SEATTLE CITY COUNCIL

Legislative Summary

CB 119150

Record No.: CB 119150 **Type:** Ordinance (Ord) **Status:** Passed

Version: 2 **Ord. no:** Ord 125517 **In Control:** City Clerk

File Created: 10/26/2017

Final Action: 01/22/2018

Title: AN ORDINANCE relating to Volunteer Park; authorizing the Superintendent of Parks and Recreation to enter into a development agreement and lease with the Seattle Art Museum for the renovation and continued occupancy for recreation purposes of the building that has historically housed the Seattle Asian Art Museum; and ratifying and confirming certain prior acts.

Notes:

Sponsors: Juarez

Date

Filed with City Clerk:

Mayor's Signature:

Vetoed by Mayor:

Veto Overridden:

Veto Sustained:

Attachments: Mayor's Letter on Returning Bill Unsigned 119150, Att 1 - Development Agreement, Att 1 Ex F - Final Project Design (part 1 of 4), Att 1 Ex F - Final Project Design (part 2 of 4), Att 1 Ex F - Final Project Design (part 3 of 4), Att 1 Ex F - Final Project Design (part 4 of 4), Att 2 - Lease Agreement v2

Drafter: Max Jacobs

Filing Requirements/Dept Action:

History of Legislative File **Legal Notice Published:** ☐ Yes ☐ No

Ver-sion:	Acting Body:	Date:	Action:	Sent To:	Due Date:	Return Date:	Result:
1	Mayor	11/09/2017	Mayor's leg transmitted to Council	City Clerk			
	Action Text:	The Council Bill (CB) was Mayor's leg transmitted to Council. to the City Clerk					
	Notes:						
1	City Clerk	11/14/2017	sent for review	Council President's Office			
	Action Text:	The Council Bill (CB) was sent for review. to the Council President's Office					
	Notes:						

1	Council President's Office	11/17/2017	sent for review	Parks, Seattle Center, Libraries, and Waterfront Committee	

Action Text: The Council Bill (CB) was sent for review. to the Parks, Seattle Center, Libraries, and Waterfront Committee

Notes:

1	Full Council	12/04/2017	referred	Parks, Seattle Center, Libraries, and Waterfront Committee	

Action Text: The Council Bill (CB) was referred. to the Parks, Seattle Center, Libraries, and Waterfront Committee

Notes:

1	Parks, Seattle Center, Libraries, and Waterfront Committee	12/07/2017	discussed		

Action Text: The Council Bill (CB) was discussed.

Notes:

1	Civic Development, Public Assets, and Native Communities Committee	01/12/2018			

Notes: Not heard in committee

1	Civic Development, Public Assets, and Native Communities Committee	01/17/2018	pass as amended		Pass

Action Text: The Committee recommends that Full Council pass as amended the Council Bill (CB).

In Favor: 2 Chair Juarez, Vice Chair Bagshaw

Opposed: 0

Abstain: 1 Member González

1	Full Council	01/22/2018	passed as amended		Pass

Action Text: The Motion carried, the Council Bill (CB) was passed as amended by the following vote, and the President signed the Bill:

Notes: ACTION 1:

Motion was made by Councilmember González, duly seconded and carried, to amend Council Bill 119150, by adding the last sentence to Section 3, as shown in the underlined langugage below:

Section 3. The Superintendent or the Superintendent's designee is further authorized to execute and perform, for and on behalf of the City, a lease (Lease) for the SAAM Building substantially in the form of Attachment 2 to this ordinance to allow SAM to continue its museum operations in the SAAM Building. With regard to any public benefits required under the Lease, SAM shall take adequate measures to clearly inform the public of these benefits, including identifying such benefits in marketing and outreach materials covering public activities at the SAAM.

ACTION 2:

Motion was made and duly seconded to pass Council Bill 119150 as amended.

In Favor: 9 Councilmember Bagshaw, Councilmember González , Council President Harrell, Councilmember Herbold, Councilmember Johnson, Councilmember Juarez, Councilmember Mosqueda, Councilmember O'Brien, Councilmember Sawant

Opposed: 0

1	City Clerk	01/22/2018	submitted for Mayor's signature	Mayor
	Action Text:	The Council Bill (CB) was submitted for Mayor's signature. to the Mayor		
	Notes:			
1	Mayor	01/22/2018	returned unsigned	
1	Mayor	01/22/2018	returned	City Clerk
2	City Clerk	01/22/2018	attested by City Clerk	
	Action Text:	The Ordinance (Ord) was attested by City Clerk.		
	Notes:			

City of Seattle

January 22, 2018

Monica Martinez Simmons
Seattle City Clerk
600 4th Avenue, 3rd Floor
Seattle, WA 98124

Dear Ms. Martinez Simmons,

I am returning Council Bill 119150. This legislation authorizes the Department of Parks and Recreation to enter into a development agreement and lease with the Seattle Art Museum for the renovation and occupancy of the Seattle Asian Art Museum in Volunteer Park.

Pursuant to SMC 4.16.070.A.1.a., and to provide strict compliance with the Executive Director of the Seattle Ethics and Election Commission's interpretation of the Ethics Code, but without forfeiting any of the Powers and Duties granted to me as Mayor by the Charter of the City of Seattle, I have been recused from participating in the Seattle Asian Art Museum expansion. Due to my recusal from this matter I will not be signing this Council Bill 119150.

By returning this legislation unsigned, I understand that it will become law.

Sincerely,

Jenny A. Durkan
Mayor of Seattle

Max Jacobs
DPR SAAM 2017 ORD
D3

CITY OF SEATTLE

ORDINANCE 125517

COUNCIL BILL 119150

AN ORDINANCE relating to Volunteer Park; authorizing the Superintendent of Parks and Recreation to enter into a development agreement and lease with the Seattle Art Museum for the renovation and continued occupancy for recreation purposes of the building that has historically housed the Seattle Asian Art Museum; and ratifying and confirming certain prior acts.

WHEREAS, in 1931, the Art Institute of Seattle, predecessor to the Seattle Art Museum (SAM), constructed the building currently housing the Seattle Asian Art Museum in Volunteer Park and upon completion, conveyed the building to The City of Seattle (City); and

WHEREAS, the Volunteer Park museum was SAM's sole location until 1991 when, after moving its principal venue to downtown Seattle, SAM renamed the building SAM's Asian Art Museum Building (SAAM Building) and it became the home for SAM's internationally-recognized Asian art collection; and

WHEREAS, the SAAM Building is an historic landmark that has not been substantially renovated or restored since it was completed in 1933; and

WHEREAS, by 2007, both the City and SAM recognized that the SAAM Building required substantial renovation, including replacement of systems needed to provide modern climate control that properly protects historic artifacts and works of art, along with structural elements such as seismic stabilization, ADA access, and other major improvements to enable SAM to continue operating in the SAAM Building; and

WHEREAS, the City and SAM agreed to share in the cost of the renovation, then estimated to cost approximately $22,000,000; and

WHEREAS, in 2008, Seattle voters approved a renewal of a levy to support the City's parks, which ballot measure included $9,000,000 towards the City's share of the renovation cost; and

WHEREAS, with the onset of the Great Recession in 2009, both general economic conditions and SAM's own challenges following the seizure of Washington Mutual conspired to postpone the renovation; and

WHEREAS, in early 2015, pursuant to Ordinance 124571, the City and SAM executed an agreement (2015 Agreement) formally committing the City to provide the full $11,000,000 it originally pledged for the basic project, subject to escalation consistent with any increases in construction costs, and inviting consideration of a more comprehensive project to complete the basic renovation as well as additional work to make the building more functional as a public museum; and

WHEREAS, as required under the 2015 Agreement, SAM formally notified the City earlier this year that it intended to proceed with the renovation, commencing in 2017; and

WHEREAS, SAM also advised the City of its desire to undertake a larger and more comprehensive renovation, and to that end SAM also requested, and the Mayor agreed, to seek an additional $5,000,000 appropriation for the renovation and expansion project (Project); and

WHEREAS, the City and SAM have determined that, as contemplated under the 2015 Agreement, a "larger and more comprehensive renovation" of the SAAM Building is appropriate and desirable for a more sustainable art museum; and

WHEREAS, RCW 35.22.290 authorizes the City to own, maintain, construct, and lease art museums; and

WHEREAS, the City believes that having a vibrant and successful museum at the SAAM Building serves an important park and recreation purpose and that an improved and expanded facility will allow SAM to better serve the needs of City residents and visitors and will enhance Volunteer Park; and

WHEREAS, the City and SAM wish to enter into a Development Agreement for the Project and a long-term lease of the SAAM Building for continued operation of the Seattle Asian Art Museum (SAAM); and

WHEREAS, the Project budget includes funding of some $6,000,000 to be derived from the Federal Historic Rehabilitation Tax Credits, and the viability of the Project would be jeopardized were such tax credits to be unavailable. The Lease between the City and SAAM Building Landlord, LLC, authorized by this ordinance, will be executed by the City and its tenant under such lease before December 31, 2017 to ensure that the SAAM building is leased by a taxpayer eligible to participate in the tax credit program before the end of the year; NOW, THEREFORE,

BE IT ORDAINED BY THE CITY OF SEATTLE AS FOLLOWS:

Section 1. The City Council finds and declares as follows:

1. It is the mission of the Seattle Department of Parks and Recreation to provide welcoming and safe opportunities to play, learn, contemplate, and build community.

2. For 84 years Seattle's Volunteer Park has been home to the Seattle Art Museum (SAM), which has provided countless opportunities for Seattle residents and visitors to enjoy their leisure time by offering inspiring and uplifting exhibitions and other recreational activities.

3. The City of Seattle (City), as a Washington first-class city, has express authority under RCW 35.22.290 to lease, purchase, construct and maintain art museums and to let them for such

public and private purposes for such compensation and rental and upon such conditions as shall be prescribed by ordinance.

4. The City has an interest in the renovation and expansion of SAM's Asian Art Museum Building (SAAM Building), as it will enhance Volunteer Park and because the continued and expanded presence of a cultural institution such as the Seattle Asian Art Museum is a valuable community asset for the public.

5. Continued use of the Volunteer Park museum building as the venue for SAM's Asian art collection is an appropriate park and recreation use.

6. Because the subject property will continue to be used for park and recreation purposes and because the agreements authorized by this ordinance do not involve a sale, transfer, or change from park use to another usage, the provisions of Ordinance 118477 (Initiative 42) do not apply to this transaction.

Section 2. The Superintendent of Parks and Recreation (Superintendent) or the Superintendent's designee is authorized to execute and perform, for and on behalf of the City, an agreement (Development Agreement) with SAM, substantially in the form of Attachment 1 to this ordinance, that will allow SAM to renovate the SAAM Building for museum purposes.

Section 3. The Superintendent or the Superintendent's designee is further authorized to execute and perform, for and on behalf of the City, a lease (Lease) for the SAAM Building substantially in the form of Attachment 2 to this ordinance to allow SAM to continue its museum operations in the SAAM Building. With regard to any public benefits required under the Lease, SAM shall take adequate measures to clearly inform the public of these benefits, including identifying such benefits in marketing and outreach materials covering public activities at the SAAM.

Section 4. The Superintendent or the Superintendent's designee is further authorized and directed, for and on behalf of the City, to make technical, conforming or otherwise nonmaterial changes to the Development Agreement or the Lease, and to execute, deliver, administer, and perform such ancillary agreements or documents or to take such other actions as may be judged necessary, appropriate, or desirable in order to carry out the terms and provisions of, and complete the transactions contemplated by, this ordinance.

Section 5. In the event renovation of the SAAM Building proceeds without the benefit of credits from the Federal Historic Rehabilitation Tax Credits as contemplated in Attachment 2 to this ordinance, the Superintendent or the Superintendent's designee is further authorized and directed to execute and perform, for and on behalf of the City, a Lease for the SAAM Building substantially in the form of Attachment 2 to this ordinance to allow SAM to continue its museum operations in the SAAM Building, amended and restated to be between the City as Landlord and SAM as Tenant.

Section 6. If a court of competent jurisdiction determines that the above findings are inaccurate with respect to the application of Initiative 42 to this transaction, then the requirements of Ordinance 118477 are hereby superseded.

Section 7. Any act consistent with the authority of this ordinance, including but not limited to execution of the attached Lease, substantially in the form of Attachment 2 to this ordinance, taken prior to its effective date is ratified and confirmed.

Section 8. This ordinance shall take effect and be in force 30 days after its approval by the Mayor, but if not approved and returned by the Mayor within ten days after presentation, it shall take effect as provided by Seattle Municipal Code Section 1.04.020.

Passed by the City Council the 22nd day of January, 2017, 2018 ϕ.

and signed by me in open session in authentication of its passage this 22nd day of January, 2017. 2018 ϕ.

Bruce A. Harrell

President _____ of the City Council

Approved by me this _____ day of _____, 2017.

_____

Jenny A. Durkan, Mayor

Filed by me this 22nd day of January, 2017. 2018 ϕ.

Monica Martinez Simmons

Monica Martinez Simmons, City Clerk

(Seal)

Attachments:
Attachment 1 – Development Agreement
Attachment 2 – Lease Agreement

DEVELOPMENT AGREEMENT

BY AND BETWEEN

THE CITY OF SEATTLE,
A WASHINGTON MUNICIPAL CORPORATION

AND

SEATTLE ART MUSEUM,
A WASHINGTON NONPROFIT CORPORATION

DATED: _____, 2017

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Attachment 3: Community Workforce Agreement

THIS DEVELOPMENT AGREEMENT (the "Agreement") is dated as of _____, 2017 and is by and between THE CITY OF SEATTLE (the "City"), a first-class city organized under the laws of the State of Washington, and the SEATTLE ART MUSEUM, a Washington nonprofit corporation ("SAM") (the "Parties").

ARTICLE 1
Recitals

The following facts and circumstances form the background of this Agreement:

1. The Volunteer Park museum, constructed during the Depression (1931), served as SAM's only location for half a century. The museum building was constructed at SAM's expense and donated to the City. SAM has been the City's tenant since then.

2. With the relocation of SAM's principal venue downtown, the Volunteer Park museum became the home for SAM's internationally recognized Asian art collection and the building is referred to as the Seattle Asian Art Museum ("SAAM Building").

3. The City-owned SAAM Building remained in service with relatively minimal major maintenance and investment for decades. The cost of such work that was done generally was shared between SAM and the City. Some ten years ago, the City and SAM began collaborative discussions about the building's future. Both recognized that the museum required a very substantial renovation, including systems replacement, seismic stabilization and other major improvements.

4. The City had committed some funding for construction of SAM's Olympic Sculpture Park that SAM determined it would not need. In 2007, the City and SAM entered into agreement under which Two Million Dollars ($2,000,000) in City funds was reallocated from the Sculpture Park to pay for planning and design work associated with a comprehensive renovation of the SAAM Building.

5. That work defined a core project that would represent a comprehensive, but basic renovation of the SAAM Building that would cost approximately Twenty-Four Million Dollars ($24,000,000), including the initial Two Million Dollars ($2,000,000) provided for project scoping. The City and SAM came to an informal understanding that each would provide half of the remaining Twenty-Two Million Dollars ($22,000,000) needed to complete it.

6. In 2008, the City requested that voters approve a renewal of a levy to support the City's parks. The ballot measure included Nine Million Dollars ($9,000,000) for the renovation of the SAAM Building. City officials informally assured SAM that the additional Two Million Dollars ($2,000,000) of the City's share of project costs would be secured later. The voters approved the levy.

7. With the onset of the Great Recession, both general economic conditions and SAM's own challenges following the seizure of Washington Mutual conspired to postpone the Project.

8. During this time, SAM seriously evaluated whether it could sustainably continue to afford to operate three locations and came close to a decision to simply close and vacate the SAAM Building. With the Project uncertain, the City sought SAM's consent to reprogram for other City projects the Nine Million Dollars ($9,000,000) of Parks levy funds reserved for the Project.

9. Fortunately, with the turn in the economy and SAM's own financial recovery, it again resolved to undertake the renovation the SAAM Building required.

10. In late 2014, the City Council adopted Ordinance No. 124571, approving an agreement between the City and SAM formally committing the City to provide the full Eleven Million Dollars ($11,000,000) it originally pledged for the basic project, subject to escalation consistent with any increases in construction costs. The agreement was executed by the Parties and became effective in early 2015 (the "2015 Agreement"). The 2015 Agreement also invited consideration of a more comprehensive project to complete the basic renovation as well as additional work to make the building more functional as a public museum.

11. As required under the agreement, SAM formally notified the City in 2016 that it intended to proceed with the Project, commencing in 2017. It also advised the City of its desire to undertake a larger and more comprehensive renovation. SAM also requested and the Mayor agreed to seek an additional Five Million Dollars ($5,000,000) appropriation for the Project. The City's 2017 Adopted Capital Budget includes a total of Nineteen Million Dollars ($19,000,000) in City funding allocated for the Project.

12. The Parties have determined that, as contemplated under the 2015 Agreement, a "larger and more comprehensive renovation" of the Museum is appropriate and desirable for a more sustainable art museum.

13. The Parties have determined that accessing Federal Historic Rehabilitation Tax Credits available for the rehabilitation elements of the Project would be highly beneficial and have agreed to structure the Project so it may do so. This includes the formation and involvement of Tax Credit Entities that will assume responsibilities under this Development Agreement while contracting with SAM to implement them. The Parties intend for SAM to remain primarily responsible for delivering the Project to be undertaken under this Agreement, and to continue to operate the SAAM Building as a public museum following its completion.

14. The Parties have agreed that the City's financial commitment to the Project, escalated for inflation to the projected construction start date in September 2017, will be Nineteen Million Dollars ($19,000,000).

ARTICLE 2
Effective Date; Incorporation of Documents and Materials; Definitions

Section 2.1 Effective Date. This Agreement will be effective upon the date when both of the following conditions are satisfied: (a) the City Council has authorized this Agreement; and (b) this Agreement is executed by authorized representatives of the City and SAM.

Section 2.2 Incorporation of Documents and Materials. The following documents and materials are attached as exhibits to this Agreement and by this reference are incorporated into this Agreement:

Exhibit A: Site Plan
Exhibit B: Joinder Agreement
Exhibit C: Project Schedule
Exhibit D: Project Budget
Exhibit E: Fundraising Plan
Exhibit F: Final Project Design
Exhibit G: Contracting and Social Equity Program
Attachment 1: Social Equity Plan
Attachment 2: Inclusion Plan
Attachment 3: Community Workforce Agreement

Section 2.3 Definitions. The following terms shall have the respective meanings set forth below for this Agreement.

(a) "Agreement" means this Development Agreement between The City of Seattle and the Seattle Art Museum.

(b) "City" means The City of Seattle, a Washington municipal corporation.

(c) "City Indemnified Parties" is defined in Section 6.1(a).

(d) "City Purchasing and Contracting Services" or "CPCS" is a division of the City's Department of Finance and Administrative Services.

(e) "Construction Permit" is defined in Section 5.3(d).

(f) "Development Agreement Parties" or "Parties" means the City of Seattle and the Seattle Art Museum.

(g) "Entrance Plaza" means the plaza and stairs leading to the principal entrance to the SAAM Building at its western façade, as shown in the "Site Plan" attached hereto as Exhibit A.

(h) "Final Project Design" is defined in Section 5.2.1.

(i) "Finance Director" means the Finance Director of the City of Seattle or his functional successor.

(j) "Lease" means the Lease for the Seattle Asian Art Museum in Volunteer Park by and between the City, as landlord and SAM as tenant, or, if the SAAM Building has been leased to a Tax Credit Entity and a Joinder Agreement executed as required under Section 3.4, the Lease for the SAAM Building in Volunteer Park by and between the City, as landlord, and a Tax Credit Entity.

(k) "Museum" means the Seattle Asian Art Museum operated by SAM or any subsequent museum or other operator of the SAAM Building.

(l) "Notice to Proceed" means the notice provided by SAM to the Project general contractor to commence renovation of the SAAM Building upon satisfaction of the requirements of Section 5.4.

(m) "Parks Department" means the Department of Parks and Recreation of the City of Seattle.

(n) "Project" means the renovation and expansion of the Seattle Asian Art Museum in Volunteer Park for continued use for public museum purposes.

(o) "Project Budget" means the budget reflecting the cost of construction of the Project, including associated soft costs such as professional services and applicable taxes.

(p) "Project Coordinator" is defined in Section 5.7(a).

(q) "Project Manager" is defined in Section 5.7(a).

(r) "Project Schedule" is defined in Section 3.5 and as shown in Exhibit C.

(s) "SAM" means the Seattle Art Museum. If the SAAM Building has been leased to a Tax Credit Entity and a Joinder Agreement executed as required under Section 3.4, "SAM" means the Seattle Art Museum as developer under contract with a Tax Credit Entity, or a Tax Credit Entity, as applicable.

(t) "SAM Indemnified Parties" is defined in Section 6.1(b).

(u) "SAAM Building" means the Seattle Asian Art Museum in Volunteer Park.

(v) "Superintendent" means the Superintendent of the Department of Parks and Recreation of the City of Seattle or his functional successor.

(w) "Tax Credit Entities" or "Tax Credit Entity" mean one or more Washington limited liability entities formed by SAM that would be eligible to claim or convey to others the

right to claim federal historic rehabilitation tax credits for the renovation of the Seattle Asian Art Museum in Volunteer Park.

ARTICLE 3
General Provisions

Section 3.1 Scope. SAM will substantially restore and expand the SAAM Building consistent with applicable historic preservation guidelines at an estimated total cost of approximately Fifty-Four Million Dollars ($54,000,000).

Section 3.2 Development Agreement. The Development Agreement Parties' rights, responsibilities and obligations during design, development and construction of the Project are delineated in this Agreement.

Section 3.3 Lease. The Development Agreement Parties' long-term rights, responsibilities and obligations during operation of the SAAM Building will be reflected in the Lease. Under the Lease, SAM will be obligated to provide enumerated public benefits in the operation of the Museum.

Section 3.4 Federal Historic Rehabilitation Tax Credits. The City and SAM intend to secure the right to claim federal historic rehabilitation tax credits for the Project. For the Project to be eligible for such credits, the City must lease the SAAM Building to a Tax Credit Entity. If SAM has secured a firm commitment from a tax credit investor on terms reasonably acceptable to SAM and upon satisfaction of the conditions precedent to the issuance by SAM of its Notice to Proceed as provided in Section 5.4, the City, prior to the start of Project construction, will execute the Lease for the SAAM Building with a Tax Credit Entity and the City, SAM and a Tax Credit Entity will execute a Joinder Agreement substantially in the form attached hereto as Exhibit B under which a Tax Credit Entity joins in and assumes SAM's rights and obligations under this Development Agreement. The City agrees to execute any additional documents reasonably necessary to effect and otherwise cooperate in such transaction. If SAM cannot secure a commitment from a tax credit investor on reasonably acceptable terms or determines it will not need to pursue tax credits to secure approval to issue its Notice to Proceed under Section 5.4, the City and SAM will execute a Lease for the SAAM Building and no Joinder Agreement will be needed.

Section 3.5 Schedule. SAM shall use its best efforts to start construction of the Project within one (1) year from the effective date of this Agreement, but in no event later than December 31, 2018. The current "Project Schedule" is attached hereto as Exhibit C. The Project Schedule remains subject to change.

ARTICLE 4
Project Budget and Funding

Section 4.1 Project Budget. The current Project Budget ("Project Budget") to complete construction of the Project is attached hereto as Exhibit D. The Project Budget reflects the

Project's 100 percent construction documents, as discussed in Section 5.2.1. The Project Budget shall include contingencies consistent with industry standards.

Section 4.2 City Direct Funding and Other City-Related Support. The following represent the City's contributions to and support for the Project:

(a) Contribution. As provided under the 2015 Agreement, the Executive will include the City's contribution in the City's proposed Capital Improvements Program for the City budget years 2016, 2017 and 2018 and, upon Council approval of (i) such Program, including such funding; and (ii) this Agreement, such funding shall be provided to the SAAM Building for its Project, as further provided in this Agreement. As stipulated in the 2015 Agreement, the City's contribution to the Project is Eleven Million Dollars ($11,000,000) "in 2008 dollars . . . adjusted for inflation to the Project start date by application of the Engineering News-Record Construction Cost Index using the annual 12-month average of the 20-city monthly index for the years and portions of years elapsed," plus an additional Five Million Dollars ($5,000,000) in current funds The Parties have determined that, consistent with application of such adjustment, the City's contribution to the Project shall be Nineteen Million Dollars ($19,000,000). Except as provided below with respect to tax credits, proceeds of the City funding may be used solely to pay or reimburse SAM for Project capital costs, including but not limited to the associated costs of planning, design, construction, fixtures and equipment.

(b) Facilitating Tax Credit Transaction. Consistent with the 2015 Agreement, the City concurs that claiming federal historic rehabilitation tax credits for the benefit of the Project is appropriate and agrees to cooperate with SAM in doing so, as further provided in this Agreement. To the extent otherwise permitted by applicable law, SAM may use any source of Project funding, specifically including the City funding, in a manner that enables it to obtain private investment in the Project under Federal income tax credit programs so long as an amount equal to the portion of such City grant funds so applied is utilized to pay Project capital costs.

(c) Reimbursement for Construction Period Utilities. Consistent with the current Operating Agreement, the City shall continue to reimburse SAM for SAAM Building utility expenses incurred during construction of the Project, terminating upon issuance of the Project's occupancy permit.

Section 4.3 SAM Funding and Other SAM-Related Support.

4.3.1 SAM Funds and Fundraising. As reflected in Exhibit D, the Project Budget currently totals Fifty-Four Million Dollars ($54,000,000) to complete the construction of the SAAM Building Project, to be provided from all available sources, including the City funding and funding derived from tax credits, as identified in Section 4.2. SAM will be responsible for securing the balance of funding needed to fully fund the Project Budget, increased or decreased as appropriate resulting from scope, design and schedule changes and any cost overruns, all as provided herein. SAM's fundraising commitment shall be increased to reflect the additional cost of any financing necessary to ensure the availability of funding as needed during construction of the Project (above the projected cost of any such financing reflected in the Project Budget). SAM agrees to use its best efforts to secure commitments from private individuals, corporations and

foundations, and governmental sources (other than the City) for such funds on a schedule consistent with its Fundraising Plan, attached hereto as Exhibit E. SAM's success in achieving its fundraising objectives shall be evaluated by the City Finance Director when making his or her determinations under Section 5.4.1(b). Such evaluation shall include review of SAM's private sector donor pledges, pledge payment experience and such other relevant information the Finance Director may reasonably require. SAM's private sector donor pledges will be reviewed by the Finance Director under procedures to protect the confidentiality of donors and SAM donor-related information to the extent possible. SAM will submit to the Finance Director a copy of the pledges in a form acceptable to the Finance Director, with donor names verified by the Finance Director but omitted from the copy submitted. The Finance Director will approve a pledge if it is from a person or entity of substantial net worth in relation to the amount pledged and the Finance Director knows of no reason the pledge will not be honored.

4.3.2 Federal Historic Rehabilitation Tax Credits. SAM agrees to use its best efforts to secure federal historic rehabilitation tax credits for the Project as a feature of the resources SAM will bring to it, as more particularly described in Section 3.4 and the City agrees to use its best efforts to assist SAM in securing federal historic rehabilitation tax credit financing for the Project.

4.3.3 SAAM Building Entrance Plaza Restoration. The Entrance Plaza is not included within the SAM leasehold under the Lease. The Entrance Plaza also needs substantial repair and restoration, including needed replacement of steps and lighting. SAM and the Parks Department shall concur on a reasonable scope and design of such work and SAM shall complete the work during the course of the Project at SAM's expense.

4.3.4 Parks Department Costs. SAM shall reimburse the Parks Department for the actual costs of its Project management and review responsibilities under Section 5.7, up to a total amount not exceeding Thirty Thousand Dollars ($30,000).

ARTICLE 5
Project Design and Construction

Section 5.1 Project Management. Subject to the requirements of this Agreement, SAM shall undertake and be responsible for the management of all aspects of the design and construction of the Project. SAM shall engage and manage, without limitation, project managers, architects and other design professionals and a general contractor with the expertise and experience necessary to successfully complete the project. In conducting any construction work on the premises, SAM shall cause all work to be done in a good and workmanlike manner and shall comply with or cause compliance with all laws. SAM shall obtain or cause to be obtained and maintain in effect, as necessary, all Master Use Permits (including SEPA approvals), Certificates of Approvals, building permits, licenses and other governmental approvals that may be required in connection with such work. SAM shall complete construction of the Project substantially consistent with the Final Project Design, except as specifically provided herein. SAM shall use its good faith best efforts to resolve issues that may arise during construction to avoid material or other changes to the Final Project Design that would require the approval of the Superintendent by, among other measures, applying contingency funding available within the Project Budget; adjusting the Project Schedule;

reducing costs through permissible changes to the Final Project Design and other means; and, as needed, committing additional funds to supplement the Project Budget.

Section 5.2 Design Review and Approval; Consistent Project Budget.

5.2.1 Parks Department Design Review and Approval. Sequential, major phase design documents (including schematic design, design development and permit documents) shall be reviewed and approved by the Superintendent, which approval shall not be unreasonably denied, conditioned or delayed. The Project's 100 percent Construction Documents are attached hereto as Exhibit F. Upon the Superintendent's approval of the Project's 100 percent Construction Documents, such documents shall constitute the Final Project Design ("Final Project Design") for purposes of this Agreement.

5.2.2 Landmarks Preservation Board Review and Approval. The Project design must be reviewed and approved of the City's Landmarks Preservation Board. In deference to the jurisdiction of the Board, the City Design Commission has declined to review the Project.

5.2.3 Material Change. Any material changes to the Final Project Design require the prior approval of the Superintendent. A material change is any change estimated to cost Two Hundred Thousand Dollars ($200,000) or more to complete and that affects the design, function or utility of the Project. SAM shall notify the Superintendent of any proposed material changes. Any dispute between the Parties whether a proposed change is material shall be resolved in favor of requiring the Superintendent's approval. Before SAM gives its construction contractor its Notice to Proceed with construction, the Parties shall develop a process under which any proposed material changes shall be reviewed by the Superintendent, including a timeline for such review designed to minimize potential delays in completing the Project consistent with the Project Schedule, attached hereto as Exhibit C. Nothing in this paragraph shall be construed as limiting the authority of the City to approve or disapprove proposed changes to the Project when acting in its regulatory capacity.

5.2.4 Signage. The SAAM Building may be identified by signage affixed on the building and located elsewhere on its leased premises. Initial signage for the SAAM Building and leased premises shall be incorporated in the Project design and shall be subject to the review and approval of the Superintendent in the context of review and approval of the design as provided in Section 5.2.1. The Project design may also include features or fixtures necessary for the display and support of temporary promotional or informational signage such as banners and flags.

Section 5.3 Requirements for Construction. In managing the Project, SAM shall ensure that the Project and its general contractor and others as appropriate apply good faith best efforts to comply with the contracting and social equity requirements contained in Exhibit G. SAM shall comply with the following additional requirements:

(a) The Project must include at least One Hundred Ninety Thousand Dollars ($190,000) (1%) for public art for the Project. Such art may be incorporated as a feature of the Project with engagement of a chosen artist(s); be of a temporary or permanent nature; or with approval from the Superintendent, sited at a location other than the Project site. The selection of

public art shall follow a process agreed to between SAM, Parks Department and the City's Office of Arts & Culture.

(b) Upon completion of construction of the Project, SAM shall apply for Leadership in Energy and Environmental Design (LEED) certification at the Silver level or higher, under the U.S. Green Building Council's Rating System.

(c) SAM shall ensure that the Project is free of construction-related liens or other obligations before it is put in service as a Museum, subject to SAM's right to contest any liens.

(d) Construction Permit means the Revocable Use Permit to be issued by the Parks Department allowing SAM, its agents, employees and contractors to use Volunteer Park for construction staging activities in a manner consistent with this Agreement in the area depicted on Exhibit A attached hereto (the "Project Area") solely to construct the Project. SAM shall obtain the Construction Permit from the Parks Department's Planning and Development Division with assistance from the Parks Department Project Coordinator. SAM shall not be charged any fee for the Construction Permit or use of the Project Area. The Construction Permit will, among other things, describe the agreed location for construction fencing and staging, access routes to the SAAM Building, parking of construction and contractor vehicles and storage of construction materials to be used in the Project. The Construction Permit shall commence on the date that SAM authorizes its contractor to proceed with construction of the Project, and terminate on the earlier of the date when the Project is complete and the SAAM Building is placed in service, or 18 months after the beginning of construction (the "Construction Period").

(e) SAM shall prepare for Parks Department review and approval a neighborhood and public engagement plan that provides for reasonably continuous and current communications through electronic and, to the extent practicable, other media and methods regarding the status of the construction of the Project. Such a plan shall include reasonably advance notice of major construction-related events that may have substantial impacts on the Volunteer Park neighborhood as well as information regarding any mitigation measures being taken to ameliorate such impacts to the extent reasonably possible and consistent with the Project budget and schedule. The plan also shall include information enabling affected residents and other members of the public to communicate with Parks Department, SAM and its contractor's Project managers for additional project-related information and to provide input regarding Project impacts and progress.

Section 5.4 Notice to Proceed.

5.4.1 SAM may issue its Notice to Proceed to its general contractor upon receipt of the following:

(a) concurrence by the Superintendent that the Project Budget is consistent with the cost of completing construction of the Final Project Design, based on his review of the most recent construction cost estimates provided by SAM;

(b) the determination of the Finance Director, based on his review of the status of SAM's fundraising efforts against its Fundraising Plan, that SAM has timely access to sufficient funds from all available sources, including the City and other City-related funding identified in Section 4.2, as well as additional funding from private individuals, corporations and foundations and public sources other than the City, to fully fund the cost of completing construction of the Project, as reflected in the Project Budget;

(c) concurrence by the Superintendent that (i) SAM's general contractor has agreed to a guaranteed maximum price to construct the Project as represented in the Final Project Design and consistent with the Project Budget; and (ii) SAM's contract with its general contractor provides for the requirements for construction under Sections 5.3 and 5.8; and

(d) concurrence by CPCS that SAM or its general contractor has provided the required Community Workforce Agreement Letter of Assent, as provided in Exhibit G.

Section 5.5 Process for Disbursement of City Funding Proceeds.

5.5.1 As provided in Section 4.2, SAM expenditures for Project capital costs may be reimbursed by City funding proceeds as follows:

(a) Prior to issuing its Notice to Proceed to its general contractor, SAM shall provide to the City updated projections for monthly spending of the proceeds of the City funding until such contribution proceeds are projected to have been fully disbursed.

(b) SAM may request disbursements of the City funding proceeds no more frequently than monthly to reimburse Project capital costs. SAM shall request disbursement of funds only for payment of such costs already incurred and each request must be limited to the amount needed to reimburse SAM for expenditures, supported by the documentation as described herein.

(c) City funding proceeds shall be disbursed, under a disbursement request in a standard format agreed to by the Parties, within thirty (30) business days after the request is received, if: (i) the disbursement request is submitted in compliance with the requirements of this Agreement; (ii) SAM is in compliance with this Agreement and no default exists under any other agreement for the financing or development of the Project; and (iii) no part of the Project shall have been materially damaged by fire or other casualty.

(d) Each disbursement request shall be accompanied by (a) copies of all vendor invoices (including all applicable back-up materials) to be reimbursed with the requested funds, together with information sufficient to identify the budgeted expenses to which the invoices relate and to verify that such expenses are Project capital costs; (b) an update to the Project Budget showing the expenditures from each fund source since the date of the preceding invoice and the current balance of each fund source; and (c) an updated total Project Budget summary that includes a copy of the Project's schedule of earned values or other document showing the actual quantities of work completed to date for each bid item in accordance with the construction contract

documents. All documents provided by SAM shall be submitted as PDF attachments to an e-mail sent to the Parks Finance Director with a copy to the Director and/or their respective designees.

(e) If City funding proceeds are applied to Project capital costs through a federal historic rehabilitation tax credit structure, SAM shall demonstrate to the City's reasonable satisfaction that an amount equal to the portion of such contribution proceeds so applied has been utilized to pay for Project capital costs.

Section 5.6 Final Allocation of City Funding Proceeds. Not later than twelve (12) months after the Project is certified to be substantially complete, SAM shall provide to the City a final allocation and summary of the use of City funding proceeds, demonstrating that an amount equivalent to the total City funding amount was expended for Project capital costs.

Section 5.7 Project Management and Coordination.

(a) Project Manager and Coordinator. At least thirty (30) days prior to issuing its Notice to Proceed, SAM shall notify the Superintendent of the identity of the SAM construction contractor's project manager ("Project Manager") by name and such person's business and home telephone numbers, and the Department of Parks and Recreation ("Parks Department") shall provide to SAM comparable contact information for the Parks Department project coordinator ("Project Coordinator"). In the event either such person is replaced, the party changing personnel shall provide notice to the other no later than the effective date of such replacement, including such replacement's name and business and home telephone numbers.

(b) Project Construction Meetings. SAM's Project Manager shall keep the Parks Department Project Coordinator informed of the time and place of each regular and special project construction meeting to enable the Parks Department Project Coordinator to attend, become informed about the status of the Project, participate in discussions and present the Parks Department's position regarding matters being discussed. The SAM Project Manager shall also participate in such separate meetings with the Parks Department Project Coordinator and, at the Superintendent's option, with the Superintendent's designee, as may be scheduled by the Parks Department Project Coordinator with at least three (3) days' prior notice.

(c) Status Reports. Within seven (7) days after the receipt by SAM of any project construction meeting minutes, SAM shall deliver a copy of each of the same to the Parks Department Project Coordinator.

(d) Minimization of Adverse Impacts. SAM shall protect from damage or destruction all private and public property on or near the construction premises not scheduled for repair, replacement or removal. All Project-related demolition, construction, alteration, addition, improvement and other activity or work performed by or for SAM on the construction premises shall be carried out in a manner that minimizes any adverse impact on City property and the use thereof by the City or third parties, and on any private property near the Project. (For purposes of this requirement, the term "property" includes land, trees, shrubbery and landscaping, irrigation facilities, drainage, survey markers and monuments, buildings and structures, conduits and pipes, meters, fences, pavements, curbs, driveways, sidewalks, and other property of any description,

excluding the SAAM Building and the premises subject to the Lease.) SAM shall prepare for the Superintendent's reasonable review and approval a plan for construction fencing, including routes for temporary pedestrian access around the construction site, before mobilization work begins. SAM shall work with the Parks Department Project Coordinator to schedule construction activity to minimize construction impacts such as noise, dust and fumes. Nothing in this Section 5.7(d) limits the City's authority to impose SEPA mitigation measures on the Project when acting in its regulatory capacity.

(e) Waste Disposal. SAM shall secure and provide within the construction premises, appropriately sized containers for the collection of all waste materials, debris and rubbish associated with the Project. SAM shall keep the work site and all adjacent property free from the accumulation of waste materials, rubbish and windblown debris associated with the Project and, daily, shall dispose of all flammable, hazardous and toxic materials generated by or otherwise associated with the Project. Storage and disposal must be in accordance with applicable Federal, State and local laws, fire codes and regulations. All waste materials, debris and rubbish generated by or otherwise associated with the Project shall be disposed of legally at disposal areas away from Volunteer Park. Upon completing the Project, SAM shall ensure that the construction premises and the roadways and walkways immediately surrounding the construction premises are cleaned to the reasonable satisfaction of the Parks Department Project Coordinator, and that all tools, equipment and surplus materials, and waste materials, debris and rubbish associated with the Project have been removed from the construction premises.

(f) Staging and Fencing. The Parties shall cooperate in the identification of sufficient space reasonably proximate to the SAAM Building for the exclusive use of SAM's contractor and its subcontractors and their employees, agents or contractors for construction staging activities. Such activities include, without limitation, parking of construction, contractor and construction worker vehicles, temporary structures and storage of construction materials to be used in the Project. The space shall become available for staging when SAM authorizes its contractor to proceed with construction of the Project and terminate upon Project completion. SAM shall fully restore the staging space, as provided in Section 5.7(h). During Project construction, SAM may install a temporary perimeter fence enclosing its staging area and the SAAM Building to secure both the construction site and the staging area. Such fencing is subject to the Superintendent's approval as provided in Section 5.7(d) and shall be removed upon Project completion.

(g) Construction Worker Parking. The Parks Department and SAM have developed a plan for identifying locations for parking for Project contractors, suppliers and construction workers to minimize the impact of worker parking on Volunteer Park and the surrounding neighborhood.

(h) Restoration. SAM shall be responsible for full restoration of all Parks Department property and improvements, excluding the SAAM Building and the premises subject to the Lease, solely or to the extent attributable to SAM's construction activity to a condition equal to or better than prior to SAM's use of such Parks Department property, including full repair to or replacement if reasonably determined necessary by the Parks Department. SAM agrees to warrant (or to assign contractor warranties for) the repair or replacement of such Parks Department

property or improvements for a period of one (1) year from SAM's completion of SAM's construction activity at Volunteer Park. If, as a result of SAM's construction activity, Parks Department property is damaged or destroyed, SAM shall repair or replace such property within thirty (30) calendar days of such damage unless an alternate deadline is approved by the Superintendent or repair or replacement should occur at a later date to ensure that additional damage would not occur during the normal course of SAM's construction activity. SAM and the Parks Department will jointly inspect any such damage; evaluate the extent of the damage attributable to SAM's construction activity; and provide such documentation as may be necessary and useful to determining appropriate repairs or replacements to redress it. SAM shall provide to the Parks Department a video of pre-existing site conditions prior to mobilization, including areas along Volunteer Park's access drive, and all Volunteer Park property adjacent to the SAM project site.

The Parties have agreed that SAM, by way of mitigation for certain impacts of the SAAM Building Project on Volunteer Park, will fund or undertake at its expense certain improvements to such park, including the construction of certain pathways within the park. The Project restoration required under this Section shall not apply to any such changes or improvements to Volunteer Park agreed upon by the Parties and completed by SAM consistent with the Parks Department approved Final Project Design or subsequent Parks Department approved modifications or additions thereto.

Section 5.8 SAM Cost Overruns Responsibility and Risk Management.

5.8.1 Cost Overruns.

(a) The Parties agree to apply good faith best efforts to complete the Project consistent with the Final Project Design. Funds required for any increases in the Project Budget necessary to complete the Project substantially consistent with the Final Project Design (as potentially modified under this Agreement) shall be provided by SAM from sources other than the City, except as specifically provided herein. SAM's responsibility for cost overruns includes responsibility for those due to unforeseen conditions that must be addressed for the Project to proceed, but only to the extent such conditions can be remedied with resources available within the Project Budget. Upon discovery of an unforeseen condition that must be addressed for the Project to proceed, SAM will notify the Superintendent. SAM will evaluate ways to resolve any such conditions for the Project to proceed and determine the cost of doing so. In addressing such additional cost, SAM may, among other measures, apply contingency funds within the Project Budget, make modifications to the Final Project Design, and apply such additional funds that SAM, in its sole discretion, determines to provide to increase the Project Budget. SAM will keep the Superintendent apprised of its work and advise him or her of its plans for addressing such conditions, specifically including any proposed changes in the Final Project Design requiring his or her approval under Section 5.2.3. If SAM concludes that it lacks the resources to address any such unforeseen conditions and that it cannot complete the Project, it will so notify the Superintendent. The Development Agreement Parties will cooperate in developing and implementing a plan to suspend or terminate the Project.

(b) SAM's responsibility for cost overruns notwithstanding, the City shall bear financial responsibility for any direct or indirect cost increases associated with changes to the Project that the City requests after the Superintendent approves the Final Project Design (excluding permitting or other regulatory requirements).

5.8.2 Retainage and Bonding. SAM shall establish retainage for purposes equivalent to those stated in Ch. 60.28 RCW at not less than five percent (5%) of its contractor's guaranteed maximum price and shall require bonding by its contractor to the extent warranted, in its judgment and discretion after consultation with the Superintendent.

5.8.3 Liens. SAM shall pay or cause to be paid all sums payable by them for any labor performed or materials furnished in connection with any work performed on the Project. SAM will discharge, by bond or otherwise, any mechanic's or materialman's lien filed against the premises for work claimed to have been done for, or materials claimed to have been furnished to SAM, within thirty (30) days after filing.

Section 5.9 Insurance Requirements.

5.9.1 Insurance Requirements. From and during the Effective Date of this Development Agreement, SAM shall, at its sole cost and expense and as part of project costs, procure and maintain with insurers acceptable to the City, at a minimum, the following insurance against claims for injuries to persons or damages to property that may arise from, or in connection with the performance of work hereunder by SAM, its agents, representatives, employees, consultants, subconsultants, contractors and/or subcontractors. Coverage shall be at least as broad as:

5.9.1.1 Commercial General Liability. Insurance Services Office form number (CG 00 01) or equivalent covering Commercial General Liability Policy shall be written on form CG 00 01 07 98 or its equivalent and shall not include any exclusions or limitations other than those incorporated in the standard form and shall include coverage for:

1. Premises/Operations;
2. Products/Completed Operations;
3. Advertising Injury;
4. Contractual Liability;
5. Independent Contractors;
6. "Additional Insured" status provided to relevant project entities;
7. Unintentional failure to disclose provision;
8. Per project aggregate per ISO CG 25 03 (Aggregate Limits of Insurance per Project) or equivalent; and
9. A broadened knowledge of occurrence provision.

Such insurance must provide a minimum limit of not less than $5,000,000 general aggregate per location aggregate. Such insurance shall not contain exclusions related to explosion, collapse, underground, and blasting. SAM shall maintain coverage for completed operations/product liability claims as part of such Commercial General Liability policy or provide evidence of

completed operations/product liability for at least six (6) years after substantial completion of the Project. The policy will not exclude coverage losses resulting from perils and acts of terrorism so long as terrorism coverage is commercially available. If any such insurance policy excludes coverage for perils and acts of terrorism, SAM will obtain a separate terrorism insurance policy in the coverage amount required by this paragraph in form and substance reasonably satisfactory to the City.

5.9.1.2 Automobile Liability. Insurance Services Office form number (CA 00 01) or equivalent covering Business Automobile Coverage, symbol 1 "any auto"; or the combination of symbols 2, 8, and 9, with a limit of not less than $1,000,000 combined single limit per occurrence.

5.9.1.3 Workers' Compensation. Workers' Compensation coverage, as required by the Industrial Insurance Act of the State of Washington, statutory limits, and any other applicable State Workers' Compensation Law.

5.9.1.4 Employer's Liability or "Stop Gap". The protection provided by the Workers' Compensation Policy, Part 2 (Employer's Liability) or, in states with monopolistic state funds, the protection provided by the "Stop Gap" endorsement to the General Liability or Worker's Compensation Policy in the amount of at least $1,000,000.

5.9.1.5 Builder's Risk Insurance. During the period of construction, SAM shall also procure and maintain Builder's Risk Insurance, which shall be written on an "all-risk" completed value policy form in the amount of the initial Contract Sum, plus value of subsequent contract modifications and cost of materials supplied or installed by SAM, the City, or others, comprising total value for the entire Project at the site on a replacement cost basis, including cost to cover professional fees. Coverage shall be provided for (i) the perils of earth movement including earthquake and flood (an earthquake and flood sublimit may be allowed, as mutually agreed to by SAM and the City and may be subject to PML study); (ii) resultant damage from errors in design, plans, specifications, faulty workmanship, materials and construction; (iii) "extra expense"; (iv) temporary buildings, debris removal and all materials to be stored offsite and while in transit to the jobsite; (v) "cold testing" of all building systems; (vi) SAM and City's loss of use of the Project due to delays in Project completion caused by covered peril losses to the Project, including loss of income and rents and soft costs such as interest on any construction loan, real estate taxes and insurance premiums; (vii) the increased cost of construction, debris removal and demolition due to the operation of building laws and code upgrades; and (viii) direct physical damage to the Project and loss of use caused by an off premises services interruption. The policy shall include a waiver of subrogation provision in favor of City and shall grant permission for partial occupancy of the facilities without having a detrimental effect on the coverage provided. SAM shall have the required Builder's Risk Policy in place no later than commencement of construction. The Builder's Risk Policy shall include SAM, the general contractor and their respective subcontractors, other contractors, and the City as insureds in an amount equal to their interest with a loss payable clause in favor of any construction lender and City, as their interests may appear. SAM shall keep the Builder's Risk Policy in place from commencement of construction until substantial completion. Upon substantial completion, the completed project broad-form all risk property insurance coverage will take effect immediately. The policy will not

exclude coverage losses resulting from perils and acts of terrorism so long as terrorism coverage is commercially available. If any such insurance policy excludes coverage for perils and acts of terrorism, SAM will obtain a separate terrorism insurance policy in the coverage amount required by this paragraph in form and substance reasonably satisfactory to the City.

5.9.1.6 Umbrella/Excess Liability. Coverage shall follow form of the General Liability, Employer's Liability, and Automobile Liability.

5.9.2 Contractors' Insurance Requirements. From and after the Effective Date of this Agreement, the contractor shall, at its sole cost and expense, procure and maintain or cause to be procured and maintained with insurers acceptable to the City, at a minimum, the following insurance against claims for injuries to persons or damages to property that may arise from, or in connection with the performance of work hereunder by contractor, its agents, representatives, employees, consultants, contractors and/or subcontractors. Coverage shall be at least as broad as follows. SAM shall include a provision in each construction contract requiring each contractor to maintain the following minimum scope and limits of insurance.

5.9.2.1 Commercial General Liability. Insurance Services Office form number (CG00 01) or equivalent covering Commercial General Liability including coverage for:

1. Premises/Operations;
2. Products/Completed Operations;
3. Advertising Injury;
4. Contractual Liability;
5. Independent Contractors;
6. Explosion collapse underground hazards;
7. Personal injury with employment and contractual exclusions deleted;
8. Unintentional failure to disclose provision;
9. Per project aggregate per ISO CG 25 03 (Aggregate Limits of Insurance per Project) or Equivalent;
10. Blasting (if explosives are used in the performance of the Work); and
11. A broadened knowledge of occurrence provision.

Such insurance must provide a minimum limit of liability general aggregate per project/location of $2,000,000 plus CGL umbrella policy with limit of $25,000,000.

The contractor's CGL insurance shall not exclude perils generally known as XCU (Explosion, Collapse and Underground Property Damage), Subsidence, Absolute Earth Movement (except as respects earthquake peril only) or any equivalent peril.

The contractor's CGL insurance shall include each City and SAM as an additional insured for Products and Completed Operations by providing additional insured status on the ISO CG 20 10 11 85 or CG 20 37 endorsement, or by an equivalent policy or endorsement provision. The

Products and Completed Operations additional insured status for City shall remain in effect for not less than six (6) years following substantial completion.

5.9.2.2 Automobile Liability. Automobile Liability Insurance Services Office form number (CA 00 01) or equivalent for owned, non-owned, hired, and leased vehicles, as applicable, with a minimum limit of liability of $2,000,000. Combined Single Limit (CSL). If pollutants are to be transported, CA 99 48 endorsement is required on the Automobile Liability insurance policy unless in-transit pollution risk is covered under a Pollution Liability insurance policy.

5.9.2.3 Workers' Compensation. The contractor shall comply with Workers' Compensation coverage as required by Title 51 RCW (Industrial Insurance) and any other applicable State Workers' Compensation laws.

5.9.2.4 Employer's Liability or "Stop Gap". The protection provided by the Workers' Compensation Policy, Part 2 (Employer's Liability) or, in states with monopolistic state funds, the protection provided by the "Stop Gap" endorsement to the General Liability or Workers' Compensation Policy in the amount of at least $1,000,000.

5.9.2.5 Contractor's Pollution Liability. Contractor shall provide contractor's Pollution Liability coverage in the amount of $2,000,000 per occurrence or claim and in the aggregate to cover sudden and non-sudden bodily injury and/or property damage to include the destruction of tangible property, loss of use, clean-up costs and the loss of use of tangible property that has not been physically injured or destroyed. Insurance shall not exclude pollution arising out of asbestos, lead, mold and/or PCB operations. Evidence of insurance must specifically state that such coverage is included. Contractor shall be responsible for obtaining and maintaining evidence of Transportation coverage (including MCS-90 and CA 9948 Endorsements for Automobile Liability) and Disposal Site Operators Insurance from all subcontractors and site operators. If coverage is placed on a "Claims-Made" basis, then the Retrospective Date of the policy must match or precede the date these contracts are executed. Evidence of continuous coverage or an extended reporting period endorsement shall be required for a period of six (6) years after substantial completion.

5.9.2.6 Contractor's Professional Liability. In any construction contract that requires professional services as part of the work, contractor shall provide $2,000,000 per claim/aggregate professional liability errors and omissions coverage. If coverage is placed on a "Claims-Made" basis, then the Retrospective Date of the policy must match or precede the date the first professional services are provided. Evidence of continuous coverage or an extended reporting period endorsement shall be required for a period of six (6) years after substantial completion.

5.9.3 Design and Engineering Consultants' Insurance Requirements. From and after the Effective Date of this Agreement, the professional consultant shall, at its sole cost and expense and as part of project costs, procure and maintain or cause to be procured and maintained with insurers acceptable to the City, at a minimum, the following insurance against claims for injuries to persons or damages to property that may arise from, or in connection with the

performance of work hereunder by professional consultant, its agents, representatives, employees, consultants, contractors and/or subcontractors. SAM shall require in each professional consultant contract that the consultant provide the following minimum scope and limits of insurance:

5.9.3.1 General Liability. Insurance Services Office form number (CG00 01) or equivalent covering Commercial General Liability, including coverage for completed operations/product liability, independent contractors, contractual liability, explosion collapse underground hazards, personal injury with employment and contractual exclusions deleted, unintentional failure to disclose provision, and a broadened knowledge of occurrence provision with a limit of not less than $1,000,000 combined single limit per occurrence, 2,000,000 general aggregate per project/location. Professional consultant shall maintain coverage for completed operations/product liability claims as part of such Commercial General Liability policy or provide evidence of completed operations/product liability for at least six (6) years after substantial completion of the Project.

5.9.3.2 Automobile Liability. Insurance Services Office form number (CA 00 01) or equivalent covering Business Automobile Coverage, symbol 1 "any auto"; or the combination of symbols 2, 8, and 9, with a limit of not less than $1,000,000 combined single limit per occurrence.

5.9.3.3 Workers' Compensation. Workers' Compensation coverage, as required by the Industrial Insurance Act of the State of Washington or any other applicable State Workers' Compensation Law, at statutory limits.

5.9.3.4 Employer's Liability or "Stop Gap". The protection provided by the Workers' Compensation Policy, Part 2 (Employer's Liability) or, in states with monopolistic state funds, the protection provided by the "Stop Gap" endorsement to the General Liability or Worker's Compensation Policy in the amount of at least $1,000,000.

5.9.3.5 Professional Liability Errors and Omissions. Consultant shall provide $5,000,000 per claim/aggregate professional liability errors and omissions coverage. Such coverage shall continue in force or be extended by professional "Tail" coverage for a period no less than six (6) years from project completion.

5.9.4 Terms and Conditions. The policies required under this Section 5.9 shall meet all requirements below.

5.9.4.1 The City of Seattle as Additional Insured. The CGL insurance and, in addition, Excess and/or Umbrella liability insurance, if any, shall include "The City of Seattle, its officers, officials, employees, agents and volunteers" as additional insureds. All insurance shall be primary and non-contributory to any insurance maintained by or available to the City. The term "insurance" in this paragraph shall include insurance, self-insurance (whether funded or unfunded), alternative risk transfer techniques, capital market solutions or any other form of risk financing.

5.9.4.2 Required Separation of Insured Provision; Cross-Liability Exclusion and other Endorsements Prohibited. SAM's insurance policy shall include a "separation

of insureds" or "severability" clause that applies coverage separately to each insured and additional insured, except with respect to the limits of the insurer's liability. SAM's insurance policy shall not contain any provision, exclusion or endorsement that limits, bars, or effectively precludes the City of Seattle from coverage or asserting a claim under SAM's insurance policy on the basis that the coverage or claim is brought by an insured or additional insured against an insured or additional insured under the policy. SAM's failure to comply with any of the requisite insurance provisions shall, at the discretion of the City of Seattle, serve as grounds for the City to procure or renew insurance coverage with any related costs of premiums to be repaid by SAM or reduced and/or offset against the Agreement.

5.9.4.3 Cancellation Notice. Such policies shall not be renewed, canceled, or materially modified without thirty (30) days' prior written notice to the City or ten (10) days for non-payment of premiums. SAM shall provide City with notification in the event of any reduction or restriction of insurance limits or coverage of any respective policies.

5.9.4.4 Minimum Security Requirements: Each insurance policy required hereunder shall be (1) subject to reasonable approval by City that it conforms with the requirements of this Section, and (2) be issued by an insurer rated A–:VII or higher in the then-current A. M. Best's Key Rating Guide and licensed to do business in the State of Washington unless procured under the provisions of chapter 48.15 RCW (Unauthorized insurers).

5.9.4.5 Each insurance policy shall be written on an "occurrence" form, excepting that insurance for professional liability, errors and omissions, and Contractors Pollution Liability when required, may be acceptable on a "claims made" form.

5.9.4.6 If coverage is approved (if approval is required above) and purchased on a "claims made" basis, SAM warrants continuation of coverage, either through policy renewals or the purchase of an extended discovery period, if such extended coverage is available, for not less than six (6) years from the date of completion of the work that is subject to said insurance.

5.9.4.7 Any deductible must be disclosed to, and shall be subject to reasonable approval by, the City. The cost of any claim falling within a deductible shall be the responsibility of SAM.

5.9.4.8 By requiring such minimum insurance as specified herein, neither party shall be deemed to, or construed to, have assessed the risks that may be applicable to the other party to this Agreement or any contractor. Each party and each contractor shall assess its own risks and, if it deems appropriate and/or prudent, maintain greater limits or broader coverage.

5.9.4.9 SAM shall release the City from any and all claims or causes of action whatsoever in or from or in any way connected with any loss covered or which should have been covered by insurance required to be maintained by SAM pursuant to this Agreement.

5.9.5 Waiver of Subrogation. City and SAM release and relieve the other from any liability they might otherwise have and waive their entire right of recovery for loss or damage to property located within or constituting a part or all of the Premises or the SAAM Building to the extent that the loss or damage either (a) is actually covered by the injured party's property

insurance, or (b) if the injured party failed to maintain insurance as required under this Agreement, would have been covered under the terms and conditions of the property insurance the injured party is required to carry under Section 5.9, whichever is greater. This waiver applies regardless of the cause or origin of the claim including without limitation loss due to the negligent acts or omissions of City or SAM, or their respective officers, directors, council members, employees, agents, contractors, invitees, SAM's assignees or subtenants. The parties shall have their property insurers endorse the applicable insurance policies to reflect the foregoing waiver of claims, provided however, that the endorsement shall not be required if the applicable policy of insurance permits the named insured to waive rights of subrogation on a blanket basis, in which case the blanket waiver shall be acceptable; and provided further, that the failure to obtain such endorsement, when required, shall not impair the effectiveness of this waiver and/or release between City and SAM.

5.9.6 Evidence of Insurance. On or before the Effective Date, and thereafter not later than the last business day prior to the expiration date of each such policy, the following documents must be delivered to City at its notice address as evidence of the insurance coverage required to be maintained by SAM:

5.9.6.1 Certification of insurance documenting compliance with the coverage, minimum limits and general requirements specified herein.

5.9.6.2 A copy of the policy's declarations pages, showing the insuring company, policy effective dates, limits of liability and the Schedule of Forms and Endorsements specifying all endorsements listed on the policy including any company-specific or manuscript endorsements;

5.9.6.3 A copy of the CGL insurance policy provision(s) and endorsements expressly including the City of Seattle and its officers, elected officials, employees, agents and volunteers as additional insureds (whether on ISO Form CG 20 26 or an equivalent additional insured or blanket additional insured policy wording), showing the policy number, and the original signature and printed name of the representative of the insurance company authorized to sign such endorsement; a full and complete copy of insurance policies must be provided to the City upon request.

5.9.6.4 Pending receipt of the documentation specified in this Section 5.9.6, SAM may provide a copy of a current complete binder. An ACORD certificate of insurance will not be accepted in lieu thereof.

Evidence of Insurance as set forth above, shall be issued to:

City of Seattle
Department of Parks and Recreation
100 Dexter Avenue North
Seattle, WA 98109-5199
Attn: Property Management

5.9.7 Assumption of Property Risk. Except to the extent of City's negligence or willful misconduct, but subject to Section 5.9.5 above, the placement and storage of SAM's

Business Personal Property in or about the Premises shall be the responsibility, and at the sole risk, of SAM.

5.9.8 Adjustments of Claims. SAM shall provide for the prompt and efficient handling of all claims for bodily injury, property damage or theft arising out of the activities of SAM under this Agreement.

5.9.9 SAM's Responsibility. The procuring of the policies of insurance required by this Agreement shall not be construed to limit SAM's liability hereunder. Notwithstanding said insurance, but subject to Section 5.9.5 above, SAM shall be obligated for the full and total amount of any damage, injury or loss caused by negligence of SAM, or any of its agents, officers and employees or through use or occupancy of the Premises.

Section 5.10 Changes During Construction. Any material change to the Final Project Design requires the approval of the Superintendent, which approval shall not be unreasonably withheld or delayed. A material change represents a major departure from the Final Project Design including but not limited to elimination or addition of a significant element or feature; discernible or functional alteration in the quality or projected performance of any significant feature or system; or any significant change in the use or appearance of any major space or component.

ARTICLE 6
Indemnification and Dispute Resolution

Section 6.1 Indemnification.

(a) SAM Indemnification. To the fullest extent permitted by law, SAM shall indemnify, defend (using counsel acceptable to the City) and hold the City, its officers, agents, employees and elected officials (collectively, the "City Indemnified Parties") harmless, and shall require its construction contractor to similarly indemnify, defend and hold the City Indemnified Parties harmless from and against all claims, suits, losses, damages, fines, penalties, liabilities and expenses (including City's actual and reasonable personnel and overhead costs and attorneys' fees and other costs incurred in connection with claims, regardless of whether such claims involve litigation) of any kind whatsoever arising out of the Project, including, but not limited to, claims resulting from, arising out of, or connected with the following: (i) the acts or omissions of SAM, its employees, agents, officers, affiliates, contractors, guests or invitees throughout the course of the Project; (ii) SAM's breach of this Agreement; or (iii) construction of the Project. SAM's defense and indemnity obligations and those of its contractor shall extend to claims brought by their own employees and the foregoing obligations are specifically and expressly intended to act as a waiver of SAM's and SAM's contractor's immunity under Washington's Industrial Insurance Act, RCW Title 51, but only as to the City Indemnified Parties and to the extent necessary to provide the City Indemnified Parties with a full and complete defense and indemnity.

(b) City Indemnification. To the fullest extent permitted by law, the City shall indemnify, defend (using counsel acceptable to SAM) and hold SAM, its board members, employees, agents, officers, contractors, guests or invitees throughout the course of the Project (collectively, "SAM Indemnified Parties") harmless from and against all claims, suits, losses, damages, fines, penalties, liabilities and expenses (including SAM's actual and reasonable

personnel and overhead costs and attorneys' fees and other costs incurred in connection with claims, regardless of whether such claims involve litigation) of any kind whatsoever resulting from, arising out of, or connected with the City's breach of this Agreement. The City's defense and indemnity obligations extend to claims brought by its own employees and the City's foregoing obligations are specifically and expressly intended to act as a waiver of the City's immunity under Washington's Industrial Insurance Act, RCW Title 51, but only as to SAM Indemnified Parties and to the extent necessary to provide SAM Indemnified Parties with a full and complete defense and indemnity.

Section 6.2 Limitation of SAM's Obligation. To the extent necessary to comply with RCW 4.24.115 as in effect on the date of this Agreement, SAM's and SAM's contractor's obligation to indemnify the City for damages arising out of bodily injury to persons or damage to property relative to the construction, alteration, repair, addition to, subtraction from, improvement to, or maintenance of, any building, road, or other structure, project, development, or improvement attached to real estate, including the Project (i) shall not apply to damages caused by or resulting from the sole negligence of the City Indemnified Parties; and (ii) to the extent caused by or resulting from the concurrent negligence of (A) the City Indemnified Parties and (B) SAM, its board members, agents, contractors, officers, affiliates, employees, guests or invitees shall apply only to the extent of the negligence of SAM, its board members, agents, contractors, officers, employees, guests or invitees; PROVIDED, HOWEVER, the limitations on indemnity set forth in this Section shall automatically and without further act by either the City or SAM be deemed amended so as to remove any of the restrictions contained in this Section 6.2(a) no longer required by then applicable law.

Section 6.3 Waiver of Indemnity; Indemnities Negotiated. SAM agrees that the foregoing indemnity specifically include, without limitation, claims brought by SAM's employees against the City. THE FOREGOING INDEMNITY IS EXPRESSLY INTENDED TO CONSTITUTE A WAIVER OF SAM'S IMMUNITY UNDER WASHINGTON'S INDUSTRIAL INSURANCE ACT, RCW TITLE 51, TO THE EXTENT NECESSARY TO PROVIDE THE CITY WITH A FULL AND COMPLETE INDEMNITY FROM CLAIMS MADE BY SAM AND ITS EMPLOYEES, TO THE EXTENT OF ITS NEGLIGENCE. THE CITY AND SAM ACKNOWLEDGE THAT THE INDEMNIFICATION PROVISIONS OF THIS ARTICLE WERE SPECIFICALLY NEGOTIATED AND AGREED UPON BY THEM.

Section 6.4 Dispute Resolution. In the event of a dispute regarding this Agreement, the Development Agreement Parties agree to follow the procedures in this Section prior to filing or initiating a lawsuit. The Development Agreement Parties shall make their best efforts to resolve disputes as expeditiously as possible through negotiations at the lowest possible decision-making level, and in the event such negotiations are unsuccessful, the matter shall be referred to the Superintendent and the Executive Director of SAM. If those officials are unable to resolve the dispute within a period of fifteen (15) days after the matter has been formally referred to them for resolution, they shall meet during the immediately succeeding seven (7) days to select a mediator to assist in the resolution of such dispute. SAM and the City agree to participate in mediation with the agreed upon mediator for a reasonable amount of time and in good faith. The cost of the mediation shall be shared equally between the City (one-half) and SAM (one-half).

ARTICLE 7
Miscellaneous

Section 7.1 Amendments. This Agreement may not be amended, changed, modified or altered, except by an instrument in writing duly executed by the City and SAM (or their successors in title) upon passage of an ordinance by the City Council.

Section 7.2 Authority. Each Development Agreement Party hereto warrants that it has the authority to enter into this Agreement and to perform its obligations hereunder and that all necessary approvals, acts or resolutions to authorize this transaction have been taken, and the signatories, by executing this Agreement, warrant that they have the authority to bind the respective parties.

Section 7.3 Binding Effect; No Assignment. This Agreement shall inure to the benefit of and shall be binding upon the Development Agreement Parties and their successors. This Agreement may not be assigned without the written consent of the Development Agreement Parties, except for possible joinder of a Tax Credit Entity under Section 3.4.

Section 7.4 Consents and Approvals. In any instance when any Development Agreement Party's consent or approval is required under this Agreement, such consent or approval shall not be unreasonably withheld, conditioned or delayed. Whenever the consent of City, the Finance Director or the Superintendent to any act to be performed under this Agreement is required, SAM must obtain the consent or approval expressly for purposes of this Agreement, regardless of whether a consent or approval shall have been granted by the City in its regulatory, public utility, or other capacity. No permission, consent, or approval of the City, the Finance Director or the Superintendent contained herein or given pursuant to this Agreement is, or shall be construed as, a representation or assurance that the matter consented to or approved complies with applicable laws, regulations, ordinances or codes, nor shall any such consent or approval be construed to authorize any failure to comply with any of the foregoing.

Section 7.5 Construction. The following rules shall apply to the construction of this Agreement unless the context otherwise requires:

(a) Words describing the singular number shall include the plural number and vice versa, except where otherwise indicated.

(b) All references herein to articles, sections or exhibits are references to articles, sections or exhibits of this Agreement, unless otherwise stated.

(c) The headings and table of contents herein are solely for convenience of reference and shall not constitute a part of this Agreement nor shall they affect its meaning, construction or effect.

(d) This Agreement shall not be construed as if it had been prepared by one of the Development Agreement Parties, but rather as if all Development Agreement Parties had prepared it.

Section 7.6 Counterparts. This Agreement may be executed in counterparts for the convenience of the Development Agreement Parties, and such counterparts shall together constitute one Agreement.

Section 7.7 Cumulative Remedies. The rights and remedies that any Development Agreement Party may have under this Agreement or at law or in equity, upon any breach, are distinct, separate and cumulative and shall not be deemed inconsistent with each other, and no one of them shall be deemed to be exclusive of any other.

Section 7.8 Force Majeure. Except as otherwise provided in this Agreement, time periods for any Development Agreement Party's performance under any provisions of this Agreement shall be extended for periods of time during which such performance is prevented due to circumstances beyond such party's reasonable control, including without limitations, strikes, embargoes, shortages of labor or materials, governmental regulations, acts of God, unforeseen site conditions, casualty, war or other strife.

Section 7.9 Governing Law; Venue. This Agreement is governed by and shall be construed in accordance with the substantive laws of the State of Washington and shall be liberally construed so as to carry out the purposes hereof. Except as otherwise required by applicable law, any action under this Agreement shall be brought in the Superior Court of the State of Washington in and for King County.

Section 7.10 Integration. Together with the Lease, this Agreement contains the entire integrated agreement between the parties as to the matters covered herein and supersedes any oral statements or representations or prior written matter not contained in this instrument as to the matters set forth herein.

Section 7.11 Limitation on Third Party Rights. Nothing in this Agreement expressed or implied is intended or shall be construed to give to any person other than the Development Agreement Parties any legal or equitable right, remedy or claim under or in respect of this Agreement or any covenant, condition or provision herein contained; and all such covenants, conditions and provisions are and shall be held to be for the sole and exclusive benefit of the Development Agreement Parties.

Section 7.12 No Partnership. Nothing in this Agreement shall create any partnership, joint venture or other relationship between SAM and the City.

Section 7.13 No Waiver. Failure of any Development Agreement Party to complain of any act or omission by the other, no matter how long the failure may continue, shall not constitute a waiver of any rights under this Agreement. No waiver by any Development Agreement Party of any breach of any provisions of this Agreement shall be deemed a waiver of a breach of any other provision or consent to any subsequent breach of any other provision. If any action of any Development Agreement Party requires the consent or approval of another, consent or approval given on one occasion shall not be deemed a consent to or approval of that action on any other

occasion. No extension of time for performance of any obligation or act shall be deemed an extension of the time for performance of any other obligation or act.

Section 7.14 Notices. All notices, demands or requests that may or must be given by any Development Agreement Party to another under this Agreement shall be given in writing and delivered personally, or sent by U.S. certified mail, postage prepaid, return receipt requested, or nationally recognized overnight air carrier, and addressed to City's address or SAM's address, as follows:

If to the City:	Glen Lee Finance Director City of Seattle 700 5th Avenue, Suite 5200 Seattle, WA 98104-5058 Phone: 206.684.8079 Email: glen.lee@seattle.gov
And:	Jesús Aguirre Superintendent, Department of Parks and Recreation City of Seattle 100 Dexter Avenue North Seattle, WA 98109-5199 Phone: 206.684.8022 Email: jesus.aguirre@seattle.gov
Copy to:	Helaine Honig Assistant City Attorney City of Seattle Law Department 701 5th Avenue, Suite 2050 Seattle, WA 98104-7097 Phone: 206.684.8222 Email: helaine.honig@seattle.gov
If to SAM:	Kimerly Rorschach Illsley Ball Nordstrom Director and CEO Seattle Art Museum 1300 1st Avenue Seattle, WA 98101-2003 Phone: 206.654.3142 Email: kimr@seattleartmuseum.org
Copy to:	Richard Beckerman Chief Operating Officer Seattle Art Museum 1300 1st Avenue Seattle, WA 98101-2003

Phone: 206.654.3150
Email: richardb@seattleartmuseum.org

Copy to: Gerry Johnson
Pacifica Law Group LLP
1191 2nd Avenue, Suite 2000
Seattle, WA 98101-3404
Phone: 206.245.1700
Email: gerry.johnson@pacificalawgroup.com

Notices shall be deemed to have been given upon receipt or attempted delivery where delivery is not accepted. Any Development Agreement Party may change its address and/or those receiving copies of notices upon written notice given to the other.

Section 7.15 Severability. If any provision of this Agreement is determined to be invalid or unenforceable, then that provision and the remainder of this Agreement shall continue in effect and be enforceable to the fullest extent permitted by law. It is the intention of the Development Agreement Parties that if any provision of this Agreement is capable of two constructions, one of which would render the provision void, and the other of which would render the provision valid, then the provision shall have the meaning that renders it valid.

Section 7.16 Termination of Agreement. Unless otherwise stated herein, this Agreement and all obligations hereunder shall terminate when the Project receives its final certificate of occupancy, except that the provisions of Sections 6.1, 6.2, 6.3 and 6.4 survive the expiration or termination of this Agreement.

Section 7.17 Time of Essence. Time and all terms and conditions shall be of the essence of this Agreement.

[signatures on next page]

City:

CITY OF SEATTLE, a Washington municipal corporation

By: _____
Name: _____
Title: _____

SAM:

SEATTLE ART MUSEUM, a Washington nonprofit corporation

By: _____
Name: _____
Title: _____

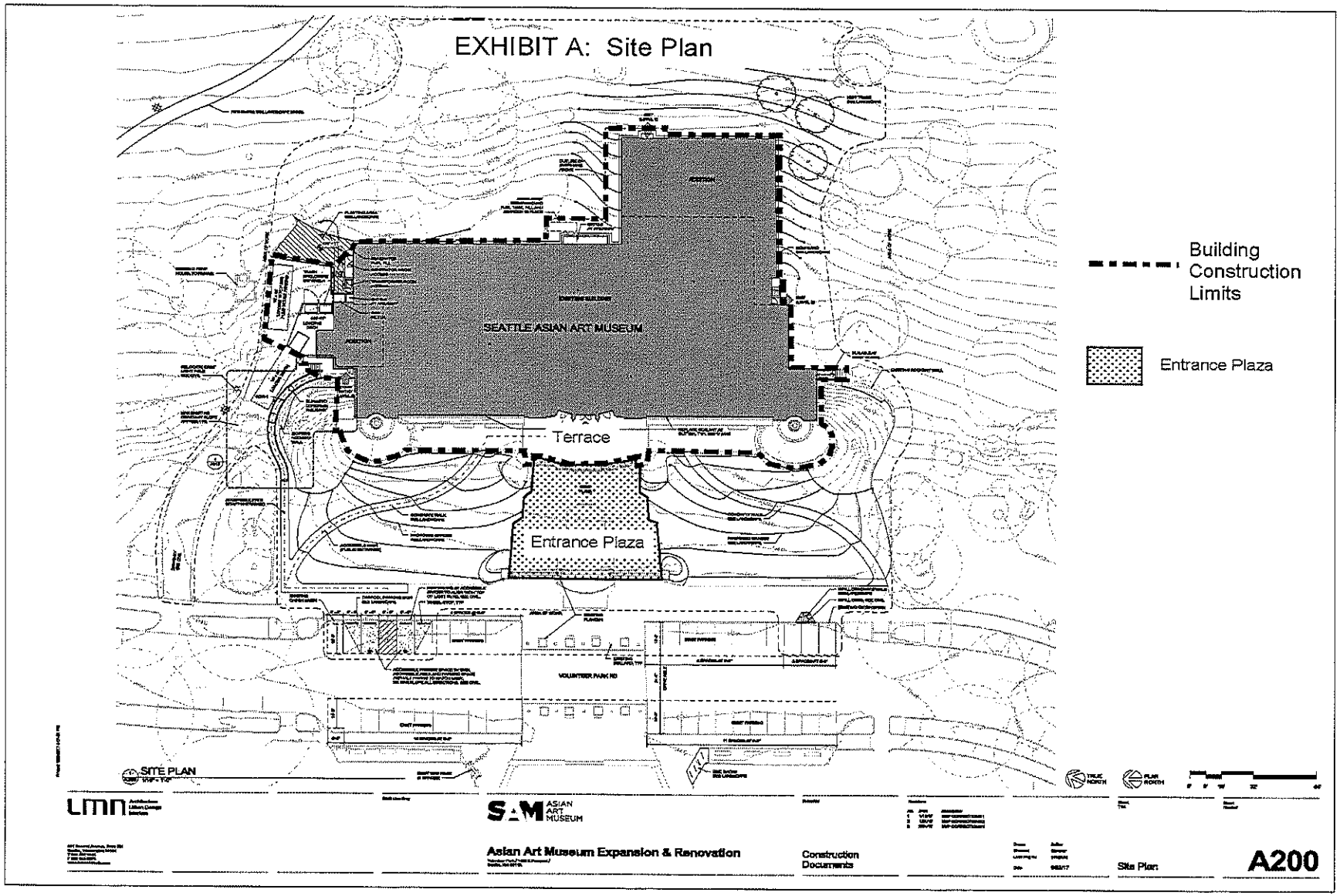
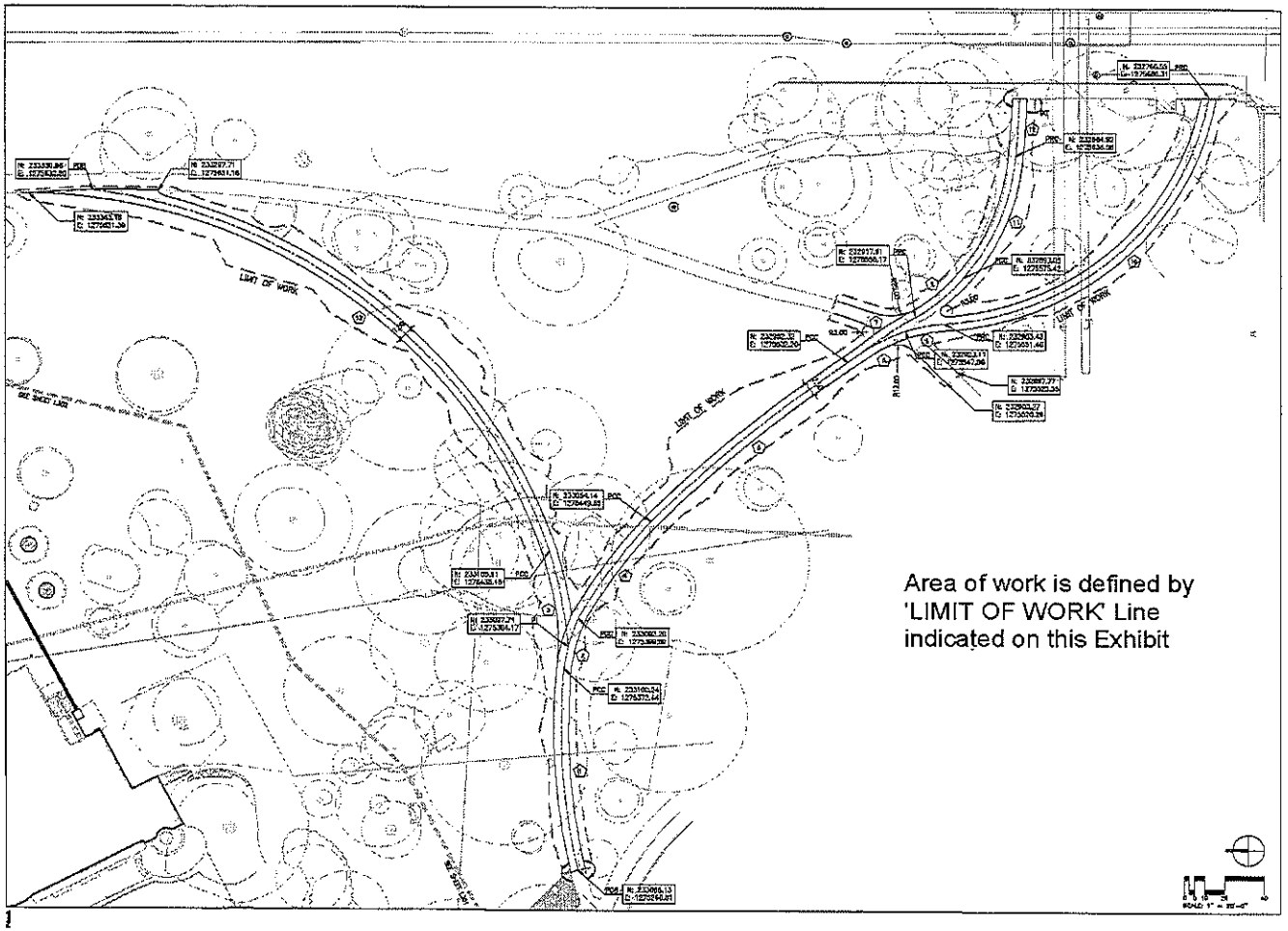


EXHIBIT A: Site Plan
SEATTLE ASIAN ART MUSEUM
Terrace
Entrance Plaza
Building Construction Limits
Entrance Plaza
SITE PLAN
LMN
SAM ASIAN ART MUSEUM
Asian Art Museum Expansion & Renovation
Construction Documents
Site Plan
A200

EXHIBIT A: Site Plan



LEGEND

- BASELINE
- CENTERLINE
- MATCH-LINE
- SHEET REFERENCE LINE
- EXTENSION OF BUILDING FACE
- ISOLATION JOINT
- DOWELLED ISOLATION JOINT
- B BEARING
- C CHORD LENGTH
- EQ EQUAL
- L LENGTH OF CURVE
- OC ON CENTER
- POB POINT OF BEGINNING
- PC POINT OF CURVATURE
- PCC POINT OF COMPOUND CURVATURE
- PRC POINT OF REVERSE CURVATURE
- PI POINT OF INTERSECTION
- PT POINT OF TANGENCY
- R RADIUS
- RP RADIUS CENTER POINT
- SP STAGES
- VF VERIFY IN FIELD
- ALIGN
- RELOCATED LIGHT FIXTURE

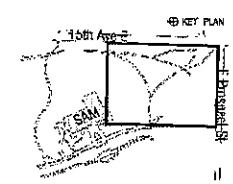
LAYOUT NOTES

1. SITE SURVEY WAS PREPARED BY BRH ON FEBRUARY 13TH 2017. ALL COORDINATES SHOWN ON THE DRAWINGS ARE BASED UPON THE COORDINATE SYSTEM ESTABLISHED BY THE SURVEYOR. WALKER MACY ASSUMES NO RESPONSIBILITY FOR ACCURACY OF SURVEYED DIMENSIONS AS SHOWN. SURVEY INFORMATION IS PROVIDED FOR REFERENCE ONLY.
2. DO NOT SCALE FROM THE DRAWINGS. THE LOCATION OF FEATURES NOT SPECIFICALLY DIMENSIONED MAY NOT BE DETERMINED BY SCALE. IF CONFLICTS ARISE IN THE FIELD, CONTACT OWNER'S REPRESENTATIVE FOR RESOLUTION.
3. ALL DIMENSIONS ARE TO THE OUTSIDE FACE OF BUILDINGS AND WALLS OR BACK OF CURBS, UNLESS OTHERWISE NOTED.
4. ALL CURVED OBJECTS SHALL HAVE SMOOTH, CONTINUOUS CURVES WITH CONSISTENT RADII AS INDICATED. EACH CURVE SHALL MEET ADJACENT CURVES OR LINEAR SECTIONS ON THE TANGENT, UNLESS NOTED OTHERWISE.

CURVE DATA

CURVE NO.	CURVE RADIUS	CURVE LENGTH	CHORD LENGTH	INCLUDED ANGLE
1	337.37'	106.20'	103.74'	18.04'
2	97.56'	28.20'	27.84'	16.57'
3	250.02'	51.70'	51.64'	11.84'
4	287.74'	63.40'	63.34'	12.68'
5	857.61'	131.10'	130.86'	11.42'
6	96.42'	33.36'	33.31'	20.83'
7	182.84'	33.33'	41.48'	10.44'
8	73.75'	20.04'	19.97'	15.57'
9	93.36'	32.12'	31.86'	19.83'
10	148.38'	192.92'	178.21'	76.83'
11	112.76'	70.29'	69.16'	35.70'
12	480.99'	30.27'	30.27'	3.61'
13	276.25'	315.86'	299.12'	93.63'

KEY PLAN



LMN WALKER MACY

SAM ASIAN ART MUSEUM

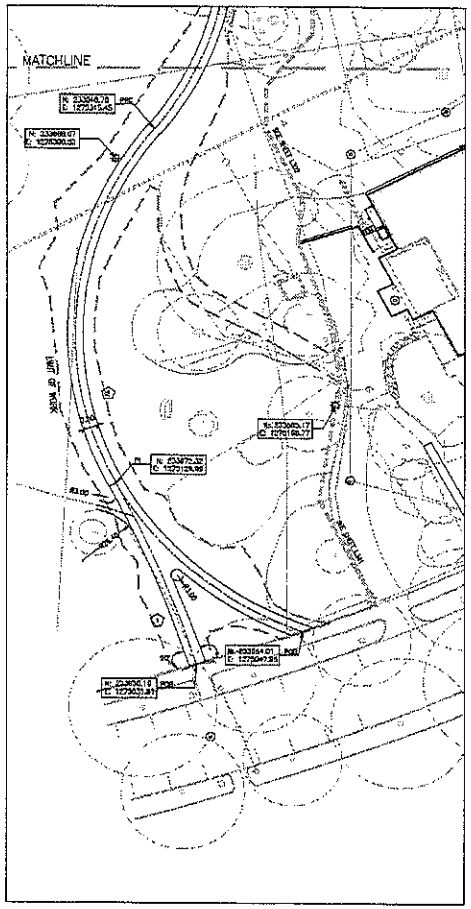
Asian Art Museum Expansion & Renovation

Construction Documents

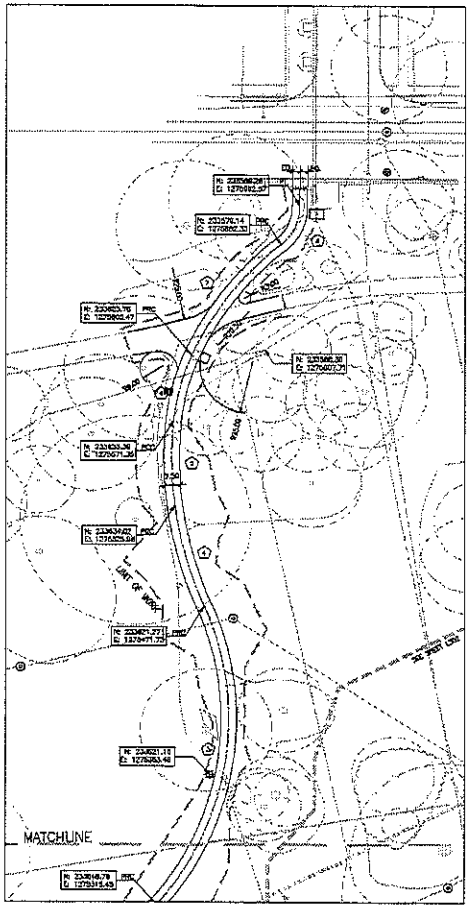
Layout Plan - South

L931

EXHIBIT A: Site Plan



NORTH PATH – WEST SIDE
SCALE: 1"= 20'



NORTH PATH – EAST SIDE
SCALE: 1"= 20'

Area of work is defined by 'LIMIT OF WORK' Line indicated on this Exhibit

LEGEND

- BASELINE
- CENTERLINE
- MATCHLINE
- SHEET REFERENCE LINE
- EXTENSION OF BUILDING FACE
- U — ISOLATION JOINT
- DU — DOWELLED ISOLATION JOINT
- B — BEARING
- C — CHORD LENGTH
- CO — COAL
- L — LENGTH OF CURVE
- OC — ON CENTER
- POB — POINT OF BEGINNING
- PC — POINT OF CURVATURE
- PCC — POINT OF COMPOUND CURVATURE
- PRC — POINT OF REVERSE CURVATURE
- PI — POINT OF INTERSECTION
- PT — POINT OF TANGENCY
- R — RADIUS
- RP — RADIUS CENTER POINT
- SP — SPACES
- VF — VERIFY IN FIELD
- ALIGN
- RELOCATED LIGHT FIXTURE

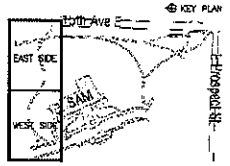
LAYOUT NOTES

1. SITE SURVEY WAS PREPARED BY BRN ON FEBRUARY 13TH 2017. ALL COORDINATES SHOWN ON THE DRAWINGS ARE BASED UPON THE COORDINATE SYSTEM ESTABLISHED BY THE SURVEYOR. WALKER MACY ASSUMES NO RESPONSIBILITY FOR ACCURACY OF SURVEYED CONDITIONS AS SHOWN. SURVEY INFORMATION IS PROVIDED FOR REFERENCE ONLY.
2. DO NOT SCALE FROM THE DRAWINGS. THE LOCATION OF FEATURES NOT SPECIFICALLY DIMENSIONED MAY NOT BE DETERMINED BY SCALE. IF CONFLICTS ARISE IN THE FIELD, CONTACT OWNER'S REPRESENTATIVE FOR RESOLUTION.
3. ALL DIMENSIONS ARE TO THE OUTSIDE FACE OF BUILDINGS AND WALLS OR BACK OF CURBS, UNLESS OTHERWISE NOTED.
4. ALL CURVED OBJECTS SHALL HAVE SMOOTH, CONTINUOUS CURVES WITH CONSISTENT RADII AS INDICATED. EACH CURVE SHALL MEET ADJACENT CURVES OR LINEAR SECTIONS ON THE TANGENT, UNLESS NOTED OTHERWISE.

CURVE DATA

CURVE NO.	CURVE RADIUS	CURVE LENGTH	CHORD LENGTH	INCLUDED ANGLE
1	628.50'	104.33'	104.17'	9.81'
2	169.75'	321.70'	278.18'	108.55'
3	153.75'	186.75'	138.88'	62.13'
4	200.75'	55.62'	55.73'	15.72'
5	210.00'	40.00'	40.37'	12.30'
6	116.25'	37.58'	35.45'	17.54'
7	163.75'	72.92'	72.26'	27.18'
8	26.25'	23.25'	22.54'	50.80'

KEY PLAN



LMN Architecture Urban Design Interiors | WALKER MACY | S&M ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Layout Plan - North

L932

EXHIBIT B

JOINDER AGREEMENT

THIS JOINDER AGREEMENT (the "Agreement") made and entered into this _____ day of _____, 2017, by and between THE CITY OF SEATTLE (the "City"), a first class city organized under the laws of the State of Washington, the SEATTLE ART MUSEUM, a Washington nonprofit corporation ("SAM") and _____, LLC ("Tax Credit Entity"), a Washington limited liability company.

RECITALS

The following facts and circumstances form the background of this Agreement:

1. The City and SAM executed the Development Agreement dated _____, 2017 (the "Development Agreement"). SAM will substantially restore and expand the Seattle Asian Art Museum (the "SAAM Building") in Volunteer Park consistent with applicable historic preservation guidelines at an estimated total cost of approximately _____ ($_____) (in 2017 dollars).

2. Under the Development Agreement, the City and SAM commit to use their respective best efforts to secure federal historic rehabilitation tax credits for the museum project.

3. The Development Agreement also provides that if SAM has secured a firm commitment from a tax credit investor on terms reasonably acceptable to SAM, that a number of actions will be taken to access such credits, specifically including the City leasing the SAAM Building to a Tax Credit Entity and the execution of a Joinder Agreement by a Tax Credit Entity under which a Tax Credit Entity joins in and assumes SAM's rights and obligations under the Development Agreement.

4. SAM has secured a firm commitment from the tax credit investor acceptable to it and, consequently, the City, SAM and a Tax Credit Entity wish to execute this Joinder Agreement as required under the Development Agreement.

AGREEMENTS

1. Joinder. A Tax Credit Entity hereby joins with the City and SAM, as a party under the Development Agreement dated _____, to the same extent and with the same effect as if a Tax Credit Entity had executed the Development Agreement as an original party thereto, and hereby assumes, jointly and severally with SAM, all of the rights and obligations of SAM under the Development Agreement, as well as any rights and obligations specifically reserved for a Tax Credit Entity per se under such Development Agreement.

2. No Release. Nothing in this Agreement shall be construed as a release of SAM from any of its obligations under the Development Agreement, and SAM hereby confirms and reaffirms its obligations under the Agreement.

CITY OF SEATTLE

By _____
Its _____

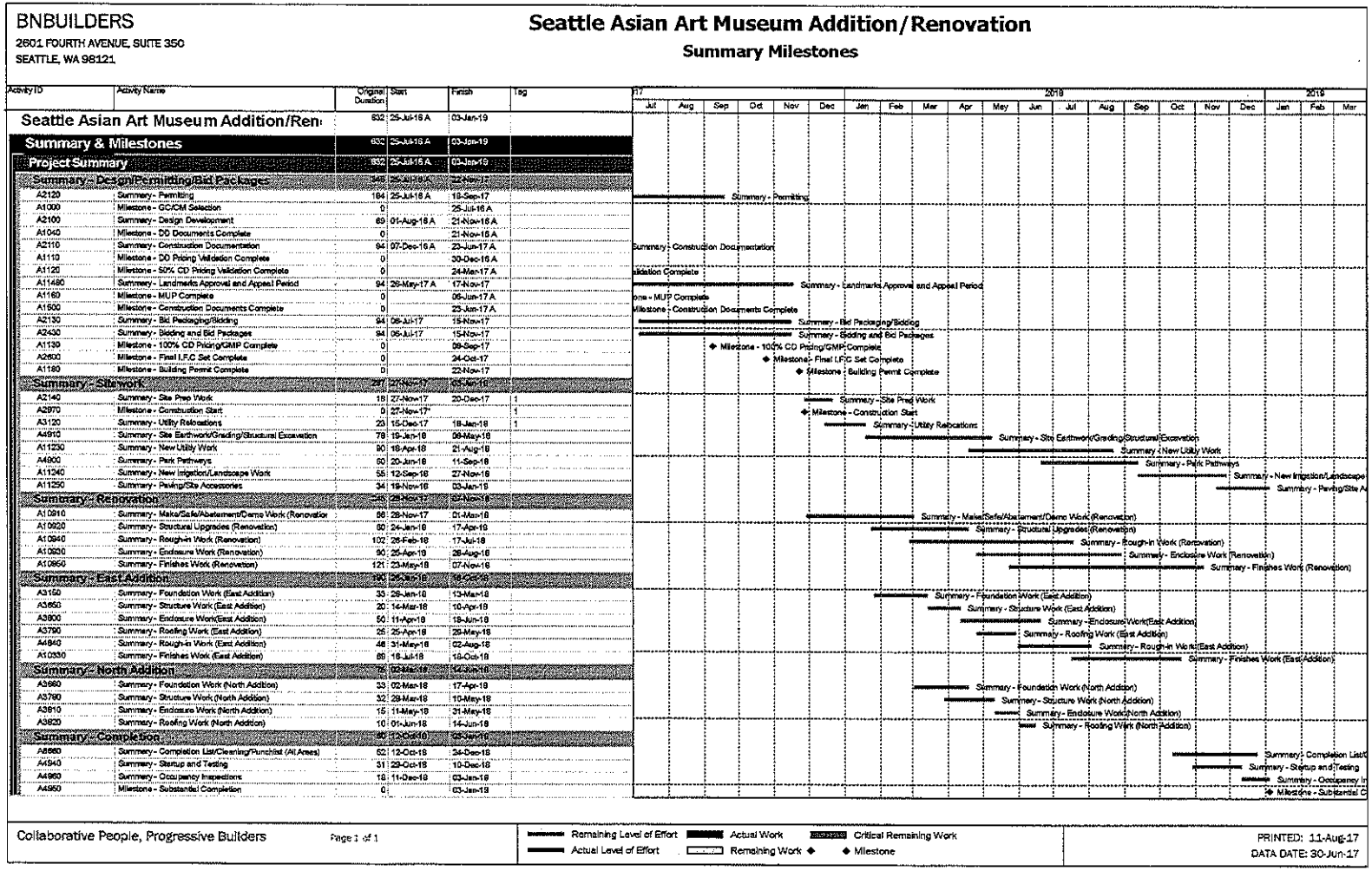
SEATTLE ART MUSEUM

By _____
Its _____

TAX CREDIT ENTITY

By _____
Its _____

EXHIBIT C
PROJECT SCHEDULE



BNBUILDERS
2601 FOURTH AVENUE, SUITE 350
SEATTLE, WA 98121

Seattle Asian Art Museum Addition/Renovation
Summary Milestones

Activity ID	Activity Name	Original Duration	Start	Finish	Tag
Seattle Asian Art Museum Addition/Ren		632	25-Jul-16 A	03-Jan-19	
Summary & Milestones		632	25-Jul-16 A	03-Jan-19	
Project Summary		632	25-Jul-16 A	03-Jan-19	
Summary - Design/Permitting/Bid Packages		348	25-Jul-16 A	22-Nov-17	
A2120	Summary - Permitting	184	25-Jul-16 A	18-Sep-17	
A1000	Milestone - GC/CM Selection	0		25-Jul-16 A	
A2100	Summary - Design Development	69	01-Aug-16 A	21-Nov-16 A	
A1040	Milestone - DD Documents Complete	0		21-Nov-16 A	
A2110	Summary - Construction Documentation	94	07-Dec-16 A	22-Jun-17 A	
A1110	Milestone - DD Pricing Validation Complete	0		30-Dec-16 A	
A1120	Milestone - 50% CD Pricing Validation Complete	0		24-Mar-17 A	
A11480	Summary - Landmarks Approval and Appeal Period	94	26-May-17 A	17-Nov-17	
A1160	Milestone - MUP Complete	0		06-Jun-17 A	
A1500	Milestone - Construction Documents Complete	0		22-Jun-17 A	
A2130	Summary - Bid Packaging/Bidding	94	06-Jul-17	15-Nov-17	
A2430	Summary - Bidding and Bid Packages	94	06-Jul-17	15-Nov-17	
A1130	Milestone - 100% CD Pricing/GMP Complete	0		06-Sep-17	
A2600	Milestone - Final I,F,C Set Complete	0		24-Oct-17	
A1180	Milestone - Building Permit Complete	0		22-Nov-17	
Summary - Sitework		227	27-Nov-17	03-Jan-19	
A2140	Summary - Site Prep Work	18	27-Nov-17	20-Dec-17	
A2970	Milestone - Construction Start	0	27-Nov-17*		
A3120	Summary - Utility Relocations	23	15-Dec-17	18-Jan-18	
A4910	Summary - Site Earthwork/Grading/Structural Excavation	79	19-Jan-18	09-May-18	
A11230	Summary - New Utility Work	90	16-Apr-18	21-Aug-18	
A4900	Summary - Park Pathways	60	20-Jun-18	11-Sep-18	
A11240	Summary - New Irrigation/Landscape Work	55	12-Sep-18	27-Nov-18	
A11250	Summary - Paving/Site Accessories	34	19-Nov-18	03-Jan-19	
Summary - Renovation		345	28-Nov-17	01-Nov-18	
A10810	Summary - Make/Safe/Abatement/Demo Work (Renovation	86	28-Nov-17	01-Mar-18	
A10820	Summary - Structural Upgrades (Renovation)	80	24-Jan-18	17-Apr-18	
A10840	Summary - Rough-in Work (Renovation)	102	26-Feb-18	17-Jul-18	
A10830	Summary - Enclosure Work (Renovation)	90	26-Apr-18	26-Aug-18	
A10850	Summary - Finishes Work (Renovation)	121	23-May-18	07-Nov-18	
Summary - East Addition		190	26-Dec-17	04-Oct-18	
A3150	Summary - Foundation Work (East Addition)	33	26-Jan-18	13-Mar-18	
A3650	Summary - Structure Work (East Addition)	20	14-Mar-18	10-Apr-18	
A3800	Summary - Enclosure Work(East Addition)	50	11-Apr-18	18-Jun-18	
A3790	Summary - Roofing Work (East Addition)	25	25-Apr-18	29-May-18	
A4840	Summary - Rough-in Work (East Addition)	48	31-May-18	02-Aug-18	
A10330	Summary - Finishes Work (East Addition)	86	19-Jul-18	18-Oct-18	
Summary - North Addition		75	02-Mar-18	12-Jun-18	
A3660	Summary - Foundation Work (North Addition)	33	02-Mar-18	17-Apr-18	
A3780	Summary - Structure Work (North Addition)	32	29-Mar-18	10-May-18	
A3810	Summary - Enclosure Work (North Addition)	15	11-May-18	31-May-18	
A3820	Summary - Roofing Work (North Addition)	10	01-Jun-18	14-Jun-18	
Summary - Completion		90	03-Oct-18	03-Jan-19	
A5660	Summary - Completion List/Cleaning/Punchlist (All Areas)	62	12-Oct-18	04-Dec-18	
A4940	Summary - Startup and Testing	31	29-Oct-18	10-Dec-18	
A4960	Summary - Occupancy Inspections	19	11-Dec-18	03-Jan-19	
A4950	Milestone - Substantial Completion	0		03-Jan-19	

Collaborative People, Progressive Builders

Page 1 of 1

Remaining Level of Effort | Actual Work | Critical Remaining Work
Actual Level of Effort | Remaining Work | Milestone

PRINTED: 11-Aug-17
DATA DATE: 30-Jun-17

EXHIBIT D
PROJECT BUDGET

Seattle Art MuseumAsian Art Museum Renovation Project
Project Budget Detail

OAC

8/15/2017 - last updated by		Budget	Budget		Commitments		Forecast	Spend
Cost Codes	Category / Description	Original Budget	Approved Budget	Potential Future	Current Commitment	Pending Commitments	Forecast at Completion	Total Spent to Date
		$$	a	b	c	d	e = (c + d)	
LAND AND TITLE								
	Legal	$162,077	$162,077	$0	$162,077	$400,000	$562,077	$409,263
	Easements	$0	$0	$0	$0	$0	$0	$0
	Land and Title Subtotal:	$162,077	$162,077	$0	$162,077	$400,000	$562,077	$409,263
OWNER DIRECT WORK								
	MISC PURCHASED SERVICES Hazmat							
	Design/Testing for HazMat	$46,665	$46,665	$0	$43,850	$1,865	$44,715	$32,339
	WSST 10.10%	$4,490	$4,490	$0			$0	$0
	Utility Fees							
	SCL Fees and Hookup costs		$226,000	$0	$95,481	$75,000	$170,481	$21,298
	WSST 10.10%	$0	$26,000	$0	$9,947	$7,575	$17,522	$0
			$0					
	Phone / Internet / Fiber- Provider	$31,845	$31,845	$0	$0	$63,090	$63,090	$0
	WSST 10.10%	$3,057	$3,057	$0	$0	$6,371	$6,371	$0
	Other misc signage	$10,000	$10,000		$0	$163,290	$163,290	$0
	WSST 10.10%	$980	$980	$0	$0	$2,020	$16,482	$0
	GAAM Owner Direct Work:	$0	$0		$0		$0	$0
	Art move and reinstallation, storage internal labor, temp office space	$3,147,638	$3,176,037		$885,784	$3,382,850	$4,271,624	$1,117,383
	Fundraising	$792,750	$792,750		$212,454	$497,546	$710,000	$30,347
	Marketing	$15,000	$15,000		$58,377	$180,000	$238,377	$0
	Bridge Financing				$0	$800,000	$800,000	$0
	Subcontracted Work							
	AV Supply/Install and Phone Cabling	$150,000	$150,000	$0	$0	$319,957	$319,957	$0
	Security - Supply/Install	$75,000	$445,000	$0	$0	$444,800	$444,800	$0
	LEED	$25,000	$25,000	$0	$0	$25,000	$25,000	$900
	Misc Data and WAPS	$50,000	$50,000	$0	$0	$50,000	$50,000	$0
	FF&E	$100,000	$100,000	$0	$0	$225,000	$225,000	$1,347
	FF&E - Kitchen		$0		$2,100	$62,753	$64,853	$1,200
	WSST 10.10%	$146,697	$163,467	$0	$87,582	$161,650	$258,332	$0
	Owner Work Subtotal:	$4,696,640	$5,263,291	$0	$1,400,554	$6,495,478	$7,912,495	$1,204,795
CONSTRUCTION								
	PRECON / CONSTRUCTION							$0
	Pre-Construction		$0				$0	$562,207
	Contractors Cost	$27,441,306	$30,725,326		$810,680	$30,499,988	$31,310,668	
	WSST 10.10%	$2,697,296	$2,767,298	$0	$81,879	$3,080,498	$3,162,377	$0
	Construction Subtotal:	$30,078,602	$33,492,623	$0	$892,559	$33,580,487	$34,473,045	$562,207
DESIGN / ENGINEERING								
	Architect / Engineering	$4,743,748	$4,993,748	$0	$5,084,803	$65,000	$5,149,803	$4,232,668
	Design / Engineering Subtotal:	$4,743,748	$4,993,748	$0	$5,084,803	$65,000	$5,149,803	$4,232,668
PROJECT MANAGEMENT								
	Construction / Project Management	$941,340	$941,340	$0	$941,340	$0	$941,340	$458,581
	Building Commissioning	$65,000	$114,100	$0	$107,600	$6,500	$114,100	$26,199
	Project Management Subtotal:	$1,006,340	$1,055,440	$0	$1,048,940	$6,500	$1,055,440	$484,779
PLANNING								
	Survey	$0	$3,624	$0	$0	$0	$0	$0
	Geotechnical Studies / Surveys	$20,000	$30,000	$0	$29,483	$15,000	$44,483	$33,227
	Traffic Studies / Surveys	$3,507	$7,014	$0	$7,190	$1,900	$9,090	$5,998
	WSST 10.10%	$2,584		$0				
	Planning Subtotal:	$26,091	$40,638	$0	$36,673	$16,900	$53,573	$39,226
PERMITS, INSURANCE & UTILITIES								
	Permits & City Fees	$275,233	$275,233	$0	$139,537	$131,447	$270,984	$143,552
	Permits, Insurance & Utilities Subtotal:	$301,655	$301,655	$0	$139,537	$131,447	$270,984	$143,552
TESTING AND INSPECTION - INDIVIDUAL CONTRACTORS								
	Soils Testing / Inspection		$0		$0		$0	$0
	Special Inspection (conc, steel, bldg code)	$20,000	$20,000	$0	$0	$20,000	$20,000	$0
	Testing And Inspection Subtotal:	$22,020	$22,020	$0	$0	$20,000	$20,000	$0
	Subtotal All Work Above	$40,948,873	$45,361,362	$0	$8,766,143	$40,719,812	$49,497,417	$7,076,400
CONTINGENCY								
	Project Contingency	$3,496,800	$3,496,745	$0	$3,496,745		$4,027,351	$0
	Design & Estimating Contingency	$2,283,900	$528,227	$0	$528,227		$528,227	
	Escalation Contingency	$2,510,900	$0	$0	$0		$0	$0
TAX								
	Total Budget:	$49,285,473	$49,376,334	$0	$12,260,887	$41,259,418	$54,052,995	$7,076,400

EXHIBIT E
FUNDRAISING PLAN

SEATTLE ART MUSEUM
ASIAN ART MUSEUM RENOVATION AND ENHANCEMENT CAMPAIGN
Fundraising Feasibly

BACKGROUND
Since opening in 1933, the Seattle Asian Art Museum (AAM) in Volunteer Park—the original home of the Seattle Art Museum—has been a center for cultural life in the Pacific Northwest. Millions of visitors have passed the famed camels flanking the beautiful art deco entryway, entering the museum to experience exceptional art from around the globe. While the building has been modestly expanded and updated since its original construction, no major renovation has taken place in its history. Over the last 20 years, numerous environmental and facilities studies have indicated a critical need to address aging infrastructure and other issues, most notably seismic vulnerabilities and mechanical and environmental systems original to the 1933 building.

In 2007, SAM was poised to address these needs in partnership with the City of Seattle – with a project cost then estimated at $24M. The City approved a Parks Levy securing approximately half of the funds needed, including $2M in early funding for design and planning. The second half of funds needed was to be secured through fundraising by SAM. Unfortunately, the worldwide financial crisis of 2008 had significant impact on the philanthropic environment, causing SAM to put the project on hold until prospects for fundraising improved.

In 2013, SAM's then new Executive Director, Kimerly Rorschach, and the Board of Trustees began exploring if enhancements could and should be added to the scope project that would improve the overall functionality of the building. That study determined that in addition to the needed infrastructure upgrades, enhancements such as an added exhibition space, improved education and community engagement spaces, and an enhanced visual connection to Volunteer Park would greatly improve SAM's ability to fulfill its mission and better serve its many diverse constituencies. Exploration in design possibilities thus began.

To determine readiness and feasibility of successfully securing the funding need for this project, SAM returned to a previously commissioned CAMPAIGN READINESS STUDY for the AAM, which was completed in 2012 by the Collins Group, a well-respected fundraising consulting firm which SAM had worked with on the very successful, $240M *Transformation of SAM Campaign* from 2000 – 2007. That study evaluated SIX elements critical to the success of any major fundraising campaign, evaluating SAM's readiness. While this study was originally commissioned when the scope of the project just focused on infrastructure upgrades (at a cost of $24M) it was determined that the same measurements/evaluation criteria could be used in determining the fundraising feasibility for an expanded project.

Readiness

Organizational Strength

As part of their assessment – The Collins Group stated "*SAM has an excellent reputation and a proven track record with successful campaigns; blockbuster exhibitions and expanded programming are delivering on the promises of the "Transformation of SAM" campaign.*

Additional evaluation:

1) Finances: Coming out of the financial crisis of 2008, SAM and its Board of Trustees have focused on achieving a sustained balance budget for the institution. Through cost-cutting and a conservative approach to expenses, increased fundraising, and review of earned revenue streams, SAM has stabilized its finances with a balanced budget for the last two fiscal years and forecasts for balanced budgets in years ahead.

2) Attendance:
SAM wanted to ensure that investing in expanded exhibition and education spaces at the AAM would result in an increased number of constituents served. To explore feasibility, SAM's Director and CEO instituted a change in programming at the AAM: more contemporary art exhibitions, a faster rotation of works of art on view, and an increased number of educational programs. In addition, a decision was made to invest more aggressively in marketing for these activities. As a result, annual attendance rose to more than 80,000 visitors, the highest level since the museum was converted into the Asian Art Museum.

Conclusion: We believe SAM and the AAM are organizationally strong (both in terms of finances and audience) for a successful campaign.

Leadership

As part of their assessment – The Collins Group stated "*SAM's trustees are passionate and generous. While the tenure of senior staff is long, the current vacancy in the Director position (as well as the Japanese Curator position) limits the museum's ability to develop a long-range vision and program plan for the Seattle Asian Art Museum.*"

Additional evaluation:

1) SAM hired a new Director and CEO in fall of 2012. Kimerly Rorschach came to the institution after having successfully led both the Nasher Museum of Art at Duke University and the Smart Museum of Art at the University of Chicago. The Nasher Museum was built from scratch under her leadership – a 66,000 square foot facility was built, and attendance rose from 10,000 per year to 180,000. Her extensive experience with campaign and museum construction will be an asset for the AAM project.

2) SAM has hired two curators in Asian Art since the time of the Collins review: Xiaojin Wu, curator of Japanese and Korean Art; and Ping Foong, curator of Chinese Art. Under their direction, exhibition programs have expanded, and attendance has increased more than 30%.

3) SAM has a 65 member board of Trustees (active) along with 15 Honorary Trustees. Trustees are dedicated and passionate about SAM's mission. All confirm upon appointment that SAM is among their top three philanthropic priorities and commit to making a campaign contribution appropriate to their ability. Among this group, SAM has identified 16 members to serve on a specific AAM Campaign Committee. These include:

   Winnie Stratton, **President**
   Stewart Landefeld, **Chairman**
   Mimi Gardner Gates, Gursharan Sidhu – **Campaign Co-Chairs**
   Griffith Way – **Honorary Chair**
   Margaret Allison, Frank Bayley, Janet Ketcham, Najma Lalji, Charlie Nolan, Brooks Ragen, Catherine Roche, Lee Rolfe, Faye Sarkowsky, Jon Shirley, Mandira Virmani, Maggie Walker, and Virginia Wright

Conclusion: SAM's leadership is strong on all levels, from board and senior management, to programming – all with prior experience directly relating to campaigns and building audiences.

Case for Support

As part of their assessment – The Collins Group stated *"Current documents describing the proposed investments in SAAM are very building centric and do not describe community benefits from the "donor's point of view." Potential supporters will want to know what new and/or expanded programs will maximize the investments in a remodeled and renovated facility."*

Additional evaluation:

1) To ensure that SAM's messaging and case for support reflect the interest and perceptions of the community we serve, in 2015 **Pyramid Communications** – a local communications/PR firm focused on nonprofit organizations – was contracted to complete a *community perception audit* and communication plan. Through their work, a dozen one-on-one interviews were held with individuals representing diverse constituencies throughout our region, ranging from a former Governor to a millennial who has only been the museum a few times; from a Seattle Public Schools educator to a member of the Washington State China Relations Council.

These responses were combined with similar feedback gathered at community meetings and interviews with Key Staff to develop specific campaign messages that can be incorporated into a wide array of campaign marketing materials and speeches.

Conclusion: We have tested our campaign messaging on our Board of Trustees and numerous lead funders of the project, with positive responses, and feel we are in a strong position for communications/ease for support.

Giving Potential.

As part of their assessment – The Collins Group stated *"While SAM's trustees have exhibited tremendous levels of generosity for past projects and current operations, there is not yet a sufficient pool of prospects to contribute the first 50 to 70 percent of the campaign goal. The museum must develop and act on a plan to cultivate new donors for this project."*

Additional evaluation:

1) Since the Collins Group evaluation was completed, a funding plan towards the now estimated $54M estimated project goal has been developed, outlined as follows:

    a. **$21M from the City of Seattle** (Confirmed with original $2M design planning funding in hand, plus increased investment to account for construction cost inflation and added scope)
    b. **$6M in Historic Tax Credits** (We have engaged legal counsel with experience securing Historic Tax Credits – recently with the Museum of History and Industry. Early evaluation has been positive and we are confident that Tax Credits can be secured at this level.
    c. **$27M in Public and Private Support**

2) Because the need for this project was critical – at the minimum level of completing the infrastructure upgrades, SAM made the decision to forgo a traditional, external fundraising feasibility study, and begin soliciting leadership gifts. It was felt that the success these early solicitations (combined with additional research to be described next) would help predict the likelihood of success in this campaign. **Fundraising for these leadership gifts began in late 2014 and nearly $10M was secured in the first 18 months, with an additional $10M since (for a total of $20.7M to date).**

3) In addition to the above, SAM contracted with **Grenzenbach Glier & Associates** – a national campaign management firm – to complete a "Wealth Screening" of SAM's database. This research determines the volume of potential supporters an organizations has, including levels of possible support. This is the same organization that has supported such campaigns as the University of

Washington's $2.5B *Campaign for Washington.* This research found that SAM currently has:

99 Exact matches in our data base with capacity to give:	Above $1M
341 Exact matches in our data base with capacity to give:	$250K - $999K
979 Exact matches in our data base with capacity to give:	$100K - $249K
14,819 Exact matches in our data base with capacity to give:	$25K - $99K

4) Simultaneously with the above, SAM continued its contract with the Collins Group – working to identify strategies to successfully research, evaluate, cultivate and solicit the above mentioned prospect pool. Of that very large group, a much smaller campaign pyramid was developed to estimate what is needed to achieve the overall campaign goal:

SAMPLE Gift Pyramid to secure $53.8 million

	Gift Size	# of Gifts Needed	# of Prospects Needed	# of Prospects Identified	Wealth Screen	Category Total
Leadership & Major Gifts	$21,000,000	1	1	n/a	City	$21,000,000
	$7,500,000	1	1	n/a	Confirmed	$7,500,000
	$6,000,000	1	1	n/a	HRTC	$6,000,000
	$1M - $5M	6	12	14	86	$8,000,000
	$500,000	7	15	18		$3,500,000
	$250,000	9	16	13	341	$2,250,000
Major & Mid-Major Gifts	$100,000	22	40	19	979	$2,200,000
	$50,000	33	75	27		$1,650,000
	$25,000	28	100	100+	14K+	$700,000
	$10,000	50	120	5		$500,000
Community Gifts	$5,000	50	200	tbd		$250,000
	$1,000	250	1800	tbd		$250,000
	TOTALS	436	2320	90		$

Conclusion: Based on secured funding from the City of Seattle, strong potential for historic tax credits; significant, positive response in leadership gift fundraising (securing nearly $10M in early conversations); plus a very sizable prospect pool with existing connections to SAM, we feel the Giving Potential for this Campaign is STRONG.

Internal Readiness

As part of their assessment – The Collins Group stated *"SAM's fundraising track record is stellar. The degree to which a future SAAM campaign can be successful will depend on a cadre of current and new development leaders who have experience with major gifts fundraising."*

Additional evaluation:

1) Since Collin's evaluation, SAM has hired a new Chief Development Officer with more than 20 years fundraising experience, including nearly 10 years at the University of Washington leading Arts and Humanities fundraising during the successful *Campaign for Washington*. Other new staff include a Director of Individual Giving; two Major Gift Officers dedicated to the campaign, a Campaign Coordinator; and two Institutional Giving Officers focused on Foundation/Government Relations and Corporate Relations (with partial focus on the campaign).

Conclusion: We believe staffing levels are appropriate for a successful campaign.

Climate and Timing

As part of their assessment – The Collins Group stated *"Other cultural institutions are engaged in campaigns around the region, and the economic recovery is proceeding at a slow pace. That being said, the convergence of the availability of the parks levy dollars, the deteriorating condition of the Volunteer Park facility, and the impending arrival of a new director will help to create urgency for fundraising."*

Additional evaluation:

1) Since Collin's evaluation, both the economic and philanthropic environment have improved. Accordingly, an even greater number of campaigns around the region have begun.

Conclusion: While there are many campaigns underway throughout the region, we believe that because of the historical significance of this project, and the potential impact it will have increasing the museum's ability to better serve our community, we remain confident that SAM and the AAM will be successful in this project.

Current Status

SAM has made a great deal of progress in its four-phase fundraising strategy towards the current $53.8M goal, as outlined below:

Phase 1 - Leadership and Major Gifts, Government and Foundation Grants
Gift Amounts $100K +; Began in 2014

Phase 2 - Builder's Club, Individual Contributions
Gift Amounts $10K - $99K; Began 2016

Phase 3 - Community Campaign
Gifts $1K+; Beginning Fall 2018/Beginning of Construction

Phase 4 · AAM Premier Year/Grand Opening
Membership Drive, Beginning 4 – 6 months prior to opening

	Cumulative Goal	Received To·date	Remaining by level
City of Seattle	$21,000,000	$21,000,000	$0
Historic Tax Credits	$6,000,000		$6,000,000
Major Gifts/Grants			
$7.5M+	$7,5000,000	$7,500,000	$0
$2M· $7.49M	$2,000,000	$2,000,000	$0
$1M · $1.99M	$6,000,000	$4,920,000	$1,080,000
$500K · $999K	$3,500,000	$1,500,000	$2,000,000
$100K · $499K	$4,500,000	$3,847,000	$653,000
Builder's Club			
$50K · $99K	$1,600,000	$659,786	$940,214
$25K · $49K	$700,000	$175,000	$525,000
$10K · $24K	$600,000	$100,000	$500,000
Community Campaign			
$5K · $9K	$350,000	$5,000	$345,000
$1K · $4K	$350,000	$4,978	$345,022
Totals (8/18/2017)	**$54,000,000**	**$41,711,764**	**$13,288,236**

Notes:

1) SAM is confident it will be able to secure $6M in Historic Tax Credits,
2) Of the approx. $3.6M. left to raise in the Major Gifts Category, SAM has currently identified 24 prospective supporters at this level, with a combined solicitation amount of $5 – 6M.
3) The Builder's Club Committee will begin peak level of activity in Fall 2017, continuing for c.18 Months. SAM has identified several hundred prospective supporters at this level and has a strong track record of success with similar initiatives (having secured $6.8M at this level during the final 18 months of the SAM Transformation Campaign in 2007
4) SAM will begin this phase of the campaign in Fall 2017 or approximately at time construction begins. The strategy will be similar to "name a brick" efforts common in capital projects.

Seattle Art Museum

Asian Art Museum Funding Status

As of 10/05/2017

	Received	2017	2018	2019	2020	2021	2022	Total
City of Seattle	$2,000,000							$2,000,000
Contributions	$10,654,982							$10,654,982
City of Seattle			$19,000,000					$19,000,000
State of Washington			$750,000	$770,000				$1,520,000
King County	$500,000			$600,000				$1,400,000
Confirmed Pledges		$3,086,238	$634,250	$2,551,750	$305,500	$45,000	$25,000	$6,647,738
Contributions Pending		$296,666	$459,999	$379,999	$117,500	$84,166	$51,670	$1,390,000
Contributions Projected			$1,200,000	$1,325,000	$1,225,000	$925,000	$725,000	$5,400,000
Historic Tax Credit Investment			$1,250,000	$3,500,000	$1,250,000			$6,000,000
Total	$13,454,982	$3,382,904	$23,294,249	$9,126,749	$2,898,000	$1,054,166	$801,670	$54,012,720

DETAIL

Gifts Received	
Name	**Gift Total**
Donor 1	$300,000.00
Donor 2	$50,000.00
Donor 3	$130,000
Donor 4	$72,125.00
Donor 5	$250,000.00
Donor 6	$2,000.00
Donor 7	$5,000.00
Donor 8	$25,000.00
Donor 9	$10,000.00
Donor 10	$125,000.00
Donor 11	$1,478.00
Donor 12	$100,000.00
Donor 13	$100,000.00
Donor 14	$50,000.00
Donor 15	$20,000.00
Donor 16	$400,000.00
Donor 17	$160,000.00
Donor 18	$996,823.38
Donor 19	$50,001.80
Donor 20	$25,000.00
Donor 21	$50,000.00
Donor 22	$10,000.00
Donor 23	$62,660.83
Donor 24	$50,000.00
Donor 25	$99,630.61
Donor 26	$20,000.00
Donor 27	$10,000.00
Donor 28	$1,500.00
Donor 29	$50,000.00
Donor 30	$25,000.00
Donor 31	$10,000.00
Donor 32	$100,000.00
Donor 33	$25,000.00
Donor 34	$100,000.00
Donor 35	$250,000.00
Donor 36	1,000,000
Donor 37	$20,000.00
Donor 38	$25,000.00
Total Gifts Received	**$4,780,720**

DETAIL

Booked Gifts								
Name	Gift Total	Received	Remaining 2017	2018	2019	2020	2021	2022
Donor 1	$2,000,000				$2,000,000			
Donor 2	$50,000	$25,000		$25,000				
Donor 3	$112,000	$28,000		$28,000	$28,000	$28,000		
Donor 4	$500,000	$300,000	$200,000					
Donor 5	$100,000	$20,000		$20,000	$20,000	$20,000	$20,000	
Donor 6	$50,000			$50,000				
Donor 7	$10,000	$2,500		$2,500	$2,500	$2,500		
Donor 8	$125,000			$25,000	$25,000	$25,000	$25,000	$25,000
Donor 9	$25,000		$25,000					
Donor 10	$7,500,000	$5,000,000	$2,500,000					
Donor 11	$250,000	$100,000		$50,000	$50,000	$50,000		
Donor 12	$25,000	$20,000	$5,000					
Donor 13	$500,000	$100,000	$100,000	$100,000	$100,000	$100,000		
Donor 14	$100,000	$25,000	$25,000	$25,000	$25,000			
Donor 15	$25,000	$5,000	$5,000	$5,000	$5,000	$5,000		
Donor 16	$100,000	$25,000	$25,000	$25,000	$25,000			
Donor 17	$100,000	$50,000	$50,000					
Donor 18	$25,000	$2,500		$12,500	$10,000			
Donor 19	$25,000	$6,250	$6,250	$6,250	$6,250			
Donor 20	$50,000	$25,000	$10,000	$10,000	$5,000			
Donor 21	$100,000	$50,000	$50,000					
Donor 22	$50,000	$40,012	$9,988					
Donor 23	$350000			$175,000	$175,000			
Donor 24	$100,000		$25,000	$25,000	$25,000	$25,000		
Donor 25	$250,000	$50,000	$50,000	$50,000	$50,000	$50,000		
Totals	$12,522,000	$5,874,262	$3,086,238	$634,250	$2,551,750	$305,500	$45,000	$25,000

DETAIL

Not Booked: Verbal / DAF								
Name	Gift Total	Received	remaining 2017	2018	2019	2020	2021	2022
Donor 1	$375,000		$125,000	$125,000	$125,000			
Donor 2	$50,000			$50,000				
Donor 3	250000		$41,666	$41,666	$41,666	$41,666	$41,666	$41,670
Donor 4	100000			$25,000	$25,000	$25,000	$25,000	
Donor 5	50000		$25,000	$25,000				
Donor 6	5000			$5,000				
Donor 7	10000			$2,500	$2,500	$2,500	$2,500	
Donor 8	250000		$100,000	$100,000	$50,000			
Donor 9	50000			$25,000	$25,000			
Donor 10	50000			$10,000	$10,000	$10,000	$10,000	$10,000
Donor 11	100000			$33,333	$33,333	$33,334		
Donor 12	25000			$12,500	$12,500			
Donor 13	25000		$5,000	$5,000	$5,000	$5,000	$5,000	
Donor 14	50000				$50,000			
Verbal / DAF Total	$1,390,000		$296,666	$459,999	$379,999	$117,500	$84,166	$51,670

Asian Art Museum

Final Phase of Fundraising

Gifts Above $100K = goal of $3M
c. $850K from Corporations
c. $750K from Foundations/Government Agencies
$1.3M from Individual Supporters

Gifts $10K - $99K "Builders Club" = goal of $2M

Community Campaign "Name a Brick" = Goal of $500K

EXHIBIT F

FINAL PROJECT DESIGN

Exhibit F is provided as a separate document in four parts.

EXHIBIT G

CONTRACTING AND SOCIAL EQUITY PROGRAM
SEATTLE ASIAN ART MUSEUM RENOVATION

The City of Seattle (City) and the Seattle Art Museum (SAM), with its general contractor, BNBuilders (BNB) and Project Manager OAC (OAC) concurring, agree to the following terms and conditions for the renovation of the Asian Art Museum Building (Project):

1. SAM will require BNB to pay the Prevailing Wage as defined in RCW 39.12. The contractor shall submit statements of intent to pay prevailing wages and affidavits of wages paid to City Purchasing and Contracting Services (CPCS) unless otherwise mutually agreed.

2. SAM will require BNB to withhold contract retainage in the manner and for the purposes described in RCW 60.28 and to provide a payment and performance bond in the full amount of the construction contract, naming The City of Seattle as co-obligee, for the purposes set forth in RCW 39.08. SAM shall also require its contractor to utilize apprentice labor for no less than 15% of the total Project labor hours.

3. SAM will require BNB to pursue utilization of Women and Minority Business Establishments (WMBE) as follows:

   3.1 SAM agrees upon an aspirational total Project utilization rate of 12% for WMBEs, including both certified and self-identified firms.
   - SAM agrees to have BNB provide CPCS with a plan (Attachment 1) for review and approval. CPCS may instruct BNB to make changes as needed in order to assure the greatest opportunity for successful achievement of the goals.
   - CPCS will provide any requested advice, comments, suggestions, hosting or event promotion, recruitment efforts, and similar assistance with regard to implementation of the plan.
   - BNB will include the City Inclusion Plan (Attachment 2) in all remaining sub packages.
   - CPCS agrees to attend each pre-bid, pre-con and pre-job meeting, to explain the WMBE and Community Workforce Agreement (CWA) forms, reporting/monitoring requirements, and performance needs. BNB will notify CPCS of such meetings in advance.
   - BNB and CPCS will meet monthly or as otherwise mutually agreed, to review WMBE progress and have discussion as needed around suggested improvements, opportunities, or information that may be helpful to share.
   - CPCS will alert SAM/OAC to any subcontractors about whom the City has concerns with respect to responsibility, although BNB retains authority to make such determinations on subcontract decisions.

4. Community Workforce Agreement (CWA)
   - SAM and BNB agree to comply with the City CWA and BNB will require all subtier contractors to assent to the CWA.
   - CPCS is available to BNB and any subcontractor as needed, for questions, information, advice, guidance, forms and related assistance that may assure full and successful implementation of the CWA.
   - CPCS and the Building Trades Executive Secretary will provide BNB with interpretations of the CWA should questions arise as to intent and/or meaning.

5. Monitoring
   - BNB/OAC will provide to CPCS a PDF of certified payrolls for BNB and every subcontractor each month on the first business day each month unless the City and SAM agree on a different schedule.
   - CPCS compliance staff will make unscheduled site visits and will attend safety meetings to evaluate and provide any requested assistance in labor, wage, WMBE and Acceptable Workplace compliance and needs.
   - CPCS compliance staff will report any issues, comments, or needs requiring attention to SAM/OAC and to BNB.

6. Progress Reviews

   Should BNB or CPCS have concerns about a subcontractor's substantial compliance with the CWA, WMBE, or Acceptable Workplace, BNB and CPCS will meet to determine if any action is necessary and if so, discuss solutions that encourage or require compliance. While the decision remains with BNB contractor, the City and BNB may consider such escalating solutions as:

   Step 1: Withholding Payment
   Step 2: Notification of default with cure opportunity
   Step 3: Suspension of Work
   Step 4: Termination of subcontractor

6.1 Acceptable Worksite Provision: BNB agrees to comply with the following provisions, shall notify any current subcontractors of these expectations, and shall include these provisions in future Project subcontracts:

BNB will ensure an Acceptable Worksite that is appropriate, productive, and safe work for all workers. An Acceptable Worksite is free from behaviors that may impair production, and/or undermine the integrity of the work conditions including but not limited to job performance, safety, productivity, or efficiency of workers. BNB will display at each Worksite location, including the Project Site office, a poster and other materials supplied by CPCS regarding Acceptable Worksites.

The intent of the person that appears to violate the Acceptable Worksite is not a measure of whether such behaviors are appropriate; rather the standard is whether a reasonable person should have known that such behavior would cause a worker to be humiliated,

intimidated, or otherwise treated in an inappropriate, discriminatory, or differential manner.

Behaviors that violate an Acceptable Worksite include, but are not limited to:

(1) Persistent conduct that to the reasonable person would be perceived as offensive and unwelcome;
(2) Conduct that a reasonable person would perceive to be harassing or bullying in nature;
(3) Conduct that a reasonable person would perceive to be hazing;
(4) Verbal references that a reasonable person would perceive to be offensive stereotypes or racial/gender slurs;
(5) Jokes about race, gender, or sexuality that a reasonable person would perceive to be offensive;
(6) Assigning undesirable tasks, unskilled work to trained apprentices and journey-level workers, manual work in lieu of works with appropriate equipment, unsupervised work, or dangerous work in disproportionate degrees to apprentices, women, or workers of color;
(7) Language that a reasonable person would perceive to be offensive based on race, gender or oriented towards sexuality;
(8) Name-calling, cursing or unnecessary yelling, including from a supervisor, foreman or other more senior person that a reasonable person would perceive as offensive;
(9) Repeating rumors about individuals in the Worksite that a reasonable person would perceive as harassing or harmful to the individual's reputation;
(10) Refusal to hire someone based on race, gender, sexuality, or any other protected class;
(11) References to or requests for immigration status (other than required by law), religious affiliation, gender affiliation, criminal background, or other related aspects of a worker unless mandated by federal law.

Attachment 1 to Exhibit G
City of Seattle
Social Equity Plan

COMPANY:

PROJECT:

WMBE COORDINATOR: NAME AND CONTACT INFORMATION

The Social Equity Plan outlined below includes some elements required by the Agreement as well as additional deliverables the CONTRACTOR will implement as demonstration of their good faith efforts to meet their WMBE utilization goals.

Unless otherwise specified below, the CONTRACTOR will keep CPCS informed of its progress on each item in this program by a Monthly Social Equity Report for the duration of the project. The CONTRACTOR will include attachments with the report as appropriate.

The table illustrates our proposed inclusion goals as a percentage of the preconstruction services budget of $XXXXX and as a percentage of the contract value based on an assumed construction cost of $xx,000,000.

Phase	Total WMBE Goal	WBE Sub-Goal	MBE Sub-Goal
Preconstruction Services ($XXX,XXX)			
Construction Services ($xx,000,000) Est.			

CLARIFICATION

[CONTRACTOR] understands that the overall WMBE goal is a minimum, and will conduct all the strategies listed in the Social Equity Plan. Each strategy will be further defined and adjusted during the pre-construction and construction phases. Modification to the Social Equity Plan will need to be approved by the City. The Social Equity Plan is in its preliminary stages and is based on limited information, proposed scopes and bid packages are preliminary and will be finalized at the time of MACC negotiations.

Bid Packaging & Subcontract Planning

The following subcontracting strategy is in its preliminary stages and based upon limited information. The overall WMBE goal is intended as a minimum with the intent that the Contractor will perform the following tasks inside this strategy. The proposed scopes and bid packages are preliminary, to be finalized by x/xx/xxxx . Each task will be defined and adjusted during pre-construction and construction by mutual agreement to meet project goals.

Professional Services
The Contractor will team with WMBEs for the following pre-construction planning and construction services. (past examples have been survey, public outreach, testing, environmental monitoring and WMBE technical assistance.)

Phase (Pre-const or const)	Element of Work (Specify)	WMBE Firm (Name)	Est. Contract Value

Deliverables to the City: Subcontracting Plan for each professional service work package.

Construction
The CONTRACTOR will leverage their company experience, WMBE Coordinator advice and support from the City to develop a bid packaging plan that meets or exceeds the proposed WMBE utilization. The CONTRACTOR will:

- Analyze past projects conducted for government agencies and identify the reasons why WMBE firms have not been successful. CONTRACTOR will use results to develop and offer lessons a learned training program and offer to local WMBE firms, working with the National Association of Minority Contractors and Tabor 100.

- Design bid packages that leverage local WMBE capacity, particularly under-represented MBEs. Review bid packaging strategy to ensure qualified WMBE firms have opportunity to bid and succeed. This will include breaking up bid packages to fit the scale of work WMBE subs can successfully manage. Sometimes, bid packages will succeed if they are larger and have requirements for the subcontractor's sub-tier bid packages to incorporate WMBE firms. In other cases, smaller bid packages will succeed depending on WMBE capabilities, capacities, and proven performance in that specific scope of work.

- Require and implement the City's WMBE Inclusion Plan in all bid packages as an element of responsiveness.

- Set past performance WMBE participation percentages for each bid package that support the overall WMBE goal and are congruent with the scoped of work included in the bid package.

With the understandings and intentions above, and based on analysis of Project's scope of work and local WMBE capacity, we intend to contract with WMBEs to perform:

Package/Scope	Estimated Value of Package
	$
	$
	$
	$
	$
	$
	$
	$
	$
	$
	$

Materials, Supplies, and Equipment
Suppliers of materials and equipment and consumables are often overlooked in public works contracts. CONTRACTOR intends to issue purchase orders to WMBEs for the following materials, supplies and or equipment:

Item	Estimated Value
	$
	$
	$

Deliverables to the City: Construction Subcontracting Plan with the information and format acceptable to the City.

Outreach

CONTRACTOR will participate in the following outreach events:

- National Association of Minority Contractors – Monthly meetings
- Tabor 100 – at least two monthly meetings.
- How to do business workshops – at least two events.
- Community Project Meetings.
- Pre-bid meetings in City of Seattle
- Two Open House(s), to be scheduled as work packages are available.
- Other events as opportunities present themselves.

Deliverables to City: Per event Promotional flyers, Agendas, Handout packages

Outreach Strategy for Bidding Purposes

CONTRACTOR will engage in the following outreach to recruit potential bidders for sub-contractable work packages:

- Pre-bid meetings for each bid package.
- Project-specific web-page on Contractor's webpage with a link to the City's Project webpage.
- City's electronic procurement portal (e-Bid).
- Daily Journal of Commerce ("DJC").
- Notify Business Resource Providers of opportunities.
- National Association of Minority Contractors ("NAMC") and other appropriate associations .
- Personal communications with WMBEs who have worked and who have worked with the City of Seattle before.

Deliverables to City: Outreach monthly activity log

Capacity-Building and Technical Assistance Program

CONTRACTOR will create a robust capacity-building and technical assistance program to help WMBEs successfully bid on and perform work packages, all of which will include the elements listed below.

Alternatively, the City reserves the right to require CONTRACTOR to participate in the City's Mentorship program.

- **Assessment**—CONTRACTOR will create a consultant approach, to offer any WMBE firm coaching, mentoring and counseling about preparing for the project. This includes offering up to 5 free hours to any WMBE firm requesting assistance, with an expert that can guide the WMBE through how to

bid, opportunities, resolving issues and concerns, and guiding the WMBE through the bidding and/or contract performance process.

- **Individual Business Development Plan (IBDP)**—CONTRACTOR will offer to help develop an IBDP for each WMBE and identify how our team and various Business Resource Providers can work with the WMBE to fulfill the plan.

- **Open Communication**—Facilitate authentic communication among all concerned so that issues can be raised and addressed before they become problems and disputes and to enhance the potential for positive outcomes.

- **Scheduling**—CONTRACTOR will hold planning meetings with WMBEs to assist them in understanding the project schedule and to collect input about how they perceive the flow and time demands of the work.

- **Safety**—Provide safety program to subcontractors as a basis for their project-specific safety plans. Review their safety plans and offer training to assist WMBEs in building their safety programs.

- **Resource Sharing**—Provide opportunities to share our equipment such as cranes, forklifts, etc. CONTRACTOR will look for opportunities to engage in resource sharing for any professional service providers and vendors.

- **Cash Flow**—Work with subcontractors to maximize cash flow throughout the project on a case-by-case basis.

- **Contract Administration**—CONTRACTOR will hold group sessions and one-on-one coaching to help subcontractors navigate contract paperwork. These orientations are held several times each year and at project closeout.

Deliverables to City: Monthly log of technical assistance

Communications
Surveys—Conduct quarterly surveys of subcontractors to gauge success of Inclusion Plan progress. We will provide the results to the City of Seattle, CPCS.

Progress Meetings—Have a standard agenda item to discuss the WMBE program at regular progress meetings. A separate follow-up meeting may be required.

Deliverables to the City:
- Monthly Report of Amounts Paid to WMBEs.
- Notes from Progress Meetings about Diversity Topics and any related attachments.

Compliance and Monitoring
CONTRACTOR will collect and report data about WMBE utilization and workforce diversity. A monthly progress report will be delivered at each monthly meeting. CONTRACTOR will also monitor the qualitative impacts of the inclusion program by conducting surveys, discussing WMBE issues at progress meetings, and keeping a close eye on cash flow and costs to complete. This help will help the CONTRACTOR to monitor how to cost effectively support smaller trading partners.

If a WMBE under subcontract lowered-tiered subcontractor, including our major mechanical or electrical subs, cannot perform a designated work package, the CONTRACTOR endeavor to have that scope transferred to another WMBE already working on the project or recruit a new WMBE to perform the remaining scope of work.

Social Equity Reporting

a. Payments made to WMBEs, at all tiers, in the following ways

   i. PDF or

   ii. On an Excel spreadsheet

Deliverables: Subcontractor payments.

Comprehensive List of Deliverables to City Purchasing and Contracting Services

The following must be provided regularly as specified. The City may withhold invoice payments until all late deliverables are received.

Subcontracting Plan for each professional service work package.	First and monthly update
Construction Subcontracting Plan with the information and format acceptable to the City.	
Schedule for Outreach Events with flyers and handout packages	Each occurrence
Web page development and updates	Monthly
Training Program Curriculum for construction	One time
Outreach Monthly Activity Log	Monthly
Technical Assistance Program Plan and Monthly Log of Activity	Monthly
Quarterly Survey Results	Quarterly

Attachment 2 to Exhibit G
City of Seattle Inclusion Plan

City of Seattle
City Purchasing and Contracting Services (CPCS)

Inclusion Plan
Construction – Public Works

Bidders must complete and submit this form with their bid. Carefully read all instructions.

For questions or assistance contact:

- Miguel Beltran, City Contract Compliance Manager, 206-684-4525 (Miguel.Beltran@seattle.gov)
- Carment Kucinski, 206-684-0188 (carmen.kucinski@seattle.gov)

Bidder Company Name	
Public Works Number	
Project Title	
Name of person authorized to speak on behalf of the company regarding this Plan	
Email	
Phone	

Aspirational WMBE GOALS. Total available score: 6 points.
Identify the Aspirational WMBE Goals Bidder believes can reasonably be achieved through good faith efforts during this project. It is not mandatory that these goals be achieved; they are not contractually or legally binding. Goals must be developed in good faith and represented as attainable by reasonable efforts.

Estimated percentage of the base bid to Minority Owned contractors and suppliers	%
Estimated percentage of the base bid to Woman Owned contractors and suppliers	%
Total estimated percentage of the base bid to all WMBE contractors and suppliers	%

City of Seattle
City Purchasing and Contracting Services (CPCS)

Inclusion Plan
Construction – Public Works

Bidders must complete and submit this form with their bid. Carefully read all instructions.

For questions or assistance contact:

- Miguel Beltran, City Contract Compliance Manager, 206-684-4525 (Miguel.Beltran@seattle.gov)
- Carment Kucinski, 206-684-0188 (carmen.kucinski@seattle.gov)

Bidder Company Name	
Public Works Number	
Project Title	
Name of person authorized to speak on behalf of the company regarding this Plan	
Email	
Phone	

Aspirational WMBE GOALS. Total available score: 6 points.
Identify the Aspirational WMBE Goals Bidder believes can reasonably be achieved through good faith efforts during this project. It is not mandatory that these goals be achieved; they are not contractually or legally binding. Goals must be developed in good faith and represented as attainable by reasonable efforts.

Estimated percentage of the base bid to Minority Owned contractors and suppliers	%
Estimated percentage of the base bid to Woman Owned contractors and suppliers	%
Total estimated percentage of the base bid to all WMBE contractors and suppliers	%

BUSINESS SUPPORT STRATEGIES. Total available score: 4 points

Each of the two options below is worth 2 points. Bidder may select one, both, or neither. Once selected, it applies to:

1. Registered as a Women or Minority Owned Business in the City Online Business Directory, and/or
2. Small Business Concern as certified by King County, and/or
3. Disadvantaged Business Enterprise of any definition certified by the State of Washington, and/or
4. Women or Minority Owned Business Enterprise as certified by the State of Washington; and/or
5. Small Business Concern certified by the State of Washington.

Business Support Strategy	Accept
Early Retainage Release. The prime (and any sub-tier primes) will release retainage held for the subcontractor, within thirty (30) days of acceptance of the work performed by the qualified subcontractor.	
Advance Mobilization Pay: The Prime (and any sub-tier primes) shall advance 10% of the specified and agreed-upon mobilization costs that were identified by line item within the WMBE firms bid, to each qualified firm at least 5 days in advance of the mobilization event.	

WMBE GUARANTEES. Total available score: 6 points.
A Bidder may offer to guarantee work to WMBE firms for the project, by identifying the WMBE and minimum dollar value of such work in the table below. You may add additional rows.

WMBE Business Name	Minimum Guaranteed Dollar Amount
	$
	$
	$
	$
	$
	$
TOTAL	$

City of Seattle: Public Works
Women and Minority Business
Inclusion Plan Instructions

Carefully review all instructions. All Bidders must complete this form. The City public works inclusion plan requires the Bidder identify the good faith efforts the Bidder will use to include woman-owned and minority-owned business (WMBE) firms on the City project. There are 3 options for evidencing good faith efforts. Each option is worth points which can vary depending on information supplied by the Bidder. There is a maximum of 16 points available. The Bidder must earn at least 10 points. Bidders that earn less than 10 points will be found non-responsive and the Bid will be rejected. This Inclusion Plan becomes a material part of the Bidder's contract if the project is awarded to Bidder.

WMBE firms are state certified or self-identified firms that are at least 51% WMBE owned (per SMC 20.42). A WMBE need not be self-identified within the City Online Directory at bid time, but in such case must self-identify and register by time of award. These resources may assist bidders:
City On-Line Directory: http://web6.seattle.gov/fas/registration/
OMWBE Directory: http://www.omwbe.wa.gov/certification/certification_directory.shtml).

1. INSTRUCTIONS

a. All Bidders (including WMBE Primes) must complete and submit this form as part of the Bid for City design-bid-build public works project having an Engineer's Estimate of $300,000 or greater, unless the City expressly instructs otherwise in the bid package.
b. There are three commitments Bidders can use to establish an Inclusion Plan – Aspirational WMBE Goals, Business Support Strategies, and WMBE Guarantees:
    1. Aspirational WMBE Goals are goals Bidder believes can be achieved by good faith efforts. This option is worth a maximum of 6 points;
    2. Business Support Strategies are those the Bidder commits to employ for qualified firms. This option is worth a maximum of 4 points;
    3. WMBE Guarantees identify WMBE firms the Bidder guarantees to contract with for this project, with agreement reached about the work and pricing for the WMBE scope, including any terms and conditions important to the WMBE for their performance. This option is worth a maximum of 6 points.

c. Work performed by a WMBE must be commercially useful and a distinct element of work that includes managing and supervising the work. The Contractor should evaluate the amount of work subcontracted, industry practices, and other relevant factors to determine whether the work is commercially useful.
d. A Bidder scored less than 10 points will be deemed non-responsive. See Scoring section below.
e. All dollars cited shall exclude sales tax (including references to the Total Bid Cost and estimates made by Prime when completing this form).

2. SCORING INSTRUCTIONS

a. The percentage of WMBE utilization on past City projects is used to evaluate the Bidder's Plan.
b. The Prime Contractor will determine Performance Goals for each bid package based upon what the GCCM determines to be the predominant nature of the work and subject to City's approval. If the project materially differs from scopes below, the Prime Contractor may calculate a unique measure and submit to the City for approval.
c. The Performance Goal for this bid package is XX%.
d. The project type and percentage of Performance Goal will be stated in the advertisement for bids and bid documents
e. In addition to the Past Performance, scoring also recognizes an intent to exceed past performance by at least 2 percentage points above past performance.
f. If past utilization for a project type was zero, an Aspirational Goal above two percent will receive 6 points. Bidder must still identify Business Support Strategies and Guarantees it is willing to employ and will be scored accordingly.

g. Points awarded for WMBE Guarantees will be calculated based upon total available work for subcontract given past performance. This section can be awarded as many as 6 points.
h. When calculations are used to evaluate the points, the City will calculate points to the nearest tenth decimal place. The City will round up to the nearest tenth.

3. ASPIRATIONAL WMBE GOAL INSTRUCTIONS

a. Aspirational WMBE Goals represent a serious commitment to use good faith efforts to reach the stated goals.
b. The Prime Contractor will rely upon the Total WMBE Goal to determine responsiveness. The City will correct the Total WMBE Goal if that provided by the Bidder does not match the MBE and WBE goals.
c. Aspirational WMBE Goals are a percentage of the Base Bid and during the course of the project will apply to the total contract amount including all contract change orders (additives, alternates and deductives). Contractor may seek a goal adjustment if such changes may merit a greater or lesser goal; the Contractor will consider such requests, approve if appropriate, and modify the Plan accordingly.
d. A WMBE Bidder may include in their goals and guarantees that percentage of contract base bid for work which the WMBE intends to self-perform that is in excess of the mandatory 30% they are otherwise required to perform as required by the City Specifications Section 1-08.1(3).
e. Bidder will receive between 0 and 6 points for its Aspirational WMBE Goals, with proportional points based on a straight line formula to Past Performance (plus 2%) identified for the project as advertised in the bid solicitation. Bidder receives 3 points if the Total Aspirational Goal is half of Past Performance + 2%. Six points are awarded if the Bidder meets or exceeds Past Performance by 2 or more percentage points. For example, a project with Past Performance of 14%, would receive 3 points if the Total Aspirational Goal was 8% or 6 points if the Total Aspirational Goal was 16%.

$$P_A = 6A/(P + 2),$$

Where P_A = Points awarded for Bidder's Aspiration Goal
A = Bidder's Aspiration Goal (%)
P = Applicable Past Performance Trend (%)

4. BUSINESS SUPPORT STRATEGIES INSTRUCTIONS

The Bidder may elect to provide the business support identified on Page 2 for qualified firms. The City will provide two points for each choice selected. There are two options, allowing a total of 4 points if both options are chosen:

1. Early Retainage Release. The prime and any sub-tier primes will release retainage held for the subcontractor, within thirty (30) days of acceptance of the work performed by the qualified subcontractor.
2. For mobilization, the Prime and any sub-tier primes will pay all qualified firms five days in advance of the on-site performance, except if a unique situation prohibits such as an emergency or event requiring an immediate mobilization response. In those events, the Prime (including any sub-tier primes) shall deliver the payment no later than 5 days after job mobilization begins.

5. WMBE GUARANTEE INSTRUCTIONS

a. This guarantees the City and WMBE that they shall be used for at least the amount given, following the remaining rules below. A WMBE Guarantee expects the Bidder achieved agreement about scope, terms and cost of the work for the WMBE at bid time. The burden is upon the Bidder to resolve any differences, once the guarantee is given.
b. The Prime should clearly document in writing, agreements made with the WMBE firm upon which the guarantee was predicated, such as unit price or lump sum pricing as applicable, scope, terms or conditions, and subcontractor concurrence. This protects both parties when completing and executing the resultant subcontract before work begins.
c. The Prime Contractor or the City may contact the WMBE firm or Contractor after Bid opening to verify the firm has agreement to perform work as described in the plan. Failure to have agreement may result in rejection of the Inclusion Plan, rendering the Bid non-responsive.

d. A bidder will receive between 0 and 6 points for WMBE Guarantees, receiving a proportional number of points based on a straight line formula to Past Performance. A bidder will receive 3 points if the dollar-value of the Guarantees equals half of the Past Performance percentage. Six points are awarded if the Bidder commitments meet or exceed Past Performance.

$P_G = 6\ G\ /\ P$

Where P_G = Points awarded for Bidder's Guaranteed Goal
G = Bidder's Guaranteed WMBE Goal (%)
P = Applicable Past Performance Trend (%)

e. A WMBE bidder may only include self-performed work above 30%. This is based on the self-performance minimum required by the City Specifications Section 1-08.1(3).
f. Substitution of a Guaranteed WMBE firm is prohibited absent a waiver granted by the CPCS as a result of:
   1. Bankruptcy of the WMBE firm;
   2. Failure of the WMBE firm to provide the required bond;
   3. The WMBE firm cannot perform the work because they are debarred, not properly licensed, does not meet the subcontractor approval criteria, or in some other way is ineligible to work;
   4. Failure of the Subcontractor to comply with a requirement of law applicable to subcontracting;
   5. Death or disability of the principal of the WMBE firm rendering it unable to perform the work;
   6. Dissolution of the WMBE firm;
   7. Failure of the WMBE firm to perform satisfactorily in previous projects not known to Bidder at the time of bid;
   8. Failure or refusal of the WMBE to perform work for reasons other than contract term or pricing disputes;
   9. A change in scope of the contract which removes the guaranteed work from the project.
   10. WMBE Subcontractor does not execute an offered contract that reflects the terms and pricing that was agreed upon as a condition of the Guarantee. The Prime must evidence that the WMBE Subcontractor failed to execute a contract offered by the Prime which reflected such agreements, after the Subcontractor was given adequate time to execute the offered subcontract.

6. INCORPORATION OF PLAN INTO CONTRACT AND REPORTING REQUIREMENTS

a. Prime Contractor may discuss the Plan with the Apparent Successful Bidder before incorporating into the contract and may amend the Plan by mutual consent.
b. Prime Contractor reserves the right to require a completed WMBE Inclusion Plan Supplement as a condition for contract execution if no WMBE guarantees are provided in order to demonstrate results of good faith efforts.
c. The Contractor must provide reports and documents as required by Contractor within 15 days.
d. CPCS will evaluate Contractor's WMBE utilization throughout the project.
e. Contractor may not substitute a WMBE firm identified in the guaranteed portion of the plan unless the substitution is approved by the Prime Contractor and CPCS. Such a substitution will not be considered unless Contractor can demonstrate clear necessity for such substitution. A Contractor granted permission to substitute for a guaranteed WMBE firm shall use good faith efforts to recruit another WMBE firm to perform the Work.
f. If the Prime Contractor determines the Contractor is not making good faith efforts, it may take action as allowed by their contract.
g. The City will evaluate the WMBE utilization at close-out and may assign a Deficiency rating for failure to demonstrate good faith efforts. Deficient ratings are used by the City to determine Bidder responsibility on future work and debarment. To avoid a deficiency rating, the Contractor must demonstrate:
   1. A good faith effort to achieve Aspirational goals. Attainment under 80% of the goal will likely be considered deficient;
   2. Timely submittal of required and requested materials and reports to CPCS;
   3. Having advance agreements with each WMBE Guarantee, such that the WMBE understands and agrees that the WMBE Guarantee represents mutual agreement at time of the bid submittal;

4. Using all "WMBE Guarantees" named in the Inclusion Plan, unless Prime received written authorization from CPCS for substitution;
5. WMBE relationships are harmonious, clearly communicated and free of undue dispute; and
6. WMBE work was commercially useful as defined above.

Attachment 3 to Exhibit G

CITY OF SEATTLE

City Purchasing and Contracting Services

COMMUNITY WORKFORCE AGREEMENT

April 8, 2015

WITH

Seattle Building and Construction Trades Council and the
Northwest National Construction Alliance II

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COMMUNITY WORKFORCE AGREEMENT
City of Seattle

This Community Workforce Agreement (CWA) is entered into April 8, 2015 by and between the City of Seattle (hereafter referred to as "City"), the Seattle King County Building and Construction Trades Council, and Northwest National Construction Alliance II acting on their own behalf and on behalf of their respective affiliates and members whose names are subscribed hereto and who have, through their duly authorized officers (hereafter referred to collectively as "Unions") executed this Agreement. The City and Unions are the signatory parties to this Agreement.

All construction contractors and subcontractors of whatever tier engaged in construction work for projects that are subject to this Agreement, shall sign a letter of assent (see Attachment A) and are bound by this Agreement as a condition of performing work on the project. Such Contractors shall be hereafter referred to as "Contractors." When the Agreement refers to only the prime contractor, the term "Prime Contractor" will be used alone, which includes primes that serve as a GC/CM, a design-builder, a general or a prime.

This CWA meets the intent and obligations set forth in Seattle Municipal Code (SMC) Chapter 20.37, which directs a priority hire program and an agreement executed between the Director and Labor Unions that represent workers who typically perform on City public works projects. SMC refers to that as a Project Labor Agreement; for consistency with other regional agreements of a similar nature, this agreement is termed and referred to throughout this agreement as a Community Workforce Agreement (CWA).

This CWA covers every City of Seattle administered public works project estimated to cost $5 million dollars or more at time of bid when including any contingency budget, except when a project is exempted by the Director of City Purchasing and Contracting Services for the Department of Finance and Administrative Services (hereinafter referred to as "Director") under conditions established by SMC 20.37. Such projects are hereafter referred to as "Covered Projects."

PURPOSE

The parties to this Community Workforce Agreement, and Contractors who assent to work under this CWA, acknowledge that social equity, workforce diversity, development of local workers for construction careers as well as the timely completion of projects without delay, with skilled workers and agreed-upon procedures, is of benefit to the City. Public Works projects are important to the residents of Seattle and protect critical City infrastructure. This CWA enhances cooperative efforts towards those principles. This CWA is intended to establish a spirit of harmony, peace, and stability between labor and management, to support timely construction of public works projects.

Timely construction of projects requires substantial numbers of workers from construction and supporting crafts possessing skills and qualifications vital to its completion. This CWA supports training and dispatch of local craft workers to construct Covered Projects.

This CWA seeks to stabilize wages, hours and working conditions for craft workers, to ensure workers on Covered Projects have the same working conditions, and encourages close cooperation between the City, Unions and Contractors, for a satisfactory, continuous and harmonious relationship between all involved on these projects.

The parties, and Contractors who assent to this CWA, agree to abide by the terms and conditions in this CWA. This CWA establishes effective and binding methods for settlement of misunderstandings, disputes or grievances that may arise related to labor relations on a Covered Project. Such issues will follow the appropriate procedures described by this CWA in ARTICLE VIII (Disputes and Grievances) and ARTICLE IX (Jurisdictional Disputes). Unions agree to not engage in any strike, slow-down, or interruption or other disruption or interference with the work covered by this CWA. Contractors agree to not engage in any lockout.

This CWA supports SMC 20.42, to promote and ensure access for woman and people of color to meaningful work on City public works projects. This CWA also supports all Contractor efforts and obligations to utilize women- and minority-owned firms, as established under the public works project contract between the City and the Contractor. Nothing in this CWA shall minimize or relieve the Contractor from such contractual obligations.

This CWA supports development of a skilled construction workforce. This CWA supports hire of pre-apprentice graduates and apprentices in Washington State Apprenticeship and Training Council (WSATC) registered training programs, particularly women, people of color and other individuals facing significant employment barriers. SMC Chapter 20.38 requires Prime Contractors to ensure apprentices perform the rate of utilization that is directed in the City Public Works contract for each project. Such required utilization shall never be less than 15% and will not exceed 20% of all craft project labor hours. The Prime Contractors shall also ensure that they attain the required placement for pre-apprenticeship program graduates (from qualified Apprenticeship and Pre-Apprentice programs as defined within this CWA).

The local region has economically distressed areas with high unemployment and low incomes, as defined in SMC 20.37. This CWA instructs dispatch of workers from such economically distressed ZIP codes (Attachment B) in a manner that will achieve the requirements established by the City within each project contract, for the share of hours that will be performed by workers from such distressed areas.

This CWA seeks to support dispatch of workers to achieve the aspirational goals for hire of women and people of color, as established by the City within the contract for each Covered Project.

ARTICLE I
SCOPE OF AGREEMENT

Section 1. This CWA applies and is limited to the recognized and accepted historical definition of public works under the direction of and performed by Contractors of every tier. Public works, also called project work, shall include site preparation and dedicated off site work. All City of Seattle administered public works projects with a project construction budget plus contingency of $5 million and over at the time of bid shall be covered by this CWA, except when exempted by the Director of City Purchasing and Contracting Services (hereafter referred to as "Director") in accordance with Seattle Municipal Code Chapter 20.37.

Contractors of every tier who perform project work, must agree to accept and be bound by all CWA terms and conditions, and sign a Letter of Assent (Attachment A) before commencing work. The Prime Contractor shall assure all sub-tier contractors who perform project work will comply with this CWA.

If the CWA is silent on any issue, the local Collective Bargaining Agreement(s) that are currently in force at the time such issue emerges shall prevail; where there is a conflict, the terms and conditions of this Agreement shall supersede and override terms and conditions of any and all other national, area, or local collective bargaining agreements, except for all work performed under the NTL Articles of Agreement, the National Stack/Chimney Agreement, the National Cooling Tower Agreement, all instrument calibration work and loop checking shall be performed under the terms of the UA/IBEW Joint National Agreement for Instrument and Control Systems Technicians, and the National Agreement of the International Union of Elevator Constructors, with the exception of ARTICLE VII (Work Stoppages and Lockouts), ARTICLE VIII (Disputes and Grievances), and ARTICLE IX (Jurisdictional Disputes), which shall apply to such work on Covered Projects.

This is a self-contained, stand-alone Agreement in that Contractors are not obligated to sign any other local, area, or national agreement.

This agreement contains Attachments which may be updated from time to time. Updates to Attachment A (Letter of Assent) and Attachment C (Pre-Job Package and Pre-Job Waiver Forms) shall be reviewed and mutually agreed upon by the Joint Administrative Committee. The City has the sole discretion to update Attachment B (Priority ZIP code list).

Section 2. Nothing herein shall prohibit, restrict or interfere with any operation, work, or function that may occur at project sites or associated with Covered Projects.

Section 3. This CWA is binding on the signatory parties hereto and Contractors who sign a letter of assent; it does not apply to their parents, affiliates or subsidiaries.

Section 4. The City has the absolute right to award responsive and responsible bidders for project contracts without reference to the existence of any agreements between such bidder and any party to this Agreement; provided that such bidder is willing, ready and able to sign a letter of assent to comply with this Agreement, should the bidder be designated the successful bidder.

Section 5. Any craft or trade identified in RCW Chapter 39.12 (Prevailing Wages) will be subject to the CWA.

Section 6. This CWA does not apply to City workers and nothing herein shall prohibit or restrict City workers from performing project work. Once work or portions of work on the Covered Projects is completed and accepted by the City, the Agreement will have no further force or effect on such work, except when the Contractors are directed by the Prime Contractor or the City to engage in repairs, modifications, check-out, and written warranty by the manufacturer.

Section 7. The City, at its sole option, may terminate, change, delay and/or suspend any or all portions of the City's contract on a specific Covered Project.

Section 8. The liability of any Contractor and the liability of the separate unions under this Agreement shall be several and not joint. The Unions agree this Agreement does not have the effect of creating any joint employer status between or among the City and any Contractor.

ARTICLE II
PROJECT CONDITIONS

Section 1. Workers shall be at their place of work at the designated starting time and shall remain during working hours until their designated quitting time. As practicable given City contract requirements for the project, parking will be available to workers within a three (3) block radius of the project, at a location designated by the Prime Contractor. If the City determines dedicated parking is not possible, then the Prime Contractor will provide transportation to and from a designated parking location that the Prime Contractor provides, and the project worksite; in such situations, workers shall leave their place of work 15 minutes before end of shift for travel. Transportation to such a designated parking location shall be available to the workers throughout each scheduled work day. In lieu of compensated time for travel to designated parking, the Prime Contractor may elect to pay each worker for their parking costs, at an amount negotiated between the Seattle Building and Construction Trades Council and the Prime Contractor.

Section 2. In accordance with the requirements of the Occupational Safety and Health Act as amended; the provisions of the Washington Industrial Safety and Health Act (WISHA), as amended; the requirements of Title 296 WAC, Department of Labor and Industries, this CWA, as well as the applicable City contract, it shall be the exclusive responsibility of the Contractor to ensure the safety and health of its workers and worker compliance with any and all such safety rules mentioned above and as otherwise established by the Contractor or the City through any additional instruction. Contractors will provide a copy of the Contractor's safety rules at the pre-job conference. The Contractor is responsible for providing and maintaining personal protective equipment (PPE) per WAC 296, and the expectation for appropriate replacements schedules of such PPE may also be subject to pre-job discussion by the Union with the Contractor. Safety rules shall be posted at the job site and shall be uniformly enforced.

Section 3. Should a Contractor seek to change any safety rule during the course of a project, such proposed changes shall be discussed at Joint Administrative Committee meetings prior to implementation.

ARTICLE III
WAGE RATES AND FRINGE BENEFITS

Section 1. Contractors of every tier shall adhere to the applicable Federal and/or State prevailing wage rates for all craft workers, in effect at the time each Covered Project is bid. If both Federal and State prevailing wage requirements apply, the higher wage rate will prevail. Each September, Contractors of every tier shall incorporate all increases to such wage and benefits rates that are announced by the State or Federal government, as applicable, for the duration of each Covered Project. Federal updates to Davis Bacon wages will not be incorporated and updated until the annual September adjustment. Such wage increases shall be made effective the first full payroll period following the effective date. Wages shall be paid weekly on an established payday before quitting time. Workers who quit shall be paid on the next regular pay day by mail to their last known address unless such workers give adequate notice to do otherwise.

Section 2. The workweek for payroll purposes will begin with the first day shift on Monday morning and end on the following Monday morning (the workweek for any particular project may be modified by mutual consent). The Contractor will have the following options of making payment at the election of the employee in writing at the time of hire or with ten (10) business days' notice of a change: 1) negotiable check by a local bank, paid prior to quitting time at the job site; 2) direct deposit, into worker's bank account; or 3) by mail. If paid by mail, the check shall be postmarked no later than two (2) business days prior to the established payday.

Section 3. The Contractor will furnish appropriate trust documents and signed letters of assent, to the Union that is covering the funds into which contributions shall be made. The Contractor will contribute to, and hereby becomes party to and is bound by bona

fide pension, vacation, health and welfare, apprenticeship and training funds covering workers under this Agreement.

Section 4. If contribution payments for hours worked each month as defined above are not received by the Health and Welfare Fund office or Pension Fund office within the date prescribed by the appropriate trust funds, the Fund will make every effort to resolve the delinquency with the Contractor and will notify the Contractor, Prime Contractor (if different) and the City of such delinquency with all documentary evidence of the delinquency endorsed by the Fund.

ARTICLE IV
HOURS OF WORK, OVERTIME AND SHIFTS

Section 1. Hours of Work (Section 2 below) and Shifts (Section 4 below) may be pre-empted by the City contract and/or City through instruction to the Contractor, based on unforeseen project needs, provided adequate notice is given to the Union.

Section 2. Hours of Work: The standard workday shall consist of eight (8) hours of work scheduled between 7 a.m. and 7 p.m. with one-half hour designated as an unpaid period for lunch. The starting time may be different (staggered) on a crew basis. The standard workweek shall be five (5) days of work, Monday through Friday. Nothing herein shall be construed as guaranteeing any employee eight (8) hours of work per day or forty (40) hours of work per week.

Section 3. Overtime: All hours worked in excess of eight (8) hours per day, forty (40) hours per week, or outside of regular shift, Monday through Friday and Saturday shall be paid in accordance with applicable State and Federal prevailed wage requirements. There shall be no pyramiding of overtime pay. Holidays, pursuant to SMC 4.20.190 and RCW 1.16.050, are named in the City Covered Project contract specifications and include:

1. New Year's Day (January 1)
2. Martin Luther King Jr Birthday (Third Monday of January)
3. Presidents Day (Third Monday of February)
4. Memorial Day (Last Monday of May)
5. Fourth of July
6. Labor Day (First Monday of September)
7. Veteran's Day (Eleventh Day of November)
8. Thanksgiving (Fourth Thursday of November)
9. Post Thanksgiving Friday (Friday immediately following Thanksgiving Day)
10. Christmas (December 25)

Section 4. Shifts: Shifts may be established for some or all crews when considered necessary by the Contractor or as directed by the City project contract. When three (3) shifts are worked, the first, or day shift shall be established on an eight (8) hour basis,

the second shift shall be established on a seven and one-half (7 ½) hour basis and the third shift shall be established on a seven (7) hour basis. The pay for the second and third shifts shall be the equivalent of eight (8) hours pay at the employee's regular hourly rate. When shift work is established, it must continue for a minimum of five consecutive days on a schedule of 8 hours a day 5 days a week. If only two shifts are to be worked, each shift will work eight (8) hours for eight (8) hours pay. In any shift change 2 business days' notice to the affected union shall be provided. There shall be no split shifts. Other shift provisions may be established by mutual consent of the parties.

Section 5. Meal Period: Workers shall not be required to work more than five hours from the start of the shift without at least one-half hour unpaid uninterrupted break for lunch. This lunch period shall not begin earlier than three and one-half hours after the start of the shift. In the event that the Contractor establishes a ten-hour shift, the meal periods shall be at mid-shift. The worker meal periods may be staggered on an individual basis.

(a) If a craft worker is required to work more than five hours before breaking for lunch, they shall be paid one-half hour at the applicable overtime rate and shall eat their lunch on company time.
(b) An additional hour of overtime pay shall be provided in lieu of lunch.
(c) Craft workers required to work more than two hours after the end of an eight hour shift and one hour after an ten hour shift shall be furnished a meal and paid one-half hour at the applicable wage rate and every five hours thereafter a craft worker shall be given time for a meal. Mealtime shall be paid at the applicable overtime rate and adequate lunch shall be provided by the Contractor at the job site.
(d) An additional hour of overtime pay shall be provided in lieu of a second lunch.

Section 6. Rest Facilities: Adequate sanitary and restroom facilities will be provided at the work location to allow workers to wash-up before and after their meal. The Contractor shall furnish warm, dry, lighted rooms of ample size equipped with heat for drying clothes and with benches and tables for use during meal periods. These are to be situated close to the site of the work and shall not be used for storage of materials or equipment.

Section 7. Reporting to Work Pay: Any worker who reports for work (except when given notification not to report to work 2 hours prior to shift), and for whom no work is provided, shall receive two (2) hours pay. Any worker who reports for work and for whom work is provided, shall be paid for actual time worked but not less than four (4) hours. If the job is shut down because of adverse conditions that prevent work and are beyond the control of the Contractor, workers shall be paid for actual time worked but not less than two (2) hours. Procedures for the Contractor to use to cancel work shall be agreed upon at the pre-job conference.

ARTICLE V
UNION RECOGNITION

Section 1. The Contractor(s) recognize the signatory Unions as the sole and exclusive bargaining representatives for all craft workers within their respective jurisdictions, who are working on Covered Projects within the scope of this CWA.

Section 2. All workers covered by this CWA who are Union members and working for a Contractor signatory to a collective bargaining agreement other than this CWA, shall remain members in said Union during the project.

Section 3. No worker shall be required to become a member of a Union to be eligible for employment under this CWA. No Contractor shall be required to become affiliated with the Union to be eligible for work under this CWA.

Section 4. The Contractor shall honor Union dues and initiation fees check-off pursuant to receipt of properly authorized dues deduction cards signed by its worker, along with other lawful authorizations from employees providing for deductions from wages. The Union will notify the Contractor and the City in a timely manner if a Contractor is delinquent in remitting representation fees authorized by the worker.

Section 5. Union representatives shall have reasonable access to Covered Projects, provided they do not interfere with the work of the workers and if such representatives fully comply with the visitor, safety and security rules established for Covered Projects as established at the pre-job conference.

Section 6. The Business Representative(s) for each of the local Unions signatory hereto shall have the right to designate for each shift worked with each Contractor one (1) working journey-level worker as Steward for all related craft personnel, who shall be recognized as a Union representative. Such designated Stewards shall be qualified workers assigned to a crew and shall perform the work of their craft. Under no circumstances, shall there be a non-working Steward on the job.

Section 7. The working Steward shall be paid at the applicable wage rate for the job classifications in which they are employed.

Section 8. Steward(s) for each craft of the Unions employed on Covered Projects shall be permitted on Covered Projects site at all times. They shall not be subjected to discrimination or discharge for performing proper union business. The Unions agree that such business shall not unreasonably interfere with the Steward's work for the Contractor.

Section 9. The employee selected as Steward shall remain on the job if there is work within their craft for which they are qualified, willing and able to perform. The Contractor shall be notified in writing of the selection of each Steward. The Contractor shall give

the Unions prior written notice before discharging a Steward.

Section 10. The Steward may not cause or encourage a work stoppage and, if found guilty of instigating such action, will be subject to disciplinary action by the Contractor, including discharge.

Section 11. The Steward's duties shall not include hiring and termination.

Section 12. The Stewards shall be given the option of working all reasonable overtime within their craft and shift provided they are qualified to perform the task assigned.

ARTICLE VI
MANAGEMENT'S RIGHTS

Section 1. Contractors retain full and exclusive authority for management of their operations. Except as limited by this CWA, Contractors shall direct their working forces at their prerogative, including, but not limited to hiring, promotion, transfer, lay-off or discharge for just cause. No rules, customs, or practices shall be permitted or observed which limit or restrict production, or limit or restrict the working efforts of workers. Contractors shall utilize the most efficient method or techniques of construction, tools, or other labor saving devices except when in conflict with provisions in the City contract. There shall be no limitations upon the choice of materials or design, nor shall there be any limit on production by workers or restrictions on the full use of tools or equipment. There shall be no restriction, other than may be required by safety regulations, on the number of workers assigned to any crew or to any service.

Section 2. The City will provide project oversight and administration through internal dedicated staff or third party administration. Copies of redacted certified payroll and daily worker sign in sheets will be made available upon request, redacted and subject to the limitations of law.

Section 3. The parties agree to participate in a Joint Administrative Committee (JAC) to address safety, targeted hiring, apprenticeship utilization, preferred entry, job progress and any other relevant issues that affect Covered Projects. The parties agree to address issues as they arise and resolve them in a timely manner. Only signatory parties to this Agreement shall have voting rights when the JAC makes a decision by vote.

The JAC shall allow interested contractors and community members to attend meetings, and receive copies of materials and information that are distributed by the parties. The City shall chair the Committee. The City and Unions shall each have one vote. When in disagreement, the Union and the City may, by mutual agreement, appoint an impartial third party to break the tie with a third vote. The City shall prepare copies of reports and

materials, and distribute to the JAC membership and any interested audience or stakeholders upon their request.

Section 4. Upon referral or dispatch from a Union, refusal by a Prime Contractor or Contractor to employ the dispatched worker (also known as a "turnaround"), requires a written explanation from the Contractor that shall be copied to the Prime Contractor (if different), City and affected Union, within two business days. The City shall make such turnaround explanations available in a timely way to other interested stakeholders, redacted as appropriate and subject to limitations of law.

Section 5. If the signatory Unions are unable to fill a request for employees within 2 business days, the Contractor shall request a referral from the City Job and Training Coordinator. If the City is unable to refer a worker that can satisfy the request, the City, Union and Contractors shall make any other reasonable efforts to comply with priority hire requirements and goals as practicable given the needs of the work to be performed.

Section 6. The Unions and Contractors agree to maintain copies of all Craft Request Forms used on Covered Projects. The City may review and inspect any Craft Request Forms, upon request.

ARTICLE VII
WORK STOPPAGES AND LOCKOUTS

Section 1. During this CWA, there shall be no strikes, picketing, work stoppages, slowdowns or other disruptive activity for any reason by the Union, any applicable local Union or by any worker, and there shall be no lockout by the Contractor. Failure of any Union, local Union or worker to cross any picket line established at Covered Project sites violates this Article.

Section 2. The Union and every applicable local Union shall not sanction, aid or abet, encourage or continue any work stoppage, strike, picketing or other disruptive activity at the Contractor's project site and shall undertake all reasonable means to prevent or to terminate any such activity. No worker shall engage in activities that violate this Article. Any worker who participates in or encourages any activities that interferes with normal operations on a Covered Project, shall be subject to disciplinary action, including discharge, and if justifiably discharged shall not be eligible for rehire on the project for a period of not less than ninety (90) days.

Section 3. Neither the Union nor any applicable Local Union shall be liable for acts of workers for whom it has no responsibility. The International Union General President or Presidents will immediately instruct order and use the best efforts of his office to cause the Local Union or Unions to cease any violations of this Article. An International Union complying with this obligation shall not be liable for unauthorized acts of its Local Union. The principal officer or officers of a Local Union will immediately instruct, order and use

the best efforts of his office to cause the workers the Local Union represents to cease any violations of this Article. A Local Union complying with this obligation shall not be liable for unauthorized acts of employees it represents. The failure of the Contractor to exercise its right in any instance shall not be deemed a waiver of its right in any other instance.

ARTICLE VIII
DISPUTES AND GRIEVANCES

Section 1. This CWA promotes close cooperation between management and labor. Each Union will assign a representative to ensure Covered Projects are completed economically, efficiently, continuously, and without interruptions, delays, or work stoppages.

Section 2. The Contractors, Unions, and workers, collectively and individually, realize the importance to all parties to maintain continuous and uninterrupted performance of project work and agree to resolve disputes under the grievance arbitration provisions herein.

Section 3. Any dispute on a Covered Project that is specific to labor relationships (other than jurisdictional disputes) shall be considered a grievance and subject to resolution under the following. The Prime Contractor and City shall be given copies of all notices and invited to participate in any meetings or proceedings. Failure of the grieving party to adhere to the time limits established renders the grievance null and void. The time limits established may be extended by written mutual consent of the parties at the step where the extension is agreed.

Step 1. If a worker, Contractor or Union subject to this CWA feels aggrieved by a labor issue, the worker may give notice to their Union representative. Within ten (10) business days after becoming aware of the grievance, the Union representative (which may be the business agent or the Steward) shall give verbal or written notice to the Contractor's worksite representative. The notice shall describe the violation(s) and provision violated.

The Union representative and Contractor's work-site representative shall meet or discuss the dispute within 3 business days after such notice. Each party may keep meeting minutes and send a copy to the other. If the discussion does not resolve the issue, either party may escalate the grievance to Step 2.

Step 2. To escalate the grievance into Step 2, the Union may, within two (2) business days after the discussion, send a written notice to the Contractor setting forth the alleged violation(s), providing a description, the date on which the violation(s) provoking the grievance occurred, and the provisions of the CWA that are alleged to have been violated. The Union will send a copy to the City.

The local Business Manager and/or their designee and the Prime Contractor and sub-tier Contractor (if any), shall meet within seven (7) business days after the written notice was delivered to the Contractor, to arrive at a satisfactory agreement. The meeting will be scheduled to also include a designee of the Director on behalf of the City. The City will take meeting minutes and share with the Prime Contractor, sub-tier Contractor (if applicable), and the Union as soon as practicable after the meeting, which is intended to be within two (2) business days.

Step 3. (a) If the grievance has not been resolved within five business days under Step 2, either party may request that the grievance be submitted to an Arbitrator mutually agreed upon by them. The Contractor and the involved Union shall attempt mutually to select an arbitrator, but if they cannot do so, they shall request the American Arbitration Association to provide them with a list of arbitrators from which the Arbitrator shall be selected. The rules of the American Arbitration Association shall govern the conduct of the arbitration hearing. The decision of the Arbitrator shall be final and binding on all parties. The fee and expenses of such Arbitration shall be borne equally by the Contractor and the involved Local Union(s).

(b) The Arbitrator shall have the authority to decide only issues presented to him or her, and he or she shall not have authority to change, amend, add to or detract from this Agreement.

ARTICLE IX
JURISDICTIONAL DISPUTES

Section 1. The assignment of work will be solely the responsibility of the Contractor performing the work involved; such work assignments will be under the Plan for the Settlement of Jurisdictional Disputes in the Construction Industry (the "Plan") or any successor Plan.

Section 2. All jurisdictional disputes on a Covered Project, between or among Building and Construction Trades Unions and Contractors of any tier, shall be settled and adjusted according to the present Plan established by the Building and Construction Trades Department or any other plan or method of procedure that may be adopted by the Building and Construction Trades Department. Decisions rendered shall be final, binding and conclusive on the Contractors and Unions parties to this Agreement.

Section 3. All jurisdictional disputes shall be resolved without the occurrence of any strike, work stoppage, or slow-down of any nature and the Contractor's assignment shall be adhered to until the dispute is resolved. Individuals violating this section shall be subject to immediate discharge.

Section 4. Each Contractor will conduct a pre-job conference with the appropriate Building and Construction Trades Council 2 weeks prior to commencing work. The Prime Contractor and the City will be advised in advance of all such conferences and may participate if they wish.

After attending a pre-job conference once, Contractors may submit a waiver request to the City, waiving the requirement to attend future pre-job meetings when they are performing the same scope of work (see Pre-job Package and Pre-Job Waiver forms in Attachment C). The City and Unions will mutually agree upon granting any such waivers.

Should an emergency make it impracticable for a Contractor to attend a pre-job two weeks prior to placement, the Contractor may give less than two weeks' notice and request a pre-job meeting by contacting the City.

ARTICLE X
SUBCONTRACTING

Section 1. Every Contractor of any tier agrees that they will not subcontract any Covered Project work except to a person, firm or corporation who has signed a letter of assent. Any Contractor working on the Project shall, as a condition to working on said Project, perform all work **exclusively** under this Agreement.

Section 2. If a Union that traditionally represents construction workers in the geographic area of the Covered Project chooses not to become signatory to this Agreement, the Contractor and signatory Unions shall utilize one or both of the following options to ensure that work may be claimed by the non-signatory Union ("claimed work") so the work is completed without disrupting the Project:

(a) The signatory Unions will provide the Prime Contractor and all other Contractors who assent to this Agreement with the appropriate workforce to perform the claimed work.

(b) The Prime Contractor may utilize any Contractor to perform claimed work except that if such Contractor is party to an agreement with the non-signatory Union, such Union must agree in writing to abide by ARTICLE IX (Jurisdictional Disputes) for the contractor to be awarded work under this Agreement. Such Contractor may utilize its existing workforce and wage and benefit package. Such Contractors shall be required to agree in writing to be bound to and abide by this Article, ARTICLE VII (Work Stoppages and Lockouts), and ARTICLE IX (Jurisdictional Disputes). No other provision shall apply to such contractors unless required by the Contractor.

Section 3. The Prime Contractor, City and the Unions commit to provide outreach, and train, mentor and support woman and minority contractors on any Covered Project. The City, Prime Contractor and Unions also will provide training and assistance about

working under the CWA to any interested contractor and those contractors who may wish to bid on such work.

Section 4. Any Contractor conducting a bid process for work to be performed for a Covered Project, shall notify all bidders of the requirement to comply with the terms and conditions of this CWA.

Section 5. If a Contractor of any tier subcontracts any work covered by this Agreement, such subcontractors of all tiers, shall sign letter of assent to this CWA, prior to beginning work on the Project.

ARTICLE XI
CORE WORKERS

Section 1. The parties agree that non-signatory contractors of any tier often have core workers, also referred to as core employees, that they use commonly on their work and who contribute to the efficiency and competitiveness of those non-signatory contractors. The parties seek to remove barriers for non-signatory Contractors so they can compete effectively on projects covered by the CWA without unnecessarily displacing their own workers to do so.

The non-signatory contractor may bring as many as five core workers onto the Covered Project for each contract accordingly.

Section 2. Core Workers are those that have worked on the Contractor' payroll a minimum of one thousand five hundred (1500) hours within the craft classification over the last two year period from the date of dispatch to the Covered Project and have also been on the Contractors active payroll for at least sixty (60) out of the ninety (90) calendar days prior to the execution of the contract for the affected Contractor. All Core Workers shall meet the minimum journey level qualifications of the craft they are performing, and shall hold all required licenses and certifications for the work of their craft.

Section 3. The Contractor shall provide detailed documentation at the pre-job conference identifying their Core Workers on the project and their scope of work and submit certified payroll data to verify that the worker meets the required definition, redacted as appropriate. The City shall monitor Contractor compliance to this Core Worker definition.

ARTICLE XII
EMPLOYMENT DIVERSITY

Section 1. The Director will set a requirement for each project that directs the Prime Contractor to utilize workers from economically distressed ZIP codes ("priority workers")

for a specified share of total hours worked on the project by apprentices and journey-level workers. Workers that qualify towards those requirements shall be called "Priority Workers."

Section 2. Unions shall first dispatch Priority Workers, and shall continue to prioritize the dispatch of such workers even after the required percentages are stabilized and suggest the Prime Contractor will achieve the requirements.

The Union shall prioritize dispatch of Priority Workers who are residents of Seattle ZIP codes first, and then dispatch Priority Workers from ZIP codes in King County, and then Priority Workers from any other economically distressed ZIP code (Attachment B).

Labor hours performed by workers living outside of Washington will be excluded from priority worker calculations that the City performs when calculating whether required percentages of total Priority Worker hours were achieved.

The Prime Contractor may receive a credit of up to 10% of the hours performed by Priority Workers, if they hire workers from the Priority ZIP codes who perform non-manual work and continue to employ said workers in these positions for the duration of the Contractor's work on the Covered Project. Such substitutes must be approved by the Director.

The Union will dispatch women and people of color in a manner that best supports the aspirational goals for their utilization as agreed upon within the contract for the Covered Project.

ARTICLE XIII
APPRENTICESHIP UTILIZATION

Section 1. The parties and assenting Contractors agree to utilize apprentices from Washington State Apprenticeship Training Council (WSATC) programs for total hours established within the City contract for the Covered Project for no less than 15% and no more than 20% of total project hours on each project with the exact requirement set by the Director. The Prime Contractor shall provide a copy of their apprenticeship utilization plan upon request by the JAC. The Prime Contractor's apprenticeship utilization plan will be reviewed by the JAC and appropriate efforts shall be taken to increase utilization.

Section 2. The parties and assenting Contractors agree to hire and facilitate utilization of those WSATC apprentices on Covered Projects and to facilitate the participation of people of color, women and persons from economically distressed areas. The Director will establish a goal for labor hours performed by female apprentices and people of color who are apprentices, for each project and may substitute other efforts to meet the intent. The apprenticeship utilization plan provided by the Prime Contractor at the JAC shall describe how the Prime Contractor will achieve the goals for utilization of apprentices who are people of color and women.

ARTICLE XIV
VETERAN EMPLOYMENT

Section 1. This CWA desires to facilitate the entry into the building and construction trades of veterans interested in careers in the building and construction industry. The Contractors and Unions agree to utilize the services of the Center for Military Recruitment, Assessment and Veterans Employment ("Center"), the Center's "Helmets to Hardhats" program, and other appropriate veteran programs, to serve as resources for preliminary orientation, assessment of construction aptitude, referral to WSATC registered apprenticeship programs or hiring halls, counseling and mentoring, support network, employment opportunities and other needs as identified by the parties.

Section 2. The Unions, Contractors and City Job and Training Coordinator agree to coordinate with the Center and other appropriate veteran referral sources, to maintain an integrated database of veterans interested in working on Covered Projects, and of apprenticeship and employment opportunities for Covered Projects. To the extent permitted by law, the Unions will give credit to such veterans for bona fide, provable past experience.

Section 3. This agreement will include Helmets to Hard Hats qualified applicants and other qualified veteran applicants from within the economically distressed ZIP codes as defined by the City, as part of the Priority Worker hours that the contract shall require the Prime Contractor to achieve for the Covered Project.

ARTICLE XV
PREFERRED ENTRY

Section 1. The parties seek to construct and expand pathways to good jobs and lifetime careers for Priority Workers, women and people of color, through collaborative workforce development systems that also likely includes community-based training providers and WSATC registered apprenticeship programs. This facilitates a workforce reflective of the diversity and needs of Seattle and the local region, supporting goals of workforce inclusiveness.

Section 2. This CWA establishes a Preferred Entry program that will identify individuals, especially women, people of color, and those from economically distressed ZIP codes as defined by the City, who meet entry standards for WSTAC apprenticeship programs that allow qualified preferred entry applicants into their programs.

Preferred Entry candidates shall be placed with Contractors working on Covered Projects, subject to an interview if requested by the Contractor. Selected Preferred Entry candidates who are not already first year apprentices shall become first period apprentices.

To give preferred entry apprentices an opportunity to become established in their apprenticeship training, Contractors must employ Preferred Entry candidates for 700 hours, in order to count that candidate toward the Preferred Entry requirement. The Director may reduce the number of required hours to a minimum of 350 hours on Covered Projects that have insufficient total apprentice hours to support placements of a 700 hour duration.

Section 3. The Prime Contractor shall ensure one (1) of each five (5) apprentices on the Covered Project is from a recognized Pre-Apprenticeship program. Such programs include the Apprenticeship and Non-Traditional Employment Program for Women (ANEW), YouthBuild, Helmets to Hard Hats or other mutually agreed-upon programs that serve people living in economically distressed ZIP codes, people of color, women and/or veterans. The list of such programs may be updated by mutual agreement between the City and the Seattle Building and Construction Trades Council.

Section 4. The Unions and Prime Contractor agree to ensure hiring of Preferred Entry apprentices during the early start of work on the Covered Projects. The City, Unions and Contractors recognize Preferred Entry Apprentices that are still completing their first 1500 hours of employment.

Section 5. If a preferred entry apprentice leaves, Contractors will replace that apprentice with another from the preferred entry program.

Section 6. The hours worked by eligible Preferred Entry qualified applicants hired from such distressed economic ZIP codes will count towards accomplishment of the Priority Worker requirements.

Section 7. Identification and selection of qualified applicants shall include the Contractor(s), where candidates have been proposed by Contractors and the individual apprenticeship program's designated representative. The final selection decision will be the responsibility of the Joint Apprenticeship Training Committee (JATC).

ARTICLE XVI
TERM

Section 1. This agreement shall commence upon execution by all parties and shall continue in full force for a period of five years. The parties may mutually agree to amendments or modifications of this agreement.

Section 2. The agreement shall continue in full force and effect for each Covered Project throughout the duration of each project and until the last of the Covered Projects concludes. Either party desiring to extend this agreement beyond the intended five year term, shall make such intention known to the other party by written notice as soon as practical, which may be as early as six months prior to the otherwise effective expiration date for this agreement.

ARTICLE XVII
GENERAL PROVISIONS

Section 1. Titles and headings of sections and provisions in this agreement are for convenience only.

NOTE: The following provisions are determined by local collective bargaining:

1. Referral Procedures

[Note, however, that any referral provision must contain : " There shall be no discrimination against any employee or applicant for employment because of his or her membership or non-membership in the union or based upon race, creed, color, sex, age or national origin of such employee or applicant."]

2. General Savings Clause

IN WITNESS WHEREOF, in consideration of the terms, conditions, and covenants contained herein, or attached or incorporated and made a part hereof, the parties have executed this Contract by having their authorized representatives affix their signatures below.

City of Seattle

Signature: Nancy Locke, Director of City Purchasing and Contracting Services

Date: 4-8-2015

Washington State Building Trades Council
Lee Newgent
Executive Secretary

Signature

Date

Seattle/King County Building Trades Council
Monty Anderson
Executive Secretary

Signature

Date

Northwest Construction Alliance II
Gary Fasso

Signature

Date

Pacific Northwest Regional Council of Carpenters
Gary Fasso

Signature

Date

International Union of Operating Engineers Local 302
Ron Dahl
Business Representative

Signature

5-1-15
Date

BAC Pacific Northwest ADC
Dave Sheppard
Director

Signature

4/14/15
Date

Boilermakers Local 502
Tracey Eixenberger
Business Manager

Signature

5-1-15
Date

Cement Masons Local 528
John Kearns
Business Manager

Signature

4/14/15
Date

Electrical Workers Local 46
Jim Tosh
Business Manager

Signature

4/13/15
Date

Elevator Constructors Local 19
Don Felton
Business Manager

Don Felton (CWA(1949-15)
Signature

5/5/15
Date

Heat and Frost Insulators & Allied Workers Local 7
Todd Mitchell
Business Manager

Signature

4/28/15
Date

Iron Workers Local 86
Jeff Glockner
Business Manager

Signature

4-14-15
Date

IUPAT District Council 5
Denis Sullivan
Business Manager

Signature

4/24/2015
Date

Laborers Local 242
Dale Cannon
Business Manager

Signature

4-28-15
Date

Laborers Local 440
Alan Clune
Business Manager

Signature

4-21-15
Date

Plumbers & Pipefitters Local 32
Jeff Owen
Business Manager

Signature

4/24/15
Date

Roofers Local 54
Steve Hurley
Business Manager

Signature

4/14/15
Date

~~Sheet Metal Local 66~~
Tim Carter
Business Manager

Signature

4-25-16
Date

Sprinkler Fitters Local 699
Stanton Bonnell
Business Manager

Signature

4-14-15
Date

Teamsters Local 174
Rick Hicks
Secretary Treasurer

Signature

SR. Business Agent

4/28/15
Date

ATTACHMENT A

City of Seattle
Community Workforce Agreement (CWA)
Letter of Assent

CONTRACTOR/SUBCONTRACTOR AGREEMENT TO BE BOUND

Public Works Contract Number: _____

Public Works Contract Name: _____

Business Name of Contractor/Subcontractor:

_____

Contractor/Subcontractor has been awarded construction work within the scope of the City of Seattle's CWA and hereby agrees to be bound by all its terms and conditions.

_____

Signature **Date**

_____

Printed Name

_____

Title

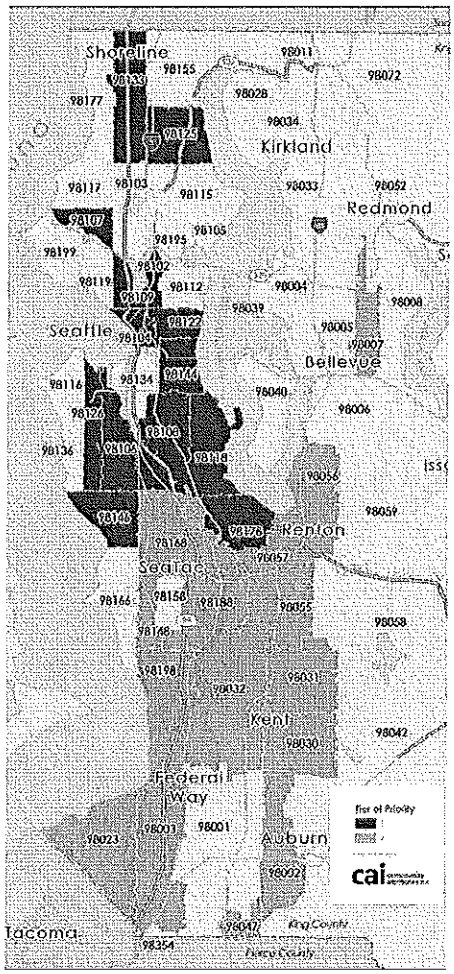
ATTACHMENT B

PRIORITY HIRE in the CITY of SEATTLE and KING COUNTY

Economically distressed ZIP codes in Seattle and King County are based on several indicators:

1. People living under 200% of the federal poverty line.
2. Unemployment rate.
3. Those over 25 without a college degree.

Priority Hire Economically Distressed ZIP Codes



Tier 1	Seattle Neighborhood	ZIP Code
Tier 1	Downtown	98101
Tier 1	Capitol Hill/Eastlake	98102
Tier 1	Downtown/ID	98104
Tier 1	Delridge	98106
Tier 1	Ballard	98107
Tier 1	S. Beacon Hill/South Park	98108
Tier 1	Interbay/Queen Anne	98109
Tier 1	Rainier Valley/Rainier Beach	98118
Tier 1	Belltown	98121
Tier 1	Central District	98122
Tier 1	Lake City/Northgate	98125
Tier 1	Delridge/High Point	98126
Tier 1	Bitter Lake/NW Seattle	98133
Tier 1	N. Beacon Hill	98144
Tier 1	White Center	98146
Tier 1	Rainier Beach/Skyway	98178

Tier 2	King County Neighborhood	ZIP Code
Tier 2	Kent/Auburn	98002
Tier 2	Federal Way	98003
Tier 2	Bellevue	98007
Tier 2	Federal Way	98023
Tier 2	East Kent	98030
Tier 2	Northeast Kent	98031
Tier 2	West Kent	98032
Tier 2	Pacific	98047
Tier 2	South Renton	98055
Tier 2	Northeast Renton	98056
Tier 2	Central Renton	98057
Tier 2	Burien	98148
Tier 2	Boulevard Park/Tukwila	98168
Tier 2	SeaTac/Tukwila	98188
Tier 2	Des Moines	98198

Source: Community Attributes Inc., Priority ZIP Codes, 2016.
Updated January 2017

Department of Finance and Administrative Services
700 Fifth Avenue, 41st Floor

Tel (206) 684-0444
LaborEquity@seattle.gov

OPCMIA

America's Oldest Building and Construction Trades International Union, Established 1864

Cement Masons & Plasterers Local 528

MEMORANDUM OF UNDERSTANDING
CEMENT MASON PROVISIONS

Community Workforce Agreement
City of Seattle

Because of the unique nature of the Cement Mason work, the following provisions have been included for application to Cement Masons only:

A. **Start of Pour**: The Cement Mason crew must be on the job at the start of the shift in which finishing will be required and assist with the pour on slab work or work preparatory to concrete finishing coming within the jurisdiction of the Cement Masons.

B. **Multiple Shift Operation**: There will be no shift operation on slab work except by mutual agreement. Shifts may be established when considered necessary by the employer.

C. **Shifts and Hours of Work**: If a four/ten hour shift is established at the straight time rate, any Cement Mason dispatched for a one day pour will be paid at the eight (8) hour straight time plus two (2) hour overtime rate.

D. **Reporting and Minimum Hours Pay**:

1. Employees reporting for work and for whom no work is provided, except when given notification not to report to work, shall receive four (4) hours at the regular straight-time hourly rate.

2. When the shift is started, four (4) hours shall be allowed. If the second half is started, then a whole shift shall be allowed, unless an employee leaves of his own volition or is discharged for cause. In such event, he shall be paid for actual time worked.

E. **Work Hours Shall Be Uniform for ALL CRAFTS**

For the Union: OPCMIA Local 528	For: _____ PROJECT OWNER
_____ SIGNATURE	_____ SIGNATURE
_____ PRINT NAME	_____ PRINT NAME
_____ DATE	_____ DATE

6362 Sixth Avenue South * Seattle, WA 98108 * (206) 441-9386 * Fax (206) 441-9018 * opcmialocal528.org

City of Seattle
Subcontractor Name: _____

Pre-Job Conference Package

This package helps contractors understand the forms and requirements for the Pre-Job Conference, which is a required meeting under the City of Seattle Community Workforce Agreement (CWA). The CWA requires the following of every contractor.

1. The prime contractor must achieve workforce requirements for the project and relies on subcontractors to help fulfill those requirements. This includes a minimum share of hours performed by each of the following:
   - residents from certain Seattle and King County zip codes
   - women
   - people of color
   - graduates of registered pre-apprentice programs
   - apprentices
2. Every contractor signs a letter (included in the attached pre-job package) agreeing to work under the CWA.
3. Every prime contractor and subcontractor attends a Pre-Job Conference at least two weeks prior to their work on the job-site. A Pre-job Package is submitted to the prime contractor prior to that meeting. Unless granted a waiver, the contractor re-appears at another Pre-Job Conference prior to any other work on the project. The request for such a waiver can be obtained here and will only be considered when the same scope of work is being repeated.
4. Every prime attends a monthly Joint Administrative Committee.

Tuesday Pre-Job Conference
Standing Meeting Every Tuesday @ 10am
Seattle Building & Construction Trades Council Office
14675 Interurban Ave. S., Auditorium 2, Tukwila, WA 98168

Who attends:

- Contractors of any tier scheduled to work onsite
- City of Seattle staff
- Labor Union representatives

Agenda:

- City staff explains the CWA and documentation required from all attending contractors
- Each contractor and subcontractor presents their Pre-Job Package, explains their contract scope, and answers questions
- Contractors request clarification or guidance from the city or unions
- Attendees discuss jobsite conditions and proposed trade assignments

Prime (includes primes known as the GCCM) brings:

- Contract information including the project scope and job site address
- List of planned and working subcontractors
- Job site conditions such as start/stop times, safety plan, parking, water and restroom access

Next Steps:

Contractors announce their trade assignments within one week after their Pre-Job Conference and send an email to City Purchasing and Contracting Services (CPCS) Labor Equity Program (laborequity@seattle.gov). Any Union may challenge the craft assignments up to one week thereafter.

City of Seattle
Subcontractor Name: _____

PRE-JOB PACKAGE

Email this package to your Prime no later than Thursday before your Pre-Job Conference

Subcontractor Name	
Subcontractor License#	
Pre-Job Meeting Date:	Time: 10:00 AM
Location: Seattle Building & Construction Trades, Tukwila 14675 Interurban Ave. S., Auditorium 2, Tukwila, WA 98168	Women and Minority Business (WMBE): ☐ Yes ☐ No www.seattle.gov/purchasing/wmbe.htm.
Prime Contractor:	Hiring Contractor (if any):
City of Seattle Contract #:	Hiring Contractor License #:

Subcontract Detail

Contact Name	
Contact Phone	
Subcontractor Address	
Current Union Agreements	
Contract Sub-package Name/Identifier	
Subcontract Dollar Amount	
Approximate Start Date	
Approximate Completion Date	
Job Site Location	
Job Superintendent	
Job Site Phone	
Craft Hiring Rep	
Project Manager	
Shifts	
Payday(s)	
Date Pay Period Ends	

City of Seattle
Subcontractor Name: _____

First Aid Provider Hospital	
Worker Parking Provisions *Review requirements in CWA Article II Section 1*	
Drinking Water Provided by	☒ General Contractor ☒ Subcontractors
Sanitation Facilities Provided by	☐ General Contractor ☐ Subcontractors
Number of Workers & Crafts Expected	
Scope of Work for subcontract, (Including prefabrication in Washington State)	

DRAFT

City of Seattle
Subcontractor Name: _____

CWA – Proposed Trade Assignment

All workers, including core workers, must be dispatched through the appropriate union hall.

Please list trade assignments by craft in the table below. Describe the scope of work for each. List each piece of equipment planned for use by craft. Include all "tools of the trade" or part-time use of equipment. If more space is needed, attach additional sheets.

Craft	Scope	Equipment/Tools

City of Seattle
Subcontractor Name: _____

Project Craft Demand List

List the number of workers per craft for both the peak and average number of workers.

Craft	Peak	Average
Asbestos Workers		
Boiler Makers		
Brick Layers		
Carpenters		
Cement Masons		
Electrical Workers (Inside Wiremen)		
Electrical Workers (Outside Wiremen)		
Elevator Constructors		
Glaziers		
Insulators		
Iron Workers (Structural/Rebar)		
Iron Workers (Ornamental/Architectural)		
Laborers		
Millwrights		
Operating Engineers		
Painters		
Pile Drivers		
Plumbers & Pipefitters		
Plasterers		
Roofers		
Teamsters		

City of Seattle
Subcontractor Name: _____

Project Staff

Project Manager:	
Office Contact #	
Cell Contact #	
Email Address	
Office Contact:	
Office Phone	
Cell Phone	
Email Address	
Superintendent:	
Office Phone	
Cell Phone	
Email Address	
Safety Representative:	
Office Phone	
Cell Phone	
Email Address	
Drug Test Coordinator:	
Office Phone	
Cell Phone	
Email Address	

City of Seattle
Subcontractor Name: _____

Open-Shop Core Worker List

Open Shop Contractors without a collective bargaining agreement with Unions signatory to the City CWA may employ up to 5 of their own core workers, with possible exceptions that must be discussed with Union Representatives. A core worker is an employee that meets all the following (CWA Article IX Section 2):

- Worked on the (sub)contractor payroll at least 1500 hours within the craft classification during the last two years prior to the date of dispatch for this project
- Been on (sub)contractors active payroll for at least 60 of 90 calendar days prior to (sub)contract execution
- Meets journey level qualifications for the craft they are performing
- Holds all required licenses and certifications for the craft

Core workers include working foremen, lead (journeymen), working City-operators and apprentices, and are not supervisory, management or non-working non-signatory contractors.

Core workers must place their name with the respective union hall dispatch prior to work.

CORE WORKER LIST:

Employee Name	Classification	Hire Date	Has worker been on payroll 1500 hours in the last 2 years?	Has worker been on active payroll 60 out of the last 90 calendar days?
			Yes ☐ No ☐	Yes ☐ No ☐
			Yes ☐ No ☐	Yes ☐ No ☐
			Yes ☐ No ☐	Yes ☐ No ☐
			Yes ☐ No ☐	Yes ☐ No ☐
			Yes ☐ No ☐	Yes ☐ No ☐

Your signature verifies the information above is accurate. If information is a knowing misrepresentation of facts, (sub)contractor could be subject to breach and/or removal from the project.

Name: _____ **Email/Phone:** _____

City of Seattle
Subcontractor Name: _____

Signature: _____

Community Workforce Agreement
Letter of Assent

CONTRACTOR/SUBCONTRACTOR AGREEMENT TO BE BOUND

Public Works Contract Number: _____

Public Works Contract Name: _____

Business Name of Contractor/Subcontractor:

_____

Contractor/Subcontractor has been awarded construction work within the scope of the City of Seattle's CWA and hereby agrees to be bound by all its terms and conditions.

_____
Signature **Date**

_____
Printed Name

_____
Title

City of Seattle
Subcontractor Name: _____

Site Specific Safety Plan

Please attach a Site Specific Plan (*either copied and pasted here or in a separate document*).

The (sub)contractor is responsible for providing and maintaining personal protective equipment (PPE) per WAC 296. The (sub)contractor must provide a robust replacement schedule for such PPE, which is subject to pre-job discussion. Safety rules shall be posted at the job site and uniformly enforced. (CWA Article II Section 2)

DRAFT

City of Seattle
Subcontractor Name: _____

Request for Pre-Job Conference Waiver

(Sub)contractors who have already attended a pre-job conference for the same scope of work, may request a waiver from attending another pre-job conference. Complete and submit this form to the prime contractor. Work may only begin if the waiver is approved by the Building and Construction Trades Council.

New scope of work?	**Yes**	**No**
New contract?	**Yes**	**No**

(Sub)contractor Name: _____ Sub to: _____

Contract #: _____ Project Name: _____

Describe the scope of work to be performed:

_____
_____

Specify proposed trade assignments and list craft unions and Local #:

_____
_____

List other project contracts you have performed under the City CWA. List and describe any jurisdictional, dispatch, grievance, and/or CWA compliance disputes.

CONTRACT#	DISPUTE DESCRIPTION
_____	_____
_____	_____
_____	_____

(Sub)contractor requests a waiver from the Pre-job Conference. The (sub)contractor agrees that the Building and Construction Trades Council and affiliated local union members retain their CWA to deny this waiver request and to challenge any proposed trade assignment.

Signed: _____ Title: _____ Date: _____

Reviewed by: Seattle/King County Building Trades Council Initials: _____ Date _____ Approved: __Yes __ No

Pre-Job Waiver Form – Last updated 5/20/15

City of Seattle
Edward B. Murray, Mayor

Finance and Administrative Services
Fred Podesta, Director

April 21, 2016

Monty Anderson, Executive Secretary
Seattle/King County Building and Construction
Trades Council, AFL-CIO
14675 Interurban Ave S, Suite 101
Tukwila, WA 98168

Re: Letter of Understanding
Article XI

Dear Mr. Anderson,

This letter is intended to clarify the intent of Article XI, Section 1 of the Community Workforce Agreement (CWA). The provision shall now be clarified to read:

"The City of Seattle seeks to remove barriers for non-signatory Contractors so they can compete effectively on projects covered by the CWA without unnecessarily displacing their own workers to do so, provided that workers performing covered employment shall be compensated as specified in ARTICLE III (Wage Rates and Fringe Benefits) and observe the working conditions specified in ARTICLE II (Project Conditions) and ARTICLE IV (Hours of Work, Overtime and Shifts)."

Should you have any questions regarding this clarification, please feel free to contact Anna Pavlik, Labor Equity Program Manager.

Sincerely,

Nancy Locke
Director of City Purchasing and Contracting Services

Nancy Locke, Director
Department of Finance and Administrative Services
700 Fifth Avenue, Suite 4112, 41st Floor
P.O. Box 94687
Seattle, Washington 98124-4687

Tel (206) 684-0444
Fax (206) 233-5155
Hearing Impaired use the Washington Relay Service (7-1-1)
http://www.seattle.gov/FAS

ATTACHMENT F

City of Seattle Community Workforce Agreement
Seattle Building Trades/City of Seattle
Memorandum of Understanding

This memorandum of understanding will confirm the votes taken by the Joint Administrative Committee (JAC) on August 30, 2016 and January 24, 2017 concerning ARTICLE XV (PREFERRED ENTRY) Section 3.

The JAC voted to update the list of WSATC recognized Pre-Apprenticeship programs to include King County Pre-Apprenticeship Construction Education (KC PACE), Ironworkers Pre-Apprenticeship Program, TERO Vocational Training Center (TVTC), Seattle Vocational Institute – Pre-Apprenticeship Construction Training (PACT), and the Trades Related Apprenticeship Coaching Program (TRAC).

City of Seattle

Seattle Building Trades



Construction Documents

Volume 1

GENERAL
SURVEY
CIVIL
LANDSCAPE
STRUCTURAL
ARCHITECURAL

Asian Art Museum
Expansion & Renovation

LMN Architecture | Urban Design | Interiors

SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Cover Sheet

G000.1

PROJECT INFORMATION

PROJECT ADDRESS:
VOLUNTEER PARK
1400 E PROSPECT STREET
SEATTLE, WA 98112

PROPERTY OWNER
CITY OF SEATTLE
SEATTLE PARKS AND RECREATION
800 MAYNARD AVE S., 3RD FLOOR
SEATTLE, WA 98134
CONTACT: DAVID GRAVES
DAVID.GRAVES@SEATTLE.GOV
206-684-1040

APPLICANT
SEATTLE ART MUSEUM
1300 1ST AVE
SEATTLE, WA 98101
CONTACT: RICHARD BEDERMAN
RICHARD@SEATTLEARTMUSEUM.ORG
206-654-3159

APPLICANTS AGENT
LMN ARCHITECTS
911 2ND AVE, SUITE 501
SEATTLE, WA 98104
CONTACT: PAMELA TREWITHEN
TREWITHEN@LMNARCHITECTS.COM
206-682-3460

DPD PROJECT NUMBER#:
MUP 3013313
CONSTRUCTION 3023858

PARCEL NUMBER
5129200057

LEGAL DESCRIPTION:

Volunteer Park

The Northeast Quarter of the Northwest Quarter (NE¼NW¼) of Section Twenty-nine (29) in Township Twenty five (25) North, Range Four (4) East (E), Willamette Meridian (W.M.)

Beginning at the quarter post (QP) corner of the northwest corner of the NE¼NW¼ of Section Twenty-nine (29) in Township Twenty-five (25) North (N) of Range Four (4) East (E), Willamette Meridian (W.M.); thence South one degree three minutes forty-eight seconds (S1°03'48"E) West a distance of fourteen hundred thirty-three and fifty-two one-hundredths (1433.52) feet along the east line of Section Twenty-nine (29) Township 25 North, Range 4 East, Section North (N) eighty-eight degrees fifteen minutes twenty-two seconds (N88°15'22"W) West a distance of four hundred eighty-two and ten one-hundredths (482.10) feet; thence North (N) eighty-eight degrees fifteen minutes thirty-one seconds (N88°15'31"W) West a distance of two hundred sixty-six and sixty-seven one-hundredths (266.67) feet; thence North (N) eighty-eight degrees fifteen minutes twenty-two seconds (N88°15'22"W) West a distance of one hundred sixty-six and four one-hundredths (166.04) feet; thence North (N) eighty-eight degrees fifteen minutes twenty-two seconds (N88°15'22"W) West a distance of three hundred forty-four and seventy-five one-hundredths (344.75) feet; thence North (N) eighty-eight degrees fifteen minutes twenty-two seconds (N88°15'22"W) West a distance of one hundred forty-two and seventy-five one-hundredths (142.75) feet to a point on the easterly line of Lot 1 of Short Plat No. 9503SP001 recorded under Recording Number 9512070670, records of King County, Washington; thence North (N) one degree twenty-seven minutes forty-seven seconds (N1°27'47"E) West, more or less, to a point on the south line of the northeast quarter (NE¼) of the northwest quarter (NW¼) of Section 29 in Township 25 North, Range 4 East, Willamette Meridian; thence South (S) one degree twenty-seven minutes forty-seven seconds (S1°27'47"E) East, more or less, to a point on the south line of Section 29 in Township 25 North, Range 4 East, Willamette Meridian; thence South (S) one degree twenty-seven minutes forty-seven seconds (S1°27'47"E) East a distance of one thousand three hundred forty-five (1345) feet, more or less, along the north line of Section 29 in Township 25 North, Range 4 East to the point of beginning. Also the east one half (E ½) of parcel E and P of Parcel "A" Subject to the City of Seattle as recorded in Vol. 1, Page 175 Skagit County, Plat. Also the portion of Bigelow (19th) Avenue North in the City of Seattle from the north line of Boyd's Addition to the City of Seattle and the north line of Hillery's Addition to the City of Seattle as vacated by ordinance 26762.

PROJECT DESCRIPTION:

Renovation of existing 99,000 sf museum with 19,000 sf addition. Project will also include landscape, hardscape and grading modifications associated with building expansion. Renovations include major systems, structural and interior/finish alterations.

DRAWING INDEX

VOLUME 1

DRAWING INDEX - CD VOL 1

SHT. NO.	SHEET NAME

DRAWING INDEX - CD VOL 1

SHT. NO.	SHEET NAME

DRAWING INDEX - CD VOL 1

SHT. NO.	SHEET NAME

VOLUME 2

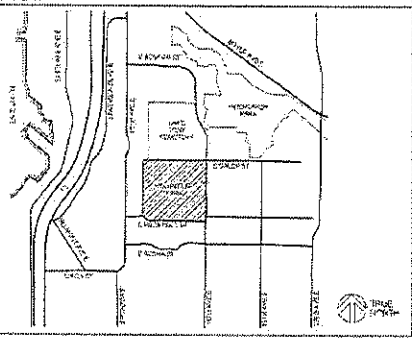
DRAWING INDEX - CD VOL 2

SHT. NO.	SHEET NAME

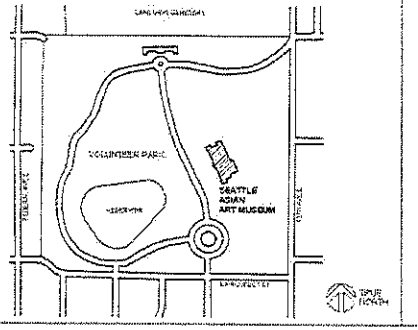
DRAWING INDEX - CD VOL 2

SHT. NO.	SHEET NAME

VICINITY MAP



LOCATION MAP



PROJECT TEAM DIRECTORY

OWNER
SEATTLE ART MUSEUM
1300 1ST AVE
SEATTLE, WA 98101
206.654.3100

OWNER'S REPRESENTATIVE
DAG
101 DEXTER AVENUE NORTH, SUITE 201
SEATTLE, WA 98109
206.285.4747

CONTRACTOR
BW BUILDERS
2601 4TH AVE, SUITE 550
SEATTLE, WA 98121
206.340.2400

ARCHITECT
LMN ARCHITECTS
911 2ND AVE #500
SEATTLE, WA 98104
206.682.3460

CIVIL ENGINEER
DORSHKIN FORTER LANDEEN
811 OLIVE AVE
SEATTLE, WA 98104
206.340.0466

LANDSCAPE ARCHITECT
WALKER MACY
710 MAIN STREET, SUITE 505
SEATTLE, WA 98101
206.324.8760

STRUCTURAL ENGINEER
MKA
1301 FIFTH AVENUE, SUITE 3000
SEATTLE, WA 98101
206.292.1200

MECHANICAL/PLUMBING ENGINEER
RUSHING
1325 WESTLAKE AVE NORTH, SUITE 300
SEATTLE, WA 98109
206.283.7100

ELECTRICAL/AV/TECHNOLOGY/ACOUSTICAL ENGINEER
STANTEC
4130 194TH STREET SW, SUITE 400
LYNNWOOD, WA 98036
425.640.3000

LIGHTING DESIGN
FISHER MARANTZ STONE
801 1ST AVE, SUITE 501
SEATTLE, WA 98101
206.623.1131

BUILDING SCIENCE / ENVELOPE
JOHN BUILDING SCIENCE
2811 N 34TH STREET, SUITE 150
SEATTLE, WA 98103
360.324.2112

SURVEYOR
BOWE, PECK & MITCHELL
2009 MINOR AVE E
SEATTLE, WA 98102
206.323.1414

GEOTECHNICAL ENGINEER
ABBOTT GEOLOGY & ASSOC
2401 152ND AVE NE
REDMOND, WA 98052
425.453.5100

VERTICAL TRANSPORTATION
LERCH BATES
19515 NORTH CREEK PARKWAY, SUITE 104
BOTHELL, WA 98011
425.398.7260

LMN Architects
Lloyd Design Initiative

SAM Asian Art Museum

Asian Art Museum Expansion & Renovation

Construction Documents

Drawing Index and Project Info

G001.1

ABBREVIATIONS

CODE INFORMATION

GRAPHIC SYMBOLS

MATERIAL LEGEND

GENERAL NOTES

LMN Architects

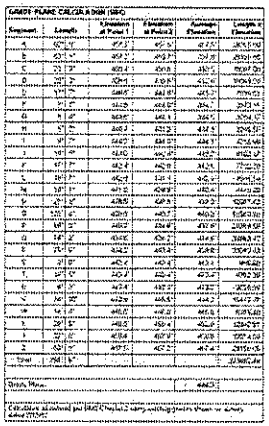
SAM Asian Art Museum

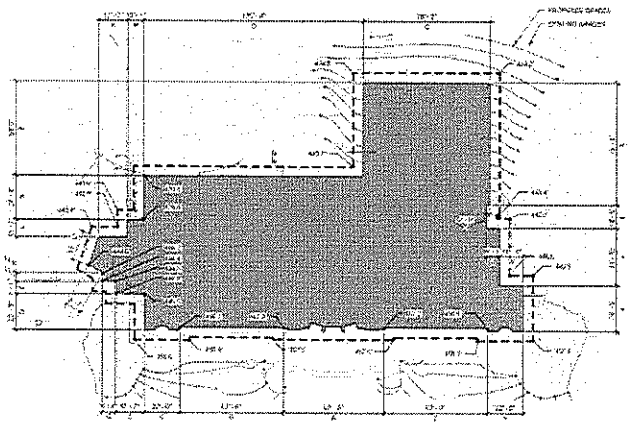
Asian Art Museum Expansion & Renovation

Construction Documents

Abbreviations, Code Info, and Legends

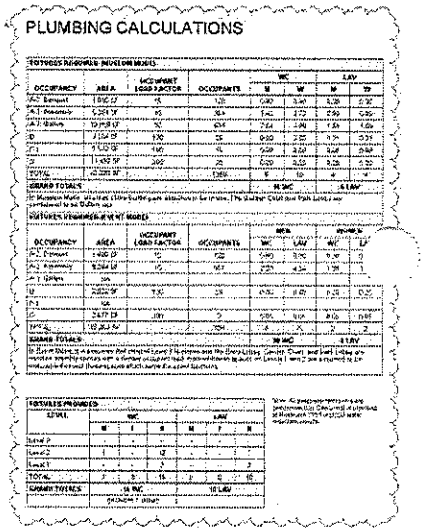
G002





GRADE PLANE CALCULATION - PROPOSED FOOTPRINT

PLUMBING CALCULATIONS



LMN Architecture | Urban Design | Interiors

SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Code Info

G003

Code Modification or Alternate Request

Date Requested: [illegible]

Contact Information:
Name: [illegible]
Mailing Address: [illegible]
Phone Number: [illegible]
Fax Number: [illegible]
E-mail Address: [illegible]
Relationship to Project: Owner; Design Professional; Contractor

Project Information:
Job Number: [illegible]
Address: [illegible]
Code Edition: 2015 SBC

Structure Information:
Occupancy Classification: Assembly; Mercantile; Business; Educational; Factory Industrial; Hazardous; Institutional; Residential; Storage; Utility and Miscellaneous
Description: Alteration and addition to existing art museum
Construction Type: [illegible]
Number of Stories: [illegible]
Sprinklered: [illegible]
Standpipes: [illegible]

Code Modification Request:
Ref. SBC 104.4: A code modification is a waiver of a code requirement and is allowed by the building official where there are practical difficulties involved in carrying out the provisions of the code and where the modification will comply with the intent and purpose of the code, and will not lessen the health, life safety, and structural requirements of the building. The modification shall be based on a demonstration that the intent of the code provision(s) will be complied with and that the modification is adequate for safety, accessibility, durability, and reasonably similar to the code requirement.

Please attach plans showing your proposal.

Code Alternate Request:
Ref. SBC 104.11: Code alternates are available for evaluation of alternative materials, designs, and methods of construction and equipment. An alternate is a specific action to vary one or more code requirements that would not be in accordance with a literal interpretation and application of the code, but will result in a solution that is at least equivalent to the code in effectiveness, fire resistance, durability, safety, and sanitation.

The alternate is requested as an alternate to the code requirement(s) listed below and is considered to be equivalent to the code requirement(s) in terms of [illegible]

Please attach plans showing your proposal.

Construction Review & Inspection Quality
[illegible]

When an agent for the project, the registered design professional or responsible person shall submit the request for a code alternate under their seal and signature, including a statement that in their professional opinion, the alternate is equivalent to the code provisions.

Please attach plans showing your proposal.

[illegible]

Description of Alternate Modification (include reason for request):
[illegible]

Description of Code Requirement (include section):
[illegible]

Justification (attach copies of any reference, test reports, expert opinions, etc.):
[illegible]

Construction Review & Inspection Quality
[illegible]

Code Modification or Alternate Request

Date Requested: [illegible]

Contact Information:
Name: [illegible]
Mailing Address: [illegible]
Phone Number: [illegible]
Fax Number: [illegible]
E-mail Address: [illegible]
Relationship to Project: Owner; Design Professional; Contractor

Project Information:
Job Number: [illegible]
Address: [illegible]
Code Edition: 2015 SBC

Structure Information:
Occupancy Classification: Assembly; Mercantile; Business; Educational; Factory Industrial; Hazardous; Institutional; Residential; Storage; Utility and Miscellaneous
Description: Alteration and addition to existing art museum
Construction Type: [illegible]
Number of Stories: [illegible]
Sprinklered: [illegible]
Standpipes: [illegible]

Code Modification Request:
Ref. SBC 104.4: A code modification is a waiver of a code requirement and is allowed by the building official where there are practical difficulties involved in carrying out the provisions of the code and where the modification will comply with the intent and purpose of the code, and will not lessen the health, life safety, and structural requirements of the building. The modification shall be based on a demonstration that the intent of the code provision(s) will be complied with and that the modification is adequate for safety, accessibility, durability, and reasonably similar to the code requirement.

Please attach plans showing your proposal.

Code Alternate Request:
Ref. SBC 104.11: Code alternates are available for evaluation of alternative materials, designs, and methods of construction and equipment. An alternate is a specific action to vary one or more code requirements that would not be in accordance with a literal interpretation and application of the code, but will result in a solution that is at least equivalent to the code in effectiveness, fire resistance, durability, safety, and sanitation.

The alternate is requested as an alternate to the code requirement(s) listed below and is considered to be equivalent to the code requirement(s) in terms of [illegible]

Please attach plans showing your proposal.

Construction Review & Inspection Quality
[illegible]

When an agent for the project, the registered design professional or responsible person shall submit the request for a code alternate under their seal and signature, including a statement that in their professional opinion, the alternate is equivalent to the code provisions.

Please attach plans showing your proposal.

[illegible]

Description of Alternate Modification (include reason for request):
[illegible]

Description of Code Requirement (include section):
[illegible]

Justification (attach copies of any reference, test reports, expert opinions, etc.):
[illegible]

Construction Review & Inspection Quality
[illegible]

LMN

[illegible]

Structure Information:
Description: Alteration and addition to existing art museum
Occupancy: Assembly; Mercantile
Type of Construction: IIB
Stories: 2/3 Unsprinkled - 1 Unsprinkled Mezzanine
Sprinklered throughout per NFPA 13

Description of Alternate Modification (include reason for request):

[illegible]

[illegible]

Description of Code Requirement (include section):

[illegible]

Art Museum
Code Modification Request: Duct Penetration
3/24/17

[illegible]

Section 708.4 Exception 1 requires that vertical openings be protected with fire dampers. The smoke control system for the museum will operate by the operation of fire/smoke dampers at the perimeter of the smoke zones. Dampers will be installed at the Level 2 floor penetrations and at the Level 3 floor penetrations. Ducts that penetrate the Level 2 floor slab for the exhaust of smoke/fire from the Level 3 space will penetrate the Level 2 floor slab at locations that are within the perimeter of the smoke zone. Ducts that penetrate the Level 2 floor slab for the supply of air to the Level 3 space will penetrate the Level 2 floor slab at locations that are within the perimeter of the smoke zone. Ducts that penetrate the Level 2 floor slab for the return of air from the Level 3 space will penetrate the Level 2 floor slab at locations that are within the perimeter of the smoke zone.

Ducts that penetrate the Level 2 floor slab at locations that are outside the perimeter of the smoke zone will not penetrate the Level 3 space. Therefore, fire dampers are not required at these locations.

Ducts that penetrate the Level 2 floor slab at locations that are within the perimeter of the smoke zone will penetrate the Level 3 space. Therefore, fire dampers are required at these locations.

Justification (attach copies of any reference, test reports, expert opinions, etc.):

SBC 708.4.1 allows the code official to waive or modify any of the specific requirements, where equivalent protection is provided or where impractical. The following conditions make fire dampers unnecessary per SBC 708.4.1 exceptions:

1. The duct penetrates the smoke barriers at a location where the duct is enclosed in a shaft of not less than 1-hour fire-resistance rating. The only ducts that penetrate the Level 2 floor slab at locations that are outside the perimeter of the smoke zone are those that penetrate the Level 2 floor slab at locations that are within the perimeter of the smoke zone. Ducts that penetrate the Level 2 floor slab at locations that are within the perimeter of the smoke zone will penetrate the Level 3 space. Therefore, fire dampers are not required at these locations.
2. The duct penetrates the Level 2 floor slab at locations that are within the perimeter of the smoke zone. Ducts that penetrate the Level 2 floor slab at locations that are within the perimeter of the smoke zone will penetrate the Level 3 space. Therefore, fire dampers are required at these locations.
3. The duct penetrates the smoke barriers at a location where the duct is enclosed in a shaft of not less than 1-hour fire-resistance rating. The only ducts that penetrate the Level 2 floor slab at locations that are outside the perimeter of the smoke zone are those that penetrate the Level 2 floor slab at locations that are within the perimeter of the smoke zone. Ducts that penetrate the Level 2 floor slab at locations that are within the perimeter of the smoke zone will penetrate the Level 3 space. Therefore, fire dampers are not required at these locations.
4. The duct penetrates the smoke barriers at a location where the duct is enclosed in a shaft of not less than 1-hour fire-resistance rating. The only ducts that penetrate the Level 2 floor slab at locations that are outside the perimeter of the smoke zone are those that penetrate the Level 2 floor slab at locations that are within the perimeter of the smoke zone. Ducts that penetrate the Level 2 floor slab at locations that are within the perimeter of the smoke zone will penetrate the Level 3 space. Therefore, fire dampers are required at these locations.

Art Museum
Code Modification Request: Duct Penetration
3/24/17

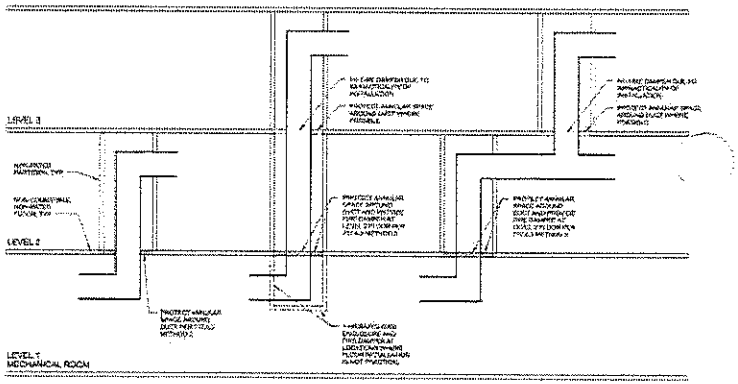
[illegible]

The purpose of the smoke control system is to control the movement of smoke and fire in the event of a fire. The system is designed to control the movement of smoke and fire in the event of a fire. The system is designed to control the movement of smoke and fire in the event of a fire. The system is designed to control the movement of smoke and fire in the event of a fire.

The purpose of automatic fire dampers is to prevent the spread of fire and smoke from one part of the building to another. The dampers are designed to close automatically when they sense heat or smoke. The dampers are designed to close automatically when they sense heat or smoke. The dampers are designed to close automatically when they sense heat or smoke.

The purpose of the smoke control system is to control the movement of smoke and fire in the event of a fire. The system is designed to control the movement of smoke and fire in the event of a fire. The system is designed to control the movement of smoke and fire in the event of a fire. The system is designed to control the movement of smoke and fire in the event of a fire.

ASIAN ART MUSEUM #6529634
CODE MODIFICATION REQUEST
EXHIBIT 1: DUCT PENETRATION DIAGRAM
3/24/17



CONDITION 1:
DUCT PENETRATES ONE FLOOR, OPEN TO TWO STORIES

CONDITION 2:
DUCT PENETRATES TWO FLOORS, OPEN TO TWO STORIES

CONDITION 3:
DUCT PENETRATES TWO FLOORS, OPEN TO THREE STORIES

LMN Architects
Lohm Design
Interiors

[illegible]

REGISTERED ARCHITECT
[illegible]
STATE OF WASHINGTON

SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

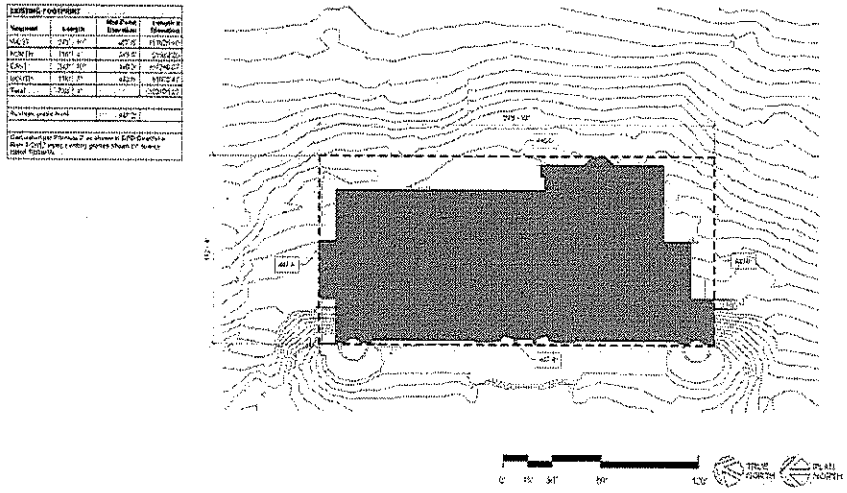
[illegible]

Construction Documents

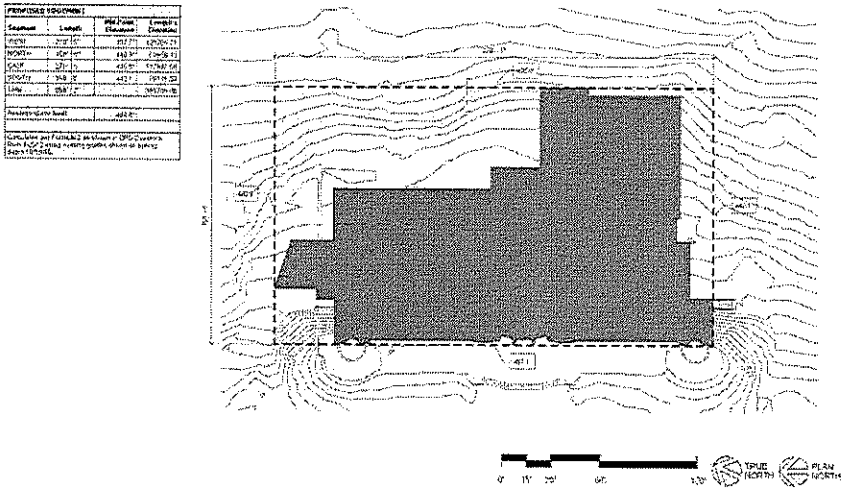
Issues
ID Date Description
A 6/2/17 PERMIT CORRECTIONS 1

Sheet Title: Code Modifications

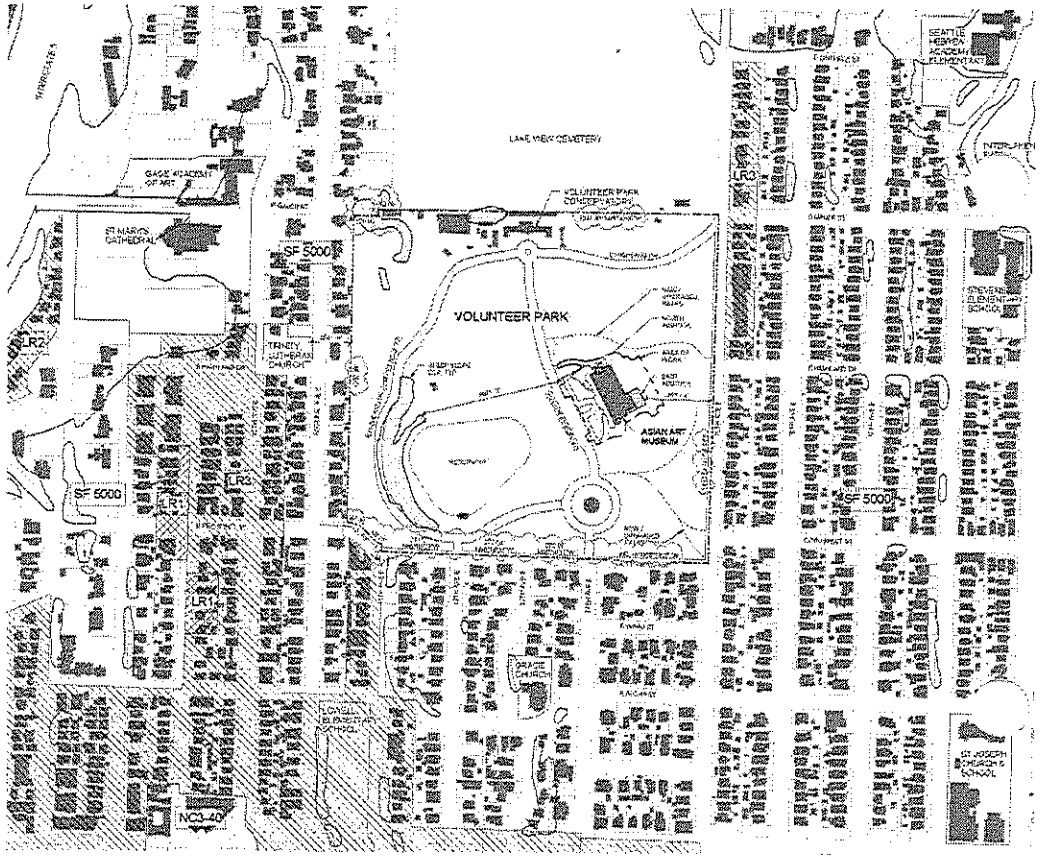
Sheet Number: G004



AVERAGE GRADE LEVEL CALCULATION - EXISTING FOOTPRINT



AVERAGE GRADE LEVEL CALCULATION - PROPOSED FOOTPRINT



LAND USE MAP

LMN Architects

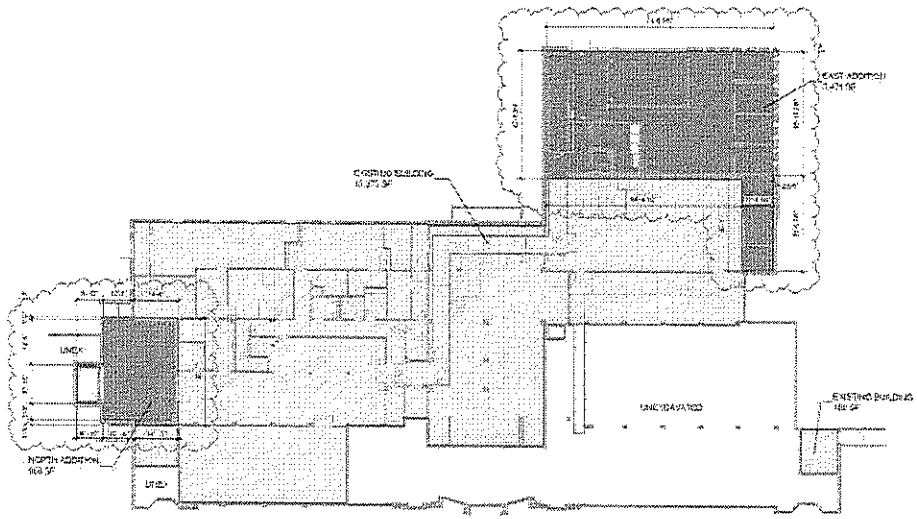
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

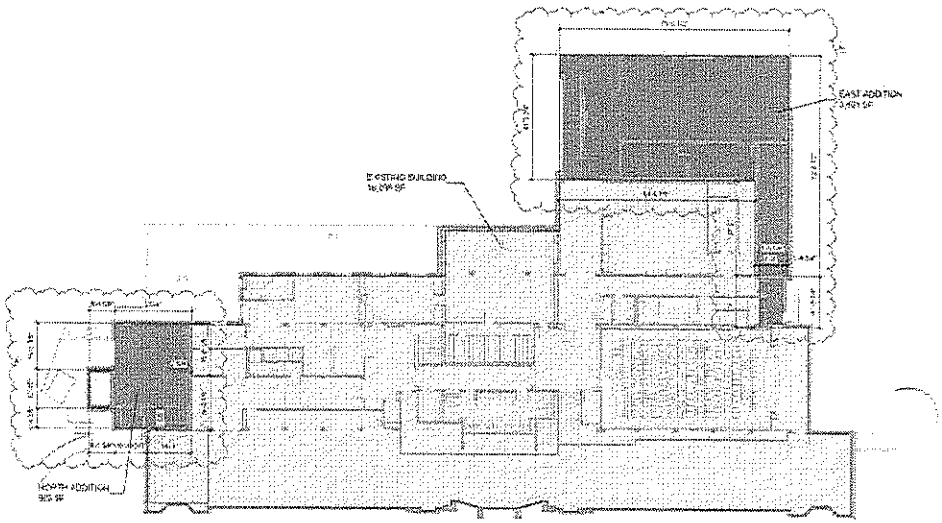
Construction Documents

Land Use Diagrams

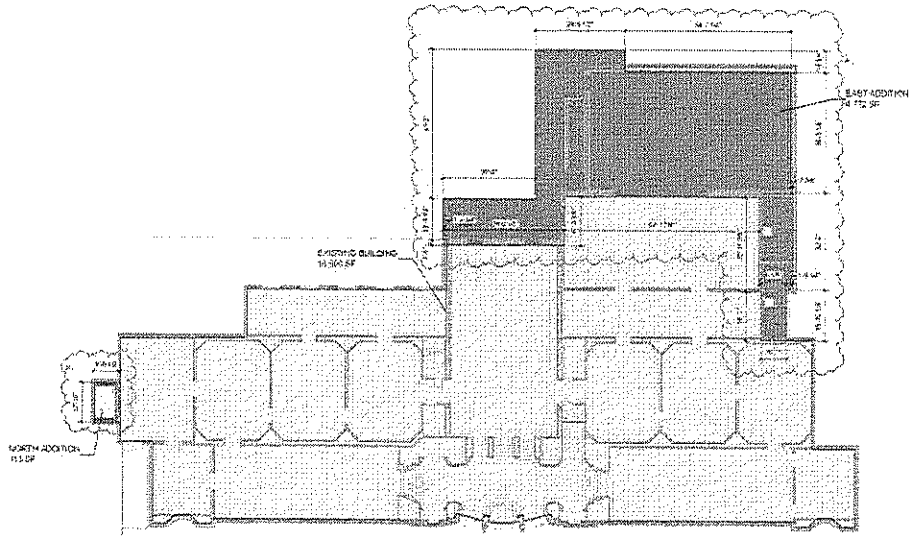
G010



LEVEL 1 - LAND USE AREA PLAN



LEVEL 2 - LAND USE AREA PLAN



LEVEL 3 - LAND USE AREA PLAN

LAND USE AREAS:
EXISTING / NEW

LEVEL	NAME	AREA
LEVEL 1	EXISTING BUILDING	[illegible]
LEVEL 1	EXISTING BUILDING	[illegible]
LEVEL 2	EXISTING BUILDING	[illegible]
LEVEL 3	EXISTING BUILDING	[illegible]
EXISTING BUILDING		[illegible]
EXISTING		[illegible]
LEVEL 1	EAST ADDITION	[illegible]
LEVEL 2	EAST ADDITION	[illegible]
LEVEL 3	EAST ADDITION	[illegible]
EAST ADDITION		[illegible]
LEVEL 1	NORTH ADDITION	[illegible]
LEVEL 2	NORTH ADDITION	[illegible]
LEVEL 3	NORTH ADDITION	[illegible]
NORTH ADDITION		[illegible]
ADDITIONS		[illegible]
Grand total		[illegible]

LAND USE AREAS:
BY LEVEL

LEVEL	NAME	A
LEVEL 1	EXISTING BUILDING	[illegible]
LEVEL 1	EAST ADDITION	[illegible]
LEVEL 1	NORTH ADDITION	[illegible]
LEVEL 1	EXISTING BUILDING	[illegible]
LEVEL 1		[illegible]
LEVEL 2	EXISTING BUILDING	[illegible]
LEVEL 2	EAST ADDITION	[illegible]
LEVEL 2	NORTH ADDITION	[illegible]
LEVEL 2		[illegible]
LEVEL 3	EXISTING BUILDING	[illegible]
LEVEL 3	EAST ADDITION	[illegible]
LEVEL 3	NORTH ADDITION	[illegible]
LEVEL 3		[illegible]
Grand total		[illegible]

TRUE NORTH

PLAN NORTH

LMN Architecture Lemon Design Interiors

REGISTERED ARCHITECT

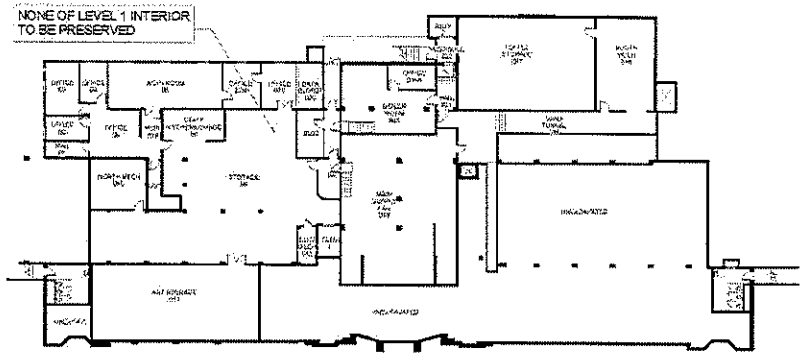
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

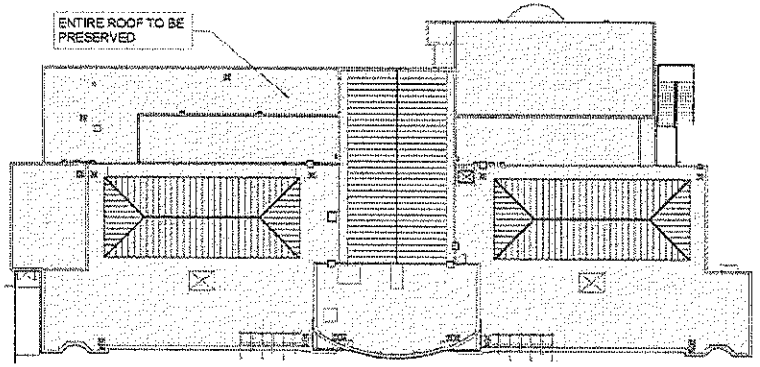
Construction Documents

Land Use Area Plans

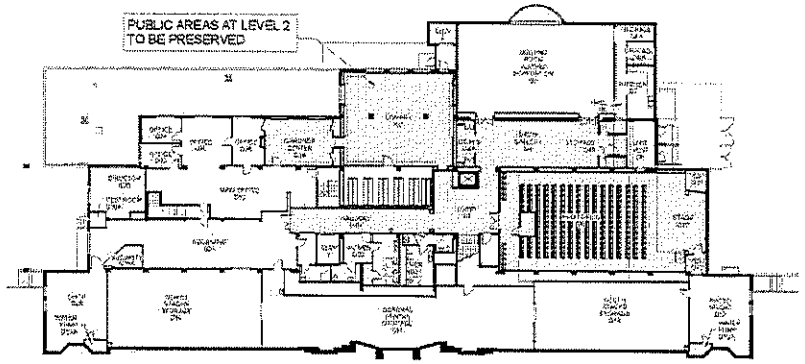
G011



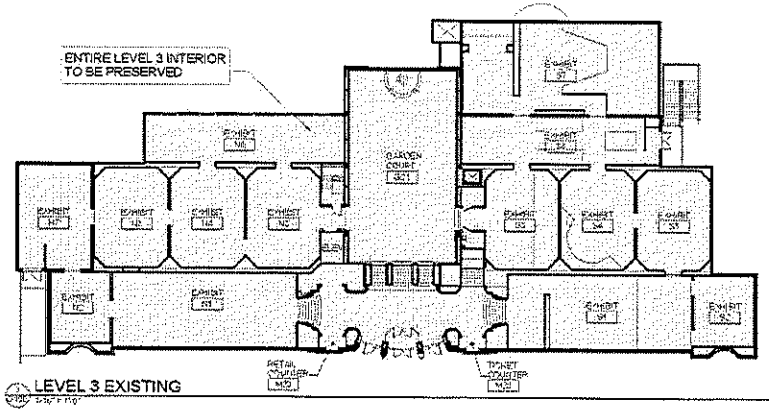
LEVEL 1 EXISTING



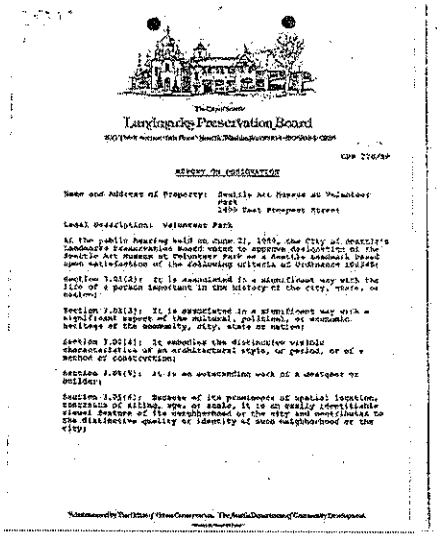
ROOF PLAN - EXISTING



LEVEL 2 EXISTING



LEVEL 3 EXISTING



The Seattle
Landmarks Preservation Board

[illegible]

CDM 2706/5P

REPORT ON DESIGNATION

Name and Address of Property: Seattle Art Museum at Volunteer Park
1400 East Prospect Street

Legal Description: Volunteer Park

At the public hearing held on June 21, 1999, the City of Seattle's Landmarks Preservation Board voted to approve designation of the Seattle Art Museum at Volunteer Park as a Seattle Landmark, based upon satisfaction of the following criteria set forth in Ordinance 102229:

Section 3.01(3): It is associated in a significant way with the life of a person important in the history of the city, state, or nation;

Section 3.01(4): It is associated in a significant way with a significant aspect of the cultural, political, or economic heritage of the community, city, state or nation;

Section 3.01(5): It embodies the distinctive visible characteristics of an architectural style, or period, or of a method of construction;

Section 3.01(6): It is an outstanding work of a designer or builder;

Section 3.01(7): Because of its prominence of spatial location, contrasts of siting, age, or scale, it is an easily identifiable visual feature of its neighborhood or the city and contributes to the distinctive quality or identity of such neighborhood or the city;

Administered by The Office of Urban Conservation, The Seattle Department of Community Development

The features of the Landmark to be preserved, including:

The entire exterior of the building, including the roof, and the location of the landscapeable land is in accordance with the Ordinance 21-ee of 1971, and the following interior features: the entire main floor, and the public areas of the ground floor, including the auditorium, the auditorium, the caseese gallery, the former house of Treasures Room, and the library.

Issued: July 9, 1999

Karen Gordon
City Historic Preservation Officer

KG:bl:v

cc: Mary McDonald, Chair, Landmarks Preservation Board
Lynnda Roberson, DCLS
Alan Olson, DCLS
Ann Rice, DCLS
Bobby Miller, DCPAR
Don Harris, DCPAR
Kai Tveten, DCPAR
Joy Gates, DAR
Gail Dubov, DAR
Will Rogers

FILE
A3:1p

LMN Architects
Lawrence Miller Nelson Inc

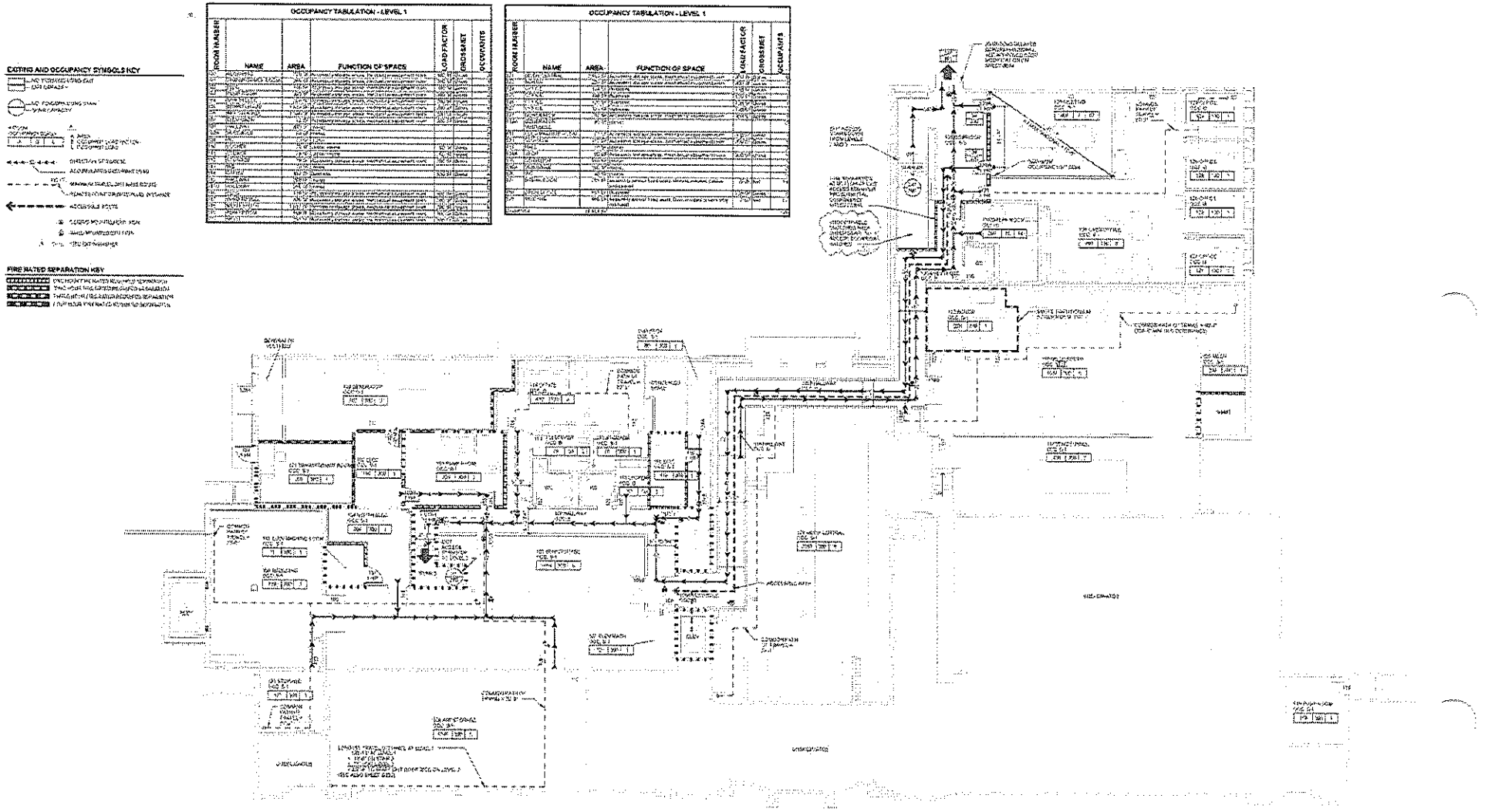
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Historic Landmark Preservation Plans

G100



LEVEL 1 - LIFE SAFETY PLAN

TRUE NORTH

PLAN NORTH

LMN Architecture Lemon Design Associates

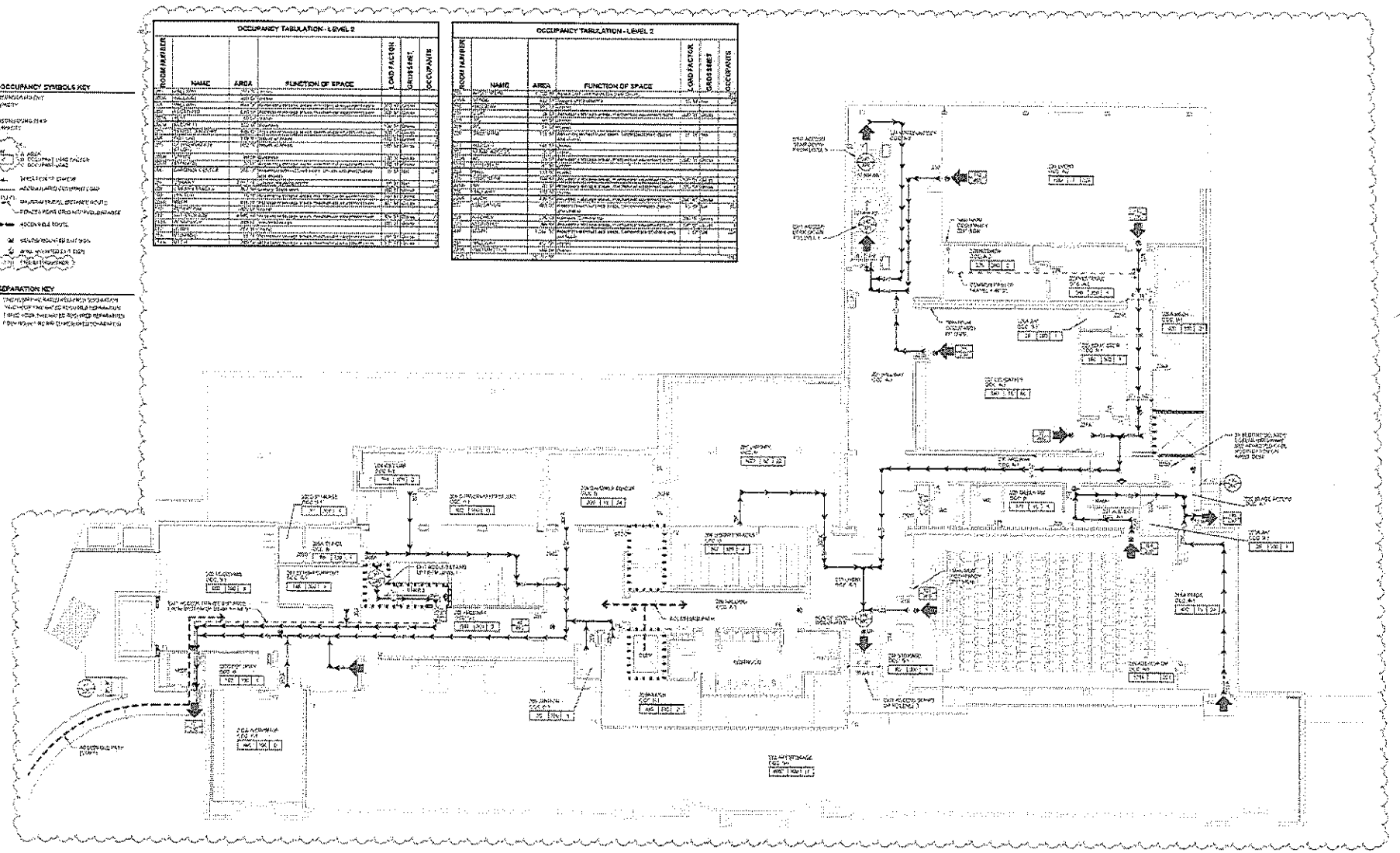
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Life Safety Plan - Level 1

G201



1 LEVEL 2 - LIFE SAFETY PLAN

LMN Architecture Urban Design Interiors

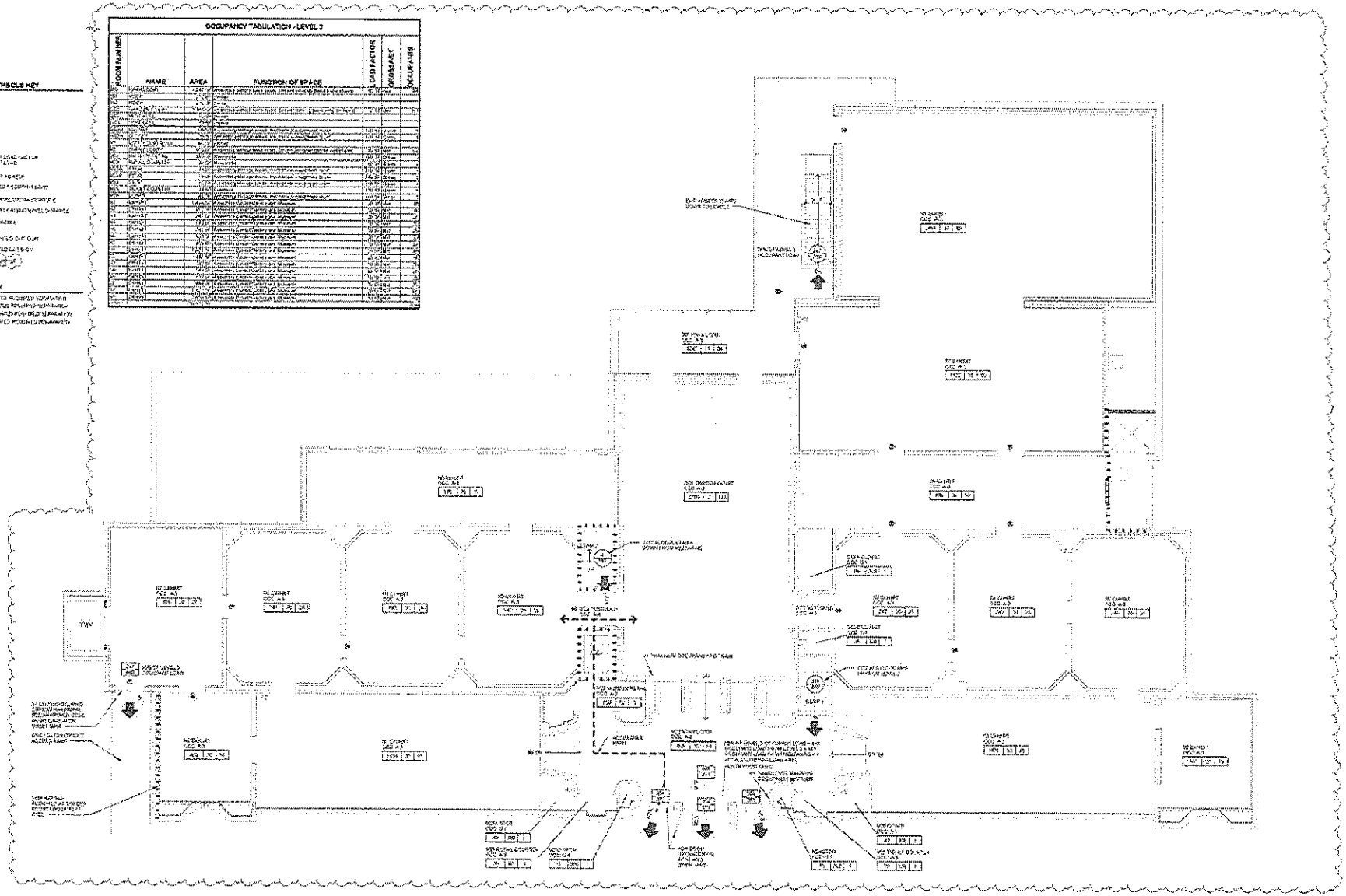
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Life Safety Plan - Level 2

G202



LEVEL 3 - LIFE SAFETY PLAN

TRUE NORTH

PLAN NORTH

0' 4' 8' 16' 32'

LMN Architects Urban Design Interiors

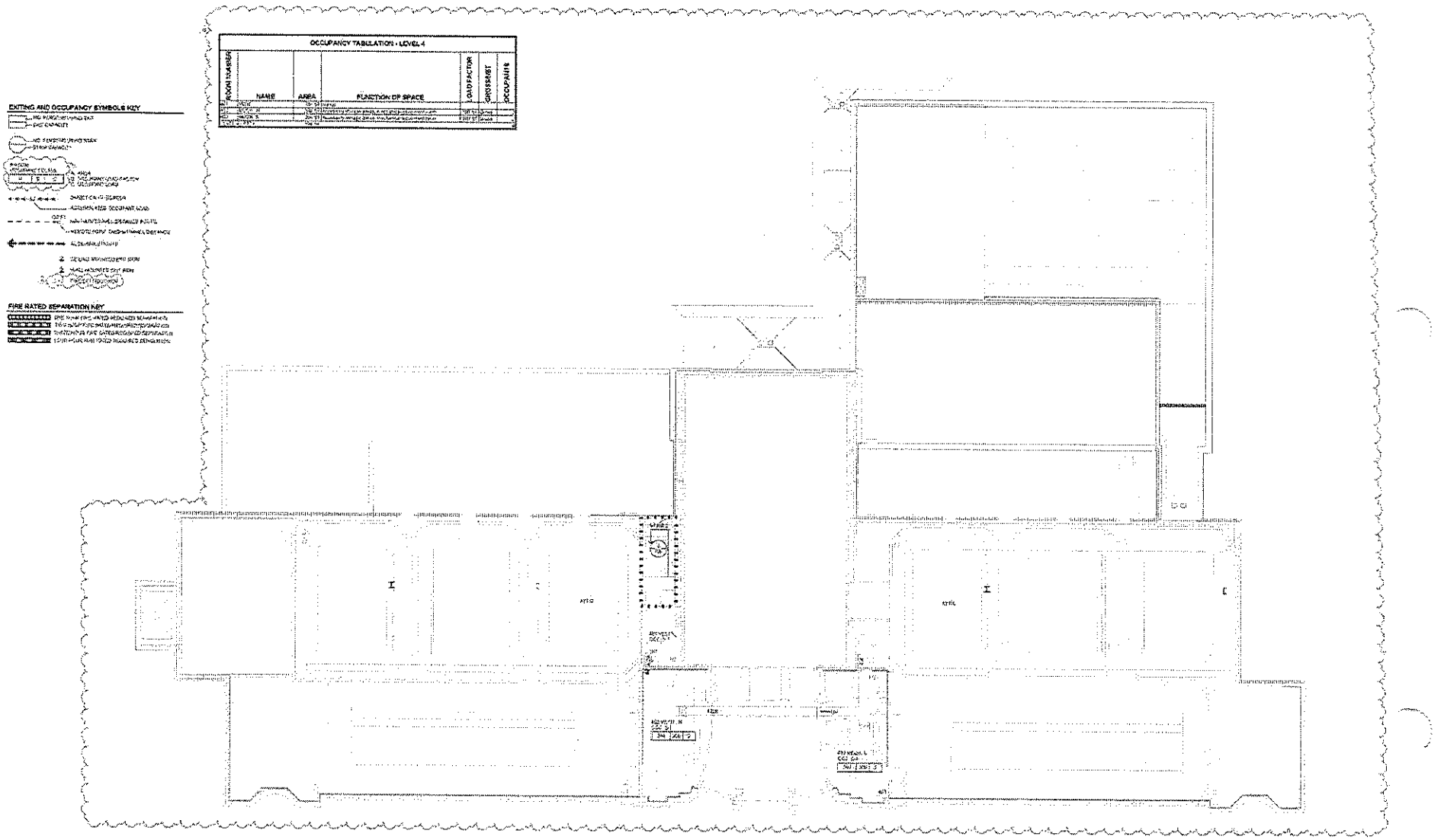
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Life Safety Plan - Level 3

G203



LEVEL 4 ATTIC LIFE SAFETY PLAN

LMN Architecture | Urban Design | Interiors

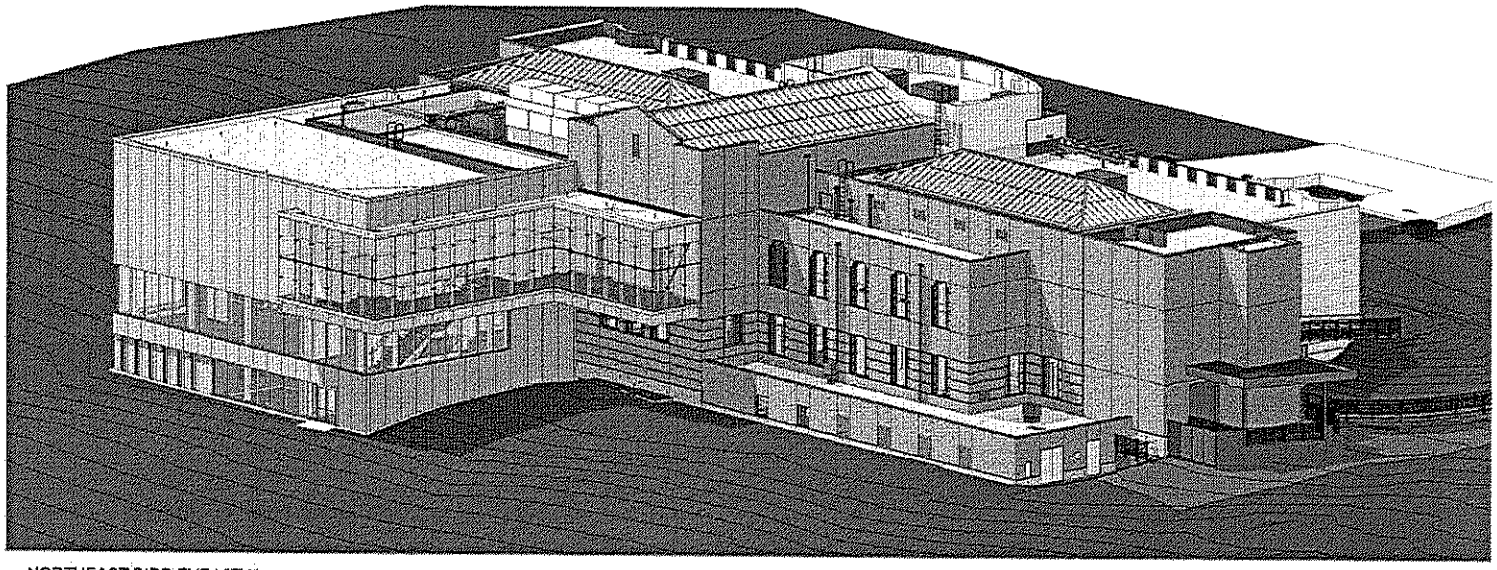
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

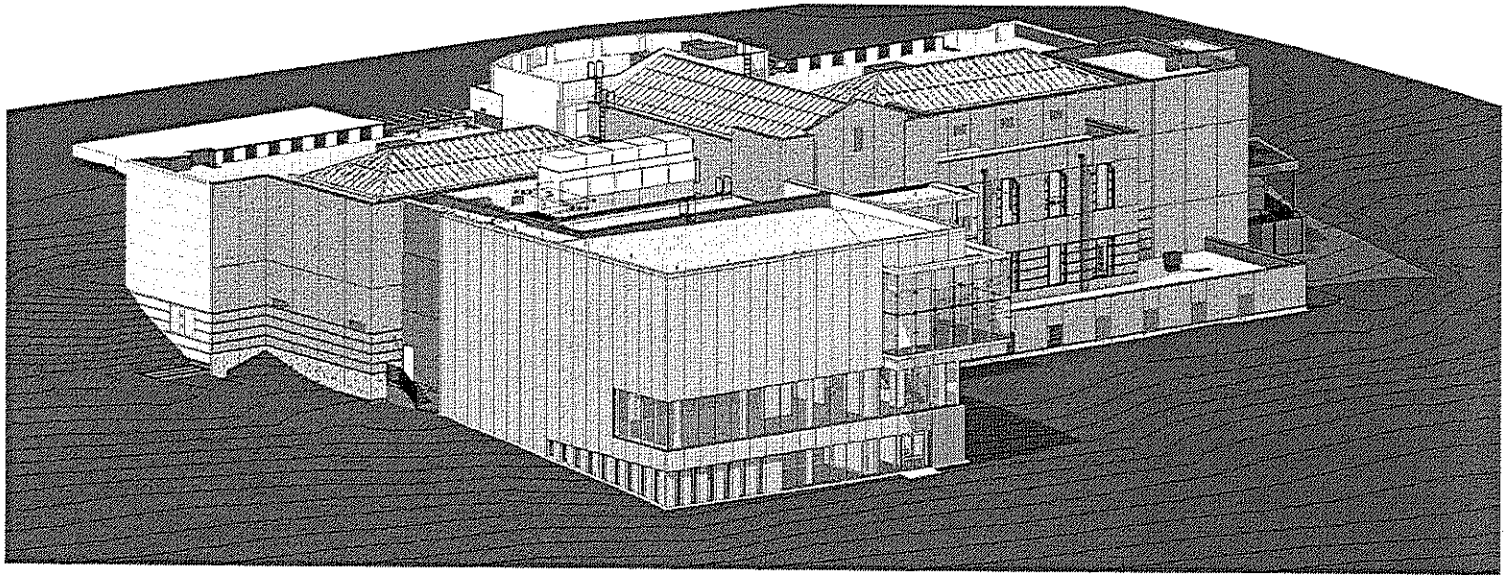
Construction Documents

Life Safety Plan - Mezz/Attic

G204



NORTHEAST BIRD EYE VIEW



SOUTHEAST BIRD EYE VIEW

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SAM ASIAN ART MUSEUM

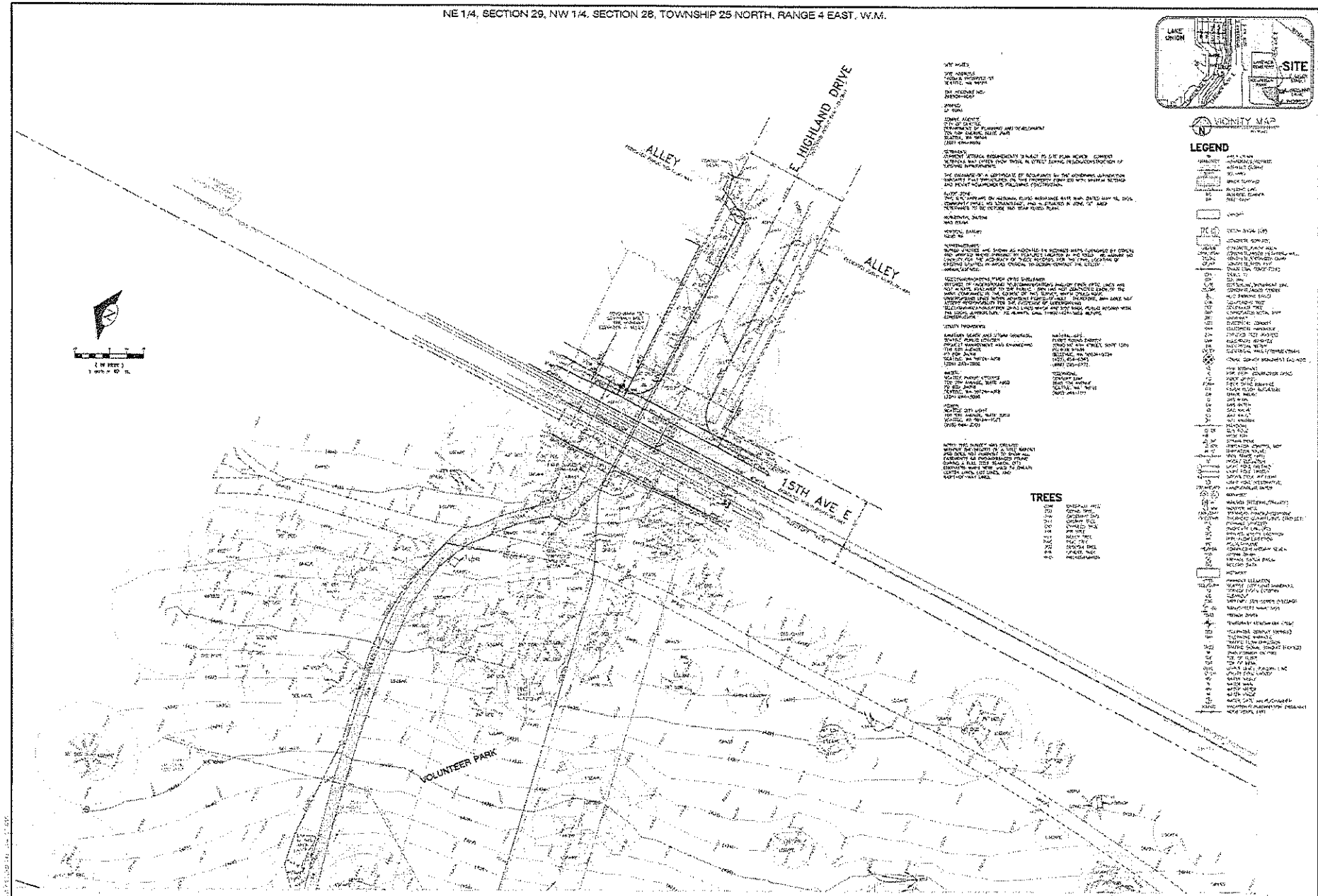
Asian Art Museum Expansion & Renovation

Construction Documents

3D Views

G900

NE 1/4, SECTION 29, NW 1/4, SECTION 28, TOWNSHIP 25 NORTH, RANGE 4 EAST, W.M.



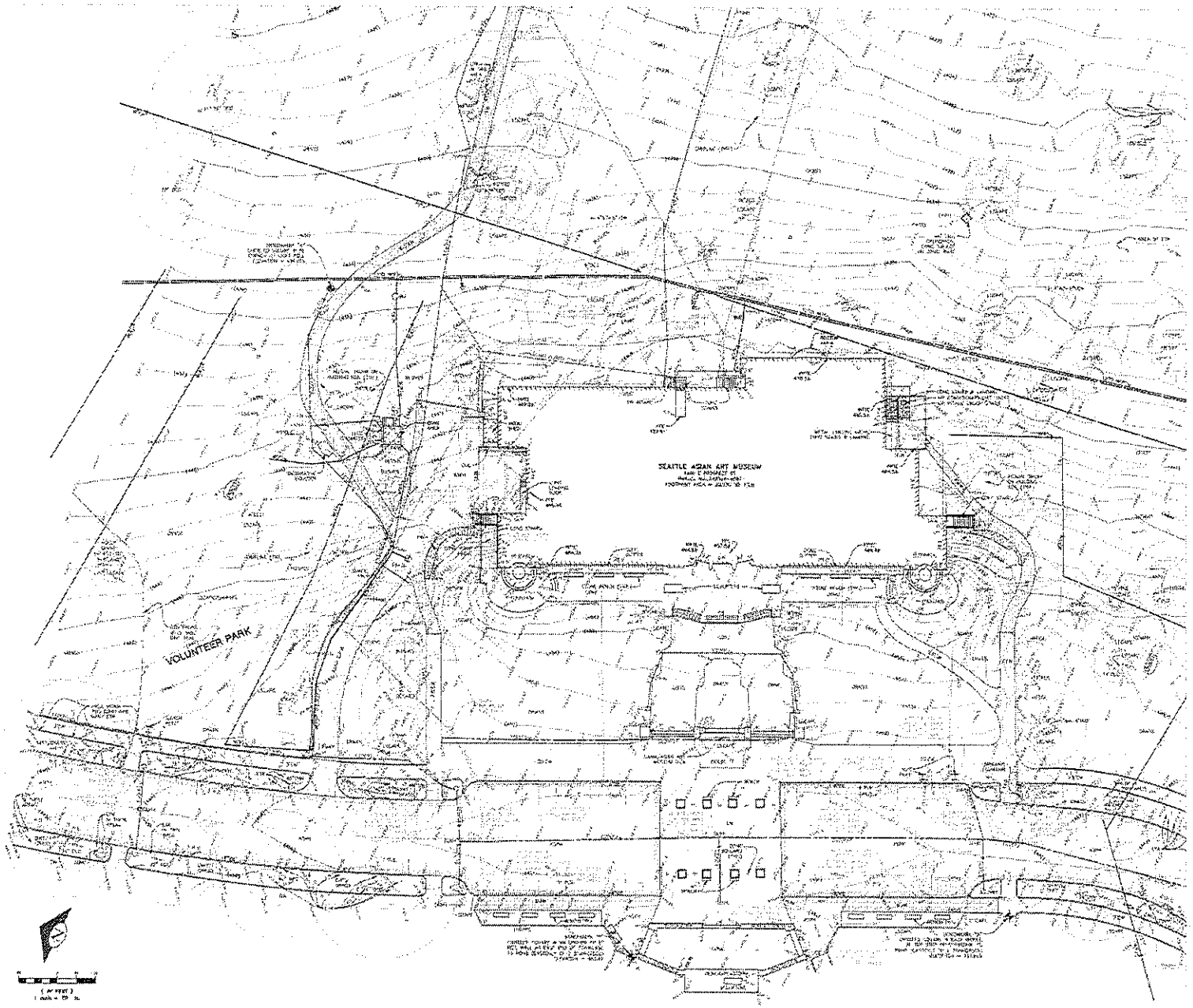
BUSH, ROED & HITCHINGS, INC.
LAND SURVEYORS & CIVIL ENGINEERS

TOPOGRAPHIC SURVEY
SEATTLE ART MUSEUM
SEATTLE ASIAN ART MUS

SEATTLE
KING COUNTY
WASHINGTON

Feb/Mar
1" = 20'
2/18/17
2015:28.02
1 of 3

NE 1/4, SECTION 29, NW 1/4, SECTION 28, TOWNSHIP 25 NORTH, RANGE 4 EAST, W.M.



LEGEND

TREES

BUSH, ROED & HITCHINGS, INC.
LAND SURVEYORS & CIVIL ENGINEERS

TOPOGRAPHIC SURVEY
SEATTLE ART MUSEUM
SEATTLE ASIAN ART MUS

SEATTLE | KING COUNTY | WASHINGTON

Feb/Mar | DGK
1" = 20' | 2/13/17
2015128.02
2 of 3

NE 1/4, SECTION 29, NW 1/4, SECTION 28, TOWNSHIP 25 NORTH, RANGE 4 EAST, W.M.



LEGEND

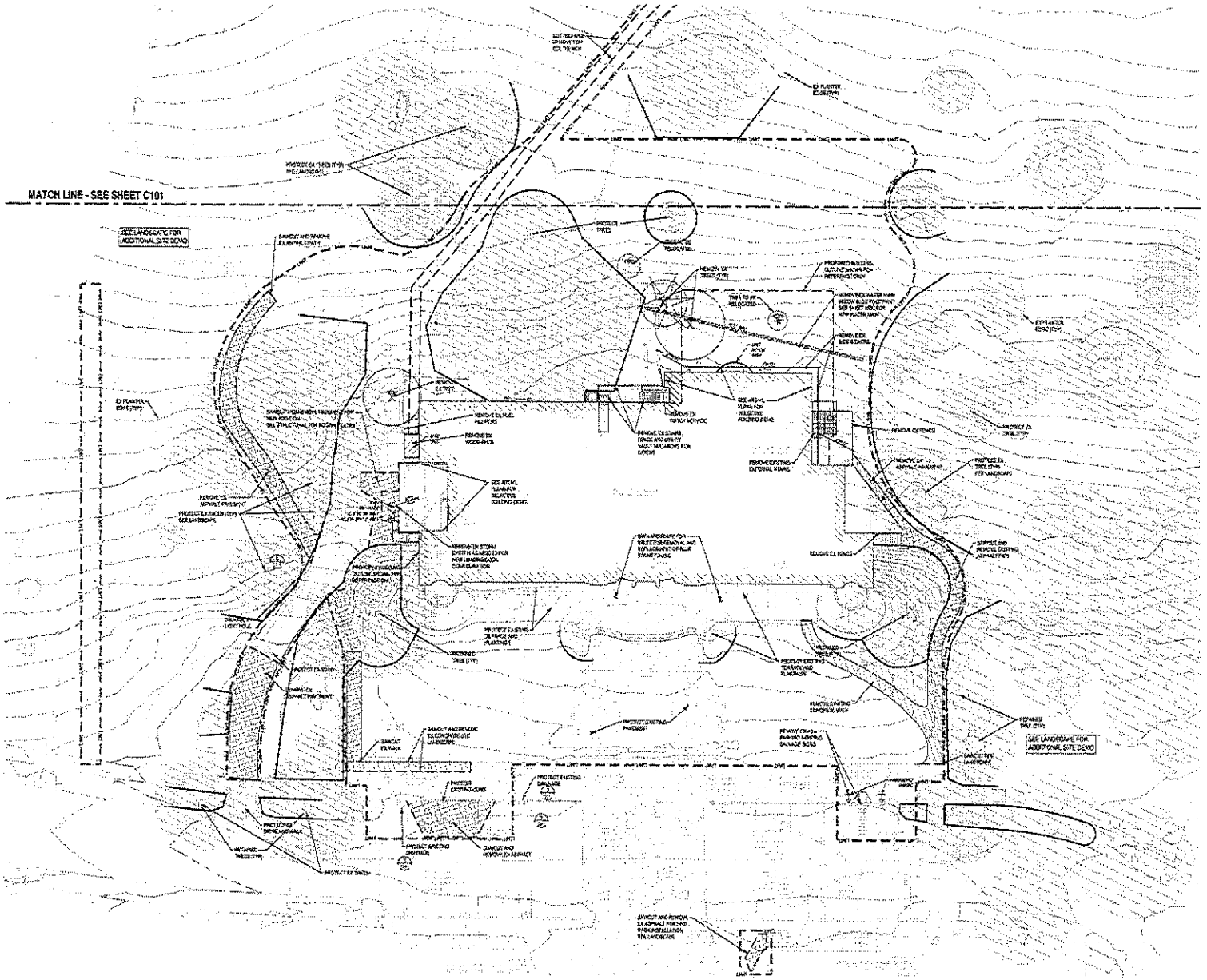
TREES

BUSH, ROED & HITCHINGS, INC.
LAND SURVEYORS & CIVIL ENGINEERS

TOPOGRAPHIC SURVEY
SEATTLE ART MUSEU"
SEATTLE ASIAN ART MUS
KING COUNTY
WASHINGTON

SEATTLE

1" = 20'
2/13/12
2015128.02



Call before you
Dig 8-1-1

SCALE 1"=20'

Legend

- PROPERTY LINE
- SAWCUT LINE
- REMOVE CURBING
- REMOVE ASPHALT PAVEMENT
- REMOVE CONCRETE PAVEMENT
- DEMOLISH BUILDING
- REMOVE TREES
- TREE CANOPY / EXCEPTIONAL TREE
- FENCING

Sheet Index

C100	DEMOLITION PLAN
C101	DEMOLITION PLAN
C200	T.E.S.C PLAN
C201	T.E.S.C PLAN
C210	T.E.S.C. DETAILS
C300	SITE PLAN
C301	SITE PLAN
C310	SITE DETAILS
C311	SITE DETAILS
C320	SITE PROFILE

SEE LANDSCAPE FOR DETAILED TREE AND SHRUB PROTECTION/REMOVAL SITE LINE

VERIFY SAWCUT LOCATIONS WITH LANDSCAPE DESIGN

MAINTAIN EX PAVING FOR CONSTRUCTION SITE ACCESS. REMOVE SITE BEFORE NEW PAVING AND FINAL SITE STABILIZATION IS INSTALLED

LMN Architecture Urban Design Services

COUGHLIN PORTER LUNDEEN

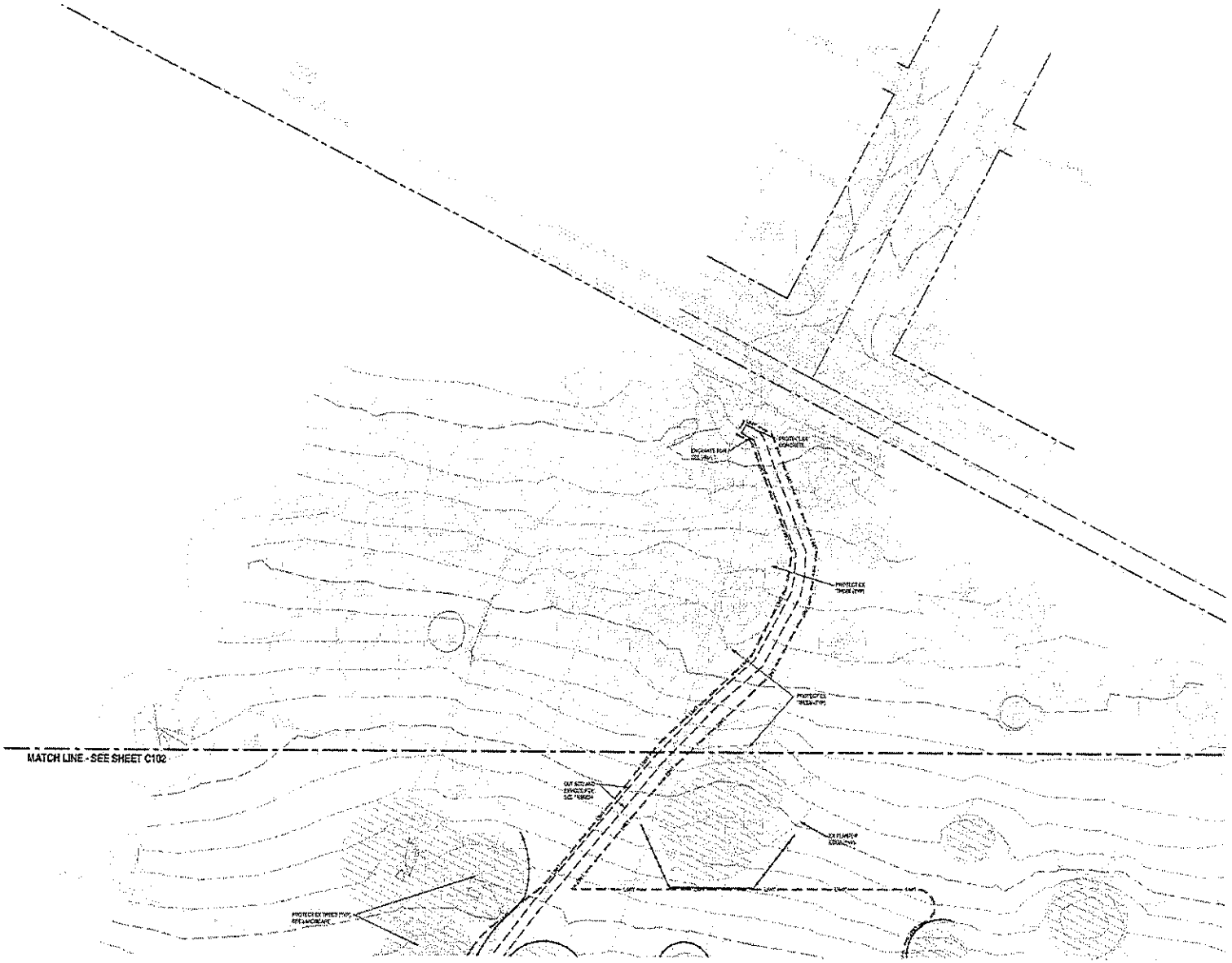
S&M ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Site Demolition Plan

C100



Call before you
Dig 8-1-1

SCALE 1"=20'

Legend

PROPERTY LINE
BANDUR LINE
REMOVE CURBING
REMOVE ASPHALT PAVEMENT
REMOVE CONCRETE PAVEMENT
DEMOLISH BUILDING
REMOVE TREE(S)
TRAY CANOPY/EXCEPTIONAL TREE
FENCING

Sheet Index

C101 DEMOLITION PLAN
C102 DEMOLITION PLAN
C201 SITE PLAN
C202 SITE PLAN
C203 SITE PLAN
C204 SITE PLAN
C205 SITE PLAN
C206 SITE PLAN
C207 SITE PLAN
C208 SITE PLAN
C209 SITE PLAN
C210 SITE PROFILE

SEE LANDSCAPE FOR DETAILED TREE AND SHRUB PROTECTION INFORMATION - SEE LP01

SHRUB CANOPY LOCATIONS WITH LANDSCAPE DESIGN

MAINTAIN 24 PRIMARY FOR CONSTRUCTION SITE ACCESS, REMOVE SITE BEFORE NEW PAVING AND FINAL SITE STABILIZATION IS INSTALLED

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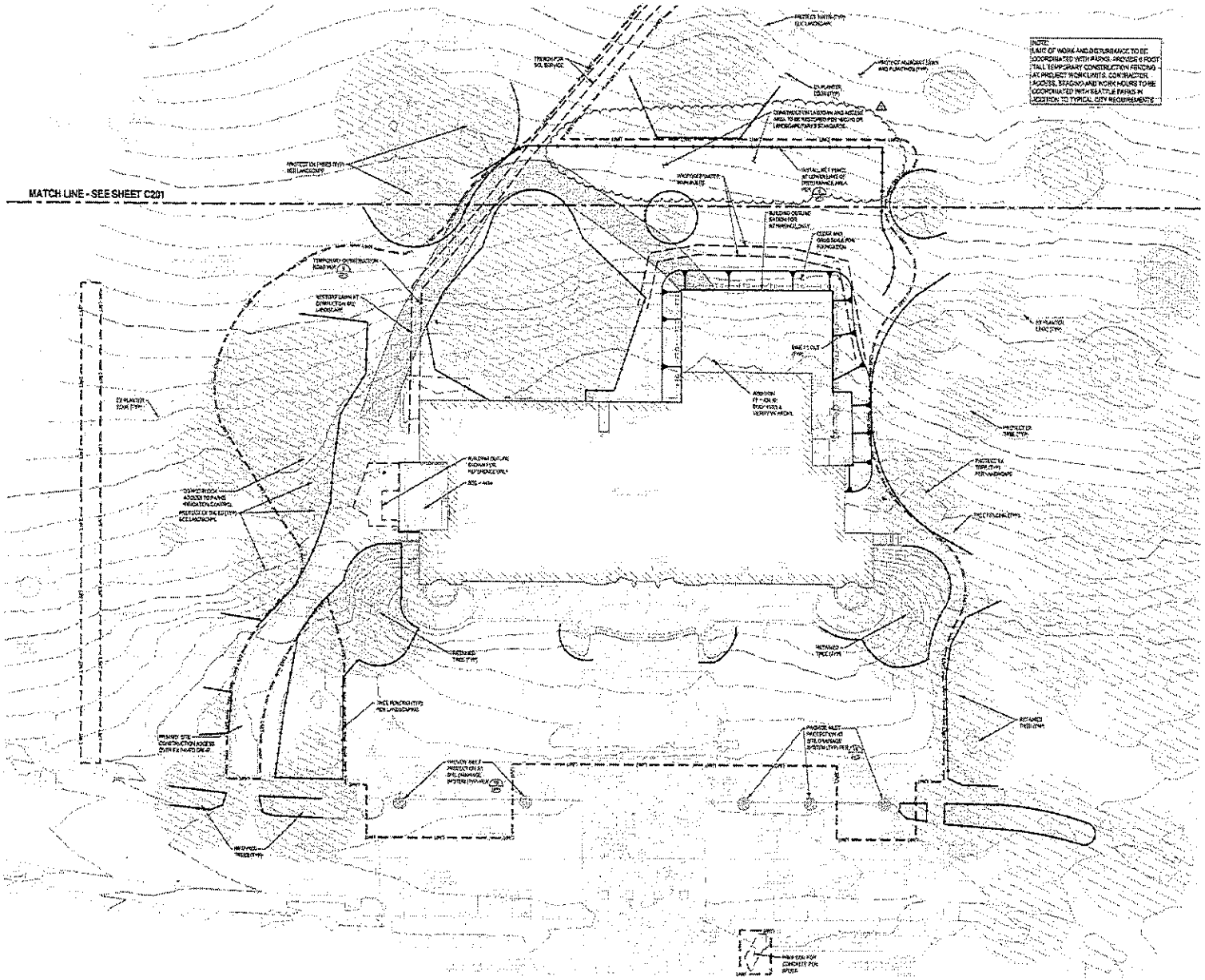
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Site Demolition Plan

C101



Call before you Dig 8-1-1

0 10 20 40

SCALE 1"=20'

Legend

- PROJECT LINE
- LIMITS OF CONSTRUCTION
- SEDIMENT FENCE
- FILTER FABRIC FENCING
- TEMPORARY CONSTRUCTION ENTRY
- TEMPORARY CONSTRUCTION GATE
- CLEAR AND GRUB
- HEAT MITIGATION
- TREE CANOPY, EXCEPTIONAL TREE

City of Seattle T.E.S.C. Notes

1. NONCOMPLIANCE WITH THE EROSION CONTROL REQUIREMENTS, WATER QUALITY REQUIREMENTS OR CLEAN LIMITS VIOLATIONS MAY RESULT IN REVOCATION OF PROJECT PERMITS, PLAN APPROVAL, AND/OR CLEARING.
2. PRIOR TO ANY WORK, THE CONTRACTOR SHALL CONTACT THE CITY OF SEATTLE TO SCHEDULE A PRECONSTRUCTION MEETING.
3. PRIOR TO ANY SITE CONSTRUCTION WHICH INCLUDES CLEARING, LOGGING OR GRADING THE SITE, CLEARING LIMITS SHALL BE LOCATED AND FIELD-IDENTIFIED BY THE PROJECT SURVEYOR. THE CONTRACTOR SHALL COORDINATE WITH THE CITY AS REQUIRED. COORDINATE LIMITS AND FENCE PLACEMENT WITH THE UNIVERSITY.
4. THE TEMPORARY EROSION/SEDIMENTATION CONTROL FACILITY SHALL BE CONSTRUCTED PRIOR TO ANY GRADING OR EXTENSIVE CLEARING IN ACCORDANCE WITH THE APPROVED TEMPORARY EROSION/SEDIMENTATION CONTROL PLAN. THESE FACILITIES MUST BE EXTENSIVELY MAINTAINED.
5. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT SEATTLE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION.
6. ALL EARTHWORK SHALL BE PERFORMED IN ACCORDANCE WITH CITY STANDARDS.
7. SEE STRUCTURAL DRAWING FOR FOUNDATION DESIGN.
8. STOCK PILE AREA NOTE PERMITTED.
9. ALL STRUCTURAL FILL SHALL BE COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DENSITY BY MODIFIED PROCTOR TEST.
10. THE ESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT LADEN WATER DOES NOT ENTER THE EXISTING DRAINAGE SYSTEM OR VIOLATE APPLICABLE WATER QUALITY REQUIREMENTS.
11. THE ESC FACILITIES SHOWN ON THIS PLAN MAY BE MODIFIED OR SUPPLEMENTED, PRIOR WRITTEN APPROVAL FROM THE ESC INSPECTOR IS REQUIRED IF CONDITIONS DURING THE CONSTRUCTION PERIOD ARE NOT ADEQUATELY SHOWN. ADDITIONAL MEASURES SHALL BE IMPLEMENTED AS NEEDED TO ACCOUNT FOR UNFORESEEN CIRCUMSTANCES OR EVENTS.
12. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.
13. ANY AREA WITHIN THE LIMITS OF CONSTRUCTION THAT WILL REMAIN UNWORKED FOR MORE THAN 7 DAYS SHALL BE MULCHED OR PROVIDED WITH TEMPORARY COVER. BETWEEN OCTOBER 1 AND APRIL 30, ANY SUCH AREA SHALL BE MULCHED OR PROVIDED WITH TEMPORARY COVER WITHIN 2 DAYS. BETWEEN MAY 1 AND SEPTEMBER 30, THIS TIME PERIOD SHALL BE EXTENDED TO 7 DAYS.
14. ALL DISTURBED AREAS MUST BE PERMANENTLY STABILIZED WITHIN 7 DAYS OF REACHING FINAL GRADE. THESE AREAS MUST BE STABILIZED BEFORE THE NEXT ANTICIPATED STORM EVENT. APPLICATION OF PERMANENT SEEDING, SODDING OR PLANTING MUST BE COMPLETED WITHIN 7 DAYS OF FINAL GRADING. (SEE LANDSCAPE PLANS FOR SEEDING, SODDING, PLANTING, AND MULCHING SPECIFICATIONS.)
15. ALL ESC FACILITIES SHALL BE INSPECTED, MAINTAINED AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. ALL EROSION AND SEDIMENT CONTROL FACILITIES SHALL BE INSPECTED AT LEAST ONCE EVERY 24 HOURS DURING PROLONGED RAINFALL AND AT LEAST ONCE EVERY CALENDAR WEEK OTHERWISE. ALL FACILITIES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN 24 HOURS FOLLOWING A STORM EVENT.
16. ALL ESC FACILITIES SHALL CONFORM TO THE CITY OF SEATTLE STORMWATER MANAGEMENT MANUAL. A COPY OF THE STORMWATER MANUAL SHALL BE ON SITE DURING CONSTRUCTION. ALL ESC FACILITIES REFERENCED DETAILS IN THE MANUAL UNLESS OTHERWISE NOTED.
17. DISTURBED AREAS THAT ARE EXPOSED TO SURFACE RUNOFF SHALL BE STABILIZED WITH STRAW OR HYDROSEEDING.
18. APPROVAL BY ESC OF THE GRADING AND TEMPORARY EROSION CONTROL PLANS DOES NOT INCLUDE APPROVAL OF THE GRADING ACTIVITIES SHOWN HEREIN.
19. CATCH BASINS IN THE STREET SHALL BE INSPECTED BY THE CONTRACTOR DAILY. WATER LEAVING THE SITE DURING CONSTRUCTION, INCLUDING WATER CONTAINED BY STOCKPILES, SHALL BE CLEAR. THE CONSTRUCTION SHALL CLEAN DISCHARGE LOCATIONS AND IMPLEMENT ALTERNATE EROSION CONTROL METHODS IF NECESSARY AND AS DIRECTED BY CITY INSPECTORS OR OTHER REPRESENTATIVES.
20. THE TEMPORARY CONSTRUCTED EROSION CONTROL MEASURES SHOWN ON THESE PLANS MAY BE ALTERED OR MOVED TO AS DETERMINED BY THE ESC SITE INSPECTOR.
21. ANY EROSION CONTROL MEASURES NOT IN PLACE AND APPROVED BY THE ESC SITE DEVELOPMENT INSPECTOR PRIOR TO DEMOLITION AND GRADING CALLING FOR THEIR INSTALLATION MUST BE INSTALLED IMMEDIATELY.

SEE LANDSCAPE FOR DETAILED TREE AND SHRUB PROTECTION INFORMATION

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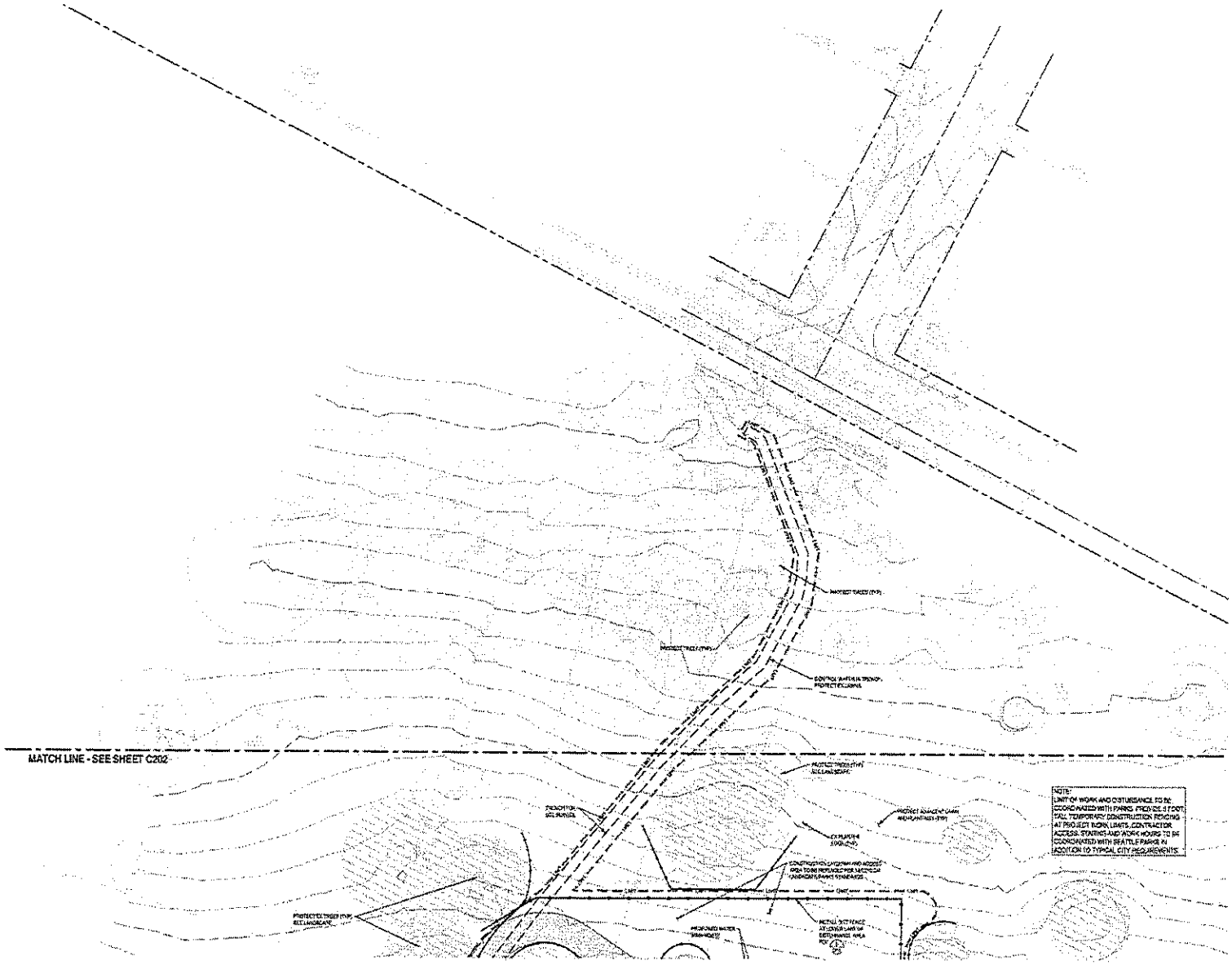
ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

T.E.S.C Plan

C200



Call before you Dig 8-1-1

SCALE 1"=20'

Legend

- PROPERTY LINE
- LIMITS OF CONSTRUCTION
- TESC EQUIPMENT ON HOLD
- FILTER FABRIC FENCING
- TEMPORARY CONSTRUCTION FENCING
- TEMPORARY CONSTRUCTION GATE
- ECOLOGY BLOCK
- 310 INLET PROTECTION
- TREE CANOPY / EXCEPTIONAL TREE

City of Seattle T.E.S.C. Notes

1. NON-COMPLIANCE WITH THE EROSION CONTROL REQUIREMENTS, "WATER QUALITY REQUIREMENT" CLEAN WATER VIOLATIONS MAY RESULT IN REVOCATION OF PROJECT PERMITS, PLAN APPROVAL, FORECLOSURE.
2. PRIOR TO ANY WORK, THE CONTRACTOR SHALL CONTACT THE CITY OF SEATTLE TO SCHEDULE A PRE-CONSTRUCTION MEETING.
3. PRIOR TO ANY SITE CONSTRUCTION, ISOLATION (CLEARING) FLAGGING OR CHOKING THE TREE CLEARING LIMITS SHALL BE LOCATED AND FIELD CHECKED BY THE PROJECT SUPERVISOR. THE CONTRACTOR SHALL COORDINATE WITH THE CITY AS REQUIRED. COORDINATE LIMITS AND FENCE PLACEMENT WITH THE ARBORIST.
4. THE TEMPORARY EROSION SEDIMENTATION CONTROL FACILITY SHALL BE CONSTRUCTED PRIOR TO ANY GRADING OR EXTENSIVE LAND CLEARING IN ACCORDANCE WITH THE APPROVED TEMPORARY EROSION SEDIMENTATION CONTROL PLAN. THESE FACILITIES MUST BE IN PLACE DURING ALL GRADING ACTIVITY IN PROGRESS.
5. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT SEATTLE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION.
6. ALL EARTHWORK SHALL BE PERFORMED IN ACCORDANCE WITH CITY STANDARDS.
7. SEE STRUCTURAL DRAWING FOR FOUNDATION DESIGN.
8. STEPS/RISERS ARE NOT PERMITTED.
9. ALL STRUCTURAL FILL SHALL BE COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DENSITY BY MODIFIED PROCTOR TEST.
10. THE ESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED AS DURACTION SHOWN ALL CLEARING AND GRADING ACTIVITIES AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT AND WATER DO NOT ENTER THE EXISTING DRAINAGE SYSTEM OR VIOLATE APPLICABLE WATER QUALITY REQUIREMENTS.
11. THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS.
12. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.
13. ANY AREA STRIPPED OF VEGETATION, INCLUDING ROADWAY EMBANKMENTS, WHERE NO FURTHER WORK IS ANTICIPATED SHALL BE STABILIZED WITH APPROVED EROSION CONTROL MEASURES WITHIN 7 DAYS BETWEEN MAY 1 AND SEPTEMBER 30, i.e. SEEDING, MULCHING, NETTING, EMERGENCY PLANTING, ETC.)
14. THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTENANCE PERFORMED ONCE A MONTH OR WITHIN TWENTY-FOUR HOURS FOLLOWING A STORM EVENT.
15. ALL ESC FACILITIES SHALL CONFORM TO THE CITY OF SEATTLE CONSTRUCTION BEST MANAGEMENT PRACTICES MANUAL. A COPY OF THIS DOCUMENT SHALL BE ON SITE DURING CONSTRUCTION. ALL ESC STRUCTURES REFERENCED DETAILS IN THIS MANUAL UNLESS OTHERWISE NOTED.
16. DISTURBED SOILS THAT ARE EXPOSED TO SURFACE RUNOFF SHALL BE STABILIZED WITH EFFECTIVE HYDROSEEDING.
17. APPROVAL BY DPD OF THE EROSION AND TEMPORARY EROSION CONTROL PLANS DOES NOT INCLUDE APPROVAL OF THE GRADING ACTIVITIES SHOWN HEREON.
18. CATCH BASINS IN THE STREET SHALL BE INSPECTED BY THE CONTRACTOR DAILY. WATER LEAVING THE SITE DURING CONSTRUCTION, INCLUDING WATER CARRIED BY TRUCKS, SHALL BE FREE OF SEDIMENT. THE CONTRACTOR SHALL CLEAN UP IMMEDIATELY ANY MUD OR DIRT TRACKED OR WASHED ON PAVEMENT. ADDITIONAL METHODS, IF NECESSARY AND AS DIRECTED BY CITY INSPECTORS OR OWNER REPRESENTATIVE.
19. THE TEMPORARY CONSTRUCTION EROSION CONTROL MEASURES SHOWN ON THIS PLAN MAY BE ALTERED OR ADDED TO AS DETERMINED BY THE SITE INSPECTOR.
20. ANY EXISTING DRAINAGE FEATURES THAT ARE TO BE REPLACED AND APPROVED BY THE SITE DEVELOPMENT INSPECTOR PRIOR TO DEMOLITION AND GRADING. DAILY CESC REPORTS TO BE AVAILABLE AND POSTED.

SEE LANDSCAPE FOR DETAILED TREE AND SHRUB PROTECTION INFORMATION

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SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

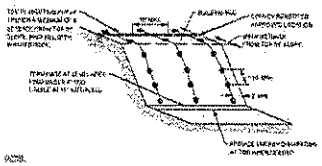
Construction Documents

T.E.S.C Plan

C201

Not Used 1

Not Used 2



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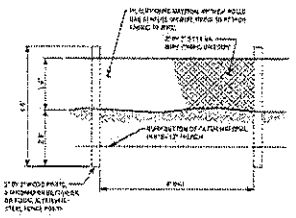
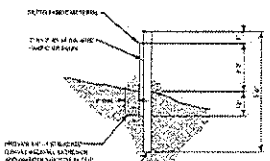




Silt Fence 5

Not Used 6

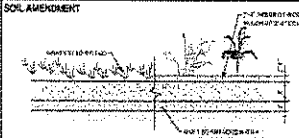
Not Used 7

POST CONSTRUCTION SOIL MANAGEMENT PLAN

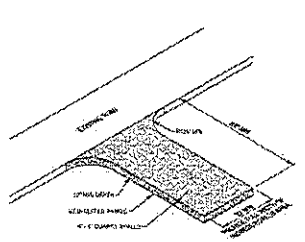
POST CONSTRUCTION COMPOST CALCULATION WORKSHEET:

DEFINITIONS:

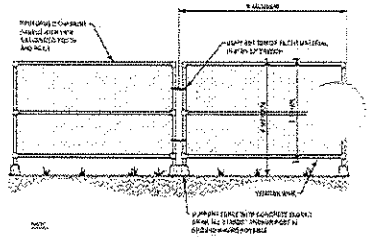
SOIL AMENDMENT



Seattle - Post Construction Soil Management Plan 18



Stabilized Construction Entrance / Road 9



Temporary Construction Fence 10

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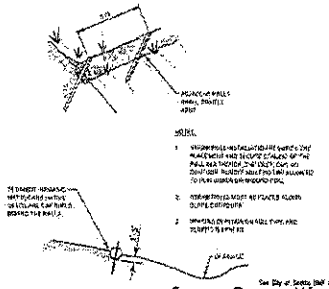
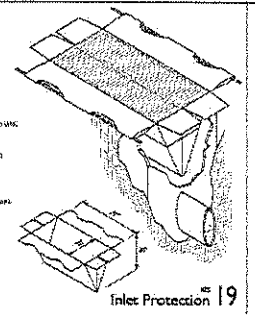


Straw or Compost Wattle 14

Not Used 15

Not Used 16

Not Used 17



Inlet Protection 19

Not Used 20

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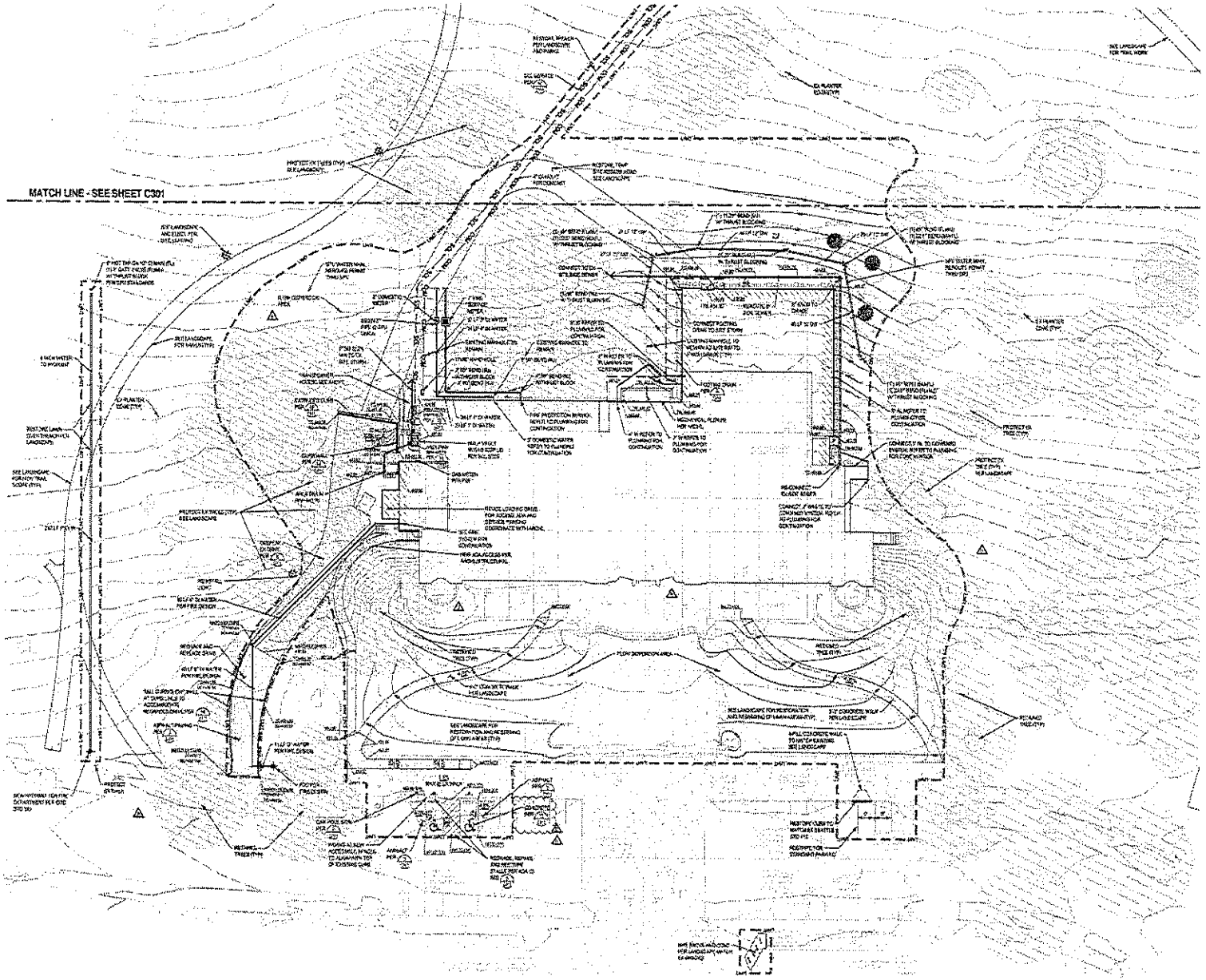
Asian Art Museum Expansion & Renovation

Construction Documents

T.E.S.C. Details

C210



Call before you Dig 8-1-1

SCALE 1"=20'

Legend

Water Service Notes

General Notes on Plans for 4" Through 12" Water Mains

SEE LANDSCAPE FOR DETAILED TREE AND SHRUB PROTECTION INFORMATION

SEE LANDSCAPE FOR DETAILED GRADING. VERIFY ALL FINISH GRADE WITH CURRENT LANDSCAPE GRADING DESIGN

ALL SIDE SEWER CONNECTIONS PER SDCI DIRECTORS RULE 4-2011 "REQUIREMENTS FOR DESIGN AND CONSTRUCTION OF SIDE SEWERS"

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COUGHLIN PORTER LUNDEEN

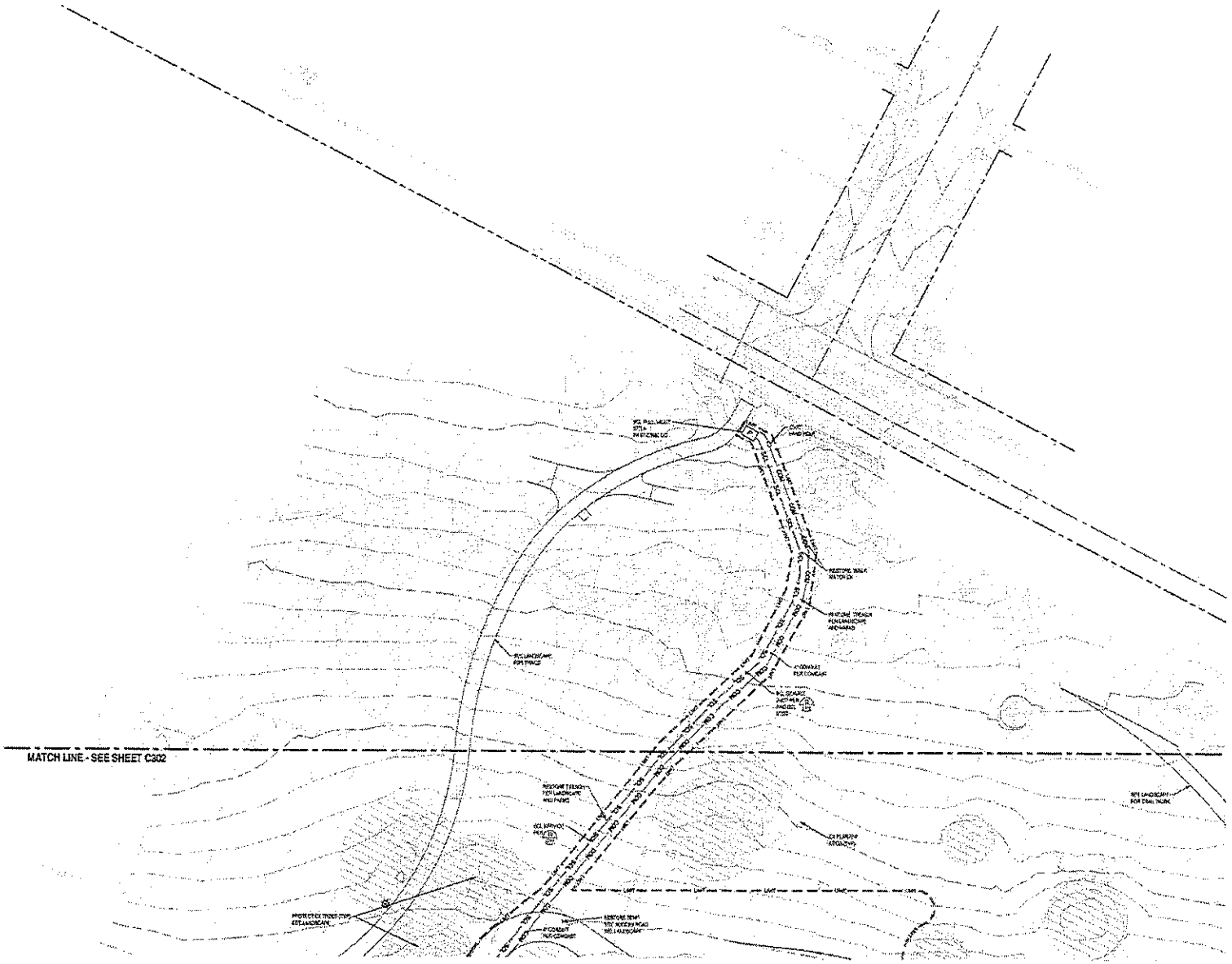
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Site Plan

C300



Call before you Dig 8-1-1

SCALE 1"=20'

Legend

Water Service Notes

General Notes on Plans for 4" Through 12" Water Mains

SEE LANDSCAPE FOR DETAILED TREE AND SHRUB PROTECTION INFORMATION

SEE LANDSCAPE FOR DETAILED GRADING. VERIFY ALL FINISH GRADE WITH CURRENT LANDSCAPE GRADING DESIGN.

ALL SIDE SEWER CONNECTIONS PER SDCI DIRECTOR'S RULE 4-2011 "REQUIREMENTS FOR DESIGN AND CONSTRUCTION OF SIDE SEWERS"

LMN Architecture Urban Design Interiors

COUGHLIN PORTER LUNDEEN

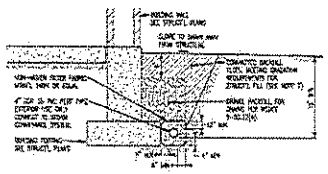
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

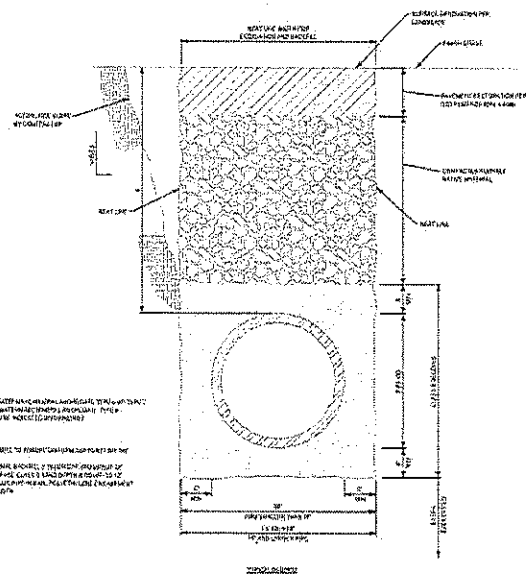
Construction Documents

Site Plan

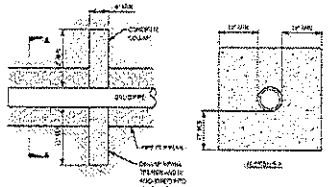
C301



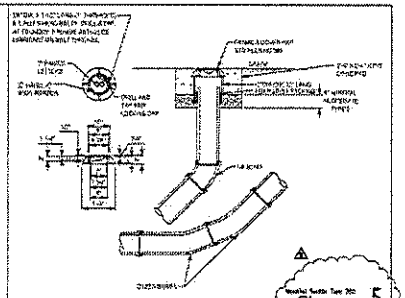
Exterior Footing Drain w/ Filter Fabric Wrap 6



Watermain Trench and Bedding 8

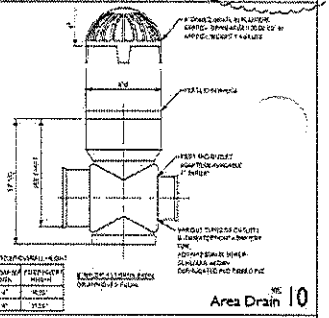


Pipe Trench Dam 4

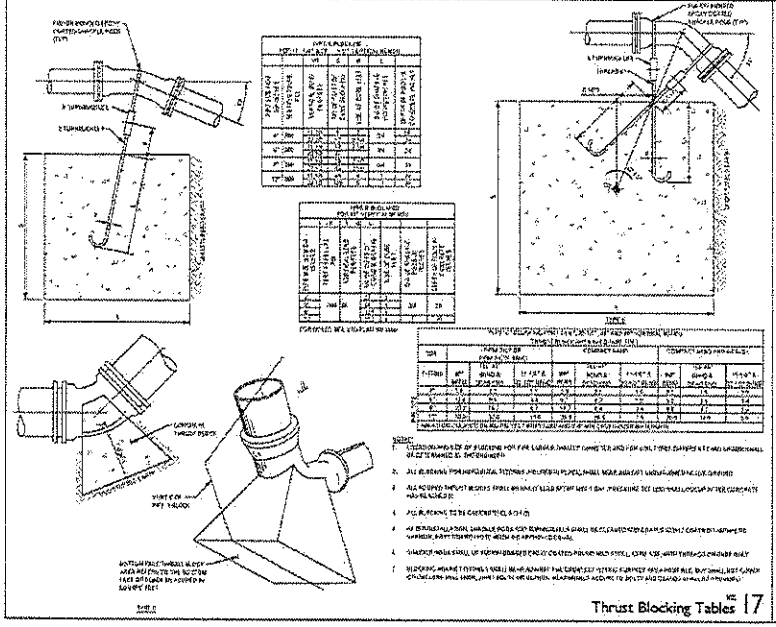


Cleanout 5

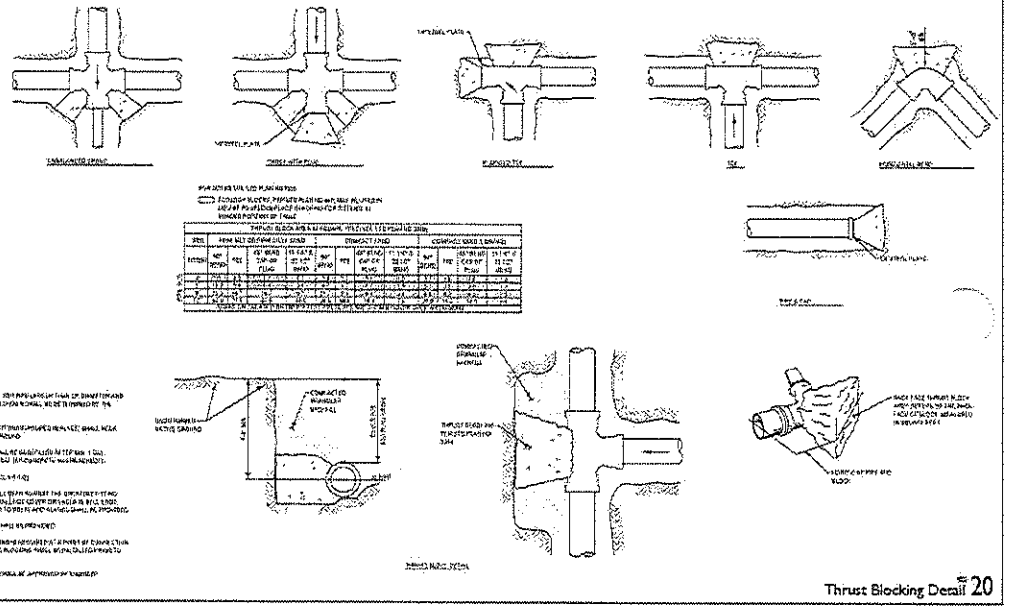
Not Used 9



Area Drain 10



Thrust Blocking Tables 17



Thrust Blocking Detail 20

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COUGHLIN PORTER LUNDEEN

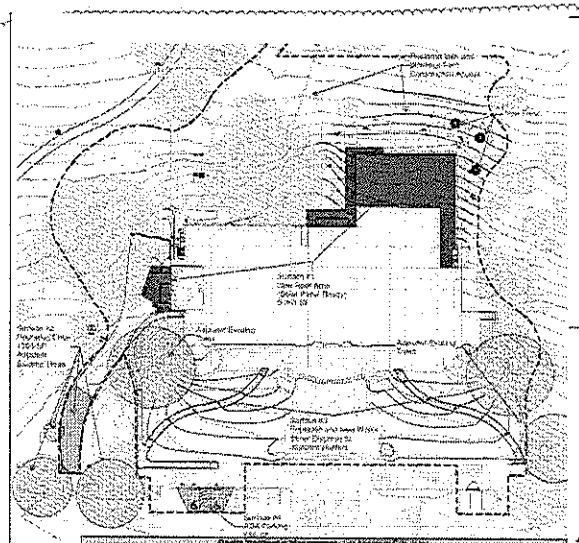
ASIAN ART MUSEUM

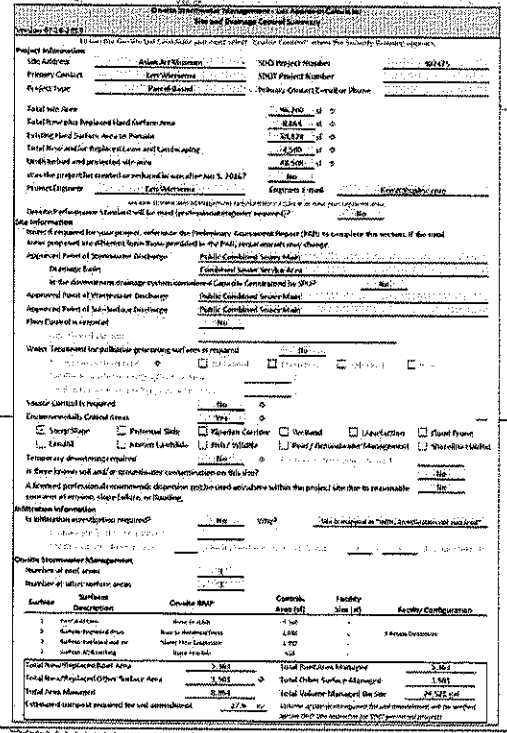
Asian Art Museum Expansion & Renovation

Construction Documents

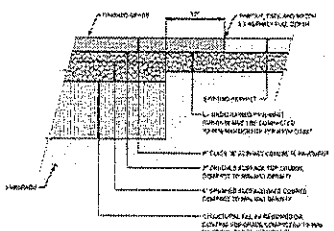
Site Details

C310

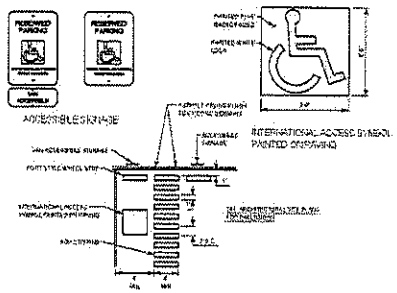




Not Used 2

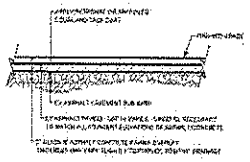


Asphalt Paving Section 3

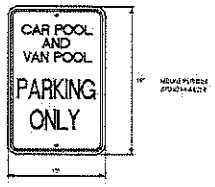


Accessible Parking Stall 5

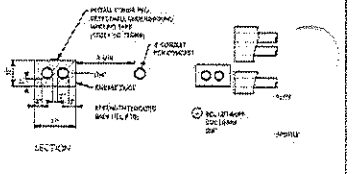
Not Used 7



Asphalt Overlay Paving Section 8

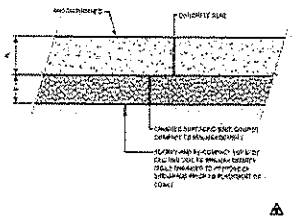


Car Pool Sign Detail 9

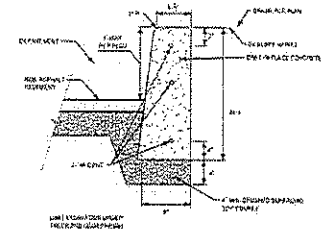


SCL and Comm Duct Bank Detail 10

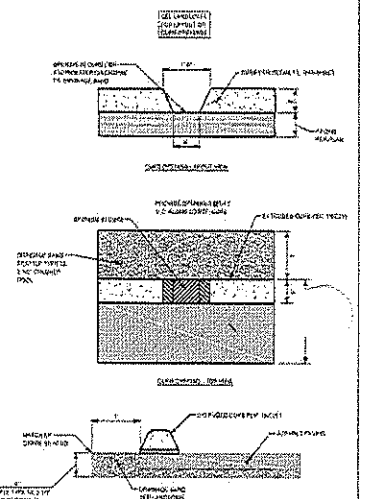
Not Used 12



Unreinforced Concrete Slab-on-grade 13



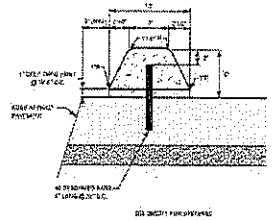
Concrete Vertical Curb 14



Curb Opening Detail 20

Not Used 17

Not Used 18



Concrete Extruded Curb 19

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SAM ASAN ART MUSEUM

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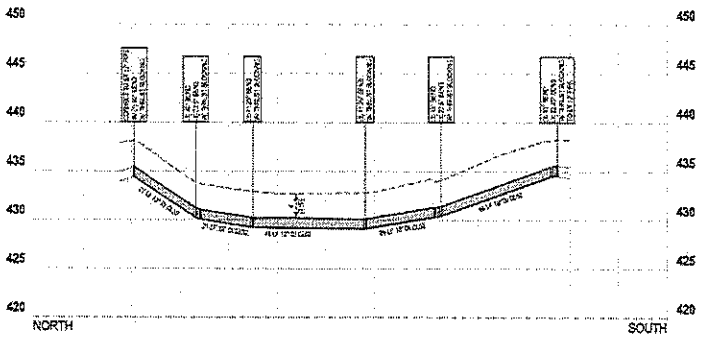
Construction Documents

Site Details

C311



Utility Profile

Scale: 1" = 5' Vertical, 1" = 20' Horizontal

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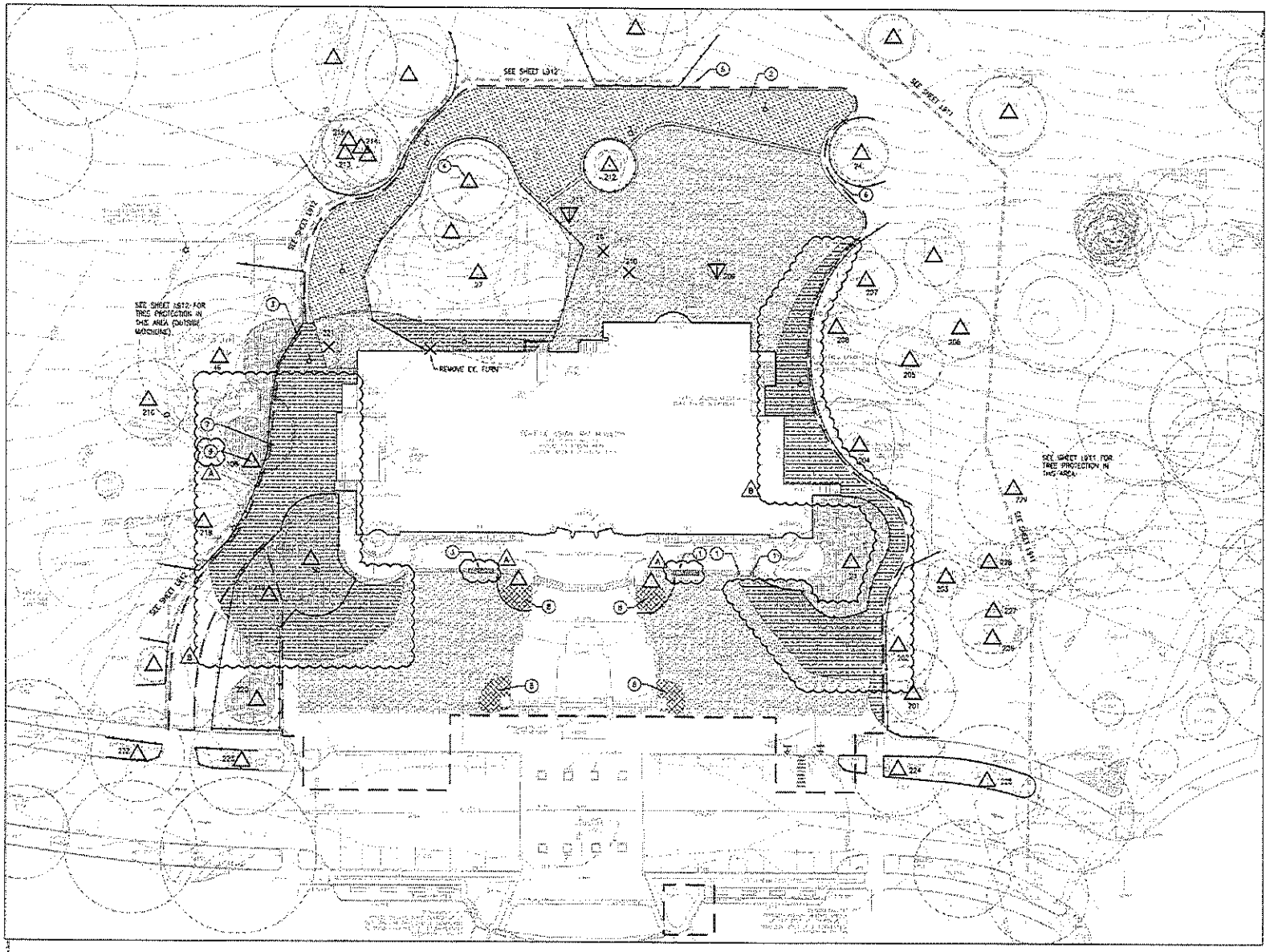
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Utility Profile

C320



LEGEND

- STRIP LAWN
- PROTECT EXISTING PLANTING
- REMOVE EXISTING PLANTING
- REMOVE AND TRANSPLANT SHRUBS, SEE KEY NOTE 1
- ALL WORK WITHIN THIS AREA SHALL BE DONE UNDER DIRECT SUPERVISION OF SAM URBAN FORESTER PRESENT
- APPROXIMATE CONTRACTOR LAYDOWN AND STAGING AREA, SEE KEY NOTE 2 AND 5
- TREE PROTECTION FENCE
- PROTECT EXISTING TREE
- RELOCATE EXISTING TREE TO LOCATION OUTSIDE PROTECT AREA, SEE SPECS
- REMOVE EXISTING TREE / SHRUB / FURN
- (TREE DRIPLINE)
- EXISTING TREE
- SOIL TEST LOCATION, SEE SPECS
- APPROXIMATE LIMIT OF CONSTRUCTION
- 222 TREE ID, PER "TABLE OF TREES", AVAILABLE UPON REQUEST.

GENERAL NOTES

1. CONTRACTOR TO NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES BETWEEN THE PLANS AND THE EXISTING CONDITIONS BEFORE STARTING WORK.
2. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE TEMPORARY TREE AND PLANT PROTECTION SPECIFICATIONS FOR THE PROJECT.
3. SEE CIVIL DRAWINGS FOR SITE DEMOLITION.
4. PROTECT ALL EXISTING PLANTING AREAS UNLESS NOTED OTHERWISE.
5. CONTRACTOR SHALL LOCATE AND TEST ALL EXISTING IRRIGATION HEADS, VALVES, AND ASSOCIATED APPURTENCES WITH SPR PLUMBER PRIOR TO CONSTRUCTION.
6. IRRIGATION IN THE PARK SHALL NOT BE INTERRUPTED DURING CONSTRUCTION. PROVIDE TEMPORARY IRRIGATION OR HAND WATERING AS REQUIRED.
7. COORDINATE SHUTOFF OF IRRIGATION WITH SEATTLE DEPARTMENT OF PARKS AND RECREATION.
8. CONSULT THE PROJECT ARBORIST AND SPR URBAN FORESTER FOR APPROVAL PRIOR TO DOING ANY WORK WITHIN DESIGNATED TREE PROTECTION AREAS.
9. SEE SHEETS L011 AND L012 FOR ADDITIONAL TREE PROTECTION.

KEY NOTES

1. REMOVE SHRUBS ONLY AS NECESSARY FOR REMOVAL OF EXISTING PATH OR CONSTRUCTION OF NEW PATH. VERIFY IN FIELD. LANDSCAPE ARCHITECT TO SELECT (20) FOR TRANSPLANTING.
2. STRIP LAWN IN LAYDOWN AND STAGING AREA
3. PRUNE RHODODENDRON TO ALLOW FOR CONSTRUCTION ACCESS ROAD, PER DIRECTION OF LANDSCAPE ARCHITECT.
4. PRUNE YEW TO ALLOW 12' TO 15' WIDE CLEARANCE FOR CONSTRUCTION ACCESS.
5. CONTRACTOR SHALL MAINTAIN TREE PROTECTION FENCING WITHIN STAGING AREA AND SHALL REPLACE AND MAINTAIN TREE PROTECTION MEASURES AS RECOMMENDED BY ARBORIST AND SPR URBAN FORESTER.
6. EXISTING CONCRETE PEDESTAL TO REMAIN.
7. MARKER POLE/BARRIER BOLTED TO ASPHALT TO KEEP TALLER VEHICLES FROM TREE BRANCH. CONTRACTOR TO PROVIDE SKETCH OF POLE TO LANDSCAPE ARCHITECT.
8. REMOVE ANIMAL PLANTS ONLY.
9. TREE #706 HAS EXPERIENCED MULTIPLE IMPACTS TO ITS LARGE SCAFFOLD BRANCH EXTENDING SOUTH TOWARD THE MUSEUM. CONTRACTOR SHALL PRUNE THE SOUTHERLY LIMB ONLY PER THE DIRECTION OF TREE SOLUTIONS INC. CONTACT HOLLY LOSSO (206-528-4470) TO COORDINATE PRUNING ONE WEEK PRIOR TO COMMENCEMENT OF WORK.

SCALE: 1" = 20'-0"

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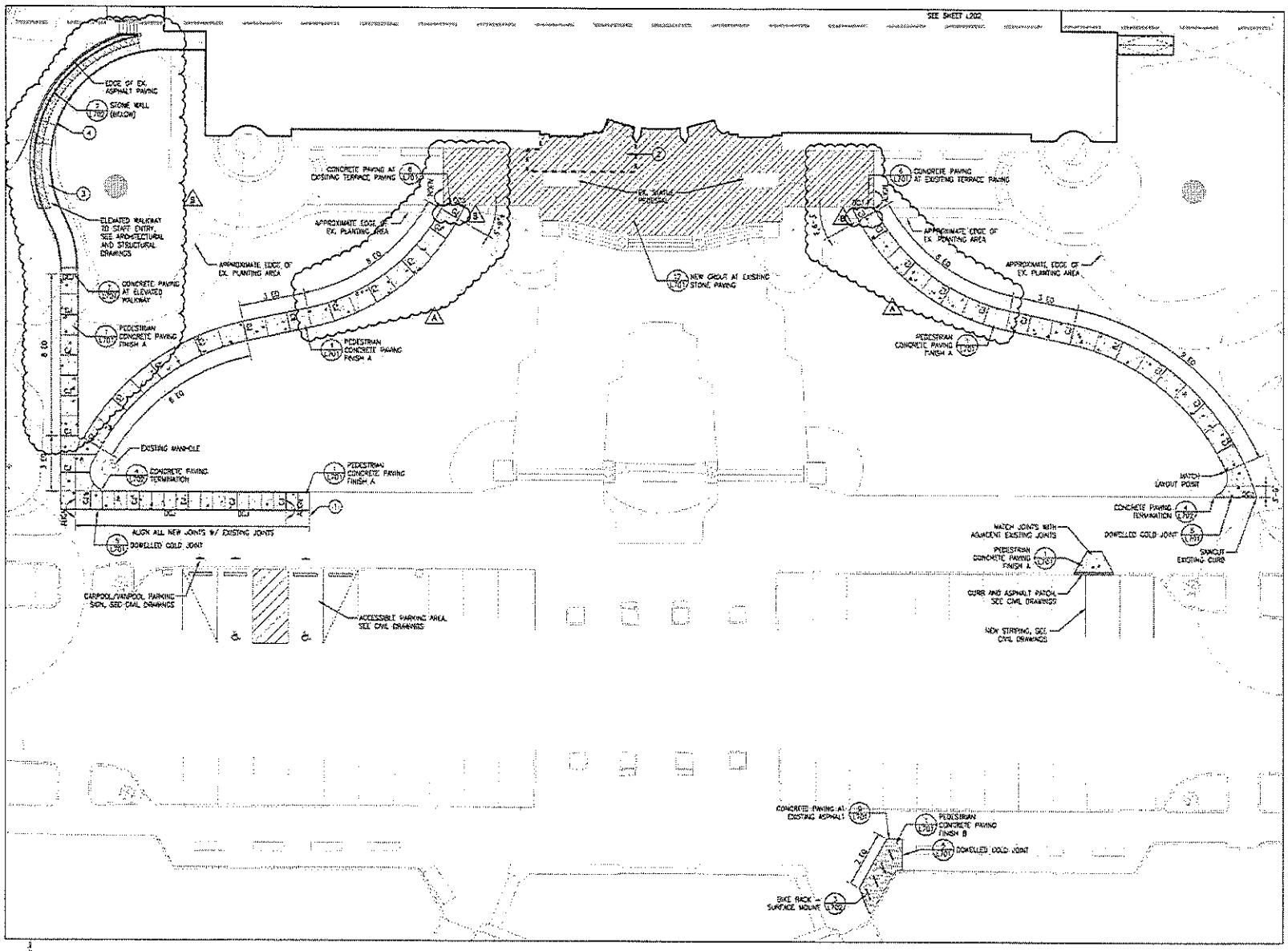
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Tree and Plant Protection Plan

L101



LEGEND

- PEDESTRIAN CONCRETE PAVING: FINISH A
- PEDESTRIAN CONCRETE PAVING: FINISH B
- KEYJOINT PAVING JOINTS IN THIS AREA, SEE DETAIL 12/L701
- STONE WALL
- (DRIP LINE)
- EXISTING TREE
- EJ — EXPANSION JOINT, SEE DETAIL 4/L701. PROVIDE WHERE PAVING MEETS VERTICAL ELEMENT
- DCJ — DOWELLED COLD JOINT, SEE DETAIL 5/L701
- CJ — CONTRACTION JOINT, SEE DETAIL 2/L701
- SCORE JOINT, SEE DETAIL 3/L701
- EQ — EQUAL

GENERAL NOTES

1. CONTRACTOR TO NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES BETWEEN THE PLANS AND THE EXISTING CONDITIONS BEFORE STARTING WORK.
2. EXISTING TRASH RECEPTACLES AT NEW BIKE RACK AREA TO BE RELOCATED BY SEATTLE PARKS AND RECREATION. CONTACT SPR PROJECT MANAGER TO COORDINATE (206-684-0226).

KEY NOTES

1. JOINT LOCATIONS IN EXISTING PAVING ARE APPROXIMATE AND FOR REFERENCE ONLY. VERIFY IN FIELD. NOTIFY LANDSCAPE ARCHITECT IF EXISTING CONDITIONS DON'T REFLECT DESIGN INTENT.
2. CONTRACTOR TO REMOVE, REINSTALL OR REPLACE (ONLY IF REMOVAL IS NOT POSSIBLE) STONE PAVING TO PROVIDE ADA ACCESSIBILITY (2% MAX. SLOPE) AND / OR DRAIN AS NECESSARY TO ACHIEVE ADA ACCESSIBILITY. CONTRACTOR TO SUBMIT PLAN FOR LANDSCAPE ARCHITECTS APPROVAL PRIOR TO CONSTRUCTION.
   - CONTRACTOR PERFORMING THIS WORK SHALL CONDUCT A PRE-CONSTRUCTION CONFERENCE PRIOR TO SURVEYING AND DISMANTLING EXISTING PAVERS.
   - CONTRACTOR SHALL PERFORM A SURVEY OF THE AREA DASHED ON THE PLAN, NOTING SPOT ELEVATION ON A 2' GRID.
   - CAREFULLY HANDLE, CATALOG AND PACKAGE ALL SALVAGED FEATURES IN AN APPROVED MANNER AND AS DEEMED APPROPRIATE TO PREVENT DAMAGE, DETERIORATION, LOSS OR OTHER ADVERSE EFFECTS.
   - CONTRACTOR TO IDENTIFY PAVERS THAT REQUIRE RESETTING TO MAKE AN ACCESSIBLE ROUTE TO THE FRONT DOOR OF THE MUSEUM (IE IMPACTED AREA).
   - CONTRACTOR SHALL SUBMIT A PAVING PLAN OF THE IMPACTED AREA, TO SCALE. THE PAVING PLAN SHALL ASSOCIATE A NUMBER WITH EACH PAVER, IT'S ORIENTATION TO NORTH, AND ADJACENCY TO PAVERS AND/OR PLANTING AREAS. EACH PAVER SHALL BE NOTED ON THE UNDERSIDE, WITH CHALK, OF ITS CORRESPONDING PLAN # AND ORIENTATION TO NORTH.
   - CONTRACTOR SHALL DISMANTLE EACH PAVER, WITHIN IMPACTED AREA AS AGREED UPON BY LANDSCAPE ARCHITECT, BEGINNING FROM THE EASTERN EDGE OF THE PAVING PATCH ABUTS THE PLANTING AREA AND WHERE THE MORTAR SETTING BED IS ACCESSIBLE. CONTRACTOR SHALL EMPLOY USED OF A TENSION GAUGE IN ORDER TO REMOVE PAVERS WITHOUT UNDERMINE CRACKING. IF REMOVAL WITHOUT CRACKING IS UNAVOIDABLE NOTIFY LANDSCAPE ARCHITECT BEFORE PROCEEDING. SELECT REMOVAL OF THESE PAVERS SHALL BE COMPLETED IN A MANNER THAT MAINTAINS THE EXISTING PAVERS IN THEIR CURRENT CONFIGURATION WITH THE SAME JOINTING PATTERN. DISMANTLE DEFINITION: TO DISASSEMBLE AND DETACH ITEMS FROM EXISTING CONSTRUCTION USING APPROVED TOOLS AND EQUIPMENT SO AS TO PROTECT HISTORIC FABRIC AND FINISHES' CONDITION TO BE REINSTALLED AND REFINISHED.
   - CONTRACTOR SHALL TRANSPORT SALVAGED FEATURES WITH CI STORE IN A PROTECTED AREA UNTIL SUCH FEATURES ARE RE-RETURN TO THE SITE FOR INSTALLATION.
   - CONTRACTOR SHALL DOCUMENT THE IMPACTED AREA AND EACH JOINT AND PAVER BY PHOTOGRAPHS PRIOR TO DISMANTLING. PHOTOS SHALL CORRESPOND WITH PAVER PLAN.
   - CONTRACTOR SHALL PROTECT ALL FINISHES FROM DAMAGE.
   - USE ONLY HAND-HELD TOOLS UNLESS OTHERWISE APPROVED BY OWNER'S REPRESENTATIVE.
   - TENSION GAUGE SHALL BE USED IN ALL INSTANCES TO REMOVE PAVERS WITHOUT CRACKING.
   - PRY BARS WIDE THAN 18 INCHES LONG AND HAMMERS WEIGHING MORE THAN 2LB ARE NOT PERMITTED FOR DISMANTLING WORK. DO NOT USE PRY BARS WITHIN 6 INCHES OF A HISTORIC BUILDING, STATUARY, OR ARTWORK.
   - DO NOT USE PNEUMATIC, PISTO HAMMER OR PERCUSSION TOOLS WITHOUT THE PERMISSION OF THE OWNER'S REPRESENTATIVE.
3. FINISH OF OVERHEAD WALK TO MATCH PEDESTRIAN CONCRETE PAVING FINISH A
4. CONTRACTOR TO PHONE THEIR AS NECESSARY FOR HEAD CLEARANCE. COORDINATE WITH LANDSCAPE ARCHITECT PRIOR TO COMMENCEMENT OF WORK.

SCALE: 1"=10'-0"

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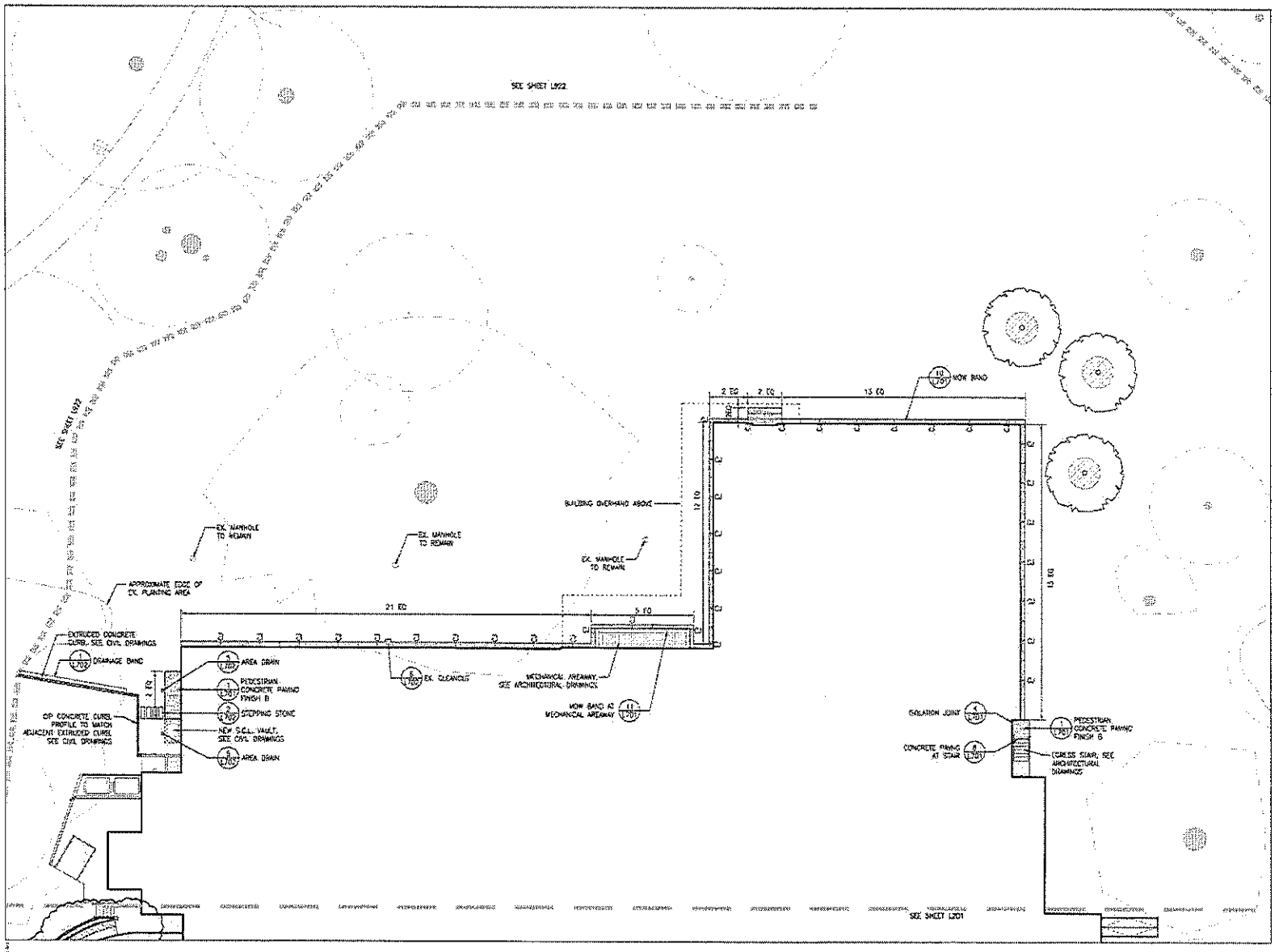
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Materials Plan West

L201



LEGEND

- PEDESTRIAN CONCRETE PAVING FINISH B
- (DRIP LINE) EXISTING TREE
- (MULCH RING) NEW TREE
- IJ — ISOLATION JOINT, SEE DETAIL 4/L701, PROVIDE WHERE PAVING MEETS VERTICAL ELEMENT.
- DCJ — DOWELLED COLD JOINT, SEE DETAIL 5/L701
- CJ — CONTRACTION JOINT; SEE DETAIL 2/L701
- SJ — SLOPE JOINT, SEE DETAIL 3/L701
- EQ — EQUAL

GENERAL NOTES

1. CONTRACTOR TO NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPENCIES BETWEEN THE PLANS AND THE EXISTING CONDITIONS BEFORE STARTING WORK.
2. EXISTING TRASH RECEPTACLES AT NEW BIKE RACK AREA TO BE RELOCATED BY SEATTLE PARKS AND RECREATION. CONTACT SAM PROJECT MANAGER TO COORDINATE (206-684-5286).

KEY NOTES

SCALE: 1"=10'-0"

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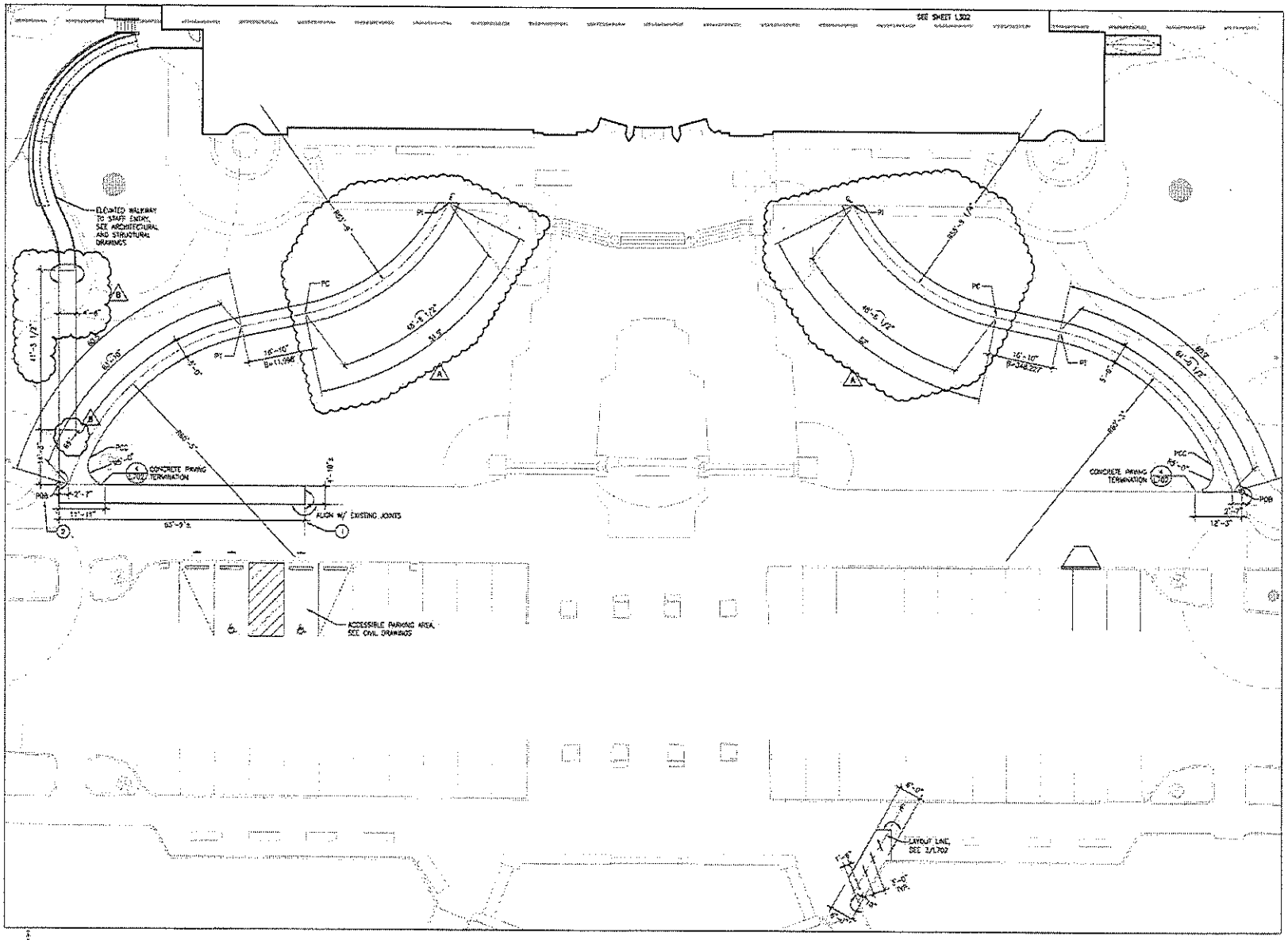
Asian Art Museum Expansion & Renovation

Construction Documents

Materials Plan East

L202



LEGEND

	BASELINE
	CENTERLINE
	EXTENSION OF BUILDING FACE
B	BEARING
C	CHORD LENGTH
EQ	EQUAL
L	LENGTH OF CURVE
OC	ON CENTER
POB	POINT OF BEGINNING
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PI	POINT OF INTERSECTION
PT	POINT OF TANGENCY
R	RADIUS
RP	RADIUS CENTER POINT
SP	SPACES
VIF	VERIFY IN FIELD
	ALIGN

LAYOUT NOTES

1. SITE SURVEY WAS PREPARED BY NASH, ROED & HOLTHUIS, INC. ON 2/13/2017. ALL COORDINATES SHOWN ON THE DRAWINGS ARE BASED UPON THE COORDINATE SYSTEM ESTABLISHED BY THE SURVEYOR. WALKER MACY ASSUMES NO RESPONSIBILITY FOR ACCURACY OF SURVEYED CONDITIONS AS SHOWN. SURVEY INFORMATION IS PROVIDED FOR REFERENCE ONLY.
2. DO NOT SCALE FROM THE DRAWINGS. THE LOCATION OF FEATURES NOT SPECIFICALLY DIMENSIONED MAY NOT BE DETERMINED BY SCALE. IF CONFLICTS ARISE IN THE FIELD, CONTACT OWNER'S REPRESENTATIVE FOR RESOLUTION.
3. ALL DIMENSIONS ARE TO THE OUTSIDE FACE OF BUILDINGS AND WALLS OR BACK OF CURBS, UNLESS OTHERWISE NOTED.
4. ALL CURVED OBJECTS SHALL HAVE SMOOTH, CONTINUOUS CURVES WITH CONSISTENT RADII AS INDICATED. EACH CURVE SHALL MEET ADJACENT CURVES OR LINEAR SECTIONS ON THE TANGENT, UNLESS NOTED OTHERWISE.
5. MOW BAND TO BE PARALLEL TO BUILDING WALL.

KEY NOTES

1. JOINT LOCATIONS IN EXISTING PAVING ARE APPROXIMATE AND FOR REFERENCE ONLY. VERIFY IN FIELD.
2. MATCH END POINT OF EXISTING JOINT LINE.

SCALE: 1"=10'-0"

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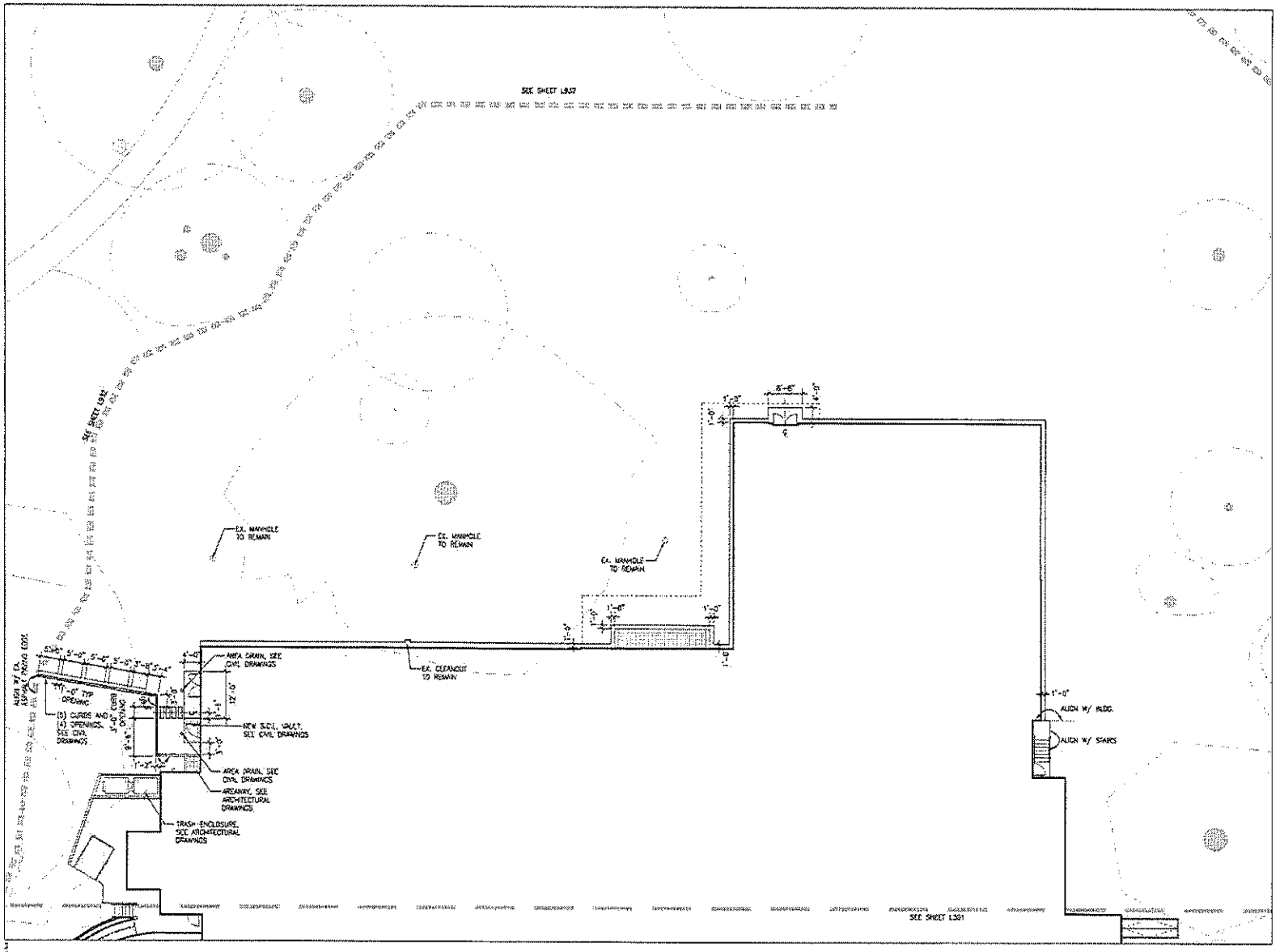
S&M ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Layout Plan West

L301



LEGEND

	BASELINE
	CENTERLINE
	EXTENSION OF BUILDING FACE
B	BEARING
C	CHORD LENGTH
EQ	EQUAL
L	LENGTH OF CURVE
OC	ON CENTER
POB	POINT OF BEGINNING
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PI	POINT OF INTERSECTION
PT	POINT OF TANGENCY
R	RADIUS
RP	RADIUS CENTER POINT
SP	SPACES
VF	VERIFY IN FIELD
	ALIGN

LAYOUT NOTES

1. SITE SURVEY WAS PREPARED BY BUSH, ROED & HITCHINGS, INC. ON 2/13/2017. ALL COORDINATES SHOWN ON THE DRAWINGS ARE BASED UPON THE COORDINATE SYSTEM ESTABLISHED BY THE SURVEYOR. WALKER MACY ASSUMES NO RESPONSIBILITY FOR ACCURACY OF SURVEYED CONDITIONS AS SHOWN. SURVEY INFORMATION IS PROVIDED FOR REFERENCE ONLY.
2. DO NOT SCALE FROM THE DRAWINGS. THE LOCATION OF FEATURES NOT SPECIFICALLY DIMENSIONED MAY NOT BE DETERMINED BY SCALE. IF CONFLICTS ARISE IN THE FIELD, CONTACT OWNER'S REPRESENTATIVE FOR RESOLUTION.
3. ALL DIMENSIONS ARE TO THE OUTSIDE FACE OF BUILDINGS AND WALLS OR BACK OF CURBS, UNLESS OTHERWISE NOTED.
4. ALL CURVED OBJECTS SHALL HAVE SMOOTH, CONTINUOUS CURVES WITH CONSISTENT RADII AS INDICATED. EACH CURVE SHALL MEET ADJACENT CURVES OR LINEAR SECTIONS ON THE TANGENT, UNLESS NOTED OTHERWISE.
5. WOW BAND TO BE PARALLEL TO BUILDING WALL.

KEY NOTES

1. JOINT LOCATIONS IN EXISTING PAVING ARE APPROXIMATE AND FOR REFERENCE ONLY. VERIFY IN FIELD.
2. MATCH END POINT OF EXISTING JOINT LINE.

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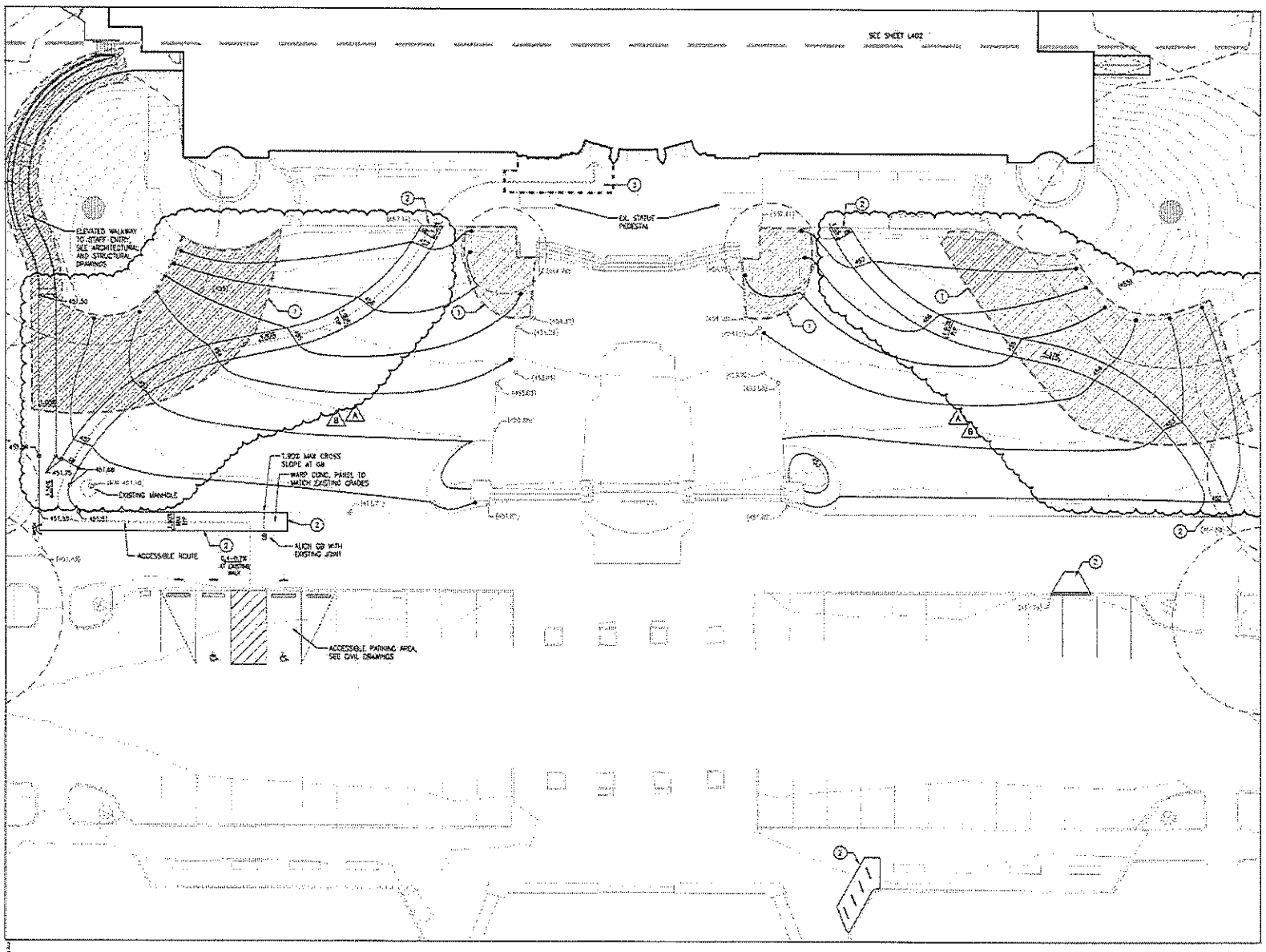
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Layout Plan East

L302



LEGEND

(DRIP LINE)
EXISTING TREE
PROPOSED CONTOUR
EXISTING CONTOUR
PROPOSED SPOT ELEVATION
EXISTING SPOT ELEVATION
MATCH EXISTING ELEVATION
DIRECTION AND PERCENTAGE OF SLOPE
GRADE BREAK
FLOWLINE

AD	AREA DRAIN
DCH	DITCH
FC	FLUSH CURB
FFE	FINISH FLOOR ELEVATION
FG	FINISH GRADE
BC	BOTTOM OF CURB
TC	TOP OF CURB
BS	BOTTOM OF STEP
TS	TOP OF STEP
BW	BOTTOM OF WALL (AT FC OF PAVING)
TW	TOP OF WALL
RIM	RIM ELEVATION
VIF	VERIFY IN FIELD

B TREE PROTECTION AREA WITHIN DRIP LINES, SEE GRADING NOTE 15.
ACCESSIBLE ROUTE SHALL BE 2% CROSS SLOPE ON FINISHED SURFACE.

GRADING NOTES

1. VERIFY ACCURACY OF EXISTING GRADES AND INTERPOLATED ELEVATIONS PRIOR TO BEGINNING WORK. NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCY PRIOR TO BEGINNING WORK.
2. PROTECT ALL TREES INDICATED TO REMAIN.
3. ALL PROPOSED GRADES ARE TO MEET AND BLEND IN WITH EXISTING GRADING AT PROJECT LIMIT, PROPERTY LINES, BUILDING LINES AND EXISTING CURBS.
4. "ROUND OFF" ALL SHARP KNOCKS EXISTING ON SITE WHETHER OR NOT SUCH CONDITIONS ARE INDICATED ON PLANS.
5. NOTIFY THE OWNER'S REPRESENTATIVE TO REVIEW ROUGH GRADES PRIOR TO PLACEMENT OF TOPSOIL AND FINE GRADING PRIOR TO PLANTING.
6. ALL AREAS SHALL HAVE POSITIVE DRAINAGE TO APPROVED DRAINAGE STRUCTURES OR CONVEYANCES.
7. PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS AT 0.5% SLOPE MINIMUM.
8. ALL WALKWAYS AND PAVED AREAS SHALL HAVE SMOOTH AND CONTINUOUS ELEVATION CHANGES.
9. SET STRAIGHT GRADES BETWEEN GIVEN ELEVATIONS, UNLESS OTHERWISE INDICATED.
10. PROVIDE 2% MAX. SLOPE, PERPENDICULAR TO DIRECTION OF TRAVEL, ON ALL PAVED PEDESTRIAN SURFACES, UNLESS NOTED OTHERWISE.
11. ALL PAVING SHALL MEET LOCAL AND FEDERAL ADA CODES.
12. GRADE BREAK LINES ARE SHOWN GRAPHICALLY TO ILLUSTRATE DRAINAGE PATTERNS AND ARE NOT TO BE INSTALLED AS ACTUAL JOINT LINES, EXCEPT WHERE THEY COINCIDE WITH PAVING JOINTS.
13. VERIFY IN FIELD THAT AS-BUILT CONDITIONS MATCH PRECISE ELEVATIONS INDICATED ON PLANS.
14. SITE SURVEY WAS PREPARED BY BUSH, ROED & HITCHINGS, INC. ON 7/13/2017. ALL GRADES SHOWN ON THE DRAWINGS ARE BASED UPON THE DATUM ESTABLISHED BY THE SURVEYOR. WALKER MAC ASSUMES NO RESPONSIBILITY FOR ACCURACY OF SURVEYED CONDITIONS AS SHOWN. SURVEY INFORMATION IS PROVIDED FOR REFERENCE ONLY. NOT ALL SURVEYED SPOT ELEVATIONS ARE SHOWN.
15. ALL GRADING WITHIN TREE PROTECTION AREAS SHALL BE BY HAND METHODS ONLY.
16. WHERE EXISTING PATHS ARE BEING REMOVED AND REGRADED WITH LAWN OR PLANTING, RESTORE GRADE TO MATCH ORIGINAL AND ADJACENT FINISH GRADES. A

KEY NOTE

1. CONTRACTOR TO GRADE USING HAND METHODS ONLY WITHIN TREE PROTECTION AREAS.
2. MATCH GRADES OF ADJACENT PAVING.
3. SEE SHEET L201 KEY NOTE 2 FOR STONE PAVING. B

SCALE: 1"=10'-0"

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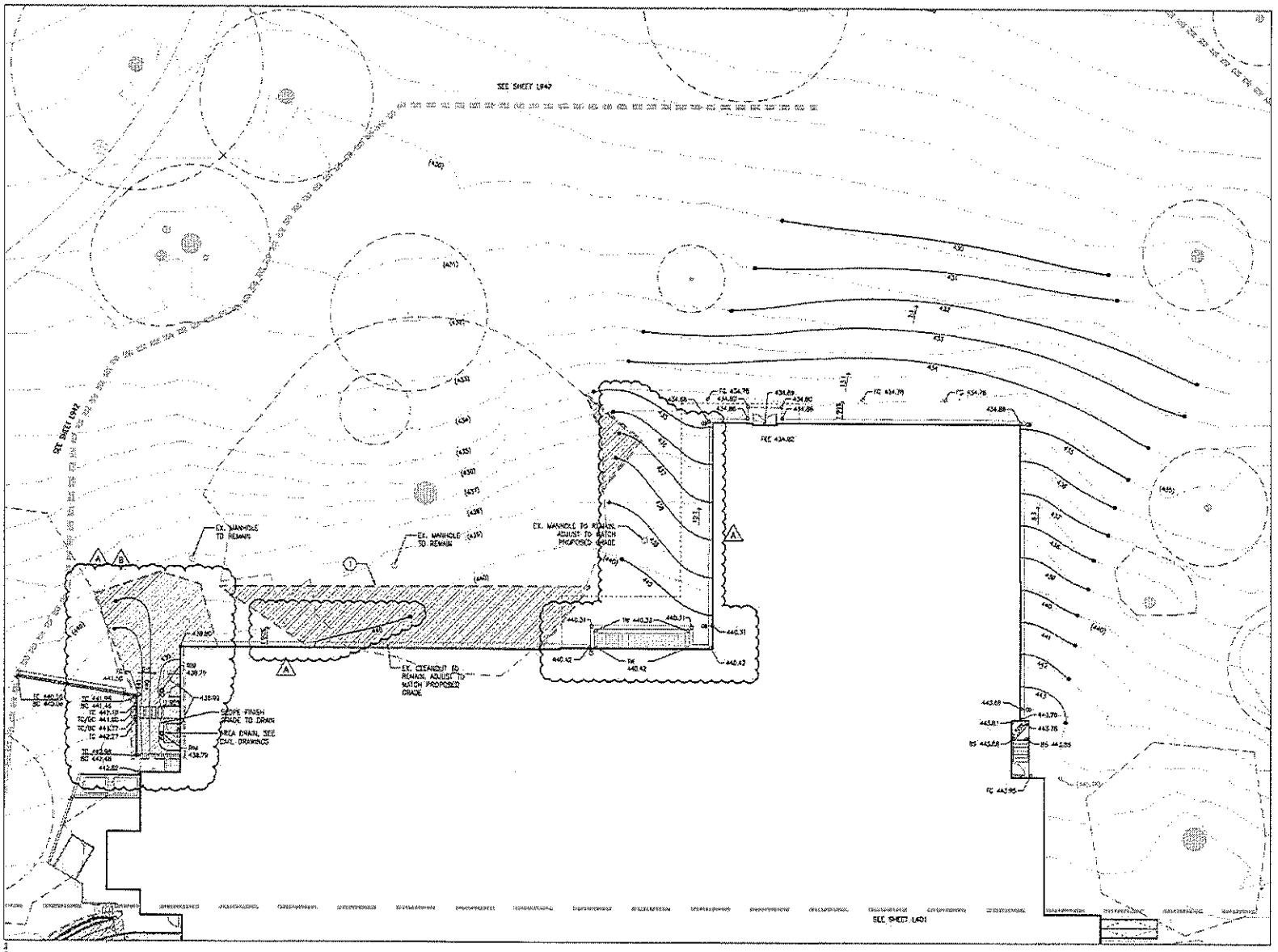
Construction Documents

Grading Plan West

L401



LEGEND

(DRIP LINE)	EXISTING TREE
434	PROPOSED CONTOUR
(434)	EXISTING CONTOUR
434.86	PROPOSED SPOT ELEVATION
(434.86)	EXISTING SPOT ELEVATION
WATCH	WATCH EXISTING ELEVATION
4.50%	DIRECTION AND PERCENTAGE OF SLOPE
GB	GRADE BREAK
	FLOWLINE
AD	AREA DRAIN
EA	EACH
FC	FLUSH CURB
FFE	FINISH FLOOR ELEVATION
FG	FINISH GRADE
BC	BOTTOM OF CURB
TC	TOP OF CURB
BS	BOTTOM OF STEP
TS	TOP OF STEP
BW	BOTTOM OF WALL (AT FG OF PAVING)
TW	TOP OF WALL
RW	RW ELEVATION
VF	VERIFY IN FIELD
B	TREE PROTECTION AREA WITHIN 4 LINES, SEE GRADING NOTE 15

GRADING NOTES

1. VERIFY ACCURACY OF EXISTING GRADES AND INTERPOLATED ELEVATIONS PRIOR TO BEGINNING WORK. NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCY PRIOR TO BEGINNING WORK.
2. PROTECT ALL TREES INDICATED TO REMAIN.
3. ALL PROPOSED GRADES ARE TO MEET AND BLEND IN WITH EXISTING GRADING AT PROJECT LIMIT, PROPERTY LINES, BUILDING LINES AND EXISTING CURBS.
4. "ROUND-OFF" ALL SHARP RIDGES EXISTING ON SITE WHETHER OR NOT SUCH CONDITIONS ARE INDICATED ON PLANS.
5. NOTIFY THE OWNER'S REPRESENTATIVE TO REVIEW ROUGH GRADES PRIOR TO PLACEMENT OF TOPSOIL AND FINE GRADING PRIOR TO PLANTING.
6. ALL AREAS SHALL HAVE POSITIVE DRAINAGE TO APPROVED DRAINAGE STRUCTURES OR CONVEYANCES.
7. PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS AT 0.5% SLOPE, MINIMUM.
8. ALL WALKWAYS AND PAVED AREAS SHALL HAVE SMOOTH AND CONTINUOUS ELEVATION CHANGES.
9. SET STRAIGHT GRADES BETWEEN GIVEN ELEVATIONS, UNLESS OTHERWISE INDICATED.
10. PROVIDE 2% MAX. SLOPE, PERPENDICULAR TO DIRECTION OF TRAVEL, ON ALL PAVED PEDESTRIAN SURFACES, UNLESS NOTED OTHERWISE.
11. ALL PAVING SHALL MEET LOCAL AND FEDERAL ADA CODES.
12. GRADE BREAK LINES ARE SHOWN GRAPHICALLY TO ILLUSTRATE DRAINAGE PATTERNS AND ARE NOT TO BE INSTALLED AS ACTUAL JOINT LINES, EXCEPT WHERE THEY COINCIDE WITH PAVING JOINTS.
13. VERIFY IN FIELD THAT AS-BUILT CONDITIONS MATCH PRECISE ELEVATIONS INDICATED ON PLANS.
14. SITE SURVEY WAS PREPARED BY BUSH, ROED & HITCHINGS, INC. 2/13/2017. ALL GRADES SHOWN ON THE DRAWINGS ARE BASED UPON THE DATUM ESTABLISHED BY THE SURVEYOR. WALKER & ASSUMES NO RESPONSIBILITY FOR ACCURACY OF SURVEYED CONDITIONS AS SHOWN. SURVEY INFORMATION IS PROVIDED FOR REFERENCE ONLY. NOT ALL SURVEYED SPOT ELEVATIONS ARE SHOWN.
15. ALL GRADING WITHIN TREE PROTECTION AREAS SHALL BE BY HAND METHODS ONLY.
16. WHERE EXISTING PATHS ARE BEING REMOVED AND REDUCED WITH LAWN OR PLANTING, RESTORE GRADE TO MATCH ORIGINAL AND ADJACENT FINISH GRADES.

KEY NOTE

1. CONTRACTOR TO GRADE USING HAND METHODS ONLY WITHIN TREE PROTECTION AREAS.
2. MATCH GRADES OF ADJACENT PAVING.

SCALE: 1"=10'-0"

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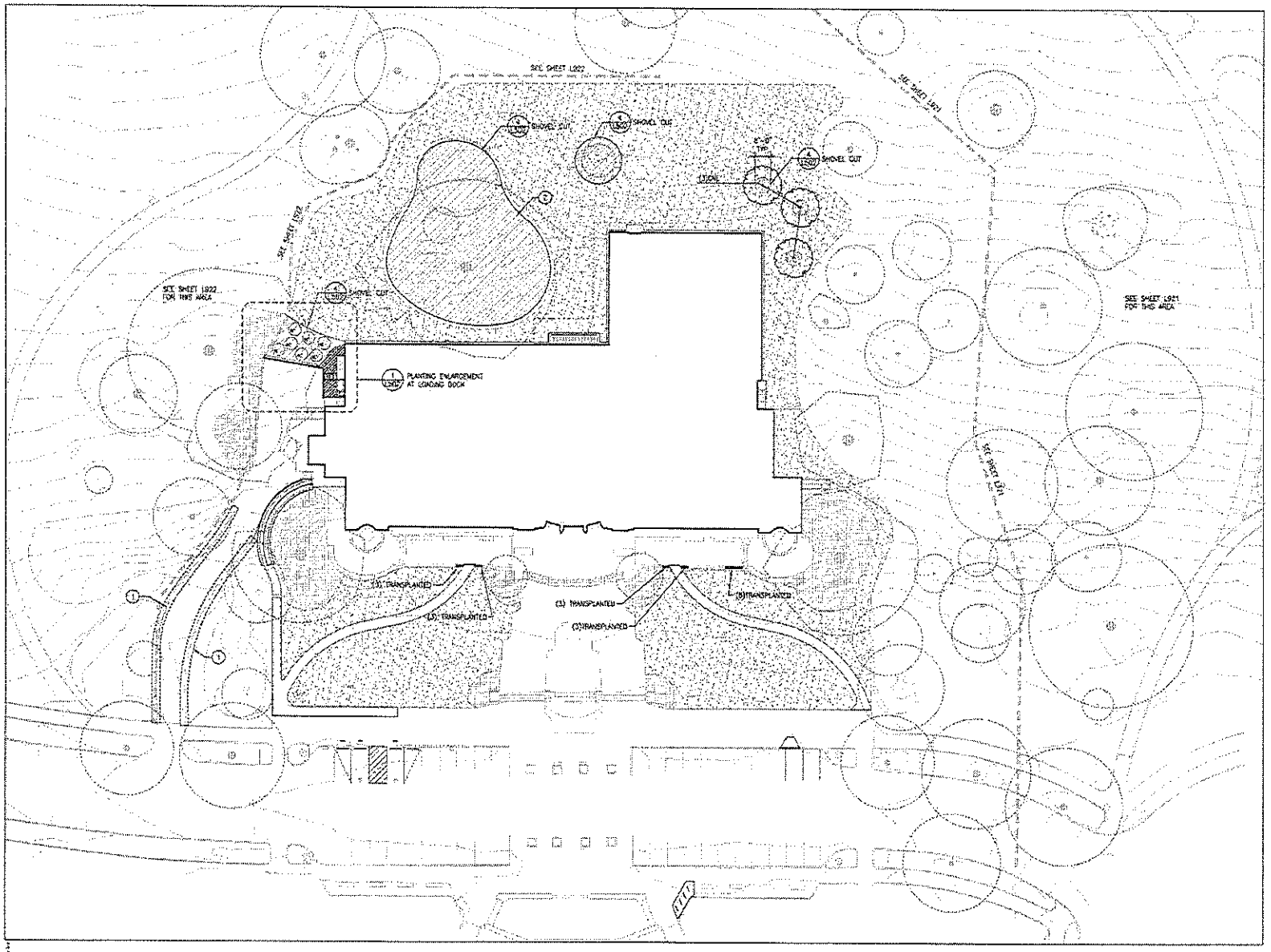
L402



LEGEND

- FINISHED LAWN
- MULCH
- EXISTING PLANTING AREA
- (DRIP LINE) EXISTING TREE
- (PROPOSED MULCH RING W/ SHOVEL CUT) PROPOSED TREE
- TRANSPLANTED BUXUS SEMPERVIRENS / BOXWOOD (A)

PLANTING NOTES

1. CONTRACTOR TO VERIFY LOCATION OF EXISTING TREES INDICATED TO REMAIN PRIOR TO SOIL PREPARATION. PROTECT ALL TREES AND SHRUBS INDICATED TO REMAIN PER SHEET L101 TREE AND PLANT PROTECT PLAN. COORDINATE WITH THE OWNER'S REPRESENTATIVE.
2. PLANTING AREAS TO BE SUFFICIENTLY CLEANED OF ALL CONSTRUCTION MATERIALS, INCLUDING IMPORTED ROCK, TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE BEFORE BEGINNING ANY LANDSCAPE WORK.
3. IDENTIFY ALL PLANTING AREAS IN FIELD WITH WHITE FIELD-MARKING CHALK OR APPROVED EQUAL. PLANTING AREAS TO BE ADJUSTED AND APPROVED BY OWNER'S REPRESENTATIVE PRIOR TO PLANT LOCATION.
4. THE OWNER'S REPRESENTATIVE WILL APPROVE INDIVIDUAL PLANT MATERIAL AND LOCATION OF PLANT MATERIAL PRIOR TO INSTALLATION. REFER TO SPECIFICATIONS FOR PROCEDURE.
5. SHRUBS AND GROUNDCOVER TO BE PLANTED A MINIMUM OF ONE HALF THEIR ON CENTER SPACING AWAY FROM PAVEMENT EDGES, UNLESS OTHERWISE NOTED.
6. PROVIDE ROOT BARRIER AROUND ALL TREES WITHIN 5' OF PAVING, CURBS, WALLS, BUILDINGS, UTILITY DUCTS AND OTHER APPURTENANCES.
7. PROVIDE JUTE NETTING ON ALL SLOPES WITH GRADIENT OF 3:1 OR GREATER AS DIRECTED IN THE FIELD BY THE OWNER'S REPRESENTATIVE. STAPLE FABRIC TO GROUND WITH METAL STAKES AT 4' O.C.
8. PRIOR TO EXECUTION OF PLANTING, THE CONTRACTOR SHALL PROVIDE TEST RESULTS INDICATING SOIL COMPACTION MEETS PRECONSTRUCTION CONDITIONS.
9. REPAIR ALL HOLES AND LANDSCAPE TO ORIGINAL CONDITION AFTER REMOVAL OF FENCING.

KEY NOTES

1. CONTRACTOR TO PHOTOGRAPH EX. CONDITIONS PRIOR TO CONSTRUCTION AND SHALL RESTORE IF DAMAGED.
2. MULCH BED TO BE LAID OUT IN FIELD UNDER SUPERVISION OF LANDSCAPE ARCHITECT.

SCALE: 1" = 20'-0"

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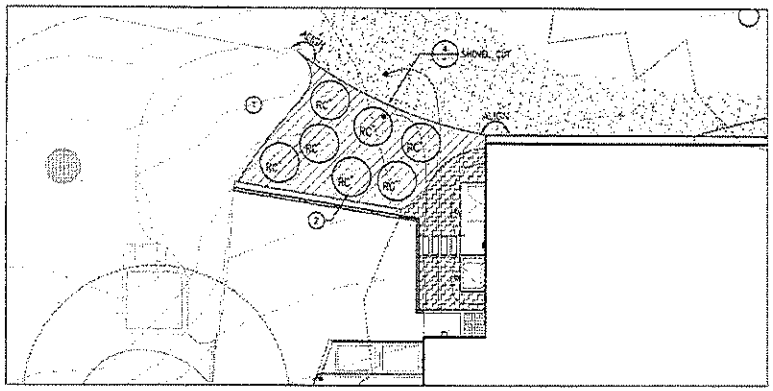
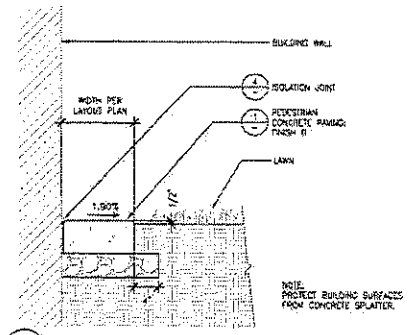
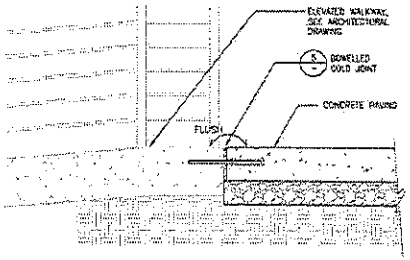
Planting Plan

L501

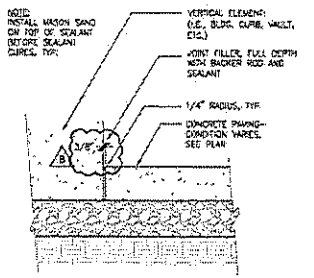

SHOVEL CUT
RC
RC
RC



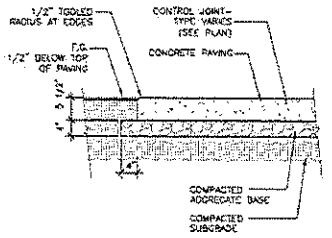
10 MOW BAND
SCALE: 1"=1'-0" SECTION



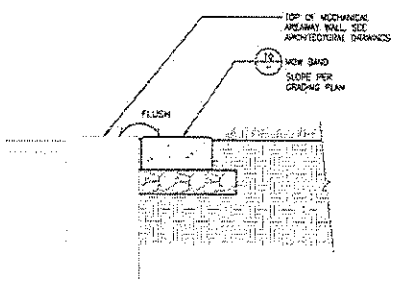
7 CONCRETE PAVING AT ELEVATED WALKWAY
SCALE: 1-1/2"=1'-0" SECTION



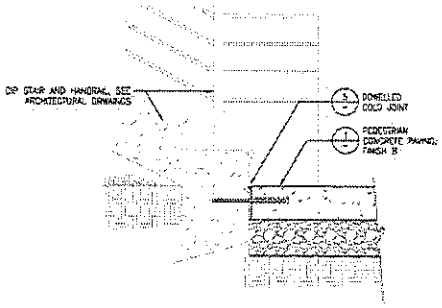
4 ISOLATION JOINT
SCALE: 1-1/2"=1'-0" SECTION



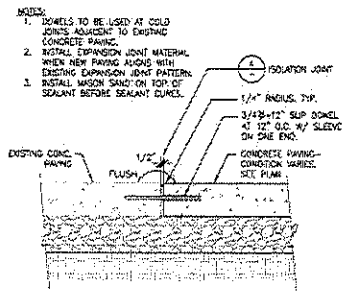
1 CONCRETE PAVING - PEDESTRIAN
SCALE: 1"=1'-0" SECTION



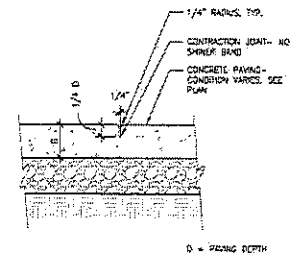
11 MOW BAND AT MECHANICAL AREAWAY
SCALE: 1"=1'-0" SECTION



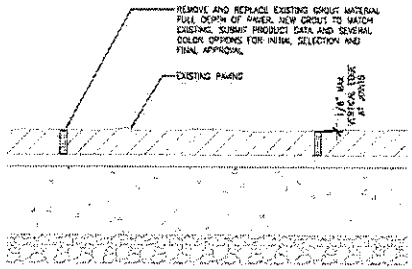
8 CONCRETE PAVING AT STAIR
SCALE: 1-1/2"=1'-0" SECTION



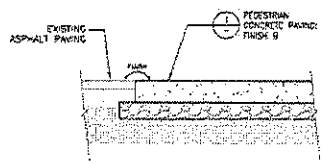
5 DOWELLED COLD JOINT
SCALE: 1-1/2"=1'-0" SECTION



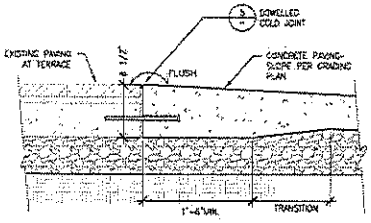
2 CONTRACTION JOINT - TOOLED
SCALE: 1-1/2"=1'-0" SECTION



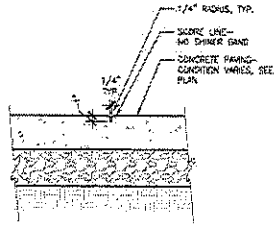
12 NEW GROUT AT EXISTING STONE PAVING
SCALE: 3"=1'-0" SECTION



9 CONCRETE PAVING AT EXISTING ASPHALT
SCALE: 1"=1'-0" SECTION



6 CONCRETE PAVING AT EXISTING TERRACE PAVING
SCALE: 1-1/2"=1'-0" SECTION



3 SCORE JOINT - TOOLED
SCALE: 1-1/2"=1'-0" SECTION

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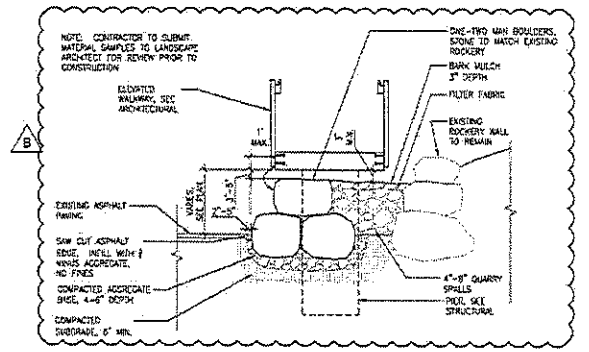
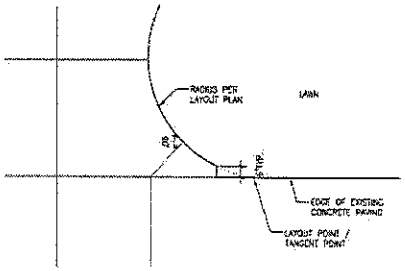
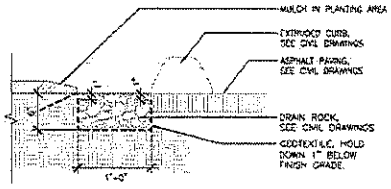


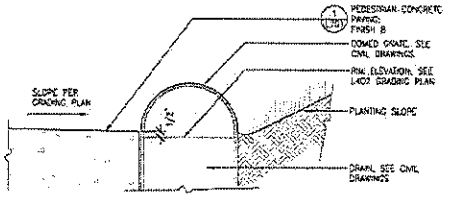
7 STONE WALL
SCALE: 1/2"=1'-0" SECTION



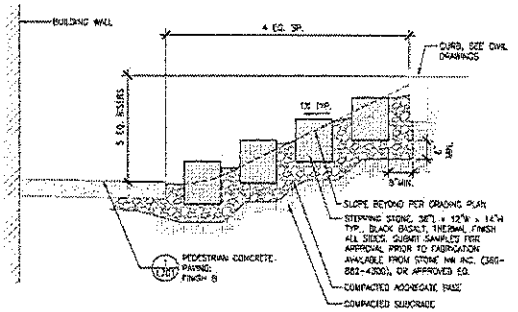
4 CONCRETE PAVING TERMINATION
SCALE: 1/2"=1'-0" PLAN



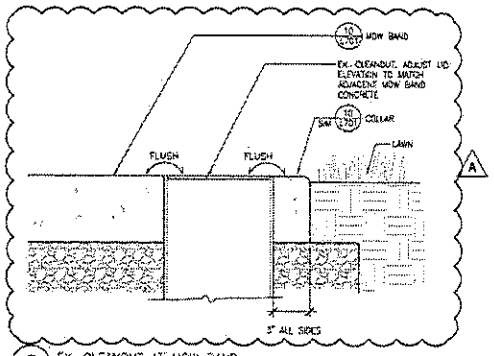
1 DRAINAGE BAND
SCALE: 1-1/2"=1'-0" SECTION



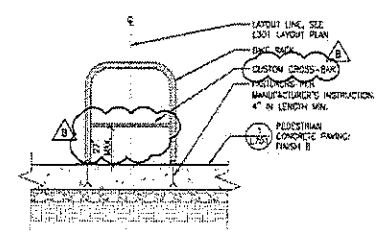
5 AREA DRAIN
SCALE: 3"=1'-0" SECTION



2 STEPPING STONE
SCALE: 3/4"=1'-0" SECTION



6 EX. CLEANOUT AT MOW BAND
SCALE: 3"=1'-0" SECTION



3 BIKE RACKS - SURFACE MOUNT
SCALE: 3/4"=1'-0" SECTION

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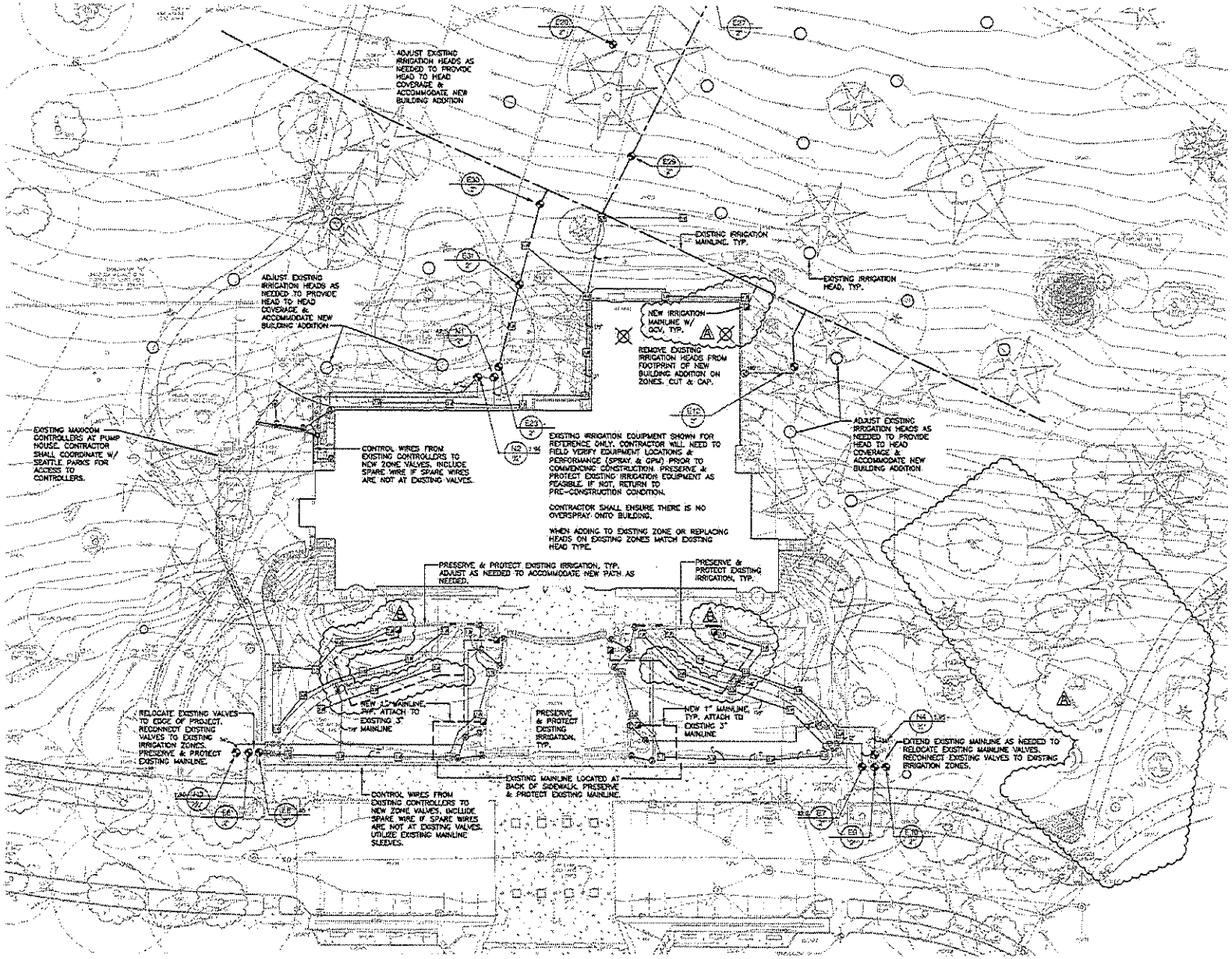

SCALE: 1" = 20'-0"

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IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	PSI
	HUNTER MP1000 RD12-SAM-F-P45 SHRUB ROTATOR. MP ROTATOR NOZZLE ON RD-1800 TURF SPRAY BODY ON 12.0" POP-UP, WITH CHECK VALVE AND 45 PSI IN-STEM PRESSURE REGULATOR AND FLOW SHIELD. 1/2" NPT FEMALE THREADED INLET. M=MAROON ADJ ARC 90 TO 210. L=LIGHT BLUE 210 TO 270 ARC. O=OLIVE 360 ARC ON PRS40 BODY.	40
	HUNTER MP CORNER RD12-SAM-F-P45 SHRUB ROTATOR. MP ROTATOR NOZZLE ON RD-1800 TURF SPRAY BODY ON 12.0" POP-UP, WITH CHECK VALVE AND 45 PSI IN-STEM PRESSURE REGULATOR AND FLOW SHIELD. 1/2" NPT FEMALE THREADED INLET. T=TURQUOISE ADJ ARC 45-105 ON PRS40 BODY.	40
	HUNTER MP STRIP RD12-SAM-F-P45 SHRUB ROTATOR. MP ROTATOR NOZZLE ON RD-1800 TURF SPRAY BODY ON 12.0" POP-UP, WITH CHECK VALVE AND 45 PSI IN-STEM PRESSURE REGULATOR AND FLOW SHIELD. 1/2" NPT FEMALE THREADED INLET. LST=IVORY LEFT STRIP, SST=BROWN SIDE STRIP, RST=COPPER RIGHT STRIP, ON PRS40 BODY.	40

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	PSI	GPM	RADIUS
	HUNTER I-20-ADS, 36S TURF ROTOR, 4" POPUP, ADJUSTABLE AND FULL CIRCLE, WITH CHECK VALVE, STAINLESS STEEL RISER	30	0.90	30'
	HUNTER I-20-ADS, 36S TURF ROTOR, 4" POPUP, ADJUSTABLE AND FULL CIRCLE, WITH CHECK VALVE, STAINLESS STEEL RISER	45	1.50	31'
	HUNTER I-20-ADS, 36S TURF ROTOR, 4" POPUP, ADJUSTABLE AND FULL CIRCLE, WITH CHECK VALVE, STAINLESS STEEL RISER	45	2.00	34'
	HUNTER I-20-ADS, 36S TURF ROTOR, 4" POPUP, ADJUSTABLE AND FULL CIRCLE, WITH CHECK VALVE, STAINLESS STEEL RISER	45	3.00	36'
	HUNTER I-20-ADS, 36S TURF ROTOR, 4" POPUP, ADJUSTABLE AND FULL CIRCLE, WITH CHECK VALVE, STAINLESS STEEL RISER	30	2.60	34'
	HUNTER I-20-ADS, 36S TURF ROTOR, 4" POPUP, ADJUSTABLE AND FULL CIRCLE, WITH CHECK VALVE, STAINLESS STEEL RISER	45	4.00	40'
	HUNTER I-20-ADS, 36S TURF ROTOR, 4" POPUP, ADJUSTABLE AND FULL CIRCLE, WITH CHECK VALVE, STAINLESS STEEL RISER	45	6.00	43'
	TORO 640-02 TURF ROTOR, 2-3/8" POP-UP, STAINLESS STEEL-ENCASED NOZZLE. COMMERCIAL APPLICATIONS. 1" INLET, NPT THREADED. WITH CHECK-O-MATIC CHECK VALVE, AND ADJUSTABLE ARC TRAJECTORY.	50	14.5	59'

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	EXISTING BUCKNER V8 2-WAY-HD NORMALLY CLOSED, TWO-WAY BRASS VALVE WITH FLOW CONTROL WITH HEAVY DUTY OPTION.
	BUCKNER-SUPERIOR V8-HD (2) 3/4", 1-1/4", 1-1/2", AND 2" ELECTRIC BRASS VALVE WITH REVERSE FLOW DESIGN. INTERNAL AND EXTERNAL BLEED FEATURE. CONTAMINATION RESISTANT. WITH HEAVY DUTY OPTION. 24VAC 50/60 HZ.
	BUCKNER QB44LRC-10 1" QUICK COUPLER VALVE, TWO PIECE BODY. LOCKING COVER
	IRRIGATION LATERAL LINE: PVC SCHEDULE 40 IRRIGATION PIPE. ONLY LATERAL TRANSITION PIPE SIZES 1" AND ABOVE ARE INDICATED ON THE PLAN, WITH ALL OTHERS BEING 3/4" IN SIZE.
	IRRIGATION MAINLINE: PVC SCHEDULE 40 IRRIGATION PIPE.
	IRRIGATION MAINLINE: EXISTING PVC SCHEDULE 40
	PIPE SLEEVE: PVC SCHEDULE 40
	EXISTING IRRIGATION HEAD

TRENCHING NOTES

1. DRAWING IS SCHEMATIC. ACTUAL LOCATIONS MAY VARY DUE TO UTILITIES OR EXISTING CONDITIONS.
2. CONTRACTOR SHALL PLACE TRENCHES AS CLOSE TO HARD SURFACES AS POSSIBLE. DO NOT TRENCH WITHIN TWO (2) FEET OF CONCRETE MOW BANDS.
3. CONTRACTOR SHALL LAYOUT PROPOSED TRENCHING LAYOUT FOR OWNER APPROVAL PRIOR TO COMMENCING WITH TRENCHING.
4. SEE SPECIFICATIONS FOR TRENCHING IN DRIP ZONES OF EXISTING TREES.
5. ALL WORK IN THE VICINITY OF EXISTING TREES AND SHRUBS SHALL BE PERFORMED IN STRICT ACCORDANCE WITH PROCEDURES AS OUTLINED IN SPECIFICATION SECTION 015639 "TEMPORARY TREE & PLANT PROTECTION"

IRRIGATION NOTES

1. DRAWING IS SCHEMATIC. ACTUAL LOCATIONS MAY VARY DUE TO UTILITIES OR EXISTING CONDITIONS. CONTRACTOR IS RESPONSIBLE FOR LOCATING UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. LOCATE QUICK COUPLING VALVE & AUTOMATIC CONTROL VALVES AT POINT OF EASY ACCESS. OWNER'S REPRESENTATIVE TO REVIEW & APPROVE FINAL LOCATION OF ALL QUICK COUPLERS & AUTOMATIC CONTROL VALVES PRIOR TO INSTALLATION.
3. HEAD LOCATION MUST BE ADJUSTED IN THE FIELD TO COMPLY W/ EXISTING SITE CONDITIONS AND PLANT MATERIALS.
4. SYSTEM DESIGNED TO 45 PSI AT ROTOR HEADS.
5. IRRIGATION SLEEVED SHALL BE 2X THE SIZE OF THE PIPE BEING INSERTED. ONE SLEEVE PER PVC PIPE.
6. ALL IRRIGATION SLEEVING TO BE STAKED IN THE FIELD & LOCATED ON DIMENSIONED "AS-BUILT" DRAWING TO ALLOW FUTURE LOCATION & USE.
7. AIR BLOW IRRIGATION SYSTEM THROUGH QUICK COUPLERS TO WINTERIZE IRRIGATION SYSTEM.
8. VALVE BOX LOCATIONS SHALL BE STAKED IN FIELD & APPROVED BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
9. CONTRACTOR SHALL LOCATE AND TEST ALL EXISTING IRRIGATION HEADS, VALVES, AND ASSOCIATED APPURTENCES WITH SPR PLUMBER PRIOR TO CONSTRUCTION.

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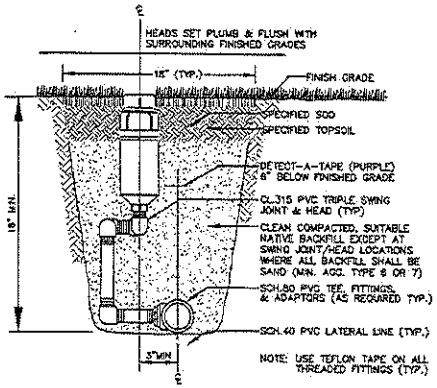
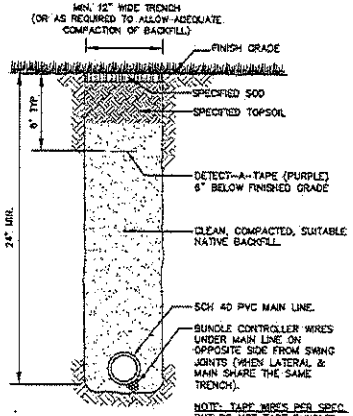
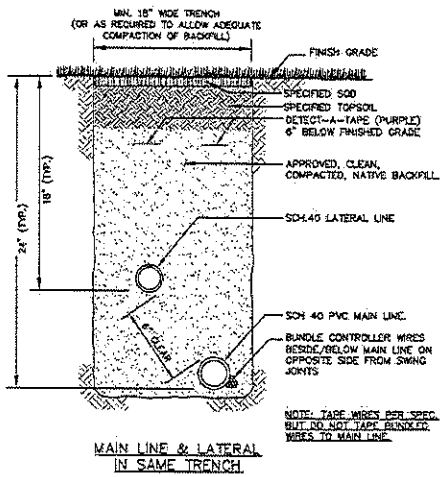


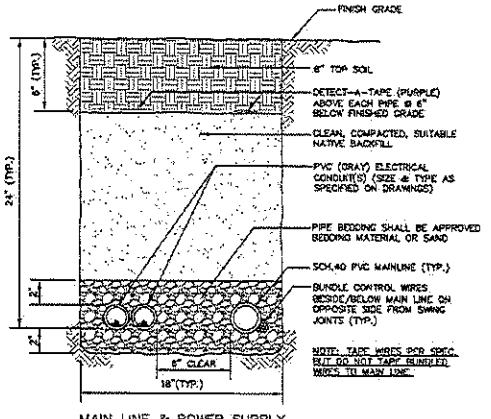
LATERAL LINE WITH SWING JOINT/HEAD



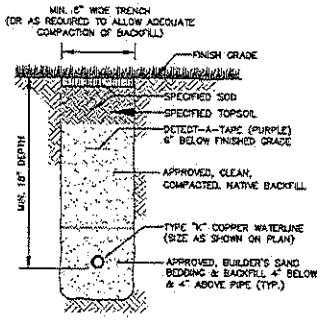
MAIN LINE TRENCH



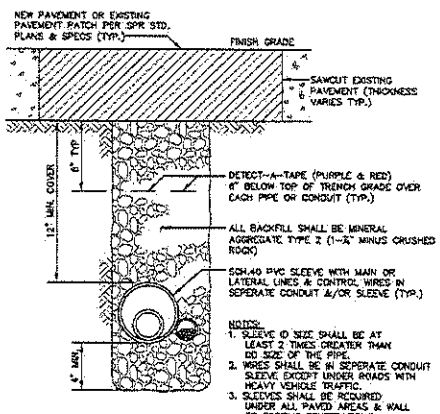
MAIN LINE & LATERAL IN SAME TRENCH



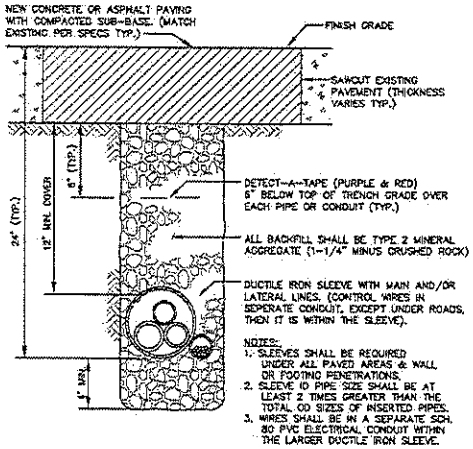
MAIN LINE & POWER SUPPLY IN SAME TRENCH



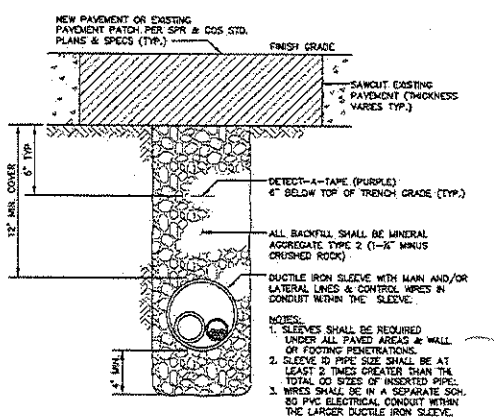
TYPICAL POTABLE WATERLINE TRENCH



IRRIGATION SLEEVE TRENCHING UNDER PATHWAY OR SIDEWALK



IRRIGATION SLEEVE TRENCHING UNDER PATHWAY OR SERVICE ROAD



IRRIGATION SLEEVE TRENCHING UNDER STREET ONLY

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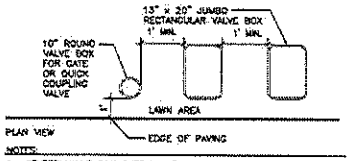
Asian Art Museum Expansion & Renovation

Construction Documents

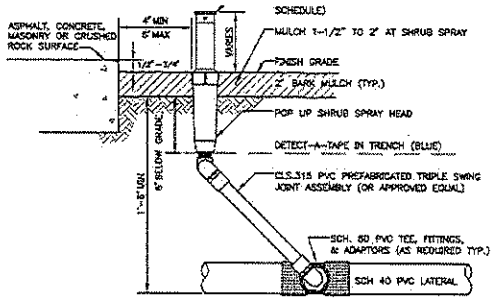
Irrigation Details

L803



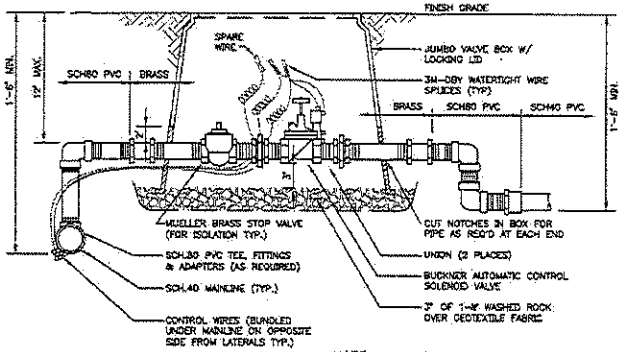
NOTES:
1. CENTER VALVE BOX OVER VALVE
2. SET BOXES 2" ABOVE FINISH GRADE IN GROUND COVER/SHRUB AREA AND FLUSH TO FINISH GRADE IN LAWN AREA.
3. LOCATE ROUND VALVE BOX & VALVE BOX ASSEMBLY IN GROUNDCOVER/SHRUB AREA WHERE POSSIBLE. INSTALL IN LAWN ONLY IF GROUNDCOVER DOES NOT EXIST ADJACENT TO LAWN.
4. SET BOXES PARALLEL TO EACH OTHER & PERPENDICULAR TO EDGE.
5. AVOID HEAVILY COMPACTING SOIL AROUND VALVE BOXES TO PREVENT COLLAPSE AND DEFORMATION OF VALVE BOX SIDES.

VALVE BOX LAYOUT



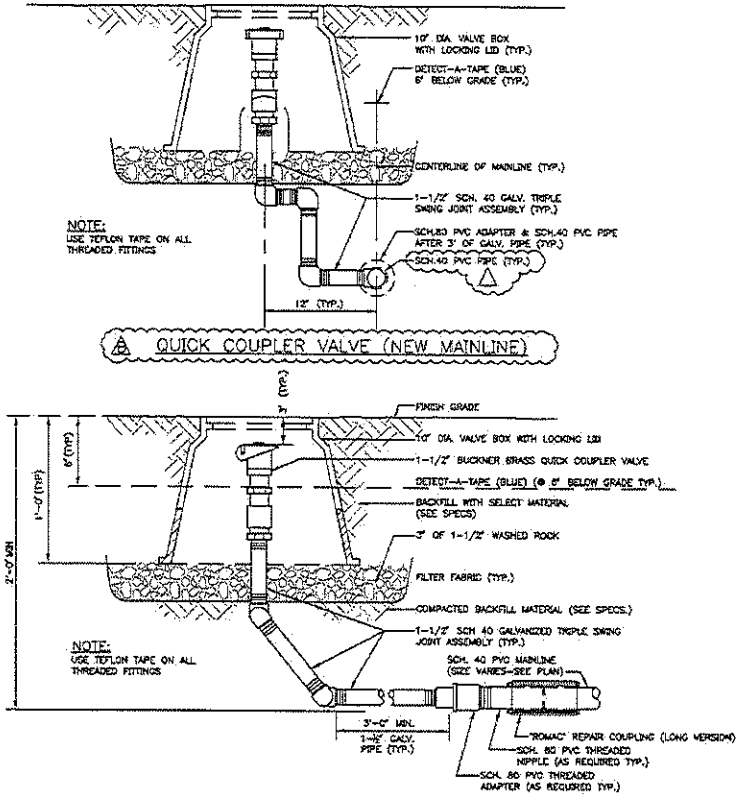
NOTE:
USE TEFLON TAPE ON ALL THREADED FITTINGS

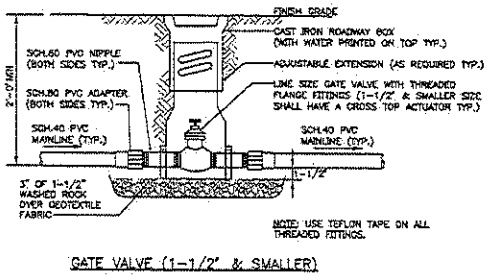
POP UP SPRAY HEAD



NOTE: CUT "L" SHAPED NOTCHES IN BOTH SIDES OF VALVE BOX THAT ALLOW 2" MIN. CLEARANCE FROM TOP OF PIPE TO TOP OF CUT-OUT. USE TEFLON TAPE ON ALL THREADED FITTINGS.

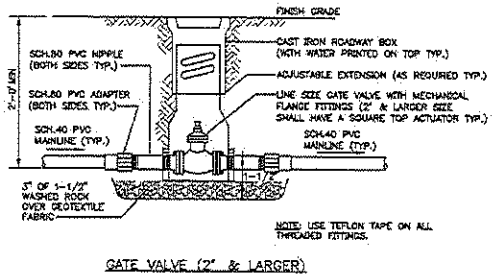
AUTOMATIC CONTROL VALVE





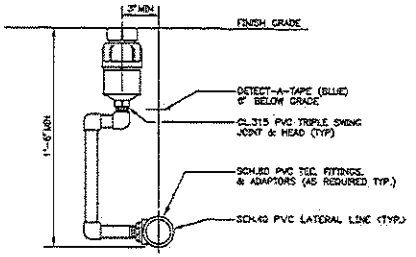
NOTE: USE TEFLON TAPE ON ALL THREADED FITTINGS.

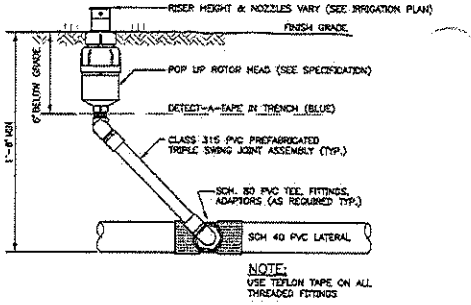
GATE VALVE (1-1/2" & SMALLER)



NOTE: USE TEFLON TAPE ON ALL THREADED FITTINGS.

GATE VALVE (2" & LARGER)





NOTE:
USE TEFLON TAPE ON ALL THREADED FITTINGS

POP UP ROTOR HEAD

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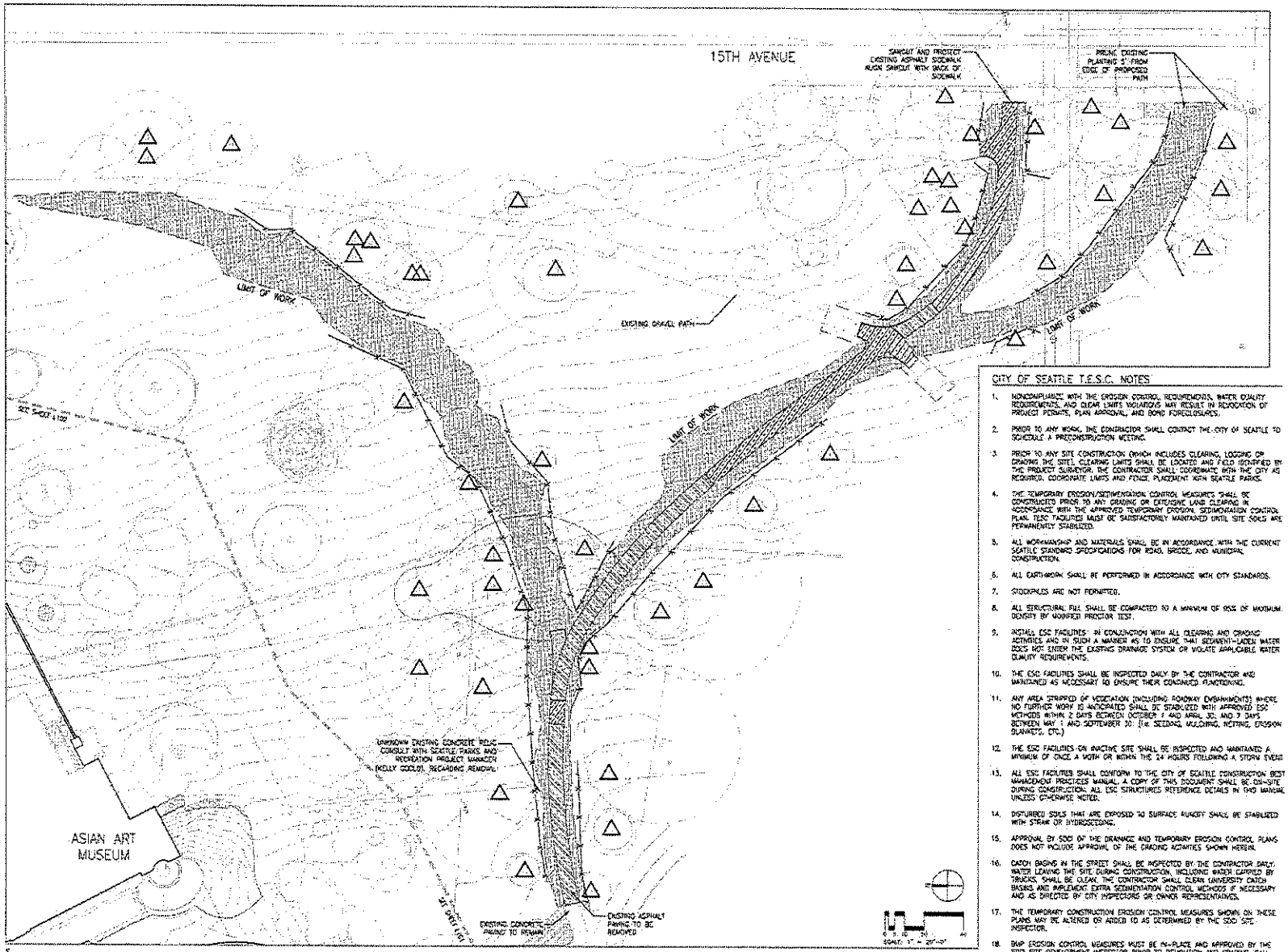
Construction Documents

Irrigation Details

L804



CITY OF SEATTLE T.E.S.C. NOTES

1. NONCOMPLIANCE WITH THE EROSION CONTROL REQUIREMENTS, WATER QUALITY REQUIREMENTS, AND CLEAR LIMITS VIOLATIONS MAY RESULT IN REVOCATION OF PROJECT PERMITS, PLAN APPROVAL, AND BOND FORECLOSURES.
2. PRIOR TO ANY WORK, THE CONTRACTOR SHALL CONTACT THE CITY OF SEATTLE TO SCHEDULE A PRECONSTRUCTION MEETING.
3. PRIOR TO ANY SITE CONSTRUCTION (WHICH INCLUDES CLEARING, LOGGING OR GRADING THE SITE), CLEARING LIMITS SHALL BE LOCATED AND FIELD IDENTIFIED BY THE PROJECT SURVEYOR. THE CONTRACTOR SHALL COORDINATE WITH THE CITY AS REQUIRED, COORDINATE LIMITS AND FENCE PLACEMENT WITH SEATTLE PARKS.
4. THE TEMPORARY EROSION/SEDIMENTATION CONTROL MEASURES SHALL BE CONSTRUCTED PRIOR TO ANY GRADING OR EXTENSIVE LAND CLEARING IN ACCORDANCE WITH THE APPROVED TEMPORARY EROSION, SEDIMENTATION CONTROL PLAN. TESC FACILITIES MUST BE SATISFACTORILY MAINTAINED UNTIL SITE SOILS ARE PERMANENTLY STABILIZED.
5. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT SEATTLE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION.
6. ALL EARTHWORK SHALL BE PERFORMED IN ACCORDANCE WITH CITY STANDARDS.
7. STOCKPILES ARE NOT PERMITTED.
8. ALL STRUCTURAL FILL SHALL BE COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DENSITY BY MODIFIED PROCTOR TEST.
9. INSTALL ESC FACILITIES IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT-LADEN WATER DOES NOT ENTER THE EXISTING DRAINAGE SYSTEM OR VIOLATE APPLICABLE WATER QUALITY REQUIREMENTS.
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11. ANY AREA STRIPPED OF VEGETATION (INCLUDING ROADWAY EMBANKMENTS) WHERE NO FURTHER WORK IS ANTICIPATED SHALL BE STABILIZED WITH APPROVED ESC METHODS WITHIN 2 DAYS BETWEEN OCTOBER 1 AND APRIL 30, AND 7 DAYS BETWEEN MAY 1 AND SEPTEMBER 30. (I.e. SEEDING, MULCHING, MATTING, EROSION BLANKETS, ETC.)
12. THE ESC FACILITIES ON INACTIVE SITE SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN THE 24 HOURS FOLLOWING A STORM EVENT.
13. ALL ESC FACILITIES SHALL CONFORM TO THE CITY OF SEATTLE CONSTRUCTION BEST MANAGEMENT PRACTICES MANUAL. A COPY OF THIS DOCUMENT SHALL BE ON-SITE DURING CONSTRUCTION. ALL ESC STRUCTURES REFERENCE DETAILS IN THIS MANUAL UNLESS OTHERWISE NOTED.
14. DISTURBED SOILS THAT ARE EXPOSED TO SURFACE RUNOFF SHALL BE STABILIZED WITH STRAW OR HYDROSEEDING.
15. APPROVAL BY SDCI OF THE DRAINAGE AND TEMPORARY EROSION CONTROL PLANS DOES NOT INCLUDE APPROVAL OF THE GRADING ACTIVITIES SHOWN HEREIN.
16. CATCH BASINS IN THE STREET SHALL BE INSPECTED BY THE CONTRACTOR DAILY. WATER LEAVING THE SITE DURING CONSTRUCTION, INCLUDING WATER CARRIED BY TRUCKS, SHALL BE CLEAN. THE CONTRACTOR SHALL CLEAN UNIVERSITY CATCH BASINS AND IMPLEMENT EXTRA SEDIMENTATION CONTROL METHODS IF NECESSARY AND AS DIRECTED BY CITY INSPECTORS OR OWNER REPRESENTATIVES.
17. THE TEMPORARY CONSTRUCTION EROSION CONTROL MEASURES SHOWN ON THESE PLANS MAY BE ALTERED OR ADDED TO AS DETERMINED BY THE SDCI SITE INSPECTOR.
18. BMP EROSION CONTROL MEASURES MUST BE IN-PLACE AND APPROVED BY THE SDCI SITE DEVELOPMENT INSPECTOR PRIOR TO DEMOLITION AND GRADING. CALL (206) 684-8860 TO SCHEDULE AN INSPECTION.

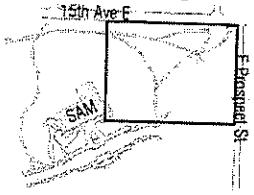
LEGEND

- LIMIT OF WORK, COORDINATE W/ GRADING PLAN
- PAVING SAWCUT LINE
- STRIP LAWN/CLEAR AND GRUB VEGETATION
- REMOVE EXISTING ASPHALT PAVING, STEEL EDGE, AND BASE MATERIAL – FULL DEPTH
- HAND REMOVE EXISTING ASPHALT PAVING TO BASE MATERIAL UNDER DRIP LINE (UP TO 6" DIA TO TOP OF ROOTS)
- REMOVE EXISTING GRAVEL PAVING FULL DEPTH
- TREE PROTECTION FENCE
- PROTECT EXISTING TREE TO REMAIN
- REMOVE EXISTING TREE/SHRUB
- RELOCATE EXISTING LIGHT POLE AND REMOVE FOOTING – SEE L902 FOR LOCATION – DECOMMISSION POWER PER ELEC.
- PROTECT EXISTING LIGHT POLE AND FOOTING
- REMOVE EXISTING LIGHT POLE AND FOOTING
- EXISTING TREE (DRIP LINE)

GENERAL NOTES

1. CONTRACTOR TO NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES BETWEEN THE PLANS AND THE EXISTING CONDITIONS BEFORE STARTING WORK.
2. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE TEMPORARY TREE AND PLANT PROTECTION SPECIFICATIONS FOR THE PROJECT.
3. PROTECT ALL EXISTING PLANTING AREAS UNLESS NOTED OTHERWISE.
4. IRRIGATION IN THE PARK SHALL NOT BE INTERRUPTED DURING CONSTRUCTION. PROVIDE TEMPORARY IRRIGATION OR HAND WATERING AS REQUIRED.
5. COORDINATE SHUTOFF OF IRRIGATION WITH SEATTLE DEPARTMENT OF PARKS AND RECREATION.
6. CONSULT THE PROJECT ARBORIST AND OR URBAN FORESTRY FOR APPROVAL PRIOR TO DOING ANY WORK WITHIN DESIGNATED TREE PROTECTION AREAS.
7. REMOVE ALL EXISTING STEEL EDGING ON PATHS TO BE DEMOLISHED
8. CONTRACTOR SHALL LOCATE AND TEST ALL EXISTING IRRIGATION HEADS, VALVES, AND ASSOCIATED APPURTENCES WITH SPS PLUMBER PRIOR TO CONSTRUCTION.

KEY PLAN



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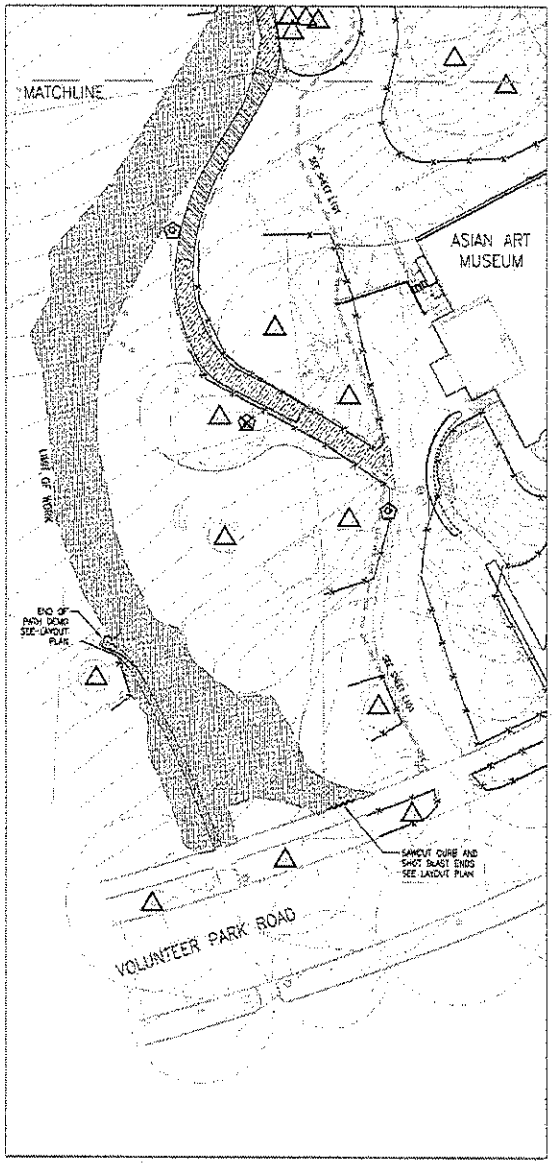
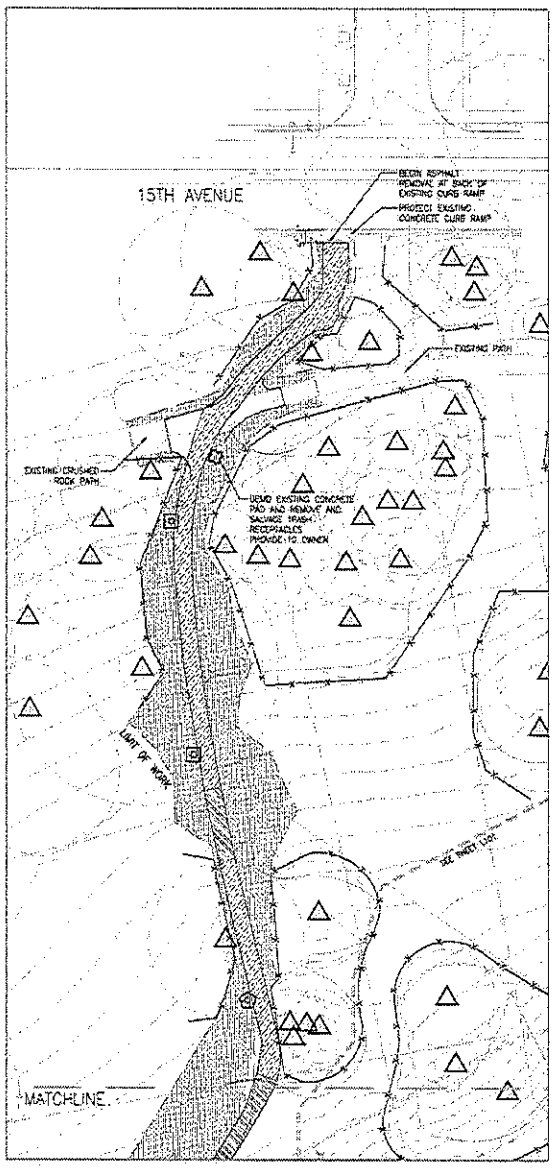
Construction Documents

Demolition and Plant Protection Plan - South

L911



NORTH PATH – WEST SIDE
SCALE: 1" = 20'



NORTH PATH – EAST SIDE
SCALE: 1" = 20'

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LEGEND

- LIMIT OF WORK, COORDINATE W/ GRADING PLAN
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- STRIP LAWN/CLEAR AND GRUB VEGETATION
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- HAND REMOVE EXISTING ASPHALT PAVING TO BASE MATERIAL UNDER DRIP LINE, UP TO 6' OF TO TOP OF ROOTS
- REMOVE EXISTING GRAVEL PAVING FULL DEPTH
- TREE PROTECTION FENCE
- PROTECT EXISTING TREE TO REMAIN
- REMOVE EXISTING TREE/STUMP/SHRUB
- RELOCATE EXISTING LIGHT POLE AND REMOVE FOOTING – SEE L823 FOR LOCATION – DECOMMISSION POWER PER ELEC.
- PROTECT EXISTING LIGHT POLE AND FOOTING
- REMOVE EXISTING LIGHT POLE AND FOOTING
- EXISTING TREE
- (DRIP LINE)

GENERAL NOTES

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6. CONSULT THE PROJECT ARBORIST (NAME SHALL BE GIVEN AT CONSTRUCTION) FOR APPROVAL PRIOR TO DOING ANY WORK WITHIN DESIGNATED TREE PROTECTION AREAS. A
7. REMOVE ALL EXISTING STEEL EDGING ON PATHS TO BE DEMOLISHED.
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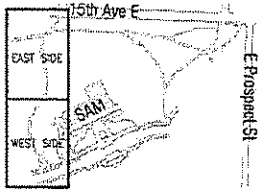
KEY PLAN



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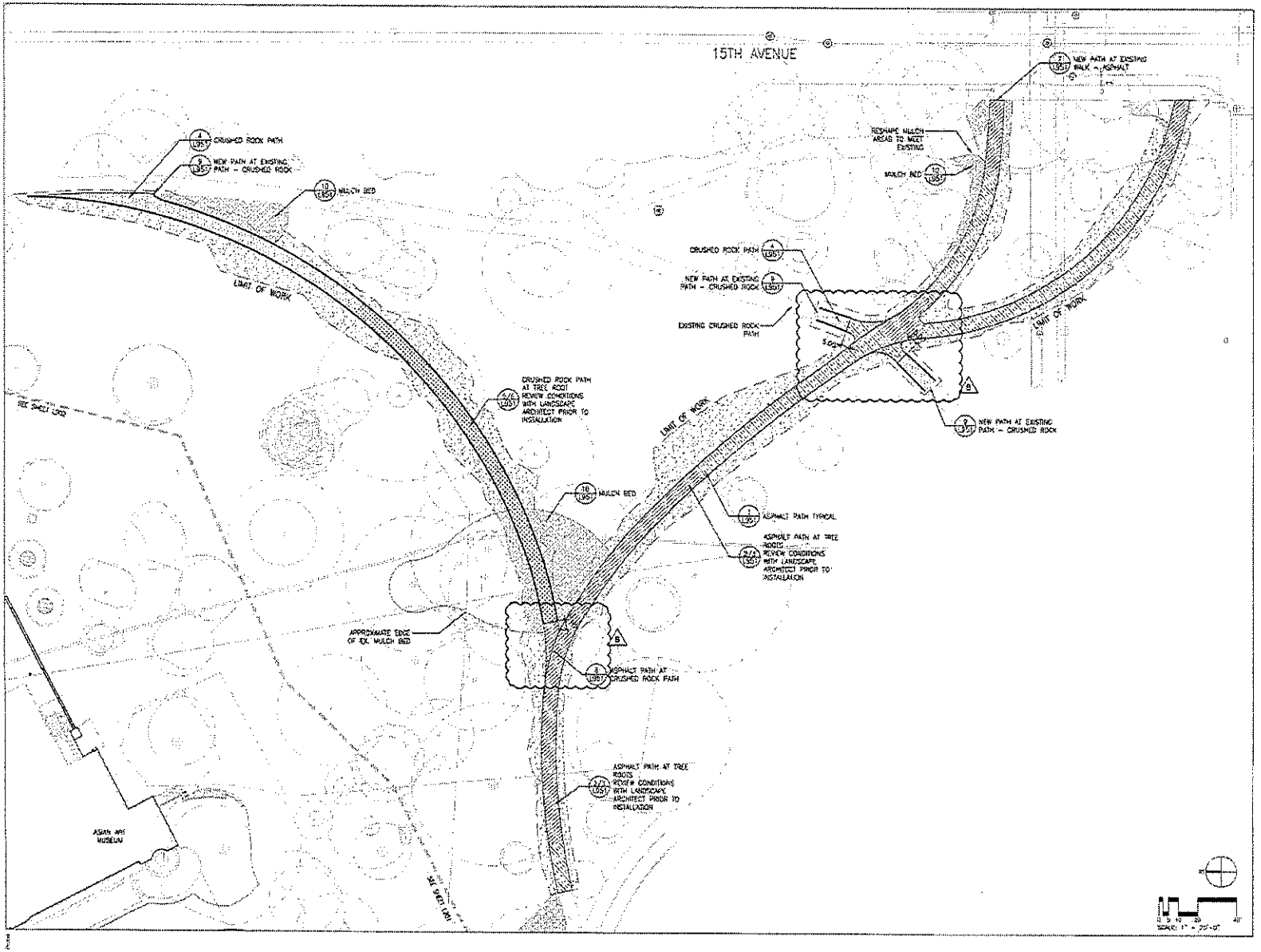
STATE OF WASHINGTON – REGISTERED LANDSCAPE ARCHITECT
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Demolition and Plant Protection Plan - North

L912



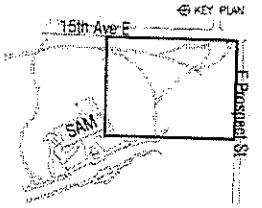
LEGEND

- ASPHALT PATH - TYPICAL SEE DETAIL 1, SHEET 951
- ASPHALT PATH - AT TREE ROOTS EXTENTS ARE APPROXIMATE REVIEW CONDITIONS WITH LANDSCAPE ARCHITECT PRIOR TO INSTALLATION SEE DETAIL 2/1, SHEET 951
- CRUSHED ROCK PATH - TYPICAL SEE DETAIL 4, SHEET 951
- CRUSHED ROCK PATH - AT TREE ROOTS EXTENTS ARE APPROXIMATE REVIEW CONDITIONS WITH LANDSCAPE ARCHITECT PRIOR TO INSTALLATION SEE DETAIL 5/6, SHEET 951
- LAWN
- MULCH AREA SEE DETAIL 10, SHEET 951
- STEEL EDGE
- RELOCATED LIGHT FIXTURE, SEE ELECTRICAL AND STRUCTURAL DRAWINGS

GENERAL NOTES

1. CONTRACTOR TO NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPENCIES BETWEEN THE PLANS AND THE EXISTING CONDITIONS BEFORE STARTING WORK.
2. ADJUST EXISTING IRRIGATION HEADS AS NEEDED TO PROVIDE HEAD TO HEAD COVERAGE.

KEY PLAN



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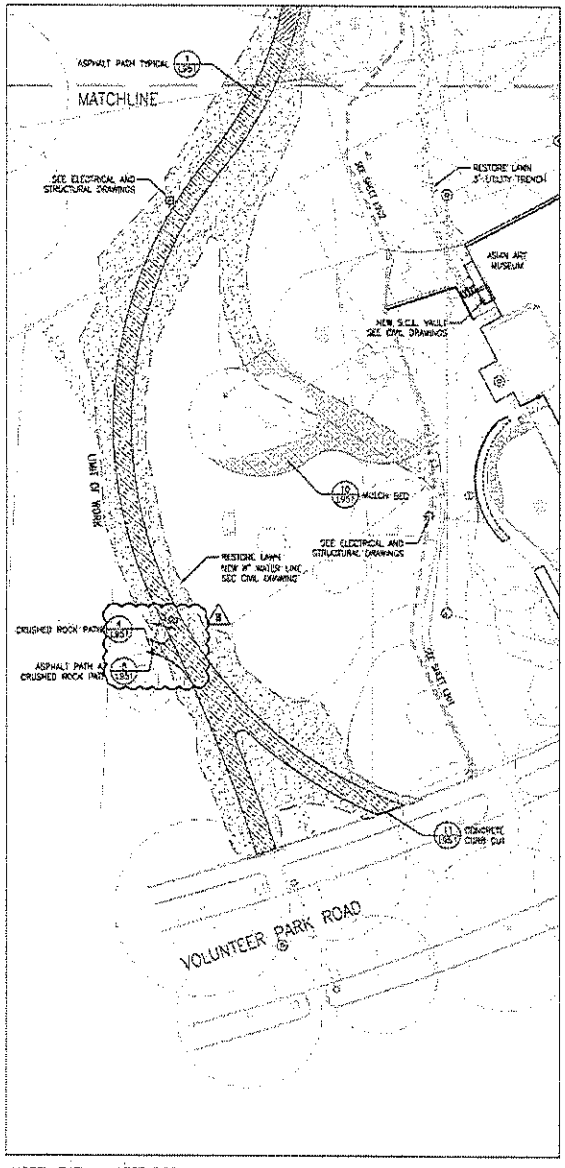
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

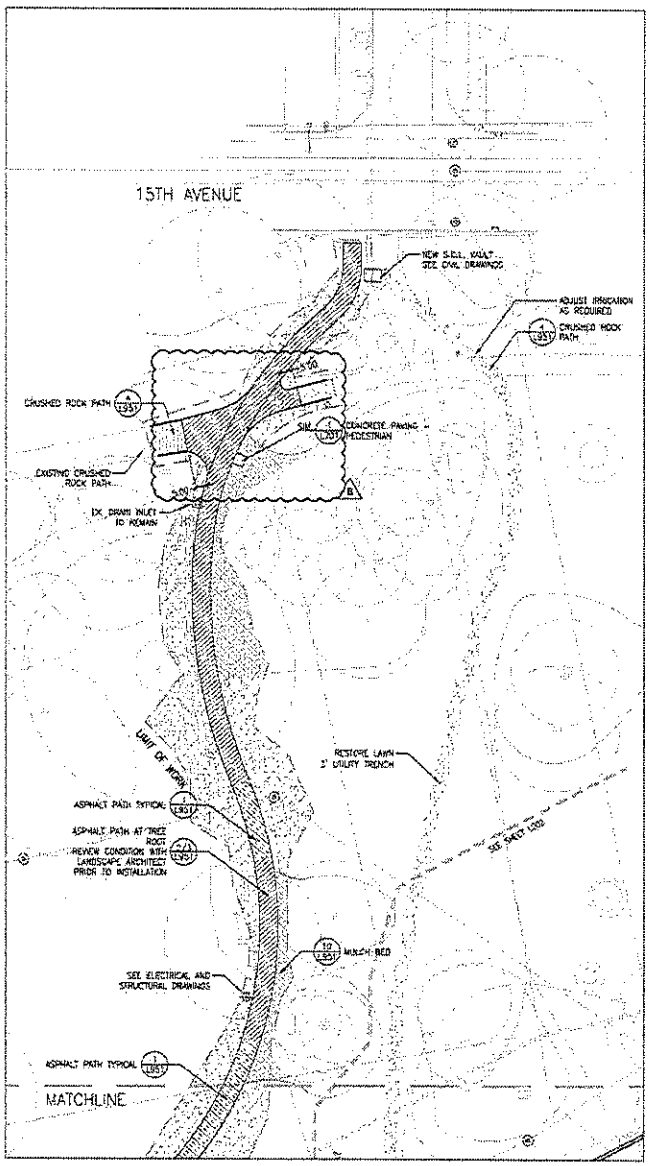
Construction Documents

Materials Plan - South

L921



NORTH PATH – WEST SIDE
SCALE: 1" = 20'



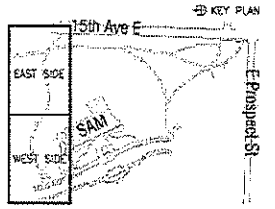
NORTH PATH – EAST SIDE
SCALE: 1" = 20'

LEGEND

- ASPHALT PATH – TYPICAL SEE DETAIL 1, SHEET 951
- ASPHALT PATH – AT TREE ROOTS EXTENTS ARE APPROXIMATE REVIEW CONDITIONS WITH LANDSCAPE ARCHITECT PRIOR TO INSTALLATION SEE DETAIL 2/3, SHEET 951
- CRUSHED ROCK PATH – TYPICAL SEE DETAIL 4, SHEET 951
- CRUSHED ROCK PATH – AT TREE ROOTS EXTENTS ARE APPROXIMATE REVIEW CONDITIONS WITH LANDSCAPE ARCHITECT PRIOR TO INSTALLATION SEE DETAIL 5/6, SHEET 951
- LAWN
- MULCH AREA SEE DETAIL 10, SHEET 951
- STEEL EDGE
- RELOCATED LIGHT FIXTURE. SEE ELECTRICAL AND STRUCTURAL DRAWINGS

GENERAL NOTES

1. CONTRACTOR TO NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES BETWEEN THE PLANS AND THE EXISTING CONDITIONS BEFORE STARTING WORK.
2. ADJUST EXISTING IRRIGATION HEADS AS NEEDED TO PROVIDE HEAD TO HEAD COVERAGE.



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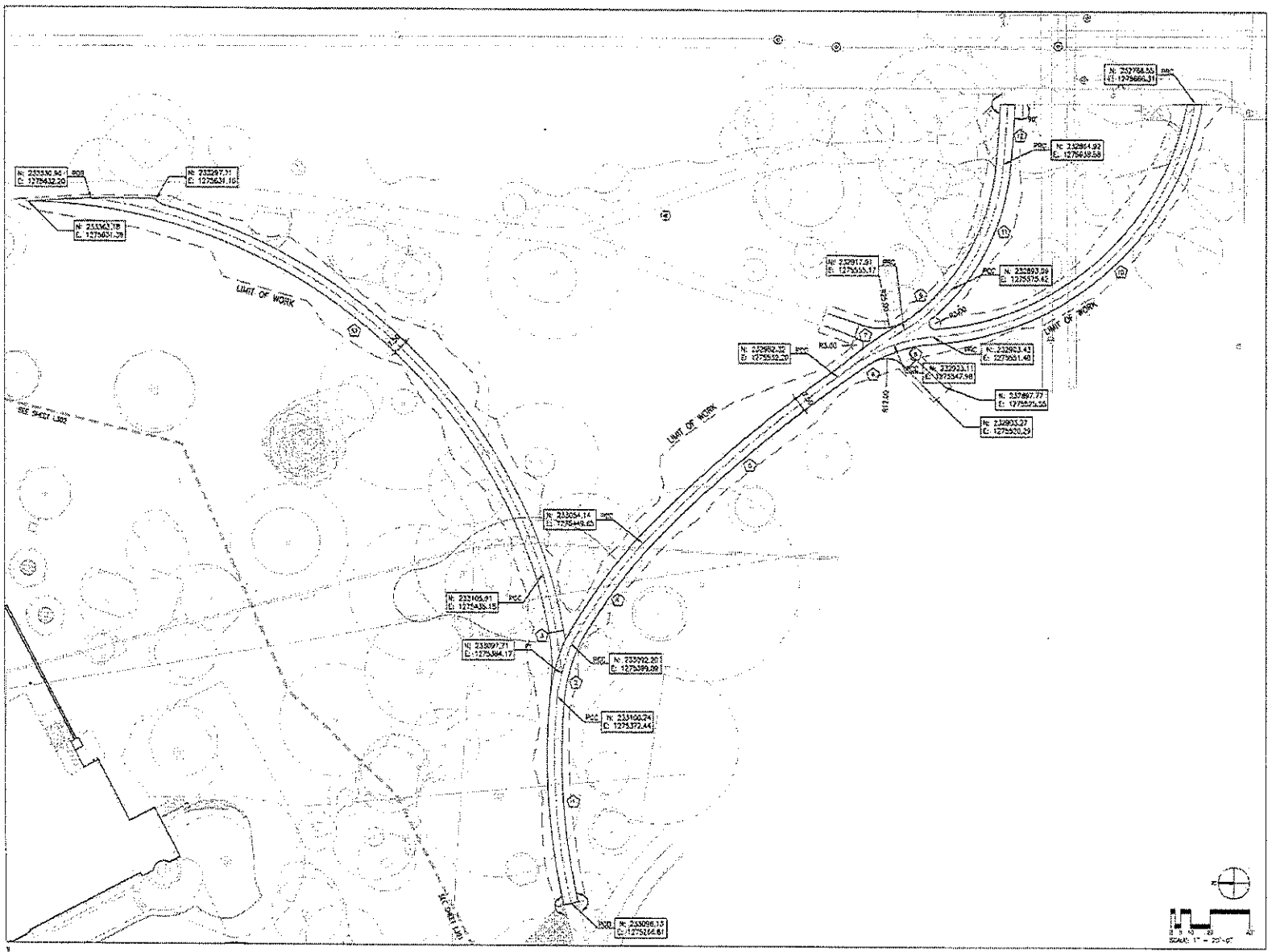
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Materials Plan - North

L922



LEGEND

- BASELINE
- CENTERLINE
- MATCHLINE
- SHEET REFERENCE LINE
- EXTENSION OF BUILDING FACE
- ISOLATION JOINT
- DOWELLED ISOLATION JOINT
- B BEARING
- C CHORD LENGTH
- EQ EQUAL
- L LENGTH OF CURVE
- OC ON CENTER
- POB POINT OF BEGINNING
- PC POINT OF CURVATURE
- PCC POINT OF COMPOUND CURVATURE
- PRC POINT OF REVERSE CURVATURE
- PI POINT OF INTERSECTION
- PT POINT OF TANGENCY
- R RADIUS
- RP RADIUS CENTER POINT
- SP SPACES
- VIF VERIFY IN FIELD
- ALIGN
- RELOCATED LIGHT FIXTURE

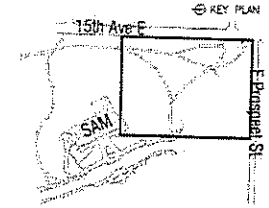
LAYOUT NOTES

1. SITE SURVEY WAS PREPARED BY BRH ON FEBRUARY 13TH 2017. ALL COORDINATES SHOWN ON THE DRAWINGS ARE BASED UPON THE COORDINATE SYSTEM ESTABLISHED BY THE SURVEYOR. WALKER MACY ASSUMES NO RESPONSIBILITY FOR ACCURACY OF SURVEYED CONDITIONS AS SHOWN. SURVEY INFORMATION IS PROVIDED FOR REFERENCE ONLY.
2. DO NOT SCALE FROM THE DRAWINGS. THE LOCATION OF FEATURES NOT SPECIFICALLY DIMENSIONED MAY NOT BE DETERMINED BY SCALE. IF CONFLICTS ARISE IN THE FIELD, CONTACT OWNER'S REPRESENTATIVE FOR RESOLUTION.
3. ALL DIMENSIONS ARE TO THE OUTSIDE FACE OF BUILDINGS AND WALLS OR BACK OF CURBS, UNLESS OTHERWISE NOTED.
4. ALL CURVED OBJECTS SHALL HAVE SMOOTH, CONTINUOUS CURVES WITH CONSISTENT RADII AS INDICATED. EACH CURVE SHALL MEET ADJACENT CURVES OR LINEAR SECTIONS ON THE TANGENT, UNLESS NOTED OTHERWISE.

CURVE DATA

CURVE NO.	CURVE RADIUS	CURVE LENGTH	CHORD LENGTH	INCLUDED ANGLE
1	337.37'	105.20'	105.74'	18.04'
2	97.58'	28.20'	27.84'	16.57'
3	250.02'	51.70'	51.84'	11.86'
4	287.74'	63.48'	63.34'	12.60'
5	657.81'	131.10'	130.86'	11.42'
6	95.42'	33.36'	33.31'	20.03'
7	182.94'	33.33'	41.49'	10.44'
8	73.75'	20.04'	19.97'	15.57'
9	92.35'	32.12'	31.88'	19.93'
10	145.38'	192.52'	178.21'	76.03'
11	112.78'	70.20'	69.16'	35.70'
12	480.98'	30.27'	30.27'	3.[illegible]
13	278.25'	315.80'	299.12'	6[illegible]

KEY PLAN



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STATE OF WASHINGTON REGISTERED LANDSCAPE ARCHITECT

SAM ASIAN ART MUSEUM

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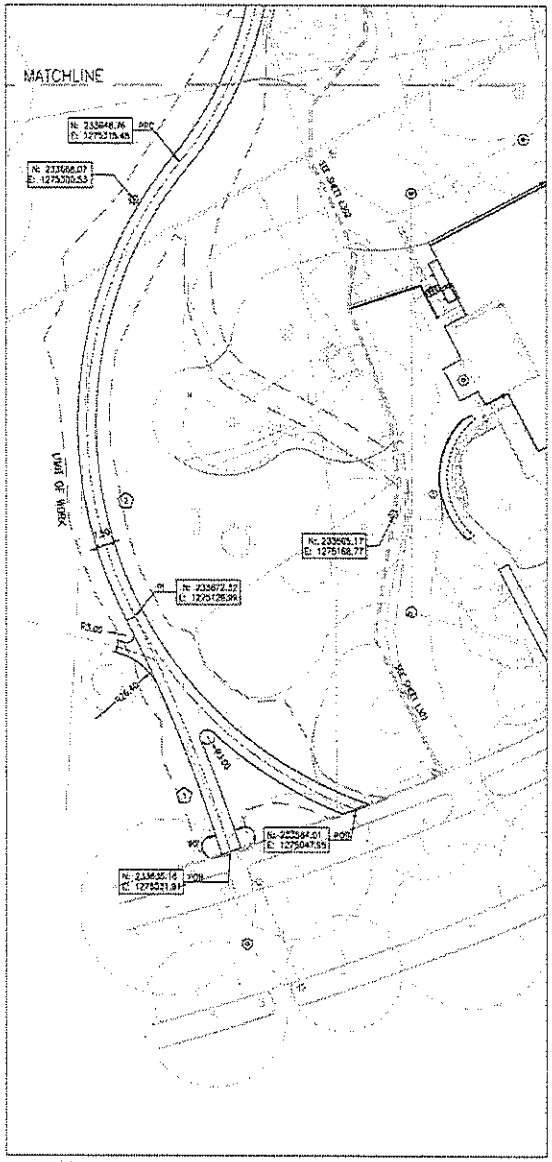
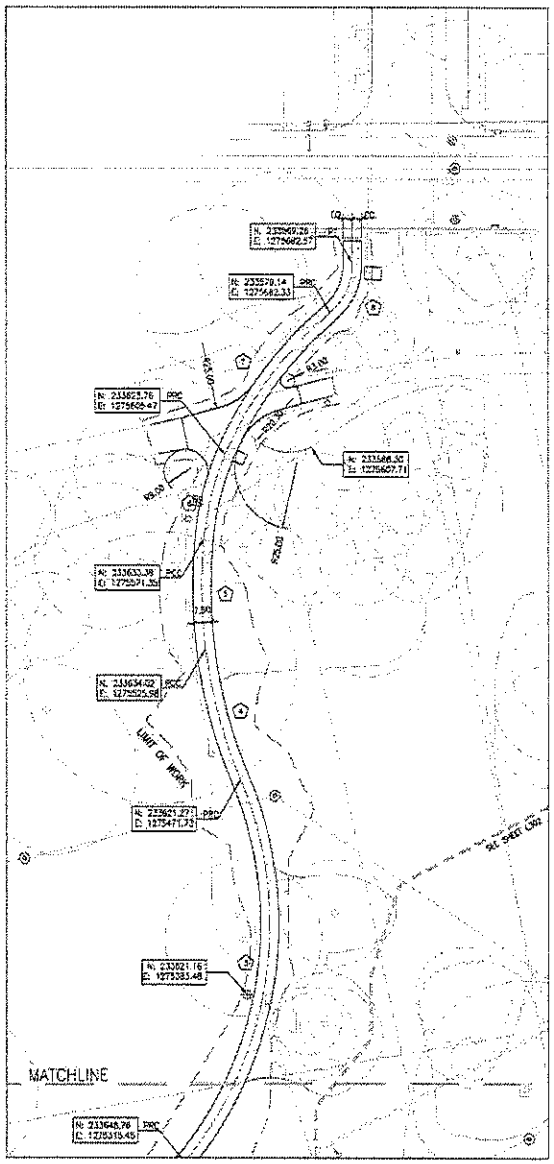
Construction Documents

Layout Plan - South

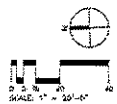
L931



NORTH PATH – WEST SIDE
SCALE: 1" = 20'



NORTH PATH – EAST SIDE
SCALE: 1" = 20'



LEGEND

	BASELINE
	CENTERLINE
	MATCHLINE
	SHEET REFERENCE LINE
	EXTENSION OF BUILDING FACE
IJ	ISOLATION JOINT
DJ	DOWELLED ISOLATION JOINT
B	BEARING
C	CHORD LENGTH
E	EQUAL
L	LENGTH OF CURVE
OC	ON CENTER
POB	POINT OF BEGINNING
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PRC	POINT OF REVERSE CURVATURE
PI	POINT OF INTERSECTION
PT	POINT OF TANGENCY
R	RADIUS
RP	RADIUS CENTER POINT
SP	SPACES
VIF	VERIFY IN FIELD
	ARCH
	RELOCATED LIGHT FIXTURE

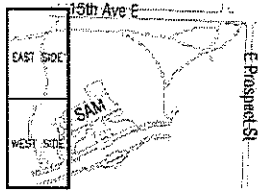
LAYOUT NOTES

1. SITE SURVEY WAS PREPARED BY BBH ON FEBRUARY 13TH 2017. ALL COORDINATES SHOWN ON THE DRAWINGS ARE BASED UPON THE COORDINATE SYSTEM ESTABLISHED BY THE SURVEYOR. MAHLUM MACY ASSUMES NO RESPONSIBILITY FOR ACCURACY OF SURVEYED CONDITIONS AS SHOWN. SURVEY INFORMATION IS PROVIDED FOR REFERENCE ONLY.
2. DO NOT SCALE FROM THE DRAWINGS. THE LOCATION OF FEATURES NOT SPECIFICALLY DIMENSIONED MAY NOT BE DETERMINED BY SCALE. IF CONFLICTS ARISE IN THE FIELD, CONTACT OWNER'S REPRESENTATIVE FOR RESOLUTION.
3. ALL DIMENSIONS ARE TO THE OUTSIDE FACE OF BUILDINGS AND WALLS OR BACK OF CURBS, UNLESS OTHERWISE NOTED.
4. ALL CURVED OBJECTS SHALL HAVE SMOOTH, CONSISTENT CURVES WITH CONSISTENT RADII AS INDICATED. EACH CURVE SHALL MEET ADJACENT CURVES OR LINEAR SEGMENTS ON THE TANGENT, UNLESS NOTED OTHERWISE.

CURVE DATA

CURVE NO.	CURVE RADIUS	CURVE LENGTH	CHORD LENGTH	INCLUDED ANGLE
1	629.50'	104.33'	104.17'	9.51°
2	165.75'	321.75'	275.16'	109.25°
3	153.75'	166.75'	158.98'	62.13°
4	263.75'	68.92'	68.73'	15.27°
5	210.85'	45.50'	45.37'	12.25°
6	116.25'	37.58'	37.45'	17.54°
7	153.75'	72.92'	72.20'	27.19°
8	28.25'	23.25'	22.54'	50.80°

KEY PLAN



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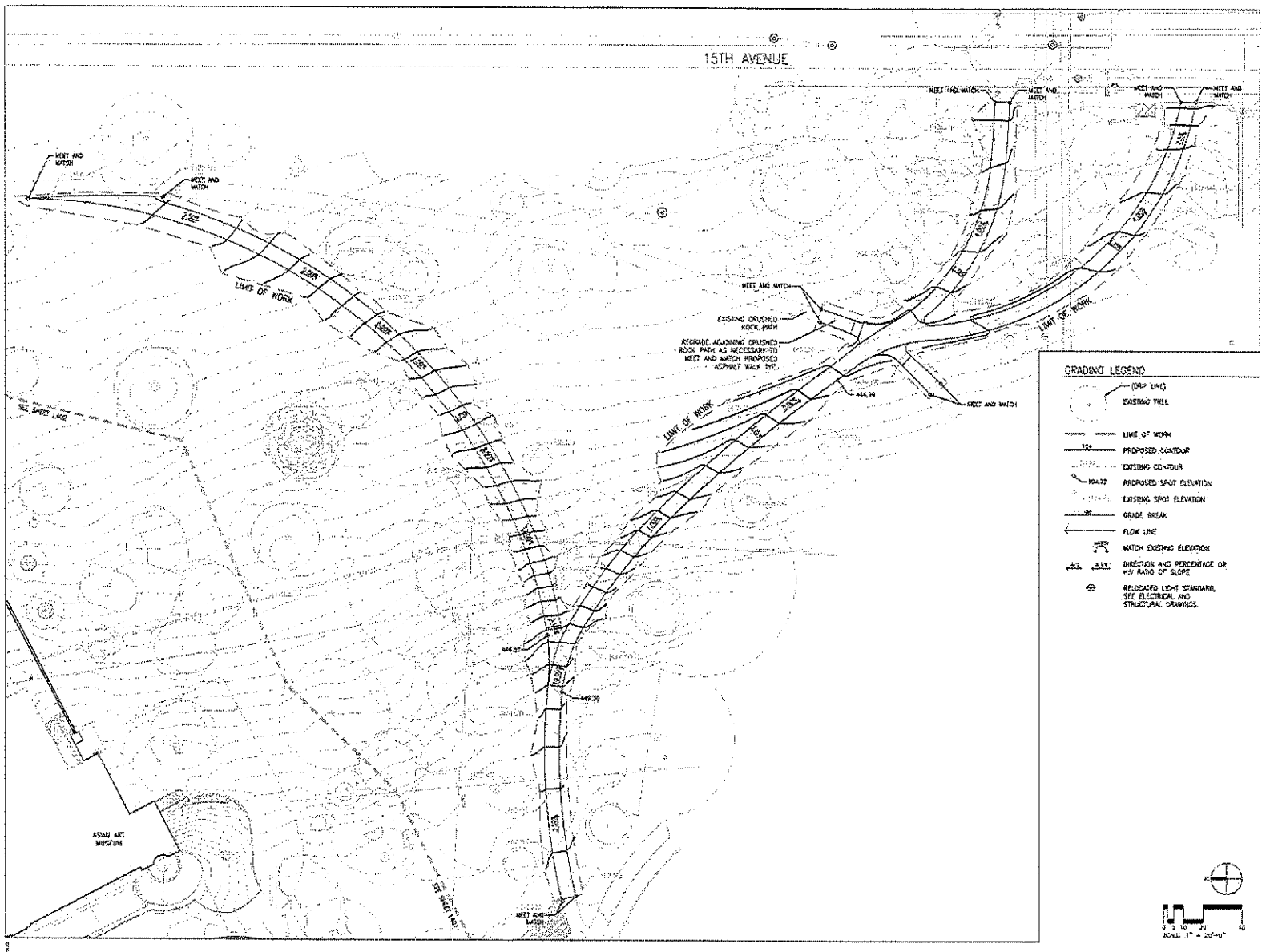
Asian Art Museum Expansion & Renovation

Construction Documents

Layout Plan - North

L932

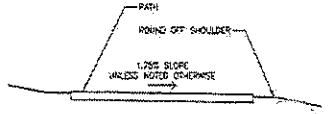


GRADING NOTES

1. GRADING PLAN REPRESENTS DESIGN INTENT. CONSTRUCTION DETAILS FOR PATHWAYS SHALL SUPERCEDE GRADES AS SHOWN ON GRADING PLAN. ACTUAL FINISH GRADES OF PATHWAYS AND ADJACENT LANDSCAPE SHALL BE VERIFIED ON ADJUSTED PENDING REMOVAL OF EXISTING PATHS AND DISCOVERY OF SUBGRADE CONDITIONS. NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCY BETWEEN GRADING PLAN AND CONSTRUCTION DETAILS, PRIOR TO BEGINNING WORK.
2. VERIFY ACCURACY OF EXISTING GRADES AND INTERPOLATED ELEVATIONS PRIOR TO BEGINNING WORK. NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCY PRIOR TO BEGINNING WORK.
3. PROTECT ALL TREES INDICATED TO REMAIN.
4. ALL PROPOSED GRADES ARE TO MEET AND BLEND IN WITH EXISTING GRADING AT PROJECT LIMIT, PROPERTY LINES, BUILDING LINES AND EXISTING CURBS.
5. 'ROUND OFF' ALL SHARP RIDGES EXISTING ON SITE WHETHER OR NOT SUCH CONDITIONS ARE INDICATED ON PLANS.
6. NOTIFY SAC OWNER'S REPRESENTATIVE TO REVIEW ROUGH GRADES PRIOR TO PLACEMENT OF TOPSOIL AND FINE GRADING PRIOR TO PLANTING.
7. ALL AREAS SHALL HAVE POSITIVE DRAINAGE TO APPROVED DRAINAGE STRUCTURES OR CONVEYANCES.
8. PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS AT 0.5% SLOPE, MINIMUM.
9. ALL WALKWAYS AND PAVED AREAS SHALL HAVE SMOOTH CONTINUOUS ELEVATION CHANGES.
10. SET STRAIGHT GRADES BETWEEN GIVEN ELEVATIONS. UNL OTHERWISE INDICATED.
11. PROVIDE 2% MAX. SLOPE, PERPENDICULAR TO DIRECTION OF TRAVEL ON ALL PAVED PEDESTRIAN SURFACES, UNLESS NOTED OTHERWISE.
12. GRADE BREAK LINES ARE SHOWN GRAPHICALLY TO ILLUSTRATE DRAINAGE PATTERNS AND ARE NOT TO BE INSTALLED AS ACTUAL JOINT LINES, EXCEPT WHERE THEY COINCIDE WITH PAVING JOINTS.
13. INSTALL DRAINS IN PAVING SQUARE WITH AND ALIGNING TO PAVING JOINTS AS SHOWN.
14. VERIFY IN FIELD THAT AS-BUILT CONDITIONS MATCH PRECISE ELEVATIONS PROVIDED ON PLANS.
15. SITE SURVEY WAS PREPARED BY BSH ON FEBRUARY 15TH, 2017. ALL GRADES SHOWN ON THE DRAWINGS ARE BASED UPON THE DATUM ESTABLISHED BY THE SURVEYOR. WALKER MACY ASSUMES NO RESPONSIBILITY FOR ACCURACY OF SURVEYED CONDITIONS AS SHOWN. SURVEY INFORMATION IS PROVIDED FOR REFERENCE ONLY. NOT ALL SURVEYED SPOT ELEVATIONS ARE SHOWN.
16. ALL VERTICAL CURVES SHALL BE SMOOTH AND CONTINUOUS.
17. NOTIFY LANDSCAPE ARCHITECT IF EXISTING SITE CONDITIONS REQUIRE GRADING TO OCCUR OUTSIDE DESIGNATED LIMIT OF WORK PRIOR TO DOING SO.
18. WHERE EXISTING PATHS ARE BEING REMOVED AND REGRADED WITH LAWN OR PLANTING, RESTORE GRADE TO MATCH ORIGINAL AND ADJACENT FINISH GRADES. A

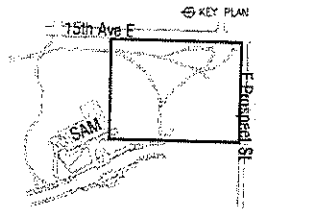
GRADING LEGEND

- (DRIP LINE) EXISTING TREE
- LIMIT OF WORK
- 104 PROPOSED CONTOUR
- EXISTING CONTOUR
- 104.77 PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- GRADE BREAK
- FLOW LINE
- MATCH EXISTING ELEVATION
- 4.5% DIRECTION AND PERCENTAGE OR WAY RATIO OF SLOPE
- RELOCATED LIGHT STANDARD, SEE ELECTRICAL AND STRUCTURAL DRAWINGS.



1 PATH GRADING
SCALE: 1/2" = 1'

KEY PLAN



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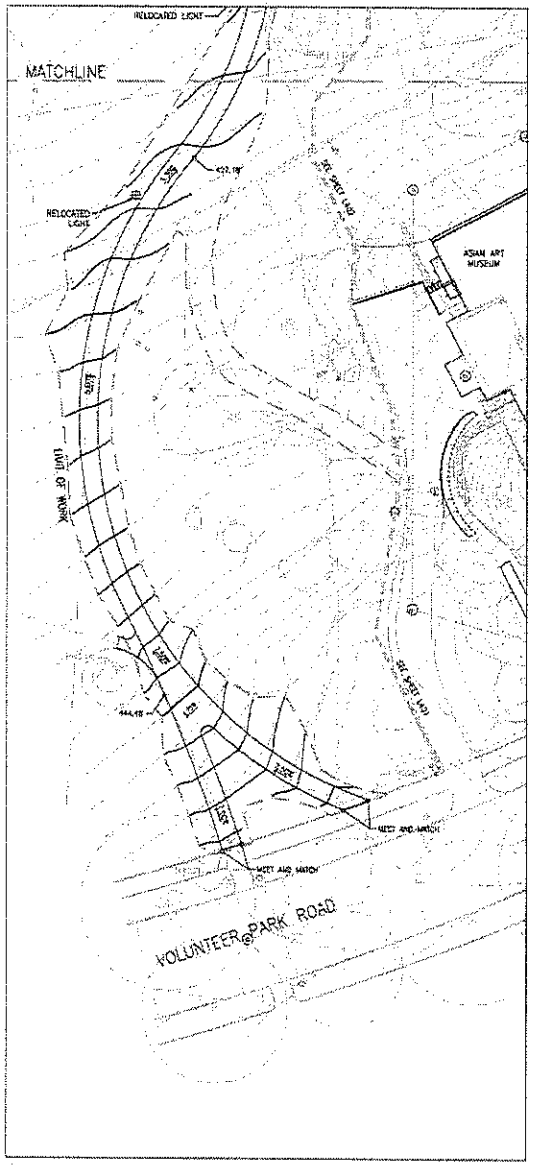
CHRISTOPHER S. JONES
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

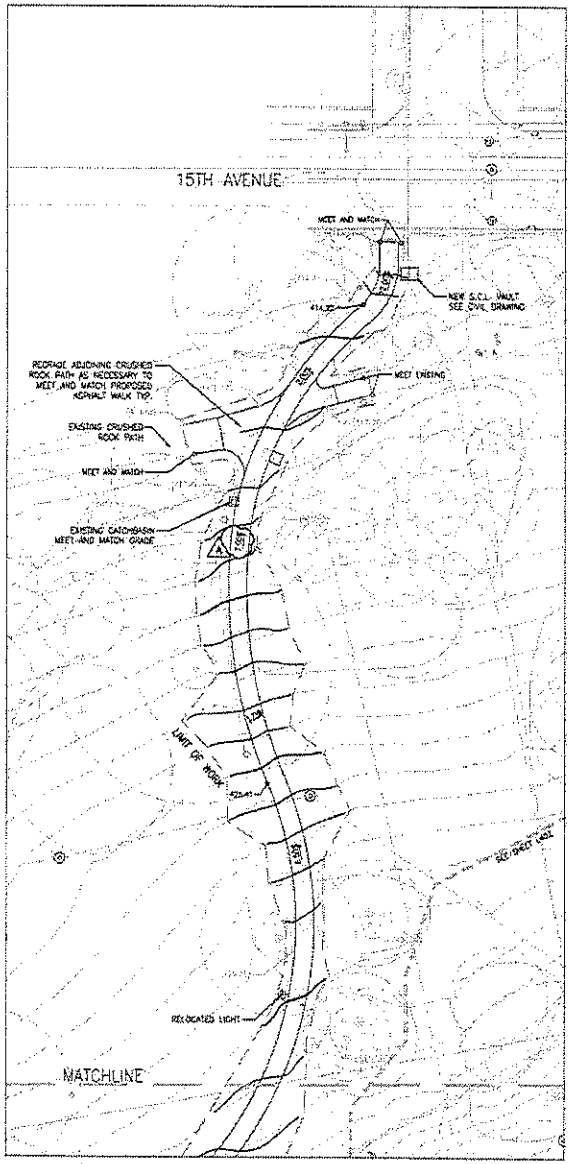
Construction Documents

Grading Plan - South

L941



NORTH PATH - WEST SIDE
SCALE: 1" = 20'



NORTH PATH - EAST SIDE
SCALE: 1" = 20'

GRADING LEGEND

- EXISTING TREE (DRIP LINE)
- LIMIT OF WORK
- PROPOSED CONTOUR
- EXISTING CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- GRADE BREAK
- FLOW LINE
- MATCH EXISTING ELEVATION
- DIRECTION AND PERCENTAGE OR H:V RATIO OF SLOPE
- RELOCATED LIGHT STANDARD, SEE ELECTRICAL AND STRUCTURAL DRAWINGS

GRADING NOTES

1. GRADING PLAN REPRESENTS DESIGN INTENT. CONSTRUCTION DETAILS FOR PATHWAYS SHALL SUPERCEDE GRADES AS SHOWN ON GRADING PLAN. ACTUAL FINISH GRADES OF PATHWAYS AND ADJACENT LANDSCAPE SHALL BE VERIFIED OR ADJUSTED PENDING REMOVAL OF EXISTING PATHS AND DISCOVERY OF SUBGRADE CONDITIONS. NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCY BETWEEN GRADING PLAN AND CONSTRUCTION DETAILS, PRIOR TO BEGINNING WORK.
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3. PROTECT ALL TREES INDICATED TO REMAIN.
4. ALL PROPOSED GRADES ARE TO MEET AND BLEND IN WITH EXISTING GRADING AT PROJECT LIMIT, PROPERTY LINES, BUILDING LINES AND EXISTING CURBS.
5. 'ROUND OFF' ALL SHARP RIDGES EXISTING ON SITE WHETHER OR NOT SUCH CONDITIONS ARE INDICATED ON PLANS.
6. NOTIFY THE OWNER'S REPRESENTATIVE TO REVIEW ROUGH GRADES PRIOR TO PLACEMENT OF TOPSOIL; AND FINE GRADING PRIOR TO PLANTING.
7. ALL AREAS SHALL HAVE POSITIVE DRAINAGE TO APPROVED DRAINAGE STRUCTURES OR CONVEYANCES.
8. PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS AT 0.5% SLOPE, MINIMUM.
9. ALL WALKWAYS AND PAVED AREAS SHALL HAVE SMOOTH AND CONTINUOUS ELEVATION CHANGES.
10. SET STRAIGHT GRADES BETWEEN GIVEN ELEVATIONS, UNL OTHERWISE INDICATED.
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12. GRADE BREAK LINES ARE SHOWN GRAPHICALLY TO ILLUSTRATE DRAINAGE PATTERNS AND ARE NOT TO BE INSTALLED AS ACTUAL JOINT LINES, EXCEPT WHERE THEY COINCIDE WITH PAVING JOINTS.
13. INSTALL DRAINS IN PAVING, SQUARE WITH AND ALIGNING TO PAVING JOINTS AS SHOWN.
14. VERIFY IN FIELD THAT AS-BUILT CONDITIONS MATCH PRECISE ELEVATIONS INDICATED ON PLANS.
15. SITE SURVEY WAS PREPARED BY GRH ON FEBRUARY 13TH, 2017. ALL GRADES SHOWN ON THE DRAWINGS ARE BASED UPON THE DATUM ESTABLISHED BY THE SURVEYOR. WALKER MACY ASSUMES NO RESPONSIBILITY FOR ACCURACY OF SURVEYED CONDITIONS AS SHOWN. SURVEY INFORMATION IS PROVIDED FOR REFERENCE ONLY. NOT ALL SURVEYED SPOT ELEVATIONS ARE SHOWN.
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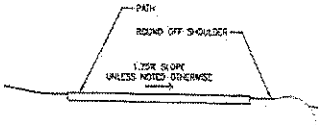
17. NOTIFY LANDSCAPE ARCHITECT IF EXISTING SITE CONDITIONS REQUIRE GRADING TO OCCUR OUTSIDE DESIGNATED LIMIT OF WORK PRIOR TO DOING SO.
18. WHERE EXISTING PATHS ARE BEING REMOVED AND REPLACED WITH LAWN OR PLANTING, RESTORE GRADE TO MATCH ORIGINAL AND ADJACENT FINISH GRADES. (A)



1 PATH GRADING
SCALE: 1/2" = 1'
SECTION

KEY PLAN



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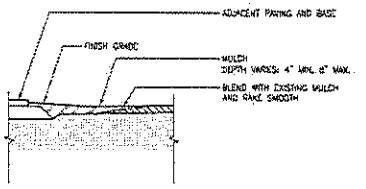
Asian Art Museum Expansion & Renovation

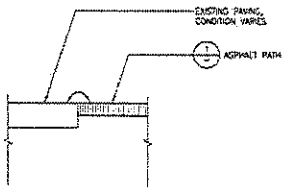
Construction Documents

Grading Plan - North

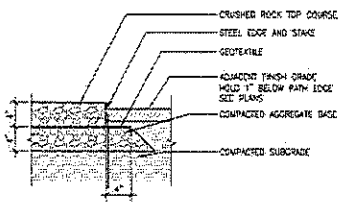
L942



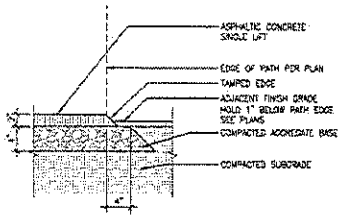
10 MULCH BED
SCALE: 3/4"=1'-0" SECTION



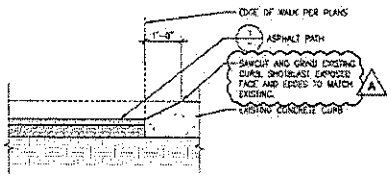
7 NEW PATH AT EXISTING PATH - ASPHALT
SCALE: 1 1/2" = 1'-0" SECTION



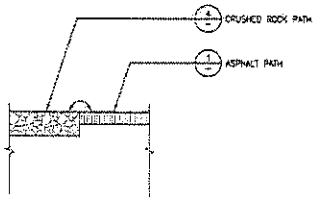
4 CRUSHED ROCK PATH
SCALE: 1 1/2" = 1'-0" SECTION



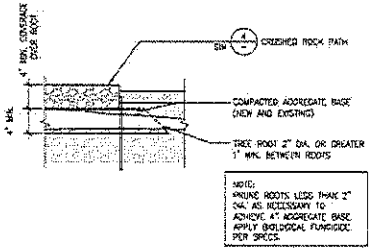
1 ASPHALT PATH - TYPICAL
SCALE: 1 1/2" = 1'-0" SECTION



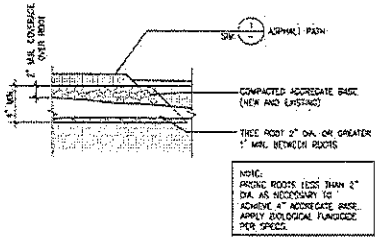
11 CONCRETE CURB CUT
SCALE: 3/4"=1'-0" SECTION



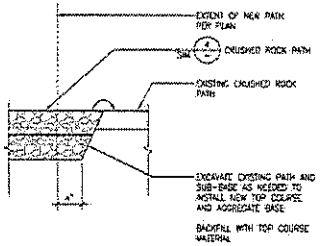
8 ASPHALT PATH AT CRUSHED ROCK PATH
SCALE: 1 1/2" = 1'-0" SECTION



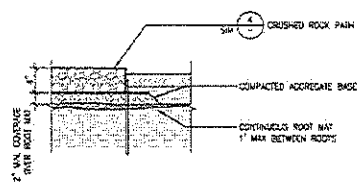
5 CRUSHED ROCK PATH AT TREE ROOT 1
SCALE: 1 1/2" = 1'-0" SECTION



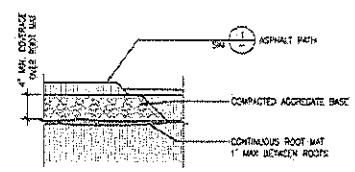
2 ASPHALT PATH AT TREE ROOTS 1
SCALE: 1 1/2" = 1'-0" SECTION



9 NEW PATH AT EXISTING PATH - CRUSHED ROCK
SCALE: 1 1/2" = 1'-0" SECTION



6 CRUSHED ROCK PATH AT TREE ROOTS 2
SCALE: 1 1/2" = 1'-0" SECTION



3 ASPHALT PATH AT TREE ROOTS 2
SCALE: 1 1/2" = 1'-0" SECTION

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Asian Art Museum Expansion & Renovation

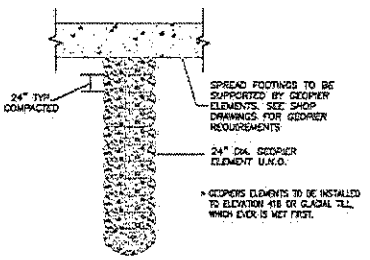
Construction Documents

Path Details

L951

RAP ELEMENT FOUNDATION CONSTRUCTION NOTES:

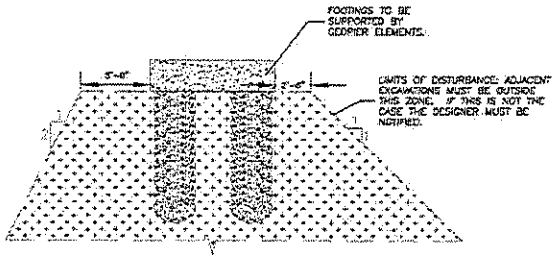
1. RAMMED AGGREGATE PIER (RAP) FOUNDATION SUPPORT IS AS DESIGNED BY GEOPIER FOUNDATION COMPANY, INC.; DAVIDSON, NORTH CAROLINA (DESIGNER).
2. RAP ELEMENT LAYOUT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR (GC). GEOPIER ELEMENT SHALL BE INSTALLED IN THE FIELD WITHIN 6-INCHES OF LOCATION SHOWN ON THESE PLANS.
3. A QUALIFIED, FULL-TIME QUALITY CONTROL (QC) REPRESENTATIVE PROVIDED BY THE RAP INSTALLER (THE INSTALLER) SHALL BE RESPONSIBLE FOR INSTALLATION OF THE RAP ELEMENTS IN ACCORDANCE WITH THE DESIGN, AND SHALL REPORT ALL GEOPIER FOUNDATION CONSTRUCTION ACTIVITIES TO THE DESIGNER. IF AUTHORIZED BY THE OWNER, THE QC REPRESENTATIVE SHALL COORDINATE QC ACTIVITIES WITH THE TESTING AGENCY HIRED BY THE OWNER. UNDER NO CIRCUMSTANCES SHALL THE TESTING AGENCY DIRECT RAP INSTALLATION PROCEDURES.
4. RAP ELEMENTS SHALL BE BASED ON THE FOLLOWING CRITERIA UNLESS OTHERWISE APPROVED IN WRITING BY THE DESIGNER:
   A. RAP ELEMENTS SHALL BE WITHIN 3 INCHES OR DEEPER THAN THE DEPTHS SHOWN ON THE PLANS.
   B. AVERAGE COMPACTED LIFT THICKNESS DURING EACH DAYS PRODUCTION SHALL BE APPROXIMATELY 24 INCHES.
   C. A BST SHALL BE PERFORMED ON THE FIRST FIVE RAP INSTALLED. RESULTS OF THE INITIAL BST SHOULD BE PROVIDED TO THE DESIGNER FOR REVIEW AND ESTABLISHMENT OF ACCEPTANCE CRITERIA AND FREQUENCY OF BST. THE FREQUENCY OF BST MAY VARY DEPENDING ON THE SOIL CONDITIONS, HOWEVER, BST SHALL BE PERFORMED ON NO LESS THAN 10% OF PRODUCTION RAP.
   D. RAP ELEMENT AGGREGATE SHALL CONSIST OF TYPE I GRADE B IN GENERAL ACCORDANCE WITH ASTM D-1241-68, OR APPROVED BY GEOPIER DESIGNER AND SUCCESSFULLY USED IN THE MODULUS TEST.
5. WHEN OBSTRUCTIONS ARE ENCOUNTERED THAT CANNOT BE REMOVED WITH CONVENTIONAL RAP INSTALLATION EQUIPMENT, THE QC SHALL BE RESPONSIBLE FOR REMOVING THE OBSTRUCTIONS. IF THE QC DOES NOT DO SO IN A TIMELY MANNER THAT DOES NOT INTERRUPT RAP PRODUCTION, THE INSTALLER MAY REMOVE OBSTRUCTION(S) AND SHALL BE REIMBURSED FOR COSTS INCURRED, INCLUDING LABOR, EQUIPMENT, AND MATERIALS. IN THE EVENT OBSTRUCTIONS ARE ENCOUNTERED BELOW THE DESIGN BOTTOM OF FOOTING ELEVATION THE OBSTRUCTION SHALL BE REMOVED AS OUTLINED ABOVE. THE RESULTING EXCAVATION SHALL THEN BE BACKFILLED AND COMPACTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. THE AREA SHALL BE TESTED BY THE OWNER'S TESTING AGENCY AND THE COMPACTION TEST RESULTS SHALL BE SUBMITTED TO THE INSTALLER AND THE DESIGNER.
6. RAP ELEMENTS NOT MEETING THE REQUIREMENTS DEFINED IN THE DESIGN AND MODULUS TEST SHALL BE RE-INSTALLED TO MEET PROJECT REQUIREMENTS UNLESS OTHERWISE APPROVED IN WRITING BY THE DESIGNER.
7. FOOTING ELEVATIONS ARE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE REPORTED IN WRITING TO THE INSTALLER'S QC REPRESENTATIVE PRIOR TO INSTALLING RAP ELEMENTS.
8. UTILITY LOCATIONS ARE THE RESPONSIBILITY OF THE GC. THE DESIGNER SHALL BE NOTIFIED OF ANY CONFLICTS WITH RAP LOCATIONS SHOWN ON THE PLANS. NEW UTILITIES EXCAVATIONS SHALL BE LIMITED TO THE ZONE DEPICTING ON DETAIL 1 ON THIS SHEET. IF EXCAVATIONS ARE PLANNED WITHIN THE RAP "NO DIG" ZONE, THE DESIGNER SHOULD BE NOTIFIED IMMEDIATELY TO DISCUSS EXCAVATION OPTIONS.
9. RAP ELEMENTS ARE LOCATED AT THE INTERSECTION OF REFERENCE GRID LINES OR AT THE CENTERLINE OF STRIP FOOTINGS UNLESS DIMENSIONED OTHERWISE.
10. AFTER COMPLETION OF RAP INSTALLATIONS, THE GC IS RESPONSIBLE FOR PROTECTION OF THE WORK. THIS INCLUDES, BUT IS NOT LIMITED TO, PROPER SITE DRAINAGE TO PREVENT PONDING OF WATER ABOVE THE RAP ELEMENTS AND APPROPRIATE CONTROL AND COORDINATION OF EARTHWORK AND ANY SUBSEQUENT DRILL ACTIVITIES SUCH AS ELEVATOR SHAFT CONSTRUCTION, TO PREVENT DAMAGE TO INSTALLED RAP ELEMENTS.
11. ALL RAP ELEMENTS HAVE A MINIMUM NOMINAL TOP DIAMETER OF 24 INCHES WITH COMPACTED 24 INCH LIFTS. GEOPIERS ELEMENTS TO BE INSTALLED TO ELEVATION 418 OR GLACIAL TILL, WHICH EVER IS MET FIRST.
12. THESE DRAWINGS ARE BASED ON THE STRUCTURAL DRAWINGS PROVIDED BY MAGNUSSON KLEMENCIC ASSOCIATES. THE RAP ELEMENT LAYOUT LOCATION PLAN AND FOOTING DETAILS PLAN ARE FOR RAP ELEMENT NUMBER, LOCATION, AND LAYOUT ONLY. FOOTING LOCATIONS, SIZES, AND ORIENTATION SHOWN ON THESE PLANS ARE FOR INFORMATION ONLY. PLEASE REFER TO STRUCTURAL PLANS FOR SPECIFIC FOUNDATION DIMENSIONS AND LOCATION. THE DESIGNER ACCEPTS NO RESPONSIBILITY FOR LOCATION OF FOOTINGS SHOWN ON THESE PLANS. THE DESIGNER SHALL BE NOTIFIED IMMEDIATELY IF INFORMATION ON THESE PLANS CONFLICTS WITH STRUCTURAL OR ARCHITECTURAL DRAWINGS.
13. THE RAP FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL INFORMATION PROVIDED IN THE SUBSURFACE EXPLORATION BY HAYNE MCELROY & ASSOCIATES, REPORT DATE JULY 29, 2016. GEOPIER FOUNDATION COMPANY, INC. HAS RELIED ON THIS INFORMATION AND WE HAVE NO REASON TO SUSPECT ANY OF THE INFORMATION IN THE REPORT IS IN ERROR. GEOPIER FOUNDATION COMPANY, INC. IS NOT RESPONSIBLE FOR ERRORS OR OMISSIONS IN THE REPORT THAT MAY AFFECT THE PARAMETER VALUES IN OUR DESIGN. IF THE SUBSURFACE OR SITE CONDITIONS DIFFER FROM THOSE UTILIZED IN THE DESIGN THE DESIGNER SHALL BE NOTIFIED IMMEDIATELY.
14. RAP FOUNDATION DESIGN LOADS ARE BASED ON THE DESIGN INFORMATION PROVIDED TO US BY MAGNUSSON KLEMENCIC & ASSOCIATES. IN THE EVENT THE STRUCTURAL LOADS VARY THE DESIGNER SHALL BE NOTIFIED.



1 TYPICAL GEOPIER ELEMENT
NOT TO SCALE

GEOPIER LEGEND:

GEOPIER GP3 - 24" DIAMETER



2 ADJACENT EXCAVATION DETAIL
NOT TO SCALE

CONCRETE FOOTING CONSTRUCTION SUPPORTED BY RAP NOTES

1. ALL EXCAVATIONS FOR FOOTINGS SUPPORTED BY RAMMED AGGREGATE PIERS SHALL BE PREPARED IN THE FOLLOWING MANNER BY THE QC: OVEREXCAVATION BELOW THE BOTTOM OF FOOTING SHALL BE LIMITED TO THREE INCHES. THIS INCLUDES LIMITING THE TEETH OF EXCAVATORS FROM OVEREXCAVATION BEYOND THREE INCHES BELOW THE FOOTING ELEVATION.
2. FOOTINGS SHALL BE POURED AS SOON AS POSSIBLE FOLLOWING FOOTING EXCAVATIONS. IT IS THE CONTRACTORS RESPONSIBILITY TO PROTECT FOOTING BEARING SURFACES FROM WET WEATHER AND DISTURBANCE. A "MUD MAT" (2 INCH THICKNESS OF LEAN CONCRETE) OR COMPACTED CRUSHED ROCK SURFACE IS RECOMMENDED TO PROTECT BEARING SURFACES.
3. PRIOR TO CONCRETE OR MUD MAT PLACEMENT, THE TOP OF THE EXCAVATED SOIL AND RAMMED AGGREGATE PIERS SHALL BE COMPACTED WITH A STANDARD, LIGHTLY OPERATED IMPACT COMPACTOR (I.E. JUMPING JACK COMPACTOR). COMPACTION SHALL BE PERFORMED OVER THE ENTIRE FOOTING SUBGRADE TO COMPACT ANY LOOSE SURFACE SOIL AND LOOSE SURFACE PIER AGGREGATE.
4. WATER SHALL NOT BE ALLOWED TO ACCUMULATE IN THE FOOTING EXCAVATIONS PRIOR TO CONCRETE PLACEMENT OR ALLOWED TO ACCUMULATE OVER THE POURED FOOTING.
5. EXCAVATION AND SURFACE COMPACTION OF ALL FOOTING SUBGRADES SHALL BE THE RESPONSIBILITY OF THE QC.
6. THE TESTING AGENCY SHALL INSPECT EACH FOOTING AND APPROVE IT IN WRITING ON THE SAME DAY THAT THE CONCRETE OR MUD MAT IS PLACED IN THE FOOTING EXCAVATION. THE APPROVAL SHALL STATE THAT ALL FOOTING BOTTOMS INCLUDING MATRIX SOILS AND RAP TOPS HAVE NOT BEEN OVEREXCAVATED MORE THAN THREE-INCHES BELOW THE BOTTOM OF THE FOOTING, HAVE BEEN KEPT FREE OF WATER ACCUMULATION, AND HAVE BEEN REASONABLY DENSIFIED WITH A HAND-HELD MECHANICAL IMPACT COMPACTOR ON THE SAME DAY THAT THE CONCRETE WAS PLACED.
7. THE QC IS RESPONSIBLE FOR MEASURING TOP OF FOOTING ELEVATIONS TO ACCURACY OF 0.01 FEET. MEASUREMENTS SHALL BE TAKEN BY A LICENSED PROFESSIONAL SURVEYOR BEFORE LOADS ARE APPLIED TO THE FOOTINGS.
8. IN THE EVENT THAT FOOTING BOTTOM PREPARATIONS, AS DESCRIBED ABOVE, ARE NOT PERFORMED OR DOCUMENTED IN ACCORDANCE WITH THIS SECTION, ANY WRITTEN OR IMPLIED WARRANTY WITH RESPECT TO GEOPIER FOUNDATION PERFORMANCE CAN BE CONSIDERED VOID.

NOTE: GEOPIER DESIGN DOCUMENTS AND PLANS ARE ONLY VALID IF INSTALLED BY A LICENSED GEOPIER INSTALLER.

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NO.	DESCRIPTION	BY	APPROVED
2016-1	1ST CONSTRUCTION PLAN SUBMITTAL REVIEW SET	MJC	
2016-2	2ND CONSTRUCTION PLAN SUBMITTAL REVIEW SET	MJC	

GEOPIER CONSTRUCTION NOTES & DETAILS

8/17/2017

ASIAN ART MUSEUM EXPANSION

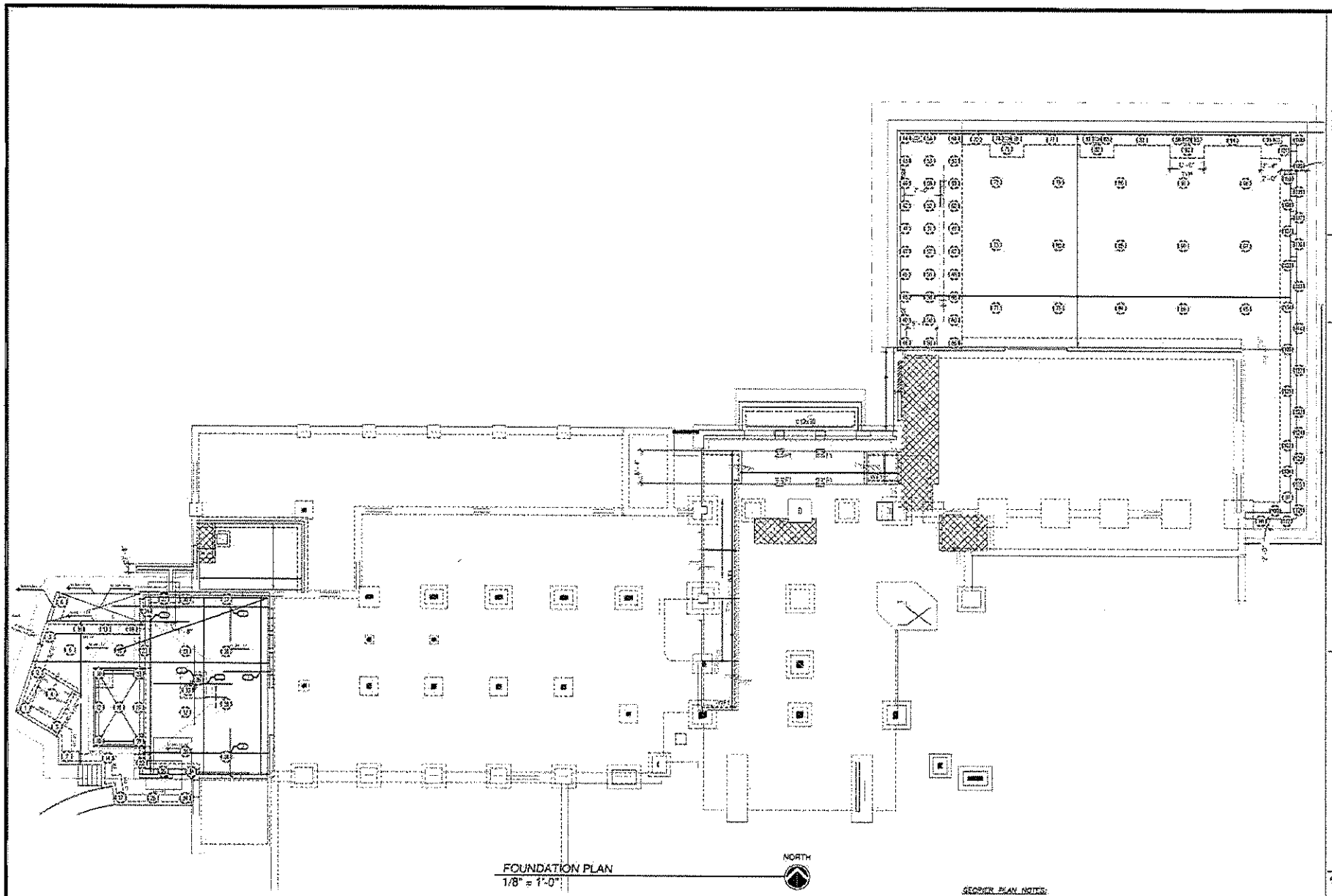
BELLEVUE, WASHINGTON

geopier
GEOPIER FOUNDATION COMPANY
621 Lake Patrick, Suite 100
Jackson, WI 53005

PROJECT NUMBER
17-GNW-00774

DATE
8/13/2017

SHEET NUMBER
GP0.1



FOUNDATION PLAN
1/8" = 1'-0"

NORTH

NOTE: GEOPIER DESIGN DOCUMENTS AND PLANS ARE ONLY VALID IF INSTALLED BY A LICENSED GEOPIER INSTALLER.

GEOPIER PLAN NOTES:

1. THIS DRAWING IS BASED ON STRUCTURAL DRAWINGS PROVIDED BY MADRIGRAM KLEMENCIC ASSOCIATES.
2. FOOTING OUTLINES ARE FOR INFORMATION ONLY. SEE STRUCTURAL AND/OR ARCHITECTURAL PLANS FOR FOOTING DIMENSIONS AND DETAILS.
3. FOOTING LOCATIONS SHALL BE IN ACCORDANCE WITH STRUCTURAL AND/OR ARCHITECTURAL DRAWINGS, DIMENSIONS, AND DETAILS.
4. GEOPIER ELEMENTS UNDER WALLS AND COLUMNS SHALL BE CENTERED UNDER FOOTINGS AS SHOWN, DIMENSIONED FROM CONTROL POINTS ESTABLISHED FROM STRUCTURAL AND/OR ARCHITECTURAL PLANS.

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GEOPIER FOUNDATION PLAN

ASIAN ART MUSEUM EXPANSION

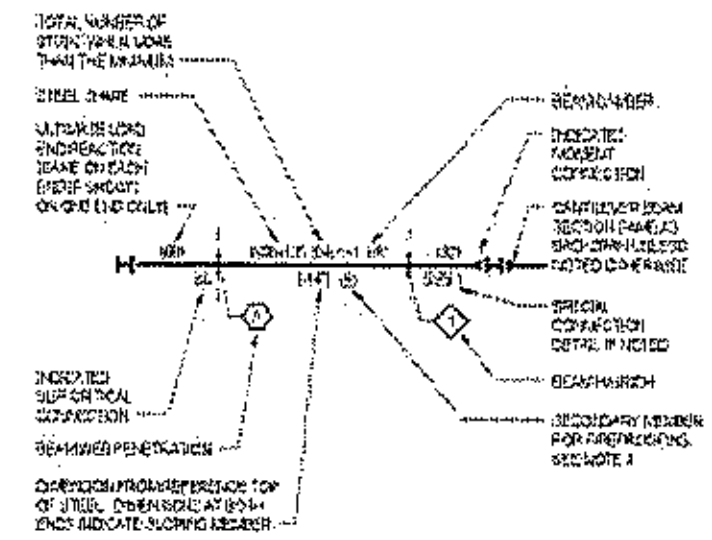
BELLEVUE, WASHINGTON

GEOPIER NORTHWEST
Kirkland, Washington

PROJECT NUMBER
17-GNW-00774

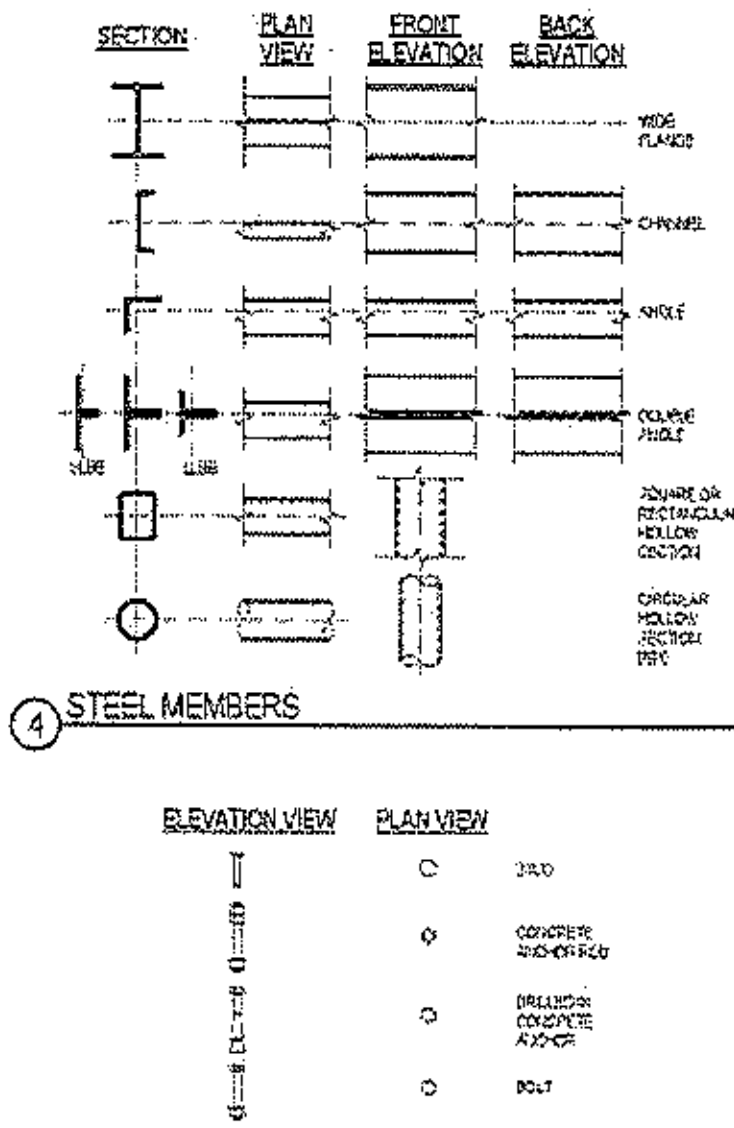
DATE
5/13/2017

SHEET NUMBER
GP1.1



8 BEAM CALLOUT KEY

4 STEEL MEMBERS



9 CONNECTORS

DRAWING LIST	
SHEET NUMBER	SHEET NAME
S001	ABBREVIATIONS, SYMBOLS, DRAWING LIST
[illegible]	GENERAL NOTES
[illegible]	GENERAL NOTES
[illegible]	LOAD MAPS
[illegible]	LOAD MAPS
[illegible]	LOAD MAPS
[illegible]	FLOOR PLAN - LEVEL 1
[illegible]	ENLARGED GALLERY EXPANSION FLOOR PLAN - LEVEL 1
[illegible]	FLOOR PLAN - LEVEL 2
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[illegible]	PARTIAL PLANS
[illegible]	PARTIAL PLANS
[illegible]	BRACED FRAME ELEVATIONS
[illegible]	TYPICAL BRACED FRAME CONNECTION SECTIONS AND DETAILS
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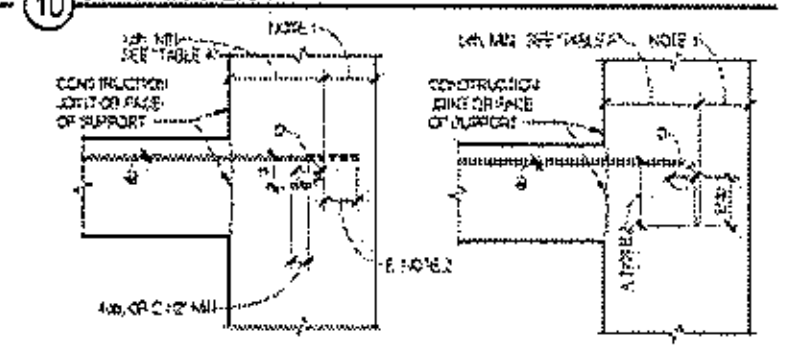
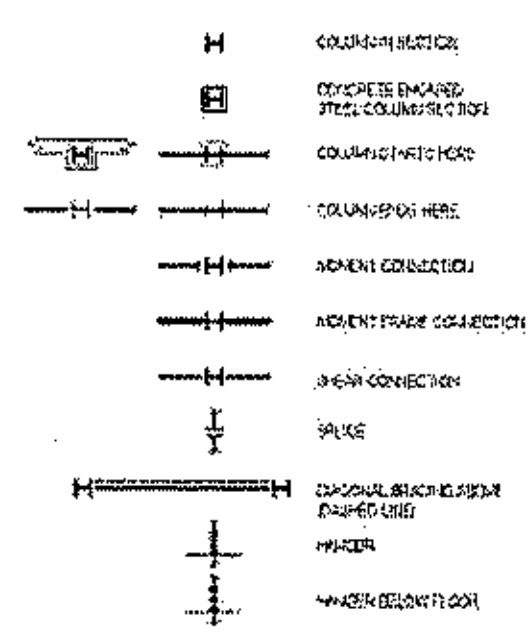
10 DRAWING LIST

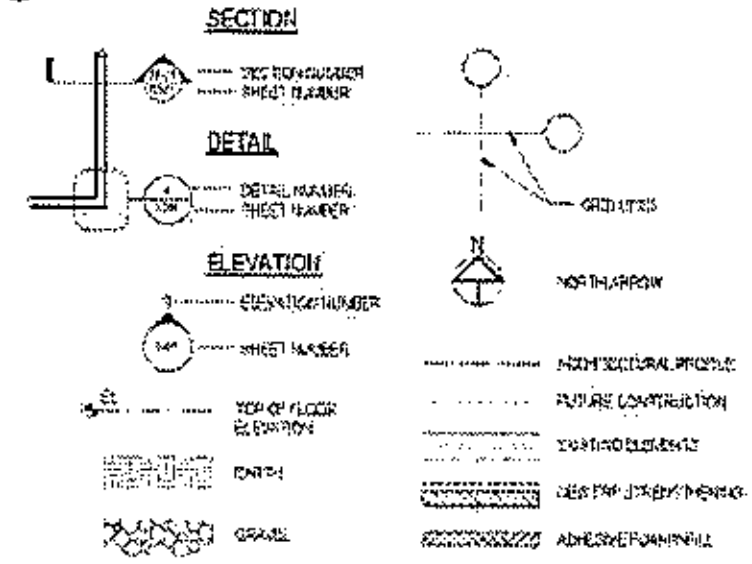


12 ABBREVIATIONS



13 STEEL SYMBOLS

14 MISCELLANEOUS SYMBOLS



17 CONCRETE SYMBOLS

18 REINFORCING BAR DEVELOPMENT AND SPLICE LENGTH TABLES

20 STANDARD HOOKS AND EMBEDMENT

lmn Architecture Urban Design Interiors

MAGNUSSON KLEMENCIC ASSOCIATES

SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

100% Construction Documents

ABBREVIATIONS, SYMBOLS, DRAWING LIST

S001

GENERAL

ALL TYPICAL DETAILS AND NOTES SHOWN OR DRAWINGS SHALL APPLY UNLESS NOTED OTHERWISE. TYPICAL DETAILS MAY LIST ADDITIONAL OR LESS INFORMATION THAN SHOWN OR CALLED OUT ON SPECIFIC PLANS, BUT SHALL APPLY AS SHOWN OR DESCRIBED IN THE DETAILS WHERE THEY ARE NOTED OR REFERENCED ON THE DRAWINGS. THE SPECIFIED TYPICAL DETAIL SHALL BE USED WHERE NO SPECIFIC DETAIL IS SHOWN. THE CONTRACTOR IS RESPONSIBLE TO CHECK OUT THE APPROPRIATE TYPICAL DETAIL FROM THOSE PROVIDED. THE CONTRACTOR SHALL SUBMIT ALL PROPOSED ALTERNATE TYPICAL DETAILS TO THOSE PROVIDED WITH RELATED CALCULATIONS TO THE ENGINEER FOR APPROVAL PRIOR TO SHOP DRAWING PRODUCTION AND FIELD USE.

BUILDING CODE

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE BUILDING CODE. THE PUBLICATIONS LISTED BELOW ARE THE GOVERNING CODES AND STANDARDS AND ARE REFERENCED BY THOSE BODIES OR SIMILAR. IN THE CASE OF CONFLICTING REQUIREMENTS, THE BUILDING CODE SHALL GOVERN.

APPLICABLE CODES AND STANDARDS

BUILDING CODE	INTERNATIONAL BUILDING CODE (IBC) 2018 EDITION (INCLUDING THE CITY OF SEATTLE BUILDING CODE AMENDMENTS)
ACI 318	AMERICAN CONCRETE INSTITUTE, "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE," 2014 EDITION
RCSC	RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS, "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS," 2009 EDITION
AISC 341	AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS," 2016 EDITION
AISC 360	AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS," 2016 EDITION
ASCE/SEI	AMERICAN SOCIETY OF CIVIL ENGINEERS "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES," 2016 EDITION
ASCE 41	AMERICAN SOCIETY OF CIVIL ENGINEERS, "SEISMIC REHABILITATION OF EXISTING BUILDINGS," 2013 EDITION, INCLUDING SUPPLEMENT NO. 1
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS (LATEST EDITION UNLESS NOTED)
AWS A2.4	AMERICAN WELDING SOCIETY, "STANDARD SYMBOLS FOR WELDING, BRAZING AND NONDESTRUCTIVE EXAMINATION," 2007 EDITION
AWS D1.1	AMERICAN WELDING SOCIETY, "STRUCTURAL WELDING CODE - STEEL," 2015 EDITION
AWS D1.4	AMERICAN WELDING SOCIETY, "STRUCTURAL WELDING CODE - REINFORCING STEEL," 2005 EDITION
AWS D1.8	AMERICAN WELDING SOCIETY, "STRUCTURAL WELDING CODE - SEISMIC SUPPLEMENT," 2009 EDITION
ICC	INTERNATIONAL CODE COUNCIL, INTERNATIONAL CODE COUNCIL - EVALUATION SERVICES REPORTS

CONCRETE

MIXING, BATCHING, PLACING, CURING, AND FINISHING OF ALL CONCRETE, AND SELECTION OF CONCRETE MATERIALS SHALL CONFORM TO ACI 301, "SPECIFICATIONS FOR STRUCTURAL CONCRETE," EXCEPT AS NOTED BELOW. PROPORTIONS OF NONPRESTRESSED CONCRETE SHALL BE BASED ON FIELD EXPERIENCE AND/OR TRIAL MIXTURES WITH AGGREGATES PROPORTIONED TO PRODUCE A DENSE, WORKABLE MIX OF THE CONSISTENCY THAT CAN BE PLACED WITHOUT SEGREGATION OR EXCESSIVE "SURFACE WASH."

NO CONCRETE NOTED BELOW SHALL BE PLACED TO THE ARCHITECT AND ENGINEER'S PRIOR TO SLUMP TEST SELECTION OF CONCRETE MIXTURE PROPORTIONS SHALL BE BY QUALIFIED LABORATORY WITH AT LEAST FIVE YEARS OF EXPERIENCE IN SIMILAR CONCRETE MIXTURES. MIX PROPORTIONS SHALL MEET OR EXCEED THE REQUIREMENTS OF THE FOLLOWING CHART. THE MORE STRINGENT OF THE REQUIREMENTS LISTED BELOW SHALL GOVERN.

PROVIDE ASTM C150 TYPE I OR TYPE II PORTLAND CEMENT UNLESS NOTED OTHERWISE. THE CONCRETE MIXTURE, INCLUDING CEMENT CONTENT, SHALL BE ADEQUATE FOR THE SPECIFIED EXPOSURE CONDITIONS FOR FREEZE/THAW, WATER-CEMENTITIOUS, DURABILITY, AND PERMEABILITY.

MAXIMUM FLY ASH AS A PERCENTAGE OF TOTAL WEIGHT OF CEMENTITIOUS MATERIAL SHALL NOT EXCEED 15. FLY ASH SHALL BE CLASS F, AND THE ADDITION REQUIREMENTS WATER-CEMENTITIOUS RATIO, AND INCREASED TOTAL CEMENTITIOUS MATERIAL, INCLUDING FLY ASH AND OTHER POZZOLANIC MATERIALS. MAXIMUM SIZE OF AGGREGATE SHALL BE AS LISTED BELOW.

ALL CONCRETE USED IN HORIZONTAL SURFACES EXPOSED TO THE WEATHER SHALL CONTAIN ENTRAINED AIR. ADMIXTURE TO PRODUCE AIR ENTRAINED CONCRETE WITH TOTAL AIR CONTENT AS NOTED IN THE FOLLOWING EXPOSURE CLASSIFICATION TABLE. TOLERANCE FOR AIR CONTENT SHALL BE +/- 1.5 PERCENT. AIR CONTENT SHALL BE MEASURED AT THE DISCHARGE OF THE TRUCK. IF CONCRETE IS PUMPED, AIR CONTENT SHALL BE MEASURED AT THE DISCHARGE END OF THE PUMP LINE. ALLOWED SLUMP TOLERANCE IS +/- 1 INCH OF THE SPECIFIED SLUMP.

THE USE OF SUPER PLASTICIZERS AND WATER REDUCERS IS ALLOWED, BUT NOT REQUIRED. ALL ADMIXTURES SHALL BE OF A SINGLE FIRM, UNLESS OTHERWISE APPROVED BY THE ENGINEER.

CONCRETE EXPOSURE CLASSIFICATION TABLE

LOCATION	f'c (psi)	SLUMP (inches)	MAX. W/C RATIO	TOTAL AGGREGATE SIZE	MINIMUM CEMENTITIOUS
MASTER HANDY DOWEL, EVANS WEIR WALLS	4000	5	0.50	1"	470
EXTERIOR EXPOSED SLABS ON GRADE, SIDEWALKS, RAMPS, DRILLED PIERS	4000	5	0.45	1"	470
INTERIOR SLABS ON GRADE	4000	5	0.50	1"	-
CONCRETE WALLS, SPREAD FOOTINGS	4000	5	0.44	1"	-
CONCRETE ON STEEL DECK	4000	5	0.44	3/4"	-
WALLS AND SPREAD BEAMS AND SLABS, GRADE BEAMS	4000	5	0.44	3/4"	-

CONCRETE

STRUCTURAL UNREINFORCED SHALL BE USED FOR WALLS SUBJECT OF CAST-IN-PLACE CONCRETE ENCLOSURE SHALL CONFORM STRICTLY TO THE REQUIREMENTS OF THE BUILDING CODE, EXCEPT FOR AMOUNT OF MIXTURE AND DIRECTIONS RULE 15-0004. EXPERIENCED LAB OR JOB SHALL BE SATISFACTORY FOR COMPLIANCE WITH THE CODE AND QUALIFICATION OF CONCRETE MIXTURE ACCORDING TO THE SPECIFICATIONS. TO ATTAIN CARE REQUIRED FOR HEAVILY REINFORCED AREAS SUCH AS PILASTERS, WALL COLUMNS, ETC. THE CONTRACTOR SHALL SUBMIT PROPOSED LOCATION OF OR SPECIFIC METHOD.

REINFORCING STEEL

ALL REINFORCING SHALL BE NEW BILLET STEEL OF GRADE AS NOTED, UNLESS NOTED OTHERWISE. BARS SHALL BE ACCURATELY TIED IN PLACE AND HELD CLEAR FROM ADJACENT FORMS. BARS SHALL BE SUPPORTED ON CHAIRS IN ACCORDANCE WITH THE STANDARD PLACING OF STANDARD PRACTICE. REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH ACI 315 "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT." THE CONTRACTOR SHALL COORDINATE ALL REINFORCING STEEL PLACEMENT DETAILS AND PROVISION TO ARRANGE FOR PLACING CONCRETE IN WORKED AREAS AND NECESSARY. SHOP DRAWINGS INCLUDING PLACING PLANS AND BILL OF MATERIALS SHALL BE SUBMITTED AND RECEIVED BY THE ARCHITECT/ENGINEER BEFORE ANY FABRICATION.

REINFORCING BARS SHALL BE LAP SPLICED FOR TENSION LESS UNLESS NOTED OTHERWISE ON THE DRAWINGS. AS A AND 4 B BARS SHALL BE SPLICED WITH MECHANICAL COUPLINGS, INCLUDING UPLINER WITH SMALLER BARS. AS A AND 4 B BARS SHALL NOT BE LAP SPLICED. AT THE CONTRACTOR'S OPTION, MECHANICAL COUPLERS SHALL BE USED FOR ANY BAR SIZE. PROVIDED A CURRENT ICC-ES EVALUATION REPORT DEMONSTRATES THAT THE PROPOSED COUPLER HAS A MINIMUM TENSILE STRENGTH OF 125% OF THE SPECIFIED YIELD STRENGTH OF THE BAR. ICC-ES EVALUATION REPORTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. IN NO EVENT SHALL THE COUPLER BE LOCATED IN A REGION OF MAXIMUM MOMENT OR SHEAR WITHIN A DISTANCE OF MAXIMUM FRAMING MEMBER DEPTH FROM THE FACE OF THE CONNECTING BEAM OR MOMENT FRAMED, WORK WHICH SPLICES MAY BE LOCATED IF THE MECHANICAL SPLICE STRENGTH IS INCREASED TO DEVELOP 150 PERCENT OF THE SPECIFIED TENSILE STRENGTH OF THE REINFORCING BAR. A SPLICE DETAIL SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW THAT SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. HEADED BARS OR STANDARD HOOKS SHALL BE PROVIDED WHERE INDICATED ON THE DRAWINGS OR AT THE CONTRACTOR'S OPTION FOR CONGESTED AREAS OF REINFORCEMENT AND WHERE SUBJECT TO THE SPECIFIED SEISMIC APPROVAL. HEADED BARS OR TERMINATIONS SHALL MEET THE REQUIREMENTS OF ACI 318 AND ASTM A970, AUSTENITIC ALLOYED STEEL HEADED BARS.

WELDING OR TACK WELDING OF REINFORCING BARS TO OTHER BARS OR TO PLATES, ANGLES, ETC. IS PROHIBITED, EXCEPT WHERE SPECIFICALLY APPROVED BY THE ENGINEER. WHERE WELDING IS APPROVED, IT SHALL BE DONE IN ACCORDANCE WITH AWS D1.4 "STRUCTURAL WELDING CODE - REINFORCING STEEL." WELDING PROCEDURES SHALL CONFORM TO THE REQUIREMENTS OF AWS D1.4.

FINISH AND CAST-IN-PLACE CONCRETE COVER OVER REINFORCING STEEL UNLESS NOTED OTHERWISE, SHALL BE AS FOLLOWS:

1. FOR CONCRETE CAST AGAINST EARTH:

   ALL BAR SIZES: 3 INCHES

2. FOR CONCRETE EXPOSED TO EARTH OR WEATHER:

   #5 BAR OR LARGER: 2 INCHES
   #4 BAR OR SMALLER: 1 1/2 INCHES

3. FOR OTHER CONDITIONS:

   SLABS:
   #14 AND #18 BARS: 1 1/2 INCHES
   #11 BAR AND SMALLER: 3/4 INCH
   TOP BARS: 3/4 INCH
   BOTTOM BARS: 1 INCH

   WALLS:
   #14 AND #18 BARS: 1 1/2 INCHES
   #11 BAR AND SMALLER: 1 INCH

   BEAMS AND COLUMNS: TIES, STIRRUPS, SPIRALS: ALL BAR SIZES: 1 1/2 INCHES

SPECIFIED CONCRETE COVER SHALL BE MEASURED TO ALL REINFORCEMENT AT CONCRETE JOINTS, SLAB CONSTRUCTION JOINTS, AND SURFACES IN CONTACT WITH CONCRETE. HOOKS AND OTHER BENDS SHALL BE SUBMITTED FOR REVIEW.

WELDED WIRE REINFORCEMENT

WELDED WIRE REINFORCEMENT OWNER SHALL BE ELECTRICALLY WELDED AND CONFORM TO ASTM A185. LAP EDGE REQUIRED OF FABRIC A MINIMUM OF ONE MESH SPACING PLUS 2 INCHES, BUT NOT LESS THAN 6 INCHES. WELDED WIRE FOR REINFORCEMENT SHALL BE SUPPORTED ON CHAIRS IN ACCORDANCE WITH THE CRSI MANUAL OF STANDARD PRACTICE.

CONCRETE CURING

IN ADDITION TO ANY CURING METHOD IN THE CONSTRUCTION DRAWINGS, CONCRETE FOR MINOR CURING SHALL BE CURED FOR NO LESS THAN SEVEN DAYS AFTER PLACEMENT. WET CONCRETE TO LOAD CURING OF LESS THAN 4 DAYS MAY BE NEGLECTED.

CONSTRUCTION JOINTS

ALL CONSTRUCTION JOINTS IN FLOORS, BEAMS, AND WALLS SHALL BE LOCATED IN ACCORDANCE WITH THE TYPICAL DETAILS OR AT THE CONTRACTOR'S OPTION, SHALL BE IN APPROXIMATELY HORIZONTAL OR VERTICAL PLANES WITH THE REINFORCING STEEL THE SURFACE OF THE HARDENED JOINTS SHALL BE ROUGHENED TO EXPOSE THE AGGREGATE AND SHALL BE CLEANED AND ROUGHENED WITH A SHARP HAMMER TO REMOVE THE AGGREGATE EMBEDDED IN THE PREVIOUS POUR. THE EXPOSED AGGREGATE SHALL PROVIDE A MINIMUM OF 1/4 INCH. ALL SURFACES OF CONSTRUCTION JOINTS SHALL BE CLEANED AND WETTED BEFORE FRESH CONCRETE IS PLACED AGAINST THEM. ALL CONSTRUCTION JOINTS SHALL BE APPROVED BY THE ENGINEER.

VERTICAL CONSTRUCTION JOINTS IN WALLS SHALL BE HELD TO A MAXIMUM SPACING OF 40'-0".

ALL CONSTRUCTION JOINTS FOR SLIPFORM AND CLIMB FORMS SHALL BE IN ACCORDANCE WITH THE TYPICAL DETAILS.

ALL CONSTRUCTION JOINTS IN SLABS, BEAMS, AND WALLS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW BEFORE PLACEMENT. CONSTRUCTION JOINTS SHALL BE AT LOCATIONS PREFERABLY NOTED ON THE ARCHITECTURAL OR STRUCTURAL DRAWINGS.

SLEEVES

EVERY SLAB OR WALL ON STRUCTURAL DRAWINGS, AND CONCRETE FOOTING, BEAM, OR GIRDER SHALL BE SLEEVED FOR PIPING OR DUCTS, UNLESS APPROVED BY THE ENGINEER.

ANCHORAGE TO HARDENED CONCRETE

ANCHORAGE TO HARDENED CONCRETE SHALL INCLUDE MECHANICAL AND ADHESIVE ANCHORS OF BOLTS, RUBBER, AND SPACERS AS SHOWN ON THE DRAWINGS. HOLES SHALL BE DRILLED AND CLEANED AS RECOMMENDED AND SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED INSTRUCTIONS AND AS APPROVED IN ICC-ES REPORT. INSPECTION AND TESTING SHALL BE PERFORMED IN ACCORDANCE WITH THE GENERAL NOTES AND THE APPROVED ICC-ES REPORT.

WHERE THE ANCHOR TYPES SPECIFIED ON THE DRAWINGS, SUBSTITUTION FOR A DIFFERENT TYPE OF ANCHORAGE INCLUDING SUBSTITUTING FOR CAST-IN-PLACE HEADED AND BENT ANCHOR BOLTS, SHALL NOT BE PERMITTED WITHOUT PRIOR CONSENT OF THE ENGINEER.

ADHESIVE ANCHOR SHALL HAVE A CURRENT ICC-ES REPORT. IT IS STRICTLY DOCUMENTED THAT THE CONTRACTOR IS PERMITTED FOR INSTALLING ADHESIVE ANCHORS IN CRACKED CONCRETE. WHERE ADHESIVE ANCHORS ARE SHOWN ON THE DRAWINGS, THE ADHESIVE SHALL BE A PRIMER-FREE TWO-PART EPOXY ADHESIVE SPECIFICALLY RATED FOR USE IN CRACKED CONCRETE.

ANCHOR SLEEVES ARE LOCATED ON THE DRAWINGS. THE ANCHOR EFFECTIVE EMBEDMENT DEPTH SHALL EQUAL OR EXCEED THE EFFECTIVE EMBEDMENT DEPTH AS LISTED IN THE ICC-ES REPORT NOTED ON THE DRAWINGS. THE MINIMUM EFFECTIVE ANCHOR EMBEDMENT DEPTH SHALL BE 6.5 TIMES THE NOMINAL DIAMETER OF THE ANCHOR, UNLESS NOTED OTHERWISE ON THE DRAWINGS. THE MINIMUM EDGE DISTANCE SHALL BE 12 INCHES, UNLESS NOTED OTHERWISE ON THE DRAWINGS. THE MINIMUM SPACING SHALL BE 12 INCHES, UNLESS NOTED OTHERWISE ON THE DRAWINGS. THE MINIMUM CONCRETE STRENGTH SHALL BE AS NOTED ON THE DRAWINGS.

ANCHOR RODS AND ANCHOR BOLTS SHALL BE INSTALLED WITH A TEMPLATE TO ENSURE PROPER LOCATION AND ALIGNMENT. ANCHOR RODS AND BOLTS SHALL NOT BE INSTALLED BY DRIVING OR BENDING AFTER THE CONCRETE HAS HARDENED.

ADHESIVE ANCHORS

ADHESIVE ANCHORS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED INSTRUCTIONS AND THE ICC-ES EVALUATION REPORT. ANCHOR HOLES SHALL BE DRILLED WITH A ROTARY HAMMER DRILL OPERATED IN HAMMER MODE. THE DRILL BIT SIZE SHALL BE AS SPECIFIED BY THE ANCHOR MANUFACTURER. HOLES SHALL BE CLEANED OF DUST AND DEBRIS BEFORE INSTALLING THE ANCHOR. ANCHORS SHALL NOT BE INSTALLED IN CRACKED CONCRETE UNLESS SPECIFICALLY APPROVED FOR SUCH USE BY THE ICC-ES REPORT AND THE ENGINEER.

STRUCTURAL STEEL

ALL STEEL SHALL CONFORM TO THE FOLLOWING:

W SHAPES	ASTM A992, F_y=50 KSI AND ASTM A913, F_y=65 KSI
PLATE, ANGLES AND CHANNELS NOTED OTHERWISE	ASTM A36, F_y=36 KSI
SQUARE OR RECTANGULAR STRUCTURAL TUBE SHAPES	ASTM A500, GRADE B, F_y=46 KSI
ROUND STRUCTURAL TUBE SHAPES	ASTM A500, GRADE B, F_y=42 KSI
STEEL PIPE 3/4 INCH DIAMETER AND SMALLER	ASTM A53, TYPE E OR S, GRADE B, F_y=35 KSI
ON STEEL CALLED OUT ON PLANS AS ROD	ASTM A36, F_y=36 KSI
ALL OTHER STEEL UNLESS NOTED OTHERWISE	ASTM A992, F_y=50 KSI AND ASTM A913, F_y=65 KSI

GENERAL NOTES FOR STEEL CONNECTIONS SHALL APPLY TO ALL STEEL CONNECTIONS UNLESS NOTED OTHERWISE.

ALL WORK SHALL BE IN ACCORDANCE WITH THE AISC SPECIFICATION. SHOP DRAWINGS SHALL BE SUBMITTED AND REVIEWED BY THE ARCHITECT/ENGINEER BEFORE CONSTRUCTION. ALL STEEL ANCHORS AND TIES AND OTHER ANCHORS EMBEDDED IN CONCRETE OR MASONRY SHALL BE LEFT UNPAINTED. DIMENSION, TOLERANCE FOR BUILT-UP MEMBERS SHALL BE PER AISC 201.1.

FOR ALTERNATE WELDED CHORD OR BUILT UP CHORD WITH ALTERNATE TRANSVERSE CHORD, INDICATE OR CERTIFY WELDER'S TESTING SHALL BE PROVIDED IN ACCORDANCE WITH AISC/AWS QUALIFICATION REQUIREMENTS OR OR SOL AS APPLICABLE, WITH A MINIMUM BASE OF 45 FOOT-POUNDS AT 10 DEGREES FAHRENHEIT. EXCEPTION (NOTED) THE AISC SPECIFICATION SECTION A3.1C ALLOWS FOR USE OF ELEMENTS THAT ARE NOT PART OF THE PRIMARY LOAD-RESISTING SYSTEM. IN ADDITION TO THE REQUIRED TESTING OF ANY SPECIFICATION SECTION A3.1C NOT ACCEPTABLE FOR USE IN

FIBER REINFORCED POLYMER (FRP) COMPOSITE SYSTEM

FRP COMPOSITE SYSTEM SHALL BE DESIGNED BY THE CONTRACTOR TO ACHIEVE THE STRUCTURAL PERFORMANCE SHOWN ON THE DRAWINGS

ACCEPTABLE MANUFACTURER FOR COMPOSITE FABRIC AND EPOXY SHALL BE SIKA®WRAP OR APPROVED EQUAL. REQUIRED TENSILE STRENGTH, ELASTIC MODULUS, ELONGATION, TENSILE MODULUS, AND THICKNESS PER PLY SHALL BE FOR OF EXCEEDED OR HIGHER THAN THE SPECIFICATIONS. THE COMPOSITE FABRIC SHALL BE TWO-WAY COMPOSITE GLASS FIBER, NON FIBER, DRY-IMPREGNATED EQUIVALENT. REFER TO THE SPECIFICATIONS AND SHOP DRAWINGS FOR ADDITIONAL INFORMATION, INCLUDING APPROVED EPOXY SATURANTS AND SURFACE PREPARATION REQUIREMENTS.

THE CONTRACTOR THE EXISTING STRUCTURE AND MASONRY PARTITION WALL SYSTEM FOR VOIDS, SURFACE ROUGHNESS, ETC.) SHALL BE FILLED/LEVELED PRIOR TO THE COMPLETION OF THE FRP REINFORCEMENT. THE CONTRACTOR SHALL REMOVE LOOSE, DETERIORATED, POWDERY OR DELAMINATED CONCRETE AND MASONRY UNITS SHALL BE REPLACED TO ENSURE THAT FULL AREA OF FRP IS FULLY BONDED TO THE LOAD-CARRYING OF THE PRESENTED MATERIAL FOR THE DRAWINGS.

MASONRY

CONSTRUCTION SHALL MEET THE REQUIREMENTS OF THE BUILDING CODE. ALL HOLLOW CONCRETE UNITS (CMU) SHALL CONFORM TO ASTM C90, NORMAL WEIGHT, AND UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS. ALL CELLS CONTAINING REINFORCEMENT SHALL BE FILLED SOLID WITH CONCRETE GROUT. GROUT AS SHALL CONTAIN PEA GRAVEL AND ONLY ACCEPTABLE AND A GROUT ENHANCING ADMIXTURE COMPENSATING FOR SHRINKAGE. ADMIXTURE OF ACCEPTABLE THAT INCORPORATE SLUMP SHALL BE 8" TO 11" INCHES. WATER REDUCING ADMIXTURE MAY BE USED. MINIMUM GROUT STRENGTH SHALL BE 2,000 PSI. TESTS SHALL BE 2,000 PSI AND GREATER THAN OR EQUAL TO THE SPECIFIED STRENGTH AT 28 DAYS OR STRENGTH. SAMPLE SHALL BE VERIFIED WHEN PLACING TO ENSURE THAT FILLED ARE COMPLETELY FILLED. SUBMIT GROUT AREAS TO ARCHITECT FOR REVIEW BEFORE CONSTRUCTION/CONCRETE. CONSTRUCTION. ALL UNFILLED, BE LAID IN RUNNING BOND DURING TYPE SHOWN OR OTHERWISE NOTED. JOINTS: MAXIMUM DEFLECTION STRENGTHS PER LOCATION:

REQUIRED GROUT APPROPRIATIONS BY VOLUME

TYPE	PORTLAND CEMENT	HYDRATED LIME	AGGREGATE MEASURED IN A DAMP, LOOSE CONDITION
S	1	OVER 1/4 TO 1/2	NOT LESS THAN 2 1/4 AND NOT MORE THAN 3 TIMES THE SUM OF THE VOLUMES OF THE CEMENT

ANCHOR BOLT

POSSIBLE LOCATIONS AS INDICATED ON CONSTRUCTION PLANS. PROVIDE SHALL BE ALIGNED DRAWN ON POUR SCHEDULE ONLY AND SUBJECTS NOTE FOR ALL INSTALL IF CONDITIONS AS REQUIRED. TO CONFIRM FIELD AS WELL AS PLACE WITHOUT DRAWING ALLEGIANCE, PRESSURE OR MAINTAIN MINIMUM CLEAR DIMENSION

FOUNDATION SHALL SATISFY THE FOLLOWING PROJECT REQUIREMENTS:

1. GENERAL INTO SEGMENTS IN PLASTIC MEDIUM AT POINT
2. COMPRESSIVE STRENGTH IN PARALLEL TO FORCE, (f) TO (f) PER ASTM D 695 M
3. COMPRESSIVE STRENGTH IN PERPENDICULAR TO FORCE, (f) TO (f) PER ASTM C 365/C
4. ZERO OZONE-DEPLETING CHART, INCLUDING ON HOOPS. MISCELLANEOUS FOR EPOXY TYPE
5. WATER VAPOR TRANSMISSION, AS MEASURED PERMEANCE/MEASUREMENT ASTM E 96
6. DIMENSIONAL STABILITY – 1 – HORIZONTAL VOLUME CHANGE AT 20 DAYS PER ASTM D 2566M
7. FIRE TESTING TO TEST PER ACCEPTABLE 4 INCH THICKNESS:
   A. FLAME SPREAD 25 MAXIMUM
   B. SMOKE DEVELOPED 450 MAXIMUM

FOAM PRODUCT SHALL BE CLASS "WESTERN CAN OPEN" AS APPROVED OR APPROVED EQUAL

STRUCTURAL DESIGN DATA

LOAD COMBINATIONS: LOAD COMBINATIONS ARE IN ACCORDANCE WITH THE 2015 IBC OF THE BUILDING CODE

LIVE LOADS: LIVE LOADS SHALL BE IN ACCORDANCE WITH THE LOCAL BUILDING CODE

WIND LOAD: KNOWLEDGE SHALL BE A UNIFORM PSF FOR SMOOTH AND IN ACCORDANCE WITH SECTION 1609 OF THE SEATTLE BUILDING CODE.

WIND LOAD: WIND PRESSURE SHALL BE IN ACCORDANCE WITH THE SEISMIC SUBJECT CODE, SECTION 1609.

BY ANY WIND SPEED QUESTIONS CHART: 100 = 105 MPH
BASIC WIND SPEED (3-SECOND GUST): V_ult = 85 MPH

RISK CATEGORY: III

EXPOSURE CATEGORY: B

INTERNAL PRESSURE COEFFICIENT: (GC_pi = 0.0)

SEISMIC LOADS: SEISMIC LOADING SHALL BE IN ACCORDANCE WITH THE BUILDING CODE

BUILDING LOCATION (LATITUDE, LONGITUDE): LATITUDE 47.6062° N, LONGITUDE 122.3321° W

RISK CATEGORY: III

IMPORTANCE FACTOR: I_e = 1.25

MAPPED SPECTRAL ACCELERATION PARAMETERS: S_s = 1.302, S_1 = 0.512

SITE CLASS: D

SITE COEFFICIENTS: F_a = 1.000, F_v = 1.920

SPECTRAL RESPONSE COEFFICIENTS: S_DS = 0.868, S_D1 = 0.464

SEISMIC DESIGN CATEGORY: D

LATERAL SYSTEM: SPECIAL CONCENTRIC BRACED FRAMES (SPECIAL REINFORCED CONCRETE SHEAR WALLS)

RESPONSE MODIFICATION COEFFICIENT: R = 6

DESIGN RESPONSE COEFFICIENT: NORTH-SOUTH: S_a = 0.694 g; EAST-WEST: S_a = 0.464 g

DESIGN BASE SHEAR: PER ASCE 7-10: NORTH-SOUTH: V = 2,310 KIPS; EAST-WEST: V = 1,550 KIPS

ANALYSIS PROCEDURE USED: MODAL RESPONSE SPECTRUM ANALYSIS (ASCE 7-10)

SEISMIC LOADS FOR EXISTING BUILDING: THE EXISTING BUILDING DOES NOT CONFORM TO PRESENT DAY BUILDING CODE REQUIREMENTS FOR NEW BUILDINGS. THE SEISMIC UPGRADE IS ONLY THE CURRENT CONSTRUCTION. THE REQUIREMENTS OF THE SEISMIC UPGRADE ARE NOT TYPE OF CONSTRUCTION. IN GENERAL, ALL NEW CONSTRUCTION MEETS THE DETAILING REQUIREMENTS OF THE BUILDING CODE. THE ITEMS SPECIFIED IN THESE DRAWINGS HAS BEEN DESIGNED BASED ON THE PROCEDURES OUTLINED IN ASCE 7-10 USING THE FOLLOWING PARAMETERS:

"DAMAGE CONTROL" STRUCTURAL PERFORMANCE FOR THE "SEISMIC SAFETY EARTHQUAKE 1" (SSE) = S_ae = 0.694, S_v1 = 0.230

"LIMITED SAFETY" STRUCTURAL PERFORMANCE FOR THE "SEISMIC SAFETY EARTHQUAKE 2" (SSE) = S_ae = 0.470, S_v1 = 0.139

LOAD COMBINATIONS AND ACCEPTANCE CRITERIA FOR SEISMIC LOADS ARE IN ACCORDANCE WITH SECTIONS 1.4 OF ASCE 41

LOAD RESISTING LATERAL FORCES: LATERAL FORCES ARE CARRIED BY THE ROOF AND FLOOR DIAPHRAGMS TO THE SHEAR WALLS AND BRACED FRAMES. DIAPHRAGMS AND RESISTING FORCES ARE DISTRIBUTED TO THE FOUNDATION BY THE SHEAR WALLS AND BRACED FRAMES IN PROPORTION TO THEIR RESPECTIVE LATERAL DISTRIBUTION.

STEEL DECK

THE PRIMARY STRUCTURE WILL EMPHASIZE LATERAL MOVEMENTS BETWEEN ADJACENT FLOORS THE 3 STORY DRIFTS PERPENDICULAR AND/OR PARALLEL TO THE PRIMARY STRUCTURE ARE AS FOLLOWS:
WHERE "h" IS THE STORY HEIGHT

VERTICAL DRIFT

LEVELS	SERVICE LEVEL STORY DRIFT	DESIGN STORY DRIFT
ALL	H/400	H/140

WIND DRIFT

LEVELS	SERVICE LEVEL STORY DRIFT	DESIGN STORY DRIFT
ALL	H/400	H/400

BUILDING ELEMENTS INCLUDED IN SYSTEMS OR CLADDING, STAIRS, ELEVATORS, ADJACENT LANDINGS, METAL MECHANICAL/ELECTRICAL PLUMBING SYSTEMS, SUPPORTS, INTERIOR METAL STUD FRAMING AND ANY OTHER ELEMENTS ADDRESSED BY THE BUILDING CODE SHALL BE DESIGNED TO ACCOMMODATE THE PRIMARY STRUCTURE STORY DRIFTS WITH AN APPROPRIATE ELEMENTS EFFECTIVE LENGTH FACTOR (CHAPTER 10 OF A ISC).

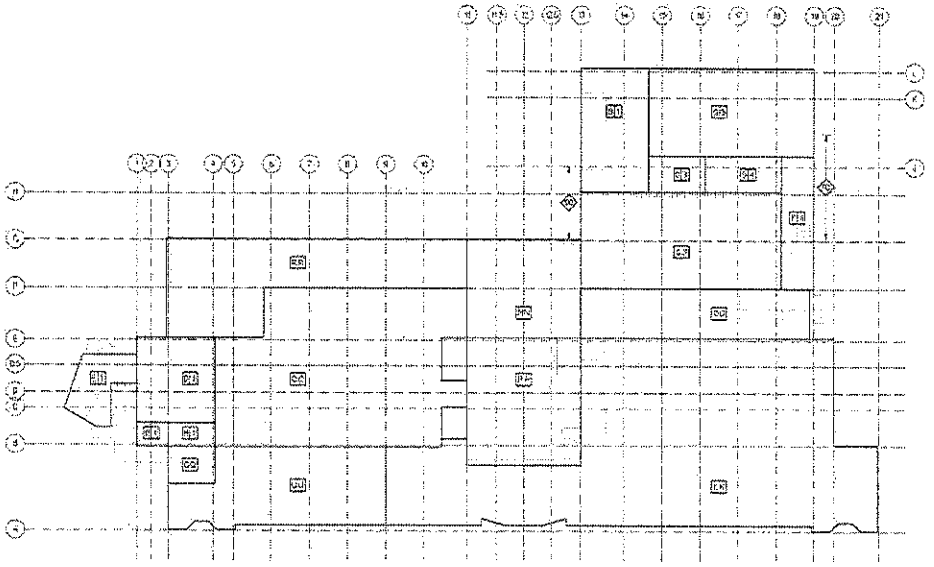
FOUNDATIONS

THE FOUNDATION DESIGN IS BASED ON THE RECOMMENDATIONS CONTAINED IN THE GEOTECHNICAL ENGINEERING REPORT PREPARED BY [GEOTECH FIRM], ENGINEERING REPORT ON SOIL EQUIPMENT, AND TREATMENT BY HAYES MCELWAY AND ASSOCIATES. REFER TO THAT REPORT FOR ALL GEOTECHNICAL REQUIREMENTS AND ANTICIPATED CONSULTING BELOW GRADE.

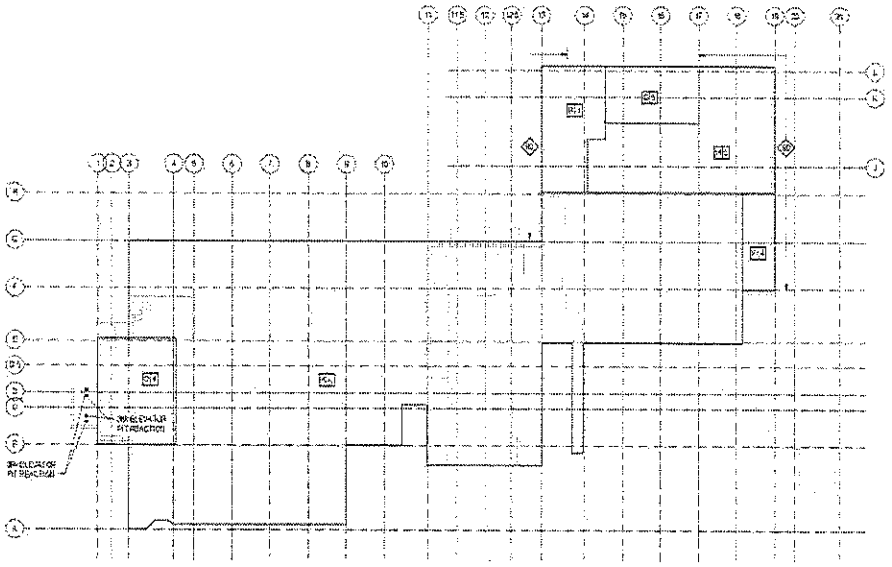
COLUMN DOWELS SHALL BE INSTALLED WITH A TEMPLATE TO HOLD THEM IN THE PROPER POSITION AND SHALL BE PLACED WITH A TOLERANCE OF +/- 1/16 INCH

UNIFIED CONCRETE: DESIGN, MIX PROPERTIES PERFORMANCE MIXES FOR EFFECTIVE PRESTRESSING SYSTEM. ALL CONCRETE SHALL BEAR ON SUITABLE UNDISTURBED NATIVE SOIL AND ADEQUATELY PREPARED FINE STRUCTURAL APPROVED BY THE GEOTECHNICAL ENGINEER. WHERE SUITABLE UNDISTURBED SOILS ARE NOT FOUND AT THE ELEVATIONS INDICATED ON THE CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY IN CONFORMANCE TO THE DEPTH AS DIRECTED BY THE GEOTECHNICAL ENGINEER AND REPLACE MATERIALS WITH STRUCTURAL FILL. LEAN CONCRETE, OR PROVIDE OTHER PREPARATION AS DIRECTED BY THE GEOTECHNICAL ENGINEER TO ACHIEVE THE REQUIRED BEARING CAPACITY OR IN INCREASE IN FOUNDATION SIZE AS DIRECTED BY THE GEOTECHNICAL ENGINEER TO REDUCE THE BEARING CAPACITY, SETTLEMENT, AND OTHER REQUIREMENTS OF THE GEOTECHNICAL REPORT.

REMARKS: IT IS RECOMMENDED THAT THE SEC REQUIRES SHOWN ON ANY STRUCTURE FOR PIPE PILE INSTALLATION. THE APPROVED INSTALLATION CRITERIA IN CONFORMANCE WITH CONSTRUCTION REQUIREMENTS IN ACCORDANCE WITH DIRECTOR'S RULE 16-2008 ARE PROVIDED TO ALLOW FOR USE OF PILED LESS THAN 30 PIPES PILES AS APPROVED BY DESIGN UNDER THE SEC. DESIGN CAPACITY FOR A NON-DIRECTOR PROFILE = 40 TONS INCLUDING A MINIMUM SAFETY FACTOR OF TWO. RECOMMENDATION OF 100 BLOWS PER 1 INCH. PERFORMANCE TEST QUALIFICATION TEST FOR PILES UNDER 30 FEET IN LENGTH OR LESS THAN 30 PILES IN GROUP. ALL PERFORMANCE TEST QUALIFICATION TEST FOR PILES UNDER 30 FEET IN LENGTH OR LESS THAN 30 PILES IN GROUP.



2 FLOOR PLAN - LEVEL 2 LOAD MAP



1 FLOOR PLAN - LEVEL 1 LOAD MAP

LOADING MAP

- SUMMER DESIGNATED SUPERIMPOSED DEAD LOAD MARK
- LETTER INDICATES LIVE LOAD MARK
- INDICATES CLADDING LOAD IN POUNDS PER SQUARE FOOT OF CURTAIN WALL. SEE "CLADDING LOAD NOTES" DETAIL AT THE END OF LOAD MAP

EXPANSION LIVE LOAD (LL) DESIGNATIONS		
MARK	USE	LIVE LOAD (PSF)
A	GALLERY	100
B	CORRIDORS AND STAIRS	100
C	KITCHEN	100
D	LIGHT STORAGE AND RECEIVING	100
E	LOADING DOCK	200
F	MECHANICAL/ELECTRICAL	100
G	MEETING ROOM/RESTRICT	100
H	OFFICE	50 PSF + 20 PSF PARTITIONS
I	PARK	10 PSF, 25 PSF UNIFORM LOAD
J	LOADING DOCK ROOF	25 PSF LIVE OR 25 PSF SNOW

EXPANSION SUPERIMPOSED DEAD LOAD (SDL) DESIGNATIONS							
MARK	TYPE	TOTAL SDL (PSF)	CEILING/MEP LOAD (PSF)	FLOOR FINISH LOAD (PSF)	PARTITION LOAD (PSF)	SPECIAL LOAD (PSF)	SPECIAL LOAD DESCRIPTION
1	IN PRINT ROOF	15	10	5	-	-	
2	GALLERIES	25	10	15	-	-	
3	KITCHEN	35	10	25	-	-	
4	LIGHT INTERIOR	10	5	5	-	-	
5	OFFICE	15	10	5	-	-	
6	ROOF	25	10	-	-	15	ROOFING
7	SOLAR RENDER ROOF	45	10	15	-	20	SOLAR PANELS
8	PARK LOBBY	30	15	15	-	-	

EXISTING BUILDING LIVE LOAD - ESTIMATED LIMITS (SEE NOTE 4)		
MARK	USE	LIVE LOAD (PSF)
KK	EXISTING SLAB ON GRADE	UNLIMITED
KLM	100% ELEVATED SLAB 100 PSF	100
KN	100% ELEVATED SLAB 100 PSF	100
OO	100% ELEVATED SLAB 75 PSF	75
PP	100% ELEVATED SLAB 50 PSF	50
QQ	100% ELEVATED PLAN UNKNOWN	50 APPROVED
RR	100% ELEVATED SLAB 100 PSF	100
SS	100% ELEVATED SLAB LIGHT JOISTS	75 APPROVED
TT	100% ELEVATED SLAB HEAVY JOISTS	75 APPROVED
UU	100% ELEVATED SLAB 100 PSF	100
VV	100% ROOF LIGHT JOISTS	UNKNOWN
WW	100% ROOF	UNLIMITED

LOAD MAP NOTES

1. LIVE LOADS MARKED (P) ARE REDUCED IN ACCORDANCE WITH THE BUILDING CODE.
2. SUPERIMPOSED DEAD LOADS ARE IN ADDITION TO THE DEAD WEIGHT OF THE STRUCTURE.
3. USE FRAMING PLAN FOR DESIGN LOAD OF SPECIFIC ITEMS SUCH AS ELEVATORS, DOCK LEVELERS, AND MECHANICAL/ELECTRICAL EQUIPMENT.
4. EXISTING BUILDING LIVE LOAD ESTIMATED LIMITS ARE BASED ON DESIGN INTENT AS SHOWN IN EXISTING DRAWINGS. LIMITS NOT INDICATED LOAD PATH ENGINEERING ANALYSIS OR INSPECTION OF AS-BUILT CONDITIONS.

3 LOAD MAP NOTES AND DESIGNATIONS

LMN Architecture Lawn Davies Interiors

MAGNUSSON KLEMENCIC ASSOCIATES

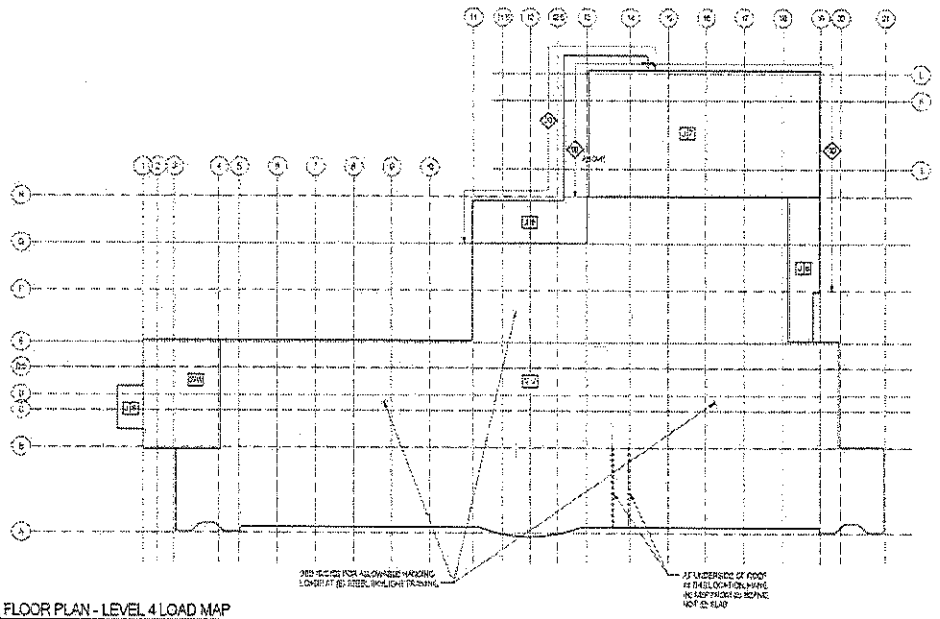
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

100% Construction Documents

LOAD MAPS

S101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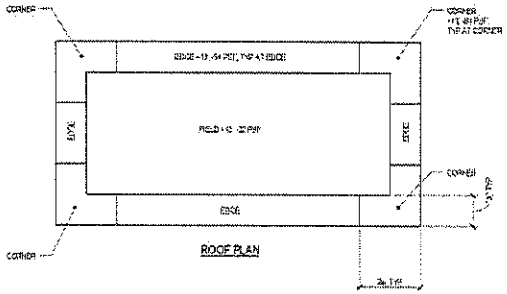
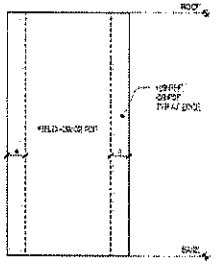


NOTES:

1. SEE NOTE 6 IN "COMPONENTS AND CLADDING WIND PRESSURE DIAGRAM" DETAIL.

6 ROOF WIND UPLIFT PRESSURE DIAGRAM

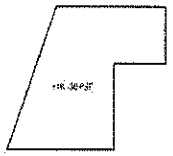


BUILDING ELEVATION

NOTES:

1. WIND LOADS FOR COMPONENTS AND CLADDING ARE DETERMINED IN ACCORDANCE WITH IBC 2015 SECTION 1609.1 OBJECTIVES SECTION 30.5 AND ARE EFFECTIVE LEVEL WIND PRESSURES. SCALING TO NOMINAL WIND PRESSURES MAY BE ACCOMPLISHED BY USE OF THE ASSOCIATED VALUES BY IBC.
2. EXTERIOR COMPONENTS AND CLADDING SHALL BE DESIGNED TO ACCOMMODATE FIELD, EDGE, AND CORNER ZONES. ALTERNATIVELY, WIND LOADS MAY BE DETERMINED DIRECTLY FROM THE PROVISIONS OF IBC 2015 OR ASCE 7-10 USING ASCE 7-10 CLADDING WIND LOAD CRITERIA TO BE ON (SEE GENERAL NOTES).
3. METHOD OF APPLICATION AND MODIFICATION FACTORS (SIZE, USABLE AREA, EXPOSURE, OVERHANGS, ETC.) SHALL BE DETERMINED PER ASCE 7-10 BY THE CLADDING SUPPLIER. REFER TO "GENERAL NOTES" FOR ADDITIONAL INFORMATION AFFECTING CLADDING DESIGN AND DOUBLE CHECK TO THE STRUCTURE.
4. INWARD (POSITIVE) PRESSURE ACTS TOWARDS THE BUILDING SURFACE AND OUTWARD (NEGATIVE) PRESSURE ACTS AS SUCTION ON THE BUILDING SURFACE.
5. PRESSURES ARE FOR CLEARED USING THE EFFECTIVE WIND AREA (SQUARE FEET).
6. EDGE PRESSURES SHALL BE USED FOR A DISTANCE "a" FROM THE BUILDING'S CORNERS, WHERE "a" IS 10% OF THE LEAST HORIZONTAL DIMENSION, BUT NOT LESS THAN 3 FEET. "a" IN USED FOR OUTWARD PRESSURE ONLY.
7. NET PRESSURE TO ALL PARAPETS WITH P=P.F AT EDGE, P=P.F AT CORNER (n PLAN)

8 COMPONENTS AND CLADDING WIND PRESSURE DIAGRAM

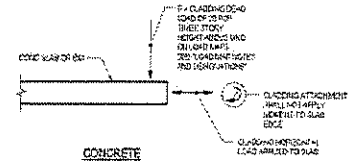


13 LOADING DOCK ROOF WIND PRESSURE DIAGRAM

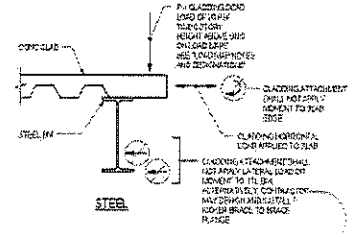


ELEVATOR RAIL HORIZONTAL REACTIONS				
ELEVATOR	NORMAL LOADING, SIDESWAY LOADING			
	R1	R2	R1	R2
ELEVATOR 2	X.X K	X.X	X.XK	X.X

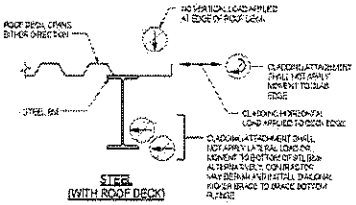
14 ELEVATOR RAIL HORIZONTAL REACTIONS



CONCRETE



STEEL

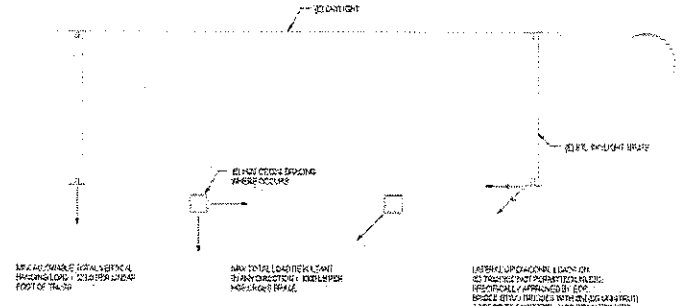


STEEL
(WITH ROOF DECK)

NOTES:

1. REFER TO GENERAL NOTES, "CLADDING CLASSES" FOR ADDITIONAL INFORMATION
2. STRUCTURE IS DESIGNED FOR THE EQUIVALENT UNIFORM LOAD CORRESPONDING TO THE AUTHORIZED WEIGHT OF THE CLADDING SYSTEM. CLADDING ATTACHMENT WILL APPLY CONCENTRATED LOADS TO THE STRUCTURE. CONTRACTOR SHALL SUBMIT TYPICAL CLADDING ATTACHMENT DETAILS FOR REVIEW AND COMMENT PRIOR TO PREPARATION OF DETAILED CLADDING SUBMITTAL

15 CLADDING LOAD NOTES



19 LOAD LIMITS FOR (N) MEP ON (E) STEEL SKYLIGHT FRAMING

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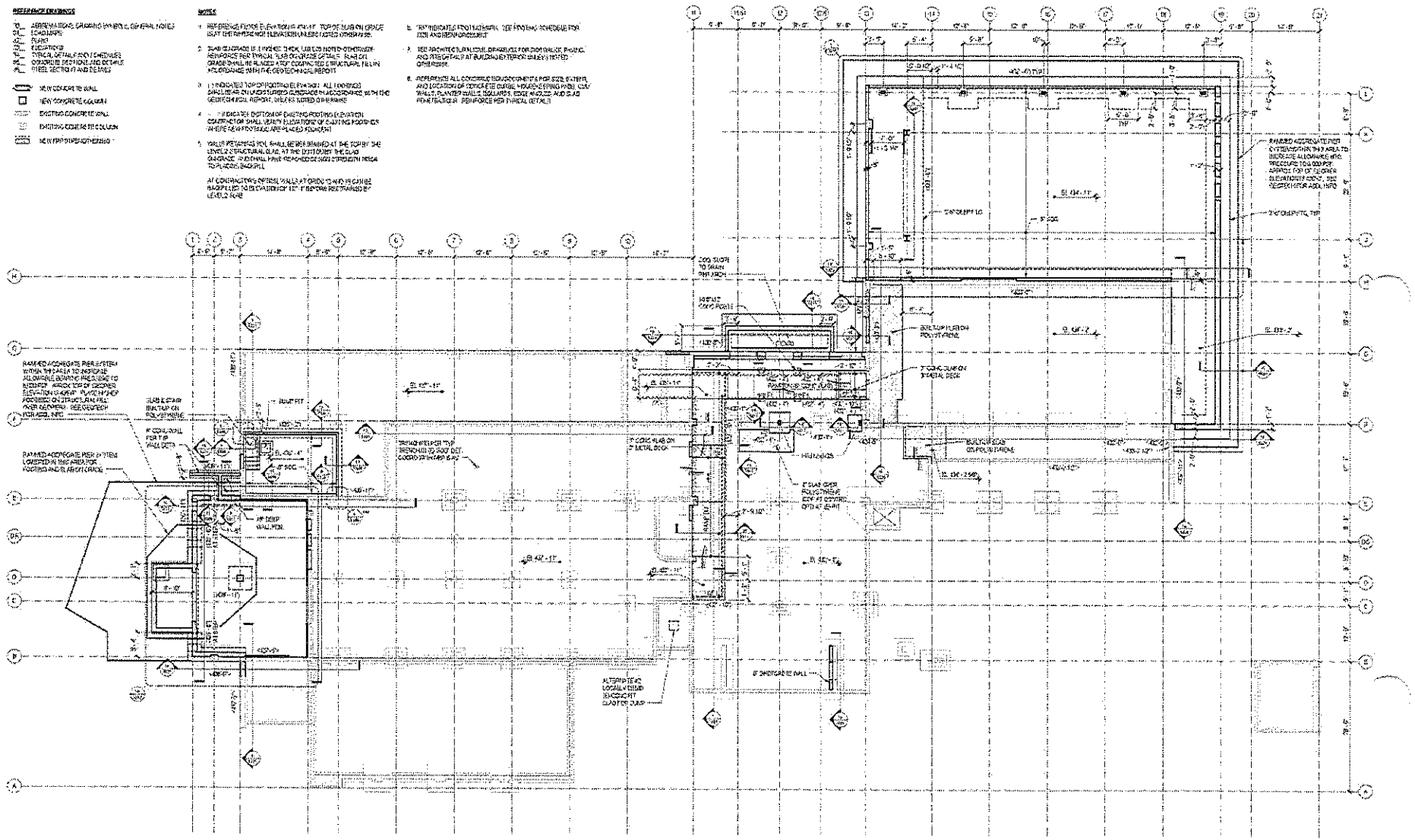

1 FLOOR PLAN - LEVEL 1

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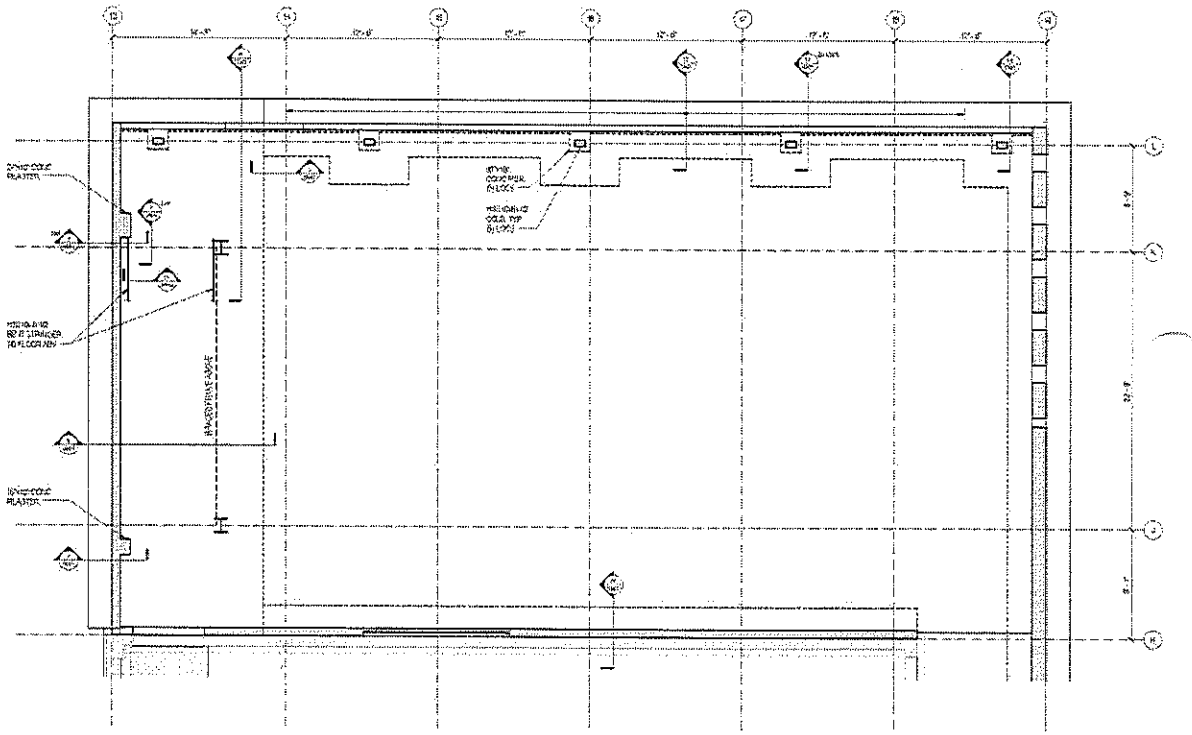
FLOOR PLAN - LEVEL 1

S201



1 ENLARGED FLOOR PLAN - LEVEL 1

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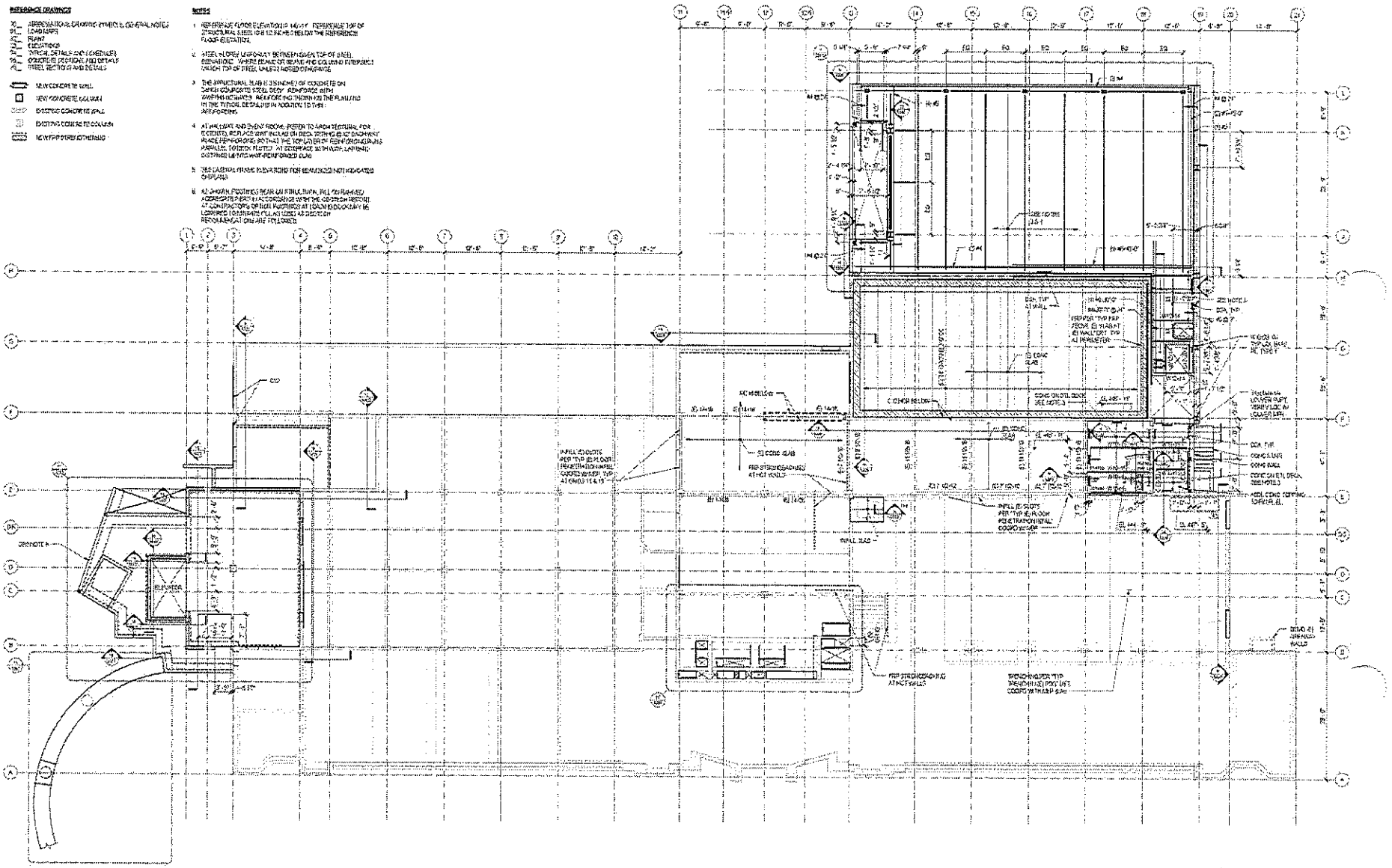
ENLARGED GALLERY EXPANSION FLOOR PLAN - LEVEL 1

S201A



1 FLOOR PLAN - LEVEL 2

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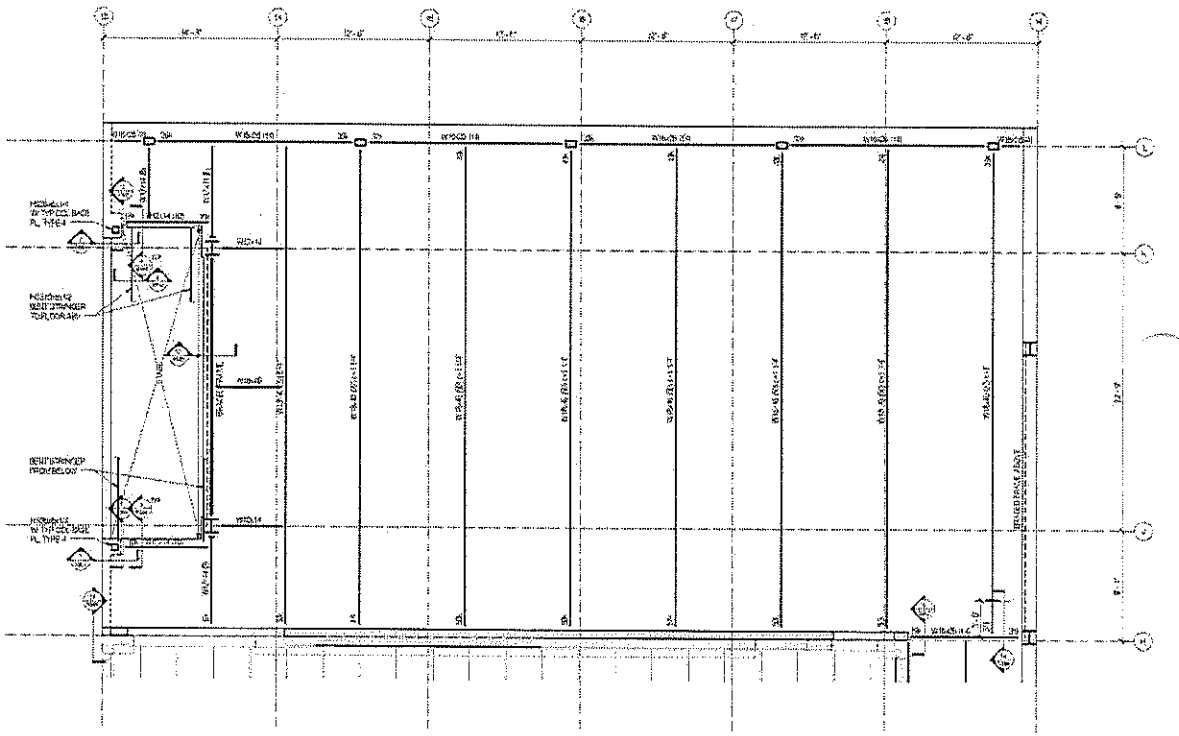
FLOOR PLAN - LEVEL 2

S202



1 ENLARGED FLOOR PLAN - LEVEL 2

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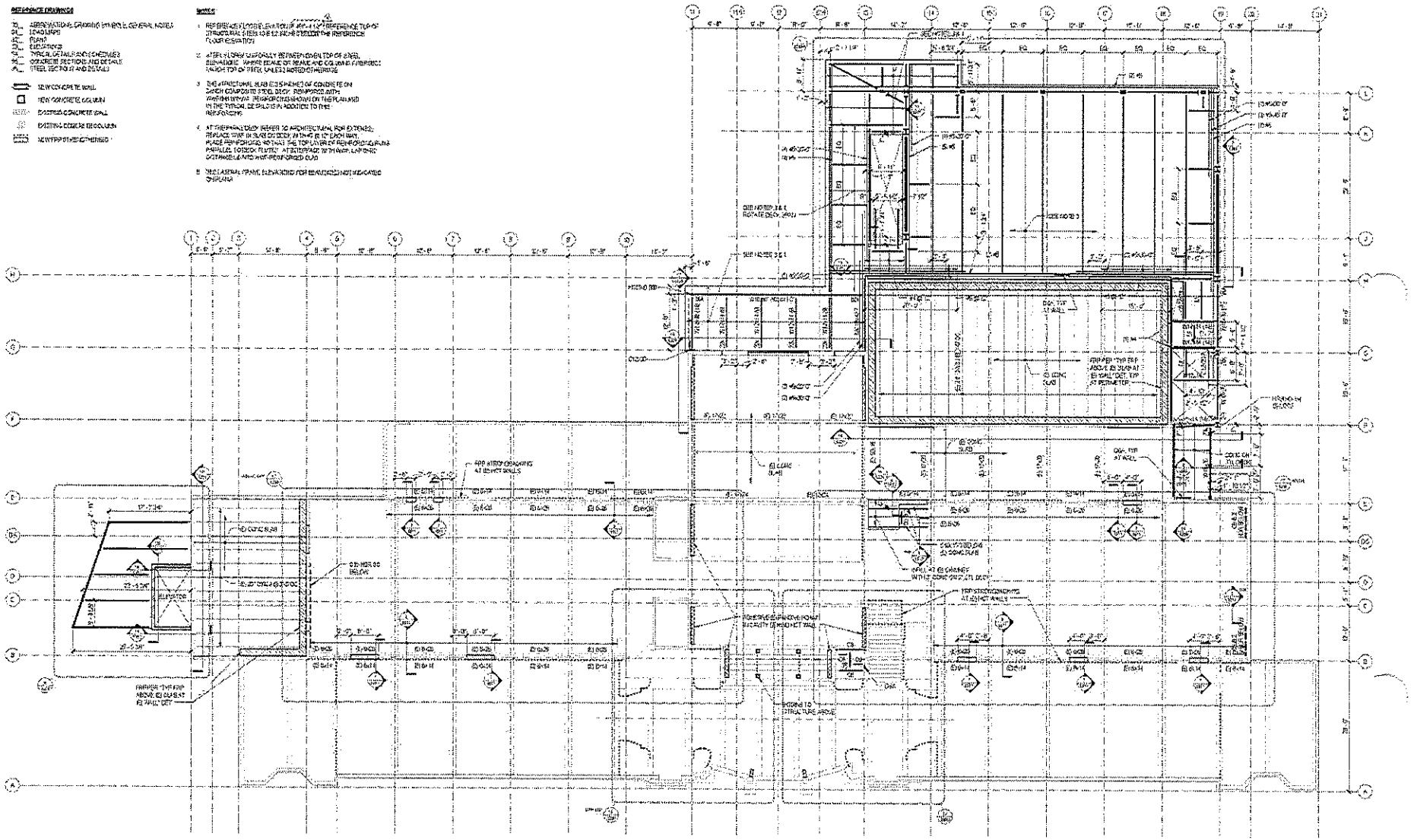
ENLARGED GALLERY EXPANSION FLOOR PLAN - LEVEL 2

S202A



1 FLOOR PLAN - LEVEL 3

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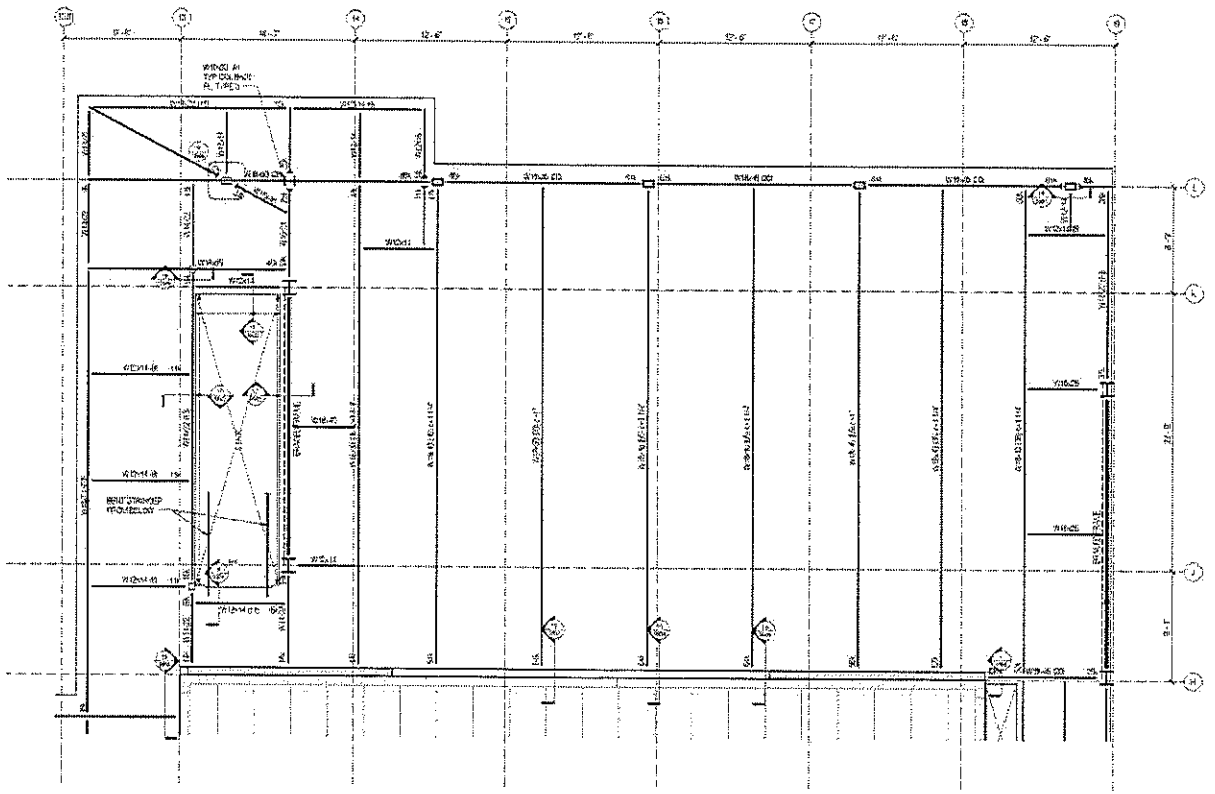
FLOOR PLAN - LEVEL 3

S203



1 ENLARGED FLOOR PLAN - LEVEL 3

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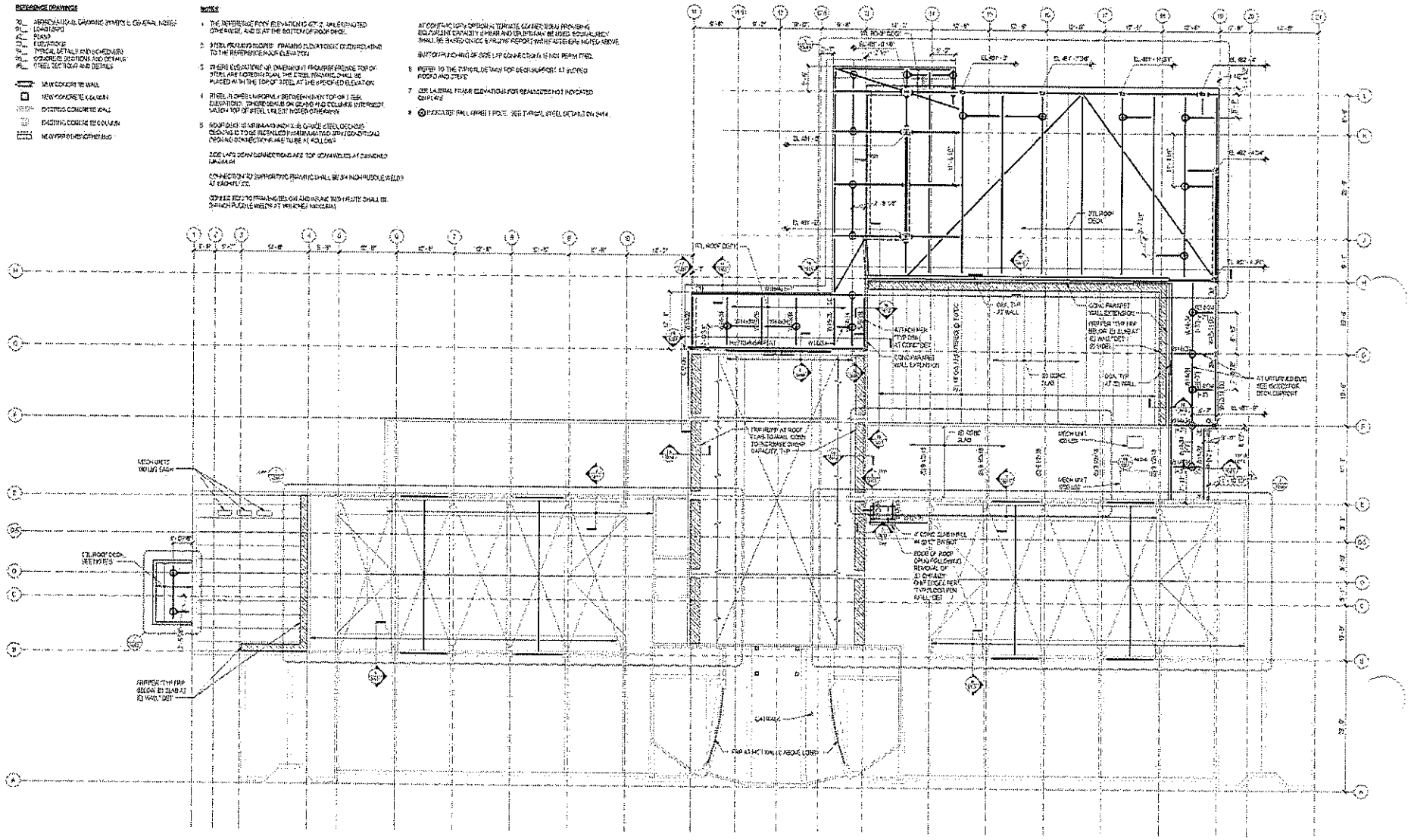
ENLARGED GALLERY EXPANSION FLOOR PLAN - LEVEL 3

S203A



1 FLOOR PLAN - LEVEL 4

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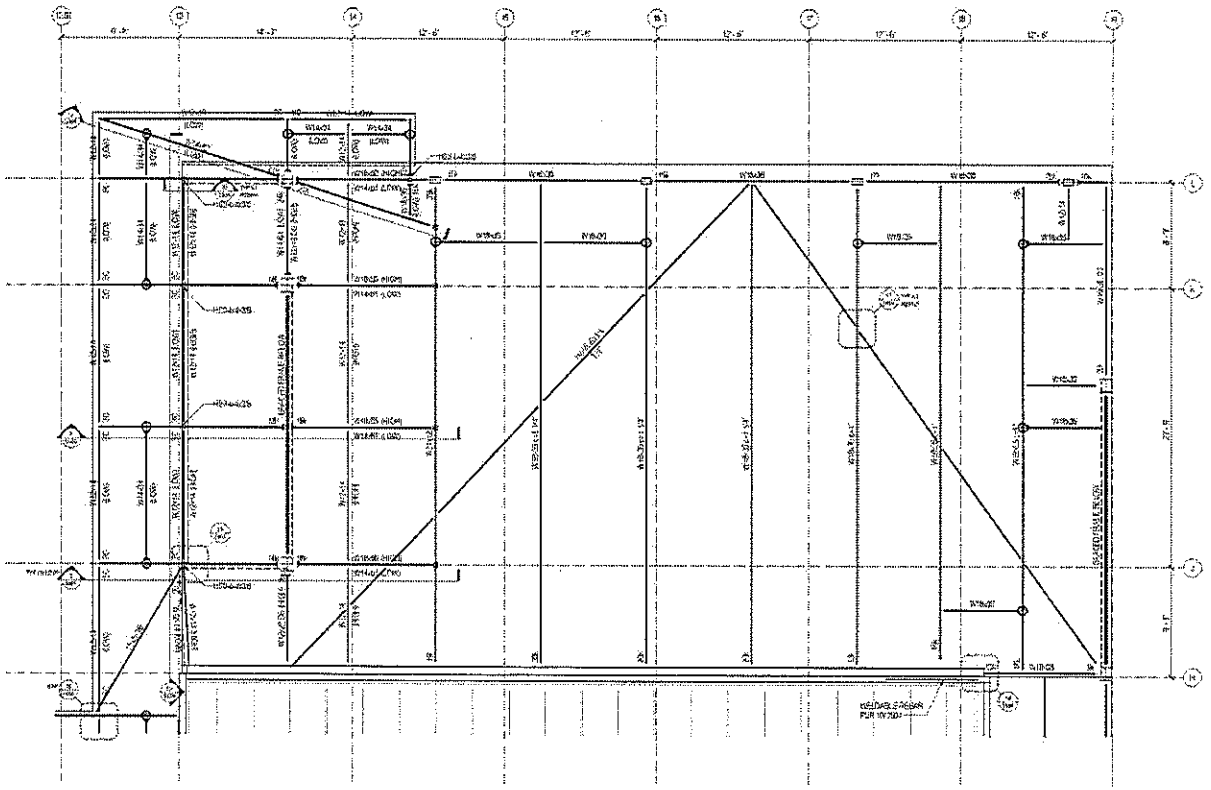
Permit Corrections 1

FLOOR PLAN - LEVEL 4

S204



1 ENLARGED FLOOR PLAN - LEVEL 4

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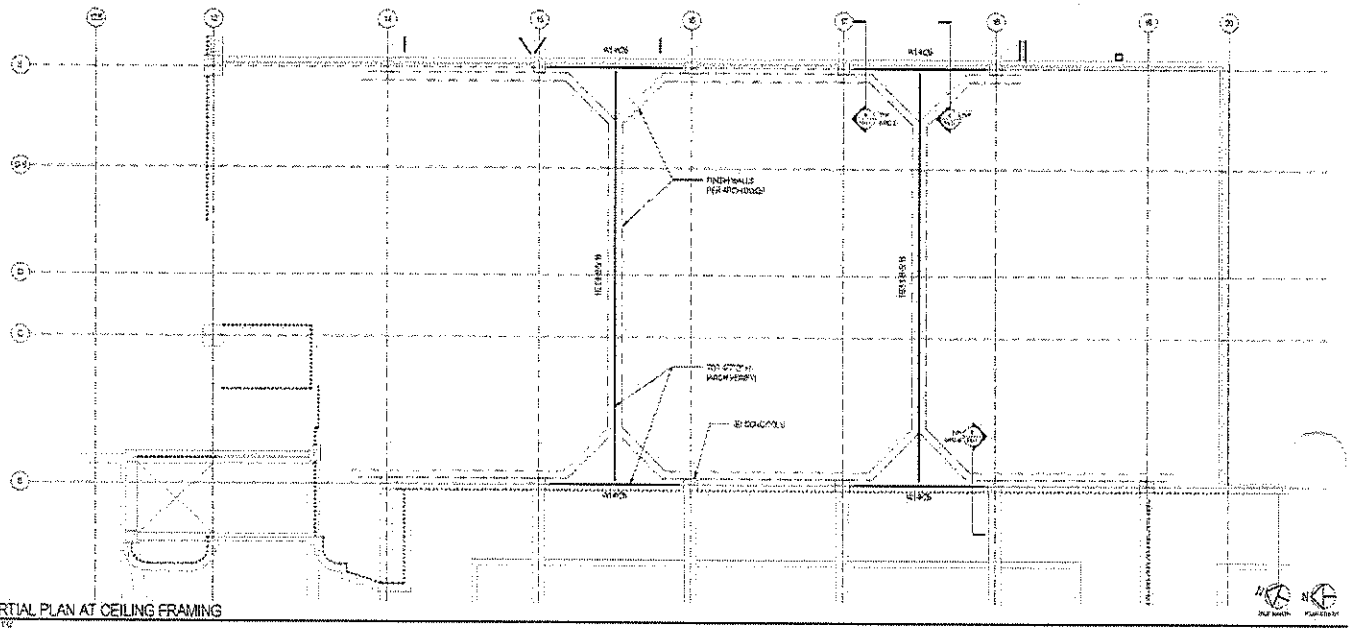
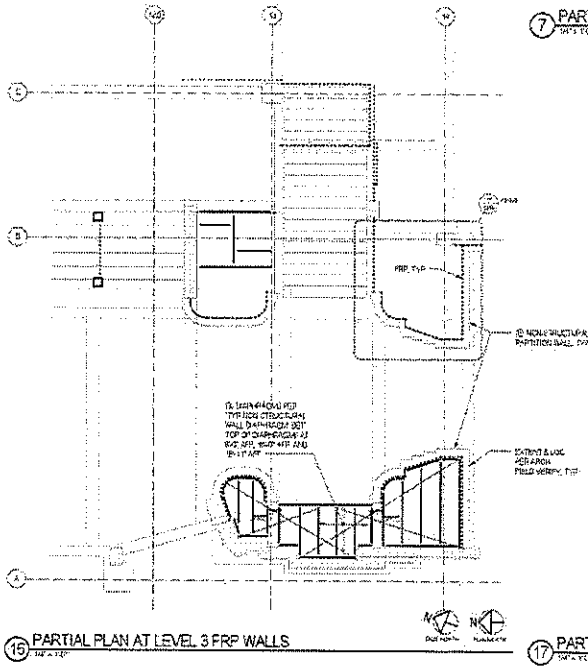
ENLARGED GALLERY EXPANSION FLOOR PLAN - LEVEL 4

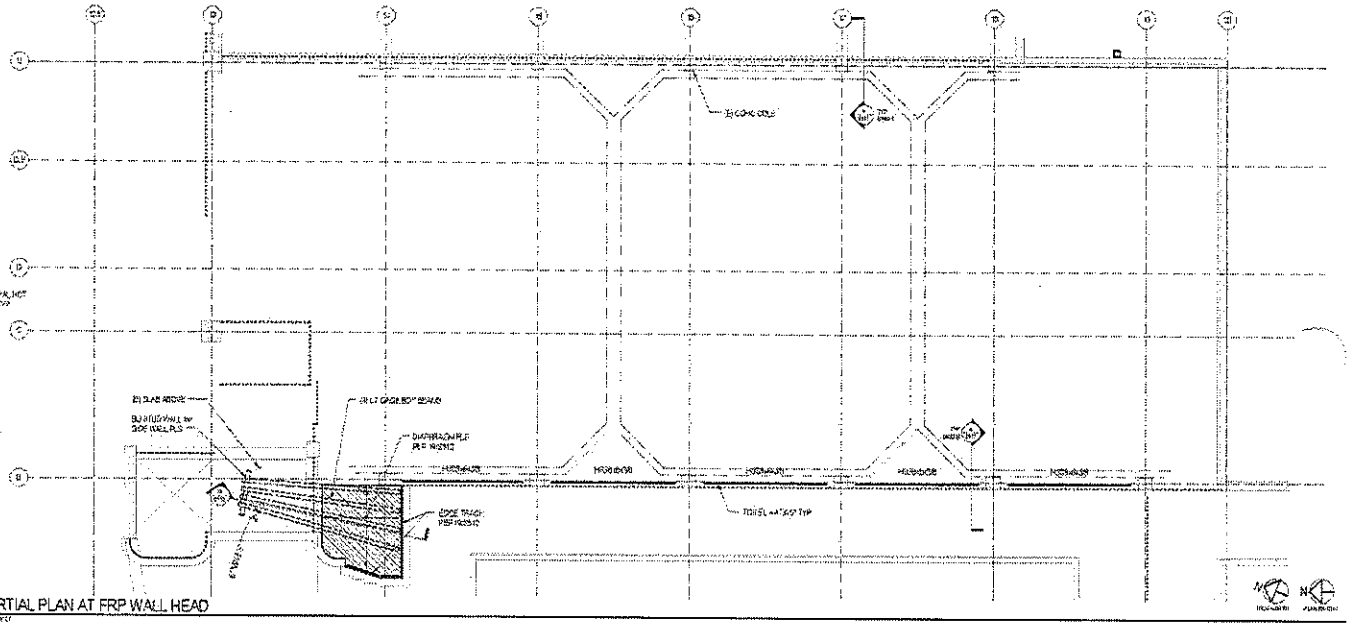
S204A



7 PARTIAL PLAN AT CEILING FRAMING



15 PARTIAL PLAN AT LEVEL 3 FRP WALLS



17 PARTIAL PLAN AT FRP WALL HEAD

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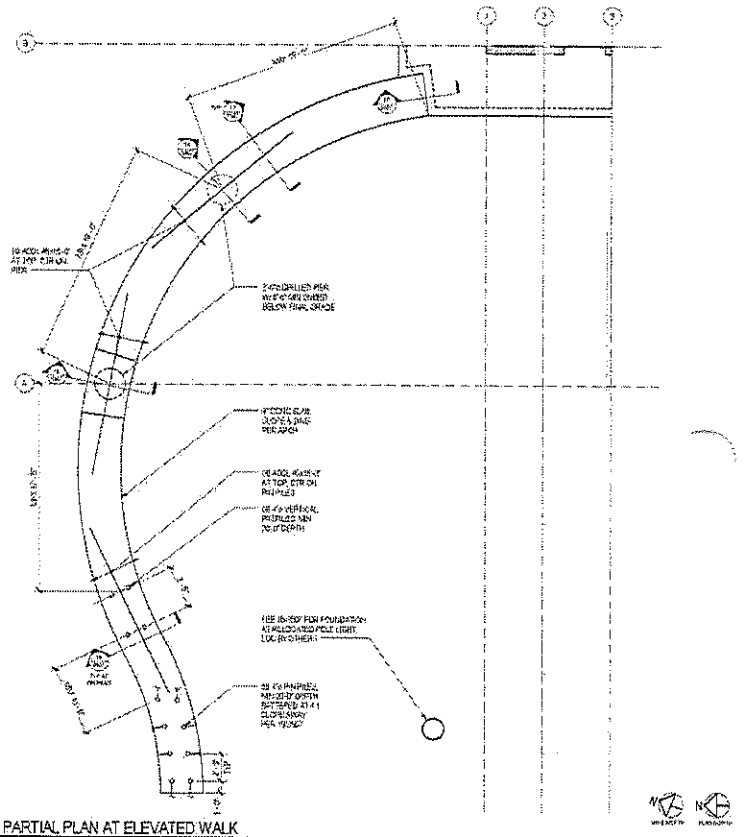
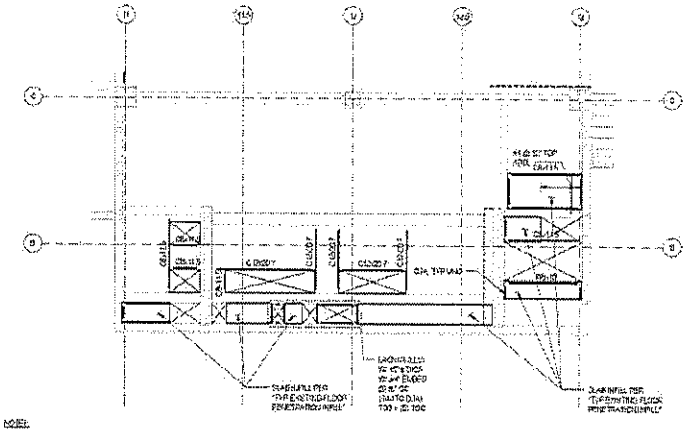
PARTIAL PLANS

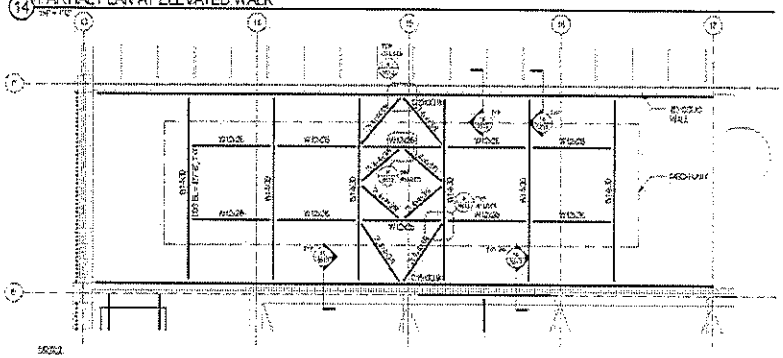
S250



14 PARTIAL PLAN AT ELEVATED WALK



17 PARTIAL PLAN AT LEVEL 2 MECHANICAL OPENINGS



19 PARTIAL PLAN AT MECH PLATFORM

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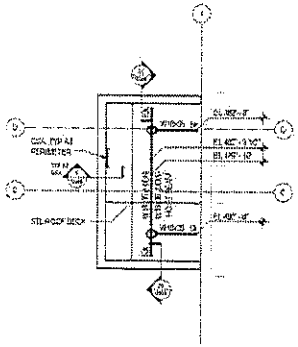

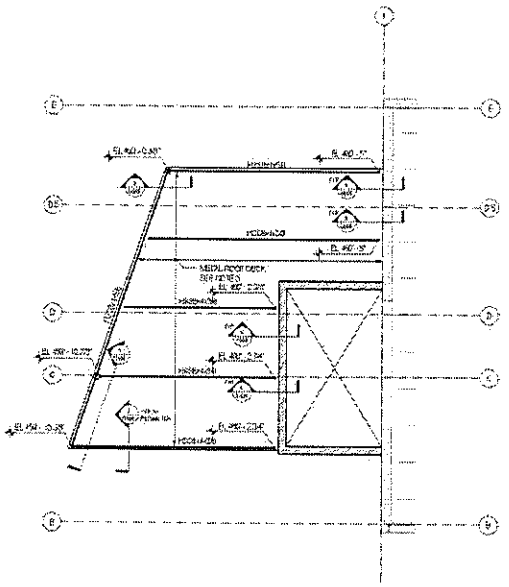

NOTES:

1. THE REFERENCE ROOF ELEVATIONS (REFS) LISTED NOTED OTHERWISE, ARE AT THE TOP OF ROOF DECK.
2. REFERENCE FOR OTHER ELEVATION IS AT THE REFERENCE ROOF ELEVATION, UNLESS LISTED OTHERWISE.
3. RIDGE ELEVATIONS OR DIMENSIONS REFERENCING A "TOP OF STEEL" ARE NOTED IN PLAN. THE STEEL FRAMING SHALL BE PLACED WITH THE TOP OF STEEL AT THE SPECIFIED ELEVATION.
4. STEEL SUPPORTING A METAL DECK OVER TOP OF STEEL ELEVATION. RIDGE SHALL BE SQUARE AND SQUARED WITH ROOF, UNLESS TOP OF STEEL UNLESS NOTED OTHERWISE.
5. ROOF DRAINAGE IS PRIMARILY DESIGNED TO FLOW STEEL DECKING DRAINAGE IS TO BE INSTALLED IN A MANNER THAT SHALL NOT PONDING CONDITIONS ARE TO BE AVOIDED.

SIDE LAPS: SEAM CONDITIONS ARE W-C AT 5 INCHES.

CONNECTION TO SUPPORTING FRAMING SHALL BE 3/4 INCH PUDDLE WELDS AT SIDE ATTACHMENT PATTERN.

AT CONTRACTOR'S OPTIONAL TEMPORARY CONNECTIONS EQUIVALENT CAPACITY SHEAR AND UPLIFT MAY BE TO SHALL BE PLACED SHOP, ON ROOF DECKS (WITH A NOTE ABOVE, BUT FOR PURPOSES OF LOCAL PONDING CONDITIONS PERMITTED.

7 PARTIAL PLAN AT ELEVATOR ROOF

NOTES:

1. SEE GENERAL NOTES FOR REINFORCEMENT REQUIREMENTS.
2. SLAB REINFORCEMENT SHALL BE PLACED IN THE FOLLOWING SEQUENCE:
   - BAR BOTTOM BARS
   - N-S BOTTOM BARS
   - N-S TOP BARS
   - E-W TOP BARS
   - E-W BOTTOM BARS
3. FOR CONTINUOUS SLAB BOTTOM BARS, LAP BARS (SHALL REQUIRED) WITH LAPS AT OR THE SLAB SPAN BETWEEN ADJACENT SUPPORTS (STAGGER LAPS 50%, 1 PACH). SEE ESD NOTES OTHERWISE.
4. FOR SLAB TOP BARS, CENTER REINFORCEMENT OVER COLUMNS UNLESS NOTED OTHERWISE. STAGGER TOP BARS PER 1 OR REINFORCEMENT NO-CENTER.
5. ENDS OF THE CONTINUOUS BOTTOM BARS ARE TO BE PLACED EACH WAY IN PERIMETER, COUPLER WITH CLOSED VERTICAL REINFORCEMENT WHERE NOTED OTHERWISE.
6. WHERE REINFORCEMENT IS INTERRUPTED BY BLOCKOUTS OR OPENINGS, HOOK BARS AND PLACE EQUIVALENT REINFORCEMENT ON EITHER SIDE OF OPENINGS. SEE TYPICAL SLAB REINFORCEMENT DETAILS. NOTIFY STRUCTURAL ENGINEER OF ANY OPENINGS NOT SHOWN ON THE STRUCTURAL DRAWINGS FOR WHICH THE ENGINEER DOES NOT APPLY. ADDITIONAL REINFORCEMENT MAY BE REQUIRED.
7. WHERE BAR LENGTH CANNOT BE ACHIEVED DUE TO PLAN EDGE, HOOK BAR.
8. SEE TYPICAL CONSTRUCTION JOINTING AT INTERSECTION OF SLABS AND WALLS DETAIL FOR REINFORCEMENT AT SLAB TO WALL INTERFACE.
9. WHERE NOTED AS "HOOKED" BEYOND DOOR, HOOK BAR AROUND HOOK AT SHORT SIDE PLAN NOTED PARALLEL TO THE LENGTH OF STRAIGHT PORTION OF BAR AND LENGTH OF HOOK SHALL BE ADDED TO BAR BEFORE BEND (TYP.).

TOP REINFORCING SCHEDULE		
MARK	REINFORCING	REMARKS
T1	#6@12" OC U.N.	HOOK AT END
T2	#6 @ 12" OC @ 12"	STAGGER 6" OC

16 SLAB REINFORCING NOTES AND SCHEDULE

9 PARTIAL PLAN AT LOADING DOCK ROOF

17 PARITAL PLAN AT LEVEL 2 LOADING DOCK

19 PARTIAL PLAN AT LEVEL 1 LOADING DOCK

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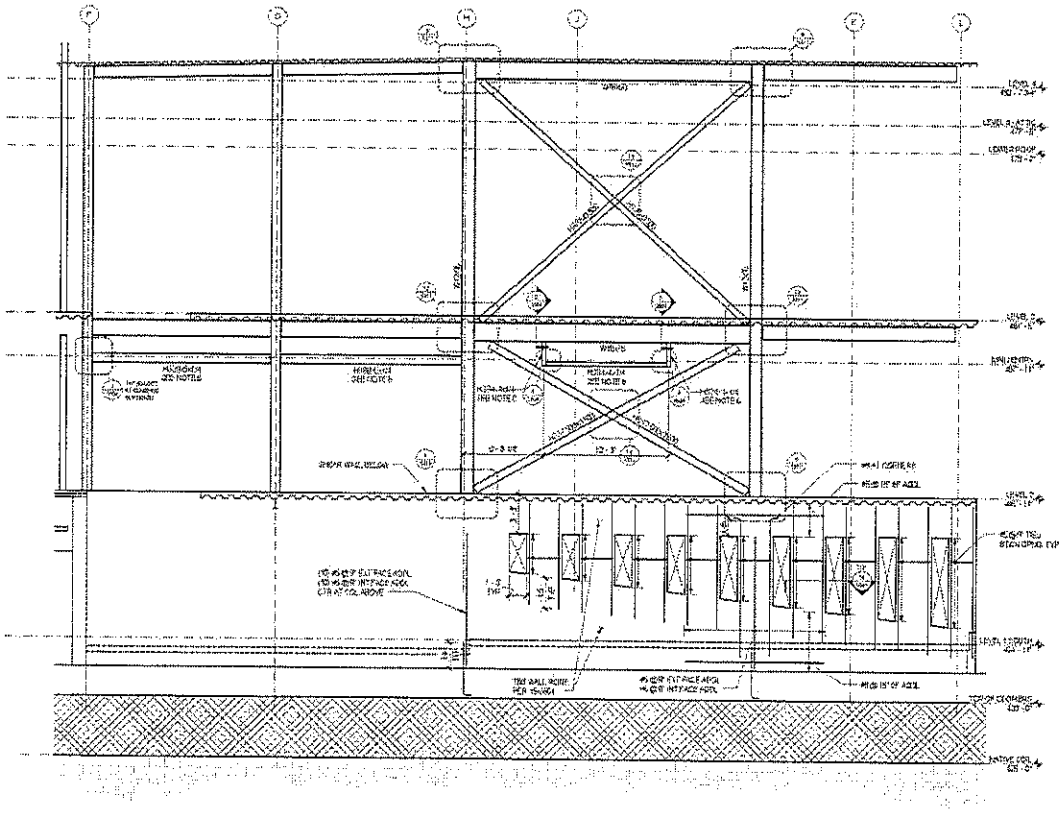
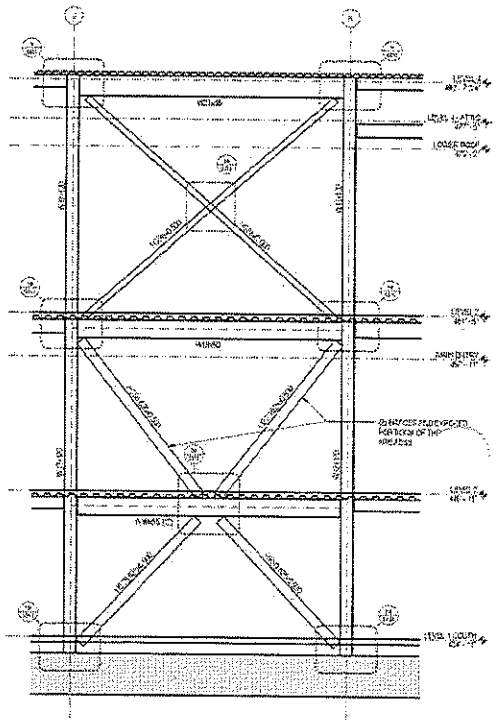
PARTIAL PLANS

S252



7 SOUTH BRACED FRAME ELEVATION ALONG GRID 19



10 NORTH BRACED FRAME ELEVATION ALONG GRID 13.7

NOTES:

1. SEE BRACED FRAME GENERAL NOTES
2. ALL BRACED FRAME STEEL, IT'S CONNECTIONS, AND CONCRETE FOUNDATION ELEMENTS BELOW ARE PART OF THE LIG TAIL LOAD RESISTING SYSTEM (LRS)
3. BEAMS MAY BE ONLY PARTIALLY COVERED BY CONCRETE SLAB ON PORTION OF BEAMS WITH CONCRETE ABOVE
4. SEE PLAN FOR BEAMS EXPOSED, UNLESS NOTED OTHERWISE
5. BRACE INTERSECTIONS OF CLIP AND PAN BETWEEN ADJACENT COLUMNS, UNLESS NOTED OTHERWISE
6. COORDINATE BOTTOM OF STEEL ELEVATION WITH ALL ADJACENT CONTRACTOR, CLADDING SUPPORT MEMBERS NOT PART OF ALPHA.

STUDS

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BRACED FRAME ELEVATIONS

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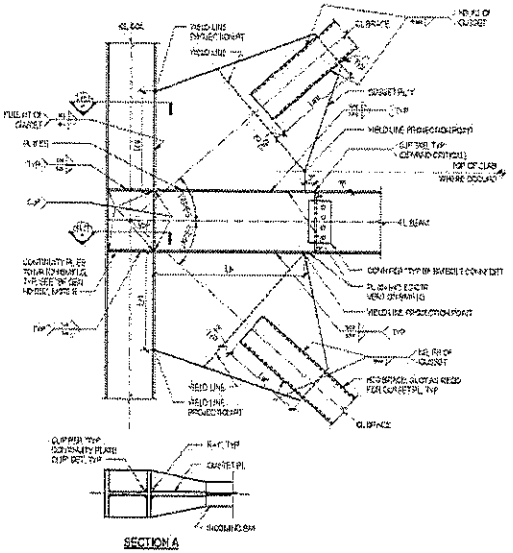


SECTION A

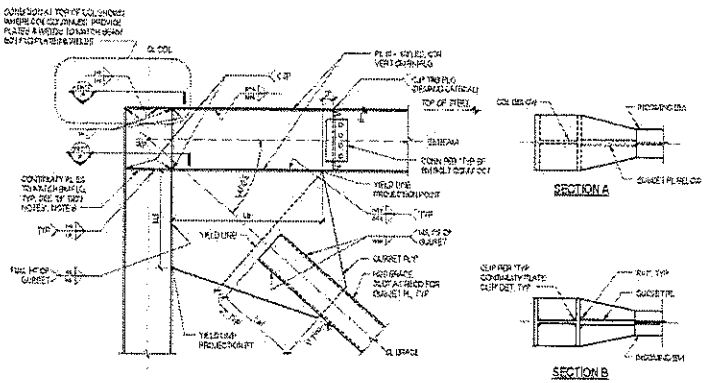
BRACED FRAME TO BEAM/COLUMN CONNECTION SCHEDULE										
GUSSET MARK	t	Lh	Wh	Slot Wid	Weld Size	Edge Dist	Weld Size	Slot Weld Size	REMARKS
SOUTH	1 1/4	21	24	8	24	5	10	3/4	
NORTH	1 1/2	24	24	10	24	7	12	3/4	SEE GUSSET FOR CRITERIA

12 TYPICAL BRACED FRAME CONNECTION

NOTES:

1. ALL PLATES SHALL BE A36 KEY = GR 36
2. SEE TYPICAL STEEL DETAILS FOR BEAM-TO-COLUMN MOMENT CONNECTION
3. EACH GUSSET AND TAPERED LINE PROJECTION POINTS, AND AT DISTANCE 'D' TO COLUMN, ON AT CONNECTION TO BEAM FOR OF HEAD WHERE GUSSET. THE YIELD LINE PROJECTION POINTS FORM THE AREA YIELD USE FURTHEST FROM THE WORK POINT, SHALL DETERMINE GUSSET GEOMETRY. YIELD LINES ARE PERPENDICULAR TO BRACE AXIS
4. DETAIL GUSSET PLATE TO PROVIDE THE REQUIRED BRACE-TO-GUSSET PLATE, GUSSET PLATE-TO BEAM AND GUSSET PLATE-TO-COLUMN WELD LENGTHS
5. SLOT WIDTH IN BRACE SHALL BE EQUAL TO THE CONNECTING GUSSET PLATE THICKNESS PLUS A MINIMUM OF 1/8 INCH CLEARANCE. PROVIDE CLIP AT END AND SLOT RADIUS PER DETAIL AT ALL BRACE SLOTS INCLUDING BRACE-TO-BRACE CHORD PER TYPICAL BRACE SLOT REINFORCING DETAIL
6. BRACE-TO-GUSSET WELDS CALLED OUT ARE EFFECTIVE WELD LENGTH. WHERE BRACE SLOT WIDTH RESULTS IN GAP AT ROOT OF WELD, INCREASE WELD LEG LENGTH TO COMPENSATE
7. PROVIDE STUDS AT 24" MAX O.C. AT SPACING NOT EXCEEDING 12" ON BRACE FRAME BEAMS AT COMPOSITE SLAB UNLESS NOTED OTHERWISE
8. WHERE WT OR PLATE CONFLICTS WITH OTHER REQUIRED CONNECTION PLATES AT COLUMNS, BREAK WT OR PLATE AT EACH SIDE OF COLUMN. STITCH PLATE AND WT WHERE, SQUARE EDGE JOINT PENETRATION WELDS
9. SHOP DRAWINGS SUBMITTED TO THE ENGINEER FOR REVIEW SHALL CLEARLY INDICATE THE BRACE ANGLE, BRACE-TO-GUSSET PLATE WELD LENGTH, VERTICAL GUSSET PLATE LENGTH, AND GUSSET PLATE HORIZONTAL EDGE. YIELD LINE AND BRACE OUTLINE SHALL BE SHOWN.
10. WHERE BRACE WORKPOINTS ARE OFFSET A SINGLE BOLT SHALL BE PROVIDED AT EACH END OF THE BRACE, DIRECTION NOT TO SHALL BE LOCATED WITHIN 4" OF BRACE END

14 BRACED FRAME GENERAL NOTES

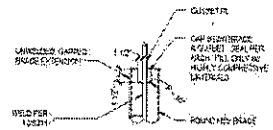


SECTION A

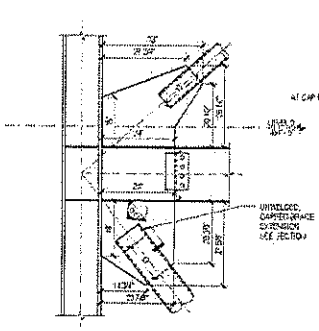
SECTION B

BRACED FRAME TO BEAM/COLUMN CONNECTION SCHEDULE								
GUSSET MARK	t	Lh	Wh	Lwd	Wwd	Lst	Wst	REMARKS
SOUTH	1	15	24	8	24	7		
NORTH	1	15	24	8	24	7		

9 TYPICAL BRACED FRAME CONNECTION



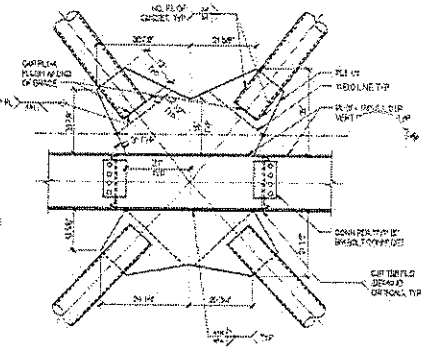
SECTION



NOTES:

1. SEE GUSSET FOR ADDITIONAL INFORMATION

19 BRACED FRAME CONNECTION



20 BRACED FRAME CONNECTION

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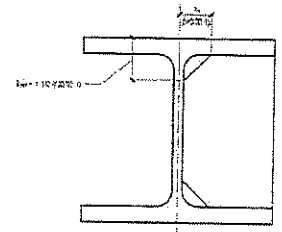
TYPICAL BRACED FRAME CONNECTION SECTIONS AND DETAILS

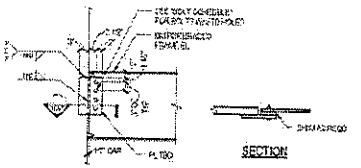
S311



NOTES:

1. ALLOWABLE TOLERANCE (FT. - 1/4")

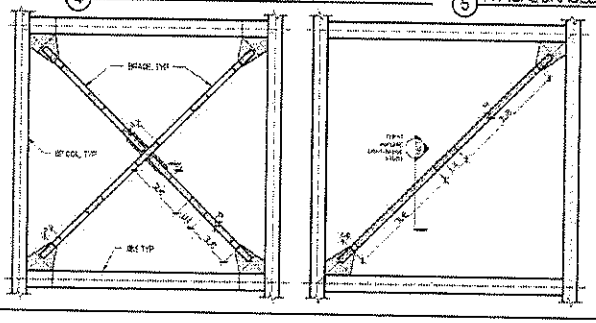
4 TYPICAL CONTINUITY PLATE CLIP

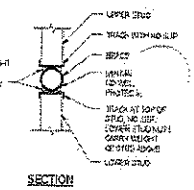


DETAIL AT GUSSET PLATE CONNECTION

BOLT SCHEDULE	
REMARKS	NUMBER OF BOLTS
W14	3
W18	4
W21	5

5 TYPICAL BRACED FRAME BEAM BOLT CONN

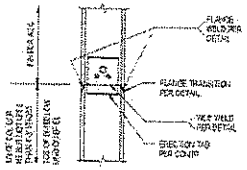




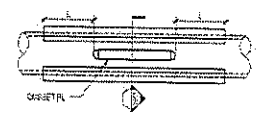
NOTES:

1. SHADING INDICATES PROTECTED ZONE. NO COLLAR SOLID ATTACHMENTS (SHADING, PLUG WELD, ETC) NOT PERMITTED WITH THE PROTECTED ZONE.
2. TACK WELDED CONNECTIONS OF INTERIOR, NON-STRUCTURAL LIGHT GAUGE STUDS ARE ACCEPTABLE OUTSIDE OF THE PROTECTED ZONES. DRYWALL OUT-OF-PLANE LOADING IS TO BE 10 PSF. SUP TRACKS HAVE NOT BEEN AT BRACED SUCH THAT BRACES ARE NOT LOADED VERTICALLY.

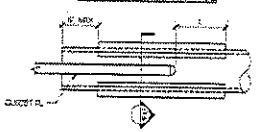
8 TYPICAL BRACE PROTECTED ZONE



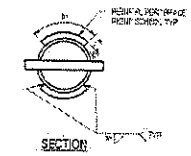
13 BRACED FRAME COLUMN SPLICE



SLOT IN CENTER OF BRACE

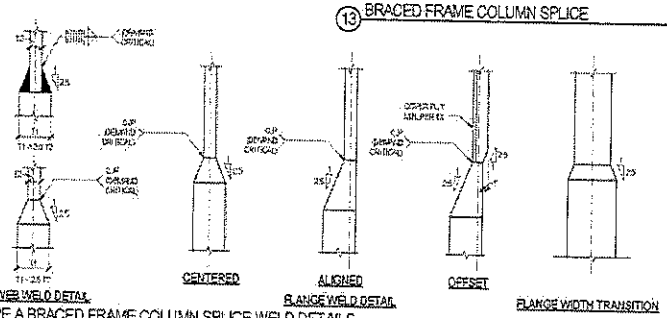


SLOT AT END OF BRACE

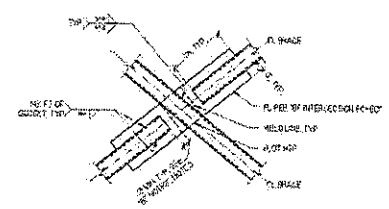


BRACED FRAME REINFORCING SCHEDULE				
BRACE SIZE	[illegible]	[illegible]	[illegible]	[illegible]
HSS[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
HSS[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
HSS[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

14 TYPICAL BRACE SLOT REINFORCING



17 TYPE A BRACED FRAME COLUMN SPLICE WELD DETAILS



BRACED FRAME INTERSECTION SCHEDULE				
BRACE SIZE	[illegible]	[illegible]	[illegible]	REINFORCE
HSS[illegible]	[illegible]	[illegible]	[illegible]	
HSS[illegible]	[illegible]	[illegible]	[illegible]	

19 TYPICAL BRACE INTERSECTION

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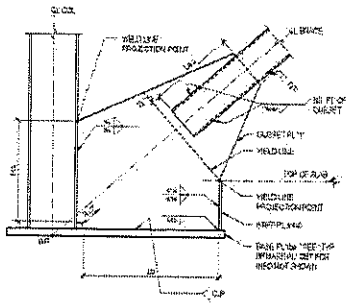
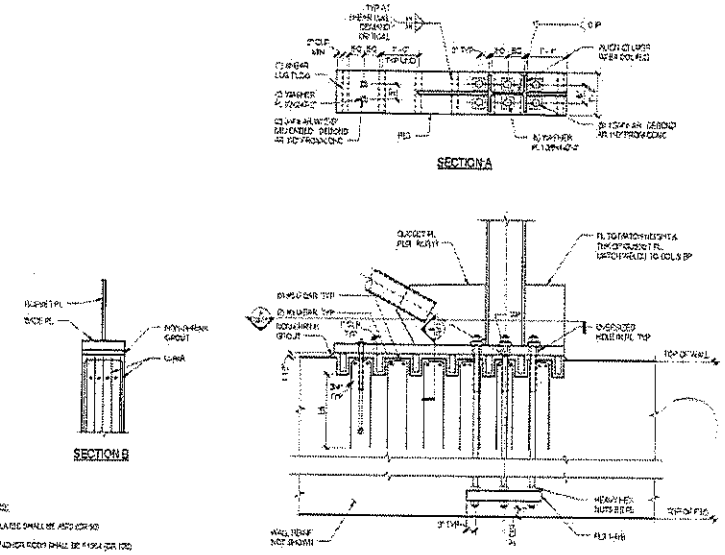
TYPICAL BRACED FRAME CONNECTION SECTIONS AND DETAILS

S312



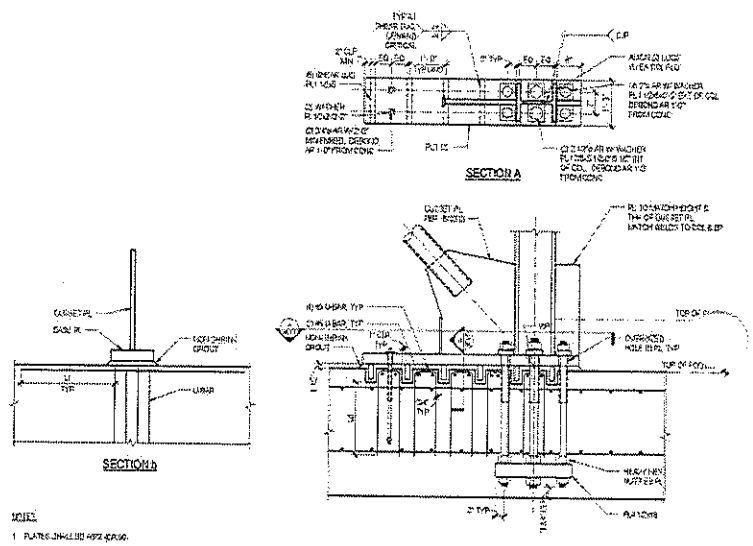
BRACED FRAME BASE PLATE CONNECTION SCHEDULE								
CUSHET MARK	T (IN)	Lb (IN)	Lbu (IN)	Rmin (IN)	Lcu (IN)	Wc (IN)	REMARKS	
SOUTH	1	24	16	3/4	20	3/4	FORF PL TO TOP OF SLAB AT FIRST	
NORTH	1 1/2	22	16	3/4	20	3/4		

8 TYPICAL BRACED FRAME BASE PLATE CONNECTION



NOTES:
1. PLATES SHALL BE ASTM A36 (CR 50)
2. ANCHOR RODS SHALL BE F1554 (CR 105)

9 BRACED FRAME BASE PLATE DETAIL



NOTES:
1. PLATES SHALL BE ASTM A36 (CR 50)
2. ANCHOR RODS SHALL BE F1554 (CR 105)

19 BRACED FRAME BASE PLATE DETAIL

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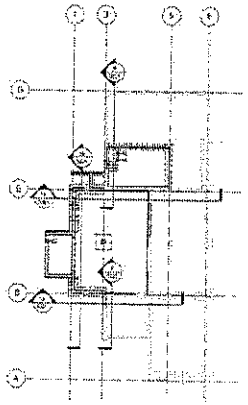
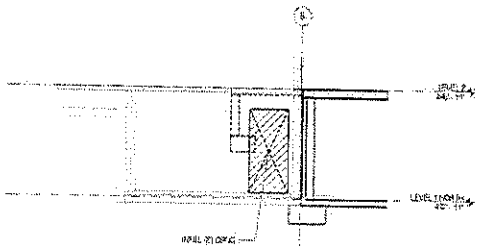
TYPICAL BRACED FRAME CONNECTION SECTIONS AND DETAILS

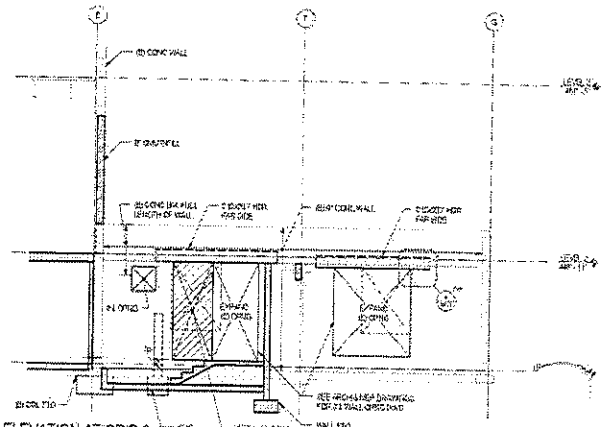
S313



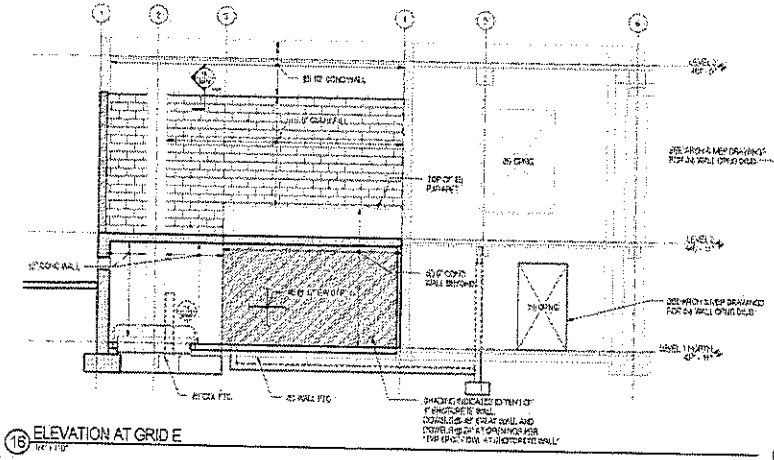
6 KEY PLAN



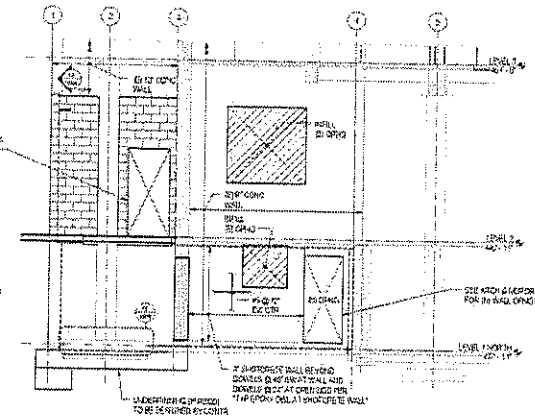
8 ELEVATION AT GRID 3



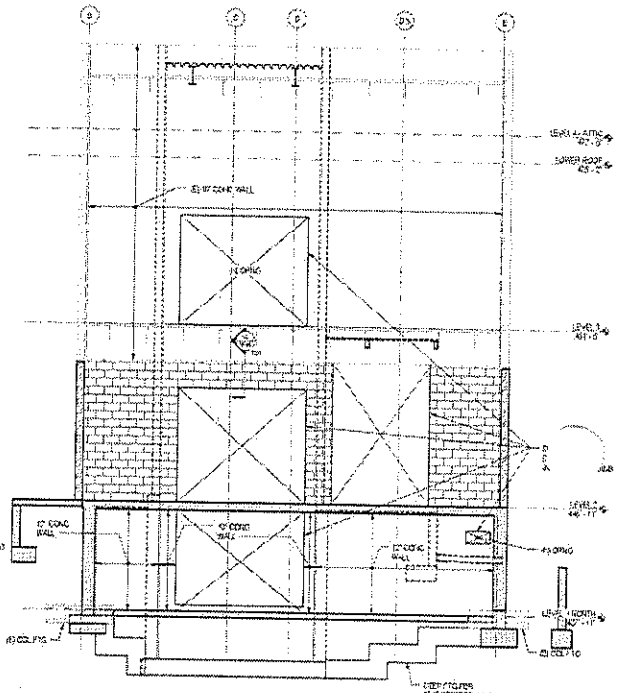
9 ELEVATION AT GRID 3



16 ELEVATION AT GRID E



18 ELEVATION AT GRID B



19 ELEVATION AT GRID 1

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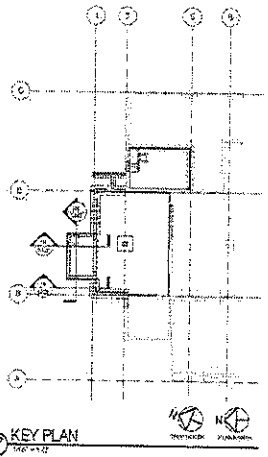
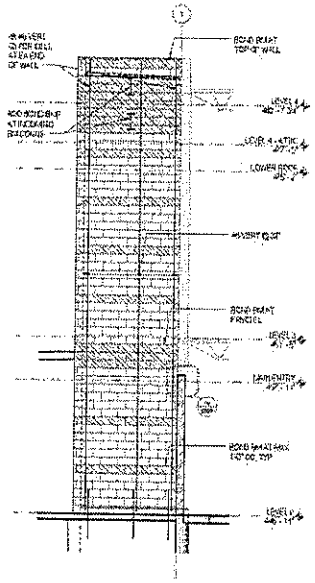
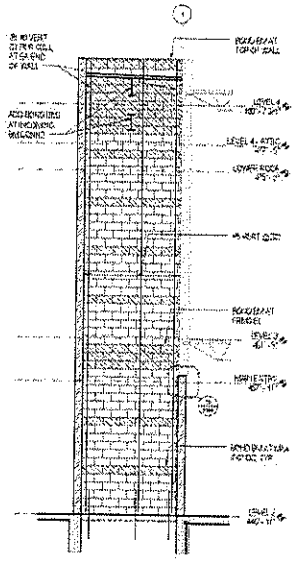
S321



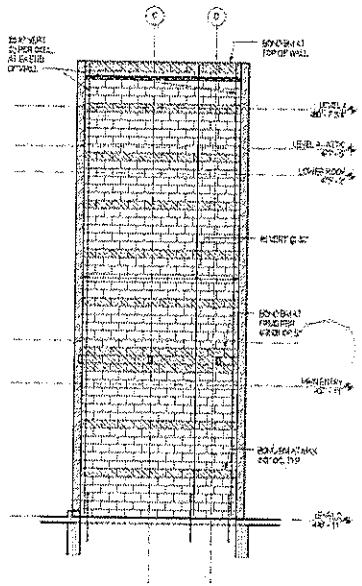
17 KEY PLAN



18 ELEVATION AT WEST ELEVATOR WALL



19 ELEVATION AT EAST ELEVATOR WALL



20 ELEVATION AT NORTH ELEVATOR WALL

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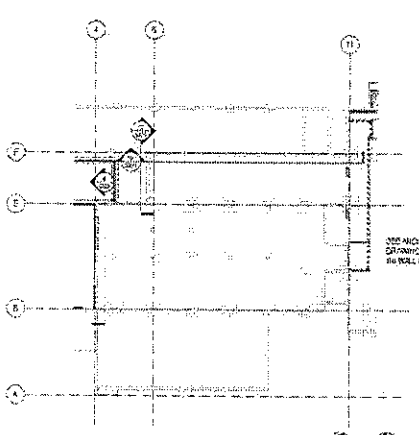
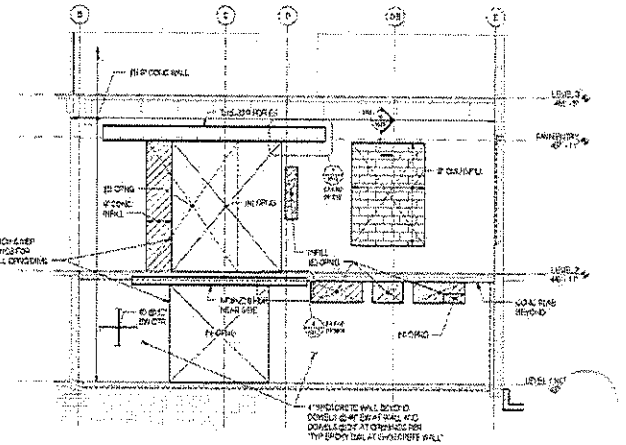
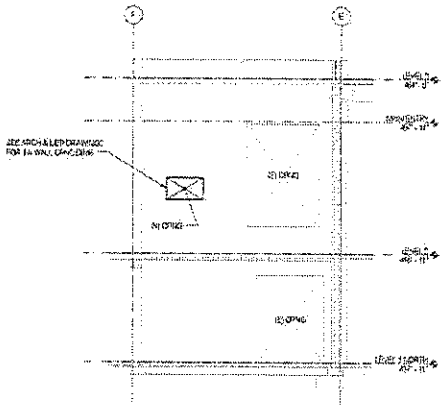


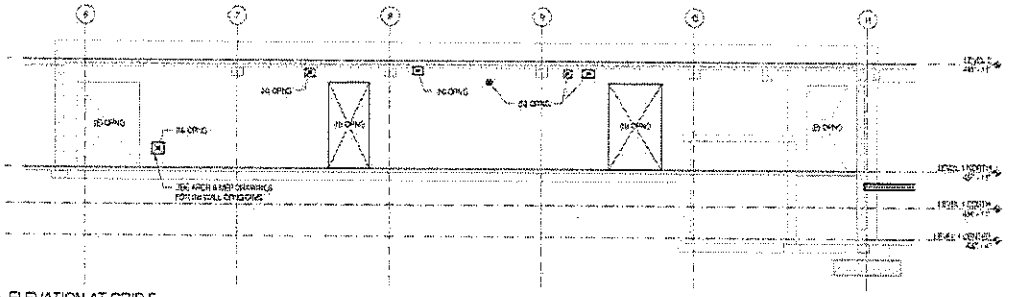
8 KEY PLAN



9 ELEVATION AT GRID 4



12 ELEVATION AT GRID 6



13 ELEVATION AT GRID F

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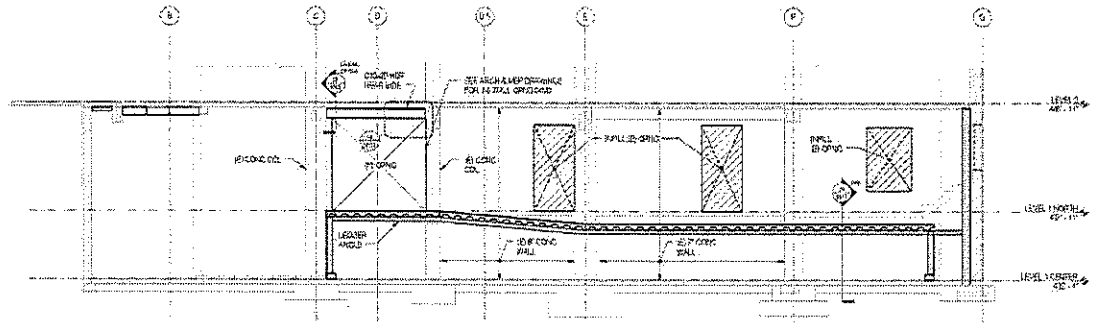
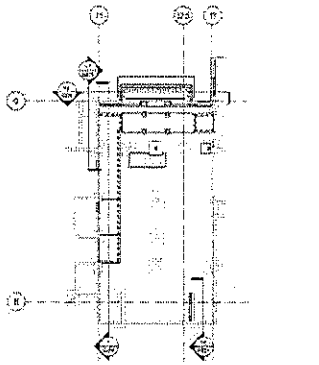
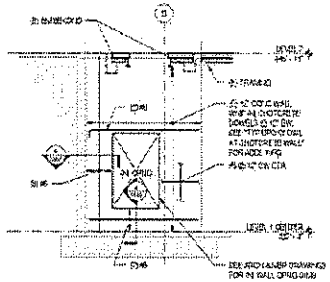


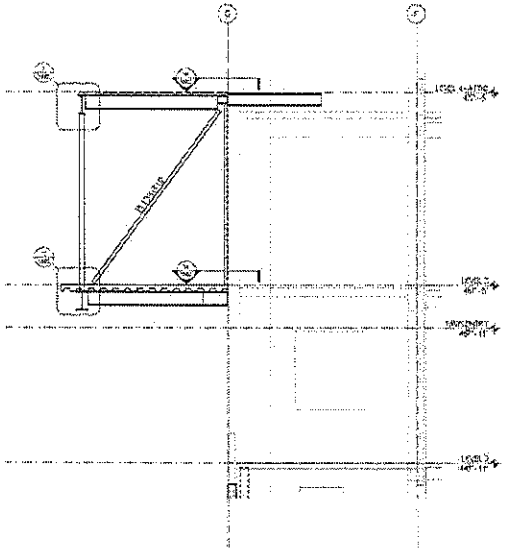
1 ELEVATION AT GRID 11



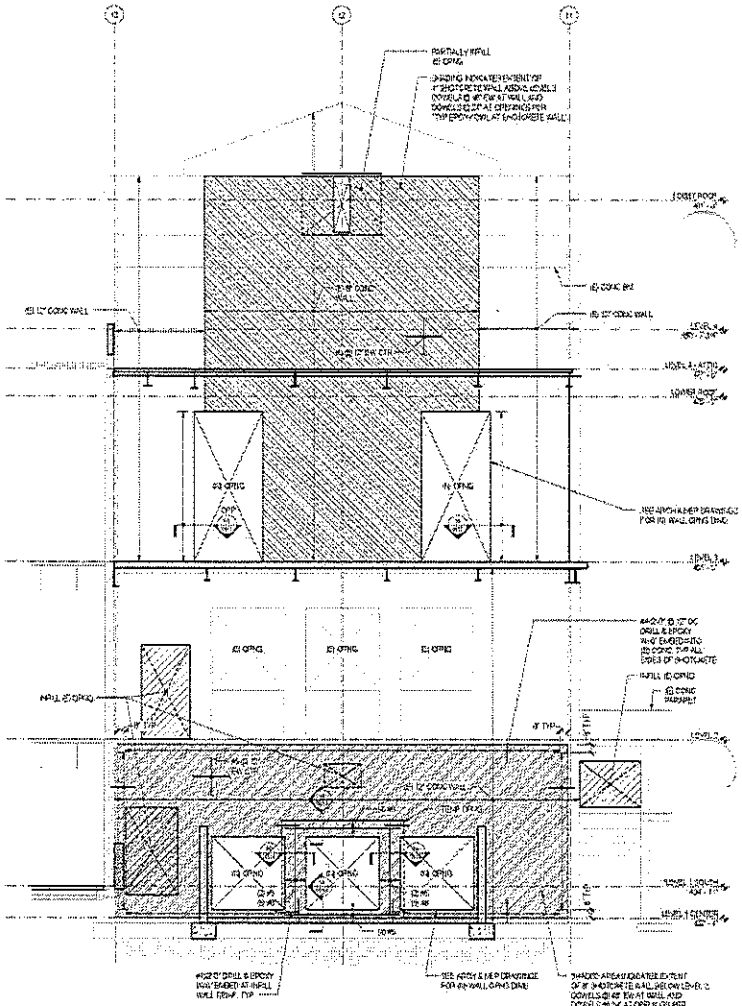
11 KEY PLAN



16 ELEVATION AT GRID 12.7



17 ELEVATION AT GRID 11



19 ELEVATION AT GRID G

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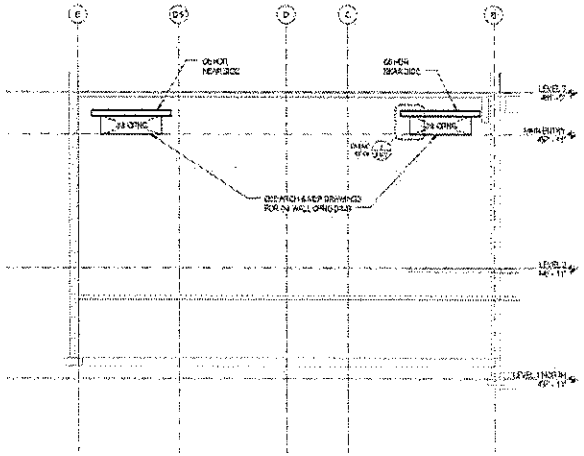
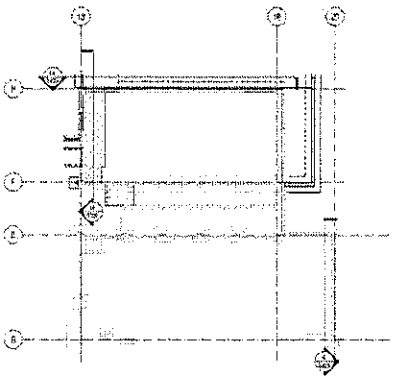
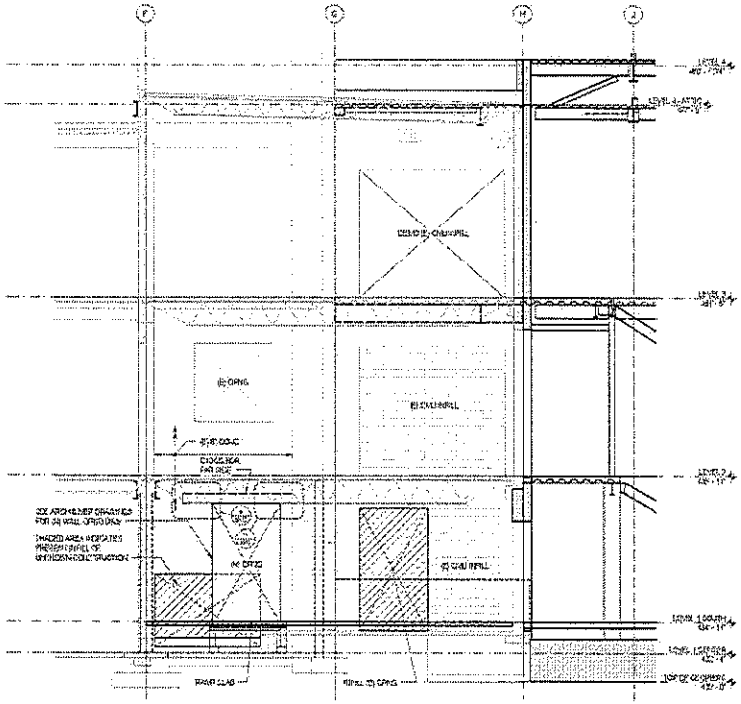


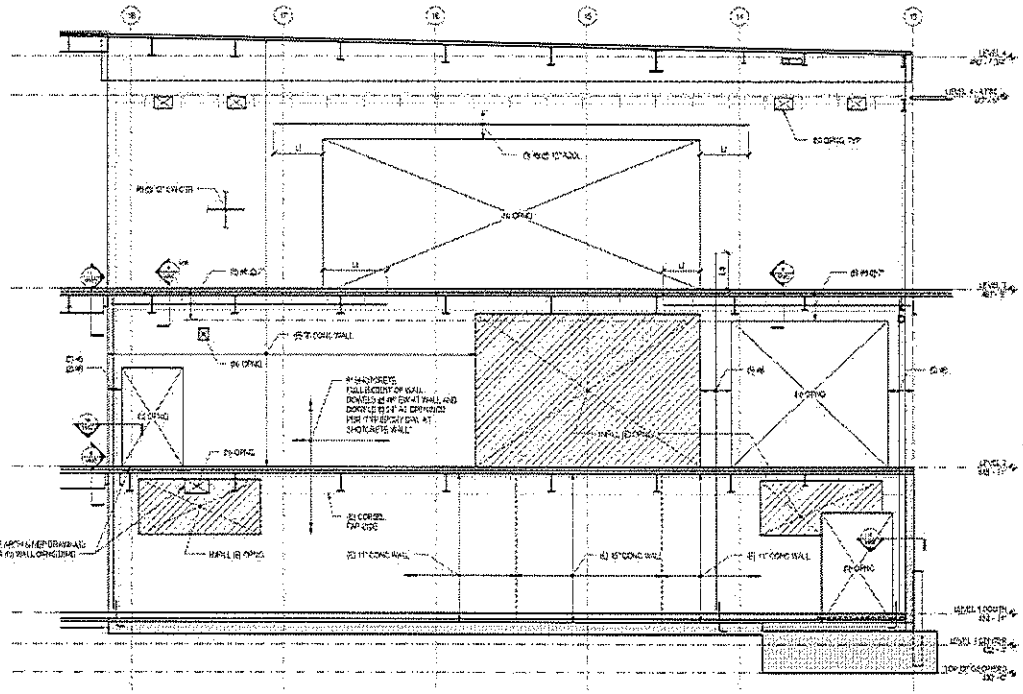
6 ELEVATION AT GRID 20



10 KEY PLAN



16 ELEVATION AT GRID 13



18 ELEVATION AT GRID H

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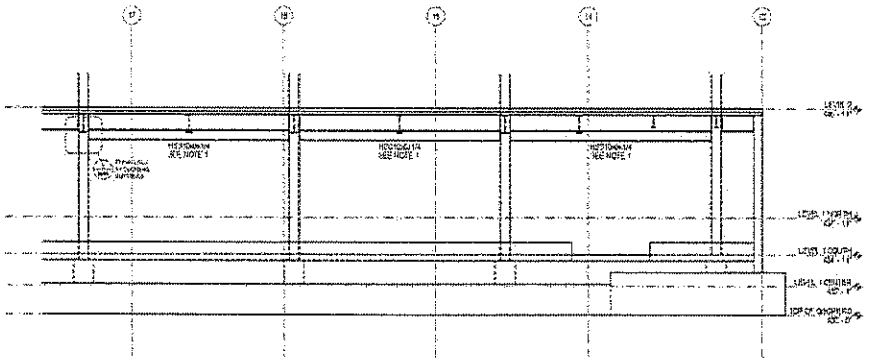
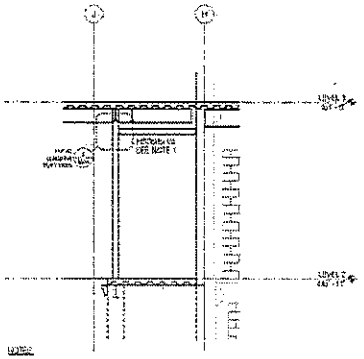
S325



NOTES:

1. COORDINATE BOTTOM OF STEEL ELEVATION WITH CLADDING CONTRACTOR

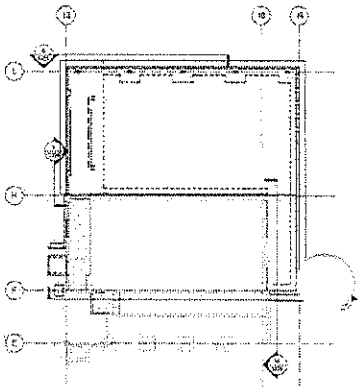
6 SECTION



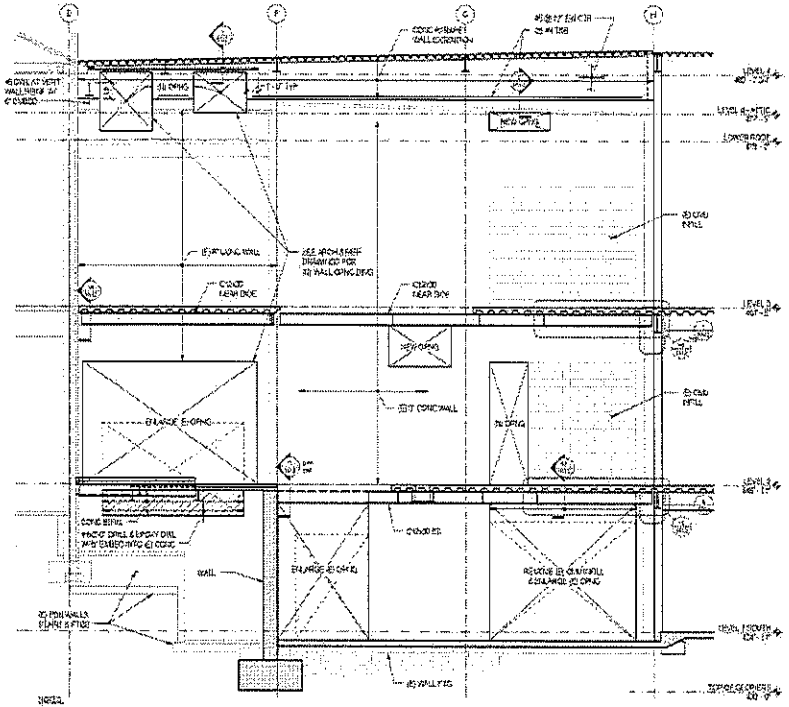
NOTES:

1. COORDINATE BOTTOM OF STEEL ELEVATION WITH CLADDING CONTRACTOR

9 SECTION



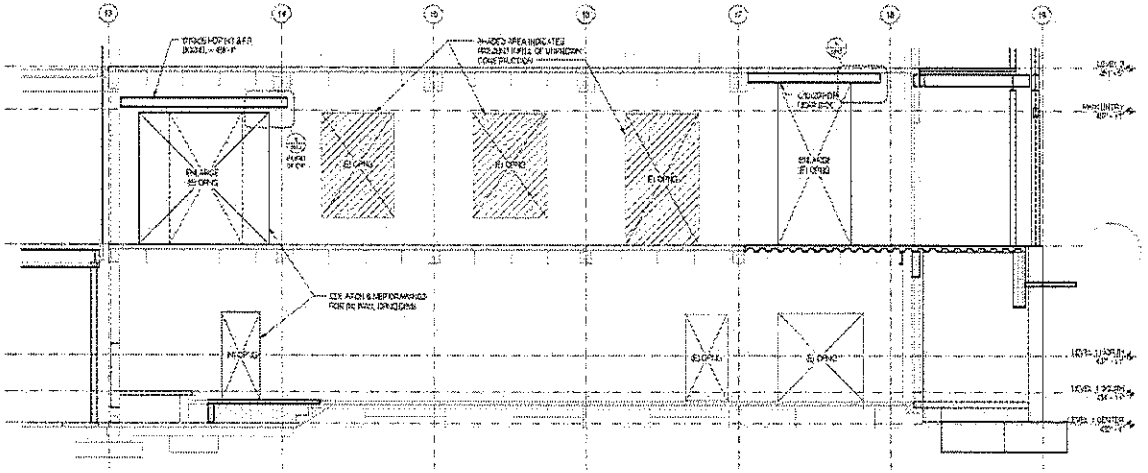
10 KEY PLAN



NOTES:

1. INSTALL EPAN INSERT PRIOR TO CUTTING AND CONCRETE WALLS WHERE INDICATED

16 ELEVATION AT GRID 18



18 ELEVATION AT GRID F

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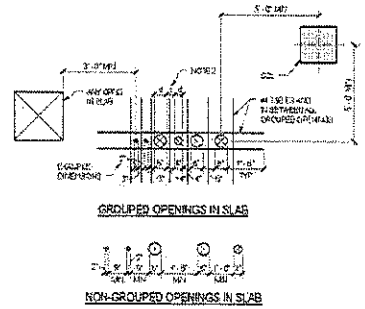
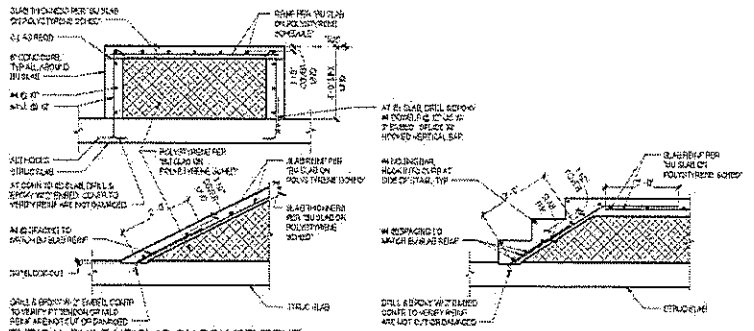
S326



NOTES:

1. ADDED REINFORCING SHOWN APPLIES TO GROUPS OF OPENINGS 10" OR SMALLER SEPARATED OPENINGS ARE DEFINED BY MULTIPLE OPENINGS THAT ARE LOCATED WITHIN THREE TIMES THE DIAMETER OF SMALLER ADJACENT OPENING CLEAR APART OR A MINIMUM OF 24 INCHES.
2. "A" MUST BE GREATER THAN OR EQUAL TO THE SMALLER OF 1/4" OPENING DIMENSION OF ADJACENT SLEEVES, "B" IS EQUAL TO OR GREATER THAN 3 INCHES IN ALL CASES.
3. OPENINGS NOT SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE SUBMITTED FOR REVIEW AT THE SAME TIME AS SLAB SHOP DRAWINGS. REINFORCING OTHER THAN THAT SHOWN MAY BE REQUIRED.
4. WHERE THESE CONDITIONS CANNOT BE MET, SUBMIT TO STRUCTURAL ENGINEER FOR REVIEW.

1 TYP ADDED REINFORCEMENT AT GROUPED OPENINGS IN SLAB OR SLAB ON GRADE

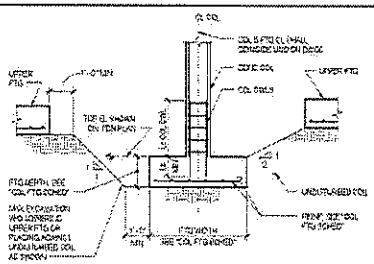


3 TYPICAL BUILT-UP SLAB ON POLYSTYRENE

BUILT-UP SLAB ON POLYSTYRENE SCHEDULE				
TYPE	SLAB THICKNESS (MIN)	REINFORCEMENT	POLYSTYRENE STRENGTH - NOTE 1	REMARKS
TYP	4	#4 @ 12" EW	3.6 PSI @ 1%	(TYP BUILT)
V	6	#6 @ 12" EW	7.2 PSI @ 1%	PROVIDE AT ALL AREAS SUBJECT TO VEHICLE LOADS

NOTES:

1. RIGID CELLULAR POLYSTYRENE WITH MINIMUM COMPRESSIVE RESISTANCE INDICATED AT 1% DEFORMATION CONFORMING TO ASTM D6817 OR ASTM D6 OR APPROVED EQUIVALENT.
2. PROVIDE 3/4" DEEP SAWCUT CONTROL JOINTS AT MINIMUM SPACING OF 10 TIMES THE SLAB THICKNESS ON CENTER EACH WAY. PROVIDE CONTROL JOINTS AT ALL REENTRANT CORNERS. CONTRACTOR SHALL SUBMIT A JOINTING PLAN TO THE ARCHITECT FOR REVIEW.
3. FOR MECHANICAL EQUIPMENT EXCEEDING 1000 POUNDS SUPPORTED ON THE SLAB, CONTACT THE ENGINEER FOR APPROVAL.



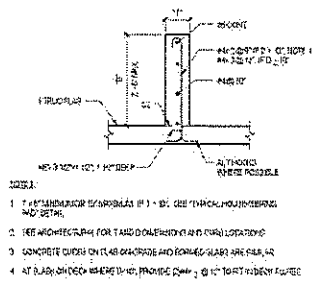
9 TYPICAL CONCRETE COLUMN FOOTING

COLUMN FOOTING SCHEDULE				
MARK	SIZE	DEPTH	REINFORCING EACH WAY BOTTOM	REMARKS
F1	[illegible]	[illegible]	[illegible]	[illegible]
F2	[illegible]	[illegible]	[illegible]	
F3	[illegible]	[illegible]	[illegible]	

NOTES:

1. COLUMN DOWELS TO MATCH VERTICAL REINFORCING UNLESS NOTED OTHERWISE.

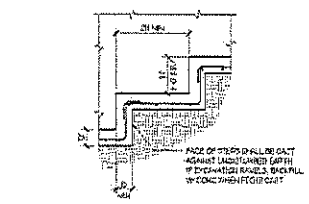
10 COLUMN FOOTING SCHEDULE



NOTES:

1. [illegible]
2. SEE ARCHITECTURAL FOR TAKEDOWN/RESTORATION AND CURB LOCATIONS.
3. CONCRETE CURBS ON SLAB ON GRADE AND FORMED SLABS ARE SIMILAR.
4. AT SLABS ON DECK WHERE [illegible], PROVIDE [illegible] @ 12" TO FIT IN DECK FLUTES.

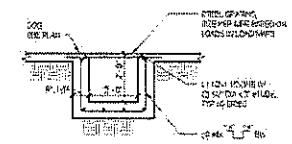
13 TYPICAL CONCRETE CURB



NOTES:

1. SEE TYPICAL WALL FOOTING DETAIL FOR ADDITIONAL INFORMATION.

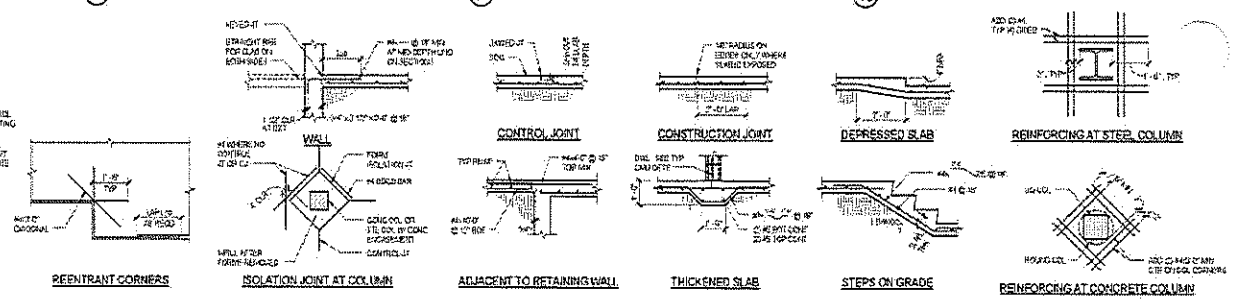
14 TYPICAL STEPPED WALL FOOTING



15 TYPICAL SUMP PIT

NOTES:

1. SLAB ON GRADE IS 4 INCHES THICK UNLESS NOTED OTHERWISE.
2. LOCATE CONSTRUCTION JOINTS UNDER PARTITIONS OR ON COLUMN LINES. PROVIDE CONTROL JOINTS AT ALL COLUMN LINES AND AT A MAXIMUM SPACING OF 10 TIMES THICKNESS EACH WAY IN BETWEEN. PROVIDE CONTROL JOINTS AT ALL REENTRANT CORNERS. CONTRACTOR SHALL SUBMIT A JOINTING PLAN TO ARCHITECT FOR REVIEW.
3. LAYING JOINTS SHALL BE MADE AS SOON AS THE JOINT CAN BE CUT WITHOUT EXCESSIVE RAVELING AND WITHIN 24 HOURS OF SLAB PLACEMENT. SAWED JOINTS SHALL BE FILLED WITH SEALANT AS COORDINATED WITH THE ARCHITECT.
4. LOCATE REINFORCING AT MID-DEPTH OF SLAB UNO.
5. TYPICAL SLAB REINFORCING:
   #4 @ 24" EACH WAY FOR 4" SLAB
   #4 @ 24" EACH WAY FOR 6" EXTERIOR SLAB
   #4 @ 18" EACH WAY FOR 8" EXTERIOR SLAB



17 TYPICAL SLAB ON GRADE

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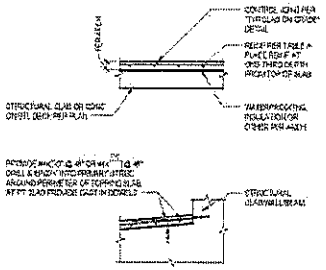
TYPICAL CONCRETE DETAILS

S401



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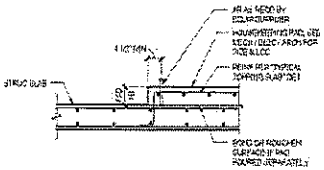
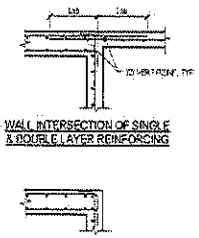


NOTES:
1. HOUSEKEEPING PADS ON SLAB-ON-GRADE AND COMPOSITE SLABS, SIMILAR.

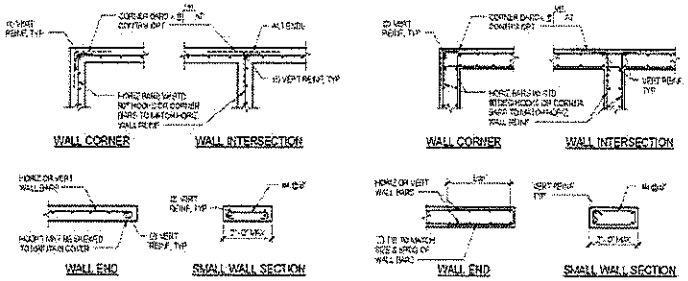
2 TYPICAL HOUSEKEEPING PAD



WALL INTERSECTION OF SINGLE & DOUBLE LAYER REINFORCING

WALL CORNER OF SINGLE & DOUBLE LAYER REINFORCING

NOTES:
1. SMALL WALL DETAILS SHOWN ARE TYPICAL FOR BOTH HORIZONTAL AND VERTICAL DIRECTIONS.



WALL CORNER — WALL INTERSECTION — SINGLE LAYER REINFORCING

WALL END — SMALL WALL SECTION

WALL CORNER — WALL INTERSECTION — DOUBLE LAYER REINFORCING

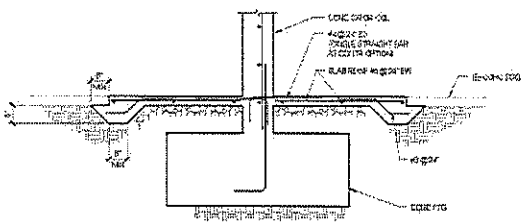
WALL END — SMALL WALL SECTION

3 TYPICAL CONCRETE WALL REINFORCING

TABLE A	
THICKNESS (IN)	MINIMUM REINFORCING
3"	#3 @ 18" EF (EW) OR #4@24" - 1 MAT (SHOTCRETE)
4"	#3 @ 18" EF OR #4@24" - 1 MAT (SHOTCRETE)
5"	#3 @ 12" EF OR #4@18" - 1 MAT (SHOTCRETE)
6"	#3 @ 12" EF OR #4@18" - 1 MAT (SHOTCRETE)
7"	#3 @ 12" EF OR #4@18" - 1 MAT (SHOTCRETE)
8"	#3 @ 12" EF OR #4@18" - 1 MAT (SHOTCRETE)
9"	#3 @ 12" EF OR #4@18" - 1 MAT
10"	#3 @ 12" EF OR #4@18" - 1 MAT

NOTES:
1. SEE TYPICAL SLAB ON GRADE DETAILS FOR ADDITIONAL INFORMATION.

6 TYPICAL TOPPING SLAB

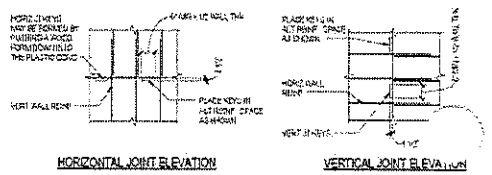


7 TYPICAL SLAB REPLACEMENT AT NEW FOUNDATIONS

NOTES:
1. UNLESS NOTED OTHERWISE, ALL WALLS ARE TO BE REINFORCED IN THE MANNER OF CONCRETE AS SHOWN IN THE FOLLOWING TABLE.

MINIMUM WALL REINFORCEMENT			
WALL THICKNESS	HORIZONTAL BARS	VERTICAL BARS	LOCATION
6" & LESS	#4 @ 12"	#4 @ 12"	CENTER LINE
OVER 6" TO 8"	#5 @ 12"	#5 @ 12"	CENTER LINE
OVER 8" TO 12"	#5 @ 12"	#5 @ 12"	EACH FACE
OVER 12" TO 16"	#5 @ 12"	#5 @ 12"	EACH FACE
OVER 16" TO 20"	#5 @ 12"	#5 @ 12"	EACH FACE
OVER 20"	#5 @ 12"	#5 @ 12"	EACH FACE

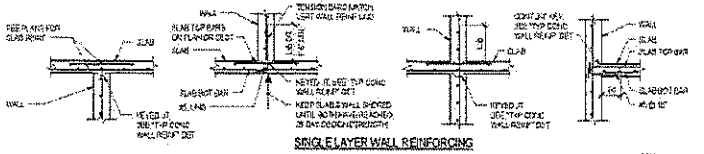
2. LAP WALL REINFORCING (U.N.O.) AT SPLICES.
3. ALL VERTICAL REINFORCING IN CONCRETE WALLS SHALL BE CONTINUOUS FROM STRUCTURAL FLOOR TO STRUCTURAL FLOOR OR FROM FOOTING TO FIRST STRUCTURAL FLOOR ABOVE, U.N.O.
4. STAGGER HORIZONTAL AND VERTICAL BARS 1 INCH CLEAR OF EDGE OF OPENING. SPACE REINFORCING BARS AT EQUAL SPACEMENT TO EACH SIDE OF OPENING.
5. WALL OPENINGS NOT INDICATED ON PLANS BY THE STRUCTURAL ENGINEER MUST BE APPROVED BY THE STRUCTURAL ENGINEER PRIOR TO CONSTRUCTION.
6. SEE DETAIL FOR HORIZONTAL REINFORCEMENT IS REQUIRED.



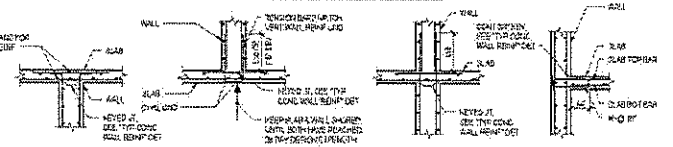
HORIZONTAL JOINT ELEVATION

VERTICAL JOINT ELEVATION

9 TYPICAL CONCRETE WALL REINFORCING



SINGLE LAYER WALL REINFORCING



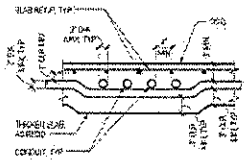
DOUBLE LAYER WALL REINFORCING

14 TYPICAL CONCRETE REINFORCING AT INTERSECTION OF SLABS AND WALLS



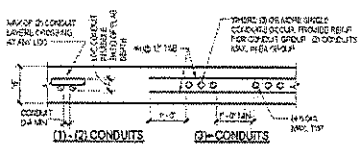
NOTES:
1. BRACING WALL DOES NOT REQUIRE REINFORCING FOR NEW SMALL OPENINGS IF THEIR SPACING AND ARRANGEMENTS ARE MET. OTHERWISE SMALL OPENINGS REQUIRES A STRUCTURAL ENGINEER OF RECORD APPROVAL.
2. LOCATE EXISTING REINFORCING BEFORE BEGINNING TO CUT OPENING. DO NOT CUT EXISTING REINFORCING WITHOUT PRIOR APPROVAL FROM STRUCTURAL ENGINEER OF RECORD. SCANNING REQUIRED TO LOCATE REINFORCING PRIOR TO CORE DRILLING.

11 TYP NEW SMALL PENETRATION IN EXISTING WALL



NOTES:
1. DO NOT DISTURB WATERPROOFING MEMBRANE.

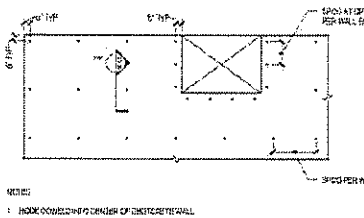
12 TYP PIPING/ CONDUIT IN SLAB ON GRADE



NOTES:
1. CONDUIT PLACEMENT WITHIN 4'-0" OF COLUMN FACE OR THROUGH SLAB SHEAR REINFORCING IS PROHIBITED.
2. CONDUITS ARE ALSO CONSIDERED THAT DO NOT MEET THIS CRITERIA SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. ADDITIONAL REINFORCEMENT MAY BE REQUIRED.
3. DO NOT TIE CONDUIT DIRECTLY TO REINFORCEMENT. INSTALL TIE CONDUIT AT CHAIR INTERVALS, BUT NOT LESS THAN ONE EVERY 8 FEET OF CONDUIT AND REINFORCEMENT.

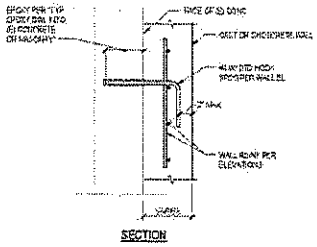
TYPICAL CONDUIT PLACEMENT CRITERIA IN ELEVATED SLABS

13

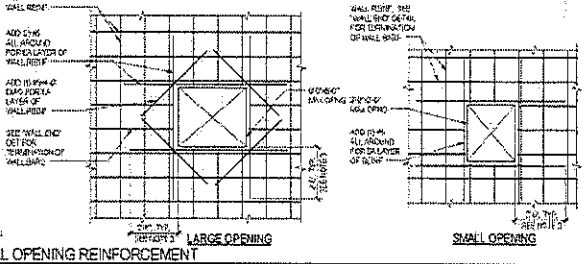


NOTES:
1. INSIDE CORNER FILLET AT CENTERLINE OF CONCRETE WALL.

17 TYPICAL EPOXY DOWEL AT SHOTCRETE WALL



SECTION



NOTES:
1. ONE ADDED REINFORCEMENT BAR SIZE ABOVE WHICH SPECIAL REINFORCEMENT IS INDICATED ON PLANS OR DETAILS EXCEEDS THIS REINFORCEMENT.
2. CONTRACTOR SHALL VERIFY ALL OPENINGS NOT SHOWN ON THE STRUCTURAL DRAWINGS WITH THE STRUCTURAL ENGINEER BEFORE PLACEMENT.
3. WHEN EDGE OF OPENING IS CLOSE TO OPENING WALL TIES ALL OR THE LENGTH OF OPENING STRUCTURAL ENGINEER BEFORE CONSTRUCTION.

LARGE OPENING — SMALL OPENING

19 TYPICAL CONCRETE WALL OPENING REINFORCEMENT

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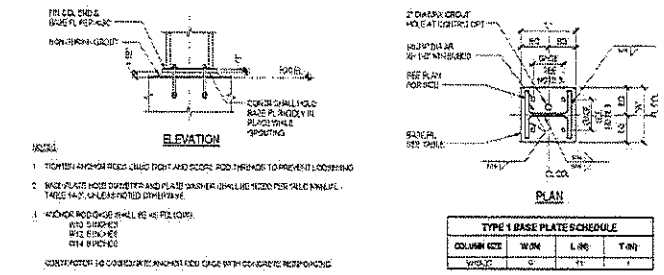
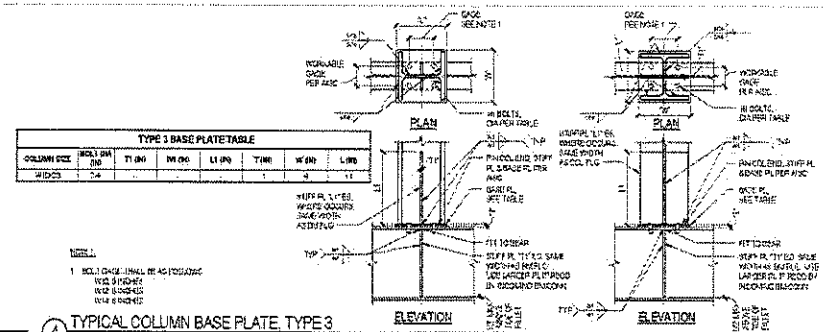
TYPICAL CONCRETE DETAILS

S402



TYPE 1 BASE PLATE SCHEDULE			
COLUMN SIZE	W (IN)	L (IN)	T (IN)
W10X33	12	17	1

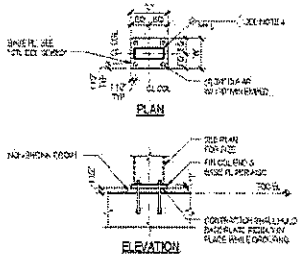
2 TYPICAL COLUMN BASE PLATE, TYPE 1



TYPE 3 BASE PLATE TABLE							
COLUMN SIZE	ANCH. DIA. (D)	T1 (IN)	W1 (IN)	L1 (IN)	T (IN)	W (IN)	L (IN)
W10X33	3/4				1	8	11

4 TYPICAL COLUMN BASE PLATE, TYPE 3

TYPE 4 BASE PLATE SCHEDULE			
COLUMN SIZE	W (IN)	L (IN)	T (IN)
W10X33	10	21	1
W14X90	15	32	1 3/4



9 TYPICAL COLUMN BASE PLATE, TYPE 4

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TYPICAL STEEL DETAILS

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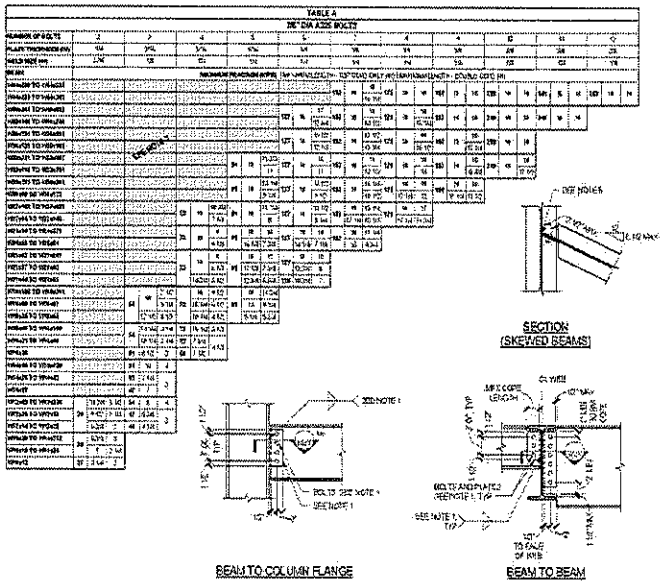


SECTION
(SKEWED BEAMS)

BEAM TO COLUMN FLANGE

BEAM TO BEAM

6 TYPICAL TYPE C1 - SINGLE PLATE SHEAR CONNECTION

NOTES:

1. FOR A GIVEN BEAM AND REQUIRED REACTION, SEE TABLE A OR TABLE B FOR BOLT SIZE AND TYPE, NUMBER OF BOLTS, PLATE THICKNESS, WELDS, MINIMUM BEAM CORE LENGTH.
2. PLATE SHALL MEET ASTM A36 MINIMUM.
3. WHEN REQUIRED CAPACITY EXCEEDS AVAILABLE CAPACITY PER TABLE A OR TABLE B, USE TYPICAL TYPE C2 OR TYPICAL TYPE C-DT CONNECTIONS.
4. FOR CHOSEN BEAM NOT MEETING THE LIMITS SHOWN IN SECTION, USE TYPICAL TYPE CP CONNECTION.
5. SEE "GENERAL NOTES FOR COPED BEAMS" FOR ADDITIONAL REQUIREMENTS.
6. FOR ROOF CAPS STIFFENED LESS THOROUGHLY, INCREASE WEB SIDE FILLET WELD SIZE PER AISC 9-1.1. ADD FOOT CAPS GREATER THAN 3/8IN BEVEL PLATE OR PROVIDED EQUIVALENT FOR WELDING USE OF HEAVIER SIDE FILLET WELD.
7. CHOSEN AREA INDICATES NUMBER OF BOLTS NOT PERMITTED FOR GIVEN BEAM SIZE.

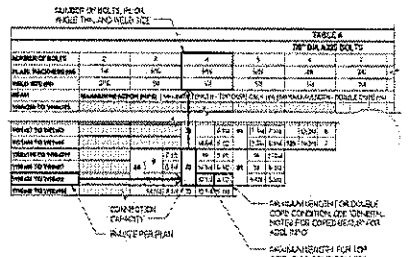


EXAMPLE PARTIAL
FRAMING PLAN

NOTES BELOW APPLY TO ALL CONNECTIONS AS CONSTRUCTED IN THIS SET

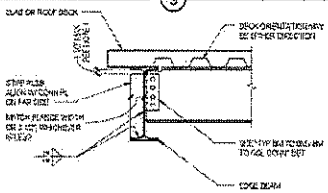
1. SEE PLANS FOR BEAM INSPECTION, WHERE NOT DETAILED OR NOTED, USE APPROPRIATE TYPICAL DETAIL.
2. THE MINIMUM NUMBER OF BOLTS IN A BEAM WEB CONNECTION SHALL NOT BE LESS THAN THE MINIMUM NUMBER OF BOLTS PERMITTED FOR A GIVEN BEAM IN TABLE A.
3. BEAMS AND SHEAR END PLATES OR ANGLES SHALL HAVE 3/4" STANDARD ROUND HOLES (STD) UNLESS NOTED OTHERWISE. AT CONTRACTOR'S OPTION, HOLES IN SHEAR END PLATES OR ANGLES MAY BE HORIZONTAL SHORT-SLOTTED HOLES.
4. ALL BOLTS TO BE SNUG-TIGHTENED UNLESS SPECIFICALLY NOTED OTHERWISE. BOLTS IN CONNECTIONS OF SECONDARY MEMBERS MAY BE SNUG TIGHTENED EXCEPT WHERE OTHERWISE NOTED OR CALLED OUT IN SLIP CRITICAL JOINTS.
5. FOR EXTERIOR OR WEATHERABLE APPLICATIONS, USE HOT-DIP GALVANIZED FINISH OF BOLTS.
6. WHEN CONDITIONS VARY FROM THOSE SHOWN IN THE TYPICAL STEEL DETAILS, OR WHEN THE CONTRACTOR WANTS TO USE ALTERNATE DETAILS, DETAIL CONSTRUCTION ACCORDING TO THE "MEANS AND OF OPEN CONSTRUCTION." SUBMIT CALCULATIONS FOR ENGINEER'S APPROVAL.
7. CONTRACTOR SHALL COORDINATE THE BOLT SELECTION AND LINE SET WITH FABRICATOR AND ERECTOR.
8. SEE "GENERAL NOTES FOR COPED BEAMS" FOR ADDITIONAL REQUIREMENTS WHEN BEAMS ARE COPED.

5 GENERAL NOTES FOR STEEL CONNECTIONS



PARTIAL TABLE A

9 TABLE A THROUGH TABLE D LEGEND



NOTES:

1. AT LOCATIONS WHERE A CONCRETE SLAB POUR IN PLANT AT EDGE BEAM, THE STEP IN CONCRETE SLAB OR REACTION PLATE SHALL BE EXTENDED TO FULL DEPTH AND WELDED TO THREE SIDES.
2. THIS DETAIL APPLIES AT ALL EDGE OF SLAB CONDITIONS.

14 TYPICAL STEEL EDGE BEAM STIFFENER



TYPICAL COPED BEAM

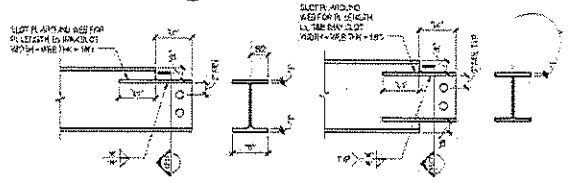
NOTES:

1. COPED BEAMS SHALL BE CHECKED FOR MAXIMUM COPE LENGTH PER TABLE A1, TABLE B1, TABLE C1, OR TABLE D1, WHICHEVER IS APPLICABLE. COPE LENGTH IS AS SHOWN IN THE CONNECTION DETAIL.
2. MAXIMUM TOP COPE DEPTH IS 2 INCHES FOR BEAM DEPTHS UP TO W24 AND 3 INCHES FOR BEAM W24 AND DEEPER. WHERE ACTUAL COPE DEPTH EXCEEDS MAXIMUM COPE DEPTH, ADD STIFFENERS PER "TYPICAL COPED BEAM STIFFENER" DETAIL.
3. WHEN THE REQUIRED BEAM COPE LENGTH IS GREATER THAN THE MAXIMUM ALLOWABLE COPE LENGTH, TIED TO THE FLANGE, SMALL WEB TYPICAL COPED WITH STIFFENER. THE MINIMUM REACTION MAY BE REDUCED PER THE FOLLOWING RATIO:

D*tw/Cope Area

THIS REDUCTION SHALL NOT BE PERMITTED WHERE LINE IS COLED EITHER "B" OR "L" SIDE.

15 GENERAL NOTES FOR COPED BEAMS



TOP COPE ONLY SECTION DOUBLE COPE SECTION

NOTES:

1. FILLET WELD TYP. SHALL BE 5/16" + MIN. OR AS SHOWN.
2. "B" SHALL BE EQUAL TO OR GREATER THAN THE BEAM FLANGE WIDTH AND "L" SHALL BE EQUAL TO OR GREATER THAN THE BEAM'S ANGLE THICKNESS.
3. "D" SHALL BE THE GREATER OF 2 INCHES OR WIDTH, THE TOP COPE DEPTH AND THE BOTTOM COPE DEPTH.
4. "L" SHALL BE A MINIMUM OF 12 INCHES FOR W10 AND W12 BEAMS, 18 INCHES FOR W14 AND W16 BEAMS, AND 24 INCHES FOR W18 AND DEEPER BEAMS.

19 TYPICAL COPED WEB STIFFENER

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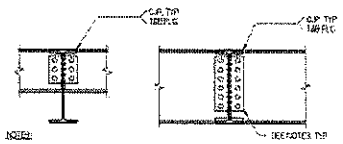
TYPICAL STEEL DETAILS

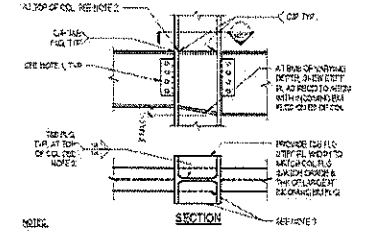
S412



NOTES:

1. SEE "TYPICAL TYPE C3" OR "TYPICAL TYPE C2" FOR ADDITIONAL CONNECTION REQUIREMENTS.
2. CORE LENGTHS AND DEPTHS OF "TYPICAL TYPE C3" OR "TYPICAL TYPE C2", ACTUALLY AS THE "GENERAL NOTES FOR COPED CONNECTIONS" DO NOT APPLY TO THIS DETAIL.
3. FOR SKEWED BEAMS, SEE "TYPICAL STEEL CONNECTION TYPE C1" SECTION.
4. THIS DETAIL APPLIES ONLY FOR BEAMS OF EQUAL DEPTH EACH SIDE OF SUPPORTING BEAMS.

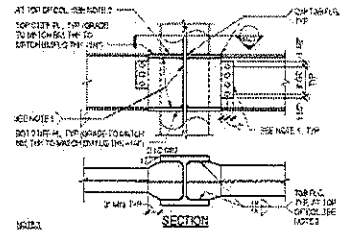
1 TYP TYPE C3 - BEAM TO BEAM MOMENT CONN



NOTES:

1. SEE "TYPICAL TYPE C4" OR "TYPICAL TYPE C2" FOR ADDITIONAL CONNECTION REQUIREMENTS.
2. AT TOP OF COLUMN PROVIDE 1/4 INCH FLIP WELD IN LIEU OF TOP SIDE FILLET WELD OR AT CONTRACTOR'S OPTION, A SINGLE CAP PLATE MAY BE USED IN LIEU OF TWO STIFFENER PLATES. USE SIDE BIDS FOR SIDE FILLET WELD FOR STIFFENER PLATE TO EACH COLUMN FLANGE AND SIDE OF COLUMN WEB.
3. AT CONTRACTOR'S OPTION, WIDTH OF STIFFENER PLATES MAY BE REDUCED TO WIDTH OF LARGEST BEAM FLANGE BY NO OTHER DEGREES CONNECTIONS OCCUR AT A GIVEN BEAM COLUMN CONNECTION.

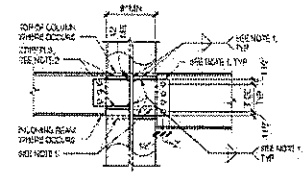
2 TYP TYPE C4 - BM TO COL FLG MOMENT CONN



NOTES:

1. FOR A GIVEN BEAM AND REQUIRED REACTION, SEE "TABLE A" OR "TABLE B" FOR BOLT SIZE AND TYPE, NUMBER OF BOLTS, VERTICAL PLATE THICKNESS, AND WELDS.
2. AT TOP OF COLUMN PROVIDE 1/4 INCH FLIP WELD IN LIEU OF TOP SIDE FILLET WELD OR AT CONTRACTOR'S OPTION, A SINGLE CAP PLATE MAY BE USED IN LIEU OF TWO STIFFENER PLATES. USE SIDE BIDS FOR SIDE FILLET WELD FOR STIFFENER PLATE TO EACH COLUMN FLANGE AND SIDE OF COLUMN WEB.
3. THIS DETAIL APPLIES ONLY FOR BEAMS OF EQUAL DEPTH EACH SIDE OF COLUMN.

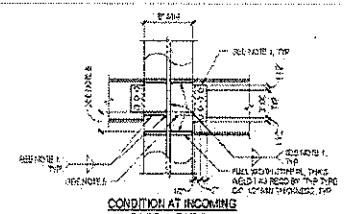
3 TYP TYPE C5 - BM TO COL WEB MOMENT CONN



NOTES:

1. FOR A GIVEN BEAM AND REQUIRED REACTION, SEE "TABLE A" OR "TABLE B" FOR BOLT SIZE AND TYPE, NUMBER OF BOLTS, VERTICAL PLATE THICKNESS, AND WELDS.
2. STIFFENER PLATE THICKNESS IS 1/2 INCH FOR CONNECTIONS USING A325 BOLT LEAD, AND 1/4 INCH FOR CONNECTIONS USING A490 BOLTS.
3. ALL PLATES SHALL HAVE Fy = 50 KSI MINIMUM.

4 TYPICAL TYPE C6 - BEAM TO COLUMN WEB SHEAR CONNECTION



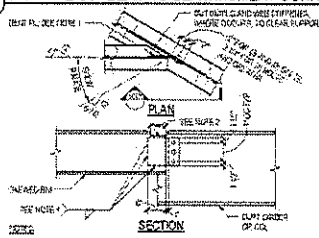
NOTES:

1. BEAMS MAY BE SKEWED UP TO 10 DEGREES. SEE "TYPICAL TYPE C4" FOR ADDITIONAL PERMISSIBLE FOOT MAP AT SKEWED CONNECTIONS.
2. FOR COLUMNS WITH AND COVER, PROVIDE DIRT INTER PLATES ON EACH SIDE OF COLUMN OR USE "TYPICAL TYPE C2" OR "TYPICAL TYPE C10" CONNECTIONS.
3. WHEN DIMENSIONS SHOWN IS SHOWN OR LESS, EACH VERTICAL PLATE TO LOWER STIFFENER. WHEN DIMENSIONS SHOWN IS GREATER, THAN 4 INCHES PROVIDE ADDITIONAL STIFFENER PLATES LIKE AT BOTTOM OF VERTICAL PLATE.

4 TYPICAL TYPE C6 - BEAM TO COLUMN WEB SHEAR CONNECTION

TABLE Y

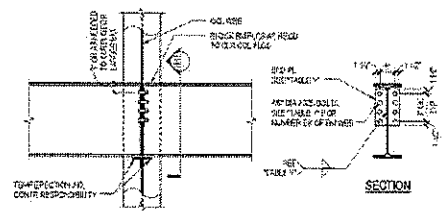
NUMBER OF BOLTS PER SIDE	MAXIMUM REACTION (KIPS)	END PLATE THICKNESS (IN)	WELD SIZE (IN)	MINIMUM BEAM WEB THICKNESS (IN)	MINIMUM COLUMN WEB THICKNESS (IN)
2	31	1/4	3/16	0.19	0.14
2	67	1/2	3/8	0.29	0.43
2	82	1/4	3/16	0.20	0.13
3	137	1/2	3/8	0.28	0.43
4	83	1/4	3/16	0.20	0.20
4	187	1/2	3/8	0.28	0.44
5	127	1/4	1/4	0.30	0.24
5	236	1/2	3/8	0.28	0.45
6	179	3/8	1/4	0.30	0.30
6	298	1/2	3/8	0.28	0.46
7	225	3/8	5/16	0.35	0.35
7	358	1/2	3/8	0.28	0.48
8	313	3/8	5/16	0.47	0.40
8	389	1/2	3/8	0.50	0.48
9	357	1/2	5/16	0.50	0.48
9	427	1/2	3/8	0.50	0.48
10	485	1/2	3/8	0.50	0.48
11	534	1/2	3/8	0.50	0.48
12	562	1/2	3/8	0.50	0.48



NOTES:

1. FOR A GIVEN BEAM AND REQUIRED REACTION, SEE "TABLE A" OR "TABLE B" FOR BOLT SIZE AND TYPE, NUMBER OF BOLTS, VERTICAL PLATE THICKNESS, AND WELDS.
2. THE MINIMUM CORE LENGTH ALONG THE PLATE BE 1.5 MINIMUM 0.25 IN. SHORTENING THE MINIMUM APPLICABLE CORE LENGTH IN "TABLE A" OR "TABLE B". WHERE THE REQUIRED CORE LENGTH EXCEEDS THE MINIMUM, SEE "TYPICAL COPED WEB STIFFENER" DETAIL.
3. MINIMUM SUPPORTING GIRDER OR COLUMN FLANGE THICKNESS IS 0.25 INCHES FOR A325 BOLTS OR 0.25 INCHES FOR A490 BOLTS. WHEN THE SUPPORTING GIRDER OR COLUMN FLANGE THICKNESS EXCEEDS THAT THE MINIMUM REDUCE THE MINIMUM REACTION BY THE RATIO OF THE ACTUAL THICKNESS TO THE MINIMUM THICKNESS.

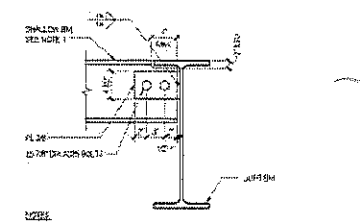
6 TYP TYPE C8 - SKEWED BEAM CONNECTION



NOTES:

1. WHEN THE BEAM WEB IS LESS THAN THE VALUE SHOWN IN "TABLE Y", REDUCE THE MAXIMUM REACTION BY THE RATIO OF ACTUAL BEAM WEB THICKNESS TO MINIMUM BEAM WEB THICKNESS.
2. WHERE THE CAP CONNECTION OCCURS ON BOTH SIDES OF THE COLUMN WEB, THE MINIMUM COLUMN WEB THICKNESS SHALL BE TWICE THE VALUE SHOWN IN "TABLE Y".
3. WHEN COLUMN WEB IS LESS THAN VALUE SHOWN IN "TABLE Y", REDUCE MAXIMUM REACTION BY THE RATIO OF ACTUAL COLUMN WEB THICKNESS TO MINIMUM COLUMN WEB THICKNESS.
4. MINIMUM NUMBER OF BOLTS PER SIDE SHALL CONFORM TO THE REQUIREMENTS IN "GENERAL NOTES FOR STEEL CONNECTIONS".
5. END PLATE SHALL FIT BETWEEN BEAM WEB FILLETS.
6. END PLATES SHALL HAVE Fy = 50 KSI MINIMUM.
7. 1/4 INCH MINIMUM FIRING ALLOWED ON EACH BEAM END.
8. DO NOT COPE STEEL BEAM FLANGES.

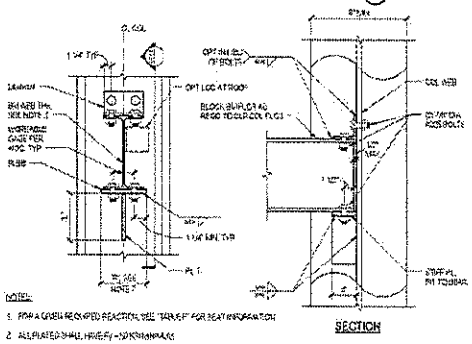
7 TYPICAL TYPE C10 - BEAM END PLATE CONNECTION



NOTES:

1. THIS DETAIL SHALL BE USED ONLY FOR BEAMS UP TO 9 INCHES DEEP AND WEIGHING AT LEAST 8 LBS. USE "TYPICAL TYPE C1" CONNECTION FOR DEEPER BEAMS.
2. ALL PLATES SHALL HAVE Fy = 50 KSI MINIMUM.

10 TYP TYPE C11 - SHALLOW BEAM CONN



NOTES:

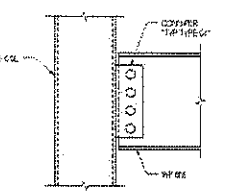
1. FOR A GIVEN BEAM AND REQUIRED REACTION, SEE "TABLE A" OR "TABLE B" FOR BOLT SIZE AND TYPE, NUMBER OF BOLTS, AND MINIMUM CORE LENGTH.
2. ALL PLATES SHALL HAVE Fy = 50 KSI MINIMUM.
3. WHERE THE BEAM WEB THICKNESS IS LESS THAN THE MINIMUM WEB THICKNESS (Tmin) REQUIRED IN "TABLE B", REDUCE THE MAXIMUM REACTION BY THE FOLLOWING RATIO:

$$\frac{Q_{1/2}}{Q_{1/2}} \quad \text{(Tmin)}$$

WHERE Q = 0.0 FOR 3/4 AND 1/2 BEAMS, 0.25 FOR 1/4 TO 7/8 BEAMS, 0.5 FOR 3/8 TO 1/2 BEAMS, AND 0.75 FOR 1/2 AND DEEPER BEAMS.

4. THE CONNECTION MAY BE SKEWED A MINIMUM OF 10 DEGREES BY SKEWING THE STIFFENER PLATE TO ALIGN WITH THE BEAM WEB. BEVEL PLATE END OR PROVIDE EQUIVALENT PIN WELD IN LIEU OF OUTSIDE FILLET WELD. BEVEL END OF BEAM TO BE PARALLEL TO COLUMN WEB.
5. WHERE "TYPICAL TYPE C20" OCCURS ON BOTH SIDES OF THE COLUMN WEB, THE REQUIRED COLUMN WEB THICKNESS (Tmin) SHALL BE 1/2 INCH. WHERE THE COLUMN WEB THICKNESS (Tmin) IS LESS THAN THE REQUIRED WEB THICKNESS, REDUCE THE "TABLE B" MAXIMUM REACTION BY THE RATIO (Tmin/Tmin).
6. WHERE "TYPICAL TYPE C22" OCCURS AT A COLUMN WEB, ONLY 1/2 AND 3/4 COLUMNS ARE PERMITTED.
7. "B" IS A MINIMUM BEAM PER "TABLE B". INCREASE WIDTH AS REQ'D TO BE EQUAL TO OR GREATER THAN INCOMING BEAM FLANGE AND ADJUST BOLTS AS SHOWN. INTO CASE SHALL THE SEAT WIDTH EXCEED THE DISTANCE BETWEEN THE COLUMN WEB FILLETS.

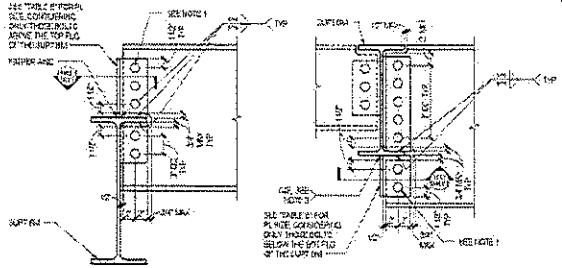
16 TYPICAL TYPE C20 - SEATED BEAM CONNECTION



12 TYPICAL CONN AT HSS COLUMN

TABLE F

MAXIMUM REACTION (KIPS)	SEAT (IN) B	STEEL PLATE (IN) L	STEEL PLATE (IN) T	MINIMUM BEAM WEB THICKNESS (IN)
12	6	6	1/2	0.30
16	6	7	1/2	0.31
18	6	8	1/2	0.36
20	6	9	1/2	0.40
22	6	10	1/2	0.44
26	6	11	1/2	0.48
32	6	12	5/8	0.53
34	6	13	5/8	0.56
42	6 1/2	14	3/4	0.59
50	7	15	3/4	0.61
58	7 1/2	16	7/8	0.64
64	8	17	7/8	0.66
74	8 1/2	18	1	0.69
84	9	19	1	0.72
94	9 1/2	20	1 1/8	0.74
100	10	21	1 1/8	0.76
112	10 1/2	22	1 1/4	0.80
125	10 1/2	23	1 1/4	0.84



NOTES:

1. FOR A GIVEN BEAM AND REQUIRED REACTION, SEE "TABLE A" OR "TABLE B" FOR BOLT SIZE AND TYPE, TOTAL NUMBER OF BOLTS, AND MINIMUM CORE LENGTH.
2. ALL PLATES SHALL HAVE Fy = 50 KSI MINIMUM.
3. CONTRACTOR SHALL PERFORM ULTRASONIC TESTING AND INSPECTION OF SUPPORT BEAM BOTTOM FLANGE PER SPECIFICATION FOR WELDED CONNECTIONS.

13 TYPICAL TYPE C21 - BEAM FLANGE INTERSECTING BEAM WEB

TABLE E

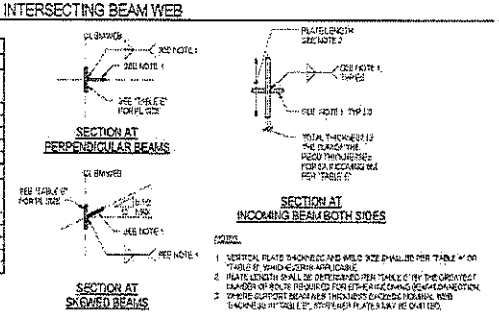
7/8" DIA A325 BOLTS

NUMBER OF BOLTS	PL THICKNESS (IN)	PL LENGTH (IN)	NOMINAL WEB THICKNESS (IN)	STIFF PL THICKNESS (IN)
2-4	5/8	7	0.31	3/8
5-6	5/8	7	0.31	3/8
7-8	3/4	8	0.50	1/2
9-10	3/4	9	0.61	5/8
11-12	1	10	0.64	5/8

1" DIA A490 BOLTS

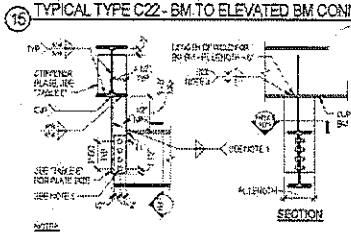
NUMBER OF BOLTS	PL THICKNESS (IN)	PL LENGTH (IN)	NOMINAL WEB THICKNESS (IN)	STIFF PL THICKNESS (IN)
2-4	5/8	7	0.31	3/8
5-6	3/4	8	0.48	1/2
7-8	3/4	9	0.61	5/8
9-10	1	10	0.66	3/4
11-12	1	10	0.72	1

18 TABLE E



NOTES:

1. VERTICAL PLATE THICKNESS AND WELD SIZE SHALL BE PER "TABLE A" OR "TABLE B" WHICH EVERY APPLICABLE.
2. PLATE LENGTH SHALL BE DETERMINED PER "TABLE C" BY THE GREATEST NUMBER OF BOLTS REQUIRED FOR EITHER BEAM CONNECTION.
3. WHERE SUPPORT BEAM WEB THICKNESS EXCEEDS NOMINAL WEB THICKNESS IN "TABLE E", STIFFENER PLATES MAY BE OMITTED.



NOTES:

1. FOR A GIVEN BEAM AND REQUIRED REACTION, SEE "TABLE A" OR "TABLE B" FOR BOLT SIZE AND TYPE, NUMBER OF BOLTS, AND MINIMUM CORE LENGTH.
2. ALL PLATES SHALL HAVE Fy = 50 KSI MINIMUM.
3. PROVIDE FILLET WELD AT BEAM WEB BEAMS, WELD SIZE "A" SHALL BE 0.75 IN. WHERE "A" IS THE SUPPORT BEAM WEB THICKNESS.
4. CONTRACTOR SHALL PERFORM ULTRASONIC TESTING AND INSPECTION OF SUPPORT BEAM BOTTOM FLANGE PER SPECIFICATION FOR WELDED CONNECTIONS.

20 TYP TYPE C23 - BEAM TO DEPRESSED BM CONN

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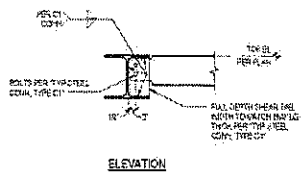
TYPICAL STEEL DETAILS

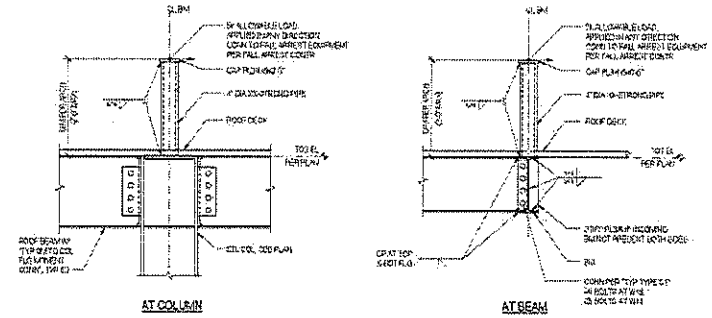
S413



NOTES:

1. SEE TYPICAL STEEL CONNECTION TYPE C1 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. THIS CONNECTION SHALL ONLY BE USED WHEN SPECIFICALLY CALLED OUT ON PLAN OR IN A DETAIL.

3 TYPICAL STEEL CONNECTION TYPE C30



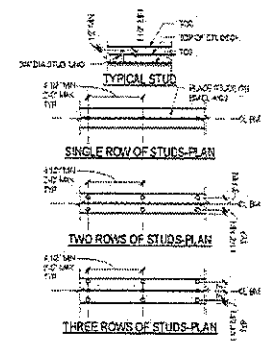
NOTES:

1. SEE TYPICAL STEEL CONNECTION TYPE C1 FOR INCOMING BEAM UNLESS NOTED OTHERWISE.

4 TYPICAL FALL ARREST POST

NOTES:

1. SEE PLAN FOR REQUIRED NUMBER OF STUDS. STUDS SHALL BE PLACED AT A MAXIMUM SPACING OF 12" ALONG THE BEAM AND UNLESS NOTED OTHERWISE ON PLAN. SEE GENERAL NOTES FOR MINIMUM NUMBER OF STUDS AND MINIMUM STEEL COMPOSITE DECK TO STEEL BEAM FASTENING REQUIREMENTS.
2. WHEN NOTED OTHERWISE, STUDS ARE TO BE EQUALLY SPACED ALONG THE BEAM LENGTH AND PLACED SYMMETRICALLY ABOUT THE BEAM CENTERLINE AND, IF EQUAL SPACING IS NOT POSSIBLE DUE TO DECK CONFIGURATION, THE STRUCTURAL ENGINEER SHALL BE NOTIFIED.
3. THE REQUIRED NUMBER OF STUD ROWS SHALL BE DETERMINED AS FOLLOWS (BEAM LENGTH IN FEET):
   a. FOR DECK FLUTES PERPENDICULAR TO THE BEAM:
      #ROWS = 4 STUDS / BEAM LENGTH
   b. FOR DECK FLUTES PARALLEL TO THE BEAM:
      #ROWS = 2.5 STUDS / BEAM LENGTH
4. FOR DECK FLUTES PARALLEL TO THE BEAM, THE FIRST STUD OR STUDS SHALL BE PLACED AT FROM ONE BEAM EDGE. FOR DECK FLUTES PERPENDICULAR TO THE BEAM, THE FIRST STUD OR STUDS SHALL BE PLACED IN THE FLUTE CLOSEST TO THE BEAM EDGE.
5. FOR CANTILEVER BEAMS, STUDS SHALL BE PLACED IN ONE ROW ALONG THE BEAM CENTERLINE AND AT A MAXIMUM SPACING OF 2'-0". STUDS PLACED ON THE CANTILEVER BEAM ARE NOT INCLUDED IN THE NUMBER OF STUDS NOTED ON THE DRAWINGS.
6. WHERE WELDED WIRE REINFORCING IS USED AS SLAB REINFORCEMENT, ADDITIONAL REINFORCEMENT SHALL BE PLACED PERPENDICULAR TO THE BEAM ACROSS THE BEAM AND CANTILEVERED SPANS AS FOLLOWS:
   1. ONE STUDS / FT - ADD NONE
   2. STUDS / FT - ADD NONE @ 12"
   3. FOR MORE STUDS / FT - ADD NONE @ 12"



14 TYPICAL SHEAR STUD PLACEMENT AND ADDED REINFORCING

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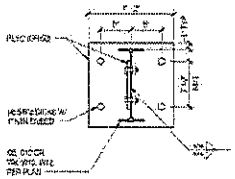
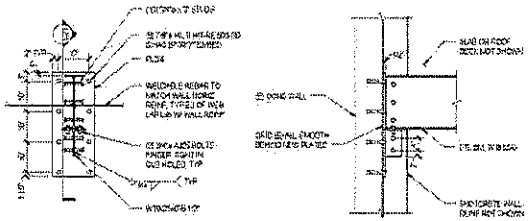
TYPICAL STEEL DETAILS

S414

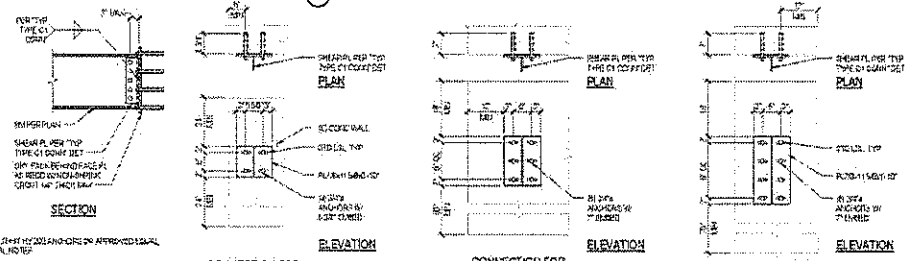




SECTION

3 TYPICAL INFILL STEEL BEAM END CONNECTION

4 ALTERNATE CONNECTION FOR STEEL BEAM TO SHOTCRETE WALL



SECTION

ELEVATION

CONNECTION FOR W8, W10

PLAN

ELEVATION

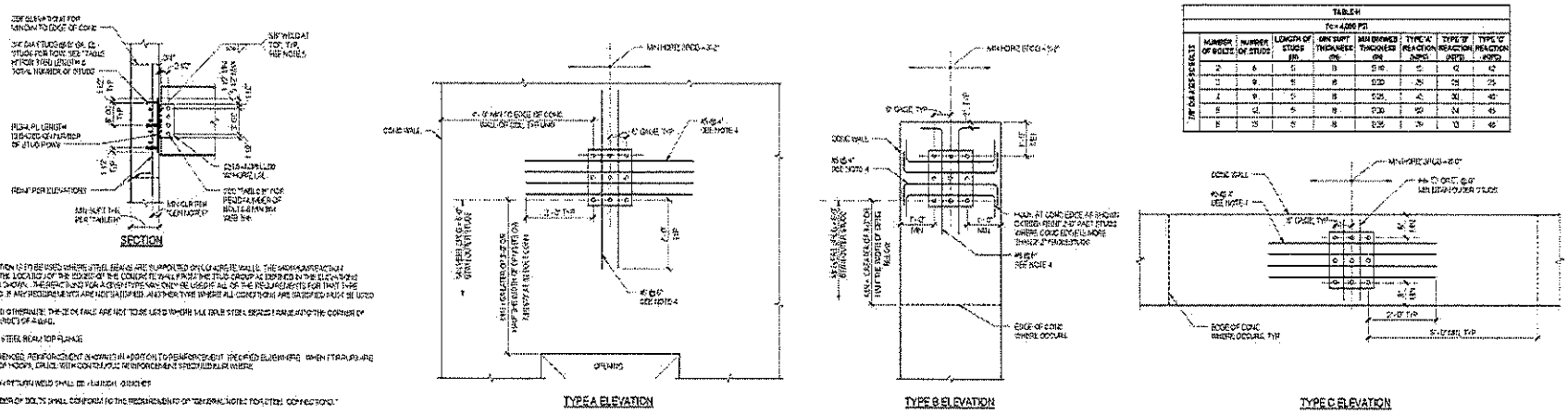
CONNECTION FOR W12, W14, W16

PLAN

ELEVATION

CONNECTION FOR W18, W21

8 TYPICAL CONNECTIONS TO EXISTING CONCRETE COLUMNS OR WALLS



SECTION

TYPE A ELEVATION

TYPE B ELEVATION

TYPE C ELEVATION

TABLE H f'c = 4,000 PSI								
TYP. DIA. ASTD. BOLTS	NUMBER OF BOLTS	NUMBER OF STUDS	LENGTH OF STUDS (in)	MIN. SLAB THICKNESS (in)	MIN. BURIED THICKNESS (in)	TYPE 'A' REACTION (kips)	TYPE 'B' REACTION (kips)	TYPE 'C' REACTION (kips)
3/4"	2	6	5	8	8 1/2	5	12	12
	3	9	5	8	8 1/2	20	18	18
	4	8	5	8	8 1/2	20	24	24
	4	8	7	8	8 1/2	20	30	30
	5	10	5	8	8 1/2	25	30	30
	5	10	7	8	8 1/2	25	36	36
	6	12	5	8	8 1/2	30	36	36
	6	12	7	8	8 1/2	30	42	42
1"	2	6	5	8	8 1/2	5	12	12
	3	9	5	8	8 1/2	20	18	18
	4	8	5	8	8 1/2	20	24	24
	4	8	7	8	8 1/2	20	30	30
	5	10	5	8	8 1/2	25	30	30
	5	10	7	8	8 1/2	25	36	36
	6	12	5	8	8 1/2	30	36	36
	6	12	7	8	8 1/2	30	42	42

NOTES:

1. THIS CONNECTION IS TO BE USED WHERE STEEL BEAMS ARE SUPPORTED ON CONCRETE WALLS. THE MAIN INTERACTION CONFIGURATION ON THE LOCATION OF THE EDGE OF THE CONCRETE WALL FROM THE STUD GROUP AS DEFINED IN THE ELEVATIONS OF THE TYPES SHOWN. THE SAME RULES FOR A GIVEN TYPE MAY ONLY BE USED IF ALL OF THE REQUIREMENTS FOR THAT TYPE ARE SATISFIED. IF ANY REQUIREMENTS ARE NOT SATISFIED, ANOTHER TYPE WHERE ALL CONDITIONS ARE SATISFIED MUST BE USED.
2. UNLESS NOTED OTHERWISE, THE (3) FACE ARE NOT TO BE USED WHERE THE BEAM STEEL BEARS FLUSH INTO THE CORNER OF (3) OPPOSITE FACES OF A WALL.
3. DO NOT COPE STEEL BEAM TOP FLANGE.
4. WHERE REFERENCED, REINFORCEMENT IS PROVIDED IN ADDITION TO REINFORCEMENT SPECIFIED ELSEWHERE. WHEN STIRRUPS ARE USED IN LIEU OF HOOPS, CLOSE WITH CONTINUOUS REINFORCEMENT SPECIFIED ELSEWHERE.
5. TOLERANCE ON RETURN WELD SHALL BE +1/4INCH -0INCHES
6. MINIMUM NUMBER OF BOLTS SHALL CONFORM TO THE REQUIREMENTS OF "GENERAL NOTES FOR STEEL CONNECTIONS."

16 TYPICAL TYPE C25 - STEEL CONNECTION TO CONCRETE WALL

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TYPICAL STEEL DETAILS

S415

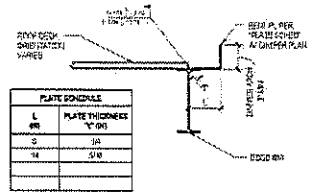
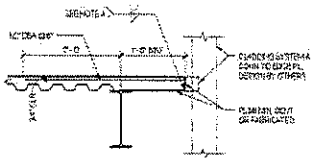


PLATE SCHEDULE	
L (IN)	PLATE THICKNESS "t" (IN)
6	1/4
14	5/16

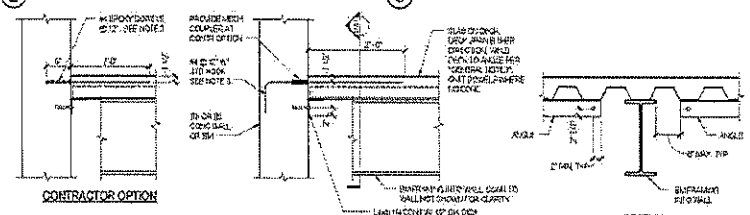
NOTES:
1. FIELD INSTALL BENT PLATE WHERE REQUIRED TO SATISFY ARCHITECTURAL TOLERANCES.
2. PROVIDE TRENCH NUMAL PENETRATION AT SECTION CUTS TO SPLICE BENT PLATE
3. NO VERTICAL CONCENTRATED LOADS SHALL BE APPLIED TO BENT PLATE. SUCH LOADS ARE PROHIBITED. SUBMIT TO ENGINEER PRIOR TO FABRICATION

1 TYPICAL ROOF DECK EDGE



NOTES:
1. SEE "TYPICAL DECK EDGE CONDITIONS" DETAIL FOR ADDITIONAL INFORMATION
2. PROVIDE BENT PLATE AT EXTERIOR WHERE REQUIRED TO SUPPORT EXTERIOR CLADDING
3. BRIDGE HOLES IN STIFFENER AND BENT PLATE AT EXPOSED PLATE CONDITIONS PER ARCHITECTURE
4. AT CURVED EDGE, FABRICATE EDGE PLATE FROM TWO PIECES OF PLATE AND FIELD GRIND SMOOTH TO ACHIEVE PLATE AT EXPOSED PLATE CONDITIONS
5. EXTERIOR CLAD EDGE SHALL NOT VARY MORE THAN 1/2" FROM PLUMB
6. CLADDING LOAD MAGNITUDES AND LOCATIONS SHALL BE SUBMITTED TO ENGINEER FOR REVIEW PRIOR TO FABRICATION. BASED ON REVIEW, ADJUSTMENT TO THIS DETAIL MAY BE REQUIRED

2 TYPICAL CONDUIT IN SLAB ON STEEL DECK

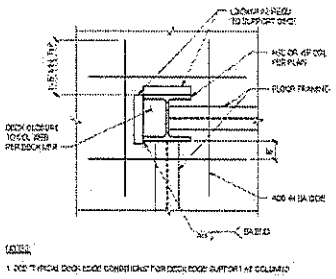


CONTRACTOR OPTION

SECTION

NOTES:
1. PROVIDE DECK SUPPORT ANGLES BOTH AT ALL EDGES OF OPENINGS WHERE SUPPORTED BY CONCRETE WALLS
2. SEE DETAIL 4/S416 FOR STEEL EMBED PLATE, UNIT SIZED AND ANCHORED BY 3/16" FILLET WELD TOP AND BOTTOM OF ATTACHMENT TABLE TO EMBED PLATE
3. WHERE HOOKED BOLTS ARE SHOWN IN PLAN, PROVIDE REINFORCING AS SHOWN ON PLAN IN LIEU OF PAN @ EC

3 TYP DECK SUPPORT AND REINF AT COLUMNS



NOTES:
1. SEE TYPICAL DECK EDGE CONDITIONS FOR DECK EDGE SUPPORT AT COLUMNS

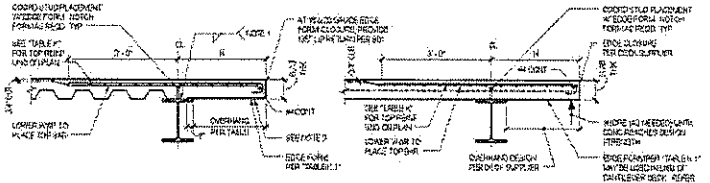
4 TYP SLAB EDGE AT EXTERNAL CLADDING

NOTES:
1. WELDING SHALL BE AS FOLLOWS:

MATERIAL	WELD SIZE / LENGTH AT SPACING
16 GA & LIGHTER	1/8" x 1" @ 12" OC
14 GA & 12 GA	1/8" x 2" @ 24" OC
12 GA & 10 GA	1/8" x 2" @ 16" OC
3/16" & 1/4"	3/16" x 2" @ 12" OC
5/16" & 3/8"	3/16" x 2" @ 8" OC

2. MATERIALS ARE TO BE AS FOLLOWS:
   - 16 GAUGE AND LIGHTER - ASTM A653 - Fy = 33 KSI MINIMUM
   - 14 GAUGE AND HEAVIER - ASTM A1011 - Fy = 36 KSI MINIMUM
   AT CONTRACTOR'S OPTION, ASTM A36 Fy = 36 KSI MINIMUM MAY BE USED FOR PLATES
3. FOR CONDITIONS WHERE SLAB EDGE EXPOSED TO HIGH AIR DRAWING, PROVIDE 1/8" NON-FLAKE ASTM A36 PLATE AND SHORE THE EDGE UNTIL CONCRETE REACHES 28 DAY COMPRESSIVE STRENGTH
4. AT CONTRACTOR'S OPTION, ALTERNATE METHODS OF PROVIDING EDGE CONTAINS TO MAY BE USED AS DESIGNED BY CONTRACTOR PROVIDED SHORING AND FRAMING MATERIALS ARE REQUIRED.
5. THE SLAB EDGE CLOSURE PLATE IS NOT DESIGNED TO SUPPORT WET CONCRETE AND CONSTRUCTION LOADS. DO NOT USE THE PLATE TO DIRECTLY SUPPORT CLADDING LOADS OR ANY OTHER APPLIED LOAD FROM THE STRUCTURE OF PERIOD
6. AT CORNER CONDITIONS, USE BOTH TYPICAL EDGE CONDITIONS AT COLUMN DETAILS. EDGE FORM SHALL BE NOTCHED AND WELDED
7. AT BLOCK OUTS FOR CLADDING CONNECTIONS, EDGE REINFORCING IS TO BE CONTINUOUS
8. AT RECESS CONDITIONS, EDGE PLATE HEIGHT TO BE TO TOP OF SLAB HEIGHT AT RECESS
9. COORDINATE EDGE ANGLE INSERTS FOR CLADDING SUPPORTS WITH ARCHITECTURAL DRAWINGS. SUBSTITUTE REMOVABLE FORM AS SHOWN ON ARCHITECTURAL
10. CONSTRUCTION LOAD AT EDGE FORM SHALL NOT EXCEED 30 PLF

7 TYPICAL DECK SUPPORT ANGLE (DSA) AT CONCRETE



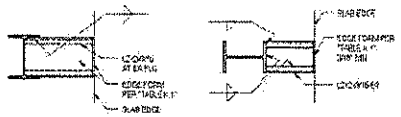
DECK SPANNING PARALLEL TO BEAM

DECK SPANNING PERPENDICULAR TO BEAM

TABLE K	
H	REINFORCING
9" TO 36"	-
OVER 36" TO 54"	#4 @ 12" OC
OVER 54" TO 72"	#5 @ 12" OC

TABLE K.1

SLAB THICKNESS "t"	SLAB EDGE CLOSURE PLATE GAUGE / THICKNESS AT DECK PARALLEL TO BEAM	OVERHANG (IN)														
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
4	14 GA	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16
4.5	14 GA	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16
5	14 GA	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16
5.5	14 GA	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16
6	14 GA	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16
6.5	14 GA	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16
7	14 GA	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16
7.5	14 GA	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16
8	14 GA	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16

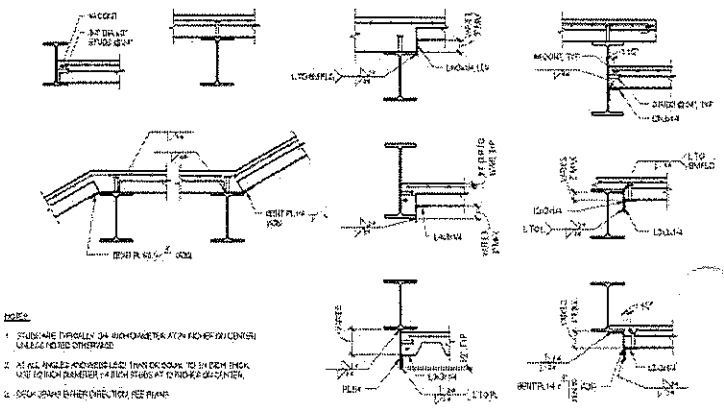


COLUMN WITH WEB PARALLEL

COLUMN WITH WEB PERPENDICULAR

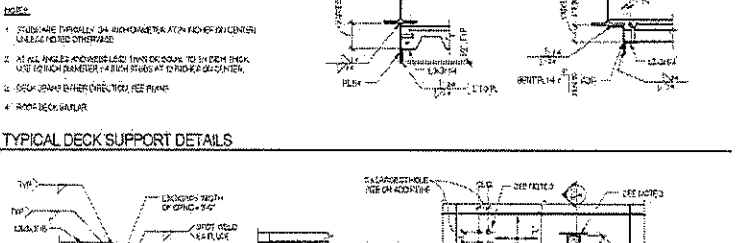
TYPICAL EDGE CONDITION AT COLUMN
SEE NOTE #8

9 TYPICAL DECK SUPPORT DETAILS



NOTES:
1. STUD ARE TYPICALLY 3/4" DIAMETER AT 6" FROM EDGE AND 12" CENTERS UNLESS NOTED OTHERWISE.
2. AT ALL ANGLES AND EDGES LESS THAN OR EQUAL TO 3" FROM EDGE, USE 1/2" DIAMETER x 4" LONG STUDS AT 12" FROM EDGE OR CENTER.
3. DECK SPANS EITHER DIRECTION, SEE PLANS.
4. PROVIDE DECK EARLIER.

14 TYPICAL ROOF DECK - OPENING 7'-0" AND LESS



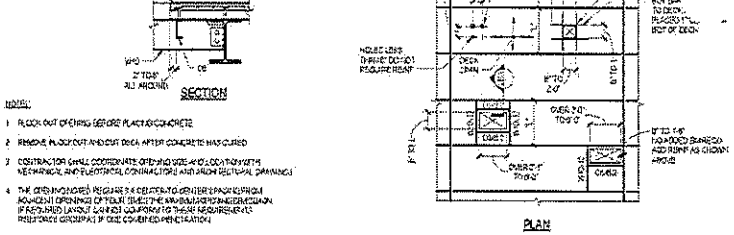
SECTION A

SECTION B

NOTES:
1. INSTALL HEAVY FORCES BEFORE CUTTING HOLES.
2. CONTRACTOR SHALL COORDINATE OPENING SIZE AND LOCATION WITH MECHANICAL AND ELECTRICAL CONTRACTORS.
3. THE OPENING NOTED REQUIRES A CLEAR SPACING FROM ADJACENT CENTERLINE OF THREE TIMES THE LARGEST OPENING DIMENSION. IF REQUIRED LAYOUT CANNOT CONFORM TO THESE REQUIREMENTS, REINFORCE GROUP AS IF OVERLAPPED PENETRATION.

PLAN

19 TYPICAL FLOOR DECK - OPENING 6'-0" AND LESS



SECTION

NOTES:
1. BLOCK OUT OPENING BEFORE PLACING CONCRETE.
2. REMOVE BLOCK OUT AND EXPOSE DECK AFTER CONCRETE HAS CURED.
3. CONTRACTOR SHALL COORDINATE OPENING SIZE AND LOCATION WITH MECHANICAL AND ELECTRICAL CONTRACTORS AND ARCHITECTURAL DRAWINGS.
4. THE OPENING NOTED REQUIRES A CLEAR SPACING FROM ADJACENT OPENINGS OF TWICE THE LARGEST OPENING DIMENSION. IF REQUIRED LAYOUT CANNOT CONFORM TO THESE REQUIREMENTS, REINFORCE GROUP AS IF OVERLAPPED PENETRATION.

PLAN

16 TYPICAL DECK EDGE CONDITIONS

LMN Architects
Lohmo Design Collective

MAGNUSSON KLEMENCIC ASSOCIATES

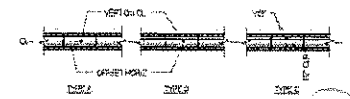
S|A|M ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

100% Construction Documents

TYPICAL STEEL DETAILS

S416



BAR LOCATION TYPES

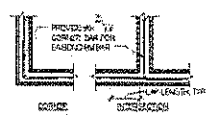
NOTES:

1. BOND BEAM REINFORCEMENT ABOVE AND BELOW OPENINGS SHALL BE CONTINUOUS BE UNSPLICED AND EXTENDED 24" MINIMUM BEYOND OPENING.
2. WHERE BOND BEAM DOES NOT ALIGN WITH TOP OR BOTTOM OF OPENING, ADD A BOND BEAM COURSE EXTENDING 24" BEYOND THE OPENING.
3. LOCATE SCHEDULED BARS FROM TABLE EXCHANGE OF EACH OPENING, EACH CORNER AND WALL STUDS.
4. BOND BEAM BARS MAY BE USED TO ARRIVE AT TOTAL STEEL AREA REQUIRED BY REINFORCING SCHEDULE.
5. DO NOT ALL DELETE THAT CONTAIN REINFORCEMENT OR EMBEDDED ITEMS.
6. ALL WALL REINFORCING BAR BEND, EXTENSIONS, ETC. TO CONFORM TO RECOMMENDATIONS OF ACI 530.

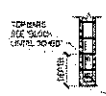
CMU LOAD BEARING WALL REINFORCING SCHEDULE

NOMINAL WALL	BOND BEAM		VERTICAL		BAR LOCATION TYPE	MAXIMUM WALL HEIGHT
	REINFORCING	LAP LENGTH	REINFORCING	LAP LENGTH		
8"	20 #5	45"	40 @ 48"	45"	B	12'-0"

9 TYPICAL CMU LOAD BEARING WALL REINFORCING SCHEDULE AND NOTES



HORIZONTAL BEAM



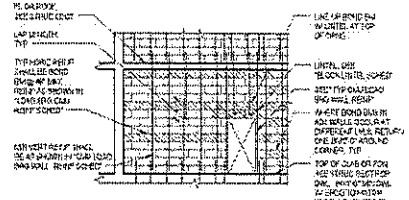
NOTES:

1. WHERE "BLOCK LINTEL SCHEDULE" INDICATES 90 INCHES DEPTH, USE 8 INCHES DEPTH LINTEL BLOCK AND REGULAR SHORT DEEP BLOCK WITH THEIR WEBS REMOVED. FILL 16 INCHES DEPTH WITH HOME MONOLITHIC CONCRETE GROUT POUR.

LINTEL BEAM

BLOCK LINTEL SCHEDULE

THICKNESS	CLEAR SPAN	DEPTH	HORIZONTAL REINFORCING	STIRRUPS
8"	4'-0" OR LESS	8"	(2) #4 BOT	#3 ∧ @ 10"
	4'-0" TO 6'-0"	16"	(2) #6 BOT (1) #4 TOP	#3 ∧ @ 8"
	6'-0" TO 8'-0"	16"	(2) #6 BOT (1) #6 TOP	#3 ∧ @ 8"
10" OR 12"	4'-0" OR LESS	8"	(2) #6 BOT	#3 ∧ @ 10"
	4'-0" TO 6'-0"	16"	(2) #6 BOT (1) #4 TOP	#3 ∧ @ 8"
	6'-0" TO 8'-0"	16"	(2) #6 BOT (1) #6 TOP	#3 ∧ @ 8"



ELEVATION

13 TYPICAL CMU LOAD BEARING WALL ELEVATION

LMN Architecture Lawrence Design Institute

MAGNUSSON KLEMENCIC ASSOCIATES

SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

100% Construction Documents

TYPICAL MASONRY DETAILS

S421

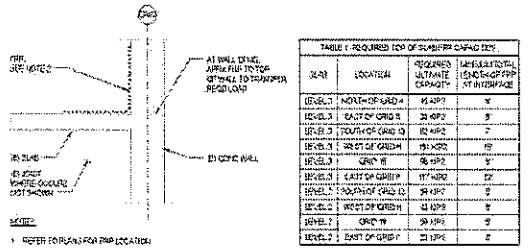


TABLE 1: REQUIRED TOP OF SLAB/FRP EMBED DEPTH			
SLAB	LOCATION	REQUIRED ULTIMATE CAPACITY	MINIMUM TOTAL LENGTH OF FRP AT INTERFACE
LEVEL 1	NORTH OF GRID 4	95 KIPS	9"
LEVEL 1	EAST OF GRID B	30 KIPS	5"
LEVEL 1	SOUTH OF GRID 1/3	85 KIPS	7"
LEVEL 2	WEST OF GRID H	150 KIPS	10"
LEVEL 3	GRID H	95 KIPS	9"
LEVEL 3	EAST OF GRID F	117 KIPS	10"
LEVEL 3	SOUTH OF GRID 3/2	54 KIPS	6"
LEVEL 3	WEST OF GRID H	43 KIPS	5"
LEVEL 2	GRID H	59 KIPS	6"
LEVEL 2	EAST OF GRID F	21 KIPS	4"

NOTES:

1. REFER TO PLANS FOR FRP LOCATION
2. CONTRACTOR TO DESIGN TO TRANSFER SHEAR FORCE BETWEEN SLAB AND WALL. SEE TABLE 1 FOR CAPACITY AND LENGTH REQUIREMENTS
3. LENGTH OF FRP NOTED IN TABLE 1 IS MEASURED PERPENDICULAR TO THESE DETAILS. PARALLEL TO EXISTING WALLS. CONTRACTOR TO DESIGN OVERLAP LENGTH TO EACH WALL AND SLAB

1 TYPICAL FRP ABOVE (E) SLAB AT (E) WALL

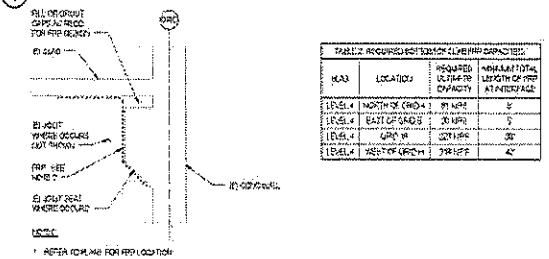
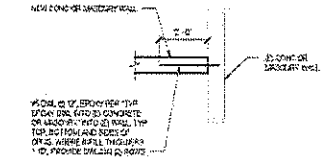


TABLE 2: REQUIRED BOTTOM FLANGE FRP CAPACITIES			
SLAB	LOCATION	REQUIRED ULTIMATE CAPACITY	MINIMUM TOTAL LENGTH OF FRP AT INTERFACE
LEVEL 1	NORTH OF GRID 4	81 KIPS	9"
LEVEL 1	EAST OF GRID B	30 KIPS	5"
LEVEL 1	GRID W	120 KIPS	30"
LEVEL 1	WEST OF GRID H	29 KIPS	4"

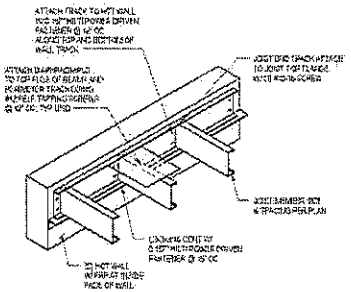
NOTES:

1. REFER TO PLANS FOR FRP LOCATION
2. CONTRACTOR TO DESIGN TO TRANSFER SHEAR FORCE BETWEEN SLAB AND WALL. SEE TABLE 2 FOR CAPACITY AND LENGTH REQUIREMENTS
3. LENGTH OF FRP NOTED IN TABLE 2 IS MEASURED PERPENDICULAR TO THESE DETAILS. PARALLEL TO EXISTING WALLS. CONTRACTOR TO DESIGN OVERLAP LENGTH TO EACH WALL AND SLAB

6 TYPICAL FRP BELOW (E) SLAB AT (E) WALL



11 TYPICAL NEW WALL TO (E) WALL DETAIL



NOTES:

1. DIAPHRAGM/SUPPORT FRAMING:

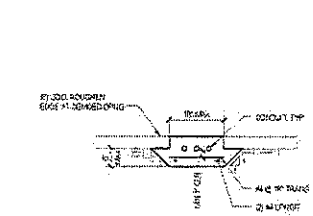
   DIAPHRAGM PLATE: PLYWD, SEE PLAN, SECURE TO SUPPORT FRAMING WITH NAILS OR BOLTS AT 12" O.C. MAX. AT ALL PLATE EDGES AND FIELD

   JOISTS: WOOD JOISTS AS INDICATED ON DIAPHRAGM PLANS. AT LOCATIONS REQUIRING DIAPHRAGM PLATE SPLICES, USE TWO JOISTS BACK TO BACK

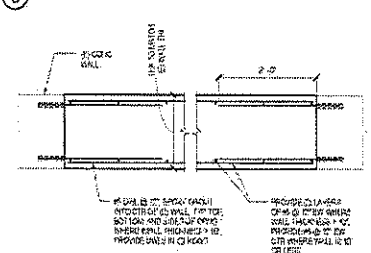
   PERIMETER BRACE: WOOD PER SCHEDULE

2. DIAPHRAGM/FRP ANGLE TO PROVIDE ENHANCED LATERAL LOAD RESISTANCE TO THE EXISTING CONCRETE STRUCTURAL WALLS. THESE FRP ANGLES SHALL BE INSTALLED AFTER THE FRP WRAPS HAVE BEEN COMPLETED. THESE FRP ANGLES ARE NOT INTENDED TO PROVIDE MORE THAN A MODEST ACCESS LIVE LOAD CAPACITY. SEE ARCHITECTURAL FOR ANY REQUIRED ACCESS HATCHES THROUGH ANY OF THE DIAPHRAGM PLATES
3. SEE "ONE-SIDED FIBER WRAP OF HCT WALL" DETAIL FOR ADDITIONAL INFORMATION
4. POWER-ACTUATED FASTENERS SHALL HAVE A MINIMUM SHANK DIAMETER OF 0.145" AND HEAD DIAMETER OF 0.3" WITH 1 INCH MINIMUM EMBED

17 TYPICAL NON-STRUCTURAL WALL DIAPHRAGM



3 TYPICAL TRENCH IN (E) SLAB ON GRADE

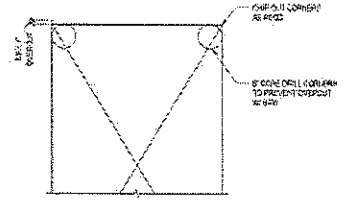


PLAN

NOTES:

1. INFILL CONCRETE TO BE CHAMFERED AND REPLICATE EXISTING

8 TYPICAL CONCRETE WALL INFILL DETAIL



13 TYPICAL NEW OPENING IN EXISTING WALL

GENERAL NOTES FOR NEW OPENINGS IN EXISTING WALLS:

1. ALL REINFORCING AND CONCRETE, WHERE REQUIRED, MUST BE IN PLACE BEFORE OPENINGS ARE CUT
2. DRILLING THROUGH EXISTING WALLS SHOWN IS STRUCTURAL DRAWINGS DO NOT REQUIRE ADDITIONAL REINFORCING UNLESS REINFORCING IS SHOWN OR NOTED IN THE DRAWINGS
3. IF AN OPENING IS NOT SHOWN IN THE STRUCTURAL DRAWINGS AND DOES NOT MEET THE CRITERIA GIVEN IN THIS DETAIL, HIRE A STRUCTURAL ENGINEER TO EVALUATE EXISTING WALL, OBTAIN APPROVAL FROM ARCHITECT AND BUILDING OFFICIAL PRIOR TO BEGINNING TO CUT THE OPENING
4. REFER TO TYPICAL NEW OPENINGS IN EXISTING WALL" DETAIL FOR REQUIREMENTS FOR OPENINGS LARGER THAN INDICATED ON THESE DETAILS
5. REFER TO "TYPICAL OPENINGS THRU EXISTING JOIST SEAT ON GRID H" FOR REQUIREMENTS FOR OPENINGS THROUGH JOIST SEATS. IF AN OPENING DOES NOT MEET THE REQUIREMENTS OF THIS DETAIL, OBTAIN APPROVAL, PROVIDE DRAWINGS PRIOR TO BEGINNING TO CUT THE OPENING

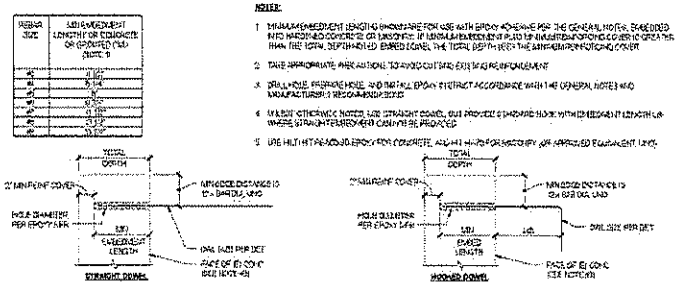
GENERAL NOTES FOR NEW OPENINGS IN EXISTING FLOORS:

1. ALL REINFORCING MUST BE IN PLACE BEFORE OPENINGS ARE CUT
2. REFER TO THE "TYPICAL FRAMING FOR NEW OPENINGS IN EXISTING CONCRETE SLABS" DETAILS FOR REINFORCING REQUIREMENTS AT TYPICAL SLAB OPENINGS IN EXISTING SLABS
3. IF AN OPENING DOES NOT MEET THE CONDITIONS OF THESE DETAILS, PROVIDE FOR NEW OPENINGS IN EXISTING CONCRETE SLABS: DETAIL, OBTAIN APPROVAL FROM ENGINEER PRIOR TO BEGINNING TO CUT THE OPENING

GENERAL NOTES FOR NEW OPENINGS IN EXISTING BEAMS AND SOLDIERS:

1. OBTAIN APPROVAL FROM ENGINEER PRIOR TO BEGINNING TO CUT ANY OPENINGS IN A BEAM OR A SOLDIER

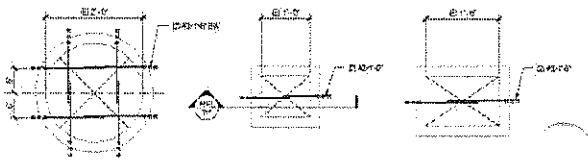
18 GENERAL NOTES FOR NEW OPENINGS IN EXISTING CONCRETE STRUCTURE



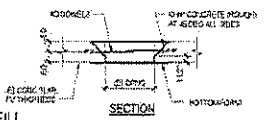
NOTES:

1. MINIMUM EMBEDMENT LENGTH SHOWN ARE FOR USE WITH EPOXY ADHESIVE PER THE GENERAL NOTES. EMBEDDED INTO HARDENED CONCRETE OR MASONRY. IF MINIMUM EMBEDMENT IS NOT ACHIEVED DUE TO OBSTRUCTIONS OR IF THE MINIMUM EMBEDMENT PLUS THE MINIMUM CONCRETE COVER IS GREATER THAN THE TOTAL DEPTH OF THE EMBEDDED CONCRETE, THE TOTAL DEPTH SHALL BE THE MINIMUM EMBEDMENT PLUS COVER
2. TAKE APPROPRIATE PRECAUTIONS TO AVOID CUTTING EXISTING REINFORCEMENT
3. DRILL HOLE, PREPARE HOLE, AND INSTALL EPOXY IN STRICT ACCORDANCE WITH THE GENERAL NOTES AND MANUFACTURER'S RECOMMENDATIONS
4. UNLESS OTHERWISE NOTED, USE STRAIGHT DOWEL. USE PREFORMED STANDARD HOOK WITH EMBEDMENT LENGTH AS WHERE STRAIGHT REINFORCEMENT CANNOT BE PROVIDED
5. USE HILTI HIT-RE 500 EPOXY FOR CONCRETE, AND HILTI HIT-CR 200 EPOXY, OR APPROVED EQUIVALENT, UNO

4 TYPICAL EPOXY DOWEL EMBEDDED INTO CONCRETE OR GROUTED MASONRY



24" DIA OPENING | 16" x 12" OPENING | 12" x 18" OPENING

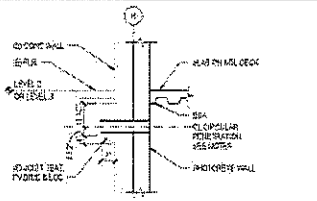


SECTION

NOTES:

1. REMOVE ALL BRICK AND MORTAR

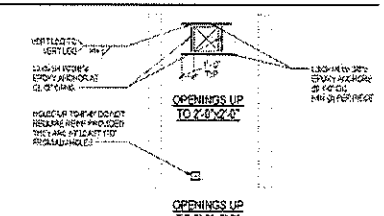
9 TYPICAL EXISTING FLOOR PENETRATION INFILL



NOTES:

1. MAXIMUM OF (3) CIRCULAR PENETRATIONS THROUGH JOIST SEAT BETWEEN EACH JOIST CENTER
2. CENTER PENETRATIONS BETWEEN JOISTS
3. MINIMUM EDGE PENETRATION DISTANCE IS 6 INCHES
4. SCAN EXISTING JOIST SEAT AND WALL BEFORE DRILLING. DO NOT CUT REINFORCING

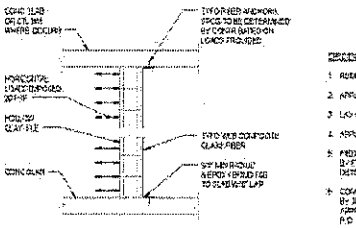
14 TYP OPENING THRU (E) JOIST SEAT ON GRID H



NOTES:

1. IF CRITERIA SHOWN ARE NOT MET, OBTAIN STRUCTURAL ENGINEER OF RECORD APPROVAL FOR OPENINGS PRIOR TO STARTING CUT
2. LOCATE EXISTING REINFORCING PRIOR TO BEGINNING CUTS. OBTAIN PRIOR STRUCTURAL ENGINEER OF RECORD APPROVAL BEFORE CUTTING REINFORCING

15 TYPICAL FRAMING FOR NEW OPENINGS IN EXISTING CONCRETE SLABS



PREPARATION FOR FIBER WRAP HCT WALL:

1. REMOVE HIGH SPOTS OF ROUGH PLASTER OR MORTAR.
2. APPLY THICKENED COAT OF EPOXY TO PROVIDE A FLAT SMOOTH SURFACE
3. LAY ONE LAYER OF FIBER OVER EPOXY COATING
4. APPLY ADDITIONAL EPOXY AS REQUIRED TO SATURATE FIBER
5. FIBER SHALL BE TYPE C-SHEET OR EQUAL AS PER MANUFACTURED BY FYFECO USA, OR EQUAL (NO "THICKNESS" INFORMATION TO BE DETERMINED BY CONTRACTOR BASED ON LOAD PROVIDED)
6. CONFIRM BY CYLINDER TAKEN AND INSTALLED ON CONSTRUCTION CERTIFIED BY THE MANUFACTURER'S REPRESENTATIVE WITH MINIMUM OF TWO YEARS EXPERIENCE. APPROVED SUPPLIER AND INSTALLATION BY CONTECH ENGINEERED SOLUTIONS, P.O. BOX 34683, SEATTLE, WA 98124, PHONE (206) 769-1007

19 ONE-SIDED FIBER WRAP OF HCT WALL

LMN Architects | Lawrence Design | Magnusson Klemencic Associates

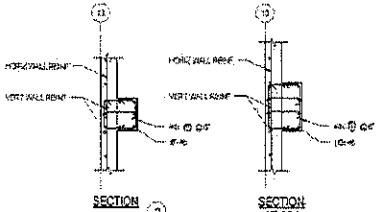
SAM Asian Art Museum

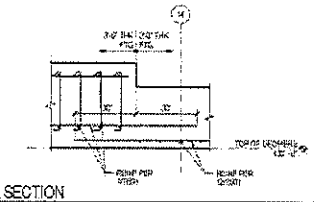
Asian Art Museum Expansion & Renovation

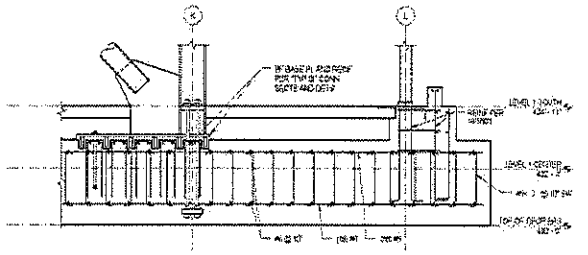
100% Construction Documents

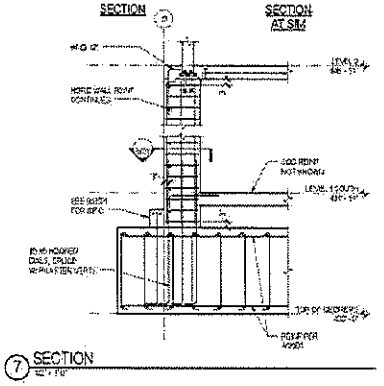
TYPICAL RENOVATION DETAILS

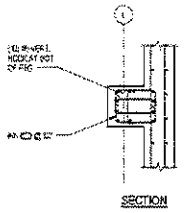
S431

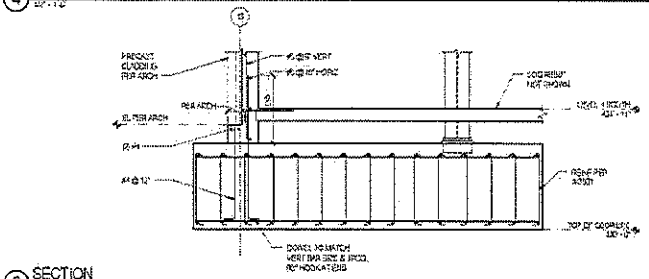


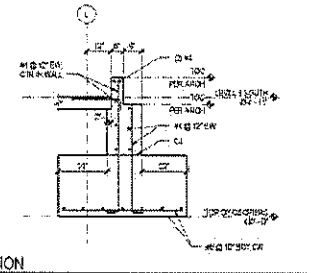


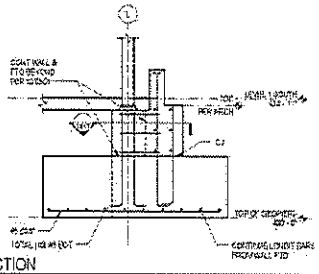


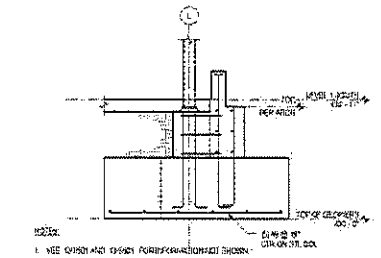


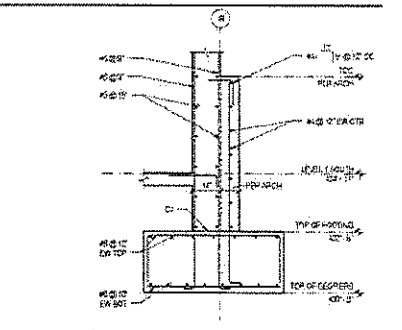


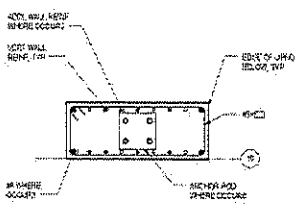


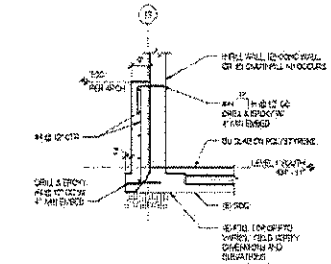


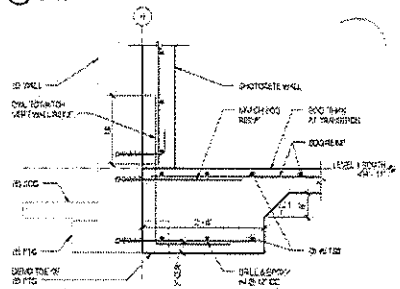












LMN Architecture | Urban Design | Interiors

MAGNUSSON KLEMENCIC ASSOCIATES

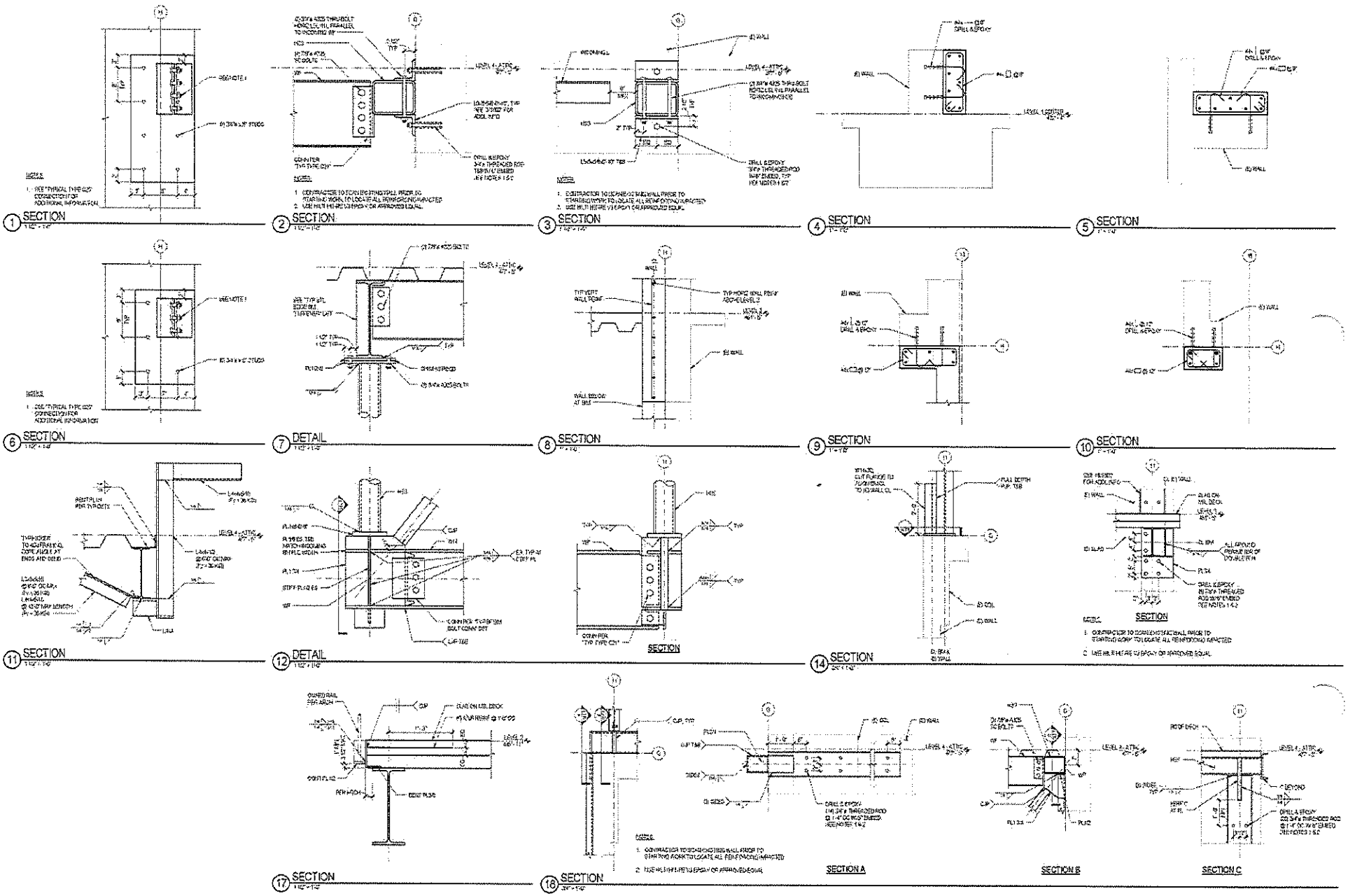
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

100% Construction Documents

GALLERY EXPANSION SECTIONS AND DETAILS

S501



LMN Architects Limon Design Interiors

MAGNUSSON KLEMENCIC ASSOCIATES

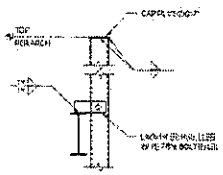
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

100% Construction Documents

GALLERY EXPANSION SECTIONS AND DETAILS

S502



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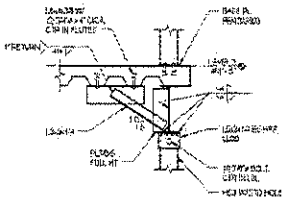

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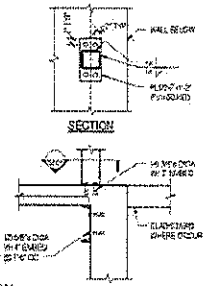

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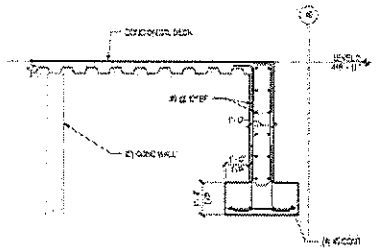

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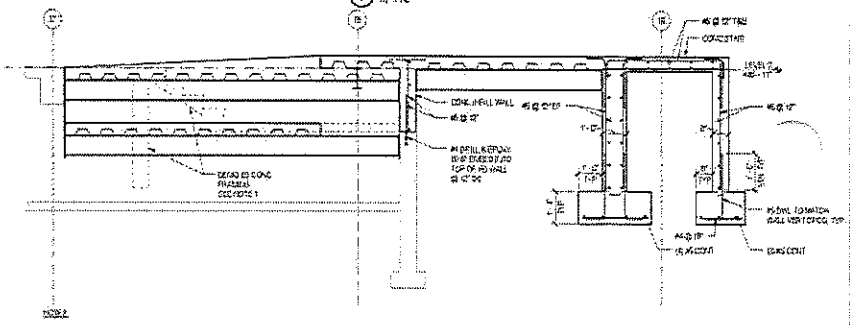

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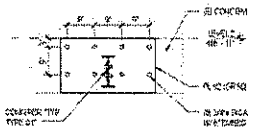

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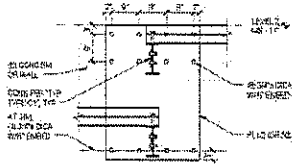

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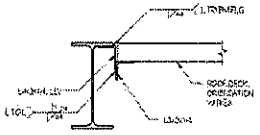

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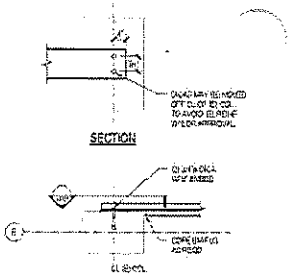


20 SECTION

LMN Architects
MAGNUSSON KLEMENCIC ASSOCIATES

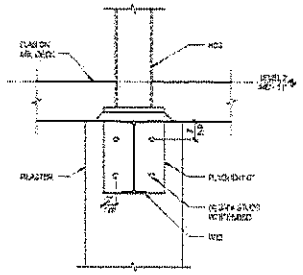
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

100% Construction Documents

GALLERY EXPANSION SECTIONS AND DETAILS

S503



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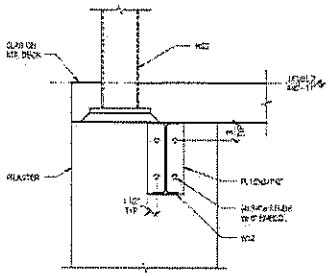

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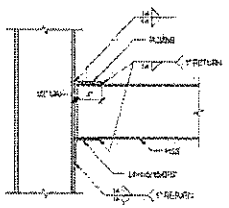

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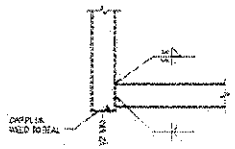

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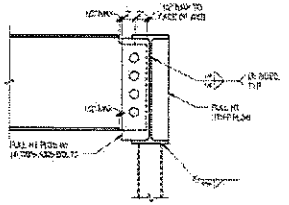

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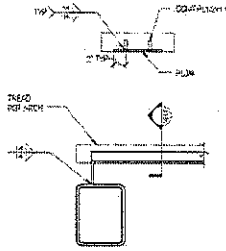

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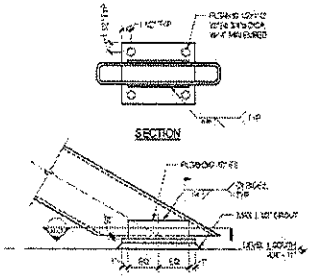

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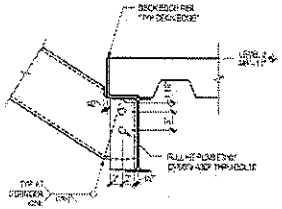

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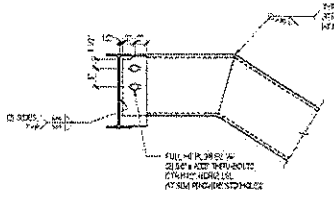

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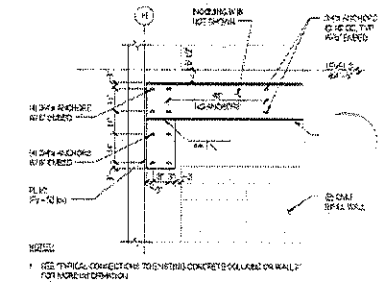

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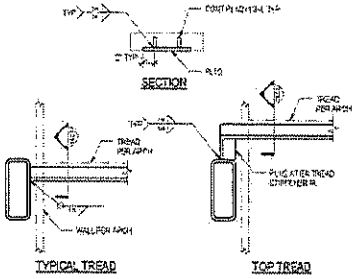

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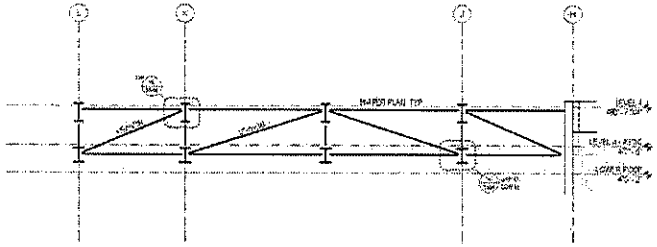

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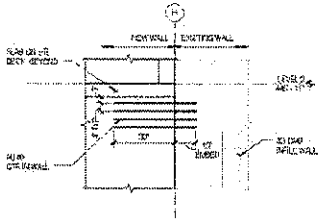

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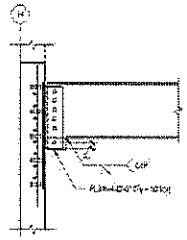

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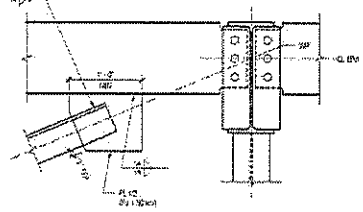

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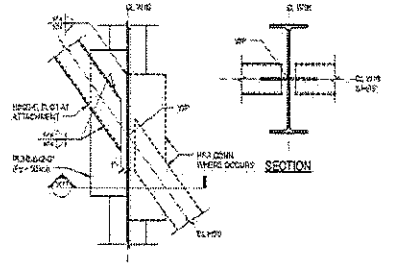

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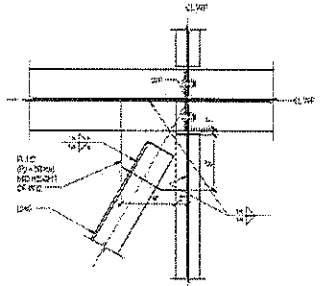

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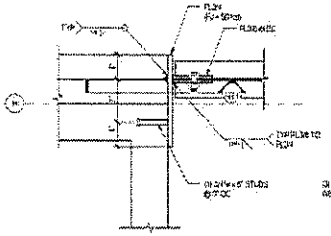

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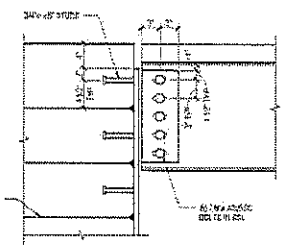


SECTION

LMN Architects

MAGNUSSON KLEMENCIC ASSOCIATES

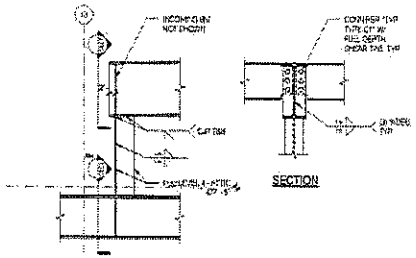
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

100% Construction Documents

GALLERY EXPANSION SECTIONS AND DETAILS

S504



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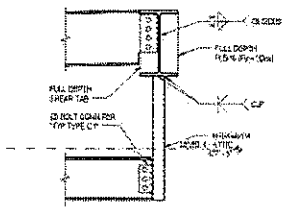

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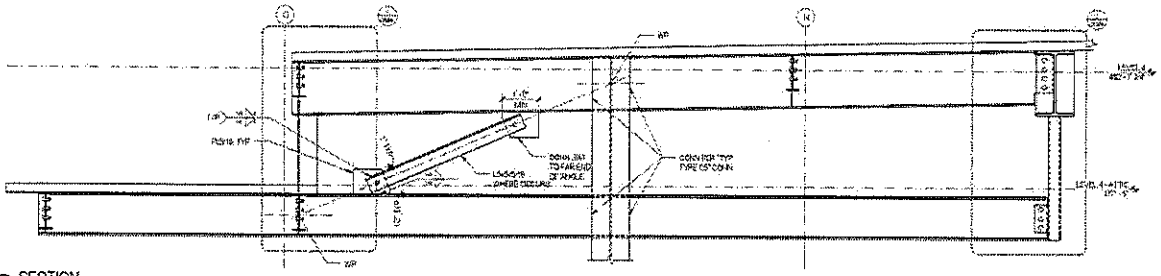

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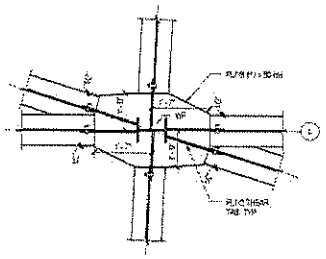

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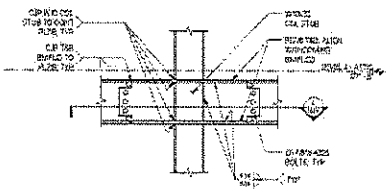

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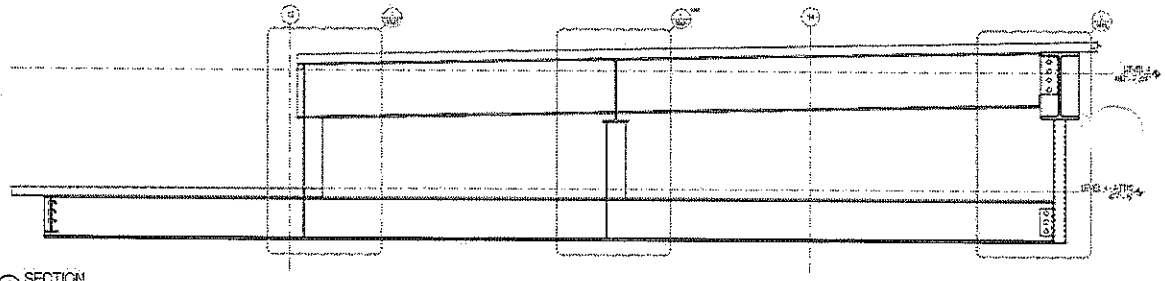

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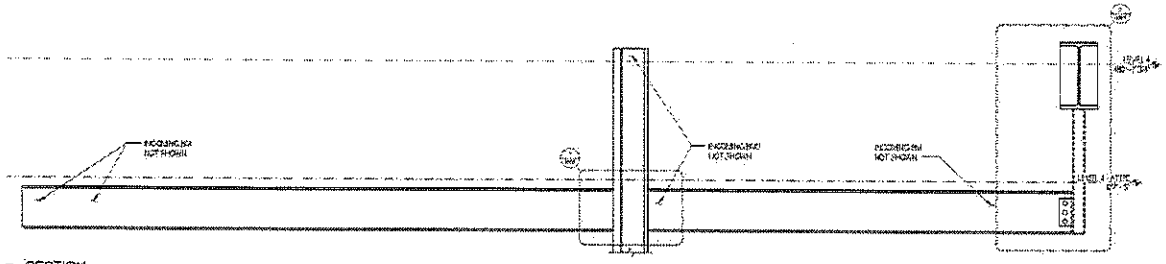

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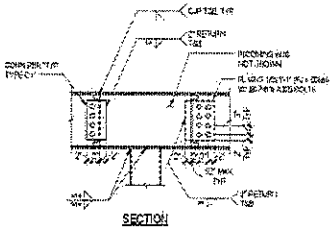

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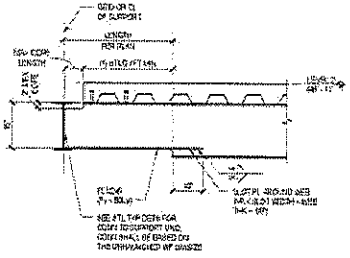

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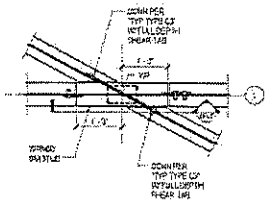

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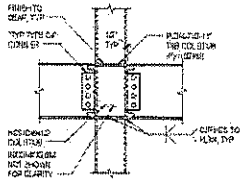

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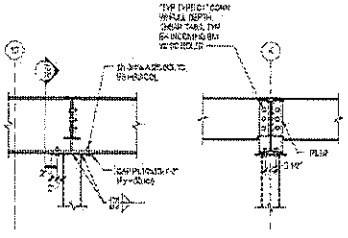
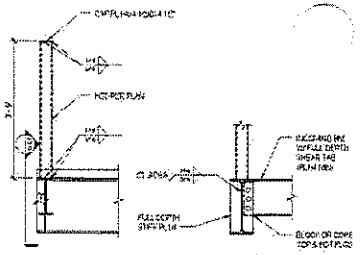


SECTION

19 SECTION



SECTION

20 SECTION

LMN Architects

MAGNUSSON KLEMENCIC ASSOCIATES

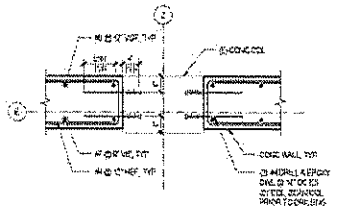
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

100% Construction Documents

GALLERY EXPANSION SECTIONS AND DETAILS

S505



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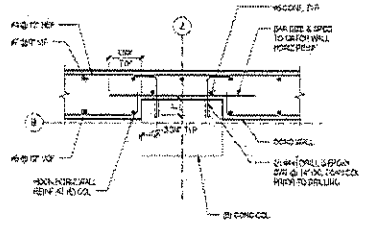

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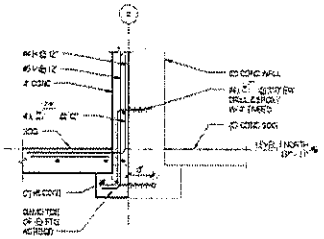

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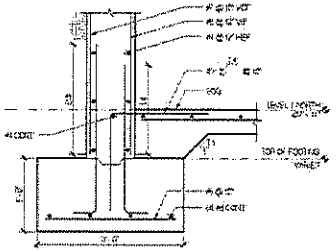

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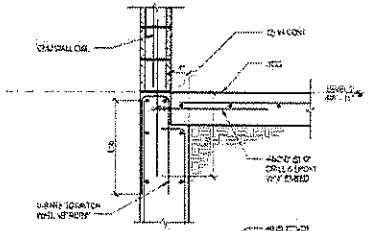

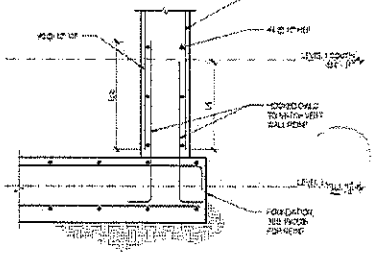

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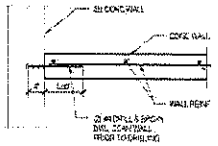

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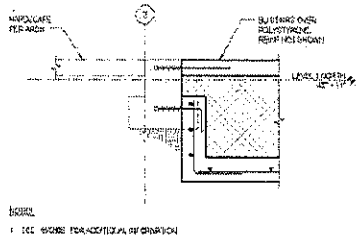

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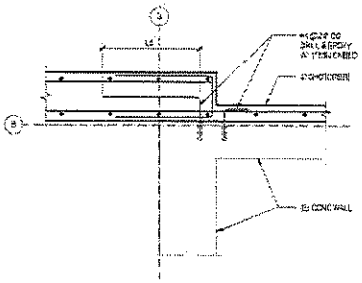

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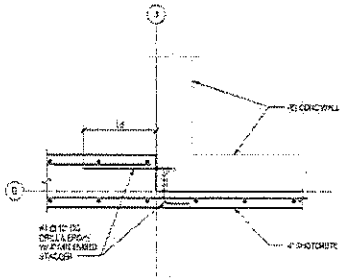

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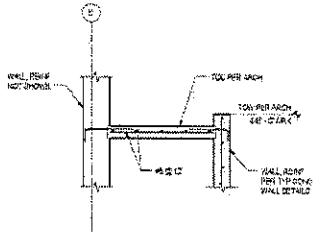

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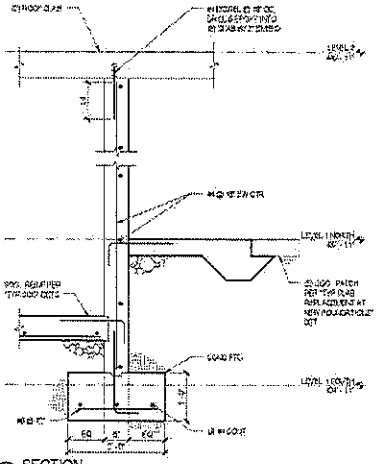

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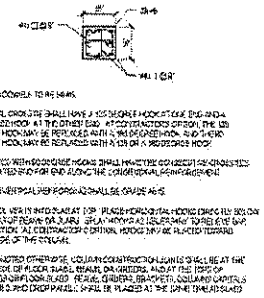

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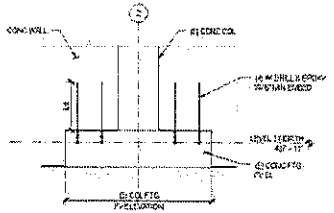

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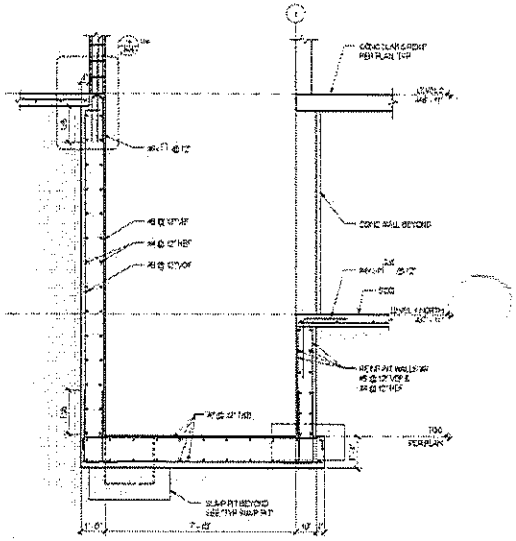

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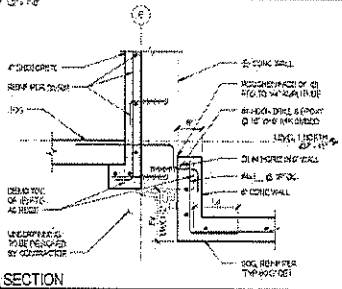


16 SECTION

LMN Architects

MAGNUSSON KLEMENCIC ASSOCIATES

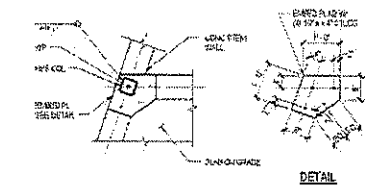
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

100% Construction Documents

LOADING DOCK SECTIONS AND DETAILS

S506



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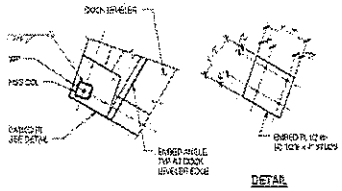

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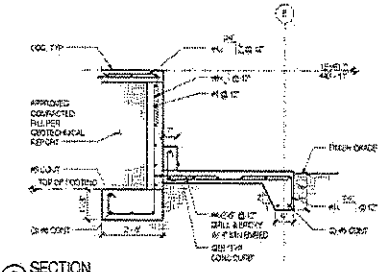

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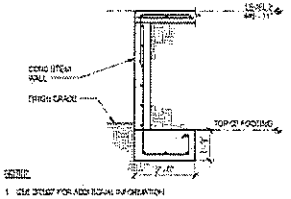

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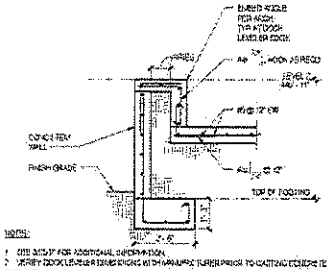

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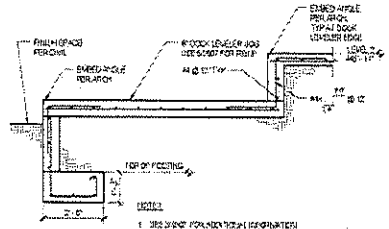

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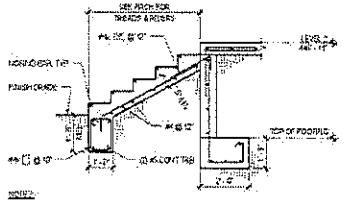

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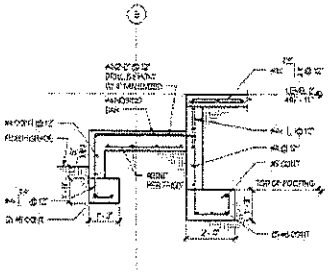

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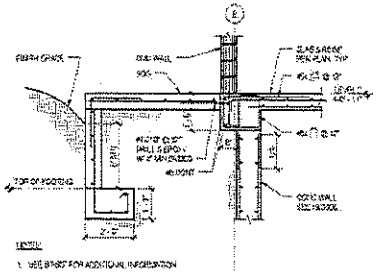

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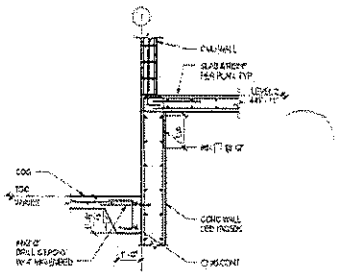

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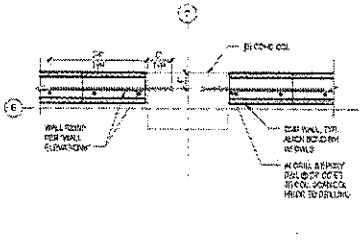

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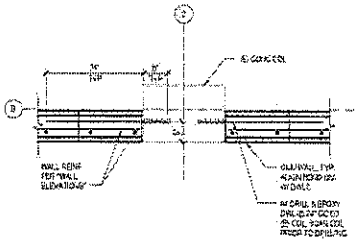

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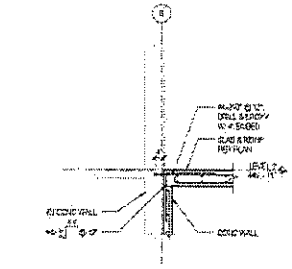

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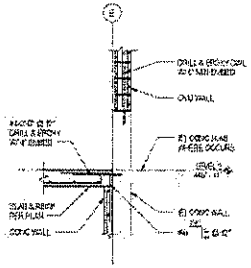

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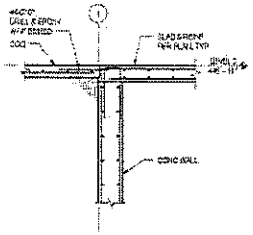

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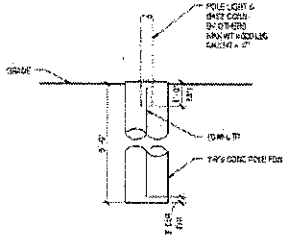

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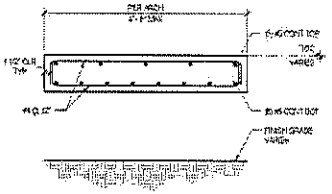

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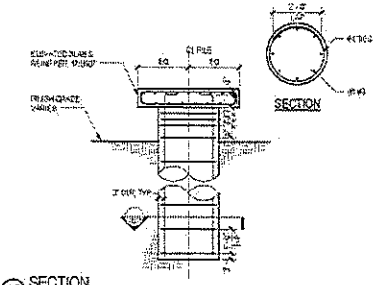

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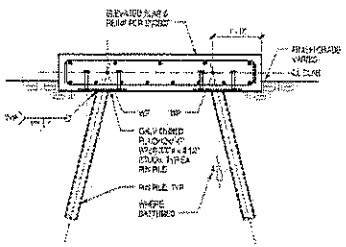

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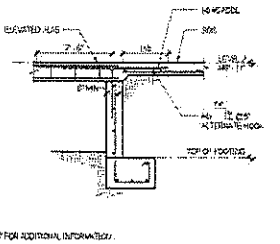


20 SECTION

LMN Architecturing Urban Design Interiors

MAGNUSSON KLEMENCIC ASSOCIATES

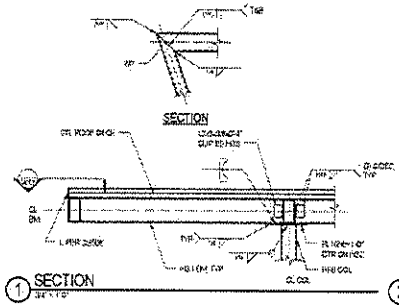
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

100% Construction Documents

LOADING DOCK SECTIONS AND DETAILS

S507



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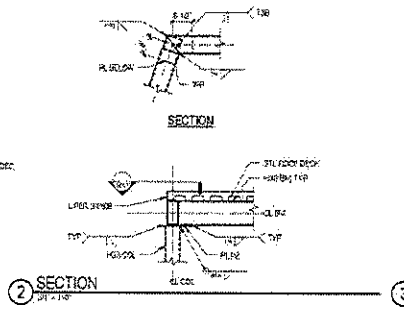

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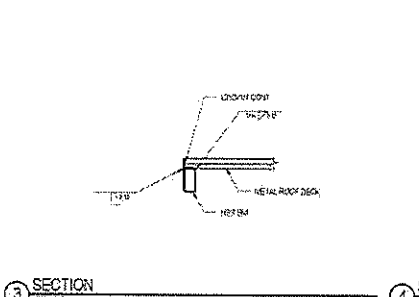

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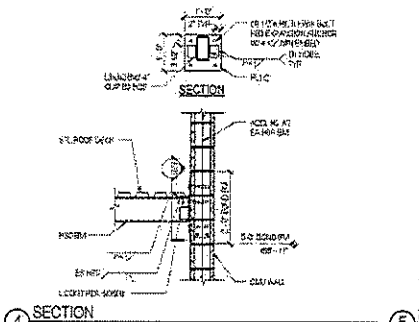

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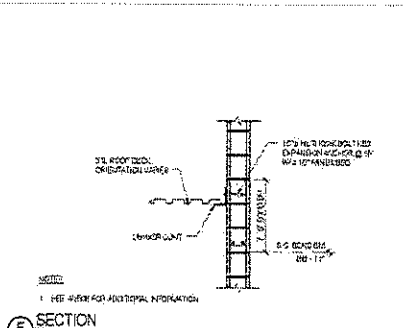

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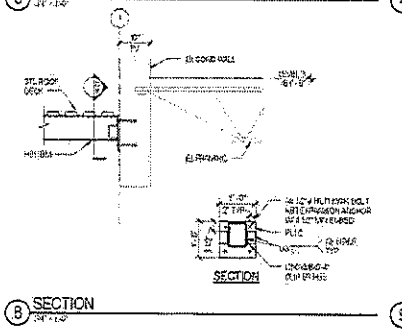

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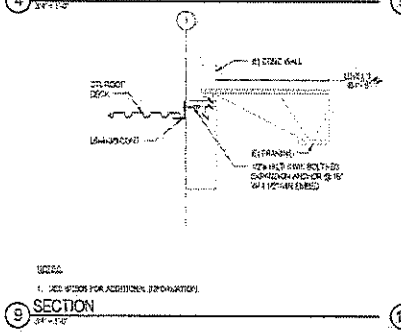

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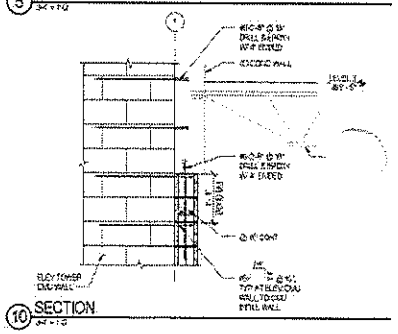

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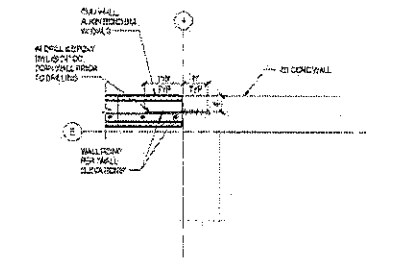
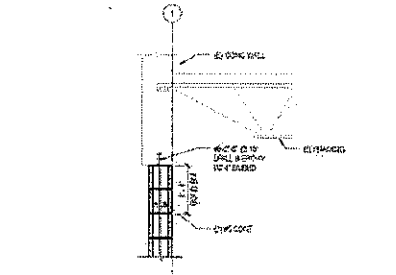


14 DETAIL



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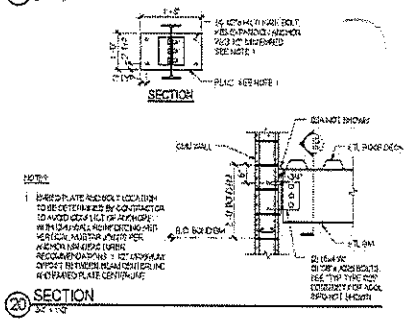


20 SECTION

LMN Architects, Limon Design Interiors

MAGNUSSON KLEMENCIC ASSOCIATES

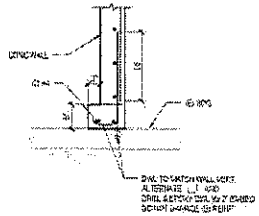
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

100% Construction Documents

LOADING DOCK SECTIONS AND DETAILS

S508



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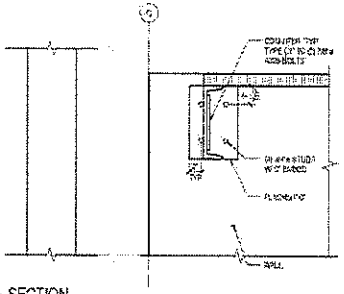

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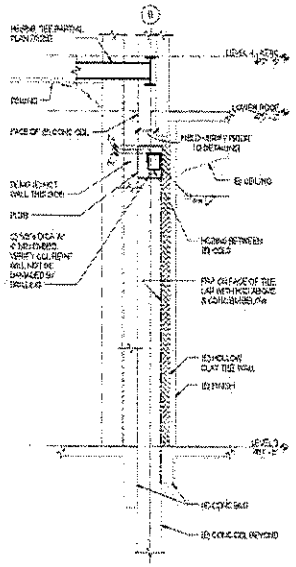

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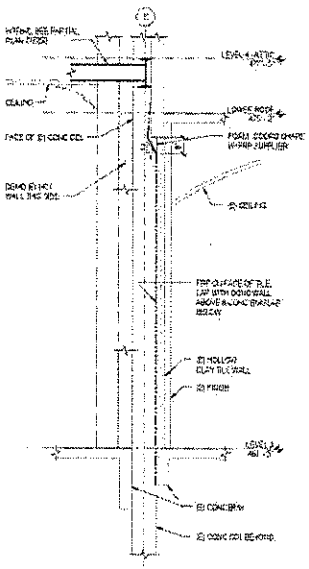

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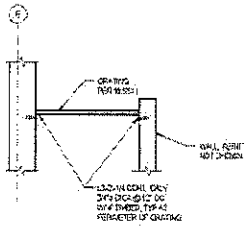

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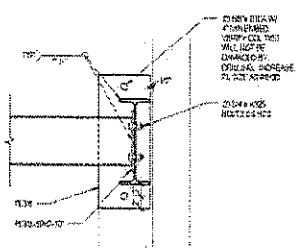

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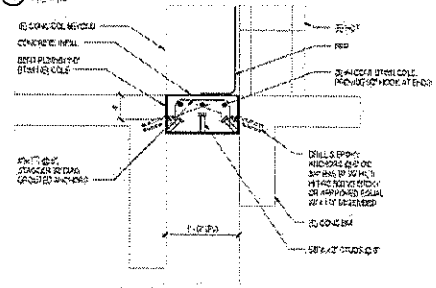
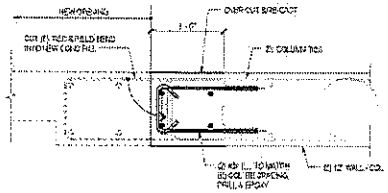
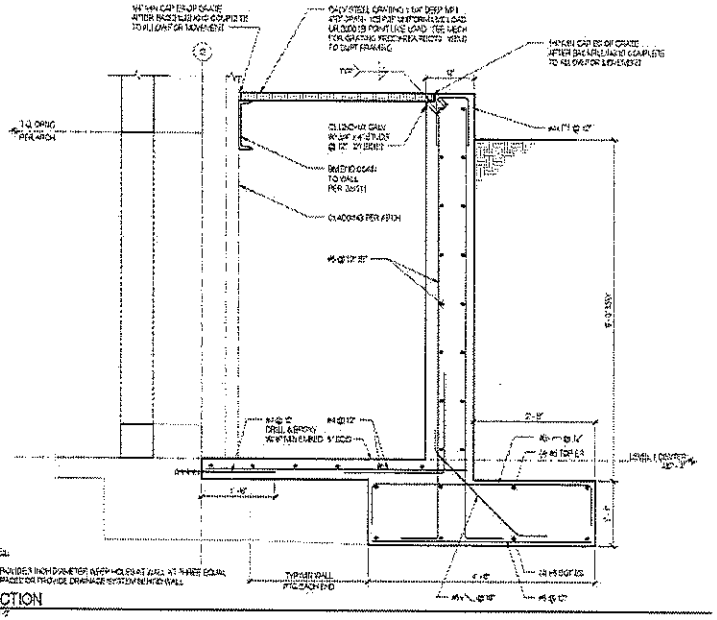


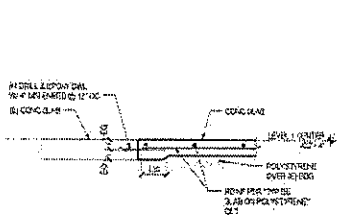
7 TYPICAL SLAB INFILL



10 DETAIL



16 SECTION



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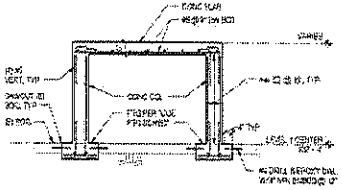

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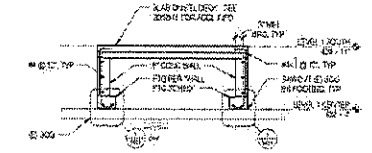

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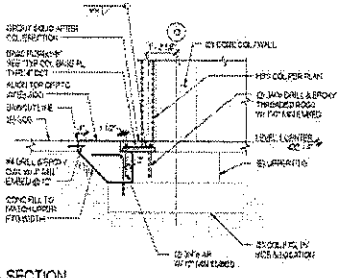

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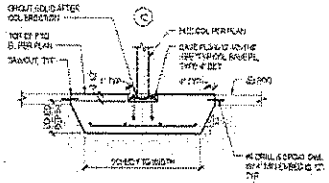

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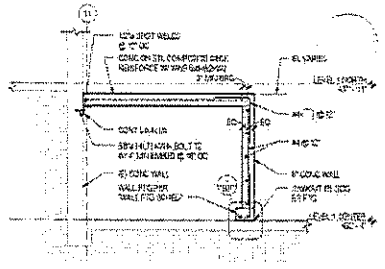


20 SECTION

LMN Architecture | Interior Design | Interiors

MAGNUSSON KLEMENCIC ASSOCIATES

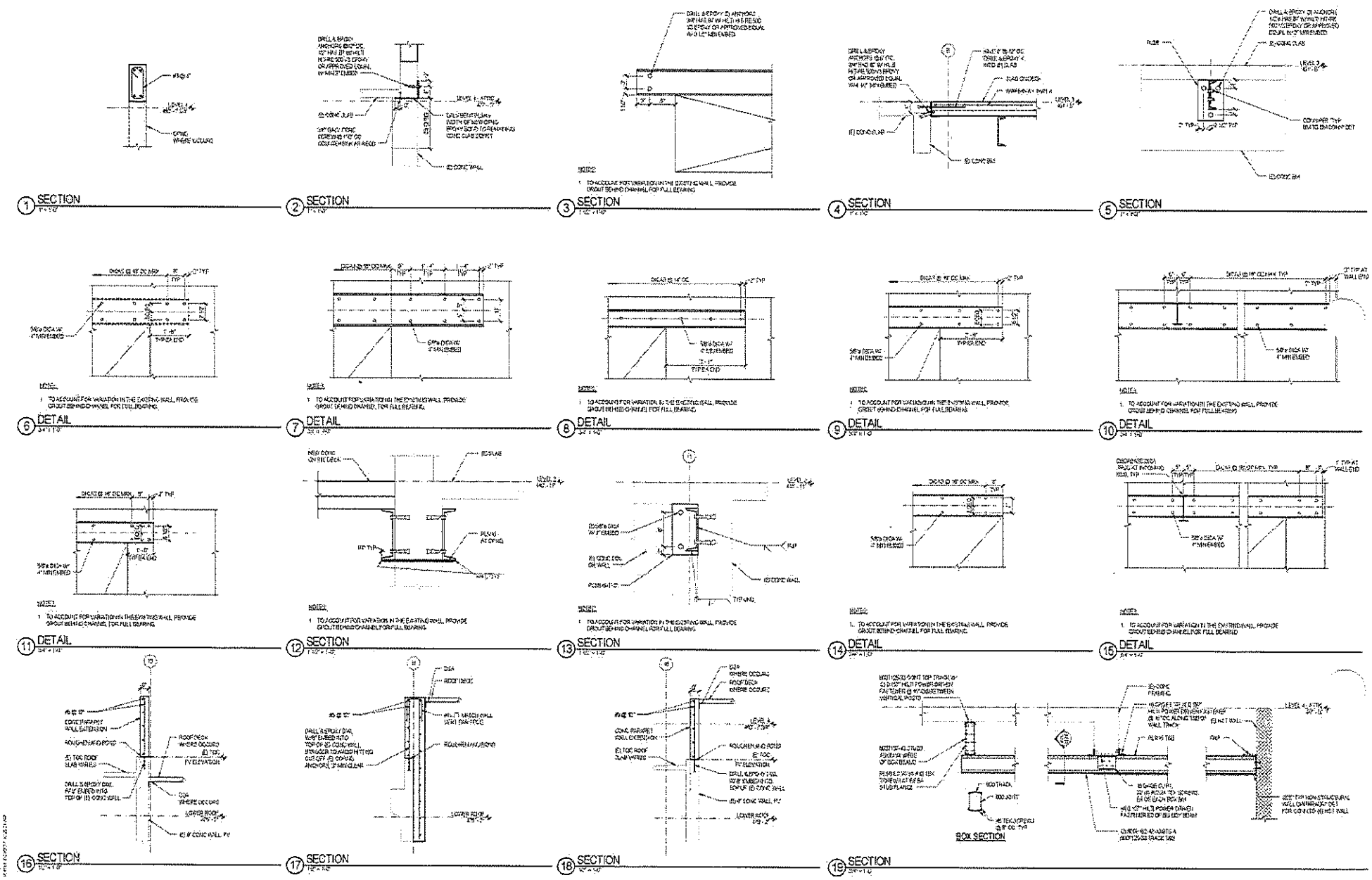
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

100% Construction Documents

RENOVATION SECTIONS AND DETAILS

S511



LMN Architecture Urban Design Interiors

MAGNUSSON KLEMENCIC

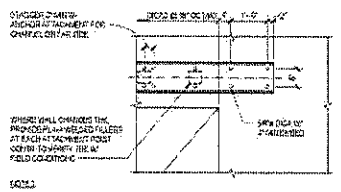
S&M ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

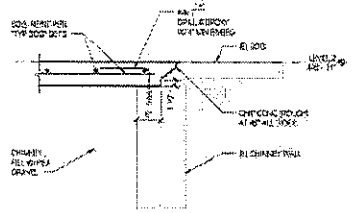
100% Construction Documents

RENOVATION SECTIONS AND DETAILS

S512



2 DETAIL



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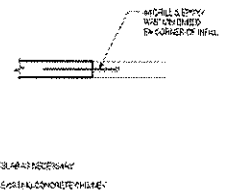

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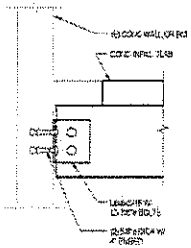

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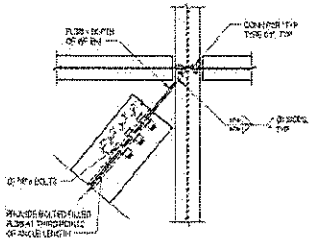
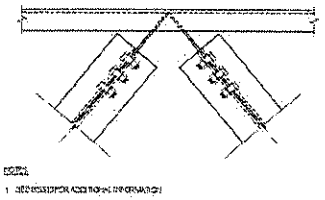
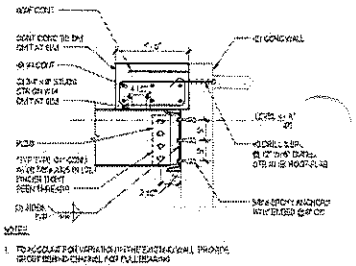


8 DETAIL



9 DETAIL



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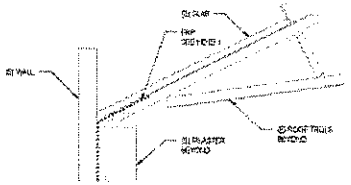
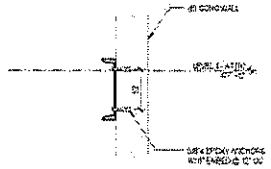


14 SECTION



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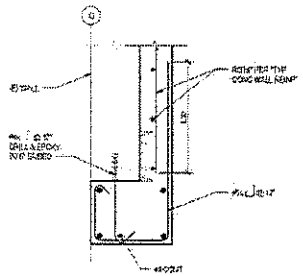

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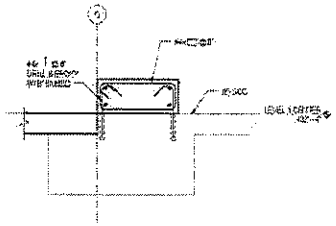
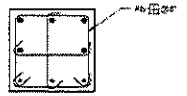


19 SECTION



20 SECTION

LMN Architects Lever Design Interiors

MAGNUSSON KLEMENCIC ASSOCIATES

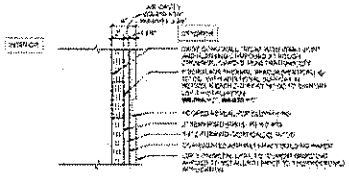
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

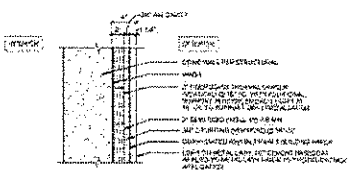
100% Construction Documents

RENOVATION SECTIONS AND DETAILS

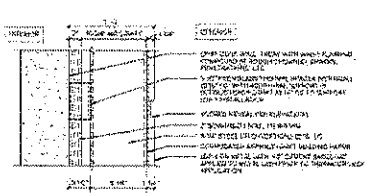
S513



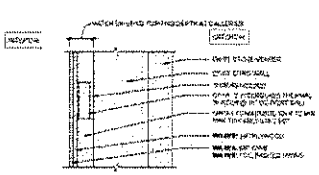
WA-01A/B - PLASTER OVER EXIST CONC



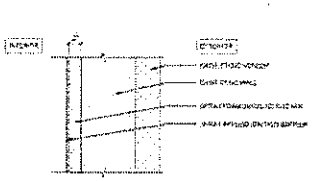
WA-01C - PLASTER OVER CONC



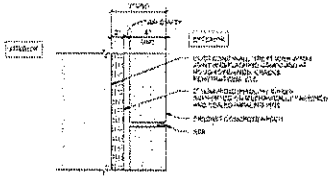
WA-01D - PLASTER OVER EXIST CONC



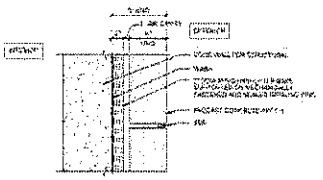
WA-02A/B - EXIST STONE AT GALLERY



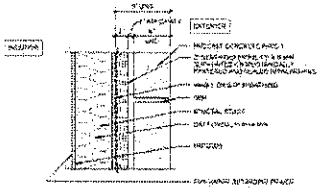
WA-02C - EXIST STONE AT BACK-OF-HOUSE



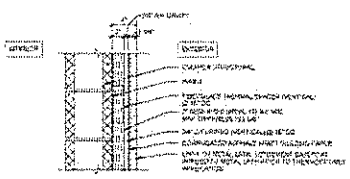
WA-03A - PRECAST OVER EXIST CONC



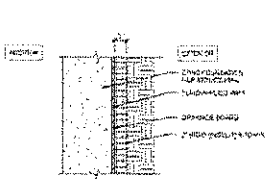
WA-03B - PRECAST OVER CONC



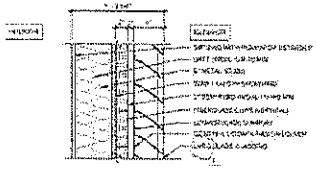
WA-04 - PRECAST OVER METAL STUD



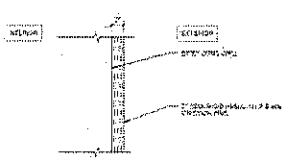
WA-05 - PLASTER OVER CMU



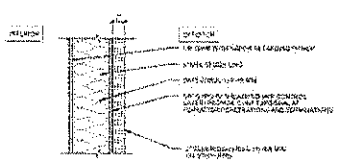
WA-06 - BELOW GRADE CONC



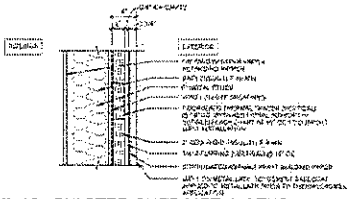
WA-07 - LOUVER WALL OVER METAL STUD



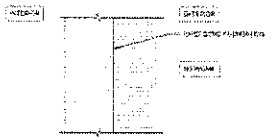
WA-08 - MECH SPACES - CONC



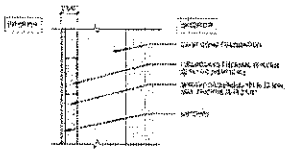
WA-09 - MECH SPACES - GWB



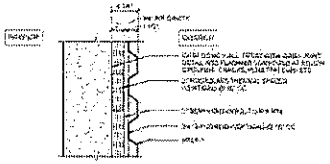
WA-10 - PLASTER OVER METAL STUD



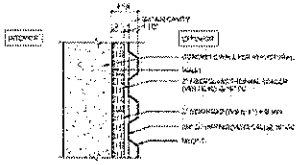
WA-11 - EXISTING BELOW GRADE CONC



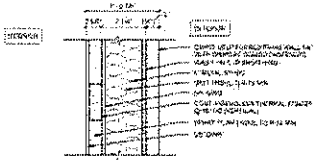
WA-12 - EXISTING BELOW GRADE CONC WITH INSUL



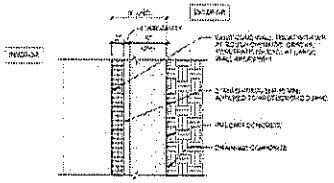
WA-13A - MTLP OVER EXIST CONC



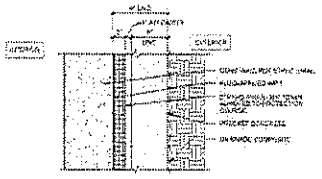
WA-13B - MTLP OVER CONC



WA-14 - CMPST MTLP ON METAL STUD



WA-16A - BELOW GRADE PRECAST OVER EXIST CONC



WA-16B - BELOW GRADE PRECAST OVER CONC

LMN Architects

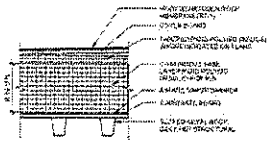
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

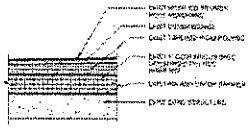
Construction Documents

Thermal Assembly Types - Wall Assemblies

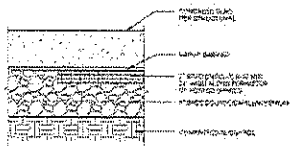
A010



RT-1 - INSUL ON MTL ROOF DECK



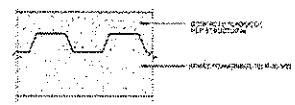
RT-X - EXISTING ROOF



FA-1 - SLAB ON GRADE



FA-2 - SUSPENDED SLAB



FA-3 - SUSPENDED SLAB

LMN Architecture Lithos Design Interiors

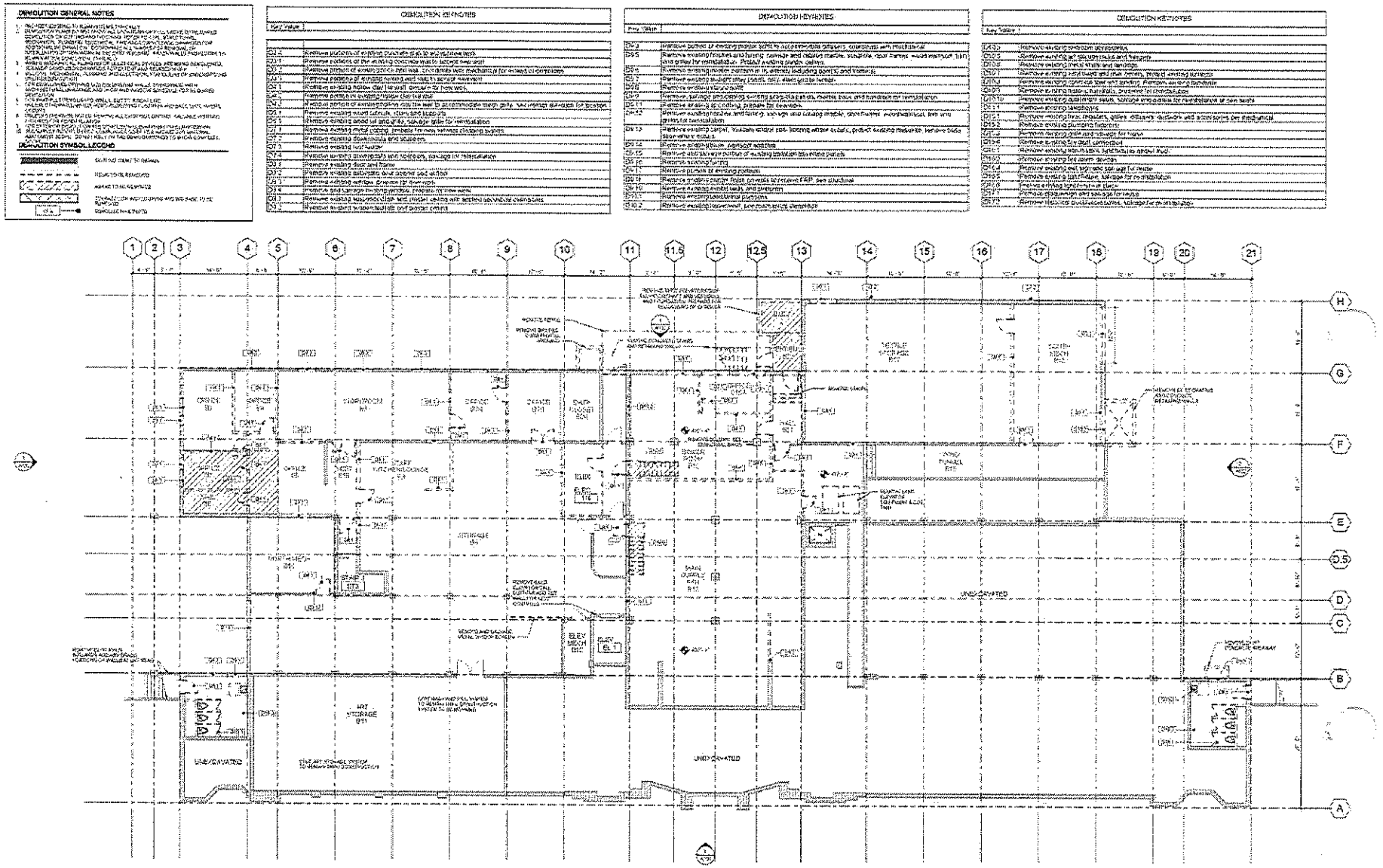
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Thermal Assembly Types - Roof and Floor Assemblies

A011



LEVEL 1 EXISTING/DEMO

TRUE NORTH

PLAN NORTH

LMN Architecture | Urban Design | Interiors

SAM ASAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Demo Plan - Level 1

A101

DEMOLITION GENERAL NOTES

1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]
6. [illegible]
7. [illegible]
8. [illegible]
9. [illegible]
10. [illegible]

DEMOLITION SYMBOL LEGEND

	EXISTING DOME TO REMAIN
	ITEMS TO BE REMOVED
	AREAS TO BE REMOVED
	[illegible]
	DEMOLITION KEYNOTE

DEMOLITION KEYNOTES

Key Value	
[illegible]	[illegible]
D1.1	Remove portions of existing concrete slab to accept new work
D1.2	Remove portions of the existing concrete wall to accept new work
D1.3	Remove portion of existing pre-cast panel, coordinate with manufacturer, remove to demolition
D1.4	Remove portions of existing mullion and glass to accept new work
D1.5	Remove existing mullion and glass to accept new work
D1.6	Remove existing mullion and glass to accept new work
D1.7	Remove existing mullion and glass to accept new work
D1.8	Remove existing mullion and glass to accept new work
D1.9	Remove existing mullion and glass to accept new work
D1.10	Remove existing mullion and glass to accept new work
D1.11	Remove existing mullion and glass to accept new work
D1.12	Remove existing mullion and glass to accept new work
D1.13	Remove existing mullion and glass to accept new work
D1.14	Remove existing mullion and glass to accept new work
D1.15	Remove existing mullion and glass to accept new work
D1.16	Remove existing mullion and glass to accept new work
D1.17	Remove existing mullion and glass to accept new work
D1.18	Remove existing mullion and glass to accept new work
D1.19	Remove existing mullion and glass to accept new work
D1.20	Remove existing mullion and glass to accept new work
D1.21	Remove existing mullion and glass to accept new work
D1.22	Remove existing mullion and glass to accept new work
D1.23	Remove existing mullion and glass to accept new work
D1.24	Remove existing mullion and glass to accept new work
D1.25	Remove existing mullion and glass to accept new work
D1.26	Remove existing mullion and glass to accept new work
D1.27	Remove existing mullion and glass to accept new work
D1.28	Remove existing mullion and glass to accept new work
D1.29	Remove existing mullion and glass to accept new work
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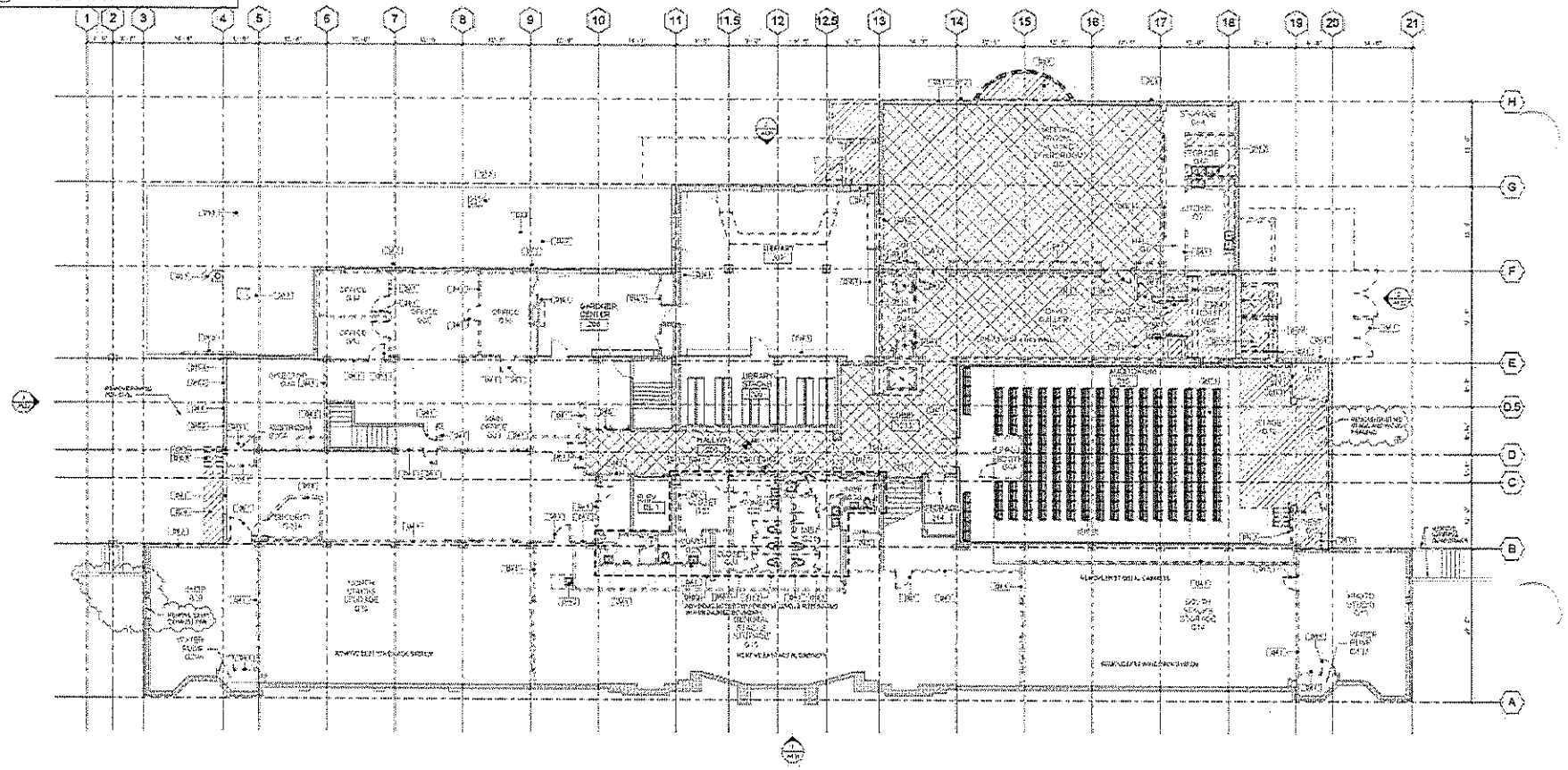

LEVEL 2 EXISTING/DEMO

TRUE NORTH

PLAN NORTH

LMN Architecture Urban Design Interiors

SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Demo Plan - Level 2

A102

DEMOLITION GENERAL NOTES

1. ARCHITECT REFERS TO HEADQUARTERS ARCHITECT.
2. CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF / HERSELF WITH ALL EXISTING CONDITIONS AFFECTING THE WORK. REPORT TO ARCHITECT ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THE CONTRACT DOCUMENTS. ARCHITECT SHALL BE NOTIFIED OF ANY CONDITIONS REQUIRING ALTERATIONS TO THE CONTRACT DOCUMENTS PRIOR TO THE START OF CONSTRUCTION. NO EXTRA COMPENSATION WILL BE ALLOWED FOR DIFFERENCES BETWEEN FIELD CONDITIONS AND THE CONTRACT DOCUMENTS WHICH COULD HAVE BEEN DISCOVERED BY SUCH EXAMINATION.
3. ALL DEMOLITION, INCLUDING REMOVAL OF MECHANICAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION EQUIPMENT AND SYSTEMS, SHALL BE PERFORMED IN A MANNER THAT WILL NOT INTERFERE WITH OR ENDANGER THE OCCUPANCY OF ADJACENT AREAS OF THE BUILDING.
4. ALL DEMOLITION WORK SHALL BE PERFORMED IN A MANNER THAT WILL NOT INTERFERE WITH OR ENDANGER THE OCCUPANCY OF ADJACENT AREAS OF THE BUILDING.
5. ALL DEMOLITION WORK SHALL BE PERFORMED IN A MANNER THAT WILL NOT INTERFERE WITH OR ENDANGER THE OCCUPANCY OF ADJACENT AREAS OF THE BUILDING.
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10. ALL DEMOLITION WORK SHALL BE PERFORMED IN A MANNER THAT WILL NOT INTERFERE WITH OR ENDANGER THE OCCUPANCY OF ADJACENT AREAS OF THE BUILDING.

DEMOLITION SYMBOL LEGEND

	EXISTING TO REMAIN
	EXISTING TO BE REMOVED
	NEW WORK
	CONSTRUCTION FENCE
	DEMOLITION KEYNOTE

DEMOLITION KEYNOTES

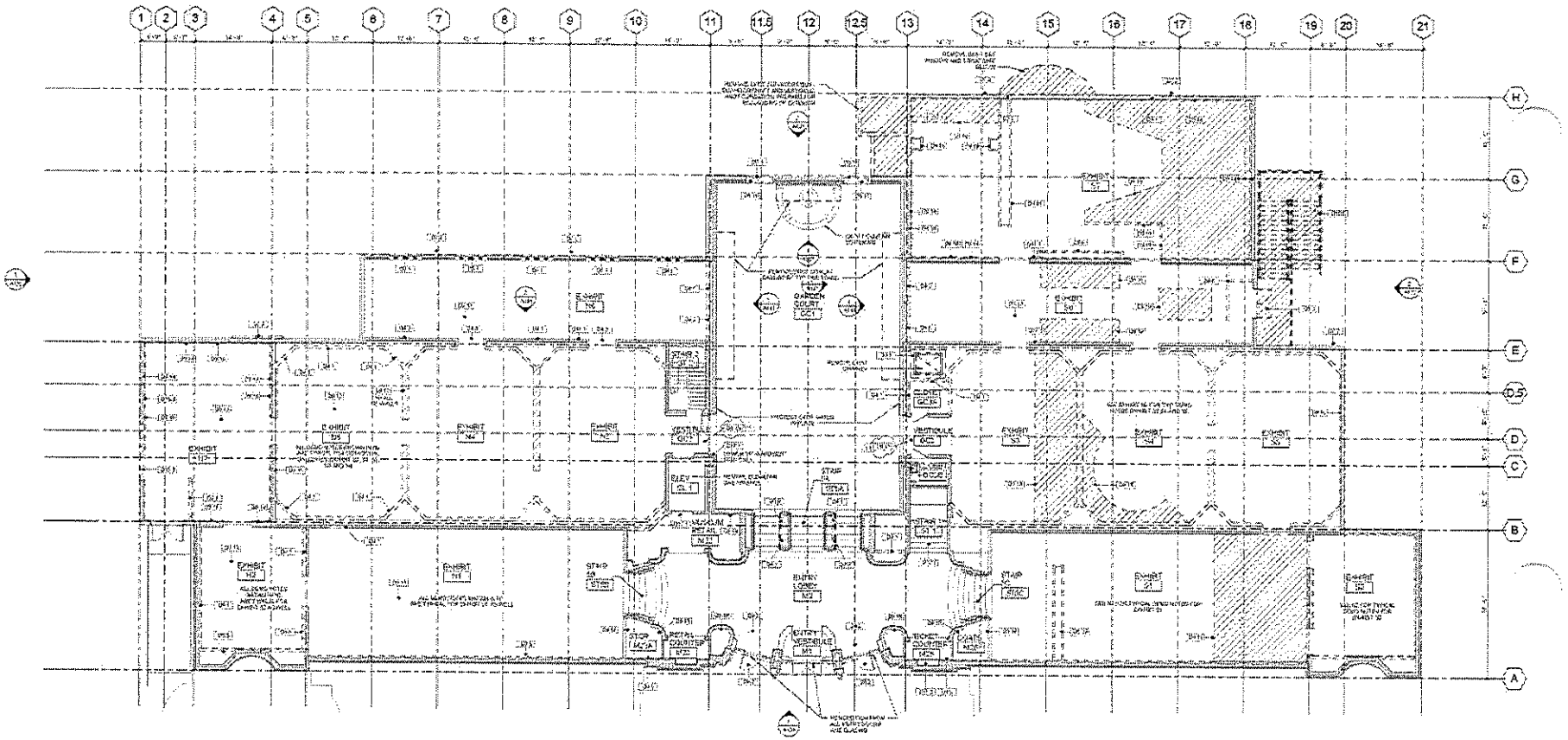
Key Value	
DK.2	Protect portions of building indicated to remain.
DK.3	Remove portions of the existing construction as required for new work.
DK.4	Remove portions of existing construction as required for new work.
DK.5	Remove portions of existing construction as required for new work.
DK.6	Remove existing flooring and prepare substrate for new finish.
DK.7	Remove existing wall and prepare for new finish.
DK.8	Remove existing ceiling and prepare for new finish.
DK.9	Remove existing window and prepare for new work.
DK.10	Remove existing door and prepare for new work.
DK.11	Remove existing millwork and prepare for new work.
DK.12	Remove existing casework and prepare for new work.
DK.13	Remove existing plumbing fixture and prepare for new work.
DK.14	Remove existing mechanical equipment and prepare for new work.
DK.15	Remove existing electrical equipment and prepare for new work.
DK.16	Remove existing fire protection equipment and prepare for new work.
DK.17	Remove existing signage and prepare for new work.
DK.18	Remove existing artwork and prepare for new work.
DK.19	Remove existing furniture and prepare for new work.
DK.20	Remove existing vertical transportation equipment and prepare for new work.

DEMOLITION KEYNOTES

Key Value	
DK.21	Remove existing roofing and prepare for new work.
DK.22	Remove existing exterior wall and prepare for new work.
DK.23	Remove existing exterior window and prepare for new work.
DK.24	Remove existing exterior door and prepare for new work.
DK.25	Remove existing exterior finish and prepare for new work.
DK.26	Remove existing exterior soffit and prepare for new work.
DK.27	Remove existing exterior fascia and prepare for new work.
DK.28	Remove existing exterior trim and prepare for new work.
DK.29	Remove existing exterior railing and prepare for new work.
DK.30	Remove existing exterior stair and prepare for new work.
DK.31	Remove existing exterior ramp and prepare for new work.
DK.32	Remove existing exterior landing and prepare for new work.
DK.33	Remove existing exterior canopy and prepare for new work.
DK.34	Remove existing exterior awning and prepare for new work.
DK.35	Remove existing exterior sign and prepare for new work.
DK.36	Remove existing exterior lighting and prepare for new work.
DK.37	Remove existing exterior mechanical equipment and prepare for new work.
DK.38	Remove existing exterior plumbing fixture and prepare for new work.
DK.39	Remove existing exterior electrical equipment and prepare for new work.
DK.40	Remove existing exterior fire protection equipment and prepare for new work.

DEMOLITION KEYNOTES

Key Value	
DK.41	Remove existing exterior artwork and prepare for new work.
DK.42	Remove existing exterior furniture and prepare for new work.
DK.43	Remove existing exterior vertical transportation equipment and prepare for new work.
DK.44	Remove existing exterior roofing and prepare for new work.
DK.45	Remove existing exterior wall and prepare for new work.
DK.46	Remove existing exterior window and prepare for new work.
DK.47	Remove existing exterior door and prepare for new work.
DK.48	Remove existing exterior finish and prepare for new work.
DK.49	Remove existing exterior soffit and prepare for new work.
DK.50	Remove existing exterior fascia and prepare for new work.
DK.51	Remove existing exterior trim and prepare for new work.
DK.52	Remove existing exterior railing and prepare for new work.
DK.53	Remove existing exterior stair and prepare for new work.
DK.54	Remove existing exterior ramp and prepare for new work.
DK.55	Remove existing exterior landing and prepare for new work.
DK.56	Remove existing exterior canopy and prepare for new work.
DK.57	Remove existing exterior awning and prepare for new work.
DK.58	Remove existing exterior sign and prepare for new work.
DK.59	Remove existing exterior lighting and prepare for new work.
DK.60	Remove existing exterior mechanical equipment and prepare for new work.
DK.61	Remove existing exterior plumbing fixture and prepare for new work.
DK.62	Remove existing exterior electrical equipment and prepare for new work.
DK.63	Remove existing exterior fire protection equipment and prepare for new work.



LEVEL 3 EXISTING/DEMO

TRUE NORTH

PLAN NORTH

0' 4' 8' 16' 32'

LMN Architects

SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Demo Plan - Level 3

A103

DEMOLITION GENERAL NOTES

1. REFER TO SHEET G-102 FOR ABBREVIATIONS AND SYMBOLS.
2. DEMOLITION PLANS ARE DIAGRAMMATIC AND ARE INTENDED TO INDICATE THE EXTENT AND CHARACTER OF DEMOLITION WORK. CONTRACTOR SHALL VISIT THE SITE AND DETERMINE THE EXTENT OF DEMOLITION AND REMOVAL REQUIRED TO ACCOMMODATE NEW CONSTRUCTION AS SHOWN ON THE DRAWINGS. CONTRACTOR SHALL INCLUDE IN THE BID ALL DEMOLITION AND REMOVAL WORK REQUIRED TO ACCOMMODATE NEW CONSTRUCTION AS SHOWN ON THE DRAWINGS.
3. REMOVE MECHANICAL AND PLUMBING EQUIPMENT AND PIPING AS INDICATED ON MECHANICAL AND PLUMBING DRAWINGS. CAP OFF PIPING AT POINTS WHERE CONNECTIONS ARE TO BE MADE FOR NEW WORK.
4. SEE CIVIL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR ADDITIONAL DEMOLITION REQUIREMENTS.
5. FOR SAWCUTTING AND DEMOLITION OF CONCRETE SLABS, FOUNDATIONS, WALLS AND ARCHITECTURAL OR MECHANICAL EQUIPMENT AND APPURTENANCES, SEE STRUCTURAL DRAWINGS.
6. FOR SAWCUTTING AND DEMOLITION OF CONCRETE SLABS ON GRADE, SEE CIVIL DRAWINGS.
7. ITEMS TO BE REMOVED AND SALVAGED SHALL BE STORED AND PROTECTED FOR OWNER'S USE.
8. ITEMS TO BE REMOVED AND DISPOSED OF SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS.
9. SEE SHEET G-001 FOR ADDITIONAL DEMOLITION NOTES AND GENERAL NOTES.
10. ALL EQUIPMENT INDICATED BY DEC AS BEING SALVAGED SHALL BE REMOVED AND DELIVERED TO OWNER'S STORAGE AREA AS DIRECTED BY OWNER'S REPRESENTATIVE. ALL EQUIPMENT NOT SALVAGED SHALL BE DISPOSED OF BY CONTRACTOR.

DEMOLITION SYMBOL LEGEND

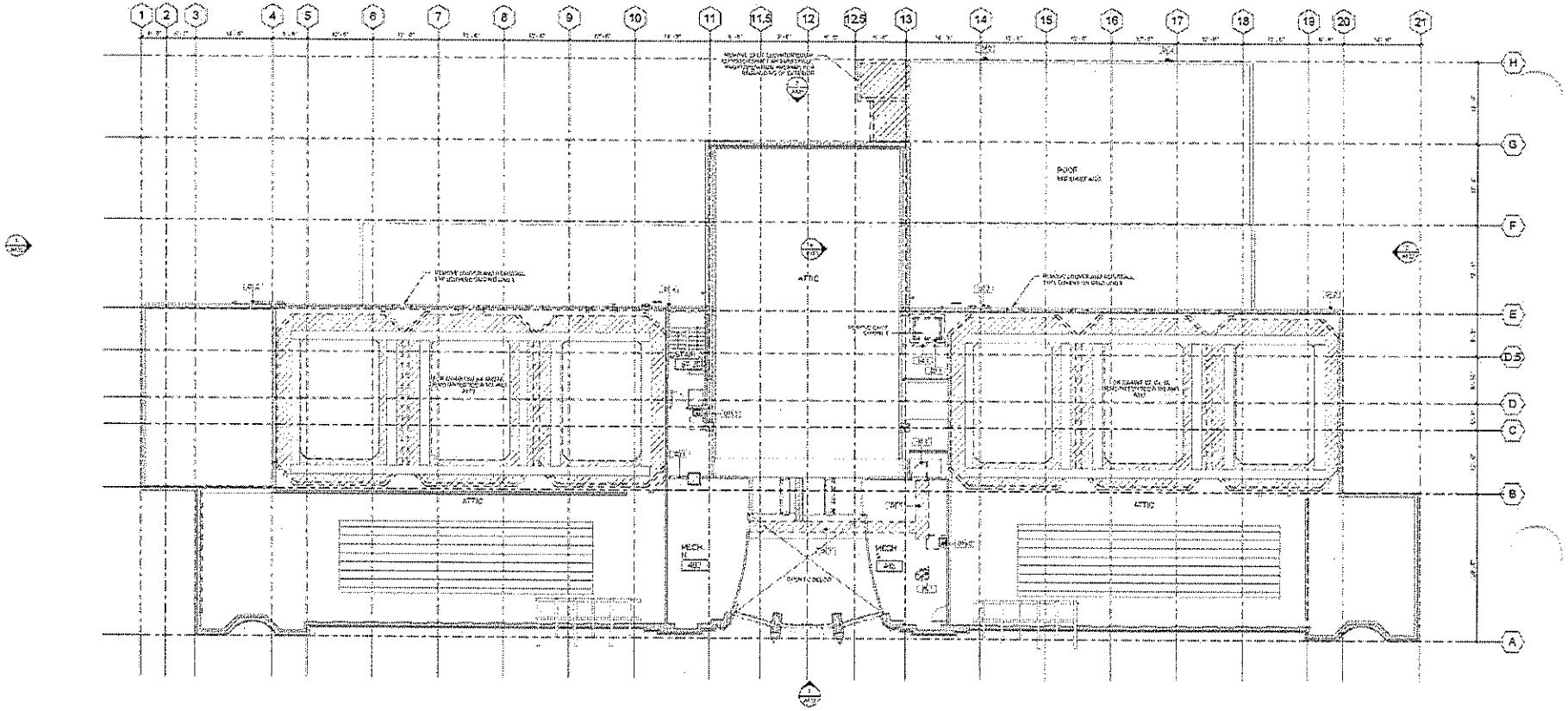
- EXISTING ITEMS TO REMAIN
- ITEM TO BE REMOVED
- WALL TO BE REMOVED
- DEMOLITION KEYNOTE

DEMOLITION KEYNOTES

Key Value	
DK-1	Remove portion of existing concrete slab to accept new work.
DK-2	Remove portions of the existing concrete wall to accept new work.
DK-3	Remove portion of existing brick wall/pier, accessible only from behind for extent of demolition.
DK-4	Maintain portions of existing concrete wall and slab to accept new work.
DK-5	Maintain portions of existing brick wall and slab to accept new work.
DK-6	Remove portion of existing hollow clay tile wall to accommodate new work.
DK-7	Remove portion of existing hollow clay tile wall to accommodate new door, new masonry opening and lintel. Refer to structural drawings for lintel size and location.
DK-8	Remove portion of existing hollow clay tile wall to accommodate new door, new masonry opening and lintel. Refer to structural drawings for lintel size and location.
DK-9	Maintain existing reveal/sidewall, sill, and header.
DK-10	Remove existing wood door and frame, salvage door for reinstallation.
DK-11	Remove existing wood door and frame.
DK-12	Remove existing metal door and frame.
DK-13	Remove existing overhead coiling metal grille.
DK-14	Remove existing overhead coiling door, salvage door for reinstallation.
DK-15	Remove existing overhead coiling door and frame.
DK-16	Remove existing wood door and frame.
DK-17	Remove existing hollow metal door and frame.
DK-18	Remove existing aluminum storefront and frame.
DK-19	Remove existing aluminum curtain wall and storefront.
DK-20	Remove existing hollow metal door and frame, access panel, or louver.
DK-21	Remove existing overhead coiling door and frame.
DK-22	Remove existing hollow metal door and frame, access panel, or louver.

DEMOLITION KEYNOTES

Key Value	
DK-1	Remove existing portion of concrete.
DK-2	Remove existing portion of concrete brick and block wall.
DK-3	Remove existing portion of metal stairs and railings.
DK-4	Remove existing roof panel and roof system, prepare existing for work.
DK-5	Maintain existing concrete roof and framing, prepare existing for work.
DK-6	Remove existing portion of concrete, brick, and block wall, prepare for new openings.
DK-7	Remove existing portion of concrete, brick, and block wall, prepare for new openings.
DK-8	Remove existing portion of concrete, brick, and block wall, prepare for new openings.
DK-9	Remove existing portion of concrete, brick, and block wall, prepare for new openings.
DK-10	Remove existing portion of concrete, brick, and block wall, prepare for new openings.
DK-11	Remove existing portion of concrete, brick, and block wall, prepare for new openings.
DK-12	Remove existing portion of concrete, brick, and block wall, prepare for new openings.
DK-13	Remove existing portion of concrete, brick, and block wall, prepare for new openings.
DK-14	Remove existing portion of concrete, brick, and block wall, prepare for new openings.
DK-15	Remove existing portion of concrete, brick, and block wall, prepare for new openings.
DK-16	Remove existing portion of concrete, brick, and block wall, prepare for new openings.
DK-17	Remove existing portion of concrete, brick, and block wall, prepare for new openings.
DK-18	Remove existing portion of concrete, brick, and block wall, prepare for new openings.
DK-19	Remove existing portion of concrete, brick, and block wall, prepare for new openings.
DK-20	Remove existing portion of concrete, brick, and block wall, prepare for new openings.
DK-21	Remove existing portion of concrete, brick, and block wall, prepare for new openings.
DK-22	Remove existing portion of concrete, brick, and block wall, prepare for new openings.



1 LEVEL 4 ATTIC - EXISTING/DEMO
1/8" = 1'-0"

TRUE NORTH PLAN NORTH

LMN Architects Lever Design Interiors

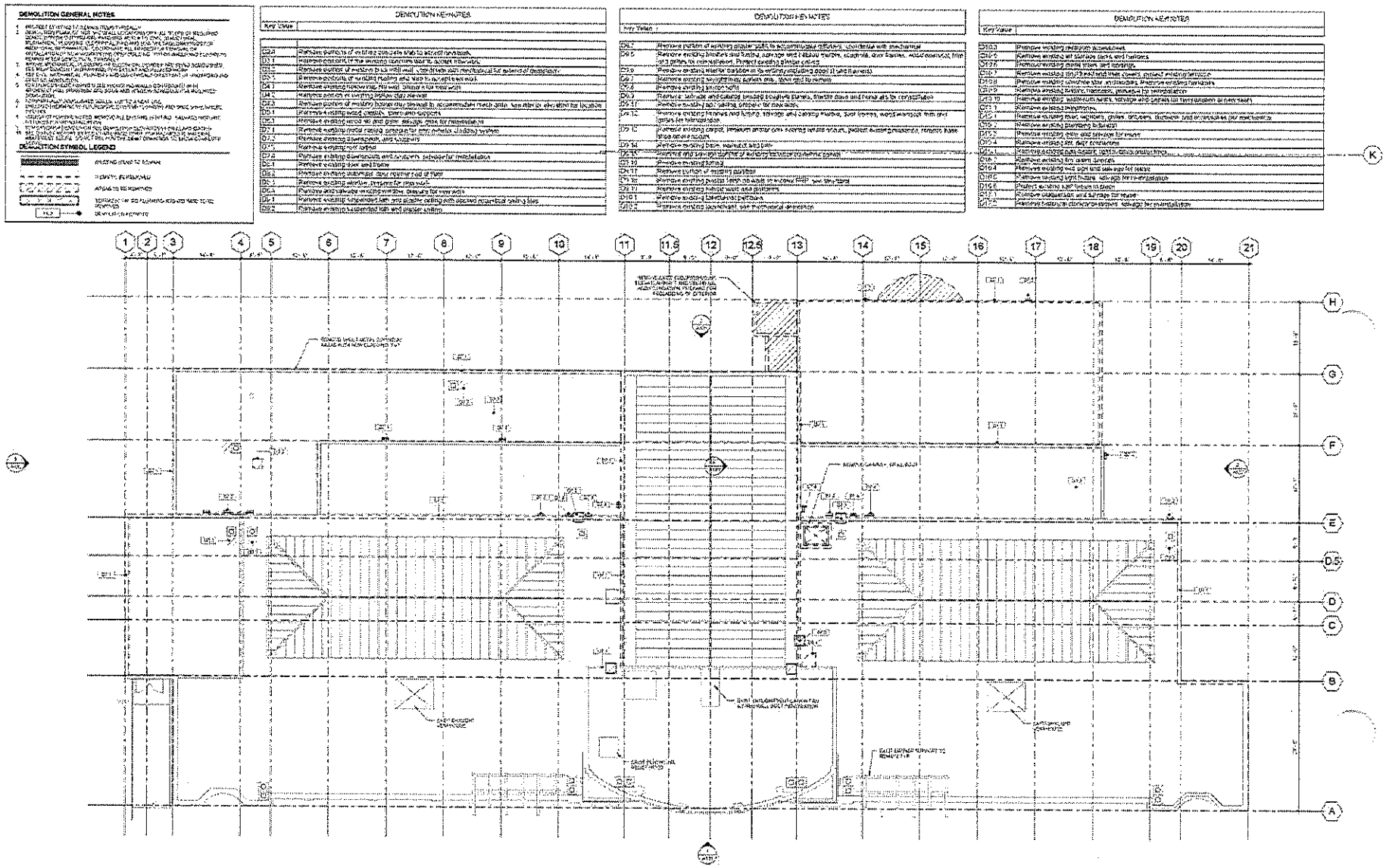
S M ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Demo Plan - Level 4 Mezz/Attic

A104



ROOF PLAN - EXISTING/DEMO

LMN Architects

SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Demo Plan - Roof

A105

DEMOLITION GENERAL NOTES

1. CONTRACTOR TO COORDINATE WORK WITH OWNER.
2. CONTRACTOR TO VERIFY EXISTING CONDITIONS PRIOR TO DEMOLITION. REPORT ANY DISCREPANCIES TO ARCHITECT.
3. CONTRACTOR TO PROTECT ADJACENT AREAS FROM DAMAGE DURING DEMOLITION.
4. CONTRACTOR TO COORDINATE UTILITY DISCONNECTIONS WITH OWNER.
5. CONTRACTOR TO PROVIDE TEMPORARY SHORING AND BRACING AS REQUIRED.
6. CONTRACTOR TO REMOVE DEBRIS FROM SITE DAILY.
7. CONTRACTOR TO PROTECT EXISTING FINISHES TO REMAIN.
8. CONTRACTOR TO COORDINATE WITH OWNER FOR ACCESS TO AREAS.
9. CONTRACTOR TO PROVIDE TEMPORARY BARRICADES AS REQUIRED.
10. CONTRACTOR TO COORDINATE WITH OWNER FOR ELEVATOR USE DURING CONSTRUCTION.

DEMOLITION SYMBOL LEGEND

EXISTING TO REMAIN

EXISTING TO BE REMOVED

ARCHITECTURAL DEMOLITION

NEW CONSTRUCTION

DEMOLITION KEYNOTES

Key Value	
D5.3	Remove portions of existing concrete wall to accept new work.
D5.5	Remove portions of the existing curtain wall to accept new work.
D5.7	Remove portion of existing brick infill wall, coordinate with treatment of remainder of remainder.
D5.8	Remove portions of existing floor and wall, coordinate with treatment of remainder of remainder.
D5.9	Remove existing skylight and associated framing, prepare for removal.
D5.10	Remove existing skylight and associated framing, prepare for removal.
D5.11	Remove existing skylight and associated framing, prepare for removal.
D5.12	Remove existing skylight and associated framing, prepare for removal.
D5.13	Remove existing skylight and associated framing, prepare for removal.
D5.14	Remove existing skylight and associated framing, prepare for removal.
D5.15	Remove existing skylight and associated framing, prepare for removal.
D5.16	Remove existing skylight and associated framing, prepare for removal.
D5.17	Remove existing skylight and associated framing, prepare for removal.
D5.18	Remove existing skylight and associated framing, prepare for removal.
D5.19	Remove existing skylight and associated framing, prepare for removal.
D5.20	Remove existing skylight and associated framing, prepare for removal.
D5.21	Remove existing skylight and associated framing, prepare for removal.
D5.22	Remove existing skylight and associated framing, prepare for removal.

DEMOLITION KEYNOTES

Key Value	
D5.1	Remove existing handrail at escalator.
D5.2	Remove existing glass and frame.
D5.3	Remove existing metal stairs and railing.
D5.4	Remove existing mechanical equipment, protect during demolition.
D5.5	Remove existing concrete stair and railing. Coordinate with new.
D5.6	Remove existing handrail.
D5.7	Remove existing concrete wall, protect during demolition.
D5.8	Remove existing concrete wall and opening. Coordinate with new.
D5.9	Remove existing concrete wall and opening. Coordinate with new.
D5.10	Remove existing concrete wall and opening. Coordinate with new.
D5.11	Remove existing concrete wall and opening. Coordinate with new.
D5.12	Remove existing concrete wall and opening. Coordinate with new.
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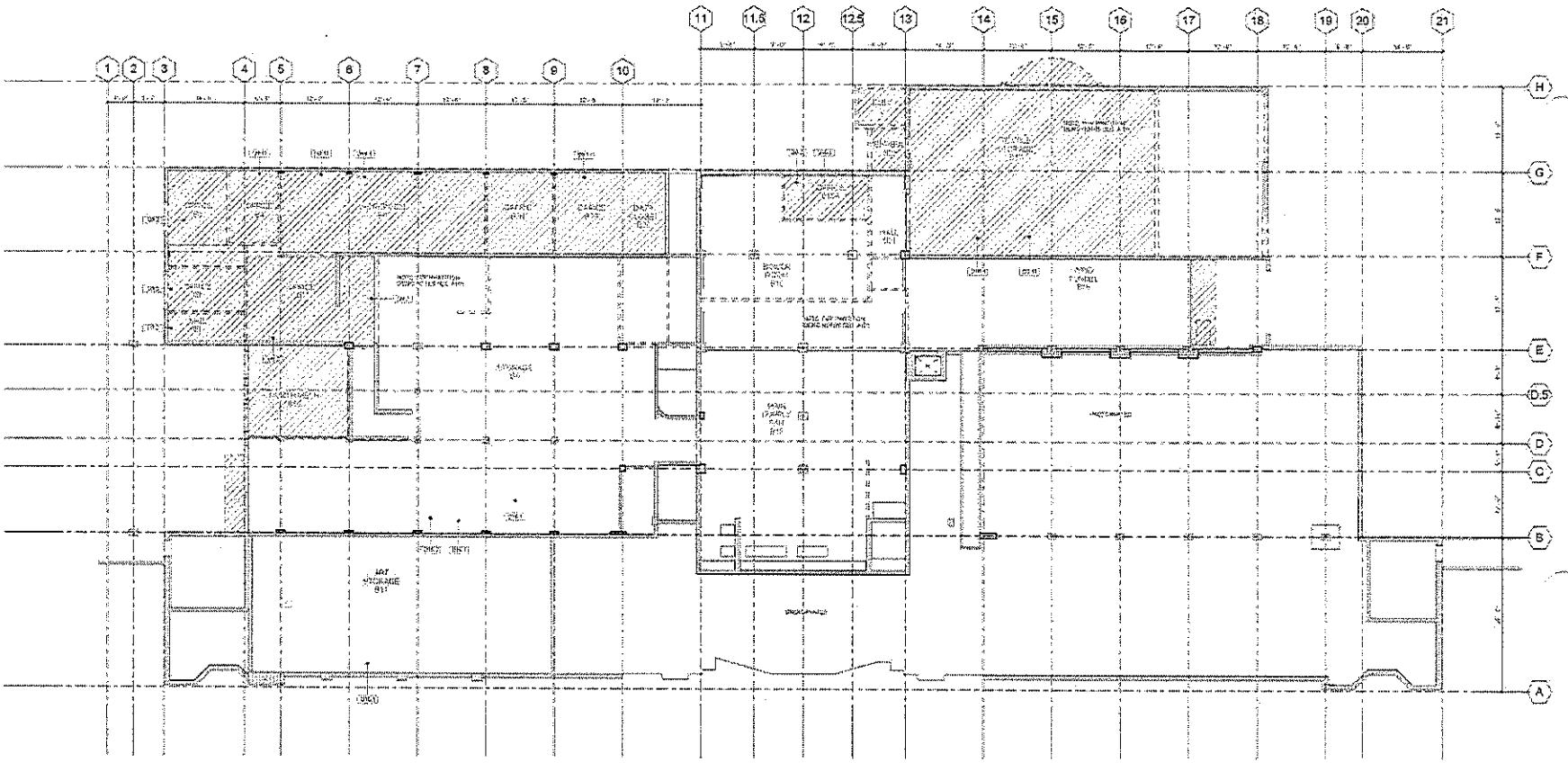
D5.18	Remove existing concrete wall and opening. Coordinate with new.
D5.19	Remove existing concrete wall and opening. Coordinate with new.
D5.20	Remove existing concrete wall and opening. Coordinate with new.
D5.21	Remove existing concrete wall and opening. Coordinate with new.
D5.22	Remove existing concrete wall and opening. Coordinate with new.



LEVEL 1 DEMO RCP

TRUE NORTH

PLAN NORTH

0' 4' 8' 16' 32'

LMN Architecture Urban Design Interiors

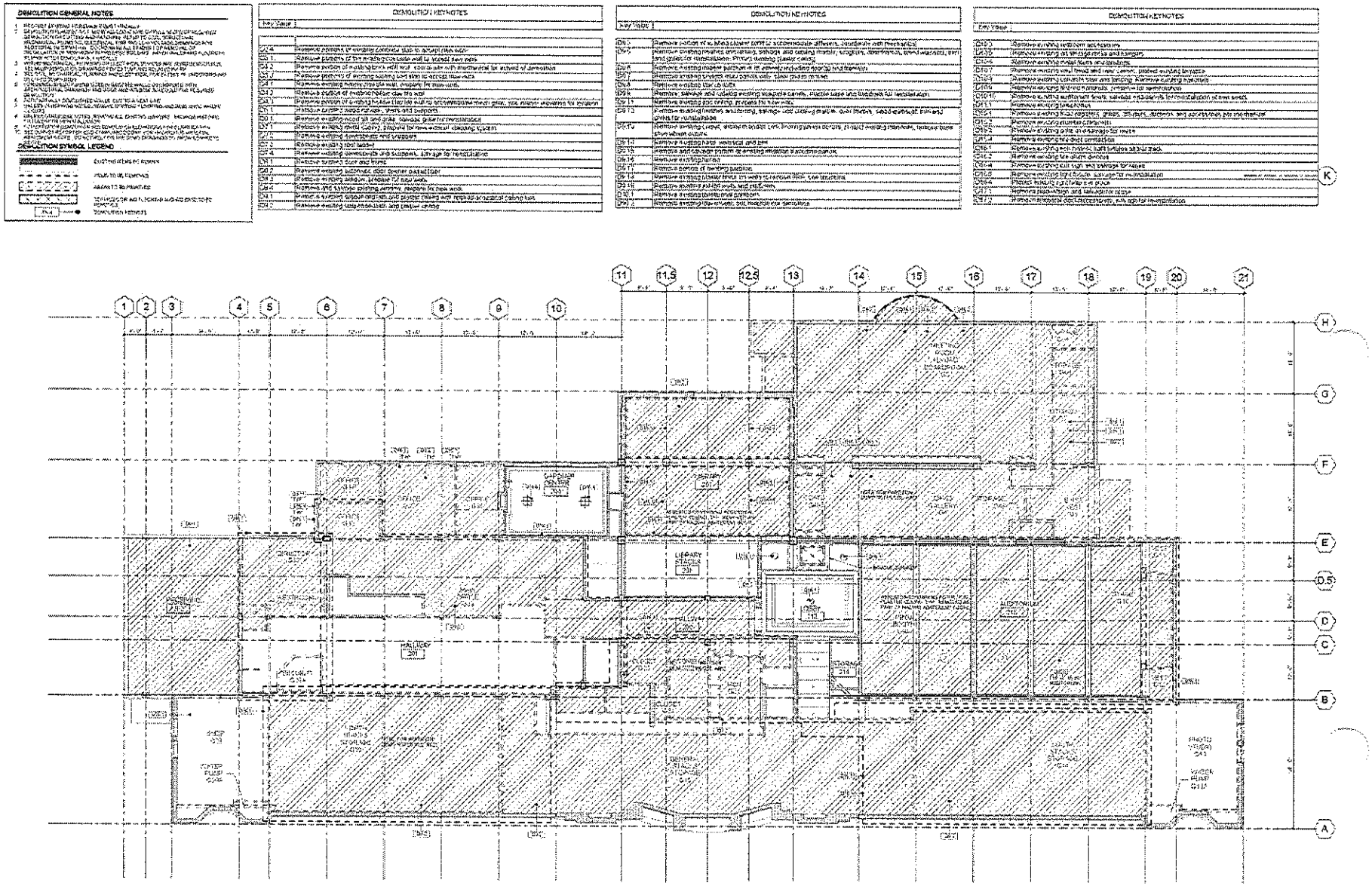
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Demo RCP - Level 1

A111



LMN Architects Urban Design Interiors

SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Demo RCP - Level 2

A112

DEMOLITION GENERAL NOTES

1. PROTECT SURFACES REMAIN FROM DAMAGE
2. DEMOLITION IS PERFORMED TO EXPOSE AREAS OF WORK ON THE DRAWINGS AND AS REQUIRED FOR INSTALLATION OF NEW WORK AND PATCHING, EXTENT OF DEMOLITION AND PATCHING IS NOT LIMITED TO AREAS INDICATED ON DRAWINGS
3. REMOVE, RELOCATE AND EXTEND EXISTING INSTALLATIONS AS NECESSARY TO ACCOMMODATE NEW CONSTRUCTION AND TO COMPLY WITH DEMOLITION DRAWINGS AND SPECIFICATIONS
4. REMOVE DEMOLISHED MATERIALS FROM BUILDING AND DISPOSE OF OFF-SITE
5. DO NOT BEGIN DEMOLITION UNTIL TEMPORARY PROTECTIONS ARE IN PLACE AND ALL PERSONNEL AND EQUIPMENT ARE CLEAR OF AREAS AND PATHS OF DEMOLITION
6. FOR PARTIAL DEMOLITION, WHERE WALLS, CEILINGS, OR FLOORS ARE TO REMAIN, PROTECT EXISTING CONDITIONS THAT ARE TO REMAIN UNDISTURBED
7. DEMOLITION WORK SHALL BE PERFORMED IN A METHODICAL MANNER. DO NOT OVERLOAD STRUCTURAL ELEMENTS. PROVIDE TEMPORARY BRACING AND SHORING AS REQUIRED
8. REMOVE ITEMS INDICATED TO BE SALVAGED AND STORE AS DIRECTED BY OWNER
9. DEMOLITION DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL EXTENT OF DEMOLITION. EXISTING CONDITIONS MAY VARY FROM THOSE SHOWN. VERIFY EXISTING CONDITIONS AND DIMENSIONS IN THE FIELD
10. THE CONTRACTOR SHALL EXAMINE THE EXISTING CONDITIONS PRIOR TO SUBMITTING A BID. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR DIFFERENCES BETWEEN CONDITIONS SHOWN ON THE DRAWINGS AND THE ACTUAL CONDITIONS AT THE JOB SITE

DEMOLITION SYMBOL LEGEND

- CONSTRUCTION TO REMAIN
- EXISTING TO BE REMOVED
- WALLS TO BE REMOVED
- EXISTING OR NEW CASEWORK AND MILLWORK TO BE REMOVED
- KEY NOTE

DEMOLITION KEYNOTES

Key Value

D2.4	Remove portions of existing plaster walls as indicated on drawings.
D3.1	Remove existing stone veneer and substrate as indicated on drawings.
D3.2	Remove existing stone veneer and substrate as indicated on drawings.
D3.3	Remove portion of existing precast concrete wall. Coordinate with Structural for scope of demolition.
D3.4	Remove portions of existing masonry wall and stair to accept new work.
D3.5	Remove existing timber stair and railings for new work.
D3.6	Remove portion of existing concrete wall as required for new work.
D4.1	Remove existing wood window and frame.
D4.2	Remove existing aluminum storefront system and frame.
D4.3	Remove existing aluminum curtain wall system and frame.
D5.1	Remove existing steel railings, guards and handrails.
D5.2	Remove existing steel stairs.
D5.3	Remove existing steel guards and handrails.
D5.4	Remove existing steel canopy.
D5.5	Remove existing steel trellis.
D5.6	Remove existing steel bollards.
D5.7	Remove existing steel lintel.
D5.8	Remove existing steel embed plate.
D5.9	Remove existing steel beam.
D5.10	Remove existing steel column.
D5.11	Remove existing steel bracket.
D5.12	Remove existing steel plate.
D6.1	Remove existing wood trim.
D6.2	Remove existing wood base.
D6.3	Remove existing wood door and frame.
D6.4	Remove existing wood panel.
D6.5	Remove existing wood shelving.
D6.6	Remove existing wood casework.
D6.7	Remove existing wood countertop.
D6.8	Remove existing wood paneling.
D6.9	Remove existing wood ceiling.
D6.10	Remove existing wood beam.
D6.11	Remove existing wood column.
D6.12	Remove existing wood bracket.
D6.13	Remove existing wood plate.
D6.14	Remove existing wood lintel.
D6.15	Remove existing wood embed plate.
D6.16	Remove existing wood bollard.
D6.17	Remove existing wood trellis.
D6.18	Remove existing wood canopy.
D6.19	Remove existing wood railing.
D6.20	Remove existing wood guard.
D6.21	Remove existing wood handrail.
D6.22	Remove existing wood stair.
D6.23	Remove existing wood landing.
D6.24	Remove existing wood ramp.
D6.25	Remove existing wood platform.
D6.26	Remove existing wood deck.
D6.27	Remove existing wood fence.
D6.28	Remove existing wood gate.
D6.29	Remove existing wood screen.
D6.30	Remove existing wood louver.
D6.31	Remove existing wood vent.
D6.32	Remove existing wood duct.
D6.33	Remove existing wood pipe.
D6.34	Remove existing wood conduit.
D6.35	Remove existing wood wire.
D6.36	Remove existing wood cable.
D6.37	Remove existing wood fixture.
D6.38	Remove existing wood device.
D6.39	Remove existing wood equipment.
D6.40	Remove existing wood appliance.
D6.41	Remove existing wood furniture.
D6.42	Remove existing wood artwork.
D6.43	Remove existing wood display.
D6.44	Remove existing wood signage.
D6.45	Remove existing wood graphics.
D6.46	Remove existing wood lighting.
D6.47	Remove existing wood controls.
D6.48	Remove existing wood sensors.
D6.49	Remove existing wood alarms.
D6.50	Remove existing wood cameras.
D6.51	Remove existing wood speakers.
D6.52	Remove existing wood microphones.
D6.53	Remove existing wood antennas.
D6.54	Remove existing wood satellite dishes.
D6.55	Remove existing wood weather stations.
D6.56	Remove existing wood fire alarm devices.
D6.57	Remove existing wood security devices.
D6.58	Remove existing wood access control devices.
D6.59	Remove existing wood intercom devices.
D6.60	Remove existing wood paging devices.
D6.61	Remove existing wood clock devices.
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D6.531	Remove existing wood flow switch devices.
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D6.570	Remove existing wood pressure switch devices.
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D6.573	Remove existing wood temperature switch devices.
D6.574	Remove existing wood humidity switch devices.
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D6.610	Remove existing wood pressure switch devices.
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D6.614	Remove existing wood humidity switch devices.
D6.615	Remove existing wood pressure switch devices.
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D6.618	Remove existing wood temperature switch devices.
D6.619	Remove existing wood humidity switch devices.
D6.620	Remove existing wood pressure switch devices.
D6.621	Remove existing wood flow switch devices.
D6.622	Remove existing wood level switch devices.
D6.623	Remove existing wood temperature switch devices.
D6.

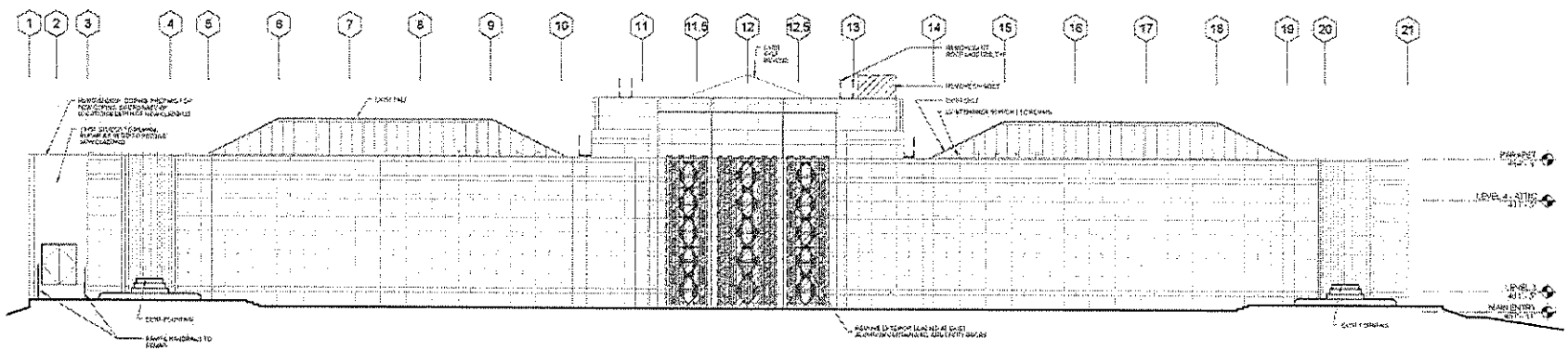
DEMOLITION GENERAL NOTES

DEMOLITION KEYNOTES

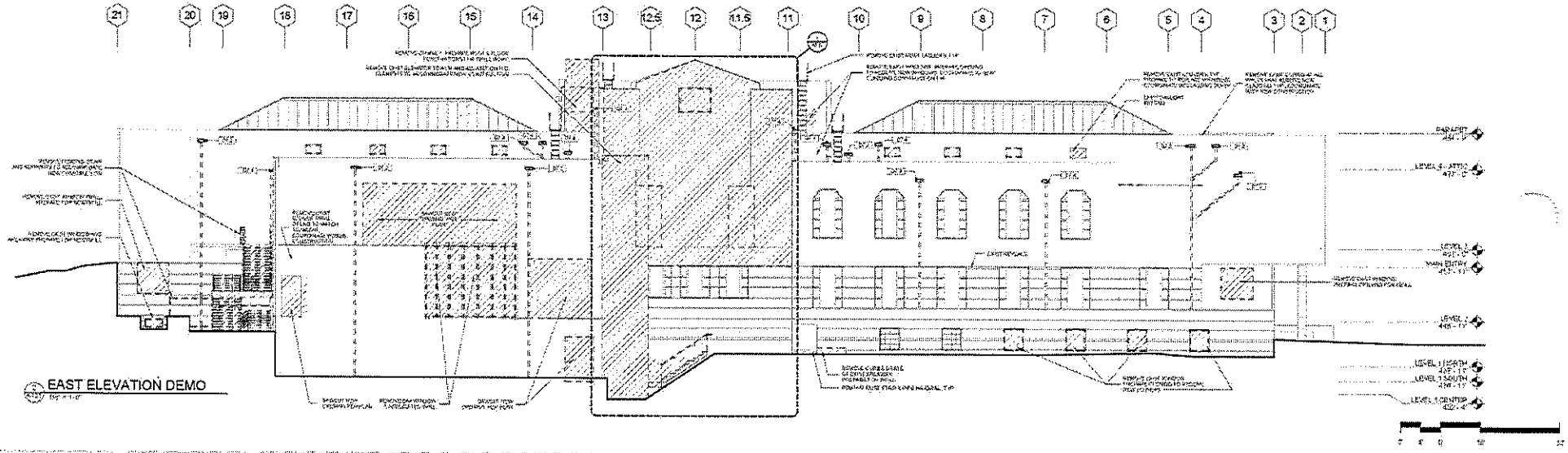
DEMOLITION KEYNOTES

DEMOLITION KEYNOTES

DEMOLITION SYMBOL LEGEND



1 WEST ELEVATION DEMO



2 EAST ELEVATION DEMO

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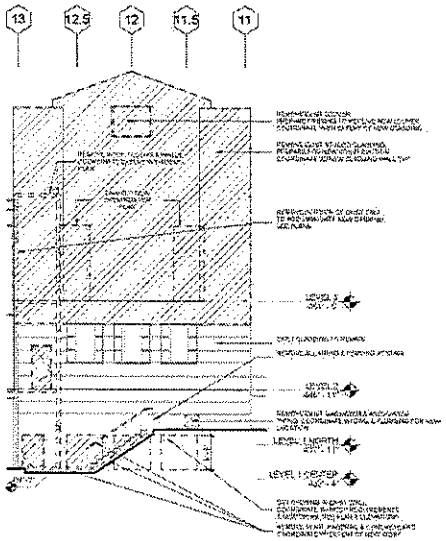
Construction Documents

Demo Elevations

A131



GARDEN COURT DEMO

DEMOLITION KEYNOTES	
KEY NOTE	
DK 3	Remove portions of existing concrete slab to accept new work
DK 4	Remove portions of the existing (if applicable) to accept new work
DK 5	Remove portions of existing brick infill wall, coordinate with structural for shoring or demolition
DK 6	Remove portions of existing concrete wall, coordinate with structural for shoring or demolition
DK 7	Remove portions of existing roofing and slab to accept new work
DK 8	Remove existing bricks and tile wall, prepare for new work
DK 9	Remove portion of existing door, door frame and hardware
DK 10	Remove portion of existing window, prepare for new work
DK 11	Remove existing wood or metal stairs and supports
DK 12	Remove existing wood or metal guard, handrail and supports
DK 13	Remove existing wood or metal guard, handrail and supports
DK 14	Remove existing wood or metal guard, handrail and supports
DK

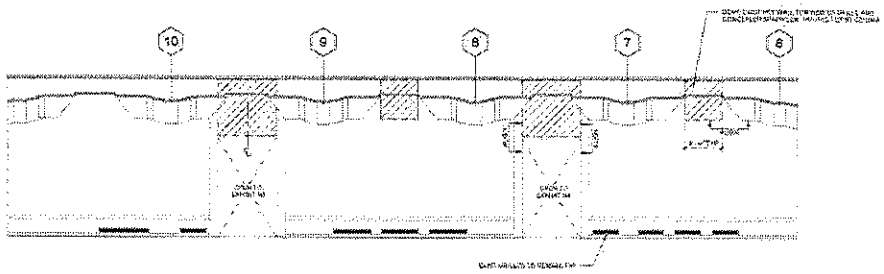
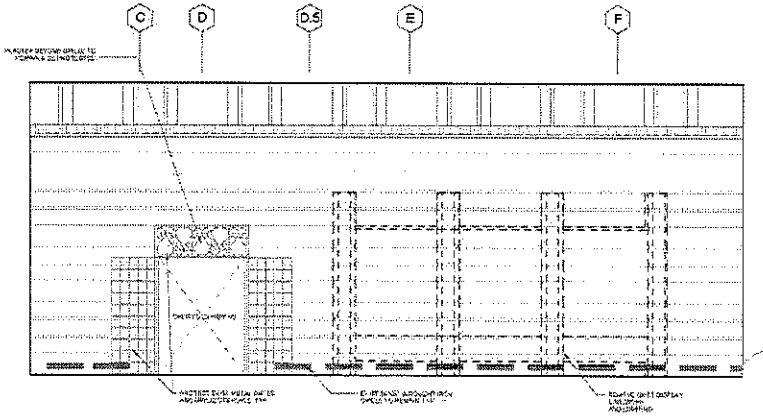
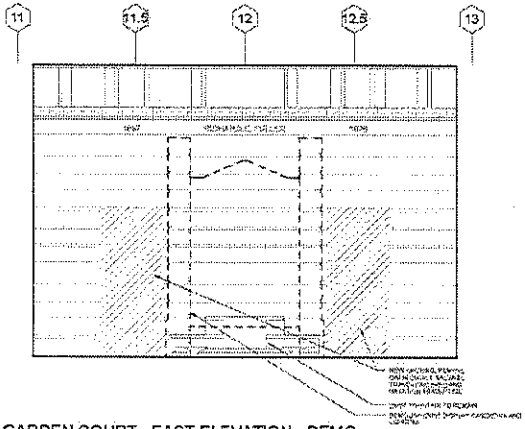


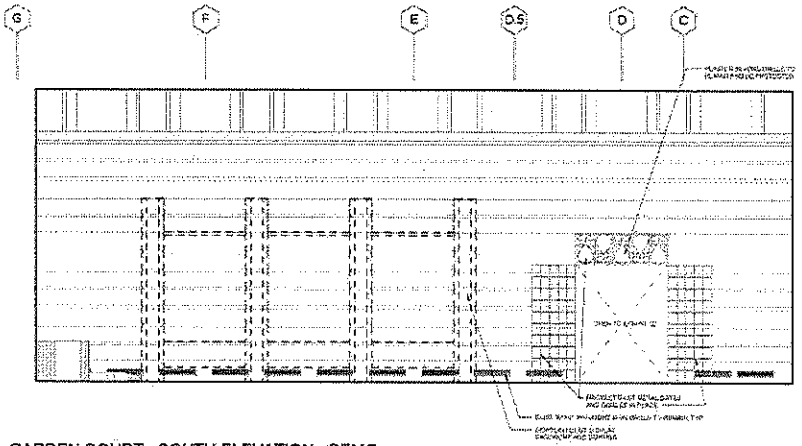
EXHIBIT N6 - WEST - DEMO, EXHIBIT S6 - WEST SIM



GARDEN COURT - NORTH ELEVATION - DEMO



GARDEN COURT - EAST ELEVATION - DEMO



GARDEN COURT - SOUTH ELEVATION - DEMO

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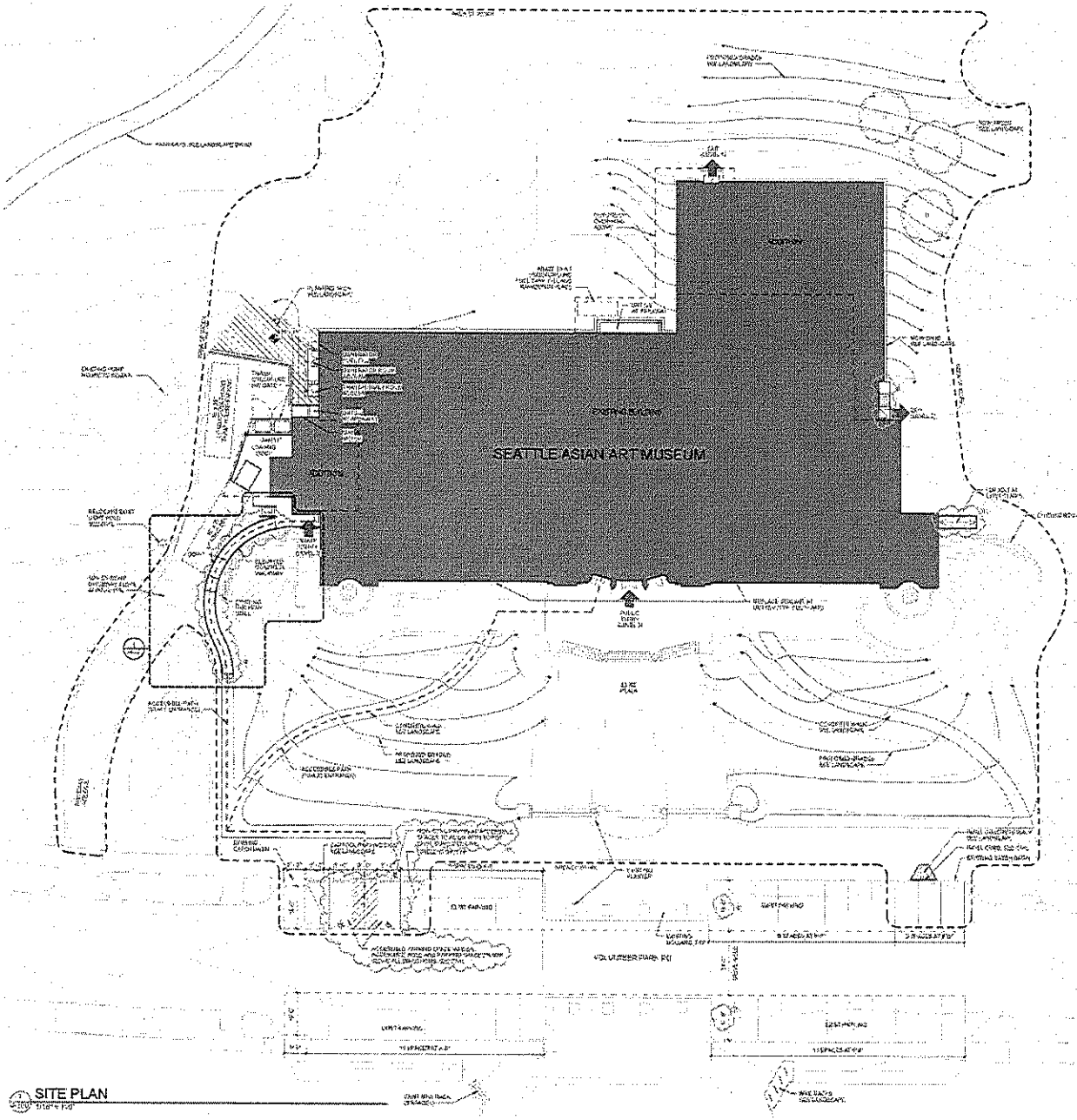
Construction Documents

Demo Interior Elevations

A141



SITE PLAN

GENERAL NOTES - SITE

VIBRATION CONTROL AND MONITORING

TRUE NORTH

PLAN NORTH

0' 8' 16' 32' 64'

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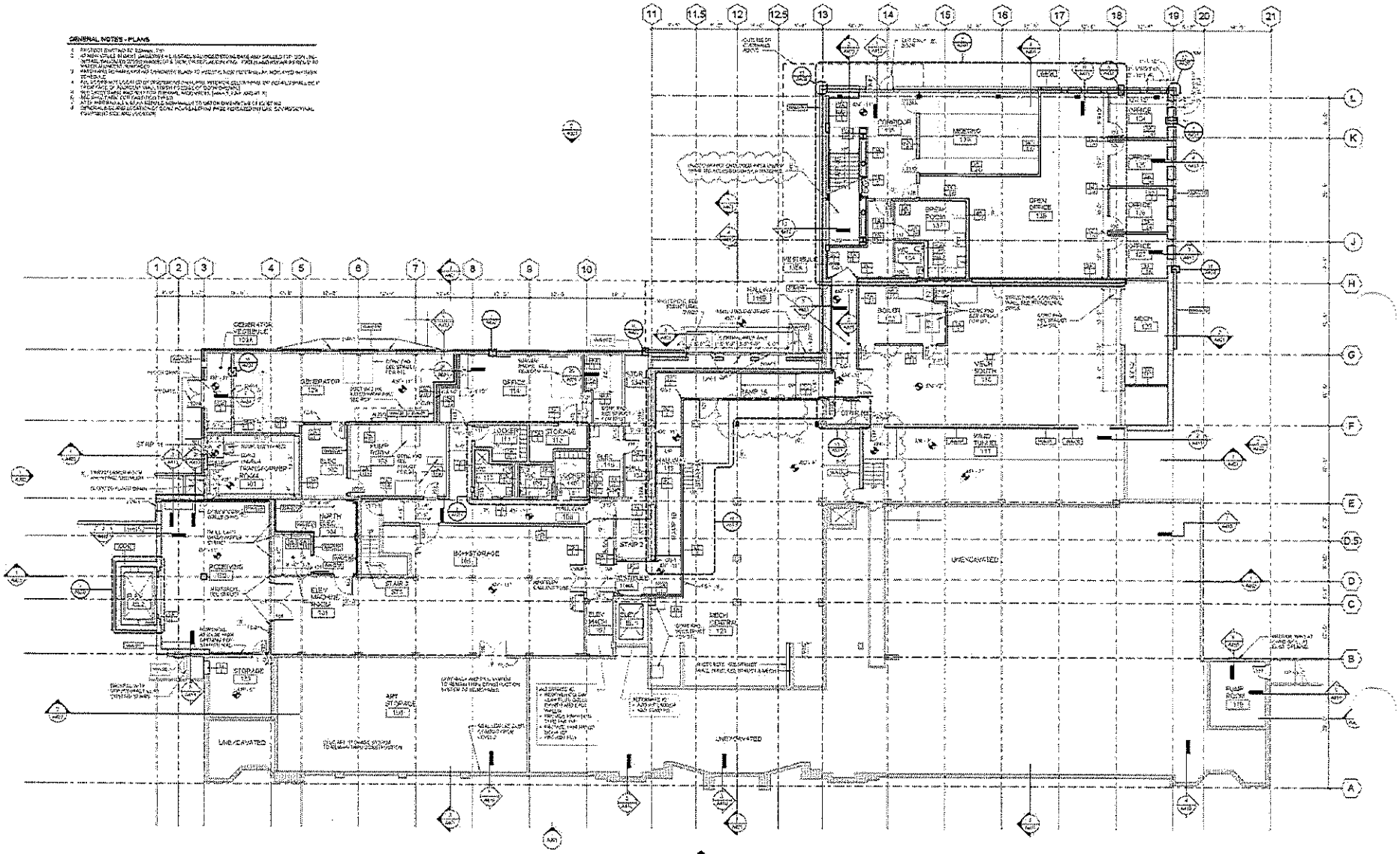
Construction Documents

Site Plan

A200



LEVEL 1 FLOOR PLAN

TRUE NORTH

PLAN NORTH

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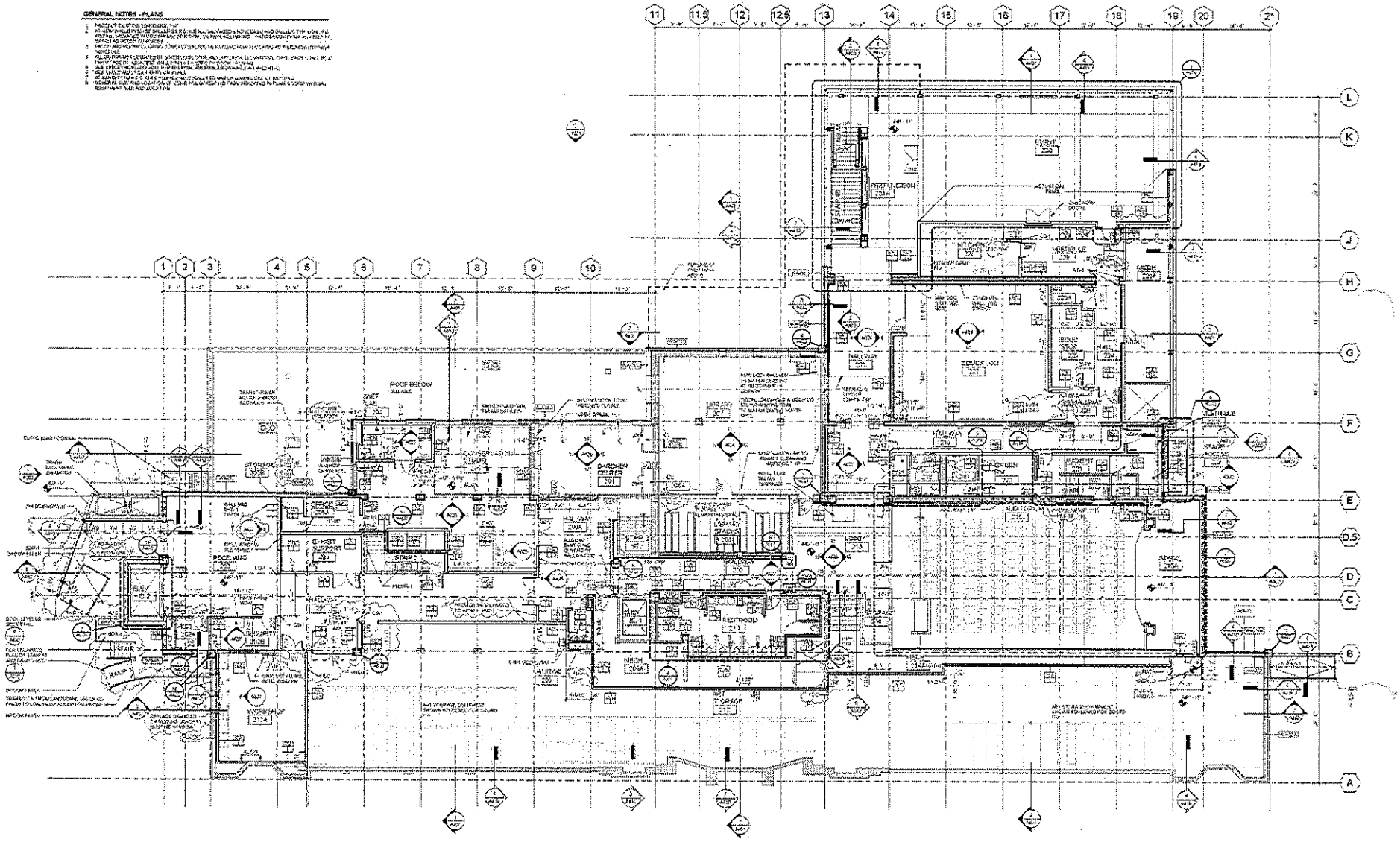
S+M ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Floor Plan - Level 1

A201



LEVEL 2 FLOOR PLAN

TRUE NORTH

PLAN NORTH

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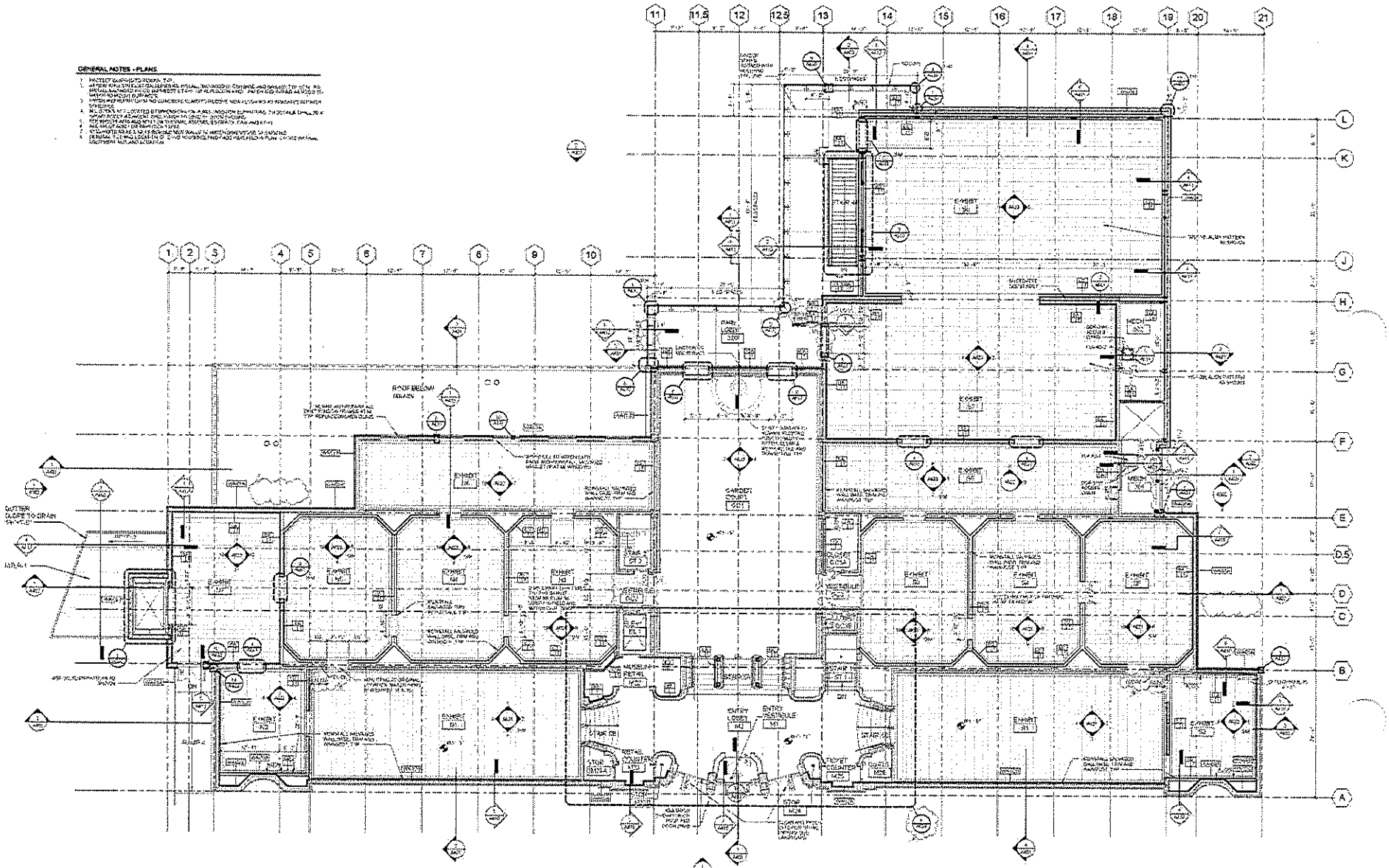
Asian Art Museum Expansion & Renovation

Construction Documents

Floor Plan - Level 2

A202



LEVEL 3 - FLOOR PLAN

TRUE NORTH

PLAN NORTH

0 4' 8' 16' 32'

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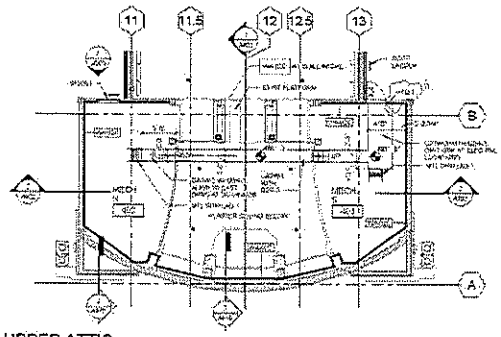
Construction Documents

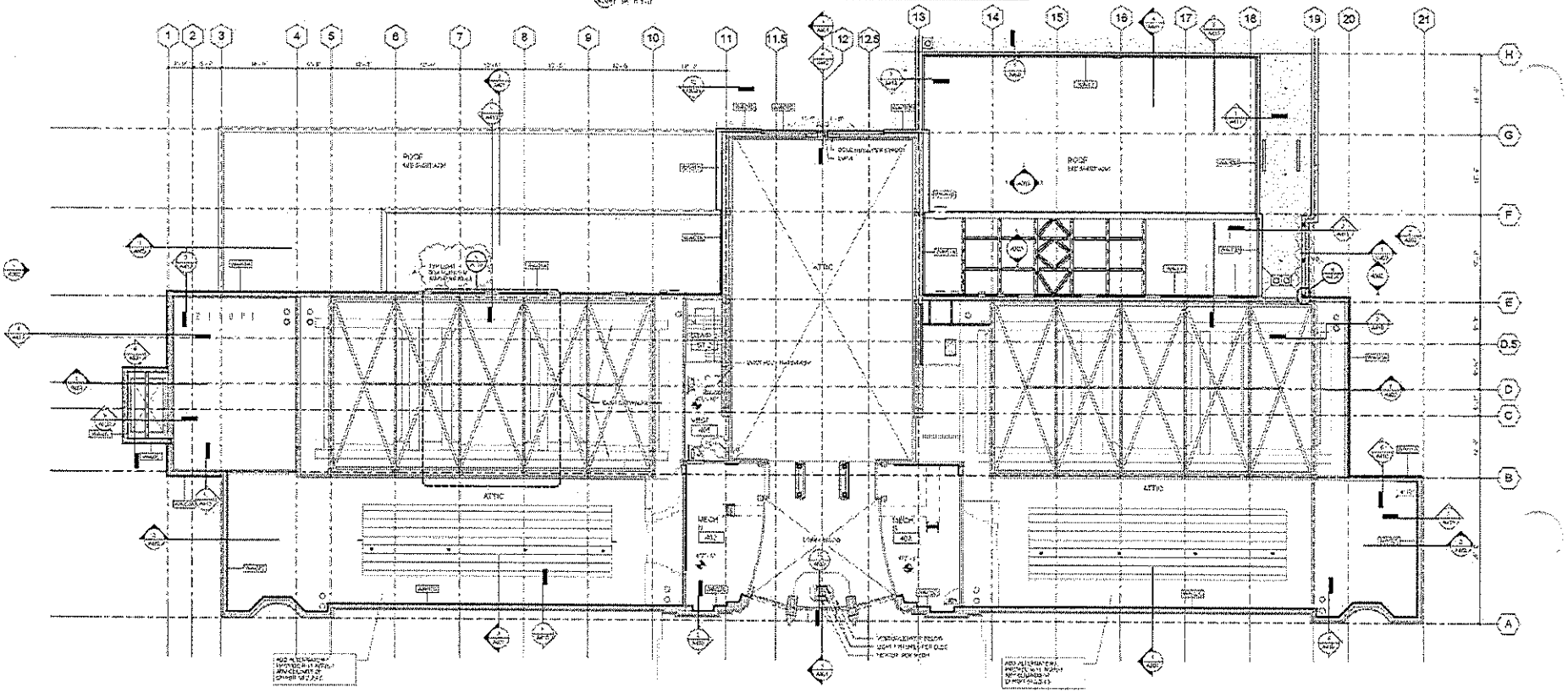
Floor Plan - Level 3

A203

GENERAL NOTES - PLANS



UPPER ATTIC



LEVEL 4 - ATTIC

TRUE NORTH

PLAN NORTH

0' 4' 8' 16' 32'

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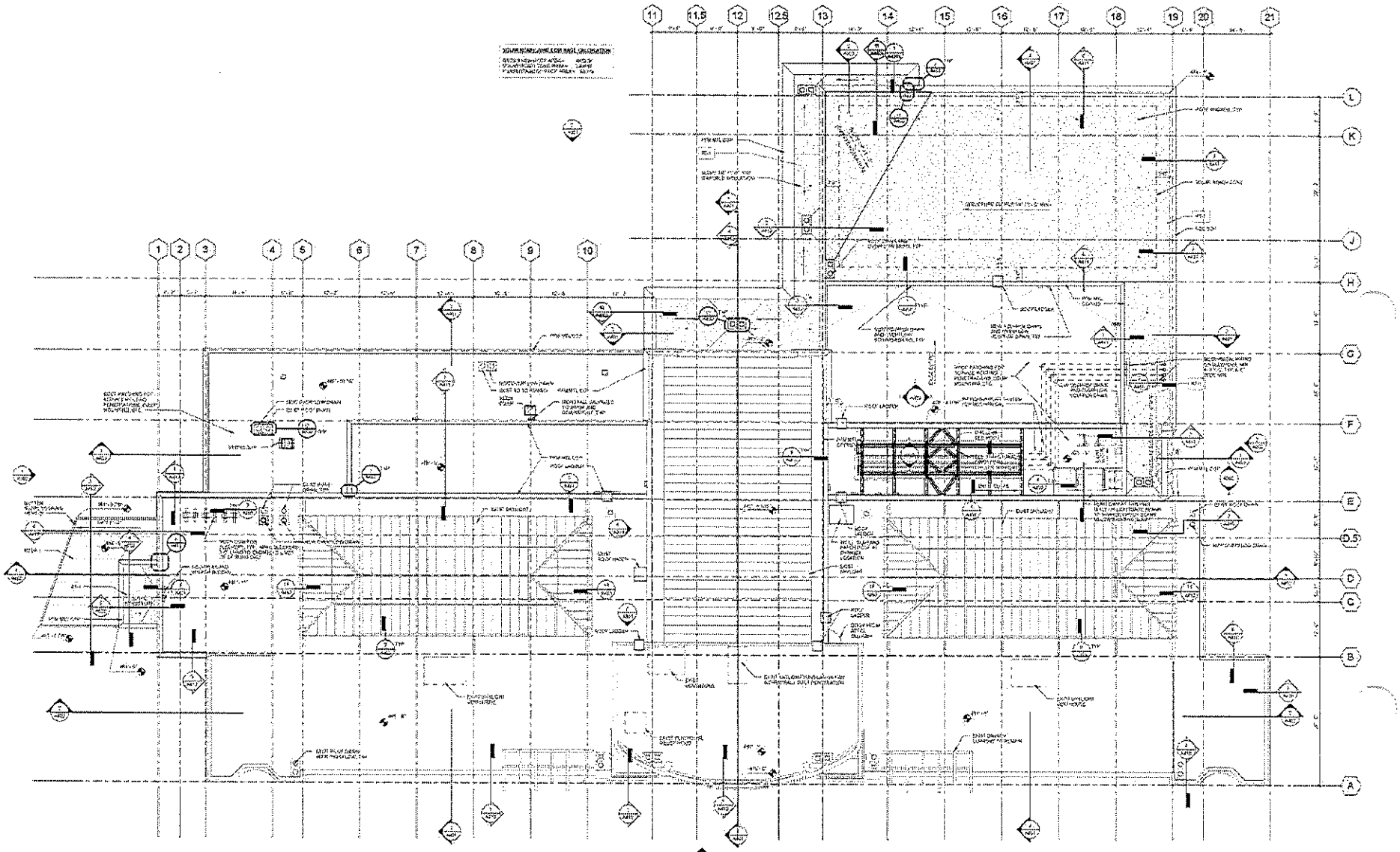
Asian Art Museum Expansion & Renovation

Construction Documents

Floor Plan - Level 4 Mezz/Attic

A204



ROOF PLAN

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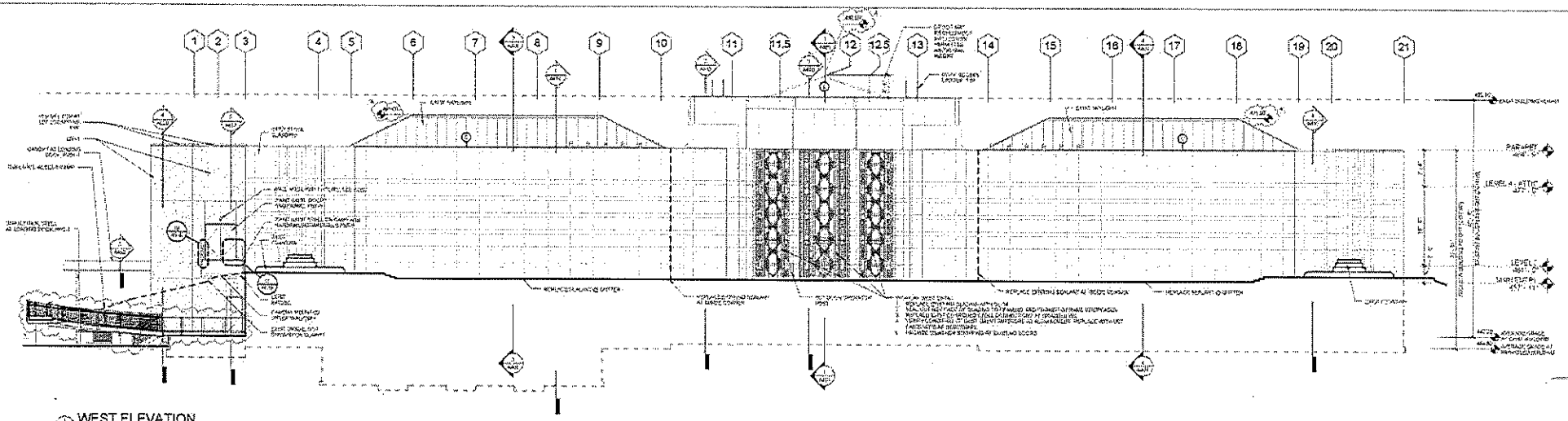
Asian Art Museum Expansion & Renovation

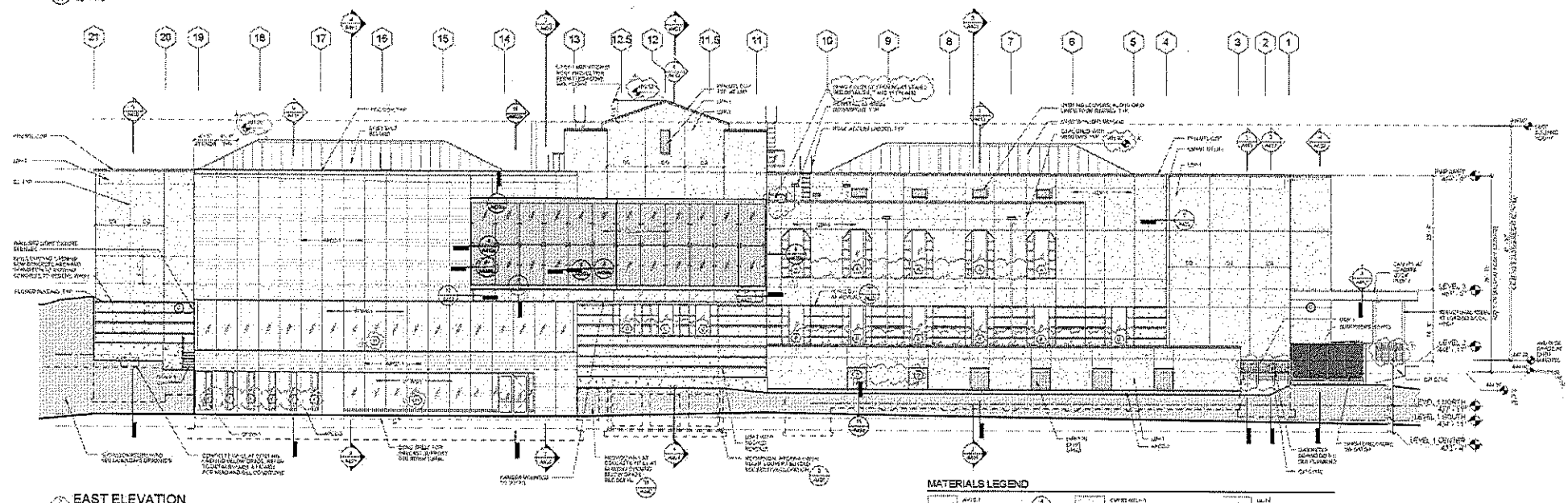
Construction Documents

Roof Plan

A205

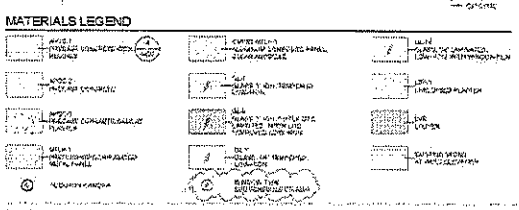


1 WEST ELEVATION



1 EAST ELEVATION

MATERIALS LEGEND



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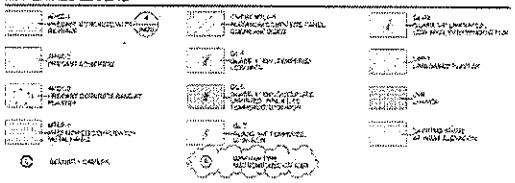
Asian Art Museum Expansion & Renovation

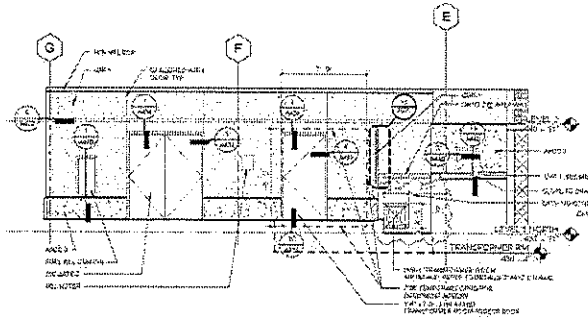
Construction Documents

Elevations - West & East

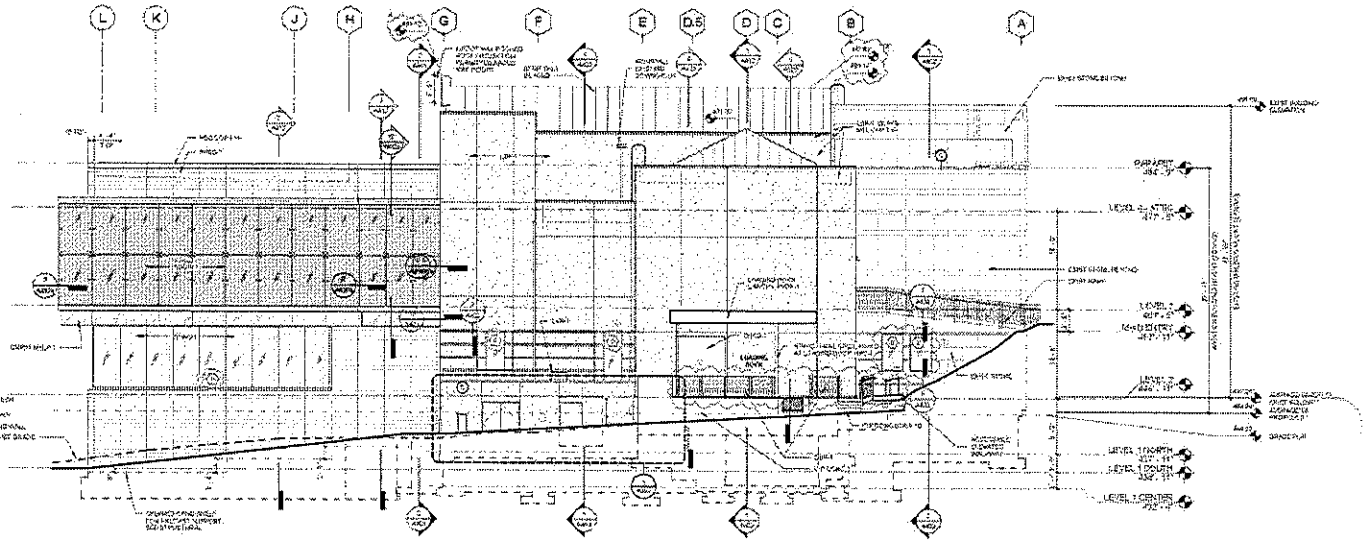
A301

MATERIALS LEGEND

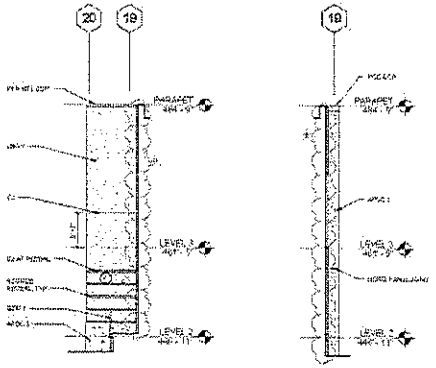




ENLARGED PARTIAL NORTH ELEVATION

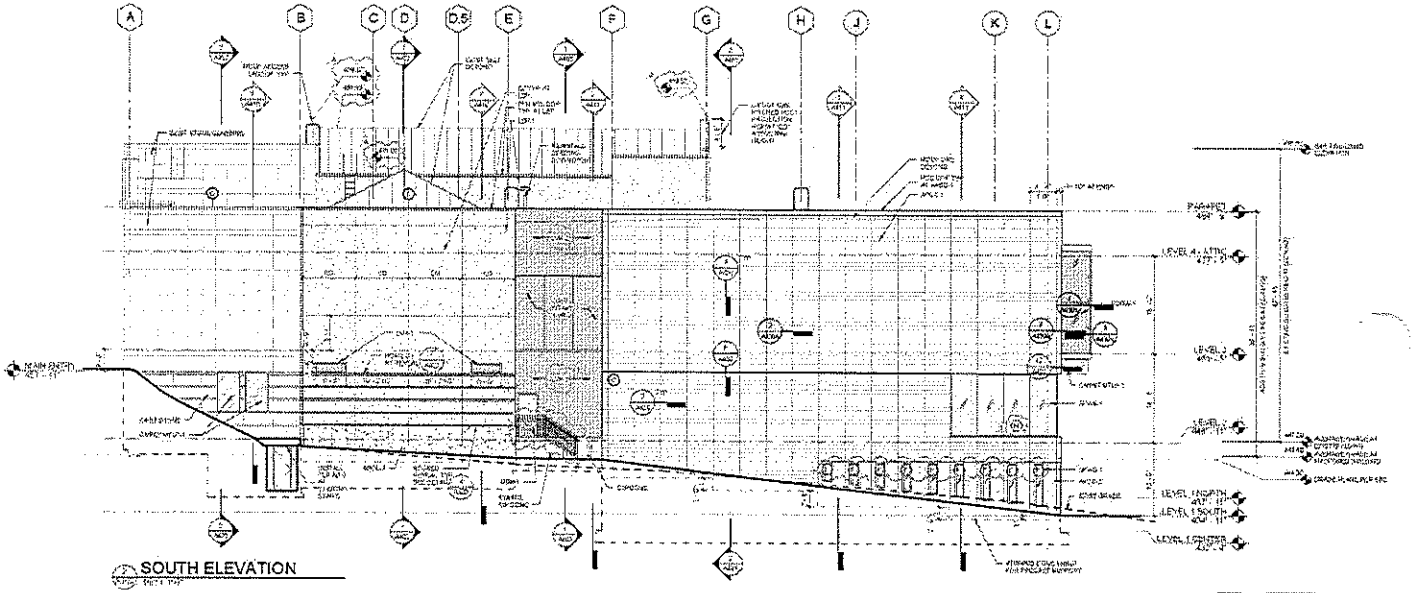


NORTH ELEVATION



EAST ELEVATION - SOUTH EXIT

WEST ELEVATION - SOUTH EXIT



SOUTH ELEVATION

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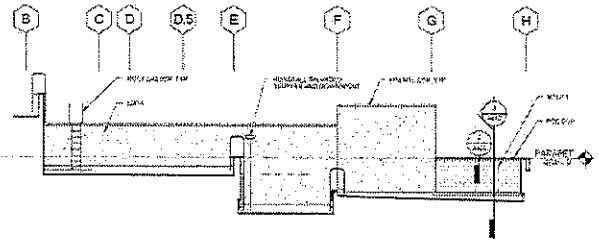
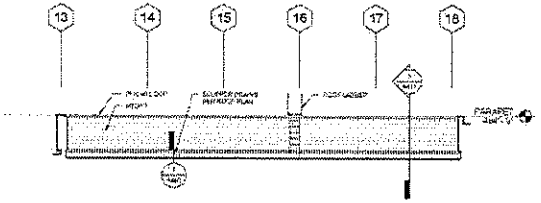
Construction Documents

Elevations - North & South

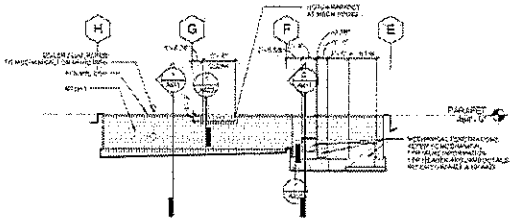
A302



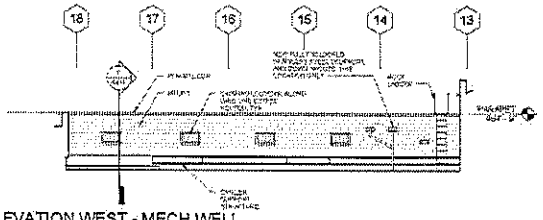
NORTH ELEVATION - MECH WELL



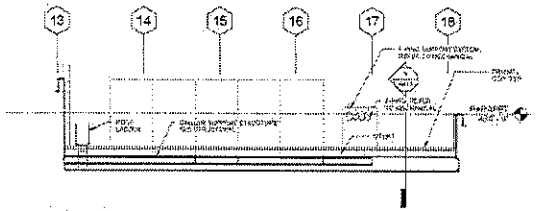
EAST ELEVATION - MECH WELL



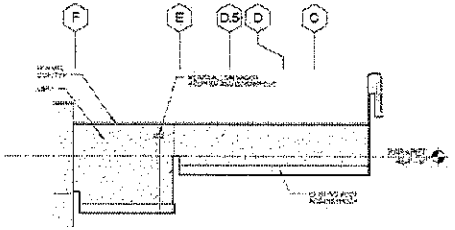
SOUTH ELEVATION - MECH WELL



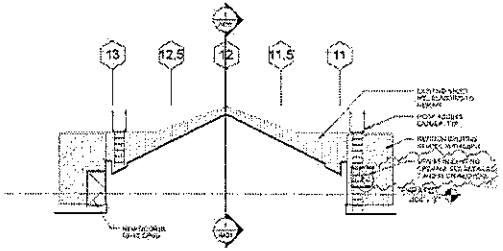
ELEVATION WEST - MECH WELL



ELEVATION EAST - MECH WELL 2

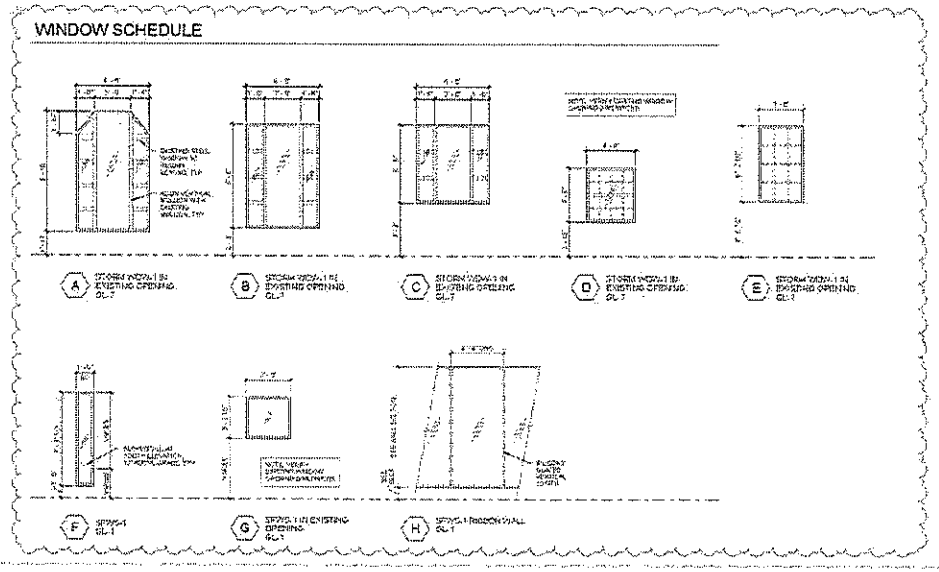


NORTH ELEVATION - GARDEN COURT

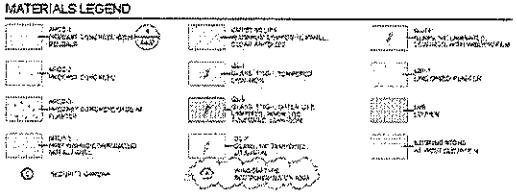


EAST ELEVATION - UPPER ATTIC

WINDOW SCHEDULE



MATERIALS LEGEND



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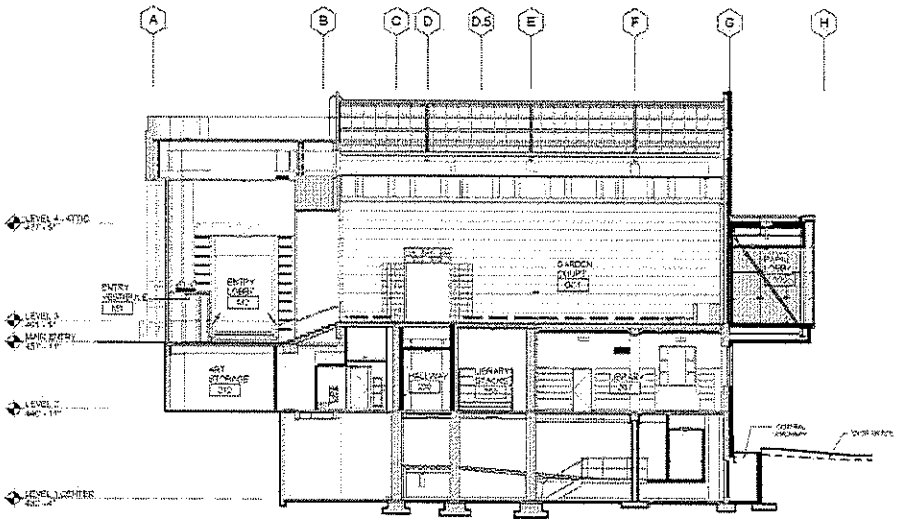
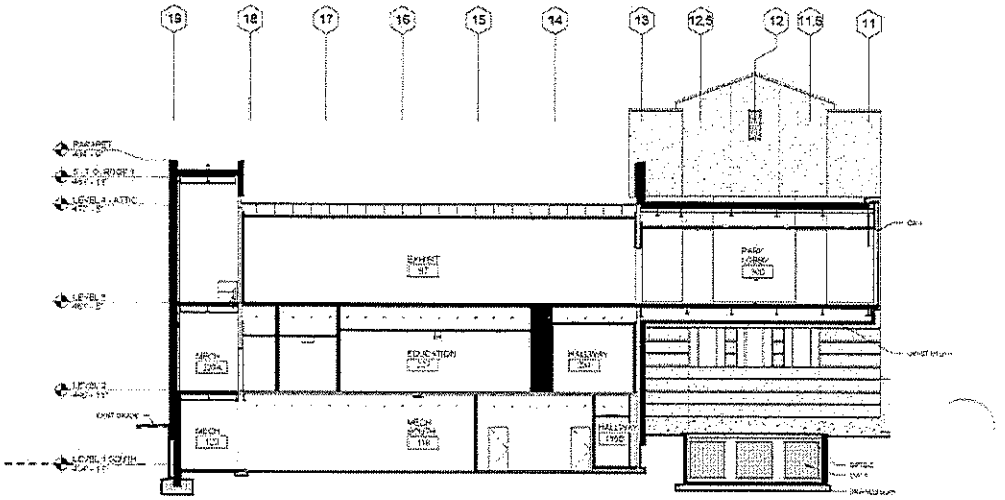
Construction Documents

Elevations - Partial

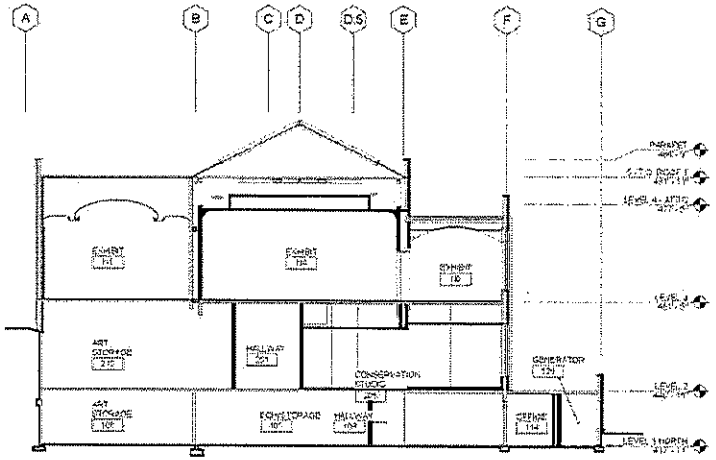
A303



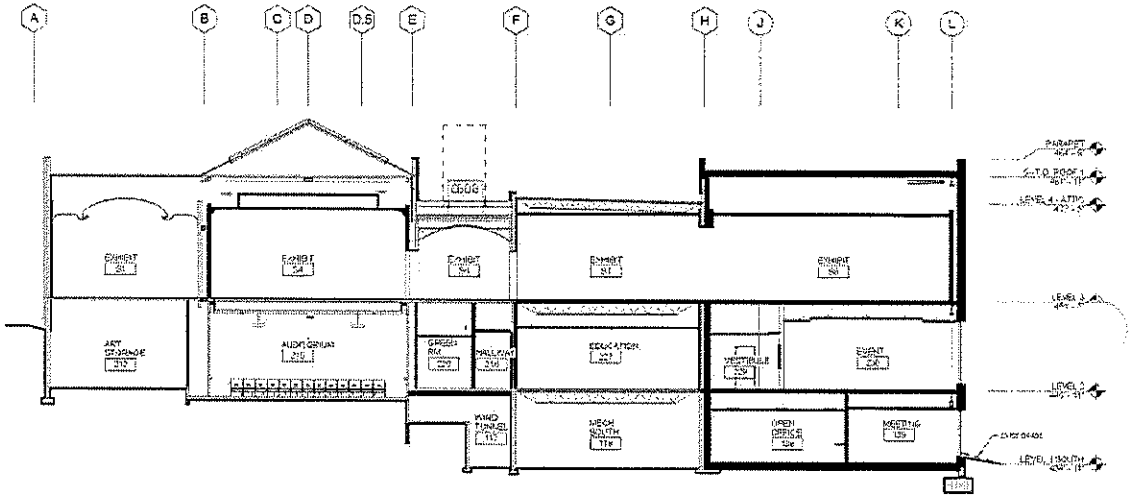
1 EAST - WEST SECTION AT GRID 12



2 EAST - WEST SECTION AT GRID 13.5



3 EAST - WEST SECTION AT GRID 7.5



4 EAST - WEST SECTION AT GRID 16.5

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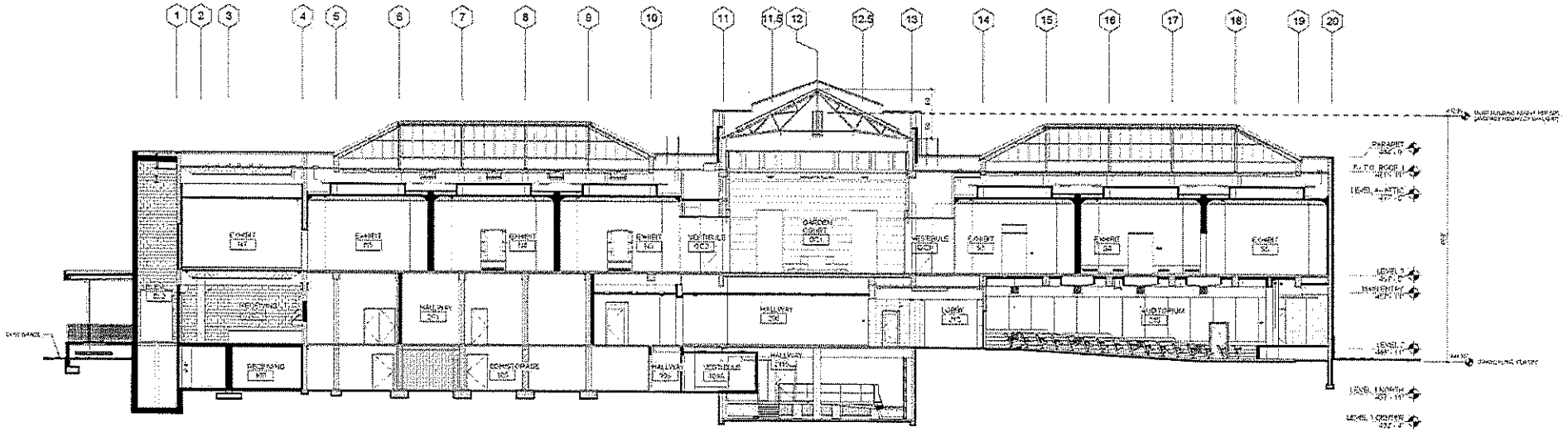
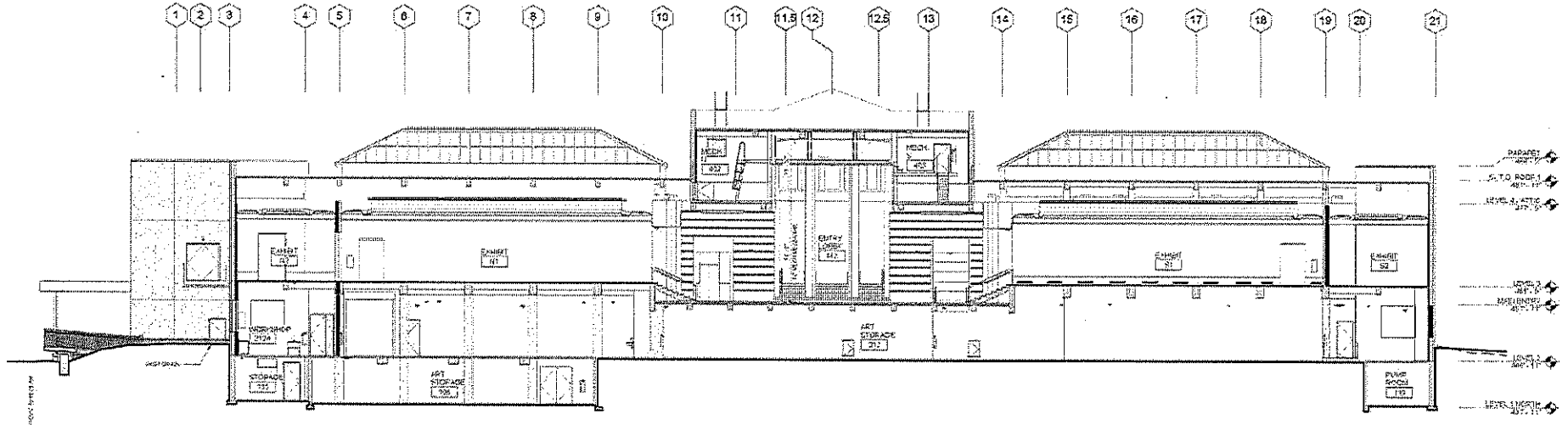
Construction Documents

Building Sections

A401



1 N - S SECTION AT GRID D



1 N - S SECTION AT GRID A.5

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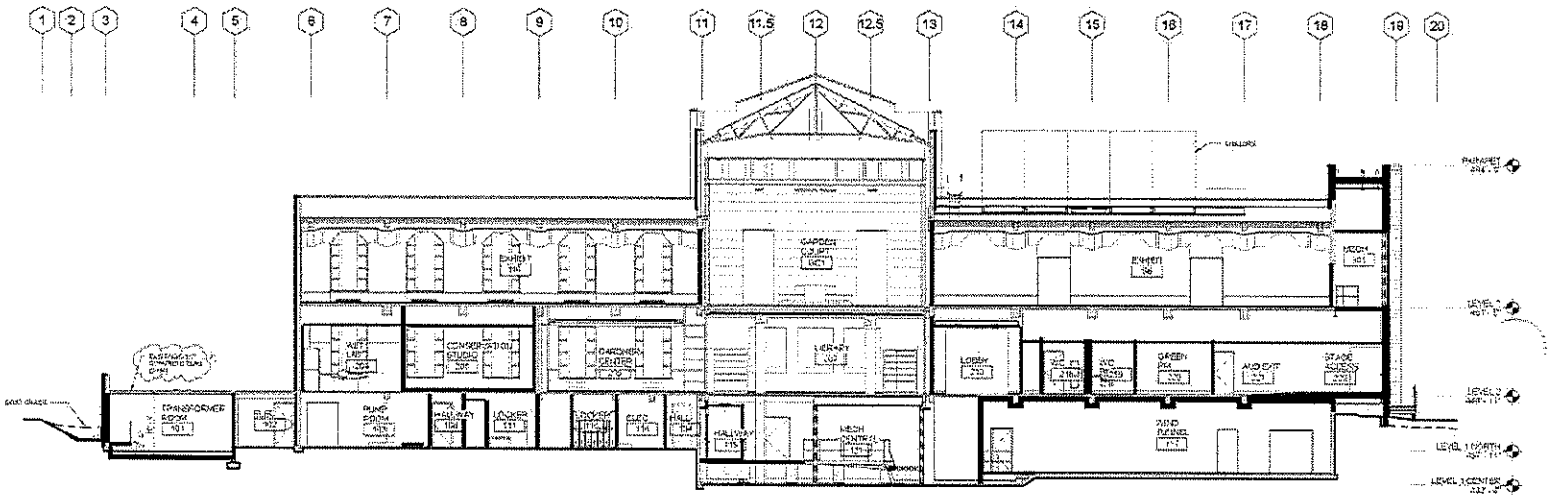
Asian Art Museum Expansion & Renovation

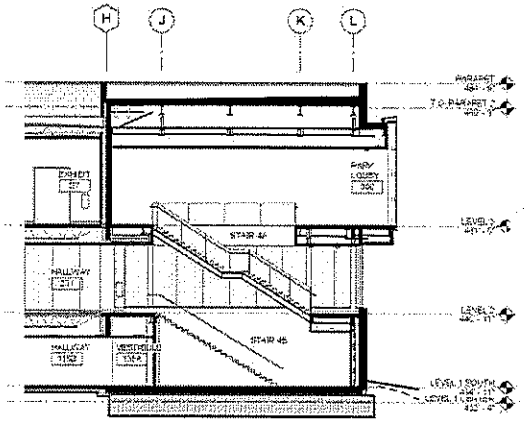
Construction Documents

Building Sections

A402



N - S SECTION AT GRID E.7



E - W SECTION AT GRID 13.4

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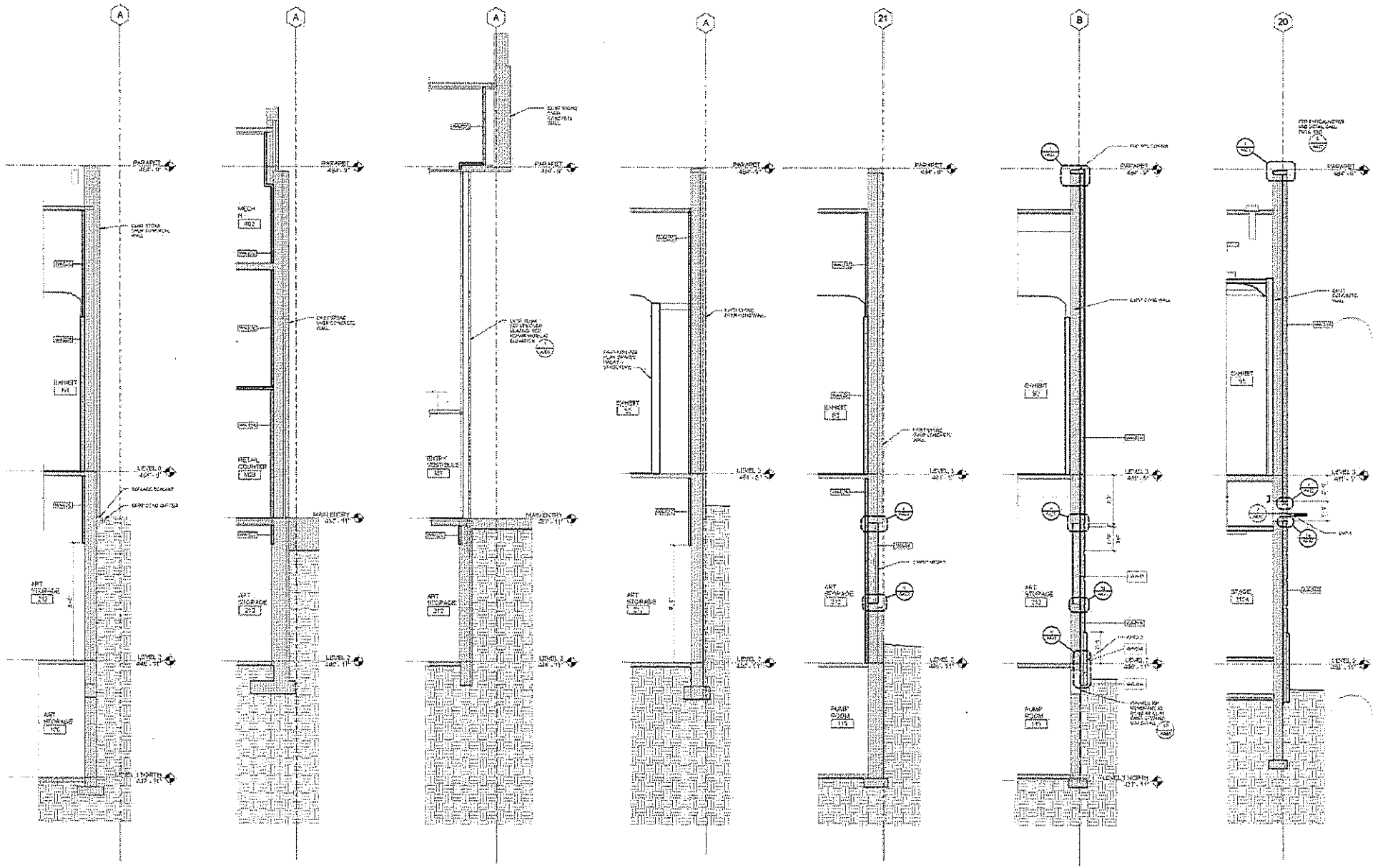
Construction Documents

Building Sections

A403



WS @ 9 LOOKING SOUTH

WS @ 11 LOOKING SOUTH

WS @ 12 LOOKING SOUTH

WS @ 20 LOOKING SOUTH

WS @ B LOOKING EAST

WS @ 20 LOOKING NORTH

WS @ E LOOKING EAST

LMN Architects

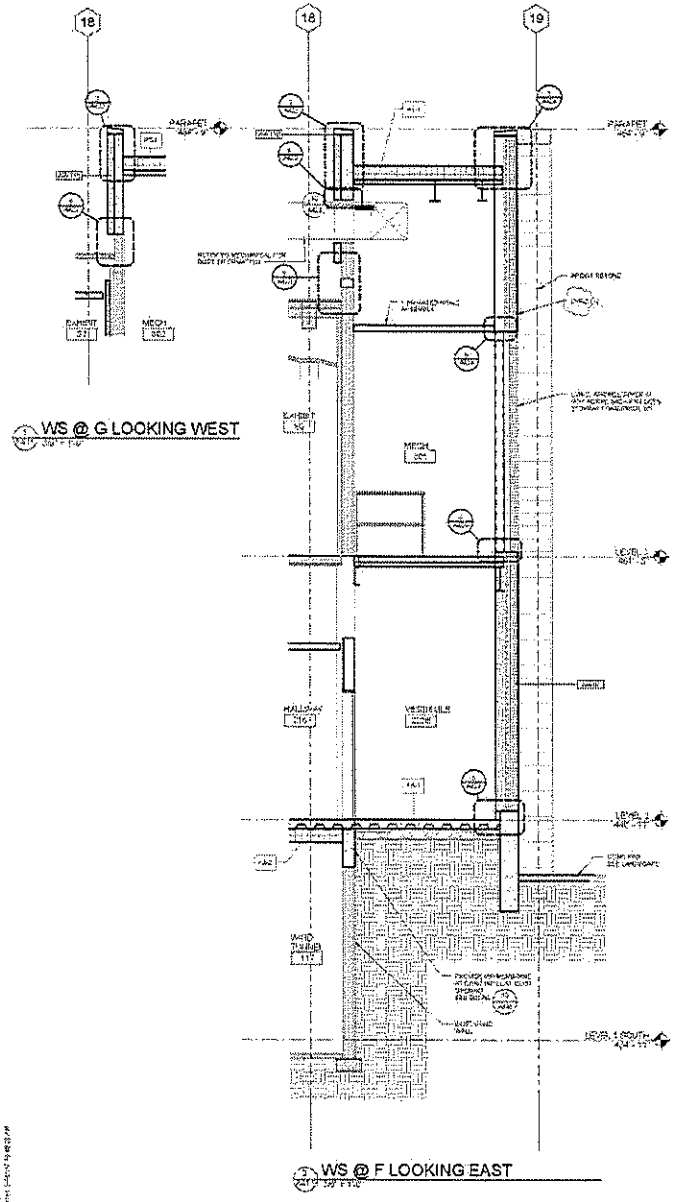
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

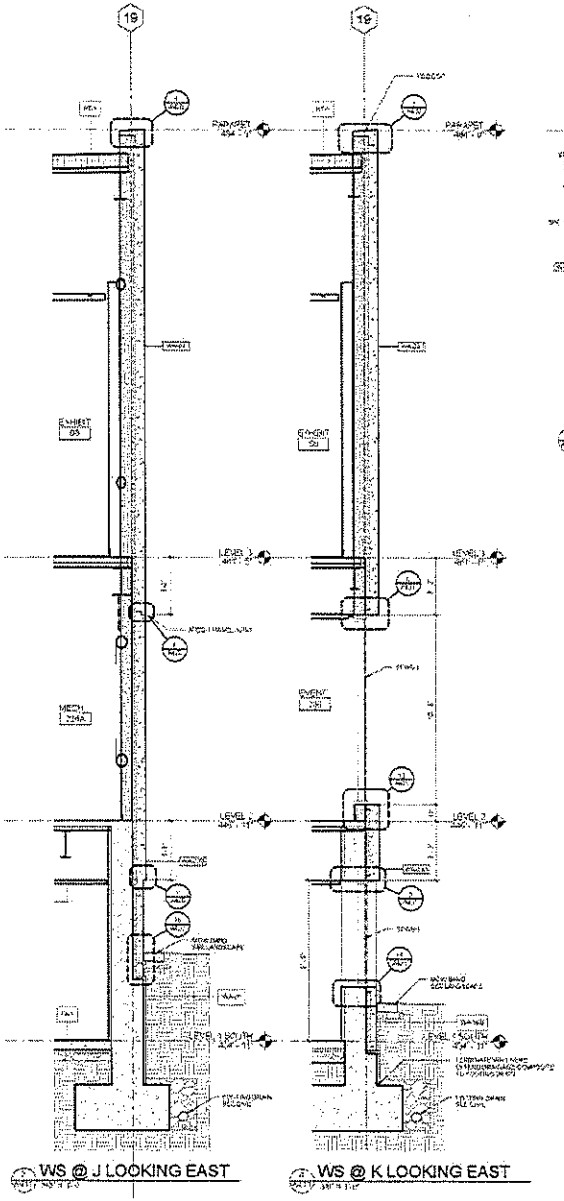
Wall Sections

A410



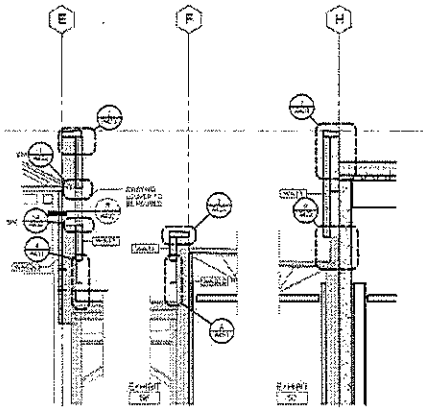
WS @ G LOOKING WEST

WS @ F LOOKING EAST

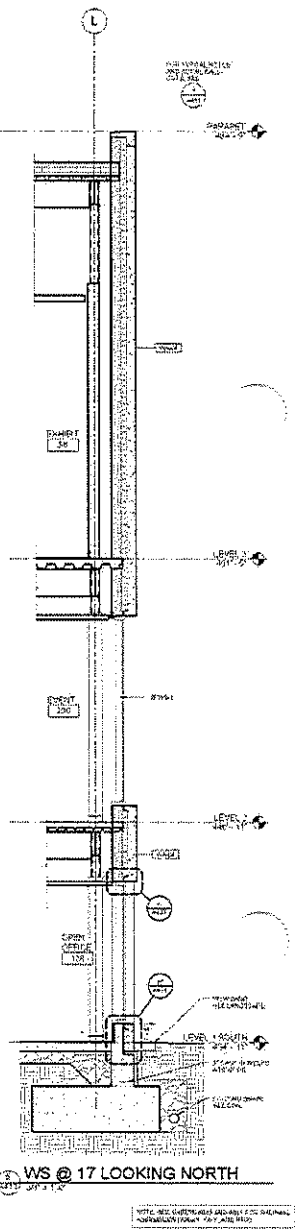


WS @ J LOOKING EAST

WS @ K LOOKING EAST



WS @ 17 LOOKING NORTH



WS @ 17 LOOKING NORTH

LMN Architects

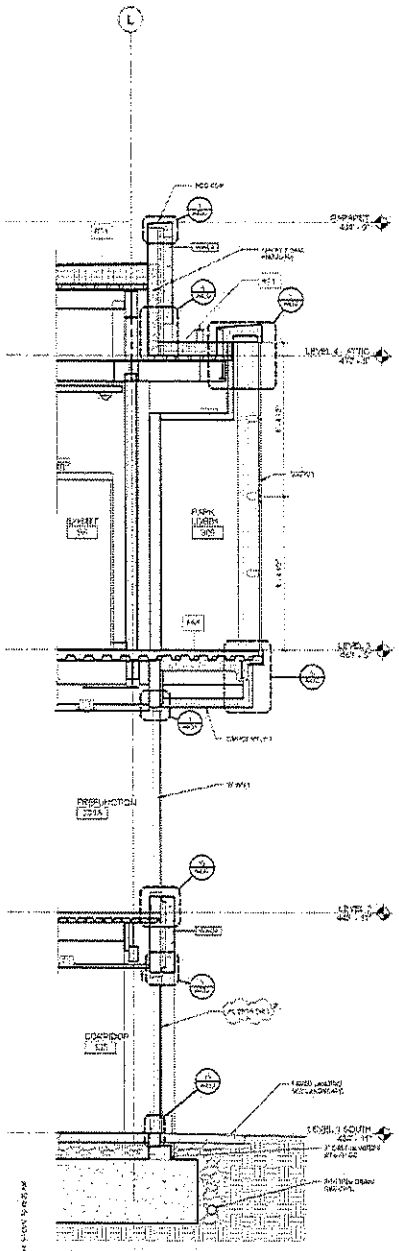
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

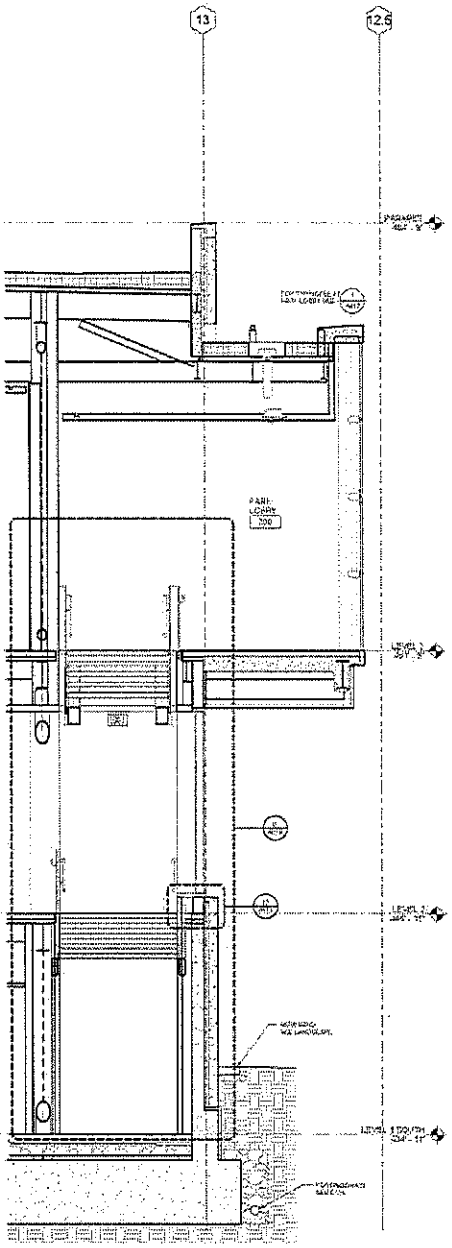
Construction Documents

Wall Sections

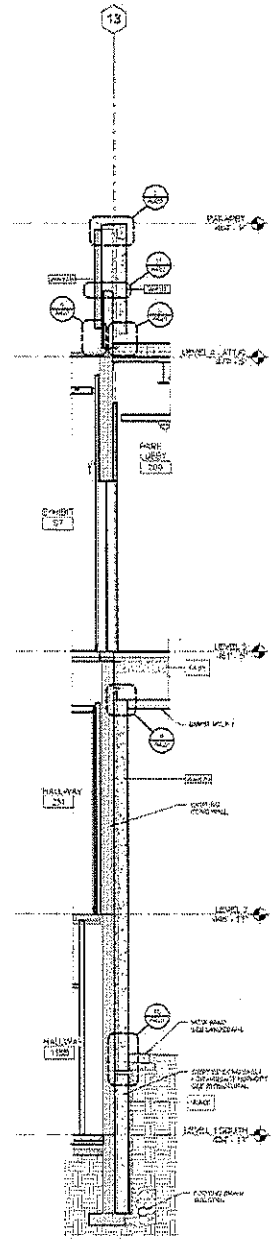
A411



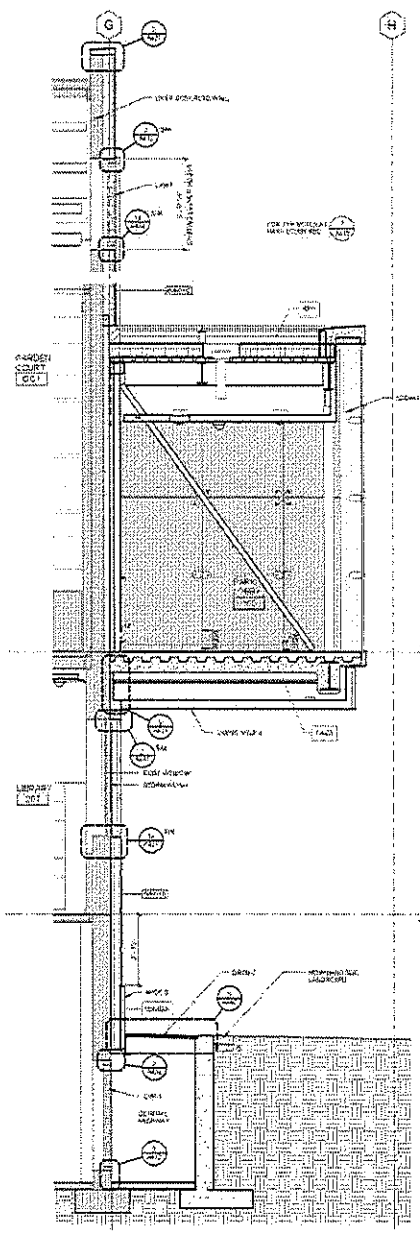
WS @14 LOOKING NORTH



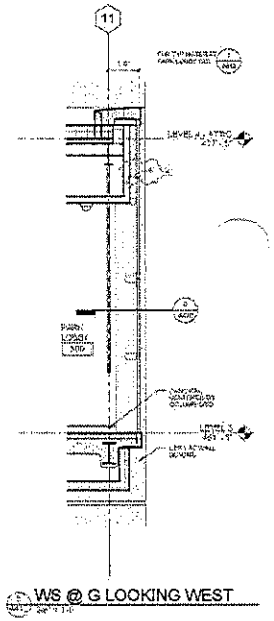
WS @ J LOOKING WEST



WS @ G LOOKING WEST



WS @ 11.5 NORTH



WS @ G LOOKING WEST

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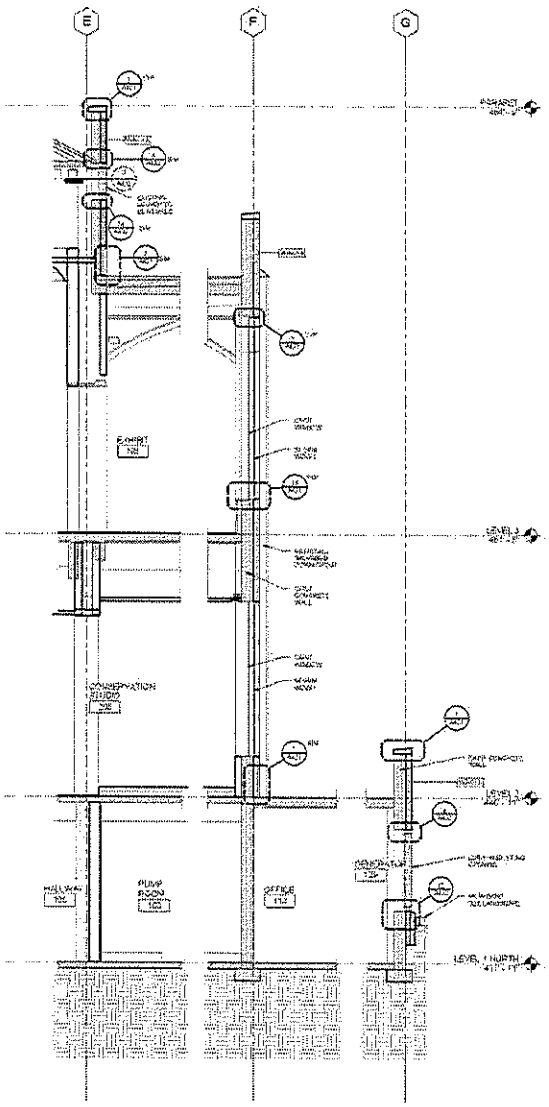
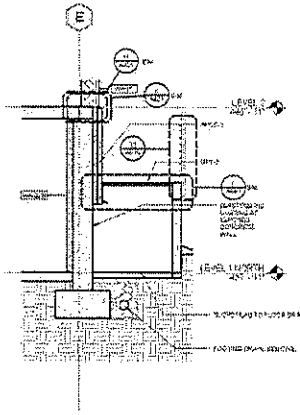
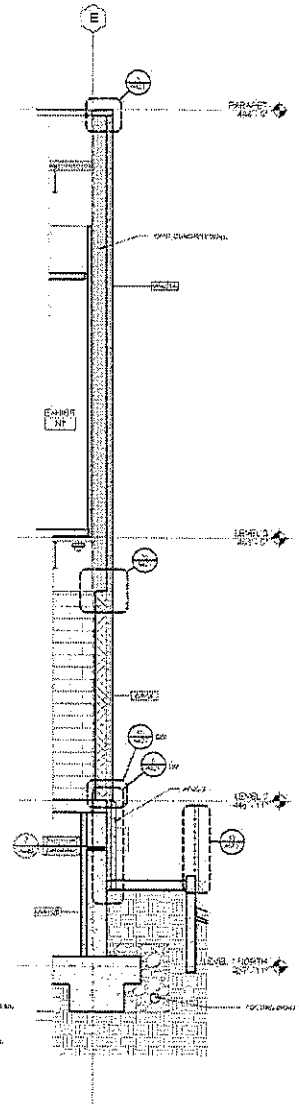
A412



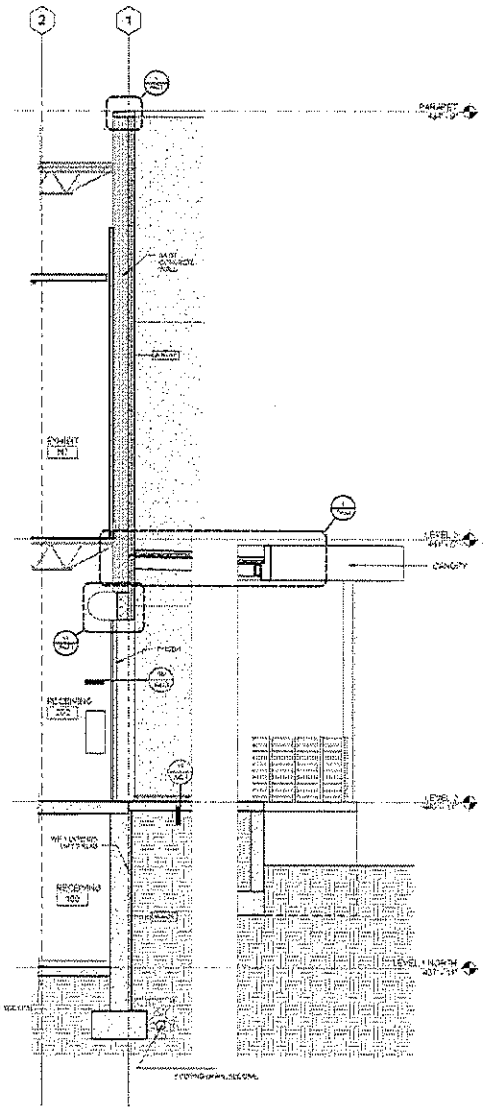
WS @ 7 LOOKING NORTH



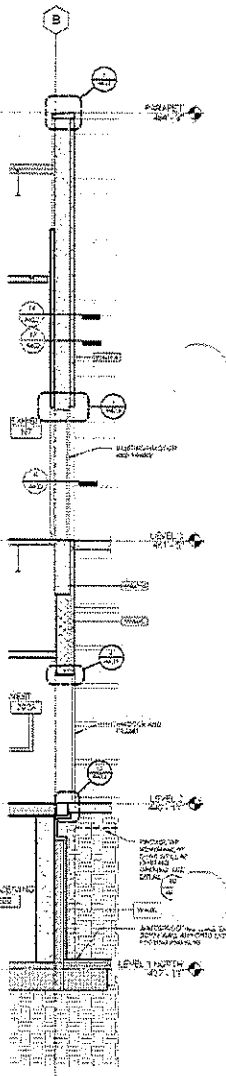
WS @ 1 LOOKING NORTH1



WS @ 1 LOOKING NORTH



WS @ 2 LOOKING WEST



WS @ 3 LOOKING SOUTH

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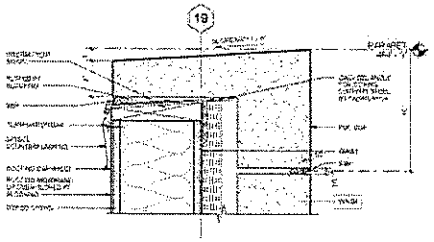
Asian Art Museum Expansion & Renovation

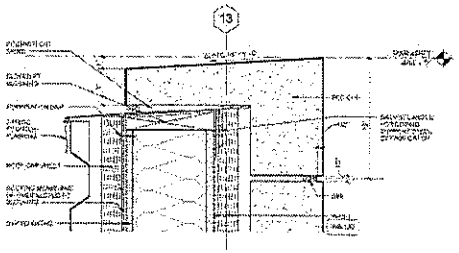
Construction Documents

Wall Sections

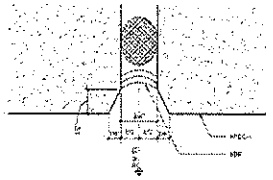
A413



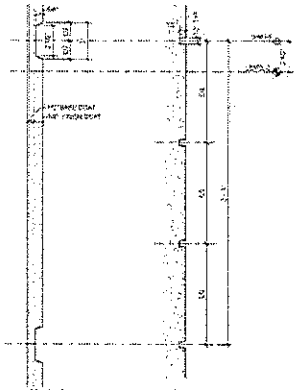
1 PARAPET AT WA-04A



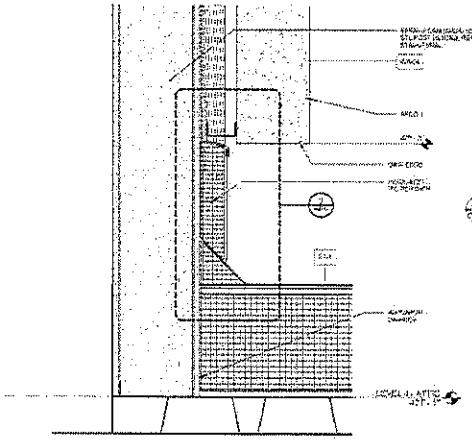
2 LOW ROOF AT WA-04 & WA-13



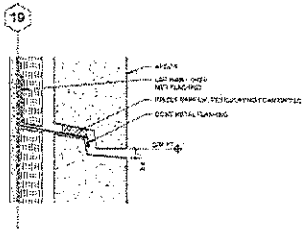
3 PRECAST PANEL JOINT, TYP.



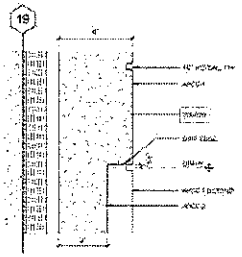
4 HORIZONTAL SCORE PATTERNS



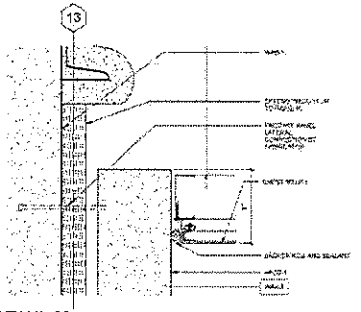
5 WA-04A AT PARAPET



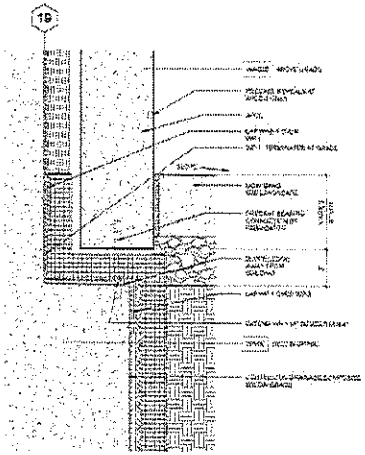
6 APCC HORIZ PANEL JOINT



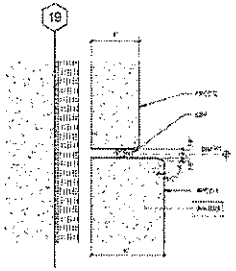
7 SECTION AT PRECAST SETBACK



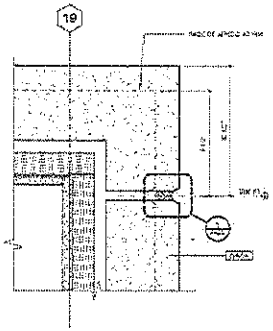
8 SOFFIT AT WA-03



9 BASE OF WA-03



10 PLAN AT PRECAST SETBACK



11 PLAN - WA-04A CORNER DETAIL

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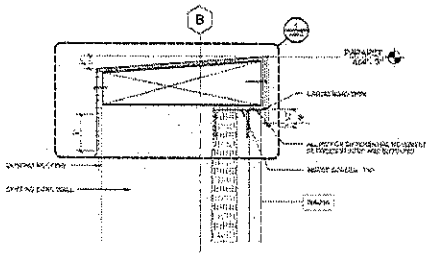
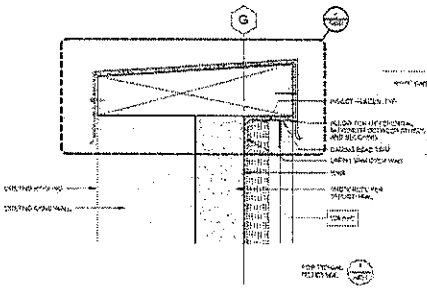
Exterior Details - Precast Cladding

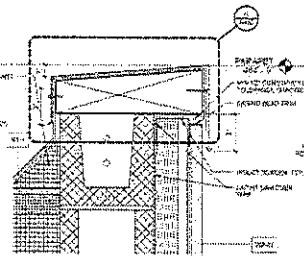
A420



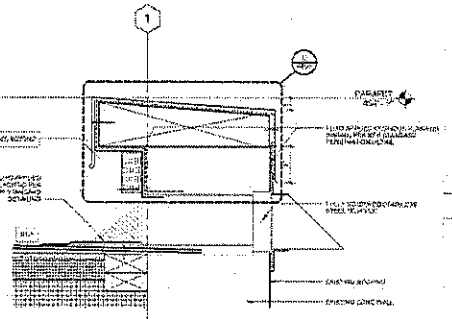
1 WA-01A PARAPET AT ROOF



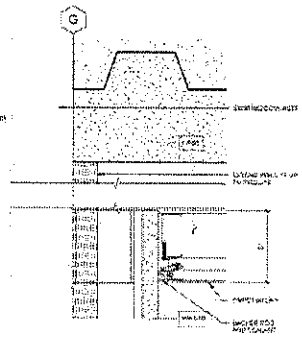
2 WA-01C PARAPET AT SHOTCRETE



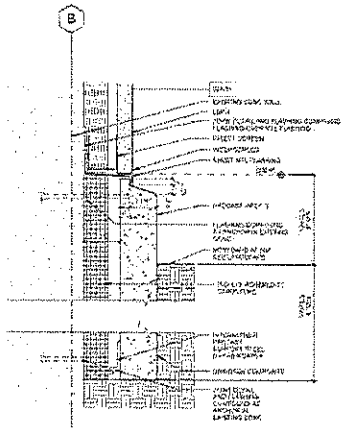
3 WA-05 PARAPET AT ROOF W/CMU



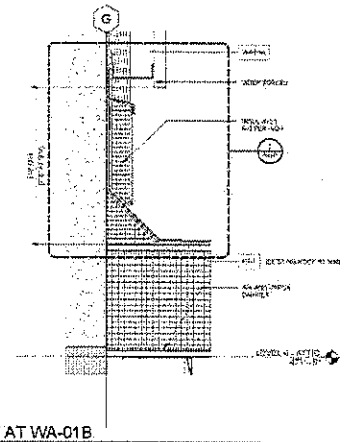
4 EXISTING CONCRETE PARAPET AT SCUPPER



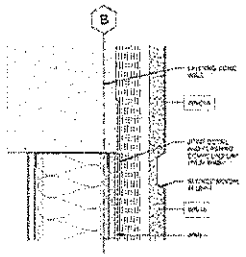
5 SOFFIT AT WA-01B



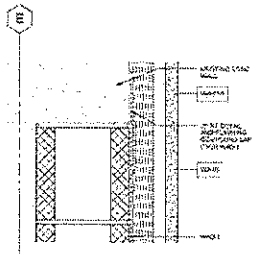
1 WA-01A AT GRADE



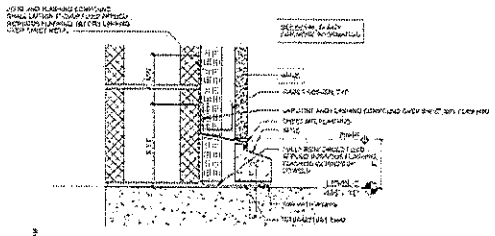
2 ROOF AT WA-01B



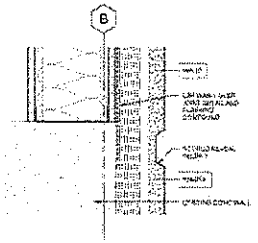
3 MET STUD INFILL AT LBP - HEAD/JAMB



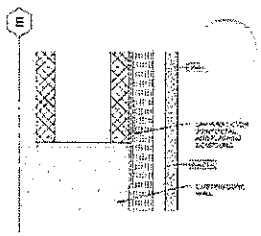
4 CMU INFILL AT LBP - HEAD/JAMB



1 LBP AT CONC WALK



2 MET STUD INFILL AT LBP - SILL



3 CMU INFILL AT LBP - SILL

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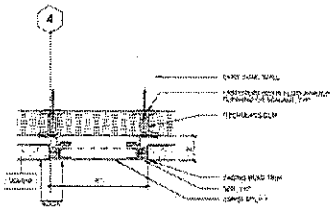
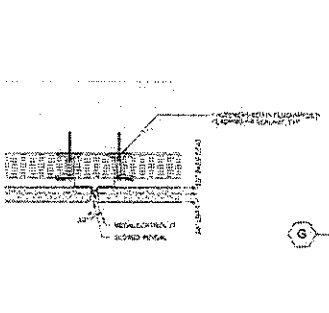
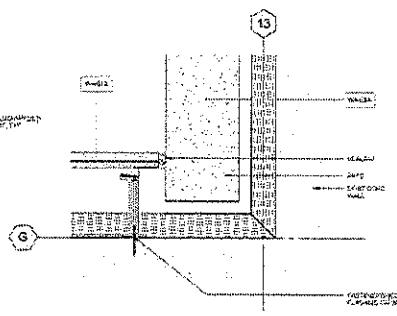
A421



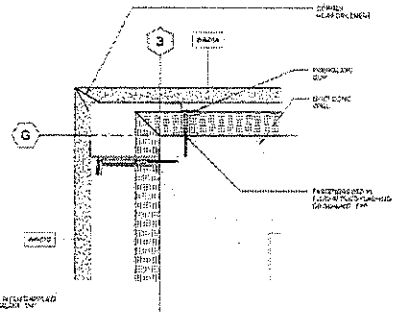
CMPST MTLP-1 TRANSITION



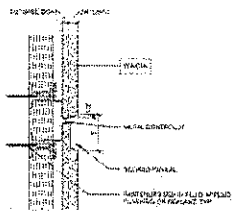
LBP CONTROL JT, TYP



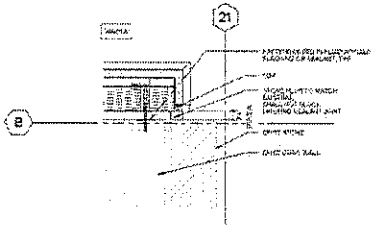
PLAN - LBP TO APCC INSIDE CORNER



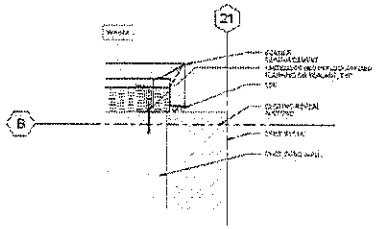
PLAN - LBP OUTISDE CORNER



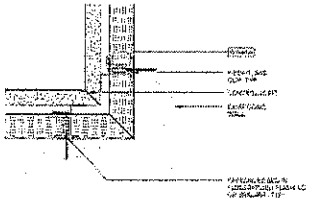
LBP CONTROL JT AT REVEAL



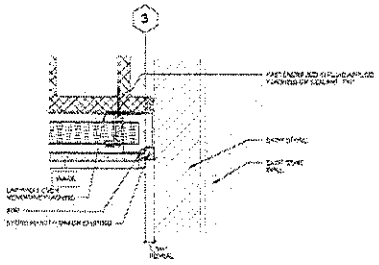
PLAN - LBP OUTSIDE CORNER AT STONE REVEAL



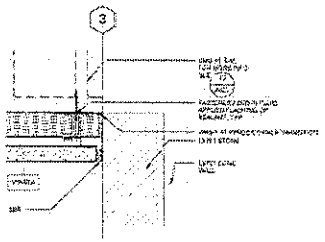
PLAN - LBP OUTSIDE CORNER AT STONE



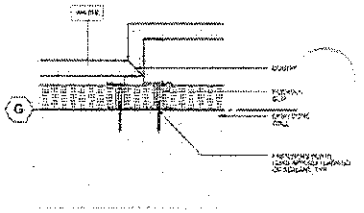
PLAN - WA-01A INSIDE CORNER



PLAN - LBP INSIDE CORNER AT STONE REVEAL



PLAN - LBP INSIDE CORNER AT STONE



PLAN - LBP STEP

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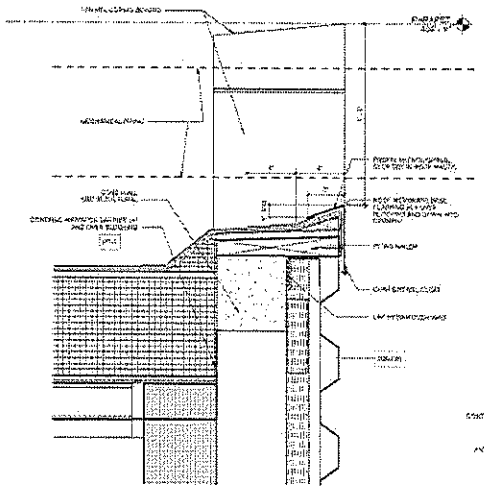
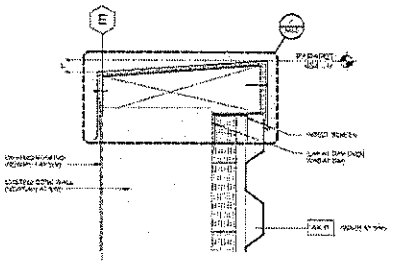
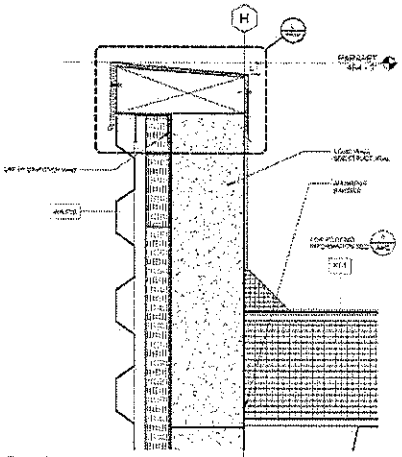
A422



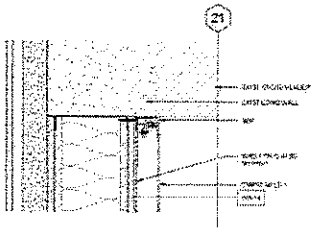
PARAPET AT COPING NOTCH



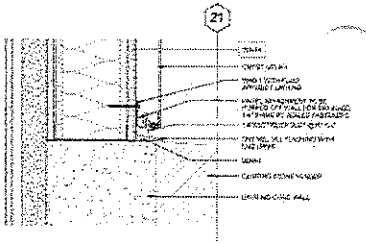
PARAPET AT WA-13



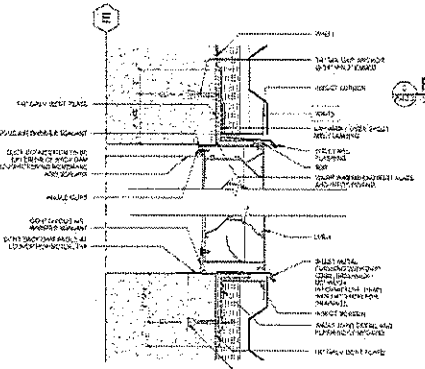
ROOF AT WA-13



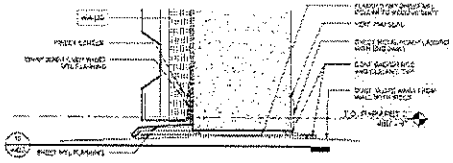
MTLP INFILL HEAD (JAMB SIM)



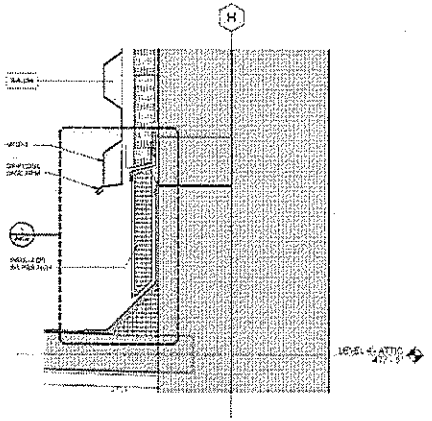
MTLP INFILL SILL



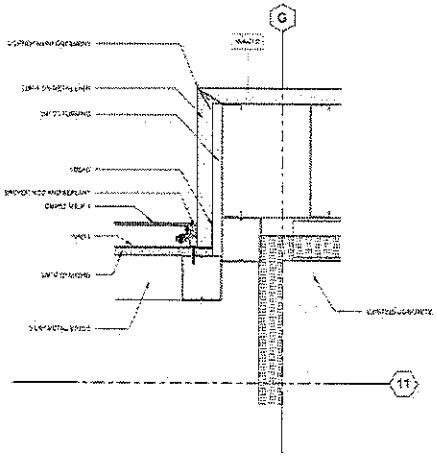
LVR-1 AT WA-13



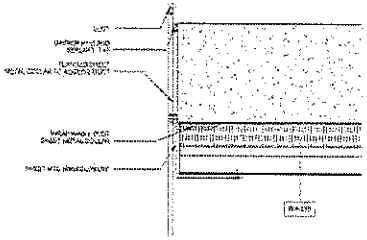
MECH DUCT PENETRATION HEADER



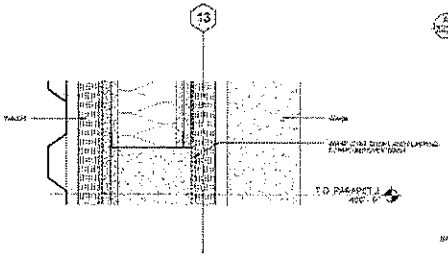
WA-13 AT ROOF



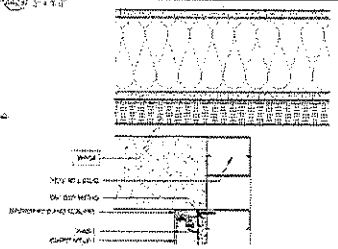
PLAN - CORNER AT CMPST MTLP-1 AND LBP-1



MECH DUCT PENETRATION JAMB



DETAIL - CONCRETE TO STUD TRANSITION



PLAN - CORNER @ APCC-1 AND CMPST MTLP-1

LMN Architects

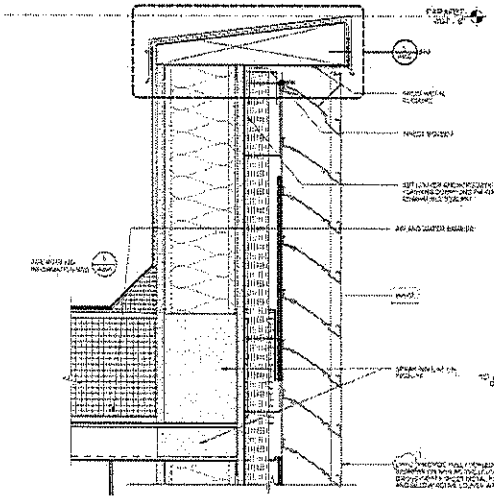
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

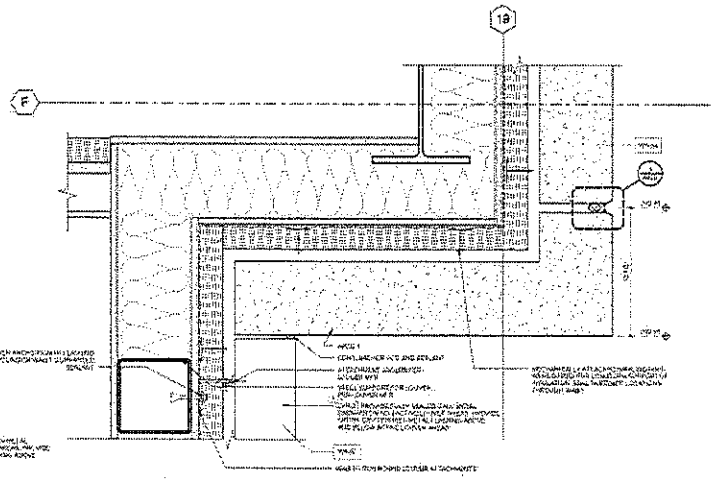
Construction Documents

Exterior Details - Metal Cladding

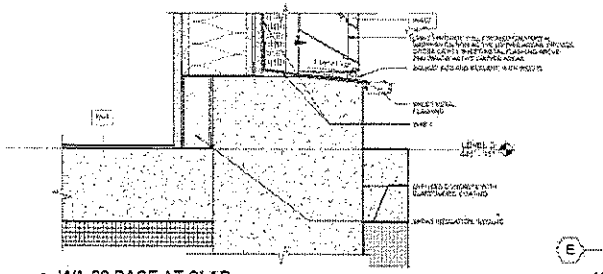
A423



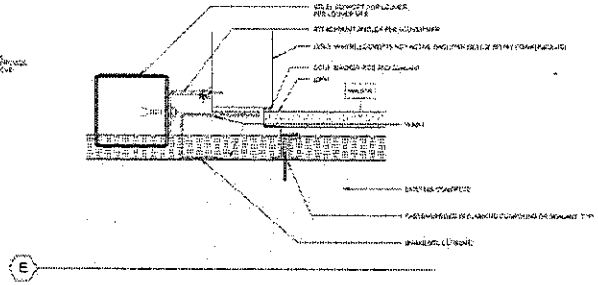
1 WA-07 PARAPET



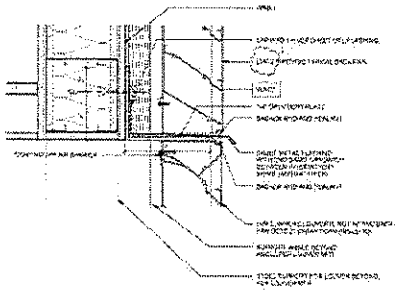
2 WA-07 TO WA-04A



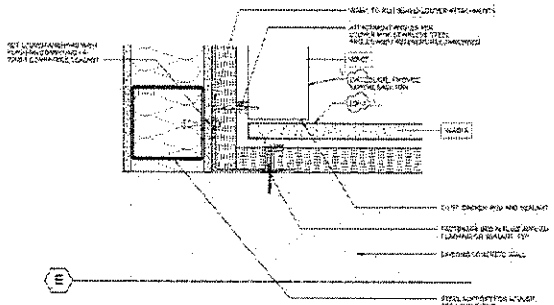
3 WA-08 BASE AT SLAB



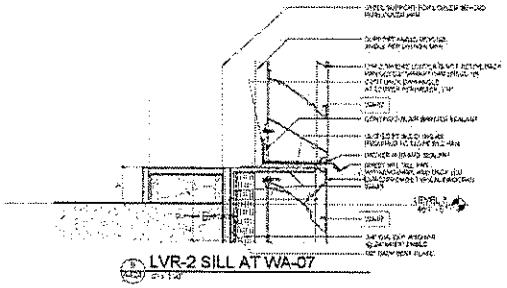
4 WA-07 TO WA-01A



5 LVR-2 HEAD @ WA-07



6 WA-07 TO WA-01A1



7 LVR-2 SILL AT WA-07

LMN Architects

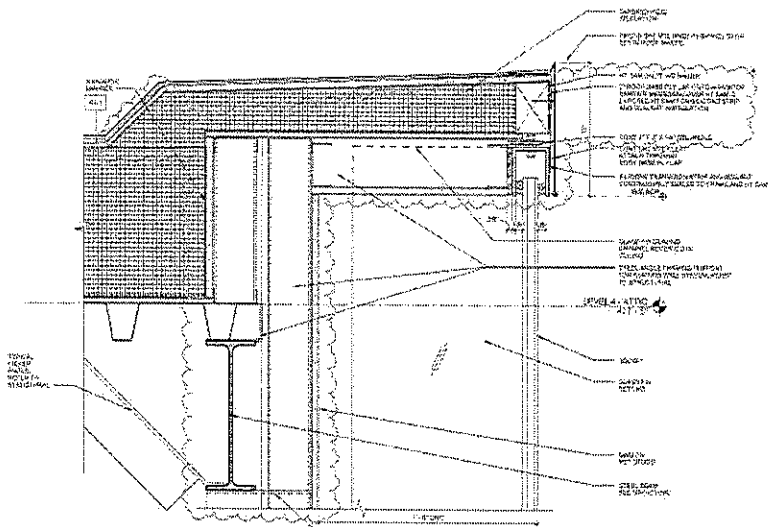
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

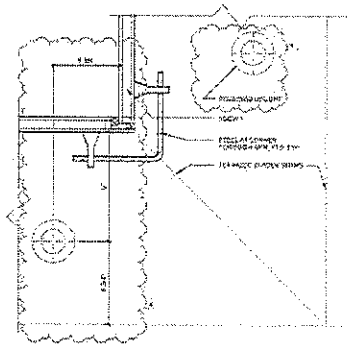
Construction Documents

Exterior Details - Metal Louver Cladding

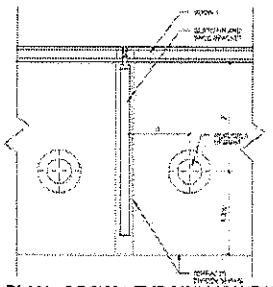
A424



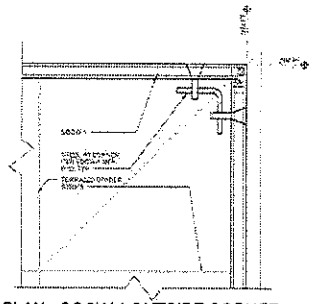
1 PARAPET AT SGCW-1



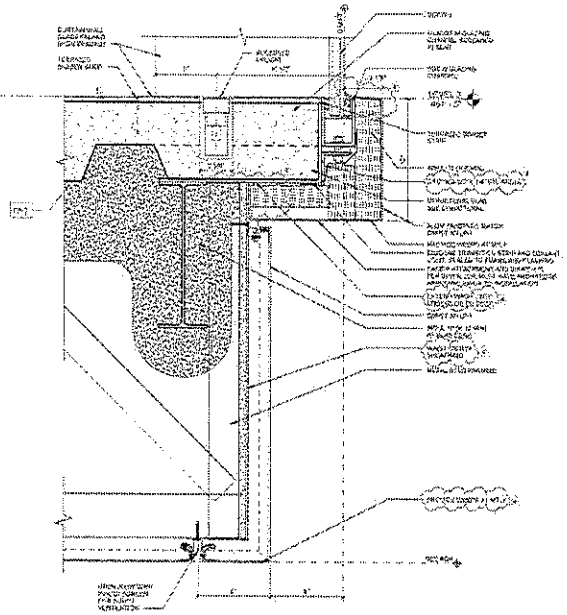
2 PLAN - SGCW-1 AT INSIDE CORNER



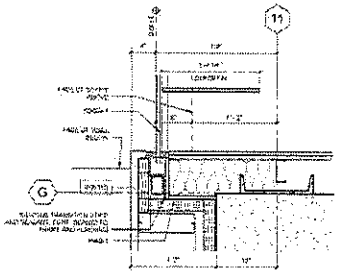
3 PLAN - SGCW-1 TYP MULLION/FIN



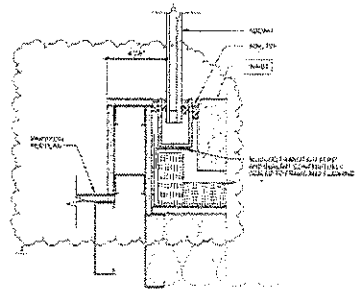
4 PLAN - SGCW-1 OUTSIDE CORNER



5 SOFFIT AT SGCW-1



6 PLAN - SGCW-1 AT LBP



7 PLAN - SGCW-1 AT L/14

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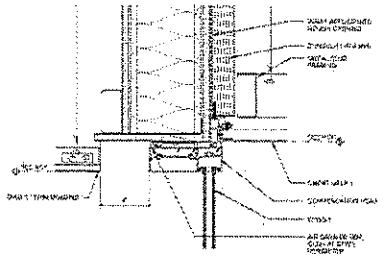
Asian Art Museum Expansion & Renovation

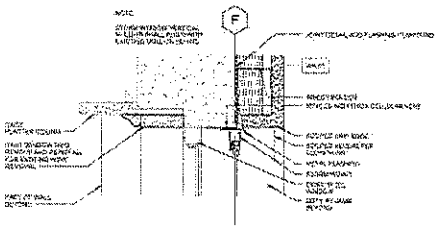
Construction Documents

Exterior Details - Curtain Wall

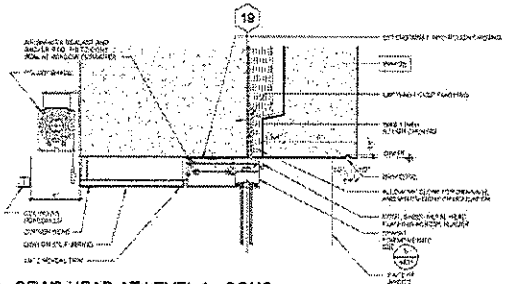
A430



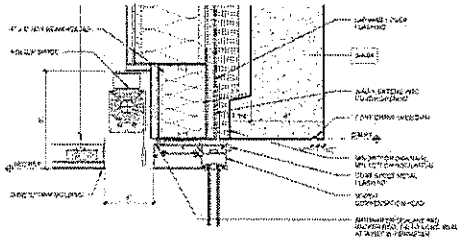
SFWS-1 AT PREFUNCTION 231A



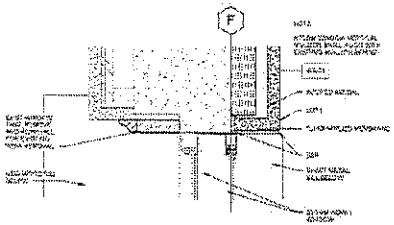
STORM WDW HEAD



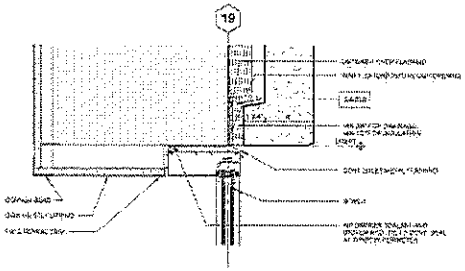
SFWS HEAD AT LEVEL 1 - CONC



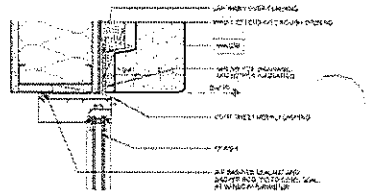
SFWS-1 HEAD AT EVENT 230



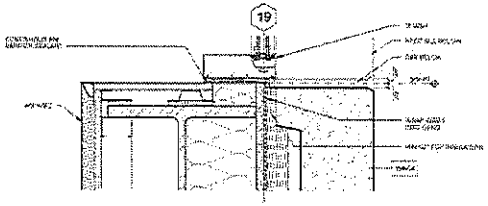
STORM WDW JAMB



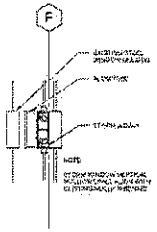
SFWS-1 JAMB AT LEVEL 1 - CONC



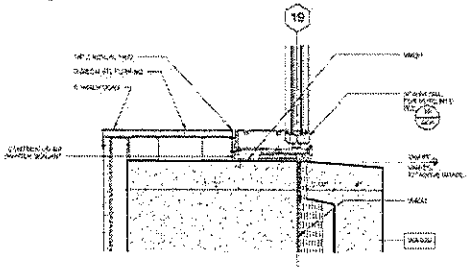
SFWS-1 JAMB2



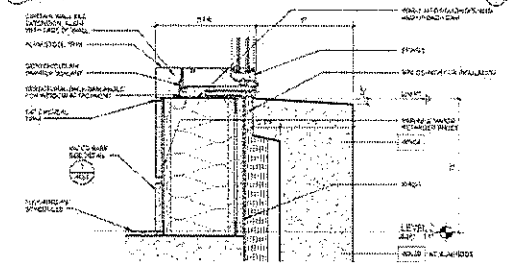
SFWS-1 JAMB AT LEVEL 2



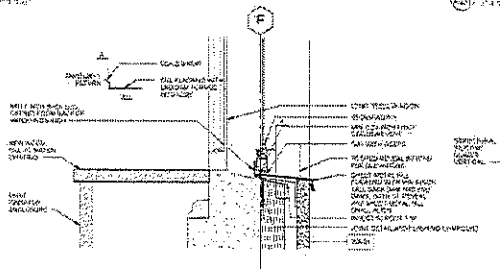
STORM WDW VERT MULLION



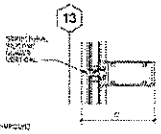
SFWS-1 SILL AT LEVEL 1 - CONC



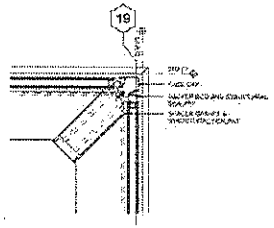
SFWS-1 SILL AT LEVEL 2



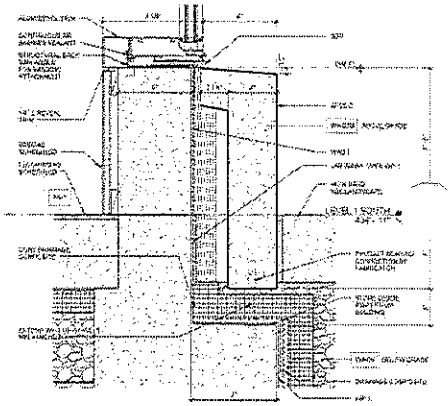
STORM WDW SILL



SFWS-1 TYP VERT MULLION



SFWS-1 CORNER



SFWS SILL AT LEVEL 1

LMN Architects

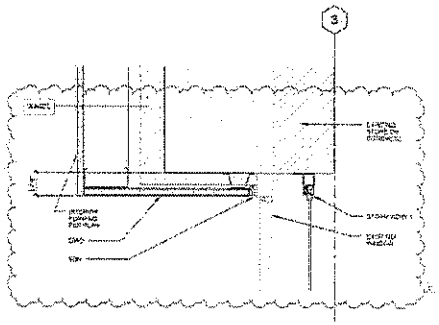
SAM Asian Art Museum

Asian Art Museum Expansion & Renovation

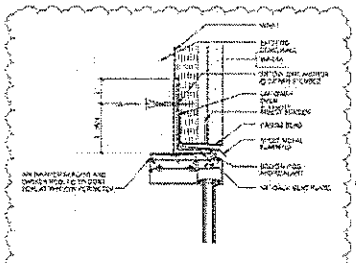
Construction Documents

Exterior Details - Windows & Louvers

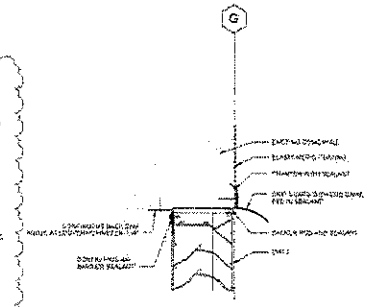
A431



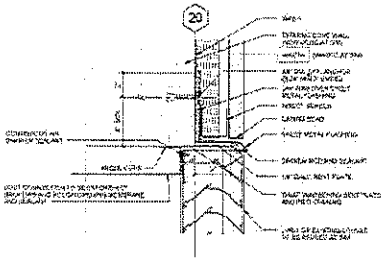
SFWS-1 HEAD AT EXIST STONE (JAMB SIM)



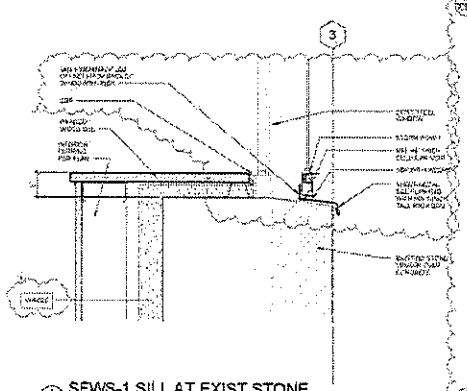
SFWS-1 HEAD @ EXIST OPNG



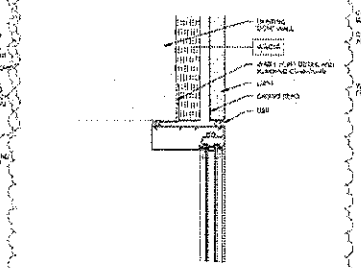
LOUVER HEAD AT AREAWAY



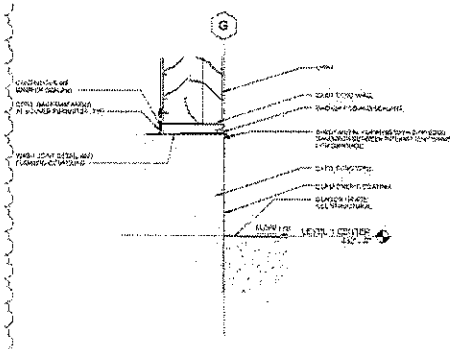
LVR-1 HEAD @ WA-01A



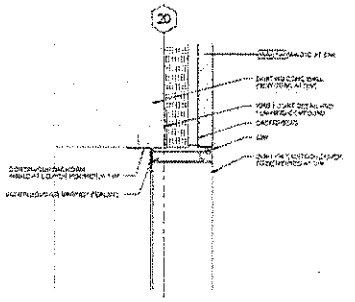
SFWS-1 SILL AT EXIST STONE



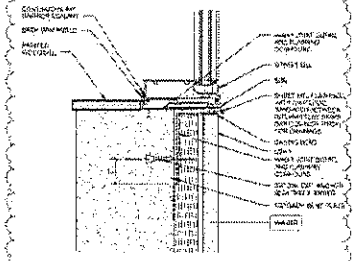
SFWS-1 JAMB @ EXIST OPNG



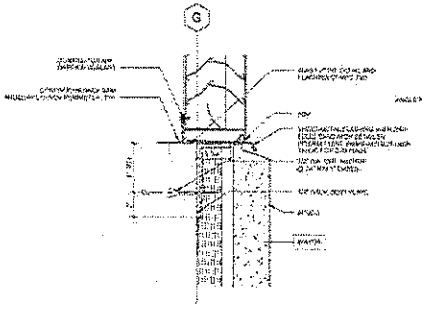
LOUVER SILL AT AREAWAY



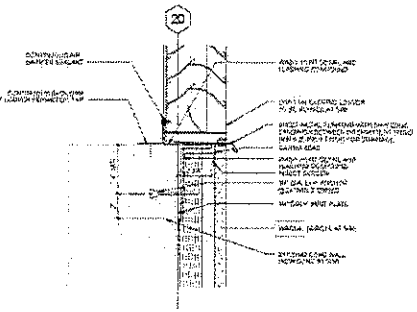
LVR-1 JAMB @ WA-01A



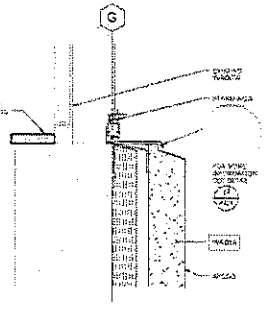
SFWS-1 SILL @ EXIST OPNG W/ LBP



GENERATOR LVR-1 SILL @ WA-01A



LVR-1 SILL @ WA-01A



STORM WDW SILL @ EXIST OPNG

LMN Architects

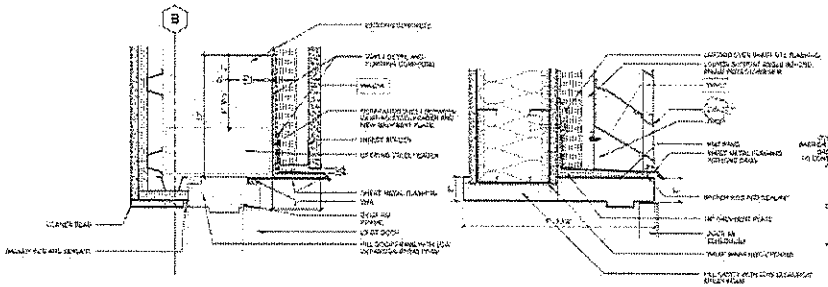
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

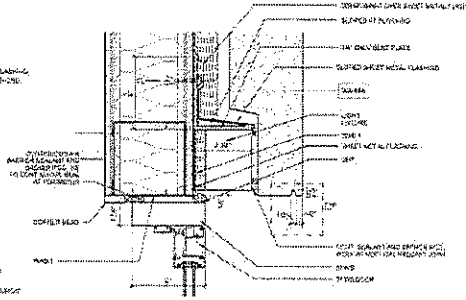
Exterior Details - Windows & Louvers

A432

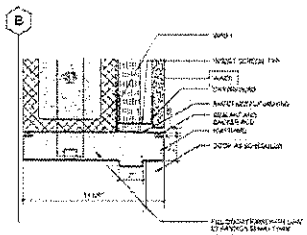


N7 DOOR HEAD @ WA-01A

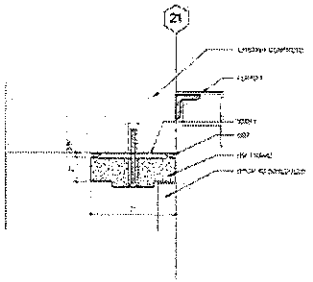
DOOR HEAD @ WA-07



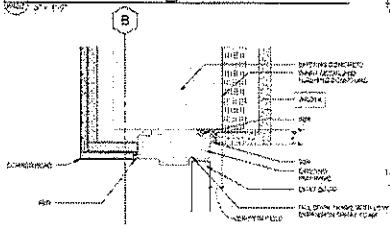
DOOR HEAD AT WA-04A



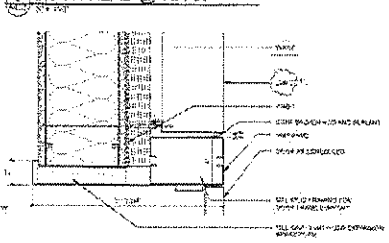
HM DOOR HEAD @ WA-05



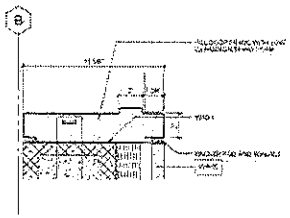
DOOR 119 HEAD/JAMB(SIM)



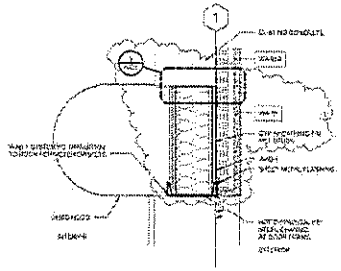
N7 DOOR JAMB @ WA-01A



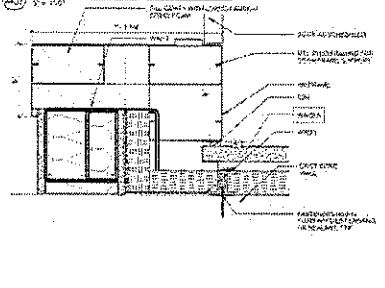
DOOR JAMB @ WA-07



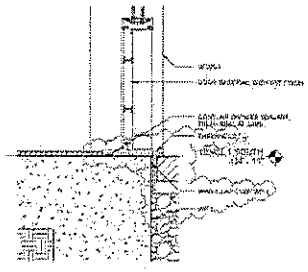
HM DOOR JAMB @ WA-05



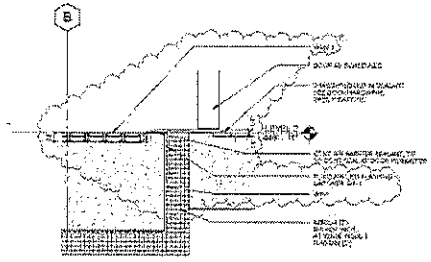
OHCD-1 HEAD



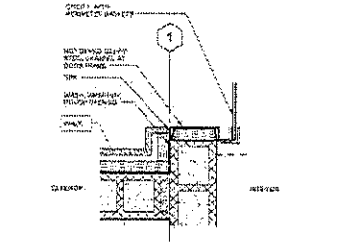
DOOR JAMB @ WA-07 AND WA-01A



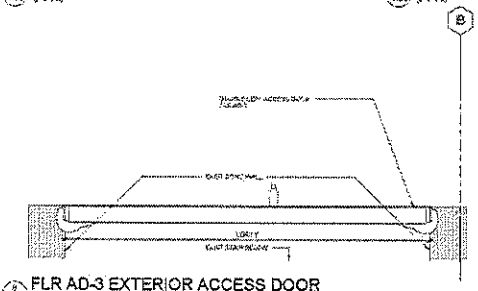
STOREFRONT DOOR THRESHOLD



HM DOOR THRESHOLD @ WA-05



OHCD-1 JAMB



FLR AD-3 EXTERIOR ACCESS DOOR

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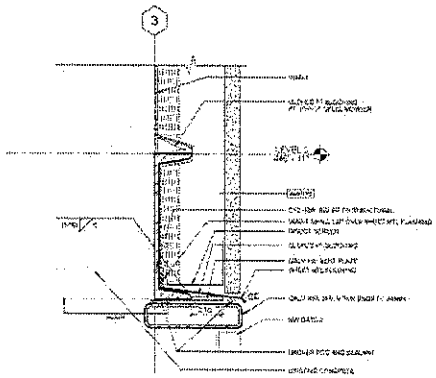
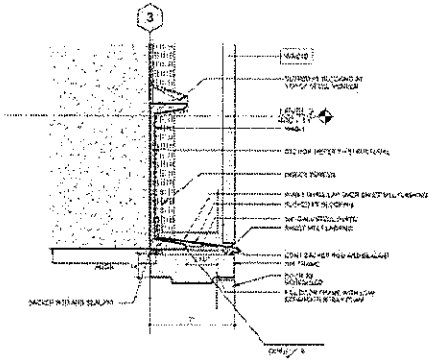
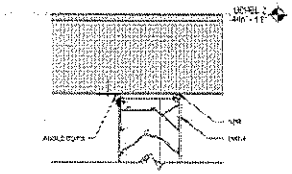
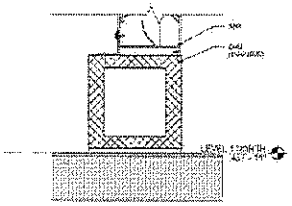


DOOR HEAD AT GENERATOR RM

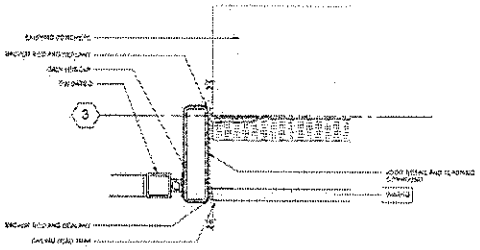


DOOR HEAD AT TRANSFORMER RM

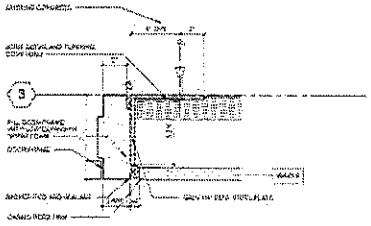




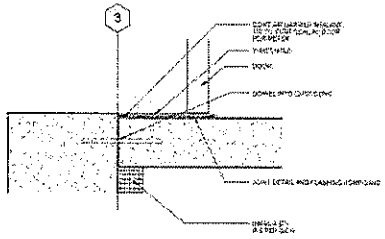
LVR-1 SECTION @ GENERATOR RM



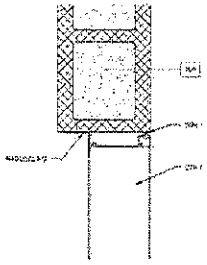
DOOR JAMB AT GENERATOR RM



DOOR JAMB AT TRANSFORMER RM



DOOR THRESHOLD AT TRANSFORMER RM



LVR-1 JAMB @ GENERATOR RM

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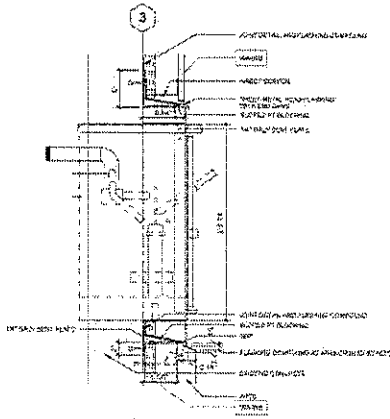
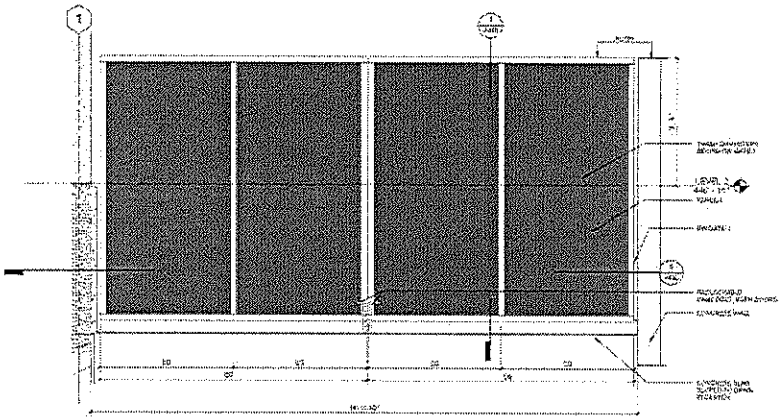
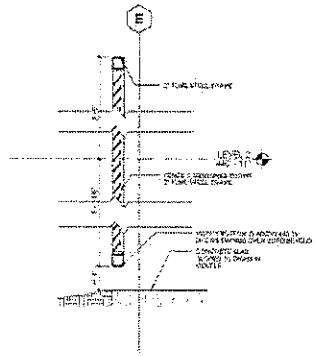


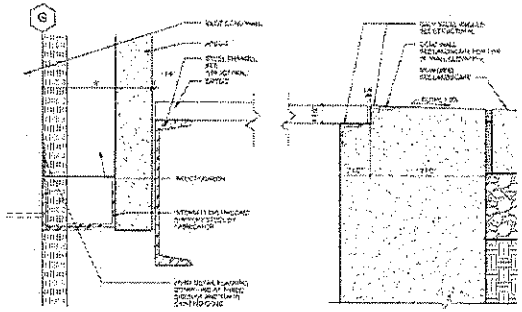
FUEL FILL STATION HEAD AND SILL



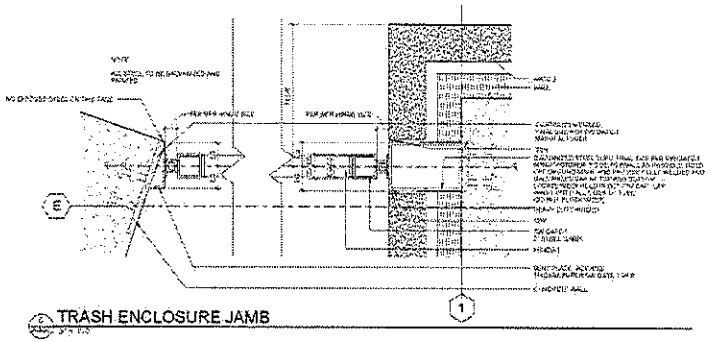
TRASH ENCLOSURE - SW GATE-1 ELEVATION



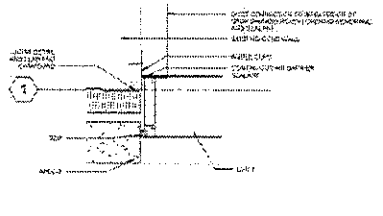
TRASH ENCLOSURE SECTION



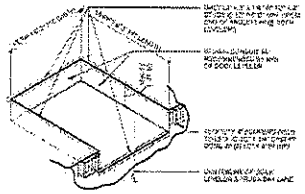
CENTRAL AREAWAY GRATE



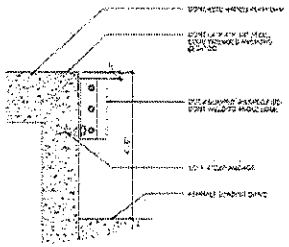
TRASH ENCLOSURE JAMB



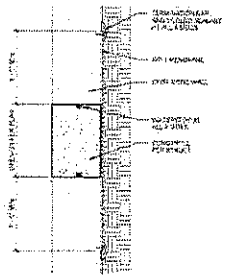
LOUVER - JAMB @ TRASH



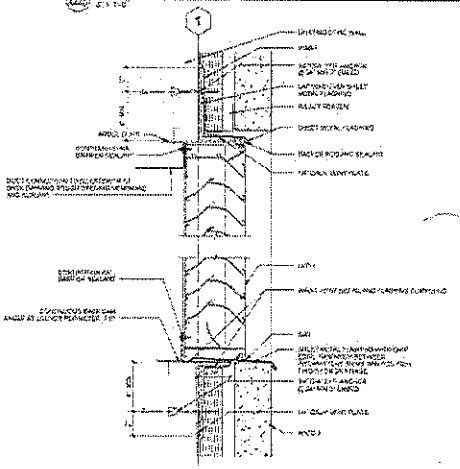
DOCK LEVELER RECESS



DOCK BUMPER



WP AT INFILL CONC WALL BELOW GRADE



LOUVER - HEAD AND SILL @ TRASH

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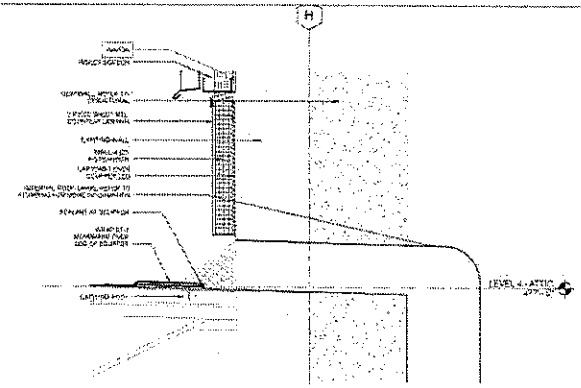
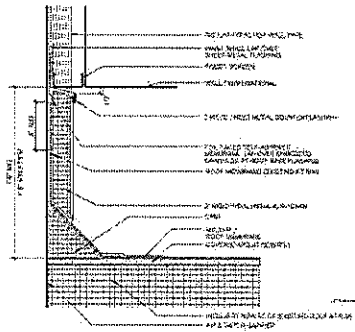
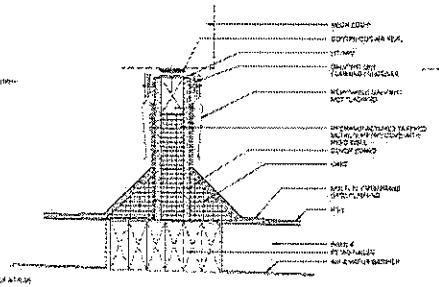


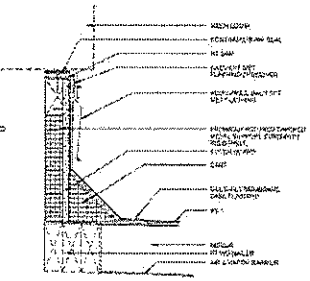
DETAIL - NEW SCUPPER DRAIN AT EXISTING ROOF



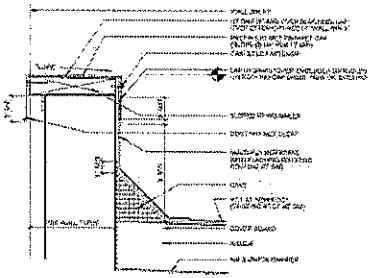
BUILT-UP ROOF AT WALL



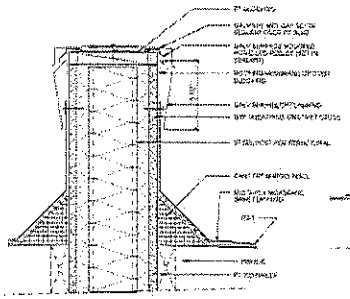
TYP MECH EQUIP ROOF SLEEPER



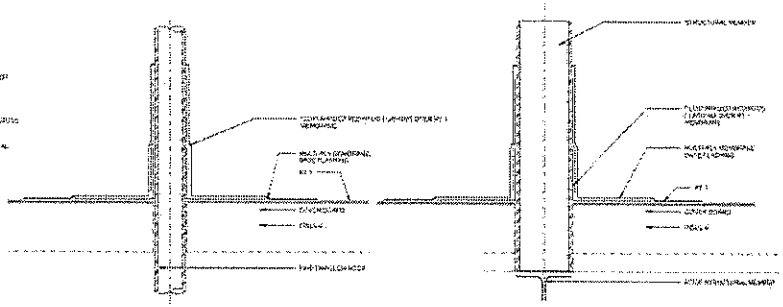
TYP MECH EQUIP ROOF CURB



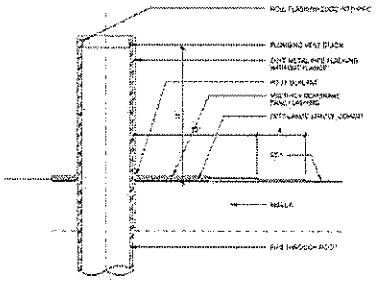
BUILT-UP ROOF AT PARAPET



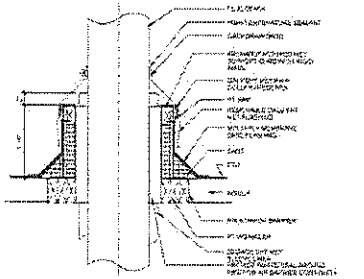
STEEL POST ENCLOSURE



PIPE ROOF PENETRATION

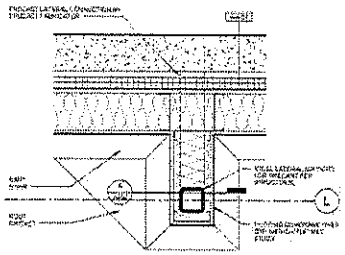


EQUIP SUPPORT STAND @ ROOF

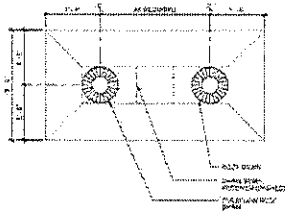


TYP PLUMBING VENT STACK

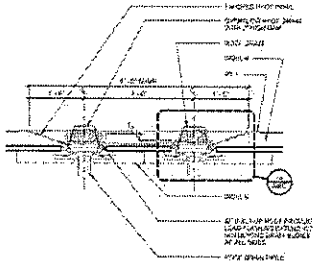
FLUE STACK ROOF PENETRATION



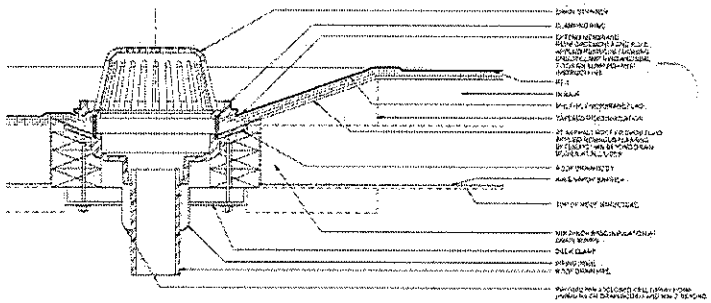
PLAN AT STEEL POST



PLAN @ ROOF DRAIN SUMP



SECTION @ ROOF DRAIN SUMP



ROOF DRAIN AT BUILT-UP ROOF

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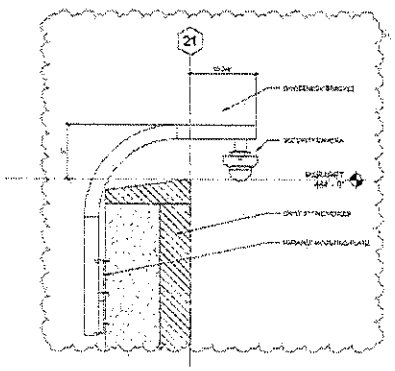
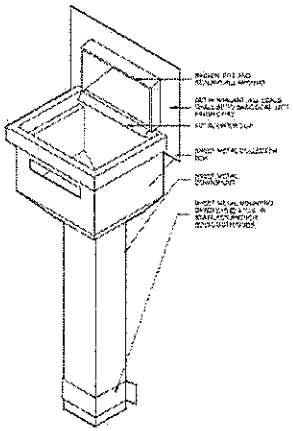
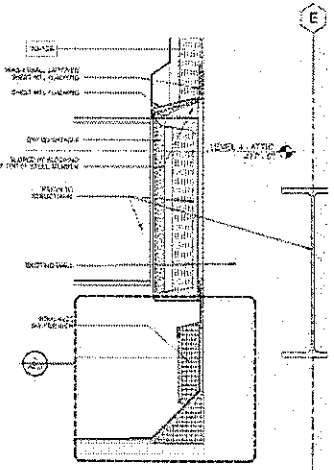


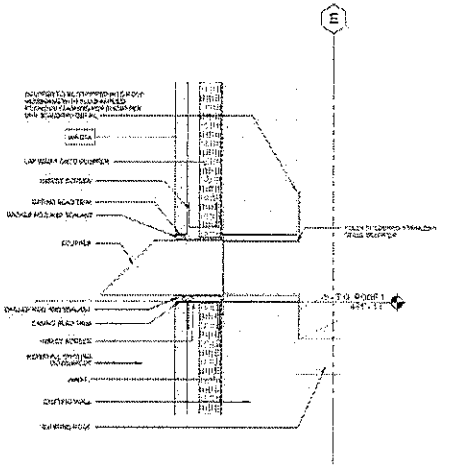
1 TYPICAL CAMERA MOUNT DETAIL AT EXIST PARAPET



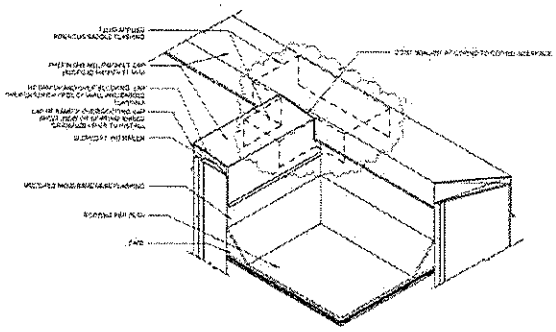
2 DOWNSPOUT ISOMETRIC



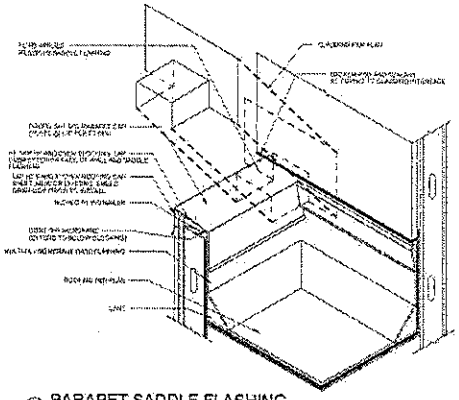
3 STEEL CONNECTION @ MTLP



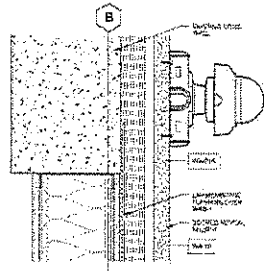
4 SCUPPER @ WA-01A



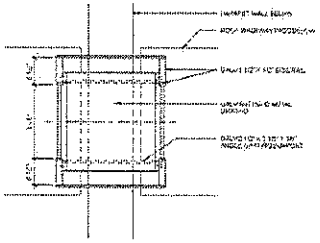
5 PARAPET INTERSECTION FLASHING



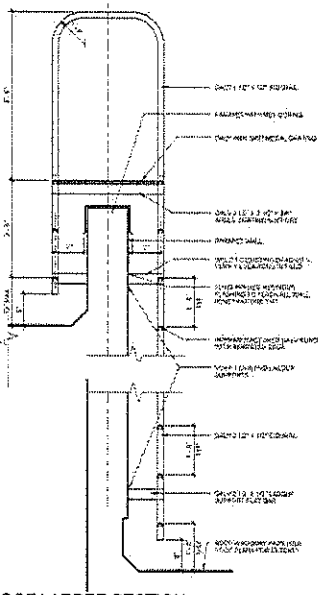
6 PARAPET SADDLE FLASHING



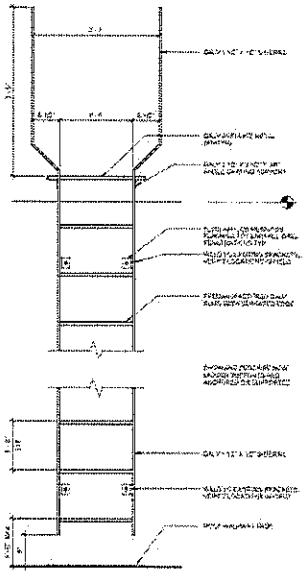
7 CAMERA MOUNT AT WA-01A



8 ROOF LADDER PLAN



9 ROOF LADDER SECTION



10 ROOF LADDER ELEVATION

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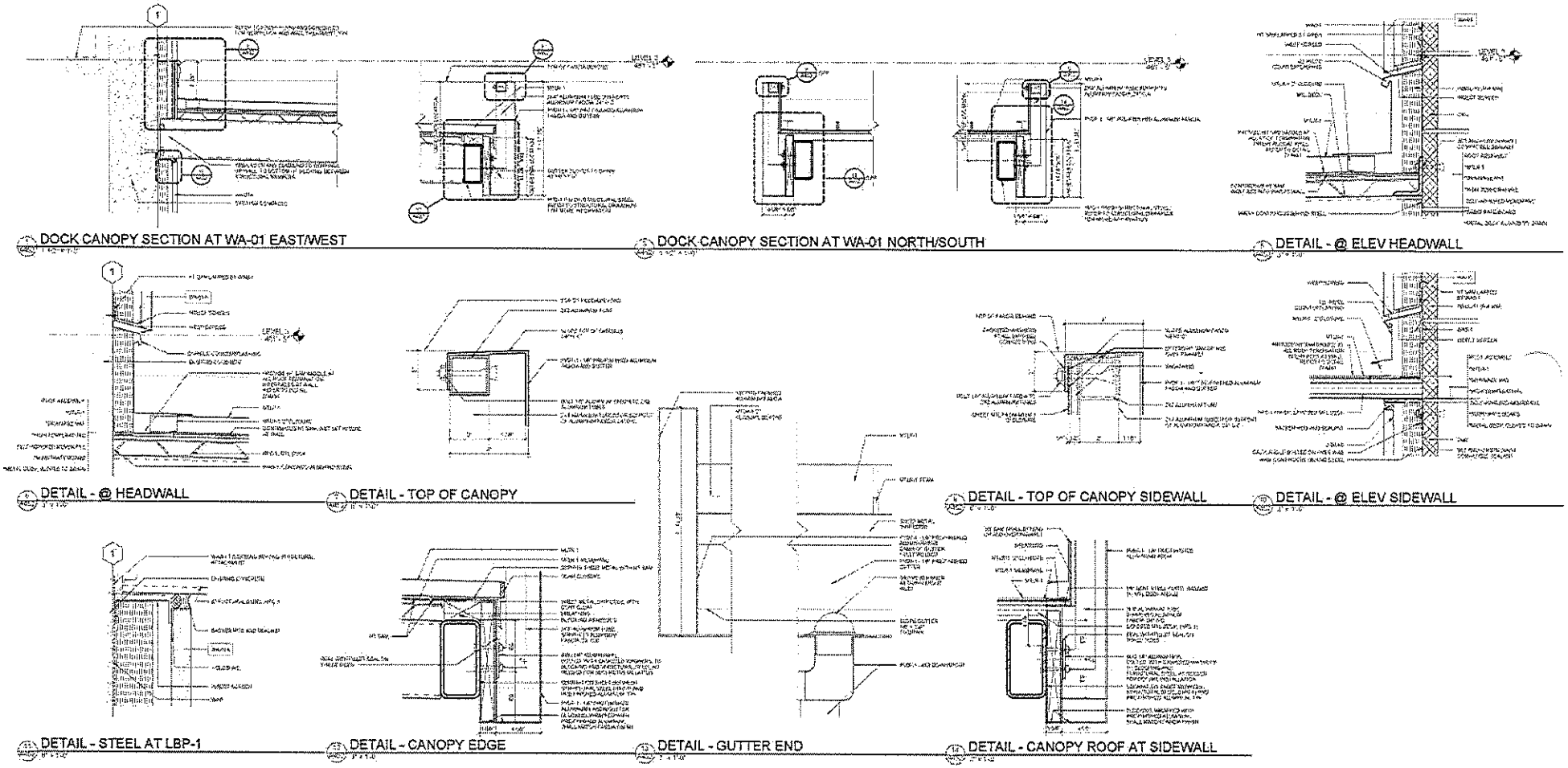
Asian Art Museum Expansion & Renovation

Construction Documents

Roof Details

A451


DOCK CANOPY SECTION AT WA-01 EAST/WEST
DOCK CANOPY SECTION AT WA-01 NORTH/SOUTH
DETAIL - @ ELEV HEADWALL
DETAIL - @ HEADWALL
DETAIL - TOP OF CANOPY
DETAIL - TOP OF CANOPY SIDEWALL
DETAIL - @ ELEV SIDEWALL
DETAIL - STEEL AT LBP-1
DETAIL - CANOPY EDGE
DETAIL - GUTTER END
DETAIL - CANOPY ROOF AT SIDEWALL

LMN Architecture Urban Design Interiors

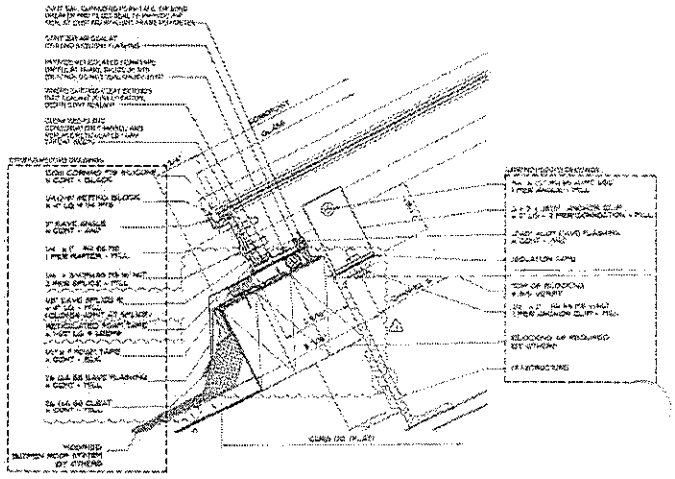
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

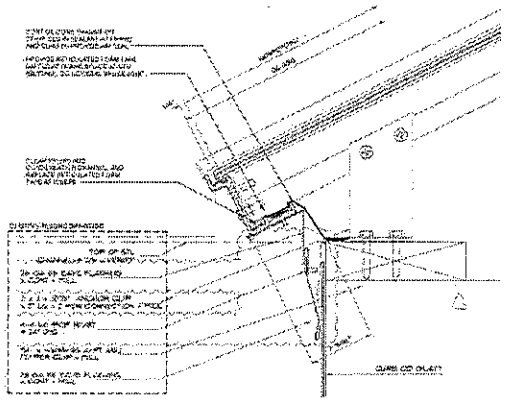
Construction Documents

Roof Details - Loading Dock Canopy

A452



EXISTING SKYLIGHT EAVE - TYPICAL



EXISTING SKYLIGHT EAVE - AT CURB

LMN Architects

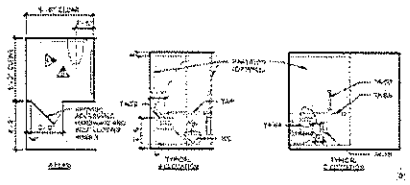
ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

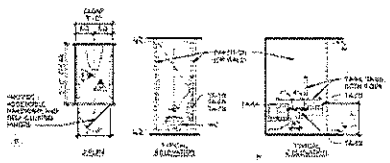
Construction Documents

Roof Details - Skylights

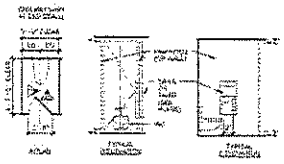
A453



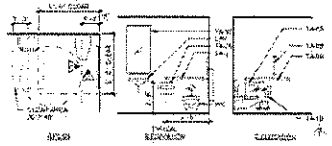
WHEELCHAIR ACCESSIBLE COMPARTMENT



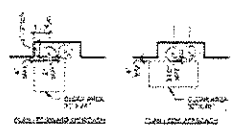
AMBULATORY COMPARTMENT



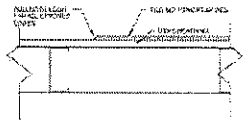
TYPICAL COMPARTMENT



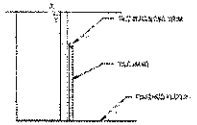
SINGLE OCCUPANCY TOILET



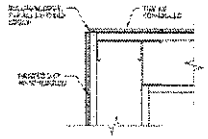
PLAN - DRINKING FOUNTAIN



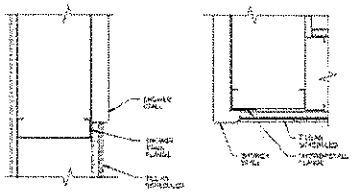
TILE END WALL



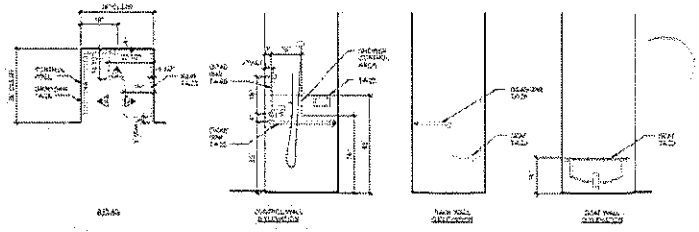
TILE BASE



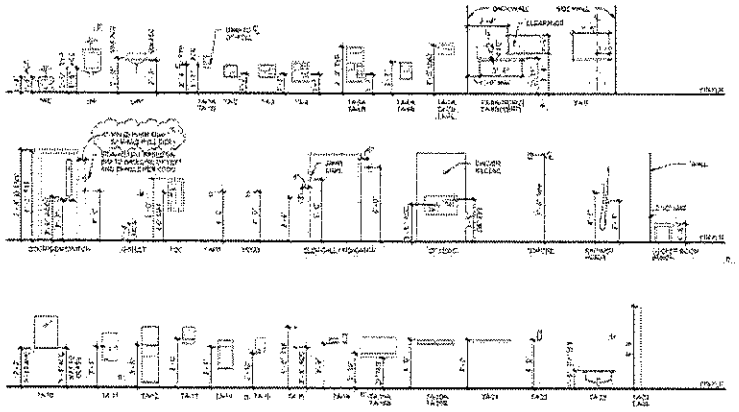
TILE CORNER



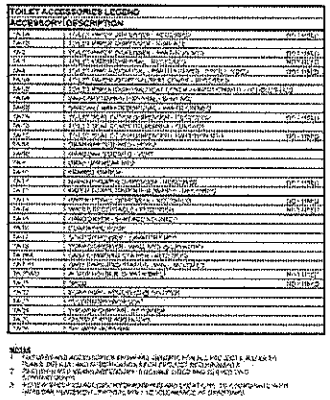
TILE AT SHOWER

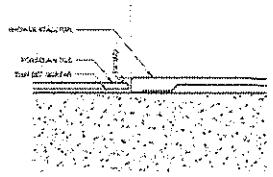


ACCESSIBLE SHOWER - TRANSFER TYPE

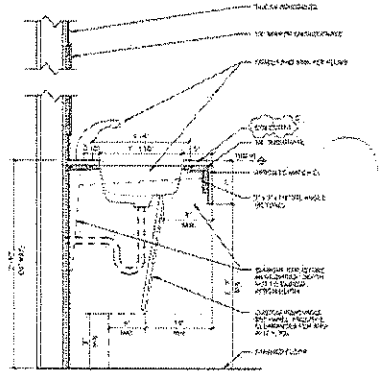


TYPICAL MOUNTING HEIGHTS





SHOWER SILL



RESTROOM SINK COUNTER

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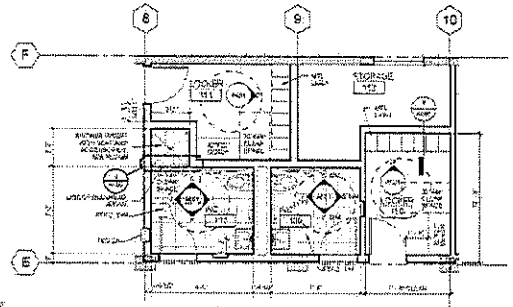
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

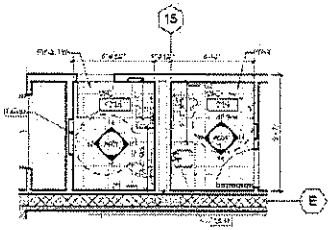
Construction Documents

Toilet Accessories & Typ. Mounting Heights

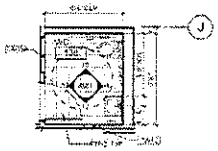
A500



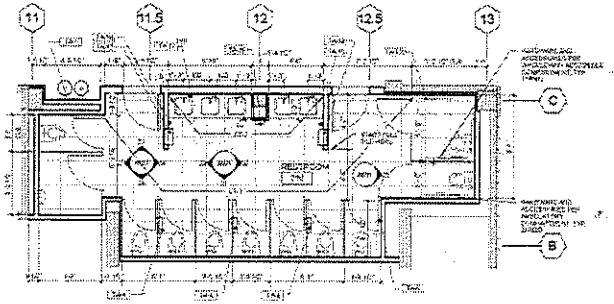
1 LEVEL 1 - WC 113 AND WC 109



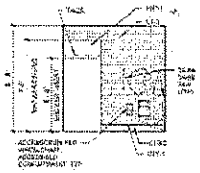
2 LEVEL 2 - WC 218 AND WC 219



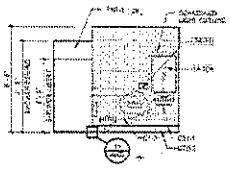
3 LEVEL 1 - WC 136



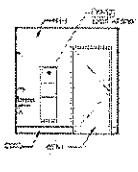
4 LEVEL 2 - RESTROOM 210



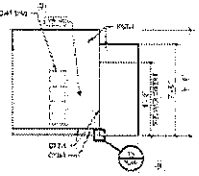
5 WC 113 - EAST



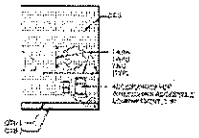
6 WC 113 - SOUTH



7 WC 113 - WEST



8 WC 113 - NORTH



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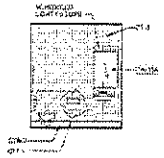

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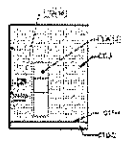

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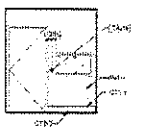
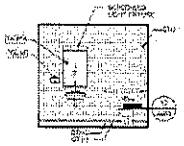


12 WC 136 - NORTH



13 WC 218 - EAST



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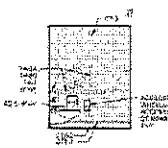

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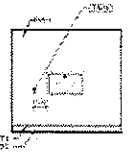

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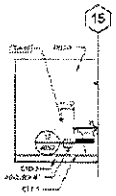

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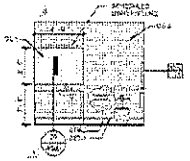

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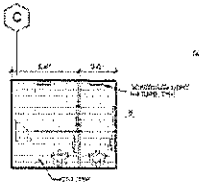
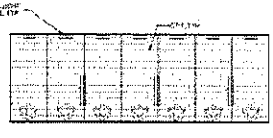


19 RR 210 - STALLS SOUTH



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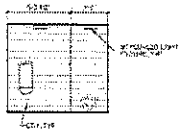
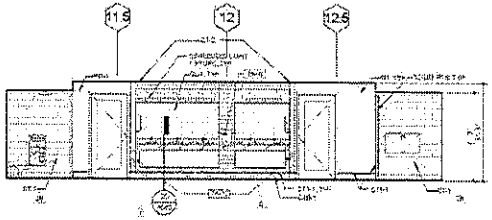


21 RR 210 - STALLS NORTH



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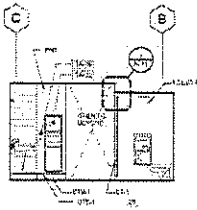

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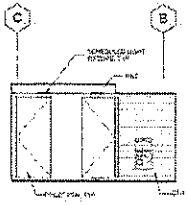

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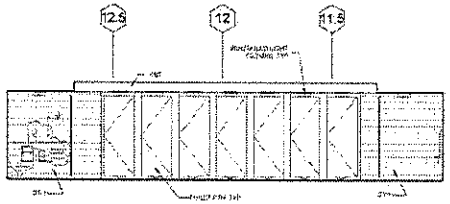

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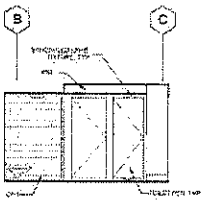
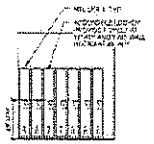


26 RESTROOM 210 - NORTH



27 LOCKER 111 - SOUTH (110 - EAST SIM)

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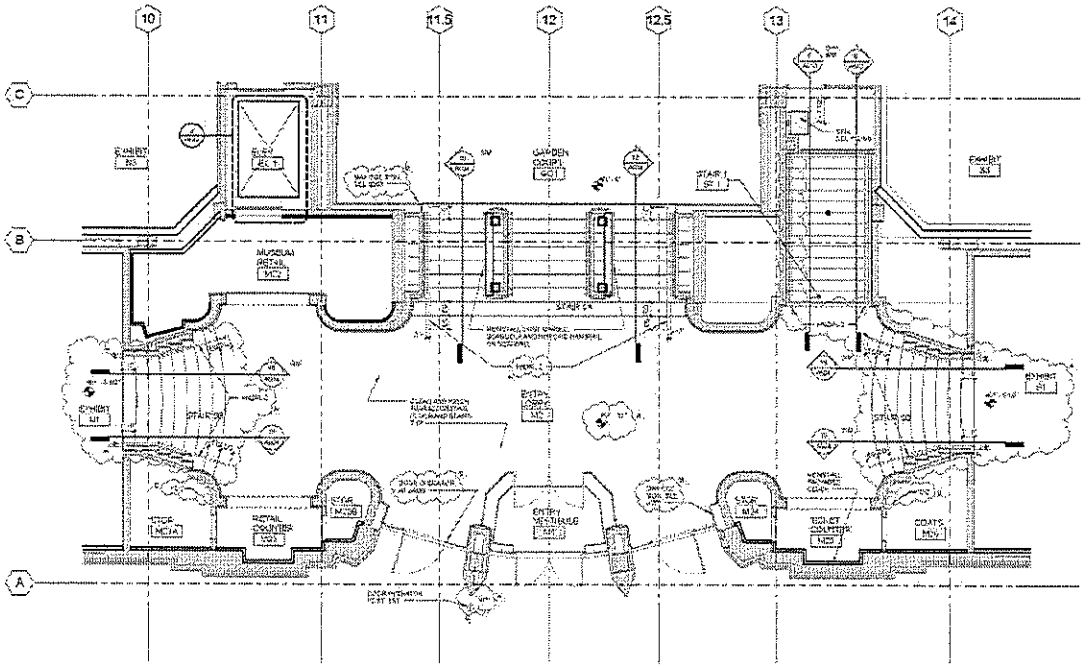
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

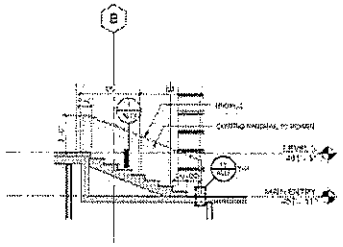
Construction Documents

Enlarged Plans and Elevations - Restrooms

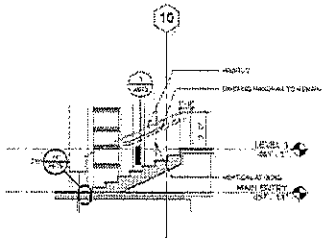
A501



LEVEL 3 ENLARGED PLAN - MAIN ENTRY



STAIR 5A - SOUTH ELEVATION



STAIR 5B - WEST ELEVATION

LMN Architecture Urban Design Interiors

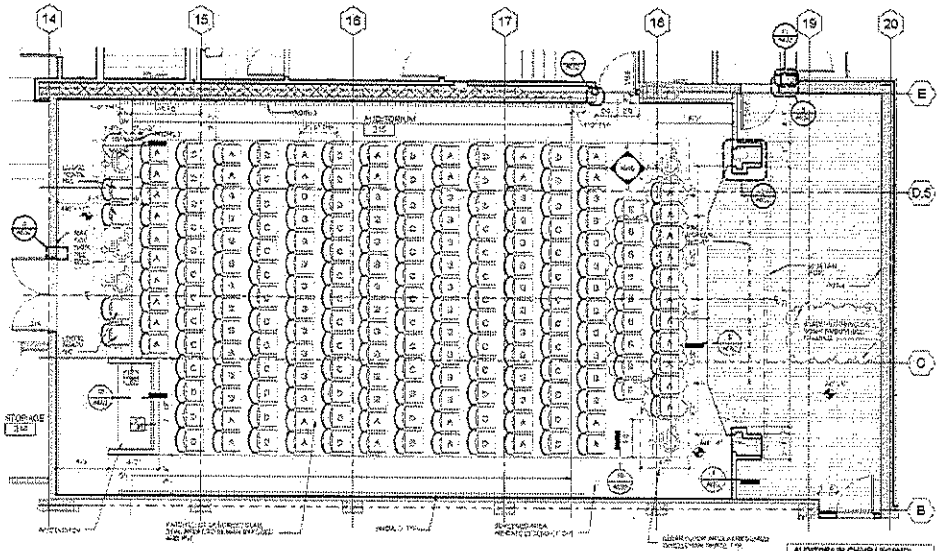
SAM ASAN ART MUSEUM

Asian Art Museum Expansion & Renovation

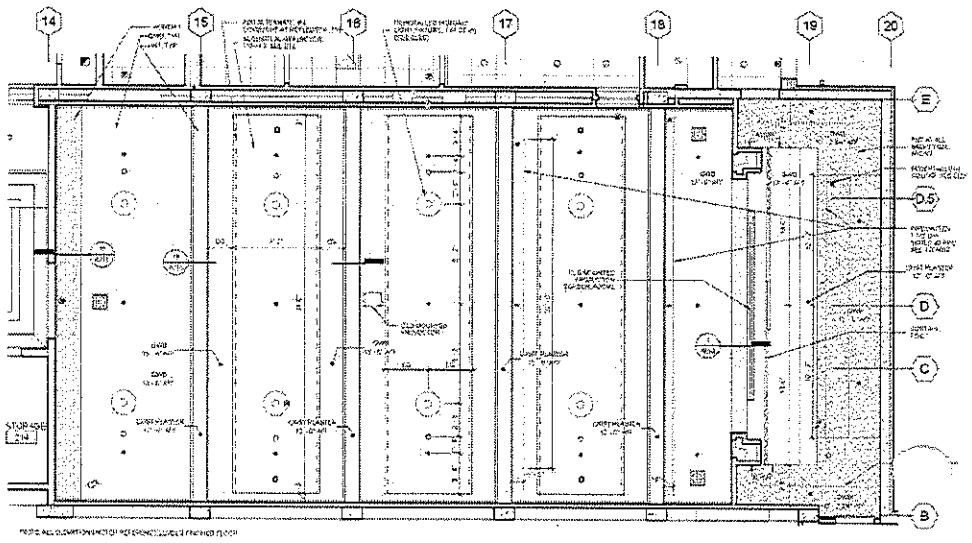
Construction Documents

Enlarged Plans and Elevations - Entry Lobby

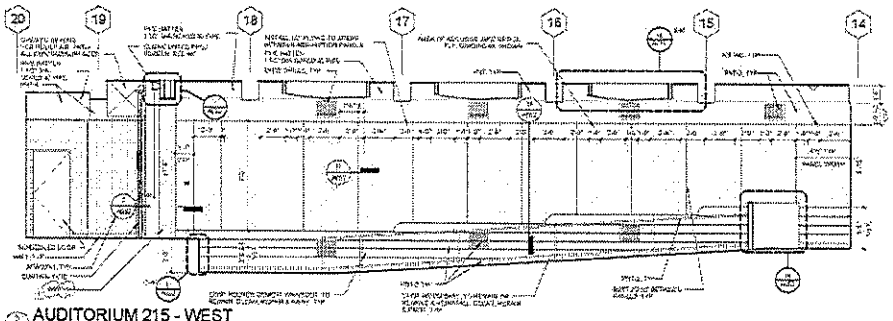
A504



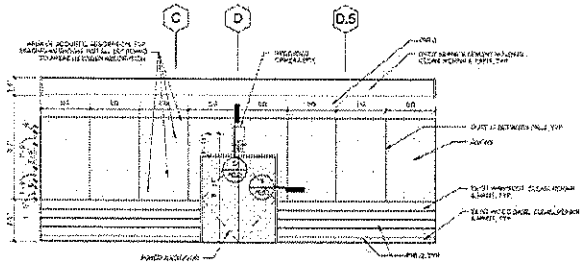
1 AUDITORIUM 215 - ENLARGED PLAN



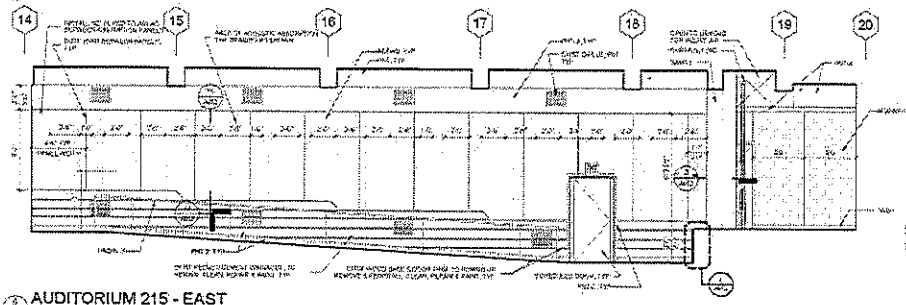
2 ENLARGED RCP - AUDITORIUM 215



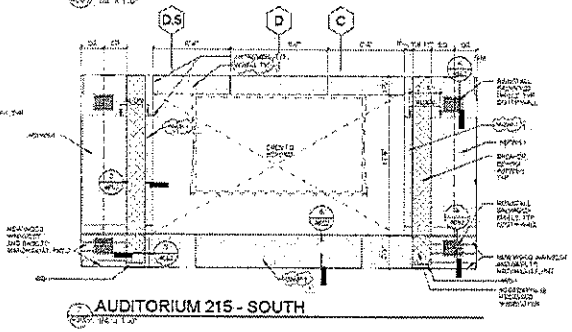
3 AUDITORIUM 215 - WEST



4 AUDITORIUM 215 - NORTH



5 AUDITORIUM 215 - EAST



6 AUDITORIUM 215 - SOUTH

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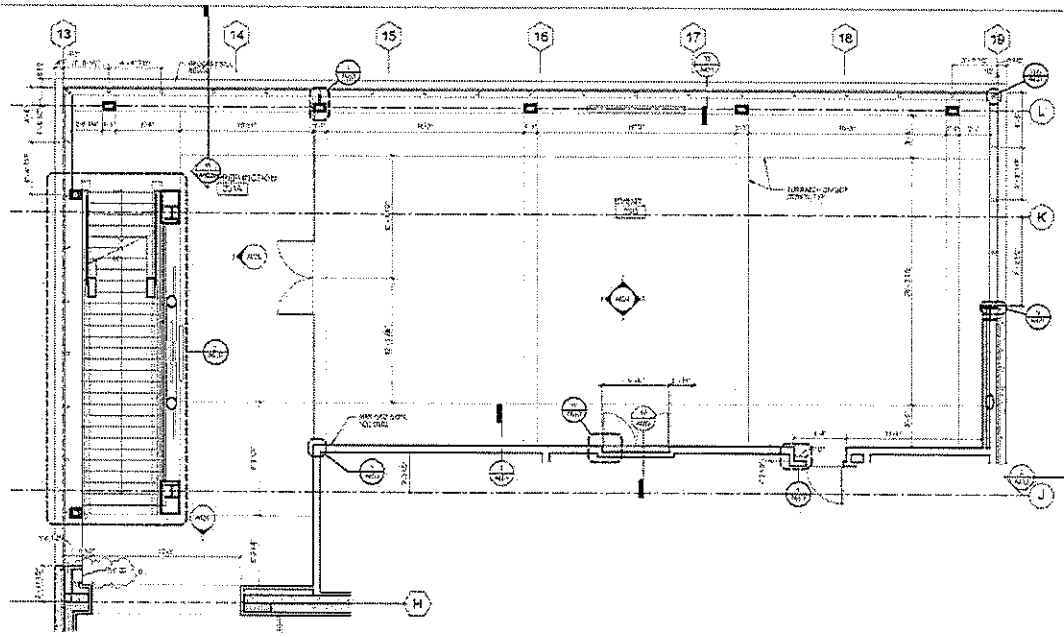
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

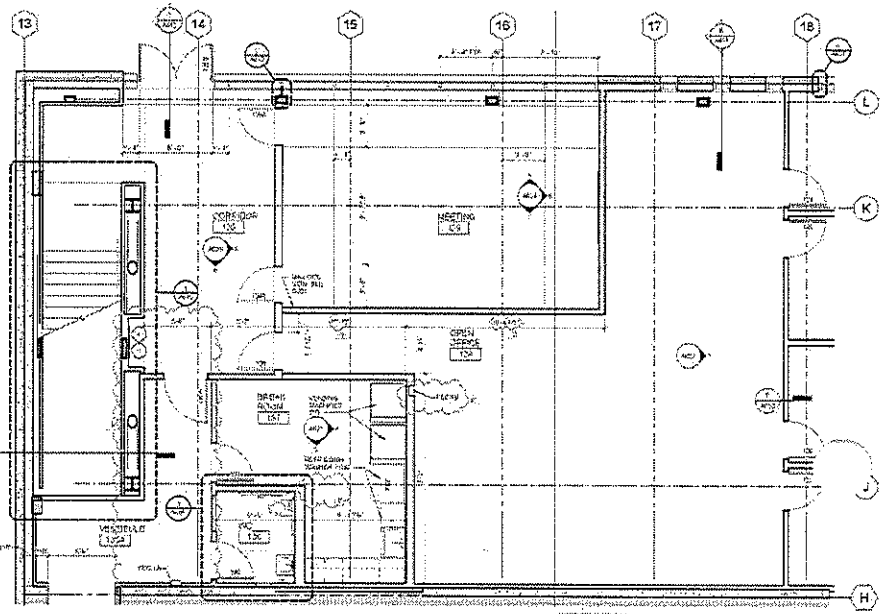
Construction Documents

Enlarged Plans and Elevations - Auditorium

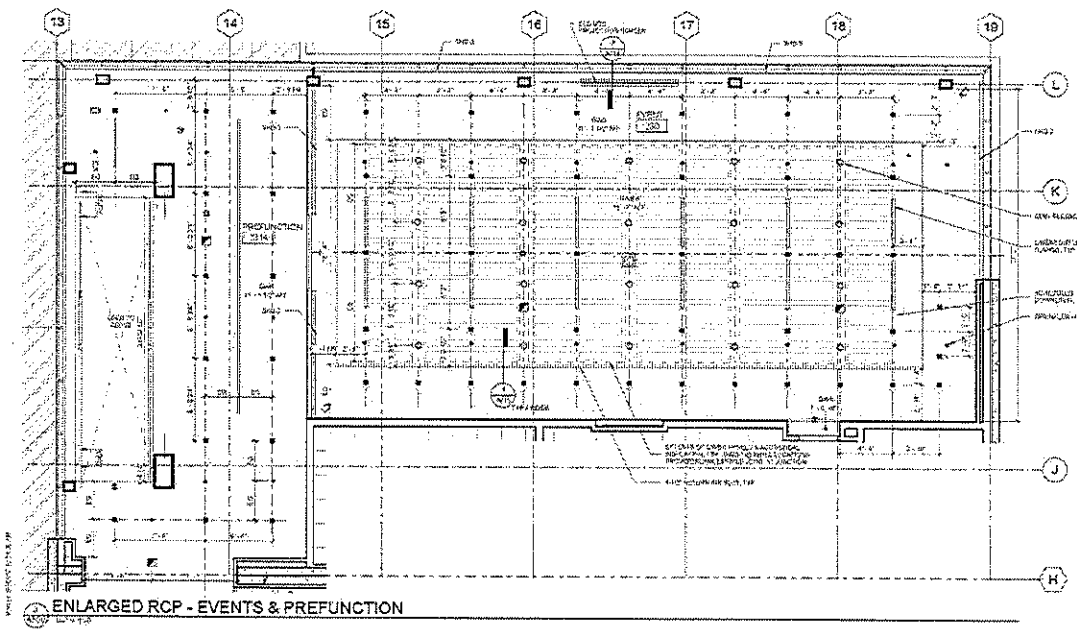
A505



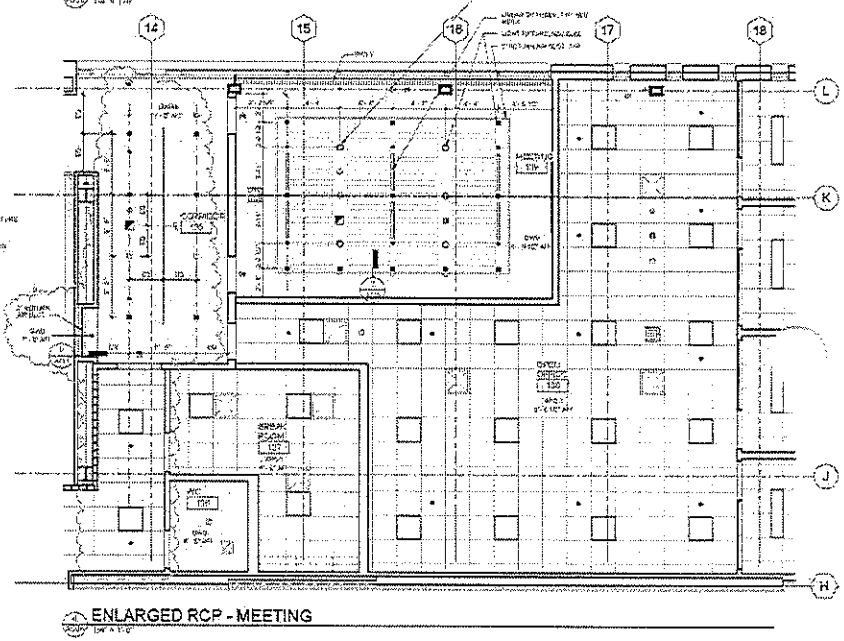
1 ENLARGED PLAN - EVENTS & PREFUNCTION



2 ENLARGED PLAN - MEETING AND OFFICE



3 ENLARGED RCP - EVENTS & PREFUNCTION



4 ENLARGED RCP - MEETING

LMN Architects

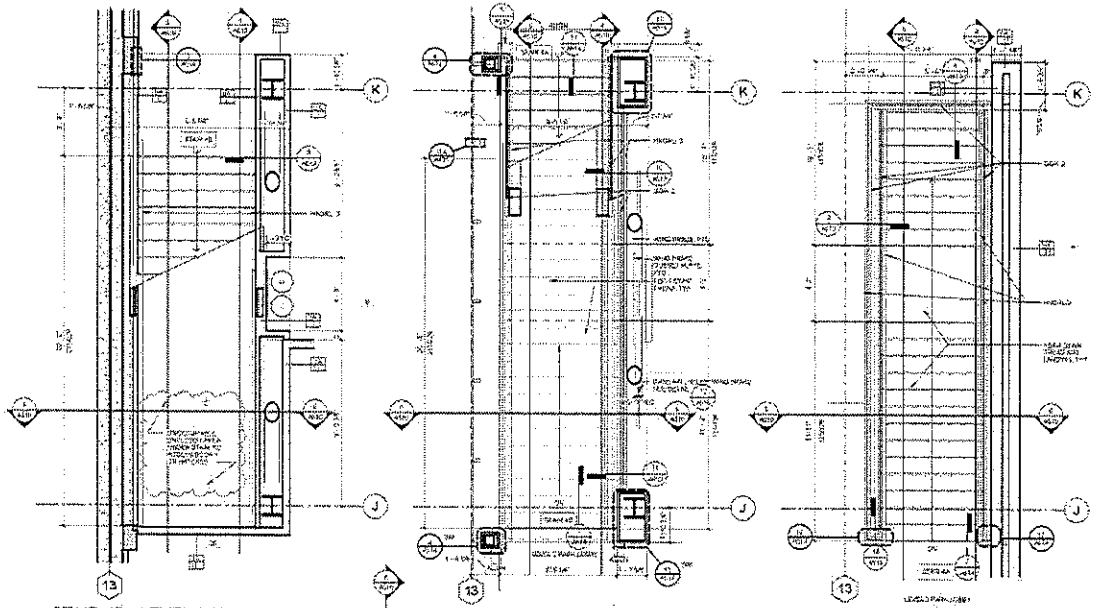
SAM Asian Art Museum

Asian Art Museum Expansion & Renovation

Construction Documents

Enlarged Plans & RCP - Events & Meeting

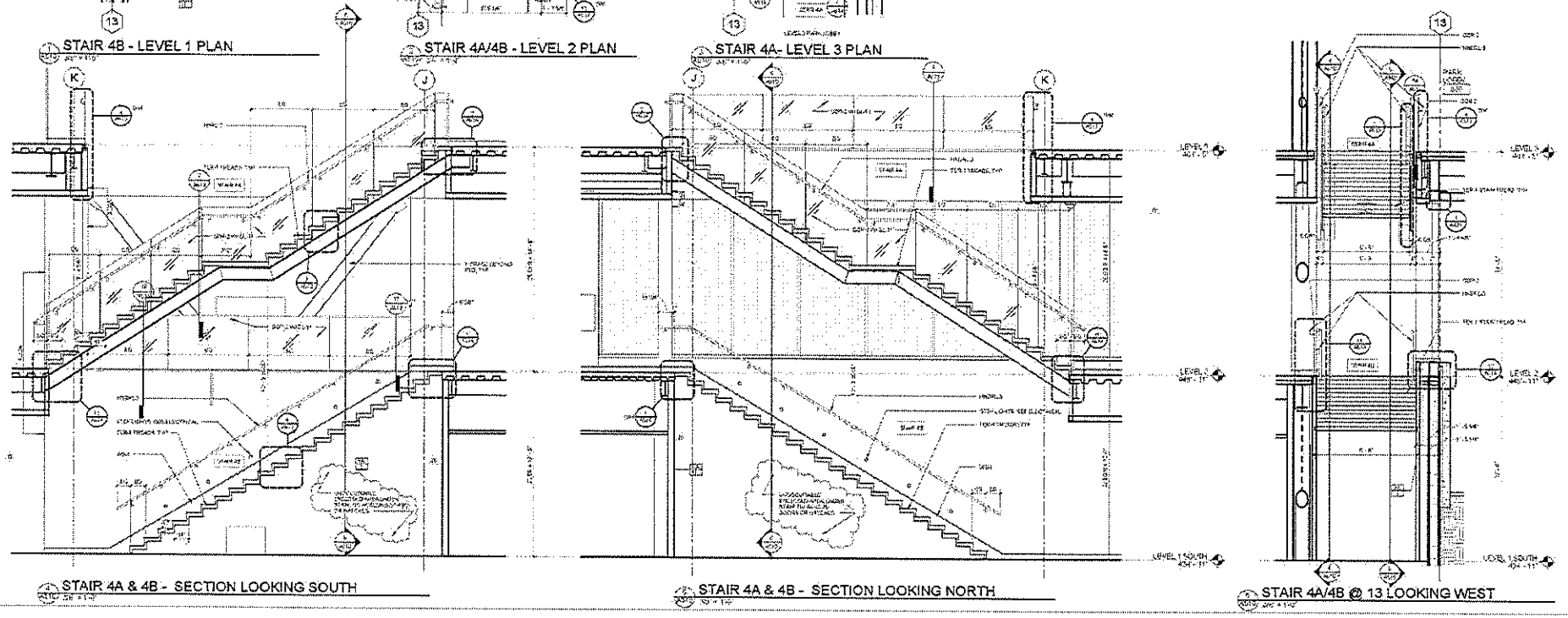
A506



STAIR 4B - LEVEL 1 PLAN

STAIR 4A/4B - LEVEL 2 PLAN

STAIR 4A- LEVEL 3 PLAN



STAIR 4A & 4B - SECTION LOOKING SOUTH

STAIR 4A & 4B - SECTION LOOKING NORTH

STAIR 4A/4B @ 13 LOOKING WEST

LMN Architecture Urban Design Interiors

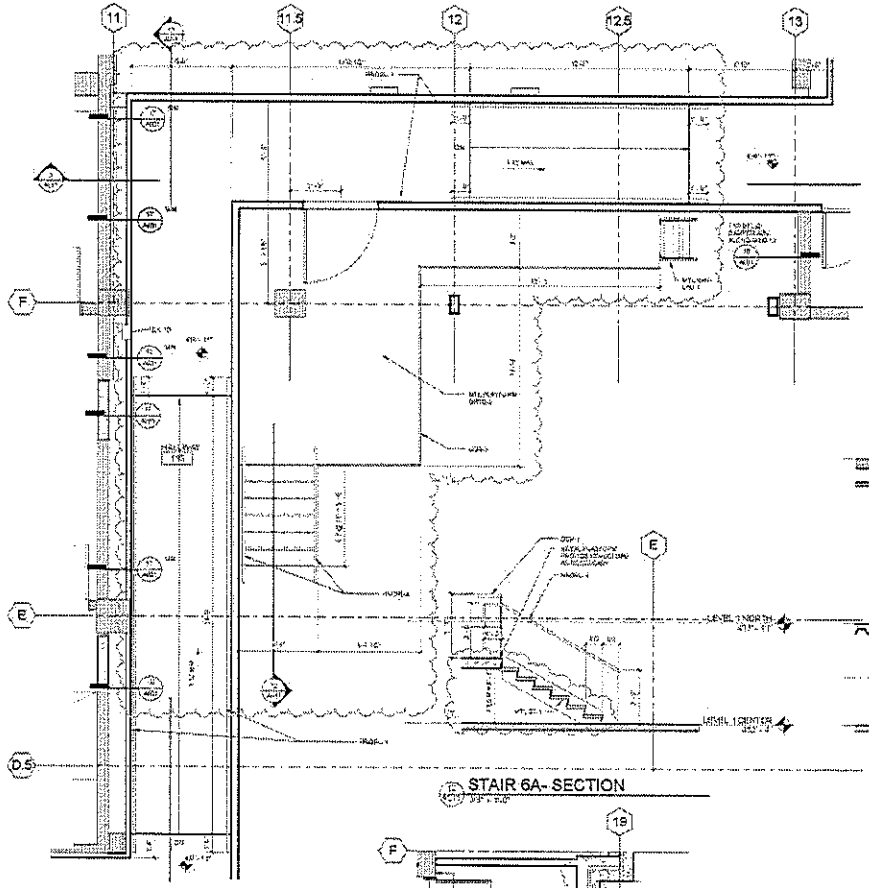
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

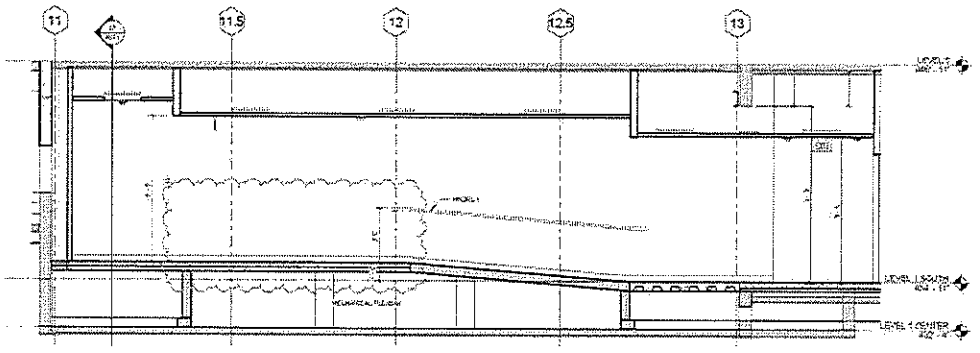
Construction Documents

Enlarged Plans & Sections - Stairs

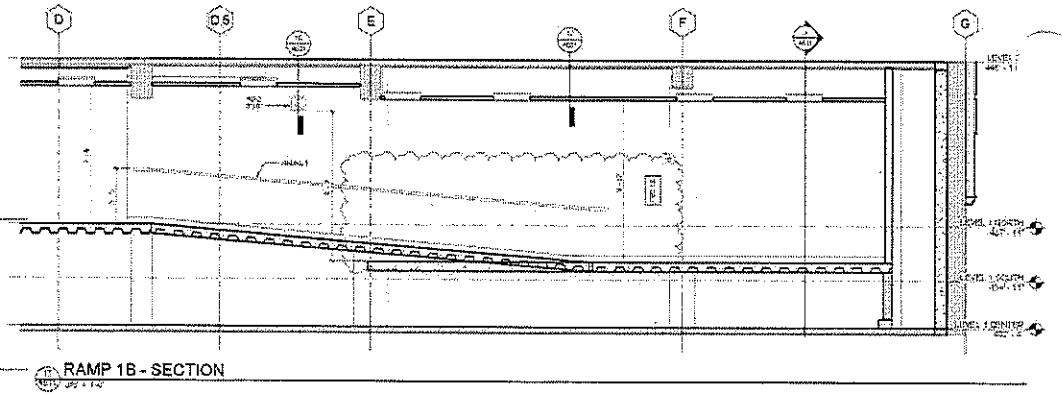
A510



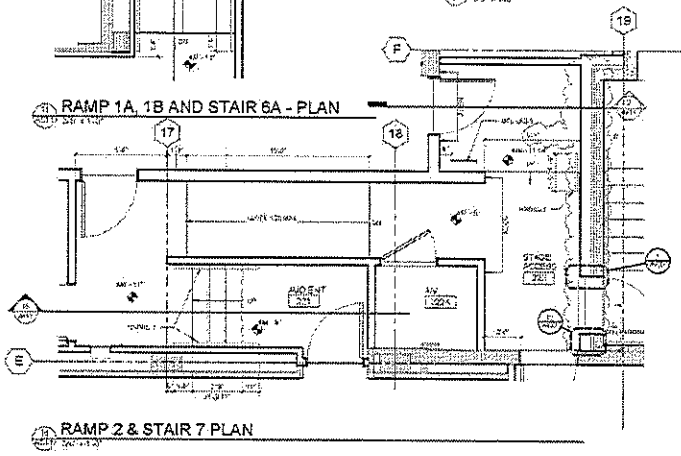
STAIR 6A- SECTION



RAMP 1A - SECTION

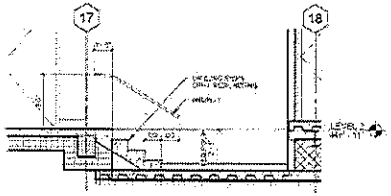


RAMP 1B - SECTION

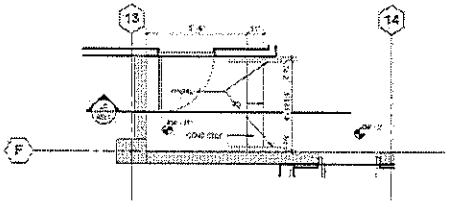


RAMP 1A, 1B AND STAIR 6A - PLAN

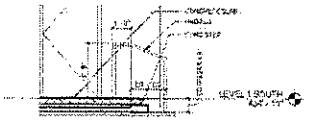
RAMP 2 & STAIR 7 PLAN



STAIR 7 SECTION



STAIR 6B - PLAN



STAIR 6B- SECTION

LMN Architects

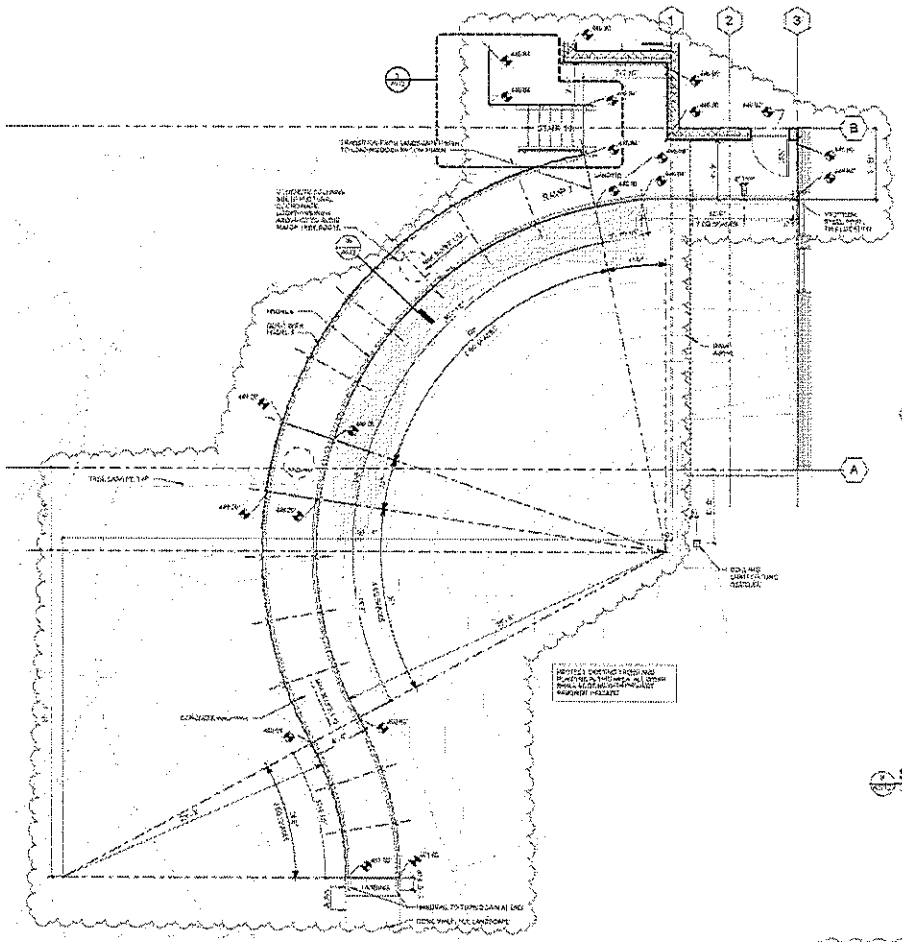
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

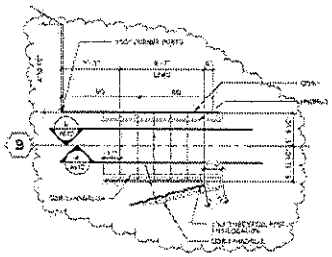
Construction Documents

Enlarged Plans & Sections - Misc Stairs & Ramps

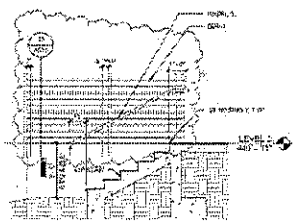
A511



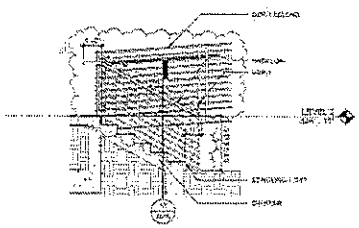
1 ELEVATED WALKWAY & STAIR 10 - ENLARGED PLAN



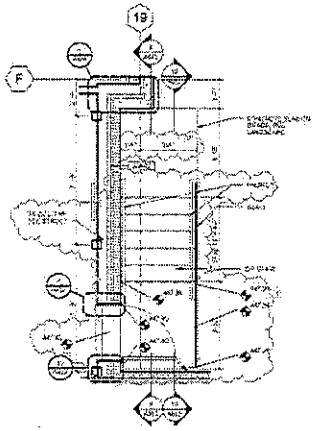
2 STAIR 10 - ENLARGED PLAN



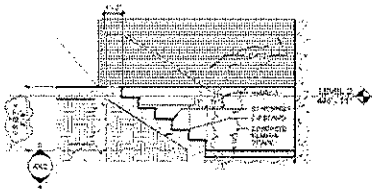
3 STAIR 10 SECTION 1



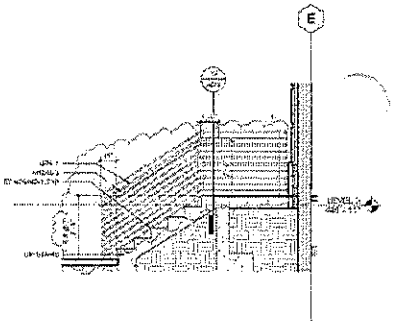
4 STAIR 10 SECTION 2



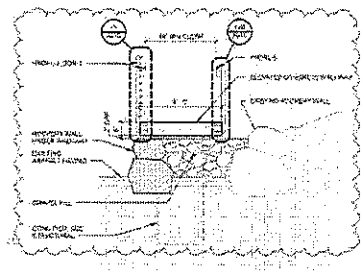
5 STAIR 9 - PLAN



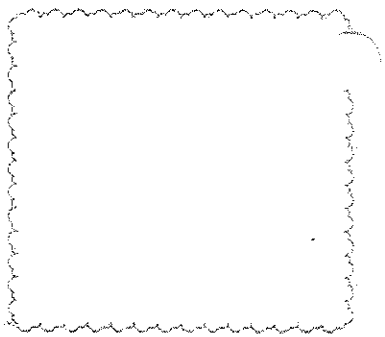
6 STAIR 9 - SECTION 1



10 STAIR 9 - SECTION 2



7 ELEVATED WALKWAY DETAIL



LMN Architecture Urban Design Interiors

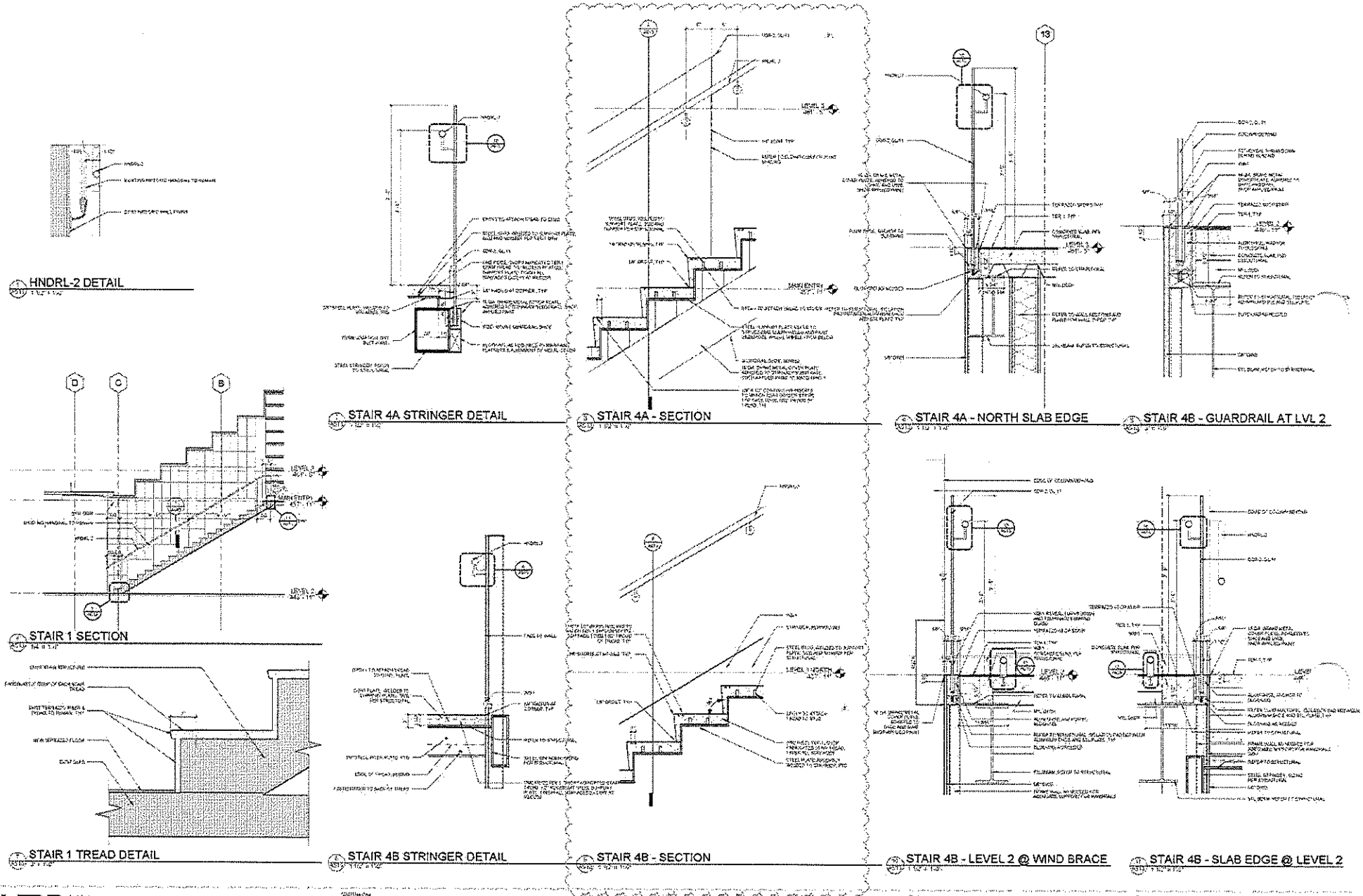
SAM ASAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Enlarged Plans & Sections - Elevated Walkway & Ext Stairs

A512



LMN Architecture Lemon Design Interiors

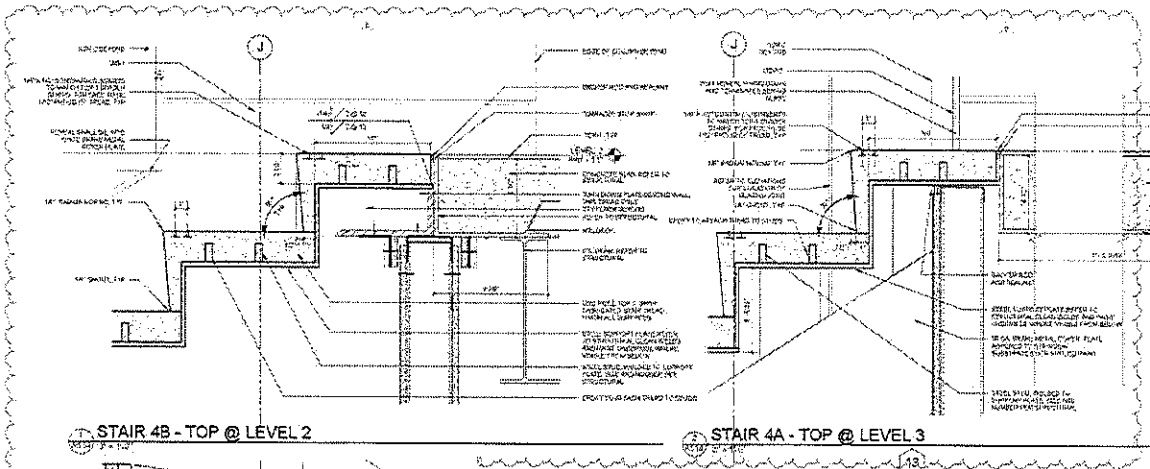
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

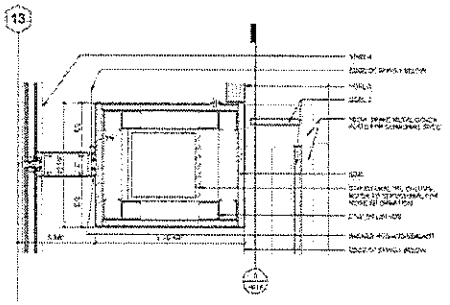
Stair & Guardrail Details

A513



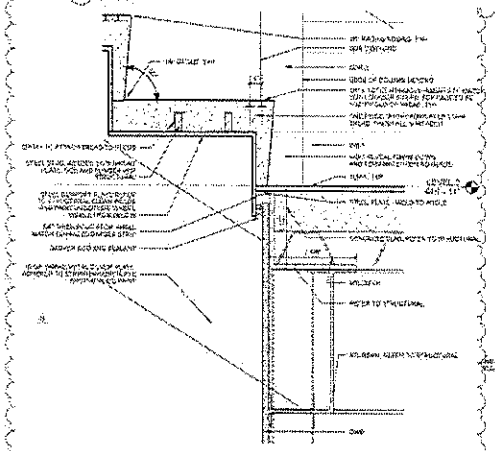
STAIR 4B - TOP @ LEVEL 2

STAIR 4A - TOP @ LEVEL 3

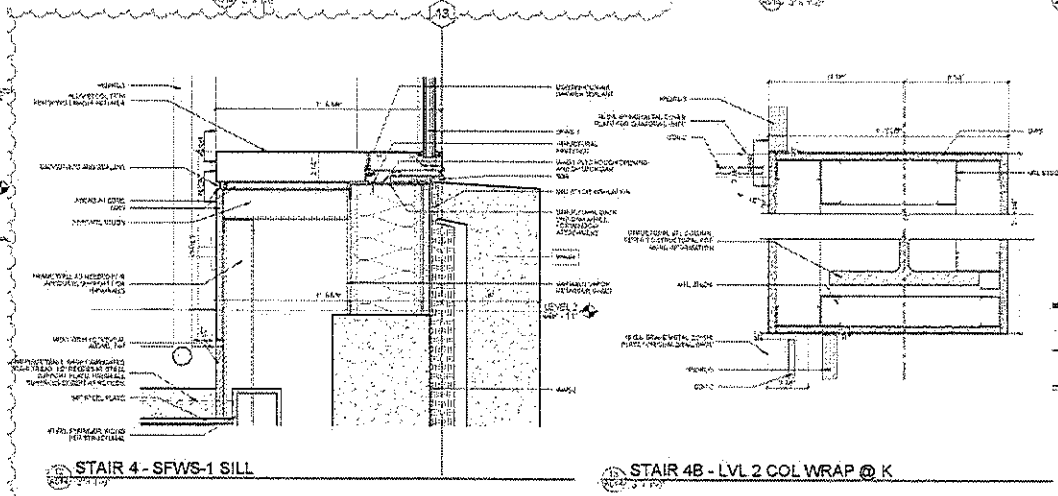


STAIR 4B - LVL 1 COL WRAP

STAIR 4B - LVL 2 COL WRAP

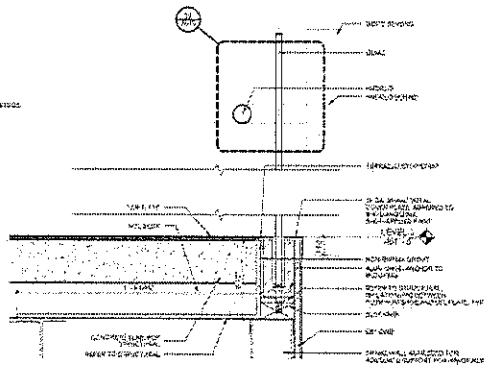


STAIR 4A - BOTTOM @ LEVEL 2

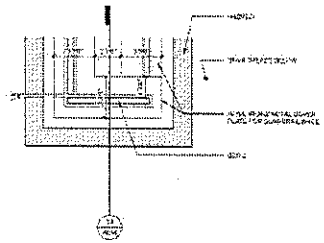


STAIR 4 - SFWS-1 SILL

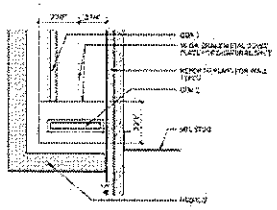
STAIR 4B - LVL 2 COL WRAP @ K



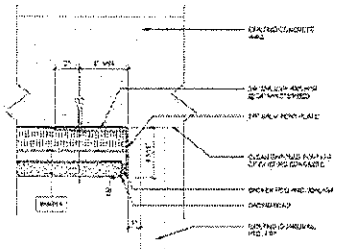
STAIR 4A - GUARD AT LVL 3 SLAB EDGE



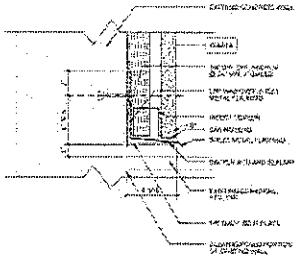
STAIR 4A - GUARDRAIL @ LVL 3 NORTH



STAIR 4A - GUARDRAIL @ LVL 3 SOUTH



JAMB REVEAL @ EXIST. GDR



HEADER REVEAL @ EXIST. GDR

LMN Architecture Urban Design Interiors

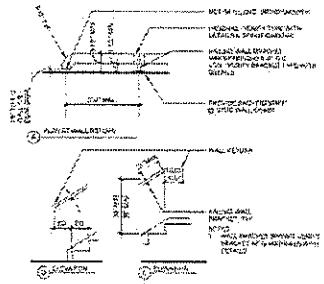
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

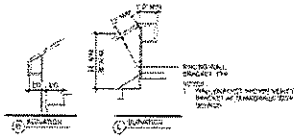
Construction Documents

Stair & Guardrail Details

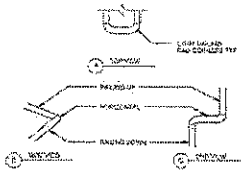
A514



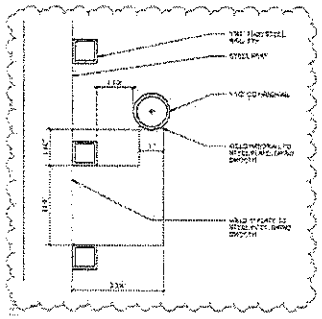
TYP. HNDRL @ WALL RETURN



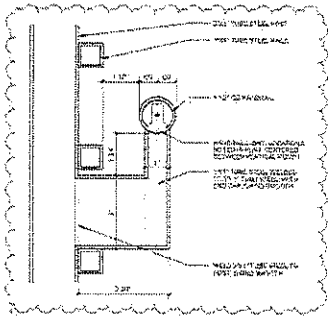
TYP HANDRAIL EXTENSIONS



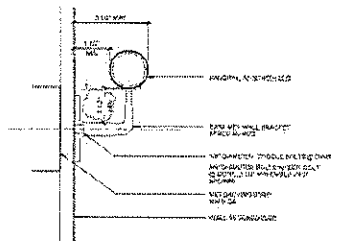
HANDRAIL TRANSITIONS



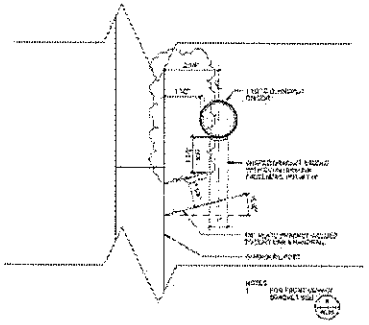
HNDRL-3 - POST MOUNTED



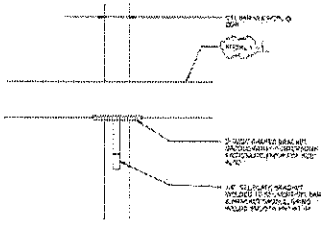
HNDRL-3A - POST MOUNTED



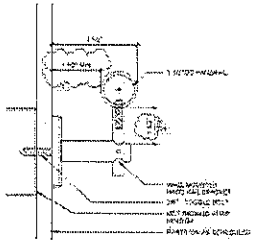
HNDRL-1 BRACKET - WALL MOUNTED



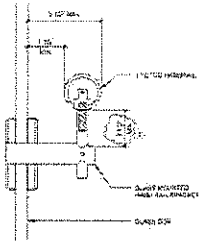
HNDRL-1 BRACKET ON GDR



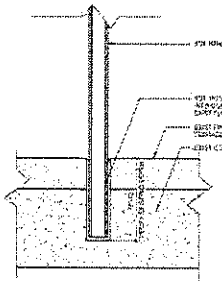
HNDRL-1 BRACKET AT GDR - ELEVATION



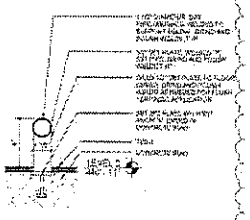
HNDRL-3 BRACKET - WALL MOUNTED



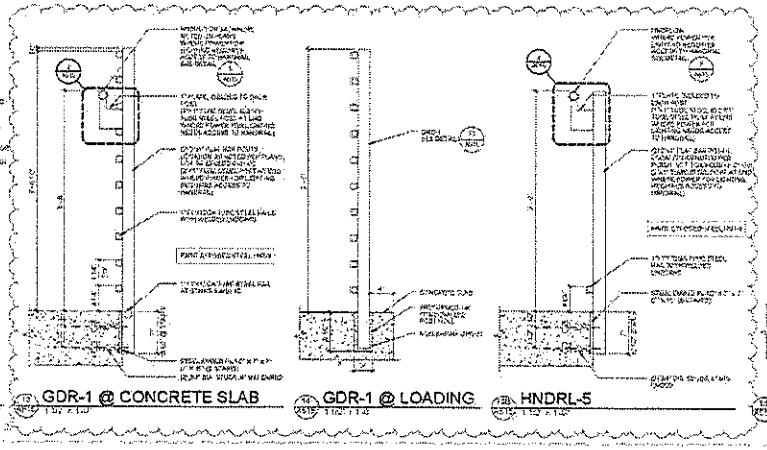
HNDRL-3 BRACKET - GLASS MOUNTED



HNDRL-2 MOUNTED @ EXIST FLOOR



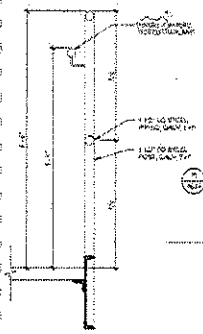
CANE RAIL



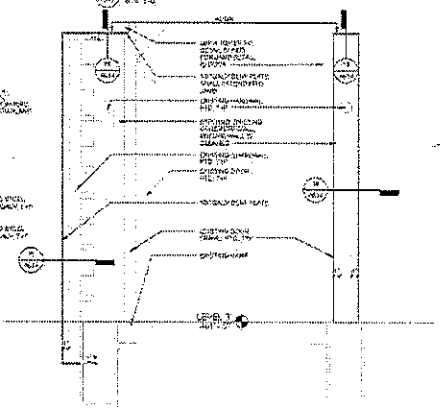
GDR-1 @ CONCRETE SLAB

GDR-1 @ LOADING

HNDRL-5



GDR-3 GUARDRAIL



EXIST. GDR @ RAMP 4

EXIST. HNDR @ RAMP 4

LMN Architecture Interior Design

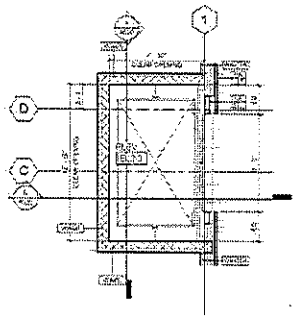
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

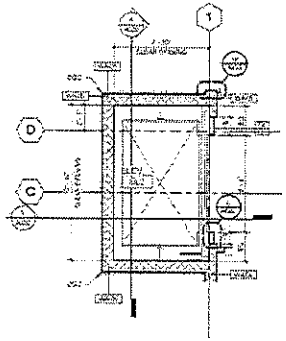
Construction Documents

Handrails & Guardrails

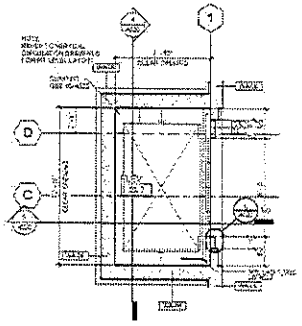
A515



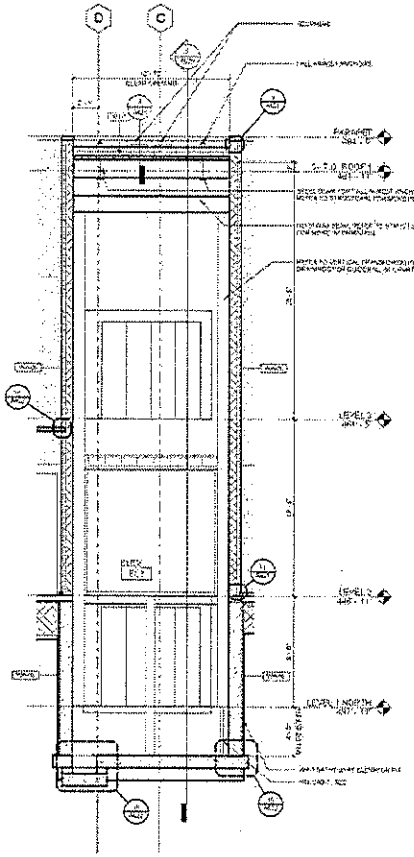
ELEVATOR 2 - LEVEL 3



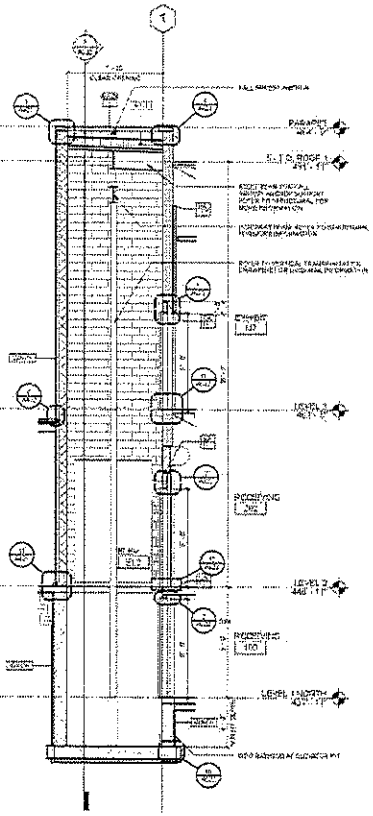
ELEVATOR 2 - LEVEL 2



ELEVATOR 2 - LEVEL 1



ELEVATOR 2 - EW SECTION



ELEVATOR 2 - NS SECTION

ELEVATOR NOTES

LMN Architects Urban Design

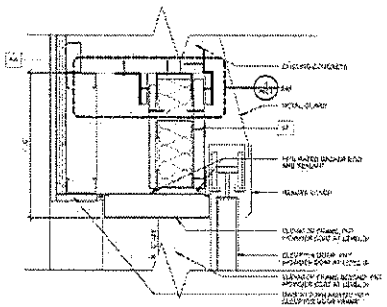
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

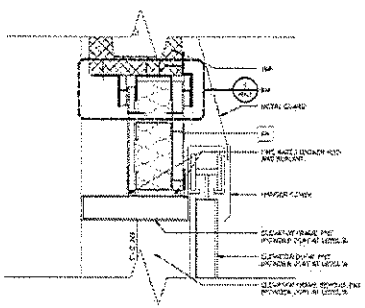
Construction Documents

Enlarged Plans & Sections - Elevator

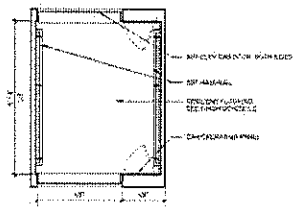
A520



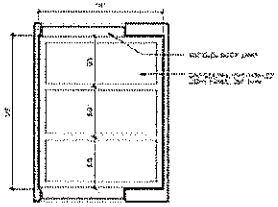
ELEVATOR HEAD LVL 3



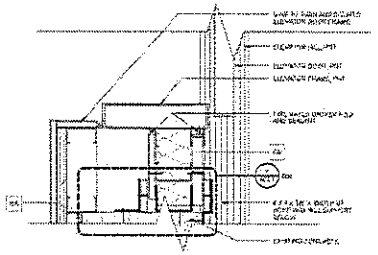
ELEVATOR HEAD LVL 1 & 2



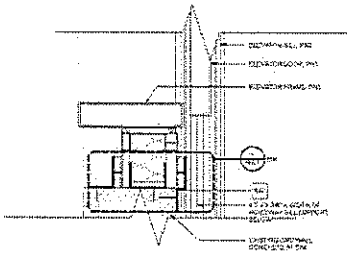
FLOOR PLAN - EXIST ELEV 1



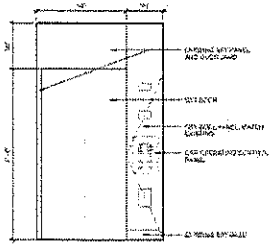
RCP - EXIST ELEV 1



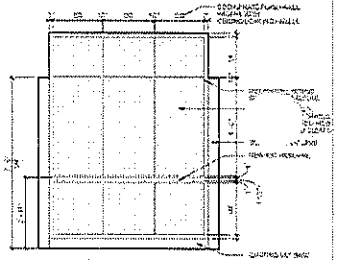
ELEVATOR JAMB LVL 3



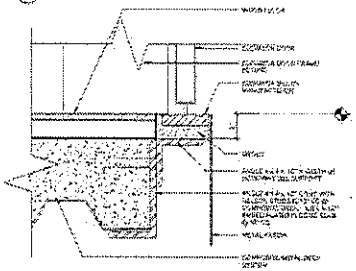
ELEVATOR JAMB LVL 1 & 2



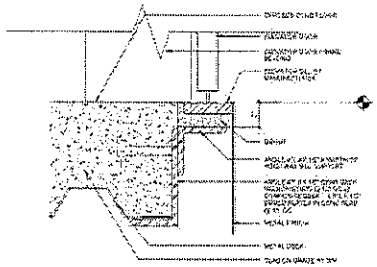
FRONT/BACK ELEVATION - EXIST ELEV 1



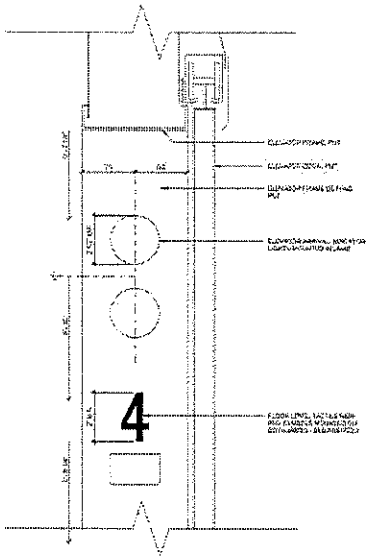
SIDE ELEVATION - EXIST ELEV 1



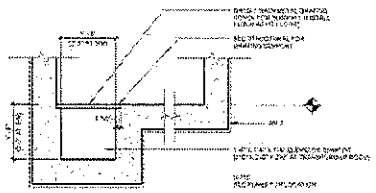
ELEVATOR SILL AT WOOD FLOOR LVL 3



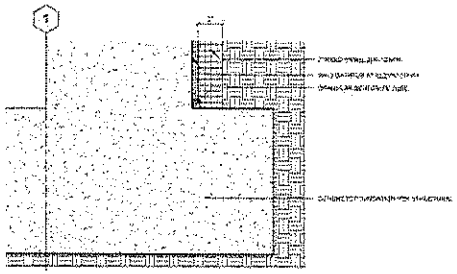
ELEVATOR SILL LVL 1 & 2



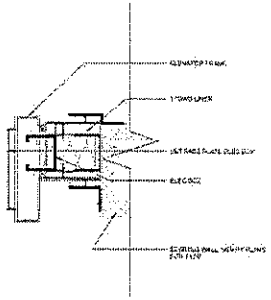
ELEVATOR FLOOR INDICATORS



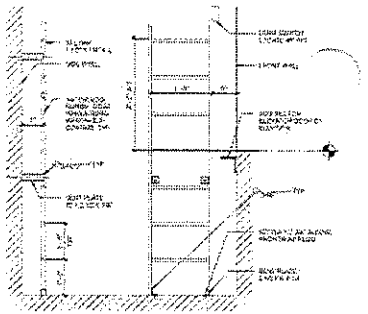
ELEV SUMP PIT SECTION



ELEVATOR FOUNDATION



CALL STATION AT ELEVATOR JAMBS



ELEVATOR PIT LADDER - MTL LAD-1

LMN Architects

SAM ASIAN ART MUSEUM

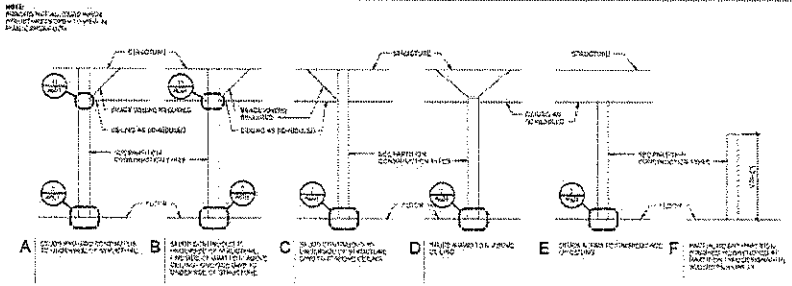
Asian Art Museum Expansion & Renovation

Construction Documents

Elevator Cab & Elevator Details

A522

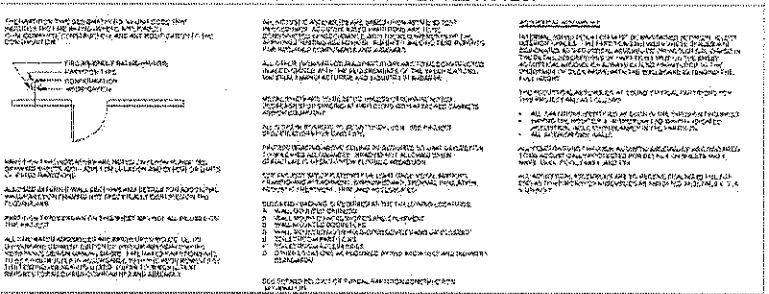
PARTITION CONFIGURATION

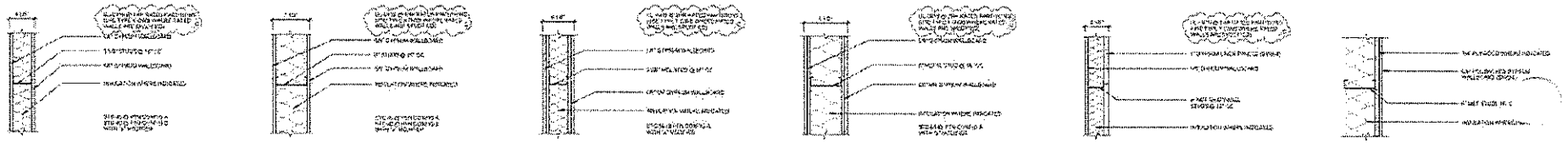


MODIFICATIONS



INTERIOR PARTITION SCHEDULE NOTES:





1 GWB PARTITION- TYPE 1

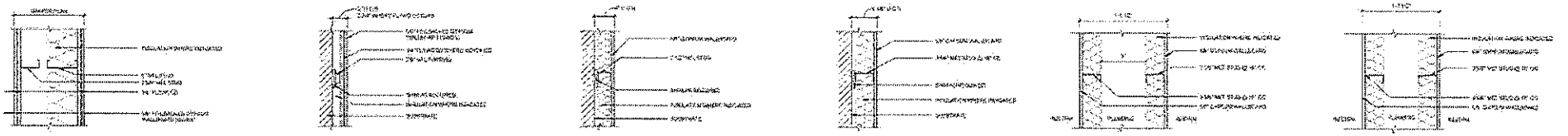
2 GWB PARTITION- TYPE 2

3 GWB PARTITION- TYPE 3

4 GWB PARTITION- TYPE 4

5 GWB PARTITION- TYPE 5

6 GWB PARTITION- TYPE 6



7 GWB PARTITION- TYPE 7

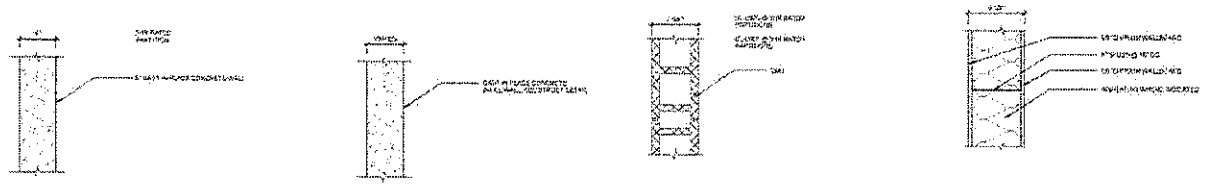
8 GWB PARTITION- TYPE 8

9 GWB PARTITION- TYPE 9

10 GWB PARTITION- TYPE 10

11 GWB PARTITION- TYPE 11

12 GWB PARTITION- TYPE 12



13 CONC PARTITION- TYPE 13

14 CONC PARTITION- TYPE 14

15 CMU PARTITION- TYPE 15

16 GWB PARTITION- TYPE 16

LMN Architects

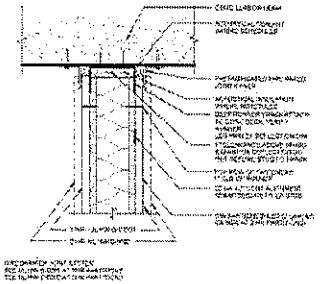
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

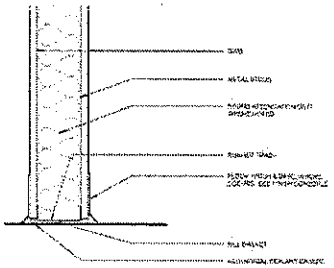
Construction Documents

Partition Types

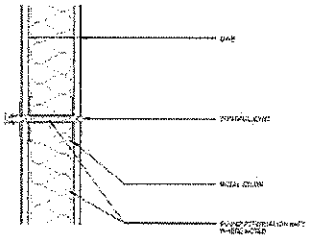
A600



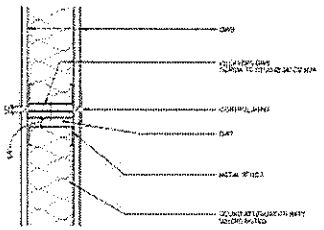
1 RATED GWB @ CONC DECK



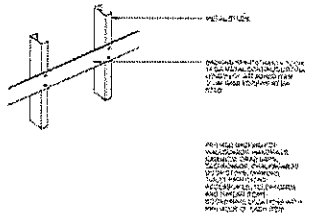
2 GWB @ FLOOR



3 CONTROL JOINT



4 CONTROL JOINT - 1HR



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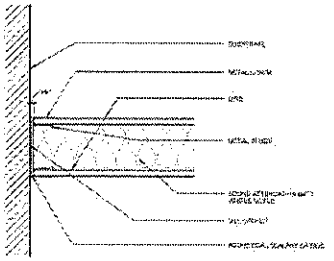
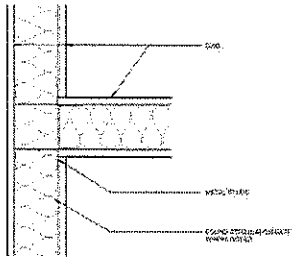
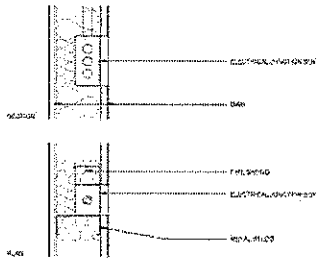


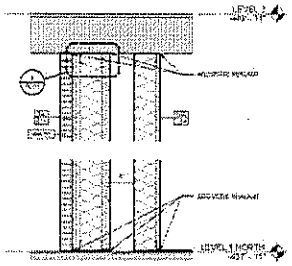
6 1 HR WALL - PERIMETER RELIEF



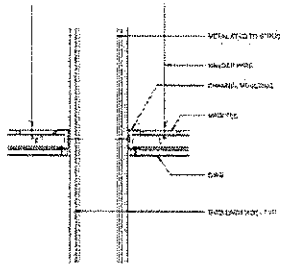
7 PARTITION INTERSECTION



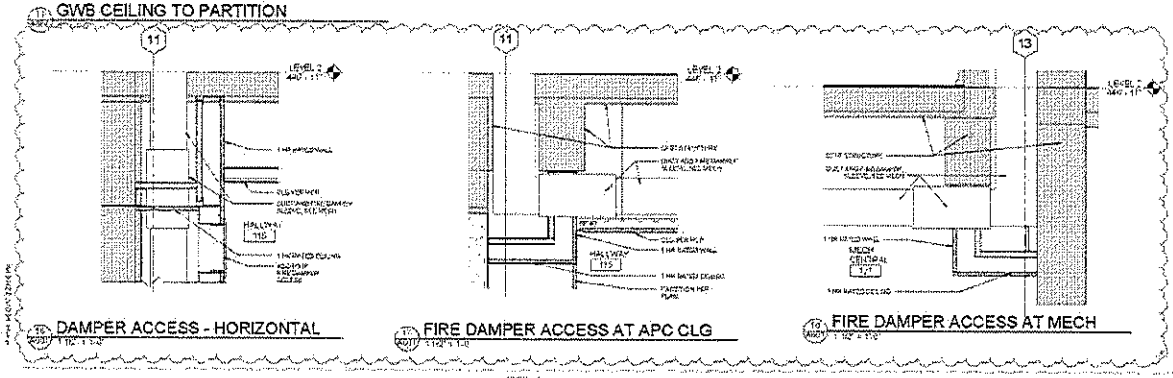
8 ELEC J-BOX - RATED PARTITION



9 2 HR RATED SOUND WALL



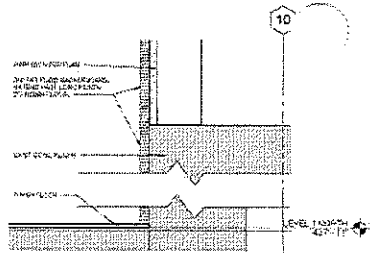
11 GWB CEILING TO PARTITION



12 DAMPER ACCESS - HORIZONTAL

13 FIRE DAMPER ACCESS AT APC CLG

14 FIRE DAMPER ACCESS AT MECH



20 EQUIPMENT WALL AT OFFICE 114

LMN Architecture Urban Design Interiors

SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

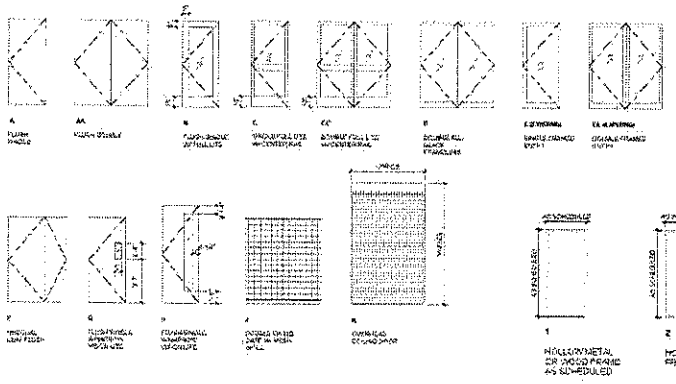
Partition Details

A601

DOOR NO.	EXISTING/NEW	RATING (MIN.)	DOOR WIDTH	DOOR HEIGHT	DOOR TYPE	DOOR MATERIAL	DOOR FINISH	DOOR CUTOUT	FRAME TYPE	FRAME MATERIAL	FRAME FINISH	DETAILS JAMB	DETAILS HEAD	DETAILS THRESH	LOCKSET	CLOSER	CARD READER	PANIC HARDWARE	DELAYED EGRESS	LATCH	COMMENTS

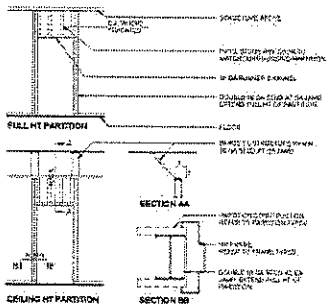
GENERAL SHEET NOTES

1. ALL DOOR HARDWARE SHALL COMPLY WITH ADA REQUIREMENTS FOR ACCESSIBILITY.
2. CONTRACTOR SHALL PROVIDE ALL DOOR HARDWARE, TYP.
3. CLEAR AND PROTECTIVE COATING ON EXPOSED ALUMINUM SURFACES OF DOOR HARDWARE, TYP.
4. DOOR SIDE LIGHTS SHALL BE FIELD VERIFIED.
5. SEE SHEET A000 FOR SPECIAL INSPECTION REQUIREMENTS.
6. SEE SHEET A000 FOR ACCESSIBILITY REQUIREMENTS.
7. REFER TO A000 FOR ADDITIONAL ACCESSIBILITY REQUIREMENTS.
8. SEE SHEET A000 FOR ADDITIONAL ACCESSIBILITY REQUIREMENTS.
9. ALL DOOR HARDWARE SHALL BE FURNISHED BY AN APPROVED DOOR HARDWARE SUPPLIER AND INSTALLED BY A CERTIFIED DOOR HARDWARE INSTALLER.
10. ALL DOOR HARDWARE SHALL BE FIELD VERIFIED BY CONTRACTOR PRIOR TO ORDERING.

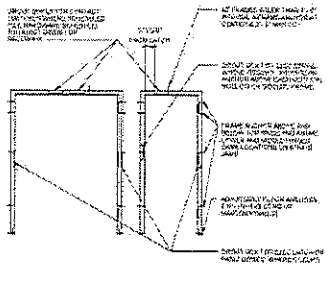


DOOR TYPES

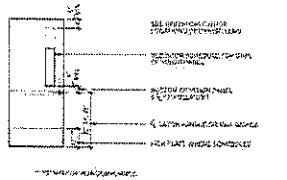
FRAME TYPES



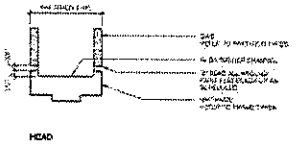
FRAMING AT DOOR OPENINGS



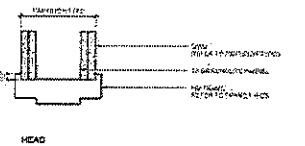
FRAME ANCHOR LOCATIONS



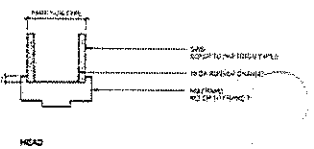
HARDWARE MOUNTING HEIGHTS



NON-RATED FLUSH HM DETAILS



TYP HM RATED DETAILS



TYP HM DETAILS

LMN Architects
Lawrence Design
Interiors

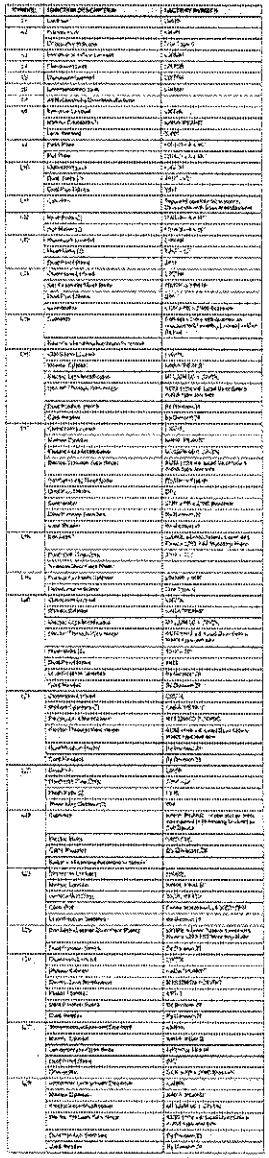
SAM ASIAN ART MUSEUM

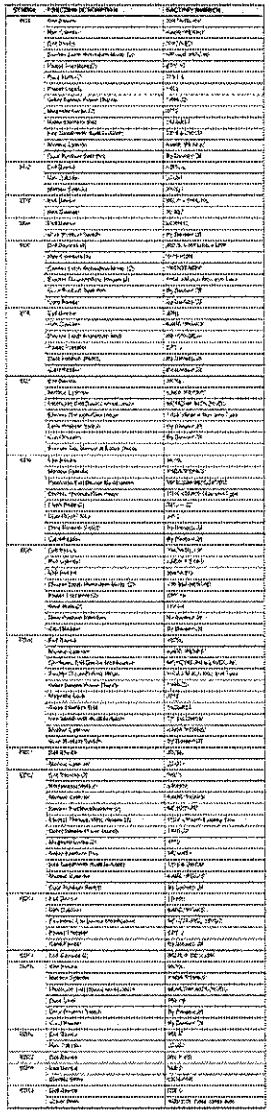
Asian Art Museum Expansion & Renovation

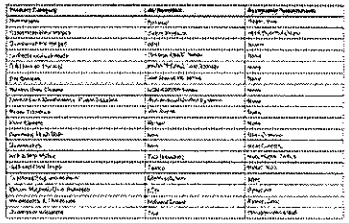
Construction Documents

Door Schedule

A610







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SYMBOL	FUNCTION DESCRIPTION	FACTORY NUMBER
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Product Category	Lab Number	Equipment Specifications
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[illegible]

LMN Architecture Design Interiors

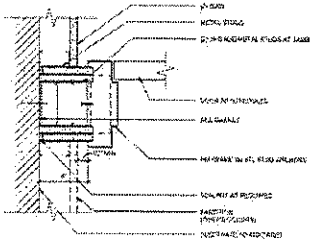
ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

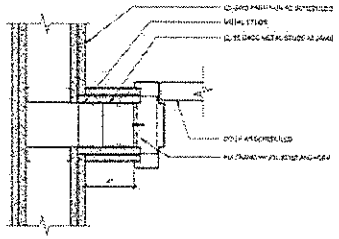
Construction Documents

Door Hardware

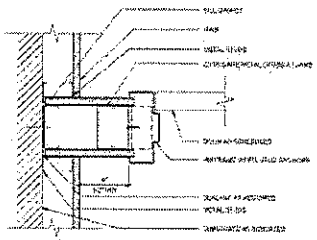
A610a



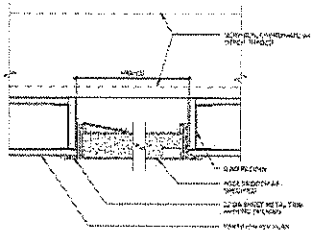
1 JAMB DETAIL



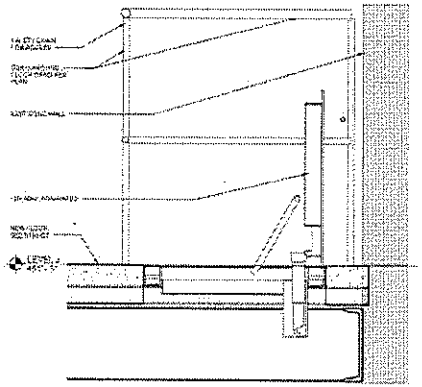
2 JAMB DETAIL



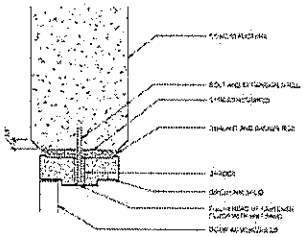
3 JAMB DETAIL AT FURRED WALL



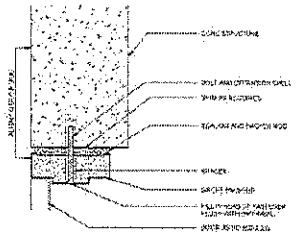
4 ACCESS DOOR SECTION



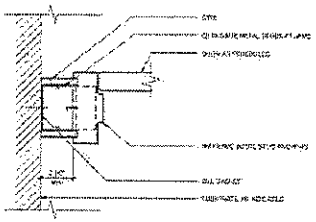
2 FLR AD-2 2 MECH 302



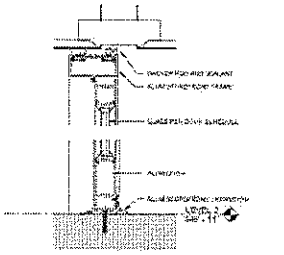
1 HEAD AT CONCRETE



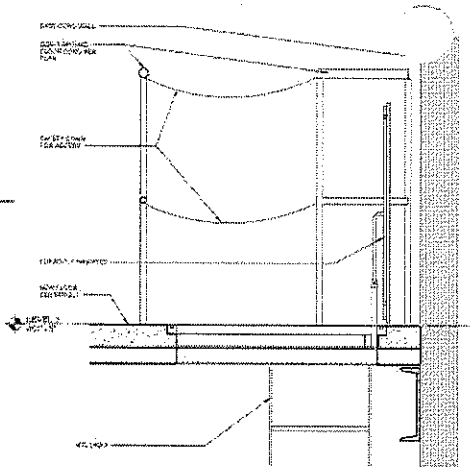
2 JAMB AT CONCRETE



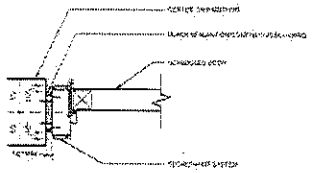
3 JAMB DETAIL



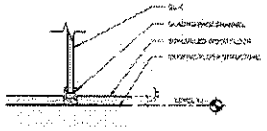
4 STOREFRONT DOOR HEAD/SILL



1 FLR AD-1 MECH 301



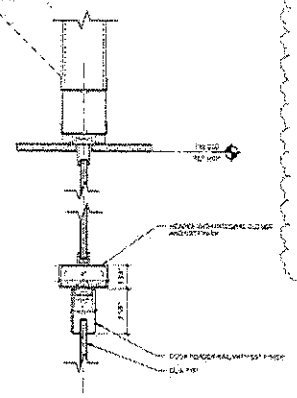
1 INT. STOREFRONT - JAMB @ GWB WALL



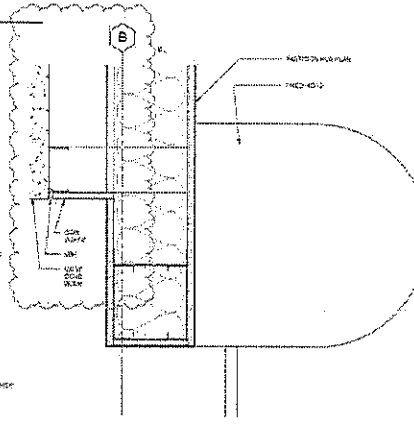
2 GLASS RELITE - SILL



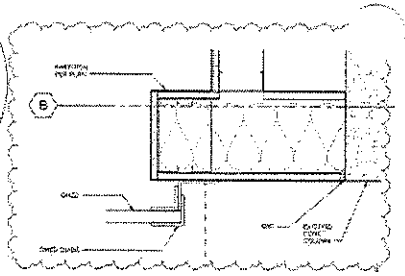
3 STOREFRONT JAMB, TYP



4 GLASS DOOR - HEADER1



5 OHCD-2 HEAD @ ART STORAGE



6 OHCD-2 JAMB @ ART STORAGE



1 JAMB DETAIL AT CLAY TILE



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Construction Documents

Door Details

A611

ROOM #	ROOM NAME	FLOOR	BASE	WALLS NORTH	WALLS EAST	WALLS SOUTH	WALLS WEST	CEILING	REMARKS
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

ROOM #	ROOM NAME	FLOOR	BASE	WALLS NORTH	WALLS EAST	WALLS SOUTH	WALLS WEST	CEILING	REMARKS
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

GENERAL SHEET NOTES

1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]
6. [illegible]

LEGEND

[illegible]

[illegible]

LMN Architecture Lyman Design Interiors

[illegible]

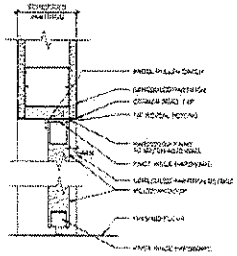
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

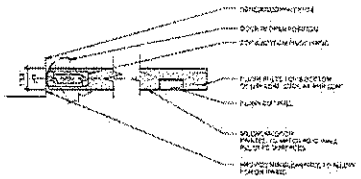
Construction Documents

Finish Schedule

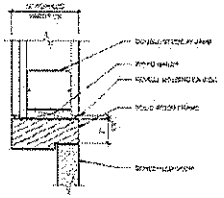
A615



DOOR - PIVOT HEAD/THRESHOLD



DOOR - PIVOT JAMB/PULL



DOOR-WD JAMB(HEAD SIM)

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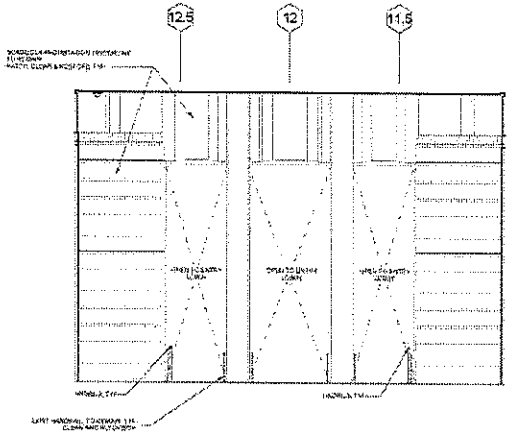
Asian Art Museum Expansion & Renovation

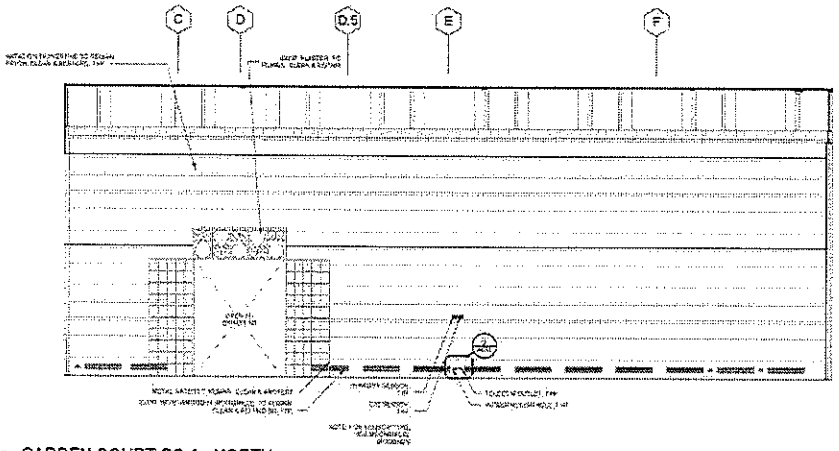
Construction Documents

Doors & Frames - Wood Doors

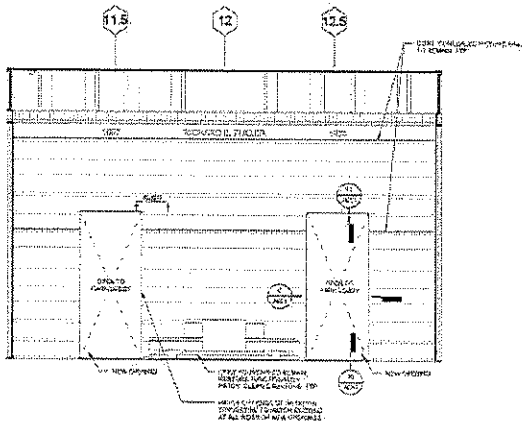
A619



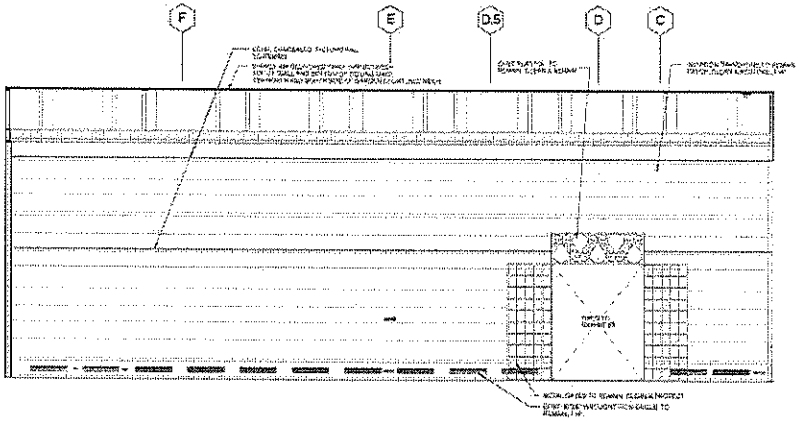
1 GARDEN COURT GC-1 - WEST



2 GARDEN COURT GC-1 - NORTH



3 GARDEN COURT GC-1 - EAST



4 GARDEN COURT GC-1 - SOUTH

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Asian Art Museum Expansion & Renovation

Construction Documents

Interior Elevations - Garden Court

A620

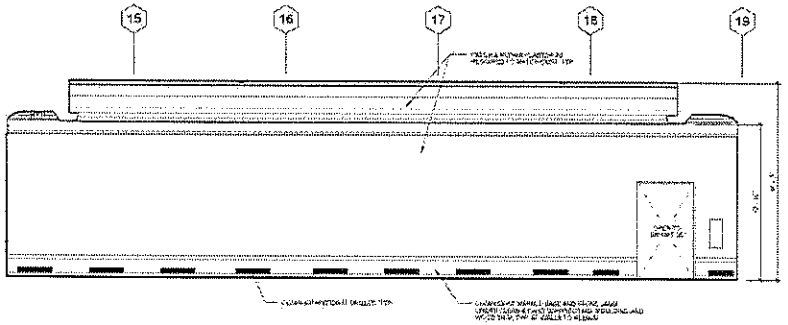


EXHIBIT S1 - EAST (EXHIBIT N1 SIM)

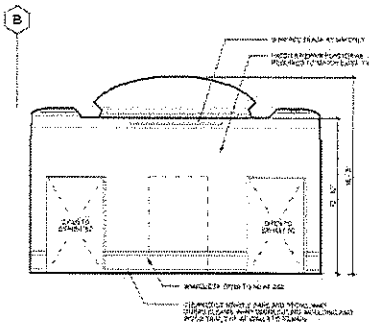


EXHIBIT S1 - SOUTH (EXHIBIT N1 NORTH SIM)

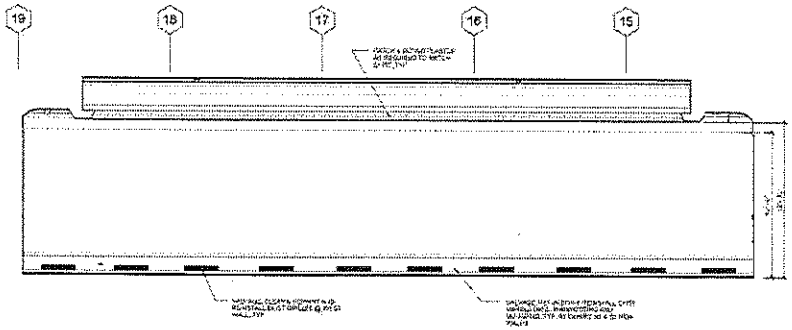


EXHIBIT S1 - WEST (EXHIBIT N1 SIM)

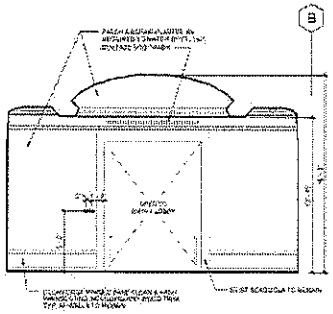


EXHIBIT S1- NORTH (EXHIBIT N1 SOUTH SIM)

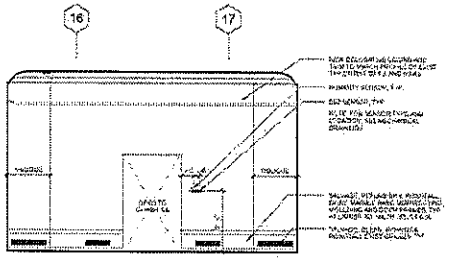
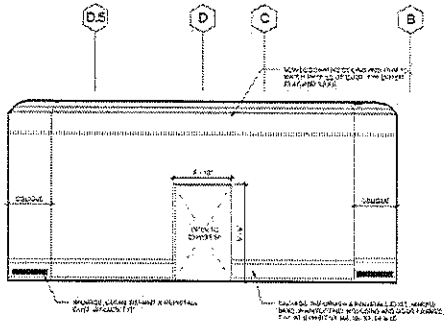


EXHIBIT S4 - EAST



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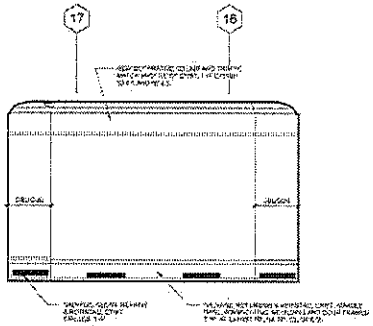

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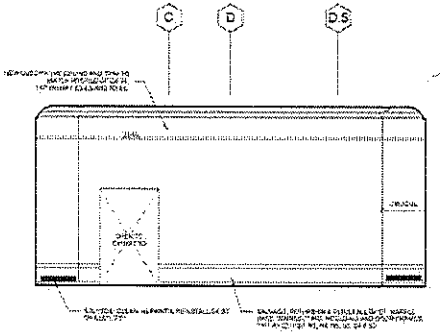

EXHIBIT S4 - NORTH

LMN Architects Urban Design Interiors

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Asian Art Museum Expansion & Renovation

Construction Documents

Interior Elevations - Galleries

A621

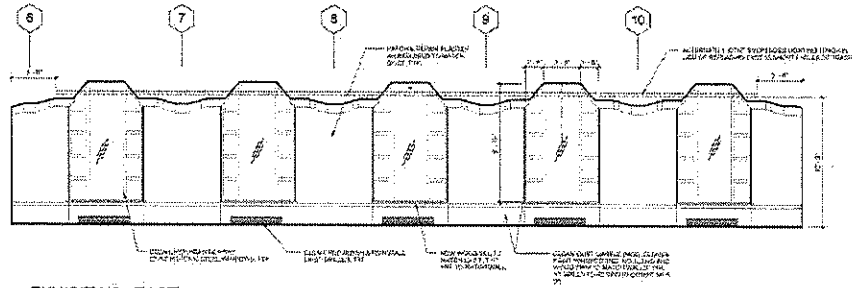


EXHIBIT N6 - EAST

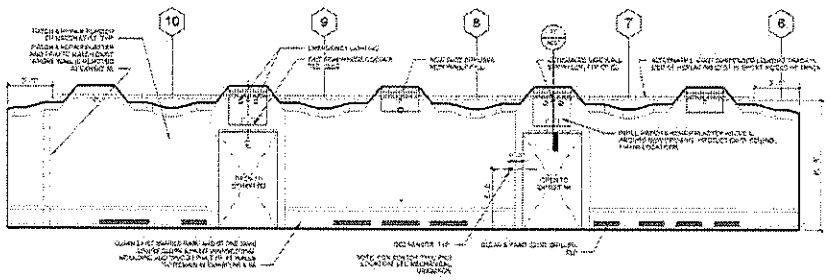


EXHIBIT N6 - WEST, EXHIBIT S6 - WEST SIM

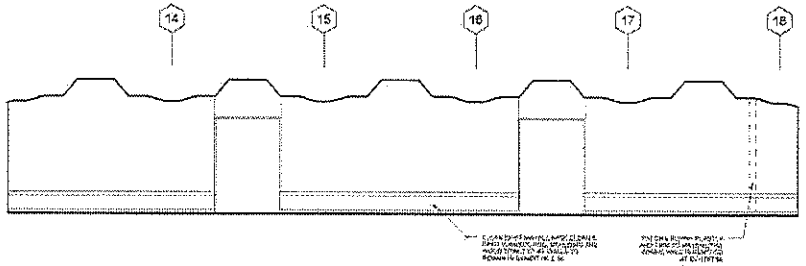


EXHIBIT S6 - EAST

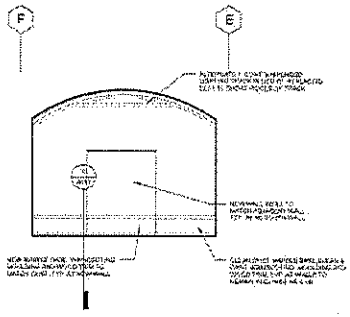


EXHIBIT S6 - SOUTH

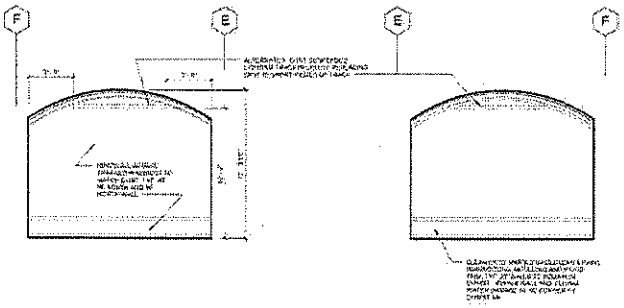


EXHIBIT N6 - SOUTH, EXHIBIT S6 NORTH SIM

EXHIBIT N6 - NORTH

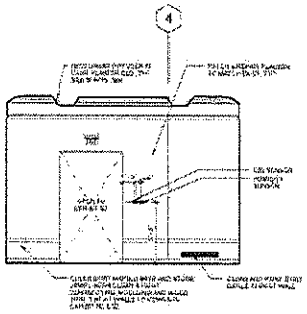


EXHIBIT N2 - EAST (EXHIBIT S2 SIM)

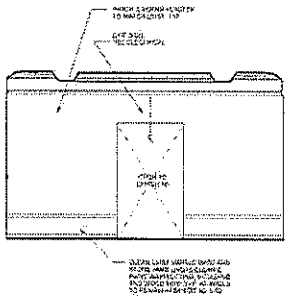


EXHIBIT N2 - SOUTH (EXHIBIT S2 SIM)

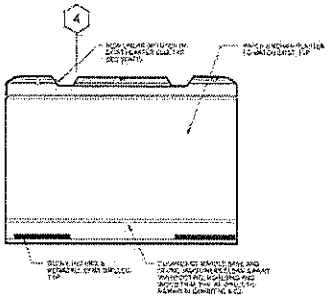


EXHIBIT N2 - WEST (EXHIBIT S2 SIM)

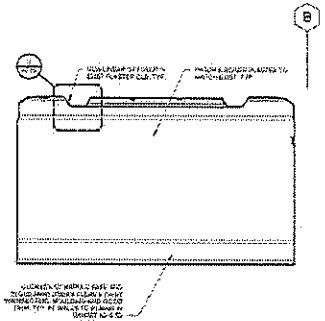


EXHIBIT N2 - NORTH (EXHIBIT S2 SIM)

LMN Architects

SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Interior Elevations - Galleries

A622

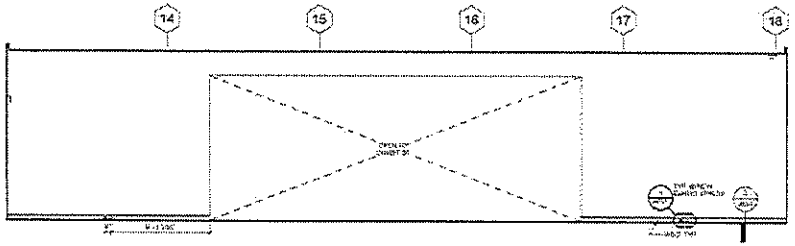
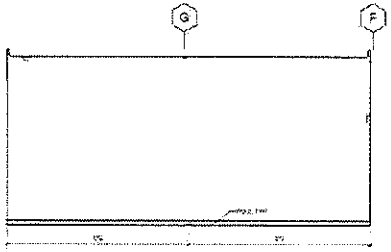


EXHIBIT S7 - EAST



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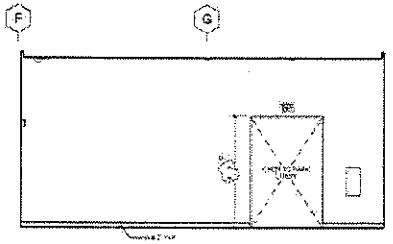

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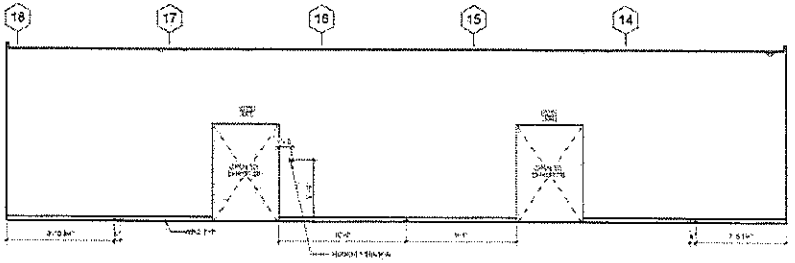

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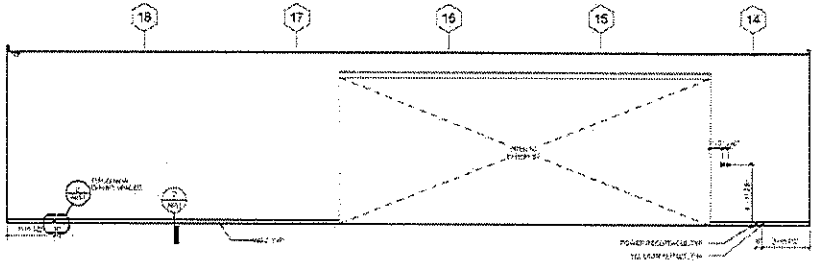
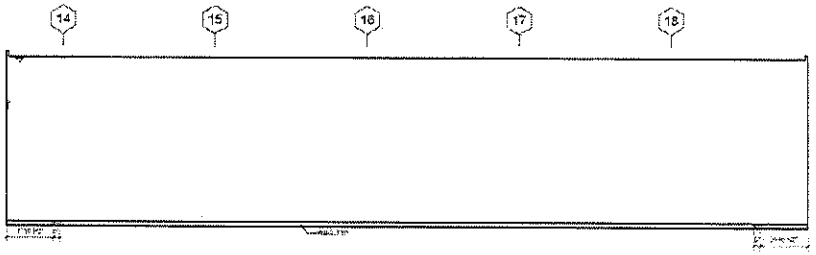


EXHIBIT S8 - WEST



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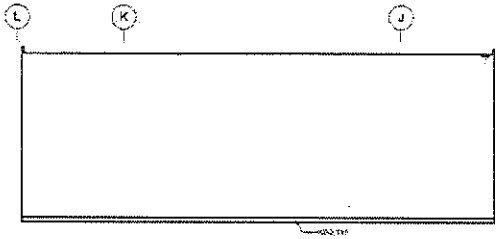

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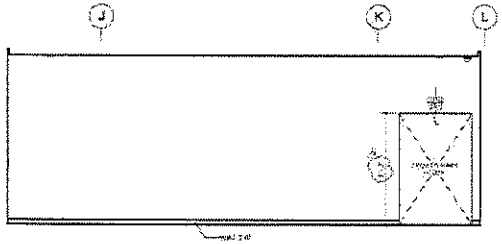
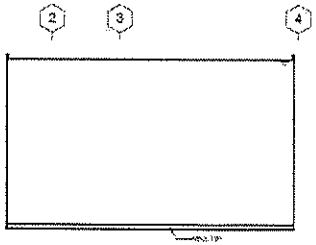
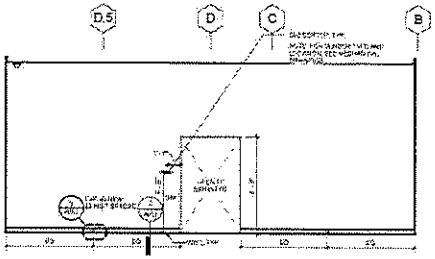


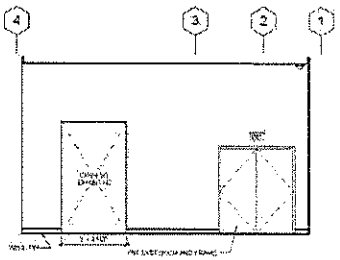
EXHIBIT S8 - NORTH



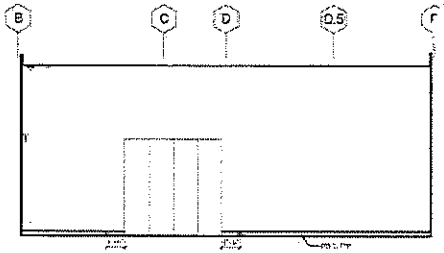
N7 EXHIBIT - EAST



N7 EXHIBIT - SOUTH



N7 EXHIBIT - WEST



N7 EXHIBIT - NORTH

LMN Architects

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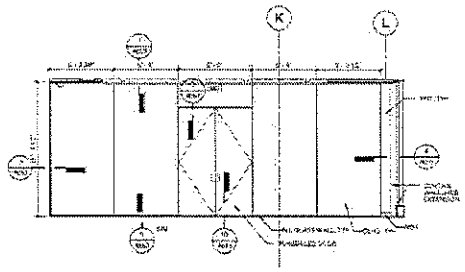
Asian Art Museum Expansion & Renovation

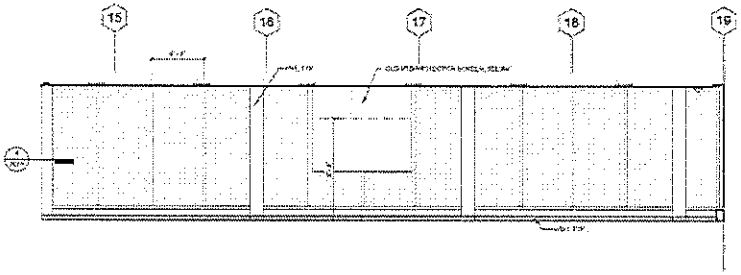
Construction Documents

Interior Elevations - Galleries

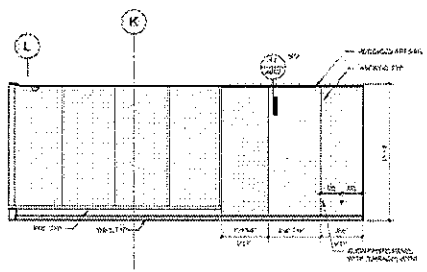
A623



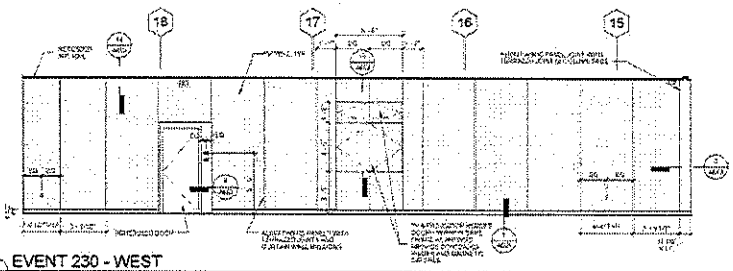
EVENT 230 - NORTH



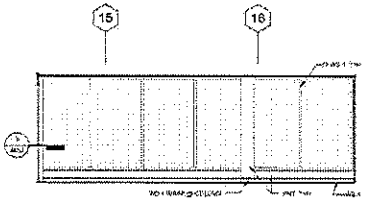
EVENT 230 - EAST



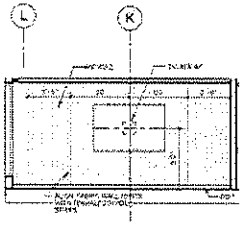
EVENT 230 - SOUTH



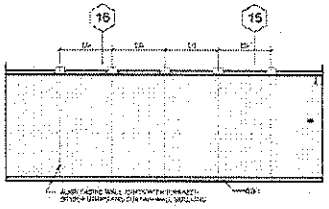
EVENT 230 - WEST



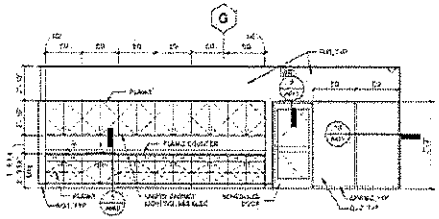
MEETING 139 - EAST



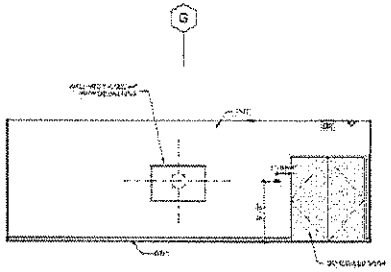
MEETING 139 - SOUTH



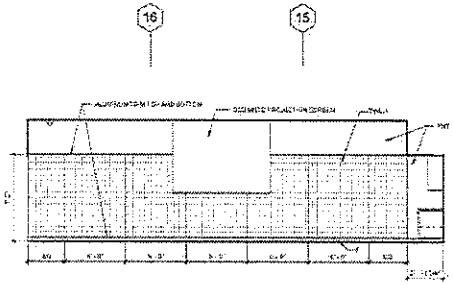
MEETING 139 - WEST



EDUCATION 227 - NORTH



EDUCATION 227 - SOUTH



EDUCATION 227 - WEST

LMN Architecture Lawn Design Interiors

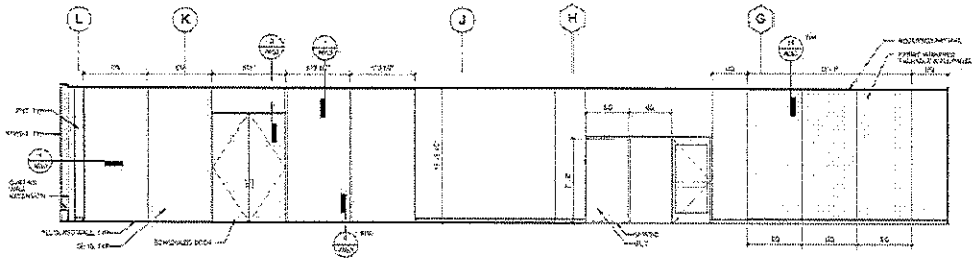
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

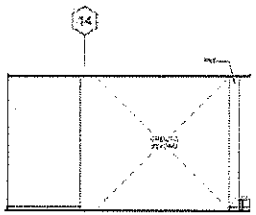
Construction Documents

Interior Elevations - Education, Event, Mtg Room

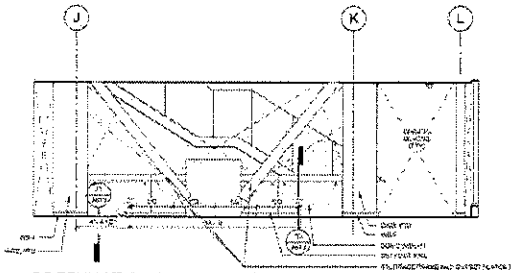
A624



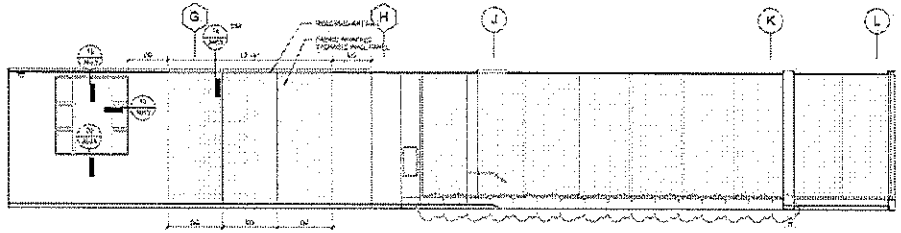
1 HALLWAY 231 - SOUTH



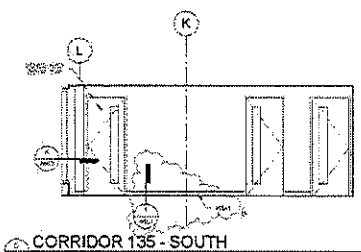
2 PREFUNCTION 231A - WEST



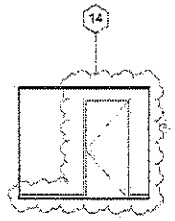
3 PREFUNCTION 231A - NORTH



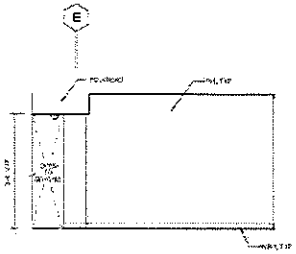
4 HALLWAY 231 - NORTH



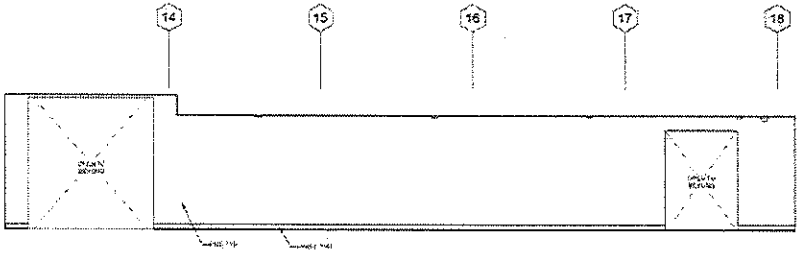
5 CORRIDOR 135 - SOUTH



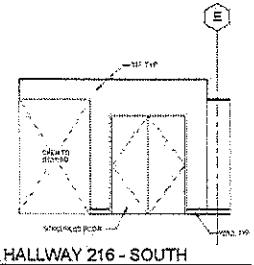
6 CORRIDOR 135 - WEST



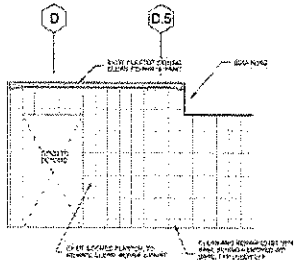
7 HALLWAY 216 - NORTH



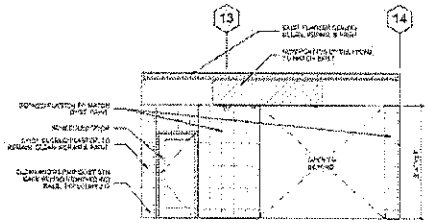
8 HALLWAY 216 - EAST



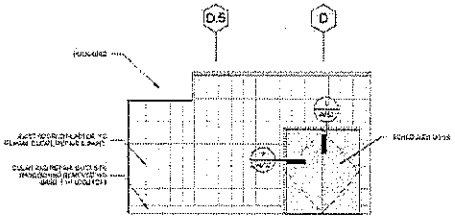
9 HALLWAY 216 - SOUTH



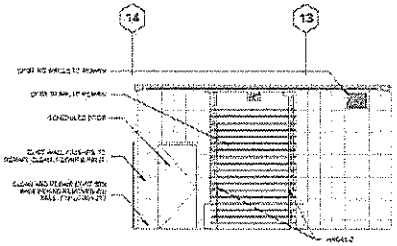
10 LOBBY 213 - NORTH



11 LOBBY 213 - EAST



12 LOBBY 213 - SOUTH



13 LOBBY 213 - WEST

LMN Architecture Urban Design Interiors

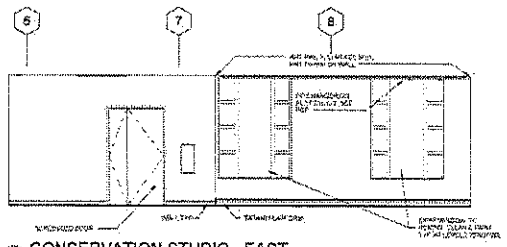
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

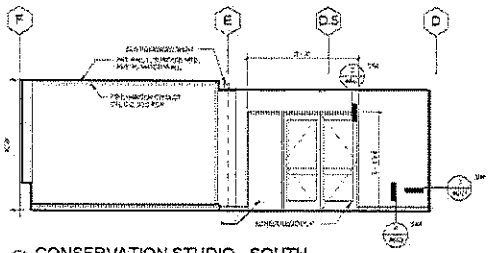
Construction Documents

Interior Elevations - Hallways and Lobbies

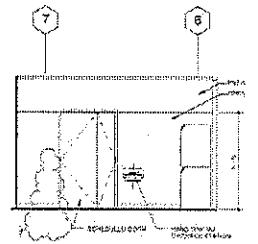
A625



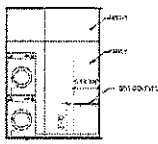
1 CONSERVATION STUDIO - EAST



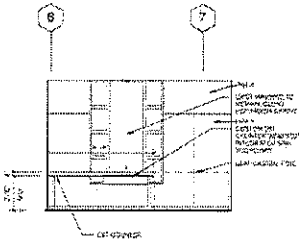
2 CONSERVATION STUDIO - SOUTH



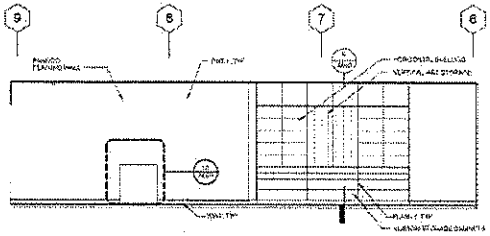
3 WET LAB - WEST



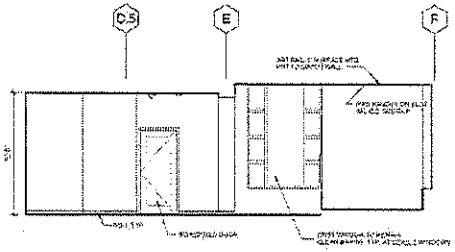
4 WET LAB - NORTH



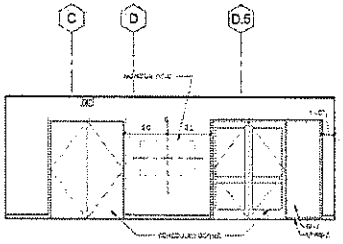
5 WET LAB - EAST



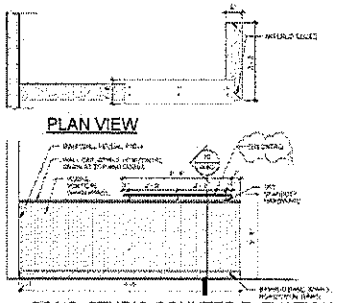
6 CONSERVATION STUDIO - WEST



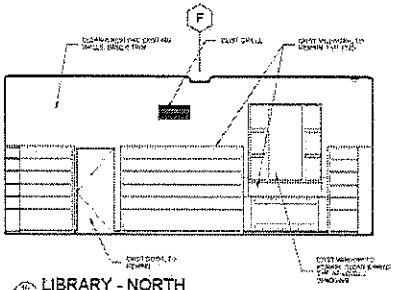
7 CONSERVATION STUDIO - NORTH



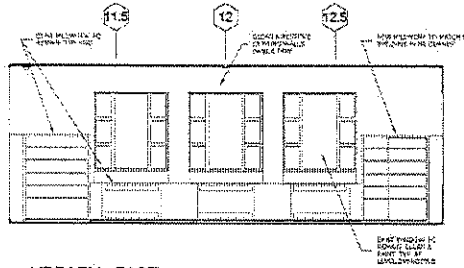
8 HALLWAY 200A - NORTH



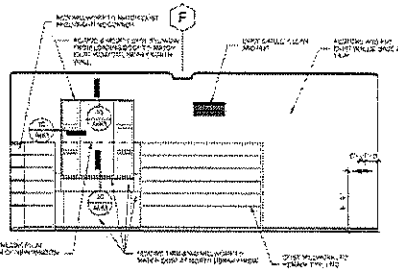
9 CONS. STUDIO COUNTER ELEVATION



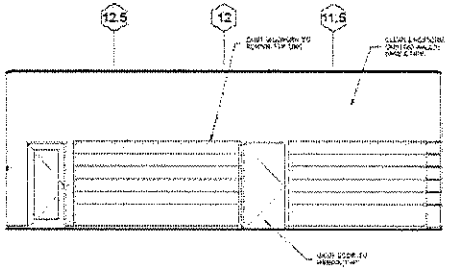
10 LIBRARY - NORTH



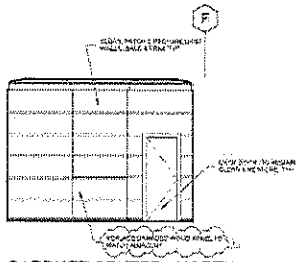
11 LIBRARY - EAST



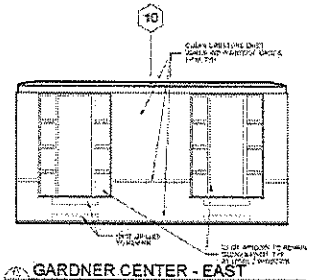
12 LIBRARY - SOUTH



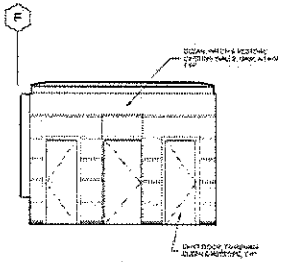
13 LIBRARY - WEST



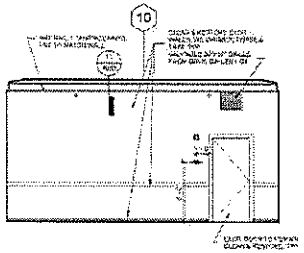
14 GARDNER CENTER - NORTH



15 GARDNER CENTER - EAST



16 GARDNER CENTER - SOUTH



17 GARDNER CENTER - WEST

LMN Architecture Urban Design Interiors

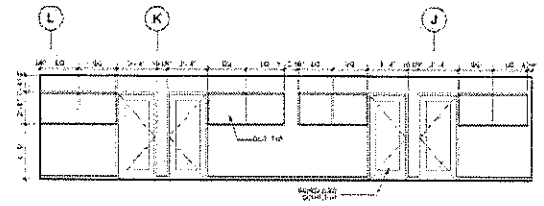
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

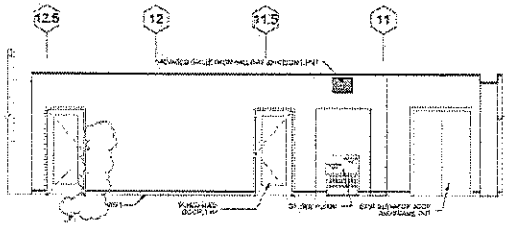
Construction Documents

Interior Elevations - Conservation Studio, Library, Gardner Ctr

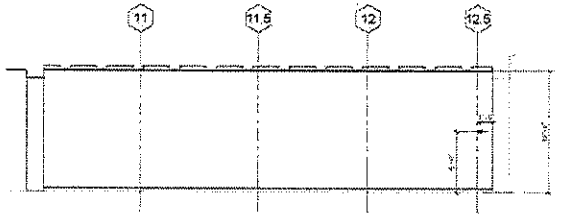
A626



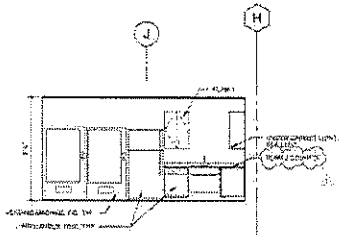
1 OPEN OFFICE 138 - SOUTH



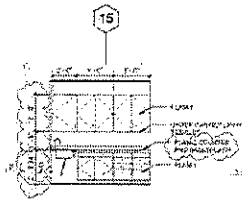
2 HALLWAY 200 - WEST



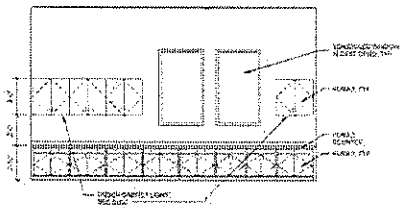
3 HALLWAY 200 - EAST



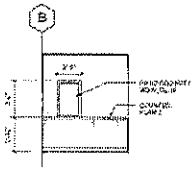
4 BREAK ROOM 137 - SOUTH



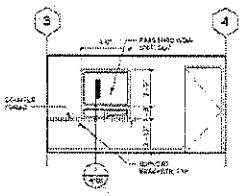
5 BREAK ROOM 137 - EAST



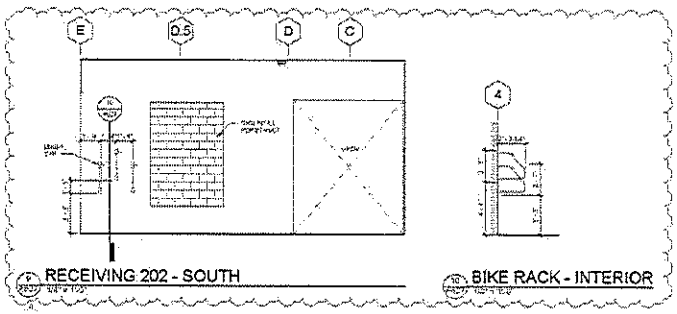
6 WORKSHOP 212A - NORTH



7 SECURITY 202B - NORTH



8 SECURITY 202B - EAST



9 RECEIVING 202 - SOUTH

10 BIKE RACK - INTERIOR

LMN Architecture | Urban Design | Interiors

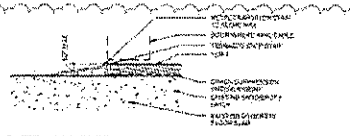
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

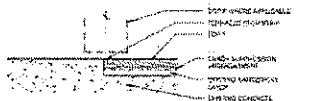
Construction Documents

Interior Elevations - Level 1 Office Suite, Misc.

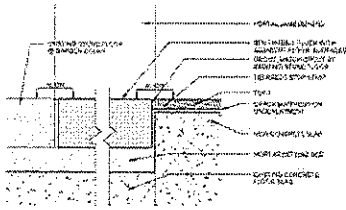
A627



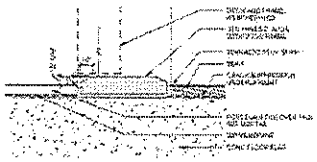
FLR TRANS TERRAZZO/CONCRETE



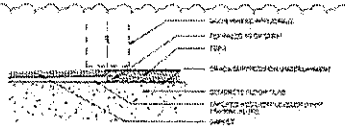
FLR TRANS TERRAZZO/CONCRETE



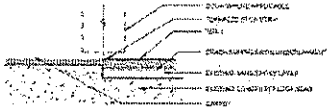
FLR TRANS TERRAZZO/STONE (EXIST)



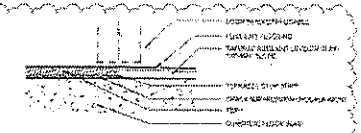
FLR TRANS TERRAZZO/PORCELAIN TILE



FLR TRANS TERRAZZO/CARPET



FLR TRANS TERRAZZO/CARPET



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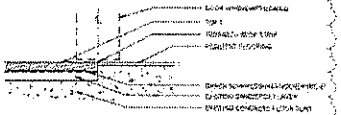

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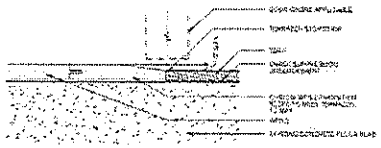
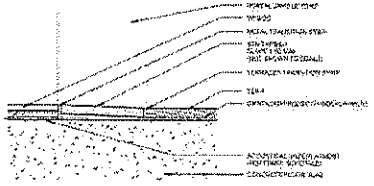


FLR TRANS TERRAZZO/BAMBOO



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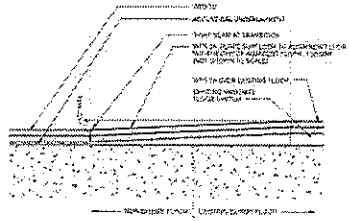

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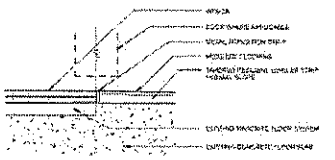

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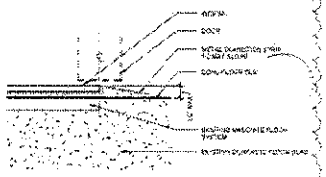
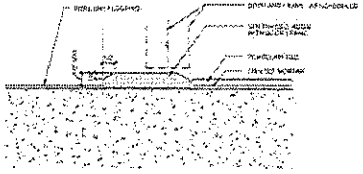
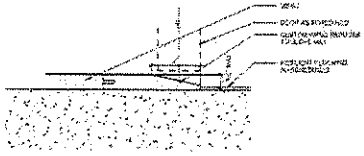


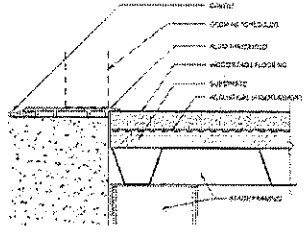
FLR TRANS MASONITE(EXIST)/CONCRETE



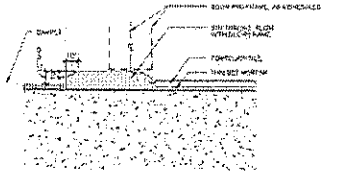
FLR TRANS RESILIENT/PORCELAIN TILE



FLR TRANS BAMBOO/RESILIENT



FLR TRANS CARPET/WOOD (AT STAGE)



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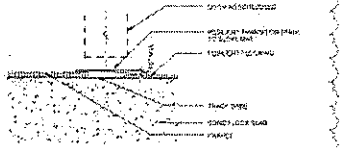

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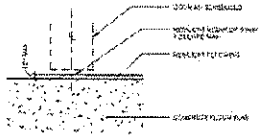
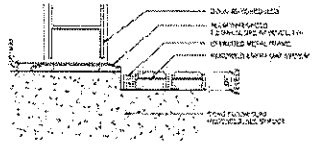
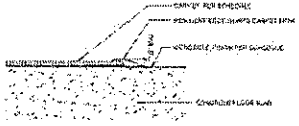


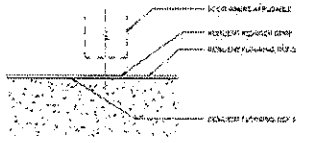
FLR TRANS CONCRETE/RESILIENT



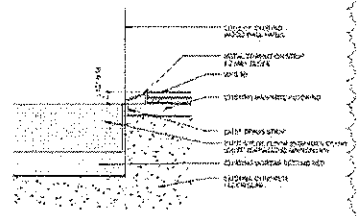
FLR TRANS CONCRETE/WALK-OFF MAT



CARPET TO CONCRETE



FLR TRANS RESILIENT (RSF-1)/(RSF-2)



FLR TRANS MASONITE/EXIST STONE (EXIST TERRAZZO SIM)

LMN Architecture Limon Design Interiors

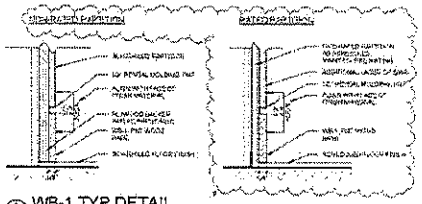
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

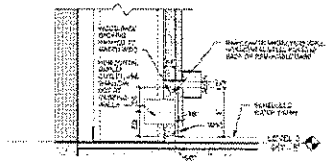
Construction Documents

Interior Details - Floor Transitions

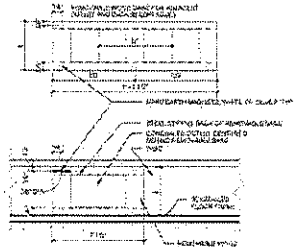
A630



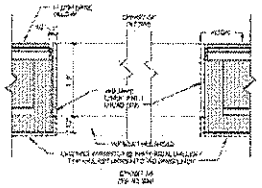
1 WB-1 TYP DETAIL



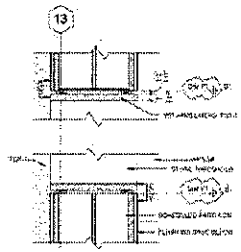
2 WB-2 @ NEW EXHIBIT SPACES, TYP



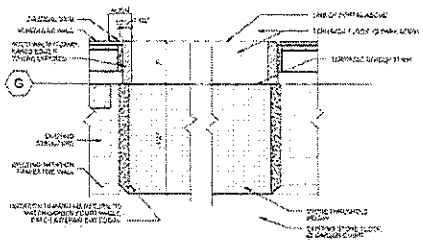
3 WB-2 ELEVATION



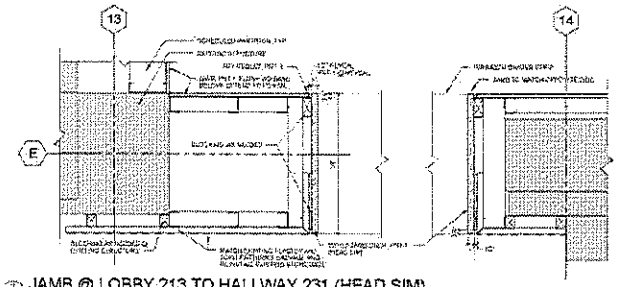
4 JAMB @ EXHIBIT N7, S7 (HEAD SIM)



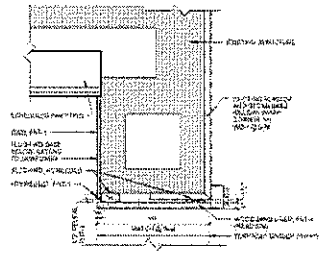
5 EXHIBIT S7, S8 JAMB TO PARK LOBBY



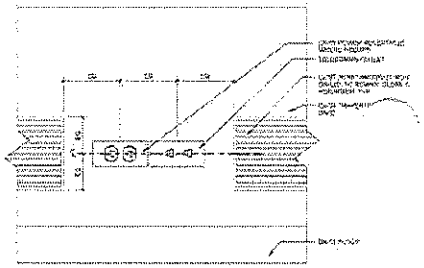
6 GARDEN COURT JAMB



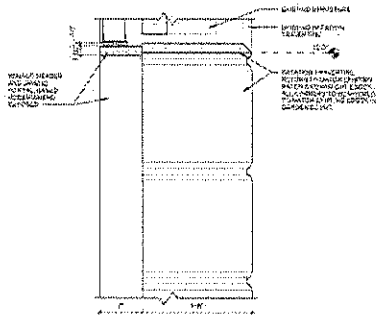
7 JAMB @ LOBBY 213 TO HALLWAY 231 (HEAD SIM)



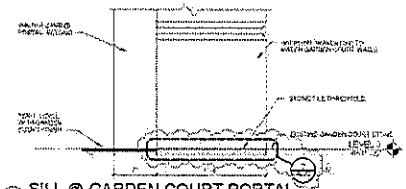
8 LOBBY 213 TO HALLWAY 200



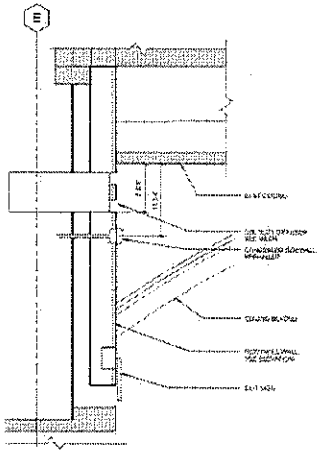
9 GARDEN COURT RECEPTACLE



10 GARDEN COURT THRESHOLD HEADER



11 SILL @ GARDEN COURT PORTAL



12 DIFFUSER @ EXHIBIT N6/S6

LMN Architects Urban Design Interiors

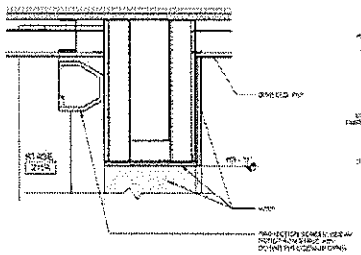
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

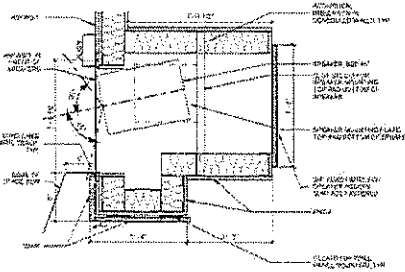
Construction Documents

Interior Details - Galleries

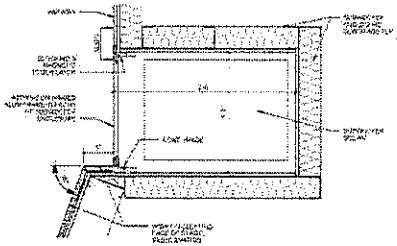
A651



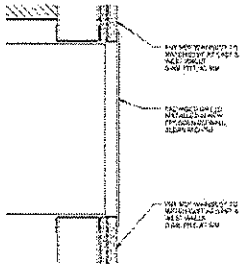
PROSCENIUM HEAD



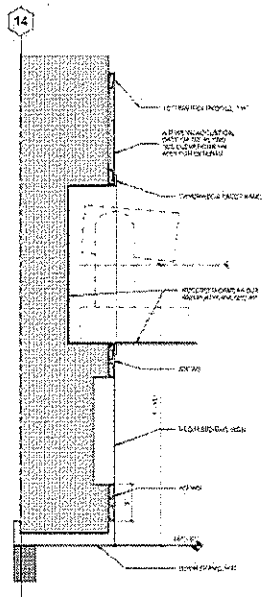
PROSCENIUM JAMB



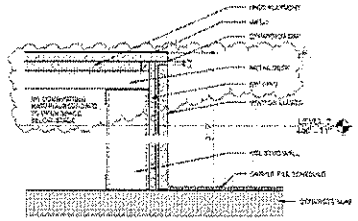
SUBWOOFER ENCLOSURE - PLAN



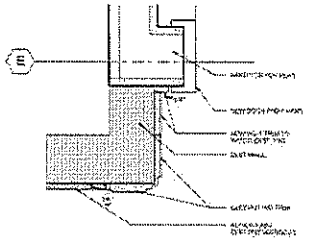
WALL GRILLE



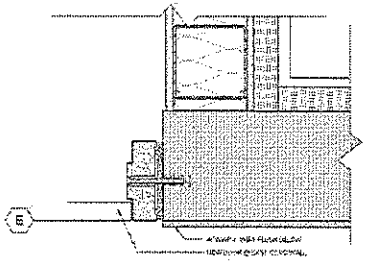
RECESSED EXIT SIGN AND CAMERA BOX



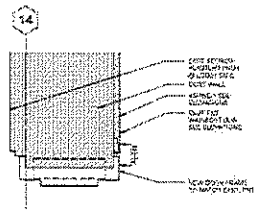
SECTION @ STAGE APRON



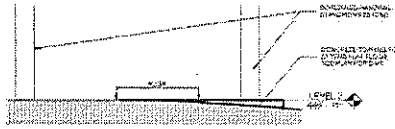
JAMB @ AUDITORIUM SIDE DR



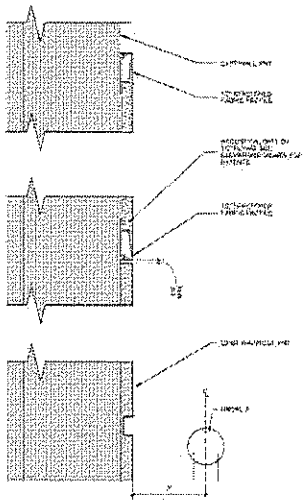
JAMB @ STAGE DOOR



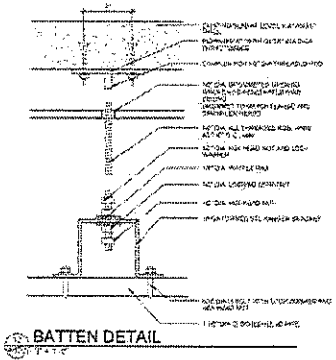
JAMB @ AUDITORIUM DOOR



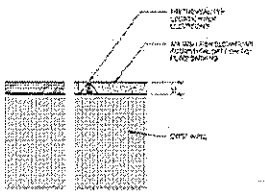
CONCRETE INFILL @ AUDITORIUM



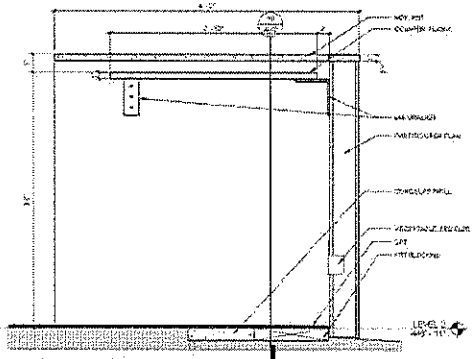
FABRIC WALL PANEL @ WAINSCOT



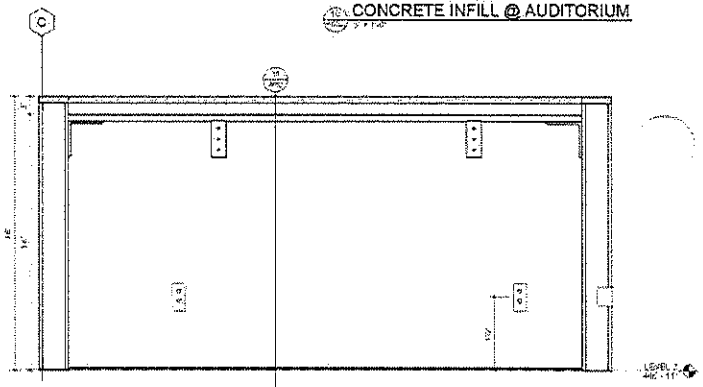
BATTEN DETAIL



PLAN - ASFWS-1 JOINT



AUDITORIUM A/V COUNTER SECTION



AUDITORIUM A/V COUNTER

LMN Architects

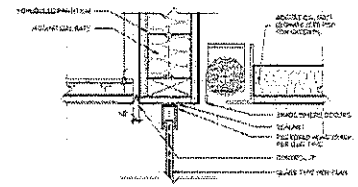
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

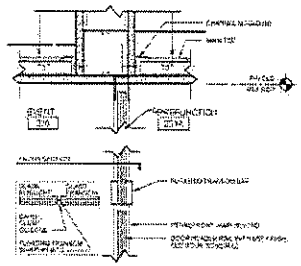
Construction Documents

Interior Details - Auditorium

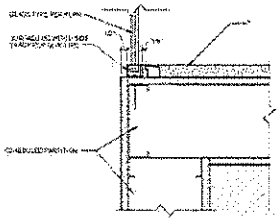
A652



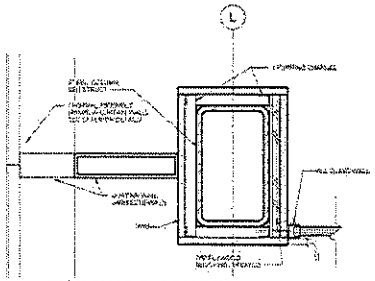
1 GLW HEAD @ EVENT 230



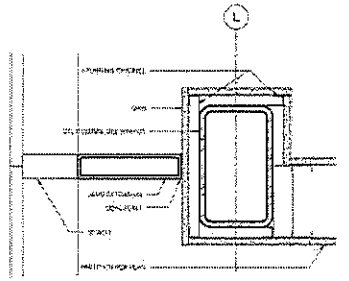
2 GLW HEAD @ GLASS DOOR FRAME



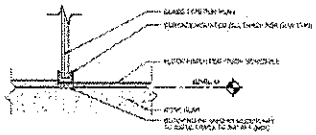
3 GLW JAMB @ CORNER, TYP



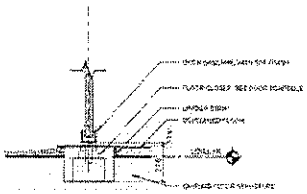
4 GLW JAMB @ COLUMN



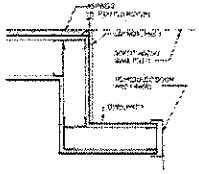
5 GLW JAMB @ RATED COLUMN



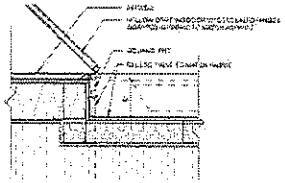
6 GLW SILL, TYP



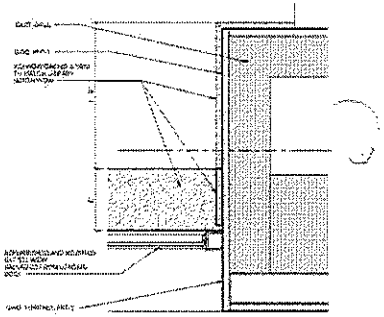
7 GLASS DOOR - THRESHOLD



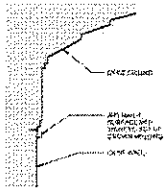
8 DOOR FRAME @ EVENT



9 PLAN DTL @ MONITOR RECESS



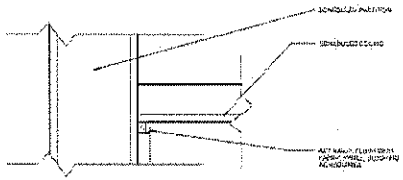
10 WINDOW 216 JAMB



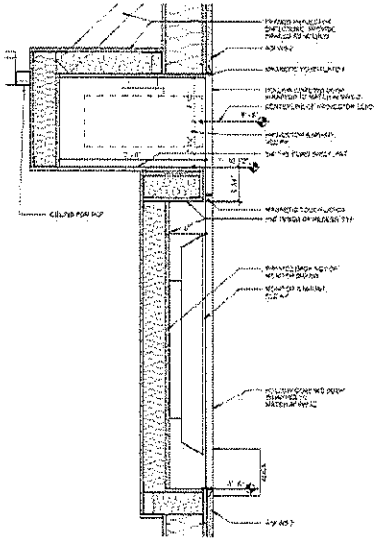
11 ART RAIL-1 @ GARDNER CENTER



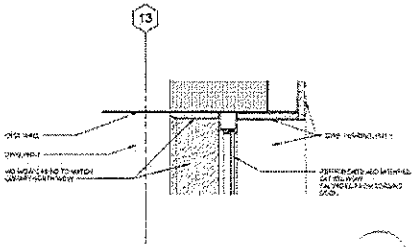
12 ACCESS DOOR DETAIL



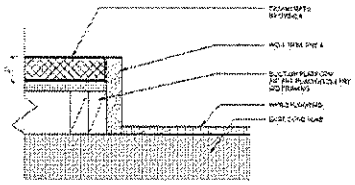
13 RECESSED ART RAIL @ FABRIC PANEL



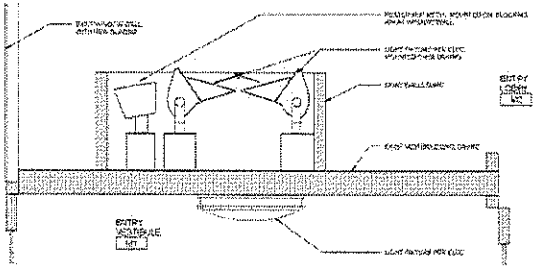
14 SECTION @ MONITOR/PROJECTOR RECESS



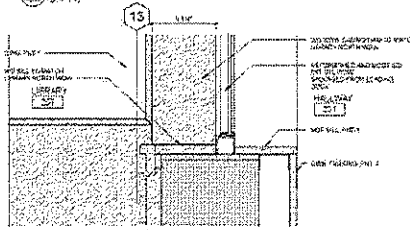
15 WINDOW 216 HEAD



16 TATAMI PLATFORM EDGE



17 VESTIBULE ROOF



18 WINDOW 216 SILL

LMN Architects

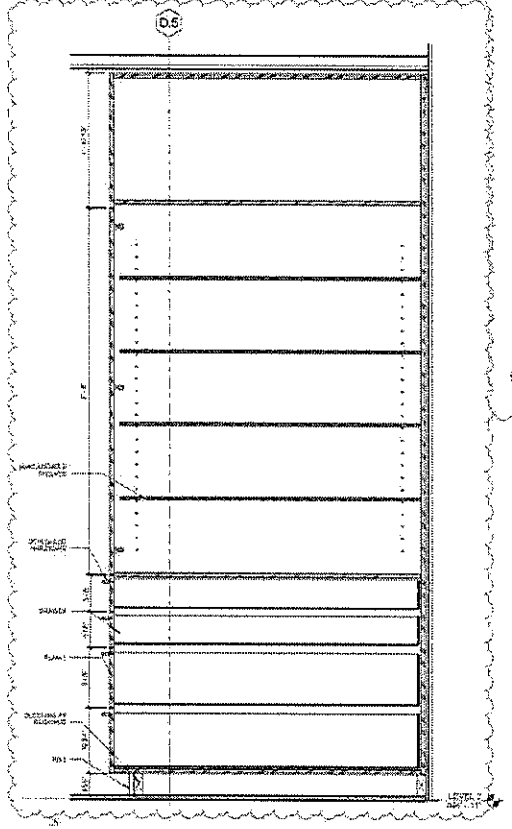
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

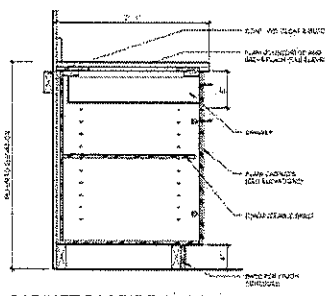
Construction Documents

Interior Details

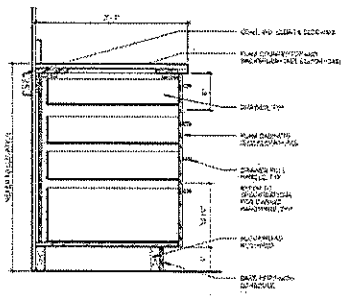
A653



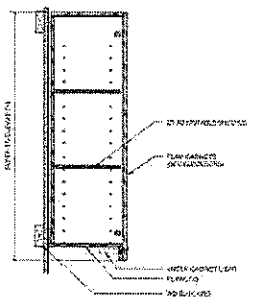
MILLWORK @ CONSERV. STUDIO



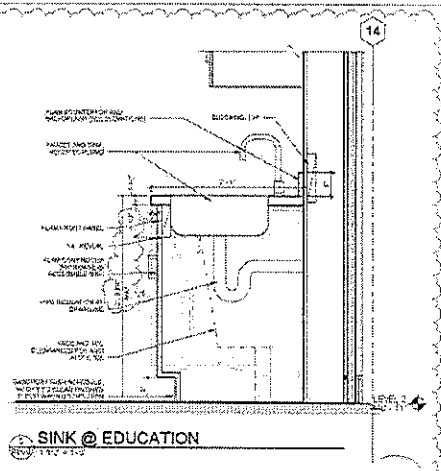
CABINET BASE-DRAWER/DOOR



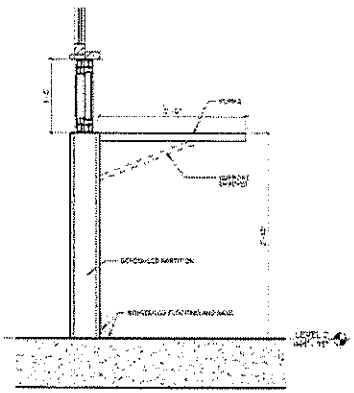
CABINET BASE DRAWERS



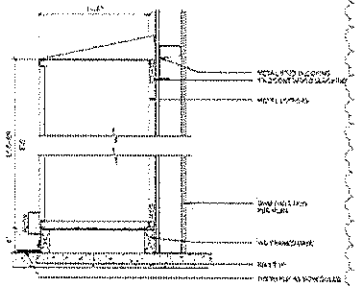
CABINET UPPER



SINK @ EDUCATION

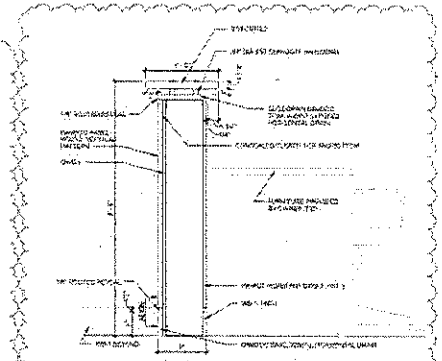


SECURITY COUNTER

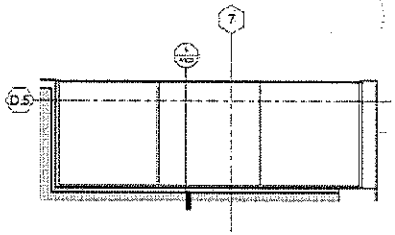


MTL LKR-1 SECTION

CABINET BASE - NOT USED



CONSERVATION STUDIO COUNTER



CONSERVATION STORAGE

LMN Architecture Urban Design Interiors

SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

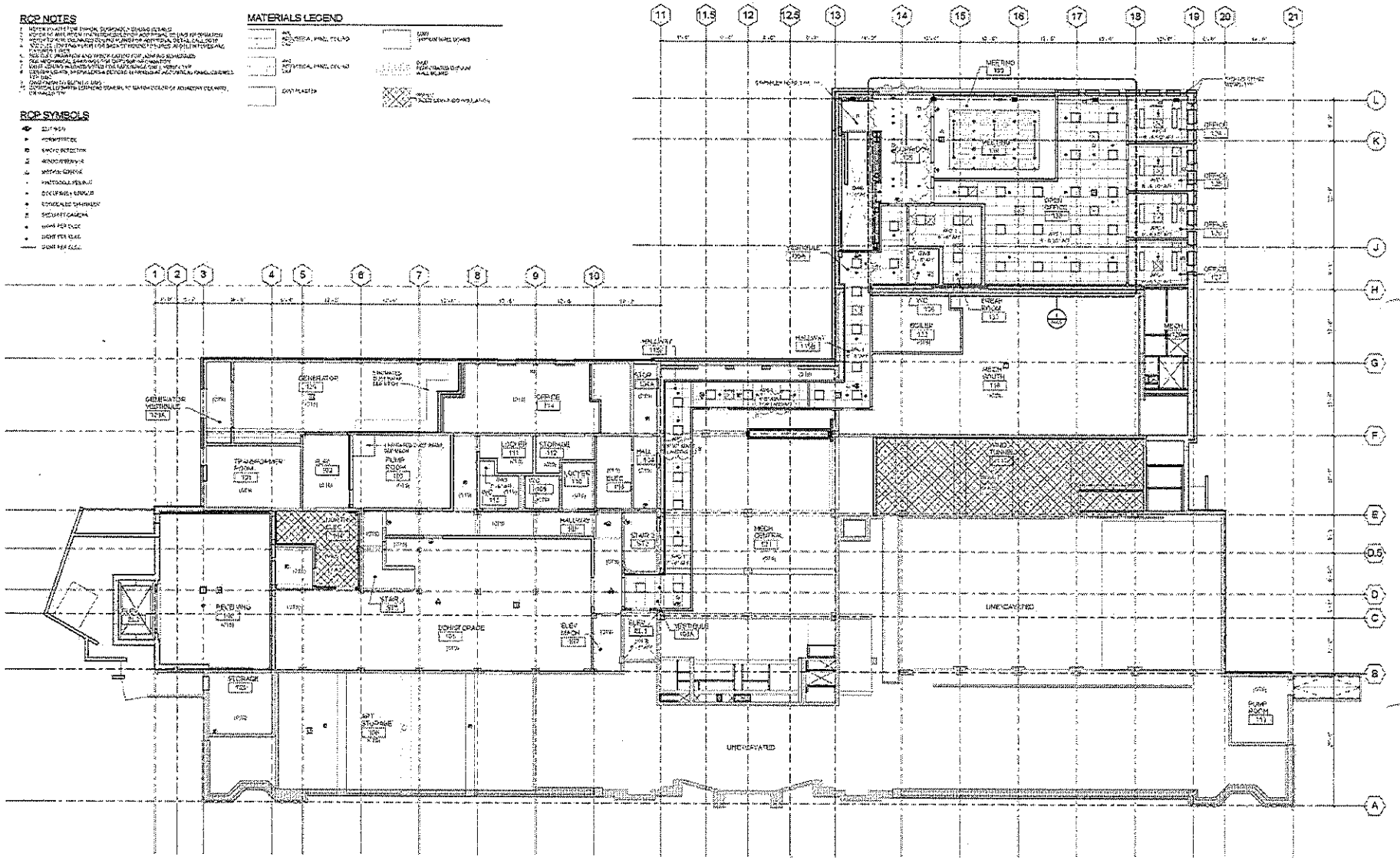
Casework Details

A660

RCP NOTES

MATERIALS LEGEND

RCP SYMBOLS



LEVEL 1 RCP

TRUE NORTH

PLAN NORTH

LMN Architecture Engineering Design Interiors

SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

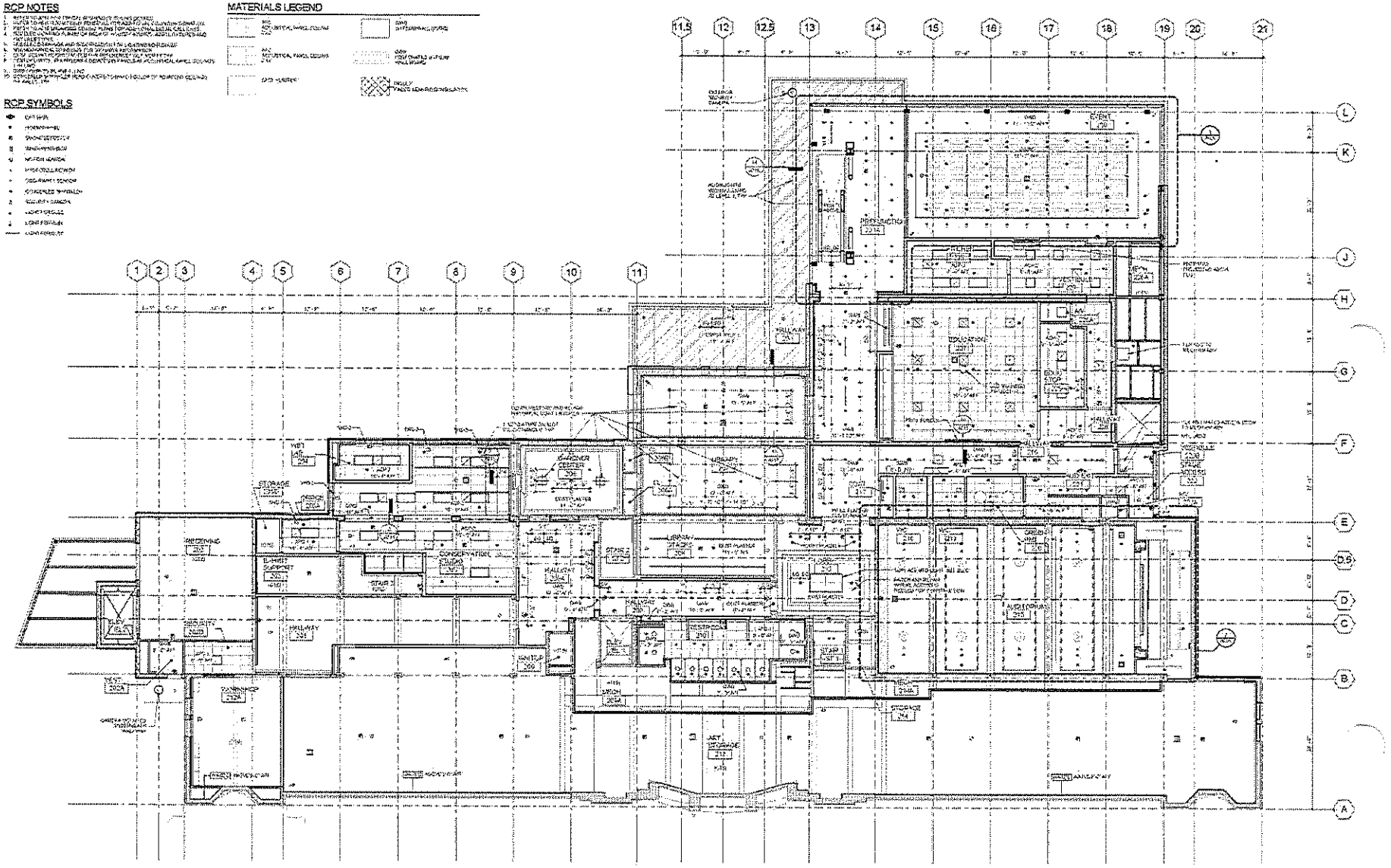
RCP - Level 1

A701

RCP NOTES

MATERIALS LEGEND

RCP SYMBOLS



LEVEL 2 RCP

TRUE NORTH

PLAN NORTH

LMN Architects

SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

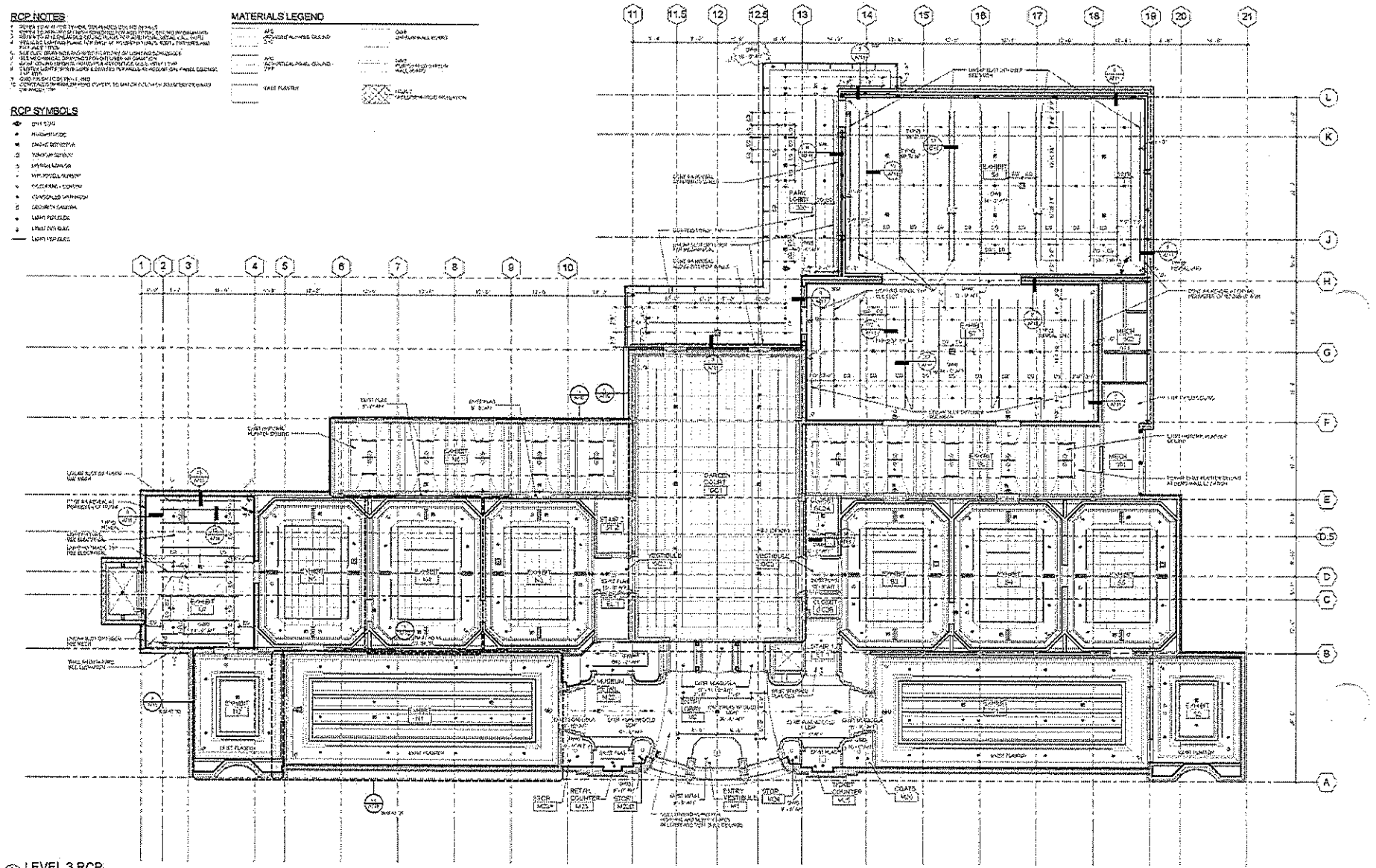
RCP - Level 2

A702

RCP NOTES

MATERIALS LEGEND

RCP SYMBOLS



LEVEL 3 RCP

LMN Architects

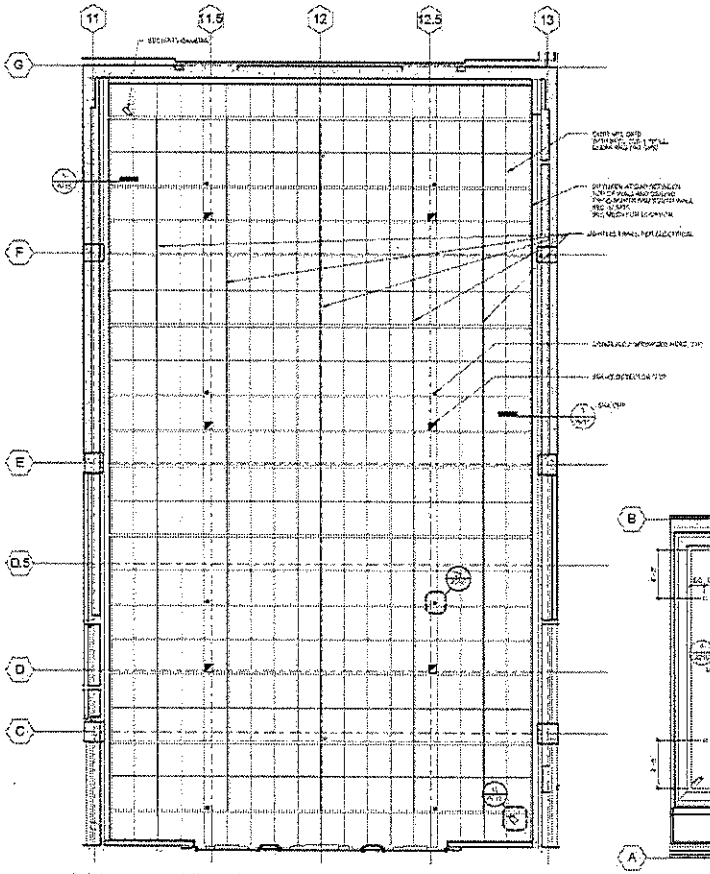
ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

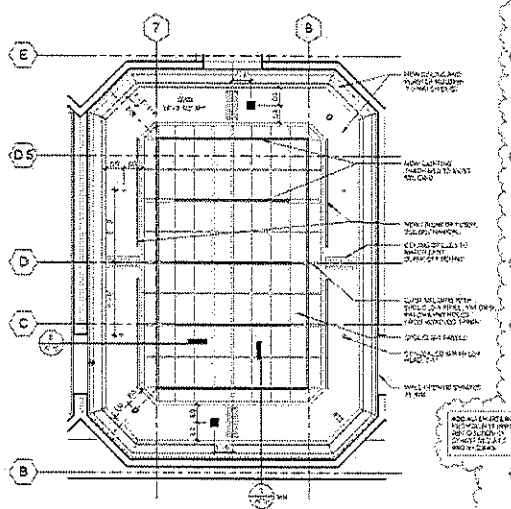
Construction Documents

RCP - Level 3

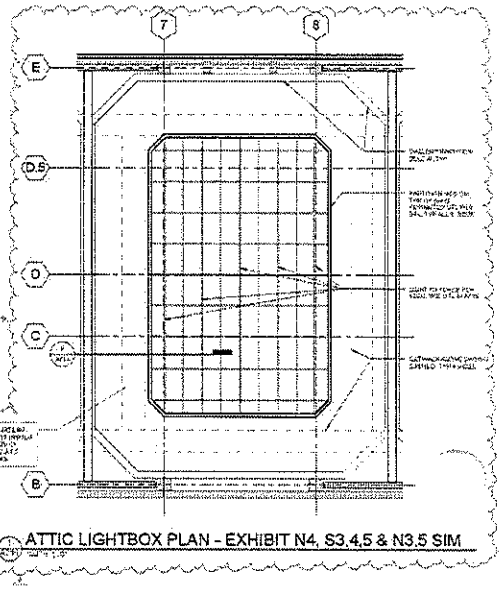
A703



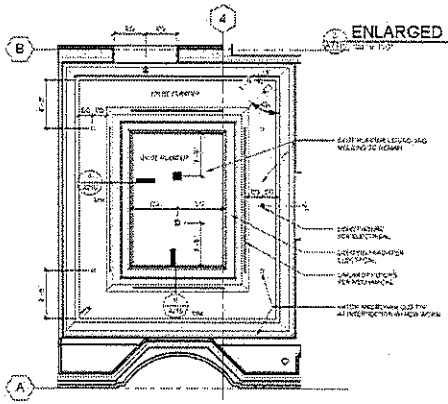
ENLARGED RCP - GARDEN COURT



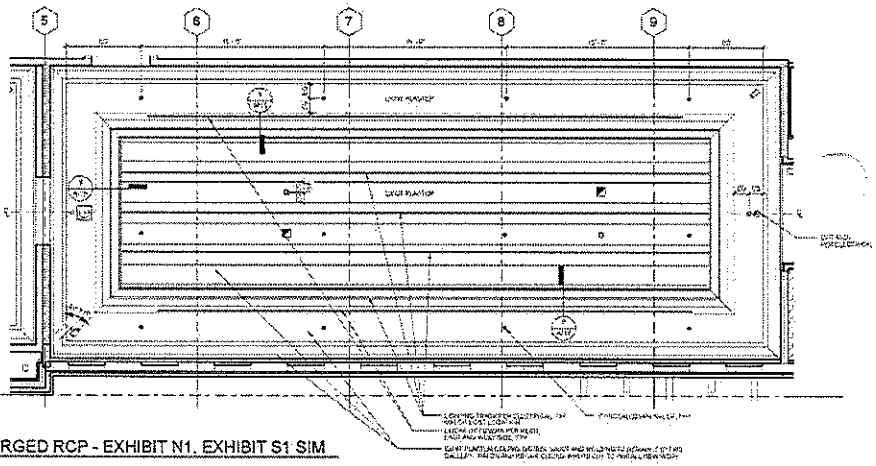
ENLARGED RCP - EXHIBIT N4, EXHIBIT S3,4,5 & N3.5 SIM



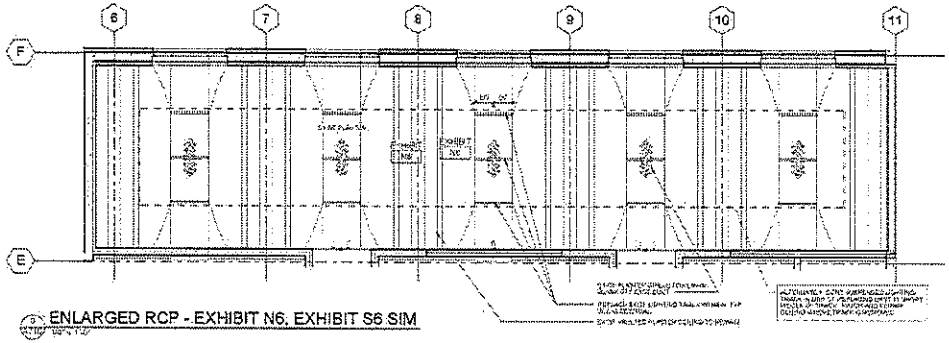
ATTIC LIGHTBOX PLAN - EXHIBIT N4, S3,4,5 & N3.5 SIM



ENLARGED RCP - EXHIBIT N2, EXHIBIT S2 SIM



ENLARGED RCP - EXHIBIT N1, EXHIBIT S1 SIM



ENLARGED RCP - EXHIBIT N6, EXHIBIT S6 SIM

LMN Architects Urban Design Interiors

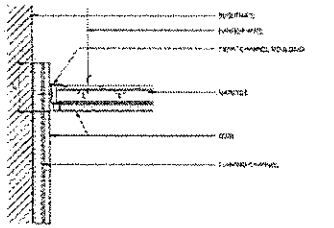
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

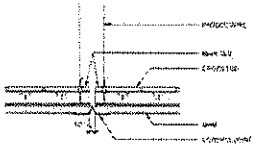
Construction Documents

Enlarged Ceiling Plans

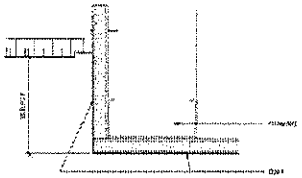
A710



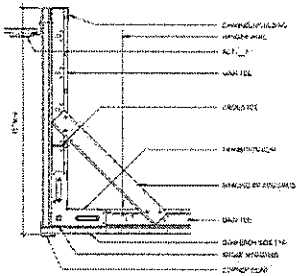
GWB CEILING - WALL INTERSECTION



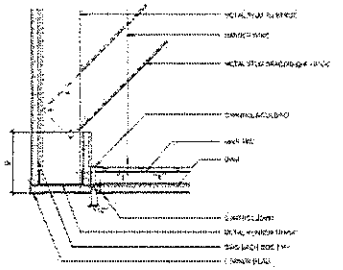
GWB CEILING - CONTROL JOINT



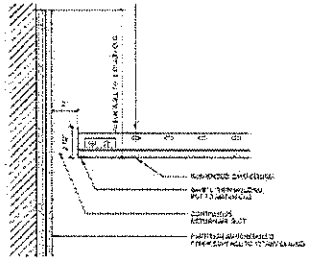
GWB TO APC STEP



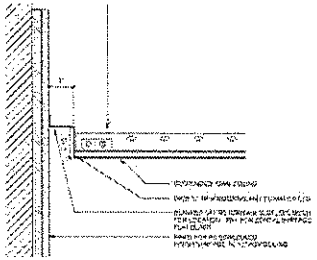
GWB CEILING AT FURR DOWN



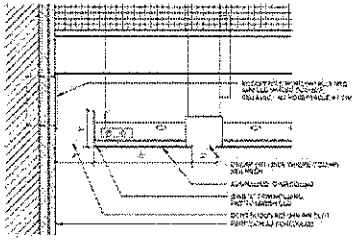
GWB CEILING AT FURR DOWN



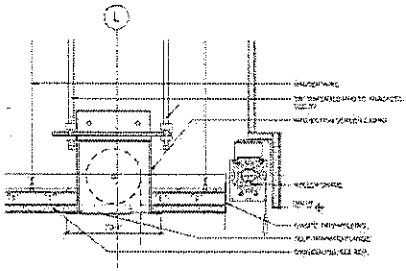
RETURN AIR SLOT AT GALLERY



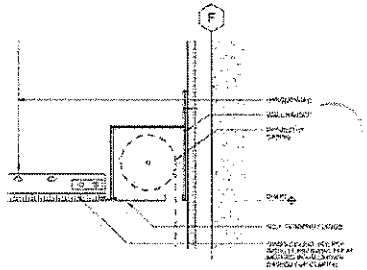
BLANKED OFF SLOT AT GALLERY



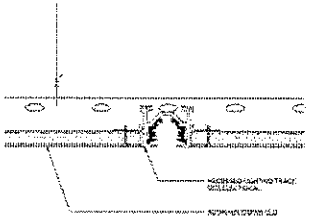
RETURN AIR SLOT AT PARK LOBBY



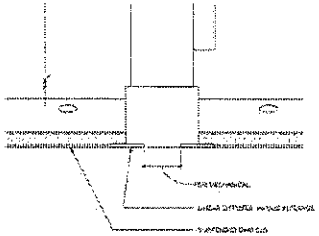
PROJECTION SCREEN - EVENTS



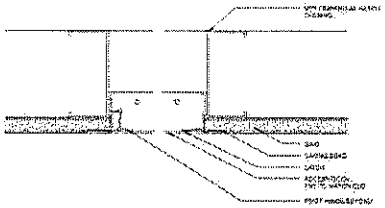
PROJECTION SCREEN - EDUCATION



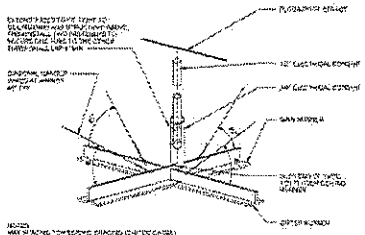
RECESSED LIGHTING TRACK



TYPICAL LINEAR DIFFUSER



CLOSET GC3A CEILING ACCESS DOOR



TYP SEISMIC BRACING AT GRID

LMN Architects

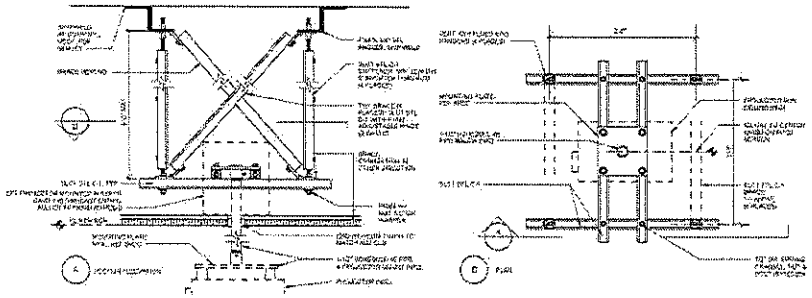
ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

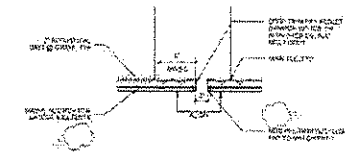
Construction Documents

Ceiling Details

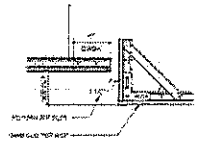
A711



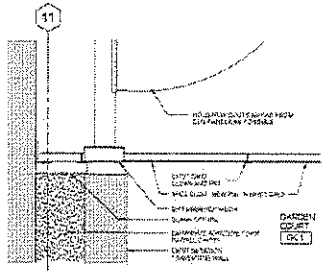
1 PROJECTOR SUPPORT ABOVE CLG



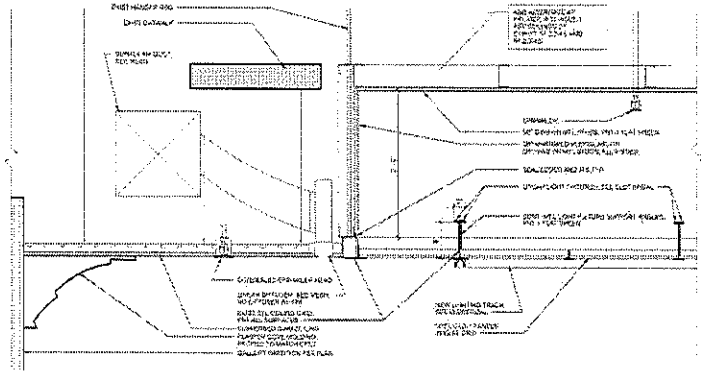
1 REVEAL @ GWB-6 CLG



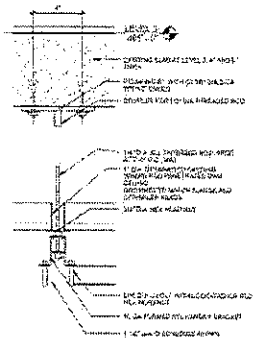
1 REVEAL @ EVENT CEILING



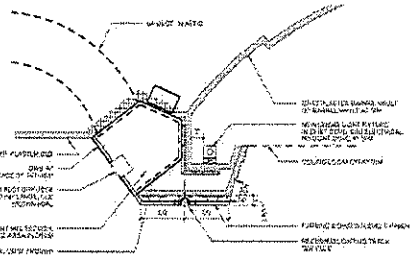
3 GARDEN COURT CEILING DIFFUSER



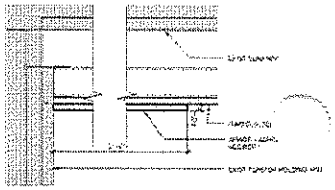
11 LIGHTBOX ABOVE CEILING - EXHIBIT N3, N4, N5, S3, S4, S5



7 UNISTRUT HANGER, TYP.



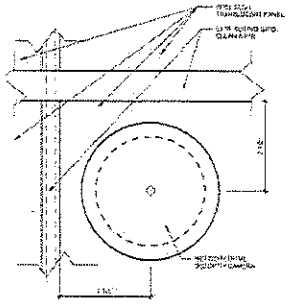
1 DIFFUSER & TRACK AT BARREL VAULT



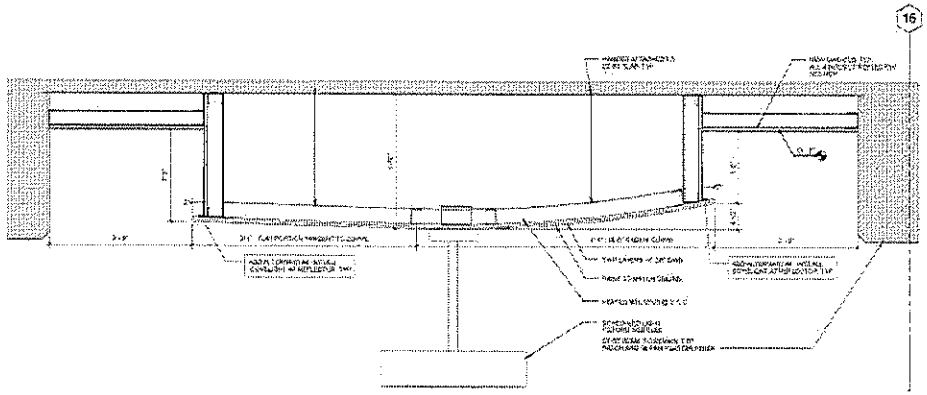
AFWCP-1 @ AUDITORIUM



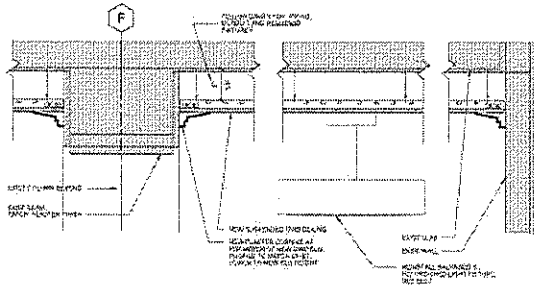
RECESSED LIGHT IN CMPST MTLP-1



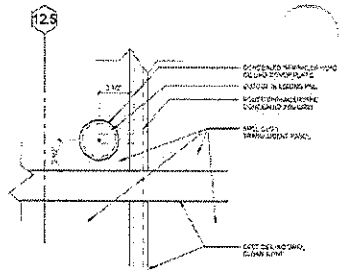
SECURITY CAMERA AT GARDEN CT



ACOUSTICAL REFLECTOR



CEILING AND PLASTER CORNICE @ LIBRARY



CONCEALED SPRINKLER AT GARDEN CT

LMN Architects

SAM Asian Art Museum

Asian Art Museum Expansion & Renovation

Construction Documents

Ceiling - Special Details

A715



Construction Documents

Volume 2

MECHANICAL
PLUMBING
ELECTRICAL AND FIRE ALARM
TELECOMM
AUDIO VISUAL
VERTICAL TRANSPORTATION

Asian Art Museum
Expansion & Renovation

LMN Architecture | Urban Design | Interiors

SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Cover Sheet

G000.2

PROJECT INFORMATION

PROJECT ADDRESS:
VALUATED SITE
1400 E PROSPECT STREET
SEATTLE, WA 98112

PROPERTY OWNER
CITY OF SEATTLE
SEATTLE PARKS AND RECREATION
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SEATTLE, WA 98104
CONTACT: DAVID RHINES
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APPLICANT
SEATTLE ART MUSEUM
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206-682-3460

DPD PROJECT NUMBERS:
MUP: 3014154
CONSTRUCTION: 6026844

PARCEL NUMBER:
2925049007

LEGAL DESCRIPTION:

Volunteer Park

The Northeast Quarter of the Northeast Quarter (NE¼ NE¼) EXCEPT Section Twenty-nine (29) in Township Twenty-five (25) North (N) of Range Four (4) east (E), Willamette Meridian; also

Beginning at the southwest (SW) corner of the Northeast Quarter (NE¼) of Section Twenty-nine (29) in Township Twenty-five (25) North (N) of Range Four (4) east (E), Willamette Meridian; thence South one degree thirty-six minutes forty-eight seconds (0°36'48") West a distance of fourteen hundred forty-three and fifty-two one-hundredths (1443.52) feet along the East line of Section 29 of Township 25 North Range 4 east; thence north (N) eighty-eight degrees fifty-three minutes twenty-seven seconds (88°53'27") west a distance of two-hundred-eighty-two and ten one-hundredths (282.10) feet; thence north (N) eighty-eight degrees fifty-seven minutes forty-one seconds (88°57'41") west a distance of two hundred seventy-three and fifty-two one-hundredths (273.52) feet; thence north (N) eighty-eight degrees forty-nine minutes forty-seven seconds (88°49'47") west a distance of three hundred and seven one-hundredths (300.07) feet; thence north (N) eighty-eight degrees forty-nine minutes forty-seven seconds (88°49'47") west a distance of three hundred seventy-seven and seven one-hundredths (377.07) feet to a point on the west line of the northeast (NE) quarter of the northwest (NW) quarter of the southeast (SE) quarter (NE¼ NW¼ SE¼) of Section 29 of Township 25 North Range 4 east; thence north one degree thirty-six minutes forty-seven seconds (1°36'47") east, more or less, a distance of fourteen hundred five and sixty-nine one-hundredths (1405.69) feet, more or less, to a point on the south line of Section 29 of Township 25 North Range 4 east; thence south (S) eighty-nine degrees forty-eighty seconds (89°40'48") east a distance of one thousand three hundred forty-five (1345) feet, more or less, along the north line of Section 29 of Township 25 North Range 4 east to the point of beginning. Also the east one-half (E ½) of blocks 6, and 7 of Prentiss's Addition to the City of Seattle as recorded in Vol. 1, Page 125 of Plats, Records Files. Also the portion of Eleventh (11th) Avenue North in the City of Seattle from the north line of Pacific Street to the City of Seattle junction with the line of Prentiss's Addition to the City of Seattle as vacated by ordinance 26750

PROJECT DESCRIPTION:

Renovation of existing 69,345 sf museum with 19,900 sf addition. Project will also include demolition, hardscape and shaded mouth visions associated with building expansion. Renovations include major systems, structural and interior/exterior finish upgrades.

DRAWING INDEX

VOLUME 1

DRAWING INDEX - CD VOL 1

SHT. NO.	SHEET NAME
GENERAL	
G001.1	Drawing Index and Project Info
G001.2	Drawing Index and Project Info
G002	Life Safety Plan - Level 1
G003	Life Safety Plan - Level 2
G004	Life Safety Plan - Level 3
G005	Life Safety Plan - Level 4

ABBREVIATIONS

GENERAL

AD ACCESS DOOR
ADJ ADJUSTABLE
AFF ABOVE FINISHED FLOOR
AMP AMPERE
ARCH ARCHITECT; ARCHITECTURAL
AUTO AUTOMATIC
AUX AUXILIARY

BS BIRD SCREEN
BTU BRITISH THERMAL UNIT
BTUH BRITISH THERMAL UNITS PER HOUR

COND CONDENSATE
C/L CENTERLINE
CLG CEILING
CO CARBON MONOXIDE
CO2 CARBON DIOXIDE

DET DETAIL
DIA DIAMETER
DISCH DISCHARGE
DN DOWN
DWG DRAWING
DWV DRAIN, WASTE, VENT

EX EXISTING
EA EACH
EC ELECTRICAL CONTRACTOR; END CAP
EL ELEVATION
ELEC ELECTRICAL
ELEV ELEVATION
ESP EXTERNAL STATIC PRESSURE
EXH EXHAUST
EXIST EXISTING

F FAHRENHEIT
FA FIRE ALARM
FCO FLOOR CLEANOUT
FDC FIRE DEPARTMENT CONNECTION
FLEX FLEXIBLE
FLG FLANGE
FLR FLOOR
FO FUEL OIL
FP FIRE PROTECTION
FPM FEET PER MINUTE
FT FOOT; FEET
FURN FURNISH

GA GAGE
GALV GALVANIZED
GC GENERAL CONTRACTOR
GPM GALLONS PER MINUTE
GWB GYPSUM WALL BOARD

HP HORSE POWER

ID INSIDE DIAMETER/DIMENSION

LF LINEAL FOOT

MAX MAXIMUM
MBH 1000 BRITISH THERMAL UNITS PER HOUR
MED MEDIUM
MFR MANUFACTURER
MIN MINIMUM
MISC MISCELLANEOUS
MN MODEL NUMBER
MTD MOUNTED

N/A NOT APPLICABLE
NC NORMALLY CLOSED
NEG NEGATIVE
NIC NOT IN CONTRACT
NO NORMALLY OPEN; NUMBER
NOM NOMINAL
NTS NOT TO SCALE

OC ON CENTER
OD OUTSIDE DIAMETER

POC POINT OF CONNECTION
PRELIM PRELIMINARY
PSI POUNDS PER SQUARE INCH
PSIG POUNDS PER SQUARE INCH GAUGE

QTY QUANTITY

REQD REQUIRED
RPM REVOLUTIONS PER MINUTE

SF SQUARE FOOT
SPEC SPECIFICATION
SQ SQUARE
STD STANDARD

TBD TO BE DETERMINED
TI TENANT IMPROVEMENTS
TOC TOP OF CONCRETE
TOS TOP OF STEEL
TYP TYPICAL

UG UNDERGROUND
UNO UNLESS NOTED OTHERWISE

VAV VARIABLE AIR VOLUME
VD VOLUME DAMPER
VFD VARIABLE FREQUENCY DRIVE

W/ WITH
W/O WITHOUT

ABBREVIATIONS CONTINUED

HVAC

AC AIR CONDITIONING
ACT ACOUSTICAL CEILING TILE
AHU AIR HANDLING UNIT
BDD BACKDRAFT DAMPER
BOD BOTTOM OF DUCT

CC COOLING COIL
CV CONSTANT VOLUME

DB DRY BULB
DIFF DIFFUSER
DMPR DAMPER
EA EXHAUST AIR
EAT ENTERING AIR TEMPERATURE

GRD GRILLE, REGISTER, DIFFUSER

HVAC HEATING, VENTILATION, AND AIR CONDITIONING

LAT LEAVING AIR TEMPERATURE

MC MECHANICAL CONTRACTOR
MECH MECHANICAL
MOD MOTOR OPERATED DAMPER; MODULATING
MUA MAKE UP AIR

OA OVERALL; OUTSIDE AIR
OBD OPPOSED BLADE DAMPER

RA RETURN AIR
RAT RETURN AIR TEMPERATURE
RCP REFLECTED CEILING PLAN

SA SUPPLY AIR
SAT SUPPLY AIR TEMPERATURE
SD SMOKE DAMPER
SF SUPPLY FAN
SL SOUND LINED
SLSM SOUND LINED SHEET METAL
SM SHEET METAL
SP STATIC PRESSURE

TG TRANSFER GRILLE
TOD TOP OF DUCT
TSP TOTAL STATIC PRESSURE

UH UNIT HEATER

WB WET BULB
WC WATER COLUMN
WG WATER GUAGE

PLUMBING

CO CLEAN OUT; CARBON MONOXIDE
DCW DOMESTIC COLD WATER
DHW DOMESTIC HOT WATER
DHWC DOMESTIC HOT WATER RECIRCULATION
EWC ELECTRICAL WATER COOLER
FD FLOOR DRAIN
GD GARBAGE DISPOSAL
IE INVERT ELEVATION
IN WC INCHES WATER COLUMN
TW TEMPERED WATER; INDIRECT WASTE

NPCW NON POTABLE COLD WATER

OFL OVERFLOW RAINWATER LEADER
PD PLANTER DRAIN; PRESSURE DROP
PERF PERFORATED
PLBG PLUMBING
PRV PRESSURE REDUCING VALVE
RPBP REDUCED PRESSURE BACKFLOW PREVENTER
SD STORM DRAIN
SS SANITARY SEWER

VTR VENT THROUGH ROOF

W WASTE
WC WATER CLOSET
WH WATER HEATER
WSP WET STANDPIPE

PIPING

BP BACKFLOW PREVENTOR

CD CONDENSATE DRAIN
CHW CHILLED WATER
CHR CHILLED WATER RETURN
CHS CHILLED WATER SUPPLY
CT CONICAL TEE

EWT ENTERING WATER TEMPERATURE
FHV FIRE HOSE VALVE

HRR HEAT RECOVERY RETURN
HRS HEAT RECOVERY SUPPLY
HWR HOT WATER RETURN
HWS HOT WATER SUPPLY

LWT LEAVING WATER TEMPERATURE

RL REFRIGERANT LIQUID
RS REFRIGERANT SUCTION

TOP TOP OF PIPE

GRILLES, REGISTERS, DIFFUSERS, AND LOUVERS

CEILING DIFFUSER (LAY-IN T-BAR CEILING): 4 CORE ADJUSTABLE, WITH FILLER. FOR 24" x 24" LAY-IN MODULE TITUS MODEL MCD, BORDER TYPE 3 - KRUEGER SERIES 1244, FRAME 23 (USE X"X" RUNOUT UNLESS OTHERWISE NOTED) (SEE BALANCE NOTE BELOW)

CEILING DIFFUSER (PLASTER/GWB CEILING): 4 CORE ADJUSTABLE, "V" FRAME TITUS MODEL MCD, BORDER TYPE 6 - KRUEGER SERIES 1244, FRAME 21 (USE X"X" RUNOUT UNLESS OTHERWISE NOTED) (SEE BALANCE NOTE BELOW)

SLOT DIFFUSER FOR LAY-IN CEILING IN GARDEN COURT (SEE BALANCE NOTE BELOW) TITUS FLOWBAR. LINEAR DIFFUSER WITH GRID SUPPORT ON ONE SIDE MODEL FL-30-HT WITH BORDER TYPE 16 (QTY) AND SIZE OF INLET CALLED OUT

SLOT DIFFUSER FOR LAY-IN CEILING (SEE BALANCE NOTE BELOW) AIR FACTORS LINEAR DIFFUSER WITH HIDDEN FLANGE B-WX(#SL)-HFHF WITH TITUS 1500 BOOT WITH (QTY) AND SIZE OF INLET CALLED OUT

SLOT DIFFUSER FOR PLASTER CEILING (SEE BALANCE NOTE BELOW) AIR FACTORS LINEAR DIFFUSER WITH HIDDEN FLANGE B-WX(#SL)-HFHF - FBP PLENUM (QTY) AND SIZE OF INLET CALLED OUT WITH CONTINUOUS SLOT

SLOT DIFFUSER FOR PLASTER SIDEWALL (SEE BALANCE NOTE BELOW) AIR FACTORS JET THROW LINEAR DIFFUSER WITH HIDDEN FLANGE B-WX(#SL)-HFHF-JP

SLOT RETURN FOR PLASTER CEILING (SEE BALANCE NOTE BELOW) AIR FACTORS LINEAR DIFFUSER WITH HIDDEN FLANGE B-WX(#SL)-HFHF - FBP PLENUM (QTY) AND SIZE OF INLET CALLED OUT WITH CONTINUOUS SLOT

SLOT DIFFUSER FOR PLASTER SIDEWALL (SEE BALANCE NOTE BELOW) AIR FACTORS LINEAR DIFFUSER WITH HIDDEN FLANGE B-WX(#SL)-HFHF - FBP PLENUM (QTY) AND SIZE OF INLET CALLED OUT

S.S.R. — SIDEWALL SUPPLY REGISTER: DOUBLE DEFLECTION, HORIZONTAL FRONT BLADES, WITH O.B.D. TITUS MODEL 272RL O.B.D. / KRUEGER MODEL 880H O.B.D.

S.S.G. — SIDEWALL SUPPLY GRILLE: DOUBLE DEFLECTION, HORIZONTAL FRONT BLADES TITUS MODEL 272RL / KRUEGER MODEL 880H

FLOOR SUPPLY GRILLE, HEAVY DUTY MOUNTING FRAME, 1/4" FIXED DEFLECTION, TITUS MODEL CT-HD-[illegible] WITH FRAME TYPE 5

R.A.G. — RETURN AIR GRILLE: ALUMINUM EGGCRATE WITH 1/2" x 1/2" x 1/2" CORE TITUS MODEL 50F / KRUEGER EGC-5

R.A.G./F. — RETURN AIR GRILLE (PLASTER/GWB CEILING): FIXED 35 DEGREE DEFLECTION BLADES TITUS MODEL 350RL / KRUEGER MODEL S80H

S.R.G. — SIDEWALL RETURN GRILLE: FIXED 35 DEGREE DEFLECTION BLADES, WITHOUT O.B.D. TITUS MODEL 350RL / KRUEGER MODEL S80H

S.E.G. — SIDEWALL EXHAUST GRILLE: FIXED 35 DEGREE DEFLECTION BLADES, WITHOUT O.B.D. TITUS MODEL 350RL / KRUEGER MODEL S80H

C.E.G. — CEILING EXHAUST GRILLE: ALUMINUM EGGCRATE WITH 1/2" x 1/2" x 1/2" CORE AND 24"X24" BORDER TYPE 3 TITUS MODEL 50F / KRUEGER EGC-5

E.G. — EXHAUST GRILLE: ALUMINUM EGGCRATE WITH 1/2" x 1/2" x 1/2" CORE TITUS MODEL 50F / KRUEGER EGC-5

E.G./R. — RETURN AIR GRILLE (PLASTER/GWB CEILING): FIXED 35 DEGREE DEFLECTION BLADES TITUS MODEL 350RL / KRUEGER MODEL S80H

T.G. — TRANSFER GRILLE: ALUMINUM EGGCRATE WITH 1/2" x 1/2" x 1/2" CORE TITUS MODEL 350RL / KRUEGER EGC-5

T.A./R. — TRANSFER GRILLE (PLASTER/GWB CEILING OR WALL): FIXED 35 DEGREE DEFLECTION BLADES TITUS MODEL 350RL / KRUEGER MODEL S80H

SCREENED OPENING — 6"x6"x6" EXTRUDED ALUMINUM SCREEN GRID RUSKIN SG100 GRID SCREEN

NOTE: BALANCE CONTRACTOR IS RESPONSIBLE FOR ADJUSTING ALL DIFFUSERS THROWS.

NOTE: ALL SUPPLY DIFFUSERS ARE TO BE INSTALLED WITH A DIFFUSER CAN W/ PERF DIVIDER, CONSOLIDATED [illegible] W/ FLEX COLLAR & DIFF, MODEL CD/[illegible] OR EQUIV.

NOTE: FOR EXPOSED DUCTWORK WITH SUPPLY EXHAUST GRILLES TAKEOFFS TO BE GRILLE SIZE PLUS 2" TO MATCH GRILLE FRAME.

HVAC AND DUCTWORK ACCESSORIES

SUPPLY AIR AIRFLOW DIRECTION
RETURN AIR AIRFLOW DIRECTION
EXHAUST AIR AIRFLOW DIRECTION
TRANSFER AIR AIRFLOW DIRECTION
OUTSIDE AIR AIRFLOW DIRECTION
FLEXIBLE EQUIPMENT/DUCTWORK CONNECTION
MANUAL VOLUME DAMPER
MANUAL VOLUME DAMPER
MOTORIZED DAMPER
AIRFLOW MONITOR
REMOTELY OPERATED DAMPER (YOUNG REGULATOR OR APPROVED)
BACKDRAFT DAMPER
COUNTER-BALANCED BACKDRAFT DAMPER
BACKDRAFT DAMPER RUSKIN MODEL CBD2/A1, LOCAL VELOCITY < 1500 FPM
BACKDRAFT DAMPER RUSKIN MODEL NMS2, LOCAL VELOCITY < 2500 FPM
BACKDRAFT DAMPER RUSKIN MODEL BDG, LOCAL VELOCITY < 3500 FPM
SMOKE DETECTOR
VERTICAL FIRE DAMPER (1-1/2 HOUR) IN AIRSTREAM RUSKIN MODEL DIBD2 STYLE A
HORIZONTAL FIRE DAMPER (1-1/2 HOUR) IN AIRSTREAM RUSKIN MODEL DIBD2 STYLE A
VERTICAL FIRE DAMPER (3 HOUR) IN AIRSTREAM RUSKIN MODEL DIBD23 STYLE A
VERTICAL FIRE DAMPER (3 HOUR) IN AIRSTREAM RUSKIN MODEL DIBD23 STYLE A
SMOKE DAMPER
HORIZONTAL COMBINATION SMOKE AND FIRE DAMPER
VERTICAL COMBINATION SMOKE AND FIRE DAMPER
DUCT HEATER
INDICATES AIRFLOW DIRECTION THROUGH THE PARKING GARAGE TO THE GARAGE EXHAUST FANS.
CEILING EXHAUST FAN SEE SCHEDULE FOR SPECIFICATIONS

CONTROLS INSTRUMENTATION LEGEND

THERMOSTAT
TEMPERATURE SENSOR
HUMIDITY SENSOR
CARBON DIOXIDE SENSOR
CARBON MONOXIDE SENSOR
VISUAL ALARM LIGHT - WALL MOUNTED
SWITCH

EQUIPMENT TAG LEGEND

EQUIP. TYPE
LOCATION/SERVICE
EQUIPMENT DESIGNATION

PROJECT ADDRESS:
1400 E. PROSPECT
SEATTLE, WA 98112

JURISDICTION:
CITY OF SEATTLE

CONSTRUCTION:
SEE ARCHITECTURAL DRAWING A001

OCCUPANCY:
SEE ARCHITECTURAL DRAWING A001

DUCTWORK SYMBOLS AND FITTINGS

ROUND SUPPLY DUCT UP
ROUND SUPPLY DUCT DN
ROUND RETURN DUCT UP
ROUND RETURN DUCT DN
ROUND EXHAUST DUCT UP
ROUND EXHAUST DUCT DN
RECTANGULAR SUPPLY DUCT UP
RECTANGULAR SUPPLY DUCT DN
RECTANGULAR RETURN DUCT UP
RECTANGULAR RETURN DUCT DN
RECTANGULAR EXHAUST DUCT UP
RECTANGULAR EXHAUST DUCT DN
12" ROUND ID SHEET METAL DUCT
12"x12" ID RECTANGULAR SHEET METAL DUCT
16"x12" ID RECTANGULAR SHEET METAL DUCT WITH 1" SOUND LINING (OD OF DUCT IS 18"X14")
16"x12" ID RECTANGULAR SHEET METAL DUCT WITH 2" SOUND LINING (OD OF DUCT IS 20"X16")
INDICATES 12" x 12" I.D. DUCTBOARD
12"x12" ID RECTANGULAR SHEET METAL DUCT WITH 1" WRAP (OD OF DUCT WITH WRAP IS 14"X14")
FLEXIBLE ROUND DUCT
FLAT OVAL DUCT, MAJOR AXIS=38" & MINOR AXIS=24"
SPIN-IN TAKE-OFF & VOLUME DAMPER WITH RIGID ROUND FIBERGLASS DUCT
TURNING VANES

MECHANICAL DRAWING INDEX

SHEET NUMBER	SHEET TITLE	SHEET SCALE	PERMIT CORRECTIONS 1 9/1/2017
M000	LEGENDS AND ABBREVIATIONS - HVAC	NTS	X
M001	COORDINATION NOTES	NTS	X
M002	MECHANICAL SPECIFICATIONS	NTS	X
M003	MECHANICAL SPECIFICATIONS	NTS	X
M004	MECHANICAL BASIS OF DESIGN	NTS	X
M005	MECHANICAL BASIS OF DESIGN	NTS	X
M006	VENTILATION CALCULATIONS	NTS	X
M007	VENTILATION CALCULATIONS	NTS	X
M010	MECHANICAL SCHEDULES - AIR BALANCE	NTS	X
M011	MECHANICAL SCHEDULES - AHU	NTS	X
M012	MECHANICAL SCHEDULES - FANS	NTS	X
M013	MECHANICAL SCHEDULES - HUMIDIFIERS	NTS	X
M014	MECHANICAL SCHEDULES - BOILER, HX, ET	NTS	X
M015	MECHANICAL SCHEDULES - VAV	NTS	X
M016	MECHANICAL SCHEDULES - EX	NTS	X
M017	MECHANICAL SCHEDULES - PUMP, RELIEF HOOD	NTS	X
M018	MECHANICAL SCHEDULES - HEAT PUMPS	NTS	X
M019	MECHANICAL SCHEDULES - MOTORIZED DAMPERS	NTS	X
M101-A	HVAC DEMO PLAN - LEVEL 1	1/8" = 1'-0"	X
M101-B	HVAC DEMO PLAN - PARTIAL LEVEL 1	1/8" = 1'-0"	X
M102	HVAC DEMO PLAN - LEVEL 2	1/8" = 1'-0"	X
M103	HVAC DEMO PLAN - LEVEL 3	1/8" = 1'-0"	X
M104	HVAC DEMO PLAN - ATTIC	1/8" = 1'-0"	X
M201	HVAC PLAN - LEVEL 1	1/8" = 1'-0"	X
M202	HVAC PLAN - LEVEL 2	1/8" = 1'-0"	X
M203	HVAC PLAN - LEVEL 3	1/8" = 1'-0"	X
M204	HVAC PLAN - ATTIC	1/8" = 1'-0"	X
M205	HVAC PLAN - ROOF	1/8" = 1'-0"	X
M301	ENLARGED HVAC PLANS	1/4" = 1'-0"	X
M302	ENLARGED MECHANICAL ROOMS	1/4" = 1'-0"	X
M401	HVAC SECTIONS	AS NOTED	X
M402	HVAC SECTIONS	AS NOTED	X
M403	HVAC SECTIONS	AS NOTED	X
M404	HVAC SECTIONS	AS NOTED	X
M405	HVAC SECTIONS	AS NOTED	X
M406	HVAC SECTIONS	AS NOTED	X
M501	MECHANICAL DETAILS	NTS	X
M502	GENERATOR DETAILS	NTS	X
M503	MECHANICAL DETAILS	NTS	X
M504	MECHANICAL DETAILS	NTS	X
M601	HUMIDITY & TEMPERATURE CONTROL ZONE PLANS	NTS	X
M602	HUMIDITY & TEMPERATURE CONTROL DIAGRAM	NTS	X
M603	HUMIDITY & TEMPERATURE CONTROL DIAGRAM	NTS	X
M604	AIR HANDLING UNIT DIAGRAMS	NTS	X
M605	HVAC - PLENUM ZONES	NTS	X
M701	PUMPING AND SOURCE EQUIPMENT SCHEMATIC	NTS	X
M702	HEATING AND CHILLED WATER LOAD SCHEMATIC	NTS	X
M703	HEATING WATER RISER DIAGRAMS	NTS	X
M704	DDC SYSTEM POINTS LIST	NTS	X
M705	MECHANICAL CONTROLS DESCRIPTION	NTS	X
M706	MECHANICAL CONTROLS DESCRIPTION	NTS	X
M707	MECHANICAL CONTROLS DESCRIPTION	NTS	X
M708	MECHANICAL CONTROLS DESCRIPTION	NTS	X
M709	MECHANICAL CONTROLS DESCRIPTION	NTS	X

LMN Architecture Urban Design Interiors

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SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Revisions: 1 — 9/1/17 — PERMIT CORRECTIONS 1

Date: 6/23/17

Sheet Title: LEGENDS AND ABBREVIATIONS - HVAC

Sheet Number: **M000**

MECHANICAL CONTRACTOR NOTES

1. ALL MECHANICAL SHEET METAL AND PIPING TO COMPLY WITH ALL APPLICABLE CODES.
2. MECHANICAL CONTRACTOR TO PROVIDE ALL ITEMS OF MECHANICAL DRAWINGS THAT OUTLINE ALL CHANGES FROM MECHANICAL CONSTRUCTION DRAWINGS SET AND COMPLY WITH 2015 SEATTLE ENERGY CODE PROJECT COMPLETION REQUIREMENTS.
3. ALL DUCTWORK TO BE CONSTRUCTED AND INSTALLED TO SMACNA STANDARDS IN ACCORDANCE WITH THE SPECIFICATIONS OUTLINED IN THE SHEET METAL DUCT SPECIFICATION. DUCT SIZES INDICATED ON PLANS ARE MINIMUM SIZES AND DEVIATIONS FROM THESE SIZES AS REQUIRED DURING DETAILED SHALL BE APPROVED BY ROMINE.
4. MECHANICAL CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR MECHANICAL ENGINEER REVIEW PRIOR TO FABRICATION OR INSTALLATION OF MECHANICAL DUCTWORK OR EQUIPMENT.
5. ALL DUCTWORK TO BE INSULATED PER 2015 SEATTLE ENERGY CODE REQUIREMENTS AS INDICATED IN THE SHEET METAL DUCT SPECIFICATION.
6. HIGH PRESSURE DUCT SYSTEMS THERE IN EXCESS OF 3 INCHES WATER GAUGE SHALL BE PRESSURE TESTED IN ACCORDANCE WITH SEC 603.9.2 & 3. NO PRESSURE TESTING FOR LEAKAGE IS REQUIRED FOR THE HVAC DUCTWORK OF LOWER PRESSURES.
7. DUCT SIZES INDICATED ON PLANS ARE NET INSIDE DIMENSIONS. A CALL-OUT SUCH AS (24X12)G INDICATES A DUCT THAT IS 12X12 OUTSIDE DIMENSION WITH 1" SOUNDLINER (TRIMAFLINE NET QAT IS 24X24).
8. MECHANICAL PIPING TO BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS. PIPE SIZES INDICATED ON PLANS ARE MINIMUM SIZES AND DEVIATIONS SHALL BE APPROVED BY ROMINE. PROVIDE UNION VALVES ARE TO BE PROVIDED AT ALL PIPING LOW POINTS. ADDITIONAL STRATEGIES VALVES MAY BE REQUIRED FOR SERVICING THE SYSTEM THAT ARE NOT SHOWN ON SCHEMATICS AND SHALL BE PROVIDED WHEN REQUIRED FOR PROPER SYSTEM MAINTENANCE.
9. MECHANICAL CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR MECHANICAL ENGINEER REVIEW PRIOR TO FABRICATION OR INSTALLATION OF MECHANICAL PIPING OR EQUIPMENT.
10. ALL PIPING TO BE PRESSURE TESTED IN ACCORDANCE WITH THE SPECIFICATIONS OUTLINED AND ALL APPLICABLE CODES.
11. ALL THROUGH PENETRATIONS OR MEMBRANE PENETRATIONS FOR DUCTWORK AND PIPING SHALL BE FIRESTOPPED AS REQUIRED BY THE 2015 WASHINGTON STATE BUILDING AND MECHANICAL CODES.
12. ALL DUCTWORK, PIPING AND EQUIPMENT TO BE RESPECTFULLY RESTRAINED PER THE ISOLATION & SEISMIC SCHEDULE.
13. EQUIPMENT SHALL BE PROVIDED AS INDICATED BY MECHANICAL SCHEDULES. THE EQUIPMENT HAS AN INDICATED TABLE OF ENTRY MANUFACTURERS AND HAS BEEN COORDINATED WITH THE DESIGN TEAM AS SHOWN. IF ALTERNATE MANUFACTURERS ARE USED BY THE MECHANICAL CONTRACTOR THEN THE CONTRACTOR SHALL INCLUDE COSTS FOR ALL ASSOCIATED ENGINEERING AND ARCHITECTURAL SERVICES REQUIRED TO RE-ENGINEER AROUND THE ALTERNATE VENDOR IN THE SUBSTITUTION REQUEST PRIOR TO THE GENERAL CONTRACTOR. THESE SERVICES INCLUDE, BUT ARE NO LIMITED TO, MECHANICAL DESIGN, CONTROLS DESIGN, ARCHITECTURE, DESIGN, STRUCTURAL DESIGN, ETC.
14. ALL ACCESS PANELS IN WALLS AND/OR CEILINGS ARE PROVIDED AND INSTALLED BY OTHERS. MECHANICAL CONTRACTOR TO COORDINATE REQUIRED LOCATION AND SIZE WITH CONTRACTOR PROVIDING AND INSTALLING ACCESS PANELS.
15. BALANCING CONTRACTOR TO REVIEW AND MEMORIZE SPECIAL BALANCING REQUIREMENTS OUTLINED OUT BY PROJECT COMPLETION REQUIREMENTS AND NOTES ON THE TYPICAL PLAN SHEETS.

GENERAL COORDINATION NOTES

1. ALL TRADES TO LEAVE A MINIMUM 36" CLEARANCE IN FRONT OF MECHANICAL EQUIPMENT ACCESS PANELS FOR SERVICING. NOTE: SOME ELECTRICAL PANELS MAY REQUIRE MORE CLEARANCE COORDINATE WITH ELECTRICAL CONTRACTOR FOR CLEARANCE REQUIREMENTS.
2. CUTTING, FRAMING, PATCHING AND PAINTING OF WALL, CEILING AND FLOOR OPENINGS SHALL BE BY OTHERS.
3. ROOF CURBS, FLASHINGS, SLEEVES, PITCH POCKETS, AND CUTTING AND PATCHING OF ROOF OPENINGS SHALL BY BY OTHERS.
4. ROOF CURBS, SLEEVING, AND CANT STRIPS TO BE BUILT AND ATTACHED TO THE ROOF BY OTHERS. CURBS TO BE CONSTRUCTED ACCORDING TO SIZES PROVIDED BY MECHANICAL CONTRACTOR SHOP DRAWINGS. SMSH AS REQUIRED TO MAKE ROOF CURBS AND SLEEPING LEVEL. TOP OF CURB MUST BE TRUE (FLAT) TO PROVIDE AN ACCEPTABLE SEALING SURFACE. MAXIMUM ALLOWABLE DEVIATION FROM LEVEL OR FLAT SHALL BE 1/4" IN 10'. ROOF CURBS AND SLEEPERS MUST BE SECURELY FASTENED TO STRUCTURAL SUPPORT MEMBERS. SEE EQUIPMENT SCHEDULE FOR MORE DETAIL.
5. LEVELING CURBS TO BE ATTACHED TO THE ROOF BY OTHERS. CURBS TO BE CONSTRUCTED ACCORDING TO SIZES PROVIDED BY MECHANICAL CONTRACTOR SHOP DRAWINGS. TOP OF CURB MUST BE TRUE (FLAT) TO PROVIDE AN ACCEPTABLE SEALING SURFACE. MAXIMUM ALLOWABLE DEVIATION FROM LEVEL OR FLAT SHALL BE 1/8" IN 10'. ROOF CURBS AND SLEEPERS MUST BE SECURELY FASTENED TO STRUCTURAL SUPPORT MEMBERS. SEE EQUIPMENT SCHEDULE FOR MORE DETAIL.
6. FINAL PAINTING OF GRILLES, REGISTERS, AND DIFFUSERS, AS MAY BE REQUIRED BY ARCHITECT, SHALL BE DONE IN THE FIELD BY OTHERS.
7. ALL LOUVERS, BOTH DUCTED AND NON-DUCTED, ARE TO BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR. LOUVERS ARE SHOWN AND SCHEDULED ON ELSEWHERE IN THE DOCUMENTS, AND TO SUPPORTS THE REQUIRED LEVEL OF PERFORMANCE. LOUVERS OF ALTERNATE MAKE AND/OR TYPE MAY BE SUBSTITUTED ONLY IF THEY HAVE BOTH PRESSURE DROP AND WATER CARRY OVER PERFORMANCE EQUAL TO OR BETTER THAN THE LOUVERS SPECIFIED. ALL LOUVER PORTIONS OF LOUVER BAND ARE TO BE BLANKED OFF AND INSULATED.
8. IN NO INSTANCE SHALL OTHER TRADES HANG OR SUPPORTS EQUIPMENT, CEILING PANELS, LIGHT FIXTURE HANGERS, ETC., FROM HVAC EQUIPMENT OR DUCTWORK.
9. PLUMBER SHALL ROUTE PLUMBING VENTS SO AS TO MAINTAIN MINIMUM 15 FEET OF CLEARANCE FROM OUTSIDE AIR INTAKES.
10. ALL ACCESS PANELS IN WALLS AND/OR CEILINGS ARE PROVIDED AND INSTALLED BY OTHERS. MECHANICAL CONTRACTOR TO COORDINATE REQUIRED LOCATION AND SIZE WITH CONTRACTOR PROVIDING AND INSTALLING ACCESS PANELS.

ELECTRICAL COORDINATION NOTES

1. WHERE INDICATED ON EQUIPMENT SCHEDULES THE EQUIPMENT COMES COMPLETE FROM THE FACTORY WITH MOTOR CONTROLS AS REQUIRED. ELECTRICIAN SHALL PROVIDE SERVICE AND A DISCONNECT FOR CODE, AND ALL POWER WIRING, INCLUDING CONNECTING TO EQUIPMENT.
2. WHERE INDICATED ON EQUIPMENT SCHEDULES THE EQUIPMENT REQUIRES FIELD INSTALLED MOTOR STARTERS. ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL MOTOR STARTERS FOR CONTRACTORS WHERE MOTOR STARTERS, PROVIDE SERVICE AND DISCONNECT FOR CODE, AND DO ALL POWER WIRING, INCLUDING CONNECTING TO EQUIPMENT. HOLDING COIL CIRCUIT SHALL BE POWERED BY ELECTRICAL CONTRACTOR CLOSE UNLESS INDICATED OTHERWISE. ALL STARTERS SHALL BE PROVIDED WITH H-O-A SWITCH.
3. WHERE INDICATED ON EQUIPMENT SCHEDULES THE EQUIPMENT IS SERVED BY A VARIABLE FREQUENCY DRIVE (VFD). VFDS ARE PROVIDED BY THE MECHANICAL CONTRACTOR AND ARE INSTALLED (MOUNTED AND WIRED) BY THE ELECTRICAL CONTRACTOR. ALL REQUIRED DISCONNECTS ARE PROVIDED AND WIRED ALLED BY THE ELECTRICAL CONTRACTOR.
4. ALL BUILDING HARMONIC STUDIES FOR THE IMPACT OF THE VARIABLE FREQUENCY DRIVES ON THE BUILDING ELECTRICAL SYSTEM AND ON THE POWER GRID FROM THE BUILDING ARE BY THE ELECTRICAL DESIGN CONSULTANT AND/OR ELECTRICAL CONTRACTOR. IT IS THE RESPONSIBILITY OF THE ELECTRICAL DESIGN CONSULTANT AND/OR ELECTRICAL CONTRACTOR TO COORDINATE ANY ADDITIONAL INPUT LOSS REACTORS, HARMONIC FILTERS, OR OTHER ASSOCIATED ELECTRICAL MID DEVICES TO PROVIDE A FULLY COMPLIANT ELECTRICAL SYSTEM WITH ROMINE AND/OR THE MECHANICAL CONTRACTOR.
5. A FIRE AND/OR SMOKE DETECTION AND ALARM SYSTEM, AS MAY BE REQUIRED BY THE OWNER, ARCHITECT, OR CODE AUTHORITY, IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
6. IT IS THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO INTERCONNECTTHE ABOVE DEVICES WITH THE CENTRAL FIRE AND/OR SMOKE DETECTION AND ALARM SYSTEM.

HYDRONIC PIPING

1. SEE MATERIALS MATRIX FOR PIPING CONSTRUCTION CRITERIA.
2. ALL MECHANICAL PIPING WILL COMPLY WITH ALL APPLICABLE CODES.
3. ALL PIPING IS TO BE INSULATED PER 2015 SEATTLE ENERGY CODE REQUIREMENTS. SEE PIPING INSULATION MATERIALS MATRIX FOR DETAILS.
4. ALL PIPING TO BE PRESSURE TESTED IN ACCORDANCE WITH 2015 SMC SECTION 1204.
5. ALL PIPING AND PLUMBING WILL BE LABELED EXTENSIVELY IN COMPLIANCE WITH ACCEPTED INDUSTRY STANDARDS AND BUILDING STANDARDS.
6. THE PIC WILL OBTAIN HV SYSTEM TESTING FOR NOMINATION INHIBITOR LEVELS PRIOR TO OPENING UP SYSTEM FOR NEW WORK. IF LEVELS ARE LOW, PRESENT REPORT TO TEAM FOR NEGOTIATION WITH OWNER FOR POST MODIFICATION INSTALL AND TREATMENT.
7. THE PIC WILL CLEAN AND FLUSH THE MODIFIED PORTION OF THE HVC SYSTEM AFTER PIPING COMPLETION USING FILL STATION FROM THE WEST CUP THE SYSTEM. PRESENT PROCEDURE TO ENGINEER FOR APPROVAL PRIOR TO EXECUTING.
8. AFTER COMPLETION OF CLEAN AND FLUSH, FILL SYSTEM AND ADD CORROSION INHIBITORS, AS NEEDED FOR FULL PROTECTION. PROVIDE FINAL TESTING DOCUMENTATION AS PART OF CLOSEOUT DOCUMENTATION.
9. HEATING HOT WATER PIPING
   A. INSULATE PER 2015 SEC TABLE 603.2.8 AND THE PIPING OPERATION MATERIALS MATRIX. THERMAL CONDUCTIVITY 0.27 TO 0.28, 1.5" NOMINAL THICKNESS.
   B. USE RIGID INSERTS CAL SIL, SHAPTE OR EQUIVALENT. INSULATION TO BE CONTINUOUS THROUGH THE HANGER, SHEETMETAL SHIELD IS NOT REQUIRED.
   C. ALL PIPING MATERIAL, FITTINGS, AND DEVICES TO BE RATED FOR 150 PSIG SERVICE. SEE PIPING MATERIALS MATRIX AND SPECIFICATIONS FOR DETAILS.
   D. PIPE EXPANSION
      1. SEE PIPING EXPANSION CALCULATIONS FOR FURTHER ANCHORING, SUPPORT, AND THERMAL EXPANSION ARE BY THE PIC
      2. PIPE EXPANSION, EXPANSION SHOWN SYSTEMWISE, IS TO BE ASSUMED TO BE MOVING WITHIN SYSTEM. EXPANSION LOOPS, AND OFFSETS. ALL PIPING MAINS, BRANCHES AND RUNOUTS SHALL BE INSTALLED TO ALLOW FOR FREE EXPANSION AND CONTRACTION WITHOUT IMPOSSIBLING LEAKS OR UNDUE STRESSING OF PIPE.

REFRIGERANT PIPING

1. SEE MATERIALS MATRIX FOR PIPING CONSTRUCTION CRITERIA. ALL PIPING AND FITTINGS TO BE INSTALLED PER UNIT MANUFACTURER INSTALLATION REQUIREMENTS.
2. ALL MECHANICAL PIPING WILL COMPLY WITH ALL APPLICABLE CODES.
3. ALL PIPING IS TO BE INSULATED PER 2015 SEATTLE ENERGY CODE REQUIREMENTS. SEE PIPING INSULATION MATERIALS MATRIX FOR DETAILS.
4. ALL PIPING TO BE PRESSURE TESTED IN ACCORDANCE WITH 2015 SMC SECTION 1104.
5. ALL PIPING AND PLUMBING WILL BE LABELED EXTENSIVELY IN COMPLIANCE WITH ACCEPTED INDUSTRY STANDARDS AND BUILDING STANDARDS.
6. REFRIGERANT PIPING TO BE INSTALLED PER 2015 SMC SECTION 1101. SPECIFICALLY, PER 2015 SMC SECTION 1101.3 REFRIGERANT PIPING TO BE INSTALLED PER THE FOLLOWING:
   A. PIPING IN OPEN TO STRUCTURE AREAS TO BE INSTALLED ABOVE 7'-7"AFF
   B. PIPING SHALL NOT BE INSTALLED IN ELEVATOR SHAFTS OR ANY SHAFT THAT HAS OPENINGS TO LIVING QUARTERS OR AN EXIT ACCESS CORRIDOR, ENCLOSED STAIRWAY, OR EXIT PASSAGEWAY.
   C. PIPING SHALL NOT BE INSTALLED IN A LOBBY THAT IS PART OF AN EXIT SYSTEM, STAIRWAY, EXIT PASSAGEWAY, OR EXIT ACCESS CORRIDOR UNLESS ONE OF THE FOLLOWING CONDITIONS IS MET:
      - REFRIGERANT PIPING AND EQUIPMENT ARE PERMITTED TO BE SEPARATED FROM THE CORRIDOR, STAIR OR PASSAGEWAY BY CONSTRUCTION EQUAL TO THE RATED CONSTRUCTION OF THE SPACE AND LOCATED SO THAT ALL REQUIRED CLEARANCES ARE MAINTAINED.
      - REFRIGERANT PIPING IS PERMITTED TO PASS THROUGH CORRIDORS IF LOCATED ABOVE A CEILING AND THE PIPING HAS NO JOINTS IN THE CORRIDOR
      - REFRIGERANT PIPING IS PERMITTED TO PASS THROUGH LOBBIES THAT ARE PART OF AN EXIT SYSTEM IF THE REFRIGERATION SYSTEM CONTAINS NOT MORE THAT THE AMOUNT OF REFRIGERANT ALLOWED BY SECTION 1104.3.

HVAC AND PLUMBING - ACOUSTICAL AND VIBRATIONAL ISOLATION

1. DO NOT ALLOW CONTACT BETWEEN ISOLATED DUCTS OR PIPES AND NON-ISOLATED EQUIPMENT OR STRUCTURE. "ISOLATED DUCTS OR PIPES" INCLUDE THE ISOLATED PORTIONS OF THEIR SUPPORTS OR HANGERS.
2. FULL HEIGHT WALL PENETRATIONS: ISOLATE ALL DUCTWORK AND PIPEWORK (INCLUDING SPRINKLER SYSTEMS) GREATER THAN 12" IN DIAMETER AT PENETRATIONS AS FOLLOWS:
   A. PROVIDE 4 SHEET METAL (22 GAUGE) SLEEVE TO COVER THE ENTIRE PERIMETER OF A 1 INCH TO 1-1/2 INCH CLR INCH TO 3/4 INCH ON EACH SIDE) OVERSIZED PENETRATION CUT. PENETRATION OPENINGS THAT ARE FRAMED ON ALL SIDES OF THE PARTITION DO NOT REQUIRE THE STRUCTURAL SLEEVE. OVERSIZED FRAMING PENETRATION AS CALLED FOR OPENINGS WITH SLEEVES.
   B. PLASTER OR GYPSUM SLEEVE TO THE WALL CEILING OR FLOOR, TO ENSURE AN ADEQUATE SEAL.
   C. IF DUCTWORK OR PIPEWORK PENETRATES A DOUBLE WALL, USE A SEPARATE SLEEVE AT EACH SIDE OF THE WALL, SEALING TO ALLOW CONNECTION BETWEEN WALLS.
   D. PACK THE GAP BETWEEN THE PENETRATING DUCT OR PIPE AND THE SLEEVE WITH ACOUSTICAL INSULATION AND HALF AN INCH OF WITH CONES OF THE WALL, FLOOR, OR CEILING AS OUTER LAYER OF ACOUSTICAL SEALANT.
   E. DO NOT USE WALL, FLOOR, OR CEILING PENETRATIONS TO SUPPORT PIPEWORK OR DUCTWORK. SUPPORT PIPE OR DUCT JUST PRIOR TO AND JUST AFTER THE PENETRATION SO THAT THE PIPE OR DUCT IS CENTERED IN PENETRATION.
   F. USE THE ABOVE PENETRATION TREATMENT REGARDLESS OF THE EXISTENCE OF EXTERNAL DUCT OR PIPE INSULATION. SIZE PENETRATION LARGE ENOUGH TO PACK ADDITIONAL ACOUSTICAL INSULATION AND 1/2" ACOUSTICAL SEALANT BETWEEN THE EXTERNAL INSULATION AND THE SHEET METAL SLEEVE.
   G. NO FLEX DUCT ALLOWED AT WALL PENETRATIONS.
   H. ACOUSTICAL SEALANT SHALL MEET THE FOLLOWING REQUIREMENTS:
      i. SEALANT SHALL BE A NON-HARDENING, NON-BLEEDING, NON-DRYING, RESILIENT CAULK.
      ii. SEALANTS SHALL MEET LEED INDOOR ENVIRONMENTAL QUALITY (IEQ CREDIT 4.1 REQUIREMENTS FOR ARCHITECTURAL SEALANTS (VOC LIMIT OF 250 GU. MSR WATER).
      iii. ACCEPTABLE PRODUCTS – CONCEALED FIRE RATED: ACOUSTICAL SEALANTS OF 604 SEAL-A-FIRESTOP FIRESTOP SEALANT BY HILTI OR FIRE-BARRIER WATER TIGHT SEALANT 600 OR 601 GUN-GRADE SILICONE BY 3M-VENTILATION CONTROL
      iv. ACCEPTABLE PRODUCTS – CONCEALED ACOUSTICAL SEALANT: TWO SILICONE BUILDING SEALANT BY DOW CORNING
3. FULL HEIGHT WALL PENETRATIONS: ISOLATE ALL DUCTWORK AND PIPEWORK (INCLUDING SPRINKLER SYSTEMS) LESS THAN OR EQUAL TO 12" IN DIAMETER AT PENETRATIONS AS FOLLOWS:
   A. OVERSIZE PENETRATION BY 3/8 INCH ON EACH SIDE.
   B. SEAL GAP ANNULAR WITH ACOUSTICAL SEALANT.
   C. DO NOT USE WALL, FLOOR, OR CEILING PENETRATIONS TO SUPPORT PIPEWORK OR DUCTWORK. SUPPORT PIPE OR DUCT JUST PRIOR TO AND JUST AFTER THE PENETRATION, SO THAT THE PIPE OR DUCT IS CENTERED IN PENETRATION.
   D. USE THE ABOVE PENETRATION TREATMENT REGARDLESS OF THE EXISTENCE OF EXTERNAL DUCT OR PIPE INSULATION. SIZE PENETRATION LARGE ENOUGH TO APPLY ACOUSTICAL SEALANT BETWEEN THE EXTERNAL INSULATION AND THE PENETRATION.
4. EQUIPMENT VIBRATION ISOLATION
   A. SEE PROJECT EQUIPMENT VIBRATION MATRIX AND SPECIFICATIONS FOR DETAILS.

HVAC AND PLUMBING SEISMIC RESTRAINT PER 2015 IBC & ASCE 7 & ERRATA

1. STRUCTURES WITH I_E = 1.0: TABLE A SPECIFIES THE MSP APPROVED SEISMIC BRACING REQUIREMENTS. (IMPORTANCE FACTOR (IP) AS DEFINED IN ASCE 7)
2. STRUCTURES WITH I_E > 1.0: ALL PROJECTS WITH I_E > 1.0 REQUIRE AN ENGINEERED DESIGN OF SEISMIC BRACING SYSTEMS FOR ALL MECHANICAL (M), ELECTRICAL (E), PLUMBING (P), SPRINKLER (SP), FIRE ALARM (FA), AND SMOKE CONTROL (SCS) SYSTEM COMPONENTS WHEN THE SYSTEM COMPONENT HAS BEEN ASSIGNED AN I_E OF 1.5. THE COMPONENT IP SHALL BE TAKEN AS 1.5 IF ANY OF THE FOLLOWING CONDITIONS APPLY:
   A. THE COMPONENT IS REQUIRED TO FUNCTION FOR LIFE-SAFETY PURPOSES AFTER AN EARTHQUAKE INCLUDING FIRE PROTECTION SPRINKLER SYSTEMS.
   B. THE COMPONENT CONTAINS HAZARDOUS MATERIALS.
   C. THE COMPONENT IS IN OR ATTACHED TO AN OCCUPANCY CATEGORY IV STRUCTURE AND IT IS NEEDED FOR CONTINUED OPERATION OF THE FACILITY OR WHOSE SITE FAILURE COULD IMPAIR THE CONTINUED OPERATION OF THE FACILITY.

TABLE – GUIDELINES FOR SYSTEM COMPONENT SEISMIC BRACING WHERE I_P = 1.0

	DUCTS & PIPING	EQUIPMENT I_P = 1.0	I_P = 1.5 AND S_{DS} < 1.0 AND a_p = 2.5	I_P = 1.5 AND S_{DS} ≥ 1.0 AND a_p = 2.5
MECHANICAL DUCTWORK	SMACNA RECTANGULAR DUCTWORK SMACNA ROUND DUCTWORK	N.A.	N.A.	N.A.
GAS AND HYDRONIC PIPING	SMACNA RECTANGULAR DUCTWORK DETAILED BRACING	N.A.	N.A.	N.A.

M, E, P EQUIP MOUNTED ≤ 4' ABOVE THE FLOOR/ROOF & MOUNTED WITH FLEXIBLE CONNECTIONS [4][5]	N.A.	NO REQUIREMENT	NO REQUIREMENT	ENGINEERING FOR GRAVITY AND LATERAL SUPPORT THAN (PLAN REVIEW REQUIRED)
M, E, P EQUIP MOUNTED > 4' ABOVE THE FLOOR/ROOF [4][5]	N.A.	NO REQUIREMENT	ENGINEERING FOR GRAVITY AND LATERAL SUPPORT BRACED (PLAN REVIEW APPROVE)	ENGINEERING FOR GRAVITY AND LATERAL SUPPORT BRACED (PLAN REVIEW REQUIRED)
M, E, P EQUIP < 20# MOUNTED WITH FLEXIBLE CONNECTIONS [4][5]	N.A.	N.A.	N.A.	N.A.
M, E, P EQUIP > 20# MOUNTED WITH FLEXIBLE CONNECTIONS [4][5]	N.A.	ENGINEERING FOR GRAVITY AND LATERAL SUPPORT BRACED WITH ENCRYPTING SYSTEMBRAN (FIELD APPROVE)	ENGINEERING FOR GRAVITY AND LATERAL SUPPORT BRACED INDEPENDENT OF DUCT/PIPING SYSTEM BRAN (FIELD APPROVE)	ENGINEERED FOR GRAVITY AND LATERAL SUPPORT BRACED INDEPENDENT OF DUCT/PIPING SYSTEMBRAN (PLAN REVIEW REQUIRED)
M, E, P EQUIP MOUNTED FROM A WALL OR SUSPENDED FROM STRUCTURE [5]	N.A.	N.A.	ENGINEERING FOR GRAVITY AND LATERAL SUPPORT (FIELD APPROVE)	ENGINEERING FOR GRAVITY AND LATERAL SUPPORT (PLAN REVIEW REQUIRED)
PLUMBING PIPING (WATER, WASTE, & VENT)	PER UPC	N.A.	N.A.	N.A.

A. 4" DIMENSION MEASURED FROM THE FLOOR TO THE MOUNTING POINT LOCATION.
B. MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS WITH FLEXIBLE CONNECTIONS INSTALLED BETWEEN THE COMPONENTS AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT.
C. WATER TANK RESTRAINTS REQUIRED PER UNIFORM BUILDING CODE.
D. ENGINEERING FOR GRAVITY NOT REQUIRED WHEN MOUNTED AT SLAB ON GRADE.
E. ENGINEERING FOR LATERAL NOT REQUIRED WHEN MOUNTED THE WEIGHT/MTD BY RATIO IS ≤ 1.0 (IN ALL HORIZONTAL DIRECTIONS) UNLESS OTHERWISE.
F. ENGINEERING SHALL ADDRESS THE BRACING SYSTEM, THE METHODS OF ATTACHMENT AND THE CAPACITY OF THE BUILDING ELEMENT OR STRUCTURE SUPPORTING THE ATTACHMENT AND BRACING SYSTEM.
G. MOUNTED EQUIPMENT, CHANGE DUE WEIGHT LESS FOR LESS, NO ENGINEERING REQUIRED. NEW INSERTS WITH WEIGHT EXCEEDING 5% OF ORIGINAL, ENGINEERING REQUIRED FOR CAPACITY (SEE SECTION 3403.5).
H. WATER HEATERS ≤ 50 GALLONS WILL FALL UNDER THIS CATEGORY.
I. SMACNA RESTAURANT MANUAL "GUIDELINES FOR MECHANICAL SYSTEMS" 2ED 20, 4TH 1998, 2003 EDITION IN UMMAS CODE TABLE 3-2.
J. SEISMIC BRACING FOR FIRE PROTECTION SPRINKLER SYSTEMS IN SEISMIC DESIGN CATEGORY D-F DESIGNED PER NFPA 13 AS SPECIFIED IN ASCE 7 SECTION 13.6.5.1.
K. SEISMIC BRACES ARE NOT REQUIRED ON DUCTWORK SUSPENDED AND INSTALLED PER ACCEPTED STANDARD AND, FOR THE ENTIRE RUN OF DUCT WIDTH:
   - THE HANGERS ARE 12 IN. OR LESS IN LENGTH, FROM THE TOP OF DUCT TO THE SUPPORTING STRUCTURE DETAILED TO AVOID BENDING OF THE HANGERS OR THEIR CONNECTIONS
   - THE CROSS-SECTIONAL AREA IS LESS THAN A SQUARE FEET.
L. SEISMIC BRACES ARE NOT REQUIRED ON PIPING WHEN:
   - THE PIPING IS SUPPORTED BY ROD HANGERS AND THE HANGERS IN THE ENTIRE RUN ARE 12" OR LESS IN LENGTH FROM THE TOP OF THE ROD TO THE SUPPORTING STRUCTURE, HANGERS ARE DETAILED TO AVOID BENDING OF THE HANGERS, AND THEIR ATTACHMENTS AND FASTENERS ARE MADE FOR PIPING TO ACCOMMODATE EXPECTED DEFLECTIONS.
   SEISMIC BRACING FOR FIRE PROTECTION SPRINKLER SYSTEMS IN SEISMIC DESIGN CATEGORY D-F DESIGNED PER NFPA 13 AS SPECIFIED IN ASCE 7 SECTION 13.6.5.1
M. SEISMIC BRACES ARE NOT REQUIRED FOR DISTRIBUTION SYSTEMS WEIGHING LESS THAN 5.0 LF.
O. SEISMIC BRACING IS NOT REQUIRED IF HIGH-DEFORMABILITY PIPING IS USED, PROVISIONS ARE MADE TO AVOID IMPACT WITH LARGER PIPING OR MECHANICAL COMPONENTS OR TO PROTECT THE PIPING IN THE EVENT OF SUCH IMPACT, AND:
   - FOR SEISMIC DESIGN CATEGORY D, E OR F WHEN I_P=1.0 AND THE PIPING IS NOMINAL PIPE SIZE 3" OR SMALLER.
   - FOR SEISMIC DESIGN CATEGORY D, E OR F WHEN I_P=1.5 AND THE PIPING IS NOMINAL PIPE SIZE 1" OR SMALLER.
   HIGH-DEFORMABILITY PIPING INCLUDES WELDED STEEL, BRAIDED, SOLDERED, THREADED, OR GROOVED COUPLING CONNEC.
P. PER ASCE 7, PIPING MOUNTED ON TRAPEZE SUPPORTS DOES NOT NEED TO BE DESIGNED FOR SEISMIC LOADS OR
   REQUIREMENTS IF NO SINGLE PIPE EXCEEDS THE 5-LF SIZE LIMIT AND THE TOTAL WEIGHT OF THE SYSTEM DOES NOT EXCEED 50-LF/F.
   RESOURCE DOCUMENT 2:
- http://www.mybuildingcomfort.com/Documents/Seismic%20Restraint%20Requirements%20for%20Plumbing%20Piping%20and%20Equipment.pdf
   RESOURCE DOCUMENT 3:
- 2015 SMC

PROJECT COMPLETION REQUIREMENTS

1. THE DELTA PROJECT COMPLETION REQUIREMENTS, ARE PER 2015 WASHINGTON STATE ENERGY CODE. SECTION NUMBER INDICATE THE APPROPRIATE ENERGY CODE SECTION, MECHANICAL CONTRACTOR TO COMPLY WITH ALL REQUIREMENTS BELOW INCLUDING PROVIDING ALL REQUIRED PROJECT COMPLETION DOCUMENTATION.
2. MECHANICAL CONTRACTOR AND/OR PLUMBING CONTRACTOR TO APPLY FOR AND SECURE ALL REQUIRED PERMITS, INCLUDING BUT NOT LIMITED TO, PRESSURE VESSEL, GAS PIPING, REFRIGERANT PIPING, PLUMBING, AND 50H VOLTAGE WIRING FOR THEIR ASSOCIATED SCOPE OF WORK.
3. COMMISSIONING TEST AND BALANCE OF HVAC AND PLUMBING SYSTEMS
   A. ONTAR WILL PERFORM ALL COMMISSIONING ACTIVITIES AND IS REQUIRED TO MEET THE CXA QUALIFICATIONS OF C408.2.
   B. THE COMMISSIONING AGENT WILL PROVIDE THE WRITTEN FUNCTIONAL TESTS FOR REVIEW BY THE ENGINEER OF RECORD. THE ENGINEER OF RECORD WILL PROVIDE COMMENTS TO INC INCORPORATED BY THE CONTRACTOR.
   C. CONTRACTORS WILL BE RESPONSIBLE FOR EXECUTING PERFUNCTIONAL TESTING OF EQUIPMENT PER THE REVIEWED TESTS. THE CONTRACTORS WILL CORRECT DEFICIENCIES PRIOR TO FINAL FUNCTIONAL TESTING.
   D. THE ENGINEER OF RECORD WILL BE NOTIFIED AND MAY SELECT TO BE PRESENT WHEN THE THE CONTRACTOR EXECUTES FINAL FUNCTIONAL TESTING.
   E. INSTALLING CONTRACTORS WILL PROVIDE EQUIPMENT, MATERIALS, AND LABOR NECESSARY TO CORRECT DEFICIENCIES FOUND DURING THE COMMISSIONING PROCESS TO HELP ALL CONTRACT AND WARRANTY REQUIREMENTS.
   F. THE CONTRACTOR WILL BE EXPECTED TO FULLY PARTICIPATE IN ALL COMMISSIONING MEETINGS AND EXECUTE WORK, START, TEST, BALANCE, FUNCTIONAL TESTING, EMERGENCY CONNECTIONS, ETC. PER THE ACCEPTED SPECIFIC PROJECT SCHEDULES. THERE WILL BE NO CHANGE ORDERS ACCEPTED FOR " CONTRACTOR'S FULLY COOK COMPLIANT COMMISSIONING EXECUTION.
   G. SEE 2015 SMC FOR ALL NECESSARY REQUIREMENTS.
   H. IN ADDITION TO THE REQUIREMENTS OF C408 AND CHAPTER 3 OF THE 2015 IEC 3 MINIMUM THE SYSTEMS LISTED IN THE SMS DESCRIPTION OF OPERATI... SHALL BE COMMISSIONED.

LEED

1. THIS PROJECT WILL BE LEED CERTIFIED UNDER LEED 2009 V3 CI.
2. LEED SUBMITTAL HAS TAKEN PLACE BELOW ARE REQUIREMENTS FOR MEP LEED CREDITS BEING PURSUED.
3. MEP LEED CI CREDITS ANTICIPATED TO BE PURSUED
   A. WE PREREQ 1 WATER USE REDUCTION
   B. WE CR1 WATER USE REDUCTION
   C. EA PREREQ 1 FUNDAMENTAL COMMISSIONING OF BUILDING SYSTEMS
   D. EA PREREQ 2 MINIMUM ENERGY PERFORMANCE
   E. EA PREREQ 3 FUNDAMENTAL REFRIGERANT MANAGEMENT
   F. EA CR1-1 OPTIMIZE ENERGY PERFORMANCE, LIGHTING POWER (LIGHTING)
   G. EA CR1-2 OPTIMIZE ENERGY PERFORMANCE, HVAC
   H. EA CR1-4 OPTIMIZE ENERGY PERFORMANCE, EQUIPMENT AND APPLIANCES
   I. EA CR 2 (PRIMATED) COMMISSIONING
   J. EA CR3 MEASUREMENT & VERIFICATION (PERIODIC)
   K. EA CR4 GREEN POWER
   L. EQ PREREQ 1 MINIMUM INDOOR AIR QUALITY PERFORMANCE
   M. EQ PREREQ 2 ENVIRONMENTAL TOBACCO SMOKE
   N. EQ CR3.1 OUTDOOR AIR DELIVERY MONITORING (PENDING)
   O. EQ CR3.2 CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT PLAN: DURING CONSTRUCTION
   P. EQ CR4 CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT PLAN: BEFORE OCCUPANCY
   Q. EQ CR6 INDOOR CHEMICAL AND POLLUTANT SOURCE CONTROL (MERV-13 FILTERS)
   R. EQ CR7.1 THERMAL COMFORT: DESIGN

2015 SEATTLE ENERGY CODE C409.1 ENERGY METERING AND ENERGY CONSUMPTION MANAGEMENT

1. SEC C403.1 GENERAL. BUILDINGS WITH A GROSS CONDITIONED FLOOR AREA OVER 20,000 SQUARE FEET SHALL COMPLY WITH SECTION C409. BUILDINGS SHALL BE EQUIPPED TO MEASURE, MONITOR, RECORD AND DISPLAY ENERGY C

HVAC PIPING MATERIALS SPECIFICATION MATRIX

SERVICE ID	SERVICE DESCRIPTION	OPERATING PRESSURE RANGE (PSIG)	DESIGN PRESSURE (PSIG)	DESIGN TEMPERATURE (DEG F)	SIZE	MATERIAL	JOINT TYPE	LOCATION FOR USE	INSULATION (SEE PIPING INSULATION MATRIX)	REMARKS
HYDRONIC PIPING										
CHWS / CHWR	CHILLED WATER SUPPLY / RETURN	< 125 PSIG	150	40 - 80 °F	2" AND SMALLER	COPPER TUBE TYPE L	SOLDERED, PROPRESS MECHANICAL JOINTS	SEE SPECIFICATIONS	YES	1, 2
CHWS / CHWR	CHILLED WATER SUPPLY / RETURN	< 125 PSIG	150	40 - 80 °F	2 1/2" AND LARGER	CARBON STEEL SCH 40 ASTB ERW	150# WELDNECK FLANGE, BUTTWELD, OR GROOVED	SEE SPECIFICATIONS	YES	2
HWS / HWR	HEATING WATER SUPPLY / RETURN	< 125 PSIG	150	75 - 160 °F	2" AND SMALLER	COPPER TUBE TYPE L	SOLDERED, PROPRESS MECHANICAL JOINTS	SEE SPECIFICATIONS	YES	1, 2
HWS / HWR	HEATING WATER SUPPLY / RETURN	< 125 PSIG	150	75 - 160 °F	2-1/2" AND LARGER	CARBON STEEL SCH 40 ASTB ERW	150# WELDNECK FLANGE, BUTTWELD, OR GROOVED	SEE SPECIFICATIONS	YES	1
MISC. HVAC PIPING										
GEN EXH	GENERATOR EXHAUST		150		ALL	CARBON STEEL PIPE ASTB ERW 2-1/2" TO 10" - SCH 40 12" - SCH 40S 14" TO 16" - SCH 30	BUTTWELD	-	YES	1
HUMIDIFIER STEAM	LOW PRESSURE STEAM PIPING BETWEEN HUMIDIFIER AND DISPERSION TUBE	< 5 PSIG	< 5 PSIG	180 - 222 °F	2-1/2" AND SMALLER	COPPER TUBE TYPE L, WHERE LESS THAN 15 FT AND AS INDICATED IN HUMIDIFIER SCHEDULE HOSES BY FACTORY	SOLDERED, PROPRESS MECHANICAL JOINTS		YES	1
REFRIGERATION PIPING - PER UM FDI PIPE CODE P-7										
RS	REFRIGERATION SUCTION LINE	-	-	-	ALL	ACR COPPER TUBE - HARD DRAWN (RIGID) OR ANNEALED PER ASTM B280 AND B88	BRAZED	-	YES	1
RL	REFRIGERATION LIQUID LINE	-	-	-	ALL	ACR COPPER TUBE - HARD DRAWN (RIGID) OR ANNEALED PER ASTM B280 AND B88	BRAZED	-	YES	1
RS, RL, RAV	REFRIGERATION (EXPOSED PIPING INSTALLATION)	-	-	-	ALL	COPPER TUBING, TYPE L HARD DRAWN	BRAZED	-	YES	1
FUEL OIL PIPING (DIESEL)										
FUEL OIL	FUEL OIL FILL AND VENT		125	N/A	2" AND SMALLER	CARBON STEEL PIPE SCH 40 ASTM A-53	BUTTWELD	-		1

REMARKS:
1. THERMAL EXPANSION DESIGN AND SIZING FOR PIPING BY M.C.
2. TEE DRILLING ACCEPTABLE AS LONG AS IT IS PERFORMED PER MANUFACTURER SPECIFICATIONS AND INSTALLATION PROCEDURES USING MANUFACTURER CERTIFIED TOOLS.

HVAC DUCT MATERIALS SPECIFICATION MATRIX

DUCT SYSTEM OR SECTION	SMACNA PRESSURE CLASS	MATERIALS	FITTINGS	INSULATION	REMARKS
GENERAL EXHAUST SYSTEMS					
GENERAL EXHAUST DUCTWORK	SMACNA -2" PRESSURE SEAL ALL TRANSVERSE JOINTS, LONGITUDINAL SEAMS, BRANCH CONNECTIONS OVAL AND SPIRAL LOCK SEAMS DO NOT REQUIRE SEALING	UNLINED GALVANIZED DUCT FLEX: 4' MAX LENGTH, THERMAFLEX SUA-10 OR APPROVED EQUAL. LISTED CLASS 1 AIR CONNECTOR UL 181 LISTED	RETURED 90S WITH VANES, SPIN-IN BRANCHES OK.	NA	
EXHAUST DUCTWORK ON ROOF	SMACNA -2" PRESSURE SEAL ALL TRANSVERSE JOINTS, LONGITUDINAL SEAMS, BRANCH CONNECTIONS OVAL AND SPIRAL LOCK SEAMS DO NOT REQUIRE SEALING	1" LINED DUCTWORK FIRST 25 FT UPSTREAM OF FAN, ALL ELSE UNLINED GALVANIZED DUCT AS INDICATED LISTED CLASS 1 AIR CONNECTOR UL 181 LISTED	MITERED 90S WITH VANES.	NA	
HVAC SUPPLY, MEDIUM PRESSURE					
AIR HANDLING UNIT TO VAV INLET ROUND	- UPSTREAM OF SHAFT SAT DAMPERS: SMACNA +4" PRESSURE. - DOWNSTREAM OF SHAFT SAT DAMPERS: SMACNA +3" PRESSURE - SEAL ALL TRANSVERSE JOINTS, LONGITUDINAL SEAMS, BRANCH CONNECTIONS, ETC. OVAL AND SPIRAL LOCK SEAMS DO NOT REQUIRE SEALING - FLEX CONNECTIONS TO DUCTS AND BOX COLLARS WILL BE SEALED.	- UNLINED GALVANIZED RECTANGULAR, ROUND, OR FLAT OVAL ONLY. - FLEX: 2 FT. MAX. LENGTH WITH NO OFFSETS, THERMAFLEX CRC OR EQUAL.	ELBOWS: CENTERLINE RADIUS OF 1.5D OR MITERED 90s WITH VANES. CL RADIUS OF 1.0D ON DUCTS LARGER THAN 14". TAPS: CONICAL OR BOOT STYLE	R-3.3 (INSTALLED) INSULATION WITH VAPOR BARRIER (APPROX 1")	
HVAC SUPPLY, LOW PRESSURE					
EQUIPMENT OUTLET TO DIFFUSER	- SMACNA +1" PRESSURE - SEAL ALL TRANSVERSE JOINTS, LONGITUDINAL SEAMS, BRANCH CONNECTIONS, ETC. OVAL AND SPIRAL LOCK SEAMS DO NOT REQUIRE SEALING.	- UNLINED GALVANIZED DUCT. - FLEX: 8' MAX. LENGTH, THERMAFLEX CAN OR EQUAL.	CENTERLINE RADIUS OF 1.5 DIAMETER OR MITERED 90s WITH VANES. SPIN-IN BRANCHES OK	R-3.3 (INSTALLED) INSULATION WITH VAPOR BARRIER (APPROX 1")	
OUTSIDE AIR DUCTWORK					
HVAC OA INTAKE LOUVER CONTINUING UPSTREAM OF MOTORIZED DAMPER	- SMACNA -2" PRESSURE - SEAL ALL TRANSVERSE JOINTS, LONGITUDINAL SEAMS, BRANCH CONNECTIONS, ETC. OVAL AND SPIRAL LOCK SEAMS DO NOT REQUIRE SEALING.	- UNLINED GALVANIZED DUCT.	1.5 DIAMETER CENTERLINE RADIUS OR MITERED 90s WITH VANES	- R-7 (INSTALLED) INSULATION WITH VAPOR BARRIER (3")	
BOILER COMBUSTION AIR SUPPLY AND FLUE EXHAUST					
BOILER OUTSIDE AIR COMBUSTION AIR INTAKE	- SMACNA -2" PRESSURE - SEAL ALL TRANSVERSE JOINTS, LONGITUDINAL SEAMS, BRANCH CONNECTIONS, ETC. OVAL AND SPIRAL LOCK SEAMS DO NOT REQUIRE SEALING.	UNLINED GALVANIZED DUCT	1.0 DIAMETER CENTERLINE RADIUS OR MITERED 90s WITH VANES	INSULATE WITH R-7 (INSTALLED) INSULATION WITH VAPOR BARRIER (~3" THICK)	
BOILER FLUE EXHAUST	FAN INLET: SMACNA -1" PRESSURE FAN OUTLET: SMACNA +2" PRESSURE SEAL ALL TRANSVERSE JOINTS, LONGITUDINAL SEAMS, BRANCH CONNECTIONS	ALL VENT MATERIALS INSTALLED PER FIREPLACE APPLIANCE MANUFACTURER REQUIREMENTS AND INSTALLATION DETAILS. FAN INLET: NEGATIVE PRESSURE, CATEGORY I VENT MATERIAL: AL29-4C FAN OUTLET: POSITIVE PRESSURE, CATEGORY III (NON-CONDENSING) VENT MATERIAL: SCHEBLER CHIMNEY SERIES PA-120 GA. 304 SS INNER PIPE 2" AIR SPACE, 22 GA. ALUMINIZED STEEL OUTER SHELL) BOILER MANUFACTURERS APPROVAL IS REQUIRED	FAN INLET: LISTED 6-VENT FITTINGS, DURAVENT 6-VENT OR EQUAL FAN OUTLET: LISTED CATEGORY III FITTINGS, SCHEBLER CHIMNEY SERIES PA OR EQUAL	NA	

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ASIAN ART MUSEUM

Revisions
1 | 6-9-17 | ADDENDUM 1 CORRECTION-1

Asian Art Museum Expansion & Renovation

Construction Documents

Drawn: DG DG
Checked: AM/DH
Date: 6.9.17

MECHANICAL SPECIFICATIONS

M002

ISOLATION & TIEDOWN SCHEDULE - EQUIPMENT, PIPING, & DUCTWORK

TAG#	EQUIPMENT TYPE	GENERIC EQUIPMENT TYPE DESCRIPTION	ACCESSED FROM LEVEL	SUPPORTED FROM LEVEL	MOUNTING LOCATION	ATTACHMENT TYPE (REMARK 4)	EXTERNAL ISOLATION DESCRIPTION	EXTERNAL ISOLATION TYPE (REMARK 5)	INTERNAL ISOLATION TYPE (REMARK 12)	INERTIA BASE BY (REMARK 5)	CONCRETE FOR INERTIA BASE	DUCT FLEX CONNECTION REQUIRED (BY MC)	PIPING FLEX CONNECTION TYPE (REMARK 10)	SUPPORT TYPE (REMARK 7)	SEISMIC TIEDOWN CALCULATIONS BY (REMARKS 1,2,3,4)	REMARKS
AHU-L1-1,2,3	AIR HANDLING UNIT	CHW/HW AHU	L1	L1	FLOOR	BY MC	WAFFLE PAD	A	1" DEF. SPRING	NA	NA	YES	B	A	BY MC	1,2,4,5,7,11,12
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWHP-#-X	AIR TO WATER HP	HEATPUMP	ROOFTOP	ROOFTOP	ROOF	BY MC	SYLOMER PAD	I	-	NA	NA	NA	A	E	BY MC	1,2,4,5,11,12
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWHP-X-X	WATER TO WATER HP	HEATPUMP	BASEMENT	BASEMENT	FLOOR	BY MC	1" DEF. SPRING	B	-	NA	NA	NA	D	B	BY MC	1,2,4,5,11,12
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HD-X-X	HUMIDIFIER	HUMIDIFIER	SEE PLANS	SEE PLANS	WALL	BY MC	NA	NA	NA	NA	NA	NA	NA	NA	BY MC	1,2,4,5
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HU-X-X	HUMIDIFIER	HUMIDIFIER	SEE PLANS	SEE PLANS	FLOOR PEDESTAL	BY MC	NA	NA	NA	NA	NA	NA	NA	F	BY MC	1,2,4,5,7
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CU-X-X	CONDENSING UNIT	HEAT PUMP CU - FLOOR	SEE PLANS	SEE PLANS	PARKING/ROOF	BY MC	DOUBLE DEFLECTION NEOPRENE MOUNTS WITH 3" STATIC DEFLECTION	D	NA	NA	NA	NA	NA	NA	BY MC	1,2,4,5,9
DXFC-X-X	FAN COIL UNIT	SPLIT SYSTEM HEAT PUMP FCU	SEE PLANS	SEE PLANS	WALL	BY MC	NA	NA	NA	NA	NA	NA	NA	NA	BY MC	1,2,4,5
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAV	VAV BOX	SINGLE DUCT	SEE PLANS	SEE PLANS	HUNG	BY MC	NEOPRENE	E	NA	NA	NA	INLET	C	NA	BY MC	1,2,5,11
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-X-X	BOILER	BOILER	BASEMENT	BASEMENT	FLOOR	BY MC	0.3" DEF. NEOPRENE	D	NA	NA	NA	NA	B	B	BY MC	1,2,3,4,5,11
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XXWP-X-X	PUMP	END SUCTION	-	-	FLOOR	BY MC	2" DEF. SPRING	F	NA	F, BY MC	BY MC	NA	B	B	BY MC	1,2,4,5,11
HWTP-X-X	PUMP	INLINE	-	-	HUNG	BY MC	1" DEF. SPRING	C	NA	NA	NA	NA	A	NA	BY MC	1,2,4,5,11,12
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ET-	EXPANSION TANK	-	-	-	FLOOR	BY MC	WAFFLE PAD	A	NA	NA	NA	NA	NA	B	BY MC	1,2,4,5,11
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FN-X-X	FAN - HUNG	MOTOR ≤ 0.5 HP OR SMALLER	SEE PLANS	SEE PLANS	HUNG	BY MC	NEOPRENE	E	NA	NA	NA	YES	NA	NA	BY MC	1,2,4,5,8,11
FN-X-X	FAN - HUNG	MOTOR ≥ 0.75 HP OR LARGER	SEE PLANS	SEE PLANS	HUNG	BY MC	1" DEF. SPRING	C	NA	NA	NA	YES	NA	NA	BY MC	1,2,4,5,8,11
FN-6-1,2	FAN - HUNG	ROOF INLINE FAN	ROOFTOP	ROOFTOP	ROOF	BY MC	1" DEF. SPRING	G	NA	NA	NA	YES	NA	NA	BY MC	1,2,4,5,8,11
DUCTWORK	DUCTWORK - HUNG	ALL DUCTWORK WITHIN 3' OF AHU'S	SEE PLANS	SEE PLANS	HUNG	BY MC	1" DEF. SPRING	C	NA	NA	NA	NA	NA		BY MC	1,2,4,5,11
PIPING	FLOOR	PIPING 2" OR LARGER	SEE PLANS	SEE PLANS	HUNG	BY MC	1" DEF. SPRING	H	NA	NA	NA	NA	NA	NA	BY MC/PC	1,2,4,5,11
PIPING	FLOOR	PIPING LESS THAN 2"	SEE PLANS	SEE PLANS	HUNG	BY MC	NEOPRENE	H	NA	NA	NA	NA	NA	NA	BY MC/PC	1,2,4,5,11
PIPING	HUNG	PIPING 2" OR LARGER	SEE PLANS	SEE PLANS	HUNG	BY MC	NEOPRENE	C,H	NA	NA	NA	NA	NA	NA	BY MC/PC	1,2,4,5,11
PIPING	HUNG	PIPING LESS THAN 2"	SEE PLANS	SEE PLANS	HUNG	BY MC	NEOPRENE	D,H	NA	NA	NA	NA	NA	NA	BY MC/PC	1,2,4,5,11
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

REMARKS:

1: SEE INDIVIDUAL EQUIPMENT SCHEDULES FOR UNIT SIZE AND WEIGHT. SEE MECHANICAL PLAN/CEW DRAWINGS FOR EQUIPMENT LOCATIONS. SEE SPECIFICATION SECTION 230548 AND 230549 FOR ADDITIONAL REQUIREMENTS.

2: PROVIDE WASHINGTON STATE STAMPED SEISMIC TIEDOWN CALCULATIONS PER 2012 INTERNATIONAL BUILDING AND MECHANICAL CODES WITH SEATTLE AMENDMENTS AND SEATTLE DIRECTORS RULE 20-2005. ALL AREAS OF THE BUILDING ARE CONSIDERED CATEGORY III PER 2012 IBC WITH SEATTLE AMENDMENTS TABLE 1604.5 AND REQUIRE A SEISMIC FACTOR OF 1.0. ALL EQUIPMENT TO BE CONNECTED PER ASCE 7 AS REFERENCED BY SBC.

3: THE LIST OF EQUIPMENT BELOW IS A LIFE-SAFETY COMPONENT AND REQUIRES AN IMPORTANCE (Ip) FACTOR = 1.5 FOR SEISMIC CALCULATIONS.

A: HYDRONIC BOILER, & NATURAL GAS PIPING.

4: MC TO VERIFY WITH FIELD DETAILER AND/OR INSTALLER INSTALLATION DETAIL (TO VERIFY UNIT ATTACHMENT TYPE TO STRUCTURE) PRIOR TO ISOLATION VENDOR PERFORMING SEISMIC TIEDOWN CALCULATIONS AND PRIOR TO SEISMIC TIEDOWN PACKAGE BEING SUBMITTED FOR TEAM REVIEW. ALL TIEDOWN LOCATIONS AND DETAILS TO BE SUBMITTED TO AND APPROVED BY THE PROJECT STRUCTURAL ENGINEER. MC SHALL CONTRACT WITH THE STRUCTURAL ENGINEER FOR THIS SUPPORT WORK.

5: EXTERNAL ISOLATION BY MC/PC BASED ON EQUIPMENT TYPE. BASIS OF DESIGN FOR ISOLATOR PRODUCTS (MC MAY PROPOSE ON ALTERNATE MANUFACTURERS FOR TEAM REVIEW). ALL SPRINGS TO BE SEISMICALLY RESTRAINED:

A: WAFFLE PAD - MASON M/N SUPER W WITH MINIMUM 0.15" STATIC DEFLECTION (NOTE: ALL EQUIPMENT MOUNTED ON WAFFLE PAD TO HAVE NEOPRENE WASHER GROMMETS AT TIEDOWN BOLTS)
B: 1" OR 2" DEF SPRING - FLOOR MOUNTED - MASON M/N SLF OR SSR PER ACOUSTIC SPECIFICATIONS
C: 1" OR 2" DEF SPRING - HUNG - MASON M/N 30N
D: 0.15" OR 0.30" DEF NEOPRENE - FLOOR MOUNTED - MASON M/N ENGINEERED WAFFLE PAD
E: NEOPRENE - HUNG - MASON M/N HD WITH MINIMUM 0.35" STATIC DEFLECTION
F: PUMP INERTIA BASE WITH 2" SPRING - MASON M/N BMK (INERTIA BASE WEIGHT TO BE APPROXIMATELY TWO TIME THE EQUIPMENT WEIGHT)
G: 1" OR 2" DEF SPRING - ROOF MOUNTED - MASON M/N SSLFH
H: SEE ACOUSTICAL SPECIFICATION FOR DETAILS.
I: SEE ACOUSTICAL SPECIFICATION FOR DETAILS. SYLOMER PAD, MODEL SYLODYN NB25 OR EQUAL. (NOTE: ALL EQUIPMENT MOUNTED ON SYLOMER PAD TO HAVE NEOPRENE WASHER GROMMETS AT TIEDOWN BOLTS)

6: SUPPLY PLENUM SHIPS SEPARATE FROM EQUIPMENT, AND WILL BE REQUIRED TO BE FIELD MOUNTED AND SUPPORTED.

7: ALL LEVELING PADS AND CURBS TO BE STRUCTURALLY ATTACHED TO BUILDING CONCRETE SLAB BY OTHERS. DESIGN OF ATTACHMENT TO CONCRETE SLAB BY STRUCTURAL ENGINEER. MC TO COORDINATE FINAL SIZE AND LOCATION OF EQUIPMENT PADS IN FIELD SHOP DRAWINGS.

A: NO CONCRETE HOUSEKEEPING PAD. FINAL FLOOR LEVELLING BY OTHERS, FLOOR SINK SIZES AND LOCATION TO BE COORDINATED BASED ON FINAL STATIC PRESSURE AND TRAP DEPTH REQUIREMENTS OF THE AHU.
B: CONCRETE LEVELING PAD BY OTHERS, SEE PLANS FOR HEIGHT.
C: CONCRETE LEVELING CURB BY OTHERS.
D: WOOD LEVELING CURB BY OTHERS.
E: STANCHION SUPPORT BY MC. MC TO COORDINATE STANCHION LOCATIONS IN FIELD SHOP DRAWINGS.
F: STANCHION SUPPORT BY MC/PC. MC TO COORDINATE STANCHION LOCATIONS IN FIELD SHOP DRAWINGS.

8: FAN ISOLATION TO ALL FAN TYPES (SF, EF, TF, FN, ETC.)

9: UNIT TO SET ON SLEEPERS. SLEEPERS TO BE STRUCTURALLY ATTACHED TO BUILDING STRUCTURE BY OTHERS. DESIGN OF ATTACHMENT TO STRUCTURE BY STRUCTURAL ENGINEER.

10: PIPING FLEX CONNECTION BY MC. BASIS OF DESIGN FOR ISOLATOR PRODUCTS (MC MAY PROPOSE ON ALTERNATE MANUFACTURERS FOR TEAM REVIEW).

A: NEOPRENE PIPE FLEXIBLE CONNECTIONS - SINGLE BELLOW - MASON M/N SFDS (2" AND LARGER) OR MASON M/N SFU (AT 3/4" TO 2")
B: VICTAULIC TYPE 77 - (DETAIL 3) FLEXIBLE COUPLING ARRANGEMENT PER MANUFACTURER RECOMMENDATIONS
C: BRAIDED STAINLESS STEEL HOSE - MASON M/N MV
D: BRAIDED BRONZE HOSE - MASON M/N CPSB-HSP

11: REFER TO SPECIFICATION SECTION 23 05 48 AND 09 80 00 (WHEN PROVIDED) FOR ADDITIONAL VIBRATION ISOLATION REQUIREMENTS

12: INTERNAL ISOLATION BY EQUIPMENT MANUFACTURER

13: UNIT TO SET ON ROOFCURB (OR SPRING ROOFCURB) PROVIDED BY MC. MC TO TIEDOWN THE FACTORY ROOFCURB (OR SPRING ROOFCURB) TO THE WOODFRAMING AND COORDINATE THE INSTALLATION WITH GENERAL CONTRACTOR. WOOD LEVELING CURB IS PROVIDED AND ATTACHED TO WOODFRAME STRUCTURE BY OTHERS. MC TO PROVIDE FINAL DETAIL OF ATTACHMENT AND SEISMIC TIEDOWN CALCULATIONS. MC TO PROVIDE SHEET METAL FLASHING AT ROOFCURB.

14: PIPE AND DUCT WALL PENETRATIONS: SHEET METAL SLEEVE, CAULK, ACOUSTICAL INSULATION

HVAC PIPING INSULATION SCHEDULE

PIPING SYSTEM	TEMP RANGE	THERMAL CONDUCTIVITY	MEAN RATING TEMPERATURE	INSULATION MATERIAL	INSULATION THICKNESS BY PIPE SIZE: 1" AND LESS	1" TO <1-1/2"	1-1/2" TO <4"	4" TO <8"	OVER 8"	REMARKS
HVAC PIPING SYSTEM INSULATION										
REFRIGERANT - ALL LINES	ALL	0.20-0.28	75	EPDM OR CLOSED CELL	0.5	1.0	1.0	1.0	1.5	1,7
COOLING COIL CONDENSATE - METAL	<40	0.20-0.26	75	EPDM OR CLOSED CELL	0.5	1.0	1.0	1.0	1.5	
COOLING COIL CONDENSATE - NON-METAL	ALL	-	-	-	-	-	-	-	-	
HYDRONIC PIPING SYSTEMS										
CHILLED WATER	40-60	0.21-0.27	75	FIBERGLASS	0.5	0.5	1.0	1.0	1.5	1,2,3,5,6,7
HEATING HOT WATER	>350	0.32-0.34	250	FIBERGLASS	4.5	5.0	5.0	5.0	5.0	1,2,3,4,7,8
HEATING HOT WATER	251-350	0.29-0.32	200	FIBERGLASS	3.0	4.0	4.5	4.5	4.5	1,2,3,5,7,8
HUMIDIFIER STEAM PIPING	201-250	0.27-0.30	150	FIBERGLASS	2.5	2.5	2.5	3.0	3.0	1,2,3,5,7,9
HEATING HOT WATER	141-200	0.25-0.29	125	FIBERGLASS	1.5	1.5	2.0	2.0	2.0	1,2,3,5,6,7
HEATING HOT WATER	105-140	0.22-0.28	100	FIBERGLASS	1.0	1.0	1.5	1.5	1.5	1,2,3,5,6,7
INSULATED SUPPORTS										
THERMAL SUPPORTS	ALL				TRYMER 2000 OR SNAPITZ	CAL-SIL OR SNAPITZ	CAL-SIL OR SNAPITZ	CAL-SIL OR SNAPITZ	CAL-SIL OR SNAPITZ	4,5,7,8

REMARKS:

1: WASHINGTON STATE AND SEATTLE ENERGY CODE 2012 STANDARDS USED (TABLE C403.2.8).
2: ALL CHILLED WATER PIPING IS TO BE INSULATED INSIDE AND OUTSIDE BUILDING ENVELOPE UNLESS NOTED OTHERWISE. CHILLED WATER PIPING TO HAVE CONTINUOUS VAPOR BARRIER TO PREVENT CONDENSATION.
3: INSULATION REQUIRED BETWEEN THE CONTROL VALVE AND COIL ON ALL RUNOUTS FOR PERSONNEL PROTECTION. FOR HOT WATER PIPING INSULATION MAY BE OMITTED ON VALVES 1" AND SMALLER ON FINAL RUNOUT TO HEATING COILS.
4: HOT WATER PIPES 2" AND SMALLER: NO RIGID INSERTS REQUIRED. INSULATION NOT CONTINUOUS THROUGH THE HANGER. NO SHEETMETAL SHIELD.
5: HOT AND COLD PIPES LARGER THAN 2": RIGID INSERTS. INSULATION CONTINUOUS THROUGH THE HANGER. SHEETMETAL SHIELD.
6: COLD PIPES 2" AND SMALLER: RIGID INSERTS. INSULATION CONTINUOUS THROUGH THE HANGER. SHEETMETAL SHIELD.
7: JACKETING: METAL JACKET (SEALED WEATHER TIGHT) WILL BE USED AT ALL EXTERIOR INSULATION EXPOSED TO WEATHER (I.E. ROOFTOP PIPING). PVC JACKET WITH RIGID RIGID CALCIUM SILICATE INSULATION WILL BE USED ON ALL HORIZONTAL PIPING AT OR NEAR THE FLOOR SUBJECT TO POTENTIAL FOOT TRAFFIC. PVC JACKET WILL BE UTILIZED ON ALL EXPOSED INSULATION WITHIN 6 FEET OF THE FLOOR ELEVATION (I.E. MECHANICAL ROOMS AND GARAGE HOSE BIBBS). PVC IS RECOMMENDED INSTEAD OF METAL IN EXPOSED AREAS DUE TO RESILIENCY (METAL JACKETS DENT).
8: CHILLED WATER PIPING TO USE VERTICAL INSULATED RISER CLAMPS AT FLOOR PENETRATIONS. PROVIDE PIPING TECH M/N E1000 OR E2000, NATIONAL PIPE HANGER CORP M/N NR10 OR NR20, OR APPROVED EQUAL.
9: MINIMUM INSULATION REQUIRED IS PER PER ENERGY CODE MINIMUM VALUES OR PER MANUFACTURER INSTALLATION INSTRUCTIONS, WHICHEVER IS GREATER. OUTDOOR PIPING WILL HAVE AN INTEGRAL WEATHER PROOF JACKET.

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SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

Revisions:
△ No. Date Description
PERMIT CORRECTIONS 1

MECHANICAL SPECIFICATIONS

M003

PROJECT OVERVIEW

Project Address: 1400 E Prospect St

The intent of this project is to upgrade the Volunteer Park Asian Art Museum facility so it remains competitive with contemporary environmental standards while also preserving the historic character of the 1933 and 1994 original. Improvements planned will include structural upgrades, building envelope insulation and replacement, seismic bracing, cladding, glazing, air distribution and electrical infrastructure upgrades. HVAC and Plumbing equipment will be demolished and replaced with new energy efficient systems complying with prevailing 2 Quality and Procurement Laws and code and preservation requirements.

DIVISION 23 – HEATING, VENTILATION, AND AIR CONDITIONING

230000 – Basis of Design Narrative and HVAC
General: Section includes Basis of design and performance criteria for mechanical systems.

Project:
2015 Seattle Energy Code Compliance: Determination of Performance Requirements
- The International and Portland project is classified as a substantial alteration.
- The building has Landmark status.
- A pre-design conference is scheduled with Seattle DCI to determine the extent of construction required based on the building's landmark status and the substantial alteration determination.
- 2015 IEBC C912.4 Historic Buildings – The code official may modify the specific requirements of this code for buildings and require alternative requirements that the code official determines will maintain an adequate degree of energy efficiency, the preservation of the building and will result in a reasonable degree of energy efficiency.
- 2015 IBC C502.1 Qualified alterations to historic. In addition to meeting the Justification requirements of this code, alterations of structures which substantial alterations or repairs are made shall comply with the requirements of the sections of IBC C502.1 Exemption 1. Alterations and repairs to maintain buildings environmentally safe may provide to the extent that the code official determines that such compliance does not have an adverse effect on the architectural or historical features of the building. The following are allowed by subsections 2, 3 or 4 of Section C502.2.3 is permitted to be measured independently of the substantial alteration and preservation of such designated features.
- 2015 IEBC C503.4.3 Energy Efficiency. Compliance pathway for Substantial Alteration of Designated Historic Buildings. Buildings undergoing substantial alteration as defined in Section 202 that are undergoing energy improvement will be provided 10 percentage of less than of the standard reference design (ERS) using the Total Building Performance methodology in Section C407 of the Seattle Energy Code, as follows:
1. A total annual will use less 40 percent of UNC. Research 06 C403 options are included in the ERS.

2015 Seattle Energy Code Compliance: CHP2 Meeting:
- CHP 1 Comment: Buildings with a gross conditioned floor area over 20,000 square feet shall comply with Seattle Code. Buildings must be equipped thermostats, monitor, record and display energy consumption data for each energy source and end use category per the governments may request to balance effective energy management.
- The model used provided will by the SAM. The SC shall provide a simple suite of connection at each panel for connection to the WSS by the MC. The BMS will store data from all electrical meters for 36 months. The data acquisition system shall provide real time energy consumption data as well as logged data for ally hour, day, month or year per C409.4.2. The information shall be utilized for us in building management activities provided by the SIC for the SMP, and is required to display current energy consumption for whole building average, site each and use category, as well as the average and peak rates for any day, week, or year.
- The PC will provide a gas meter for the gas fired MAU / Boiler plant. The data acquisition system will collect data direct from the gas meter.

2015 Seattle Energy Code Compliance C411 Commission Energy
- The total footprint of the air sealing and weatherproofing the exterior envelope of conditioned spaces, including joints around fenestration and doors, penetrations of the building envelope, and all other openings in the building envelope shall be caulked, gasketed, weatherstripped, or otherwise sealed to limit air infiltration. Exterior joints around windows and doors, openings between walls and foundations, between walls and roof and between wall panels, penetrations of utility services through walls, floors and roofs, and all other openings in the building envelope shall be sealed, caulked, gasketed or weatherstripped to minimize air leakage. Where the air barrier is penetrated by mechanical or plumbing systems, the annular space around the penetration shall be sealed with an air barrier material, suitable film or solid material.

2015 Seattle Energy Code Compliance C401 Additional Efficiency Package Options. Projects must comply with one additional efficiency package option from Section C406 in addition to those required by C401 and C402 (mandatory and prescriptive requirements). Projects must comply with one additional efficiency package option from Section C406 in addition to those required by C401 and C402 (mandatory and prescriptive requirements). Projects must comply with one additional efficiency package option from Section C406 in addition to those required by C401 and C402 (mandatory and prescriptive requirements).

Energy Criteria – Weather Conditions
- Exterior conditions are based upon ASHRAE Fundamentals Handbook, 2009 version. ASHRAE data is taken from Seattle-Tacoma Field weather station data compiled from 1942 through 2001.
- Summer 0.4% DB / MCWB:
  - Design outside dry bulb: 84°F
  - Design wet bulb: 66°F
- Winter:
  - Design dry bulb: 32°F (99% ≥ 13.4% 32°)
  - Relative humidity: 80%

Indoor Environmental Temperatures
- Generic criteria are per the following table. Architectural specific spaces are located in each of the following sections of this specification.

Space	Summer	Summer	Unoccupied Setback	Maximum Rate of Change	Winter	Winter	Maximum Rate of Change
Spaces with Exposed Solar Gains	+0.5°F	max F	50–60°F	NA	NA	NA	NA
Spaces without Exposed Solar Gains	75°F ±2°F	75°F ±2°F	Cooled to a room setback temperature	NA	NA	NA	NA
Occupied Spaces without Air Conditioning	75°F ±2°F	75°F ±2°F	75.0°F	NA	NA	NA	NA
Unoccupied Spaces without Air Conditioning	75°F ±2°F	75°F ±2°F	75°F ±2°F	4.0°F/hour	50°F ±2°F	50°F ±2°F	4.0°F/hour

Requirements for Ventilation Air Quality
- Dust Power Blowers when the diversion of the first results on quantity of HVAC exhaust servicing spaces with air.
- The ideal museum fan gas pressure shall is shown as position and, to achieve maximum pressure, the needs should be positively pressurized by creating a flow between of the supply rate. Due to space constraints the needs may be on the negative side of the fan given other outside supply criteria.
- OUTSIDE AIR: Treatment of the global air is usually to control a targeted component such as sulfur dioxide or oxides of nitrogen. This is usually done with medium and a county basis, such as pollutants (biological) or carbon and pollutants (particulate, Outdoor air shall also be tested to minimize outdoor ozone in periods designed to coincide with outdoor.
- RECIRCULATED AIR: Treatment of recirculated air is usually to control volatile organic compounds (VOCs) and ozone. Depending on the components to be removed, the activated. The process used for carbon, treated carbon, carbon wash, is caustic base, acid as activated and pressurized.
- The results of ventilation assessments must allow for the Zone/room Treatment minimum airflow values utilized in the SAAM. Filter media to be provided is Aerosol HEPA, Phase Series, MER+. The HEPA Standing outer mode will be provided and installed in the same side needed filter frame.
- Sulphur Humidity and Ammonia Air – Media should be resistant to the air stream where they can be expected to be to strong acids (pH).
- Prohibited Extensive Source from Unacknowledged Drift of Cooling Coil Condensate – The humidifier and cooling coil should be designed to prevent the growth of biological molds, or wet substrates.
- Air quality sampling station work on Commissioning for the downtown museum will be provided. Performance of the Apartment Installation will be evaluated prior to finishing the apartment.

- The following table summarizes outdoor air quantities:

Type Use	Minimum Cfm Per Person (cfm/person)	Lighting (cfm/sq ft)	VOC Removal Effectiveness (%)
Lobbies	N/A	N/A	N/A
Corridors	N/A	N/A	N/A
Galleries	5	0.06	90%
Mechanical Rooms	1.5 cfm	0.12 cfm	90%

Indoor Load Basis
- Individual thermal loads will be provided for as follows:

Space Type	Occupancy Type (1000 sq ft)	Lighting (watts/sq ft)	Equipment Load (watts/sq ft)
Lobbies	5	1	1
Offices	5	1	1
Conference Rooms	5	1	1
Classrooms	5	1	1
Galleries	5	1	1
Auditorium	200 (fixed)	1	1
Reception	5	1	1
Retail	5	1	1
Museum Food Service	5	1	1
Museum Storage	5	1	1
Museum Shop	5	1	1
Conservation Lab	5	1	1
Corridors	5	1	1
Mechanical Rooms	5	1	1

Ventilation Requirements for Spaces
- The following table is intended to document minimum ventilation requirements to which load factors will be scaled to determine what the final rates will be. Columns are provided to show the rate per ASHRAE 62.1-2013, and 2015 IBC Washington Mechanical Ventilation Rate Procedure. Rates are minimums, contractor contractors or will be provided to maintain spaces positive or neutral air for exhaust fluctuations, as required.

Space Type	IBC Outdoor Air (CFM per person)	IBC Outdoor Air (CFM per person)
Art Gallery Exhibits	15	5
Art Gallery Storage	15	5
Art Work Lab	15	5
Auditorium	15	5
Reception	15	5
Retail	15	5
Museum Food Service	15	5
Museum Shop	15	5
Conservation Lab	15	5
Corridors	15	5
Mechanical Rooms	15	5

Design and Special Insulation Areas
- Tree Islands in conjunction (concrete), any source used or environments that shows to be anticipated for an aging, machinery equipment, and testing of the HVAC systems.
- OPERATING IMAGES & SOUTHWEST OFFICES: Activities, generations of equipment creating threat of damage to the ventilation connection should be kept in balance and exhausted by separate ventilation from the space concerns. All HVAC commissioning points these spaces, if the space is fully exhausted so that unbalanced are not considered with set spaces.
- Ozone from office equipment.
- Fibers, dust, & pollen.
- Fumes, odors in spaces.
- Leaking steam, fluids or air water and fumes.
- Work/maintenance areas.
- Conservation Lab fumes.

Space Type	Equip / BIS Control Set Alm	Fixed on Area	Chemical Stored/Use	Automation Requirements	UV Requirements
Lobbies					
Corridors					
Galleries					
Auditorium					
Mechanical Rooms					
Reception					
Retail					
Museum Food Service					
Museum Storage					
Museum Shop					
Conservation Lab					
Corridors					
Mechanical Rooms					

Space Type	Fume Hood Control Set Alm	Fixed on Area	Chemical Stored/Use	Automation Requirements	UV Requirements
Lobbies					
Corridors					
Galleries					
Auditorium					
Mechanical Rooms					
Reception					
Retail					
Museum Food Service					
Museum Storage					
Museum Shop					
Conservation Lab					
Corridors					
Mechanical Rooms					

Notes:
1) Refer to mechanical drawings for fan controls.
2) Where spaces will be subjected to outside humidity in order to avoid condensation of fluid on cooler coils use either of spaces.
3) The Contract Group air is amount we keep commissions in the (s)Public drawing set. Fans is to be modified to accomplish if the Owners Group should be fully exhausted to avoid recirculation of odor-odor-into mixed air spaces.
4) [illegible]

Supplementary and Basis of Capacity Requirements for Systems
- The following table is intended to document materials or equipments subject inspection for in-house systems. Critical systems are identified to maintain design conditions, with particular attention paid to safety, stored, patient features. Subsystem emergency generator capacity and unexpected but already identified elements to other commissions submitted, identified conditions are to maximum of 30 hours.

System	Power Capacity (hp)	Redundancy	Required Tests
Air Handling Units	Yes		Yes
Fan Units	Yes		Yes
Fan Coil Units	Yes		Yes
Chilled Water Pumps	Yes		Yes
Air System AHU	Yes	Split to 2x Fans (Fume)	Phillips Plant, VFD Failure	30
Boiler Plant	Yes		Yes	30
Boiler Plant	Yes		Boiler failure, emission, EPA, security, work	30
Controls	Yes, 1 Modular		3 Simultaneous Points Capacity > 50%	30
Chiller Plant	Yes		Yes	30

Water Flow Control
- Governor – Pay energy to achieve high capacity over gasoline, except from an approved water softener and water.
- Air Ducts to wall and ceilings – Ducted wall and ceiling must be provided. Reference drawings for details.
- Prevention piping and plumbing water lines – Double walled containment will be provided. Reference drawings for details.
- Water Balance – All equipment will be set up, and points separately through the BMS.

- Rooms with strong heat air studies will be provided with their thermostats that shall not the heat performance at 5° and slope ensure based business. See commissioning coverage.

230923 – Direct Digital Control System for HVAC
General: Section includes the building automation system.

Products:
BMS Controls
- A fully recommissioning BAS and operation the HVAC systems will be provided. Provide a front end PC with Microsoft's Office Professional Suite, BAS system software license, for total field start, and full version of control and basic package.
- The MAC will be allowed for SEC metering data acquisition.
- Part BAS control is required for all the boiler hot water and steam valve plant equipment including variable-air-volume system monitoring.
- Full BAS control is to be provided for all associated plumbing and HVAC systems with real-time monitoring and responding capabilities. Full points lists and requirements as follows.
- Provide building alarm pressure present in safety.
- Facility monitor with DHC and gateway will be utilized where applicable, frequencies, central controls, temperature and set-back control points.
- Fire / All Safety system monitoring point.
- BMS to provide genuine alarms with visual from but the life safety system (FLE provided by EC).
- The BMS will not control any equipment which part the life safety system.
- The operation panel will be monitored through an Ethernet connection. A general visual interface panel will be used there. The HVAC will be configured to perform valid checking of the HVAC systems as an aid to overload the generator.
- Provide 20 alarm points from the fan VFD system to the BMS.
- All HVAC property to have gauges and VFD instrument.
- Additional miscellaneous / more items agreed at following sections:

230900 – Controls and Facility Fuel Systems
General: Section includes the controls and interfaces

Products, Materials
Centrifugal Humidity System
- Provide centrifugal exhaust room, fully located with IP Cabinet and remotely at building perimeter. All equipment and components shall be provided with the unit. The MEC will provide equipment schedules with the appropriate equipment and duties in the drawing schedule. Provide item numbers in wall thickness of equipment wall.
- Provide Ventilation with pressure by EC will be installed by MEC. Mother to be free, partial grease.

Package Airflow
- Provide ventilation discharge ductwork with fan air exhaust to the roof.
- Provide 2 humidifiers are required on 4 heat ducts and the exhaust to AS. Ventilation in these requirements.

Work Verify
- Check locations have been reviewed in preparation and set on construction plans

Fuel Oil system
- To be provided for MC. Installation is by MC. Low voltage wiring to be MC. Fuel fill piping present is by MC

Provide BMS monitoring of a genset emergency generator's power point
Fuel turbine day tanks, controls, and piping mounts on genset, between day tanks and generator will be provided by the MEC in accordance with NFC 407.3.2 thermal joint with the MEP system and protected per UL142.

233000 – HVAC Piping and Pumps
General: Section includes hydronic piping and pumps

Products:
Manufacturer
- See drawing schedules

Water Flow Control
- General – Any solenoid pressure directly into, gallon/min, except for an approved water treatment presentation.
- Pressure and piping and plumbing water lines – Double walled containment will be provided. Reference drawings for details.
- Water Testing – All balancing will be set up with approximately pressure test data.

General requirements:
- The system will run on 208V, programmable glycol.
- Development devices to be provided with VFD's and controlled by differential pressure sensors.
- All pressure gages are to be liquid filled.
- Provide P/T ports with adjacent temperature indicator at all BMS sensors and as required or symptoms as diagnostic troubleshooting. See piping schematic diagrams for minimum requirements.
- All pumps are to be controlled with gauges as set up to avoid pump kick, cavitation, and vibration measures.
- The control system shall be by electronic pilot valves with solenoid sensors and ambient thermostat (if applicable).
- Provide balancing valves to achieve flow compensation of pumps.
- All HVAC water piping shall use the Hydronic Standard details and manufacturer system as should be tested the piping from the building structure, transient, and training. Any pipe and piping type shall be used where necessary to prevent rust contact with the building.
- Distribution pumps will control near differential pressure by the BMS. Provide an adjustable, differential pressure sensor near pumps and P/T ports.
- Minimum pump flow protection: a bypass will be provided. It will be MEC contractor's duty to ensure that they are maintained for less than manufacturer's and the system [illegible]

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SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation
1400 E Prospect
Seattle, WA 98112

Construction Documents

Mark	Date	Description
1	9/1/17	PERMIT SUBMISSION 1

Drawn: BS DC
Checked: JL/RSH
Date/Project No: 1607.01
Date: 8/23/17

MECHANICAL BASIS OF DESIGN

M004

230500 - HVAC Air Distribution

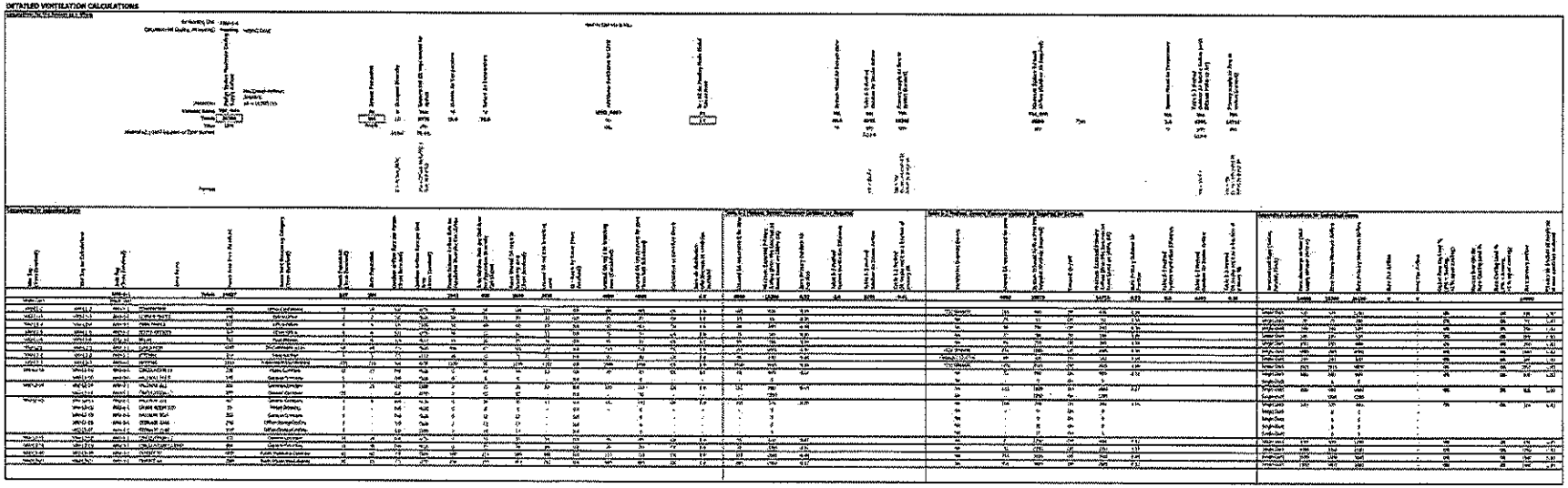
Materials: Division includes ductwork and accessories

Products:

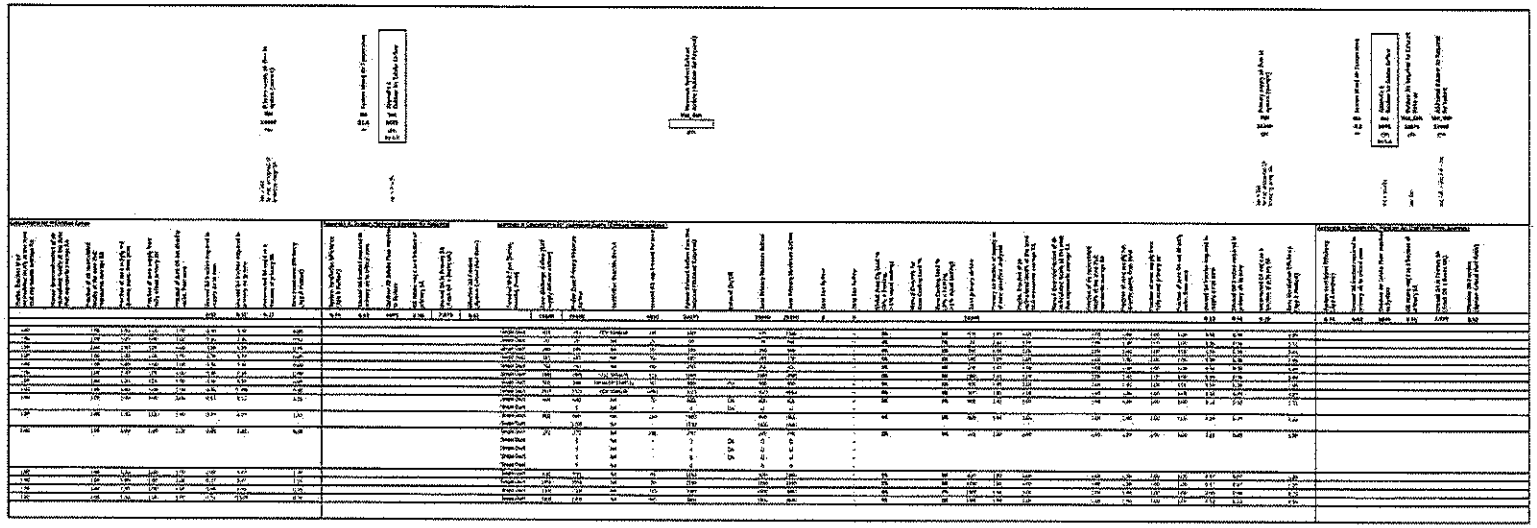
Ductwork Description:

- All connections to be welded with gaskets, flanges, and bolted or welded joints per ASHRAE Standard 154 unless otherwise noted.
- Ductwork shall be fully enclosed from exterior environmental conditions.
- Seismic or Earthquake to be followed.
- Duct sizing criteria to be reviewed with mechanical engineer.
- External insulation to be applied to protect from condensation on all supply air ductwork.
- Ductwork shall be fully protected from exterior environmental conditions during construction.
- Ductwork shall be designed to the following maximum velocities:
  - Supply air ductwork upstream of terminal units: 2,000 fpm
  - Supply air ductwork downstream of terminal units: 1,500 fpm
  - Return air ductwork upstream of terminal units: 1,500 fpm
  - Return air ductwork downstream of terminal units: 1,000 fpm
  - Exhaust air ductwork upstream of terminal units: 1,500 fpm
  - Exhaust air ductwork downstream of terminal units: 1,000 fpm
  - Outside air ductwork upstream of terminal units: 1,500 fpm
  - Outside air ductwork downstream of terminal units: 1,000 fpm
- Ductwork shall be designed to the following maximum pressure classifications:
  - Supply air ductwork upstream of terminal units: 4" w.g.
  - Supply air ductwork downstream of terminal units: 2" w.g.
  - Return air ductwork upstream of terminal units: 2" w.g.
  - Return air ductwork downstream of terminal units: 1" w.g.
  - Exhaust air ductwork upstream of terminal units: 2" w.g.
  - Exhaust air ductwork downstream of terminal units: 1" w.g.
  - Outside air ductwork upstream of terminal units: 2" w.g.
  - Outside air ductwork downstream of terminal units: 1" w.g.
- Duct construction and sealing to be in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, 3rd Edition, 2005.
- Duct sealing to be in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, 3rd Edition, 2005.
- Duct leakage testing to be in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, 3rd Edition, 2005.
- Duct leakage testing to be performed on all ductwork upstream of terminal units.
- Duct leakage testing to be performed on all ductwork upstream of terminal units.
- Duct leakage testing to be performed on all ductwork upstream of terminal units

DETAILED VENTILATION CALCULATIONS



DETAILED VENTILATION CALCULATIONS (CONTINUED)



CONSTANT VOLUME SYSTEM VENT CALCULATIONS

VENTILATION RATE CALCULATION																		
UNIT	ROOM NAME	SQUARE FOOTAGE	HVAC SYSTEM CFM	"Z"	OCCUPANCY CLASSIFICATION	LOOKUP OA (CFM / SF)	LOOKUP OA (CFM / PERSON)	ALTERNATE OA (CFM)	LOOKUP OCC. DENSITY (#/1000 SF)	DEFAULT OCC. QTY	ACTUAL OCC. QTY	USE MAX OCC.	OCC. QTY USED	USE MAX OA CFM	Zone Air Distribution Effectiveness (Ea)	Ra*Aa (CFM)	Rp*Pa (CFM)	CALC OA MIN (CFM)
AHU-1-3	AUDITORIUM	2,380	3,000	35%	Public Auditorium/Seating	0.06	5.0		150	357.8	250.0	-	250.0	-	0.8	142.8	1,250.0	1,745

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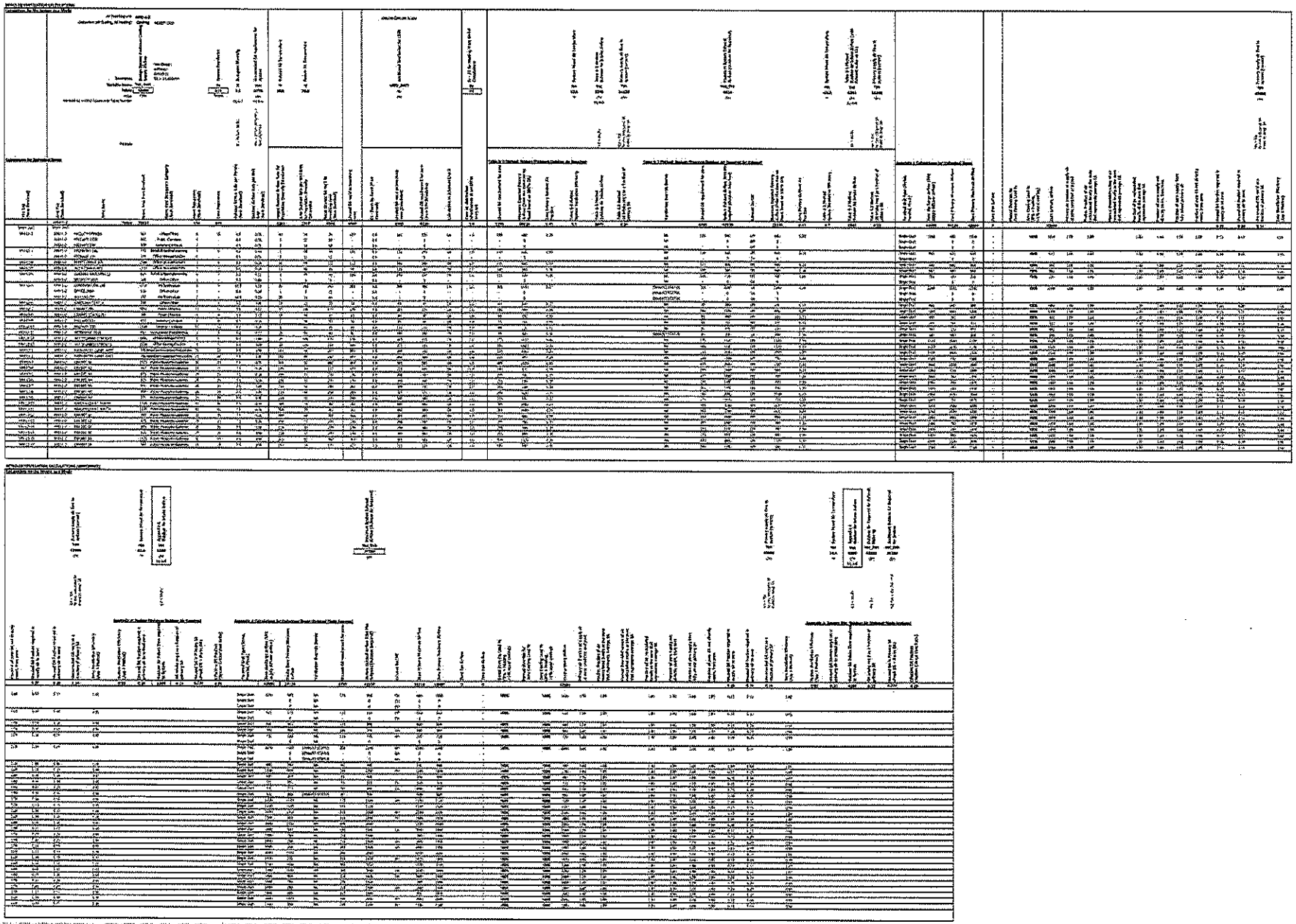
ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

VENTILATION CALCULATIONS

M006



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ASIAN ART MUSEUM

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Construction Documents

VENTILATION CALCULATIONS

M007

SPECIAL BALANCE NOTES:

GENERAL

THE FOLLOWING NOTES ARE PROVIDED AS PLUMBING, MECHANICAL AND MECHANICAL PIPING SCOPE REQUIRED FOR SPECIAL TEST AND BALANCE REQUIREMENTS. PLEASE NOTE THAT THIS IS NOT A COMPLETE TEST AND BALANCE PROCEDURE. THE TESTING ADJUSTING AND BALANCING (TAB) CONTRACTOR SHALL SUBMIT A TESTING PROCEDURES DRAFT REPORT, DESCRIBING IN GREATER DETAIL WHO THEY WILL WORK WITH AND HOW THEY WILL ACCOMPLISH THE REQUIREMENTS INCLUDED HEREIN.

SEE THE DESCRIPTION OF OPERATIONS, SPECIFICATIONS, AND 2015 SMC FOR FURTHER INFORMATION ON TEST AND BALANCE REQUIREMENTS.

AHUS:

1. SEE DESCRIPTION OF OPERATIONS FOR OUTSIDE AIR BALANCING PROCEDURE.
2. THE DESIGN HERTZ FOR THE AHU VFDS ARE ABOVE 60 HERTZ (~XX HERTZ) SO NEED TO MAKE SURE THESE DRIVES ARE NOT LIMITED TO 60 HERTZ.
3. AIRFLOW MONITORING STATIONS: REPORT CALIBRATION MULTIPLIER OR K-FACTOR FOR EACH AIR MEASURING STATION. AFTER CALIBRATION MULTIPLIER IS INPUT INTO THE DMS, RETURN TO VERIFY THE MAX AND VERIFY MIN SETPOINT. REPORT AIR MEASURING UNITS THAT ARE ABNORMAL. INSPECT AIR MEASURING UNIT AND DAMPER INSTALLATIONS.
4. TAB CONTRACTOR TO DETERMINE MINIMUM FAN SPEED, AND PRESSURE SETTING THAT CORRESPONDS TO MINIMUM REQUIRED AIRFLOW PER THE SUM OF THE MIN PRIMARY AIRFLOWS FOR THE VAVS ON EACH CORRESPONDING AHU.

OPERATIONAL MODES FOR BUILDING PRESSURIZATION:

1. GO THROUGH ALL FIVE SCENARIOS ON THE AIR BALANCE SCHEDULE: ECONOMIZER ON/OFF IN OCCUPIED MODE, ECONOMIZER ON/OFF IN UNOCCUPIED MODE, AND EMERGENCY POWER SETBACK MODE AND PRIOR TO THE FINAL REPORT SEND A DEFICIENCIES REPORT DETAILING PROPOSED SETTING AND BUILDING PRESSURES. WORK WITH THE CONTROL CONTRACTOR AND COMMISSIONING AGENT TO MODIFY LIMITS TO THE VARIOUS FAN SPEEDS AND DAMPER POSITION LIMITS. TESTING FOR THE FINAL REPORT SHALL INCLUDE BUILDING PRESSURES AND FINAL LIMITS FOR ALL FIVE SCENARIOS.
2. TAB CONTRACTOR TO DETERMINE MINIMUM AND MAXIMUM FAN SPEEDS THAT CORRESPONDS TO MINIMUM REQUIRED AIRFLOW FOR RELIEF AND RETURN FAN SCHEDULES.

VAV BOXES:

1. FOR SINGLE DUCT VAV BOXES: BALANCE DIFFUSERS AT MAXIMUM AIRFLOW. REPORT CALIBRATION MULTIPLIER OR K-FACTOR FOR EACH VAV. AFTER CALIBRATION MULTIPLIER IS INPUT INTO THE DMS, RETURN TO VERIFY THE MAX AND VERIFY MIN SETPOINT. REPORT VAV TERMINAL UNITS THAT ARE ABNORMAL. RECOMMEND INSPECTING FLOW RINGS AND DAMPER INSTALLATIONS.

HYDRONIC BALANCING:

1. ON HW AND CHW VERIFY REQUIRED DP SETPOINT FOR ADEQUATE FLOW TO THE AIR HANDLING UNITS AND VAV COILS. DETERMINE THE DP IN THE LOOP PRESSURE THAT PROVIDES MINIMUM FLOW FOR THE PUMP (APPROXIMATELY 10% FULL FLOW), WHILE ALSO ALLOWING MAXIMUM FLOW THROUGH THE AIR HANDLING UNITS.
2. ON HW AND CHW DETERMINE THE MINIMUM PUMP SPEED TO PROVIDE THE DP AT AHWP, THE WWHP, AND EACH OF THE BOILERS. SEE THE CONTROL DESCRIPTION OF OPERATIONS FOR ADDITIONAL REQUIREMENTS. NOTE A SEPARATE MINIMUM PUMP SPEED IS EXPECTED TO BE NECESSARY EACH OF THE FOUR MODULES IN THE AWHP.

PLUMBING DHWS BALANCING:

1. BALANCE DOMESTIC HOT WATER SYSTEM INITIALLY ADJUSTING CIRCUIT SETTERS TO DESIGN FLOW.
2. BALANCE ALL DOMESTIC HOT WATER RECIRCULATION PUMPS.

TERMINAL SYSTEM BALANCING:

1. ALL LINEAR SLOT DIFFUSERS (AND A FEW MODULAR CORE DIFFUSERS) HAVE A DIRECTIONAL COMPONENT INDICATED ON THE PLANS. VERIFY AND SET DIRECTIONAL COMPONENTS PRIOR TO AIR BALANCING.
2. THE EXISTING SUPPLY DUCT SYSTEM IS BECOMING THE RETURN AIR SYSTEM. NOTE RETURN AIRFLOW IS LESS THAN THE SUPPLY AIRFLOW TO ACCOUNT FOR PRESSURIZATION OF THE BUILDING. THE EXISTING RETURN DUCT GRILLES MUST BE INDIVIDUALLY BALANCED AT MAX FLOW. WHEN WALLS ARE OPEN ENSURE THAT THE EXISTING DAMPERS ARE FIXED 100% OPEN (OR HAVE BEEN PROPORTIONALLY BALANCED AS RECOMMENDED BY TAB CONTRACTOR) PRIOR TO THEM BECOMING INACCESSIBLE.
3. RETURN AIRFLOW IS LESS THAN THE SUPPLY AIRFLOW TO ACCOUNT FOR PRESSURIZATION OF THE BUILDING IN NEW PORTIONS OF THE BUILDING WHERE INDIVIDUAL SPACES ARE OPEN ABOVE CEILINGS, BALANCING OPENINGS VIA A DUCT TRAVERSE.

SOUND TRAP SCHEDULE

TAG #	ST-L1-1	ST-L1-2	ST-L1-3	ST-L1-4	ST-AT-1	ST-AT-2	ST-AT-3	ST-AT-4
PROJECT	SAAM	SAAM	SAAM	SAAM	SAAM	SAAM	SAAM	SAAM
BASIS OF DESIGN								
MANUFACTURER	VIBRO-ACOUSTICS	VIBRO-ACOUSTICS	VIBRO-ACOUSTICS	VIBRO-ACOUSTICS	VIBRO-ACOUSTICS	VIBRO-ACOUSTICS	VIBRO-ACOUSTICS	VIBRO-ACOUSTICS
MODEL	RD-LV-F1	RD-LV-F1	RD-LV-F1	RD-LV-F1	RD-ULV-F1	RD-ULV-F1	RD-ULV-F1	RD-ULV-F1
DESIGN PARAMETERS								
ASSOCIATED SYSTEM(S)	GENERATOR	GENERATOR	GENERATOR	GENERATOR	EXIST EF-05	EXIST EF-05	EXIST EF-05	EXIST EF-03
SYSTEM DESCRIPTION	EXHAUST	OUTDOOR AIR	OUTDOOR AIR	OUTDOOR AIR	EXHAUST	EXHAUST	EXHAUST	EXHAUST
LOCATION	OUTLET	INLET	INLET	INLET	INLET	INLET	INLET	INLET
CFM (OPERATING)	17551	6147	6147	6147	850	850	850	850
PHYSICAL DIMENSIONS								
OVERALL LENGTH (INCHES)	36"	36"	36"	24"	36"	36"	36"	36"
OVERALL WIDTH (INCHES)	112"	48"	48"	48"	36"	36"	36"	36"
OVERALL HEIGHT (INCHES)	72"	52"	52"	52"	12"	12"	12"	12"
TOTAL WEIGHT	-	-	-	-	-	-	-	-
PERFORMANCE DATA								
FACE AREA (SQ. FT.)	-	-	-	-	-	-	-	-
ENTERING VELOCITY (FPM - OPERATING)	313	342	342	342	283	283	283	283
STATIC PRESSURE DROP (OPERATING)	0.05	0.05	0.05	0.05	0.09	0.09	0.09	0.09
STATIC PRESSURE DROP (SMOKE CONTROL)	NA	NA	NA	NA	NA	NA	NA	NA
SOUND DIRECTION IN RELATION TO AIRFLOW	POSITIVE	POSITIVE	POSITIVE	POSITIVE	POSITIVE	POSITIVE	POSITIVE	POSITIVE
INSERTION LOSSES								
SOUND POWER REDUCTION	AT + 500 FPM	AT + 500 FPM	AT + 500 FPM	AT + 500 FPM	AT + 500 FPM	AT + 500 FPM	AT + 500 FPM	AT + 500 FPM
63	7	7	7	7	7	7	7	7
125	11	11	11	11	16	16	16	16
250	17	17	17	17	20	20	20	20
500	18	18	18	18	19	19	19	19
1000	21	21	21	21	26	26	26	26
2000	15	15	15	15	30	30	30	30
4000	15	15	15	15	17	17	17	17
8000	13	13	13	13	14	14	14	14
SPECIFICATIONS								
OUTER CASING	MIN. 22 GA GALV.	MIN. 22 GA GALV.	MIN. 22 GA GALV.	MIN. 22 GA GALV.	MIN. 22 GA GALV.	MIN. 22 GA GALV.	MIN. 22 GA GALV.	MIN. 22 GA GALV.
INTER CASING	MIN. 26 GA. GALVANIZED, PERFORATED BAFFLES	MIN. 26 GA. GALVANIZED, PERFORATED BAFFLES	MIN. 26 GA. GALVANIZED, PERFORATED BAFFLES	MIN. 26 GA. GALVANIZED, PERFORATED BAFFLES	MIN. 26 GA. GALVANIZED, PERFORATED BAFFLES	MIN. 26 GA. GALVANIZED, PERFORATED BAFFLES	MIN. 26 GA. GALVANIZED, PERFORATED BAFFLES	MIN. 26 GA. GALVANIZED, PERFORATED BAFFLES
SEAM TYPE	LOCKED FORMED, MASTIC FILLED SEAMS	LOCKED FORMED, MASTIC FILLED SEAMS	LOCKED FORMED, MASTIC FILLED SEAMS	LOCKED FORMED, MASTIC FILLED SEAMS	LOCKED FORMED, MASTIC FILLED SEAMS	LOCKED FORMED, MASTIC FILLED SEAMS	LOCKED FORMED, MASTIC FILLED SEAMS	LOCKED FORMED, MASTIC FILLED SEAMS
SPECIAL LINERS	MOISTURE CONTROL LINING REQUIRED	MOISTURE CONTROL LINING REQUIRED	MOISTURE CONTROL LINING REQUIRED	MOISTURE CONTROL LINING REQUIRED	MOISTURE CONTROL LINING REQUIRED	MOISTURE CONTROL LINING REQUIRED	MOISTURE CONTROL LINING REQUIRED	MOISTURE CONTROL LINING REQUIRED
MISC DATA								
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR
FREIGHT	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES	YES	YES	YES	YES	YES	YES	YES
ELECTRONIC SUBMITTAL	YES	YES	YES	YES	YES	YES	YES	YES
ELECTRONIC INSTALLATION MANUAL	YES	YES	YES	YES	YES	YES	YES	YES
	-	-	-	-	-	-	-	-
REMARKS:								

AIR BALANCE SCHEDULE

ZONE	EQUIPMENT TAG	EMERGENCY MODE		UNOCCUPIED MIN OA MODE		UNOCCUPIED ECONO MODE		OCCUPIED MIN OA		OCCUPIED ECONO MODE	
		EA CFM	OACFM	EA CFM	OACFM	EA CFM	OA CFM	EA CFM	OA CFM	EA CFM	OA CFM
SOUTH EAST ADDITION	AHU-L1-3	-	500	-	2500	-	13545	-	6300	-	25390
ADMIN BREAK	FN-L1-6	0	-	0	-	0	-	320	-	576	-
KITCHEN EXHAUST	FN-L2-3	0	-	0	-	0	-	610	-	610	-
SOUTH EAST ADDITION RELIEF	FN-4-1	0	-	0	-	6700	-	-	-	16503	-
MEETING ROOM	FN-2-7	0	-	0	-	4320	-	4220	-	5260	-
PRESSURIZATION		526	CFM	2350	CFM	2525	CFM	850	CFM	2480	CFM
CENTER EXISTING SF	AHU-L1-2 (SF)	-	9300	-	4300	-	25020	-	9250	-	42,860
CENTER EXISTING RF	AHU-L1-2 (RF)	-	-	-	-	18850	-	0	-	33555	-
LOCKER ROOMS	FN-L1-4	-	-	-	-	-	-	400	-	400	-
WORKSHOP/GLUE ROOM	FN-L1-9	700	-	700	-	700	-	700	-	700	-
CONSERVATION LAB	FN-L2-1	1220	-	1220	-	1270	-	2460	-	2460	-
PUBLIC TOILET	FN-L2-2	-	-	-	-	-	-	1470	-	1470	-
PRESSURIZATION		1371	CFM	2370	CFM	4240	CFM	3220	CFM	4380	CFM
AUDITORIUM	AHU-L1-3	-	-	-	-	-	-	-	3,270	-	6,200
AUDITORIUM RELIEF	AHU-L1-3 (RF)	-	-	-	-	-	-	2270	-	6200	-
PRESSURIZATION		0	CFM	0	CFM	0	CFM	0	CFM	0	CFM
WHOLE BUILDING PRESSURIZATION		1,570	CFM	4,370	CFM	4,765	CFM	4,570	CFM	4,780	CFM

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SAM ASIAN ART MUSEUM

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Construction Documents

MECHANICAL SCHEDULES - AIR BALANCE

M010

AIR HANDLING UNIT SCHEDULE (SUPPLY & EXHAUST)

TAG #	AHU-L1-1	AHU-L1-2	AHU-L1-3
QUANTITY	1	1	1
BASIS OF DESIGN			
MANUFACTURER	CLIMATECRAFT	CLIMATECRAFT	CLIMATECRAFT
MAKE	CUSTOM AHU	CUSTOM AHU	CUSTOM AHU
LOCATION / INDOOR / OUTDOOR	INDOOR	INDOOR	INDOOR
SERVICE	ART SPACES	ART SPACES	AUDITORIUM
SUPPLY FAN			
SUPPLY FAN TYPE	PLUG	PLUG	PLUG
SUP. FAN CONFIG (BLOW THRU/DRAW THRU)	DRAW THRU	DRAW THRU	DRAW THRU
TOTAL SUPPLY CFM (AT THE TERMINAL)	33390 CFM	42690 CFM	4260 CFM
SUPPLY E.S.P. (DOES NOT INCLUDE FILTER LOADING)	3.4"	3.4"	1.4"
FILTER LOADING STATIC PRESSURE	EQUAL TO INITIAL FOR EACH (MIN 0.25)	EQUAL TO INITIAL FOR EACH (MIN 0.25)	EQUAL TO INITIAL FOR EACH (MIN 0.25)
SUPPLY FAN T.S.P. (ESP + INT. LOSSES)	5.82	6.93"	3.06"
SUPPLY FAN MOTOR DIRECT DRIVE / BELT DRIVE	DIRECT	DIRECT	DIRECT
QUANTITY OF SUPPLY FANS	4	4	1
SUPPLY BHP	33.7	58.9	4.5
SUPPLY HP	40	80	6
SUPPLY FAN DESIGN RPM / MAX RPM	1885 / 2089	1934 / 2163	2827 / 2814
SUPPLY WHEEL SIZE	22.25	24.5	20
SUPPLY FAN SPRING ISO. W/ SEIS. SNUBBER	YES - 1" SPRING	YES - 1" SPRING	YES - 1" SPRING
ECONOMIZER	100% OSA / TBD	100% OSA / TBD	100% OSA / TBD
ULTRA LOW LEAK DAMPERS (OSA & SUPPLY)	YES	YES	YES
SUPPLY AIR FLOW MEASUREMENT STATION	FAN INLET CONE	FAN INLET CONE	FAN INLET CONE
DISCHARGE CONFIGURATION HOOD / LOUVER	NO	NO	NO
SUPPLY SMOKE DETECTOR (PROVIDED AND INSTALLED) (1)	BY EC	BY EC	BY EC
SUPPLY FAN ELECTRICAL			
SUPPLY MOTOR VOLTAGE/PHASE	460 / 3	460 / 3	460 / 3
SUPPLY MOTOR EFFICIENCY	CODE MIN.	CODE MIN.	CODE MIN.
MAGNETIC STARTERS	NO	NO	NO
SUPPLY MOTOR VFD (FACTORY PROVIDED AND INSTALLED)	YES	YES	YES
WIRING FROM VFD TO FAN MOTORS	BY FACTORY	BY FACTORY	BY FACTORY
SPARE SUPPLY MOTOR VFD	NO	NO	NO
INVERTER DUTY RATED MOTORS	YES	YES	YES
DISCONNECTS	BY FACTORY	BY FACTORY	BY FACTORY
120V SERVICE OUTLET WITHIN 25 FEET	BY FACTORY	BY FACTORY	BY FACTORY
EMERGENCY POWER	NO	NO	NO
E-POWER CFM	-	-	-
E-POWER BHP	-	-	-
STANDBY POWER	YES	YES	NO
STANDBY POWER CFM	6,000	30,000	-
STANDBY POWER BHP	14	35	-
STANDBY POWER NHP	30	40	-
SUPPLY SOUND POWER LEVELS BY OCTAVE BAND (DB)			
AHU SOUND POWER LEVELS INCLUDING MINIMUM AHU INSERTION LOSSES			
TOTAL DISCHARGE / CASING RADIATED 63	86/73	93/80	82/79
TOTAL DISCHARGE / CASING RADIATED 125	84/71	92/80	80/65
TOTAL DISCHARGE / CASING RADIATED 250	82/62	93/69	84/59
TOTAL DISCHARGE / CASING RADIATED 500	87/50	90/54	82/45
TOTAL DISCHARGE / CASING RADIATED 1000	87/36	87/39	80/31
TOTAL DISCHARGE / CASING RADIATED 2000	79/23	85/28	78/25
TOTAL DISCHARGE / CASING RADIATED 4000	79/23	82/27	72/23
TOTAL DISCHARGE / CASING RADIATED 8000	72/23	80/28	68/23
TOTAL DISCHARGE / CASING RADIATED DBA	90/58	93/66	85/54
TOTAL DISCHARGE / CASING RADIATED LW	95/75	98/83	89/71
OUTSIDE AIRFLOW			
MINIMUM OUTSIDE AIR CFM	6300 CFM	8250 CFM	2270 CFM
OUTSIDE AIR FLOW MEASUREMENT STATION	YES	YES	YES
ENERGY CODE REQUIRED OUTSIDE AIR DAMPER	YES	YES	YES
SEPARATE OUTSIDE AIR MINIMUM DAMPER	NO	NO	NO
INTAKE HOOD / LOUVER	NO	NO	NO
LOUVER BY OTHERS	NA	NA	NA
RETURN / RELIEF / EXHAUST FAN			
RETURN / RELIEF FAN TYPE		RETURN	-
RET. / REL. FAN CONFIG (BLOW THRU/DRAW THRU)		DRAW	-
TOTAL RETURN / RELIEF CFM (AT TERMINAL)		37,400	-
TOTAL RETURN / RELIEF CFM		40,200	-
RETURN / RELIEF E.S.P.		2.25"	-
RETURN / RELIEF FAN T.S.P. (ESP + INT. LOSSES)		2.55"	-
RETURN RELIEF MOTOR DIRECT DRIVE / BELT DRIVE		DIRECT	-
QUANTITY OF RETURN / RELIEF FANS ASSUMED		2	-
RETURN / RELIEF BHP		22	-
RETURN / RELIEF HP		30	-
RETURN / RELIEF FAN DESIGN RPM / MAX RPM		924 / 1365	-
RETURN / RELIEF WHEEL SIZE		36"	-
RET. / REL. FAN SPRING ISO. W/ SEIS. SNUBBER		1" SEISMIC	-
ULTRA LOW LEAK DAMPERS (EXHAUST INLET & DISCHARGE)		YES	-
DISCHARGE HOOD / LOUVER		-	-
LOUVER BY OTHERS	-	-	-
RETURN/RELIEF AIR FLOW MEASUREMENT STATION		NO	-
RETURN / RELIEF SMOKE DETECTOR (FIELD PROVIDED AND INSTALLED) (REMARK 1)		YES	-
TEMPERATURE RATING	-	-	-
RETURN / RELIEF / EXHAUST FAN ELECTRICAL			
RETURN / RELIEF VOLTAGE/PHASE		460 / 3	-
RETURN / RELIEF MOTOR EFFICIENCY		CODE MINIMUM	-
MAGNETIC STARTERS		NO	-
RETURN / RELIEF MOTOR VFD (FACTORY PROVIDED & INSTALLED)		YES	-
WIRING FROM VFD TO FAN MOTORS		BY FACTORY	-
SPARE RETURN / RELIEF MOTOR VFD		NO	-
INVERTER DUTY RATED MOTORS		YES	-
DISCONNECTS		BY FACTORY	-
120V SERVICE OUTLET WITHIN 25 FEET		BY EC	-
EMERGENCY POWER		NO	-
E-POWER CFM		-	-

AIR HANDLING UNIT SCHEDULE (SUPPLY & EXHAUST)

TAG #	AHU-L1-1	AHU-L1-2	AHU-L1-3
E-POWER BHP		-	-
STANDBY POWER		YES	-
STANDBY POWER CFM		20,000	-
STANDBY POWER BHP		10	-
AHU RETURN INLET SOUND POWER LEVELS BY OCTAVE BAND			
AHU SOUND POWER LEVELS INCLUDING MAXIMUM AHU INSERTION LOSSES			
TOTAL INLET 63	74	84	64
TOTAL INLET 125	76	90	52
TOTAL INLET 250	81	90	48
TOTAL INLET 500	78	77	40
TOTAL INLET 1000	70	73	34
TOTAL INLET 2000	66	89	44
TOTAL INLET 4000	64	66	38
TOTAL INLET 8000	62	63	42
TOTAL INLET DBA	78	86	48
TOTAL INLET LW	85	94	64
COOLING			
COOLING COIL TYPE	CHILLED WATER	CHILLED WATER	CHILLED WATER
CHILLED WATER COIL EWT/LWT	40°F / 52°F	40°F / 52°F	40°F / 52°F
COOLING COIL EAT (DB/WB)	75.4°F / 61.8°F	74.5°F / 61.2°F	76.8°F / 62.2°F
COOLING COIL LAT (DB/WB)	50.5°F / 50°F	50.5°F / 50°F	53°F / 52.9°F
LEAVING AHU TEMPERATURE (AFTER FAN HEAT)	55°F	55°F	55°F
COOLING MBH SENSIBLE/TOTAL	495/832	1150/1370	159/175
CHILLED WATER PROPYLENE GLYCOL %	25%	25%	25%
CHILLED WATER COIL GPM (SUM OF ALL COILS)	135	240	30
MIN QUANTITY OF CHILLED WATER COILS	2	3	1
MAX CHILLED WATER COIL WPD (FT HEAD)	13.4	12	18.1
MAX COOLING COIL APD (IN W.C.)	.5	.6	.53
COOLING COIL ROWS/FPI	8/10	6/10	4/10.5
COOLING COIL FACE VELOCITY	433	482	350
DRAIN PAN (LOWER AND INTERMEDIATE)	STAINLESS	STAINLESS	STAINLESS
DRAIN PAN SLOPE (LOWER AND INTERMEDIATE)	2 WAY	2 WAY	2 WAY
HEATING			
HEATING COIL TYPE	HOT WATER	HOT WATER	HOT WATER
HOT WATER COIL EWT / LWT (DEG F)	130/105	130/105	130/105
HEATING COIL EAT (DB)	40°F	48°F	45°F
HEATING COIL LAT (DB)	64°F	60°F	85°F
HEATING COIL MBH	354	348	275
HEATING WATER PROPYLENE GLYCOL %	25%	25%	25%
HOT WATER COIL GPM (SUM OF ALL COILS)	30	60	40
MAX HOT WATER COIL WPD	4	2.2	7.8
MAX HOT WATER COIL APD	0.05	0.07	0.12
QUANTITY OF HOT WATER COILS	2	3	1
HEATING COIL ROWS/FPI	1/6	1/8	2/12
HEATING COIL FACE VELOCITY	425	477	350
PRE-FILTER SPECIFICATIONS			
PRE-FILTER EFF. (%)	MERV 8	MERV 8	MERV 8
PRE-FILTER INITIAL DP / FINAL DP	.2/.4	.2/.4	.2/.4
PRE-FILTER SECTION (FLAT OR V-BANK)	FLAT	FLAT	FLAT
PRE-FILTER DEPTH (IN.)	2	2	2
PRE-FILTER FACE VELOCITY			
EXTRA SET OF PRE-FILTERS (SHIP NEAR END OF CONSTRUCTION)	YES	YES	YES
PRE-FILTER EFF. (%) CONSTRUCTION	MERV 8	MERV 8	MERV 8
FILTER FRAME FACE CLIPS UPSTREAM LOAD	YES (FACE CLIP DIRECT TO 2ND FILTER OK)	YES (FACE CLIP DIRECT TO 2ND FILTER OK)	YES (FACE CLIP DIRECT TO 2ND FILTER OK)
PRE-FILTER MAGNEHELIC	-	-	-
PRE-FILTER PHOTOHELIC	YES	YES	YES
SECOND FILTER SPECIFICATIONS			
SECOND FILTER EFF. (%)	MERV 13	MERV 15	MERV 13
SECOND FILTER INITIAL DP / FINAL DP	.4/.8	.4/.9	.3/.8
SECOND FILTER SECTION (FLAT OR V-BANK)	FLAT	FLAT	FLAT
SECOND FILTER DEPTH (IN.)	12	12	6
SECOND FILTER FACE VELOCITY			
EXTRA SET OF SECOND FILTERS (SHIP NEAR END OF CONSTRUCTION)	NO	NO	NO
SECOND FILTER EFF. (%) CONSTRUCTION	>95%	>95%	85-90%
FILTER FRAME FACE CLIPS UPSTREAM LOAD	YES	YES	YES
SECOND FILTER MAGNEHELIC	-	-	-
SECOND FILTER PHOTOHELIC	YES	YES	YES
THIRD FILTER SPECIFICATIONS			
THIRD FILTER EFF. (%) TYPE	CARBON	CARBON	-
THIRD FILTER INITIAL DP / FINAL DP	.4/.4	.4/.4	-
THIRD FILTER SECTION (FLAT OR V-BANK)	AEROSTAR MEGA 3452	AEROSTAR MEGA 3451	-
THIRD FILTER DEPTH (IN.)	WITH DUSTING FILTER	WITH DUSTING FILTER	-
THIRD FILTER FACE VELOCITY	-	-	-
EXTRA SET OF THIRD FILTERS (SHIP NEAR END OF CONSTRUCTION)	NO	NO	-
THIRD FILTER EFF. (%) CONSTRUCTION	-	-	-
FILTER FRAME FACE CLIPS UPSTREAM LOAD	YES	YES	-

AIR HANDLING UNIT SCHEDULE (SUPPLY & EXHAUST)

TAG #	AHU-L1-1	AHU-L1-2	AHU-L1-3
THIRD FILTER MAGNEHELIC	-	-	-
THIRD FILTER PHOTOHELIC	NO	NO	-
SOUND ATTENUATOR SPECIFICATION			
ASTM E477 CERTIFIED SOUND ATTENUATOR	NO	NO	YES
MINIMUM SOUND ATTENUATOR BASIS - MAKE & MODEL			CA 3HP-LF
DEDUCTIVE ALTERNATE FOR NON-ASTM E477 CERTIFIED SOUND ATTENUATOR			
CONSTRUCTION			
DOOR SWINGS	DOORS OPEN AGAINST PRESSURE	DOORS OPEN AGAINST PRESSURE	DOORS OPEN AGAINST PRESSURE
FACTORY WIRED DOOR SAFETY SWITCH	YES	YES	YES
OUTDOOR UNIT WITH WEATHER PROOFING	INDOOR	INDOOR	INDOOR
WALL THICKNESS	2" INSULATED	2" INSULATED	2" INSULATED
INSULATION DENSITY (LB/CU. FT.)	3	3	3
INNER LINE GAUGE	22	22	22
MIXING SECTION INNER WALL	NA	NA	NA
FILTER SECTION INNER WALL	SOLID GALVANIZED	SOLID GALVANIZED	SOLID GALVANIZED
CHW COIL INNER WALL PLUS FAN WALL	SOLID STAINLESS INNER	SOLID STAINLESS INNER	SOLID STAINLESS INNER
OTHER COIL SECTION(S) INNER WALL	SOLID GALVANIZED	SOLID GALVANIZED	SOLID GALVANIZED
SUPPLY FAN SECTION INNER WALL	SOLID GALVANIZED	PERFORATED METAL	PERFORATED METAL
DISCHARGE SECTION INNER WALL	SOLID GALVANIZED	PERFORATED METAL	PERFORATED METAL
CONICAL OUTLET FITTING	YES	YES	YES
ACCESS DOORS UPSTREAM AND DOWNSTREAM OF ALL COILS	YES	YES	YES
CHW & HW COIL CONNECTIONS OPPOSITE OF UNIT DOORS	YES	YES	YES
FLEX CONNECTION BETWEEN FAN AND FAN WALL	YES	YES	YES
QUANTITY OF ACCESS DOORS			
QUANTITY OF VIEW WINDOWS	ALL DOORS	ALL DOORS	ALL DOORS
QUANTITY OF MARINE LIGHTS	ALL SECTIONS	ALL SECTIONS	ALL SECTIONS
QUANTITY OF SHIPPING SECTIONS	TBD	TBD	TBD
CASINGS (BOLTED, SCREWED)	BOLTED	BOLTED	BOLTED
EXTERIOR PANEL GAUGE	16	16	16
BASE GAUGE	DIAMOND PLATE	DIAMOND PLATE	14
FACTORY CURB	NO	NO	NO
FACTORY BASE RAIL	YES	YES	YES
PHYSICAL DIMENSIONS			
OVERALL LENGTH	294"	479"	234"
OVERALL WIDTH	123"	139"	87"
HEIGHT (INCLUDING BASE RAIL)	105"	142"	44"
FACTORY CURB HEIGHT			
ADDITIONAL DISCHARGE PLENUM HEIGHT			
TOTAL WEIGHT (LESS SITE BUILT CURB)	14600	31040	5440
BASE / MOUNTING TYPE	8" BASE RAIL	8" BASE RAIL	4" BASE RAIL
UNIT VIBRATION ISOLATION FROM STRUCTURE	WAFFLE PAD MOUNT	WAFFLE PAD MOUNT	WAFFLE PAD MOUNT
UNIT COMPONENT LAYOUT (IN DIRECTION OF AIRFLOW)			
COMPONENT 1	MA PLENUM	OSA DAMPER	OSA DAMPER
COMPONENT 2	PRE-FILTER	PRE-FILTER	PRE-FILTER
COMPONENT 3	FINAL FILTER	FINAL FILTER	FINAL FILTER
COMPONENT 4	MEGA FILTER	MEGA FILTER	SOUND TRAP
COMPONENT 5	HW COIL	HW COIL	HW COIL
COMPONENT 6	CHW COIL	CHW COIL	CHW COIL
COMPONENT 7	FAN INLET DAMPERS	FAN INLET DAMPERS	FAN INLET DAMPERS
COMPONENT 8	SUPPLY FANS	SUPPLY FANS	SUPPLY FANS
COMPONENT 9	SOUND TRAP	SOUND TRAP	DISCHARGE DAMPER
COMPONENT 10	DISCHARGE DAMPER	DISCHARGE DAMPER	-
COMPONENT 11	-	-	-
MISCELLANEOUS			
FACTORY MOUNTED CONTROLS	YES	YES	YES
FACTORY CONDUIT FOR CONTROLS	YES	YES	YES
UL OR ETL AS AN ASSEMBLY	YES	YES	YES
AMCA 300 CERTIFIED TESTING	YES (ADD ALT)	YES (ADD ALT)	YES (ADD ALT)
FACTORY ACOUSTICAL TEST INCLUDING TRAVEL	YES	YES	YES
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	1 YEAR	1 YEAR	1 YEAR
FREIGHT	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES	YES	YES
ELECTRONIC SUBMITTAL	YES	YES	YES
ELECTRONIC INSTALL/O&M MANUAL	YES	YES	YES
-	-	-	-

1. SMOKE DETECTOR QUANTITY INDICATED IN SCHEDULE IS NOT ALL-INCLUSIVE. WHERE INDICATED IS BY E.C.
THIS IS TO REFERENCE WHERE SMOKE DETECTORS MAY BE REQUIRED BY SMC SECTION 607.
DESIGN OF SMOKE DETECTION SYSTEM IS BY E.C. ALL SMOKE DETECTORS PROVIDED BY E.C.
INSTALLATION OF DUCT DETECTORS IS BY E.C. UNDER THE SUPERVISION OF M.C.
ALL WIRING AND FIRE LIFE-SAFETY INTERLOCKS ARE BY E.C.
FOR FURTHER INFORMATION SEE THE FOLLOWING SBC AND SMC CODE SECTIONS: SBC 716, SMC 607.

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SAM ASIAN ART MUSEUM

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MECHANICAL SCHEDULES - AHU

M011

FAN SCHEDULE

TAG #	FN-L1-1	FN-L1-2	FN-L1-3	FN-L1-4	FN-L1-5	FN-L1-6	FN-L1-7	FN-L1-8	FN-L2-1	FN-L2-2
EXISTING/NEW/RELOCATED	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW
QUANTITY OF FANS	1	1	1	1	1	1	1	1	1	1
BASIS OF DESIGN										
MANUFACTURER	GREENHECK	GREENHECK	GREENHECK	GREENHECK	GREENHECK	GREENHECK	GREENHECK	GREENHECK	GREENHECK	GREENHECK
MODEL	[illegible]-120-VG	SQ-100-VG	SQ-90-VG	CSP-A710-VG	SQ-99-VG	SQ-90-VG	SQ-90-VG	CSP-A710-VG	SQ-140-VG	SQ-130-VG
DESIGN DATA										
AREA SERVED	TRANSFORMER	ELECTRICAL	PUMP ROOM	LOCKER RMS	WORKSHOP / GLUE RM	MECHANICAL	MECHANICAL	ADMIN BREAK	CONSERVATION	PUBLIC TOILET RMS
EXHAUST / SUPPLY / RELIEF	EXHAUST	EXHAUST	EXHAUST	EXHAUST	EXHAUST	EXHAUST	EXHAUST	EXHAUST	EXHAUST	EXHAUST
LOCATION	ROOF	ELECTRICAL RM 104	PUMP RM 103	STOR 114B	MECH N. 402	MECH CENTRAL 12[illegible]	MECH SOUTH 118	CEILING	CEILING	MECH N. 402
QUANTITY OF FANS	1	1	1	1	1	1	1	1	1	1
FAN PROVIDED BY	BY MC	BY MC	BY MC	BY MC	BY MC	BY MC	BY MC	BY MC	BY MC	BY MC
FAN TYPE / SIZE DETAILS										
FAN TYPE	CENTRIFUGAL	CABINET	CABINET	CABINET	CABINET	CABINET	CABINET	CABINET	CABINET	CABINET
CFM	1,490	750	460	460	590	460	400	330	2,365	1,470
AIR TEMPERATURE - NORMAL OPERATION	70°F	70°F	70°F	70°F	70°F	70°F	70°F	70°F	70°F	70°F
MAXIMUM OPERATING TEMPERATURE	85°F	82°F	80°F	80°F	85°F	83°F	83°F	85°F	85°F	85°F
SMOKE CONTROL CFM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AIR TEMPERATURE - SMOKE CONTROL OPERATIONS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MINIMUM CFM FOR VFD OPERATION	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E.S.P.	0.25	0.5	0.6	0.8	1.0	0.5	0.5	0.25	0.5	1.0
T.S.P.										
FAN RPM			2428	1012						
BHP		0.13	0.09	-	0.33	0.04	0.08		0.12	0.47
HP (OR WATTS)	1/2	1/4	1/10	320 W	1/4	1/10	1/10	325 W	3/4	3/4
VOLTS/PHASE	120/1	120/1	120/1	120/1	120/1	120/1	120/1	120/1	120/1	120/1
MOTOR EFFICIENCY	CODE MIN.	CODE MIN.	CODE MIN.	CODE MIN.	CODE MIN.	CODE MIN.	CODE MIN.	CODE MIN.	CODE MIN.	CODE MIN.
MOTOR RPM										
TWO SPEED MOTOR/ECM MOTOR	-	-	-	-	-	-	-	-	-	-
MOTOR SPEC BASED INVERTER DUTY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
MOTOR TYPE (ODP/TEFC/EXPLOSION PROOF/OTHER)	ECM	ECM	ECM	ECM	ECM	ECM	ECM	ECM	ECM	ECM
ELECTRICAL DATA										
DISCONNECT	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC
MANUAL STARTER (PROVIDED & INSTALLED BY EC)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
MAGNETIC STARTER (PROVIDED & INSTALLED BY EC)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
MAGNETIC STARTER MODEL (FURNISHED BY MC, INSTALL BY EC)	BY MC	BY MC	BY MC	BY MC	BY MC	BY MC	BY MC	BY MC	BY MC	BY MC
MOUNTED AND WIRED BY EC TO MOTORS	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC
VFD (PROVIDED BY M.C. & INSTALLED BY EC)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
VFD FUSED DISCONNECT BY (FACTORY)	-	-	-	-	-	-	-	-	-	-
VFD MOUNTED AND WIRED BY EC TO MOTORS	-	-	-	-	-	-	-	-	-	-
VFD MANUFACTURER	-	-	-	-	-	-	-	-	-	-
VFD MODEL	-	-	-	-	-	-	-	-	-	-
VFD BYPASS	-	-	-	-	-	-	-	-	-	-
VFD INPUT LINE REACTOR	-	-	-	-	-	-	-	-	-	-
VFD OUTPUT L.C. FILTER	-	-	-	-	-	-	-	-	-	-
VFD NEMA [illegible]	-	-	-	-	-	-	-	-	-	-
VFD [illegible] L.C. FILTER	-	-	-	-	-	-	-	-	-	-
VFD BYPS INTERFACE CARD	-	-	-	-	-	-	-	-	-	-
LOCAL SERVICE OUTLET WITHIN 15 FT	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC
EMERGENCY POWER	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
STANDBY POWER	NO	YES	NO	NO	YES	NO	NO	NO	YES	NO
SMOKE DETECTOR (REMARK 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
CONTROL DATA										
TYPE OF CONTROL	STAND ALONE	STAND ALONE	STAND ALONE	BMS	BMS	STAND ALONE	STAND ALONE	BMS	BMS	BMS
PART OF SMOKE CONTROL SYSTEM	-	NO	NO	NO	NO	NO	NO	NO	NO	NO
WALL SWITCH & WIRING	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
LINE VOLTAGE T-STAT	T-STAT (2)	T-STAT	T-STAT	-	-	T-STAT	T-STAT	-	-	-
BMS ROOM TEMPERATURE SENSOR	NO	NO	NO	BMS SENSOR	BMS SENSOR	NO	NO	BMS SENSOR	BMS SENSOR	BMS SENSOR
SPEED CONTROL	BY MC	BY MC	BY MC	NO	BY MC	BY MC	BY MC	BY MC	BY BMS	BY MC
BACKDRAFT DAMPER BY FAN	NO	NO	YES	YES	NO	YES	YES	YES	NO	NO
MOTORIZED DAMPER INTERLOCK	NO	MD INTERLOCK	MD INTERLOCK	MD INTERLOCK	MD INTERLOCK	MD INTERLOCK	MD INTERLOCK	MD INTERLOCK	MD INTERLOCK	MD INTERLOCK
[illegible]	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
[illegible] PRESSURE SWITCH	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO
[illegible]	NO	NO	NO	BY C.C.	BY C.C.	NO	NO	BY C.C.	BY C.C.	BY C.C.
WALL SWITCH AND TIME DELAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
WARNING LIGHT	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
SPECIFICATION DATA										
DIRECT / BELT DRIVE	DIRECT	DIRECT	DIRECT	DIRECT	DIRECT	DIRECT	DIRECT	DIRECT	DIRECT	DIRECT
DUAL BELT	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
ADJUSTABLE PITCH/FIXED PITCH SHEAVE	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
FAN CLASS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SITE BUILT CURB OR SLEEPERS BY OTHERS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
WALL HOUSING	YES	NO								
[illegible]	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
[illegible]	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
[illegible]	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
FAN MOUNTING LOCATION (INDOOR, OUTDOOR, ETC.)	OUTDOOR	INDOOR	INDOOR	INDOOR	INDOOR	INDOOR	INDOOR	INDOOR	INDOOR	INDOOR
VERTICAL OR HORIZONTAL DISCHARGE ORIENTATION	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL
MOUNTING CONFIGURATION (HUNG, CURB, FLOOR, ETC.)	CURB	HUNG	HUNG	HUNG	HUNG	HUNG	HUNG	HUNG	HUNG	HUNG
MOTOR MOUNTING LOCATION	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ISOLATION TYPE (NEOPRENE, SPRING)	SEE TIEDOWN MATRIX	SEE TIEDOWN MATRIX	SEE TIEDOWN MATRIX	SEE TIEDOWN MATRIX	SEE TIEDOWN MATRIX	SEE TIEDOWN MATRIX	SEE TIEDOWN MATRIX	SEE TIEDOWN MATRIX	SEE TIEDOWN MATRIX	SEE TIEDOWN MATRIX
FLEX CONNECTOR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
BELT GUARD / MOTOR COVER / INSPECTION DOOR	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
PHYSICAL DATA										
OVERALL HEIGHT	21	17	21	15	14	16	16	25	78	21
OVERALL HEIGHT ABOVE ROOF	33	-	-	-	-	-	-	-	-	-
OVERALL WIDTH	26	17	15	08	13	15	15	18	23	21
OVERALL LENGTH	28	19	24	30	24	10	13	26	23	26
FAN WEIGHT	-	-	-	-	-	-	-	-	-	-
MOTOR WEIGHT	-	-	-	-	-	-	-	-	-	-
TOTAL WEIGHT (LESS STL. BASE, CURB)	30	30	58	30	48	50	60	30	100	70
ACOUSTICAL DATA (AT NORMAL OPERATING CFM WITH SOUND LEVELS @ 5 FT FROM FAN)										
63	80	76	76	84	79	76	76	56	75	74
125	84	69	79	67	87	74	76	81	74	79
250	81	58	44	45	71	84	84	44	76	72
500	76	58	67	35	75	65	67	25	48	67
1000	79	56	64	32	65	54	54	29	88	60
2000	73	50	50	33	58	50	50	36	54	56
4000	58	43	47	30	37	47	47	37	44	54
8000	58	42	47	26	56	42	47	34	43	54
LwA	81	61	64	48	79	64	64	40	71	70
dBA	69	50	55	33	54	52	51	33	31	59
SONES	18.4	13	7	1.3	14.3	7	5	1	7	6.9
MISC DETAILS										
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
[illegible]	FOR JOBSITE	FOR JOBSITE	FOR JOBSITE	FOR JOBSITE	FOR JOBSITE	FOR JOBSITE	FOR JOBSITE	FOR JOBSITE	FOR JOBSITE	FOR JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & CONTROL ALL OPENINGS	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
ELECTRONIC SUBMITTAL	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
ELECTRONIC INSTALLATION MANUAL	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

TAG #	FN-L2-3	FN-L2-4	FN-L2-5	FN-L2-6	FN-L2-7	FN-L3-1	FN-R-1	FN-R-2	EF-05	EF-06
EXISTING/NEW/RELOCATED	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	EXISTING	EXISTING
QUANTITY OF FANS	1	1	1	1	1	1	1	1	[illegible]	[illegible]
BASIS OF DESIGN										
MANUFACTURER	GREENHECK	GREENHECK	GREENHECK	AIRFLOW SYSTEMS	AIRFLOW SYSTEMS	US DRAFT CO	GREENHECK	GREENHECK	[illegible]	
MODEL	SQ-75-VG	CSP-A510-VG	SP-A300	K-E ARM 11 4000	K-E ARM 11 4000	TRV-11	[illegible]	[illegible]	[illegible]	
DESIGN DATA										
AREA SERVED	KITCHEN	ELECTRICAL	ELECTRICAL	WETLAB	CONSERVATION LAB	BOILER FLUE VENT	AHU-1 RELIEF	MEETING EXHAUST	ATTIC	ATTIC
EXHAUST / SUPPLY / RELIEF	EXHAUST	TRANSFER	TRANSFER	EXHAUST	EXHAUST	DRAFT INDUCER	RELIEF	EXHAUST	EXHAUST	EXHAUST
LOCATION	CEILING	AV RM 213A	EVENT AV RM	WETLAB	CONSERVATION LAB	LEVEL 3 SOUTH MECH ROOM	ROOF	ROOF	ATTIC	GARDEN COURT ATTIC
QUANTITY OF FANS	1	1	1	1	4	1	1	1	[illegible]	1
FAN PROVIDED BY	BY MC	BY MC	BY MC	BY MC	BY MC	BY MC	BY MC	BY MC	EXISTING	EXISTING
FAN TYPE / SIZE DETAILS										
FAN TYPE	CABINET	CABINET	CEILING	CENTRIFUGAL	CENTRIFUGAL	INLINE	MIXED-AXIAL	MIXED-AXIAL	CENTRIFUGAL	PROPELLER
CFM	670	340	150	380	380	690	16,100	3,380	854	3,680
AIR TEMPERATURE - NORMAL OPERATION	72°F	70°F	70°F	70°F	70°F	70°F	78°F	78°F	[illegible]	[illegible]
MAXIMUM OPERATING TEMPERATURE	85°F	85°F	85°F	83°F	83°F	85°F	80°F	80°F	[illegible]	[illegible]
SMOKE CONTROL CFM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AIR TEMPERATURE - SMOKE CONTROL OPERATIONS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MINIMUM CFM FOR VFD OPERATION	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E.S.P.	0.625	0.25	0.25	0.5	0.5	1	1.5	1	[illegible]	[illegible]
T.S.P.				2.0	1.5				-	
FAN RPM						1690				
BHP	0.36	0.02	-	-	-		5.44	1.16		
HP (OR WATTS)	1/4	224 W	17 W	1.5	1.5	3/4	7.5	2	0.27	4.5
VOLTS/PHASE	120/1	120/1	120/1	208/1	208/1	208/1	460/3	460/3	[illegible]	[illegible]
MOTOR EFFICIENCY	CODE MIN.	CODE MIN.	CODE MIN.	CODE MIN.	CODE MIN.	-	CODE MIN.	CODE MIN.	-	-
MOTOR RPM										
TWO SPEED MOTOR/ECM MOTOR	-	-	-	-	-	-	-	-		
MOTOR SPEC BASED INVERTER DUTY	NO	NO	NO	NO	NO	NO	YES	YES		
MOTOR TYPE (ODP/TEFC/EXPLOSION PROOF/OTHER)	ECM	ECM	ODP	ODP	ODP	ECM	ODP	ODP		
ELECTRICAL DATA										
DISCONNECT	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	INTEGRAL W/ VFD	INTEGRAL W/ VFD		
MANUAL STARTER (PROVIDED & INSTALLED BY EC)	NO	NO	NO	NO	NO	NO	NO	NO		
MAGNETIC STARTER (PROVIDED & INSTALLED BY EC)	NO	NO	NO	NO	NO	NO	NO	NO		
MAGNETIC STARTER MODEL (FURNISHED BY MC, INSTALL BY EC)	BY MC	BY MC	BY MC	BY MC	BY MC	BY MC	NO	NO		
MOUNTED AND WIRED BY EC TO MOTORS	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC		
VFD (PROVIDED BY M.C. & INSTALLED BY EC)	NO	NO	NO	NO	NO	NO	YES	YES		
VFD FUSED DISCONNECT BY (FACTORY)	-	-	-	-	-	-	FACTORY	FACTORY		
VFD MOUNTED AND WIRED BY EC TO MOTORS	-	-	-	-	-	-	BY EC	BY EC		
VFD MANUFACTURER	-	-	-	-	-	-	DANFOSS GRAHAM	DANFOSS GRAHAM		
VFD MODEL	-	-	-	-	-	-	VLT FC 102	VLT FC 102		
VFD BYPASS	-	-	-	-	-	-	-	-		
VFD INPUT LINE REACTOR	-	-	-	-	-	-	-	-		
VFD OUTPUT L.C. FILTER	-	-	-	-	-	-	-	-		
VFD NEMA [illegible]	-	-	-	-	-	-	-	-		
VFD [illegible] L.C. FILTER	-	-	-	-	-	-	-	-		
VFD BYPS INTERFACE CARD	-	-	-	-	-	-	YES	YES		
LOCAL SERVICE OUTLET WITHIN 15 FT	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC		
EMERGENCY POWER	NO	NO	NO	NO	NO	NO	NO	NO		
STANDBY POWER	NO	NO	NO	NO	NO	YES	NO	NO		
SMOKE DETECTOR (REMARK 1)	NO	NO	NO	NO	NO	NO	NO	NO		
CONTROL DATA										
TYPE OF CONTROL	BMS	BMS	BMS	BMS	BMS	BOILER	BMS	BMS		
PART OF SMOKE CONTROL SYSTEM	NO	NO	NO	NO	NO	NO	NO	NO		
WALL SWITCH & WIRING	NO	NO	NO	YES BY BMS	YES BY BMS	NO	NO	NO		
LINE VOLTAGE T-STAT	-	-	-	-	-	-	-	-		
BMS ROOM TEMPERATURE SENSOR	BMS SENSOR	BMS SENSOR	BMS SENSOR	NO	NO	NO	BMS SENSOR	BMS SENSOR		
SPEED CONTROL	BY MC	BY MC	BY MC	BY MC	BY MC	BOILER	NO	NO		
BACKDRAFT DAMPER BY FAN	NO	NO	NO	NO	NO	NO	NO	NO		
MOTORIZED DAMPER INTERLOCK	MD INTERLOCK	NO	NO	NO	NO	NO	MD INTERLOCK	MD INTERLOCK		
[illegible]	NO	NO	NO	NO	NO	NO	NO	NO		
[illegible] PRESSURE SWITCH	NO	NO	NO	NO	NO	NO	NO	NO		
[illegible]	BY C.C.	BY C.C.	BY C.C.	BY C.C.	BY C.C.	BY C.C.	BY C.C.	BY C.C.		
WALL SWITCH AND TIME DELAY	NO	NO	NO	NO	NO	NO	NO	NO		
WARNING LIGHT	NO	NO	NO	NO	NO	NO	NO	NO		
SPECIFICATION DATA										
DIRECT / BELT DRIVE	DIRECT	DIRECT	-	DIRECT	DIRECT	DIRECT	BELT	BELT		
DUAL BELT	NO	NO	NO	NO	NO	NO	NO	NO		
ADJUSTABLE PITCH/FIXED PITCH SHEAVE	NO	NO	NO	NO	NO	NO	ADJUSTABLE	ADJUSTABLE		
FAN CLASS	NA	NA	NA	NA	NA	NA	NA	NA		
SITE BUILT CURB OR SLEEPERS BY OTHERS	NO	NO	NO	NO	NO	NO	YES	YES		
WALL HOUSING		NO	NO	NO	NO					
[illegible]	NO	NO	NO	NO	NO	NO	NO	NO		
[illegible]	NO	NO	NO	NO	NO	NO	YES	NO		
[illegible]	NO	NO	NO	NO	NO	NO	NO	NO		
FAN MOUNTING LOCATION (INDOOR, OUTDOOR, ETC.)	INDOOR	INDOOR	INDOOR	INDOOR	INDOOR	INDOOR	OUTDOOR	OUTDOOR		
VERTICAL OR HORIZONTAL DISCHARGE ORIENTATION	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL		
MOUNTING CONFIGURATION (HUNG, CURB, FLOOR, ETC.)	HUNG	HUNG	HUNG	HUNG	HUNG	HUNG	CURB	CURB		
MOTOR MOUNTING LOCATION	NA	NA	NA	NA	NA	[illegible]	TOP	TOP		
ISOLATION TYPE (NEOPRENE, SPRING)	SEE TIEDOWN MATRIX	SEE TIEDOWN MATRIX	SEE TIEDOWN MATRIX	SEE TIEDOWN MATRIX	SEE TIEDOWN MATRIX	SEE TIEDOWN MATRIX	SEE TIEDOWN MATRIX	SEE TIEDOWN MATRIX		
FLEX CONNECTOR	YES	YES	YES	YES	YES	NO	YES	YES		
BELT GUARD / MOTOR COVER / INSPECTION DOOR	NO	NO	NO	NO	NO	NO	YES	YES		
PHYSICAL DATA										
OVERALL HEIGHT	15	15	30"	20"	30"		63	31		
OVERALL HEIGHT ABOVE ROOF	-	-	-	-	-		79	41		
OVERALL WIDTH	15	17	40"	42"	42"		78	32		
OVERALL LENGTH	26	30	32"	32"	32"		44	38		
FAN WEIGHT	-	-	-	-	-		-	-		
MOTOR WEIGHT	-	-	-	-	-		-	-		
TOTAL WEIGHT (LESS STL. BASE, CURB)	60	50	35	30	35		1837	384		
ACOUSTICAL DATA (AT NORMAL OPERATING CFM WITH SOUND LEVELS @ 5 FT FROM FAN)										
63	80	-	-				56	71		
125	64	-	-				63	72		
250	66	-	-				74	45		
500	44	-	-				79	58		
1000	57	-	-				64	55		
2000	52	-	-				59	46		
4000	37	-	-				51	44		
8000	49	-	-				43	37		
LwA	71	-	-				72	43		
dBA	38	-	-				61	31		
SONES	11.1	8.4	1.1				16	5.9		
MISC DETAILS										
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	YES	YES	YES	YES	YES	YES	YES	YES		
[illegible]	FOR JOBSITE	FOR JOBSITE	FOR JOBSITE	FOR JOBSITE	FOR JOBSITE	FOR JOBSITE	FOR JOBSITE	FOR JOBSITE		
SHIPPING INSTRUCTIONS - SHRINK WRAP & CONTROL ALL OPENINGS	YES	YES	YES	YES	YES	YES	YES	YES		
ELECTRONIC SUBMITTAL	YES	YES	YES	YES	YES	YES	YES	YES		
ELECTRONIC INSTALLATION MANUAL	YES	YES	YES	YES	YES	YES	YES	YES		

REMARKS:

1) SMOKE DETECTOR QUANTITY INDICATED IN BMS IS NOT ALL INCLUSIVE. WHERE INDICATED IS BY E.C. THIS IS TO REFERENCE WHERE SMOKE DETECTORS MAY BE REQUIRED BY SMC SECTION 607. DESIGN OF SMOKE DETECTION SYSTEM IS BY E.C. ALL SMOKE DETECTORS PROVIDED BY E.C. INSTALLATION OF DUCT DETECTORS IS BY E.C. UNDER THE SUPERVISION OF M.C. ALL WIRING AND FIRE LIFE SAFETY INTERLOCKS ARE BY E.C. FOR FURTHER INFORMATION SEE THE FOLLOWING SBC AND SMC CODE SECTIONS: SBC 716, SMC 607.

2) DRAFT INDUCER SHALL BE FURNISHED BY THE BOILER MANUFACTURER AND SHALL BE BASED ON THE APPROVED SHOP DRAWINGS FOR THE BOILER FLUE.

3) FN-L2-6 AND FN-L2-7 [illegible] SHALL INCLUDE BLOWER, BOOM, [illegible], EXTRACTOR ADAPTER, SWIVEL, RAIN GUARD, AND MOUNTING BRACKET. SUBMIT FOR OWNER APPROVAL.

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Construction Documents

MECHANICAL SCHEDULES - FANS

M012

HUMIDIFIER SCHEDULE

TAG #	HU-L1-1 DT-L1-1	HU-L1-2 DT-L1-2	HU-L1-3 DT-L1-3	HU-L2-1 DT-L2-1	HU-L2-2 DT-L2-2	HU-L2-3 DT-L2-3	HU-L2-4 DT-L2-4	HU-L2-5 DT-L2-5
PRESENT/FUTURE	PRESENT	PRESENT	PRESENT	PRESENT	PRESENT	PRESENT	PRESENT	PRESENT
SYSTEM	AHU-L1-2	AHU-L1-2	AHU-L1-1	AHU-L1-2	AHU-L1-2	AHU-L1-2	AHU-L1-2	AHU-L1-2
ZONE	VAV-L1-7/8	VAV-L1-9	VAV-L1-10	VAV-L2-4	VAV-L2-5	VAV-L2-4/7/8	VAV-L2-9	VAV-L2-10
BASIS OF DESIGN								
MANUFACTURER	VAPORMIST	VAPORMIST	VAPORMIST	VAPORMIST	VAPORMIST	VAPORMIST	VAPORMIST	VAPORMIST
MODEL NUMBER - STEAM GENERATOR	VM-4	VM-2	VM-8	VM-4	VM-8	VM-4	VM-2	VM-2
TYPE - DISPERSION	SINGLE TUBE	SINGLE TUBE	SINGLE TUBE	SINGLE TUBE	SINGLE TUBE	SINGLE TUBE	SINGLE TUBE	SINGLE TUBE
SPECIFICATIONS								
LOCATION	BASEMENT	BASEMENT	BASEMENT	L1 MECH ROOM	L1 MECH ROOM	L1 MECH ROOM	L1 MECH ROOM	L1 MECH ROOM
SERVICE	RECEIVING	ART STORAGE	CORRIDOR	RECEIVING 202	CONSERVATION	LIB/STACKS/OC	HALLWAY 201	HALLWAY 200
CONFIGURATION (SHELL & TUBE, PLATE & FRAME)								
AIR SIDE								
PRIMARY CFM	1210	540	1240	720	2240	2080	310	440
DUCT SIZE (H X W)	12 X 12	10 X 10	14 X 14	12 X 12	14 X 20	14 X 20	10 X 10	10 X 10
ENTERING AIR DB	55F	60F	55F	60F	60F	55F	60F	55F
ENTERING AIR GRAINS LBA	48.3	48.5	40.0	48.5	48.5	48.5	48.5	48.5
LEAVING AIR DB	55.8	55.8	56.0	55.9	55.6	55.6	55.8	56.0
LEAVING AIR RELATIVE HUMIDITY	55.8	55.8	56.0	55.9	55.6	55.6	55.6	56.0
DESIRED SPACE CONDITION	70F/50%RH	70F/50%RH	70F/50%RH	70F/50%RH	70F/50%RH	70F/50%RH	70F/50%RH	70F/50%RH
DESIGN LOAD	9.1	4.2	16.4	5.4	14.9	15.7	2.3	3.3
LOSS (DOT EQUIV LENGTH)	1.18	1.1	1.2	1.1	1.2	1.2	1.0	1.1
TOTAL LOAD	10.3	5.3	17.6	6.5	18.1	16.9	3.3	4.4
DESIGN STEAM PIPING LENGTH (FT)	30	30	30	30	30	30	30	30
MAX ABSORPTION DISTANCE (in)	32	32	32	32	32	32	32	32
ACTUAL ABSORPTION DISTANCE (in)	23	11	27	13	25	23	11	11
DISPERSION TUBE AND DRAIN PAN ARRANGEMENT								
DISPERSION TUBE TYPE	SINGLE TUBE W/ CD	SINGLE TUBE W/ CD	SINGLE TUBE	SINGLE TUBE W/ CD	SINGLE TUBE	SINGLE TUBE W/ CD	SINGLE TUBE	SINGLE TUBE W/ CD
DRAIN PAN SIZE (L X W)	48 X 12	48 X 10	48 X 14	48 X 12	48 X 20	48 X 20	48 X 10	48 X 10
STEAM								
STEAM SOURCE	ELECTRIC	ELECTRIC	ELECTRIC	ELECTRIC	ELECTRIC	ELECTRIC	ELECTRIC	ELECTRIC
GENERATOR CONTROL	SCR	SCR	SCR	SCR	SCR	SCR	SCR	SCR
CAPACITY LBS/HR	12.0	6.0	18.0	6.0	18.0	16.0	6.0	6.0
ELECTRICAL DATA								
DISCONNECT	BY ELEC	BY ELEC	BY ELEC	BY ELEC	BY ELEC	BY ELEC	BY ELEC	BY ELEC
POWER	460/3	277/1	460/3	277/1	460/3	460/3	277/1	277/1
KW	4	2	6	2	6	6	2	2
FULL LOAD AMPS	7.2*	7.2	10.8*	7.2*	14.4*	10.8*	7.2	7.2
EMERGENCY POWER	NO	NO	NO	NO	NO	NO	NO	NO
STANDBY POWER	NO	YES	NO	NO	YES	YES	NO	NO
PHYSICAL DIMENSIONS								
SOFTENED WATER INLET SIZE & CONNECTION TYPE	1/4" C.U. NPT	1/4" C.U. NPT	1/4" C.U. NPT	1/4" C.U. NPT	1/4" C.U. NPT	1/4" C.U. NPT	1/4" C.U. NPT	1/4" C.U. NPT
DISPERSION TUBE DRAIN SIZE & CONNECTION TYPE	3/4" C.U.	3/4" C.U.	3/4" C.U.	3/4" C.U.	3/4" C.U.	3/4" C.U.	3/4" C.U.	3/4" C.U.
STEAM PIPING SIZE & CONNECTION TYPE	1 1/2" HOSE	1 1/2" C.U.	1 1/2" C.U.	1 1/2" HOSE	1 1/2" HOSE	1 1/2" C.U.	1 1/2" HOSE	1 1/2" C.U.
HUMIDIFIER DRAIN SIZE & CONNECTION TYPE	3/4" DN20	3/4" DN20	3/4" DN20	3/4" DN20	3/4" DN20	3/4" DN20	3/4" DN20	3/4" DN20
DRAIN MATERIAL TYPE	C.U.	C.U.	C.U.	C.U.	C.U.	C.U.	C.U.	C.U.
MIN. CLEARANCE, IN. (BOTTOM/LEFT/RIGHT/TOP/FRONT)	(18"/12"/42"/12"/36")	(18"/12"/42"/12"/36")	(18"/12"/42"/12"/36")	(18"/12"/42"/12"/36")	(18"/12"/42"/12"/36")	(18"/12"/42"/12"/36")	(18"/12"/42"/12"/36")	(18"/12"/42"/12"/36")
DRAIN COOLER	YES	NO	YES	YES	NO	NO	YES	NO
WATER VOLUME (GALLONS)								
SUPPORT TYPE	FLOOR PEDESTAL	FLOOR PEDESTAL	WALL	WALL	WALL	WALL	FLOOR PEDESTAL	WALL
HUMIDIFIER LENGTH x WIDTH x HEIGHT	24 X 17 X 19	24 X 17 X 19	24 X 17 X 19	24 X 17 X 19	24 X 17 X 19	24 X 17 X 19	24 X 17 X 19	24 X 17 X 19
SHIP WEIGHT	82	82	90	82	90	90	82	82
OPERATING WEIGHT	97	97	124	97	124	124	97	97
MISC DATA								
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	YES	YES	YES	YES	YES	YES	YES	YES
FREIGHT	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES	YES	YES	YES	YES	YES	YES	YES
ELECTRONIC SUBMITTAL	YES	YES	YES	YES	YES	YES	YES	YES
ELECTRONIC INSTALL/O&M MANUAL	YES	YES	YES	YES	YES	YES	YES	YES

TAG #	HU-L2-6 DT-L2-6	HU-L2-7 DT-L2-7	HU-L2-8 DT-L2-8	HU-L2-9 DT-L2-9	HU-L3-1 DT-L3-1	HU-L3-2 DT-L3-2	HU-L3-3 DT-L3-3	HU-L3-4 DT-L3-4
PRESENT/FUTURE	PRESENT	PRESENT	PRESENT	PRESENT	PRESENT	PRESENT	PRESENT	PRESENT
SYSTEM	AHU-L1-2	AHU-L1-2	AHU-L1-1	AHU-L1-1	AHU-L1-2	AHU-L1-2	AHU-L1/2	AHU-L1-2
ZONE	VAV-L2-11	VAV-L2-12/13	VAV-L2-14/15	VAV-L2-3	VAV-L3-1/2	VAV-L3-3/4	VAV-L3-5/6/7/9	VAV-L3-8
BASIS OF DESIGN								
MANUFACTURER	VAPORMIST	VAPORMIST	VAPORMIST	VAPORMIST	VAPORMIST	VAPORMIST	VAPORMIST	VAPORMIST
MODEL NUMBER - STEAM GENERATOR	VM-2	VM-8	VM-12	VM-25	VM-12	VM-16	VM-10	VM-6
TYPE - DISPERSION	SINGLE TUBE	SINGLE TUBE	SINGLE TUBE	SINGLE TUBE	SINGLE TUBE	SINGLE TUBE	SINGLE TUBE	SINGLE TUBE
SPECIFICATIONS								
LOCATION	L1 MECH ROOM	L1 MECH ROOM	L1 MECH ROOM	L1 MECH ROOM	L1 MECH ROOM	MEZZANINE	MEZZANINE	MEZZANINE
SERVICE	WORKSHOP	ART STORAGE	CIRCULATION L2	MEETING ROOM	MAIN LOBBY	EXHIBIT H1,2	EXHIBIT H1,4,5,7	EXHIBIT M6
CONFIGURATION (SHELL & TUBE, PLATE & FRAME)								
AIR SIDE								
PRIMARY CFM	500	2240	3340	4800	4000	3680	3600	2060
DUCT SIZE (H X W)	10 X 10	14 X 20	14 X 28	16 X 32	18 X 32	18 X 24	16 X 28	14 X 28
ENTERING AIR DB	60F	55F	55F	55F	55F	55F	55F	60F
ENTERING AIR GRAINS LBA	48.5	48.5	40.0	40.0	48.5	48.5	48.5	48.5
LEAVING AIR DB	55.4	55.6	58.3	55.8	55.5	55.5	55.5	55.9
LEAVING AIR RELATIVE HUMIDITY	55.4	55.6	58.3	55.9	55.5	55.9	55.5	55.5
DESIRED SPACE CONDITION	70F/50%RH	70F/50%RH	70F/50%RH	70F/50%RH	70F/50%RH	70F/50%RH	70F/50%RH	70F/50%RH
DESIGN LOAD	3.5	16.9	30.5	42.6	30.2	27.8	27.2	15.6
LOSS (DOT EQUIV LENGTH)	1.4	1.2	1.2	1.6	1.4	1.4	1.8	1.2
TOTAL LOAD	4.9	18.1	31.7	44.2	31.6	29.2	36.8	16.8
DESIGN STEAM PIPING LENGTH (FT)	30	30	30	30	30	30	30	30
MAX ABSORPTION DISTANCE (in)	32	32	32	32	32	32	32	32
ACTUAL ABSORPTION DISTANCE (in)	13	21	23	36	18	18	21	15
DISPERSION TUBE AND DRAIN PAN ARRANGEMENT								
DISPERSION TUBE TYPE	SINGLE TUBE	SINGLE TUBE W/ CD	SINGLE TUBE	SINGLE TUBE	SINGLE TUBE W/ CD	SINGLE TUBE W/ CD	SINGLE TUBE	SINGLE TUBE
DRAIN PAN SIZE (L X W)	48 X 10	48 X 20	48 X 20	48 X 32	48 X 32	48 X 24	48 X 24	48 X 20
STEAM								
STEAM SOURCE	ELECTRIC	ELECTRIC	ELECTRIC	ELECTRIC	ELECTRIC	ELECTRIC	ELECTRIC	ELECTRIC
GENERATOR CONTROL	SCR	SCR	SCR	SCR	SCR	SCR	SCR	SCR
CAPACITY LBS/HR	6.0	18.0	18.0	43.0	24.0	34.8	35.0	13.0
ELECTRICAL DATA								
DISCONNECT	BY ELEC	BY ELEC	BY ELEC	BY ELEC	BY ELEC	BY ELEC	BY ELEC	BY ELEC
POWER	277/1	460/3	460/3	460/3	460/3	460/3	460/3	460/3
KW	2	6	6	21	8	6	12	4
FULL LOAD AMPS	7.2	14.4*	14.4	38.1	14.4	12.6*	12.6*	10.8*
EMERGENCY POWER	NO	NO	NO	NO	NO	NO	NO	NO
STANDBY POWER	YES	YES	NO	NO	NO	YES	YES	YES
PHYSICAL DIMENSIONS								
SOFTENED WATER INLET SIZE & CONNECTION TYPE	1/4" C.U. NPT	1/4" C.U. NPT	1/4" C.U. NPT	1/4" C.U. NPT	1/4" C.U. NPT	1/4" C.U. NPT	1/4" C.U. NPT	1/4" C.U. NPT
DISPERSION TUBE DRAIN SIZE & CONNECTION TYPE	3/4" C.U.	3/4" C.U.	3/4" C.U.	3/4" C.U.	3/4" C.U.	3/4" C.U.	3/4" C.U.	3/4" C.U.
STEAM PIPING SIZE & CONNECTION TYPE	1 1/2" HOSE	1 1/2" C.U.	1 1/2" C.U.	2" C.U.	1 1/2" C.U.	1 1/2" HOSE	1 1/2" HOSE	1 1/2" HOSE
HUMIDIFIER DRAIN SIZE & CONNECTION TYPE	3/4" DN20	3/4" DN20	3/4" DN20	3/4" DN21	3/4" DN22	3/4" DN23	3/4" DN24	3/4" DN25
DRAIN MATERIAL TYPE	C.U.	C.U.	C.U.	C.U.	C.U.	C.U.	C.U.	C.U.
MIN. CLEARANCE, IN. (BOTTOM/LEFT/RIGHT/TOP/FRONT)	(18"/12"/42"/12"/36")	(18"/12"/42"/12"/36")	(18"/12"/42"/12"/36")	(18"/12"/42"/12"/36")	(18"/12"/42"/12"/36")	(18"/12"/42"/12"/36")	(18"/12"/42"/12"/36")	(18"/12"/42"/12"/36")
DRAIN COOLER	NO	YES	NO	YES	YES	YES	YES	NO
WATER VOLUME (GALLONS)								
SUPPORT TYPE	FLOOR PEDESTAL	WALL	WALL	WALL	WALL	FLOOR PEDESTAL	FLOOR PEDESTAL	FLOOR PEDESTAL
HUMIDIFIER LENGTH x WIDTH x HEIGHT	24 X 17 X 19	24 X 17 X 19	24 X 17 X 19	24 X 17 X 18	24 X 17 X 19	24 X 17 X 19	24 X 17 X 19	24 X 17 X 19
SHIP WEIGHT	82	90	90	97	90	90	95	82
OPERATING WEIGHT	97	124	124	154	124	124	141	97
MISC DATA								
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	YES	YES	YES	YES	YES	YES	YES	YES
FREIGHT	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES	YES	YES	YES	YES	YES	YES	YES
ELECTRONIC SUBMITTAL	YES	YES	YES	YES	YES	YES	YES	YES
ELECTRONIC INSTALL/O&M MANUAL	YES	YES	YES	YES	YES	YES	YES	YES

TAG #	HU-L3-5 DT-L3-5	HU-L3-6 DT-L3-6	HU-L3-7 DT-L3-7	HU-L3-8 DT-L3-8	HU-L3-9 DT-L3-9	HU-L3-10 DT-L3-10	HU-L3-11 DT-L3-11
PRESENT/FUTURE	PRESENT	PRESENT	PRESENT	PRESENT	PRESENT	PRESENT	PRESENT
SYSTEM	AHU-L1-2	AHU-L1-2	AHU-L1-2	AHU-L1-2	AHU-L1-1	AHU-L1-1	AHU-L1-1
ZONE	VAV-L3-19	VAV-L3-11	VAV-L3-12/13/14/15	VAV-L3-16/17	VAV-L3-18/19	VAV-L3-20	VAV-L3-21
BASIS OF DESIGN							
MANUFACTURER	VAPORMIST	VAPORMIST	VAPORMIST	VAPORMIST	VAPORMIST	VAPORMIST	VAPORMIST
MODEL NUMBER - STEAM GENERATOR	VM-10	VM-10	VM-16	VM-10	VM-18	VM-14	VM-21
TYPE - DISPERSION	SINGLE TUBE	SINGLE TUBE	SINGLE TUBE	SINGLE TUBE	SINGLE TUBE	SINGLE TUBE	SINGLE TUBE
SPECIFICATIONS							
LOCATION	MEZZANINE	MEZZANINE	MEZZANINE	MEZZANINE	L3 MECH ROOM	L3 MECH ROOM	L3 MECH ROOM
SERVICE	GARDEN COURT	GARDEN COURT	EXHIBIT S1,4,5,6	EXHIBIT S5,2	CORRIDOR	EXHIBIT S7	EXHIBIT S8
CONFIGURATION (SHELL & TUBE, PLATE & FRAME)							
AIR SIDE							
PRIMARY CFM	3260	3260	5800	3520	3260	3000	3800
DUCT SIZE (H X W)	16 X 24	16 X 24	18 X 36	16 X 24	16 X 24	16 X 24	16 X 34
ENTERING AIR DB	60F	60F	55F	55F	55F	55F	55F
ENTERING AIR GRAINS LBA	48.5	48.5	48.5	48.5	40.0	40.0	40.0
LEAVING AIR DB	55.5	55.5	55.3	55.5	55.8	55.8	55.8
LEAVING AIR RELATIVE HUMIDITY	55.5	55.5	55.3	55.5	55.8	55.8	55.8
DESIRED SPACE CONDITION	70F/50%RH	70F/50%RH	70F/50%RH	70F/50%RH	70F/50%RH	70F/50%RH	70F/50%RH
DESIGN LOAD	24.6	24.6	43.8	26.6	42.5	39.1	49.5
LOSS (DOT EQUIV LENGTH)	1.3	1.3	1.6	1.4	1.4	1.3	1.3
TOTAL LOAD	25.9	25.9	45.4	28.0	43.9	40.4	50.8
DESIGN STEAM PIPING LENGTH (FT)	30	30	30	30	30	30	30
MAX ABSORPTION DISTANCE (in)	32	32	32	32	32	32	32
ACTUAL ABSORPTION DISTANCE (in)	18	18	21	18	32	32	32
DISPERSION TUBE AND DRAIN PAN ARRANGEMENT							
DISPERSION TUBE TYPE	SINGLE TUBE	SINGLE TUBE	SINGLE TUBE	SINGLE TUBE W/ CD	SINGLE TUBE	SINGLE TUBE	SIN[illegible]
DRAIN PAN SIZE (L X W)	48 X 24	48 X 24	48 X 36	48 X 24	48 X 24	48 X 24	[illegible]
STEAM							
STEAM SOURCE	ELECTRIC	ELECTRIC	ELECTRIC	ELECTRIC	ELECTRIC	ELECTRIC	[illegible]
GENERATOR CONTROL	SCR	SCR	SCR	SCR	SCR	SCR	[illegible]
CAPACITY LBS/HR	24.0	24.0	28.0	24.0	36.0	30.0	36.0
ELECTRICAL DATA							
DISCONNECT	BY ELEC	BY ELEC	BY ELEC	BY ELEC	BY ELEC	BY ELEC	BY ELEC
POWER	460/3	460/3	460/3	460/3	460/3	440/6	460/3
KW	6	8	12	8	12	18	12
FULL LOAD AMPS	12.6*	12.6*	19.3	12.6*	19.2	16.3	25.3
EMERGENCY POWER	NO	NO	NO	NO	NO	NO	NO
STANDBY POWER	NO	NO	YES	YES	NO	NO	YES
PHYSICAL DIMENSIONS							
SOFTENED WATER INLET SIZE & CONNECTION TYPE	1/4" C.U. NPT	1/4" C.U. NPT	1/4" C.U. NPT	1/4" C.U. NPT	1/4" C.U. NPT	1/4" C.U. NPT	1/4" C.U. NPT
DISPERSION TUBE DRAIN SIZE & CONNECTION TYPE	3/4" C.U.	3/4" C.U.	3/4" C.U.	3/4" C.U.	3/4" C.U.	3/4" C.U.	3/4" C.U.
STEAM PIPING SIZE & CONNECTION TYPE	1 1/2" HOSE	1 1/2" HOSE	1 1/2" C.U.	1 1/2" C.U.	1 1/2" C.U.	1 1/2" C.U.	2" C.U.
HUMIDIFIER DRAIN SIZE & CONNECTION TYPE	3/4" DN26	3/4" DN27	3/4" DN28	3/4" DN29	3/4" DN30	3/4" DN31	3/4" DN32
DRAIN MATERIAL TYPE	C.U.	C.U.	C.U.	C.U.	C.U.	C.U.	C.U.
MIN. CLEARANCE, IN. (BOTTOM/LEFT/RIGHT/TOP/FRONT)	(18"/12"/42"/12"/36")	(18"/12"/42"/12"/36")	(18"/12"/42"/12"/36")	(18"/12"/42"/12"/36")	(18"/12"/42"/12"/36")	(18"/12"/42"/12"/36")	(18"/12"/42"/12"/36")
DRAIN COOLER	YES	NO	NO	YES	NO	YES	NO
WATER VOLUME (GALLONS)							
SUPPORT TYPE	FLOOR PEDESTAL	FLOOR PEDESTAL	FLOOR PEDESTAL	FLOOR PEDESTAL	WALL	WALL	WALL
HUMIDIFIER LENGTH x WIDTH x HEIGHT	24 X 17 X 19	24 X 17 X 19	24 X 17 X 19	24 X 17 X 19	24 X 17 X 19	24 X 17 X 19	24 X 17 X 19
SHIP WEIGHT	90	90	95	90	95	95	99
OPERATING WEIGHT	124	124	141	124	141	141	141
MISC DATA							
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	YES	YES	YES	YES	YES	YES	YES
FREIGHT	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES	YES	YES	YES	YES	YES	YES
ELECTRONIC SUBMITTAL	YES	YES	YES	YES	YES	YES	YES
ELECTRONIC INSTALL/O&M MANUAL	YES	YES	YES	YES	YES	YES	YES

REMARKS:

*FOR WIRE SIZING THE HIGHEST LEG DRAW IS SHOWN DUE TO CURRENT IMBALANCE

GENERATORS CONFIGURED TO RECEIVE DI/RO WATER (MECH FLOAT)

ASSUMES INSULATED INTERCONNECTING PIPING FOR LOSS CALCULATION

STEAM PRESSURE GENERATED IS NEAR ATMOSPHERIC (only at several inches of water column)

DRISTEEM 'DRANECOOLER' REQUIRED TO TEMPER HOT GENERATOR WATER UPON DRAIN CYCLES. A SINGLE DRANECOOLER CAN TAKE 6GPM & MIXES 1:1 WITH BUILDING SUPPLY WATER. MAX CAPACITY IS 6GPM + 6GPM = 12GPM TO DRAIN

DRANECOOLER CAN TAKE SEVERAL DRAINS INPUT AS LONG AS COMBINED FLOW DOESN'T EXCEED 6GPM

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Asian Art Museum Expansion & Renovation

Construction Documents

MECHANICAL SCHEDULES - HUMIDIFIERS

M013

BOILER SCHEDULE

TAG #	B-1	B-2
BASIS OF DESIGN		
MANUFACTURER	HYDROTHERM	HYDROTHERM
MODEL NUMBER	KN10	KN10
DESIGN PARAMETERS		
SERVICE	HEATING HW	HEATING HW
LOCATION	BASEMENT MECH RM	BASEMENT MECH RM
ENTERING WATER TEMPERATURE	105°F	105°F
LEAVING WATER TEMPERATURE	145°	145°
NATURAL GAS/ELECTRIC	NATURAL GAS	NATURAL GAS
BOILER RATED HORSEPOWER	20	20
INPUT, MBH	1000	1000
OUTPUT, MBH	930	930
EFFICIENCY	93%	93%
CODE MINIMUM EFFICIENCY	75%	75%
DESIGN LOAD REQUIRED, MBH		0
SPECIFICATION DATA		
LISTED IN CERTIFICATION PROGRAM	YES	YES
HEAT EXCHANGER TYPE	CAST IRON	CAST IRON
HEAT EXCHANGER MAXIMUM WORKING PRESSURE	150 PSIG	150 PSIG
PRESSURE RELIEF VALVE PROVIDED WITH BOILER	YES	YES
PRESSURE RELIEF VALVE SETTING	TBD	TBD
GAS PRESSURE - NOMINAL	7" WG	7" WG
GAS PRESSURE - MINIMUM	4" WG	4" WG
GAS PRESSURE - MAXIMUM	14" WG	14" WG
CONDENSATE DRAIN & TRAP	NA	NA
PROVIDE CONDENSATE NEUTRALIZATION KIT	YES	YES
CONDENSATE NEUTRALIZATION KIT MAKE/MODEL	JH-20	JH-20
CONDENSATE NEUTRALIZATION KIT INLET / OUTLET SIZE	1/2"	1/2"
ISOLATION	SEE ISOLATION SCHEDULE	SEE ISOLATION SCHEDULE
ELECTRICAL DATA		
BOILER VOLTS/PHASE	120/1	120/1
BOILER CIRCUIT (AMPS)	5.5 FLA	5.5 FLA
BOILER BLOWER CIRCUIT (AMPS)	NA	NA
BOILER ASME CSD-1 SHUTDOWN WIRING	BY EC	BY EC
BOILER ASME CSD-1 SHUTDOWN PUSHBUTTONS	BY EC (TYP. 1)	BY EC (TYP. 1)
EMERGENCY POWER	NO	NO
STANDBY POWER	YES	YES
UNIT MOUNTED PUMP	NO	NO
PUMP TAG	CP-HW-3	CP-HW-4
PUMP HP	SEE PUMP SCHEDULE	SEE PUMP SCHEDULE
PUMP VOLTS/PHASE	SEE PUMP SCHEDULE	SEE PUMP SCHEDULE
PUMP CIRCUIT (AMPS)	SEE PUMP SCHEDULE	SEE PUMP SCHEDULE
SINGLE POINT POWER FOR BOILER & PUMP	SEE PUMP SCHEDULE	SEE PUMP SCHEDULE
DISCONNECT	SEE PUMP SCHEDULE	SEE PUMP SCHEDULE
120/1 SERVICE OUTLET WITHIN 25 FEET	SEE PUMP SCHEDULE	SEE PUMP SCHEDULE
CONTROL DATA		
BOILER TYPE	LOW PRESSURE	LOW PRESSURE
BOILER CONTROL TYPE	AUTOMATIC	AUTOMATIC
BOILER CATEGORY (SEATTLE CODE)	MAX INPUT 2500 KBTUH	MAX INPUT 2500 KBTUH
ASME CSD-1 GAS TRAIN PROVIDED WITH BOILER	YES	YES
BOILER STAGES OR CONTROL TYPE	5:1 TURNDOWN	5:1 TURNDOWN
UNIT MOUNTED CONTROLS	YES	YES
CONTROL WIRING (SEE DESCRIPTION OF OPERATIONS)	BY CC	BY CC
MODBUS INTERFACE	NO	NO
BACNET OR LON INTERFACE	YES	YES
ENABLE HARDWIRED CONTACT	BY CC	BY CC
PUMP START/STOP	FACTORY PROVIDED	FACTORY PROVIDED
GENERAL ALARM HARDWIRED CONTACT	BY CC	BY CC
TEMPERATURE SENSOR PROVIDED WITH BOILER	PROVIDED WITH BOILER - FIELD INSTALLED BY CC	PROVIDED WITH BOILER - FIELD INSTALLED BY CC
HWS OUTLET MOTORIZED ISOLATION VALVE (FACTORY OR FIELD INSTALLED AND WIRED)	NA	NA
FLOW SWITCH (FACTORY OR FIELD INSTALLED)	FACTORY INSTALLED	FACTORY INSTALLED
LOW WATER CUTOUT (FACTORY OR FIELD INSTALLED)	FACTORY INSTALLED	FACTORY INSTALLED
MINIMUM INLET TEMPERATURE CONTROL REQUIRED	YES	YES
COMBUSTION AIR & EXHAUST FLUE ARRANGEMENT		
COMBUSTION AIR INTAKE ARRANGEMENT	FROM EXTERIOR	FROM EXTERIOR
COMBUSTION AIR DUCT MATERIAL TYPE	AL-29-4C, BY MC	AL-29-4C, BY MC
COMBUSTION AIR MAKE-UP INLET SIZE (IN. DIAMETER)	6" RD	6" RD
EXHAUST FLUE ARRANGEMENT	ROOF VENT	ROOF VENT
EXHAUST FLUE CODE DESCRIPTION	DIRECT VENT, POSITIVE PRESSURE, CATEGORY IV, UL 1738 SYSTEM	DIRECT VENT, POSITIVE PRESSURE, CATEGORY IV, UL 1738 SYSTEM
FLUE SIZE (IN. DIAMETER)	6" RD	6" RD
FLUE INSTALLATION	ROOF OUTLET WITH DRAIN SLOPE TO BOILER	ROOF OUTLET WITH DRAIN SLOPE TO BOILER
FLUE DUCT MATERIAL TYPE	CPVC, BY MC	CPVC, BY MC
PHYSICAL DIMENSIONS		
HW INLET SIZE & CONNECTION TYPE	(2) 2" NPT	(2) 2" NPT
HW OUTLET SIZE & CONNECTION TYPE	3" NPT	3" NPT
GAS CONNECTION SIZE & CONNECTION TYPE	1-1/2" NPT	1-1/2" NPT
CONDENSATE DRAIN SIZE & CONNECTION TYPE	1/2"	1/2"
CONDENSATE DRAIN MATERIAL TYPE	PVC OR CPVC	PVC OR CPVC
LENGTH x WIDTH x HEIGHT	53" x 35" x 75"	53" x 35" x 75"
MIN. CLEARANCE, IN. (REAR/LEFT/RIGHT/TOP/FRONT)	36"/24"/0"/24"/36"	36"/24"/0"/24"/36"
WEIGHT - SHIPPING	1300	1300
WATER VOLUME (GALLONS)	14	14
WEIGHT - OPERATING	1400	1400
MISC DATA		
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	5 YEAR	5 YEAR
FREIGHT	FOB JOBSITE	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES	YES
ELECTRONIC SUBMITTAL	YES	YES
ELECTRONIC INSTALL/O&M MANUAL	YES	YES
	-	-

REMARKS:

SPLIT SYSTEM SCHEDULE

TAG #	FCHP-L1-1 CU-R-1	FCU-L1-2 CU-R-2	FCU-L1-3 CU-R-3
BASIS OF DESIGN			
MANUFACTURER	MITSUBISHI	MITSUBISHI	MITSUBISHI
INDOOR UNIT MODEL	PKA-A36KA	PKA-A24KA	PKA-A24KA
OUTDOOR UNIT MODEL	PUY-A36NHA4	PUZ-A24NHA3	PUZ-A24NHA3
OUTDOOR NOMINAL TONNAGE	3 TONS	2 TONS	2 TONS
AREA SERVED	BASEMENT SERVER ROOM	ELEV MACHINE 131	ELEV MACHINE 107
DESIGN PARAMETERS			
CFM	930 CFM	635 CFM	635 CFM
MINIMUM OSA CFM	-	-	-
FAN ESP	-	-	-
AMBIENT CONDENSER DB TEMPERATURE	95°F	95°F	95°F
COOLING ENTERING AIR (DB/WB)	80°F / 67°F	80°F / 67°F	80°F / 67°F
COOLING INDOOR AIR TEMPERATURE (DB)	70 °F	80°F	80°F
OUTDOOR AIR (DB)	86°F	82°F	82°F
EQUIPMENT SENSIBLE BTUH COOLING CAPACITY			
EQUIPMENT TOTAL BTUH COOLING CAPACITY	34.2 MBH	24.0 MBH	24.0 MBH
HEATING INDOOR AIR TEMPERATURE (DB)	-	70°F	70°F
HEATING OUTDOOR AIR TEMPERATURE (DB)	-	22°F	22°F
EQUIPMENT TOTAL MBH HEATING CAPACITY	-	26.0 MBH	26.0 MBH
REFRIGERATION PIPING LINE LENGTH (FT)			
ELECTRICAL DATA - INDOOR UNIT			
FAN MOTOR HP			
MCA (NOTE 4)	POWERED FROM OUTDOOR UNIT (NOTE 10)	POWERED FROM OUTDOOR UNIT (NOTE 10)	POWERED FROM OUTDOOR UNIT (NOTE 10)
MAX. FUSE SIZE			
VOLTAGE/PHASE			
AUXILIARY HEAT KW	N/A	N/A	N/A
HEATER PART #	N/A	N/A	N/A
SINGLE POINT POWER CONNECTION FAN + HEAT OPTION	YES	YES	YES
DISCONNECT	BY E.C.	BY E.C.	BY E.C.
120/1 SERVICE OUTLET WITHIN 25 FEET	BY E.C.	BY E.C.	BY E.C.
RETURN AIR SMOKE DETECTOR (NOTE 2)	NO	NO	NO
ELECTRICAL DATA - OUTDOOR UNIT			
MCA (NOTE 4)	25 MCA	18 MCA	18 MCA
MAX. FUSE SIZE	30	25	25
VOLTAGE/PHASE	208/1	208/1	208/1
DISCONNECT	BY E.C.	BY E.C.	BY E.C.
120/1 SERVICE OUTLET WITHIN 25 FEET	BY E.C.	BY E.C.	BY E.C.
CONTROLS			
CONTROL	PROGRAMMABLE T-STAT	PROGRAMMABLE T-STAT	PROGRAMMABLE T-STAT
EMERGENCY POWER	NO	NO	NO
STANDBY POWER	YES	YES	NO
SPECIFICATIONS			
LISTED IN CERTIFICATION PROGRAM	YES - AHRI	YES - AHRI	YES - AHRI
AHRI CERTIFIED VS. RATED IN ACCORDANCE	CERTIFIED	CERTIFIED	CERTIFIED
CODE MIN COOLING EFFICIENCY	11 SEER	11 SEER	11 SEER
UNIT COOLING EFFICIENCY	14 SEER	17 SEER	17 SEER
CODE MIN HEATING EFFICIENCY	-	7.7 HSPF	7.7 HSPF
UNIT HEATING EFFICIENCY	-	10.8 HSPF	10.8 HSPF
OSA ECONOMIZER (NOTE 7)	NO - NOTE 9	NO - NOTE 9	NO - NOTE 9
LOW AMBIENT CONTROL	NO	NO	NO
CRANKCASE HEATER	NO	NO	NO
CONDENSATE PUMP (NOTE 1 & 6)	YES (NOTE 6)	YES (NOTE 6)	YES (NOTE 6)
ISOLATION	SEE ISOLATION SCHEDULE	SEE ISOLATION SCHEDULE	SEE ISOLATION SCHEDULE
FILTER SIZE			
FILTRATION RATING (MERV)	MERV 4	MERV 4	MERV 4
PHYSICAL DATA - INDOOR UNIT			
EQUIPMENT WEIGHT (LBS)	46 LBS	46 LBS	46 LBS
LENGTH x WIDTH x HEIGHT (INCHES)	12x46x15	12x46x15	12x46x15
PHYSICAL DATA - OUTDOOR UNIT			
EQUIPMENT WEIGHT (LBS)	145	145	145
LENGTH x WIDTH x HEIGHT (INCHES)	14x38x37	14x38x37	14x38x37
MISC DATA			
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	YES	YES	YES
FREIGHT	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES	YES	YES
ELECTRONIC SUBMITTAL	YES	YES	YES
ELECTRONIC INSTALL/O&M MANUAL	YES	YES	YES
	-		

REMARKS:

1. FAN COIL IS EQUIPPED WITH A FACTORY INSTALLED CONDENSATE LIFT PUMP (27") THAT IS ALSO CAPABLE OF SHUTTING OFF THE FAN COIL IF MOISTURE IS DETECTED. IF SHUTOFF SWITCH IS NOT PROVIDED WITH FAN COIL, MC TO PROVIDE CONDENSATE OVERFLOW SWITCH THAT SHALL SHUT DOWN THE FAN COIL IF MOISTURE IS DETECTED.
2. SMOKE DETECTOR QUANTITY INDICATED IN SCHEDULE IS NOT ALL-INCLUSIVE. WHERE INDICATED IS BY E.C. THIS IS TO REFERENCE WHERE SMOKE DETECTORS MAY BE REQUIRED BY SMC SECTION 606. DESIGN OF SMOKE DETECTION SYSTEM IS BY E.C. ALL SMOKE DETECTORS PROVIDED BY E.C. INSTALLATION OF DUCT DETECTORS IS BY E.C. UNDER THE SUPERVISION OF M.C. ALL WIRING AND FIRE LIFE SAFETY INTERLOCKS ARE BY E.C. FOR FURTHER INFORMATION SEE THE FOLLOWING SBC AND SMC CODE SECTIONS: SBC 716 AND SMC 607.
3. AUXILIARY HEATER KW REFERS TO KW REQUIRED TO MEET THE HEATING CAPACITY/HEAT. PROVIDE HEATER MODEL EQUAL TO OR GREATER THAN AUXILIARY KW REQUIRED.
4. MCA REFERS TO OVERALL UNIT MCA, INCLUDING AUXILIARY HEAT REQUIRED.
5. FAN COIL ECONOMIZER MIXING BOXES ARE TO BE FACTORY ASSEMBLED WITH CONTROLS, MANUFACTURED BY MICROMETL (OR EQUIV)
6. FAN COIL UNIT DOES NOT COME WITH FACTORY MOUNTED CONDENSATE PUMP. PROVIDE ASPEN MINI AQUA CONDENSATE PUMP WITH RESOURCE CONSERVATION TECHNOLOGIES AG-5100-LG SECONDARY CONDENSATE SENSOR. CONDENSATE PUMP IS POWERED DIRECTLY FROM THE FAN COIL AND DOES NOT REQUIRE A SEPARATE POWER CONNECTION.
7. PROVIDE AFTERMARKET ECONOMIZER MIXING BOX COMPLETE WITH FACTORY CONTROLS MANUFACTURED BY MICROMETL (OR EQUIV)
8. ALL REFRIGERANT PIPING SHALL BE SIZED BY THE MANUFACTURER.
9. ECONOMIZER NOT REQUIRED PER 2015 WSEC SECTION C403.3.1, EXCEPTION 10 (OPTION a).
10. INDOOR UNIT IS POWERED DIRECTLY FROM OUTDOOR UNIT. EC TO PROVIDE LINE VOLTAGE WIRING BETWEEN THE INDOOR AND OUTDOOR UNIT.
11. ALL LOW VOLTAGE CONTROL WIRING IS PROVIDED BY THE MC. LOW VOLTAGE POWER PROVIDED TO THE INDOOR AND OUTDOOR UNIT SEPARATELY BY EC.

EXPANSION TANK SCHEDULE

TAG #	ET-DW-1	ET-CHW-1	ET-HW-1
PROJECT	AAM RENOVATION	AAM RENOVATION	AAM RENOVATION
BASIS OF DESIGN			
MANUFACTURER	B&G	B&G	B&G
MODEL			
SPECIFICATIONS			
SERVICE	DOMESTIC HW	CHILLED WATER	HEATING HW
LOCATION	JAN CLOSET C20	MECH RM B18	MECH RM B18
ANTICIPATED SYSTEM VOLUME (GALLONS)	500 GALLONS	2000 GALLONS	2000 GALLONS
TANK FILL PRESS. (PSIG)	20 PSIG	20 PSIG	20 PSIG
MAXIMUM PRESSURE ASSUMED FOR TANK SIZING	45 PSIG	45 PSIG	45 PSIG
RELIEF VALVE SETTING (PSIG)	50 PSIG	50 PSIG	50 PSIG
TANK VOLUME (GALLONS)	10	68	68
ACCEPTANCE (GALLONS)	5	34	34
CONNECTION SIZE	1"	2"	2"
MAX WORKING PRESSURE (PSIG)	125 PSIG	125 PSIG	125 PSIG
MAX OPERATING TEMP. (°F)	240°F	240°F	240°F
HEIGHT	44"	44"	44"
DIAMETER	18"	24"	24"
SHIP WEIGHT (LBS)	25	250	250
WET WEIGHT (LBS)	75	850	850
ASME RATED	YES	YES	YES
MISC DATA			
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	1 YEAR	1 YEAR	1 YEAR
FREIGHT	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES	YES	YES
ELECTRONIC SUBMITTAL	YES	YES	YES
ELECTRONIC INSTALL/O&M MANUAL	YES	YES	YES
	-	-	-

REMARKS:

HOT WATER COIL SCHEDULE

TAG #	HC-VAV-L2-3
PROJECT	AAM
PROVIDED BY	MC/WET
BASIS OF DESIGN	
MANUFACTURER	COLMAC COIL
MODEL NUMBER	BWL
SPECIFICATIONS	
LOCATION	LEVEL 2 - EVENT/MEETING
SERVICE	HYDRONIC HEATING COIL VAV-L2-3
CONFIGURATION (SHELL & TUBE, PLATE & FRAME)	PLATE AND FRAME
PLATE MATERIAL	AL 1100
ASME RATED	YES
FLUID SIDE	
FLUID DESCRIPTION	HOT WATER
FLUID EWT/LWT	120.0°F/101.8°F
FLUID MAXIMUM TEMPERATURE	120°F
FLUID MAXIMUM PRESSURE	125 PSIG
FLUID GLYCOL %	25% P.G.
FLUID FOULING FACTOR	-
FLUID GPM	16
FLUID PRESSURE DROP	12.77
FLUID INLET & OUTLET ID	1.25"/1.25"
AIR SIDE	
AIR DESCRIPTION	OUTSIDE AIR
AIR EAT/LAT	53.8°F/82.1°F
AIR MAXIMUM TEMPERATURE	85°F
AIR MAXIMUM PRESSURE	-
AIR FLOW	4600
AIR PRESSURE DROP	0.26 inWC
AIR DUCT SIZE	34x30
HEATING SELECTION	
HEAT EXCHANGED (MBH)	140.5 MBH
PHYSICAL DIMENSIONS	
NUMBER OF ROWS	2
FIN SPACING	10
FEEDS	4
PASSES	10
LENGTH x WIDTH x HEIGHT	40" x 6" x 32"H
SHIP WEIGHT	120 LBS
OPERATING WEIGHT	75 LBS
MISC	
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	1 YEAR
FREIGHT	FOB JOBSITE
FILTER	YES
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES
ELECTRONIC SUBMITTAL	YES
ELECTRONIC INSTALL/O&M MANUAL	YES
-	-

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MECHANICAL SCHEDULES - BOILER, SS, ET

M014

VARIABLE AIR VOLUME TERMINAL BOX SCHEDULE (ART SPACES)

VAV ZONE NUMBER	AREA SERVED (ROOM WITH TEMP. SENSOR)	VAV BOX TYPE	MAKE	MODEL, SIZE, & SPECIFICATIONS: MODEL NUMBER	UNIT SIZE	HEATER TYPE	VAV BOX OPTIONS	VALVE CFM VALUES: CLG PRIM MAX (1)	PRIM MIN (2)	HTG PRIM MAX (1)	VALVE MIN (3)	MIN VENT (4)	MAX VENT (5)	VENT MODULATION DEVICE (6,7)	SOUND: ZONE NC CRITERIA	VAV NC LEVEL	HEATING HW COIL: AIR EDB (F)	DESIGN AIR LDB (F)	AIR LDB (F)	AIR DP (IN)	DESIGN MBH	ACTUAL MBH	COIL GPM	PIPE SIZE	WATER EWT (F)	WATER LWT (F)	WATER DP (FT)	COIL ROWS	ASSOCIATED AC UNIT OR AHU	REMARKS
VAV-L1-7	RECEIVING 100	SINGLE DUCT	NAILOR	D30RHQW	8	HOT WATER COIL	STEAM-LINER	610	610	910	180	145	-	NA	25	15	55.0	84.1	84.1	0.00	19.3	19.3	3.0	3/4"	120.0	101.8	0.85	3	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L1-8	BDH/STORAGE 105	SINGLE DUCT	NAILOR	D30RHQW	8	HOT WATER COIL	STEAM-LINER	600	600	600	180	140	-	NA	25	15	55.0	77.3	77.9	0.00	14.9	14.9	2.5	3/4"	120.0	104.6	0.75	2	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L1-9	ART STORAGE 113	SINGLE DUCT	NAILOR	D30RHQW	7	HOT WATER COIL	STEAM-LINER	560	560	560	175	130	-	NA	25	15	55.0	73.9	73.9	0.00	11.5	11.5	2.0	3/4"	120.0	99.1	0.35	2	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L1-10	CIRCULATION L1	SINGLE DUCT	NAILOR	D30RHQW	8	HOT WATER COIL	STEAM-LINER	600	600	600	180	85	-	NA	25	15	55.0	82.3	82.3	0.00	17.8	17.8	3.0	3/4"	120.0	113.5	5.29	2	AHU-1-1	1,2,3,4,5,6,7,8,9,10,11
VAV-L2-4	LOADING RECEIVING L2	SINGLE DUCT	NAILOR	D30RHQW	8	HOT WATER COIL	STEAM-LINER	720	720	720	180	180	-	NA	25	15	55.0	85.7	85.7	0.00	24.0	24.0	4.0	1"	120.0	107.8	1.85	3	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L2-5	CONSERVATION LAB	SINGLE DUCT	NAILOR	D30RHQW	16	HOT WATER COIL	STEAM-LINER	2240	1120	2240	755	220	385	EXHAUST STATUS	25	21	55.0	90.8	82.8	1.15	97.0	67.6	16.8	1-1/4"	120.0	101.2	1.91	4	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L2-6	GARDENER CENTER	SINGLE DUCT	NAILOR	D30RHQW	7	HOT WATER COIL	STEAM-LINER	480	240	480	125	25	45	CO2 SENSOR	25	15	55.0	78.5	78.5	0.45	12.2	12.2	2.0	3/4"	120.0	101.5	0.28	2	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L2-7	LIBRARY 204	SINGLE DUCT	NAILOR	D30RHQW	10	HOT WATER COIL	STEAM-LINER	1200	600	1200	250	130	225	CO2 SENSOR	25	18	55.0	80.7	80.7	0.01	33.5	33.5	5.0	1"	120.0	105.5	3.71	2	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L2-8	LIBRARY STACKS 207	SINGLE DUCT	NAILOR	D30RHQW	4	HOT WATER COIL	STEAM-LINER	400	200	400	85	45	80	CO2 SENSOR	25	15	55.0	73.1	73.1	0.69	7.9	7.9	1.5	3/4"	120.0	98.5	0.08	2	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L2-9	MAILWAY 201	SINGLE DUCT	NAILOR	D30RHQW	6	HOT WATER COIL	STEAM-LINER	710	355	710	85	65	-	NA	25	15	55.0	77.1	77.1	0.50	7.4	7.4	1.5	3/4"	120.0	106.2	0.14	3	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L2-10	MAILWAY 200	SINGLE DUCT	NAILOR	D30RHQW	7	HOT WATER COIL	STEAM-LINER	440	220	440	125	110	-	NA	25	15	55.0	77.9	77.9	0.58	10.9	10.9	2.0	3/4"	120.0	96.7	0.33	2	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L2-11	WORKSHOP 212A	SINGLE DUCT	NAILOR	D30RHQW	9	HOT WATER COIL	STEAM-LINER	900	900	900	210	55	100	EXHAUST STATUS	25	15	55.0	105.3	105.3	0.66	26.2	26.2	4.0	1"	120.0	114.6	7.51	4	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L2-12	ART STORAGE STACKS N	SINGLE DUCT	NAILOR	D30RHQW	12	HOT WATER COIL	STEAM-LINER	1120	1120	1120	280	215	-	NA	25	15	55.0	89.1	87.1	0.66	39.0	34.0	6.8	1"	120.0	109.2	7.32	3	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L2-13	ART STORAGE STACKS S	SINGLE DUCT	NAILOR	D30RHQW	12	HOT WATER COIL	STEAM-LINER	1120	1120	1120	280	205	-	NA	25	15	55.0	89.2	89.7	0.70	42.1	42.1	7.0	1"	120.0	107.4	2.13	4	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L2-14	MAILWAY 202	SINGLE DUCT	NAILOR	D30RHQW	16	HOT WATER COIL	STEAM-LINER	1600	800	1600	430	90	115	CO2 SENSOR	25	15	55.0	89.2	88.2	0.80	39.4	39.4	9.0	1-1/4"	120.0	107.8	3.85	4	AHU-1-1	1,2,3,4,5,6,7,8,9,10,11
VAV-L2-15	MAILWAY 218	SINGLE DUCT	NAILOR	D30RHQW	8	HOT WATER COIL	STEAM-LINER	740	370	740	185	350	-	NA	25	15	55.0	84.6	84.0	0.86	23.3	23.3	3.5	3/4"	120.0	105.5	1.28	3	AHU-1-1	1,2,3,4,5,6,7,8,9,10,11
VAV-L3-1	MAIN ENTRY LOBBY WEST	SINGLE DUCT	NAILOR	D30RHQW	16	HOT WATER COIL	STEAM-LINER	2100	1050	2100	755	45	200	CO2 SENSOR	25	18	55.0	90.7	90.7	1.83	95.0	95.0	13.0	1-1/2"	120.0	94.1	1.08	4	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L3-2	MAIN ENTRY LOBBY EAST	SINGLE DUCT	NAILOR	D30RHQW	14	HOT WATER COIL	STEAM-LINER	1500	750	1500	490	45	260	CO2 SENSOR	25	15	55.0	90.7	90.7	0.71	58.1	58.1	9.0	1-1/4"	120.0	104.1	3.4	4	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L3-3	EXHIBIT N1	SINGLE DUCT	NAILOR	D30RHQW	24	HOT WATER COIL	STEAM-LINER	2640	1320	2640	930	95	585	CO2 SENSOR	25	18	55.0	82.3	82.3	1.20	78.1	72.1	12.0	1-1/4"	120.0	119	17.48	4	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L3-4	EXHIBIT N2	SINGLE DUCT	NAILOR	D30RHQW	9	HOT WATER COIL	STEAM-LINER	1040	520	1040	310	55	225	CO2 SENSOR	25	18	55.0	83.6	83.6	0.83	32.3	32.3	5.0	1"	120.0	108.1	3.71	3	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L3-5	EXHIBIT N3	SINGLE DUCT	NAILOR	D30RHQW	12	HOT WATER COIL	STEAM-LINER	1400	700	1400	390	55	340	CO2 SENSOR	25	15	55.0	73.8	73.8	1.06	38.8	38.6	5.0	1"	120.0	102.7	2.9	3	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L3-6	EXHIBIT N4	SINGLE DUCT	NAILOR	D30RHQW	12	HOT WATER COIL	STEAM-LINER	1400	700	1400	390	55	340	CO2 SENSOR	25	15	55.0	73.8	72.8	0.48	38.8	38.6	5.0	1"	120.0	102.3	2.9	2	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L3-7	EXHIBIT N5	SINGLE DUCT	NAILOR	D30RHQW	12	HOT WATER COIL	STEAM-LINER	1400	700	1400	390	55	330	CO2 SENSOR	25	15	55.0	74.5	74.5	0.69	39.6	39.6	5.0	1"	120.0	104.1	3.61	2	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L3-8	EXHIBIT N6	SINGLE DUCT	NAILOR	D30RHQW	16	HOT WATER COIL	STEAM-LINER	2040	1020	2040	755	50	325	CO2 SENSOR	25	21	55.0	78.6	78.6	0.99	52.6	51.6	8.0	1-1/4"	120.0	94.2	1.57	2	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L3-9	EXHIBIT N7	SINGLE DUCT	NAILOR	D30RHQW	12	HOT WATER COIL	STEAM-LINER	1470	735	1470	390	55	340	CO2 SENSOR	25	19	55.0	81.6	81.6	1.20	42.4	42.4	7.0	1"	120.0	104.8	4.31	3	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L3-10	GARDEN COURT NORTH	SINGLE DUCT	NAILOR	D30RHQW	24x16	HOT WATER COIL	STEAM-LINER	3760	1630	3360	1750	75	680	CO2 SENSOR	25	19	55.0	80.0	80.0	0.90	85.4	85.4	14.0	1-1/2"	120.0	107.7	4.63	3	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L3-11	GARDEN COURT SOUTH	SINGLE DUCT	NAILOR	D30RHQW	24x16	HOT WATER COIL	STEAM-LINER	3260	1630	3260	1750	75	680	CO2 SENSOR	25	19	55.0	80.0	80.0	0.90	85.4	85.4	14.0	1-1/2"	120.0	91.4	1.54	3	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L3-12	EXHIBIT S6	SINGLE DUCT	NAILOR	D30RHQW	14	HOT WATER COIL	STEAM-LINER	1680	800	1680	490	60	385	CO2 SENSOR	25	15	55.0	77.9	77.9	0.86	39.7	39.7	6.0	1"	120.0	106	13.22	2	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L3-13	EXHIBIT S3	SINGLE DUCT	NAILOR	D30RHQW	12	HOT WATER COIL	STEAM-LINER	1400	700	1400	390	55	340	CO2 SENSOR	25	15	55.0	73.8	73.8	0.78	38.6	38.6	5.0	1"	120.0	94.3	1.68	2	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L3-14	EXHIBIT S4	SINGLE DUCT	NAILOR	D30RHQW	12	HOT WATER COIL	STEAM-LINER	1400	700	1400	390	55	340	CO2 SENSOR	25	15	55.0	73.8	73.8	0.79	38.8	38.6	5.0	1"	120.0	102.7	2.9	2	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L3-15	EXHIBIT S5	SINGLE DUCT	NAILOR	D30RHQW	12	HOT WATER COIL	STEAM-LINER	1600	800	1600	390	55	340	CO2 SENSOR	25	16	55.0	79.8	79.8	0.98	43.1	43.1	7.0	1"	120.0	98.0	2.81	3	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L3-16	EXHIBIT S1	SINGLE DUCT	NAILOR	D30RHQW	16	HOT WATER COIL	STEAM-LINER	2640	1320	2640	755	95	585	CO2 SENSOR	25	20	55.0	82.3	82.3	1.52	78.1	78.1	12.0	1-1/4"	120.0	105.5	8.9	3	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L3-17	EXHIBIT S2	SINGLE DUCT	NAILOR	D30RHQW	16	HOT WATER COIL	STEAM-LINER	1180	590	1180	350	95	225	CO2 SENSOR	25	18	55.0	87.1	87.1	1.26	41.0	41.0	7.0	1"	120.0	106.8	2.95	4	AHU-1-2	1,2,3,4,5,6,7,8,9,10,11
VAV-L3-18	CIRCULATION L3	SINGLE DUCT	NAILOR	D30RHQW	10	HOT WATER COIL	STEAM-LINER	1260	630	1260	290	35	45	CO2 SENSOR	25	18	55.0	82.8	82.8	1.81	37.7	37.7	6.8	1"	120.0	110.6	7.58	3	AHU-1-1	1,2,3,4,5,6,7,8,9,10,11
VAV-L3-19	CIRCULATION L3 EAST	SINGLE DUCT	NAILOR	D30RHQW	14	HOT WATER COIL	STEAM-LINER	2100	1050	2100	490	55	70	CO2 SENSOR	25	17	55.0	83.8	83.5	0.71	65.7	65.7	10.0	1-1/4"	120.0	107.4	15.76	2	AHU-1-1	1,2,3,4,5,6,7,8,9,10,11
VAV-L3-20	EXHIBIT S7	SINGLE DUCT	NAILOR	D30RHQW	24x16	HOT WATER COIL	STEAM-LINER	3000	1500	3000	1750	115	715	CO2 SENSOR	25	20	55.0	74.9	74.9	0.86	64.8	64.9	10.0	1-1/4"	120.0	96.4	2.62	3	AHU-1-1	1,2,3,4,5,6,7,8,9,10,11
VAV-L3-21	EXHIBIT S8	SINGLE DUCT	NAILOR	D30RHQW	24	HOT WATER COIL	STEAM-LINER	3800	1900	3800	1750	180	905	CO2 SENSOR	25	20	55.0	75.7	75.7	0.68	95.4	83.4	13.0	1-1/2"	120.0	103.5	10.85	2	AHU-1-1	1,2,3,4,5,6,7,8,9,10,11

1: "CLG PRIM MAX CFM" SCHEDULED VALUE EQUALS THE ZONE MAXIMUM COOLING AIR FLOW.
"HTG PRIM MAX CFM" SCHEDULED VALUE EQUALS THE ZONE MAXIMUM HEATING AIR FLOW.
2: "PRIM MIN CFM" SCHEDULED VALUE EQUALS THE ZONE MINIMUM COOLING AND HEATING MINIMUM AIR FLOW OR DEADBAND AIR FLOW.
3: "VALVE MIN CFM" SCHEDULED VALUES EQUALS THE ZONE MINIMUM COOLING AIR FLOW AND MINIMUM HEATING AIR FLOW.
THIS VALUE CORRESPONDS WITH THE PRESSURE TRANSDUCER LOWER LIMIT OF 0.03" WC OF "AMPLIFIED" VELOCITY PRESSURE ACROSS THE FLOW MEASURING DEVICE AS DETERMINED FROM DATA PUBLISHED BY THE VAV BOX MANUFACTURER.
CONTROLS CONTRACTOR TO VERIFY THE MINIMUM OF THAT THEIR VAV CONTROLLER CAN ACCURATELY READ.
4: "MIN VENT CFM" SCHEDULED VALUE EQUALS THE ZONE MINIMUM OUTSIDE AIR FLOW. THIS IS THE MINIMUM QUANTITY OF OUTSIDE AIR REQUIRED DURING NORMAL OCCUPIED MODE.
5: "MAX VENT CFM" SCHEDULED VALUES EQUALS THE MINIMUM OUTSIDE AIR FLOW. THIS IS THE MINIMUM QUANTITY OF OUTSIDE AIR REQUIRED DURING EXHAUST STATUS "ON" OVERIDE PERIOD OR ZONE SPACE CO2 CONTROL SEQUENCE.
6: EXHAUST FAN STATUS WILL BE UTILIZED TO OVERIDE THE ZONE "PRIM MIN" AIRFLOW SETPOINT TO THE ALTERNATE EXHAUST MODE "MAIN MIN" OR "HTG PRIM MAX" SETPOINT WHEN THE ASSOCIATED EXHAUST FAN IS OPERATING. (SEE DESCRIPTION OF OPERATIONS FOR FURTHER DETAIL)
7: ROOM CO2 SENSOR IS PROVIDED BY THE C.C. AND SHALL BE UTILIZED TO MODULATE ZONE VENT SETPOINT FROM "MIN VENT" CFM TO "MAX VENT" CFM. (SEE DESCRIPTION OF OPERATIONS FOR FURTHER DETAIL)
8: CONTROLS CONTRACTOR TO PROVIDE VAV BOX CONTROLLER AND WIRING DIAGRAM. VAV CONTROLLERS TO BE FACTORY INSTALLED BY VAV MANUFACTURER. VAV MANUFACTURER TO PROVIDE 24V TRANSFORMER FOR CONTROLS.
9: SEE DESCRIPTION OF OPERATIONS FOR DESIGN DAY CRITICAL VENT RATES.
10: E.C. TO PROVIDE TWO 120VAC CONTROL CIRCUITS PER FLOOR. SEE MISC. POWER CIRCUIT SCHEDULE FOR FURTHER DETAILS.
11: PARTS & LABOR WARRANTY FOR 1 YEAR FROM SUBSTANTIAL COMPLETION. FREIGHT FOR JOBSITE. SHIPPING INSTRUCTIONS - SHRINK WRAP AND COVER ALL OPENINGS. PROVIDE ELECTRONIC SUBMITTALS AND INSTALL/O&M MANUALS.
12: OPTIONAL STANDBY POWER BY EC (NEC 702)
13: LEGALLY REQUIRED STANDBY POWER PROVIDED BY EC (NEC 701)
14: EMERGENCY POWER PROVIDED BY EC (NEC 700)
15: PROVIDE ENERGY LABS AIR HANDLER SECTION WITH HEATING HOT WATER COIL (SIZED AT 750 FPM) AND INLET MOTORIZED DAMPER TO HANG IN CEILING PLENUM. MOTORIZED DAMPER TO BE GREENHECK MVM AMD-33 TO CONTROL AIRFLOW AND PROVIDE AIRFLOW MONITORING. DAMPER TO BE SIZED AT 900 FPM TO ALLOW TURNDOWN TO MINIMUM RECOMMENDED VELOCITY AT 300 FPM.

VARIABLE AIR VOLUME TERMINAL BOX SCHEDULE

VAV ZONE NUMBER	AREA SERVED (ROOM WITH TEMP. SENSOR)	VAV BOX TYPE	MAKE	MODEL, SIZE, & SPECIFICATIONS: MODEL NUMBER	UNIT SIZE	HEATER TYPE	VAV BOX OPTIONS	VALVE CFM VALUES: CLG PRIM MAX (1)	PRIM MIN (2)	HTG PRIM MAX (1)	MIN VENT (4)	MAX VENT (5)	VENT MODULATION DEVICE (6,7)	SOUND: ZONE NC CRITERIA	VAV NC LEVEL	HEATING HW COIL: AIR EDB (F)	DESIGN AIR LDB (F)	AIR LDB (F)	AIR DP (IN)	DESIGN MBH	ACTUAL MBH	COIL GPM	PIPE SIZE	WATER EWT (F)	WATER LWT (F)	WATER DP (FT)	COIL ROWS	ASSOCIATED AC UNIT OR AHU	REMARKS
VAV-L1-1	FACILITY OFFICES	SINGLE DUCT	NAILOR	D30RHQ	9	HOT WATER COIL	STEAM-LINER	1020	680	680	170	-	-	NA	25	16	55.0	82.5	82.5	0.60	30.7	30.3	5.5	3/4"	120.0	113.4	5.1	3	AHU-1-1	1,2,3,4,5,6,7,8,9,10,11
VAV-L1-2	MEETING	SINGLE DUCT	NAILOR	D30RHQ	9	HOT WATER COIL	STEAM-LINER	980	310	450	29	130	-	CO2 SENSOR	25	18	55.0	86.1	86.1	0.90	55.2	55.2	9.0	3/4"	120.0	97.3	5.18	4	AHU-1-1	1,2,3,4,5,6,7,8,9,10,11
VAV-L1-3	CORNER OFFICE	SINGLE DUCT	NAILOR	D30RHQ	5	HOT WATER COIL	STEAM-LINER	180	70	80	25	-	-	NA	25	15	55.0	105.0	105.0	0.60	4.9	4.9	0.8	3/4"	120.0	117.4	1.74	2	AHU-1-1	1,2,3,4,5,6,7,8,9,10,11
VAV-L1-4	OPEN OFFICE	SINGLE DUCT	NAILOR	D30RHQ	8	HOT WATER COIL	STEAM-LINER	800	295	400	150	-	-	NA	25	15	55.0	82.0	82.0	0.60	11.5	11.3	2.0	3/4"	120.0	95	0.09	2	AHU-1-1	1,2,3,4,5,6,7,8,9,10,11
VAV-L1-5	SOUTH OFFICES	SINGLE DUCT	NAILOR	D30RHQ	6	HOT WATER COIL	STEAM-LINER	330	185	185	70	-	-	NA	25	15	55.0	85.0	85.0	0.60	6.0	6.0	1.0	3/4"	120.0	105.3	0.11	2	AHU-1-1	1,2,3,4,5,6,7,8,9,10,11
VAV-L1-6	BREAK	SINGLE DUCT	NAILOR	D30RHQ	6	HOT WATER COIL	STEAM-LINER	600	250	350	95	-	-	NA	25	15	55.0	80.0	80.0	0.60	6.8	6.8	1.3	3/4"	120.0	103.4	0.11	2	AHU-1-1	1,2,3,4,5,6,7,8,9,10,11
VAV-L2-1	EDUCATION	SINGLE DUCT	NAILOR	D30RHQ	24	HOT WATER COIL	STEAM-LINER	2800	1750	1845	65	715	CO2 SENSOR	25	18	55.0	80.0	80.0	0.80	51.0	51.0	8.8	1-1/4"	120.0	97.5	2.52	2	AHU-1-1	1,2,3,4,5,6,7,8,9,10,11
VAV-L2-2	KITCHEN	SINGLE DUCT	NAILOR	D30RHQ	7	HOT WATER COIL	STEAM-LINER	590	240	500	35	90	EXHAUST STATUS	25	18	55.0	79.0	84.4	0.60	12.0	8.9	1.5	3/4"	120.0	113.3	2.57	2	AHU-1-1	1,2,3,4,5,6,7,8,9,10,11
VAV-L2-3	EVENT	SINGLE DUCT	NAILOR	D30HQ	36	NO HEATER	STEAM-LINER	4800	1750	3025	95	1490	CO2 SENSOR	25	23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	AHU-1-1	1,2,3,4,5,6,7,8,9,10,11

2: "CLG PRIM MAX CFM" SCHEDULED VALUE EQUALS THE ZONE MAXIMUM COOLING AIR FLOW.
"HTG PRIM MAX CFM" SCHEDULED VALUE EQUALS THE ZONE MAXIMUM HEATING AIR FLOW.
3: "PRIM MIN CFM" SCHEDULED VALUE EQUALS THE ZONE MINIMUM COOLING AND HEATING MINIMUM AIR FLOW OR DEADBAND AIR FLOW.
4: "VALVE MIN CFM" SCHEDULED VALUES EQUALS THE ZONE MINIMUM COOLING AIR FLOW AND MINIMUM HEATING AIR FLOW.
THIS VALUE CORRESPONDS WITH THE PRESSURE TRANSDUCER LOWER LIMIT OF 0.03" WC OF "AMPLIFIED" VELOCITY PRESSURE ACROSS THE FLOW MEASURING DEVICE AS DETERMINED FROM DATA PUBLISHED BY THE VAV BOX MANUFACTURER.
CONTROLS CONTRACTOR TO VERIFY THE MINIMUM OF THAT THEIR VAV CONTROLLER CAN ACCURATELY READ.
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9: CONTROLS CONTRACTOR TO PROVIDE VAV BOX CONTROLLER AND WIRING DIAGRAM. VAV CONTROLLERS TO BE FACTORY INSTALLED BY VAV MANUFACTURER. VAV MANUFACTURER TO PROVIDE 24V TRANSFORMER FOR CONTROLS.
10: SEE DESCRIPTION OF OPERATIONS FOR DESIGN DAY CRITICAL VENT RATES.
11: E.C. TO PROVIDE TWO 120VAC CONTROL CIRCUITS PER FLOOR. SEE MISC. POWER CIRCUIT SCHEDULE FOR FURTHER DETAILS.
12: PARTS & LABOR WARRANTY FOR 1 YEAR FROM SUBSTANTIAL COMPLETION. FREIGHT FOR JOBSITE. SHIPPING INSTRUCTIONS - SHRINK WRAP AND COVER ALL OPENINGS. PROVIDE ELECTRONIC SUBMITTALS AND INSTALL/O&M MANUALS.
13: OPTIONAL STANDBY POWER BY EC (NEC 702)
14: LEGALLY REQUIRED STANDBY POWER PROVIDED BY EC (NEC701)
15: EMERGENCY POWER PROVIDED BY EC (NEC 700)
16: PROVIDE ENERGY LABS AIR HANDLER SECTION WITH HEATING HOT WATER COIL (SIZED AT 750 FPM) AND INLET MOTORIZED DAMPER TO HANG IN CEILING PLENUM. MOTORIZED DAMPER TO BE GREENHECK MVM AMD-33 TO CONTROL AIRFLOW AND PROVIDE AIRFLOW MONITORING. DAMPER TO BE SIZED AT 900 FPM TO ALLOW TURNDOWN TO MINIMUM RECOMMENDED VELOCITY AT 300 FPM.

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SEATTLE, WA 98109
P. (206) 283-7100 F. (206) 283-7121

ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

MECHANICAL SCHEDULES - VAV

M015

ELECTRIC HEATER SCHEDULE

TAG #	EH-L3-1	UH-L3-2	UH-L3-3	EH-AT-01	EH-AT-02	EH-AT-03	EH-AT-04	EH-AT-05	EH-AT-06	EH-AT-07	EH-AT-08	EH-AT-09	EH-AT-10
BASES OF DESIGN													
MANUFACTURER	KING	KING	KING	CHROMALOX	CHROMALOX	CHROMALOX	CHROMALOX	CHROMALOX	CHROMALOX	CHROMALOX	CHROMALOX	CHROMALOX	CHROMALOX
MODEL	OKH	KBP	KBP	STAR-F	STAR-F	STAR-F	STAR-F	STAR-F	STAR-F	STAR-F	STAR-F	STAR-F	STAR-F
DESIGN DATA													
UNIT TYPE	CEILING	CEILING	CEILING	CEILING	CEILING	CEILING	CEILING	CEILING	CEILING	CEILING	CEILING	CEILING	CEILING
LOCATION	ATTIC	ATTIC	ATTIC	ATTIC	ATTIC	ATTIC	ATTIC	ATTIC	ATTIC	ATTIC	ATTIC	ATTIC	ATTIC
AREA SERVED	ENTRY LOBBY	ATTIC 402	ATTIC 402	ATTIC NORTH	ATTIC NORTH	ATTIC NORTH	ATTIC NORTH	ATTIC NORTH	ATTIC NORTH	GARDEN COURT	GARDEN COURT	GARDEN COURT	GARDEN COURT
QUANTITY	1	1	1	1	1	1	1	1	1	1	1	1	1
FUNCTION (FREEZE PROTECTION, TEMP.)	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION
ELECTRICAL DATA													
UNIT PROVIDED BY	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.
INSTALLED BY	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.
WIRED BY	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.
ELECTRIC COIL KW	3.6	3.9	3.9	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
FAN MOTOR HORSEPOWER	-	-	-	-	-	-	-	-	-	-	-	-	-
UNIT VOLTAGE/PHASE	120/1	120/1	120/1	277/1	277/1	277/1	277/1	277/1	277/1	277/1	277/1	277/1	277/1
UNIT FLA	-	-	-	-	-	-	-	-	-	-	-	-	-
EMERGENCY POWER	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
STANDBY POWER	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
CONTROL DATA													
STEPS OF CONTROL	1	1	1	1	1	1	1	1	1	1	1	1	1
UNIT MOUNTED T-STAT	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
REMOTE MOUNTED T-STAT	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY
DISCONNECT	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.
PHYSICAL DIMENSIONS													
LENGTH X WIDTH X HEIGHT (INCHES)	7"x23.5"x5"	18.5"x11.5"x14"	10.5"x11.5"x14"	16"x56"x12"	16"x56"x12"	16"x56"x12"	16"x56"x12"	16"x56"x12"	16"x56"x12"	16"x56"x12"	16"x56"x12"	16"x56"x12"	16"x56"x12"
SURFACE MOUNT	TOP OF VEST	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RECESS MOUNT	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MOUNTING BRACKET (WALL, CEILING)	SUSPENDED	SUSPENDED	SUSPENDED	SUSPENDED	SUSPENDED	SUSPENDED	SUSPENDED	SUSPENDED	SUSPENDED	SUSPENDED	SUSPENDED	SUSPENDED	SUSPENDED
WEIGHT	11	7	7	25	25	25	25	25	25	25	25	25	25
MISC DATA													
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FREIGHT	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
ELECTRONIC SUBMITTAL	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
ELECTRONIC INSTALLATION MANUAL	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

REMARKS:

ELECTRIC HEATER SCHEDULE

TAG #	EH-AT-11	EH-AT-12	EH-AT-13	EH-AT-14	EH-AT-15	EH-AT-16	EH-AT-17	EH-AT-18	EH-AT-19	EH-AT-20	EH-AT-21	EH-AT-22	EH-AT-23	EH-AT-24
BASES OF DESIGN														
MANUFACTURER	CHROMALOX	CHROMALOX	CHROMALOX	CHROMALOX	CHROMALOX	CHROMALOX	CHROMALOX	CHROMALOX	CHROMALOX	CHROMALOX	CHROMALOX	CHROMALOX	CHROMALOX	CHROMALOX
MODEL	STAR-F	STAR-F	STAR-F	STAR-F	STAR-F	STAR-F	STAR-F	STAR-F	STAR-F	STAR-F	STAR-F	STAR-F	STAR-F	STAR-F
DESIGN DATA														
UNIT TYPE	CEILING	CEILING	CEILING	CEILING	CEILING	CEILING	CEILING	CEILING	CEILING	CEILING	CEILING	CEILING	CEILING	CEILING
LOCATION	ATTIC	ATTIC	ATTIC	ATTIC	ATTIC	ATTIC	ATTIC	ATTIC	ATTIC	ATTIC	ATTIC	ATTIC	ATTIC	ATTIC
AREA SERVED	GARDEN COURT	GARDEN COURT	GARDEN COURT	GARDEN COURT	GARDEN COURT	GARDEN COURT	GARDEN COURT	GARDEN COURT	ATTIC SOUTH	ATTIC SOUTH	ATTIC SOUTH	ATTIC SOUTH	ATTIC SOUTH	ATTIC SOUTH
QUANTITY	1	1	1	1	1	1	1	1	1	1	1	1	1	1
FUNCTION (FREEZE PROTECTION, TEMP.)	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION	FREEZE PROTECTION
ELECTRICAL DATA														
UNIT PROVIDED BY	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.
INSTALLED BY	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.	BY M.C.
WIRED BY	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.
ELECTRIC COIL KW	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
FAN MOTOR HORSEPOWER	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UNIT VOLTAGE/PHASE	277/1	277/1	277/1	277/1	277/1	277/1	277/1	277/1	277/1	277/1	277/1	277/1	277/1	277/1
UNIT FLA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EMERGENCY POWER	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
STANDBY POWER	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
CONTROL DATA														
STEPS OF CONTROL	1	1	1	1	1	1	1	1	1	1	1	1	1	1
UNIT MOUNTED T-STAT	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
REMOTE MOUNTED T-STAT	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY	YES, BAS RELAY
DISCONNECT	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.	BY E.C.
PHYSICAL DIMENSIONS														
LENGTH X WIDTH X HEIGHT (INCHES)	16"x56"x12"	16"x56"x12"	16"x56"x12"	16"x56"x12"	16"x56"x12"	16"x56"x12"	16"x56"x12"	16"x56"x12"	16"x56"x12"	16"x56"x12"	16"x56"x12"	16"x56"x12"	16"x56"x12"	16"x56"x12"
SURFACE MOUNT	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RECESS MOUNT	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MOUNTING BRACKET (WALL, CEILING)	SUSPENDED	SUSPENDED	SUSPENDED	SUSPENDED	SUSPENDED	SUSPENDED	SUSPENDED	SUSPENDED	SUSPENDED	SUSPENDED	SUSPENDED	SUSPENDED	SUSPENDED	SUSPENDED
WEIGHT	25	25	25	25	25	25	25	25	25	25	25	25	25	25
MISC DATA														
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FREIGHT	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
ELECTRONIC SUBMITTAL	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
ELECTRONIC INSTALLATION MANUAL	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

REMARKS:

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SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

MECHANICAL SCHEDULES - EH

M016

PUMP SCHEDULE

TAG #	CP-CHW-1	CP-CHW-2	CP-CHW-3	CP-HW-1	CP-HW-2	CP-HW-3	CP-HW-4	CP-HW-5	CP-HW-6
BASIS OF DESIGN									
MANUFACTURER	BELL & GOSSET	BELL & GOSSET	BELL & GOSSET	BELL & GOSSET	BELL & GOSSET	BELL & GOSSET	BELL & GOSSET	BELL & GOSSET	BELL & GOSSET
MODEL	E-1510-3BD	E-1510-3BD	E-60 205.25	E-1510 3CB	E-1510 3CB	E-1510 3AD	E-60 205.25	SERIES 80 1-1/2X3-1/2X9	SERIES 80 1-1/2X3-1/2X9
DESIGN PARAMETERS									
SERVICE	CHW PUMP	CHW PUMP	CHW PUMP	HW PUMP	HW PUMP	HP HW PUMP	HP HW PUMP	BOILER HW PUMP	BOILER HW PUMP
LOCATION	SOUTH MECH 118	SOUTH MECH 118	SOUTH MECH 118	SOUTH MECH 118	SOUTH MECH 118	SOUTH MECH 118	SOUTH MECH 118	SOUTH MECH 118	SOUTH MECH 118
PUMP OPERATION	100% / 100%	100% / 100%	100% / 100%	100% / 100%	100% / 100%	100% / 100%	100% / 100%	100% / 100%	100% / 100%
PROVIDED WITH OTHER EQUIPMENT	NO	NO	NO	NO	NO	NO	NO	NO	NO
PUMP TYPE	END SUCTION	END-SUCTION	INLINE	END SUCTION	END SUCTION	END SUCTION	INLINE	INLINE	INLINE
GPM	410	410	58	450	450	450	73	50	50
MINIMUM ALLOWABLE FLOW (GPM)	200	200	20	115	115	63	20	10	10
FT. TOTAL HEAD	67	67	22	77	77	35	22	10	10
FLUID TEMPERATURE - DESIGN OPERATING (°F)	42/54°F	42/54°F	42/54°F	180/120°F	180/120°F	180/120°F	180/120°F	130/130°F	130/130°F
FLUID TEMPERATURE - MAXIMUM (°F)	100°F	100°F	100°F	200°F	200°F	200°F	200°F	200°F	200°F
FT. HEAD REQUIRED BY PUMP	7.8	7.8	5.7	8	8	7.3	5.7	3	3
% PROPYLENE GLYCOL	25%	25%	25%	25%	25%	25%	25%	25%	25%
MAXIMUM SYSTEM DESIGN PRESSURE (PSIG)	125 PSIG	125 PSIG	125 PSIG	125 PSIG	125 PSIG	125 PSIG	125 PSIG	125 PSIG	125 PSIG
IMPELLER DIAMETER (IN.)	8.63	8.63	5.25	10.62	10.62	8.62	5.25	7.25	7.25
MAX. IMP. IMPELLER DIAMETER (IN.)	9.5	9.5	5.25	13.5	13.5	7	5.25	9.5	9.5
PUMP EFFICIENCY	81.5%	81.5%	66.5%	64.5%	64.5%	77.4%	66.5%	46.0%	46.0%
SUCTION SIZE	4	4	2	4	4	4	2	1.5	1.5
DISCHARGE SIZE	3	3	2	3	3	3	2	1.5	1.5
PIPE CONNECTION TYPE	BY MC	BY MC	BY MC	BY MC	BY MC	BY MC	BY MC	BY MC	BY MC
SUCTION DIFFUSER	YES	YES	YES	YES	YES	YES	YES	YES	YES
SUCTION DIFFUSER SIZE (IN.) x OUT)		0			0				
DISCHARGE ELBOW PROVIDED WITH PUMP - (IN x OUT)	NO	NO	NO	NO	NO	NO	NO	NO	NO
ELECTRICAL DATA									
BHP MOTOR KW	1750	1750	1750	1750	1750	1750	1750	1730	1750
SUCTION BHP/HP	8.8	8.8	0.55	14	14	3.4	0.63	1.16	1.16
MOTOR HP	15	15	1	15	15	5	1	2	2
MOTOR FRAME SIZE	254T	254T	143T	254T	254T	184T	143T	145JM	145JM
VOLTAGE/PHASE	460/3	460/3	460/3	460/3	460/3	460/3	460/3	460/3	460/3
MOTOR EFFICIENCY	CODE MIN.	CODE MIN.	CODE MIN.	CODE MIN.	CODE MIN.	CODE MIN.	CODE MIN.	CODE MIN.	CODE MIN.
UNIVERSAL DUTY MOTOR	YES	YES	YES	YES	YES	YES	YES	YES	YES
MANUAL STARTER (PROVIDED & INSTALLED BY EC)	NO	NO	NO	NO	NO	NO	NO	NO	NO
MAGNETIC STARTER (PROVIDED & INSTALLED BY EC)	NO	NO	BY EC	NO	NO	BY EC	BY EC	BY EC	BY EC
VFD (PROVIDED BY MC & INSTALLED BY EC)	YES	YES	YES	YES	YES	YES	YES	YES	YES
VFD MANUFACTURER	DANFOSS	DANFOSS	DANFOSS	DANFOSS	DANFOSS	DANFOSS	DANFOSS	DANFOSS	DANFOSS
VFD MODEL	VLT FC 100	VLT FC 100	VLT FC 100	VLT FC 100	VLT FC 100	VLT FC 100	VLT FC 100	VLT FC 100	VLT FC 100
VFD BYPASS	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC
DISCONNECT BY	INTEGRATED W/ VFD	INTEGRATED W/ VFD	INTEGRATED W/ VFD	INTEGRATED W/ VFD	INTEGRATED W/ VFD	INTEGRATED W/ VFD	INTEGRATED W/ VFD	INTEGRATED W/ VFD	INTEGRATED W/ VFD
SYSTEM IS IP MOUNTED AND WIRED TO MOTOR	YES	YES	YES	YES	YES	YES	YES	YES	YES
208/1 SERVICE OUTLET WITHIN 25 FEET	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC	BY EC
SINGLE POINT BOILER 42 BOILER FOR PUMP	N/A	N/A	NA	N/A	N/A	NA	NA	NA	NA
EMERGENCY POWER	NO	NO	NO	NO	NO	NO	NO	NO	NO
STANDBY POWER	YES	NO	NO	YES	NO	YES	NO	NO	NO
SPECIFICATIONS									
CASING (CAST IRON, BRONZE)	CAST IRON	CAST IRON	CAST IRON	CAST IRON	CAST IRON	CAST IRON	CAST IRON	CAST IRON	CAST IRON
IMPELLER (CAST IRON, BRONZE)	BRONZE	BRONZE	BRONZE	BRONZE	BRONZE	BRONZE	BRONZE	BRONZE	BRONZE
WEAR RING (CAST IRON, BRONZE)	BRONZE	BRONZE	BRONZE	BRONZE	BRONZE	BRONZE	BRONZE	BRONZE	BRONZE
SHAFT (STEEL, STAINLESS)	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL
SHAFT SLEEVE (STEEL, STAINLESS, BRONZE)	BRONZE	BRONZE	STAINLESS STEEL	STAINLESS STEEL	STAINLESS STEEL	STAINLESS STEEL	STAINLESS STEEL	STAINLESS STEEL	STAINLESS STEEL
SEAL TYPE	BUNA-CARBON-CERAMIC	BUNA-CARBON-CERAMIC	BUNA-CARBON-CERAMIC	BUNA-CARBON-CERAMIC	BUNA-CARBON-CERAMIC	BUNA-CARBON-CERAMIC	BUNA-CARBON-CERAMIC	BUNA-CARBON-CERAMIC	BUNA-CARBON-CERAMIC
RECIRCULATION LINES	NO	NO	NO	NO	NO	NO	NO	NO	NO
BASE (STEEL, CAST IRON, OTHER)	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL
COLD ALIGNMENT	NO	NO	NO	NO	NO	NO	NO	NO	NO
FACTORY ALIGNMENT	YES	YES	YES	YES	YES	YES	YES	YES	YES
PHYSICAL DIMENSIONS									
PUMP WEIGHT	440	440	76	610	610	320	79		
INERTIA BASE WEIGHT (TYP. 2x PUMP WEIGHT)		0	-	-	-	-	-	-	-
TOTAL WEIGHT (PUMP, MOTOR, INERTIA BASE)		0	-	-	-	-	-	-	-
MOUNTED ON INERTIA BASE WITH ISOLATORS	NO	NO	NO	NO	NO	NO	NO	NO	NO
POST MOUNTED ON PUMP BODY FROM FLOOR WITH NO PAD	NO	NO	YES	NO	NO	NO	YES	YES	YES
HOUSEKEEPING PAD MOUNTED, WITH NEO PADS	YES	YES	NO	YES	YES	YES	NO	NO	NO
MISC DATA									
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR
FREIGHT	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES	YES	YES	YES	YES	YES	YES	YES	YES
ELECTRONIC SUBMITTAL	YES	YES	YES	YES	YES	YES	YES	YES	YES
ELECTRONIC INSTALLOMM MANUAL	YES	YES	YES	YES	YES	YES	YES	YES	YES
	-	-	-	-	-	-	-	-	-

AIR SEPARATOR SCHEDULE

TAG #	AS-01	AS-02
PROJECT	SAAM RENOVATION	SAAM RENOVATION
BASIS OF DESIGN		
MANUFACTURER	B&G	B&G
MODEL		
SPECIFICATIONS		
SERVICE	CHILLED WATER	HEATING HW
LOCATION	MECH RM B1B	MECH RM B2B
SYSTEM FLOW (GPM)	500 GPM	140 GPM
MAXIMUM AS RATED FLOW (GPM)	850 GPM	850 GPM
SYSTEM PIPE SIZE (IN.)	6"	6"
AIR SEPARATOR SIZE (IN.)	6"	6"
CONNECTION TYPE	FLANGED	FLANGED
MAX WORKING PRESSURE (PSIG)	125 PSIG	125 PSIG
MAX OPERATING TEMP. (°F)	350°F	350°F
DRAIN SIZE (IN.)	1"	1"
LENGTH	N/A	N/A
HEIGHT	44"	44"
DIAMETER	16"	16"
SHIP WEIGHT (LBS)	205	205
WATER WEIGHT (LBS)	350	350
WET WEIGHT (LBS)	555	555
ASME RATED	YES	YES
MISC DATA		
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	1 YEAR	1 YEAR
FREIGHT	FOB JOBSITE	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES	YES
ELECTRONIC SUBMITTAL	YES	YES
ELECTRONIC INSTALLOMM MANUAL	YES	YES
	-	-

REMARKS:

RELIEF HOOD SCHEDULE

TAG #	RH-L1-1
BASIS OF DESIGN	
MANUFACTURER	GREENHECK
MODEL	WRH
QUANTITY	1
DESIGN PARAMETERS	
TYPE	RELIEF
AREA SERVED	LEVEL 1 MOH
CFM	10000
PHYSICAL DATA	
OVERALL LENGTH	38"
OVERALL WIDTH	38"
OVERALL HEIGHT	54.75"
THROAT LENGTH	24"
THROAT WIDTH	16"
CURB HEIGHT	12"
OVERALL HEIGHT ABOVE ROOF	28.75"
TOTAL WEIGHT PER UNIT (LBS)	138
PERFORMANCE DATA	
THROAT AREA (SQ. FT.)	1.4
THROAT VELOCITY (FPM)	694
STATIC PRESSURE DROP (IN WG)	0.05
SPECIFICATIONS	
SITE-BUILT CURB BY GC	NO
FACTORY CURB	YES
BACKDRAFT DAMPER	NO
MOTORIZED DAMPER	YES
MISC DATA	
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	1 YEAR
FREIGHT	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES
ELECTRONIC SUBMITTAL	YES
ELECTRONIC INSTALLOMM MANUAL	YES
	-

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SAAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation
1400 East Prospect, 1400 E Prospect, Seattle, WA 98112

Construction Documents

Drawn: BG DC
Checked: JL ADP
Date: 8/24/17

MECHANICAL SCHEDULES - PUMP, RELIEF HOOD

M017

AIR TO WATER HEAT PUMP SCHEDULE (CHILLERS)

TAG #	AWHP-1,2,3,4
PROJECT	SAAM
PROVIDED BY	MC
BASIS OF DESIGN	
MANUFACTURER	MULTISTACK
MODEL #	(4) ARA-60X
CONDENSER FAN DATA (PER MODULE)	
CONDENSER FAN QUANTITY	4
CONDENSER FAN HORSEPOWER	2 HP
CONDENSER FAN AIRFLOW TOTAL (CFM)	44,000 CFM
CONDENSER FAN MINIMUM REQ'D AIRFLOW TOTAL (CFM)	11,000 CFM
CONDENSER FAN CONTROL TYPE	ECM
COOLING DESIGN DATA (AIRSOURCE- PER MODULE)	
NOMINAL TONNAGE	60
COOLING CAPACITY (TONS) AT SPECIFIED CONDITIONS	56.00
AMBIENT AIR TEMPERATURE (°F)	95°F
LOWER AMBIENT TEMPERATURE LIMIT (°F)	40
CHILLER MINIMUM FLOW (GPM)	125 GPM
SYSTEM MINIMUM FLOW FOR BYPASS SIZING (GPM)	187 GPM
EVAPORATOR EWT (°F)	56°F
EVAPORATOR LWT (°F)	42°F
PERCENT PROPYLENE GLYCOL	25% P.G.
TYPE OF REFRIGERANT	HFC-410a
REFRIGERANT CHARGE (PER MODULE)	220 LBS
COOLING EFFICIENCY (AT OPERATING COND)	0.852
HEATING DESIGN DATA (AIRSOURCE- PER MODULE)	
HEATING CAPACITY (MBH) AT SPECIFIED CONDITIONS	567 MBH
AMBIENT AIR TEMPERATURE (°F)	31°F
HTG MIN FLOW GPM	83 GPM
SYSTEM MINIMUM FLOW FOR BYPASS SIZING (GPM)	364 GPM
COND EWT (°F)	105°F
COND LWT (°F)	120°F
HEATING COP	2.29 COP
SIMULTANEOUS HEATING AND COOLING DESIGN DATA (PER MODULE)	
HEATING CAPACITY (MBH) AT SPECIFIED CONDITIONS	898 MBH
HTG FLOW (GPM)	120 GPM
COND EWT (°F)	105°F
COND LWT (°F)	120°F
COOLING CAPACITY (MBH) AT SPECIFIED CONDITIONS	682 MBH
EVAP FLOW (GPM)	122 GPM
EVAPORATOR EWT (°F)	56°F
EVAPORATOR LWT (°F)	42°F
HEATING/COOLING COP	7.3 COP
COOLING ENERGY EFFICIENCY DATA	
AHRI CERTIFIED & LISTED IN AHRI CERTIFICATION PROGRAM	NOT REQUIRED - NOT COVERED UNDER AHRI STANDARD
IPLV - CODE MINIMUM (ARI 550/590) FOR CHILLER	12.5 IPLV
IPLV (in accordance with ARI 550/590)	-
EER - CODE MINIMUM (ARI 550/590) FOR CHILLER	9.852 EER
EER (in accordance with ARI 550/590)	10.3 EER
IPLV - AT OPERATING CONDITIONS	
EER - AT OPERATING CONDITIONS	9.9 EER
PART LOAD PERFORMANCE AT DESIGN CONDITIONS (KW/TON)	-
100%	1.218 KW/TON
75%	.877 KW/TON
50%	.678 KW/TON
25%	.387 KW/TON
ELECTRICAL DATA	
VOLTAGE/PHASE	460/3
ONE (1) ARA60X MODULE (ON STANDBY POWER)	
FLA (SINGLE POINT POWER)	156
MOP (SINGLE POINT POWER)	225
THREE (3) ARA60X MODULES	
FLA (SINGLE POINT POWER FOR EACH)	156
FLA (SINGLE POINT POWER FOR EACH)	225
(ONE 1) ARA60X MODULE (FUTURE)	
FLA (SINGLE POINT POWER)	156
MOP (SINGLE POINT POWER)	225
FACTORY MOUNTED STARTER	YES
STARTER SHORT CIRCUIT RATING	30000 AIC
UNIT DISCONNECT BY MANUFACTURER AT EACH PWR CONNECTION	YES
120/1 POWER (20 AMP) HEAT TRACING AT EVAP. BUNDLE	NA
DISCONNECT FOR HEAT TRACING AT EVAP. BUNDLE	NA
120/1 POWER (20 AMP) FOR UNIT CONTROLS	BY EC (REMARK 1)
DISCONNECT FOR UNIT CONTROLS	BY EC
120V SERVICE OUTLET WITHIN 25 FEET	BY EC
EMERGENCY POWER (NEC 700)	NO
LEGALLY REQUIRED STANDBY POWER (NEC 701)	NO
STANDBY POWER (NEC 702)	(1) MODULE, BY EC

AIR TO WATER HEAT PUMP SCHEDULE (CHILLERS)

TAG #	AWHP-1,2,3,4
CONTROLS DATA	
UNIT FACTORY CONTROLLER	YES, MASTER CONTROLLER FOR (5) MODULES
UNIT LOCAL CONTROL DISPLAY PANEL	YES
EVAP & COND 120/1 FLOW SWITCHES (PROVIDE THERMAL DISPATCH INTERNAL TO EACH MODULE)	YES
120/1 WIRING FOR PUMP RUN REQUIRED STATUS (WIRED IN FIELD BY EC - SEE DESCRIPTION OF OPERATIONS)	YES
SUPPLY AND RETURN WATER TEMPERATURE SENSORS - FACTORY PROVIDED AND INSTALLED IN FIELD. WIRED TO UNIT BY C.C.	YES
HARDWIRED POINTS (SHOWN BELOW) - CHILLER PROVIDED WITH ALL POINTS BELOW (AT A MINIMUM)	-
CHW SUPPLY TEMP. SETPOINT (4-20mA OR 0-10 VDC)	WIRING BY CC
REMOTE CURRENT LIMIT SETPOINT (4-20mA OR 0-10 VDC)	WIRING BY CC
CIRCUIT A LOCKOUT INPUT	NO
CIRCUIT B LOCKOUT INPUT	NO
UNIT STOP/START	WIRING BY CC
EMERGENCY STOP	WIRING BY CC
GENERAL ALARM OUTPUT	WIRING BY CC
UNIT OPERATING INDICATION (STATUS)	WIRING BY CC
MAXIMUM UNIT CAPACITY INDICATOR	NO
LIMITED UNIT OPERATION INDICATOR	NO
BACNET OR LON INTERFACE	BACNET, WIRING BY CC
SPECIFICATIONS	
LISTED IN CERTIFICATION PROGRAM (ASHRAE SEC 1411.1)	NA
UL OR CSL RATING?	UL
LOW AMBIENT OPERATION	YES
UNIT HOUSEKEEPING PAD	BY OTHERS
NUMBER OF COMPRESSORS	2
TYPE OF COMPRESSOR	SCROLL
EVAP/COND MOTORIZED ISOLATION VALVE	BY MANUF.
EVAPORATOR FOULING FACTOR	0.0001
EVAPORATOR BUNDLE ASME RATED	YES
HOT GAS BYPASS	NO
SOUND PRESSURE WITH PANELS ALL MODULES OPERATING	(5) 60-TON MODULES
SOUND PRESSURE LEVEL (dB re 20 uPa) at 30 ft- NOTE 2	
63	72
125	62
250	70
500	65
1000	57
2000	59
4000	48
8000	40
A-WTG	64
PHYSICAL DIMENSIONS	
MAX LENGTH x WIDTH x HEIGHT	250" x 84" x 149"
SHIP WEIGHT (LBS)	39,225 LBS
OPERATING WEIGHT (LBS)	41,300 LBS
ISOLATION	SEE ISOLATION SCHED.
MISC. DATA	
FULL UNIT PARTS AND LABOR WARRANTY	2 YEAR
COMPRESSOR WARRANTY (PARTS)	5 YEAR
FREIGHT	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES
ELECTRONIC SUBMITTAL	YES
ELECTRONIC INSTALLATION MANUAL	YES
	-

REMARKS:

1: CONTROL PANEL POWER IS 120/1. ONE CONTROL PANEL SERVES ALL MODULES. CONTROL PANEL TO BE PROVIDED WITH STANDBY POWER (NEC 702)

2: AIR COOLED MACHINE WITH ULTRA QUIET FANS, DISCHARGE SILENCERS, COMPRESSOR WRAPS AND ACOUSTIC LOUVERS.

3: UNIT WEIGHT IS ESTIMATED DOES NOT INCLUDE CHILLER MODULES, STRUCTURAL STEEL, ACOUSTICAL OPTIONS, JUNCTION BOXES OR VFDS

4: MASK POWER CONNECTION PANELS SHALL BE PROVIDED WITH ADDITIONAL LENGTH OF WIRE AND RELOCATED IN FIELD SO THAT THEY ARE MOUNTED TO MEET NEC REQUIREMENTS, INCLUDING 6 FT MAX HEIGHT FOR TOP OF PANEL.

WATER TO WATER HEAT PUMP SCHEDULE

TAG #	WWHP-L1-1
QUANTITY	1
BASIS OF DESIGN	
MANUFACTURER	MULTISTACK
MODEL	MS040XC2N2H2
UNIT TYPE	WATER-TO-WATER HEAT PUMP
AREA SERVED	HW & CHW SYSTEM
UNIT LOCATION	BOILER ROOM
DESIGN PARAMETERS - COOLING	
COOLING CAPACITY (MBH)	400 MBH
LOAD SIDE - SYSTEM	CHW
LOAD SIDE - COOLING - EWT (F)	52 °F
LOAD SIDE - COOLING - LWT (F)	40°F
LOAD SIDE - COOLING - GPM	94 GPM
LOAD SIDE - COOLING - PD (FT WATER)	8.4 FT
LOAD SIDE - FLUID	25% P.G.
SOURCE SIDE - SYSTEM	HW
SOURCE SIDE - COOLING - EWT (F)	109 °F
SOURCE SIDE - COOLING - LWT (F)	120 °F
SOURCE SIDE - COOLING - GPM	56 GPM
SOURCE SIDE - COOLING - PD (FT WATER)	6.3 FT
SOURCE SIDE - FLUID	25% P.G.
ELECTRICAL DATA	
VOLTS/PHASE	460/3
RLA	31 AMPS
MCA	65 AMPS
MOP	80 AMPS
SCCR RATING (AMPS)	42,000 AIC
DISCONNECT	BY E.C.
CONTROLS DATA	
COMPRESSOR STAGES	2
BACNET INTERFACE	YES
FACTORY DDC CONTROLLER	YES
ENABLE/DISABLE VIA FACTORY DDC CONTROLLER FOR EACH STAGE	YES
ENABLE/DISABLE VIA FACTORY DDC CONTROLLER FOR EACH STAGE	BY CC
SPECIFICATIONS	
REFRIGERANT	R-410A
REFRIGERANT CHARGE	17 LBS
ARI CERTIFIED VS. RATED IN ACCORDANCE	RATED
TEST PROCEDURE	AHRI 550/590
CODE MIN. EER/COP (REMARK 1)	NONE
COOLING KW/TON	1.159
HEATING COP	3.0 COP
SOUND LEVEL (DBA)	-
CONCRETE MAINTENANCE PAD	YES
WATER SIDE ECONOMIZER	NO
HEAD PRESSURE CONTROL	YES
PHYSICAL DATA	
EQUIPMENT WEIGHT (LBS)	1425 LBS
LENGTH x WIDTH x HEIGHT (INCHES)	38"x56"x67"H
MISC DATA	
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	YES
FREIGHT	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES
ELECTRONIC SUBMITTAL	YES
ELECTRONIC INSTALLATION MANUAL	YES
-	-

REMARKS:

1: EQUIPMENT HAS NO MINIMUM PERFORMANCE RATING IN THE 2015 SEC.

CHILLED WATER FCU SCHEDULE

TAG #	FCU-L1-1
BASIS OF DESIGN	
MANUFACTURER	NAILOR
MODEL	39L2-8
NOMINAL TONNAGE	1.25
LOCATION	ELEC. ROOM 116
SERVICE	ELEC. ROOM 116
CONFIGURATION (HORIZ./VERT.)	VERTICAL
SUPPLY FAN INFORMATION	
SUPPLY FAN TYPE	
SUPPLY FAN CONFIG. (COOLING)	DRAW THROUGH
SUPPLY CFM	300
MINIMUM OUTSIDE AIR	0
MINIMUM OUTSIDE AIR FOR PRESSURE CONTROL	-
MINIMUM OUTSIDE AIR FOR CO2 CONTROL	-
SUPPLY T.S.P.	
SUPPLY E.S.P.	0.25
SUPPLY HP	1/3
SUPPLY VFD	NO
SUPPLY FAN CONTROL (FACTORY WIRED TO VFD)	NA
FAN RPM	
SUPPLY MOTOR EFFICIENCY (NOTE 2)	
QUANTITY OF SUPPLY FANS	1
COOLING INFORMATION	
COOLING TYPE	CHILLED WATER
COOLING COIL EAT (DB)	95
UNIT LAT (DB)	75
COOLING EWT	45
COOLING MBH TOTAL	15.5 MBH
COOLING MBH SENS	12.0 MBH
CHILLED WATER FLOW (GPM)	3 GPM
COIL PD (FT AT AHRI CONDITIONS)	-
UNIT EER	-
ELECTRICAL INFORMATION	
VOLTAGE/PHASE (SEE NOTE 2)	208/1
UNIT MCA	2.4
UNIT MOP	15.0
STARTER	FACTORY
DISCONNECT	BY E.C.
TOWER RELIEF ECONOMIZER	NA
UNIT REQUIRES NEUTRAL WIRE? (SEE NOTE 2)	NO
ECM MOTOR RATING	NA
POWER RELIEF MOTOR VOLTAGE/PHASE	-
EMERGENCY POWER	NO
STANDBY POWER	NO
FAN MOTOR(S) (YES/NO) BY	NO
SUPPLY SMOKE DETECTOR (NOTE 3)	NO
RETURN SMOKE DETECTOR (NOTE 1)	NA
UNIT MISC INFORMATION	
FACTORY ROOF CURB HEIGHT	NA
UNIT WEIGHT	82
OVERALL HEIGHT (INCLUDING SITE BUILT CURB)	-
OVERALL WIDTH	23
OVERALL LENGTH	21
TOTAL WEIGHT (INCL. SITE BUILT CURB)	208 LBS
FILTER	1"
ISOLATION	-
LOW AMBIENT OPERATION	NO
100% OA ECONOMIZER (FULLY MODULATING)	NO
CONDENSER WATER CONTROL VALVE TYPE	TWO-WAY
CONDENSER WATER CONTROL VALVE PROVIDED BY	FACTORY
CONDENSER WATER CONTROL VALVE CONTROL	BY UNIT
UNIT CONTROL TYPE	BMS
SPACE CO2 CONTROL	NO
SUPPLY/RELIEF MOTORIZED DAMPER	NO
FACTORY CURB	NA
CONDENSER WATER GLYCOL %	25%
DISCHARGE	UPFLOW
CONDENSATE (NOTE 4)	NOTE 4

NOTES:

1: UNIT TO MEET 2015 SMC SECTION 307.2.3 FOR AUXILIARY AND SECONDARY CONDENSATE DRAIN SYSTEMS.

MISC. MECHANICAL POWER CIRCUIT SCHEDULE

TAG#	ROOM	EQUIPMENT SERVED	SYSTEM SERVED	CIRCUIT LOCATION	HEAT TRACE WATTS/LF	PIPING LINEAL FOOTAGE	TOTAL WATTS	HARD WIRED OR WALL OUTLET	DISCONNECT	VOLTAGE/PHASE	AMPS	EMERGENCY POWER	STANDBY POWER	REMARKS
MPC-L1-1	GENERATOR	FUEL POLISHER	FUEL TANK	TBD	-	-	-	HARD WIRED	BY E.C.	120/1	15	NO	YES	1, 2, 3, 4
MPC-L1-2	OFFICE 114	BMS CONTROLS	BMS COMPUTER	OFFICE 114	-	-	-	WALL OUTLET	BY E.C.	120/1	15	NO	YES	1, 2, 3, 4, 5
MPC-L1-3	MECH ROOM 121	BMS FRONTEND	BMS COMPUTER	TBD	-	-	-	HARD WIRED	BY E.C.	120/1	15	NO	YES	1, 2, 3, 4
MPC-L1-4	MECH ROOM 118	BMS CONTROLS	MISC HVAC CONTROLS POWER	TBD	-	-	-	HARD WIRED	BY E.C.	120/1	15	NO	YES	1, 2, 3, 4
MPC-L1-5	MECH ROOM 204A	BMS CONTROLS	MISC HVAC CONTROLS POWER	TBD	-	-	-	HARD WIRED	BY E.C.	120/1	15	NO	YES	1, 2, 3, 4
MPC-L1-6	MECH ROOM 402	BMS CONTROLS	MISC HVAC CONTROLS POWER	TBD	-	-	-	HARD WIRED	BY E.C.	120/1	15	NO	YES	1, 2, 3, 4

1: DISCONNECT & WIRING BY E.C.
2: BMS CONTROL SYSTEM CIRCUIT LOCATIONS AND QUANTITIES TO BE VERIFIED AND RECOORDINATED AS REQUIRED BY CONTROLS CONTRACTOR.
3: E.C. TO PROVIDE CIRCUIT FOR BMS CONTROLLERS AND DEVICES. C.C. TO PROVIDE AND INSTALL 24V TRANSFORMER AS REQUIRED TO POWER THEIR CONTROL DEVICES.
4: C.C. TO PROVIDE SURGE SUPPRESSORS TO PROTECT CONTROL DEVICES AS SPECIFIED.
5: OWNER TO PROVIDE (1) ANALOG PHONE LINE OR NETWORK IP ADDRESS WITH WEB ACCESS FOR THE BMS SYSTEM IN THIS ROOM. C.C. TO PROVIDE SURGE SUPPRESSOR AND UNINTERRUPTIBLE POWER SUPPLY.

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MECHANICAL SCHEDULES - HEAT PUMPS

M018

MOTORIZED DAMPER SCHEDULE

TAG #	SYSTEM SERVED	EQUIPMENT SERVED	LOCATION	MAKE	MODEL	VELOCITY (HIGH/ LOW)	BLADE CONFIGURATION	DAMPER WIDTH (5)	DAMPER HEIGHT (5)	DUCT WIDTH	DUCT HEIGHT	DUCT SHAPE (4)	AIRFLOW (CFM)	RESULTANT VELOCITY (FPM)	PRESSURE DROP (IN.)	MOUNTING (VERT./ HORIZ.)	SLEEVE LENGTH	FAIL POSITION	END SWITCH?	VOLTAGE/PHASE	EMERGENCY POWER	STANDBY POWER	CONTROL BY	REMARKS
MD-L1-1	LEVEL 1 RELIEF	LEVEL 1 VAV	LEVEL 1	GREENHECK	VCD-23	LOW	OPPOSED BLADES	72	72	72	72	RE	-	-	0.01	VERTICAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-L1-2	LEVEL 1 RELIEF	LEVEL 1 VAV	LEVEL 1	GREENHECK	VCD-23	LOW	OPPOSED BLADES	72	72	72	72	RE	-	-	0.01	VERTICAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-L1-3	LEVEL 1 RELIEF	LEVEL 1 VAV	LEVEL 1	GREENHECK	VCD-23	LOW	OPPOSED BLADES	72	60	72	60	RE	-	-	0.01	VERTICAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-L1-4	PUMP ROOM INTAKE	FN-L1-03	LEVEL 1	GREENHECK	VCD-23	LOW	OPPOSED BLADES	10	8	10	8	RE	350	630	0.01	VERTICAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-L1-5	ELEC ROOM INTAKE	FN-L1-02	LEVEL 1	GREENHECK	VCD-23	LOW	OPPOSED BLADES	10	24	10	24	RE	750	450	0.01	VERTICAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-L1-6	ELEC ROOM EXHAUST	FN-L1-02	LEVEL 1	GREENHECK	VCD-23	LOW	OPPOSED BLADES	24	12	24	12	RE	750	375	0.01	VERTICAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-L1-7	ART SPACES RA	AHU-L1-1	LEVEL 1	GREENHECK	VCD-23	LOW	OPPOSED BLADES	60	42	60	42	RE	26150	1494	0.01	VERTICAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-L1-8	ART SPACES OA	AHU-L1-1	LEVEL 1	GREENHECK	VCD-23	LOW	OPPOSED BLADES	60	42	24	12	RE	26150	1494	0.01	VERTICAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-L1-9	MECH CENTRAL 121	FN-L1-4	LEVEL 1	GREENHECK	VCD-23	LOW	OPPOSED BLADES	6	6	6	6	RE	400	1600	0.01	HORIZONTAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-L2-1	LOCKER RELIEF	RN-L1-1	LEVEL 2	GREENHECK	VCD-23	LOW	OPPOSED BLADES	14	16	14	16	RE	1000	565	0.02	HORIZONTAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-L2-2	CONSERVATION EXHAUST	FN-L2-1	LEVEL 2	GREENHECK	VCD-23	LOW	OPPOSED BLADES	36	22	36	22	RE	2460	447	0.02	VERT. INTERNAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-AT-1	NORTH EXHIBIT SUPPLY	EF-03	ATTIC	GREENHECK	VCD-23	LOW	OPPOSED BLADES	36	12	36	12	RE	850	283	0.01	VERTICAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-AT-2	NORTH EXHIBIT SUPPLY	EF-03	ATTIC	GREENHECK	VCD-23	LOW	OPPOSED BLADES	36	12	36	12	RE	850	283	0.01	VERTICAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-AT-3	NORTH EXHIBIT SUPPLY	EF-03	ATTIC	GREENHECK	VCD-23	LOW	OPPOSED BLADES	36	12	38	12	RE	850	283	0.01	VERTICAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-AT-4	NORTH EXHIBIT SUPPLY	EF-05	ATTIC	GREENHECK	VCD-23	LOW	OPPOSED BLADES	36	12	36	12	RE	850	283	0.01	VERTICAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-AT-5	SOUTH EXHIBIT SUPPLY	EF-05	ATTIC	GREENHECK	VCD-23	LOW	OPPOSED BLADES	36	12	36	12	RE	850	283	0.01	VERTICAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-AT-6	SOUTH EXHIBIT SUPPLY	EF-05	ATTIC	GREENHECK	VCD-23	LOW	OPPOSED BLADES	36	12	36	12	RE	850	283	0.01	VERTICAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-AT-7	SOUTH EXHIBIT SUPPLY	EF-05	ATTIC	GREENHECK	VCD-23	LOW	OPPOSED BLADES	36	12	36	12	RE	850	283	0.01	VERTICAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-AT-8	SOUTH EXHIBIT SUPPLY	EF-05	ATTIC	GREENHECK	VCD-23	LOW	OPPOSED BLADES	36	12	36	12	RE	850	283	0.01	VERTICAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-AT-9	GARDEN COURT RELIEF	EF-06	ATTIC	GREENHECK	VCD-23	LOW	OPPOSED BLADES	24	58	24	58	RE	2400	372	0.01	VERTICAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-R-1	NORTH ATTIC RELIEF	EF-05	ROOF	GREENHECK	VCD-23	LOW	OPPOSED BLADES	96	48	96	48	RE	3300	103	0.01	HORIZONTAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-R-2	SOUTH ATTIC RELIEF	EF-05	ROOF	GREENHECK	VCD-23	LOW	OPPOSED BLADES	96	48	96	48	RE	3300	103	0.01	HORIZONTAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-R-3	AHU-L1-1 RELIEF	FN-R-1	ROOF	GREENHECK	VCD-23	LOW	OPPOSED BLADES	48	48	48	48	RE	19150	1197	0.01	HORIZONTAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-R-4	SOUTH EXHAUST	FN-L1-7, FN-L1-8, CX-3	ROOF	GREENHECK	VCD-23	LOW	OPPOSED BLADES	16	24	16	24	RE	1530	574	0.01	HORIZONTAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6
MD-R-5	EVENT EXHAUST	FN-R-2	ROOF	GREENHECK	VCD-23	LOW	OPPOSED BLADES	24	24	24	24	RE	5280	1320	0.01	HORIZONTAL	BY MC	CLOSE	BY MC	24/1	NO	YES	MC	1-6

REMARKS:
1. MOTORIZED DAMPER TO BE OPENED WHENEVER ASSOCIATED EQUIPMENT IS ENABLED AND OPERATING
2. 120/1 POWER TO BE PROVIDED BY E.C. (EITHER DIRECTLY TO THE DAMPER OR TO THE CONTROL SYSTEM 24V TRANSFORMER)
3. DAMPER TO BE PROVIDED WITH END SWITCH BY M.C. DAMPER AND ASSOCIATED EQUIPMENT SHALL BE INTERLOCKED VIA A HARDWIRE SWITCH. SEE DESCRIPTION OF OPERATIONS FOR MORE INFORMATION.
4. RO=ROUND; RE=RECTANGULAR, OR FO=FLAT OVAL
5. APPROXIMATE DAMPER SIZE SHOWN. MC TO VERIFY ACTUAL SIZE PRIOR TO ORDERING DAMPER.
6. PARTS & LABOR WARRANTY FOR 1 YEAR FROM SUBSTANTIAL COMPLETION. FREIGHT FOR JOBSITE. SHIPPING INSTRUCTIONS - SHRINK WRAP AND COVER ALL OPENINGS. PROVIDE ELECTRONIC SUBMITTALS AND INSTALL/O&M MANUALS.

COMBINATION FIRE/SMOKE DAMPER SCHEDULE

TAG#	QTY.	SYSTEM SERVED	EQUIPMENT SERVED	LOCATION	MAKE	MODEL	VELOCITY (3) (HIGH/LOW)	STYLE (4) (EFL/SCO)	FUSIBLE LINK TEMP (°F)	DUCT WIDTH	DUCT HEIGHT	DUCT SHAPE (12)	AIRFLOW (CFM)	RESULTANT VELOCITY (FPM)	MOUNTING (VERT./HORIZ.)	SLEEVE LENGTH	ACTUATOR QUANTITY	FAIL POSITION	END SWITCH	VOLTAGE/PHASE	EMERGENCY POWER	REMARKS
FSD-L1-1	1	EAST ENTRY SUPPLY AIR	VAV-L1-10	FIRST FLOOR	GREENHECK	FSD-212	LOW	EFL	165 °F	12	12	RE	460	460	VERTICAL	16"	TBD	CLOSED	YES, BMS	120/1	NO	1 TO 14
FSD-L1-2	1	EAST ENTRY RETURN AIR	AHU-L5-1	FIRST FLOOR	GREENHECK	FSD-212	LOW	EFL	165 °F	24	12	RE	460	230	VERTICAL	16"	TBD	CLOSED	YES, BMS	120/1	NO	1 TO 14
FSD-L1-3	1	AHU OUTSIDE AIR	AHU-L1-1, 2, 3	FIRST FLOOR	GREENHECK	FSD-212	HIGH	EFL	165 °F	98	120	RE	77105	1157	VERTICAL	16"	TBD	CLOSED	YES, BMS	120/1	NO	1 TO 14

REMARKS:
1. ALL SMOKE DETECTION AND DAMPER WIRING BY E.C. AND FIRE LIFE SAFETY CONTRACTOR
2. SMOKE DETECTOR BY ELECTRICAL CONTRACTOR (SEE COORDINATION NOTES BELOW)
   DESIGN OF SMOKE DETECTION SYSTEM IS BY E.C. ALL SMOKE DETECTORS PROVIDED BY E.C. INSTALLATION OF DUCT DETECTORS IS BY E.C. UNDER SUPERVISION OF M.C.
   ALL WIRING AND FIRE LIFE SAFETY INTERLOCKS ARE BY E.C.
   SMOKE DETECTORS SHALL BE INSTALLED PER ALL APPLICABLE CODE REQUIREMENTS INCLUDING BUT NOT LIMITED TO THE REQUIREMENTS OF THE FOLLOWING -
   UBC AND IMC CODE SECTIONS: UBC 716, UBC 403.3, IMC 607.
3. LOW VELOCITY: UP TO 1000 FPM; HI VELOCITY: GREATER THAN 1000 FPM.
4. SCO: SMOKE CONTROL OVERRIDE FOR USE WITH SMOKE MANAGEMENT SYSTEMS ONLY. FOR ALL OTHER APPLICATIONS USE EFL, ELECTRONIC FUSIBLE LINK.
   ALL ACTUATORS TO BE 120V/1.
5. REFER TO MFR'S LISTED INSTALLATION INSTRUCTIONS FOR MAXIMUM SINGLE AND MULTIPLE SECTION DIMENSIONS TO MAINTAIN CLASS II LEAKAGE RATING.
   FOR ROUND AND FLAT OVAL DUCT, DAMPER TO BE 2" LARGER THAN CONNECTING DUCT SIZE OVERALL.
6. SLEEVE TO BE GALVANIZED SHEET METAL, 16 GAGE. BREAKAWAY CONNECTION NOT REQUIRED UP TO 36" WIDE X 24" HIGH.
7. QUALIFICATIONS:
   UL555 CLASSIFICATION AND LABELING AS A 1-1/2 HR FIRE DAMPER
   UL555 LEAKAGE RATED (SMOKE) DAMPER CLASSIFICATION AND LABLE LEAKAGE CLASS II
8. DUCT ACCESS PANELS SHALL BE PROVIDED AT EACH FSD AND LOCATED SUCH THAT UL LABEL IS VISIBLE FOR INSPECTION, PER UMC 713 10, 713.11, & UL555.
9. SUBMITTAL TO INCLUDE ACTUATOR MODELS AND AMPS, WIRING DIAGRAMS, & SIZE RANGE.
10. ACCEPTABLE MAKES AND MODELS:
    LOW VELOCITY: RUSKIN M/N FSD60 OR GREENHECK M/N FSD-212 OR M/N OFSD-212 OR APPROVED EQUAL
    HIGH VELOCITY: RUSKIN M/N FSD60 OR GREENHECK M/N FSD-212 OR APPROVED EQUAL
11. OPTIONS TO INCLUDE 1-1/2" MOUNTING ANGLES BOTH SIDES.
12. RO=ROUND, RE=RECTANGULAR, OR FO=FLAT OVAL.
13. APPROXIMATE DAMPER SIZE SHOWN. MC TO VERIFY ACTUAL SIZE PRIOR TO ORDERING DAMPER.
14. PARTS & LABOR WARRANTY FOR 1 YEAR FROM SUBSTANTIAL COMPLETION. FREIGHT FOR JOBSITE. SHIPPING INSTRUCTIONS - SHRINK WRAP AND COVER ALL OPENINGS. PROVIDE ELECTRONIC SUBMITTALS AND INSTALL/O&M MANUALS.

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MECHANICAL SCHEDULES - MOTORIZED DAMPERS

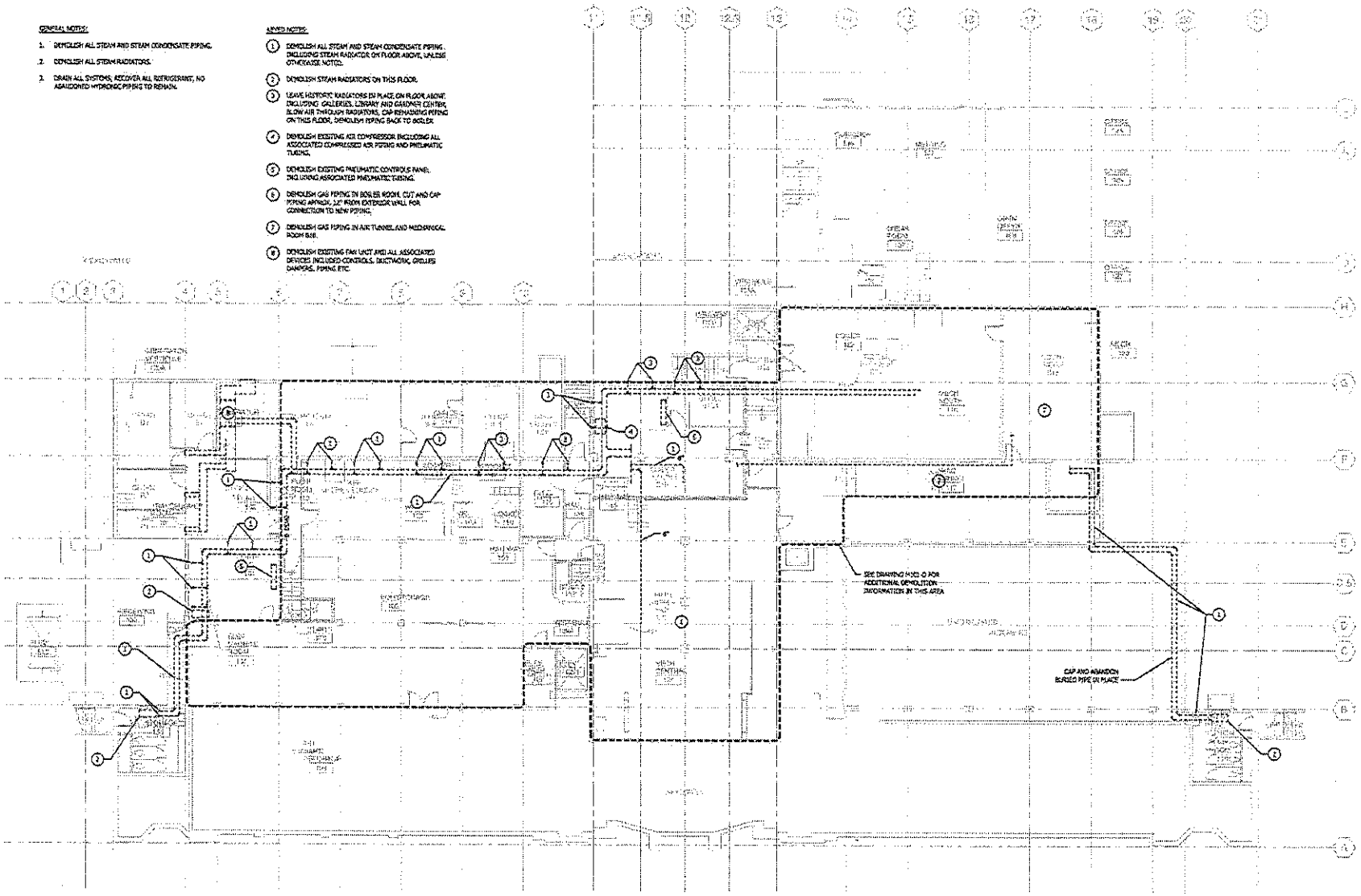
M019

GENERAL NOTES:

1. DEMOLISH ALL STEAM AND STEAM CONDENSATE PIPING.
2. DEMOLISH ALL STEAM RADIATORS.
3. DRAIN ALL SYSTEMS, RECOVER ALL REFRIGERANT, NO ABANDONED HYDRONIC PIPING TO REMAIN.

KEYED NOTES:

1. DEMOLISH ALL STEAM AND STEAM CONDENSATE PIPING, INCLUDING STEAM RADIATOR ON FLOOR ABOVE, UNLESS OTHERWISE NOTED.
2. DEMOLISH STEAM RADIATORS ON THIS FLOOR.
3. LEAVE HISTORIC RADIATORS IN PLACE ON FLOOR ABOVE, INCLUDING GALLERIES, LIBRARY AND GARDNER CENTER, BLOW AIR THROUGH RADIATORS, CAP REMAINING PIPING ON THIS FLOOR, DEMOLISH PIPING BACK TO BOILER.
4. DEMOLISH EXISTING AIR COMPRESSOR INCLUDING ALL ASSOCIATED COMPRESSED AIR PIPING AND PNEUMATIC TUBING.
5. DEMOLISH EXISTING PNEUMATIC CONTROLS PANEL INCLUDING ASSOCIATED PNEUMATIC PIPING.
6. DEMOLISH GAS PIPING IN BOILER ROOM, CUT AND CAP PIPING APPROX. 12" FROM EXTERIOR WALL FOR CONNECTION TO NEW PIPING.
7. DEMOLISH GAS PIPING IN AIR TUNNEL AND MECHANICAL ROOM B36.
8. DEMOLISH EXISTING FAN UNIT AND ALL ASSOCIATED DEVICES INCLUDED CONTROLS, DUCTWORK, GRILLES DAMPERS, PIPING ETC.



1 HVAC DEMO PLAN - LEVEL 1
1/8" = 1'-0"

TRUE NORTH PLAN NORTH

0' 4' 8' 16' 32'

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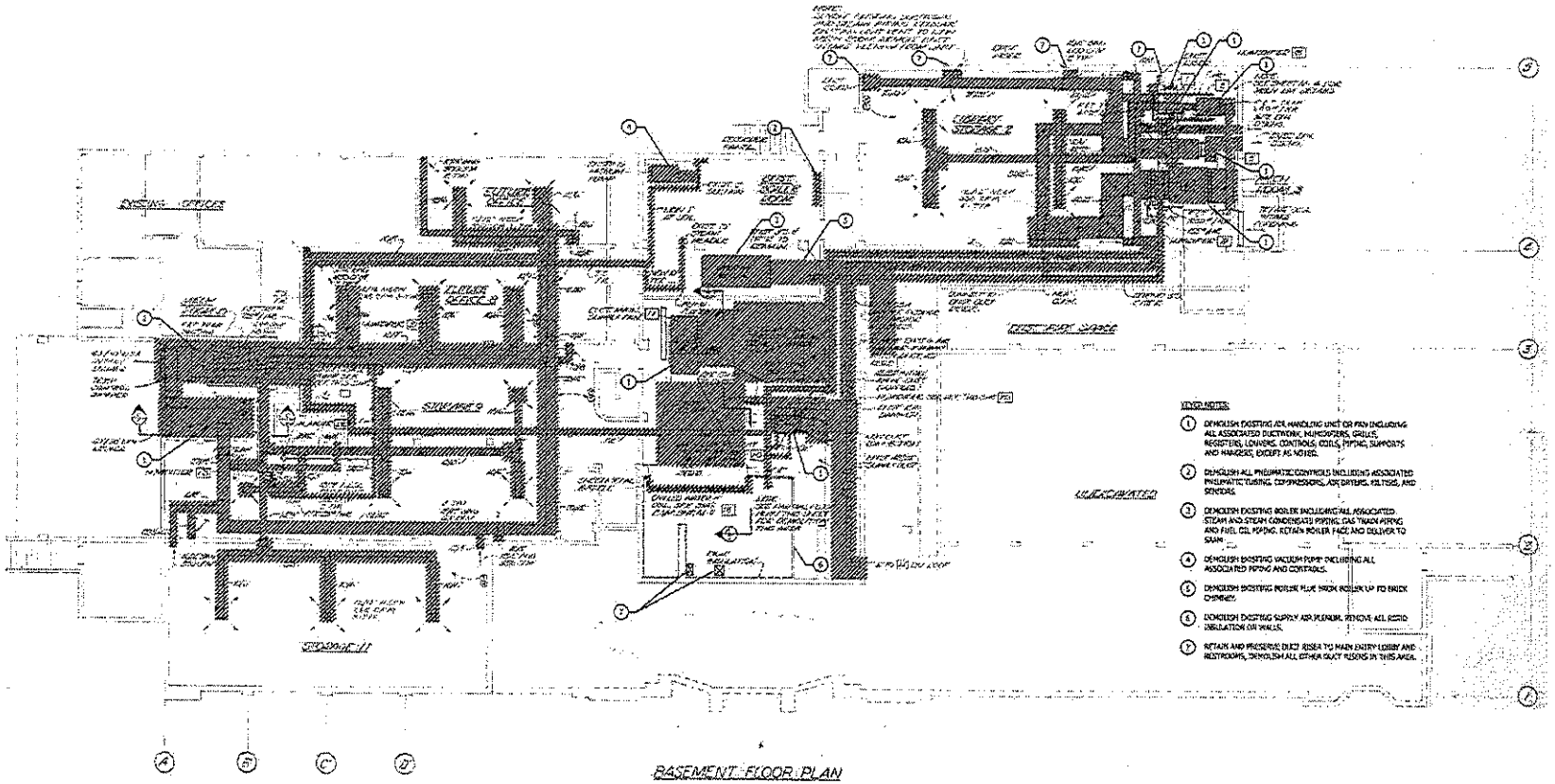
Drawn: DV, DG
Checked: J-LPCH
Date: 8/24/17

HVAC DEMO PLAN - LEVEL 1

M101-A


KEYNOTES:
1 DEMOLISH EXISTING AIR HANDLING UNIT OR FAN INCLUDING ALL ASSOCIATED DUCTWORK, MANIFOLDS, GRILLS, REGISTERS, LOUVERS, CONTROLS, COILS, PIPING, SUPPORTS AND HANGERS, EXCEPT AS NOTED.
2 DEMOLISH ALL PNEUMATIC CONTROLS INCLUDING ASSOCIATED PNEUMATIC TUBING, COMPRESSORS, AIR DRYERS, FILTERS, AND SENSORS.
3 DEMOLISH EXISTING BOILER INCLUDING ALL ASSOCIATED STEAM AND STEAM CONDENSATE PIPING, GAS TRAIN PIPING AND FUEL OIL PIPING. RETAIN BOILER FACE AND DELIVER TO SAAM.
4 DEMOLISH EXISTING VACUUM PUMP INCLUDING ALL ASSOCIATED PIPING AND CONTROLS.
5 DEMOLISH EXISTING BOILER FLUE FROM BOILER UP TO BRICK CHIMNEY.
6 DEMOLISH EXISTING SUPPLY AIR PLENUM. REMOVE ALL RIGID INSULATION ON WALLS.
7 RETAIN AND PRESERVE DUCT RISER TO MAIN ENTRY LOBBY AND RESTROOMS. DEMOLISH ALL OTHER DUCT RISERS IN THIS AREA.
EXISTING OFFICES
EXISTING STORAGE
EXISTING STORAGE 2
EXISTING STORAGE 3
EXISTING STORAGE 4
EXISTING STORAGE 5
EXISTING STORAGE 6
EXISTING STORAGE 7
EXISTING STORAGE 8
EXISTING STORAGE 9
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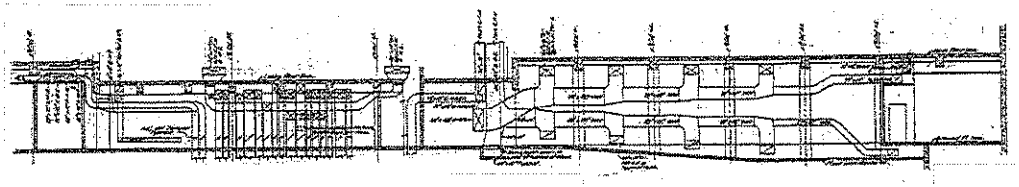
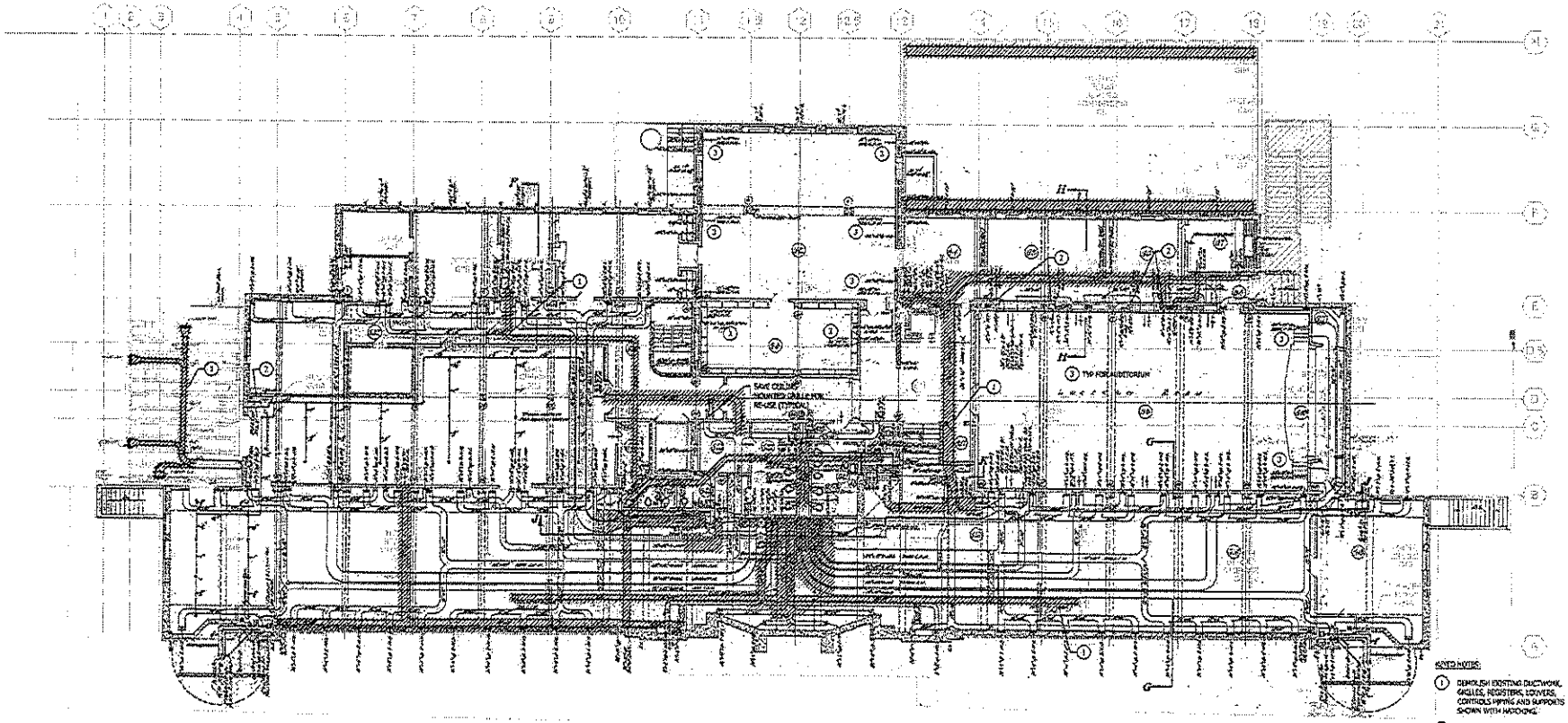
EXISTING STORAGE 12
EXISTING STORAGE 13
EXISTING STORAGE 14
EXISTING STORAGE



SECTION J-J



KEYED NOTES:

1. DEMOLISH EXISTING DUCTWORK, GRILLES, REGISTERS, LOUVERS, CONTROLS PIPING AND SUPPORTS SHOWN WITH HATCHING.
2. RETAIN EXISTING GRILLE FOR REUSE IN GARDENER CENTER.
3. RETAIN EXISTING GRILLE AND REUSE AS REQUIRED TO MAINTAIN WALL CONSTRUCTION REQUIREMENTS OF OTHER TRADES.

1 HVAC DEMO PLAN - LEVEL 2

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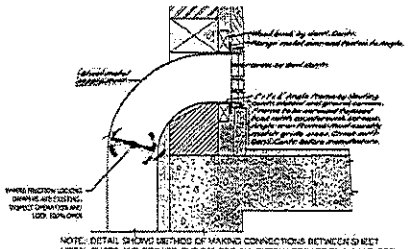
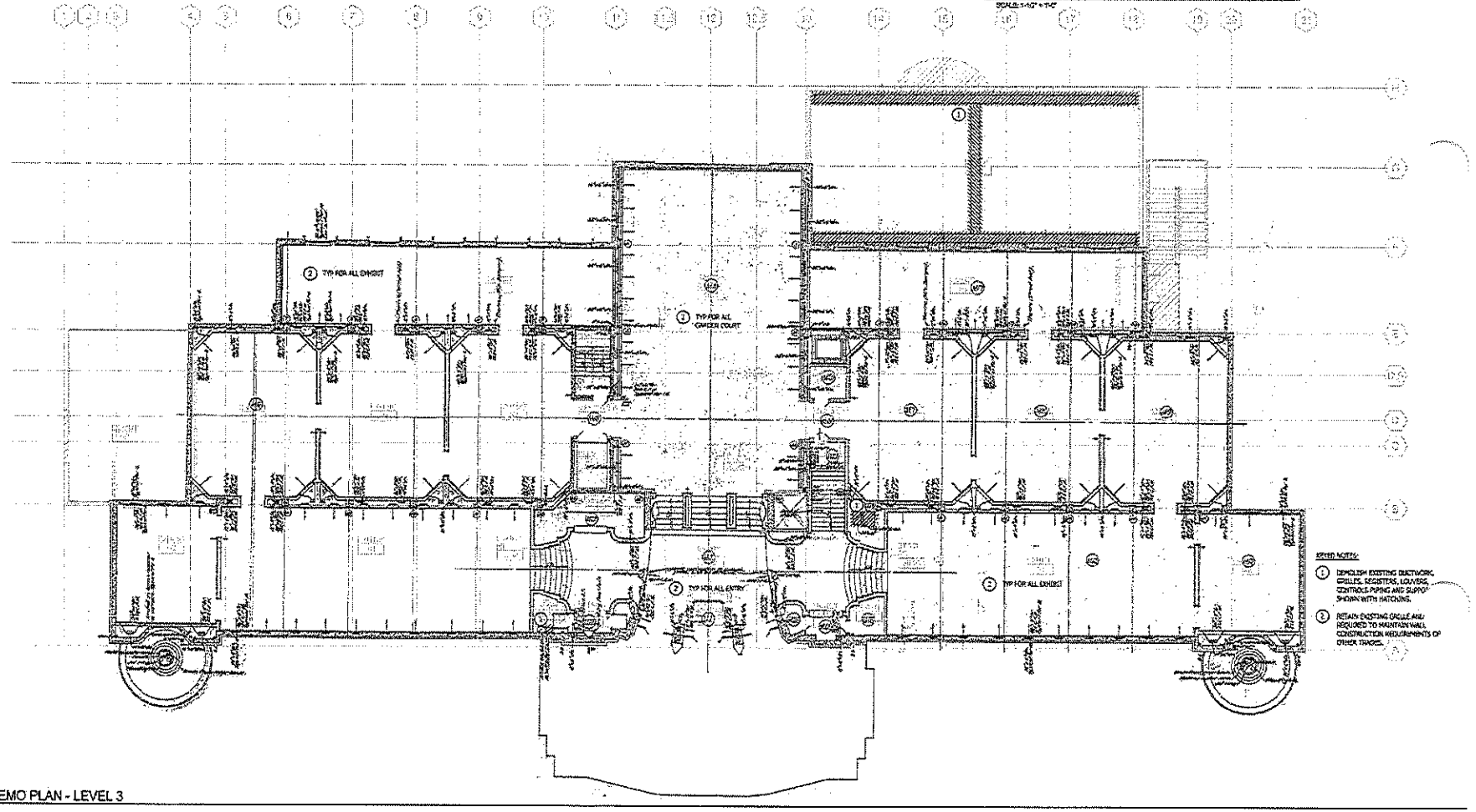
HVAC DEMO PLAN - LEVEL 2

M102



NOTE: DETAIL SHOWS METHOD OF MAKING CONNECTIONS BETWEEN SHEET METAL DUCTS AND GRILLES. TYPICAL FOR ALL SUPPLY GRILLES ON MAIN FLOOR.

SECTION THRU TYPICAL SUPPLY GRILL AT BASE



KEYED NOTES:

1. DEMOLISH EXISTING DUCTWORK, GRILLES, REGISTERS, LOUVERS, CONTROLS PIPING AND SUPPORT SHOWN WITH HATCHING.
2. RETAIN EXISTING GRILLE AND REQUIRED TO MAINTAIN WALL CONSTRUCTION REQUIREMENTS OF OTHER TRADES.

HVAC DEMO PLAN - LEVEL 3

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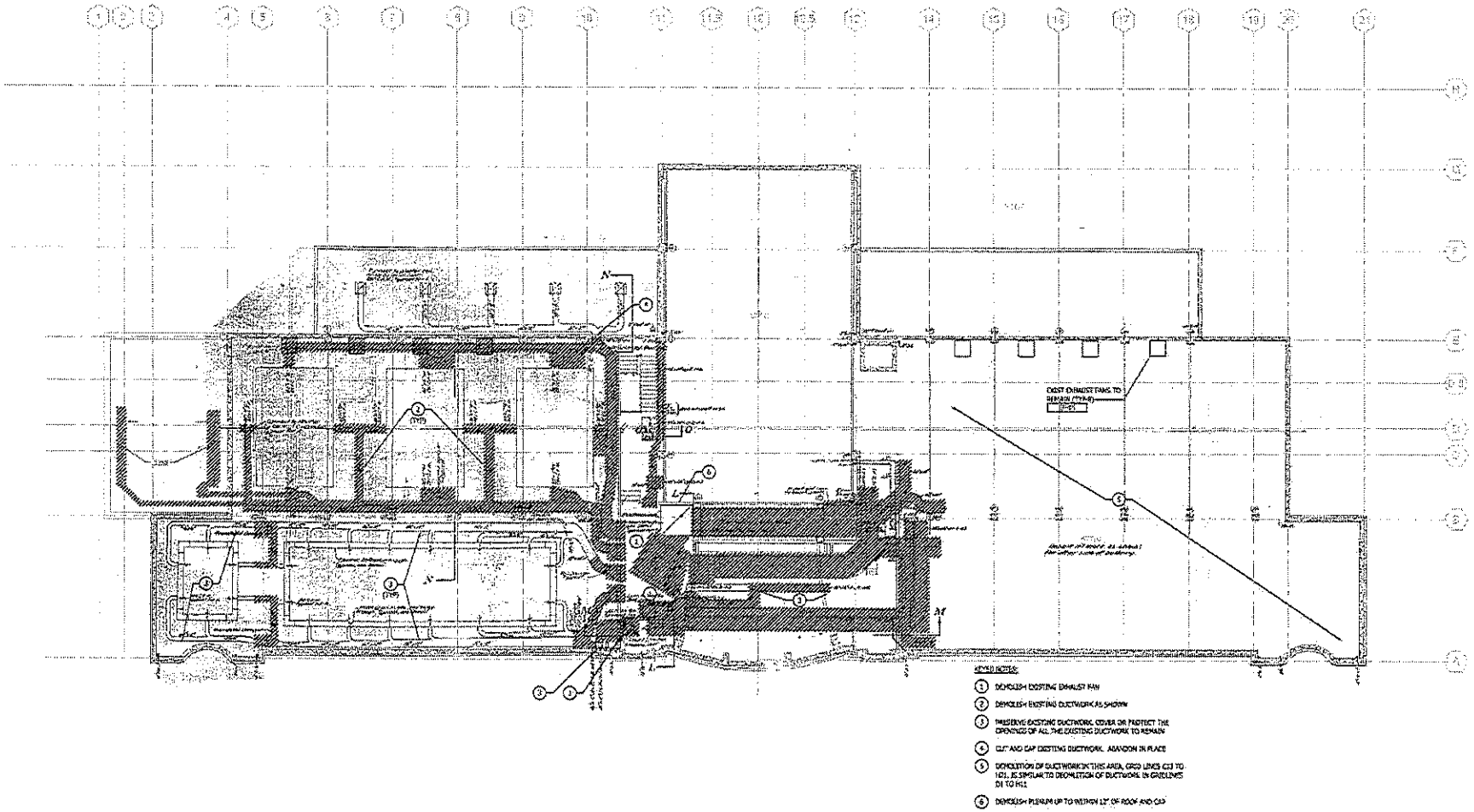
HVAC DEMO PLAN - LEVEL 3

M103



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1/8" = 1'-0"

TRUE NORTH PLAN NORTH

0' 4' 8' 16' 32'

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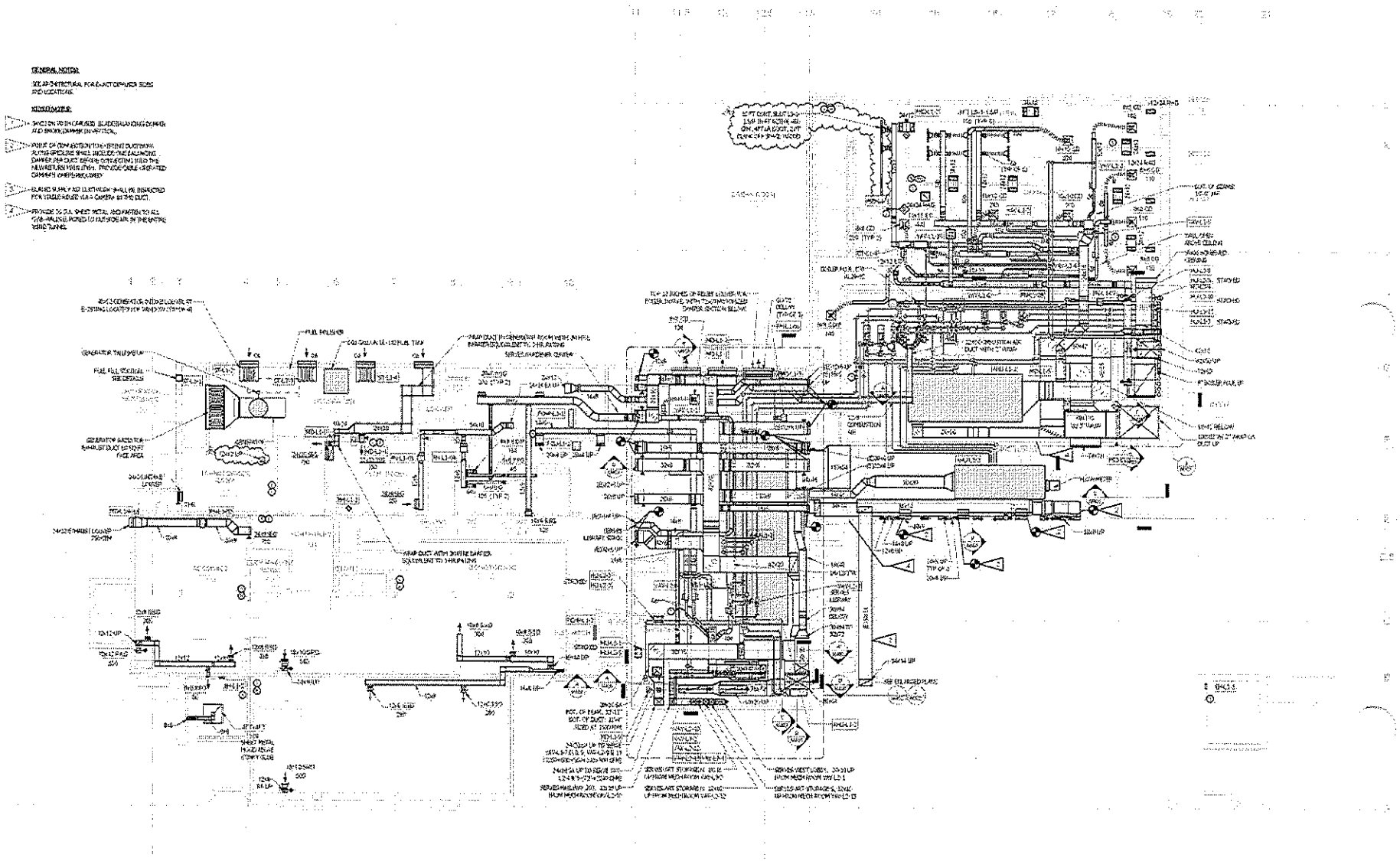
HVAC DEMO PLAN - ATTIC

M104



HVAC PLAN - LEVEL 1

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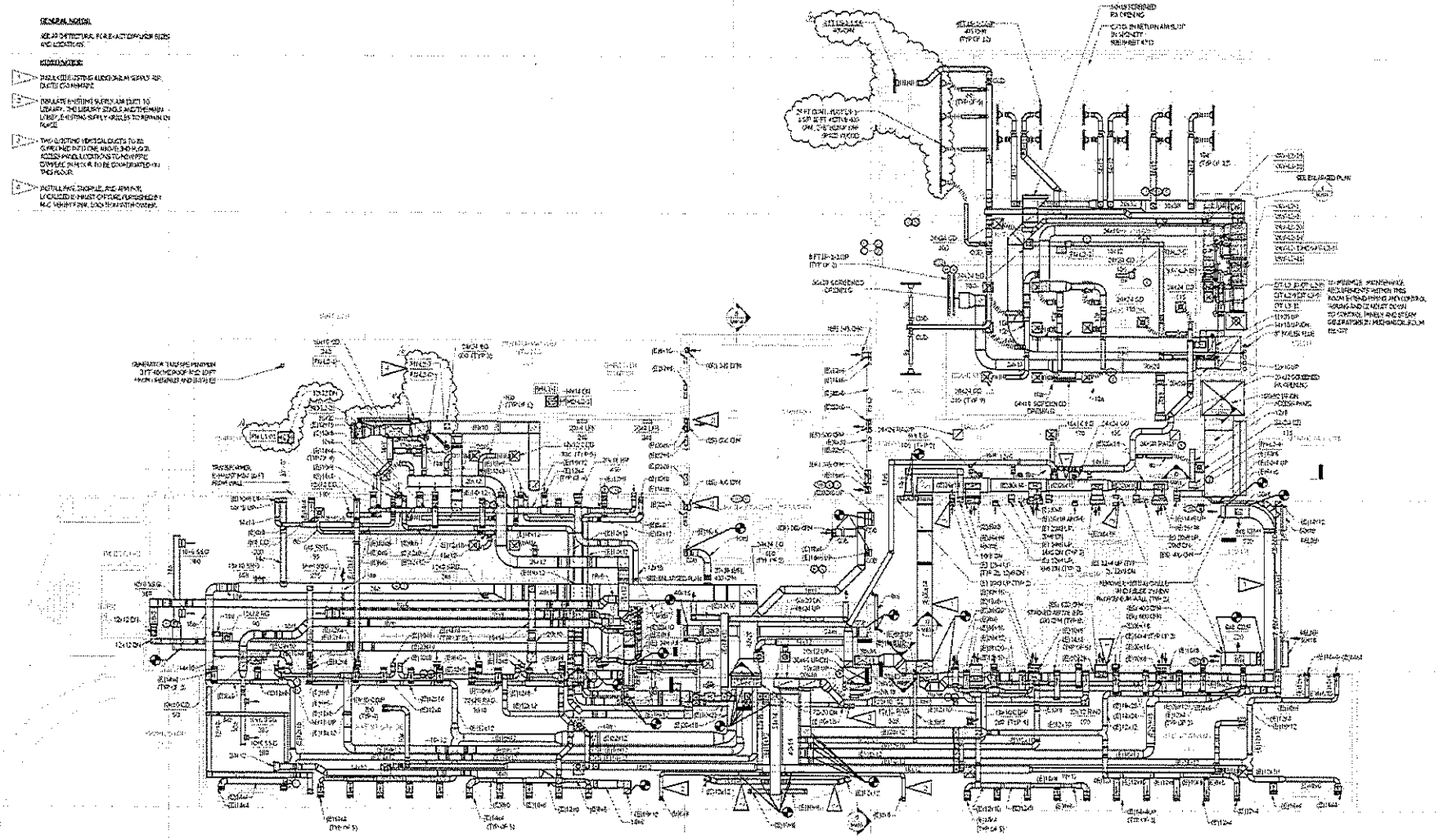
HVAC PLAN - LEVEL 1

M201



HVAC PLAN - LEVEL 2

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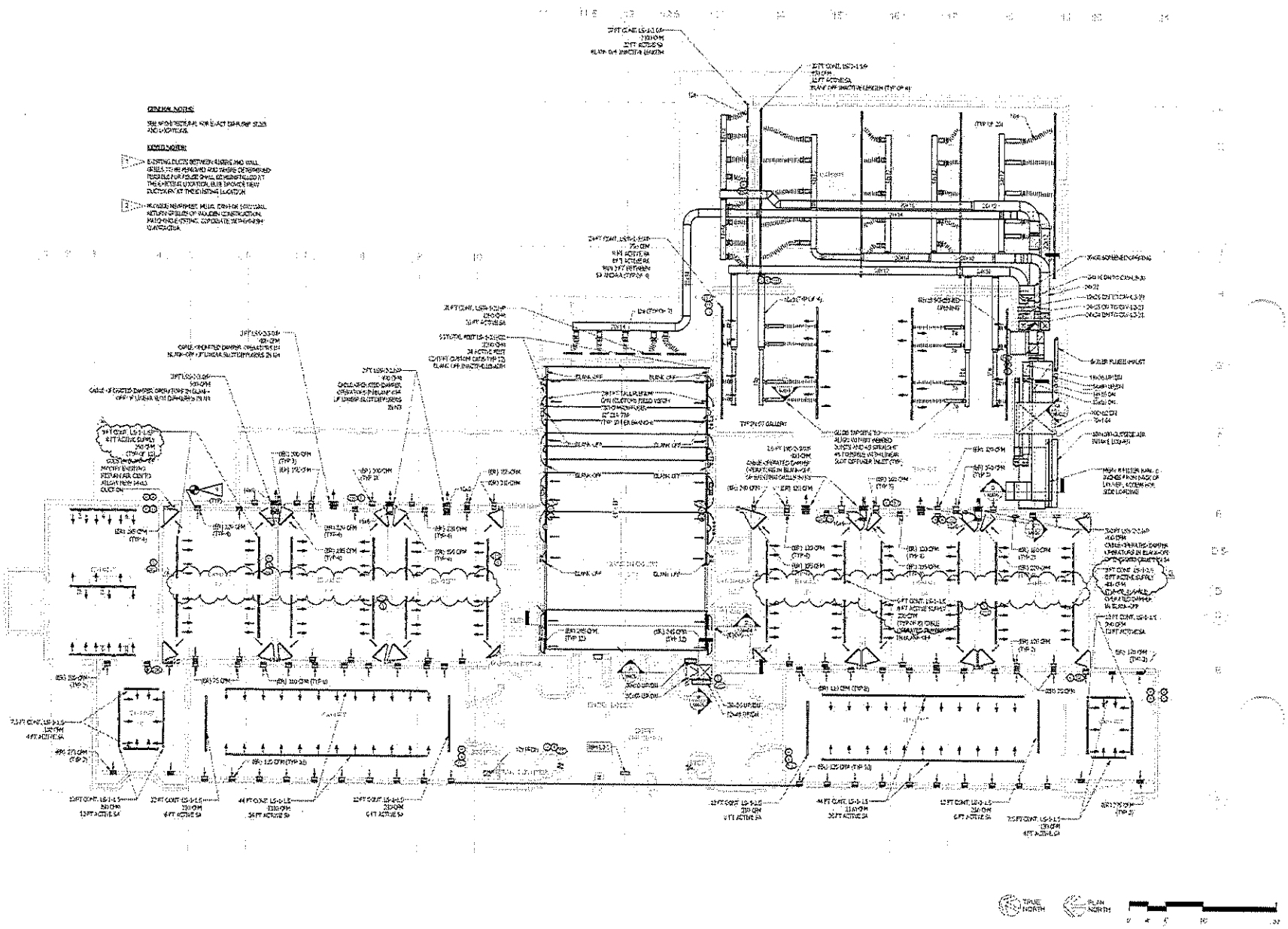
HVAC PLAN - LEVEL 2

M202



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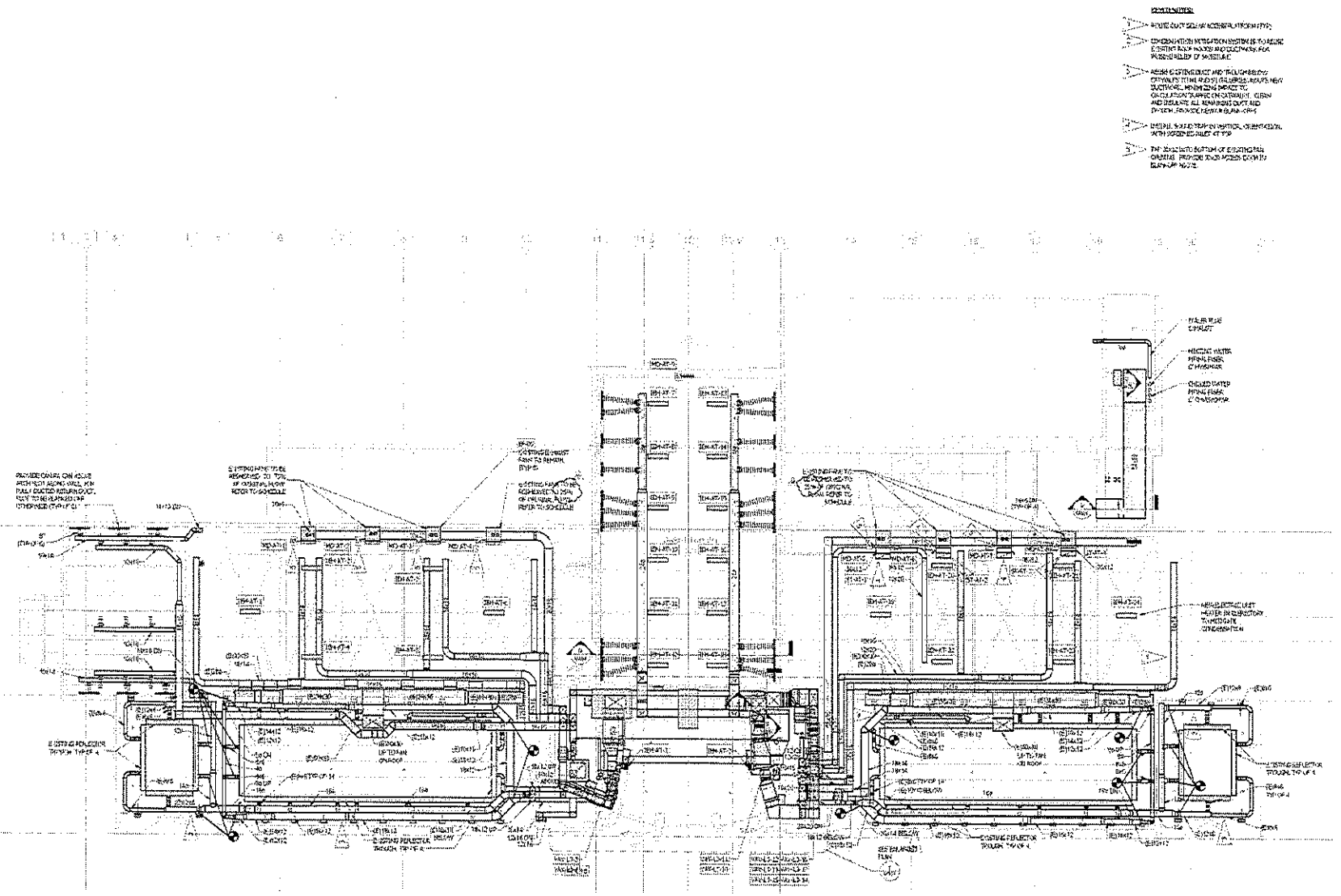
HVAC PLAN - LEVEL 3

M203



HVAC PLAN - ATTIC

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SEATTLE WA 98109
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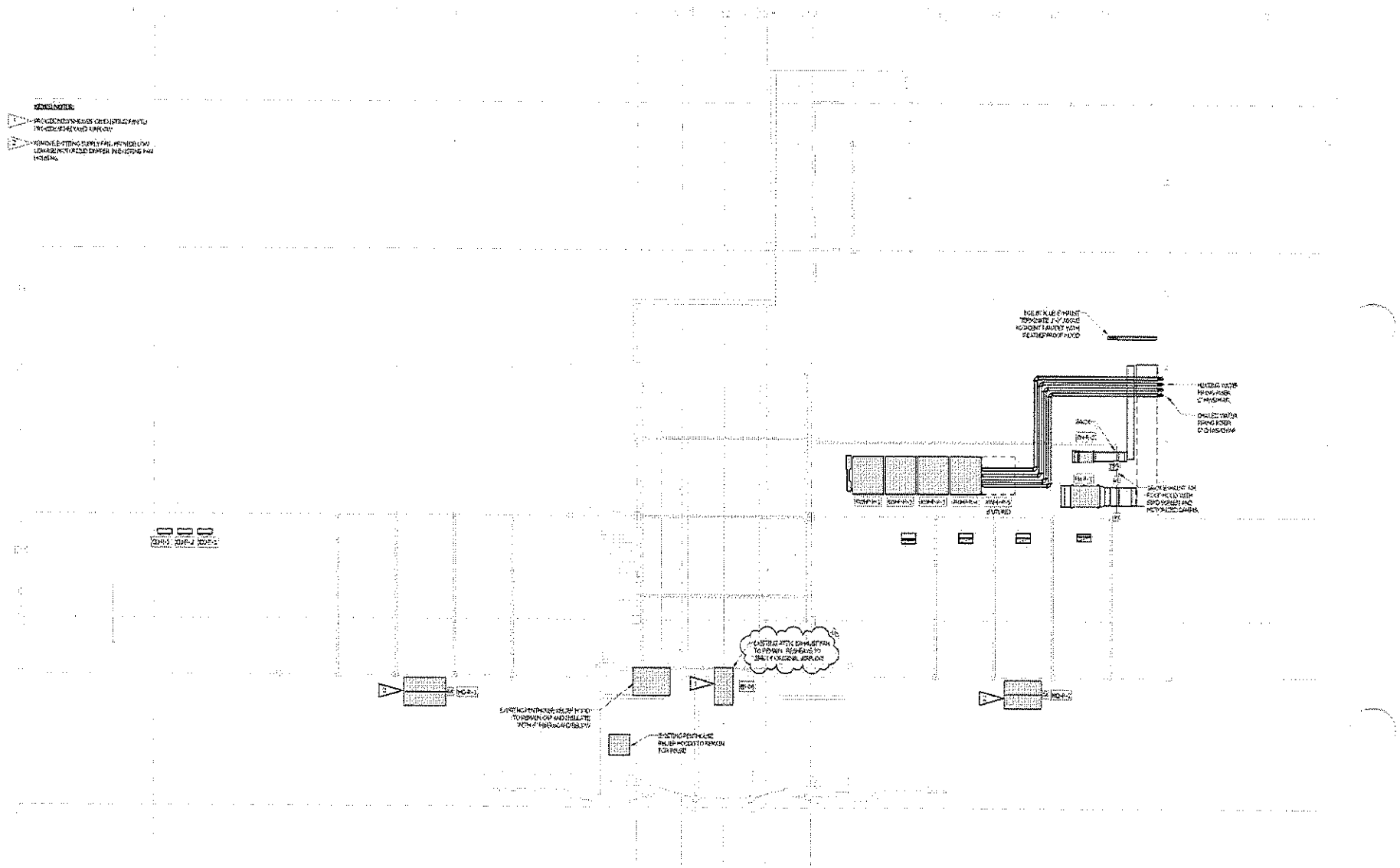
HVAC PLAN - ATTIC

M204



HVAC PLAN - ROOF

TRUE NORTH

PLAN NORTH

0 4' 8' 16' 32'

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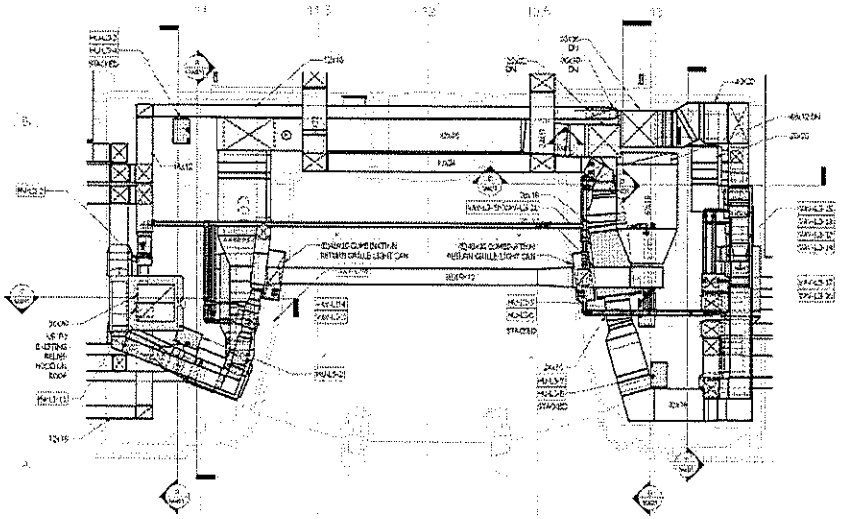
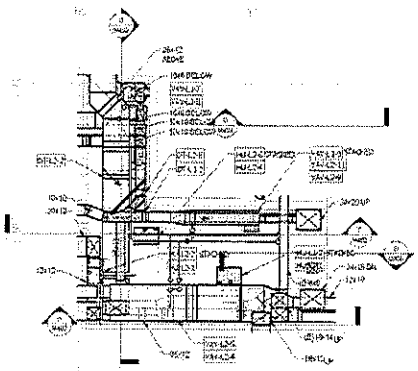
HVAC PLAN - ROOF

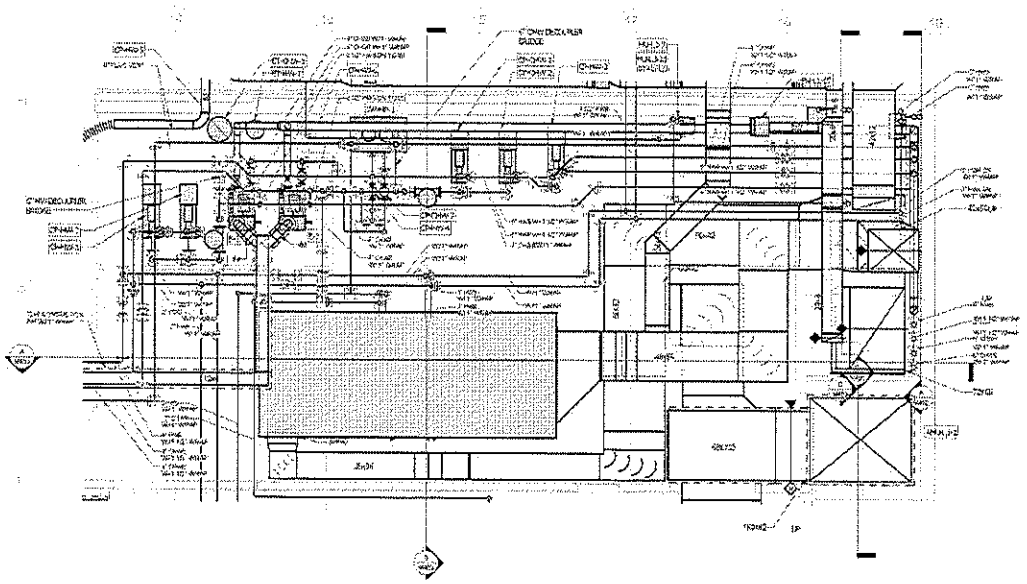
M205



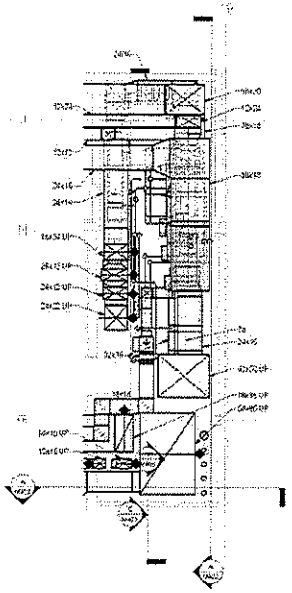
1 ENLARGED HVAC PLAN RM 402/403



2 ENLARGED HVAC PLAN RM 209A



3 ENLARGED HVAC PLAN RM 118



4 ENLARGED HVAC PLAN RM 226A

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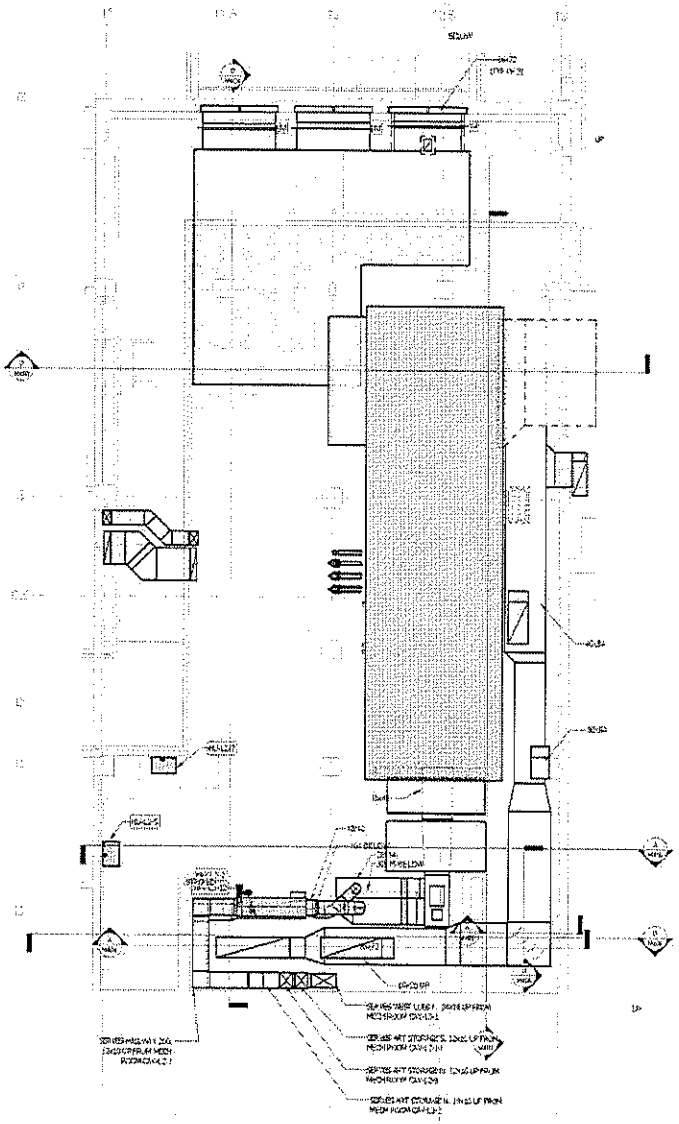
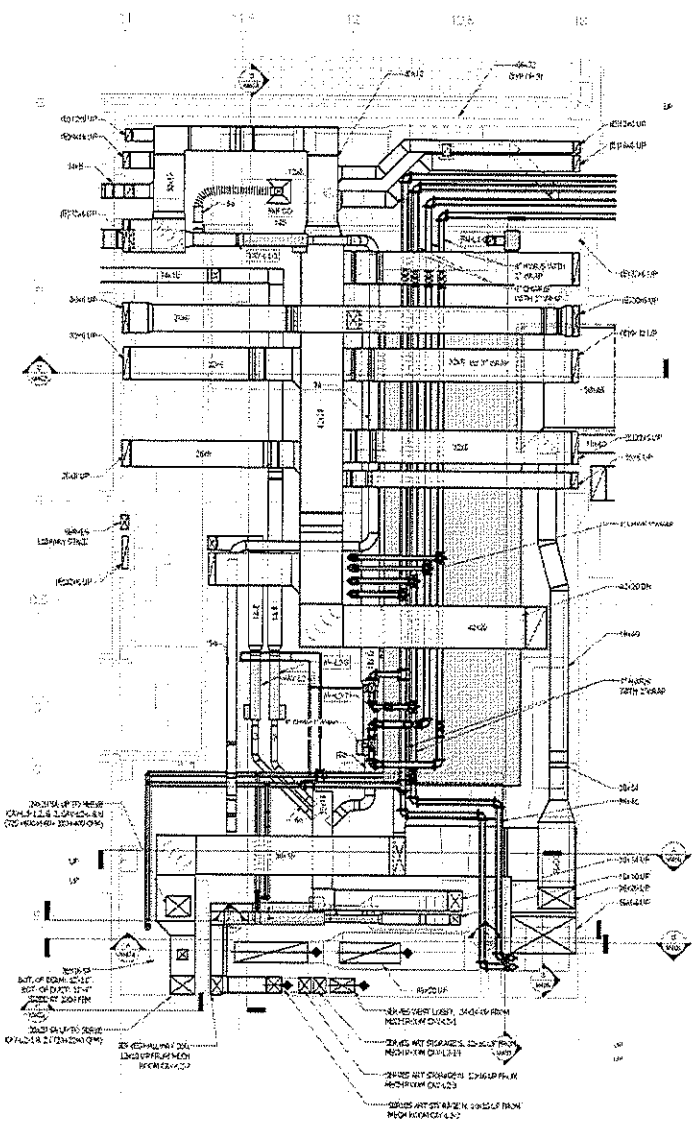
ENLARGED HVAC PLANS

M301



ENLARGED HVAC PLAN - LEVEL 1 CENTRAL MECHANICAL ROOM - LOWER



ENLARGED HVAC PLAN - LEVEL 1 CENTRAL MECHANICAL ROOM - UPPER

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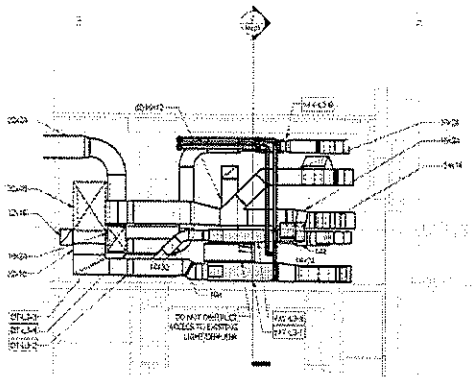
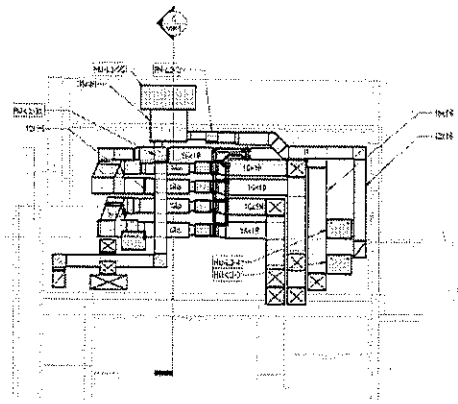
ENLARGED MECHANICAL ROOMS

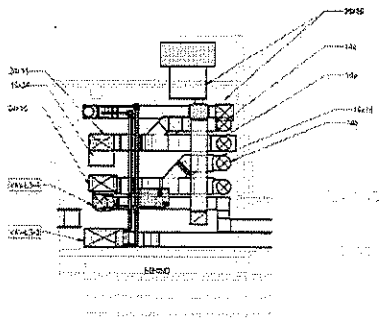
M302



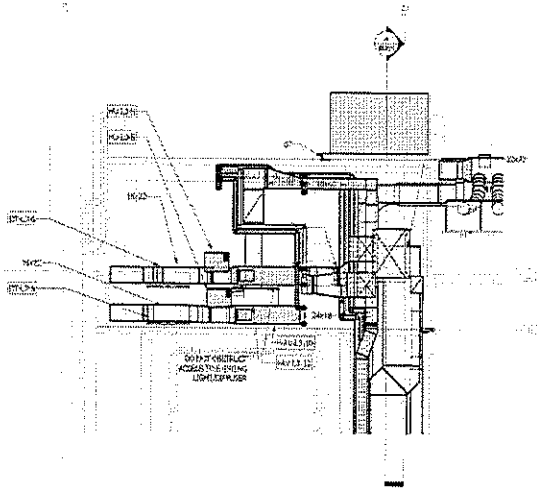
HVAC SECTION - ATTIC MECHANICAL ROOM 402 - SOUTH



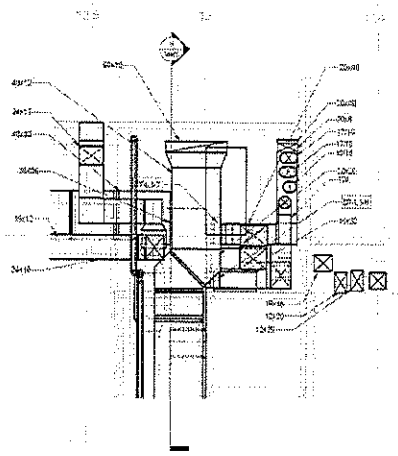
HVAC SECTION - ATTIC MECHANICAL ROOM 402 - NORTH



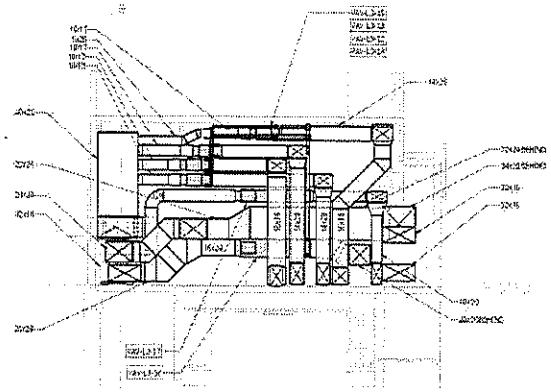
HVAC SECTION - ATTIC MECHANICAL ROOM 402 - WEST



HVAC SECTION - ATTIC MECHANICAL ROOM 403 - NORTH



HVAC SECTION - ATTIC MECHANICAL ROOM 403 - EAST



HVAC SECTION - ATTIC MECHANICAL ROOM 403 - SOUTH

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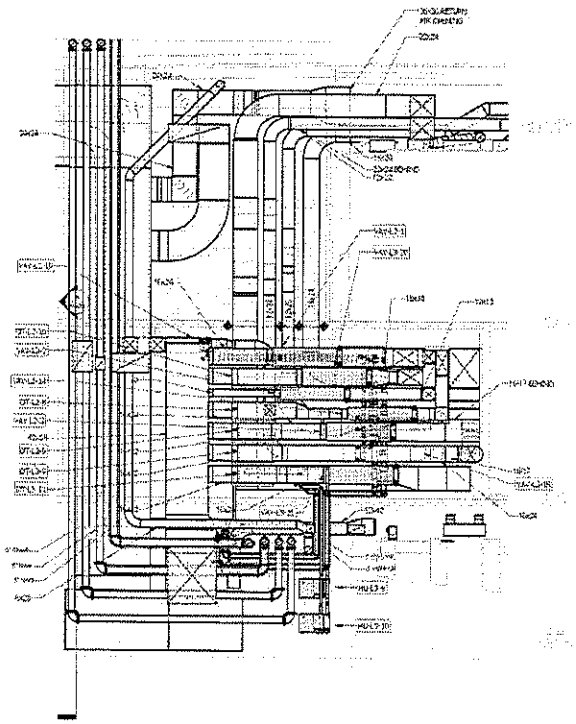
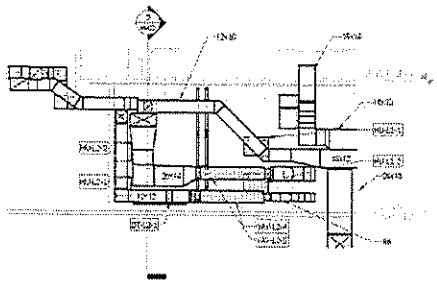
HVAC SECTIONS

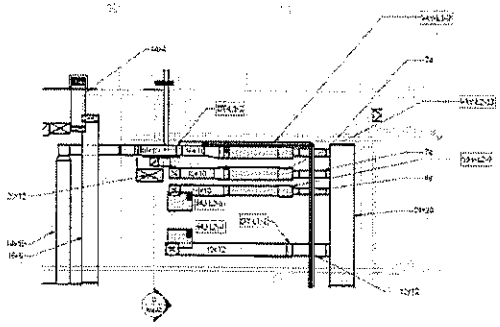
M401



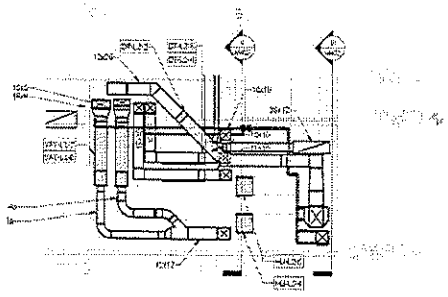
HVAC SECTION - MECHANICAL ROOM 226A



HVAC SECTION - MECHANICAL ROOM 209A - WEST



HVAC SECTION - MECHANICAL ROOM 209A - EAST



HVAC SECTION - MECHANICAL ROOM 209A - SOUTH

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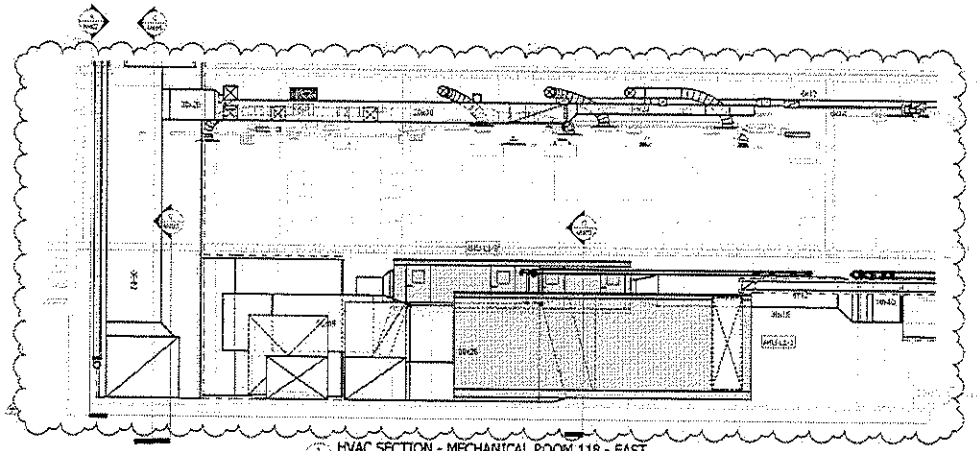
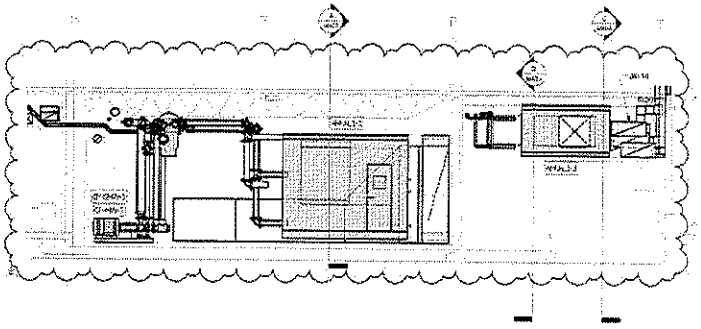
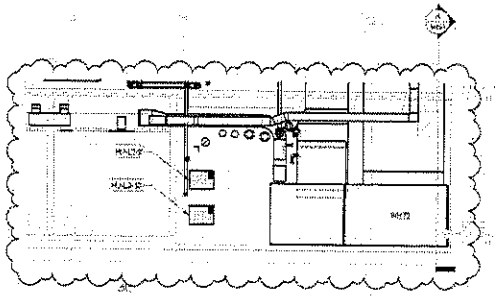
M402



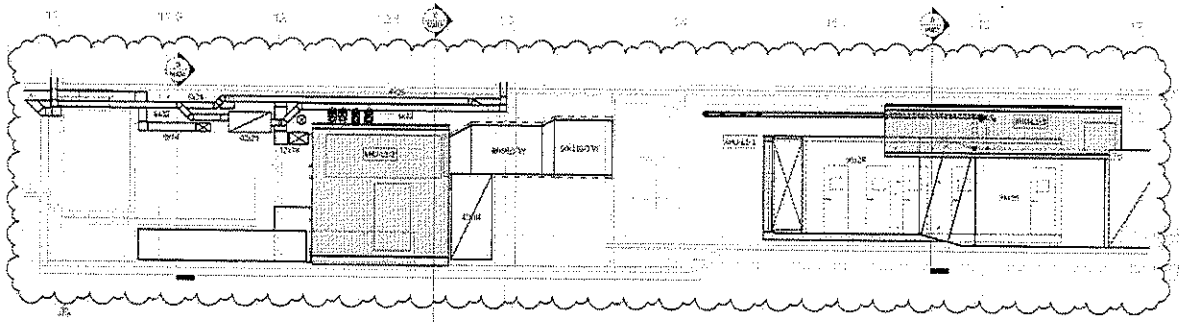
HVAC SECTION - MECHANICAL ROOM 118 - EAST



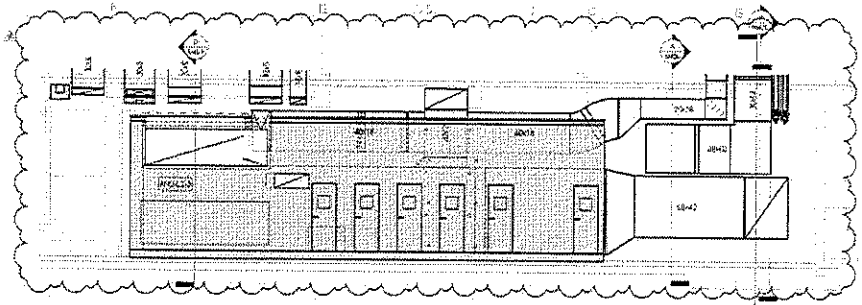
HVAC SECTION - MECHANICAL ROOM 118 -SOUTH



HVAC SECTION - MECHANICAL ROOM 118 - SOUTH CHASE



HVAC SECTION - MECHANICAL ROOM 121 - EAST



HVAC SECTION - MECHANICAL ROOM 121 - SOUTH

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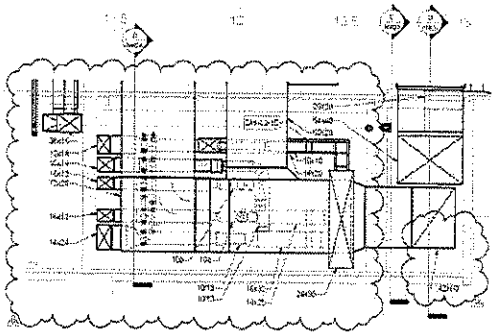
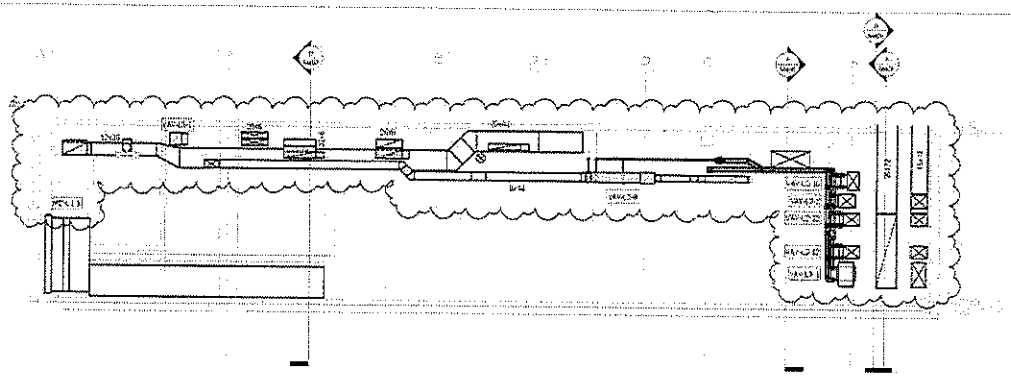
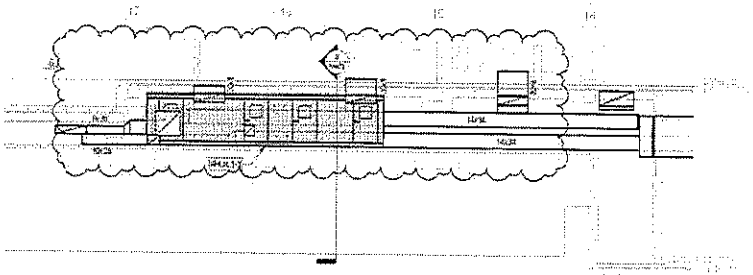
M403



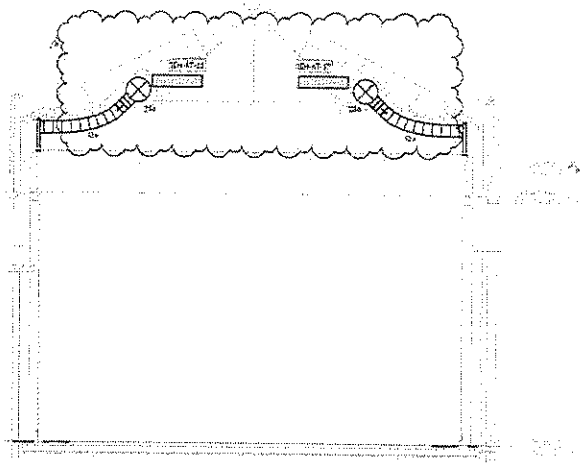
MECHANICAL ROOM 121 - VAV STACK



HVAC SECTION - MECHANICAL ROOM 121 VAV SECTION



HVAC SECTION - WIND TUNNEL 117



HAVC SECTION - GARDEN COURT

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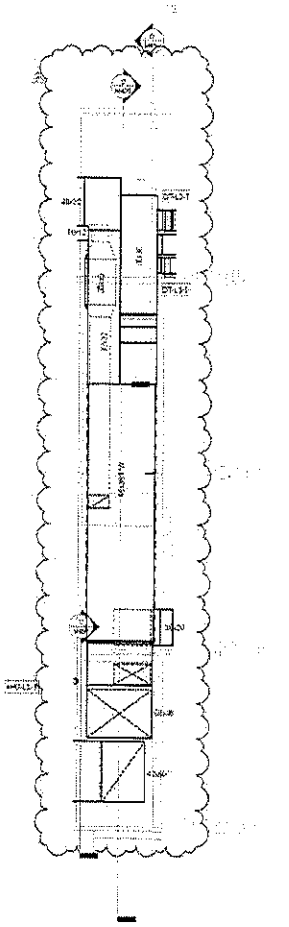
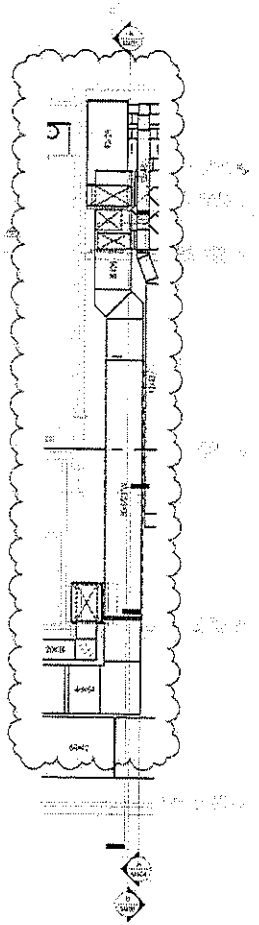
HVAC SECTIONS

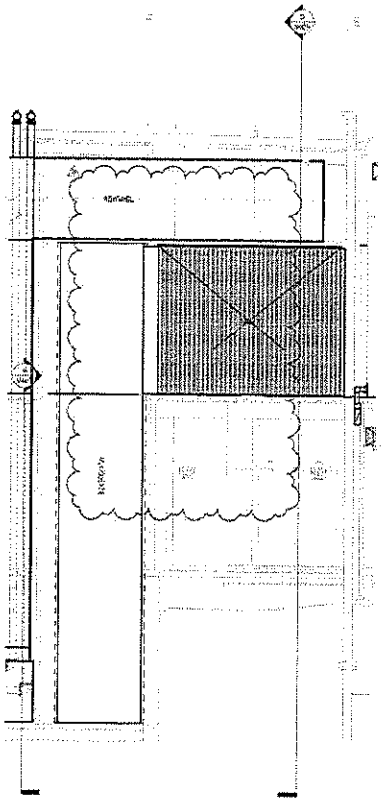
M404



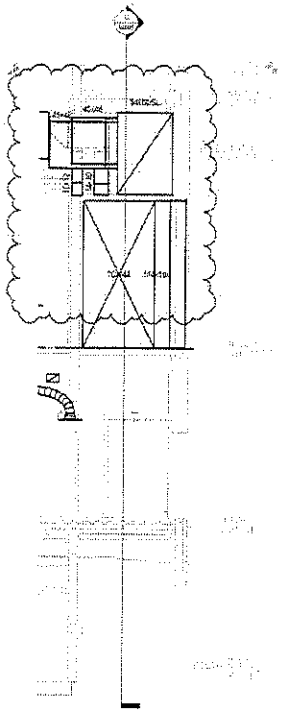
HVAC SECTION - GARDEN COURT CHASE - EAST



HVAC SECTION - GARDEN COURT CHASE - SOUTH



HVAC SECTION - OUTSIDE AIR INTAKE - SOUTH



HVAC SECTION - OUTSIDE AIR INTAKE - EAST

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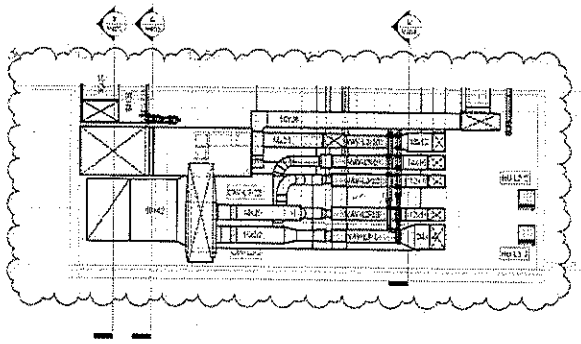
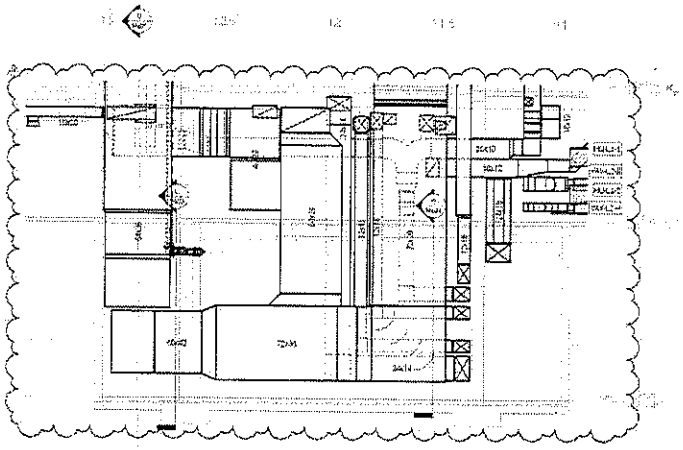
HVAC SECTIONS

M405



HVAC SECTION - MECHANICAL ROOM 121 - 1ST FLOOR



HVAC SECTION - MECHANICAL ROOM 121 - 1ST AND 2ND FLOOR

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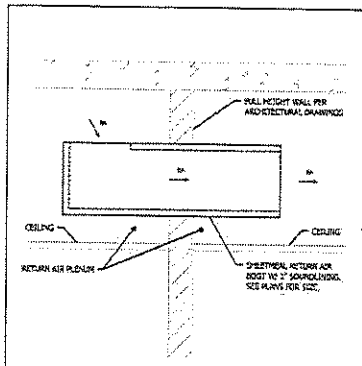
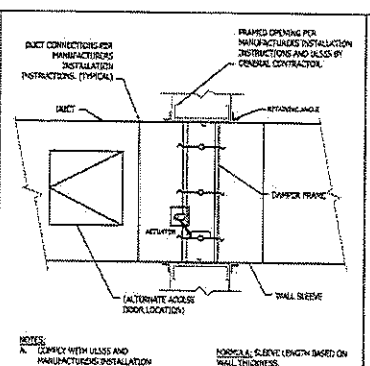
M406



8 RETURN AIR BOOT DETAIL

SCALE: NOT TO SCALE



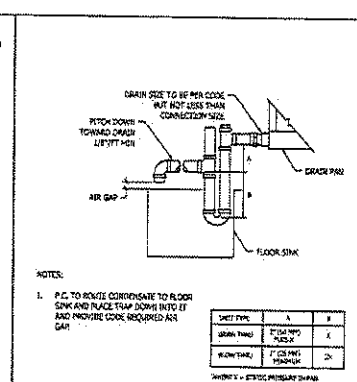
NOTES:
A. COMPLY WITH UL555 AND MANUFACTURERS INSTALLATION INSTRUCTIONS
B. MIN. SIZE 300MM
C. ROSER DSN. FOR COORD ONLY. SEE LATEST INSTALLATION MANUAL.

NORMAL SLEEVE LENGTH BASED ON WALL THICKNESS

WALL THICKNESS	SLEEVE LENGTH
4"-6"	15"
7"-10"	21"
11"-15"	24"

6 FIRE/SMOKE DAMPER

SCALE: NOT TO SCALE

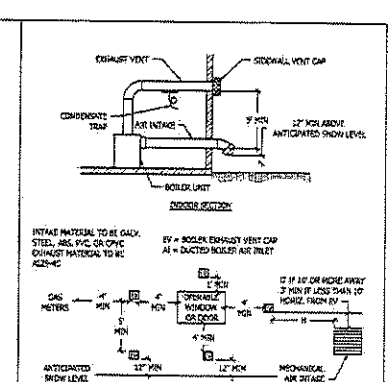


NOTES:
1. P.C. TO ROUTE CONDENSATE TO FLOOR SINK AND PLACE TRAP DOWN INTO IT AND PROVIDE CODE REQUIRED AIR GAP.

UNIT TYPE	A	B
DRAIN PANS	2" DIA NPS MINIMUM	4"
BLOW-THRU	3" DIA NPS MINIMUM	2"

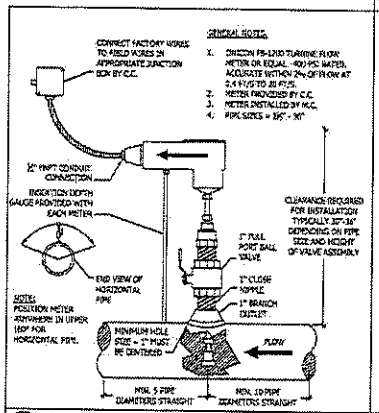
4 CONDENSATE DRAIN

SCALE: NOT TO SCALE



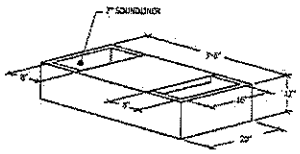
2 MECHANICAL DRAFT & DIRECT VENT VENTING CLEARANCES

SCALE: NOT TO SCALE



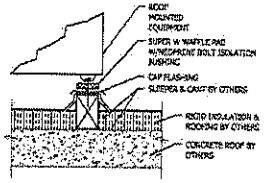
9 FLOW METER INSTALLATION - DUAL TURBINE

SCALE: NOT TO SCALE



7 AIR TRANSFER BOOT

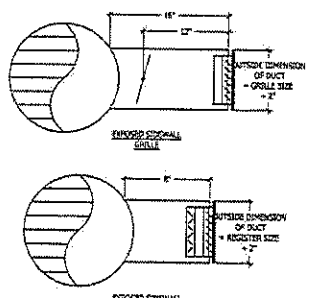
SCALE: NOT TO SCALE



NOTES:
CONFIRM EQUIPMENT MOUNTING METHODS WITH EQUIPMENT SUPPLIER PRIOR TO COORDINATION WITH GENERAL CONTRACTOR.

5 SLEEPER MOUNTED EQUIPMENT

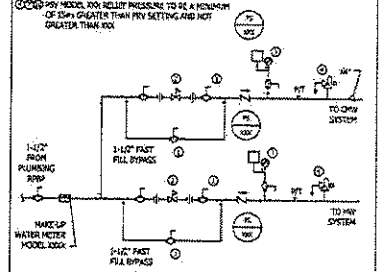
SCALE: NOT TO SCALE



NOTES:
1. REGISTERS & GRILLES TO HAVE HORIZONTAL FRONT BLADES & VERTICAL REAR BLADES.
2. DO NOT SUBSTITUTE GRILLE & REGISTER DETAILS FOR EACH OTHER. INSTALL PER THE PLAN CALLOUTS.

3 SIDEWALL SUPPLY GRILLE WITHOUT OBD

SCALE: NOT TO SCALE



NOTES:
① PROVIDE LOCKING BALL VALVE, PROVIDE VALVE TAG STATING, "VALVE TO BE CLOSED DURING NORMAL OPERATION"
②③④ PRESSURE GAGES TO BE LIQUID FILLED, MODEL XXX RANGE XXX TO XXX PSI
⑤⑥⑦ PRV MODEL XXX SET TO XXX PSI
⑧⑨⑩ PRV MODEL XXX RELIEF PRESSURE TO BE A MINIMUM OF 25PSI GREATER THAN PRV SETTING AND NOT GREATER THAN XXX

1 HYDRONIC FILL STATION

SCALE: NOT TO SCALE

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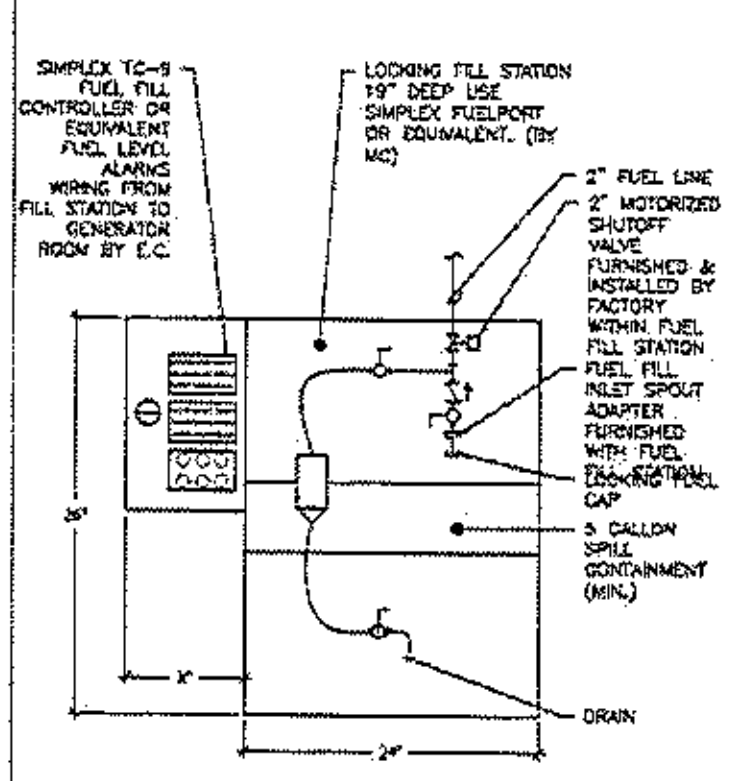
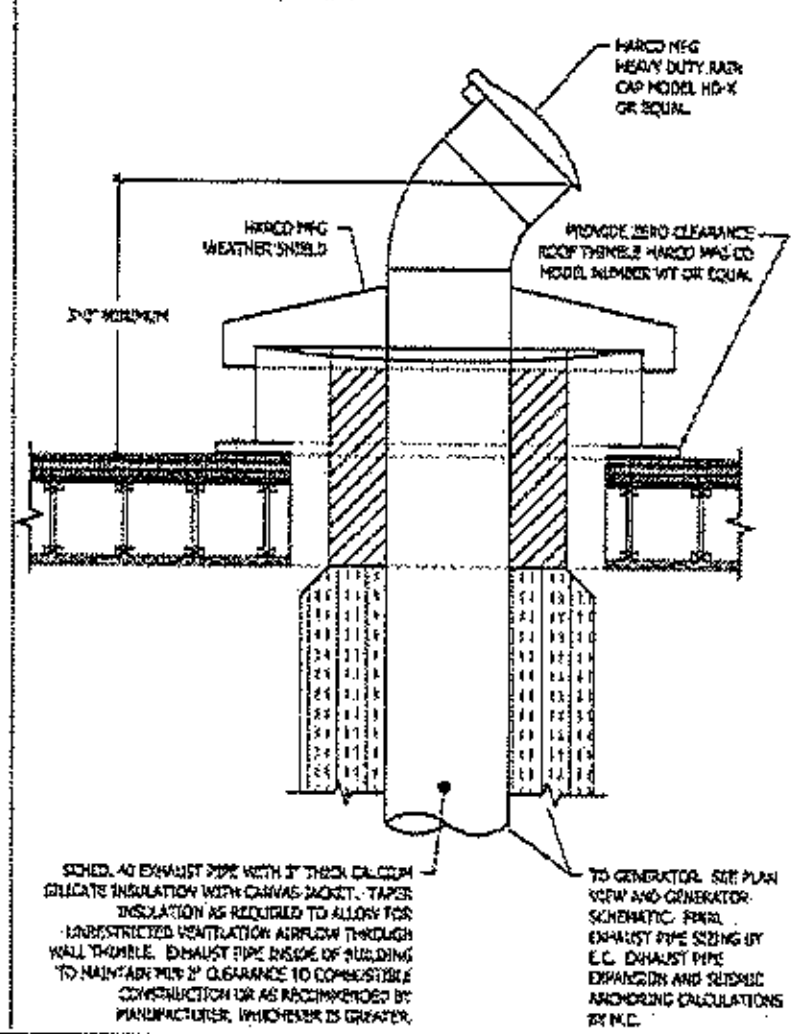
M501



4 FUEL FILL STATION
SCALE: NOT TO SCALE

EXHAUST TERMINATION NOTES:

1. OUTLET TO BE DIRECTED TOWARD NE AND ANGLED UP AT 45°
2. EXHAUST TERMINATION TO BE LOCATED TO MAINTAIN MINIMUM CLEARANCES PER CODE SUMMARY - NOTE #9 AT RIGHT.



2 EXHAUST TERMINATION
SCALE: NOT TO SCALE

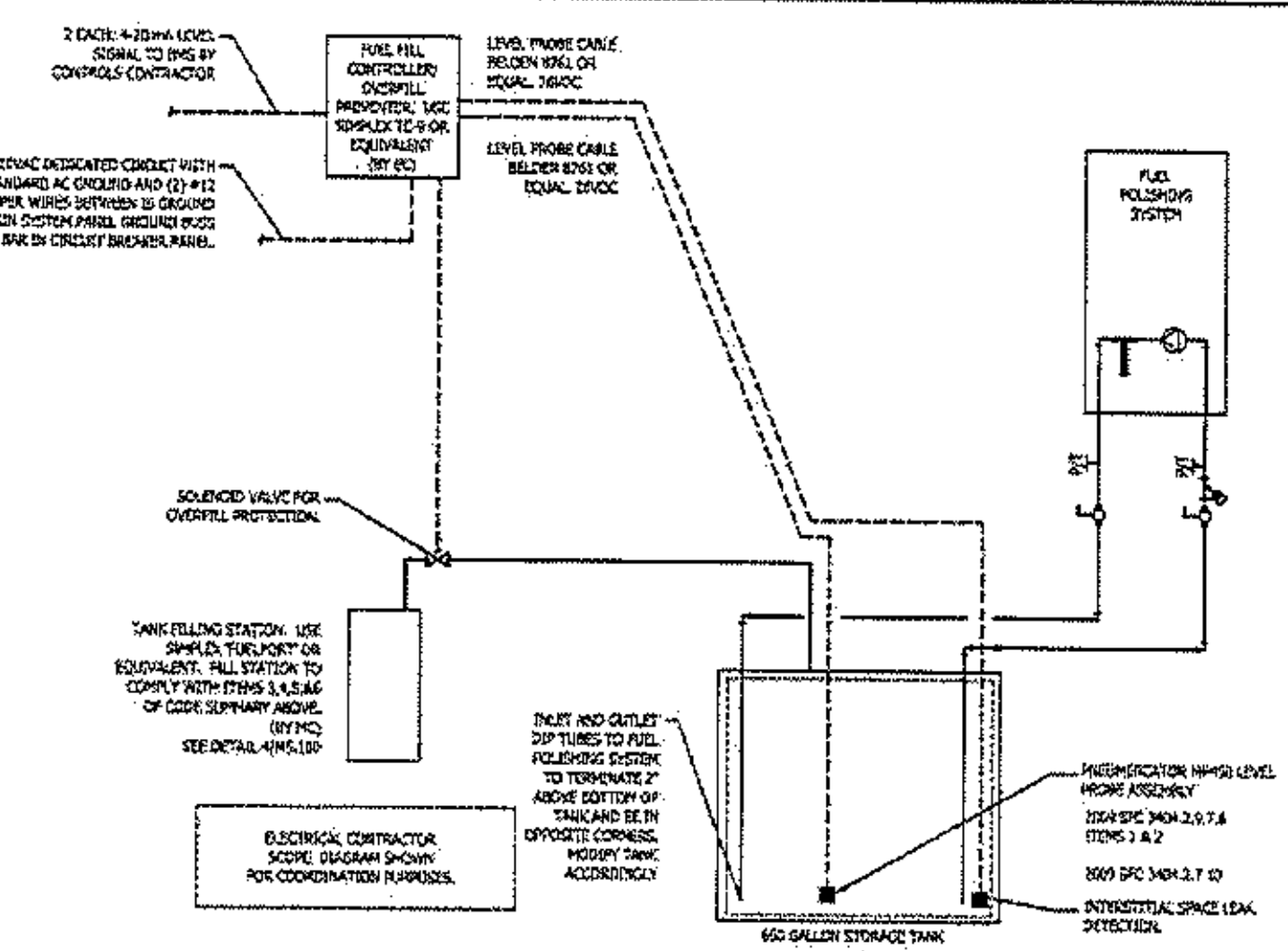
FUEL SYSTEM ALARM SEQUENCE

2012 SFC 5704.2.9.7.6

CRITICAL FUEL HIGH LEVEL SHUT-OFF:	CRITICAL FUEL HIGH LEVEL SHUT-OFF AND ALARM: AT 95% FUEL INDICATION, OVERFILL PREVENTION SOLENOID VALVE IS AUTOMATICALLY CLOSED AND ANNUNCIATES VISUAL AND AUDIBLE ALARM AT: 1. GENERATOR FUEL CONTROL PANEL, LOCATED AT REMOTE FUEL FILL STATION.
FUEL HIGH LEVEL ALARM:	ON 90% FUEL INDICATION, ANNUNCIATES VISUAL AND AUDIBLE ALARM AT: 1. GENERATOR FUEL CONTROL PANEL, LOCATED AT REMOTE FUEL FILL STATION.
FUEL LEVEL LOW ALARM:	SEND ALARM SIGNAL TO BMS AT 50% FUEL LEVEL.
FUEL LEAK ALARM:	ON PRIMARY TANK FUEL LEAK INDICATION, ANNUNCIATES VISUAL AND AUDIBLE ALARM ALARM AT: 1. GENERATOR FUEL CONTROL PANEL AT REMOTE FILL STATION. 2. ALARM SIGNAL TO BMS.

CODE SUMMARY

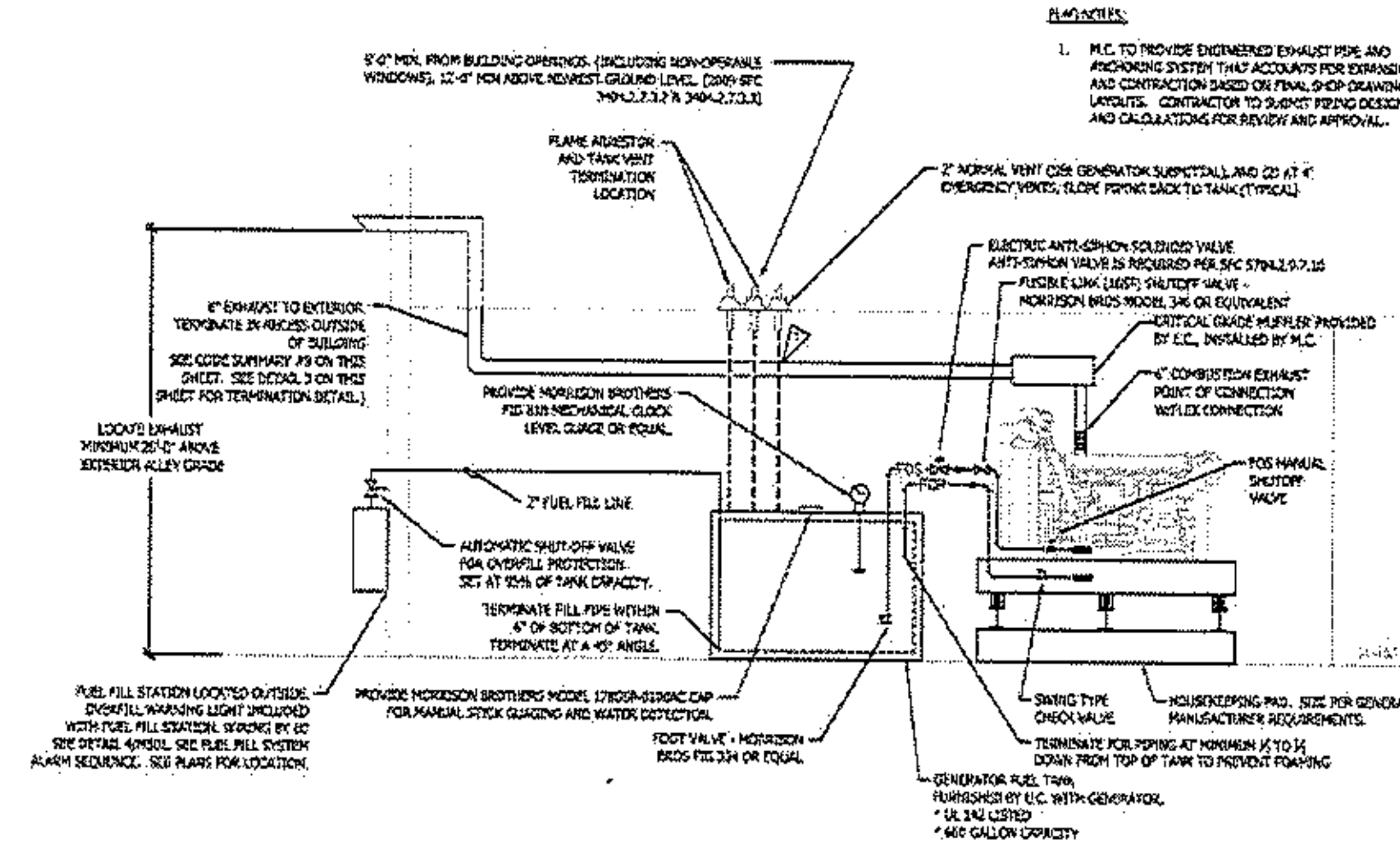
1) GOVERNING CODE
2015 INTERNATIONAL FIRE CODE WITH SEATTLE AMENDMENTS (SFC).
2015 INTERNATIONAL BUILDING CODE WITH SEATTLE AMENDMENTS (SBC).
2) DIESEL FUEL OIL CLASSIFICATION
A. PER CRC ENGINEERING HANDBOOK, FLASHPOINT BETWEEN 100°F AND 140°F, THEREFORE CLASS II. (SFC CHAPTER 2).
3) SPILL CONTROL AND CONTAINMENT
A. PROVIDE SECONDARY CONTAINMENT OR DIKING FOR ABOVE GROUND, STATIONARY TANKS. (SFC 5704.2.9.7.4, 5704.2.10)
B. PROVIDE SPILL CONTAINER AT FUEL FILL CONNECTION WITH MINIMUM OF 5 GALLON CAPACITY AND WITH A MANUAL DRAIN VALVE THAT DRAINS INTO THE PRIMARY TANK. FOR TANKS WITH REMOTE FILL CONNECTIONS, A PORTABLE SPILL CONTAINER IS ALLOWED. (SFC 5704.2.9.7.8)
4) TANK FILL CONNECTION
A. PROVIDE LIQUID-TIGHT FILL CONNECTION WHICH CAN BE CLOSED WHEN NOT IN USE. (SFC 5704.2.7.5.6)
B. FUEL FILL STATION SHALL BE LOCATED A MINIMUM OF 5' FROM BUILDING OPENING (SFC 5704.2.7.5.6)
C. PROVIDE METALLIC FILL TUBE WHICH TERMINATES WITHIN 6" OF BOTTOM OF TANK TO MINIMIZE THE GENERATION OF STATIC ELECTRICITY. (SFC 5704.2.7.5.5)
D. FILL CONNECTIONS FOR DIESEL FUEL TANKS ATTACHED TO EMERGENCY GENERATORS MAY BE LOCATED WITHIN DEDICATED LOADING DOCKS OF BUILDINGS WHEN INSTALLED WITHIN 10' OF THE EXTERIOR OPENING OF THE LOADING DOCK. (SFC 5704.2.7.5.6, EXCEPTION 1.)
5) TANK OVERFILL PROTECTION
A. PROVIDE OVERFILL PROTECTION SYSTEM FOR ABOVE GROUND TANKS WITHIN BUILDINGS. (SFC 5704.2.7.5.8 & SFC 5704.2.9.5.1)
B. PROVIDE AUDIBLE AND VISUAL ALARM DURING FILLING INDICATING THAT TANK HAS REACHED 90% CAPACITY OR PROVIDE INDEPENDENT FUEL FILL GAUGE MARKED AT 90% TANK CAPACITY. (SFC 5704.2.9.7.6)
C. PROVIDE AUTOMATIC FILL SHUT-OFF WHEN TANK HAS REACHED 95% CAPACITY. (SFC 5704.2.9.7.6)
D. LIMIT TANK FILL FLOW RATE TO MAXIMUM OF 15 GPM. (SFC 5704.2.9.7.6)
E. PROVIDE DOCUMENTED TANK FILLING PROCEDURE AND TANK CALIBRATION CHART AT FILL POINT OF TANK. (SFC 5704.2.9.7.6.2)
6) LABELING AND SIGNAGE
A. PROVIDE WARNING SIGNS INDICATING "SMOKING AND OPEN FLAMES PROHIBITED" IN MINIMUM 3" HIGH RED LETTERING ON WHITE BACKGROUND. (SFC 5703.5)
B. PROVIDE HAZARD "DIAMOND" PLACARD ON STORAGE TANK AND AT ENTRANCE TO FUEL STORAGE AREA INDICATING HEALTH, FLAMMABILITY, INSTABILITY AND SPECIAL HAZARDS OF FUEL STORED. FOR DIESEL FUEL, THESE DESIGNATIONS ARE 0-2-0, (NO SPECIAL HAZARD NUMBER). INSTALLING CONTRACTOR SHALL VERIFY WITH LOCAL FIRE MARSHAL. (SFC 5703.5, SFC 5704.2.3, NFPA 704)
7) TANK NORMAL VENTING
A. VENT LINE FLAME ARRESTORS ARE NOT REQUIRED FOR CLASS II LIQUIDS. (SFC 5704.2.9.3)
B. VENT LINE PIPE OUTLETS SHALL BE A MINIMUM OF 5 FEET FROM BUILDING OPENINGS AND A MINIMUM OF 12 FEET ABOVE ADJACENT GROUND LEVEL. TERMINATIONS SHALL ALSO BE LOCATED A MINIMUM OF 10 FEET HORIZONTALLY FROM MECHANICAL AIR INTAKES. VENT LINE PIPE OUTLETS SHALL BE LOCATED SUCH THAT FLAMMABLE VAPORS ARE NOT TRAPPED BY EAVES OR OTHER OBSTRUCTIONS. (SFC 5704.2.7.3.3, SMC 401.4 - ITEM 2)
C. VENT LINES SHALL BE INSTALLED SUCH THAT HORIZONTAL RUNS ARE SLOPED TOWARD THE TANK WITHOUT SAGS OR DIPS IN WHICH LIQUID CAN COLLECT. (SFC 5704.2.7.3.4)
D. VENT PIPE VERTICAL HEIGHT IS LIMITED TO 27 FEET FROM THE BOTTOM OF THE TANK. IF NOT POSSIBLE THE TANK MUST BE DESIGNED TO WITHSTAND THE MAXIMUM STATIC HEAD GENERATED BY THE TANK HEIGHT. (SMC 1305.7)
8) TANK EMERGENCY VENTING
A. TANKS SHALL BE EQUIPPED WITH ADDITIONAL (EMERGENCY) VENTING TO RELIEVE EXCESSIVE INTERNAL PRESSURE CAUSED BY EXPOSURE TO FIRES. (SFC 5704.2.7.4). VENT TERMINATIONS SHALL BE AS TANK NORMAL VENTS.
B. ABOVE GROUND TANKS MEET UL 142 AND LOCATED INSIDE BUILDINGS CONTAINING CLASS II LIQUIDS FOR EMERGENCY GENERATORS ARE ALLOWED TO VENT INSIDE BUILDINGS. (SFC 5704.2.7.4)
9) GENERATOR EXHAUST
A. COMBUSTION EXHAUST SHALL BE LOCATED 10' FROM PROPERTY LINES, 3' FROM EXTERIOR WALLS AND ROOFS, 10' FROM OPERABLE OPENINGS INTO BUILDINGS, AND 10' ABOVE ADJOINING GRADE (SMC 501.3.1)
B. RADIATOR EXHAUST SHALL BE LOCATED 3' FROM PROPERTY LINES, 3' FROM OPERABLE OPENINGS INTO BUILDINGS, 10' FROM MECHANICAL AIR INTAKES (SMC 501.2.1) UNLESS AIR IS DRAWN THRU CLOSED PARKING GARAGE THEN 10' SEPARATION FROM PROPERTY LINES AND OPERABLE OPENINGS (SMC 404.1.4)
C. MAINTAIN MINIMUM 2" CLEARANCE FROM COMBUSTION EXHAUST FLUE TO COMBUSTIBLE MATERIAL OR AS RECOMMENDED BY FLUE MATERIAL MANUFACTURER, WHICHEVER IS GREATER.
10) GENERATOR FUEL STORAGE
A. A GENERATOR SET WITH FUEL TANK SYSTEM NOT EXCEEDING 660 GALLONS IS NOT REQUIRED TO BE INSTALLED WITHIN A RATED ROOM WHEN INSTALLED IN A SPRINKLERED PARKING GARAGE, AND IS PERMITTED TO DRAW COMBUSTION AND COOLING INTAKE AIR FROM THE ADJACENT PARKING GARAGE. (SBC 406.4.9.2 EXCEPTION 1 & 2)
11) OVERFLOW PROTECTION
A. OVERFLOW PROTECTION SHALL BE PROVIDED IN ACCORDANCE WITH SFC 5704.2.7.5.8
12) FUEL TANK LOCATION
A. UL 142 FUEL TANKS IN BASEMENTS SHALL BE LOCATED NO MORE THAN TWO STORIES BELOW THE GRADE PLANE (SFC 603.3.2.5)
B. FUEL OIL PIPING TESTED IN ACCORDANCE WITH NFPA 31.



2 GENERATOR SET FUEL OIL SYSTEM WIRING DIAGRAM
SCALE: NOT TO SCALE

M.E. NOTES:

1. M.C. TO PROVIDE ENGINEERED EXHAUST PIPE AND ANCHORING SYSTEM THAT ACCOUNTS FOR EXPANSION AND CONTRACTION BASED ON FINAL SHOP DRAWING LAYOUTS. CONTRACTOR TO SUBMIT PIPING DESIGN AND CALCULATIONS FOR REVIEW AND APPROVAL.



1 EMERGENCY GENERATOR FUEL OIL PIPING SCHEMATIC
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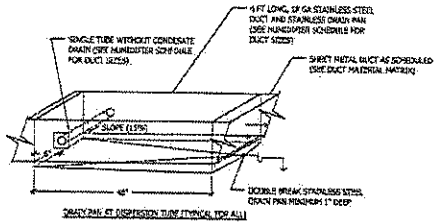
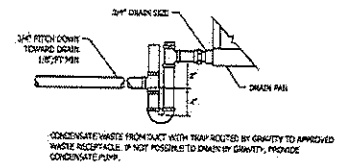
GENERATOR DETAILS

M502



DRAIN PAN AT DISPERSION TUBE (TYPICAL FOR ALL)



CONDENSATE WASTE FROM DUCT WITH TRAP ROUTED BY GRAVITY TO APPROVED WASTE RECEPTACLE. IF NOT POSSIBLE TO DRAIN BY GRAVITY, PROVIDE CONDENSATE PUMP.

INSTALLATION NOTES

- Use a hose clamp to connect the steam outlet to steam hose. Use a hose cuff and clamps to connect the steam outlet to tubing.
- Tubing diameter must match Vaporizing steam outlet size 1 1/2" (DH40), 2" (DH50), or NPT connection.
- See the steam carrying capacity and steam loss tables on Pages 19 and 20.
- Orient dispersion tube with tubeless (steam or hose) pointing up.
- If mounting the humidifier above the level of dispersion tube, see "Drip tee insulation" on Page 21.

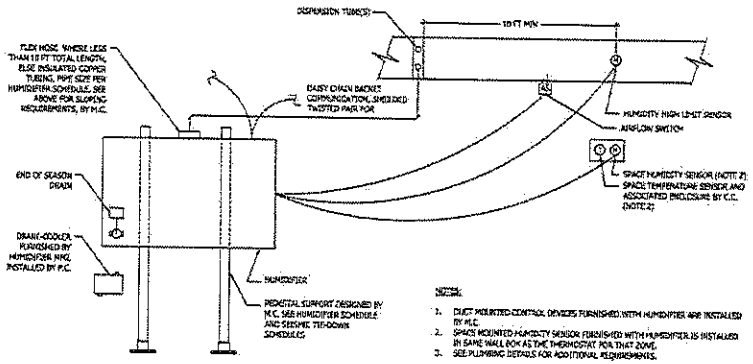
SINGLE DUCT WITH CONDENSATE DRAIN TUBE

NOTES:

1. SEE PLUMBING DETAILS FOR ADDITIONAL REQUIREMENTS.

1 DISPERSION TUBE AND DUCT DETAIL (DT-X-X)

SCALE: NOT TO SCALE

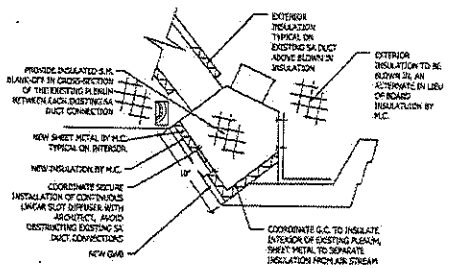


NOTES:

1. DUCT MOUNTED CONTROL DEVICES FURNISHED WITH HUMIDIFIER ARE INSTALLED BY M.C.
2. SPACE MOUNTED HUMIDITY SENSOR FURNISHED WITH HUMIDIFIER IS INSTALLED IN SAME WALL BOX AS THE THERMOSTAT FOR THAT ZONE.
3. SEE PLUMBING DETAILS FOR ADDITIONAL REQUIREMENTS.

2 HUMIDIFIER, AND DUCT MOUNTED CONTROL DETAIL (HU-X-X)

SCALE: NOT TO SCALE



3 EXISTING TROUGH INSULATION DETAIL (N1, N2, S1, S2)

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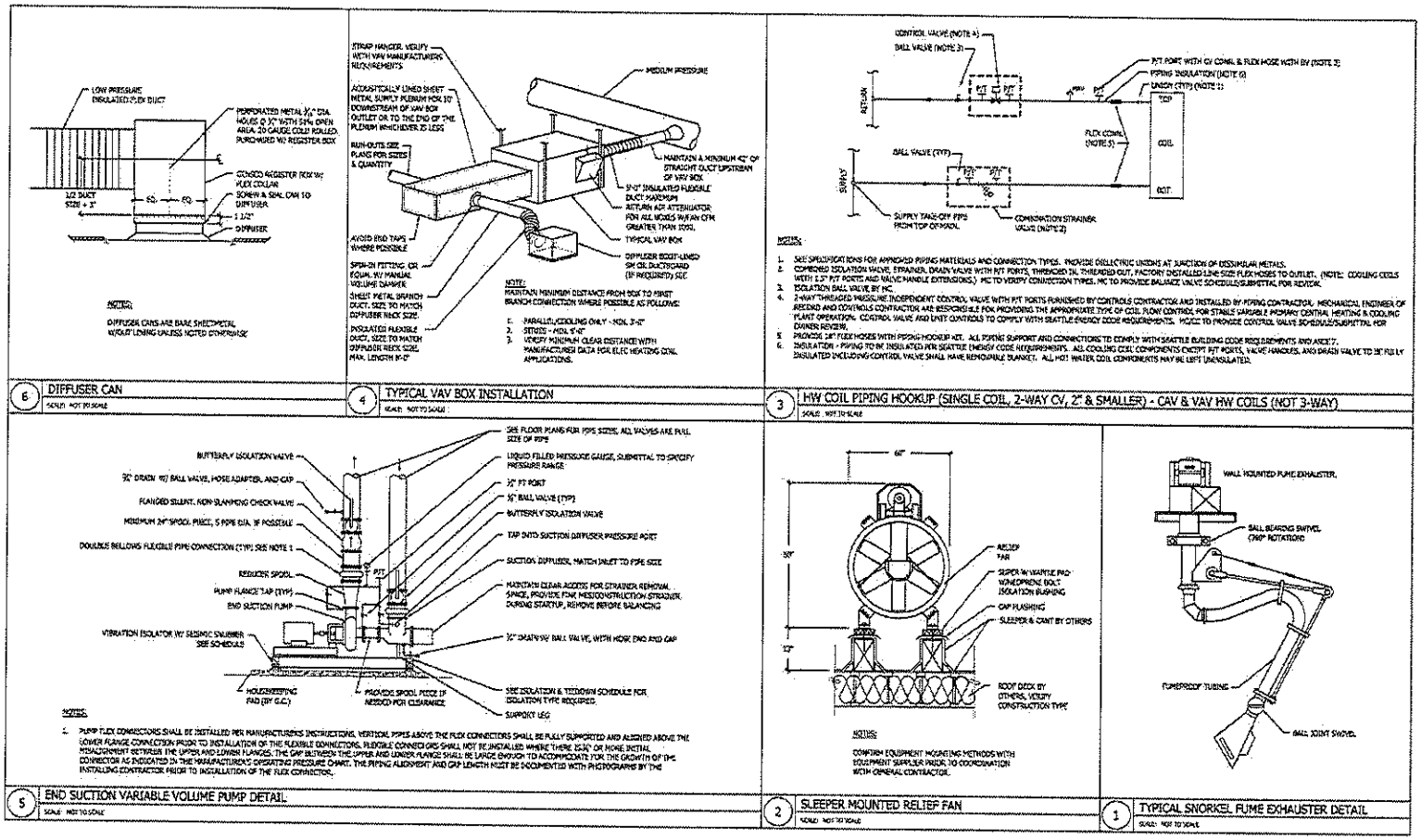
M503



6 DIFFUSER CAN
SCALE: NOT TO SCALE

4 TYPICAL VAV BOX INSTALLATION
SCALE: NOT TO SCALE

3 HW COIL PIPING HOOKUP (SINGLE COIL, 2-WAY CV, 2" & SMALLER) - CAV & VAV HW COILS (NOT 3-WAY)
SCALE: NOT TO SCALE

5 END SUCTION VARIABLE VOLUME PUMP DETAIL
SCALE: NOT TO SCALE

2 SLEEPER MOUNTED RELIEF FAN
SCALE: NOT TO SCALE

1 TYPICAL SNORKEL FUME EXHAUSTER DETAIL
SCALE: NOT TO SCALE

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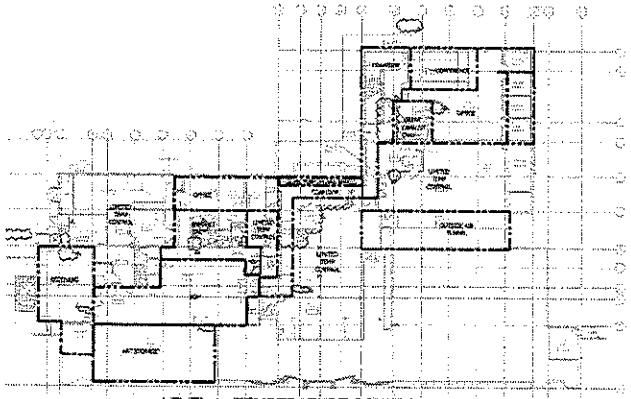
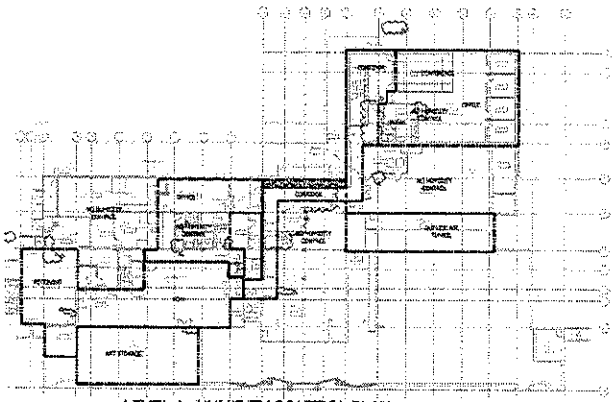
Date: 8/24/17

MECHANICAL DETAILS

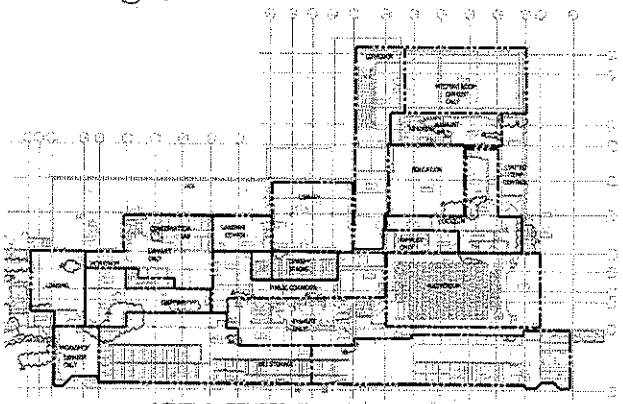
M504



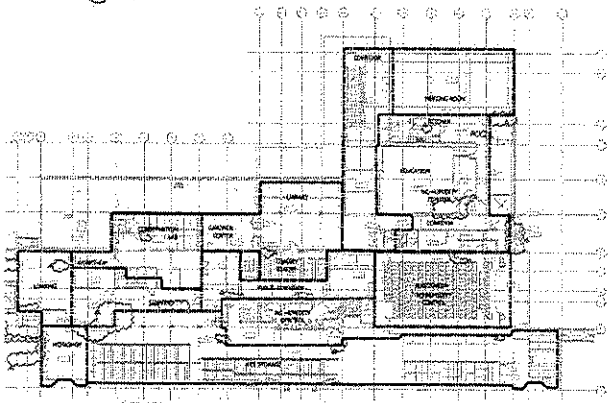
1 M601 LEVEL 1 - TEMPERATURE CONTROL PLAN
NTS



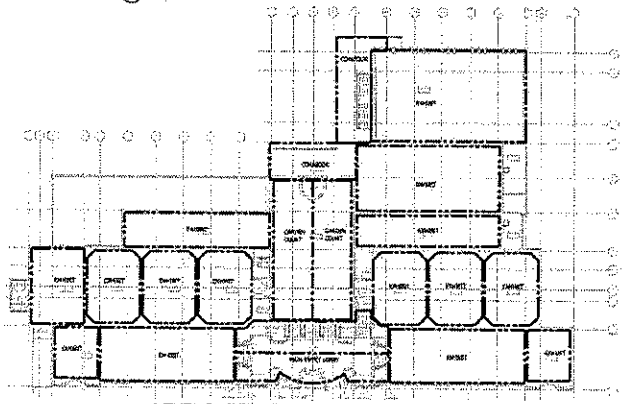
2 M601 LEVEL 1 - HUMIDITY CONTROL PLAN
NTS



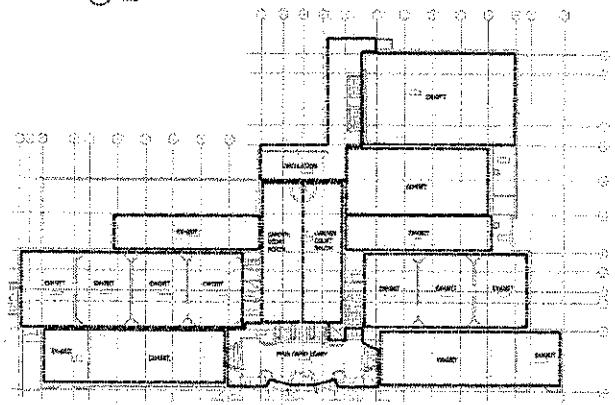
3 M601 LEVEL 2 - TEMPERATURE CONTROL PLAN
NTS



4 M601 LEVEL 2 - HUMIDITY CONTROL PLAN
NTS



5 M601 LEVEL 3 - TEMPERATURE CONTROL PLAN
NTS



6 M601 LEVEL 3 - HUMIDITY CONTROL PLAN
NTS

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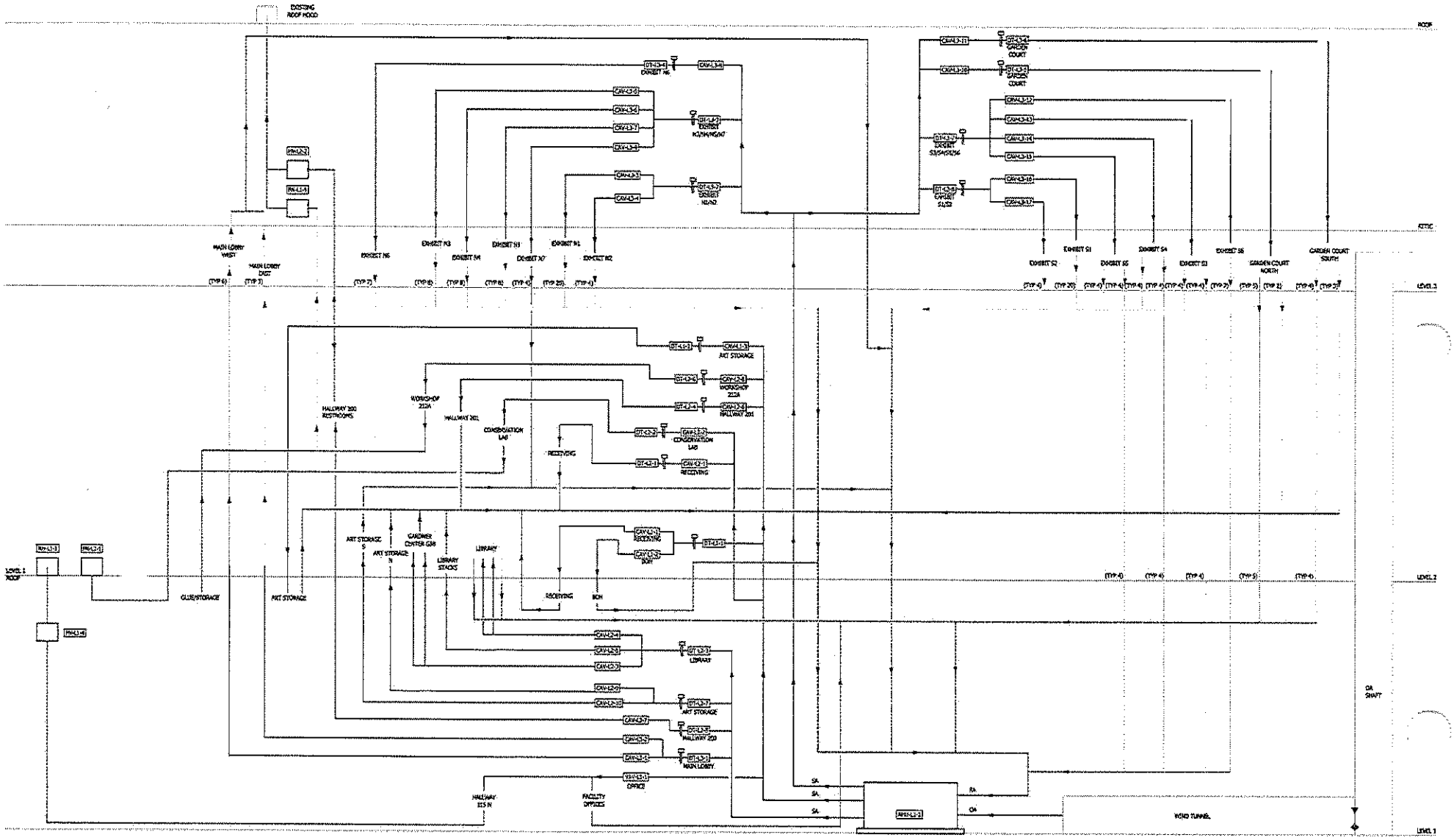
HUMIDITY & TEMPERATURE CONTROL PLANS

M601



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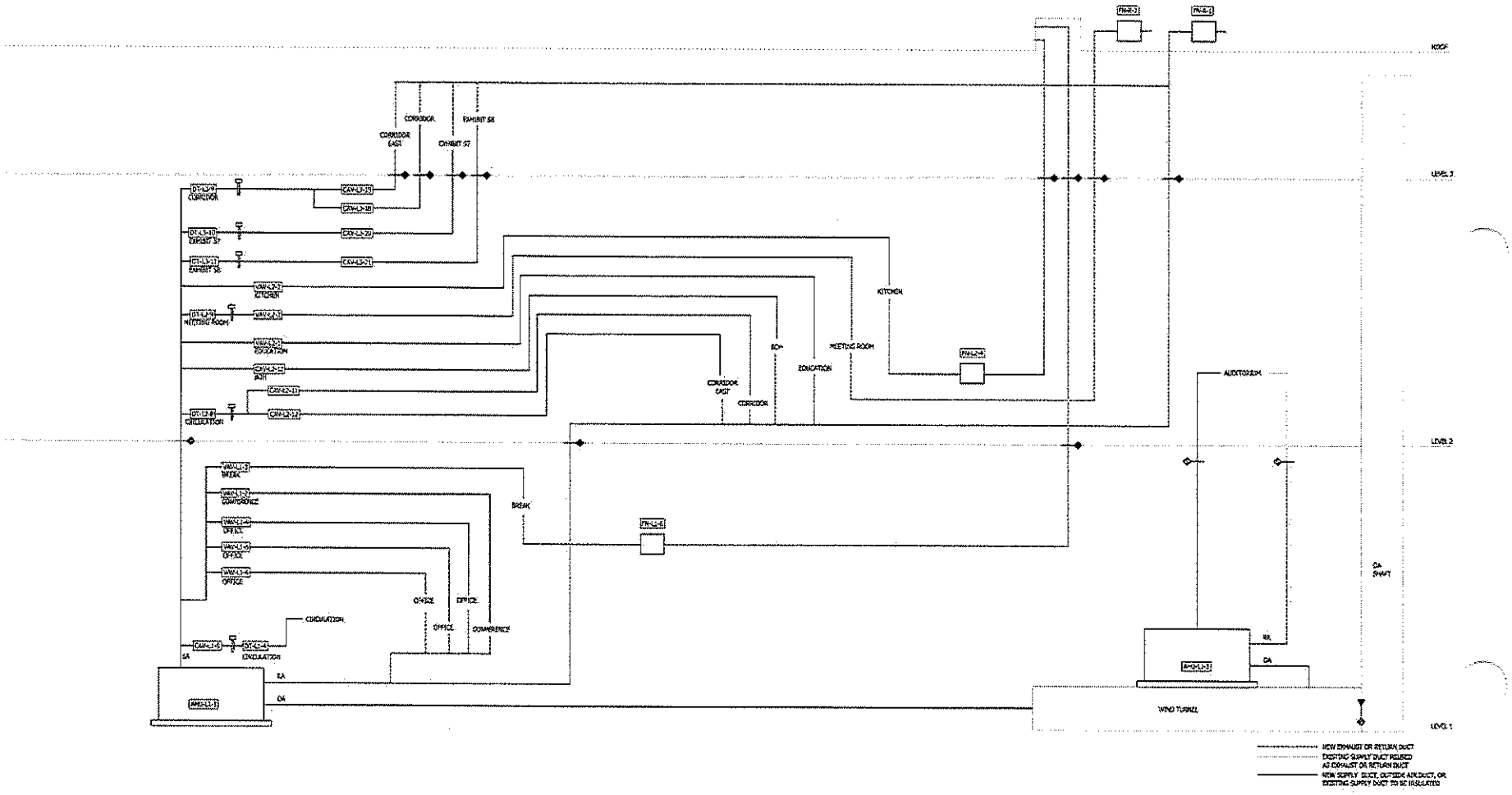
HUMIDITY & TEMPERATURE CONTROL DIAGRAM

M602



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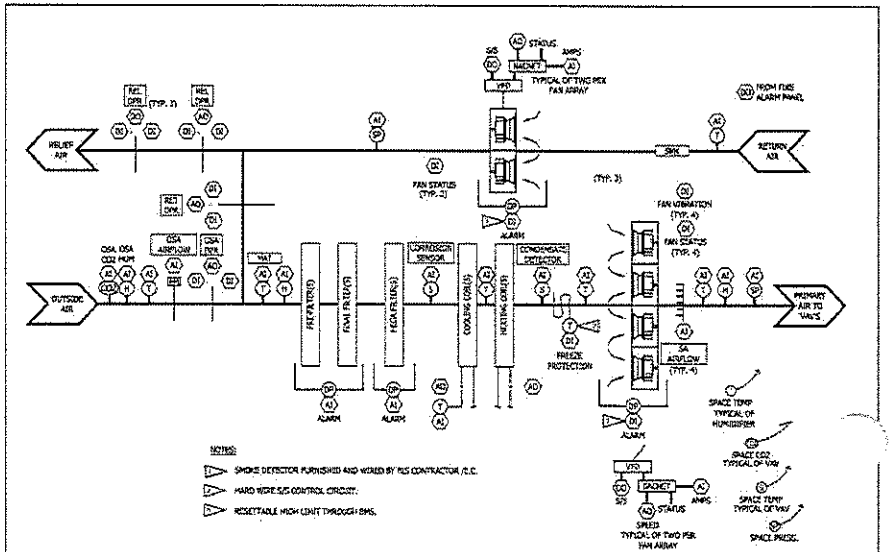
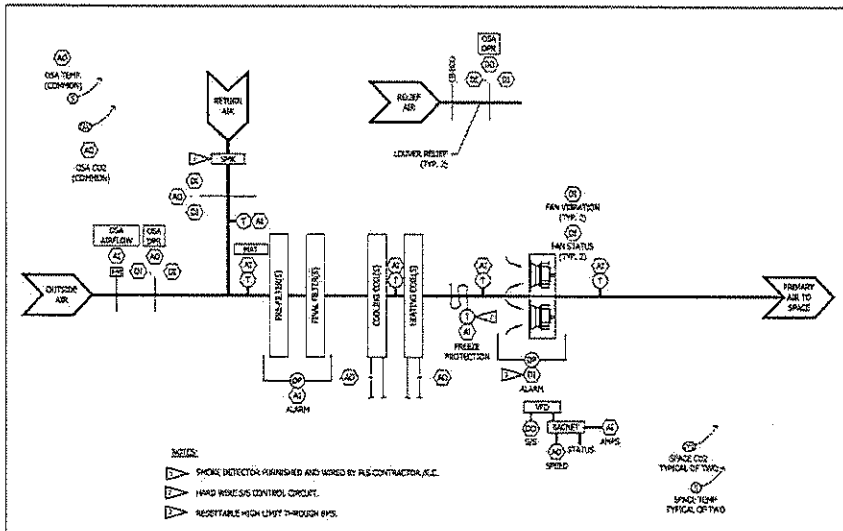
HUMIDITY & TEMPERATURE CONTROL DIAGRAM

M603



2 AIR HANDLING UNIT CONTROL DIAGRAM - AHU-L1-2

SCALE: NOT TO SCALE



3 AIR HANDLING UNIT CONTROL DIAGRAM - AHU-L1-3

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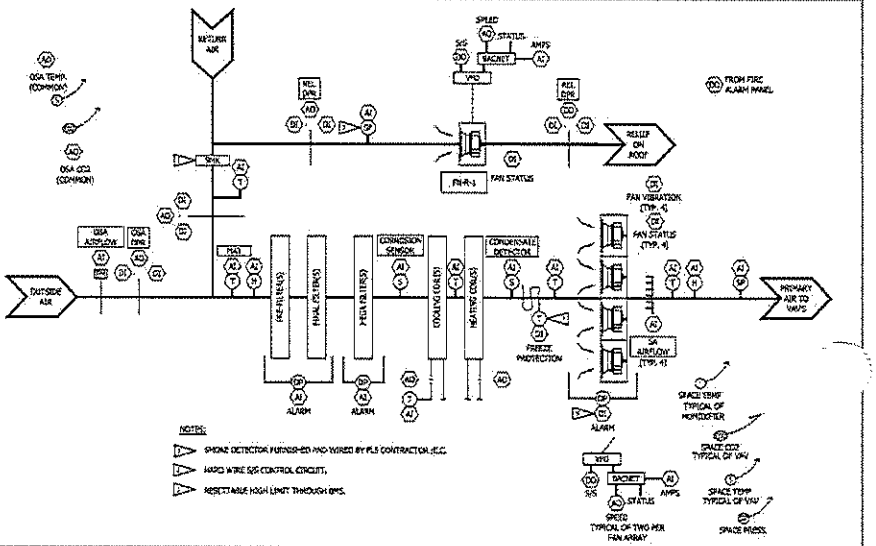

1 AIR HANDLING UNIT CONTROL DIAGRAM - AHU-L1-1

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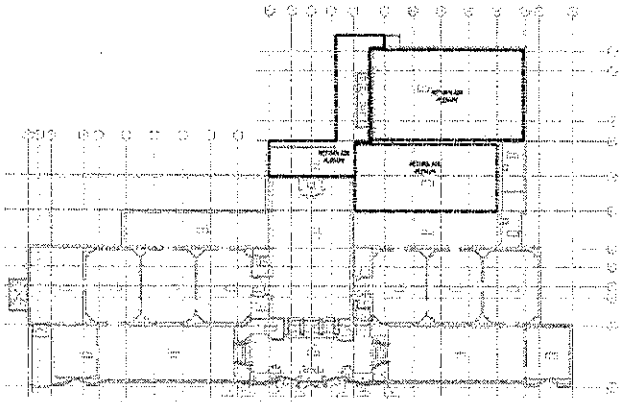
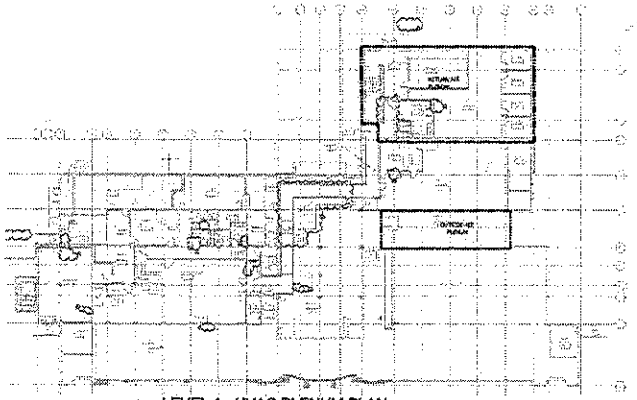
AIR HANDLING UNIT DIAGRAMS

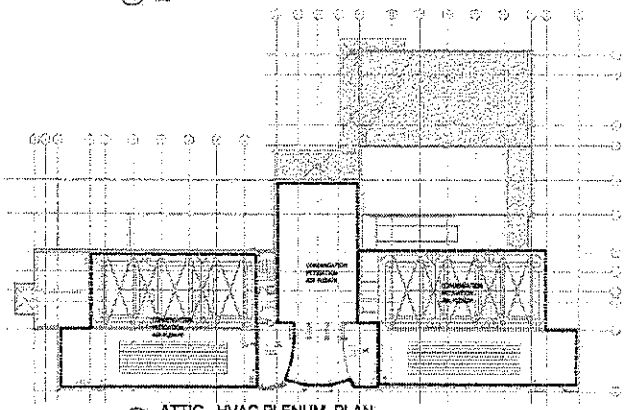
M604



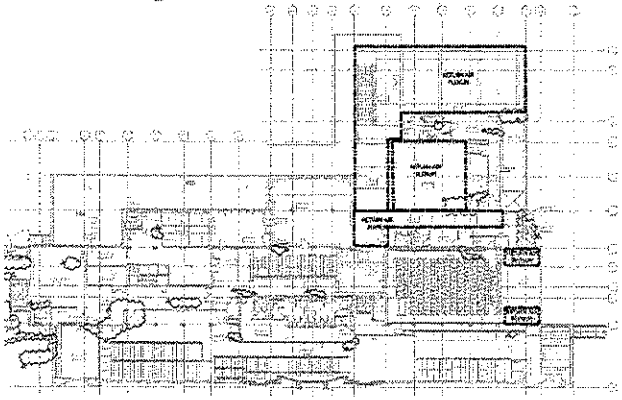
LEVEL 3 - HVAC PLENUM PLAN



LEVEL 1 - HVAC PLENUM PLAN



ATTIC - HVAC PLENUM PLAN



LEVEL 2 - HVAC PLENUM PLAN

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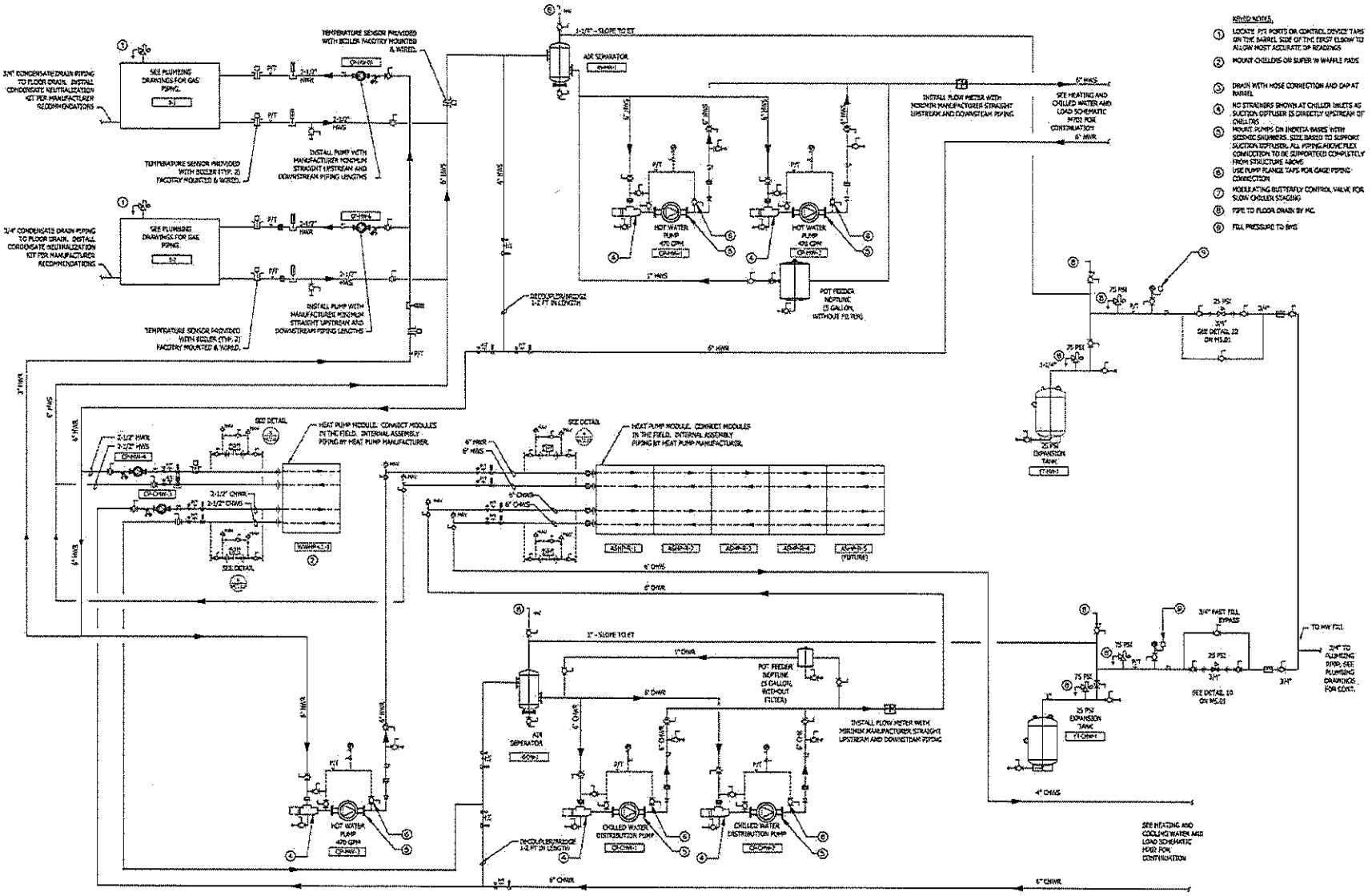
HVAC - PLENUM ZONES

M605



KEYED NOTES:

1. LOCATE P/T PORTS OR CONTROL DEVICE TAPS ON THE BARREL SIDE OF THE ERGY ELBOW TO ALLOW MOST ACCURATE DP READINGS
2. MOUNT CHILLERS ON SUPER W WAFFLE PADS
3. DRAIN WITH HOSE CONNECTION AND CAP AT BARREL
4. NO STRAINERS SHOWN AT CHILLER INLETS AS SUCTION DIFFUSER IS DIRECTLY UPSTREAM OF CHILLERS
5. MOUNT PUMPS ON INERTIA BASES WITH SEISMIC SNUBBERS. SIZE BASED TO SUPPORT SUCTION DIFFUSER. ALL PIPING ABOVE FLEX CONNECTION TO BE SUPPORTED COMPLETELY FROM STRUCTURE ABOVE
6. USE PUMP FLANGE TAPS FOR GAGE PIPING CONNECTION
7. MODULATING BUTTERFLY CONTROL VALVE FOR SLOW CHILLER STAGING
8. PIPE TO FLOOR DRAIN BY MC
9. FILL PRESSURE TO BMS

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P: (206) 285-7100 F: (206) 285-7111

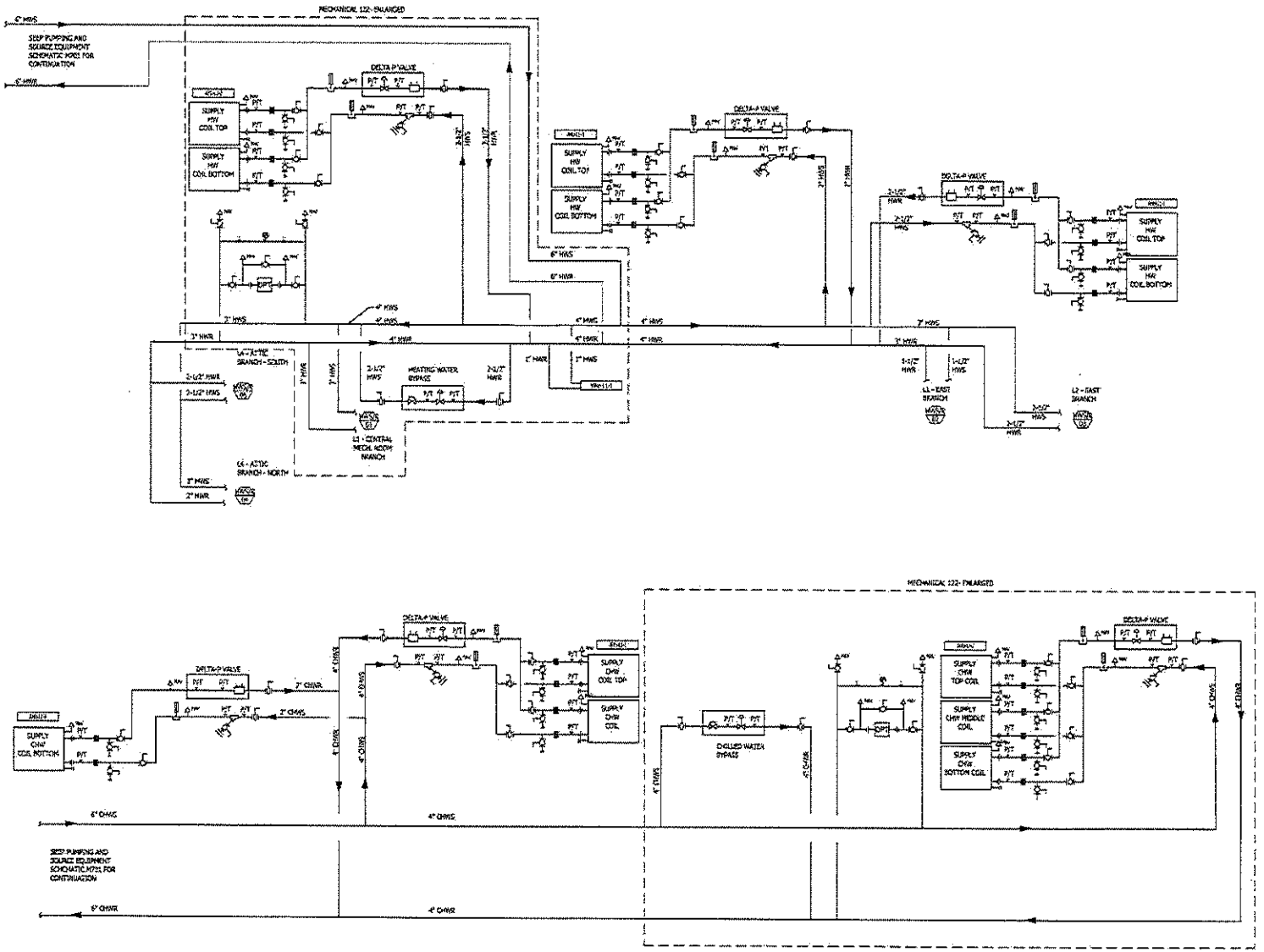
SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

PUMPING AND SOURCE EQUIPMENT SCHEMATIC

M701



HEATING AND CHILLED WATER LOAD SCHEMATIC

LMN Architecture Urban Design Interiors

RUSHING
Engineering - Commissioning - Delivery
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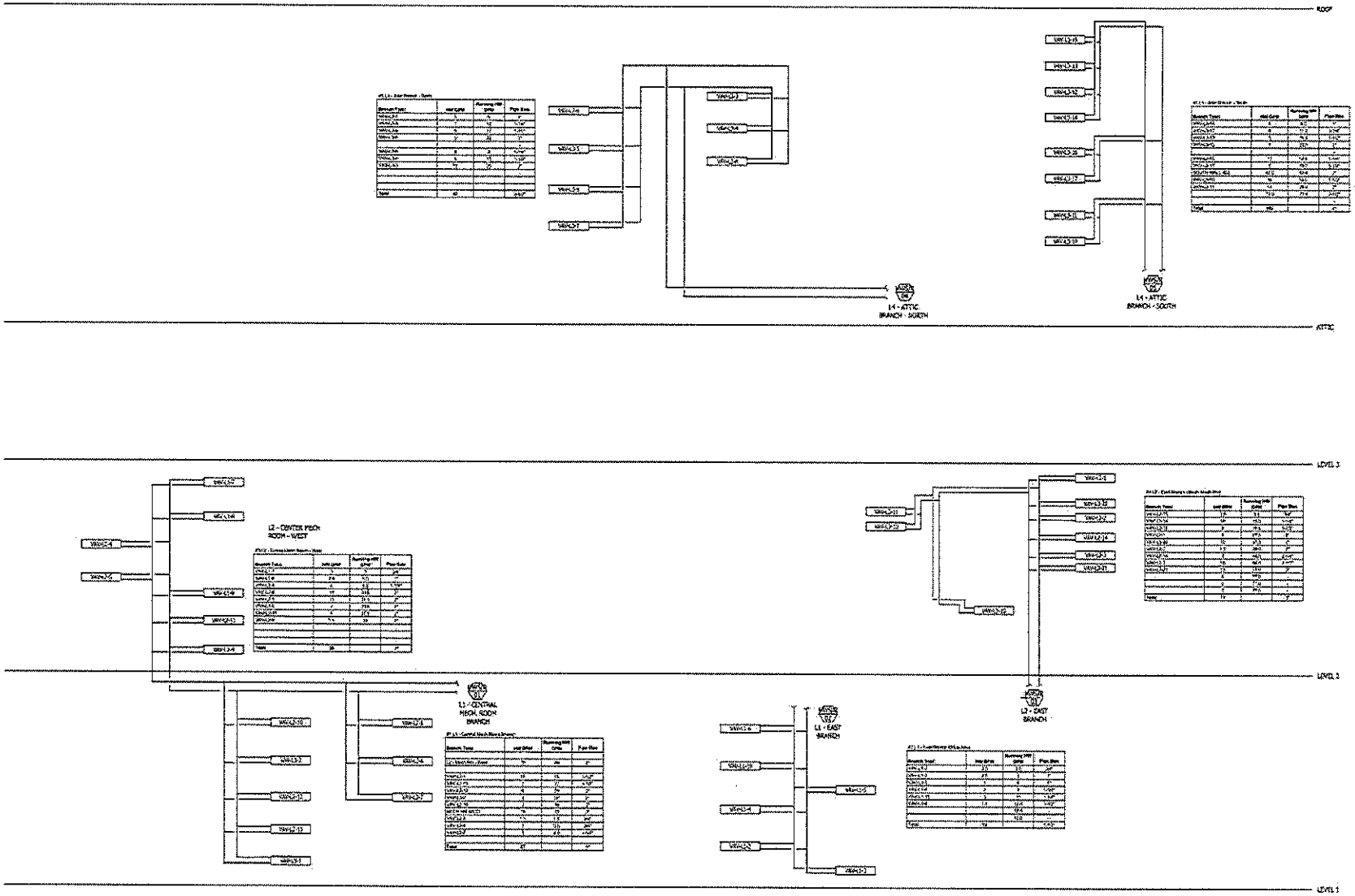
Asian Art Museum Expansion & Renovation

Construction Documents

HEATING AND CHILLED WATER LOAD SCHEMATIC

M702



HEATING WATER RISER DIAGRAMS

TRUE NORTH PLAN NORTH

LMN Architecture Urban Design Interiors

RUSHING

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HEATING WATER RISER DIAGRAMS

M703

DDC SYSTEM POINTS LIST

Description	Binary Inputs	Binary Outputs	Analog Inputs	Analog Outputs	Remarks
AIR HANDLING UNIT (AHU#1-14)					
SUPPLY FAN STATUS (PROOF)	X				
SUPPLY FAN VFD STATUS			X		
SUPPLY FAN MANUAL/AUTO			X		
SUPPLY FAN VFD START/STOP		X			
SUPPLY FAN VFD SPEED COMMAND				X	
SUPPLY FAN VFD ALARM			X		
RETURN FAN STATUS (PROOF)	X				
RETURN FAN VFD STATUS			X		
RETURN FAN MANUAL/AUTO			X		
RETURN FAN VFD START/STOP		X			
RETURN FAN VFD SPEED COMMAND				X	
RETURN FAN VFD ALARM			X		
OUTDOOR AIR DAMPER POSITION			X		
RETURN AIR DAMPER POSITION			X		
EXHAUST AIR DAMPER POSITION			X		
MIXED AIR TEMPERATURE			X		
SUPPLY AIR TEMPERATURE			X		
SUPPLY AIR HUMIDITY SENSOR			X		
SUPPLY AIR DUCT PRESSURE SENSOR			X		
FILTER DIFFERENTIAL PRESSURE SENSOR			X		
SMOKE DETECTOR (SUPPLY)	X				
SMOKE DETECTOR (RETURN)	X				
SMOKE DETECTOR ALARM	X				
FREEZE STAT	X				
FREEZE STAT ALARM	X				
HEATING COIL VALVE				X	
HEATING COIL VALVE POSITION			X		
HEATING COIL ENTERING WATER TEMPERATURE			X		
HEATING COIL LEAVING WATER TEMPERATURE			X		
HEATING COIL VALVE ALARM	X				
COOLING COIL VALVE				X	
COOLING COIL VALVE POSITION			X		
COOLING COIL ENTERING WATER TEMPERATURE			X		
COOLING COIL LEAVING WATER TEMPERATURE			X		
COOLING COIL VALVE ALARM	X				
AIR HANDLING UNIT (AHU#15-17)					
SUPPLY FAN STATUS	X				
SUPPLY FAN MANUAL/AUTO			X		
SUPPLY FAN VFD START/STOP		X			
SUPPLY FAN VFD SPEED COMMAND				X	
SUPPLY FAN VFD ALARM			X		
RETURN FAN STATUS (PROOF)	X				
RETURN FAN MANUAL/AUTO			X		
RETURN FAN VFD START/STOP		X			
RETURN FAN VFD SPEED COMMAND				X	
RETURN FAN VFD ALARM			X		
OUTDOOR AIR DAMPER POSITION			X		
RETURN AIR DAMPER POSITION			X		
EXHAUST AIR DAMPER POSITION			X		
MIXED AIR TEMPERATURE			X		
SUPPLY AIR TEMPERATURE			X		
SUPPLY AIR HUMIDITY SENSOR			X		
SUPPLY AIR DUCT PRESSURE SENSOR			X		
FILTER DIFFERENTIAL PRESSURE SENSOR			X		
SMOKE DETECTOR (SUPPLY)	X				
SMOKE DETECTOR (RETURN)	X				
SMOKE DETECTOR ALARM	X				
FREEZE STAT	X				
FREEZE STAT ALARM	X				
HEATING COIL VALVE				X	
HEATING COIL VALVE POSITION			X		
HEATING COIL ENTERING WATER TEMPERATURE			X		
HEATING COIL LEAVING WATER TEMPERATURE			X		
HEATING COIL VALVE ALARM	X				
COOLING COIL VALVE				X	
COOLING COIL VALVE POSITION			X		
COOLING COIL ENTERING WATER TEMPERATURE			X		
COOLING COIL LEAVING WATER TEMPERATURE			X		
COOLING COIL VALVE ALARM	X				
AIR HANDLING UNIT (AHU#18-20)					
SUPPLY FAN STATUS (PROOF)	X				
SUPPLY FAN MANUAL/AUTO			X		
SUPPLY FAN VFD START/STOP		X			
SUPPLY FAN VFD SPEED COMMAND				X	
SUPPLY FAN VFD ALARM			X		
RETURN FAN STATUS (PROOF)	X				
RETURN FAN MANUAL/AUTO			X		
RETURN FAN VFD START/STOP		X			
RETURN FAN VFD SPEED COMMAND				X	
RETURN FAN VFD ALARM			X		
OUTDOOR AIR DAMPER POSITION			X		
RETURN AIR DAMPER POSITION			X		
EXHAUST AIR DAMPER POSITION			X		
MIXED AIR TEMPERATURE			X		
SUPPLY AIR TEMPERATURE			X		
SUPPLY AIR HUMIDITY SENSOR			X		
SUPPLY AIR DUCT PRESSURE SENSOR			X		
FILTER DIFFERENTIAL PRESSURE SENSOR			X		
SMOKE DETECTOR (SUPPLY)	X				
SMOKE DETECTOR (RETURN)	X				
SMOKE DETECTOR ALARM	X				
FREEZE STAT	X				
FREEZE STAT ALARM	X				
HEATING COIL VALVE				X	
HEATING COIL VALVE POSITION			X		
HEATING COIL ENTERING WATER TEMPERATURE			X		
HEATING COIL LEAVING WATER TEMPERATURE			X		
HEATING COIL VALVE ALARM	X				
COOLING COIL VALVE				X	
COOLING COIL VALVE POSITION			X		
COOLING COIL ENTERING WATER TEMPERATURE			X		
COOLING COIL LEAVING WATER TEMPERATURE			X		
COOLING COIL VALVE ALARM	X				

(CONTINUED FROM PREVIOUS)

DDC SYSTEM POINTS LIST

Description	Binary Inputs	Binary Outputs	Analog Inputs	Analog Outputs	Remarks
HIGH STATIC PRESSURE SAFETY		X			
LOW LIMIT DIRECT EVAPORATOR TEMPERATURE		X			
EXHAUST DAMPER DEFLECTION STATUS		X			
SPACE TEMPERATURE (TYPICAL)			X		TYPICAL OF 2
HAND OFF AUTO SELECTOR			X		TYPICAL OF 2
RELIEF EXHAUST FANS (RF#1-3, FA#2-3)					
RELIEF EXHAUST FAN STATUS (PROOF)	X				
RELIEF EXHAUST FAN VFD STATUS			X		
RELIEF EXHAUST FAN MANUAL/AUTO			X		
RELIEF EXHAUST FAN VFD START/STOP		X			
RELIEF EXHAUST FAN VFD SPEED COMMAND				X	
RELIEF EXHAUST FAN VFD ALARM			X		
SMOKE DETECTOR (SUPPLY)	X				
SMOKE DETECTOR (RETURN)	X				
SMOKE DETECTOR ALARM	X				
FREEZE STAT	X				
FREEZE STAT ALARM	X				
MISC EXHAUST FANS (EF#1-3, FA#1-2)					
EXHAUST FAN STATUS	X				
EXHAUST FAN MANUAL/AUTO			X		
EXHAUST FAN START/STOP		X			
EXHAUST FAN SPEED COMMAND				X	
MISC EXHAUST FANS (EF#4-5, FA#4-5)					
EXHAUST FAN STATUS	X				
EXHAUST FAN MANUAL/AUTO			X		
EXHAUST FAN START/STOP		X			
MISC TRANSFER FANS (TF#1-2, FA#1-2)					
TRANSFER FAN STATUS	X				
TRANSFER FAN MANUAL/AUTO			X		
TRANSFER FAN START/STOP		X			
CONDENSATION DRAIN PUMP (PP#1-2)					
CONDENSATION PUMP STATUS	X				
EXHAUST FAN STATUS		X			
EXHAUST FAN START/STOP CONTROL		X			
CONDENSATE PUMP ALARM	X				
UNDERSLAB FANS (FA#1-2, FA#6-7)					
EXHAUST FAN STATUS	X				
EXHAUST FAN MANUAL/AUTO			X		
EXHAUST FAN START/STOP CONTROL		X			
ELECTRIC HOUSING PUMP HOUSE FANS (FA#3-5, FA#8-9)					
FAN STATUS	X				
FAN ALARM		X			
SUPPLY FAN MANUAL/AUTO	X				
SUPPLY FAN START/STOP CONTROL	X				
EXHAUST FAN MANUAL/AUTO	X				
EXHAUST FAN START/STOP CONTROL		X			
MECHANICAL ROOM FANS (FA#10-14, FA#16-17)					
FAN STATUS	X				
FAN ALARM		X			
SUPPLY FAN MANUAL/AUTO	X				
SUPPLY FAN START/STOP CONTROL		X			
EXHAUST FAN MANUAL/AUTO	X				
EXHAUST FAN START/STOP CONTROL		X			
SMOKE DAMPER ACTUATOR	X				
SMOKE DAMPER ALARM	X

DESCRIPTION OF OPERATION INTRODUCTION:
THE DESCRIPTIONS, SEQUENCES, AND FOLLOWING SCHEMATIC DIAGRAM OF OPERATIONAL REQUIREMENTS. THE DESCRIPTION IS NOT A STRICT PROGRAMMING GUIDE. THE CONTROLS CONTRACTOR (CC) IS RESPONSIBLE FOR THE FUNCTION OF THE SYSTEM AND ALL PROGRAMMING REQUIRED FOR ACHIEVING THE SYSTEM OPERATION NOTED AND AS OUTLINED IN THE SEQUENCES OF OPERATIONS. THE CC WILL PERFORM ALL CONTROL STRATEGIES AS OUTLINED UNLESS NOTED OTHERWISE.

THE SYSTEM WILL BE A TOTALLY NATIVE BACNET BASED SYSTEM, INCLUDING A MICROSOFT WINDOWS 10 COMPATIBLE OPERATOR'S WORKSTATION. THE OPERATOR'S WORKSTATION, ALL BUILDING CONTROLLERS, APPLICATION CONTROLLERS, AND ALL INPUT/OUTPUT DEVICES SHALL COMMUNICATE USING THE PROTOCOLS AND NOT MORE THAN AS DEFINED BY ANSI/ASHRAE STANDARD 135-2016, BACNET, IN OTHER WORDS, ALL WORKSTATIONS AND CONTROLLERS, INCLUDING UNITARY (TERMINAL) UNITS, SHALL BE NATIVE BACNET DEVICES. MODBUS INTERFACE MAY ONLY BE USED FOR COMMUNICATION TO SYSTEM-RUNNING SPECIFICALLY NOTED.

MONITOR/OPERATION:
A MINIMUM OF [XX] SEPARATE POINTS IS PROVIDED FOR EACH PIECE OF EQUIPMENT. THESE POINTS WILL BE PROVIDED FOR MONITORING, DIAGNOSTICS, AND CONTROL, IN ADDITION TO ALL POINTS REQUIRED TO PERFORM THE CONTROL SEQUENCES AS NOTED IN THE DESCRIPTION OF OPERATION. ALL CONTROL POINTS WILL BE AVAILABLE FOR GRAPHING.

HARDWARE:
THE BMS SYSTEM WILL BE ACCESSED ON A LOCAL PERSONAL COMPUTER PROVIDED BY THE CC. CONTRACTOR'S LOCATION WITH OWNER. ADDITIONALLY, PROVIDE INTERNET ACCESS VIA HARD CONNECT, CC TO COORDINATE WITH OWNER.

CONTROLS CONTRACTOR SHALL PROVIDE ANY REQUIRED HANDHELD DEVICES AND/OR SOFTWARE FOR PROGRAMMING CONTROLLERS AT THE ACTUAL EQUIPMENT LOCATION AND NOT AT THE BMS FRONT END. THIS INCLUDES FOR ANY TERMINAL UNIT CONTROLLERS OR CONTROL OF CONTROLLERS REQUIRING FOR BALANCING, SETPOINT SHIFT, DIAGNOSTICS, AND/OR FUNCTIONAL TESTING. THESE DEVICES ARE TO BE TURNED OVER TO THE BUILDING OWNER/FACILITY GROUP AT TIME OF PROJECT COMPLETION FOR FUTURE USE.

BMS CONTROLLERS:
THE CONTROLS CONTRACTOR SHALL PROVIDE LOW VOLTAGE WIRING FOR FACTORY PACKAGED CONTROLLERS AND SENSORS. ALL BMS CONTROLLERS AND PANELS SHALL BE PROVIDED WITH SPARE POINTS CAPACITIES. THESE VARY BY CONTROLLER TYPE AND APPLICATION.

FOR I/O AND DESIGN PURPOSES, ALLOW FOR 10% SPARE POINT CAPACITY IN GENERAL BUT SUFFICIENT TO ACCOMMODATE THE CRITERIA ABOVE IN EACH CASE THAT WILL FIND ACTUAL EXTENSION FRONT PART DESIGN. FOR EXAMPLE, DO NOT DO FOR A NEXT SIDE CONTROLLER WITH ASSOCIATED COST SAVINGS IS WRONG CONCEPT. IT IS APPROPRIATELY TO WITH THE NEXT SIDE CONTROLLER.

ALL DEVICES SHALL BE BACNET OVER IP PROTOCOL. CHOSE PROTOCOL STANDARDS MEANS THAT COMPLIANCE AND INTEROPERABILITY CONNECT THAT PROVIDED BY THAT WILL ASSURE COMPLIANCE WITH THESE STANDARDS AS AND WHEN THEY ARE UPDATED. THE BMS CONTROL SYSTEM VENDOR ACTION MUST ALIGN BY WILLING TO GET THEIR BACNET PROTOCOL WITHOUT ANY MODIFICATIONS. CONTROLS CONTRACTOR SHALL INCLUDE, IN THEIR INITIAL AND THE COST OF ANY CONFLICT, INTERFACES DATA THAT MAY BE NEEDED NOT EXPRESSLY FOR FULL INTERCONNECTIVITY WITH DDC CONTROLLERS ON EQUIPMENT BEING INSTALLED AT THIS PROJECT.

ALL CONTROLS A SINGLE BMS CONTRACTOR:
ALL CONTROLS SHALL BE DDC AND SHALL BE A SYSTEM SHALL BE CONTROLLED BY A SINGLE CONTROLLER OF SUFFICIENT I/O CAPACITY SO THAT THE POINTS ARE NOT ON ISLANDS.

CONTROLLERS: "SYSTEMS SHALL NOT BE CONTROLLED BY MULTIPLE CONTROLLERS WHEN A SINGLE OR MULTIPLE INTERCONNECTED CONTROLLERS WITH EQUIVALENT I/O ARE ACCEPTABLE, AS LONG AS ALL SPECIFIED POINTS ARE ACCESSIBLE AND CONTROLLED AND THE CONTROLLERS PROGRAM LOOP SPEED AND FREQUENCY OF THE BMS COMMUNICATIONS LOOP DOES NOT EFFECT THE OPERATION OF PROGRAM LOOPS AND DRIVERS OF THE MAJOR POWER AND CONTROLLED POINTS.

RUN OF ALL DEVICES:
ALL CONTROLLERS FOR NON-TERMINAL UNIT APPLICATIONS, FOR EXAMPLE AHUS OR OTHER FACTORY SYSTEMS, SHALL HAVE INTEGRAL HUMAN SWITCHES FOR ALL OUTPUTS, BOTH SPACE AND AHU AND/OR ANALOG OUTPUTS SHALL INCLUDE INTERVENTIONS TO ALLOW MANUAL CONTROL OF THE ANALOG SIGNAL WHEN THE WHEEL IS IN THE HAND POSITION. ALL HOA POSITIONS SHALL BE MONITORED BY THE CONTROLLER, AVAILABLE TO THE CONTROLLER PROGRAM LOOPS AND THE STATUS OF THE HOA IS DISPLAYED RIGHT TO THE OPERATOR INTERFACE. WHEN ANY HOA IS NOT ON SELECTED OUT OF THE AUTO POSITION, AN ALARM SHALL OCCUR AT THE OPERATOR WORKSTATION DETAILING THE SPECIFIC OUTPUT THAT IS IS OVERRIDE AND A FLASHING ALARM POINT SHALL BE VISIBLE ON THE SYSTEM GRAPHIC FOR THE RESPECTIVE POINT.

BMS GENERATE COMMONLY VALVES AND CONTROL DAMPERS:
THE CONTROL CONTRACTOR SHALL PROVIDE ALL CABLING AND HARDWARE DESCRIBED UNLESS NOTED OTHERWISE. SEE MECHANICAL SCHEDULES AND SCHEMATICS FOR FURTHER DETAIL. ALL SENSORS AND HARDWARE ARE TO BE INSTALLED PER THE APPLICATION THAT THEY WILL SERVE AND ARE TYPICAL OF INDUSTRY STANDARD QUALITY FOR THE APPLICATION.

TEMPERATURE SENSORS IN PUBLIC AREAS TO HAVE NON-ADJUSTABLE SENSORS WITH DIGITAL LOCAL TEMPERATURE LED DISPLAY IN LATEST. TEMPERATURE SENSORS IN BACK OF HOUSE AREAS TO HAVE NON-ADJUSTABLE TENANTED SURFACE LOCAL TEMPERATURE LED DISPLAY READOUT.

ALL PIPING CONTROL VALVES ARE PROVIDED AND CONTROLLED BY ADDITIONAL CONTRACTOR. SEE MECHANICAL SCHEDULES AND SCHEMATICS FOR DETAILS. THE PIPING CONTROL VALVES ARE INSTALLED BY THE MECHANICAL CONTRACTOR.

MOTORIZED DAMPERS ARE PROVIDED AS DESCRIBED IN THE MECHANICAL DRAWINGS. MOTORIZED DAMPER APPLICATIONS WILL BE PROVIDED AS FOLLOWS: THE SUPPLIER SHALL PROVIDE ACTUATORS FOR VAV TERMINAL UNITS AND AIR HANDLING UNIT MIXING BOXES. EACH DAMPER SHALL BE CONTROLLED INDEPENDENTLY AND LINKAGE BETWEEN DAMPERS ENGINEERED WITH AIR HANDLING UNITS SHALL BE DISCONNECTED OR REMOVED.

SOFTWARE:
- THE SOFTWARE PACKAGE SHALL ALLOW FOR LOCAL PRINTING.
- ADD GRAPHICS FOR EACH SYSTEM AS PROVIDED.
- A GRAPHICS PACKAGE WILL BE PROVIDED.
- SYSTEM SOFTWARE SHALL BE VIEWABLE FROM INTERNET BASED WEB ACCESS WITH ASSIGNED PROTECTION AND USER LEVELS OF USER ACCESS DEFINITION (FOR EXAMPLE, ACCESS TO VIEW ONLY ACCESS TO VIEW AND CHANGE OF PRODUCTS, ETC.)

SUBMITTALS:
WITH FOLLOWING WILL BE SUBMITTED BY THE CONTROLS CONTRACTOR TO AUTHORIZED OWNER PRIOR TO CONTROLS AND PROGRAMMING INSTALLATION:
A. CONTROL SYSTEM DRAWING PACKAGE. DRAWINGS PACKAGE TO CONSIST OF:
- SYSTEM ARCHITECTURE DIAGRAMS
- CONTROLLER WIRING DIAGRAMS
- FLOOR PLAN DRAWINGS THAT SHOW ALL CONTROL DEVICES THAT REQUIRE COORDINATION WITH OTHER TRADES. FOR EXAMPLE, ROOM TEMPERATURE SENSORS, DUCT STATIC PRESSURE SENSORS, ETC.

B. SEQUENCES OF OPERATION FOR EACH SYSTEM AND DEVICE SUBMITTALS, INCLUDING A VALVE SCHEDULE AND A DAMPER SCHEDULE.

D. PROPOSED MODIFICATIONS TO THE ORIGINAL RUSHING DESCRIPTION OF OPERATIONS.
E. MONITOR GRAPHICS LIST.
F. A PRIORITIZED POINTS LISTING IDENTIFYING ALARM AND TRENDING CONFIGURATIONS.
G. A POINTS LIST IMPORTED FOR A MINIMUM 168 HOUR TRENDING UPON PROJECT COMPLETION.

CLOSEOUT DOCUMENTATION:
THE FOLLOWING WILL BE SUBMITTED BY THE CONTROLS CONTRACTOR TO RUSHING AND OWNER FOR PROJECT CLOSE OUT PER SPECIFIED DEADLINES:
A. AS-BUILT CONTROL SYSTEM DRAWING PACKAGE.
B. CONTROL SYSTEM OPERATIONS AND MAINTENANCE MANUALS.
C. FINAL SEQUENCES PROGRAMMED SEQUENCE OF OPERATIONS (MICROSOFT WORD FORMAT).
D. TRAINING AND MINUTES.
E. FINAL COMPLETE HARD COPY AND ELECTRONIC COPY OF ALL PROGRAMMING INCLUDING SETPOINTS.
F. CONTROLS PRE-NET-TO-POINT CHECKLIST TO INCLUDE FROM INSTRUMENT TO CONTROLLER TO GUI.
G. BID SPECIFICATION FOR COMPLETE BMS CLOSEOUT DOCUMENTATION REQUIREMENTS.

SEQUENCE MODIFICATIONS AND AS BUILTS:
THE SEQUENCES OF OPERATIONS DO NOT INCLUDE ALL THE REQUIRED INTERCONNECTIONS, INTERLOCKS, SAFETIES, ETC. REQUIRED FOR A COMPLETE AND FUNCTIONAL SYSTEM. THE CONTROLS CONTRACTOR SHALL PROVIDE ALL SUCH ITEMS REQUIRED FOR PROPER SYSTEM OPERATION. ANY DEVIATIONS FROM THE SEQUENCES OF OPERATIONS SHALL BE NOTED IN THE SUBMITTAL PROGRAMMING SUBMITTAL. ADDITIONAL PROGRAMMING ESSENTIAL FOR PROPER SEQUENCE OF OPERATIONS, AND THAT OCCURS IN THE SUBMITTED CONTROLS SEQUENCES OF OPERATIONS, SHALL BE NOTED IN THE SUBMITTED SEQUENCES OF OPERATIONS.
AS BUILT CONTROLS SEQUENCES SHALL BE PROVIDED BY THE CONTROLS CONTRACTOR. THE DESCRIPTION OF OPERATIONS AS BUILT CONTROLS SHALL BE REVIEWED AND EDITED BY THE CONTROLS PROGRAMMER DURING CONTROLS SYSTEM DESIGN AND PROGRAMMING EFFORTS. THE FINAL SEQUENCES DESCRIPTIONS WILL USE THE IMAGE CHANGES REFLECTIVE IN WORD AND ELECTRONICALLY SUBMIT MICROFICHE FORM TO RUSHING DESCRIPTION OF OPERATIONS FOR REVIEW AND APPROVAL. THE CONTROLS CONTRACTOR WILL TRACK MODIFICATIONS AND GIVE THESE MODIFICATIONS TO THE ENGINEERING AS MEDIUM CHANGES AS INCLUDED IN THE FINAL SEQUENCES OF OPERATIONS. THE CONTROLS CONTRACTOR WILL GIVE THE FINAL CHANGES REFLINE IN WORD AND ELECTRONICALLY SUBMIT MICROFICHE FORM TO RUSHING DESCRIPTION OF OPERATIONS FOR REVIEW AND APPROVAL. THE CONTROLS CONTRACTOR WILL PROVIDE A COMPLETE HARD COPY AND ELECTRONIC COPY OF ALL PROGRAMMING INCLUDING SETPOINTS.

ALARMING:
THE FOLLOWING DESCRIPTION OF OPERATIONS INCLUDES ONLY LIMITED DISCUSSION OF ALARM POINTS AND PRIORITIES. FULL DEVELOPMENT OF ALARMS WILL BE DONE BY THE CONTROLS CONTRACTOR WITH THE DESIGN AND OWNER STAFF TO BE MADE IN JOB START UP AND COMMISSIONING.

THE CONTROLS CONTRACTOR IS ALLOWANCE ALIGNING WITH THE OWNERS DEDICATE CONTROLS TEST AND MUST BE COMPLETED THE CONTROLS CONTRACTOR WILL SET UP THE HOA OF THE POINT AT THE REVIEWED AND APPROVED BY THE COMMISSIONING AGENT. THE COMMISSIONING AGENT WILL VERIFY THE FUNCTIONALITY OF THOSE ALARMS DURING THE FUNCTIONAL PERFORMANCE TEST

THE CONTROLS CONTRACTOR PROGRAMMING IS TO INCORPORATE ALARM TIME DELAYS TO MINIMIZE THE OCCURRENCE OF NUISANCE ALARMS.

STARTUP AND TEST & BALANCE:
THE MECHANICAL CONTRACTOR WILL REQUIRE THE INVOLVEMENT OF THE CONTROLS CONTRACTOR DURING EQUIPMENT STARTUP AND DURING TEST & BALANCE. THE MECHANICAL CONTRACTOR WILL COORDINATE WITH THE CONTROLS CONTRACTOR ALL REQUIRED INVOLVEMENT TO ENSURE TIMELY STARTUP AND TEST & BALANCE OF ALL MECHANICAL AND PLUMBING SYSTEMS. TEMPORARY CONTROL SEQUENCES AND/OR TROUBLESHOOTING OF SYSTEM COMPONENTS MAY BE REQUIRED BY THE CONTROLS CONTRACTOR. EQUIPMENT STARTUP CONTRACTOR AND/OR TEST & BALANCE CONTRACTOR WILL

COORDINATE ALL SPECIAL BALANCE SETPOINTS OUTLINED IN THE DESCRIPTION OF OPERATIONS, MECHANICAL DRAWINGS, AND MECHANICAL SPECIFICATIONS WITH THE CONTROLS CONTRACTOR.

DIRECT TO POINT:
THE CONTROLS CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE BMS CONTROL SYSTEM OPERATION AND THE POINT-TO-POINT FUNCTION OF EACH CONTROL POINT IN THE SYSTEM. POINT-TO-POINT FUNCTION SHALL BE CONFIRMED AND MEASURED FROM THE EQUIPMENT TO LOCAL CONTROLLER AND FROM THE LOCAL CONTROLLER TO THE FRONT END BY THE CONTROLS CONTRACTOR. CONTROLS POINT-TO-POINT TO BE COMPLETED PRIOR TO SYSTEM FUNCTIONAL TESTING.

COMMISSIONING:
THE COMMISSIONING AGENT WILL ASSURE THE INVOLVEMENT OF THE CONTROLS CONTRACTOR DURING FUNCTIONAL PERFORMANCE TESTING BEFORE TENANT OCCUPANCY UNLESS OTHERWISE AS DEFINED. THE CONTROLS CONTRACTOR WILL COORDINATE WITH THE COMMISSIONING AGENT WHICH SHALL WITNESS FUNCTIONAL TEST AND WITH OTHERWISE DIRECTED BY THE CONTROLS CONTRACTOR AND AS DIRECTED BY THE COMMISSIONING AGENT AS A RESULT OF TESTING SOME PROGRAMMING CHANGES WILL BE REQUIRED. THE CONTROLS CONTRACTOR IS RESPONSIBLE FOR PROGRAMMING MODIFICATIONS REQUIRED TO SATISFY THE OPERATIONAL INTENT OF THIS DESCRIPTION OF OPERATIONS. THE CONTROLS CONTRACTOR IS RESPONSIBLE FOR DOCUMENTATION OF ALL FINAL SETPOINTS, RETESTING OF REQUIRED COMMISSIONING, TESTING AND BALANCING, AND CALIBRATION.

PROGRAMMING:
PROGRAMMING SHALL BE WELL ORGANIZED WITH EXTENSIVE COMMENTARY USED. COMMENT LINES ARE REQUIRED TO PROVIDE GUIDANCE TO TENANT IMPROVEMENT PROGRAMMERS OF FUTURE MODIFICATIONS AS NEEDED.
SEQUENCES SHALL BE WELL ORGANIZED WITH EXTENSIVE COMMENTARY USED. COMMENT LINES ARE REQUIRED TO PROVIDE GUIDANCE TO TENANT IMPROVEMENT PROGRAMMERS OF FUTURE MODIFICATIONS AS NEEDED.
ALL BMS CONTROL SETTINGS, WHETHER SPECIFIED OR CHANGE, SHALL BE ADJUSTABLE THROUGH THE BMS FRONT END SYSTEM AT THE BUILDING OPERATOR. WHERE SETPOINTS ARE DETERMINED TO BE A FUNCTION OF FAILURE OR MANUAL DIRECTED BY THE OWNER, A RANGE SHALL BE ENTERED TO SETPOINT AND INPUT OUTSIDE OF THAT RANGE SHALL NOT BE ALLOWED.

TRENDING:
DURING FUNCTIONAL TESTING, THE CONTROLS CONTRACTOR DETAILS SET UP TRENDS WITH SUITABLE SAMPLE PERIODS AND DURATIONS FOR FUNCTIONAL TEST DOCUMENTATION OF CRITICAL PARAMETERS SUCH AS SETPOINTS, VALVE POSITION, TEMPERATURES, AND PRESSURES. A LIST OF ALL POINTS, TREND TYPE, AND TREND DURATION SHALL BE DEVELOPED BY THE CONTROLS CONTRACTOR DURING SYSTEM DESIGN AND STARTUP PROCESS. THE LIST SHALL BE SUBMITTED TO THE PROJECT TEAM AND RUSHING FOR REVIEW PRIOR TO THE START OF FUNCTIONAL TESTING FOR REVIEW. AFTER THE FUNCTIONAL TEST HAS BEEN COMPLETED THE CONTROLS CONTRACTOR WILL SET UP THE HOA OF THE POINT AT THE REVIEWED AND APPROVED BY THE COMMISSIONING AGENT. THE COMMISSIONING AGENT WILL VERIFY THE FUNCTIONALITY OF THOSE ALARMS DURING THE FUNCTIONAL PERFORMANCE TEST

GRAPHICS:
DURING DRAWING REVIEW THE CONTROLS CONTRACTOR WILL FORWARD A PRINT OUT OF THE GRAPHICS FOR THE COMMISSIONING AGENT, OWNER'S DESIGNATE, AND RUSHING FOR REVIEW. WHEN THE GRAPHICS ARE COMPLETED THE CONTROLS CONTRACTOR WILL ARRANGE A MEETING WITH THE COMMISSIONING AGENT, OWNER DESIGNATE, AND RUSHING TO REVIEW THE FUNCTIONALITY

THE GRAPHICS. THE SYSTEM GRAPHICS ARE REQUIRED TO BE COMPLETED PRIOR TO THE START OF FUNCTIONAL TESTING. THIS REQUIREMENT IS IN PLACE TO ENSURE THAT THE SYSTEM IS TESTED UNDER THE SAME INTERFACE AS THE OWNER WILL BE USING ONCE THE BUILDING IS TURNED OVER.

TRAINING:
CONTROLS CONTRACTOR WILL INCLUDE AND SCHEDULE A MINIMUM OF 40 HOURS OF TRAINING WITH BUILDING OPERATIONS STAFF.

CODES AND PERMITS:
CONTROLS CONTRACTOR IS TO COMPLY WITH ALL APPLICABLE CODES AS REQUIRED FOR THE PROJECT. PLEASE NOTE THE MECHANICAL DRAWING SHEETS OF DESIGN CRITERIA NOTES AND SCOPE FOR DETAILS.

CONTRACTOR IS TO INCLUDE ALL COSTS FOR LINE VOLTAGE AND SAME VOLTAGE WIRING POWER AS ASSOCIATED WITH THEIR SCOPE OF WORK.

WARRANTY:
CONTRACTOR THAT WILL INCLUDE A ONE YEAR WARRANTY OF THE CONTROL SYSTEM, ALL COMPONENTS, SOFTWARE, LABOR, AND PC HARDWARE. START DATE IS DETERMINED BY DATE OF OWNER ACCEPTANCE AND ENDS TWELVE MONTHS THEREAFTER.

EMERGENCY QUANTITY COUNTS IN DESCRIPTION OF OPERATIONS:
THE CONTROLS CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE OWNER'S FOR THE MECHANICAL AND PLUMBING DRAWINGS.

CONTROL SYSTEM POWER:
THE CONTROLS CONTRACTOR IS RESPONSIBLE FOR VERIFYING AND COORDINATING ALL REQUIRED POWER TO THE BMS CONTROL SYSTEM COMPONENTS WITH THE ELECTRICAL ENGINEER AND/OR ELECTRICAL CONTRACTOR. THE MECHANICAL DRAWINGS OUTLAY THE MISC. POWER CIRCUITS THAT HAVE BEEN COORDINATED WITH THE ELECTRICAL CONSULTANT. SEE THE MISC. POWER CIRCUIT SCHEDULE. CONTRACTOR IS TO COORDINATE THE EXACT TERMINATIONS, LOCATIONS OF ALL MECHANICAL AND PLUMBING MISC. POWER CIRCUITS WITH THE ELECTRICAL ENGINEER AND/OR ELECTRICAL CONTRACTOR.

EMERGENCY (NOT FOR LEGALLY REQUIRED) STANDBY POWER (NOT TO BE OPTIONAL STANDBY POWER (NOT TO BE):
THE DESCRIPTION OF OPERATIONS CONTAINS A DESCRIPTION OF THE EQUIPMENT THAT IS PROVIDED WITH EMERGENCY OR STANDBY POWER AND THE SEQUENCE THAT IS TO BE PERFORMED IN THIS MODE. THE CONTROLS CONTRACTOR IS RESPONSIBLE FOR VERIFYING AND COORDINATING ALL CONTROLS AND CONTROL SYSTEM COMPONENTS THAT SERVE THE ASSOCIATED EQUIPMENT TO ENSURE THE SEQUENCE ARE PERFORMED AS DESCRIBED IN THE SEQUENCES. REFER TO THE MECHANICAL AND PLUMBING DRAWING SCHEDULES FOR A COMPLETE LIST ALL EQUIPMENT ON EMERGENCY OR STANDBY POWER. EMERGENCY POWER IS OBTAINED AS SECONDARY BACKUP GENERATOR POWER THAT IS REQUIRED FOR FINAL LIFE SAFETY OPERATION. STANDBY POWER IS DEFINED AS SECONDARY BACKUP GENERATOR POWER THAT IS REQUIRED FOR NON-FIRE LIFE SAFETY OPERATION.
FOR PROJECTS WITH ALL THREE TYPES OF GENERATOR POWER, CONTRACTOR TO ENSURE THAT ALL DEVICES ARE POWERED CORRECTLY TO PERFORM INTENDED OPERATION. CONTROLS CONTRACTOR TO CONFIRM THAT POTENTIAL OF MECHANICAL SYSTEM OR EMERGENCY HOA/OFF IS LIMITED SO THAT THE GENERATOR DOES NOT ENTER INTO AN OVERLOADED CONDITION BY LIMITING OPTIONAL STANDBY LOADS. THE BMS SHALL MONITOR THE GENERATOR AND THE MECHANICAL AND PLUMBING EQUIPMENT CONTROLLERS TO OPTIONAL STANDBY LOADS IN THE EVENT OF LOWER THAN NORMAL GENERATOR CAPACITY. CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL ENGINEER AND/OR ELECTRICAL CONTRACTOR TO DETERMINE THE EXACT SEQUENCE OF OPERATION FOR EACH PIECE OF EQUIPMENT. CONTRACTOR SHALL PROVIDE A STANDBY EMERGENCY OPERATION SEQUENCE OF OPERATION FOR THE CONTROLS SYSTEM AND ALL EQUIPMENT CONTROLLERS. CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL ENGINEER AND/OR ELECTRICAL CONTRACTOR TO DETERMINE THE EXACT SEQUENCE OF OPERATION FOR EACH PIECE OF EQUIPMENT.

BELOW IS A BRIEF DESCRIPTION OF POWER REQUIREMENTS:

EMERGENCY POWER:
- GENERATOR FUEL POLLSTATION, GENERATOR FUEL TANK/PUMP.

LEGALLY REQUIRED STANDBY POWER LOADS:
- MECHANICAL SYSTEMS:
  - FIRE PUMP

OPTIONAL STANDBY POWER LOADS (ORDERED FROM HIGHEST PRIORITY TO LOWEST PRIORITY):
- MECHANICAL SYSTEMS:
  - SMOKE CONTROL SYSTEMS INCLUDING BUT NOT LIMITED TO TERMINAL UNIT INLET DAMPERS, AIR CONTROL VALVES, CONTROL DAMPERS AND ASSOCIATED CONTROLS.
  - EMERGENCY BOILERS
  - ONE (1) CHILLER (NOTE: MINIMUM CAPACITY)
  - ALL PUMPS ASSOCIATED WITH CHILLER(S) (CHILLED WATER, HOT WATER, CONDENSER WATER, ETC.)
  - ALL ASSOCIATED CHILLED WATER AND HOT WATER VALVES
  - COOLING TOWER(S) INCLUDING CONDENSER WATER PUMP(S) AND ASSOCIATED EQUIPMENT
  - ONE (1) AIR HANDLING UNIT SERVING ESSENTIAL SPACES
  - FRAN-2 SUPPLY FAN (FOR ROOM CONNECTIVITY)
  - FRAN-2 CONDENSING UNIT (FOR ROOM CONNECTIVITY)
  - ELECTRICAL EQUIPMENT ROOM COOLING

GENERATOR TRANSFER SWITCH:
THE BMS SHALL MONITOR GENERATOR TRANSFER SWITCH STATE. THIS WILL BE USED TO DETERMINE WHEN EMERGENCY OR STANDBY POWER MODES ARE IN OPERATION AND WHEN NORMAL POWER MODE HAS BEEN RESTORED. THESE CONTACTS TO BE ASSIGNED PER OWNER.
THE ELECTRICAL DESIGN INCLUDES MULTIPLE GENERATOR POWER TRANSFER SWITCHES FOR:
- EMERGENCY POWER (NEC/IBC)
- LEGALLY REQUIRED STANDBY POWER (NEC 701)
- OPTIONAL STANDBY POWER (NEC 702)

SEE ELECTRICAL DRAWINGS FOR DETAILS.
THE CONTROLS CONTRACTOR SHALL REMAIN ENGAGED AS LONG AS THERE IS SUFFICIENT FUEL FOR THE EMERGENCY EVENT, AND THE FUEL LONG MORE DESIGN TIME BY THE CONTRACTOR (E.G. 48 HOURS). ANY CHANGES REQUIRED TO COMPLY WITH CODE WILL BE MADE AT NO COST OF THE OWNER. ALL REQUIRED CHANGES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S ENGINEER AND COMMISSIONING AGENT.

GENERATOR FUEL OIL SYSTEM:
THE BMS SHALL MONITOR MULTIPLE GENERATOR FUEL OIL SYSTEM POINTS. THE BMS SHALL MONITOR MULTIPLE ALARM POINTS IN THE FUEL OIL SYSTEM AND SHOULD BE ASSOCIATED WITH THE FUEL SYSTEM. THE FOLLOWING IS A LIST OF POINTS TO MONITOR (FUEL SHARING BY C.E.):
A. [#] 20KW CONTACT CLOSURE TO BASED ON FUEL LEVEL AND 5% OUTPUT (SERIAL CRITICAL MONITORING, MONITOR, AND LOW LEVEL ALARM ABOVE MINIMUM (L.M.) FUEL TANK.
B. [1] 4-20MA OUTPUT (SIZE LEVEL) AT ABOVE GROUND (E.G. "A") FUEL TANK.
C. FIRE PUMP FUEL STATUS ALARM (ALL ALARMS)
   1. 75% FUEL TANK ALARM
   2. 25% FUEL TANK ALARM
   3. LOW LEVEL ALARM
D. LEAK ALARM
E. GENERATOR OPERATING STATUS

FIRST LIST OF ABBREVIATIONS FOR THIS DESCRIPTION OF OPERATIONS:
CC CONTROLS CONTRACTOR
BMS BUILDING MANAGEMENT SYSTEM
EC ELECTRICAL CONTRACTOR
FOB FOR LIFE SAFETY

OUI SYMPHONIC USER INTERFACE (TOP DOG)
MC MECHANICAL CONTRACTOR
MAU MAKE UP AIR
MAU-1 10-20 SYUS
PC PLUMBING CONTRACTOR
DPT DIFFERENTIAL PRESSURE TRANSMITTER
RH RELATIVE HUMIDITY
ADA ACCESSIBLE AT A SINGLE LOCATION FOR EACH SYSTEM

EQUIPMENT COMMUNICATION INTERFACE:
CONTROLS CONTRACTOR TO INCLUDE ALL COSTS, SPACE AND EFFORT REQUIRED FOR COMMUNICATION INTERFACE WHERE THE INTERFACE IS NOT A STANDARD OPTION ON THE EQUIPMENT. FOR MULTI-ACCESSIBLE INTERFACE SHOULD NOT REPLICATE HARDWIRED CONTROLS POINTS REQUIRED FOR ESSENTIAL SYSTEM OPERATION BUT SHOULD SUPPLEMENT HARDWIRED POINTS TO PROVIDE ADDITION EQUIPMENT MONITORING AND DIAGNOSTIC INFORMATION. SEE MECHANICAL AND PLUMBING DRAWINGS FOR BASIS OF DESIGN EQUIPMENT MINUS INTERFACE. NOTE THAT THE MECHANICAL CONTRACTOR AND/OR PLUMBING ALTERNATE EQUIPMENT MANUFACTURERS AND THEIR FINAL FURTHER COORDINATION WITH THE CONTROLS CONTRACTOR MAY BE REQUIRED. SEE DESCRIPTION OF OPERATIONS FOR NOTES ON WHAT IS THE BASIS LEVEL OF COMMUNICATION THAT IS REQUIRED.
FOR THIS PROJECT THE FOLLOWING IS A LIST OF EQUIPMENT THAT MAY HAVE A CONTROLS COMMUNICATED INTERFACE NOTED THAT COULD OCCUR BY THE CONTROLS CONTRACTOR. THE CONTROLS CONTRACTOR WILL PRESENT OPTIONS FOR A MINIMUM OF THESE TYPES OF EQUIPMENT:
- VFDS
- AHU DX COOLING HEATING
- VRF COOLED MINI SPLIT SYSTEMS
- VAV BOXES
- BOILER METERING SYSTEMS

2016 SEATTLE ENERGY CODE CONTROL SYSTEM REQUIREMENTS:
CONTRACTOR AND CONTROLS SHALL ADHERE TO FULLY COMPLY WITH THE REQUIREMENTS OF THE 2012 SEATTLE ENERGY CODE AND 2012 SEATTLE MECHANICAL CODE. THE MC IS RESPONSIBLE FOR ENSURING THE CONTROLS CONTRACTOR HAS PROVIDED MECHANICAL ENERGY CONSERVATION PER THE CODE COMPLIANT. ANY CHANGES REQUIRED TO COMPLY WITH CODE WILL BE MADE AT NO COST OF THE OWNER. ALL REQUIRED CHANGES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S ENGINEER AND COMMISSIONING AGENT

2016 SEC GAS / ENERGY METERING AND ENERGY CONSUMPTION MANAGEMENT:
THE BUILDING'S DOMESTIC WATER HEATING INCLUDES LIMITING AND FUTURE ELECTRIC END USES WILL BE SEPARATELY METERED FOR ELECTRICAL ENERGY CONSUMPTION AND GAS CONSUMPTION PER THE SEC

METER DATA PROCUREMENT IS BY THE BMS. THE BMS WILL STORE DATA FROM ALL METERS FOR A MINIMUM OF 36 MONTHS.

THE BMS IS THE DATA ACQUISITION SYSTEM AND SHALL PROVIDE REAL-TIME ENERGY CONSUMPTION DATA AS WELL AS HISTORICAL DATA FOR NOT LESS THAN THE YEAR-BY-YEAR GAS AND ELECTRICITY CONSUMPTION DATA FOR EACH OF THE PREVIOUS 3 YEARS. THE INFORMATION SHALL BE DISPLAYED IN A WEB BASED MANAGEMENT COMPUTER PROVIDED BY THE MC FOR THIS TASK.

DISPLAY THE FOLLOWING:
- WHOLE BUILDING ENERGY USAGE AND $$
- BUILDING TOTAL ELECTRICAL ENERGY

- BUILDING TOTAL NATURAL GAS ENERGY
- HVAC ENERGY
- LIGHTING ENERGY
- PLUG LOAD ENERGY
- DOMESTIC WATER HEATING ENERGY

DISPLAY THE FOLLOWING FOR EACH OF THE CATEGORIES LISTED ABOVE, FOR EACH METER, AND FOR WHOLE BUILDING POWER (UNDESIRABLE FROM INTERFACES WITH VFDS):
- YEAR TO DATE USAGE
- PREVIOUS YEARS TOTALS
- POWER (REAL TIME) ENERGY USED
- DAILY PEAK AND AVERAGE FOR ANY SELECTED DAY
- MONTHLY PEAK AND AVERAGE FOR ANY SELECTED MONTH
- YEARLY PEAK AND AVERAGE FOR ANY SELECTED YEAR
- DISPLAY OF MATHEMATICAL CORRELATIONS THE MONTHLY METERS THAT CONTRIBUTE TO EACH END USE CATEGORY

THE EC SHALL PROVIDE EMBEDDED AND APPARATUS ELECTRIC

CARD ACCESS AND SECURITY:
THE DDC WILL NOT PROVIDE ANY CARD ACCESS OR SECURITY SYSTEM OR MONITORING. THESE SYSTEMS AND ASSOCIATED HOMERUNS AS MAY BE REQUIRED BY THE OWNER ARE ASSUMED TO BE PROVIDED BY OTHERS.

LIGHTING CONTROL:
THE BMS WILL NOT PROVIDE ANY LIGHTING CONTROLS AT THIS TIME. OTHER SYSTEMS AND ASSOCIATED MONITORING AS MAY BE REQUIRED BY THE OWNER ARE ASSUMED TO BE PROVIDED BY OTHERS.

FIRE LIFE SAFETY INTERFACE TO BMS:
THE FIRE LIFE SAFETY CONTRACTOR TO PROVIDE ALARM POINTS FOR MONITORING AT THE BMS SYSTEM AS INDICATED THROUGHOUT THIS DESCRIPTION OF OPERATIONS. FIRE LIFE SAFETY CONTRACTOR (FLSC) IS RESPONSIBLE FOR DESIGN OF THE FIRE ALARM SYSTEM AND COORDINATION WITH THE MECHANICAL CONTRACTOR TO CONFIRM ALL INTERFACE MODES OF OPERATION INCLUDING SYSTEMS INTERLOCKED BY SHUTDOWN IN RESPONSE TO SMOKE ACTIVATION OR SMOKE DAMPER CLOSURE, WITH EQUIPMENT BY THOSE TRADES. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL WIRING AND RELAYS REQUIRED TO INTERFACE SIGNALS FROM FLS SYSTEM CONTRACTOR.

NON-COMBUSTIBLE HAZARDOUS AND RARE MATERIALS:
CONTROLS CONTRACTOR SHALL NOT FURNISH EQUIPMENT CONTAINING MERCURY AND SHALL NOT SPECIFY FIRE LIFE SAFETY CONTRACTOR, LIGHTING OR SHADE CONTROL EQUIPMENT CONTAINING MERCURY. MERCURY PROHIBITED BY MECHANICAL CONTRACTORS PER THE BMS CONTRACTOR. SMOKE DETECTION AT DAMPERS AND GUIDELINES AS REQUIRED BY THE SFAC, BMC, OR OTHER APPLICABLE PROJECT CODES IS BY FIRE LIFE SAFETY CONTRACTOR OR DESIGNEE. FIRE LIFE SAFETY CONTRACTOR TO PROVIDE ALL REQUIRED DUCT DETECTORS, INCLUDING DUCT SMOKE DETECTORS REQUIRED FOR PROJECT.

ELEVATOR INTERFACE TO BMS:
DOOR CONTACTS, CONTROL AND SWITCHES ARE PROVIDED WITH DAMPER BY S.C. DIVISION 16&S SHEN ON LOCK OR INTERLOCK, ALL ASSOCIATED POWER, WIRING, CONTROL, AND END SWITCH HOMERUNS AS MAY BE REQUIRED BY CONTROLS PROVIDED BY DIV 15.

VARIABLES PROVIDED BY OTHER SYSTEMS:
ALL WIRES TO BE TERMINATED IN A MINIMUM OF 75°C (167°F) BOX OR TERMINAL EQUIPMENT. FAN OR PUMP OPERATION: 1) FACILITY IS 480 VOLT. ALL WIRE TO BE PROGRAMMED WITH A MESSAGE AND ANY NECESSARY TIME DELAY NOT TO EXCEED THE NOTIFICATION TIMEFRAME. THE MINIMUM RATING OF INSULATION SHALL BE 1,000 V. PRIMARY AND SECONDARY VOLTAGE SHALL NOT EXCEED 300 VOLTS WITH RESPECT TO GROUND. ALL WIRING SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND APPLICABLE CODES AND STANDARDS. ALL WIRING SHALL BE INSTALLED IN CONDUIT. ALL WIRING SHALL BE INSTALLED IN CONDUIT. ALL WIRING SHALL BE INSTALLED IN CONDUIT

PRESENT ONE IS THE QUANTITY OF SUPPLY AIR BEING DELIVERED TO EACH ZONE AS MEASURED BY THE SUPPLY FAN AIRFLOW (PVU) (CFM) IN EACH AHU

ZONE VENTILATION EFFECTIVENESS - EVZ = THIS VALUE IS CALCULATED BY THE BMS FOR EACH ZONE AS DESCRIBED IN THE 'TERMINAL UNIT DESCRIPTION OF OPERATIONS'. THE BMS POINT THIS VALUE WILL BE PROGRAMMED AND DISPLAY ON THE GUI IN LIST THAT INCLUDE THE AIR HANDLING UNIT, ALL TERMINAL UNITS SERVED BY THIS UNIT, AND THE CORRESPONDING ZONE VENTILATION EFFICIENCIES.

SYSTEM VENTILATION EFFICIENCY - EV = THE BMS WILL CONTAINE THE CALCULATED 'ZONE VENTILATION EFFICIENCIES' ABOVE FILL THE 'TERMINAL UNITS SERVED BY THIS UNIT'. THE 'SYSTEM VENTILATION EFFICIENCY' IS THE MINIMUM VALUE OF THE 'ZONE VENTILATION EFFICIENCIES'.

TOTAL SYSTEMS AIRFLOW - VPS = IS THE SUM OF THE SUPPLY FAN INLET AIRFLOW STATIONS.

UNCORRECTED SYSTEM OA REQUIREMENT - VOU = OA UNCORRECTED SYSTEM OA REQUIREMENT PER ANSI/ASHRAE 62.1-2016 SUMMING THE TOTAL VENTILATION REQUIRED BEFORE CORRECTING FOR SYSTEM VENTILATION EFFICIENCY.

ANSI/ASHRAE 62.1-2016 SYSTEM AIR CONTROL MODE DESCRIBED:
DEDICATED OUTDOOR AIR CONTROL MODE OCCURS WHEN THE AHU IS NOT IN AIR ECONOMIZER MODE, AND NOT IN OCCUPIED MODE. IN UNOCCUPIED VENTILATION AIR CONTROL THE BMS SHALL MONITOR THE SPACE CALCULATIONS FOR OCCUPIED VENTILATION AIR CONTROL. NOT SHALL ONLY INCLUDE THE AHUS NAMED PORTION OF THE ASHRAE STANDARD 62.1-2007 CALCULATION.

ANSI/ASHRAE 62.1-2016 AIR ECONOMIZER:
ECONOMIZER IS ENABLED WHEN THE MIXED AIR TEMPERATURE (MAT) IS GREATER THAN THE OUTDOOR AIR TEMPERATURE (OAT) BY MORE THAN (-0.5°F) AND THE OAT IS LESS THAN (65°F) AND THE MAT IS LESS THAN (68°F). THE ECONOMIZER MODE MODULATES THE MIXED AIR DAMPERS TO MAINTAIN THE COOLING COIL DAT SETPOINT. THE OUTSIDE AIR (OA) DAMPER WILL MODULATE BETWEEN THE 'OPEN' AND 'CLOSED' POSITIONS AS REQUIRED TO MAINTAIN THE COOLING COIL DAT SETPOINT. THE OA DAMPER SHALL MODULATE INVERSELY PROPORTIONAL BETWEEN 100% OPEN WHEN THE OA DAMPER IS AT THE MINIMUM OUTDOOR AIR POSITION AND FULLY CLOSED. IF THE OA DAMPER IS AT 100% AND THE MAT IS LESS THAN THE RETURN AIR TEMPERATURE (RAT), THEN THE BMS SHALL MODULATE THE CHILLED WATER CONTROL VALVE TO MAINTAIN THE COOLING COIL DAT SETPOINT. ELSE IF THE OAT IS LESS THAN THE MAT THEN THE BMS SHALL MODULATE THE OA DAMPER TO MAINTAIN OA AIR CONTROL, AND MODULATE THE CHILLED WATER FLOW (CW) VALVE TO MAINTAIN COOLING COIL DAT SETPOINT. THE SECOND STAGE OF COOLING, WHERE THE HEATING VALVE SHALL BE ENABLED CONTINUOUSLY.

PROVIDE AN ECONOMIZER FAULT DETECTION AND DIAGNOSTICS ALGORITHM ON THE AHU. THE BMS SHALL ALARM IF THE DAT, RAT, MAT, COOLING COIL DAT ON THE ROOFTOP COIL DAT HAVE A FAILURE THE BMS SHALL DISABLE THE ECONOMIZER MODE AND RETURN TO MIN OA. THE BMS SHALL ALSO DISABLE ECONOMIZER MODE AND THE RA DAMPER POSITION, AND GENERATE AND TEMP BEHAVIOR FAILURE ALARMS IF THERE ARE ANY TEMPERATURE SENSOR FAILURES. THE BMS SHALL GENERATE A DAMPER FAULT ALARM IF THE OA DAMPER AND RA DAMPER SHALL GENERATE A DAMPER FAULT MODULATING ALARM IF THE END POSITION DOES NOT MAKE WHEN THE BMS PROVIDES THE CORRESPONDING SIGNAL.

ANSI/ASHRAE 62.1-2016 OCCUPANCY CONTROL:
THE BMS SHALL MONITOR THE OCCUPANCY STATUS OF EACH ZONE WHEN THE AHU IS NOT IN AIR ECONOMIZER MODE.

THIS RESPONSE IS BASED ON ASHRAE STANDARD 62.1-2007 APPENDIX A. NOTE: THIS OPERATION IS REQUIRED BY THE 2016 SEATTLE MECHANICAL CODE (SMC) SECTION 403.3.2. WHEN NOT IN OCCUPANCY MODE, MODULATE THE OUTSIDE AIR DAMPER TO MAINTAIN THE CALCULATED AIRFLOW

ALL TERMINAL UNITS ASSOCIATED WITH AIRSTALL BY INDEPENDENTLY CALCULATED WIND THERE FAN OUTSIDE AIR MINIMUM OUTSIDE AIR DAMPER POSITION.

AIRFLOW IS THE QUANTITY OF SUPPLY AIR BEING DELIVERED TO EACH ZONE AS MEASURED BY THE SUPPLY FAN AIRFLOW STATION (CFM)

ZONE VENTILATION EFFECTIVENESS - EVZ = THIS VALUE IS CALCULATED BY THE BMS FOR EACH ZONE AS DESCRIBED IN THE 'TERMINAL UNIT DESCRIPTION OF OPERATIONS'. THE BMS POINT THIS VALUE WILL BE PROGRAMMED AND DISPLAY ON THE GUI IN LIST THAT INCLUDE THE AIR HANDLING UNIT, ALL TERMINAL UNITS SERVED BY THIS UNIT, AND THE CORRESPONDING ZONE VENTILATION EFFICIENCIES.

SYSTEM VENTILATION EFFICIENCY - EV = THE BMS WILL CONTAINE THE CALCULATED 'ZONE VENTILATION EFFICIENCIES' ABOVE FILL THE 'TERMINAL UNITS SERVED BY THIS UNIT'. THE 'SYSTEM VENTILATION EFFICIENCY' IS THE MINIMUM VALUE OF THE 'ZONE VENTILATION EFFICIENCIES'.

TOTAL SYSTEMS AIRFLOW - VPS = IS THE SUM OF THE SUPPLY FAN INLET AIRFLOW STATIONS.

THE BMS WILL MONITOR THE DIFFERENTIAL PRESSURE ACROSS BOTH THE PREFILTER AND FINAL FILTER, AND WILL PROVIDE A DIRTY FILTER ALARM IF THE FILTER DP EXCEEDS 0.50" H2O (ADJ. AND SCHEDULE FOR DIRTY FILTER ALARM SETPOINT)

SUPPLY AIR TEMPERATURE ALARM
THE BMS WILL MONITOR THE SUPPLY AIR TEMPERATURE (SAT) AND ALARM IF THE SAT IS GREATER THAN THE SUPPLY AIR TEMPERATURE SETPOINT (SAT SP) FOR MORE THAN 30 MINUTES.
THE BMS WILL MONITOR THE SUPPLY AIR TEMPERATURE (SAT) AND ALARM IF THE SAT IS LESS THAN THE SUPPLY AIR TEMPERATURE SETPOINT (SAT SP) FOR MORE THAN 30 MINUTES.
THIS IS AN INDICATION THAT THE HEATING COIL/COOLING COIL/MIXING VALVE OR ACTUATION IS NOT FUNCTIONING CORRECTLY.

ANSI/UL864 SAFETY SHUTDOWN
SMOKE ALARM:
THE AHU SHALL BE INTERLOCKED WITH PROVIDED UL FSD CONTRACTOR IS WIRED TO THE AHU 'EMERGENCY STOP' CONTROL CONTACT.
A SMOKE EVENT WILL CAUSE THE AHU PERMISSIVE CIRCUIT TO OPEN, AND THE SUPPLY FAN WILL SHUT DOWN IMMEDIATELY. THE BMS RECEIVES A HARDWIRED EVENT SIGNAL FROM THE SYSTEM, AND ALARMS THE CONDITION. THE SYSTEM WILL DO NOT 'SELF RESET'.
BMS WILL HAVE THE ABILITY TO AUTOMATICALLY RESET THIS TO ENABLE THE UNIT UNDER STANDBY POWER. UPON RESTART THE BMS WILL RESET THE SUPPLY FAN AT A LOW SPEED AND IF THE SMOKE EVENT HAS CLEARED, THE BMS AUTOMATICALLY RESUMES NORMAL SYSTEM OPERATION.
IF THE SMOKE EVENT IS STILL PRESENT, THE BMS AUTOMATICALLY RESUMES NORMAL SYSTEM OPERATION.

LOW OR HIGH STATIC SUPPLY FAN CUTOUT:
HIGH STATIC CUTOUT DIFFERENTIAL PRESSURE TRANSMITTER IS WIRED TO THE AHU
THE BMS WILL MONITOR THE SUPPLY AIR TEMPERATURE (SAT) AND ALARM IF THE SAT IS GREATER THAN THE SUPPLY AIR TEMPERATURE SETPOINT (SAT SP) FOR MORE THAN 30 MINUTES.
THE BMS WILL MONITOR THE SUPPLY AIR TEMPERATURE (SAT) AND ALARM IF THE SAT IS LESS THAN THE SUPPLY AIR TEMPERATURE SETPOINT (SAT SP) FOR MORE THAN 30 MINUTES.
THIS IS AN INDICATION THAT THE HEATING COIL/COOLING COIL/MIXING VALVE OR ACTUATION IS NOT FUNCTIONING CORRECTLY.

AHU SAFETY SHUTDOWN
SMOKE ALARM:
THE AHU SHALL BE INTERLOCKED WITH PROVIDED UL FSD CONTRACTOR IS WIRED TO THE AHU 'EMERGENCY STOP' CONTROL CONTACT.

FIRE LIFE SAFETY EVENT IN A ZONE NOT SERVED BY THE AHU:
OPERATION IS DESCRIBED ELSEWHERE.

ANSI/UL 864 POWER
A. SEE POWER LIST FOR DETAILS.
B. PROVIDE ALL POINTS AS REQUIRED TO MEET SEQUENCE AS DESCRIBED ABOVE TO BE PROVIDED.

ANSI/UL 864 POINT LIST:
MECHANICAL POINT LIST AND A COMPLETE LIST OF POINTS FOR THIS SYSTEM. ALL POINTS REQUIRED TO PERFORM THE SEQUENCES ARE REQUIRED, PROVIDE ALL TEMPERATURE SENSORS AND CONTROL DEVICES SHOWN ON THE PIPING SCHEMATICS.

RELIEF FAN OPERATION (SHALL):
THE BMS WILL MONITOR THE DIFFERENTIAL PRESSURE ACROSS BOTH THE PREFILTER AND FINAL FILTER, AND WILL PROVIDE A DIRTY FILTER ALARM IF THE FILTER DP EXCEEDS 0.50" H2O (ADJ. AND SCHEDULE FOR DIRTY FILTER ALARM SETPOINT)

SUPPLY AIR TEMPERATURE ALARM
THE BMS WILL MONITOR THE SUPPLY AIR TEMPERATURE (SAT) AND ALARM IF THE SAT IS GREATER THAN THE SUPPLY AIR TEMPERATURE SETPOINT (SAT SP) FOR MORE THAN 30 MINUTES.
THE BMS WILL MONITOR THE SUPPLY AIR TEMPERATURE (SAT) AND ALARM IF THE SAT IS LESS THAN THE SUPPLY AIR TEMPERATURE SETPOINT (SAT SP) FOR MORE THAN 30 MINUTES.
THIS IS AN INDICATION THAT THE HEATING COIL/COOLING COIL/MIXING VALVE OR ACTUATION IS NOT FUNCTIONING CORRECTLY.

AHU SAFETY SHUTDOWN
SMOKE ALARM:
THE AHU SHALL BE INTERLOCKED WITH PROVIDED UL FSD CONTRACTOR IS WIRED TO THE AHU 'EMERGENCY STOP' CONTROL CONTACT.

FIRE LIFE SAFETY EVENT IN A ZONE NOT SERVED BY THE AHU:
OPERATION IS DESCRIBED ELSEWHERE.

ANSI/UL 864 POWER
A. SEE POWER LIST FOR DETAILS.
B. PROVIDE ALL POINTS AS REQUIRED TO MEET SEQUENCE AS DESCRIBED ABOVE TO BE PROVIDED.

BAS POINT LIST:
SEE ATTACHED POINT LIST FOR A COMPLETE LIST OF POINTS FOR THIS SYSTEM. ALL POINTS REQUIRED TO PERFORM THE SEQUENCES ARE REQUIRED, PROVIDE ALL TEMPERATURE SENSORS AND CONTROL DEVICES SHOWN ON THE PIPING SCHEMATICS.

ANSI/UL 864 RETURN FAN FLOW CONTROL:

ANSI/UL 2017 HARDWARE NOTES:
A. NO SMOKE DETECTORS ARE PROVIDED IN THE AHU CONTRACT. AHU RETURN AIR RELIEF AIR
B. ALL MOTORIZED DAMPER ACTUATORS ARE PROVIDED BY THE OEC.
C. RETURN AIR SMOKE DETECTOR IS PROVIDED AND WIRED BY THE E.C. (ELS CONTRACTOR)
D. TERMINAL UNIT SPACE TEMPERATURE SENSORS PER PLANS.
E. TERMINAL UNIT SPACE OCC SENSORS PER PLANS.
F. MOTORIZED COIL LEAVING AIR TEMPERATURE SENSOR/LIMIT FOR EACH COIL (HEATING AND CHILLED WATER)
G. OUTSIDE AIR TEMPERATURE SENSOR (SEE POINTS LIST)
H. OUTSIDE AIR CO2 SENSOR
I. DUCT SIDE AIR FLOW MONITORING SENSORS ARE PROVIDED BY MANUFACTURER, WIRED BY OEC
J. SUPPLY AIR FLOW MONITORING VIA FAN INLET SCREENS WIRED BY EC
K. OUTSIDE AIR FLOW MONITORING SENSORS ARE PROVIDED BY OC
L. FREEZESTAT
M. HIGH/DIFFERENTIAL PRESSURE SENSORS ACROSS EACH FAN/UNIT SUPPLY DUCT POSITIVE AND UNIT NEGATIVE STATIC PRESSURE, AND ENABLE THE FAN
N. VFD MANUFACTURER TO PROVIDE HARDWIRED STATUS OF RUN/FAULT STATUS. CURRENT SENSING RELAY IS PROVIDED AT EACH FAN PER ATS DRAWING. OTHER POINTS ARE DIGITAL

ANSI/UL 2017 UNOCCUPIED MODE:
THE SUPPLY FAN AND RETURN FAN WILL BE:
THE OUTDOOR AIR ISOLATION DAMPER MODULATES TO MAINTAIN MINIMUM VENTILATION, OR HIGH AIR ECONOMIZER AS REQUIRED.
THE RETURN AIR DAMPER MODULATES INVERSELY PROPORTIONAL TO THE OUTDOOR AIR DAMPER TO MAINTAIN A TOTAL SUPPLY AIRFLOW WITHIN A RANGE THAT IS ACCEPTABLY THE OPERATING ECONOMIST ARRIVAL CALCULATING THE HIGHEST SPACE OUTSIDE.
THE SPACE UNOCCUPIED HEATING AND COOLING SETPOINTS ARE ENABLED.
ALL UNOCCUPIED SCHEDULING PARAMETERS ARE PROVIDED WITH AHU AND WIRED BY OC
ANY SUPPLY FAN AND THE UNIT TERMINAL UNIT MODE IN ANY SPACES TYPE OF ARE THE IN SUPPLY AIR TEMPERATURE RESET IN THE SAME AIR IN OCCUPIED MODE.

ANSI/UL OCCUPANT DETECTION:
WHEN IN AN AHU IS SWITCHED TO THE OCCUPIED MODE, ALL AHU FUNCTIONS ARE ENABLED. THE OUTDOOR AIR ISOLATION DAMPER MODULATES TO MAINTAIN MINIMUM VENTILATION, EXCEPT DURING COOLING AND HEATING PURGE THE MINIMUM OUTDOOR AIR VENTILATION IS FROM ECONOMIZER. THE AHU SUPPLY AND OPERATES TO PROVIDE AIRFLOW TO THE SAT TERMINAL UNITS BY MAINTAINING THE SUPPLY AIR TEMPERATURE SETPOINT. THE AHU SHALL DEFAULT TO THE MODE IN THE EVENT THAT COMMUNICATION WITH THE BMS IS LOST.

ANSI/UL SUPPLY AIR FLOW CONTROL:
THE VFD WILL MODULATE THE SUPPLY AIRFLOW VOLUME, VIA VFD TO MAINTAIN THE DUCT STATIC PRESSURE SETPOINT AS DETERMINED BY THE TERMINAL UNITS WITH A DIRECT CALCULATED STATIC PRESSURE SETPOINT FROM CALCULATED IN THE SYSTEM PROGRAMMING.

ANSI/UL SUPPLY AIR TEMPERATURE RESET CONTROL:
THE COOLING COIL DISCHARGE AIR TEMPERATURE (DAT) SETPOINT SHALL BE RESET BETWEEN 55°F AND 60°F (ADJ.) AS NECESSITATED OR NOT MORE THAN 5°F BUT NO HIGHER THAN 60°F OR AS DETERMINED BY THE TERMINAL UNIT WITH THE HIGHEST COOLING DEMAND FROM THE HOUR HAND. NOTE THE ROOM SETPOINT HIGH LIMIT IS INITIALLY SET AT 60°F BUT IS INDIVIDUALLY ADJUSTABLE, AND THE AHU'S RETURN AIR SPACE HUMIDITY IS NOT AT MAXIMUM MODE. IF ANY HUMIDITY SENSOR ON AHU-1,2 EXCEEDS THE HIGH LIMIT SETPOINT THAN 2 DEGREES THE COOLING COIL DAT SETPOINT LOWER. THE DEFAULT COOLING COIL DAT SETPOINT SHALL BE 55°F.

THE PRIMARY COIL DAT SHALL BE RESET BETWEEN 90°F AND 80°F (ADJ.) IN INCREMENTS OF NOT MORE

UNCORRECTED SYSTEM OA REQUIREMENT - VOU = UNCORRECTED SYSTEM OA REQUIREMENT PER ANSI/ASHRAE 62.1-2016 SUMMING THE TOTAL VENTILATION REQUIRED BEFORE CORRECTING FOR SYSTEM VENTILATION EFFICIENCY.

ANSI/UL VENTILATION AIR DETECTION (MECHANICAL):
UNOCCUPIED MODE, MONITORING OF THE SPACE OCCURS WHEN THE AHU IS NOT IN AIR ECONOMIZER MODE, AND NOT IN OCCUPIED MODE. IN UNOCCUPIED VENTILATION AIR CONTROL THE BMS SHALL MONITOR THE SPACE CALCULATIONS FOR OCCUPIED VENTILATION AIR CONTROL. NOT SHALL ONLY INCLUDE THE AHUS NAMED PORTION OF THE ASHRAE STANDARD 62.1-2007 CALCULATION.

ANSI/UL OUTSIDE AIR DETECTION:
OUTDOOR AIR MEASUREMENT STATION - "UNCONNECTED SYSTEM OA REQUIREMENT STAGED BY THE 'SYSTEM VENTILATION EFFICIENCY'. THE CALCULATED OUTSIDE AIR MEASUREMENT SHALL ALARM IF THE MINIMUM VALUE FOR THE INTAKE AIR SHALL BE MONITORED BY THE OCCUPIED AND OCCUPIED VENTILATION AIR CONTROL MODES. THE ZONES THAT HAVE DEFICIENT THE CONDITION FOR OCCUPANCY MANAGE. WORK TO THE AIR BALANCE, SHOULD FOR THE SUBMISSION OF AHRI 1060 FOR EACH MODEL FOR EACH ZONE.

CALCULATED OUTSIDE AIR FRACTION (OAF):
OAF = OA FLOW STATION (CFM) / SA FLOW STATION (SUM OF TERMINAL UNITS) (CFM) FOR EACH AHU

ANSI/UL OCCUPANCY OVERRIDE INITIATED OCCUPIED MODE
OCCUPANT DEFINITION IN THE SEQUENCE IS EVALUATED AND AGREED UPON BY DESIGN TEAM HOUSEKEEPING, MAINTENANCE AND OPERATIONS STAFF DURING TRAINING. THE AHU SHALL BE PROGRAMMED AS AGREED UPON WITH OWNER. THE UNIT SERVING THE ZONE SHALL INITIATED THE OCCUPIED MODE WHEN ANY OF THE FOLLOWING OCCUPANCY SCHEDULE OR OCCUPANCY:

ANSI/UL FAN FAILURE MODES
UPON SUPPLY FAN FAILURE, AS DETECTED BY A CURRENT SENSOR, THE SUPPLY FAN SHALL BE SHUT DOWN, AND THE RELIEF DAMPER WILL SHUT DOWN IMMEDIATELY. THE BMS RECEIVES A HARDWIRED EVENT SIGNAL FROM THE SYSTEM, AND ALARMS THE CONDITION. THE SYSTEM WILL DO NOT 'SELF RESET'.
BMS WILL HAVE THE ABILITY TO AUTOMATICALLY RESET THIS TO ENABLE THE UNIT UNDER STANDBY POWER. UPON RESTART THE BMS WILL RESET THE SUPPLY FAN AT A LOW SPEED AND IF THE SMOKE EVENT HAS CLEARED, THE BMS AUTOMATICALLY RESUMES NORMAL SYSTEM OPERATION.
IF THE SMOKE EVENT IS STILL PRESENT, THE BMS AUTOMATICALLY RESUMES NORMAL SYSTEM OPERATION.

LOW LIMIT TEMPERATURE SHUTDOWN
UPON DETECTION OF LOW TEMPERATURE VIA UNIT FREEZESTAT SHUTDOWN AHU SUPPLY FAN CLOSE, OUTSIDE AIR DAMPER, AND ENABLE HOT WATER FLOW TEMPERATURE RING HEATING COIL VALVE TO INITIATE THE APPROPRIATE ALARMS.

HIGH CONDENSATE LEVEL ALARM
UPON DETECTION OF HIGH CONDENSATE LEVEL IN THE PRIMARY DRAIN PAN, THE BMS TO INITIATE THE APPROPRIATE ALARMS.

FIRE LIFE SAFETY EVENT IN ZONE SERVED BY THE AHU
THE BMS MONITORS THE STATUS OF THE LIFE SAFETY SYSTEM. AN EQUIPMENT OPERATION ALARM CONDITION WILL NOT OCCUR DURING AN EVENT. ALL DETECTION AND INITIATION DEVICES ARE DOCUMENTED AND PROVIDED BY THE FIRE ALARM CONTRACTOR.
THE FLS SYSTEM SHUTS DOWN THE AHU AND THE ASSOCIATED RELIEF, RETURN FANS
THE BMS SHUTS DOWN ALL TERMINAL UNITS ASSOCIATED WITH THE AHU (FAN ON, FAILED AND FAN OFF). A HARD WIRED SYSTEM IS NOT REQUIRED TO PERFORM THIS FUNCTION PER THE SAME CODE SECTION.

A SMOKE EVENT WILL CAUSE THE AHU PERMISSIVE CIRCUIT TO OPEN, AND THE SUPPLY FAN WILL SHUT DOWN IMMEDIATELY.
THE BMS RECEIVES A HARDWIRED EVENT SIGNAL FROM THE SYSTEM, AND ALARMS THE CONDITION. THE SYSTEM WILL DO NOT 'SELF RESET'.
BMS WILL HAVE THE ABILITY TO AUTOMATICALLY RESET THIS TO ENABLE THE UNIT UNDER STANDBY POWER. UPON RESTART THE BMS WILL RESET THE SUPPLY FAN AT A LOW SPEED AND IF THE SMOKE EVENT HAS CLEARED, THE BMS AUTOMATICALLY RESUMES NORMAL SYSTEM OPERATION.
IF THE SMOKE EVENT IS STILL PRESENT, THE BMS AUTOMATICALLY RESUMES NORMAL SYSTEM OPERATION.

LOW OR HIGH STATIC SUPPLY FAN CUTOUT:
HIGH STATIC CUTOUT DIFFERENTIAL PRESSURE TRANSMITTER IS WIRED TO THE AHU
THE BMS WILL MONITOR THE SUPPLY AIR TEMPERATURE (SAT) AND ALARM IF THE SAT IS GREATER THAN THE SUPPLY AIR TEMPERATURE SETPOINT (SAT SP) FOR MORE THAN 30 MINUTES.
THE BMS WILL MONITOR THE SUPPLY AIR TEMPERATURE (SAT) AND ALARM IF THE SAT IS LESS THAN THE SUPPLY AIR TEMPERATURE SETPOINT (SAT SP) FOR MORE THAN 30 MINUTES.
THIS IS AN INDICATION THAT THE HEATING COIL/COOLING COIL/MIXING VALVE OR HEATING COIL CONTROL VALVE ARE NOT FUNCTIONING CORRECTLY.

AHU SAFETY SHUTDOWN
SMOKE ALARM:
THE AHU SHALL BE INTERLOCKED WITH PROVIDED UL FSD CONTRACTOR IS WIRED TO THE AHU 'EMERGENCY STOP' CONTROL CONTACT.

BUILDING STATIC PRESSURE AIR THE ZONE ASSOCIATED WITH AHU-1,2 IS CONTROLLED BY THE RELIEF FAN OPERATION, AND THE RETURN FAN OPERATIONS. THE DIFFERENTIAL PRESSURE TRANSMITTER BETWEEN THE EXTERIOR CIRCULATION SPACE AND THE OUTSIDE IS USED TO DETERMINE THE STATIC PRESSURE ASSOCIATED WITH AHU-1,2. THE BMS SHALL DETERMINE IF ANY OF THE ZONE GROUP OF RUNNING. THE BMS SHALL ALARM THAT WINDOW ACCORDING TO THE STANDARD SEQUENCE IF THE BMS SHALL BE BETWEEN 0.20 AND 0.25 OF THE MEASURED VALUE

THE RETURN FAN SHALL OPERATE IF THE SUPPLY FAN IS OPERATING. THE RETURN FAN SHALL OPERATE AT A SPEED EQUAL TO THE SUPPLY FAN SPEED WITH AN OFFSET CALCULATED BY THE BMS. THE CALCULATED OFFSET SPEED SHALL BE MONITORED BY THE OCCUPIED AND OCCUPIED VENTILATION AIR CONTROL MODES, AND THE SYSTEM WITH OPERATING DEDICATED CHANGES. RESPOND TO THE AIR BALANCE SCHEDULE FOR THE TRANSITION FAN APPLICATION EACH MODE FOR EACH ZONE. SHALL BETWEEN MIN AND MAXIMUM AIR SPEED SETPOINTS FOR EACH OF THE SUPPLY AIR TEMPERATURE MODES, OCCUPIED AND UNOCCUPIED MODES, OCCUPIED VENTILATION MODE, UNOCCUPIED. THE LARGEST OPERATING MODULATE OPEN CLOSED TO MAINTAIN THE BUILDING STATIC PRESSURE SETPOINT +0.05" W.C. (ADJUSTABLE) TO THE OUTSIDE. CYCLE FANS AS REQUIRED FOR OPERATION TO MAINTAIN EQUAL RUNTIME, AND PROVIDE STATUS OF EACH FAN. PROVIDE ALARM FOR LOSS OF AIRFLOW DURING NORMAL OCCUPIED AND UNOCCUPIED MODES.

SUPPLY AIR HANDLING UNIT DESCRIPTION (AHU-1,2):
UNIT IS A CHILLED WATER/DX WATER MOTORIZED OUTSIDE AIR DAMPER, ECONOMIZER, SUPPLY FAN, FILTER SECTION, MIXING SECTION, AND OUTSIDE AIR/CONDITIONING STATION THAT SERVES ONLY THE ZONE.

UNIT OPERATION IS FULLY CONTROLLED BY BMS. CONTROLS BY OC ARE TO BE FIELD INSTALLED

OWNER TO COORDINATE REQUIRED OCCUPIED/UNOCCUPIED SCHEDULING WITH AHU CONTRACTOR FOR INITIAL BUILDING SETUP PROGRAMMING. ALL CONTROL OF UNIT DESIGNATED BELOW IS BY THE BMS.

ANSI/UL SUPPLY AIR TEMPERATURE RESET CONTROL:
THE COOLING COIL DISCHARGE AIR TEMPERATURE (DAT) SETPOINT SHALL BE RESET BETWEEN 55°F AND 60°F (ADJ.) AS NECESSITATED OR NOT MORE THAN 5°F BUT NO HIGHER THAN 60°F OR AS DETERMINED BY THE TERMINAL UNIT WITH THE HIGHEST COOLING DEMAND FROM THE HOUR HAND. NOTE THE ROOM SETPOINT HIGH LIMIT IS INITIALLY SET AT 60°F BUT IS INDIVIDUALLY ADJUSTABLE, AND THE AHU'S RETURN AIR SPACE HUMIDITY IS NOT AT MAXIMUM MODE. IF ANY HUMIDITY SENSOR ON AHU-1,2 EXCEEDS THE HIGH LIMIT SETPOINT THAN 2 DEGREES THE COOLING COIL DAT SETPOINT LOWER. THE DEFAULT COOLING COIL DAT SETPOINT SHALL BE 55°F.

THE PRIMARY COIL DAT SHALL BE RESET BETWEEN 90°F AND 80°F (ADJ.) IN INCREMENTS OF NOT MORE

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Submittal | Revisions: No. Date Description

ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation
1400 East Prospect Street
Seattle, WA 98112

Construction Documents

Drawn: GC SM
Checked: AWM
Date: 8/23/17

Phase | Title | Sheet Number

MECHANICAL CONTROLS DESCRIPTION

M707

AND MODULATE TO MAINTAIN SPACE SUPPLY PRESSURE. THE OUTDOOR AIR INTAKE DAMPER IS OPEN WHEN AHU IS OCCUPIED OR IS AVAILABLE. THE COOLING MODE SEQUENCE BELOW IS ENABLED AS REQUIRED TO MAINTAIN THE SPACE UNOCCUPIED COOLING SETPOINT.

FOR UNOCCUPIED HEATING: AHU SUPPLY FAN IS DISABLED. MINIMUM OUTSIDE AIR DAMPER POSITION SETPOINT IS CLOSED (FOR MAXIMUM ECONOMIZING). OPEN AND CLOSING AIR DAMPER IS CLOSED. BELOW DAMPER ARE CLOSED. THE HEATING MODE SEQUENCE BELOW IS ENABLED AS REQUIRED TO MAINTAIN THE SPACE UNOCCUPIED HEATING SETPOINT.

MIXING / ECONOMIZER OPERATION:
WHEN THE AHU IS CONTROLLED TO THE OCCUPIED MODE, ALL SAS FUNCTIONS ARE ENABLED. ACTIVE SUPPLY FAN IS RATIO TRACKED AND MODULATE THE SUPPLY AIR TO MAINTAIN THE SAT SPACE SUPPLY AIR FLOW UNDER COOLING OR HEATING OPERATION. FOR PROPER FAN MINIMUM FLOW OPERATION:

1. DISCHARGE AIR TEMPERATURE CONTROL:
THE SAS CONTROLS THE UNIT TO MAINTAIN A SUPPLY AIR TEMPERATURE PER THE SAT RESET SEQUENCE.
IF THE AHU IS AT ITS MINIMUM OUTSIDE AIR FLOW SETPOINT, THEN AN AIRFLOW MEASUREMENT STATION IS ENABLED WHICH THE MIXED AIR TEMPERATURE IS CREATED FROM 1 TO 7 INCHES H2O AS MODIFIED BY THE STACK EFFECT MITIGATION SEQUENCE TO AVOID RAISING THE SAT SETPOINT OR TEMPERATURE SETPOINT FOR MORE THAN 6 WHILE DAILY.
DURING ECONOMIZER CONTROL, IT'S ENABLED AS THE FIRST STAGE OF COOLING. IN PERIOD, ECONOMIZER MODE MODULATE THE MIXED AIR DAMPERS TO MAINTAIN A 55(F) (ADJ) TEMPERATURE CREATED FROM 1 °F HIGH AS MODIFIED BY THE STACK EFFECT MITIGATION ABOVE SINCE THE SPACE SUPPLY AIR SETPOINT. THE OUTSIDE AIR DAMPER WILL MODULATE BETWEEN THE MINIMUM OUTSIDE AIR SETPOINT AND 100% OUTSIDE AIR. THE RETURN AIR DAMPER SHALL MODULATE AS NECESSARY PROPORTIONAL BETWEEN 100% OPEN AT THE MINIMUM OUTSIDE AIR POSITION AND FULLY CLOSED. IF THE BUILDING IS IN STACK EFFECT MITIGATION MODE THE HEALTHY VALVE SHALL BE ALLOWED TO MODULATE TO MAINTAIN THE FLAT, UNDER THE OUTSIDE AIR DAMPER TO BE 100% OPEN. IF THE OUTSIDE AIR DAMPER IS AT 100% AND THE OUTSIDE AIR TEMPERATURE IS STILL ABOVE THE SAT SETPOINT, THEN THE EGG SHALL MODULATE THE COOLING CONTROL VALVE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT, AND ENABLE THE HEATING CONTROL VALVE, IF THE OUTSIDE AIR TEMPERATURE IS GREATER THAN THE RETURN AIR TEMPERATURE THE MIXED AIR DAMPERS SHALL BE TO THE MINIMUM OUTSIDE AIR POSITION AND THE OUTSIDE AIR DAMPER SHALL BE TO THE MINIMUM OUTSIDE AIR POSITION. THE SAS SHALL ENABLE THE ENERGY RECOVERY WHEEL IF THE OUTSIDE AIR TEMPERATURE IS GREATER THAN THE RETURN AIR TEMPERATURE AND THE OUTSIDE AIR TEMPERATURE IS GREATER THAN THE SAT SETPOINT. THE SAS SHALL DISABLE THE ENERGY RECOVERY WHEEL IF THE OUTSIDE AIR TEMPERATURE IS LESS THAN THE SAT SETPOINT.

HEATING IS ENABLED WHEN THE SUPPLY AIR TEMPERATURE IS LESS THAN SETPOINT (ADJ) BELOW THE DESIGNATED AIR TEMPERATURE SETPOINT FOR MORE THAN 5 MINS (ADJ.)
- THE SAS REGULATES THE HEATING WATER CONTROL VALVE TO MAINTAIN THE ZONE DISCHARGE AIR TEMPERATURE PER THE SAT SETPOINT. IN WINDOW HEATING MODE, IF THE BUILDING IS IN STACK EFFECT MITIGATION MODE IT IS POSSIBLE TO BE WHILE ANY/ALL CONTRACTOR VALVES FOR PRESSURIZATION CONTROL, WHILE ALSO HAVING THE HEATING WATER VALVE ENABLED

2. SUPPLY AIR TEMPERATURE CONTROL

SAT SETPOINT:
THE SAT SPACE SUPPLY TEMPERATURE CONTROL IS MEASURED BY A SINGLE THERMOSTAT. THE SAT SETPOINT IS ADJUSTABLE FROM 55(F) TO 65(F) (ADJ) AND IS DEFAULTED TO 60(F) (ADJ) WHEN NOT BEING OCCUPIED. SUMMER SAT RESET SHALL BE ENABLED AS FOLLOWS:
- WHEN ZONE TEMPERATURE FALLS BELOW THE ZONE HEATING SETPOINT FOR 5 MINUTES OR LONGER, THE SAT RESET SHALL BE ENABLED.
- THE SAT SETPOINT SHALL BE INCREASED TO THE PRIMARY MINIMUM SETPOINT WHEN ZONE TEMPERATURE IS WITHIN A 5°F DEADBAND. THIS SHALL ALWAYS MAINTAIN A MINIMUM 5°F DEADBAND BETWEEN COOLING AND HEATING SETPOINTS. THE MINIMUM VALVE POSITION TO THE DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE MAXIMUM AND LOW AND THE MINIMUM AIRFLOW RESPONSE TO IDENTIFY IN THE ZONE (SEE ZONE PRIMARY MINIMUM AIRFLOW).

ANNUAL OUTDOOR AIR MINIMUM AIRFLOW CALCULATION:
THE OUTDOOR AIR FLOW IS CALCULATED USING STANDARD 62.1-2007 APPENDIX A. NOTE: THIS OPERATION IS REQUIRED BY THE 2013 SEATTLE MECHANICAL CODE (SMC) SECTION 403.3.2. WHEN AHU IS IN OCCUPANCY MODE, AS SHOWN ABOVE, THE OUTSIDE AIR DAMPER IS TO MAINTAIN THE CALCULATED AIRFLOW OR AS MODIFIED BY THE STACK EFFECT MITIGATION SEQUENCE.

OUTSIDE AIR VENTILATION CONTROL IN AIR SPACE CONDITIONING:
AIR HANDLING UNITS HAVE TWO ECONOMIZER VENT CYCLES. THE AHU IN WILL USE THE "MIN VENT CFM" DURING LOW OCCUPANCY.
THE OCCUPIED SPACE CO2 LEVEL WILL BE CONTROLLED TO CAUTION ARE EXCEEDED, AND THE INCREASING MINIMUM OUTSIDE AIR FLOW WILL BE RECORDED AND USED THEN THAT ASSUMING TO MAINTAIN SPACE CO2 LEVELS AT THE APPROPRIATE OUTSIDE AIR LEVELS.
THE MINIMUM ACTIVELY RESET THE "ACTIVE VENT CFM" ON THOSE MEASURES FOR THE ZONE RELIEVE MINIMUM CO2 CONCENTRATION STATUS THE "MIN VENT CFM" VALUE WILL NOT BE EXCEEDED. NECESSARY WHERE THERE ARE MULTIPLE ROOMS IN ONE ZONE WITH MULTIPLE CO2 SENSORS THE CO2 SENSORS SHALL BE AVERAGED.
DYNAMIC CORRELATION IN SAME AS FULLY OPEN BEFORE FAN STARTS.

SINGLE DUCT VAV TERMINAL UNITS (VAV) (AHU 1):
1. UNOCCUPIED MODE
   A. HEATING
      THE PRIMARY AIRFLOW VALVE WILL BE REDUCED TO THE PRIMARY MINIMUM AIRFLOW WHEN ZONE TEMPERATURE IS WITHIN A 5°F DEADBAND. THIS SHALL ALWAYS MAINTAIN A MINIMUM 5°F DEADBAND BETWEEN COOLING AND HEATING SETPOINTS. THE MINIMUM VALVE POSITION TO THE DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE MAXIMUM AND LOW AND THE MINIMUM AIRFLOW RESPONSE TO IDENTIFY IN THE ZONE (SEE ZONE PRIMARY MINIMUM AIRFLOW).
   B. COOLING
      THE PRIMARY AIRFLOW VALVE WILL MODULATE TO MAINTAIN THE SCHEDULED COOLING SETPOINT WHEN ZONE TEMPERATURE RISES ABOVE THE COOLING SETPOINT. THE PRIMARY AIR VALVE WILL MODULATE BETWEEN MINIMUM AND MAXIMUM SETTINGS TO MAINTAIN THE ZONE COOLING SETPOINT OF 75°F (ADJ.) (SEE ZONE PRIMARY MAXIMUM AIRFLOW).
   C. HEATING
      WHEN ZONE TEMPERATURE FALLS BELOW THE ZONE HEATING SETPOINT FOR 5 MINUTES OR LONGER, THE PRIMARY AIR VALVE WILL BE MODULATED TO MAINTAIN THE ZONE HEATING SETPOINT OF 70°F (ADJ.) (SEE ZONE PRIMARY MINIMUM AIRFLOW).
      FIRST STAGE (CONTROL TEMPERATURE) MANAGE (VOLUME)
      WHEN THE ZONE TEMPERATURE FALLS BELOW THE ZONE HEATING SETPOINT FOR 5 MINUTES OR LONGER, THE PRIMARY AIR VALVE WILL BE MODULATED TO MAINTAIN THE ZONE HEATING SETPOINT. DURING THIS PERIOD, THE PRIMARY AIR VALVE SHALL REMAIN AT THE MINIMUM AIRFLOW SETPOINT. THE HEATING PRIMARY MINIMUM AIRFLOW SHALL BE CALCULATED BASED ON THE CONTROL VALVE OF MINIMUM AIRFLOW. (HEATING PRIMARY MINIMUM AIRFLOW SHALL BE CALCULATED BASED ON THE CONTROL VALVE OF MINIMUM AIRFLOW. (HEATING PRIMARY MINIMUM AIRFLOW SHALL BE CALCULATED BASED ON THE CONTROL VALVE OF MINIMUM AIRFLOW.

TEMPERATURE FALLS BELOW THE HEATING SETPOINT, AT THE SECOND STAGE OF HEATING MODULATE THE DAMPER POSITION AS DESCRIBED IN PROGRAMMING AND WRITTEN TO THE VAV CONTROLLER)
- THE SECOND STAGE HEATING TEMPERATURE SETPOINT

   C. VENTILATION CONTROL VIA SPACE CO2 SENSOR
      THE VAV BOX SERVING ROOMS WITH TWO SCHEDULED VENT CFM'S WILL HAVE THAT VENT CFM'S PROGRAMMED "MIN VENT CFM" AND "MED. VENT CFM" (SEE VAV SCHEDULE). THE VAV'S ASSUMED USE THE "MIN VENT CFM" DURING LOW OCCUPANCY.
      THE OCCUPIED SPACE CO2 LEVEL WILL BE CONTROLLED TO CAUTION ARE EXCEEDED, AND THE INCREASING MINIMUM OUTSIDE AIR FLOW WILL BE RECORDED AND USED THEN THAT ASSUMING TO MAINTAIN SPACE CO2 LEVELS AT THE APPROPRIATE OUTSIDE AIR LEVELS.
      ON WHEN THE DYNAMIC FAN IS ON THE MINIMUM VENTILATION SETPOINT WILL BE USED TO ENSURE MAKE UP AIR
      THIS SEQUENCE ALSO REVIEWS RECENT THE "ACTIVE VENT CFM" SETPOINT RESULTS FROM THE ZONE REQUIRES MIN OF CO2 CONCENTRATION STATUS THE "MIN VENT CFM" VALUE WILL NOT BE EXCEEDED. NECESSARY WHERE THERE ARE MULTIPLE ROOMS IN ONE ZONE WITH MULTIPLE CO2 SENSORS THE CO2 SENSORS SHALL BE AVERAGED.
      DYNAMIC CORRELATION IN SAME AS FULLY OPEN BEFORE FAN STARTS.

   A. ECONOMIZER STATUS MINIMUM OUTSIDE AIR CONTROL
      THE AHU WILL MONITOR ECONOMIZER FAN STATUS AND STAGE THE MINIMUM AIR FOR THE ECONOMIZER SYSTEM THROUGH THE SAS BUILT-IN SYSTEM ACCORDINGLY. SEE THE VAV BOX SCHEDULE FOR THE ASSOCIATED ECONOMIZER FAN THAT EACH DAMPER IS INTERLOCKED WITH.
      WHEN THE OUTSIDE AIR ECONOMIZER FAN IS REQUIRED FOR COMFORT AND CONFIRMS THAT TO THE OUTSIDE AIR VOLUMES FOR VENTILATION AND REMAIN IN THE OPERATION OF THESE TWO OUTSIDE AIR DAMPERS.

   B. ZONE PRIMARY MINIMUM AIRFLOW
      THE PRIMARY MINIMUM AIRFLOW REQUIRED AT EACH ZONE IS THE DESIGNATION OF THREE CONDITIONS AS FOLLOWS:

      SAS VENTILATION EXPANSION: THIS IS THE MINIMUM AIRFLOW REQUIRED FOR THE VENTILATION TO ENHANCE SUMMER AIR FLOW. THIS IS IN ACCORDANCE WITH THE PRESSURE ENHANCEMENTS (COMPLIANT OF THE MINIMUM AIRFLOW VELOCITY PRESSURE) AND THE ACTUATOR MEASUREMENTS OF OUTSIDE AIR DETERMINED FROM DATA PROVIDED BY THE VAV BOX MANUFACTURER. (CONTROLS CONTRACTOR SUBMITTAL DATA TO INCLUDE MINIMUM AIRFLOW PRESSURE TRANSMITTER LOW/PLANT VELOCITY PRESSURE).
      OR
      MINIMUM PRIMARY AIR: THIS IS THE MINIMUM AIRFLOW REQUIRED TO VENTILATE THE ZONE BASED ON THE OUTSIDE AIR FRACTION. THIS VALUE IS NOT CALCULATED AS LISTED IN THE VAV BOX SCHEDULE.
      OR
      ZONE PRIMARY MIN AIRFLOW: AS ALLOWED BY 2013 SEATTLE CODE. NOTE: THIS IS ALREADY CALCULATED AND SETPOINTS IN VAV SCHEDULES.

   C. CONTROLLER SETPOINTS
      CONTROLS CONTRACTOR SUBMITTAL DOCUMENTATION SHALL INCLUDE THE CONTROL SYSTEM PROGRAMMING TO DESCRIBE THE FOLLOWING SEQUENCE WITH SETPOINTS (NOTE: SETPOINT FIGURES USED FOR EXAMPLE ONLY - THE CONTROL PROVIDE AS NEEDED):

      "MIN VENT CFM" = SCHEDULED MINIMUM MAXIMUM MODULATING CFM = ATS "OCCUPIED COOLING MAX CFM (CFM VALUE RESIDES IN VAV CONTROLLER)

      "ACTIVE VENT CFM" = SCHEDULED VENTILATION CFM = ATS "OCCUPIED HEATING MAX CFM (THIS VALUE RESIDES IN VAV CONTROLLER)

      "HEATING MAX" = SCHEDULED PRIMARY MAXIMUM HEATING CFM = ATS "OCCUPIED HEATING MAX CFM (THIS VALUE RESIDES IN VAV CONTROLLER)

      CREATION OF "ACTIVE VENT CFM" "MIN VENT CFM" AND "HEATING MAX" = ATS "OCCUPIED HEATING MAX CFM" (THIS VALUE IS CALCULATED IN PROGRAMMING AND WRITTEN TO THE VAV CONTROLLER)

      "VALVE MAX" = SCHEDULED VALVE MINIMUM CFM = ATS – RESIDES IN PROGRAMMING

      "MIN VENT CFM" = SCHEDULED VENTILATION CFM = ATS – RESIDES IN PROGRAMMING

      "MAX VENT CFM" = NO-OCCUPIED VENTILATION CFM / OVERRIDE CFM = ATS – RESIDES IN PROGRAMMING

      "ACTIVE VENT CFM" SETPOINT IS THE CURRENT VENT CFM SETPOINT. SEE CO2 CONTROL AND DYNAMIC STATUS SEQUENCE FOR DETAILS.

   J. MANUAL OUTSIDE AIR CALCULATION PROCEDURE
      THE FOLLOWING PARAMETERS ARE UTILIZED IN ZONE VENTILATION EFFECTIVENESS CALCULATION PER ASHRAE 62.1-07 APPENDIX A

      THE ZONE VENTILATION EFFECTIVENESS IS CALCULATED FROM THE FOLLOWING PARAMETERS:

      HEATING ZONE (IN LIEU) ACTIVE VENT CFM, NORMALIZED MINIMUM OF STRATIFICATION

      AVERAGING ZONE AIR – VAV = ACTIVE VENT CFM, NORMALIZED MINIMUM OF STRATIFICATION
      SUPPLY AIR FRACTION = VAV = ACTIVE VENT CFM / ACTIVE VENT CFM
      OUTSIDE AIR FRACTION = 1 – SUPPLY AIR FRACTION
      ZONE PRIMARY OUTDOOR AIR FRACTION = VAV = CURRENT MIN PRIMARY AIRFLOW / ACTIVE VENT CFM
      ZONE PRIMARY OUTDOOR AIR INTAKE = VAV = ACTIVE VENT CFM * ZONE PRIMARY OUTDOOR AIR FRACTION
      ZONE VENTILATION EFFICIENCY = VAV = TABLE
      OUTDOOR AIR INTAKE PER = VAV = FORMULA
      AIRFLOW AT VALVE IN FOR ON THE SAS.

   I. UNOCCUPIED MODE
      A. HEATING
         THE PRIMARY AIRFLOW VALVE WILL MODULATE TO MAINTAIN THE SCHEDULED COOLING PRIMARY MINIMUM AIRFLOW.
      B. HEATING
         MODULATE THE HEATING WATER CONTROL VALVE TO MAINTAIN THE ZONE TEMPERATURE AT 70°F +/- 0.5°F.
      C. EXHAUST STATUS MINIMUM OUTSIDE AIR CONTROL
         THE AHU WILL MONITOR ECONOMIZER FAN STATUS AND STAGE THE MINIMUM AIR FOR THE EXHAUST SYSTEM THROUGH THE SAS BUILT-IN SYSTEM ACCORDINGLY. SEE THE VAV BOX SCHEDULE FOR THE ASSOCIATED EXHAUST FAN THAT EACH DAMPER IS INTERLOCKED WITH.
         WHEN THE OUTSIDE AIR EXHAUST FAN IS REQUIRED FOR COMFORT AND CONFIRMS THAT TO THE OUTSIDE AIR VOLUMES FOR VENTILATION AND REMAIN IN THE OPERATION OF THESE TWO OUTSIDE AIR DAMPERS.

      DURATION OF "VALVE MIN" OR "ACTIVE VENT CFM" ("UNIT ON A %" = ATS "OCCUPIED COOLING MIN" CFM (THIS VALUE IS CALCULATED IN PROGRAMMING AND WRITTEN TO THE VAV CONTROLLER)
      - "MIN VENT" = SCHEDULED PRIMARY MINIMUM HEATING CFM = ATS "OCCUPIED HEATING MAX" CFM (THIS VALUE RESIDES IN VAV CONTROLLER)
      - "HEATING MAX" = SCHEDULED PRIMARY MAXIMUM HEATING CFM = ATS "OCCUPIED HEATING MAX" CFM (THIS VALUE IS CALCULATED IN PROGRAMMING AND WRITTEN TO THE VAV CONTROLLER)
      GREATER OF "ON" OF MIN OR "ACTIVE VENT CFM" ("UNIT ON A %" = ATS "OCCUPIED HEATING MIN" CFM (THIS VALUE IS CALCULATED IN PROGRAMMING AND WRITTEN TO THE VAV CONTROLLER)
      - "ON VENT" = SCHEDULED VALVE MINIMUM CFM = ATS – RESIDES IN PROGRAMMING
      - "MIN VENT CFM" = SCHEDULED VENTILATION (ISM) CFM = ATS – RESIDES IN PROGRAMMING
      - "MAX VENT CFM" = SCHEDULED VENTILATION (ISM) OVERRIDE CFM = ATS – RESIDES IN PROGRAMMING
      - "ACTIVE VENT CFM" SETPOINT IS THE CURRENT VENT CFM SETPOINT. SEE CO2 CONTROL AND DYNAMIC STATUS SEQUENCE FOR DETAILS.

   D. MANUAL OUTSIDE AIR CALCULATION PROCEDURE
      THE FOLLOWING PARAMETERS ARE UTILIZED IN ZONE VENTILATION EFFECTIVENESS CALCULATION PER ASHRAE 62.1-2007 APPENDIX A

      THE ZONE VENTILATION EFFECTIVENESS IS CALCULATED FROM THE FOLLOWING PARAMETERS:

      HEATING ZONE (IN LIEU) ACTIVE VENT CFM, NORMALIZED MINIMUM OF STRATIFICATION
      AVERAGING ZONE AIR – VAV = ACTIVE VENT CFM, NORMALIZED MINIMUM OF STRATIFICATION
      SUPPLY AIR FRACTION = VAV = ACTIVE VENT CFM / ACTIVE VENT CFM
      OUTSIDE AIR FRACTION = 1 – SUPPLY AIR FRACTION
      ZONE PRIMARY OUTDOOR AIR FRACTION = VAV = CURRENT MIN PRIMARY AIRFLOW / ACTIVE VENT CFM
      ZONE PRIMARY OUTDOOR AIR INTAKE = VAV = ACTIVE VENT CFM * ZONE PRIMARY OUTDOOR AIR FRACTION
      ZONE VENTILATION EFFICIENCY = VAV = TABLE
      OUTDOOR AIR INTAKE PER = VAV = FORMULA
      AIRFLOW AT VALVE IN FOR ON THE SAS.

   K. MORNING WARM-UP MODE
      ENTHALPY TURNOVER SHALL COMMENCE DURING MORNING WARM-UP IN ZONE BY THE BMS. PRIMARY AIR VALVE SHALL OPEN TO THE MINIMUM POSITION. THE VAV TERMINAL SHALL MODULATE HEAT

TO MAINTAIN OCCUPIED MODE SETPOINT (+ OPTIONAL START CONTROL WILL ADJUST THE START TIME EACH DAY TO BRING THE ZONES TO OCCUPIED CONDITIONS SETPOINT MINIMUM FULLY BEFORE WORKERS ARRIVE OCCUPANCY. THE ZONES SHALL BE CONSIDERED TO WARM UP THE ZONES TO OCCUPIED HEATING SETPOINTS. THE ALGORITHM SHALL EACH MINIMUM, BE A FUNCTION OF THE DIFFERENCE BETWEEN SPACE TEMPERATURE AND OCCUPIED SETPOINT AND THE AMOUNT OF TIME PRIOR TO SCHEDULED OCCUPANCY.

   L. MORNING/LOCK DOWN MODE
      THE VAV TERMINALS ARE COMMANDED INTO MORNING (LOCK DOWN MODE BY THE BMS. THE PRIMARY AIR VALVE WILL MODULATE OPEN. OPTIONAL START CONTROL WILL ADJUST THE START TIME EACH DAY TO BRING THE ZONES TO OCCUPIED COOLING SETPOINT MINIMUM FULLY BEFORE WORKERS ARRIVE OCCUPANCY. THE ZONES SHALL BE CONSIDERED TO COOL THE ZONES TO OCCUPIED COOLING SETPOINTS. THE ALGORITHM SHALL, EACH MINIMUM, BE A FUNCTION OF THE DIFFERENCE BETWEEN SPACE TEMPERATURE AND OCCUPIED SETPOINT AND THE AMOUNT OF TIME PRIOR TO SCHEDULED OCCUPANCY.

2. UNOCCUPIED MODE
   A. HEATING
      THE VAV TERMINALS ARE COMMANDED INTO UNOCCUPIED MODE BY THE BMS. THE STANDBY MODE SHALL OCCUR. THE PRIMARY AIR VALVE, UPON A CALL FOR HEATING THE PRIMARY AIR VALVE WILL MODULATE OPEN TO THE MINIMUM POSITION. THE VAV TERMINAL SHALL MODULATE HEAT TO MAINTAIN A SPACE SETPOINT OF 60°F (TYP.) THE BMS, REFERENCE THE AHU HANDLING UNIT SEQUENCE OF OPERATION FOR ADDITIONAL INFORMATION. RECOMMENDED THE CONTROL PROGRAMMER WILL DETERMINE WHICH ADDITIONAL STATES WILL OPEN TO ADVANCE MINIMUM AIRFLOW AT THE AIR HANDLING UNIT. (VERIFY SYSTEM CAPABILITY, AS BUILT PROGRAMMING APPROACH)

   B. COOLING
      THE VAV TERMINALS ARE COMMANDED INTO UNOCCUPIED MODE BY THE BMS. THE STANDBY MODE SHALL OCCUR. THE PRIMARY AIR VALVE, UPON A CALL FOR COOLING THE PRIMARY AIR VALVE WILL MODULATE BETWEEN MINIMUM AND MINIMUM SETTINGS TO MAINTAIN THE ZONE COOLING SETPOINT OF 85°F (TYP.) (+ 127F (ADJ.). REFERENCE THE AIR HANDLING UNIT SEQUENCE OF OPERATION FOR MINIMUM AIRFLOW RESPONSIBILITIES. RECOMMENDED THE CONTROLS PROGRAMMER WILL DETERMINE WHICH ADDITIONAL STATES WILL OPEN TO ADVANCE MINIMUM AIRFLOW AT THE AIR HANDLING UNIT. (VERIFY SYSTEM CAPABILITY, AS BUILT PROGRAMMING APPROACH)

SINGLE DUCT VAV TERMINAL UNITS (VAV-AHU-N)
1. OCCUPIED MODE
   A. AIRFLOW
      THE PRIMARY AIR SAN DIEGO WILL MODULATE TO MAINTAIN THE SCHEDULED COOLING PRIMARY MINIMUM AIRFLOW.

   B. HEATING
      MODULATE THE HEATING WATER CONTROL VALVE TO MAINTAIN THE ZONE TEMPERATURE AT 70°F +/- 0.5°F.

   C. EXHAUST STATUS MINIMUM OUTSIDE AIR CONTROL
      THE AHU WILL MONITOR ECONOMIZER FAN STATUS AND STAGE THE MINIMUM AIR FOR THE EXHAUST SYSTEM THROUGH THE VAV SUPPLY SYSTEM ACCORDINGLY. SEE THE VAV BOX SCHEDULE FOR THE ASSOCIATED ECONOMIZER FAN THAT EACH DAMPER IS INTERLOCKED WITH.
      AND TO RUN THE OUTSIDE AIR ECONOMIZER FAN CONFIRMS THAT TO THE OUTSIDE AIR REQUIRED FOR VENTILATION AND REMAIN IN THE GREATER OF THESE TWO OUTSIDE AIR QUANTITIES.

   H. ZONE PRIMARY MINIMUM AIRFLOW

THE PRIMARY MINIMUM ERR ON ASSOCIATED AT EACH ZONE IN THE GREATER OF THREE CONDITIONS AS FOLLOWS:

   SAS VENTILATION EXPANSION: THIS IS THE MINIMUM AIRFLOW REQUIRED FOR THE VENTILATION TO ENHANCE SUMMER AIR FLOW. THIS IS IN ACCORDANCE WITH THE PRESSURE ENHANCEMENTS (COMPLIANT OF THE MINIMUM AIRFLOW VELOCITY PRESSURE) AND THE ACTUATOR MEASUREMENTS OF OUTSIDE AIR DETERMINED FROM DATA PROVIDED BY THE VAV BOX MANUFACTURER. (CONTROLS CONTRACTOR SUBMITTAL DATA TO INCLUDE MINIMUM AIRFLOW PRESSURE TRANSMITTER LOW/PLANT VELOCITY PRESSURE).
   OR
   MINIMUM PRIMARY AIR: THIS IS THE MINIMUM AIRFLOW REQUIRED TO VENTILATE THE ZONE BASED ON THE OUTSIDE AIR FRACTION. THIS VALUE IS NOT CALCULATED AS LISTED IN THE VAV BOX SCHEDULE.
   OR
   ZONE PRIMARY MIN AIRFLOW: AS ALLOWED BY 2013 SEATTLE CODE. NOTE: THIS IS ALREADY CALCULATED AND SETPOINTS IN VAV SCHEDULES.

   I. CONTROLLER SETPOINTS
      CONTROLS CONTRACTOR SUBMITTAL DOCUMENTATION SHALL INCLUDE THE CONTROL SYSTEM PROGRAMMING TO DESCRIBE THE FOLLOWING SEQUENCE WITH SETPOINTS (NOTE: SETPOINT FIGURES USED FOR EXAMPLE ONLY - THE CONTROL PROVIDE AS NEEDED):

      "MIN VENT" = SCHEDULED MINIMUM MAXIMUM MODULATING CFM = ATS "OCCUPIED COOLING MAX CFM (THIS VALUE RESIDES IN VAV CONTROLLER)

      "ACTIVE VENT CFM" = SCHEDULED VENTILATION CFM = ATS "OCCUPIED HEATING MAX CFM (THIS VALUE RESIDES IN VAV CONTROLLER)

      "HEATING MAX" = SCHEDULED PRIMARY MAXIMUM HEATING CFM = ATS "OCCUPIED HEATING MAX CFM (THIS VALUE RESIDES IN VAV CONTROLLER)

      CREATION OF "VALVE MIN" OR "ACTIVE VENT CFM" ("UNIT ON A %" = ATS "OCCUPIED HEATING MIN" CFM (THIS VALUE IS CALCULATED IN PROGRAMMING AND WRITTEN TO THE VAV CONTROLLER)

      "VALVE MAX" = SCHEDULED VALVE MINIMUM CFM = ATS – RESIDES IN PROGRAMMING

      "MIN VENT CFM" = NO-OCCUPIED VENTILATION (ISM) CFM = ATS – RESIDES IN PROGRAMMING

      "MAX VENT CFM" = NO-OCCUPIED VENTILATION (ISM) OVERRIDE CFM = ATS – RESIDES IN PROGRAMMING

      "ACTIVE VENT CFM" SETPOINT IS THE CURRENT VENT CFM SETPOINT. SEE CO2 CONTROL AND DYNAMIC STATUS SEQUENCE FOR DETAILS.

   J. MANUAL OUTSIDE AIR CALCULATION PROCEDURE
      THE FOLLOWING PARAMETERS ARE UTILIZED IN ZONE VENTILATION EFFECTIVENESS CALCULATION PER ASHRAE 62.1-07 APPENDIX A

      THE ZONE VENTILATION EFFECTIVENESS IS CALCULATED FROM THE FOLLOWING PARAMETERS:

      HEATING ZONE (IN LIEU) ACTIVE VENT CFM, NORMALIZED MINIMUM OF STRATIFICATION

      SCHEDULED FOR HEAT AND ZONE TEMPERATURE WAS NOT SATISFIED,
      - ZONE AIR DISTRIBUTION EFFECTIVENESS (EZ) = 0.8 (UNLESS NOTED, ON = 1.0 MINIMUM)
      - ZONE OA (VOZ) = VAV
      - ZONE PRIMARY AIRFLOW = VAV = CURRENT MIN PRIMARY AIRFLOW (FOR 1ST ZONE, DEFAULT TO ZONE MIN AIRFLOW)
      - ZONE PRIMARY OUTDOOR AIR FRACTION (ZPOZ) = VAV = VOZ / VPZ
      - MINIMUM OUTDOOR AIR FRACTION = VAV = VOZ / VPZ
      - SINGLE-ZONE OUTDOOR AIR FRACTION = VAV = ACTIVE VENT CFM / ZONE PRIMARY AIRFLOW
      - ZONE VENTILATION EFFICIENCY = VAV = TABLE
      - OUTDOOR AIR INTAKE PER = VAV = FORMULA
      - AIRFLOW AT VALVE IN FOR ON THE SAS.

   J. UNOCCUPIED MODE
      A. AIRFLOW
         THE PRIMARY AIRFLOW VALVE WILL MODULATE TO MAINTAIN THE SCHEDULED COOLING PRIMARY MINIMUM AIRFLOW.
      B. HEATING
         MODULATE THE HEATING WATER CONTROL VALVE TO MAINTAIN THE ZONE TEMPERATURE AT 70°F +/- 0.5°F.
      C. EXHAUST STATUS MINIMUM OUTSIDE AIR CONTROL
         THE AHU WILL MONITOR ECONOMIZER FAN STATUS AND STAGE THE MINIMUM AIR FOR THE EXHAUST SYSTEM THROUGH THE SAS BUILT-IN SYSTEM ACCORDINGLY. SEE THE VAV BOX SCHEDULE FOR THE ASSOCIATED EXHAUST FAN THAT EACH DAMPER IS INTERLOCKED WITH.
         WHEN THE OUTSIDE AIR EXHAUST FAN IS REQUIRED FOR COMFORT AND CONFIRMS THAT TO THE OUTSIDE AIR VOLUMES FOR VENTILATION AND REMAIN IN THE OPERATION OF THESE TWO OUTSIDE AIR DAMPERS.

   T. ROOM/LOCAL HUMIDITY SENSOR WIRED BY THE GC
   S. DUCT MOUNTED AIRFLOW SWITCH (REMOTELY THE G.C.)

HUMIDIFIER HUMIDITY CONTROL:
THE DUCT SENSE CONTINUOUSLY ENABLE THE HUMIDIFIER IN ORDER TO RECEIVE THE ROOM HUMIDITY. THE HUMIDIFIER CONTAINS LOW SIGNAL MODULATE THE SOLENOID VALVE ORIFICE TO MAINTAIN THE HUMIDITY SETPOINT OF 50% RH +/-5% (ADJ.) FIELD CAN BE "HUMIDIFIER CONTROL SIGNAL" IF THE DUCT HAS HIGH LIMIT HUMIDITY SETPOINT (50% RH), THEN THE HUMIDIFIER WILL REDUCE THE SIGNAL TO ENSURE CLEARANCE BETWEEN OF "SUBMERGED".

HUMIDIFIER DRAIN CONTROL:
THE HUMIDIFIER IS OFF TO MAINTAIN THE HUMIDITY, HUMIDIFIER MAY BE ENABLED THE BMS SHALL MONITOR THE HUMIDIFIER AT END OF SEASON DRAIN SIGNAL, AND THE HUMIDIFIER WILL CLOSE THE MAKE-UP WATER SOLENOID VALVE AND OPEN THE DRAIN VALVE. IF THE HUMIDITY IS BELOW 50% RH FOR 5 MINUTES, THEN THE BMS SHALL MONITOR THE END OF SEASON DRAIN SIGNAL, AND THE HUMIDIFIER SHALL RESUME NORMAL OPERATION.

HUMIDIFIER SAFETY SHUTDOWNS
LOW WATER LEVEL DUCTOR, LOSS OF AIRFLOW

INFILTRATION AT EXTERIOR LOCATIONS (ENVELOPE)
THE BUILDING ENVELOPE IS DESIGNED TO ELIMINATE HEAT GAIN TO THE ENVELOPE OR THE LATTICE AND WEAR THE MAINTENANCE. IN EACH OF THE FIRST, ATTICS AND AT THE SUN OF THE WINTER ATTIC THERE IS A COMBINATION OF THE ALREADY AND TEMPERATURE DIFFERENTIAL PRESSURES BY THE GC. THE BMS CALCULATES THE INTERNAL TEMPERATURE OF EACH IN THE OUTDOOR AIR TEMPERATURE IS LESS THAN 21

MANAGE THEIR MODULATE THE MOTORIZED DAMPER TO MAINTAIN THE SETPOINT. THE VFD ON THE AIR HANDLING UNIT MONITORS FOR FAN STATUS AND ALARMS UPON FAILURE.

SPLIT SYSTEM HEAT PUMPS (SERVING LIBRARY, PERIMETER ROOMS & ADMIN AREAS):

HEAT PUMPS SHALL BE ENGAGED CONTINUOUSLY. HEATING AND COOLING CONTROL WILL BE PROVIDED BY A SMALL MODBUS UNIT PROVIDED CONTROLLER. CONTROLLER IS PROVIDED AND INSTALLED BY MECHANICAL CONTRACTOR AND IS TO BE PROVIDED W/ THE HEAT PUMP EQUIPMENT. USE IO TO ENABLE DOUBLE HEAT PUMPS, AND ALARM HEAT PUMPS FROM THE SUMMARY ALARM OUTPUT FROM THE HEAT PUMP CONTROLLER.

THEY BMS SHALL INDEPENDENTLY MONITOR SPACE TEMPERATURE. THE SPACE TEMPERATURE WILL BE DISPLAYED ON THE GUI AND ALARMED IF THE SPACE TEMPERATURE EXCEEDS 85°F (ADJ.)

CONVENIENCE/PUBLIC EXHAUST FANS (EF-1, EF-2, EF-3, EF-4, EF-5):

PROVIDE AND ENABLE THE FANS BASED ON AN OCCUPIABLE WALL SWITCH WITH THREE POSITIONS (HIGH VENT, LOW VENT AND OFF). EXHAUST MOTORIZED DAMPERS ARE INTERLOCKED WITH FAN ON/OFF CONTROL AND THE ON/OFF CONTROL FOR FAN (A LINE VOLTAGE SINGLE THROW OPEN UPON OPERATION OF ANY ONE FAN. A WALL SWITCH SHALL BE PROVIDED FOR FAN EF-4, EF-5.)

THE BMS SYSTEM SHALL HAVE SIX DIFFERENT SPEEDS FOR FAN EF-4, ONE FOR HIGH VENT AND ONE FOR LOW VENT AND ONE JUST EACH MODE WHEN EITHER FAN 2 OR ON FAN 1 OPERATION AND ONE FOR BOTH OPERATING. FANS AND THE LARGER TWO SPEEDS BASED ON VENTILATION TO THE SPACE. IF THIS SWITCH IS IN LOW VENT THE FAN SHALL RUN AT 50% OF THE FULL FLOW OF FAN 1. IN HOUSEKEEPING MODE, WHEN THE SWITCH IS OFF, THE FAN WILL BE OFF, UNLESS THE VAV SERVING THE SPACE PROVIDES CONDITIONING IN WHICH CASE IT SHALL BE AT 50% AIRFLOW. IF THE SWITCH IS ON THEN THE VAV MUST FANS SHALL BE CONTROLLED AT 100% AIRFLOW.

BMS MONITORS FAN STATUS VIA CURRENT SENSOR.

EXHAUST FANS (EF-6, EF-7, EF-8, EF-9, EF-10, EF-11, EF-12, EF-13, EF-14, EF-15, EF-16, EF-17, EF-18, EF-19, EF-20, EF-21, EF-22, EF-23, EF-24, EF-25, EF-26, EF-27, EF-28, EF-29, EF-30, EF-31, EF-32, EF-33, EF-34, EF-35, EF-36, EF-37, EF-38, EF-39, EF-40, EF-41, EF-42, EF-43, EF-44, EF-45, EF-46,

ABBREVIATIONS

GENERAL

AD	ACCESS DOOR
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AMP	AMPERE
ARCH	ARCHITECT; ARCHITECTURAL
AUTO	AUTOMATIC
AUX	AUXILIARY
A	COMPRESSED AIR
BS	BIRD SCREEN
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNITS PER HOUR
COND	CONDENSATE
CAL	CENTIGRADE
CLG	CEILING
CO	CARBON MONOXIDE
CO2	CARBON DIOXIDE
CA	COMPRESSED AIR
DET	DETAIL
DIA	DIAMETER
DISCH	DISCHARGE
DN	DOWN
DWG	DRAWING
DWV	DRAIN, WASTE, VENT
(E)	EXISTING
EA	EACH
EC	ELECTRICAL CONTRACTOR; END CAP
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATION
ESP	EXTERNAL STATIC PRESSURE
EXH	EXHAUST
EXIST	EXISTING
F	FAHRENHEIT
FA	FIRE ALARM
FCO	FLOOR CLEANOUT
FDC	FIRE DEPARTMENT CONNECTION
FLEX	FLEXIBLE
FLG	FLANGE
FLR	FLOOR
FO	FUEL OIL
FP	FIRE PROTECTION
FPM	FEET PER MINUTE
FT	FOOT; FEET
FURN	FURNISH
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
GWB	GYPSUM WALL BOARD
HP	HORSE POWER
ID	INSIDE DIAMETER/DIMENSION
LF	LINEAL FOOT
MAX	MAXIMUM
MBH	1000 BRITISH THERMAL UNITS PER HOUR
MED	MEDIUM
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MLN	MODEL NUMBER
MTD	MOUNTED
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
(NEG)	NEGATIVE
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN; NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
POC	POINT OF CONNECTION
PRELIM	PRELIMINARY
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
QTY	QUANTITY
REQD	REQUIRED
RPM	REVOLUTIONS PER MINUTE
SF	SQUARE FOOT
SPEC	SPECIFICATION
SQ	SQUARE
STD	STANDARD
TBD	TO BE DETERMINED
TI	TENANT IMPROVEMENTS
TOC	TOP OF CONCRETE
TOS	TOP OF STEEL
TYP	TYPICAL
UG	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE

ABBREVIATIONS CONTINUED

W/	WITH
W/O	WITHOUT

HVAC

AC	AIR CONDITIONING
ACT	ACOUSTICAL CEILING TILE
AHU	AIR HANDLING UNIT
BDD	BACKDRAFT DAMPER
BOD	BOTTOM OF DUCT
CC	COOLING COIL
CV	CONSTANT VOLUME
DB	DRY BULB
DIFF	DIFFUSER
DMPR	DAMPER
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
GRD	GRILLE, REGISTER, DIFFUSER
HVAC	HEATING, VENTILATION, AND AIR CONDITIONING
LAT	LEAVING AIR TEMPERATURE
MC	MECHANICAL CONTRACTOR
MECH	MECHANICAL
MOD	MOTOR OPERATED DAMPER; MODULATING
MUA	MAKE UP AIR
OA	OVERALL OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
RA	RETURN AIR
RAT	RETURN AIR TEMPERATURE
RCP	REFLECTED CEILING PLAN
SA	SUPPLY AIR
SAT	SUPPLY AIR TEMPERATURE
SD	SMOKE DAMPER
SF	SUPPLY FAN
SL	SOUND LINED
SLSM	SOUND LINED SHEET METAL
SM	SHEET METAL
SP	STATIC PRESSURE
TG	TRANSFER GRILLE
TOD	TOP OF DUCT
TSP	TOTAL STATIC PRESSURE
UH	UNIT HEATER
WB	WET BULB
WC	WATER COLUMN
WG	WATER GAUGE

PLUMBING

CO	CLEAN OUT; CARBON MONOXIDE
DCW	DOMESTIC COLD WATER
DHW	DOMESTIC HOT WATER
DHWC	DOMESTIC HOT WATER RECIRCULATION
EWC	ELECTRICAL WATER COOLER
FD	FLOOR DRAIN
G	GAS
GD	GARBAGE DISPOSAL
IE	INVERT ELEVATION
IN WC	INCHES WATER COLUMN
IW	IONIZED WATER; INDIRECT WASTE
MPG	MEDIUM PRESSURE GAS
NPW	NON-POTABLE COLD WATER
OHL	OVERFLOW RAINWATER LEADER
PD	PLANTER DRAIN; PRESSURE DROP
PERF	PERFORATED
PLBG	PLUMBING
PRV	PRESSURE REDUCING VALVE
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
SD	STORM DRAIN
SS	SANITARY SEWER
VTR	VENT THROUGH ROOF
W	WASTE
WC	WATER CLOSET
WH	WATER HEATER
WSP	WET STANDPIPE

PIPING

BP	BACKFLOW PREVENTOR
CD	CONDENSATE DRAIN
CHW	CHILLED WATER
CHR	CHILLED WATER RETURN
CHS	CHILLED WATER SUPPLY
CT	CONICAL TEE
EWT	ENTERING WATER TEMPERATURE
HW	HOSE HOSE VALVE
HRR	HEAT RECOVERY RETURN
HRS	HEAT RECOVERY SUPPLY
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
LWT	LEAVING WATER TEMPERATURE
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
TOP	TOP OF PIPE

PIPE ACCESSORIES

- P/T PORT
- TEMPERATURE SENSOR
- TEMPERATURE INDICATOR
- PRESSURE GAUGE
- MANUAL AIR VENT
- AUTOMATIC AIR VENT
- PUMP
- FLOW METER
- STRAINER
- FLOW SWITCH
- REDUCED PRESSURE BACKFLOW PREVENTOR
- FUNNEL DRAIN
- FLOOR DRAIN
- FLOOR SINK
- ROOF DRAIN
- ROOF OVERFLOW DRAIN

VALVES

- GATE - STANDARD
- GATE - MOTORIZED
- SOLENOID VALVE
- BALL - STANDARD
- PRESSURE REDUCING VALVE
- RELIEF VALVE
- CHECK VALVE
- GLOBE - STANDARD
- BALANCE VALVE
- DIAPHRAGM VALVE
- HOSE BIBB
- COMPRESSED AIR PIPE

PLUMBING SYSTEMS

- DOMESTIC COLD WATER
- DOMESTIC HOT WATER
- DOMESTIC HOT WATER RECIRC
- NON-POTABLE WATER
- SANITARY WASTE
- GREASE WASTE
- SANITARY VENT
- OVERFLOW RAINWATER LEADER
- RAINWATER LEADER
- NATURAL GAS - LOW PRESSURE
- NATURAL GAS - MEDIUM PRESSURE

PIPE FITTINGS

- UNION
- FLEX HOSE CONNECTION
- TEE UP
- TEE DOWN
- BELLOWS FLEX CONNECTION
- DOUBLE BELLOWS FLEX CONNECTION
- FLOW ARROW
- END CAP
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- WYE
- 90° ELBOW
- 45° ELBOW
- CROSS
- TEE
- ELBOW DOWN
- ELBOW UP
- CLEANOUT
- HOSE END AND CAP
- ALLIGNMENT GUIDE
- ORIFACE PLATE
- STEAM EXPANSION JOINT
- SLOPE SYMBOL

PLUMBING DRAWING INDEX

SHEET NUMBER	SHEET TITLE	SHEET SCALE	CONSTRUCTION DOCUMENTS 6/23/2017
P000	LEGEND AND ABBREVIATIONS - PLUMBING	NTS	X
P001	PLUMBING MATERIALS MATRIX	NTS	X
P002	PLUMBING CALCULATIONS	NTS	X
P010	PLUMBING SCHEDULES	NTS	X
P011	PLUMBING SCHEDULES	NTS	X
P012	PLUMBING SCHEDULES	NTS	X
P100	PLUMBING DEMO PLAN - LEVEL 1	1/8" = 1'-0"	X
P101	PLUMBING DEMO PLAN - LEVEL 2	1/8" = 1'-0"	X
P102	PLUMBING DEMO PLAN - LEVEL 3	1/8" = 1'-0"	X
P103	PLUMBING DEMO PLAN - LEVEL 4	1/8" = 1'-0"	X
P200	PLUMBING PLAN - BELOW GRADE	1/8" = 1'-0"	X
P201	PLUMBING FLOOR PLAN - LEVEL 1	1/8" = 1'-0"	X
P202	PLUMBING FLOOR PLAN - LEVEL 2	1/8" = 1'-0"	X
P203	PLUMBING FLOOR PLAN - LEVEL 3	1/8" = 1'-0"	X
P204	PLUMBING FLOOR PLAN - ATTIC	1/8" = 1'-0"	X
P205	PLUMBING FLOOR PLAN - LEVEL ROOF	1/8" = 1'-0"	X
P301	ENLARGED PLUMBING PLANS	1/4" = 1'-0"	X
P501	PLUMBING DETAILS	AS NOTED	X
P502	PLUMBING DETAILS	AS NOTED	X
P601	PLUMBING DOMESTIC WATER RISER DIAGRAM	NTS	X
P602	PLUMBING WASTE AND VENT RISER DIAGRAM	NTS	X
P603	PLUMBING NATURAL GAS RISER DIAGRAM	NTS	X
P604	PLUMBING RAINWATER RISER DIAGRAM	NTS	X

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Construction Documents

FOR REFERENCE ONLY

LEGENDS AND ABBREVIATIONS - PLUMBING

P000

PLUMBING MATERIALS SPECIFICATION MATRIX

SERVICE ID	SERVICE DESCRIPTION	DESIGN PRESSURE (PSIG)	SIZE	MATERIAL	JOINTS	LOCATION FOR USE	INSULATION (R-VALUES PER 2012 WSEC AND SEC)	REMARKS
DOMESTIC WATER - BELOW GRADE								
DCW	DOMESTIC COLD WATER UNDERGROUND	125	2" AND SMALLER	HIGH DENSITY POLYETHYLENE (HDPE) SOLID WALL SCH 80 PVC SCH 80 CPVC	SOCKET WELD SOLVENT WELD SOLVENT WELD	NO RESTRICTION NO RESTRICTION		
		125	2-1/2" AND LARGER	CLASS 52 DUCTILE IRON, CEMENT LINED	MECHANICAL JOINTS	NO RESTRICTION		INSTALL WITH POLYETHYLENE JACKET
DOMESTIC WATER - ABOVE GRADE								
DCW, DHW, DHWC	DOMESTIC COLD WATER, DOMESTIC HOT WATER, DOMESTIC HOT WATER RECIRC.	125	2" AND SMALLER	COPPER TUBING TYPE L	SOLDERED; 95-5 SOLDER, LEAD-FREE	NO RESTRICTION	CM-NON PLASTIC ONLY HW- ALL HWC-ALL	
				SCH 80 CPVC	SOLVENT WELD	DOWNSTREAM OF PRESSURE REGULATORS ONLY. CPVC IN PLENUMS MUST BE RATED FOR SUCH USE.		PC TO PROVIDE PRICING ALTERNATE TO ELIMINATE CPVC FROM THE PROJECT
				POLYPROPYLENE GREEN PIPE, SDR 7.4-DR 11	SOCKET-FUSION, ELECTROFUSION, OR BUTT-FUSION	DOMESTIC HOT WATER PIPING SHALL CONTAIN A FIBER LAYER (FIBASTIC) TO RESTRICT THERMAL EXPANSION.		
				PEX TUBING ASTM F876 ASTM F877	PEX INSERT & EXPANSION COLLAR ASTM F1807, ASTM F2159			
			2-1/2" AND LARGER	COPPER TUBING TYPE L	GROOVED, PRESS FITTINGS	NO RESTRICTION		
				STAINLESS STEEL	GROOVED, PRESS FITTINGS	NO RESTRICTION		
				SCH 80 CPVC	SOLVENT WELD	DOWNSTREAM OF PRESSURE REGULATORS ONLY. CPVC IN PLENUMS MUST BE RATED FOR SUCH USE.		PC TO PROVIDE PRICING ALTERNATE TO ELIMINATE CPVC FROM THE PROJECT
		250	ALL	COPPER TUBING TYPE L	GROOVED, PRESS FITTINGS	NO RESTRICTION		
				STAINLESS STEEL	GROOVED, PRESS FITTINGS	NO RESTRICTION		
SANITARY WASTE & VENT - ABOVE GRADE								
W	SANITARY WASTE	5	ALL	CAST IRON NO HUB	NHC FITTINGS	NO RESTRICTION	NONE	
V	SANITARY VENT	5	ALL	CAST IRON NO HUB	NHC FITTINGS	NO RESTRICTION		
				SCH 40 PVC SCH 40 ABS	SOLVENT WELD	NOT ALLOWED IN PLENUMS		
PW	PUMPED WASTE	125	ALL	SCH 40 GALVANIZED STEEL	THREADED	ABOVE GRADE ONLY		INSTALL WITH POLYETHYLENE JACKET
				SCH 80 CPVC	SOLVENT WELD	NO RESTRICTION		
SANITARY WASTE & VENT - BELOW GRADE								
W	SANITARY WASTE	5	ALL	CAST IRON NO HUB	NHC FITTINGS	NO RESTRICTION	NONE	
				SOLID WALL SCH 40 PVC	SOLVENT WELD	NO RESTRICTION NOT FOR USE WHERE DISCHARGE EXCEEDS 140°F NOT FOR COMMERCIAL KITCHEN DISCHARGE (GREASE WASTE) UPSTREAM OF INTERCEPTOR.		
V	SANITARY VENT	5	ALL	CAST IRON NO HUB	NHC FITTINGS	NO RESTRICTION		
				SCH 40 PVC SCH 40 ABS	SOLVENT WELD	NO RESTRICTION		
PW	PUMPED WASTE	125	ALL	SCH 40 GALVANIZED STEEL	THREADED	ABOVE GRADE ONLY		INSTALL WITH POLYETHYLENE JACKET
				SCH 80 CPVC	SOLVENT WELD	NO RESTRICTION		
CONDENSATE								
COND	CONDENSATE	5	ALL	COPPER TUBE DWV	95-5 SOLDER	NO RESTRICTION	REQUIRED	
				SOLID WALL PVC SCH 40 ASTM D2665	SOLVENT WELD	NOT ALLOWED IN PLENUMS	NOT REQUIRED	
NATURAL GAS PIPING								
NG	LOW PRESSURE NATURAL GAS (<0.5 PSIG)	5	1" AND SMALLER	CORRUGATED STAINLESS STEEL TUBING (CSST) ASTM A480 STEEL W/ POLYETHYLENE JACKET	THREADED	UNITS	NONE	
		125	4" AND SMALLER	CARBON STEEL PIPE SCH 40 ASTM A106	THREADED	ALL		OUTDOORS - PAINTED OR GALVANIZED
MPG	MEDIUM PRESSURE NATURAL GAS (2 < 5 PSIG)	125	4" AND SMALLER	CARBON STEEL PIPE SCH 40 ASTM A106	THREADED	ALL		OUTDOORS - PAINTED OR GALVANIZED
FUEL PIPING								
FOS/R; FOV	FUEL OIL FILL & VENT	125	2" AND SMALLER	CARBON STEEL PIPE SCH 40 ASTM A-53	SOCKETWELD	ALL	NONE	
STORM WATER PIPING								
RWL / ORL	RAIN WATER LEADER / OVERFLOW RAIN WATER LEADER	5	ALL	CAST IRON	RHC COUPLINGS	ALL	1" INSULATION OF ALL HORIZONTAL PIPES IN CONDITIONED SPACES	
				SOLID WALL SCH 40 PVC	SOLVENT WELD	BELOW GRADE OR IN GARAGE ONLY		

REMARKS:
1) PER 2012 UPC WITH WASHINGTON AMENDMENTS, PEX TUBING SHALL NOT BE INSTALLED WITHIN THE FIRST 18 INCHES OF PIPING CONNECTED TO A WATER HEATER.
2) ALL WASTE PIPES ARE TO BE ISOLATED FROM BUILDING STRUCTURE USING A CLOSED-CELL NEOPRENE SLEEVE.
3) CAST IRON OR PLENUM-RATED CPVC PIPE IS REQUIRED IN ALL RETURN AIR PLENUMS. PVC & ABS ARE NOT ALLOWED.
4) CEILING CAVITIES SURROUNDING WASTE PIPES OR ROOF DRAIN LINES ARE TO BE FILLED WITH BATT INSULATION.
5) FLOOR PENETRATIONS ARE TO BE PACKED WITH ROCK WOOL OR FIBERGLASS INSULATION AND SEALED WITH A RESILIENT FIRE CAULK. PIPING SHALL BE PREVENTED FROM MAKING RIGID CONTACT WITH THE STRUCTURE AT THESE PENETRATIONS.
6) INSULATE ALL METALLIC COLD WATER LINES WITH 1/2" FIBERGLASS WRAP OR EQUIVALENT.
7) PIPE SHALL BE INSULATED PER WASHINGTON STATE' SEATTLE ENERGY CODE 2012 REQUIREMENTS EXCEPT WHERE NOTED OTHERWISE.
8) ALL SUNKED PLASTIC PIPING INCLUDING PVC AND CPVC SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321 AND ASTM F 1668 STANDARDS.

TRUE NORTH PLAN NORTH 0' 4' 8' 16' 32'

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SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

FOR REFERENCE ONLY

Drawn: 05/30
Checked: ARMCH
LMN Project No: 160901.01
Date: 8/24/17

PLUMBING MATERIALS MATRIX

P001

Domestic Water Service Pressure

	Pressure/ Distance (ft)	Pressure (PSI)	Available Remaining Pressure	
Static Pressure available to street (psi)		39		Static Pressure per Modified Flow test
HVAC Elevation in ft:	442			HVAC elevation
Service Entry Elevation in ft:	435			Water Entry Elev = 435'
Water Entry Losses (psi):				
Pressure required due to elevation from Hatch to bldg P.O.C. (psi):	29 ft	-4.5	43.5	No change
Pressure loss due to friction from main to bldg P.O.C. (psi):		-1.2	39.1	Based upon approx. 40 L.F. of 2" S-84 CPVC
Pressure Loss thru Water Meter (psi):		3	37.1	2" Sensus Water Meter @ 84 GPM
Loss due backflow preventer (psi):		11	26.1	2" RP56, WATTS model LF909-Q -84GPM
CPD Recommended design pressure reduction:		20	6.1	Per the Water Availability Certificate
Pressure Reducing Valve:		0	6.1	PRV Not Required
Minimum Pressure Required at Top of System (psi):				
Type of Furthest Fixture Assumed:	WC			4GPF (Sloan), WF (Sloan) WC-1000-A
Pressure Required at Furthest Fixture:		40	-33.9	20.12 LPM/ 1000.1.2 – 15psi min, 80 psi max at fixture
				Confirm no requirement for DRINKFOUNTAIN
Elevation Change in pressure:				
Location of Assumed Furthest Fixture:	Level 3			
Top Elevation in ft:	467.375 ft			
Service Entry Elevation in ft:	435 ft			Elevation on plan
Total Change in feet:	36.375 ft			
Total Change in psi:		15.8	-49.2	
Piping Pressure Loss - Friction Loss in Building:				
Total length of pipe - vertical:	179 ft			Based on change in elevation from basement to Level 5
Total length of pipe - Horizontal:	36 ft			Calc. from assumed water entry on to most remote fixture
Total length of pipe:	205 ft			
Add for fittings: 35%	72 ft			
Total Equivalent Length	277 ft			
Average Friction Loss (psi/100ft):	3.4			
Total friction loss (psi):		9.7	-58.9	
Difference between Available and Required		-58.9		
Booster Pump Required (Yes/No)		YES		

Project Plumbing Load & Utility Coordination Matrix

Commercial

Fixture Type Shell/Core:	Number of Fixtures	WSFU/Fixture	Total WSFU	HWFU/Fixture	Total HWFU	DFU/ Fixture	Total DFU
Water Closet	11	5.0	55.0	0.0	0.0	4.0	44.0
Urinal	3	4.0	12.0	0.0	0.0	2.0	6.0
Lav	9	1.5	13.5	0.8	6.8	1.0	9.0
Kitchen Sink w/Dw	9	1.5	7.5	2.5	12.5	2.0	10.0
Showers	2	3.0	6.0	1.5	3.0	2.0	4.0
Mop Sink	1	3.0	3.0	2.3	2.3	3.0	3.0
Drinking Fountain	1	1.0	1.0	0.0	0.0	1.0	1.0
Floor Drain (2")	5	0.0	0.0	0.0	0.0	2.0	10.0
Hose Bibb	6	1.0	1.0	0.0	0.0	0.0	0.0
Subtotal			99.0		22.1		73.0
Total			99.0		22.1		73.0

Flush Valves or Flush Tanks? Valve

Total Domestic Water GPM: 64.0 — Total Drainage Fixture Units: 73

Irrigation GPM	10.0	
HVAC Chilled Water - Makeup water GPM	10.0	(non-calculated)
HVAC Heating Water - Makeup water GPM	10.0	(non-calculated)
Humidifier GPM	2.0	600 lb/hr = sum of humidifier loads
Building Total Domestic Water GPM:	76.0	

Domestic Water Utility Coordination

Domestic Water Utility Size		1-1/2"
Domestic Water Heater Size	2"	1-1/2"
Domestic Water Pipe Size Within Bldg		2-1/2"

Same as meter size UNO

Sanitary Sewer Utility Coordination

Pipe slope within garage: 1/8" per ft

Total DFU: 73

Sanitary Sewer Size (If 1 POC)	4"	73	DFU Served
Sanitary Sewer Size (If 2 POC's @ 50%)	4"	37	DFU Served, Each
Coordinated Sanitary Sewer Size (Manual Input)	6"		DFU Served

Sewer Meter:

Storm Drainage Utility Coordination

Total Horizontal Roof Drainage Area (SF)	26,150		
Total Vertical Roof Drainage Area (SF)	0		
Total Roof Drainage Area (SF)	26,150		
Detention Provided on site/ Daylighted? ORL'd	Yes	Yes: 1"/hour rainfall rate. No: 2"/hour rainfall rate	
Storm Drain Size 1/8"/ft slope (If 1 POC)	8"	24,150	sf served
Storm Drain Size (If 2 POC's @ 50%)	6"	13,075	sf served
Storm Drain Size (2 POC's, optional: POC #1)	#N/A	0"	
Storm Drain Size (2 POC's, optional: POC #2)	#N/A	0"	(manual input)

Notes:
1: Domestic Water Supply Fixture Unit values based upon Appendix C, Table C4.1, and Appendix A, Table A2.1, Uniformed Plumbing Code
2: Drainage Fixture Unit values based upon Appendix L, Table C 4.1(1), and Ch 7, Table 709.1, Uniform Plumbing Code
3: Numbers of Shell/Core Fixtures based upon 7/27/15 Architectural Plans
4: Storm Drainage connection sizes based upon combined primary/overflow systems (2" /hr) sloping at 1/4"/ft. min.

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Construction Documents

Addenda

Revisions
No. Date By Description

Issued

Drawn By: DC
Checked: JB/MG
Job/Proj No: 1402.01
Date: 8/24/17

FOR REFERENCE ONLY

PLUMBING CALCULATIONS

P002

PLUMBING FIXTURE SCHEDULE

ITEM	DESCRIPTION	MODEL	CONNECTION					FIXTURE FLOW RATES	
			CW	HW	TEMP	W	V	CODE FLOW	FIXTURE FLOW
WC-1	WALL MOUNTED WATER CLOSET								
	FIXTURE:	AMERICAN STANDARD 3351.311	1	–	–	4	2		
	SEAT:	BEMIS 1655SC							
	FLUSH VALVE:	AMERICAN STANDARD 6063.111	1	1	–	–	–	1.6 GPA	1.28 GPF
	CARRIER:	–		–					
	NOTES:	MOUNT TO MEET LOCAL CODES							
WC-2	WALL MOUNTED WATER CLOSET (ADA)								
	FIXTURE:	AMERICAN STANDARD 3351.511	–	–	–	4	2		
	SEAT:	BEMIS 1655SC							
	FLUSH VALVE:	AMERICAN STANDARD 6063.111	1	–	–	–	–	1.6 GPF	1.28 GPF
	CARRIER:	–							
	NOTES:	MOUNT TO MEET ADA AND LOCAL CODES							
U-1	WALL MOUNTED URINAL (ADA)								
	FIXTURE:	AMERICAN STANDARD 6580.53	–	–	–	2	2		
	FLUSH VALVE:	AMERICAN STANDARD 6062.013	3/4	–	–	–	–	1.0 GPF	0.125 GPF
	CARRIER:	STANDARD URINAL CARRIER							
	NOTES:	MOUNT TO MEET ADA AND LOCAL CODES							
LAV-1	UNDERCOUNTER MOUNTED LAVATORY								
	BOWL:	KOHLER LADENA K-2214							
	FAUCET:	DELTA 21C453	3/4	3/4	–	–	–	0.5 GPM	0.5 GPM
	DRAIN:	FLATGRID STRAINER	–	–	–	2	1 1/2		
	TRAP:	17 GA. P-TRAP 1-1/4" X 1-1/2"							
	SUPPLIES:	EASTMAN CSM20-LK ANGLE DOUBLE COMPRESSION VALVE WITH LOOSE KEY							
	NOTES:	MOUNT TO MEET LOCAL CODES							
LAV-2	UNDERCOUNTER MOUNTED LAVATORY (ADA)								
	FIXTURE:	KOHLER LADENA K-2214							
	FAUCET:	DELTA 21C453	1/2	1/2	–	–	–	0.5 GPM	0.5 GPM
	DRAIN:	FLAT GRID STRAINER	–	–	–	2	1 1/2		
	TRAP:	OFFSET, 17 GA. P-TRAP 1-1/4" X 1-1/2"							
	SUPPLIES:	EASTMAN CSM20-LK ANGLE DOUBLE COMPRESSION VALVE WITH LOOSE KEY							
	NOTES:	PROVIDE TRAP AND SUPPLY WRAP (TRUEBRO OR APPROVED EQUAL)							
LAV-3	WALL MOUNT LAVATORY (ADA) WITH EMERGENCY EYE WASH								
	FIXTURE:	AMERICAN STANDARD 4869.008							
	FAUCET:	SPEAKMAN SEF-1601-SC	1/2	1/2	–	–	–	0.5 GPM	0.5 GPM
	DRAIN:	FLAT GRID STRAINER	–	–	–	2	1 1/2		
	TRAP:	OFFSET, 17 GA. P-TRAP 1-1/4" X 1-1/2"							
	SUPPLIES:	EASTMAN CSM20-LK ANGLE DOUBLE COMPRESSION VALVE WITH LOOSE KEY							
	MISC.	PROVIDE WITH EYE WASHV – EEW-1							
	NOTES:	PROVIDE TRAP AND SUPPLY WRAP (TRUEBRO OR APPROVED EQUAL)							
LAV-4	WALL MOUNT LAVATORY (ADA)								
	FIXTURE:	KOHLER K-2084							
	FAUCET:	CHICAGO FAUCET 116.606.ABJT	1/2	1/2	–	–	–	0.5 GPM	0.5 GPM
	DRAIN:	FLAT GRID STRAINER	–	–	–	2	1 1/2		
	TRAP:	OFFSET, 17 GA. P-TRAP 1-1/4" X 1-1/2"							
	SUPPLIES:	EASTMAN CSM20-LK ANGLE DOUBLE COMPRESSION VALVE WITH LOOSE KEY							
	NOTES:	PROVIDE TRAP AND SUPPLY WRAP (TRUEBRO OR APPROVED EQUAL)							
S-1	SINGLE COMPARTMENT SINK (ADA) – WALL MOUNT								
	FIXTURE:	AMERICAN STANDARD 4869.008							
	FAUCET:	DELTA 29C3922	1/2	1/2	–	–	–	2.2 GPM	1.5 GPM
	DRAIN:	FLAT GRID STRAINER	–	–	–	1 1/2	1 1/2		
	TRAP:	OFFSET, 17 GA. P-TRAP 1-1/4" X 1-1/2"							
	SUPPLIES:	EASTMAN CSM20-LK ANGLE DOUBLE COMPRESSION VALVE WITH LOOSE KEY							
	NOTES:	PROVIDE TRAP AND SUPPLY WRAP (TRUEBRO OR APPROVED EQUAL)							
S-2	SINGLE COMPARTMENT SINK (ADA) – COUNTER MOUNT SELF RIMMING								
	FIXTURE:	JUST SL-1821-A-GR							
	FAUCET:	DELTA 28C3922	1/2	1/2	–	–	–	2.2 GPM	1.5 GPM
	DRAIN:	JUST J-35 CRUMB CUP WITH 1-1/2" TAILPIECE	–	–	–	1 1/2	1 1/2		
	TRAP:	P364, 1-1/2" X 1-1/2" 17 GAUGE, CHROME PLATED							
	SUPPLIES:	EASTMAN CSM20-LK ANGLE DOUBLE COMPRESSION VALVE WITH LOOSE KEY							
S-3	CUSTOM SINGLE COMPARTMENT SINK (ADA) – COUNTER MOUNT SELF RIMMING								
	FIXTURE:	JUST S-1831-8-GR							
	FAUCET:	DELTA 28C3922	1/2	1/2	–	–	–	2.2 GPM	1.8 GPM
	DRAIN:	STOPPER DRAIN	–	–	–	1 1/2	1 1/2		
	TRAP:	P364, 1-1/2" X 1-1/2" 17 GAUGE, CHROME PLATED							
	SUPPLIES:	EASTMAN CSM20-LK ANGLE DOUBLE COMPRESSION VALVE WITH LOOSE KEY							
SH-1	SHOWER								
	FIXTURE:	BUILT-IN STALL							
	FAUCET:	SYMMONS 9605-PUR-1.5-K-DIKS-SD	1/2	1/2				2.5	1.5
	DRAIN:	FLOOR DRAIN				2	1 1/2		
	TRAP:	CAST IRON							
CW-1	CLOTHES WASHER BOX WITH WATER HAMMER ARRESTORS								
	FIXTURE:	GUY-GRAY WITHSHOCK ARRESTERS	1/2	1/2	–	–	–		
	DRAIN:	STAND PIPE DRAIN	–	–	–	2	1 1/2		
SS-1	MOP RECEPTOR								
	FIXTURE:	MUSTEE MODEL NO. 63, 24" X 24" X 10"	–	–	–	3	2		
	FAUCET:	SYMMONS SYMMETRIX SERVICE SINK FAUCET MODEL S-2480-DIKS, 3/4" THREADED	1/2	1/2	–	–	–		
		HOSE SPOUT, TOP REINFORCING BAR AND MOUNTING BRACKET, CHROME PLATED							
	ACCESSORIES:	MUSTEE 65.700 HOSE AND HOSE BRACKET, 63.600 MOP HANGER							
		MUSTEE 63.401 BUMPER GARD, 65.308 DRAIN SEAL FOR 2", 67.2424 WALL GUARD							

ITEM	DESCRIPTION	MODEL	CONNECTION					FIXTURE FLOW RATES	
			CW	HW	TEMP	W	V	CODE FLOW	FIXTURE FLOW
SS-2	MOP RECEPTOR								
	FIXTURE:	MUSTEE # 18W ABOVE FLOOR (ES MOUNT)							
	FAUCET:	MUSTEE # 93.80 – 4" CENTERS, 8" SWING SPOUT WITH HOSE END CONNECTION & AERATOR	1/2	1/2	–	–	–		
	DRAIN:	BUILT-IN GRID STRAINER	–	–	–	2	1 1/2		
	NOTE	PROVIDE WITH VIKING VP16 PAINT COLLECTION TANK							
DF-1	WALL MOUNTED DRINKING FOUNTAIN								
	FIXTURE:	HAWS 1011	1/2	–	–	1 1/2	1 1/2		
	CARRIER:	PROVIDE WALL MOUNTING FRAME AND WALL PLATE, OR STEEL PLATE BACKING							
	REMOTE WATER CHILLER:	NA							
	ELECTRICAL REQUIREMENTS:	N/A							
	NOTES:	MOUNT TO MEET ADA AND LOCAL CODES							
EEW-1	EMERGENCY EYE WASH								
	FIXTURE:	GUARDIAN # G8F1849L, DECK MOUNTED WITH SWING DOWN ARM	–	–	1/2"	–	–		
	NOTES:	PROVIDE WITH LEONARD # TA-305 LF MIXING VALVE MEETING ASSE-1070 REQUIREMENTS							
PC-1	PAINT COLLECTION TANK								
	FIXTURE:	VIKING # VP16 – 16.5 GALLON, POLYPROPYLENE TANK WITH REVOCABLE LID FOR	–	–	–	2	1 1/2		
	NOTES:	CLEANING							
FD-1	FLOOR DRAIN								
	FIXTURE:	J.R. SMITH # 3005 – DUCO CAST IRON BODY, ADJUSTABLE 8" DIAMETER NICKEL	–	–	–	AS NOTED			
	NOTES:	BRONZE STRAINER, & TRAP PRIMER CONNECTION							
FS-1	FLOOR SINK								
	FIXTURE:	J.R. SMITH # 3100-12 – 8" X 8" X 6" DEEP, ACID RESISTANT COATING, ALUMINUM	–	–	–	AS NOTED			
	NOTES:	DOME STRAINER, & 1/2 GRATE							
FS-2	FLOOR SINK								
	FIXTURE:	J.R. SMITH # 3130-12 – 12" X 12" X 10" – ACID RESISTANT COATING, ALUMINUM DOME	–	–	–	AS NOTED			
	NOTES:	STRAINER, & 1/2 GRATE							
FS-3	FLOOR SINK								
	FIXTURE:	J.R. SMITH # 3220-11 – 16" X 16" X 12" DEEP, ACID RESISTANT COATING, ALUMINUM	–	–	–	AS NOTED			
	NOTES:	DOME STRAINER, LESS GRATE							
AD-1	AREA DRAIN								
	FIXTURE:	J.R. SMITH # 2530C – 12" X 12", DUCO CAST IRON BODY,K NICKEL BRONZE GRATE,	–	–	–	AS NOTED			
	NOTES:	SEDIMENT BUCKET							
HD-1	HUB DRAIN								
	FIXTURE:	WATTS FD-100-3D WITH TRAP PRIMER CONNECTION	–	–	–	2	2		
	NOTES:								
RD-1	ROOF DRAIN								
	FIXTURE:	J.R. SMITH # 1800 CAST IRON COMBINATION ROOF AND OVERFLOW DRAIN, INCLUDE TOP	–	–	–	3"	–		
	NOTES:	MOUNT DECK PLATE, COMBINED FLASHING CLAMP/GRAVEL STOP.							
SD-1	SCUPPER DRAIN								
	FIXTURE:	J.R. SMITH # 1510CAST IRON BODY WITH FLASHING CLAMP AND ANGLED LOOSE	–	–	–	2	2		
		GRATE							
OSD-1	OVERFLOW SCUPPER DRAIN								
	FIXTURE:	SAME AS SD-1							
RD-2	ROOF DRAIN								
	FIXTURE:	J.R. SMITH # 1020 IRON BODYWITH COMBINED FLASHING CLAMP AND GRAVEL STOP	–	–	–	3	–		
		SIDE OUTLET							
OFD-2	OVERFLOW ROOF DRAIN								
	FIXTURE:	J.R. SMITH # 1020-M02 IORN BODY WITH COMBINED FLASHING CLAMP AND GARVEL	–	–	–	3	–		
		STOP – SIDE OUTLET							
WH-1	WALL HYDRANT								
	FIXTURE:	WOODFORD# 43-VB, POLISHED CHROME FINISH WITH POLYCARBONATE WHEEL	1/2	–	–	–	–		
		HANDLE AND ANTI-SIPHONE SPOOUT							
WH-2	FREEZE PROOF WALL HYDRANT								
	FIXTURE:	WOODFORD # 65-EP, POLISHED CHROME FINISH WITH SINGLE CHECK STOP ANTI-	3/4	–	–	–	–		
		SIPHON VACUMN BREAKER AND LOOSE KEY HANDLE							
	KITCHEN FIXTURES								
KF-1	UNDERCOUNTER DISHWASHER								
	FIXTURE:	PROVIDED BY OTHERS (SEE ARCH DRAWINGS)	–	1/2	–	INDIRECT			
	NOTES:	PIPE DRAIN FULL SIZE TO FS-2							
KF-2	PRE-RINSE FAUCET								
	FIXTURE:	PROVIDED BY OTHERS (SEE ARCH DRAWINGS)	1/2	1/2	–	–	–		
	NOTES:								
KF-3	SINK FAUCET								
	FIXTURE:	PROVIDED BY OTHERS (SEE ARCH DRAWINGS)	1/2	1/2	–	–	–		
	NOTES:								
KF-4	3-COMPARTMENT SINK								
	FIXTURE:	PROVIDED BY OTHERS (SEE ARCH DRAWINGS)	–	–	–	INDIRECT			
	NOTES:	PROVIDE CONTINUEOUS WASTE WITH FLOW CONDL & PIPE TO FS-2							
KF-5	ICE MACHINE								
	FIXTURE:	PROVIDE CONTINUEOUS WASTE WITH FLOW CONDL & PIPE TO FS-2	1/2	–	–	INDIRECT			
	NOTES:	PIPE 1/2" CW TO WATER FILET PROVIDED BY OTHER AND CONNECT TO ICE MACH.							
		PIPE DRAIN FULL SIZE TO FS-1							
KF-6	HAND SINK								
	FIXTURE:	PROVIDED BY OTHERS (SEE ARCH DRAWINGS)	1/2	1/2	–	2	1-1/2		
	NOTES:								
KF-7	COMBINATION OVEN								
	FIXTURE:	PROVIDED BY OTHERS (SEE ARCH DRAWINGS)	–	3/4	–	INDIRECT			
	NOTES:	PIPE DRAIN FULL SIZE TO FS-1							
KF-8	GARBAGE DISPOSER								
	FIXTURE:	PROVIDED BY OTHERS (SEE ARCH DRAWINGS)	1/2"	–	–	2"	1-1/2"		
	NOTES:	PIPE DRAIN FULL SIZE TO FS-1							

NOTES:
SIZE AS INDICATED ON PLANS

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SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

FOR REFERENCE ONLY

PLUMBING SCHEDULES

P010

ELECTRIC WATER HEATER SCHEDULE

TAG #	EWH-L1-01	EWH-L1-02
PROJECT	SAAM RENOVATION	SAAM RENOVATION
BASIS OF DESIGN		
MANUFACTURER	AO SMITH	AO SMITH
MODEL	DRE-52-9	DRE-52-8
SPECIFICATIONS		
SERVICE	DOMESTIC HW	DOMESTIC HW
LOCATION		
CAPACITY (GALLONS)	100 GALLONS	100 GALLONS
ENTERING WATER TEMPERATURE	45	45
LEAVING WATER TEMPERATURE	120	120
GALLONS PER HOUR/FT RECOVERY	-	-
TOTAL KW	24	24
NUMBER OF ELEMENTS	2 @ 12KW	2 @ 12KW
SIMULTANEOUS OPERATION	No	No
VOLTAGE/PHASE	480/3	480/3
DISCONNECT	BY E.C.	BY E.C.
EMERGENCY POWER	NO	NO
STANDBY POWER	NO	NO
HEIGHT x DIAMETER	72-7/8" H x 15-3/4" DIA.	72-7/8" H x 15-3/4" DIA.
SHIPPING WEIGHT (LBS)	53	53
WEIGHT WITH WATER	134.3	134.3
ASME RATED	NO	NO
MISC DATA		
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	1 YEAR	1 YEAR
FREIGHT	FOB JOBSITE	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES	YES
ELECTRONIC SUBMITTAL	YES	YES
ELECTRONIC INSTALL/O&M MANUAL	YES	YES
-	-	-

REMARKS:

BACKFLOW PREVENTER SCHEDULE

TAG #	RPBA-L1-01	RPBA-L1-02	PRPBA-L1-03	RPBA-L1-04	RPBA-L1-05	RPBA-L2-06	RPBA-L1-07	RPBA-L1-08	DDCVA-L1-01
SERVICE	DOMESTIC WATER	DOMESTIC WATER	HEATING WATER SYSTEM	FOUNTAIN PUMP	HUMIDIFIERS	ICE MACHINE	FOUNTAIN PUMP	FOUNTAIN PUMP	FIRE SPRINKLER
IN PARALLEL WITH	RPBA-L1-02	RPBA-L1-01	-	-	-	-	-	-	-
BASIS OF DESIGN									
TYPE	REDUCED PRESS ZONE	REDUCED PRESS ZONE	REDUCED PRESS ZONE	REDUCED PRESS ZONE	REDUCED PRESS ZONE	REDUCED PRESS ZONE	REDUCED PRESS ZONE	REDUCED PRESS ZONE	DOUBLE DETECTOR CHECK
MANUFACTURER	WATTS	WATTS	WATTS	WATTS	WATTS	WATTS	WATTS	WATTS	WATTS
MODEL	909QT	909QT	009	009	LF009	801	009	LF909QSA	
PRESSURE VALVE WITH STRAINER	YES	YES	NO	NO	NO	YES	NO	NO	YES
SPECIFICATIONS									
LOCATION	PUMP RM 103	PUMP RM 103	MECH 118	LEVEL 1	PUMP RM 103	KITCHEN 228	LEVEL 1	LEVEL 1	PUMP RM 103
FLOW THROUGH VALVE	80 GPM	80 GPM	30 GPM	30 GPM	30 GPM	5 GPM	10 GPM	10 GPM	250 GPM
MINIMUM FLOW (ESTIMATED)	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRESSURE DROP @ DESIGN FLOW	10 PSI	10 PSI	12 PSI	12 PSI	14 PSI	17 PSI	12 PSI	12 PSI	5 PSI
VALVE SIZE (INCHES)	3-1/2"	3-1/2"	3/4"	3/4"	1-1/4"	1/2"	3/4"	3/4"	4"
NSF 61 CERTIFIED (POTABLE SYSTEMS)	YES	YES	NO	NO	NO	YES	NO	NO	NO
LEAD FREE	YES	YES	NO	NO	NO	YES	NO	NO	NO
PLUMBING SHEET #	P201	P201	P201	P201	P201	P201	P201	P201	P201
MISC DATA									
PARTS AND LABOR WARRANTY FROM DATE OF PROJECT CERTIFICATE OF OCCUPANCY	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR
FREIGHT	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES	YES	YES	YES	YES	YES	YES	YES	YES
ELECTRONIC SUBMITTAL	YES	YES	YES	YES	YES	YES	YES	YES	YES
ELECTRONIC INSTALL/O&M MANUAL	YES	YES	YES	YES	YES	YES	YES	YES	YES

REMARKS:

CIRCULATION PUMP SCHEDULE

TAG #	CP-L1-01	CP-L1-02
BASIS OF DESIGN		
MANUFACTURER	B & G	B & G
MODEL	NRF-12F	NRF-25
PUMP TYPE (IN-LINE, END SUCTION, ETC)	CIRCULATOR	CIRCULATOR
SERVICE	POTABLE HW	POTABLE HW
LOCATION	MECH 118	MECH 121
DESIGN PARAMETERS		
GPM (DESIGN)	2	4
FT. TOTAL HEAD (DESIGN)	10	15
SPECIFICATIONS		
CONTROL	AQUA STAT	AQUA STAT
MOTOR VFD-RATED (SMOOTH DUTY)	NO	NO
NSF 61 CERTIFIED (POTABLE SYSTEMS)	YES	YES
LEAD FREE	YES	YES
CASING (CAST IRON, BRONZE)	BRONZE	BRONZE
IMPELLER (CAST IRON, BRONZE)	BRONZE	BRONZE
WEAR RING (CAST IRON, BRONZE)	BRONZE	BRONZE
SHAFT (STEEL, STAINLESS)	STEEL	STEEL
SHAFT SLEEVE (STEEL, STAINLESS, BRONZE)	BRONZE	BRONZE
SEAL TYPE	CARBON	CARBON
PIPE CONNECTION SIZE	1/2"	1/2"
ISOLATION	SEE ISOLATION SCHEDULE	SEE ISOLATION SCHEDULE
ELECTRICAL DATA		
MOTOR (WATTS/HP)	125 WATTS	125 WATTS
VFD (PROVIDED BY P.C. & INSTALLED BY EC)	NO	NO
VFD BYPASS	NO	NO
RPM	2800	2940
VOLTAGE/PHASE	120/1	120/1
EMERGENCY POWER	NO	NO
STANDBY POWER	NO	NO
DISCONNECT	BY E.C.	BY E.C.
PHYSICAL DIMENSIONS		
WEIGHT	15	15
MISC DATA		
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	1 YEAR	1 YEAR
FREIGHT	FOB JOBSITE	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES	YES
ELECTRONIC SUBMITTAL	YES	YES
ELECTRONIC INSTALL/O&M MANUAL	YES	YES
-	-	-

REMARKS:

NATURAL GAS PRV SCHEDULE

TAG #	GPRV-L1--01	GPRV-L1-02
BASIS OF DESIGN		
MANUFACTURER	MAXITROL	MAXITROL
MODEL	2300	2300
SPECIFICATIONS		
LOCATION	MECH 118	MECH 118
INLET PRESSURE SETTING	2 PSI	2 PSI
INLET PIPE SIZE (INCHES)	2"	2"
OUTLET PRESSURE SETTING	14" WC	14" WC
OUTLET PIPE SIZE (INCHES)	1-1/2"	1-1/2"
VALVE SIZE (INCHES)	1"	1"
VENT LIMITER	YES	YES
ORIFICE	-	-
SPRING	-	-
MODIFIED WITH EQUIPMENT	N/A	N/A
FIELD OR FACTORY INSTALLED	FIELD	FIELD
SCHEMATIC DIAGRAM SHEET #	-	-
MISC DATA		
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	1 YEAR	1 YEAR
FREIGHT	FOB JOBSITE	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES	YES
ELECTRONIC SUBMITTAL	YES	YES
ELECTRONIC INSTALL/O&M MANUAL	YES	YES
-	-	-

REMARKS:

DOMESTIC WATER BOOSTER PUMP (DWBP) SCHEDULE

TAG #	DBP-L1-01
BASIS OF DESIGN	
MANUFACTURER	FLOWTHERM
MODEL	70VS
SERVICE	DOMESTIC WATER
LOCATION	PUMP RM 103
DESIGN PARAMETERS	
GPM	75 (TOTAL FOR PACKAGE)
HEAD (FT)	-
HEAD (PSI)	66
ELECTRICAL DATA	
MOTOR HP	(2) 5
MOTOR RPM	3500
VOLTAGE	480/3
VFD PROVIDED WITH UNIT	YES
VFD FACTORY WIRED TO CONTROLLER	YES
MCA	11(TOTAL PACKAGE)
MOP	20 (TOTAL PACKAGE)
DISCONNECT AT EACH PUMP	FACTORY PROVIDED
QUANTITY OF POWER CONNECTIONS	ONE CONTROL PANEL
EMERGENCY POWER	NO
STANDBY POWER	NO
SPECIFICATIONS	
MAX WORKING PRESSURE	-
CONTROL	SEE NOTE 1
STYLE	VERTICAL MULTI-STAGE PUMPS
SKID MOUNT	PUMP PACKAGE MANUFACTURED BY FLOWTHERM
UL LISTED UNIT	YES
NSF-61 CERTIFIED (POTABLE SYSTEMS)	YES
LEAD FREE	NO
PRESSURE TRANSMITTER	FIELD MOUNTED AT HIGH POINT
PRESSURE TRANSMITTER WIRING	BY E.C.
ISOLATION	SEE ISOLATION SCHEDULE
PHYSICAL DIMENSIONS	
LENGTH x WIDTH x HEIGHT	
SHIPPING WEIGHT (LBS)	
MISC DATA	
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	1 YEAR
FREIGHT	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES
ELECTRONIC SUBMITTAL	YES
ELECTRONIC INSTALL/O&M MANUAL	YES
-	-

REMARKS:

1. DUPLEX BOOSTER CONTROLLER WITH VARIABLE FLOW VIA VFD.
2. PACKAGED SYSTEM OF TWO PUMPS, ONE SIZED AT 1/3 CAPACITY, THE OTHER AT 2/3 CAPACITY
3. KEMA 1 UL LISTED CONTROL PANEL WITH VFD, OVERLOAD PROTECTION, MINIMUM RUN TIMERS, LOW SUCTION CUT OFF, PROOF TIME DELAY, TOUCH INTERLOCK, NO FLOW SHUTDOWN AND AUTOMATIC PUMP ALTERNATION.
4. FABRICATED STEEL FRAME FOR PUMPS TO BE MOUNTED, PIPED AND WIRED, AND PAINTED GRAY.
5. FACTORY SHALL PROVIDE FIELD START-UP.
6. BOOSTER PUMP SKID DIMENSIONS TBD.
7. MANUFACTURER SHALL ADD PUMP PACKAGE PRESSURE LOSS TO FT HD REQUIRED IN SCHEDULE.
8. MANUFACTURER SHALL PROVIDE A 5 YEAR WARRANTY ON ENTIRE PUMP PACKAGE.

MIXING VALVE SCHEDULE

TAG #	TMV-L1-1	TMV-L1-2
SERVICE	DOMESTIC HOT WATER	DOMESTIC HOT WATER
BASIS OF DESIGN		
TYPE	THERMOSTATIC	THERMOSTATIC
MANUFACTURER	LEONARD	LEONARD
MODEL	TM-5208-LF-DT	TM-5208-LF-DT
ASSE LISTED	ASSE 1017	ASSE 1017
SPECIFICATIONS		
LOCATION	L33 BOILER RM	MECH 118
FLOW THROUGH VALVE	29 GPM	29 GPM
MINIMUM FLOW REQ'D	1 GPM	1 GPM
PRESSURE DROP @ DESIGN FLOW	3 PSI	10 PSI
CONNECTION SIZE (INCHES)	1"	1"
NSF 61 CERTIFIED (POTABLE SYSTEMS)	NO	NO
LEAD FREE	YES	YES
OUTLET TEMP SETPOINT	120°	120°
MISC DATA		
PARTS AND LABOR WARRANTY FROM DATE OF PROJECT CERTIFICATE OF OCCUPANCY	1 YEAR	1 YEAR
FREIGHT	FOB JOBSITE	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES	YES
ELECTRONIC SUBMITTAL	YES	YES
ELECTRONIC INSTALL/O&M MANUAL	YES	YES

REMARKS:

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PLUMBING SCHEDULES

P011

CIRCULATION PUMP SCHEDULE

TAG#	FP-L1-01	FP-L1-02	FL-L1-03
BASIS OF DESIGN			
MANUFACTURER	B & G	B & G	B & G
MODEL	e3SH2	e3SH2	e3SH2
PUMP TYPE (IN-LINE, END SUCTION, ETC)	IN-LINE	IN-LINE	IN-LINE
SERVICE	NON-POTABLE FOUNTIAN	NON-POTABLE FOUNTIAN	NON-POTABLE FOUNTIAN
LOCATION	LEVEL 1	LEVEL 1	LEVEL 1
DESIGN PARAMETERS			
GPM (DESIGN)	20	28	20
FT. TOTAL HEAD (DESIGN)	27	27	27
SPECIFICATIONS			
CONTROL (TIME CLOCK, AQUA STAT, ETC)	WALL SWITCH	WALL SWITCH	WALL SWITCH
MOTOR VFD RATED (INVERTER DUTY)	NO	NO	NO
NSF 61 CERTIFIED (POTABLE SYSTEMS)	NO	NO	NO
LEAD FREE	NO	NO	NO
CASING	BRONZE	BRONZE	BRONZE
IMPELLER (CAST IRON, BRONZE)	BRONZE	BRONZE	BRONZE
WEAR RING	BRONZE	BRONZE	BRONZE
SHAFT	STEEL	STEEL	STEEL
SHAFT SLEEVE	BRONZE	BRONZE	BRONZE
SEAL TYPE	CARBON	CARBON	CARBON
PIPE CONNECTION SIZE	1-1/2"	1-1/2"	1-1/2"
ISOLATION	SEE ISOLATION SCHEDULE	SEE ISOLATION SCHEDULE	SEE ISOLATION SCHEDULE
ELECTRICAL DATA			
MOTOR	1/3 HP	1/3 HP	1/3 HP
VFD (PROVIDED BY M.C. & INSTALLED BY EC)	NO	NO	NO
VFD BYPASS	NO	NO	NO
RPM	1800	1800	1800
VOLTAGE/PHASE	120/1	120/1	120/1
EMERGENCY POWER	NO	NO	NO
STANDBY POWER	NO	NO	NO
DISCONNECT	BY E.C.	BY E.C.	BY E.C.
PHYSICAL DIMENSIONS			
WEIGHT	15	15	15
MISC DATA			
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	1 YEAR	1 YEAR	1 YEAR
FREIGHT	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES	YES	YES
ELECTRONIC SUBMITTAL	YES	YES	YES
ELECTRONIC INSTALL/O&M MANUAL	YES	YES	YES
-	-	-	-

REMARKS:

EXPANSION TANK SCHEDULE

TAG #	ET-L1-01	ET-L1-02	HT-L1-01
PROJECT	-	-	-
BASIS OF DESIGN			
MANUFACTURER	AMTROL	AMTROL	WESSELS
MODEL	ST-5-C	ST-5-C	FXA-500
SPECIFICATIONS			
SERVICE	DOMESTIC HOT WATER	DOMESTIC HOT WATER	PRESS BOOSTER PUMP
LOCATION	MECH 118	MECH 121	PUMP RM 103
TANK VOLUME (GALLONS)	2 GAL	2 GAL	75 GAL
ACCEPTANCE (GALLONS)	0.9 GAL	0.9 GAL	-
ANTICIPATED SYSTEM VOLUME (GALLONS)	25 GAL	25 GAL	-
TANK MINIMUM PRESS. (PSIG)	70 PSIG	70 PSIG	70 PSIG
MAXIMUM PRESSURE ASSUMED FOR TANK SIZING (PSIG)	80 PSIG	80 PSIG	85 PSIG
RELIEF VALVE SETTING (PSIG)	85 PSIG	85 PSIG	-
CONNECTION SIZE	3/4"	3/4"	1-1/2"
MAX WORKING PRESSURE (PSIG)	150 PSIG	150 PSIG	125 PSIG
MAX OPERATING TEMP. (°F)	200	200	240
PHYSICAL DIMENSIONS			
LENGTH	-	-	-
HEIGHT	33"	33"	55"
DIAMETER	8"	8"	24"
SHIP WEIGHT (LBS)	5	5	225
WET WEIGHT (LBS)	21.7	21	848
LEAD RATED	YES	YES	YES
MISC DATA			
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	1 YEAR	1 YEAR	1 YEAR
FREIGHT	FOB JOBSITE	FOB JOBSITE	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES	YES	YES
ELECTRONIC SUBMITTAL	YES	YES	YES
ELECTRONIC INSTALL/O&M MANUAL	YES	YES	YES
-	-	-	-

REMARKS:

GREASE TRAP SCHEDULE

TAG#	GI-L1-01
BASIS OF DESIGN	
MANUFACTURER	JOSAM
MODEL	64108H
SPECIFICATIONS	
TYPE	HYDRO-MECH
SERVICE	KITCHEN
DRAINAGE FIXTURE UNITS SERVED	N/A (1)
DRAINAGE FIXTURE UNITS ALLOWED	N/A
FLOW RATE (HYDROMECHANICAL ONLY)	80
TOTAL SIZE (GAL)	N/A
LOCATION	MECH 118
PIPE CONNECTION SIZE (INLET)	3
MINIMUM FLOOR SURFACE AREA (SF)	N/A
MINIMUM AIR VOLUME (CU.)	N/A
PIPE INLET IS ENTERING (ABOVE/BOTTOM OF UNIT)	N/A
PIPE OUTLET ELEVATION (ABOVE BOTTOM OF UNIT)	N/A
DIMENSIONS (LxWxH)	42IN x 24IN x 22.5 IN
WEIGHT (OPERATING)	
MISC DATA	
PARTS AND LABOR WARRANTY FROM PROJECT SUBSTANTIAL COMPLETION DATE	2 YEAR
FREIGHT	FOB JOBSITE
SHIPPING INSTRUCTIONS - SHRINK WRAP & COVER ALL OPENINGS	YES
ELECTRONIC SUBMITTAL	YES
ELECTRONIC INSTALL/O&M MANUAL	YES
-	-

REMARKS:
1. 3 COMPARTMENT SINK DIMENSIONS: 2 AT 18"x23"xHTD, 1 AT 24"x20"xHTD
2. DESIGN BASED ON TWO MINUTE DRAIN-DOWN, FOR ALL THREE COMPARTMENTS, 75% FULL
3. MANUFACTURER TO PROVIDE FLOW CONTROL DEVICE TO ENSURE MAXIMUM FLOW DOES NOT EXCEED DESIGN VALUE

MISCELLANEOUS PLUMBING EQUIPMENT SCHEDULE

EQUIP. NO.	QTY.	DESCRIPTION	AREA SERVED	LOCATION	MAKE BASIS	MODEL BASIS	GPM		ELECTRICAL HP	kW	MCA	VOLTS	PH	DISC.	MSAC	MAC
PLUMBING EQUIPMENT - OFFICE																
MISCELLANEOUS EQUIPMENT																
UV-L1-01	1	ULTRA VIOLENT LIGHT	WATER FOUNTIANS	LEVEL 1	HATALA	RX -L44HT	30	GPM	-	0.04	-	120	1	-	-	-
WS-L1-01	1	WATER SOFTENER	NON POTABLE COLD WATER	LEVEL 1	AQUASANA	SIMPLY SOFT	15	GPM	-	-	-	-	-	-	-	-
FR-L1-02	3	PRE-FILTER	WATER FOUNTIANS	LEVEL 1	HAYWARD	SB SERIES	30	GPM	-	-	-	-	-	-	-	-
FF-L1-01	3	FINAL FILER	WATER FOUNTIANS	LEVEL 1	HAYWARD	C250	20	GPM	-	-	-	-	-	-	-	-
TRAP PRIMERS & SEALS						-	-	-	-	-	-	-	-	-	-	-
TP-L1-01	3	ELECTRONIC TRAP PRIMER	LEVEL 1 MECHANICAL ROOM	LEVEL 1	ZURN		-	-	-	-	-	-	-	-	-	-
							-	-	-	-	-	-	-	-	-	-
AIR COMPRESSOR							-	-	-	-	-	-	-	-	-	-
AC-L1-02	1	VERTICAL AIR COMPRESSOR	BUILDING	MECH RM 121	INGERSOL RAND	2545L5	30	SCFM	-	5	-	460	3	60		80
RAD-L1-1	1	REFRIGERATED AIR DRYER	AIR COMPRESSOR	MECH RM 121	INGERSOL RAND	D42IT	25	SCFM	1/4	0.37	1.2	120	1	60	-	-

TRUE NORTH PLAN NORTH 0' 4' 8' 16' 32'

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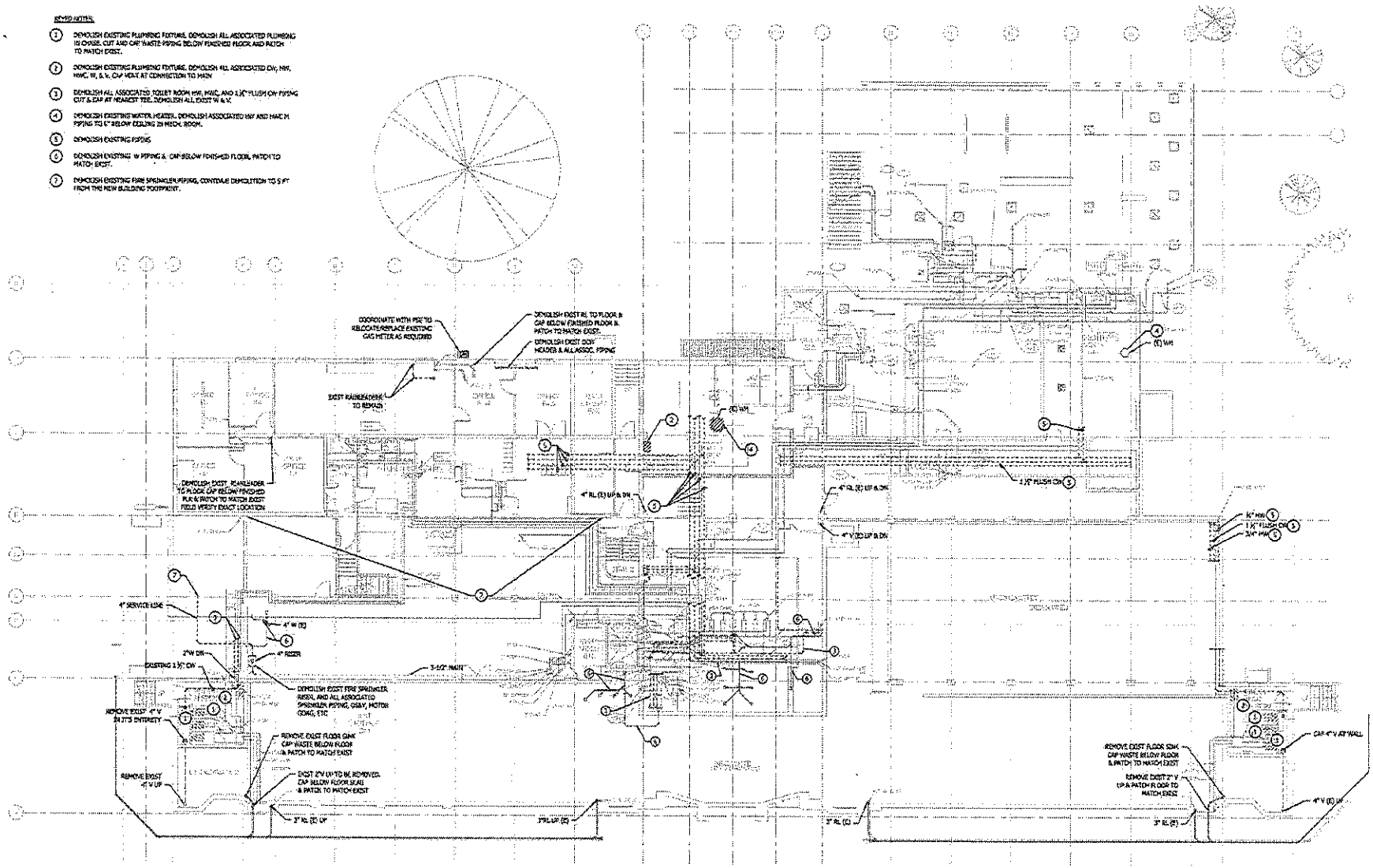
PLUMBING SCHEDULES

P012

DEMO NOTES:

1. DEMOLISH EXISTING PLUMBING FIXTURE, DEMOLISH ALL ASSOCIATED PLUMBING IN CHASE. CUT AND CAP WASTE PIPING BELOW FINISHED FLOOR AND PATCH TO MATCH EXIST.
2. DEMOLISH EXISTING PLUMBING FIXTURE, DEMOLISH ALL ASSOCIATED CW, HW, HWC, W, & V. CAP VENT AT CONNECTION TO MAIN
3. DEMOLISH ALL ASSOCIATED TOILET ROOM HW, HWC, AND 1 1/2" FLUSH CW PIPING CUT & CAP AT NEAREST TEE. DEMOLISH ALL EXIST W & V.
4. DEMOLISH EXISTING WATER HEATER. DEMOLISH ASSOCIATED HW AND HWC PIPING TO 6" BELOW CEILING IN MECH. ROOM.
5. DEMOLISH EXISTING PIPING
6. DEMOLISH EXISTING W PIPING & CAP BELOW FINISHED FLOOR, PATCH TO MATCH EXIST.
7. DEMOLISH EXISTING FIRE SPRINKLER PIPING, CONTINUE DEMOLITION TO 5'-0" FROM THE NEW BUILDING FOOTPRINT.



1 PLUMBING DEMO PLAN - LEVEL 1
1/8" = 1'-0"

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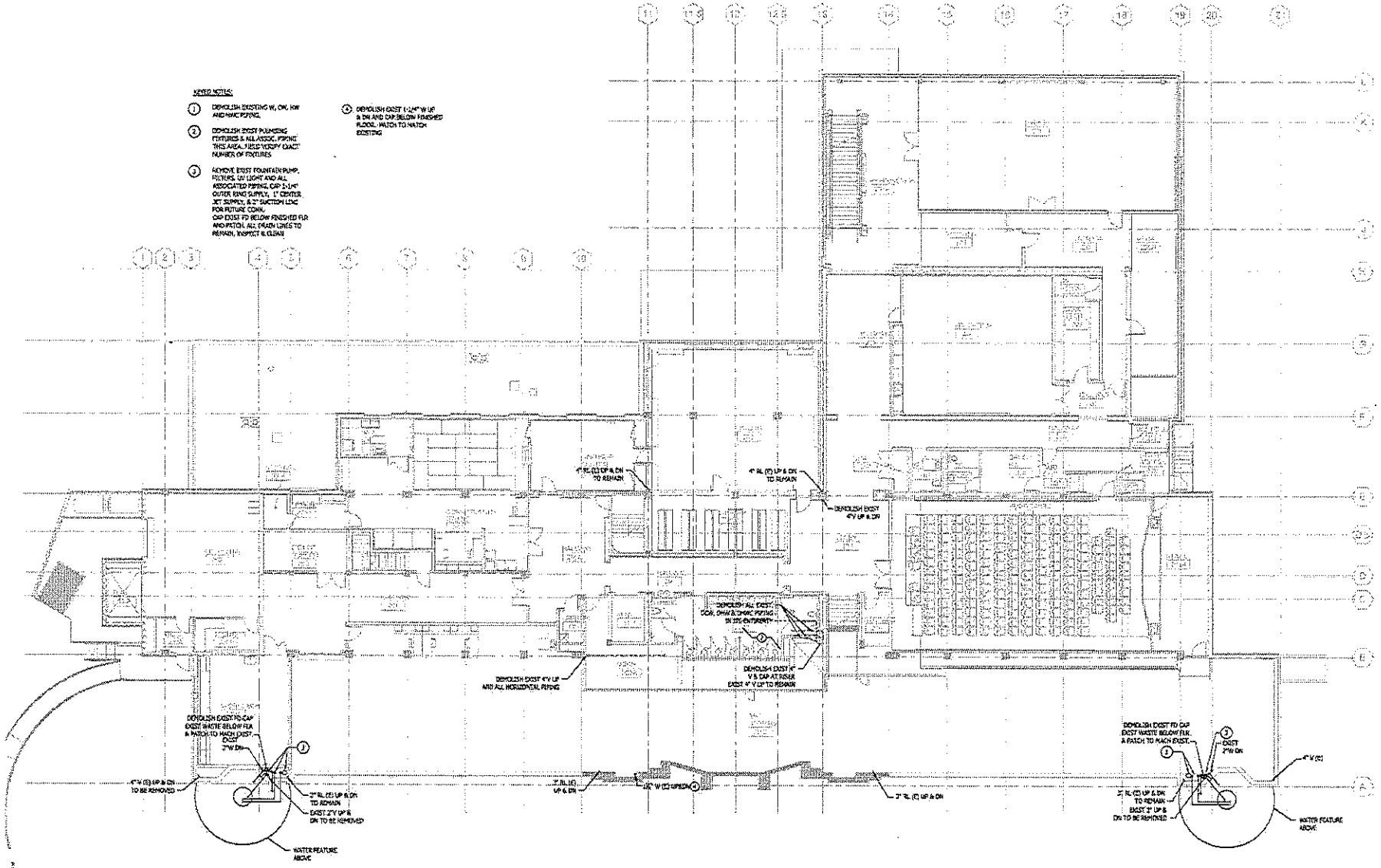
PLUMBING DEMO PLAN - LEVEL 1

P101



1 PLUMBING DEMO PLAN - LEVEL 2
1/8" = 1'-0"

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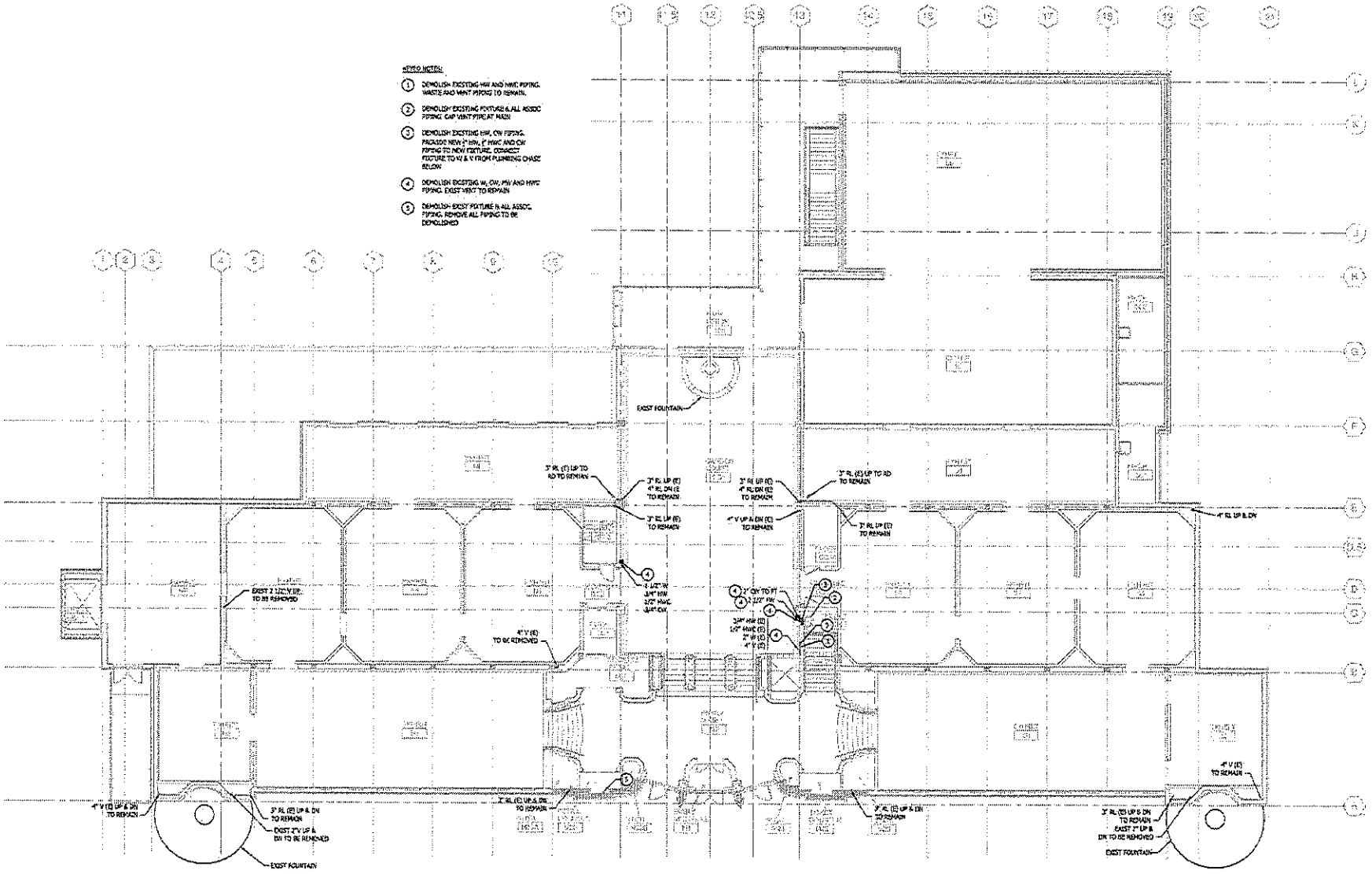
PLUMBING DEMO PLAN - LEVEL 2

P102



1 PLUMBING DEMO PLAN - LEVEL 3

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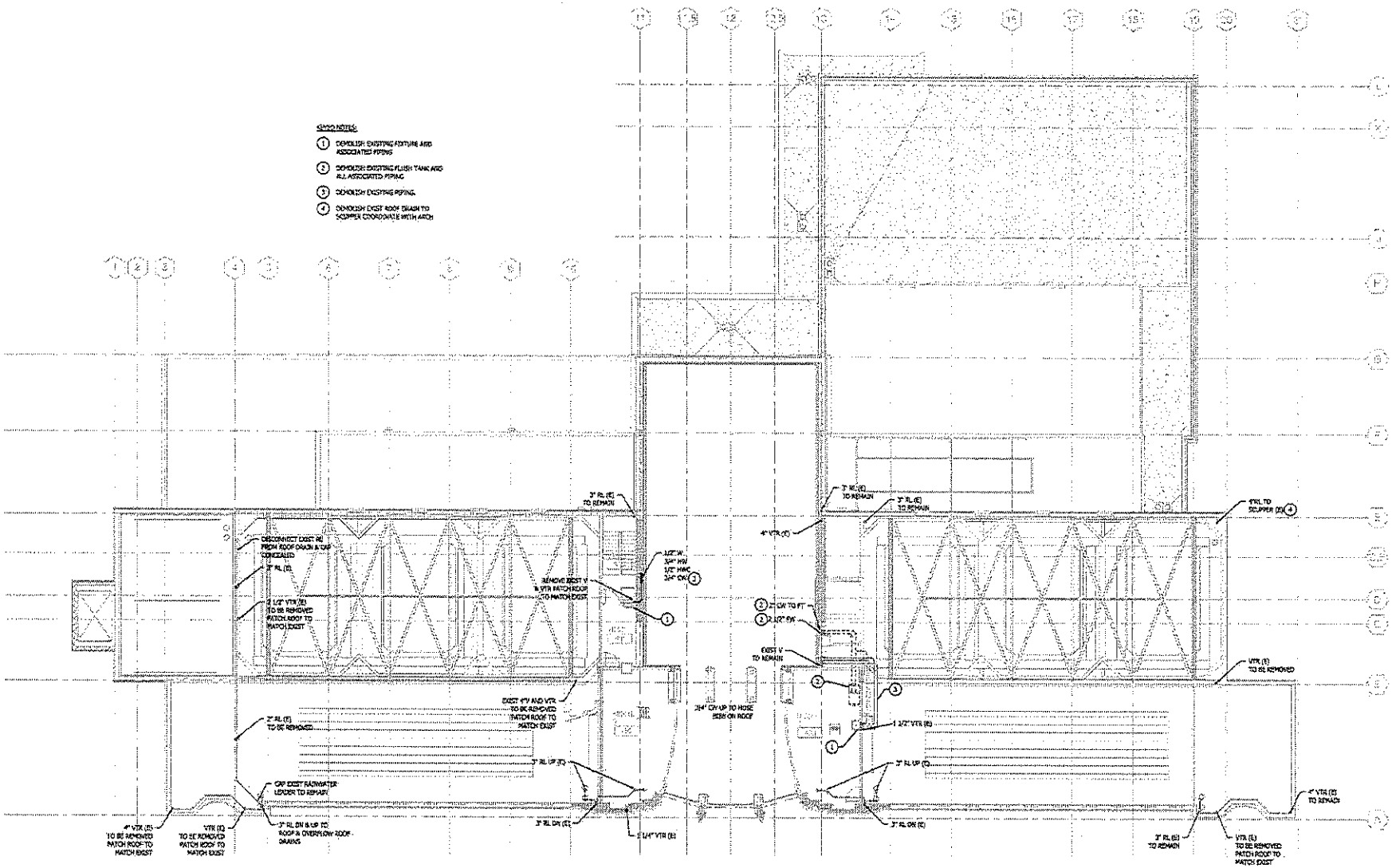
PLUMBING DEMO PLAN - LEVEL 3

P103



1 PLUMBING DEMO PLAN - LEVEL 4
1/8" = 1'-0"

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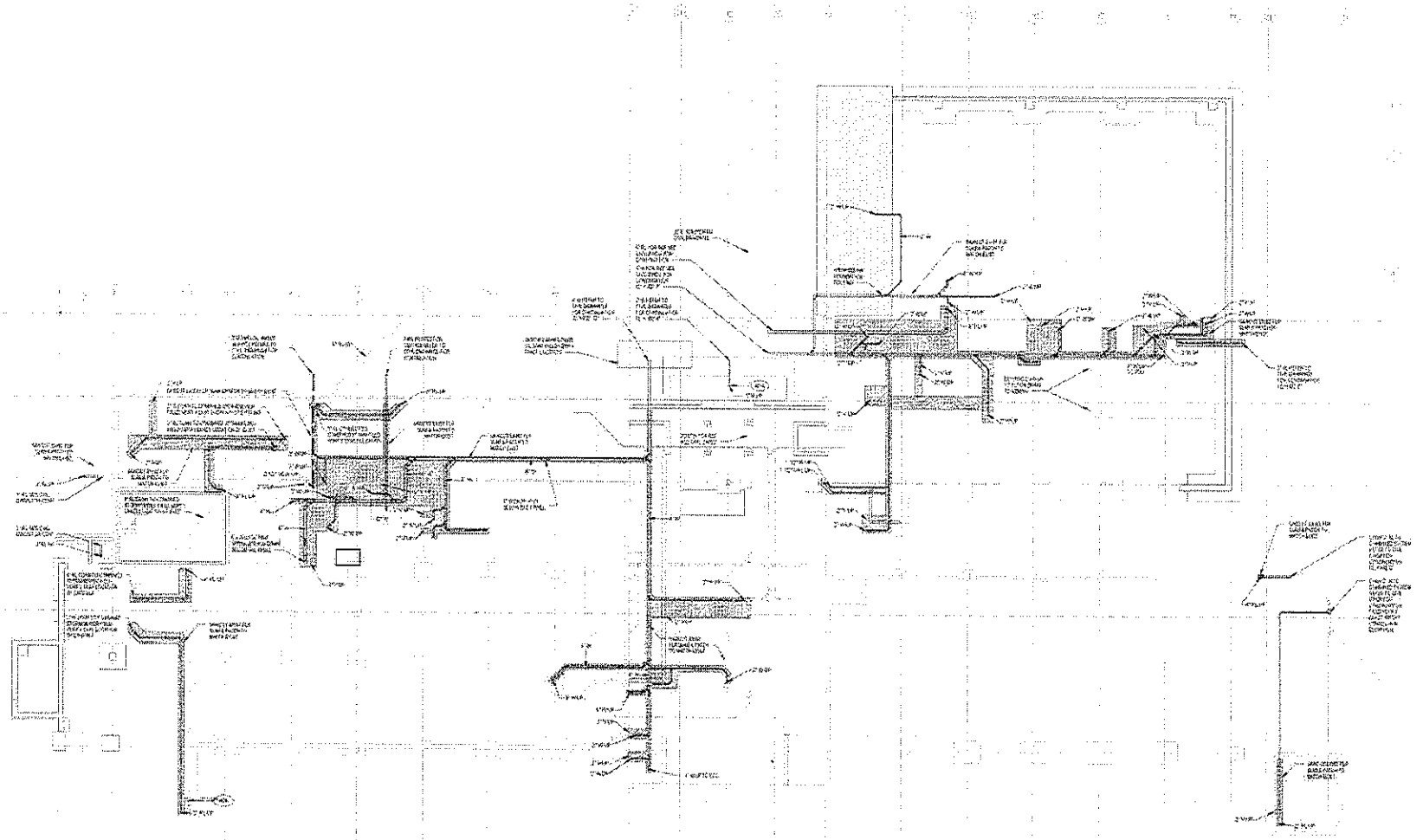
PLUMBING DEMO PLAN - LEVEL 4

P104



GENERAL NOTE:

PLUMB PLAN - BELOW GRADE

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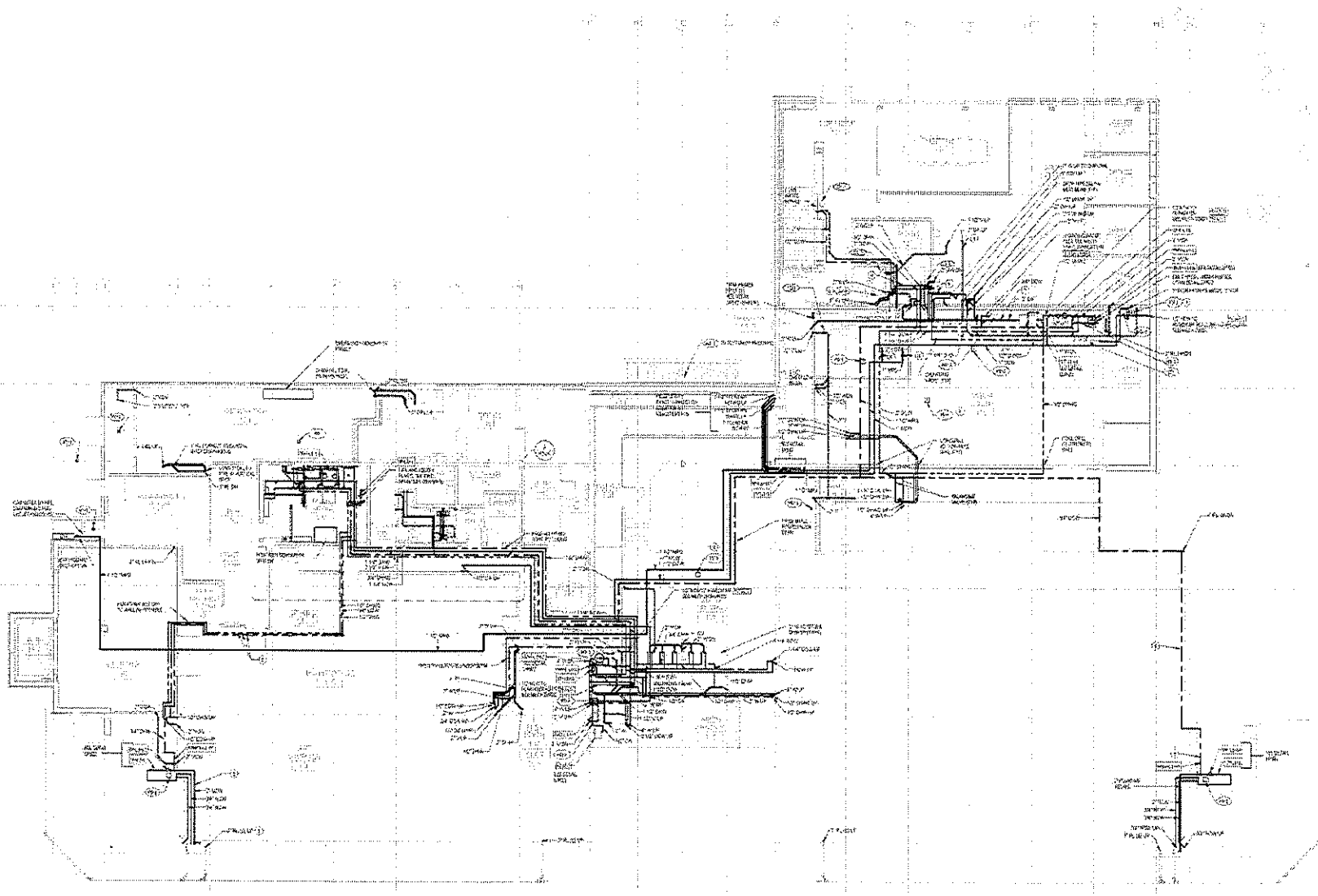
PLUMBING PLAN - BELOW GRADE

P200



PLUMB PLAN - LEVEL 1

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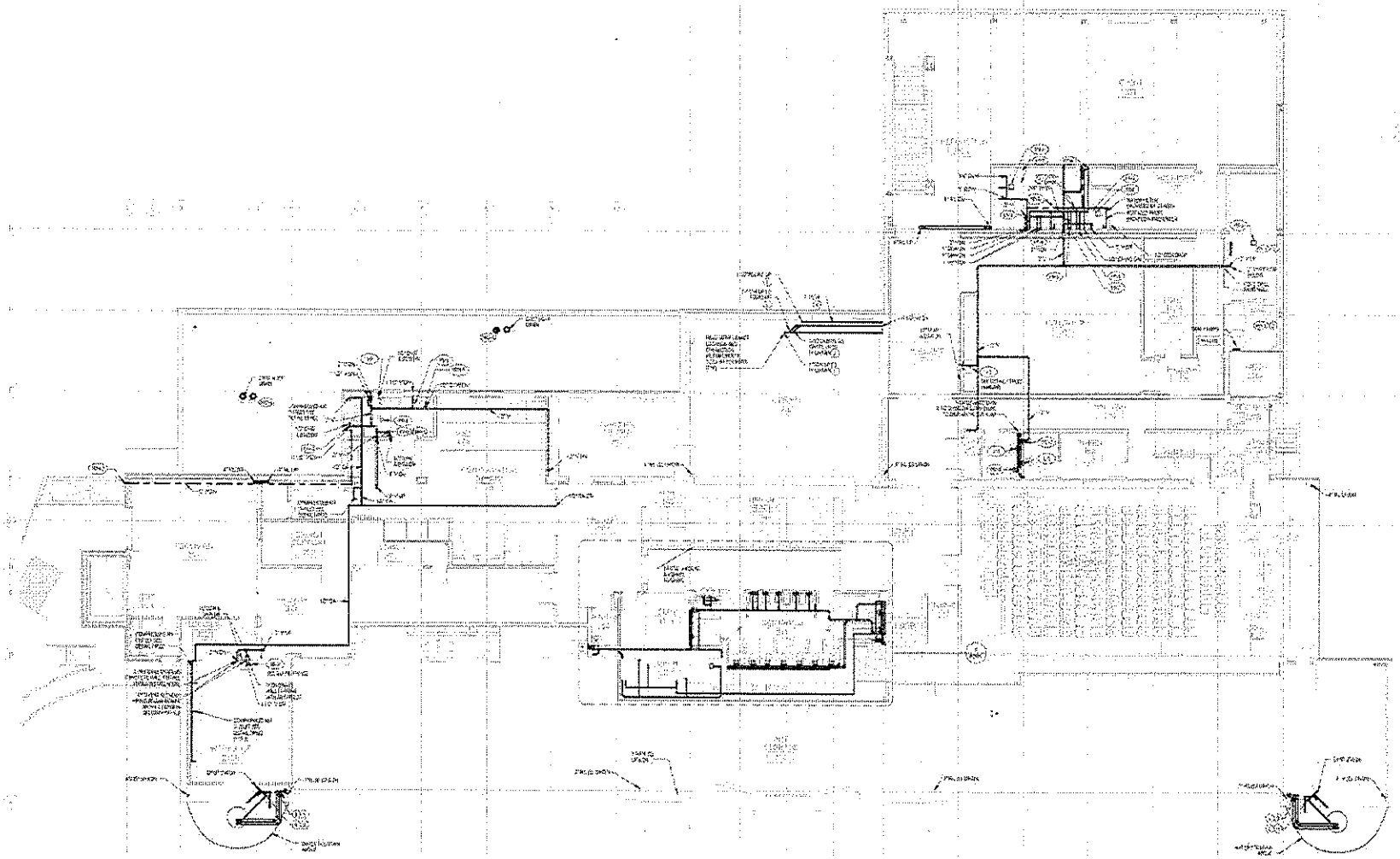
PLUMBING FLOOR PLAN - LEVEL 01

P201



KEYED NOTES:

PLUMB PLAN - LEVEL 2

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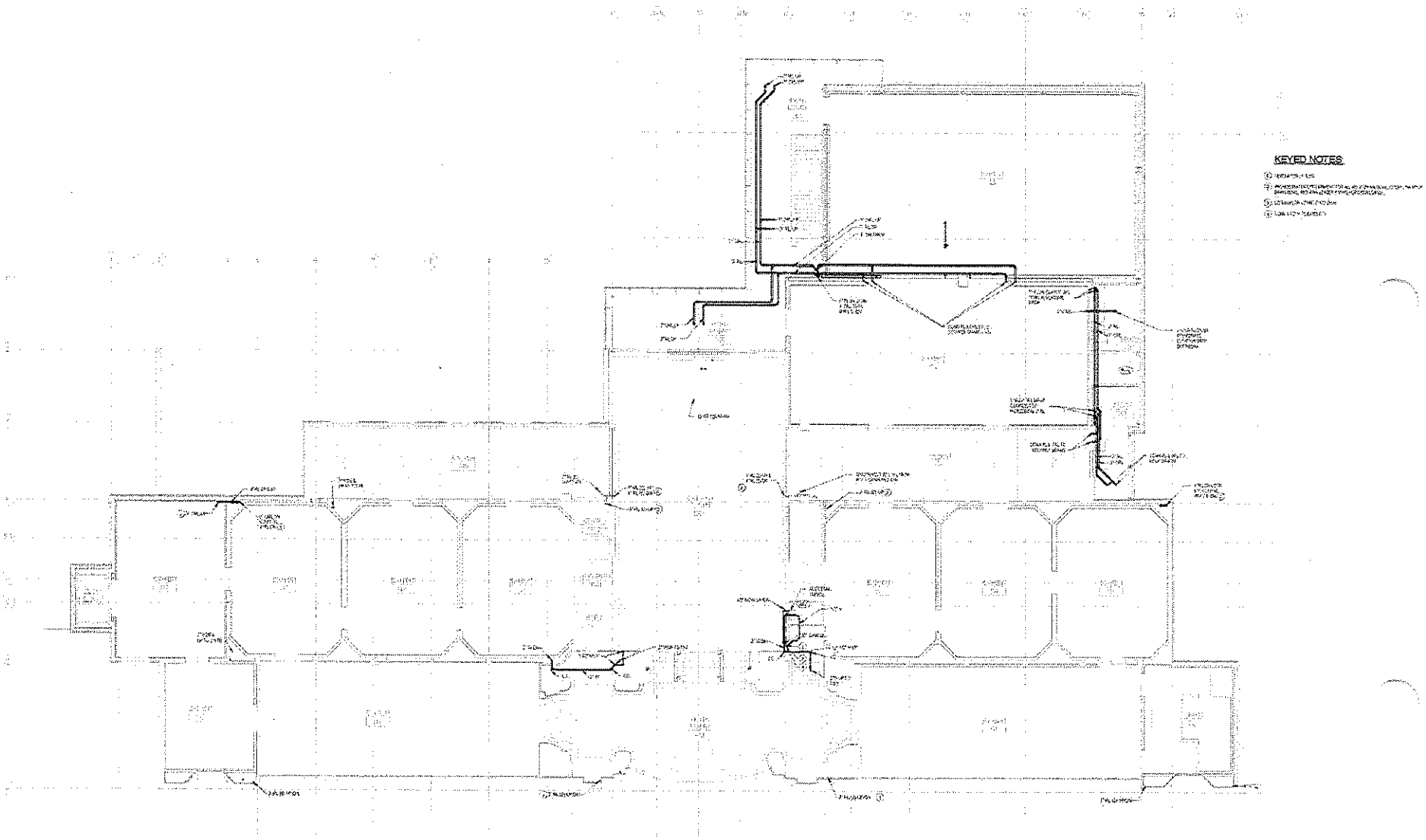
PLUMBING FLOOR PLAN - LEVEL 02

P202



PLUMB PLAN - LEVEL 3

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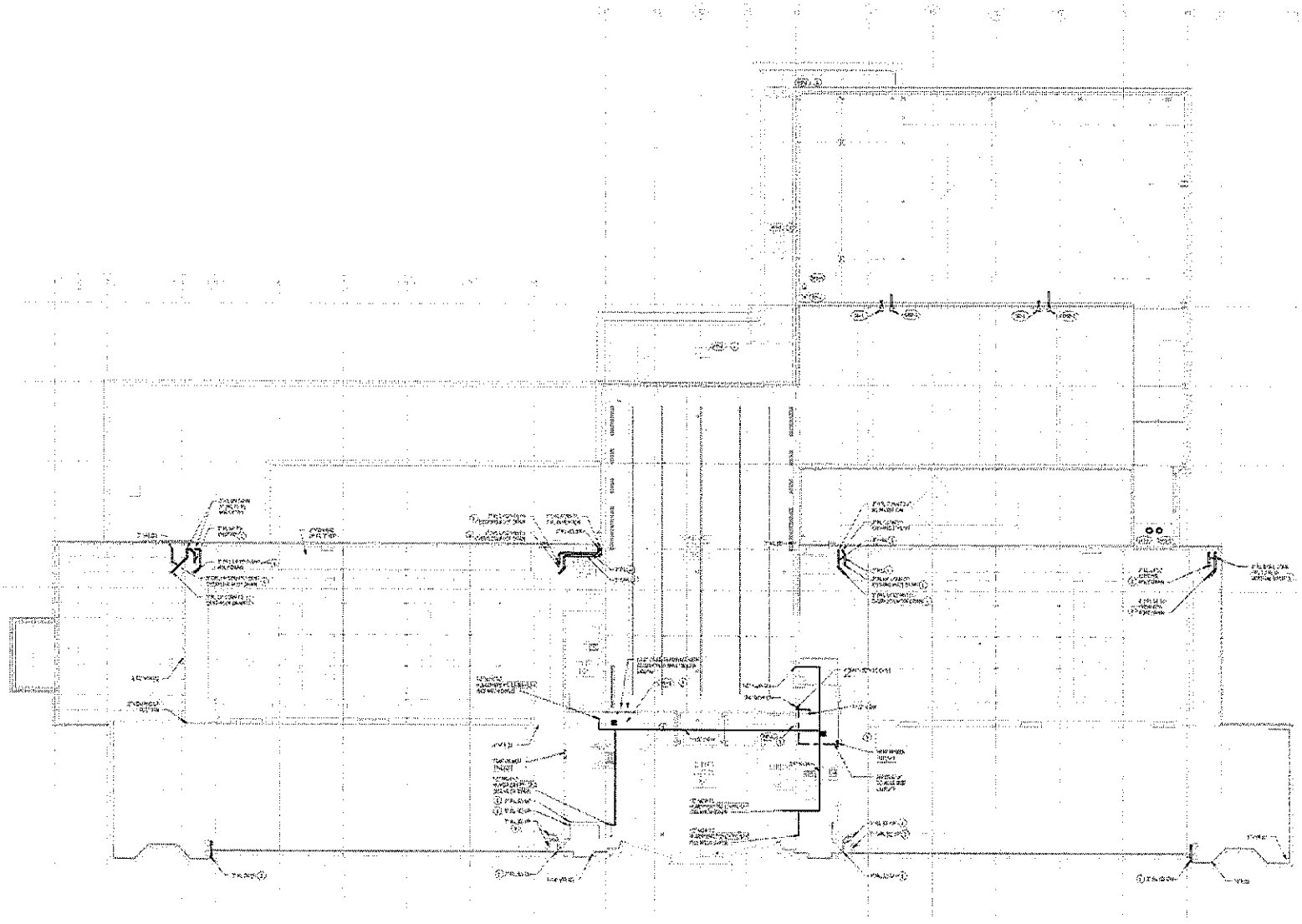
PLUMBING FLOOR PLAN - LEVEL 03

P203



KEYED NOTES

PLUMB PLAN - LEVEL 4

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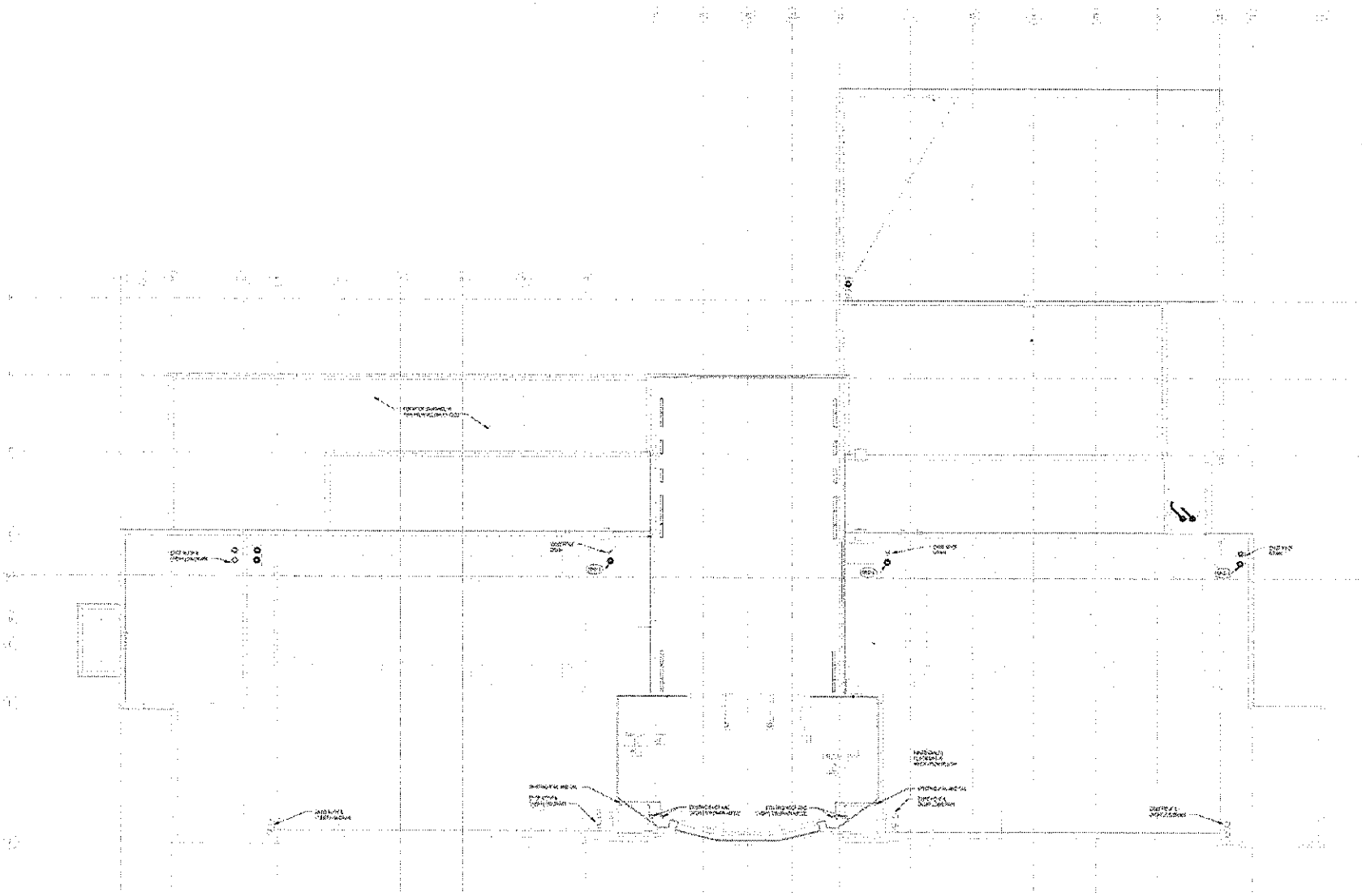
PLUMBING FLOOR PLAN - ATTIC

P204



PLUMB PLAN - LEVEL 5 - T.O. ROOF

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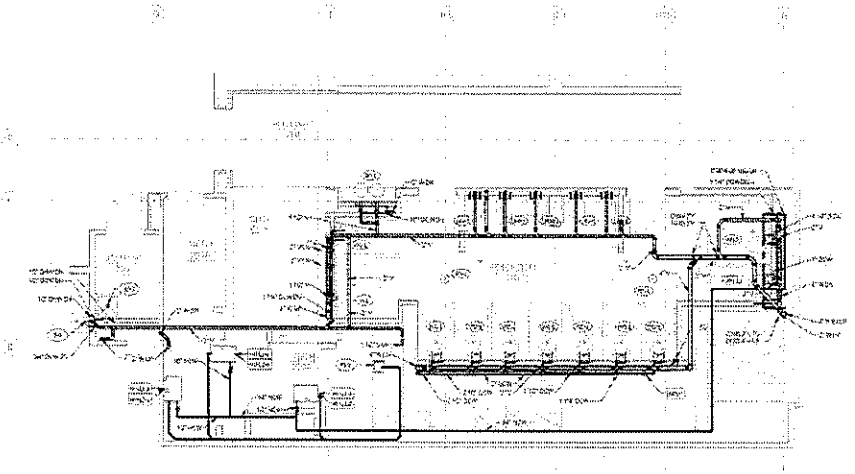
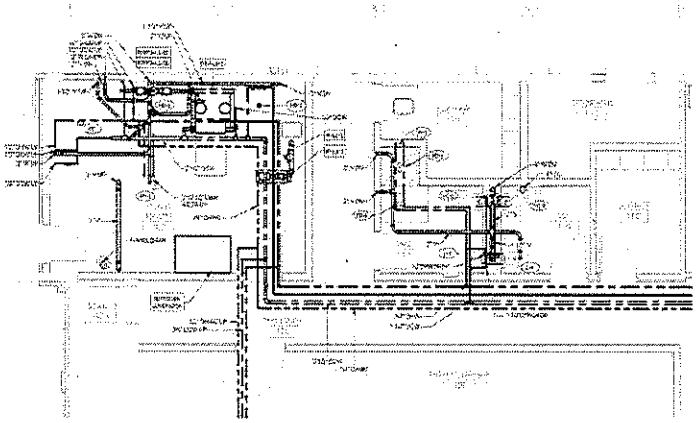
PLUMBING FLOOR PLAN - LEVEL ROOF

P205



ENLARGED PLUMB PLAN - MECH ROOM 209A



ENLARGED PLUMB PLAN - PUMP ROOM 103

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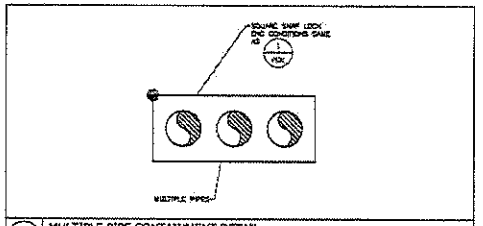
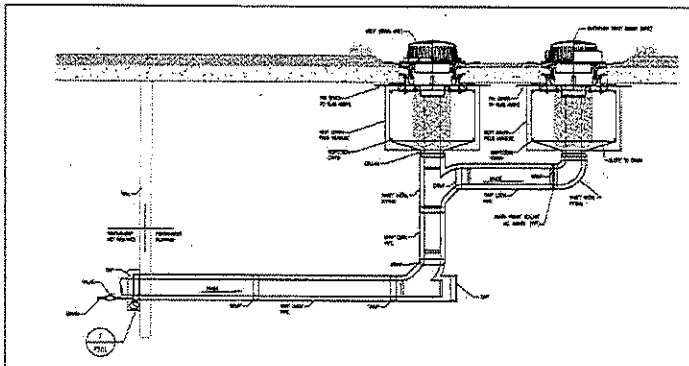
ENLARGED PLUMBING PLANS

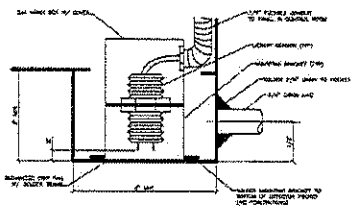
P301



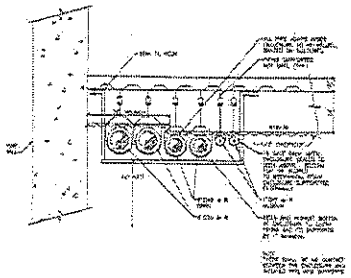
3 MULTIPLE PIPE CONTAINMENT DETAIL
SCALE: NOT TO SCALE



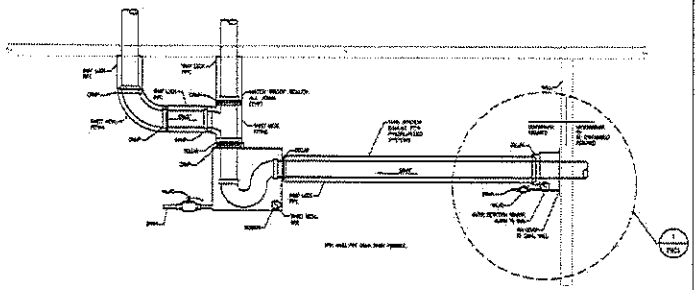
5 ROOF DRAIN CONTAINMENT OVERFLOW DRAIN (ORD) DETAIL
SCALE: NOT TO SCALE



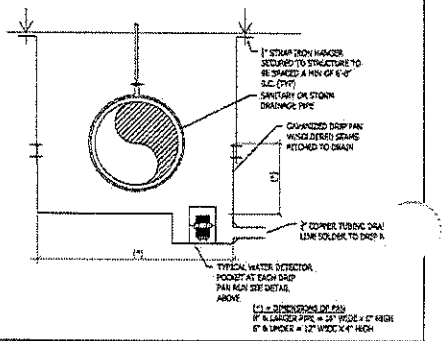
2 EXISTING VENTURI DETAIL NEW INSTALLATION SIMILAR
SCALE: NOT TO SCALE



6 HVAC PIPE CONTAINMENT
SCALE: NOT TO SCALE



4 TRAP CONTAINMENT
SCALE: NOT TO SCALE



1 WASTE PIPE CONTAINMENT DETAIL
SCALE: NOT TO SCALE

NOTE: THESE DETAILS WERE PROVIDED BY THE SEATTLE ART MUSEUM AS STANDARD DETAILS FROM THE DOWNTOWN SEATTLE ART MUSEUM ADDITION AND RENOVATION PROJECT.

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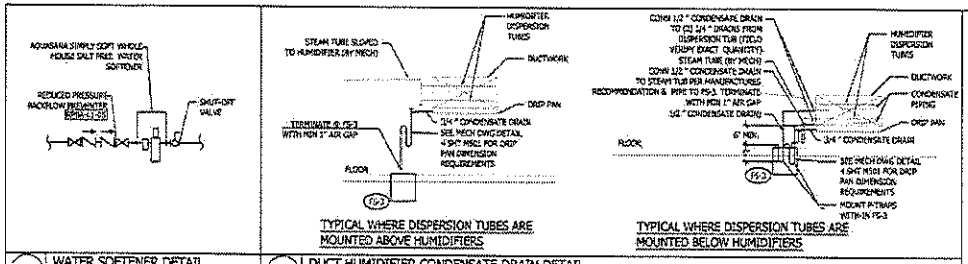
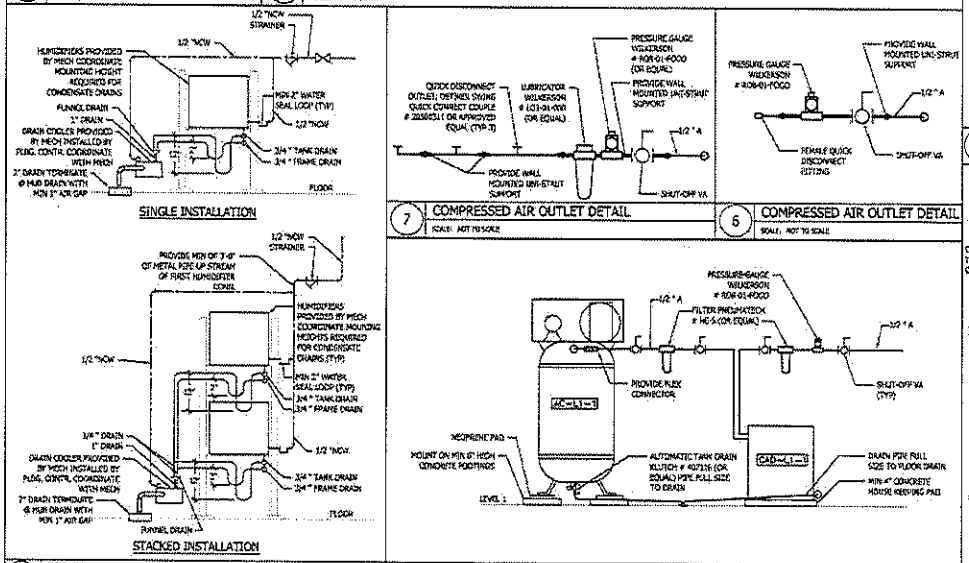
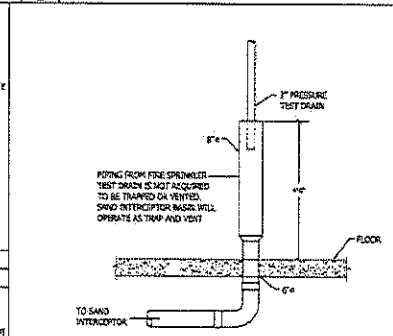
Checked: JJ RSH
LMN Project No.: 14001.07
Date: 8/24/17

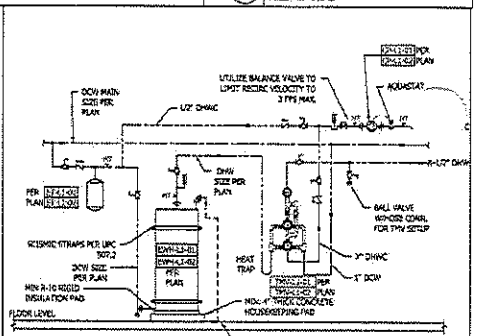
PLUMBING DETAILS

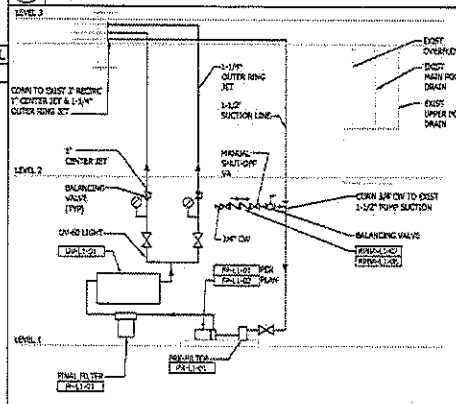
P501

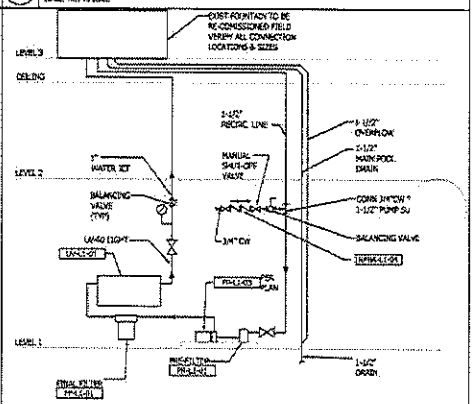


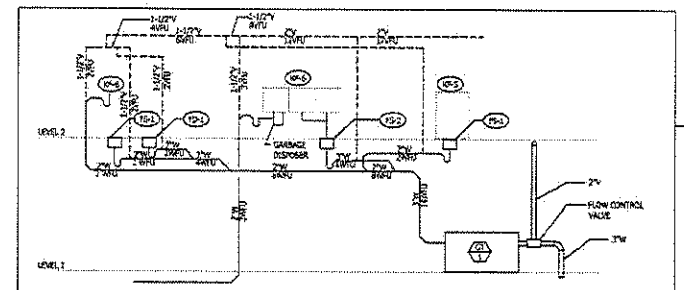


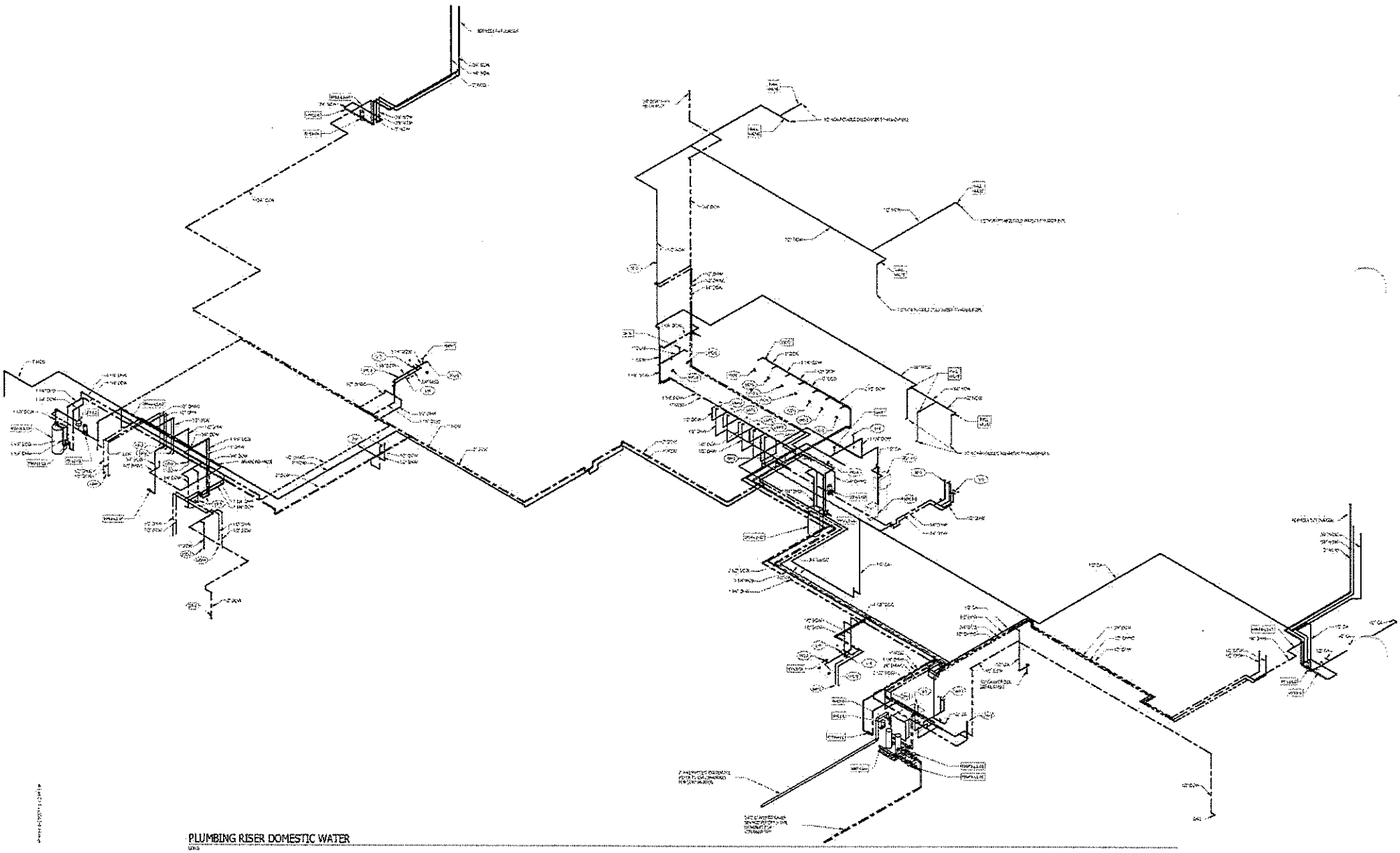









1-1/2"V 4WU
1-1/2"C 6WU
3"V 24WU
3"C 24WU
PS-6
PS-5
PS-1
PS-2
PS-4
GARBAGE DISPOSER
2"W 24WU
2"W 8WU
2"W 24WU
2"W 8WU
2"W 24WU
2"W 24WU
2"W 24



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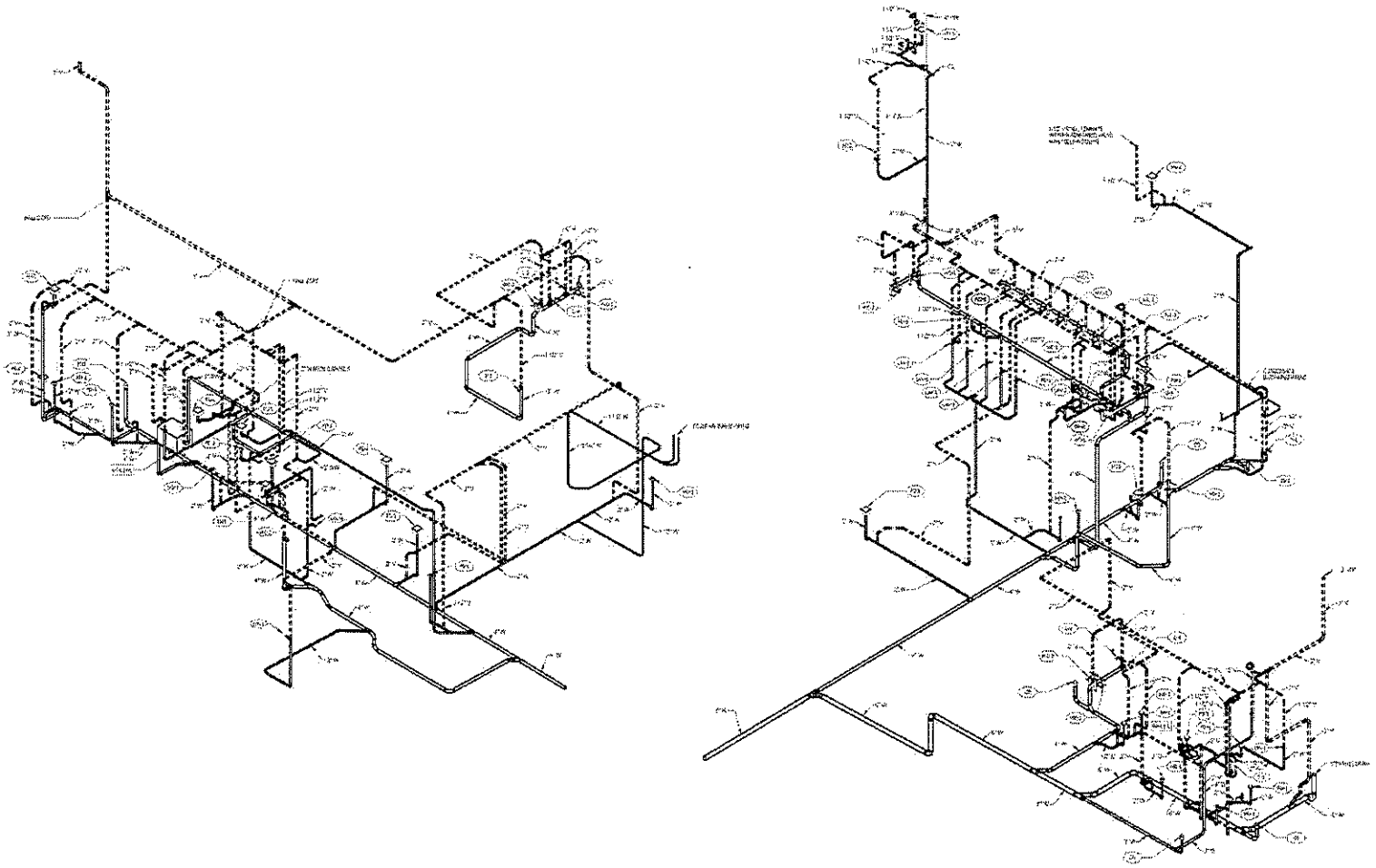
PLUMBING
DOMESTIC WATER
RISER DIAGRAM

P601



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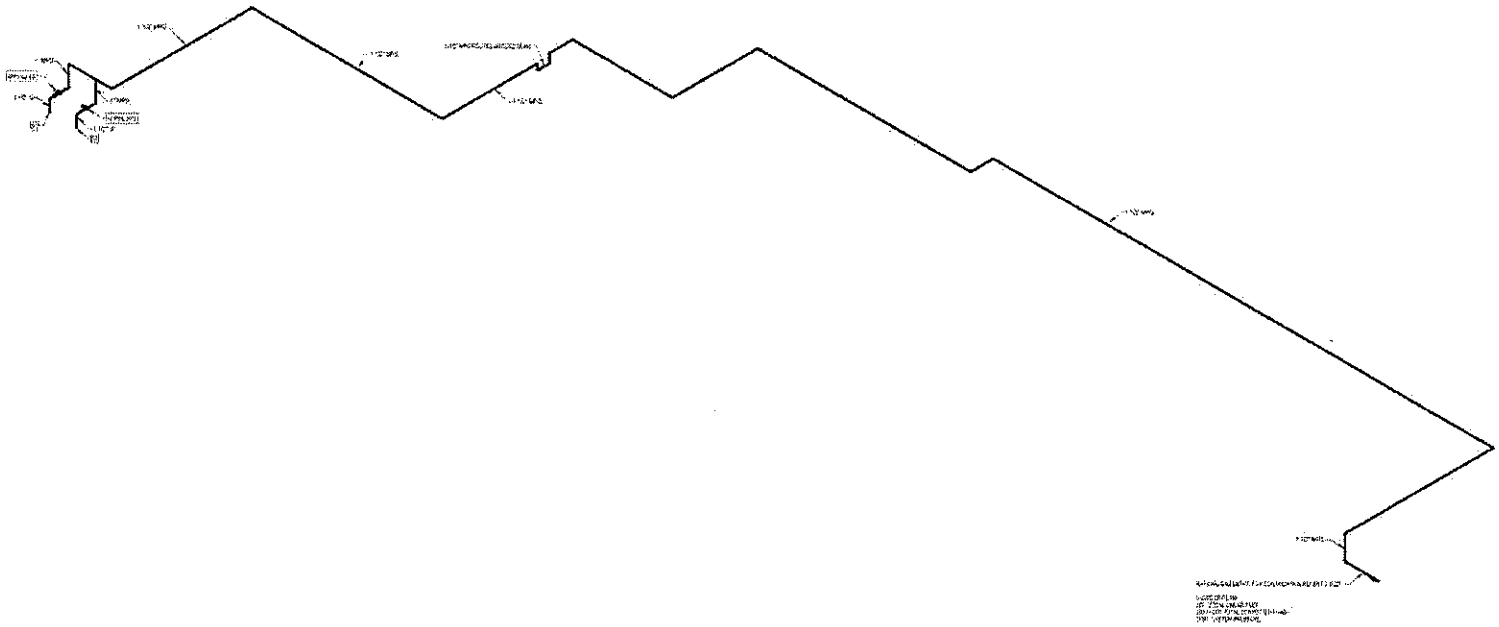
PLUMBING WASTE AND VENT RISER DIAGRAM

P602



PLUMBING NATURAL GAS RISER

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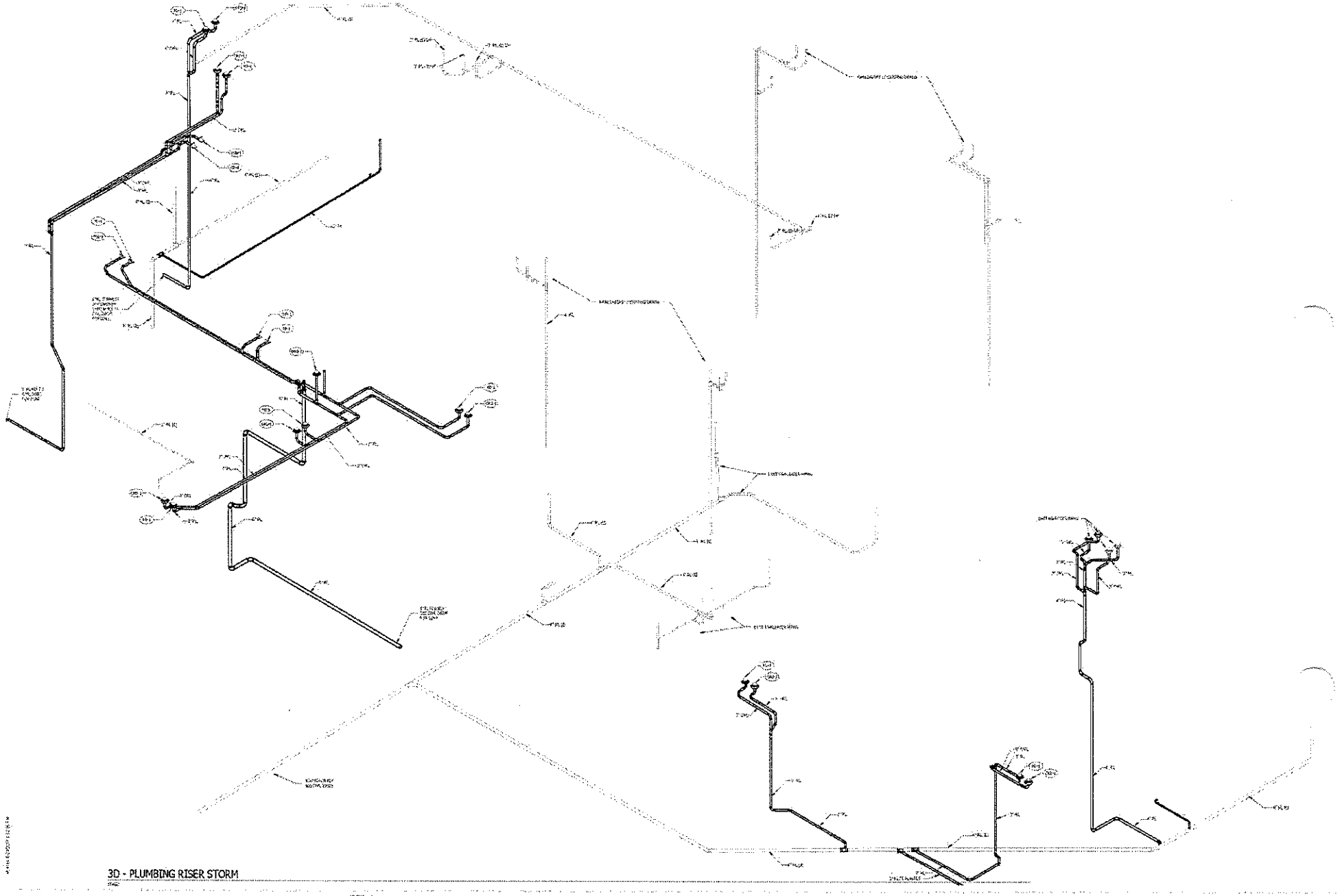
PLUMBING
NATURAL GAS
RISER DIAGRAM

P603



3D - PLUMBING RISER STORM

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PLUMBING
RAINLEADER
RISER DIAGRAM

P604

SYMBOLS AND ABBREVIATIONS

SHEET INDEX

E000 ELECTRICAL SYMBOLS AND ABBREVIATIONS

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E002 ENERGY CODE COMPLIANCE

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E103 POWER DEMO PLAN – LEVEL 3
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E201 POWER FLOOR PLAN – LEVEL 1
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E404 ENLARGED PLANS – AUDITORIUM
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E601 TYPICAL POWER ONE-LINE DIAGRAM
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E603 FEEDER SCHEDULE
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E701 ELECTRICAL DETAILS

F4201 FIRE ALARM FLOOR PLAN – LEVEL 2
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F4204 FIRE ALARM FLOOR PLAN – LEVEL 4 ATRIC

F4501 FIRE ALARM ONE-LINE DIAGRAM

FIRE ALARM

HEAT DETECTOR
HEAT DETECTOR (FIXED TEMPERATURE)
HEAT DETECTOR (RATE OF RISE)
SMOKE DETECTOR
SMOKE DETECTOR (DUCT MOUNTED)
STROBE LIGHT (WALL MOUNTED)
STROBE LIGHT (CEILING, RECESS MOUNTED)
AREA OF REFUGE AUDIO/VISUAL STATION
AREA OF REFUGE MASTER ANNUNCIATOR PANEL
CONTROL MODULE
CARBON/FIRE DAMPER CONNECTION
SMOKE DOOR RELEASE MECHANISM, COMBINATION DOOR CLOSER/HOLDER TYPE
CHIME (WALL MOUNTED)
HORN (WALL MOUNTED)
HORN AND STROBE LIGHT (CEILING, FLUSH MOUNTED)
HORN AND STROBE LIGHT (WALL MOUNTED)
INDICATOR LIGHT
MANUAL STATION (WALL MOUNTED)
SPEAKER (CEILING, FLUSH MOUNTED)
SPEAKER (WALL MOUNTED)
SPEAKER AND STROBE LIGHT (WALL MOUNTED)
TRANSMITTER
CONTROL PANEL
GRAPHIC ANNUNCIATOR
NETWORK SERVERS
REMOTE ANNUNCIATOR
TERMINAL CABINET
SPRINKLER FLOW SWITCH CONNECTION
REMOTE INDICATION LIGHT
VISUAL ALARM LIGHT (WALL MOUNTED)
SMOKE DOOR RELEASE MECHANISM, MAGNETIC TYPE (WALL MOUNTED)
MONITOR MODULE
MONITOR POINT
POST INDICATOR VALVE
SPRINKLER PRESSURE SWITCH CONNECTION
KNUCKLE BOOM RELEASE MECHANISM
SPRINKLER TAMPER SWITCH
SPRINKLER VALVE POSITION MONITOR CONNECTION

LIGHTING

CIRCUITS		
N/A	(XXX)	LOWER-CASE LETTER NEXT TO FIXTURE SYMBOL INDICATES SWITCH LEG. SEE SCHEDULE FOR DESCRIPTION.

RECESSED FLUORESCENT FIXTURE, DRAWN TO SCALE
RECESSED BASKET FLUORESCENT FIXTURE, DRAWN TO SCALE
SURFACE MOUNTED FLUORESCENT FIXTURE, DRAWN TO SCALE
FLUORESCENT STRIP FIXTURE, LENGTH TO SCALE
WALL MOUNTED FLUORESCENT FIXTURE, LENGTH TO SCALE (NUMBER OF MOUNTING POINTS WILL VARY WITH FIXTURE LENGTH)
RECESSED DOWNLIGHT FIXTURE
SURFACE MOUNTED DOWNLIGHT FIXTURE
PENDANT MOUNTED FIXTURE
LINEAR PENDANT MOUNTED FIXTURE, LENGTH TO SCALE (NUMBER OF MOUNTING POINTS WILL VARY WITH FIXTURE LENGTH)
WALL MOUNTED FIXTURE
WALL MOUNTED RECESSED FIXTURE
WALL MOUNTED VERTICALLY ORIENTED FIXTURE
WALL MOUNTED RECESSED LINEAR FIXTURE, LENGTH TO SCALE
EXIT SIGN, FILLED RED; ARC ILLUMINATED, DIRECTIONAL ARROWS AS INDICATED
EMERGENCY BATTERY PACK
EXIT WITH EMERGENCY BATTERY PACK
CEILING MOUNTED WALL WASH FIXTURE, OPEN AREA INDICATES DIRECTION OF ILLUMINATION
CEILING MOUNTED LINEAR WALL WASH FIXTURE, LENGTH TO SCALE
RECESSED ACCENT FIXTURE
SURFACE MOUNTED ACCENT FIXTURE
MONOPOINT FIXTURE
TRACK LIGHTING
CONTINUOUS LINEAR TOURLE, SEE ARCHITECTURAL FOR ACTUAL FIXTURE
MULTI-LAMP ACCENT FIXTURE
UNDERCABINET TASK LIGHT
FIBER OPTIC REMOTE SOURCE
STEP LIGHT
FIXTURE ON NORMAL AND EMERGENCY CIRCUITS
NIGHT LIGHT
FIXTURE IDENTIFICATION, SEE LIGHTING FIXTURE SCHEDULE

LIGHTING SWITCHES AND CONTROLS

LOWER-CASE LETTER NEXT TO SWITCH SYMBOL INDICATES CIRCUIT CONTROLLED (TYP)
SINGLE POLE SWITCH
DOUBLE POLE SWITCH
3-WAY SWITCH
4-WAY SWITCH
KEY OPERATED SWITCH
MOMENTARY CONTACT, LOW VOLTAGE SWITCH
OCCUPANCY SENSOR SWITCH
SWITCH WITH PILOT LIGHT
DIMMER SWITCH
CONTROL STATION, XX= INDICATES QUANTITY OF BUTTONS
DIMMING SYSTEM CONTROLS
EMERGENCY LIGHTING OVERRIDE SWITCH
CEILING MOUNTED OCCUPANCY SENSOR SWITCH
PHOTOCELL CONTROL
RELAY, NEC CLASS 2
LOW VOLTAGE TRANSFORMER

PANELBOARDS

120V SYSTEM PANELBOARD
480V SYSTEM PANELBOARD

ELECTRIC HEAT

BASEBOARD HEATER CONVECTION (AS INDICATED) LENGTH TO SCALE
UNIT HEATER CONVECTION
CABINET HEATER CONVECTION

ELECTRICAL RISER

UTILITY CO. IDENTIFICATION
AVAILABLE FAULT CURRENT INDICATION
LIGHTNING ARRESTOR
ARRESTOR, LIGHTNING
AUTOMATIC TRANSFER SWITCH
BUS SPACE
BUS DUCT
BUSWAY END TAP BOX
CABLE TO BUS CONNECTION
DISPOSITION
CONTACTOR, NORMALLY OPEN AND NORMALLY CLOSED
DELUGE SPRINKLER
CIRCUIT BREAKER, DRAWOUT
CIRCUIT BREAKER, DRAWOUT, MEDIUM VOLTAGE
CIRCUIT BREAKER, GFI
CIRCUIT BREAKER, GFI WITH OVERLOAD
CIRCUIT BREAKER, MAGNETIC OVERLOAD
CIRCUIT BREAKER, NETWORK PROTECTOR
CIRCUIT BREAKER, THERMAL OVERLOAD
FUSE OR CURRENT LIMITER
FUSE, DISCONNECT
FUSED SWITCH
GROUND
TRANSMITTER
SPLICE
STRESS RELIEF, MEDIUM VOLTAGE
SWITCH, 2-POLE
SWITCH, 3-POLE
THERMAL ELEMENT
TRANSFORMER
TRANSFORMER, CURRENT
TRANSFORMER, ELECTROSTATICALLY SHIELDED, MAGNETIC CORE SHOWN
TRANSFORMER, MAGNETIC CORE SHOWN
TRANSFORMER, SHIELDED, MAGNETIC CORE SHOWN
AMMETER
CONTACTOR
ENGINE-GENERATOR
KEY INTERLOCK
POWER METER
POWER QUALITY METER
RELAY
RELAY, GFI
SURGE PROTECTIVE DEVICE
VOLTMETER
WATT HOUR METER

CONTROLS

FUSED DISCONNECT SWITCH (FUSE RATING NOTED)
DISCONNECT SWITCH
MOTOR STARTER
MANUAL MOTOR STARTER
COMBINATION MOTOR STARTER FUSED DISCONNECT SWITCH
ENCLOSED CIRCUIT BREAKER
CONTACTOR
PUSH BUTTON CONTROL STATION
AUTO DOOR PUSHPLATE
EMERGENCY SHUTDOWN
MOTOR RATED TOGGLE SWITCH
RESTART PLUG
DIRECT DIGITAL CONTROL PANEL
RELAY, CONTROL TYPE
THERMOSTAT STAT
TIME CLOCK
VARIABLE FREQUENCY DRIVE

EQUIPMENT

EQUIPMENT CABINET
EQUIPMENT CONNECTION, 2 + EMERGENCY POWER
GROUND BAR, LENGTH TO SCALE
MOTOR CONNECTION, SINGLE PHASE
MOTOR CONNECTION, 3 PHASE
POWER BUSWAY
SURGE PROTECTIVE DEVICE
TRANSFORMER, <30KVA, DOT TO SCALE
TRANSFORMER, 30KVA OR GREATER, DRAWN TO SCALE

CIRCUITS

RACEWAY CONCEALED IN CEILING OR WALL, HASH MARKS INDICATE NUMBER OF WIRES (#2 AND WIRE UNLESS OTHERWISE NOTED, EXPOSED RACEWAY IS ALLOWED ONLY WHERE NOTED)
HOT (CIRCUIT HASH MARK)
NEUTRAL (LONG HASH MARK)
GROUND WIRE (LOOSELY HASH MARK)
EXISTING RACEWAY (IF HASH MARKS ARE SHOWN, FULL NEW CONDUCTORS)
RACEWAY (SLAB OR UNDERGROUND
RACEWAY UP
RACEWAY DOWN
RACEWAY STUB-OUT WITH BUSHING
CIRCUIT CONTINUATION
HOME RUN TO PANEL OR LOCATION NOTED
JUNCTION BOX
PULL BOX

RECEPTACLE TYPES

MOUNTED 3" ABOVE COUNTER BACKSPLASH
DEDICATED CIRCUIT
GROUND FAULT CIRCUIT INTERRUPTER
GROUND FAULT CIRCUIT INTERRUPTER AND TAMPER RESISTANT
ISOLATED GROUND
TAMPER RESISTANT
GROUND FAULT CIRCUIT INTERRUPTER WITH WEATHER PROOF COVER
(1) DUPLEX RECEPTACLE CONTROLLED VIA PROGRAMMABLE RELAY SYSTEM 'A' AND (1) DUPLEX RECEPTACLE NOT CONTROLLED (SHOWN FLOOR)
DOUBLE DUPLEX RECEPTACLE, FLUSH FLOOR BOX (2) DUPLEX RECEPTACLE CONTROLLED VIA PROGRAMMABLE RELAY SYSTEM 'A' AND (2) DUPLEX RECEPTACLE NOT CONTROLLED (SHOWN FLOOR)

RECEPTACLES

CIRCUITS		
		SINGLE RECEPTACLE 120V
		DUPLEX RECEPTACLE 120V
		DOUBLE DUPLEX RECEPTACLE 120V
		SPLIT WIRED RECEPTACLE, 120V, TOP SWITCHED
		RECEPTACLE 208V OR 240V, SINGLE PHASE
N/A		RECEPTACLE 208Y OR 240V, THREE PHASE
N/A		COMBINATION RECEPTACLE 120/208Y OR 120/240V, SINGLE PHASE
N/A		RECEPTACLE 480V, SINGLE PHASE
N/A		RECEPTACLE 480V, THREE PHASE
N/A		SINGLE RECEPTACLE 120V (TWIST LOCK)
N/A		DUPLEX RECEPTACLE 120V (TWIST LOCK)
N/A		RECEPTACLE 208Y OR 240V, SINGLE PHASE (TWIST LOCK)
N/A		RECEPTACLE 208Y OR 240V, THREE PHASE (TWIST LOCK)
N/A		COMBINATION RECEPTACLE 120/208Y OR 120/240V, SINGLE PHASE (TWIST LOCK)
N/A		RECEPTACLE 480V, SINGLE PHASE (TWIST LOCK)
N/A		RECEPTACLE 480V, THREE PHASE (TWIST LOCK)
N/A		CLOCK RECEPTACLE 120V
		SINGLE RECEPTACLE, FLUSH FLOOR BOX
		DUPLEX RECEPTACLE, FLUSH FLOOR BOX
		DOUBLE DUPLEX RECEPTACLE, FLUSH FLOOR BOX
		SPLIT WIRED RECEPTACLE, 120V, FLUSH FLOOR BOX
N/A		FLOOR BOX DEVICES AS INDICATED
N/A		POKE THROUGH DEVICES AS INDICATED
		SINGLE RECEPTACLE, CEILING MOUNTED
		DUPLEX RECEPTACLE, CEILING MOUNTED
		20AMP DUPLEX RECEPTACLE, CEILING MOUNTED
		CEILING CORD DROP, 120V, SINGLE PHASE
N/A		POWER POLE
N/A		MULTI-OUTLET ASSEMBLY DEVICES AS INDICATED
		DUPLEX RECEPTACLE, SURGE PROTECTION TYPE
		DOUBLE DUPLEX RECEPTACLE, SURGE PROTECTION TYPE

WORK DEFINITION

FLAG NOTE
REVISION IDENTIFICATION
EQUIPMENT IDENTIFICATION
EQUIPMENT IDENTIFICATION
DETAIL REFERENCE
DETAIL REFERENCE #/ORIGINATING SHEET REFERENCE
SECTION REFERENCE
SECTION REFERENCE #/ORIGINATING SHEET REFERENCE
ELEVATION REFERENCE
PROJECT NORTH REFERENCE
PROJECT NORTH REFERENCE #/TRUE NORTH REFERENCE
NEW WORK
EXISTING
FUTURE
REMOVE EXISTING ELECTRICAL EQUIPMENT

ABBREVIATIONS

ABV	ABOVE	MLO	MAIN LUGS ONLY
AC	3" ABOVE COUNTER BACKSPLASH	MCC	MOTOR CONTROL CENTER
ACK	ABOVE COUNTER HEIGHT	MH	MANHOLE
AFF	ABOVE FINISHED FLOOR	MR	MULTIWIRE
AL	ALUMINUM	MTD	MOUNTED
AMP	AMPERE	NIC	NOT IN CONTRACT
A/V	AUDIO/VISUAL	N	NEUTRAL
ATS	AUTOMATIC TRANSFER SWITCH	NL	NIGHT LIGHT (EMERGENCY)
AWG	AMERICAN WIRE GAUGE	NIC	NOT IN CONTRACT
CATV	COMMUNITY ACCESS TELEVISION	OFOI	OPERATOR/OPERABLE
CB	CIRCUIT BREAKER	OFCI	OWNER PROVIDED (ONLY) INSTALLED
CCTV	CLOSED CIRCUIT TELEVISION	OS	OPTIONAL STATMENT
CKT	CIRCUIT	PB	PULLBOX
CLG	CEILING	PNL	PANEL, PANELBOARD
CM	CEILING MOUNTED	PUC	POSITION/PHONE OF SCALE
COMM	COMMUNICATIONS	RM	RISER
C -	CONDUIT	RTC	PRIMARY SATELLITE ZONE
CO	CONDUIT ONLY	RTS	PNEUMATIC TUBE STATION
CTRL	CONTROL	S	RACEWAY
CU	COPPER	SO	RACEWAY ONLY
D	DATA	RECEPT	RECEPTACLE
DCP	DOOR CONTROL PANEL	REF	REFRIGERATOR
DED	DEDICATED	SEC	SECONDARY DAYLIGHT ZONE
DEV	DEVICE	SDV	SLEEVE
DN	DOWN	SW	SWITCH
DW	DISHWASHER	SPECS	SPECIFICATIONS
EF	ENTRANCE FACILITY	SW	SWITCH
FM	EMERGENCY	SWBD	SWITCHBOARD
EC	EQUIPMENT BOOK/ARCHITECT	TELECOM	TELECOMMUNICATIONS
	YOUR	TGB	TELECOMMUNICATIONS GROUNDING
EWC	ELECTRIC WATER COOLER		BUSBAR
FA	FIRE ALARM	TMGB	TELECOMMUNICATIONS MAIN
FD	FLOOR BOX		GROUNDING BUSBAR
FBOIC	FURNISHED BY OTHERS, INSTALLED BY CONTRACTOR	TR	TELECOMMUNICATIONS ROOM
		TV	TELEVISION
FT	TRAY ILLUMINATOR	TYP	TYPICAL
FO	FIBER OPTIC(AL)	UF	UNDER FLOOR
FOC	FACE OF COLUMN	UG	UNDER GROUND
G,GND	GROUND	UON	UNLESS OTHERWISE NOTED
GI	GARBAGE DISPOSAL	UTP	UNSHIELDED TWISTED PAIR
GFI,GFCI	GROUND FAULT CIRCUIT INTERRUPTER	V	VOLT OR VOLTS
HC	HAND HOLE	VIF	VERIFY EXACT LOCATION
HP	HORSEPOWER	W	WIRE, WATT, OR WALLMOUNT
HT	HEIGHT OF WATER HEATER	WAP	WIRELESS ACCESS POINT
J-BOX	JUNCTION BOX	WP	WEATHERPROOF
LV	LOW VOLT REQUIRED	XFMR	TRANSFORMER
MAG	MAGNETIC	#	PHASE

GENERAL NOTES

1. COMPLY WITH THE NATIONAL ELECTRICAL CODE AS ADOPTED AND AMENDED BY THE LOCAL AUTHORITY HAVING JURISDICTION.
2. THE LOCATIONS OF ELECTRICAL DEVICES OR LIGHTING FIXTURES INDICATED ON ARCHITECTURAL PLANS, ELEVATION OR SECTIONS TAKE PRECEDENCE OVER LOCATIONS INDICATED ON THE ELECTRICAL DRAWINGS.
3. REFER TO THE ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LIGHTING FIXTURE, FIRE ALARM, LIGHTING CONTROL AND POWER DEVICE LOCATIONS.
4. FOR LIGHTING CONTROLS WHICH INCLUDE DAYLIGHT OR OCCUPANT SENSING, AUTOMATIC CONTROLS, AUTOMATIC DAYLIGHT CONTROLS, OCCUPANCY SENSORS, OR AUTOMATIC TIME SWITCHES THE LIGHTING CONTROLS SHALL BE TESTED TO ENSURE THAT CONTROL DEVICES, COMPONENTS, EQUIPMENT, AND SYSTEMS ARE CALIBRATED, ADJUSTED, AND OPERATE IN ACCORDANCE WITH PROJECT PLANS AND SPECIFICATIONS. INCIDENCE OF OPERATION SHALL ALSO BE FUNCTIONALITY TESTED TO ENSURE IT IS OPERATING IN ACCORDANCE WITH PROJECT PLANS AND SPECIFICATIONS. A COMPLETE REPORT OF TEST PROCEDURES AND RESULTS SHALL BE PREPARED AND FILED WITH THE OWNER.
5. A CONTRACTOR SHALL COORDINATE ALL ELECTRICAL DEMOLITION WITH THE GENERAL CONTRACTOR. DISCONNECT ALL POWER TO AREA WHERE WORK OF TRADE AREA. TRADE TO ELECTRICAL SOURCE. SEE ARCHITECTURAL AND MEP DEMOLITION PLANS FOR WALL AND CEILING TO BE REMOVED.
6. AFTER CEILING GRID HAS BEEN COMPLETED, CONTRACTOR SHALL REMOVE ELECTRICAL EQUIPMENT AWARENESS UNDER THIS PROJECT. ALL EXISTING EQUIPMENT NOT REUSE PROPERLY SHALL BE DISCONNECTED FROM SOURCE AND REMOVED. ALL CONDUIT AND WIRING SHALL BE REMOVED.
7. ELECTRICIAN AND OTHER ELECTRICAL EQUIPMENT PROVIDERS SHALL COORDINATE WITH ARCHITECT, FACILITY (OWNER) AND CONSULTANTS, WHICH ARE NO LONGER IN SERVICE PREVIOUSLY OF AS A RESULT OF THIS CONTRACT SHALL BE REMOVED. UNUSED FLUSH MOUNTED DEVICES, OUTLET AND OTHER BOXES IN FINISHED AREAS SHALL BE REMOVED FROM WALL AND THE REMAINING HOLE PATCHED TO MATCH ADJACENT WALL SURFACES. EXPOSED CONDUITS AND DEVICES SHALL BE CUT FLUSH AT CEILING, FLOOR OR WALL AND PLUGS WITH GROUT. UNUSED RACEWAYS ABOVE ACCESSIBLE CEILINGS SHALL BE REMOVED.
8. CONTRACTOR SHALL SURVEY SITE AND EXISTING BRANCH CIRCUITS SERVING EQUIPMENT TO REMAIN THAT ARE NOT DOCUMENTED IN THE ELECTRICAL AND ARCHITECTURAL DEMOLITION DRAWINGS. CONTRACTOR SHALL SURVEY EQUIPMENT LIST TO ARCHITECT PRIOR TO DEMOLITION TO CONFIRM WHICH BRANCH CIRCUITS TO BE REPLACED TO MAINTAIN POWER TO EQUIPMENT THAT IS EXISTING TO REMAIN.
9. ANY EXISTING WIRING SERVING DEVICES TO REMAIN IN SERVICE AND WHICH IS INTERRUPTED BY WORK PERFORMED UNDER THIS CONTRACT SHALL BE REPAIRED TO MAINTAIN CIRCUIT CONTINUITY. IF SUCH WIRING IS FOUND THE CONTRACTOR SHALL NOTIFY ARCHITECT OF WIRING LOCATION. REASON IT MUST BE REMOVED AND COST OF RELOCATION AND REVISE THE OWNER'S APPROVAL BEFORE PROCEEDING WITH THE WORK.
10. PRIOR TO COMMENCING WITH DEMOLITION, IDENTIFY ALL POWER, LIGHTING, COMMUNICATION AND SIGNAL SERVICES PASSING THROUGH THE DEMOLITION AREA OR TERMINATING WITHIN THE DEMOLITION AREA. COORDINATE MAINTENANCE SHOWN INSTALLED SYSTEMS WITH OWNER'S REPRESENTATIVE(S). CLEARLY MARK ITEMS TO BE MAINTAINED AND COORDINATE NEED FOR DEMOLITION WORK OF OTHER TRADES.
11. WHERE NEW AND REMODEL WORK BY ELECTRICAL, MECHANICAL, PLUMBING OR OTHER TRADES IS INDICATED ON PLANS, REMOVE, RELOCATE AND REINSTALL ALL EXISTING ELECTRICAL SYSTEMS INCLUDING, BUT NOT LIMITED TO, ELECTRICAL CONDUITS, CIRCUITS, LIGHTING EQUIPMENT, DEVICES AND SUPPORTS AS REQUIRED TO INSTALL NEW WORK AND REMODEL EXISTING WORK.
12. CIRCUITS AND WIRING SHOWN IN DEMOLITION PLANS ARE BASED ON AVAILABLE RECORD DRAWINGS AND MAY NOT SHOW ACTUAL INSTALLED DEVICES AND OPERATING FIELD CONDITIONS.
13. COORDINATE ALL EXPOSED BRANCH CONDUIT ROUTING WITH ARCHITECT PRIOR TO INSTALL.

OUTLET MOUNTING HEIGHTS

SPECIAL OUTLET HEIGHTS ARE SHOWN ON THE ELECTRICAL DRAWINGS OR ON THE ARCHITECTURAL DRAWINGS IF SPECIAL OUTLET HEIGHT IS ARE NOT SHOWN OR REQUIRED, THEN LOCATE OUTLETS AS NOTED BELOW. OUTLET HEIGHTS ARE MEASURED FROM THE FINISHED FLOOR TO THE CENTERLINE OF THE OUTLET UNLESS OTHERWISE NOTED.

RECEPTACLES	18 INCHES (460 mm) VERTICALLY MOUNTED
SWITCHES	43 INCHES (1090 mm) VERTICALLY MOUNTED
CLOCK OUTLET	80 INCHES (2035 mm)
PANELBOARDS	72 INCHES (1830 mm) TO TOP OF PANELBOARD IF BOX < 84 INCHES (2134 mm) HIGH, OTHERWISE PER NEC 408.8.
INTERCOM	43 INCHES (1090 mm)
CARD READER	43 INCHES (1090 mm)
TELECOM OUTLET, DESK MOUNTED	18 INCHES (460 mm) VERTICALLY MOUNTED
TELECOM OUTLET, WALL MOUNTED	43 INCHES (1090 mm) VERTICALLY MOUNTED
VOLUME CONTROLLER	43 INCHES (1090 mm)
FIRE ALARM PULL STATION	43 INCHES (1090 mm)
FIRE ALARM AUDIBLE NOTIFICATION DEVICES	TOP EDGE NOT LESS THAN 80 INCHES (2030 mm) AFF AND NOT LESS THAN 6 INCHES (150 mm) BELOW CEILING. 6 INCHES (150 mm) BELOW CEILING SHALL TAKE PRECEDENCE WHERE CEILING HEIGHT DOES NOT ALLOW BOTH DIMENSIONS
FIRE ALARM VISUAL AND COMBINATION AUDIBLE/VISUAL NOTIFICATION DEVICES	BOTTOM EDGE NOT LESS THAN 80 INCHES (2030 mm) AFF AND TOP EDGE NOT GREATER THAN 96 INCHES (2438 mm) AFF
FIRE ALARM CONTROL PANEL	72 INCHES (1830 mm) TO TOP OF PANEL

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Electrical Symbols and Abreviations

E000

PLUMBING EQUIPMENT SCHEDULE

EQUIPMENT TAG	DESCRIPTION	LEVEL	ROOM	VA	VOLTAGE	PHASE	PANEL	CONDUIT	WIRE	CIRCUIT
[illegible]	ELECTRIC WATER HEATER	LEVEL 1	[illegible]	[illegible]	480	3	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	ELECTRIC WATER HEATER	LEVEL 1	[illegible]	[illegible]	480	3	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	DOMESTIC BOOSTER PUMP	LEVEL 1	PUMP ROOM 104	[illegible]	480	3	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	DOMESTIC HW CIRC PUMP	LEVEL 1	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	DOMESTIC HW CIRC PUMP	LEVEL 1	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	FOUNTAIN PUMP	LEVEL 1	STORAGE [illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	FOUNTAIN PUMP	LEVEL 1	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	FOUNTAIN PUMP	LEVEL 1	PUMP ROOM [illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	ULTRAVIOLET LIGHT	LEVEL 1	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	ULTRAVIOLET LIGHT	LEVEL 1	STORAGE [illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	VERTICAL AIR COMPRESSOR	LEVEL 1	[illegible]	[illegible]	[illegible]	3	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	LEVEL 1	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]

FIRE PROTECTION EQUIPMENT SCHEDULE

EQUIPMENT TAG	DESCRIPTION	LEVEL	ROOM	VA	LOAD VOLTAGE	PHASE	PANEL	CONDUIT	WIRE	CIRCUIT
[illegible]	FIRE PUMP CONTROLLER	LEVEL 1	PUMP ROOM [illegible]	[illegible]	480	3	[illegible]			
[illegible]	JOCKEY PUMP CONTROLLER	LEVEL 1	PUMP ROOM [illegible]	[illegible]	480	3	[illegible]			
[illegible]	NITROGEN GENERATOR	LEVEL 1	PUMP ROOM [illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]

MECHANICAL EQUIPMENT SCHEDULE

EQUIPMENT TAG	DESCRIPTION	LEVEL	ROOM	VA	LOAD VOLTAGE	PHASE	PANEL	CONDUIT	WIRE	CIRCUIT
[illegible]	AIR HANDLING UNIT	LEVEL 1	[illegible]	[illegible]	480	3	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	AIR HANDLING UNIT	LEVEL 1	LEVEL 1	[illegible]	480	3	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	AIR HANDLING UNIT	LEVEL 1	LEVEL 1	[illegible]	480	3	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	EXHAUST FAN	LEVEL 1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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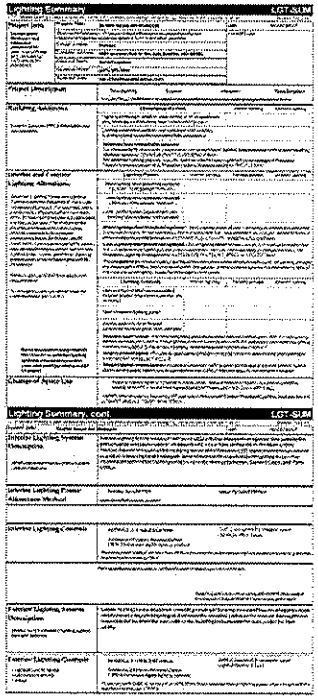
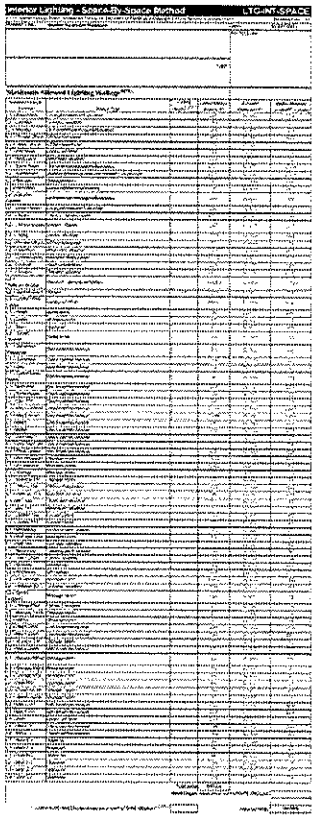
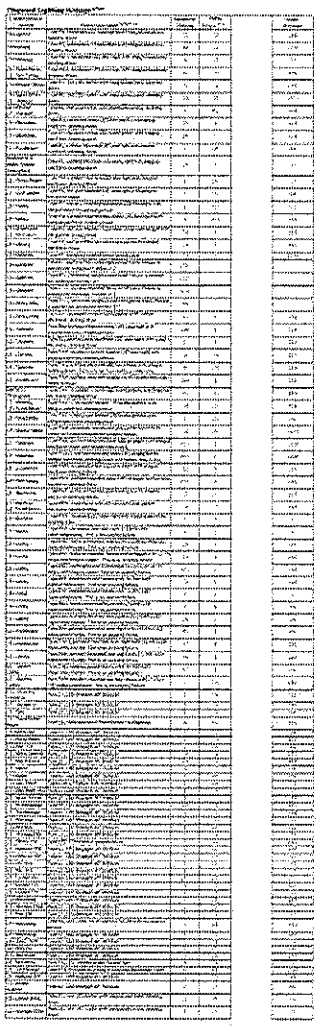
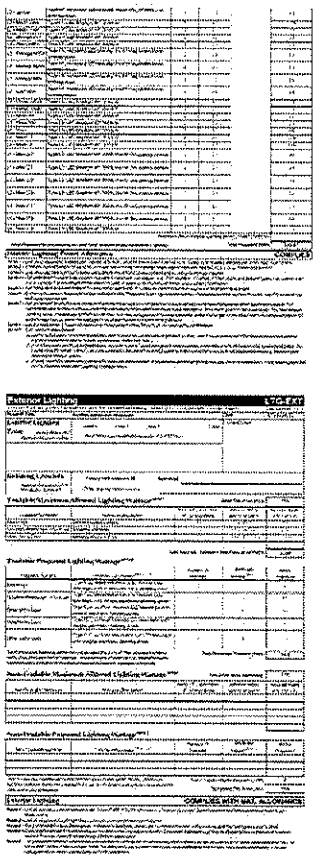
Equipment Schedule

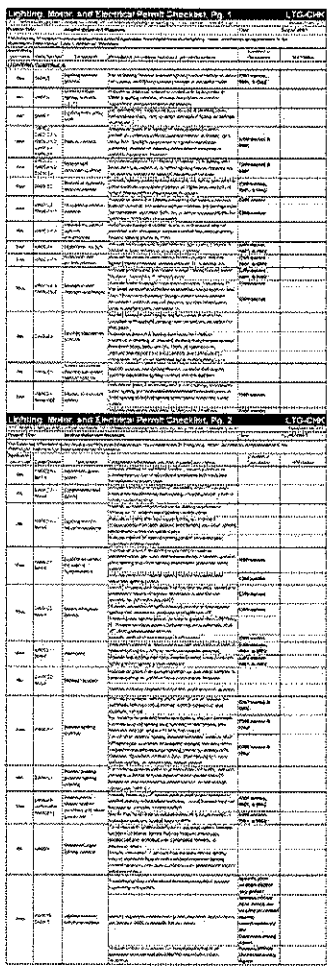
E001

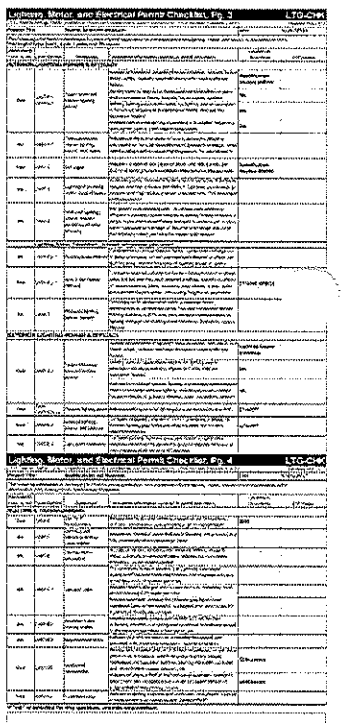












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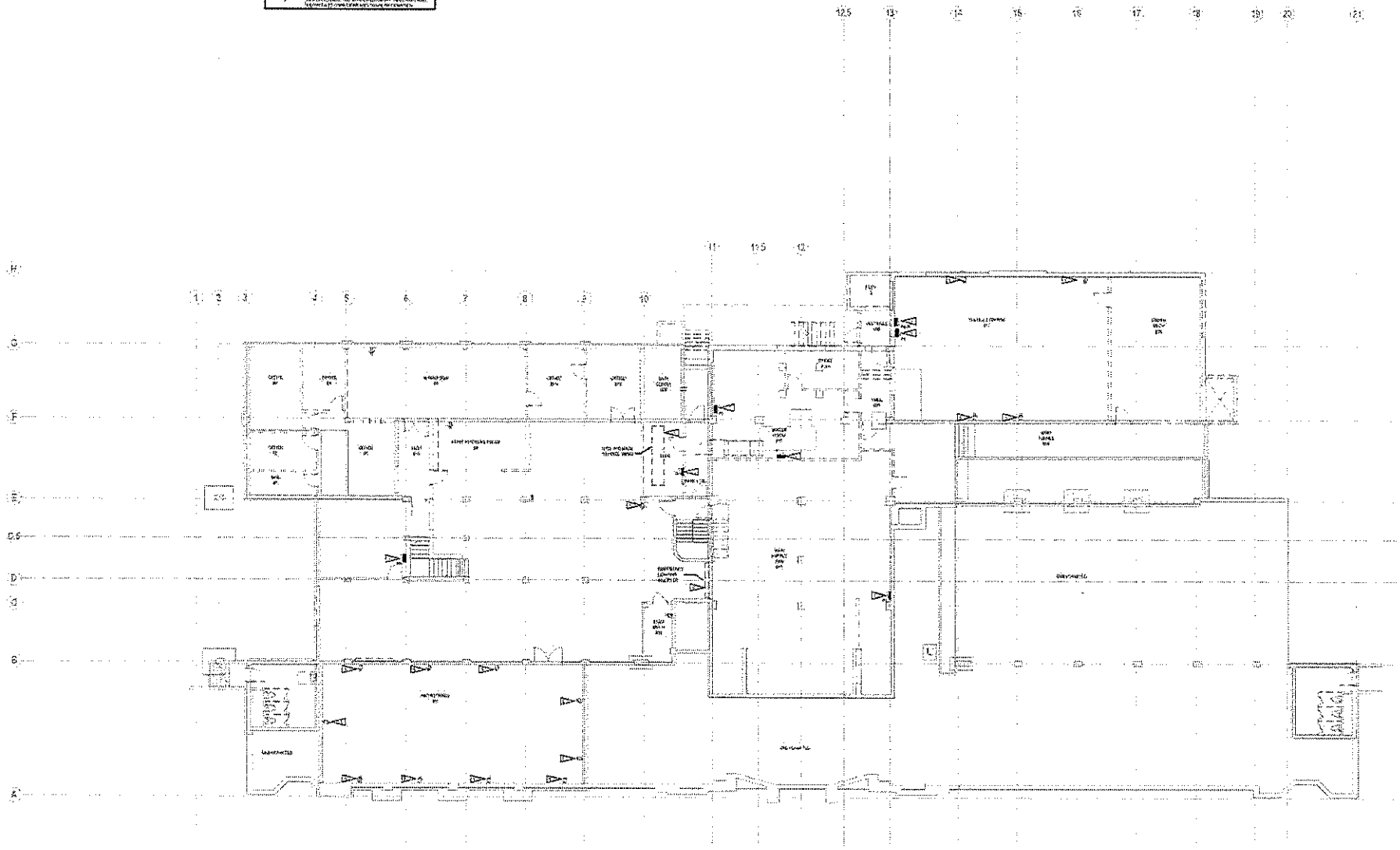
Energy Code Compliance

E002

DEMOLITION GENERAL NOTES

	Key Items
1	
2	
3	



T E101 POWER DEMO PLAN - LEVEL 1

1/8" = 1'-0"

TRUE NORTH PLAN NORTH 0 4' 8' 16' 32'

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Power Demo Plan - Level 1

E101

DEMOLITION GENERAL NOTES

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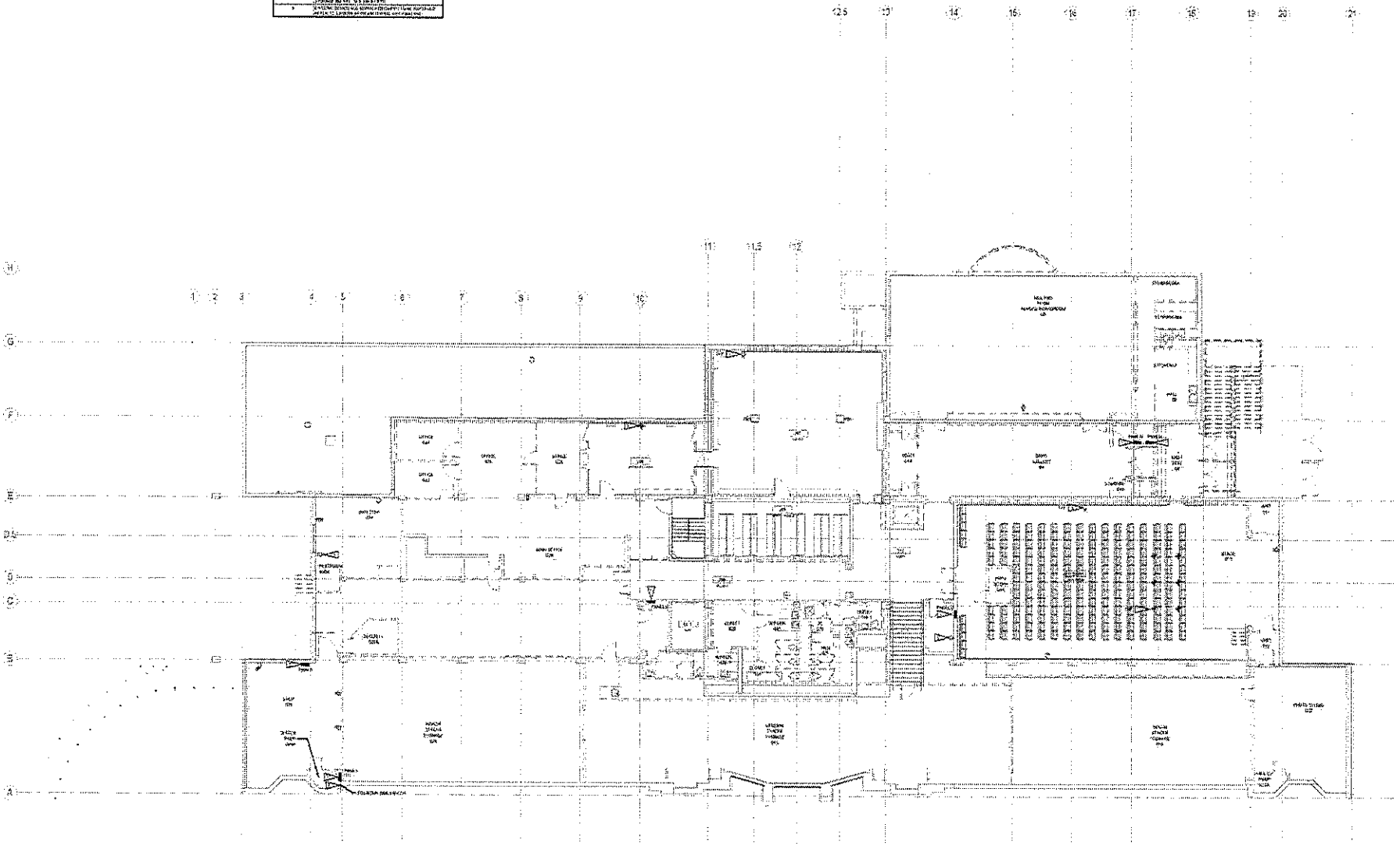

1 POWER DEMO PLAN - LEVEL 2

TRUE NORTH PLAN NORTH

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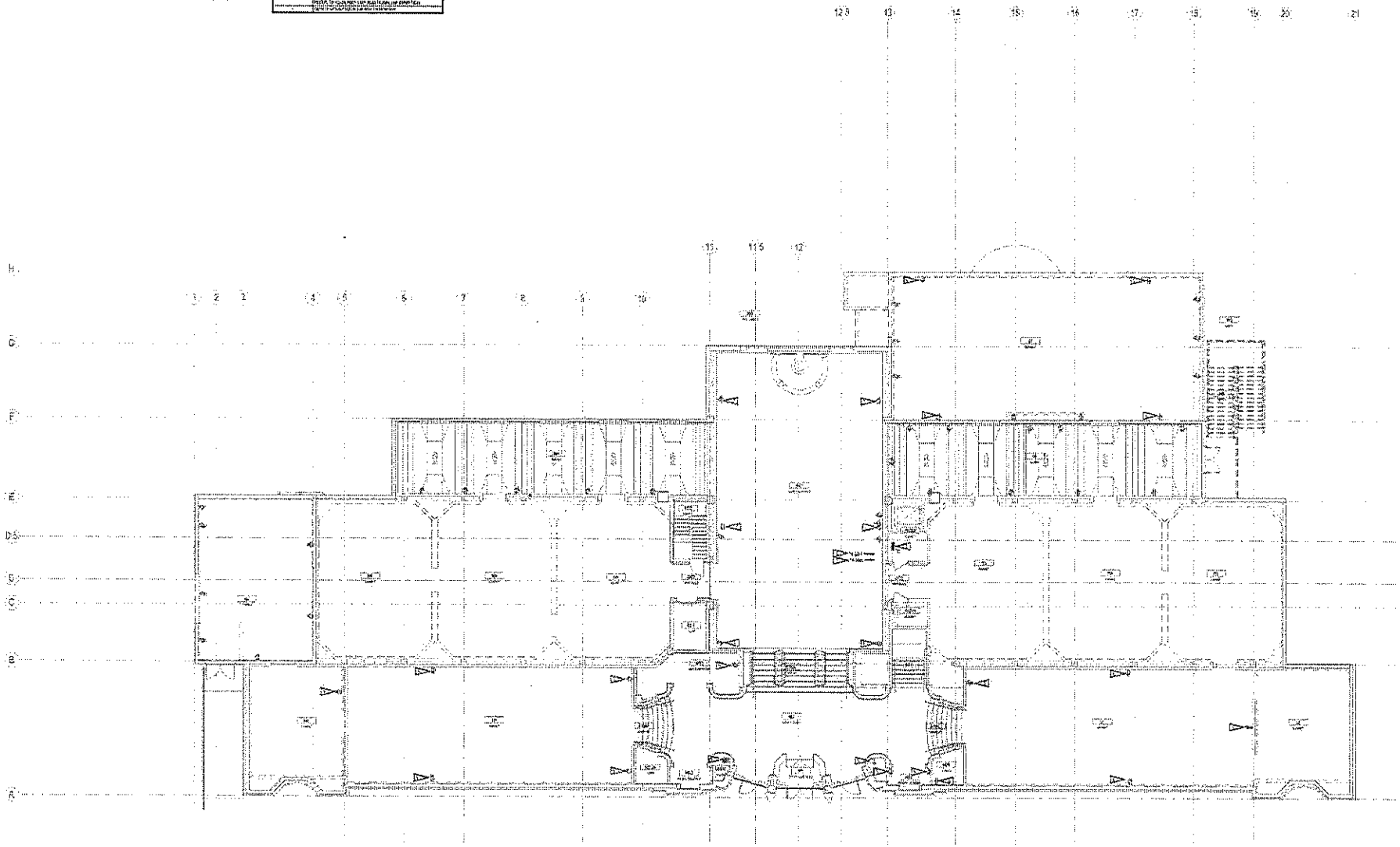
Power Demo Plan - Level 2

E102

DEMOLITION GENERAL NOTES



1 POWER DEMO PLAN - LEVEL 3
1/8" = 1'-0"

TRUE NORTH PLAN NORTH

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Power Demo Plan - Level 3

E103

DEMOLITION GENERAL NOTES

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2 [illegible]

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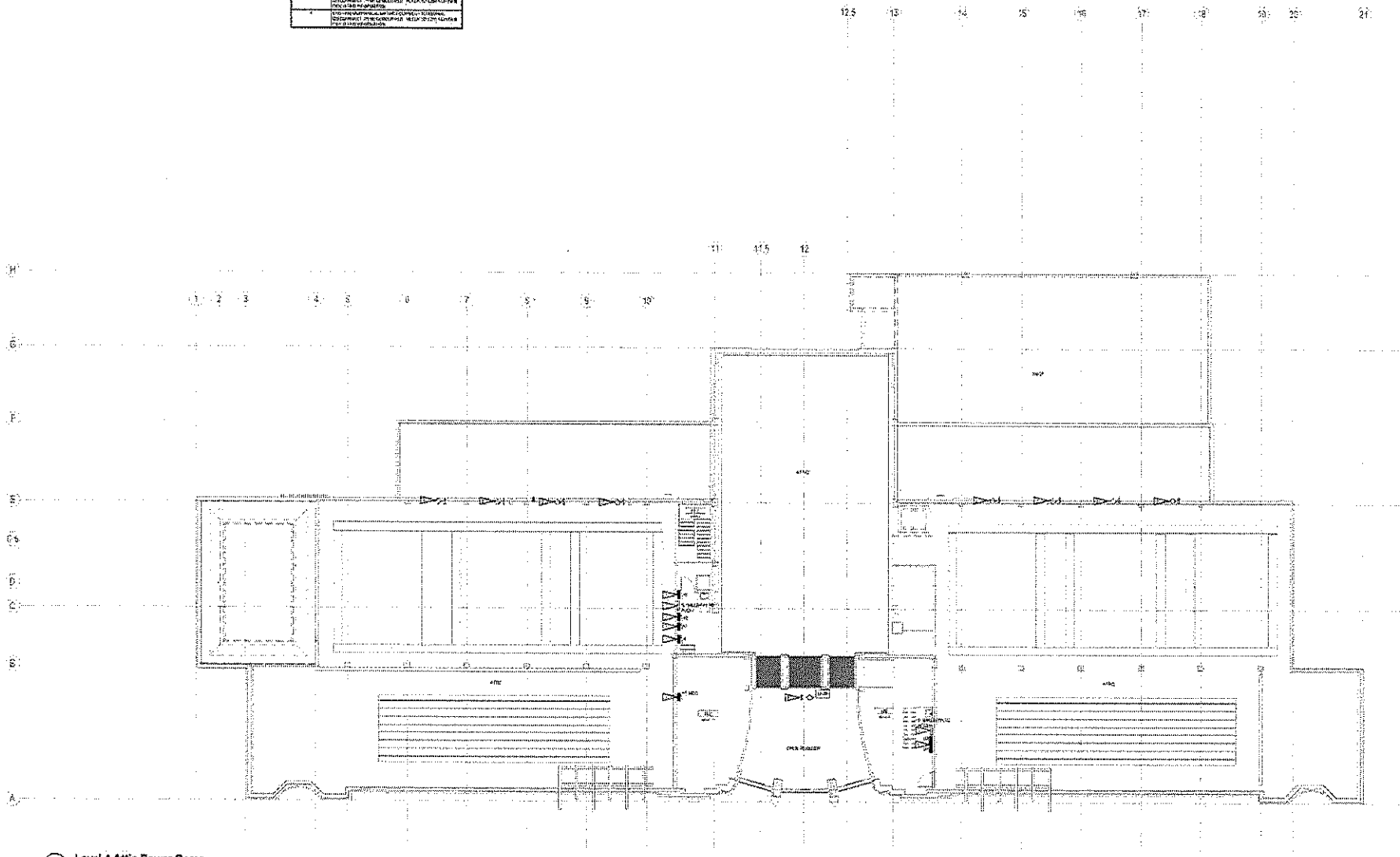

1 Level 4 Attic Power Demo
1/8" = 1'-0"

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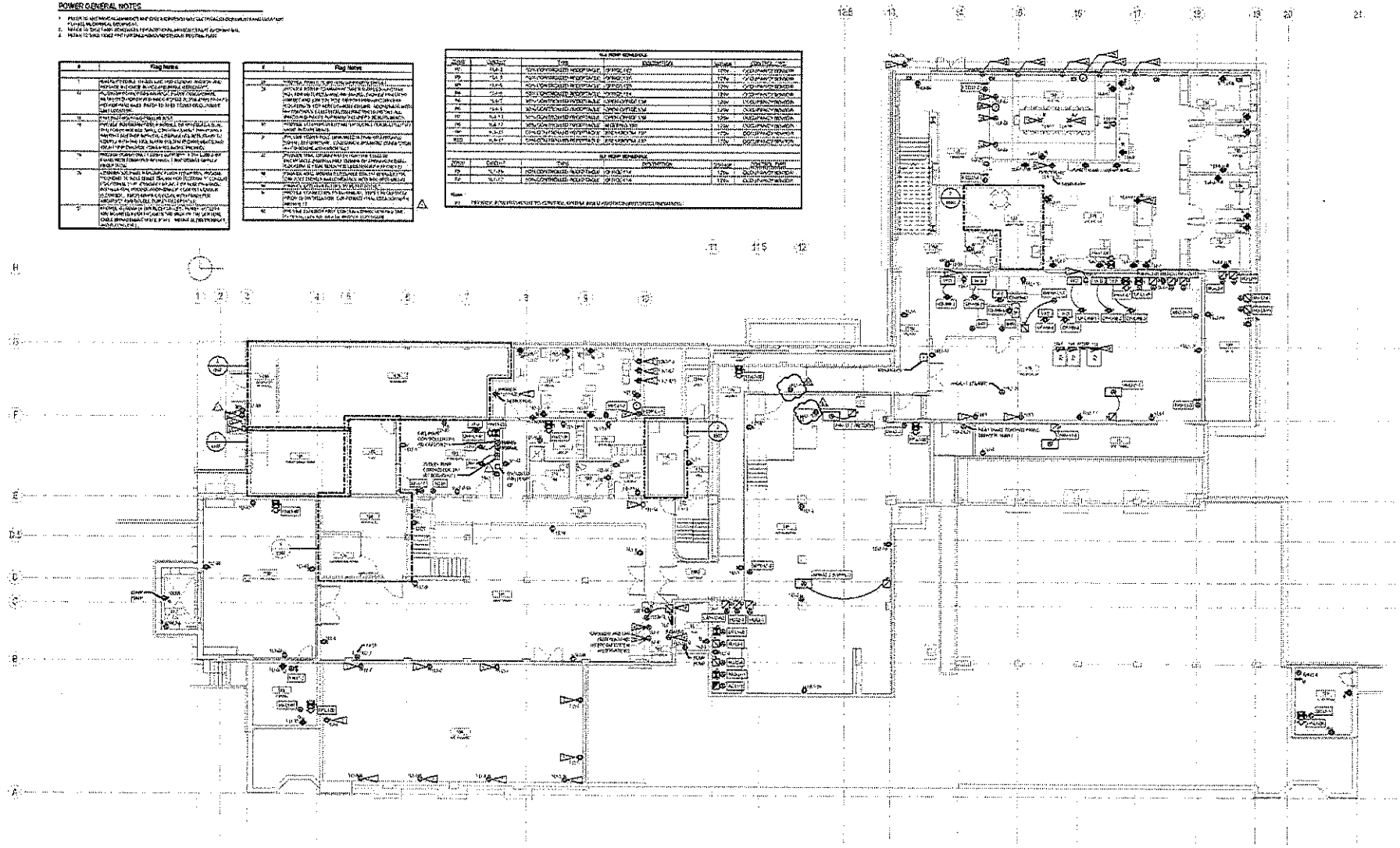
Power Demo Plan - Level 4 Attic

E104



1 POWER FLOOR PLAN - LEVEL 1

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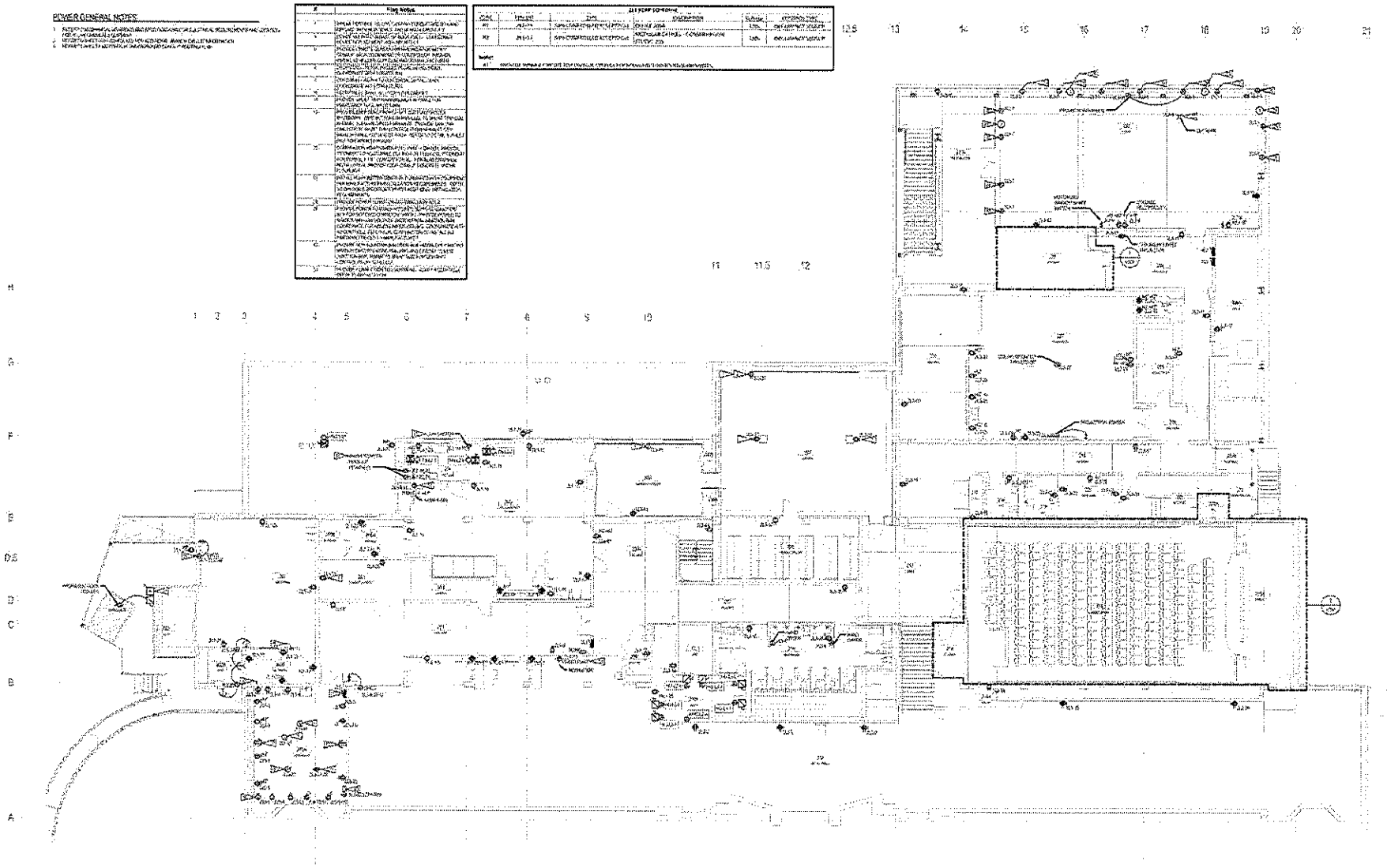
Power Floor Plan - Level 1

E201

POWER GENERAL NOTES



POWER FLOOR PLAN - LEVEL 2

FOR REFERENCE ONLY

LMN Architects Urban Design Interiors

Stantec

SAM ASIAN ART MUSEUM

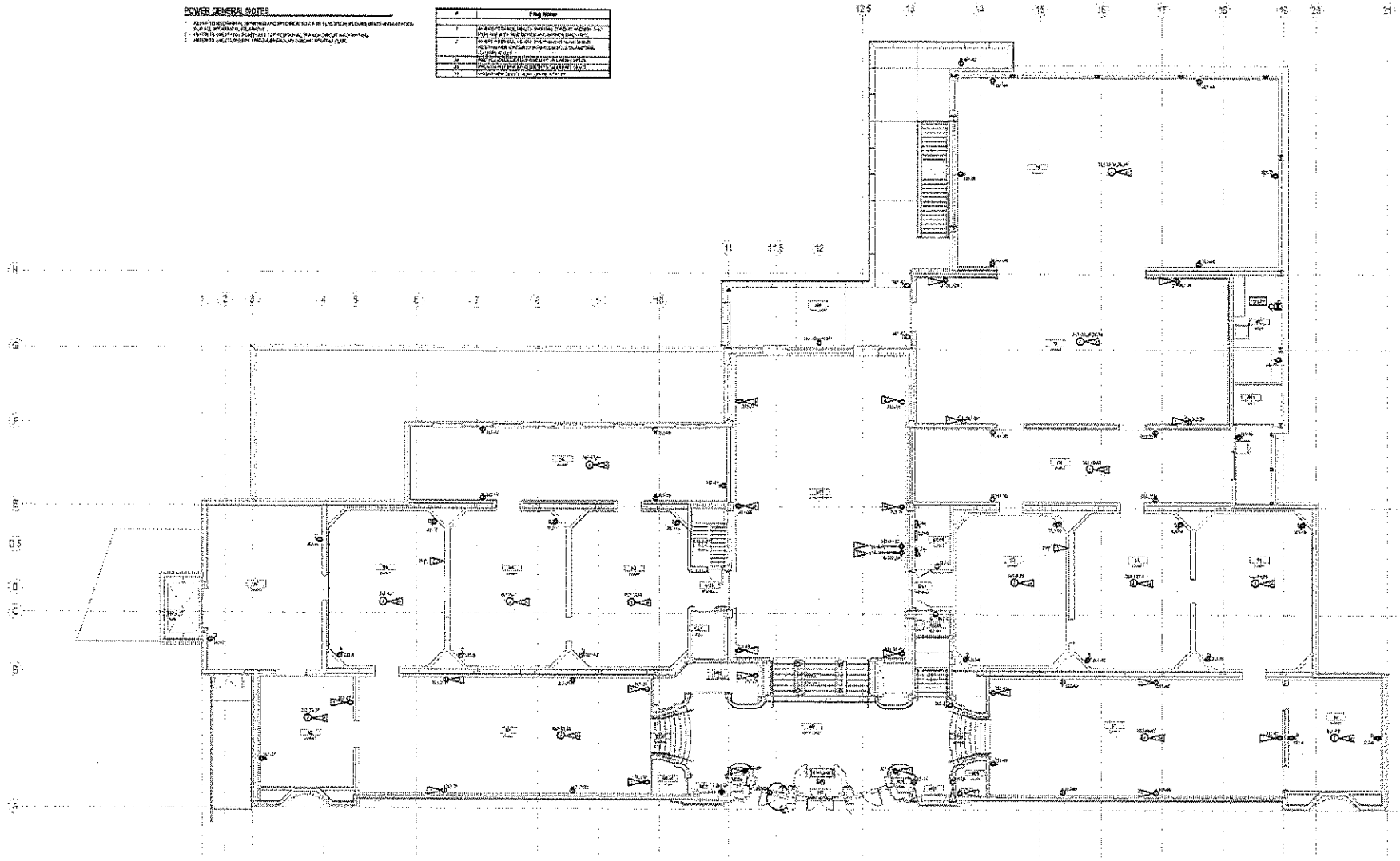
Asian Art Museum Expansion & Renovation

Construction Documents

Power Floor Plan - Level 2

E202

POWER GENERAL NOTES



1 POWER FLOOR PLAN - LEVEL 3
1/16" = 1'-0"

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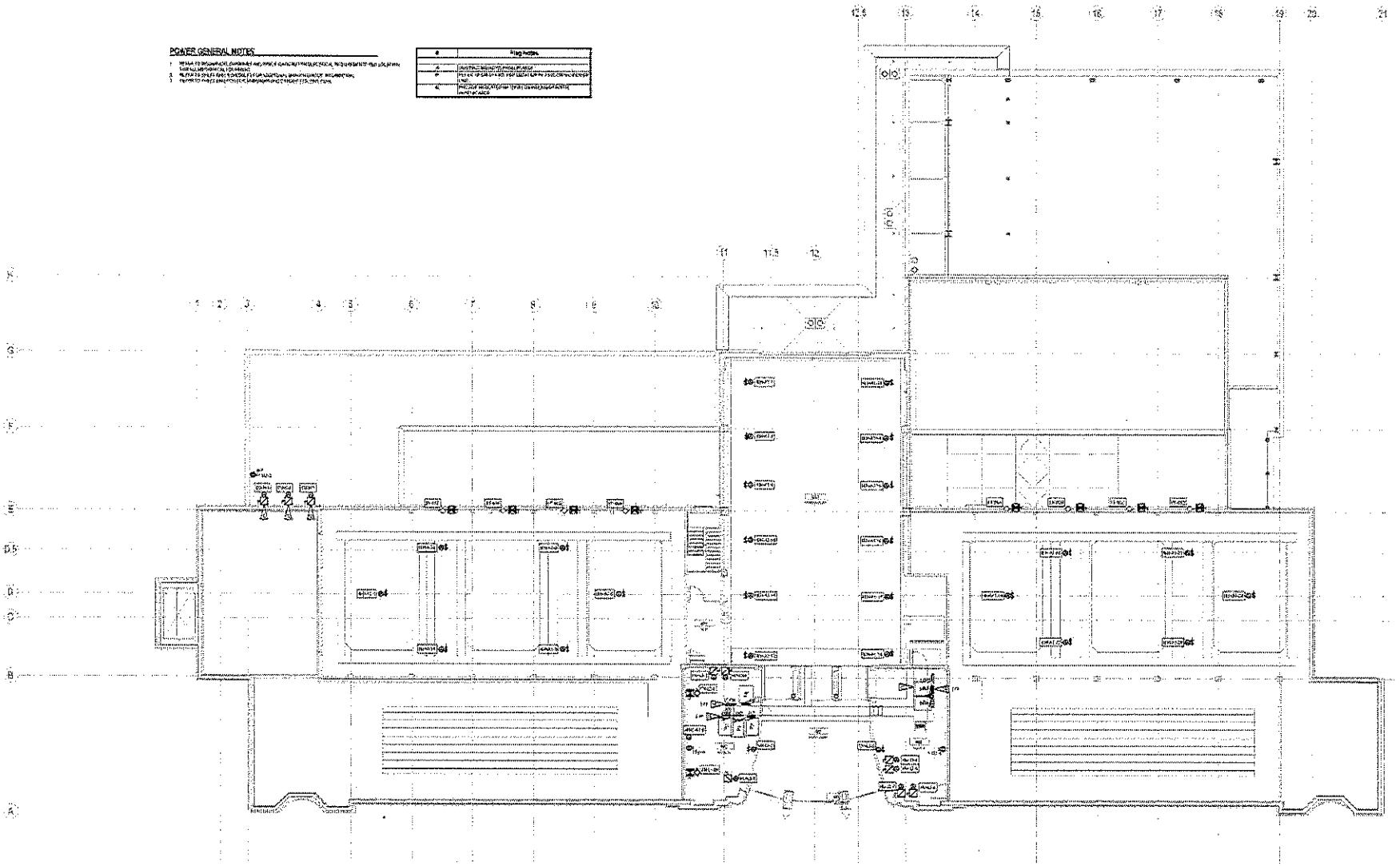
Asian Art Museum Expansion & Renovation

Construction Documents

Power Floor Plan - Level 3

E203



Level 4 Attic Power

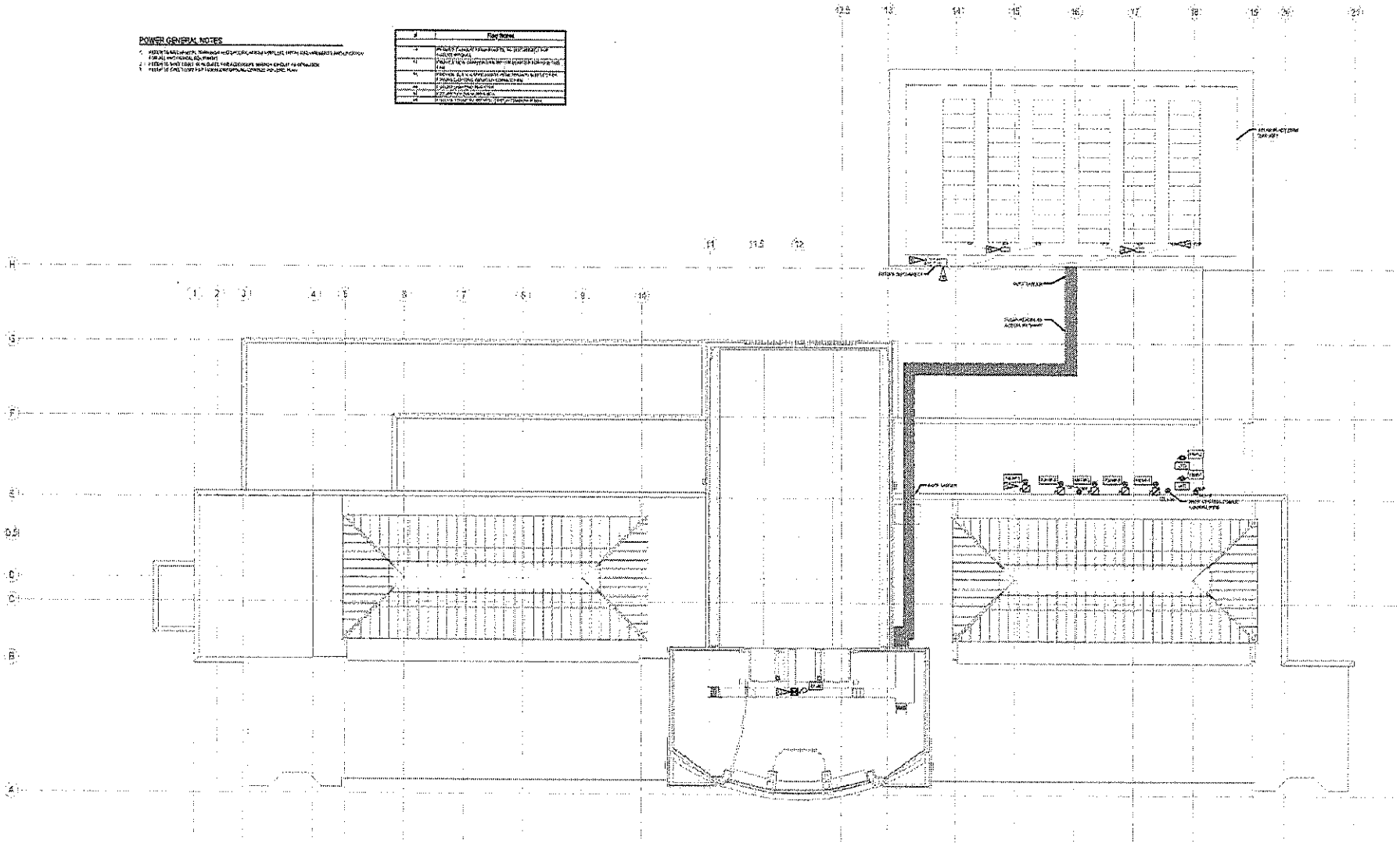
FOR REFERENCE ONLY

Asian Art Museum Expansion & Renovation

Construction Documents

Power Floor Plan - Level 4 Attic

E204



POWER GENERAL NOTES

#	Plan Notes

POWER FLOOR PLAN - ROOF
1/8" = 1'-0"

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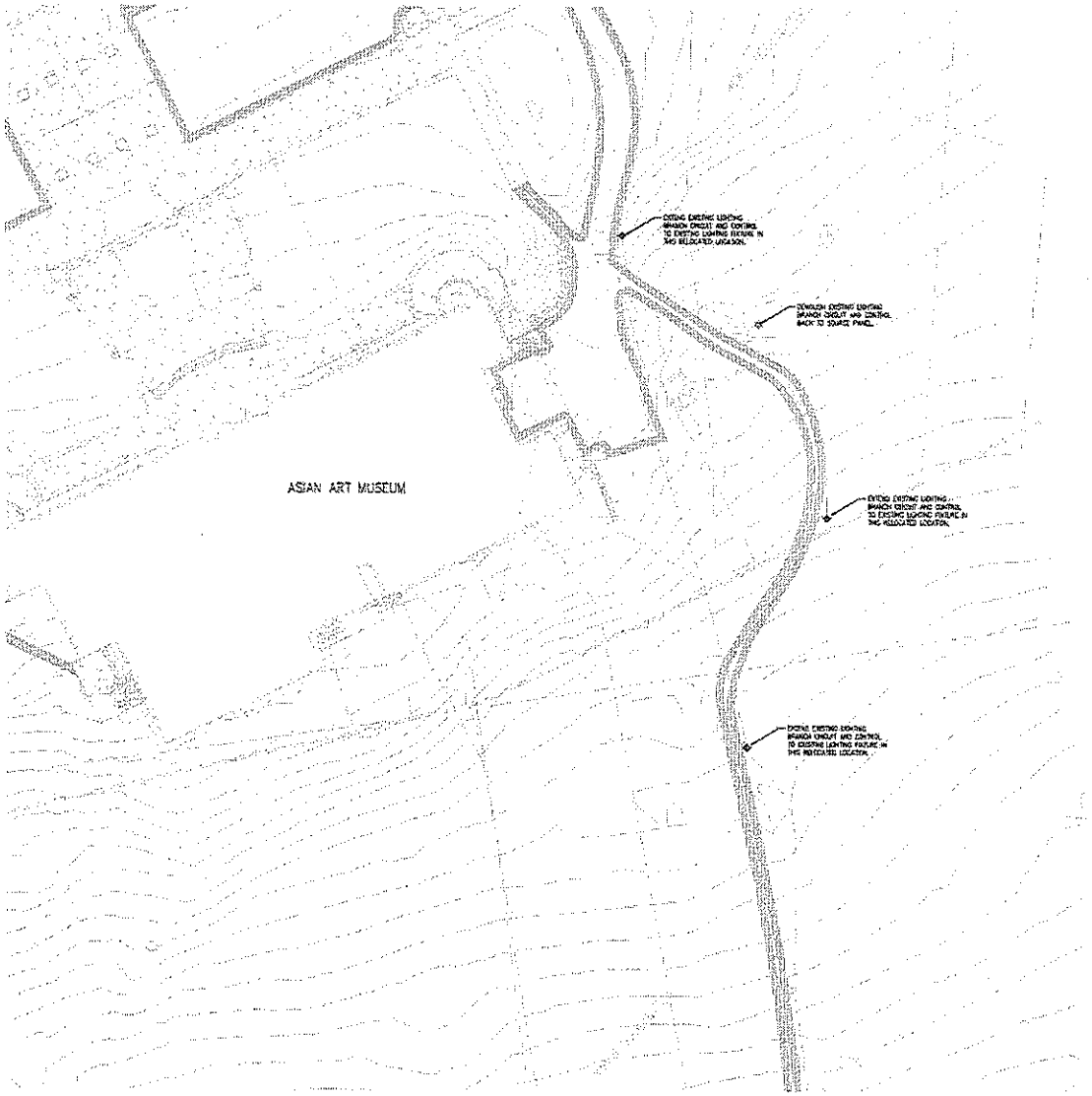
Power Floor Plan - Roof

E205

GENERAL NOTES:

1. REFER TO CIVIL AND LANDSCAPE DRAWINGS FOR SCOPE RELATED TO DEMOLITION, RELOCATION OF SITE LIGHTING FIXTURES.



1 SITE LIGHTING PLAN
E300 SCALE: 1" = 30'

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SITE LIGHTING PLAN

E300

LEVEL 1 LIGHTING GENERAL NOTES

1.
2.
3.
4.
5.
6.
7.

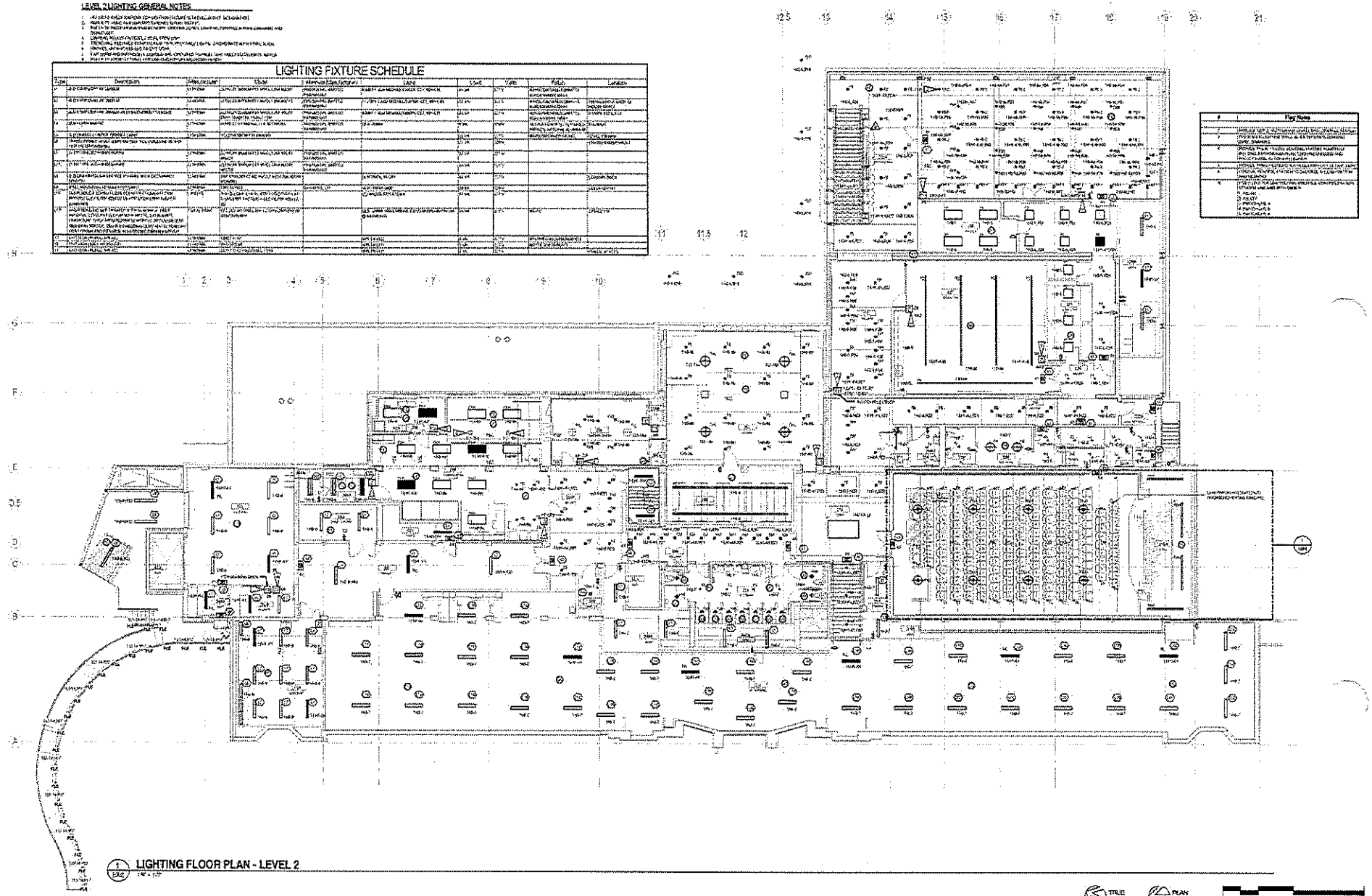
#	Flag Notes
10	

LIGHTING FIXTURE SCHEDULE

Type	Description	Manufacturer	Catalog	Mounting/Housing/Finish	Lamp	Lamps	Watts	Voltage	Comments

LEVEL 2 LIGHTING GENERAL NOTES

LIGHTING FIXTURE SCHEDULE



1 LIGHTING FLOOR PLAN - LEVEL 2

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Construction Documents

Lighting Floor Plan - Level 2

E302

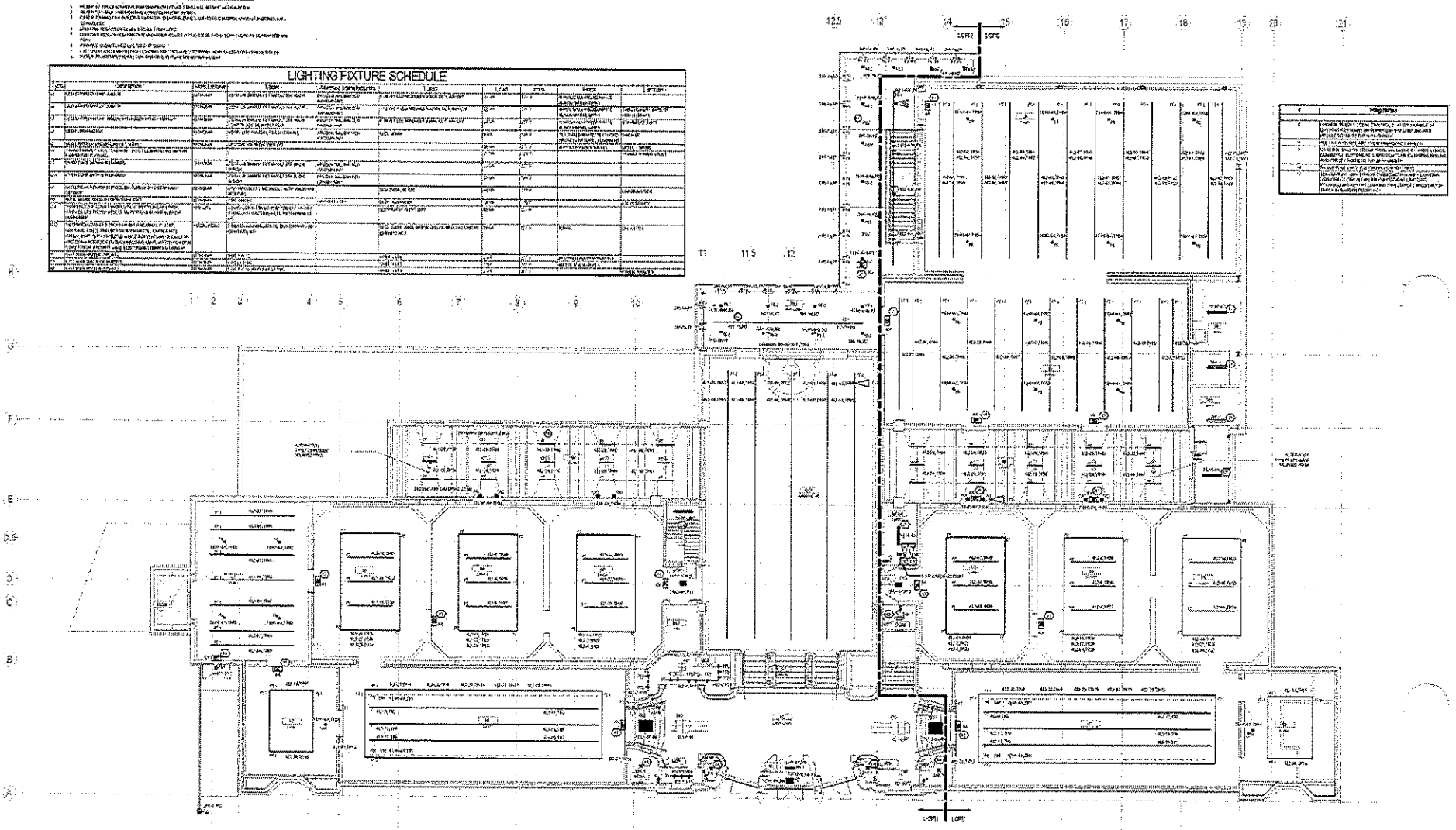
LEVEL 3 LIGHTING GENERAL NOTES

1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]
6. [illegible]

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	MODEL	ADDITIONAL INFORMATION	LAMP	LOAD	VOLTS	FINISH	REMARKS
A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
B	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
D	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
F	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
G	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
H	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
J	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
K	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
L	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
M	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
N	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Q	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
R	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
S	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
T	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
U	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
V	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
W	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
X	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

#	Key Notes
1	[illegible]
2	[illegible]
3	[illegible]
4	[illegible]
5	[illegible]



1 LIGHTING FLOOR PLAN - LEVEL 3

TRUE NORTH PLAN NORTH

0 8' 16' 32'

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Asian Art Museum Expansion & Renovation

Construction Documents

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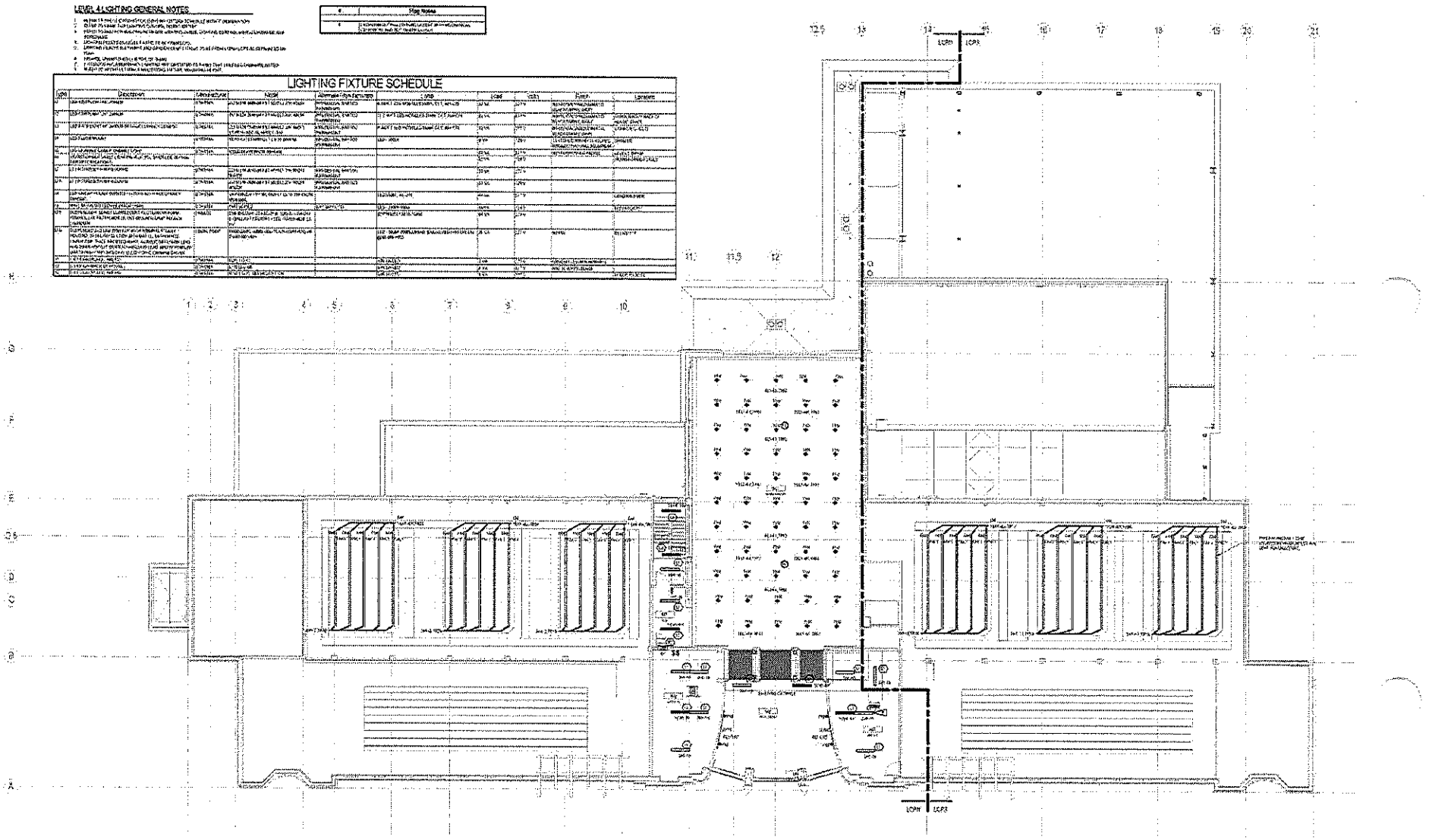
Lighting Floor Plan - Level 3

E303



1 LIGHTING FLOOR PLAN - LEVEL 4 ATTIC
E304 1/8" = 1'-0"

TRUE NORTH

PLAN NORTH

0' 4' 8' 16' 32'

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Construction Documents

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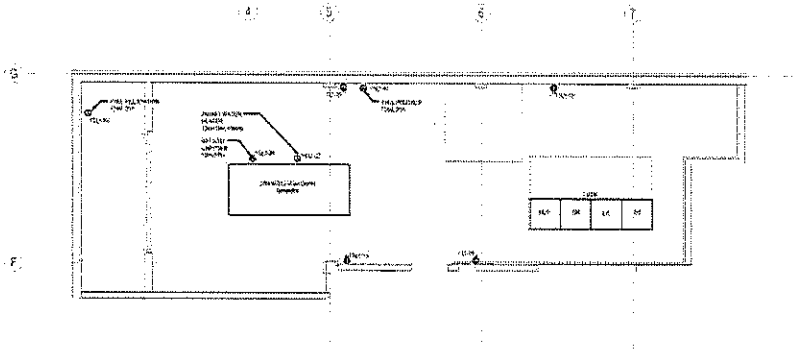
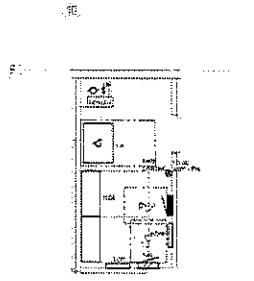
Lighting Floor Plan - Level 4 Attic

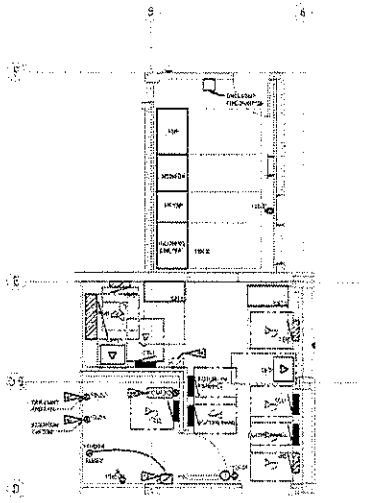
E304



3 Enlarged Generator Rm 129



2 Enlarged Electrical Rm 116



1 Enlarged North Electrical Rm 104

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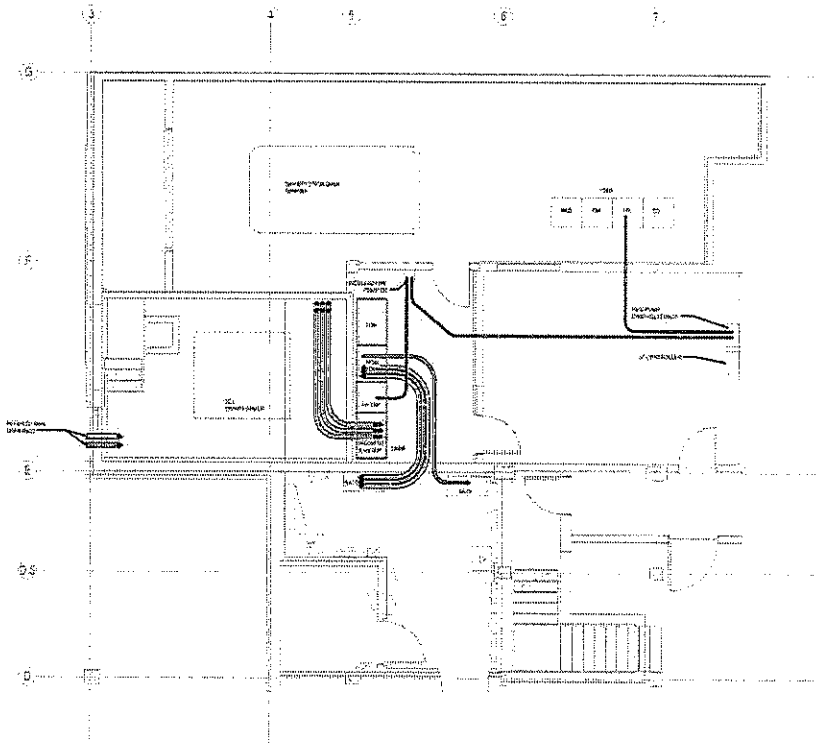
Enlarged Plans - Electrical Rms

E501



1 Undersiab Conduit Penetration
E502 1/4" = 1'-0"

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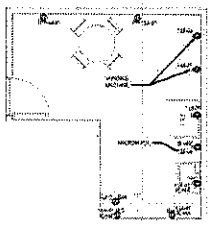
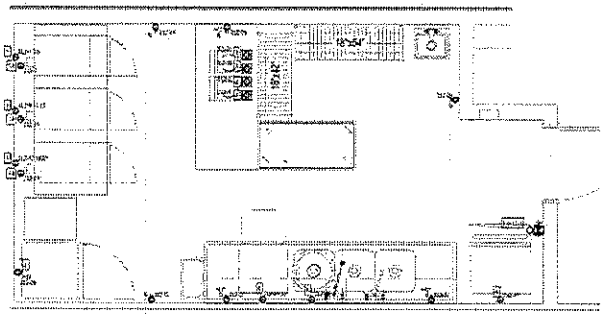
Enlarged Plans - Underground Conduit Routing

E502



2 E501 Enlarged Breakroom 137
1/2" = 1'-0"



1 E501 Enlarged Kitchen 228
1/2" = 1'-0"

LEVEL 1 KITCHEN EQUIPMENT SCHEDULE									
ITEM #	EQUIPMENT DESCRIPTION	QUANTITY	MANUFACTURER	MODEL NUMBER	ELECTRICAL REQUIREMENTS	MOUNTING HEIGHT	CLEARANCE	WEIGHT	REMARKS
1	CAFE SERVICE COUNTER	1	AGE	24" L	ACCU-WHITE	36"	0"	450 LBS	
1A	PROOFER	1	ECO	1	ADJUSTABLE	0'-0"	0'-0"	240 LBS	
2	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
3	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
4	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
5	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
6	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
7	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
8	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
9	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
10	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
11	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
12	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
13	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
14	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
15	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
16	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
17	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
18	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
19	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
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21	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
22	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
23	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
24	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
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26	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
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28	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
29	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
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93	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
94	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
95	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
96	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
97	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
98	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
99	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	
100	REFRIGERATED PREP TABLE	1	ECO	1	1/2 HP	0'-0"	0'-0"	240 LBS	

LMN Architects Urban Design Interiors

Stantec

SAM ASIAN ART MUSEUM

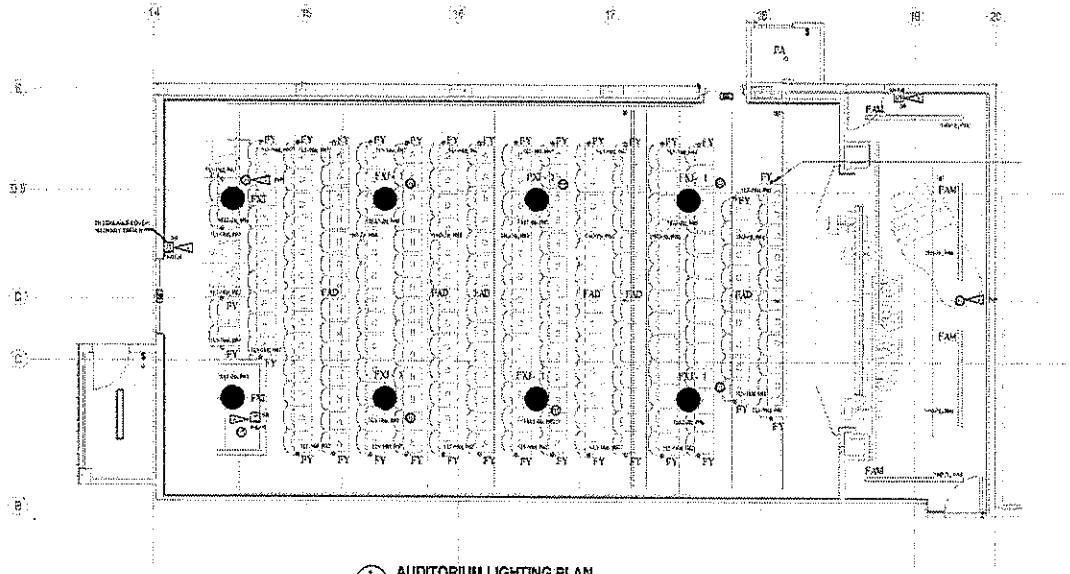
Asian Art Museum Expansion & Renovation

Construction Documents

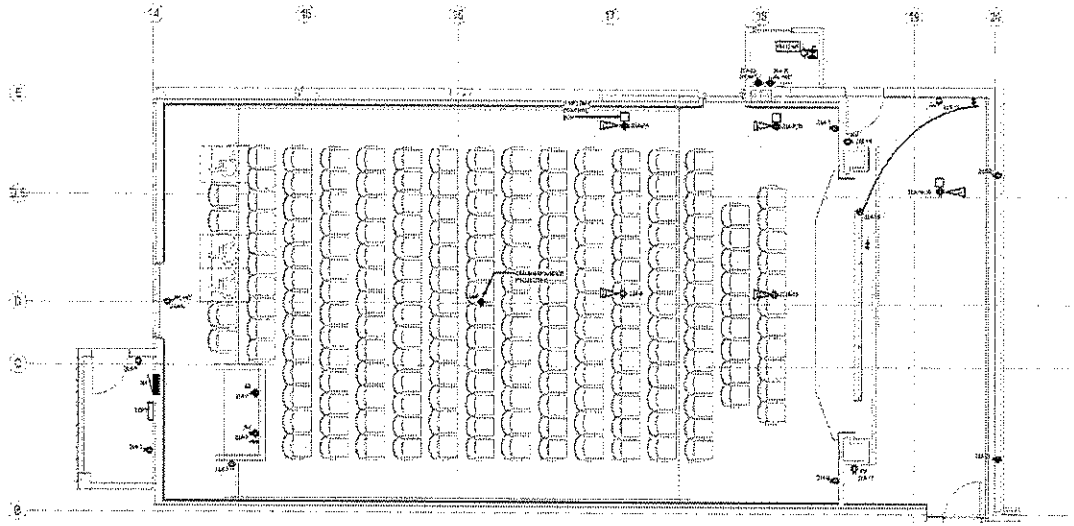
FOR REFERENCE ONLY

Enlarged Plans - Kitchens

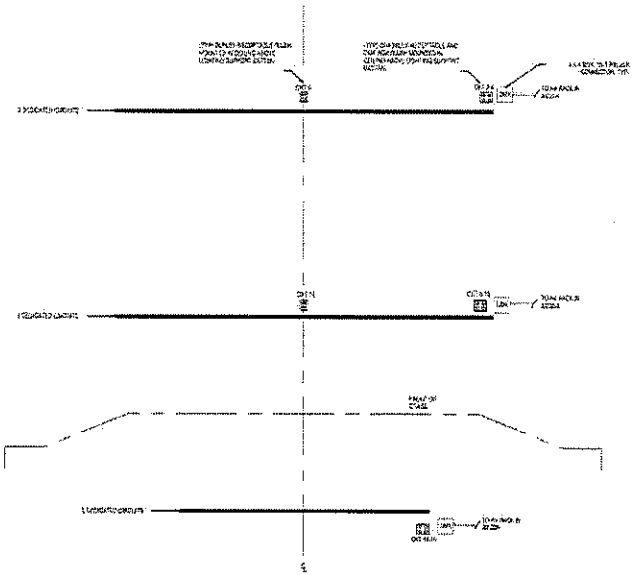
E503



1 AUDITORIUM LIGHTING PLAN
1/8" = 1'-0"



2 AUDITORIUM POWER PLAN
1/8" = 1'-0"



3 STAGE LIGHTING DETAIL VIEW
1/2" = 1'-0"

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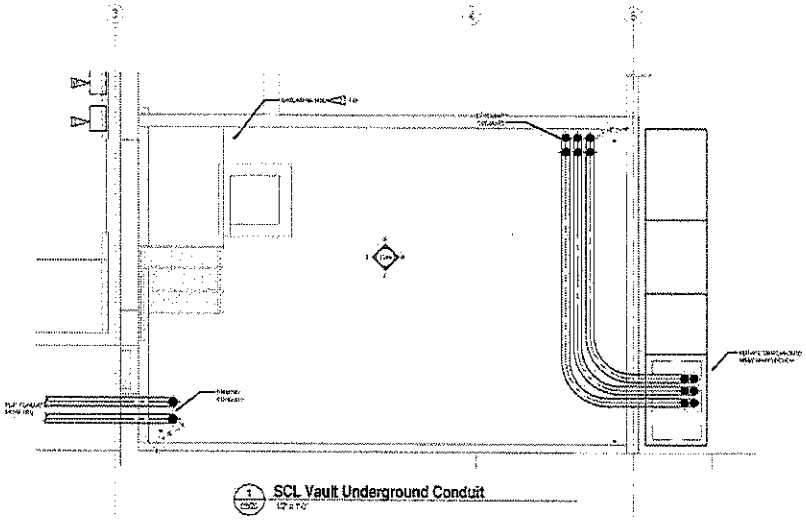
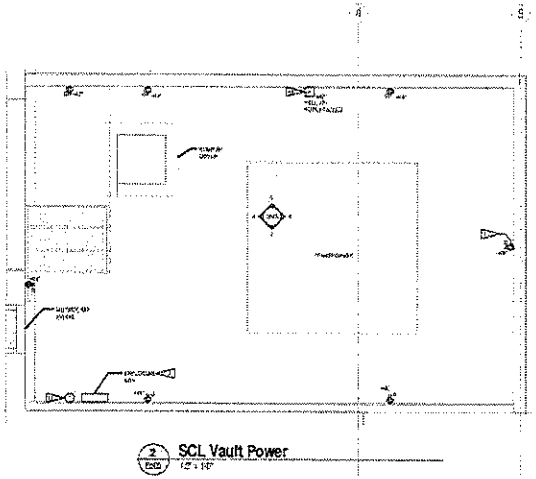
Enlarged Plans - Auditorium

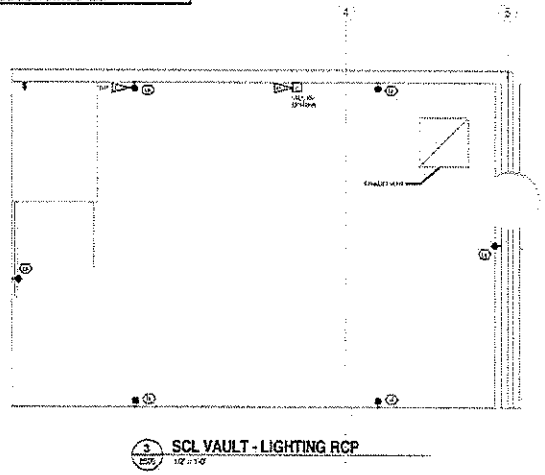
E504



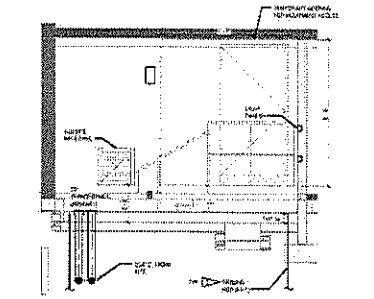
1 SCL Vault Underground Conduit



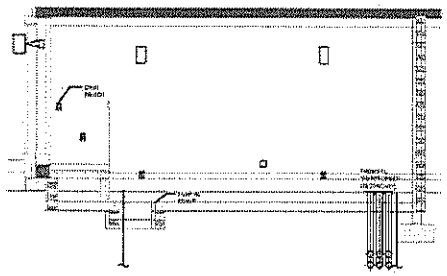
2 SCL Vault Power



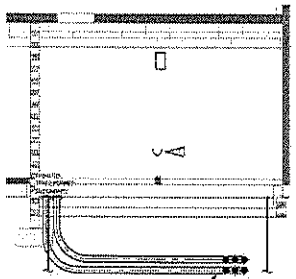
3 SCL VAULT - LIGHTING RCP



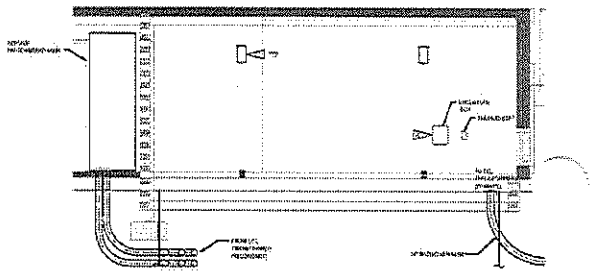
4 NORTH



5 EAST



6 SOUTH



7 WEST

SCL VAULT GENERAL NOTES:

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SAM ASIAN ART MUSEUM

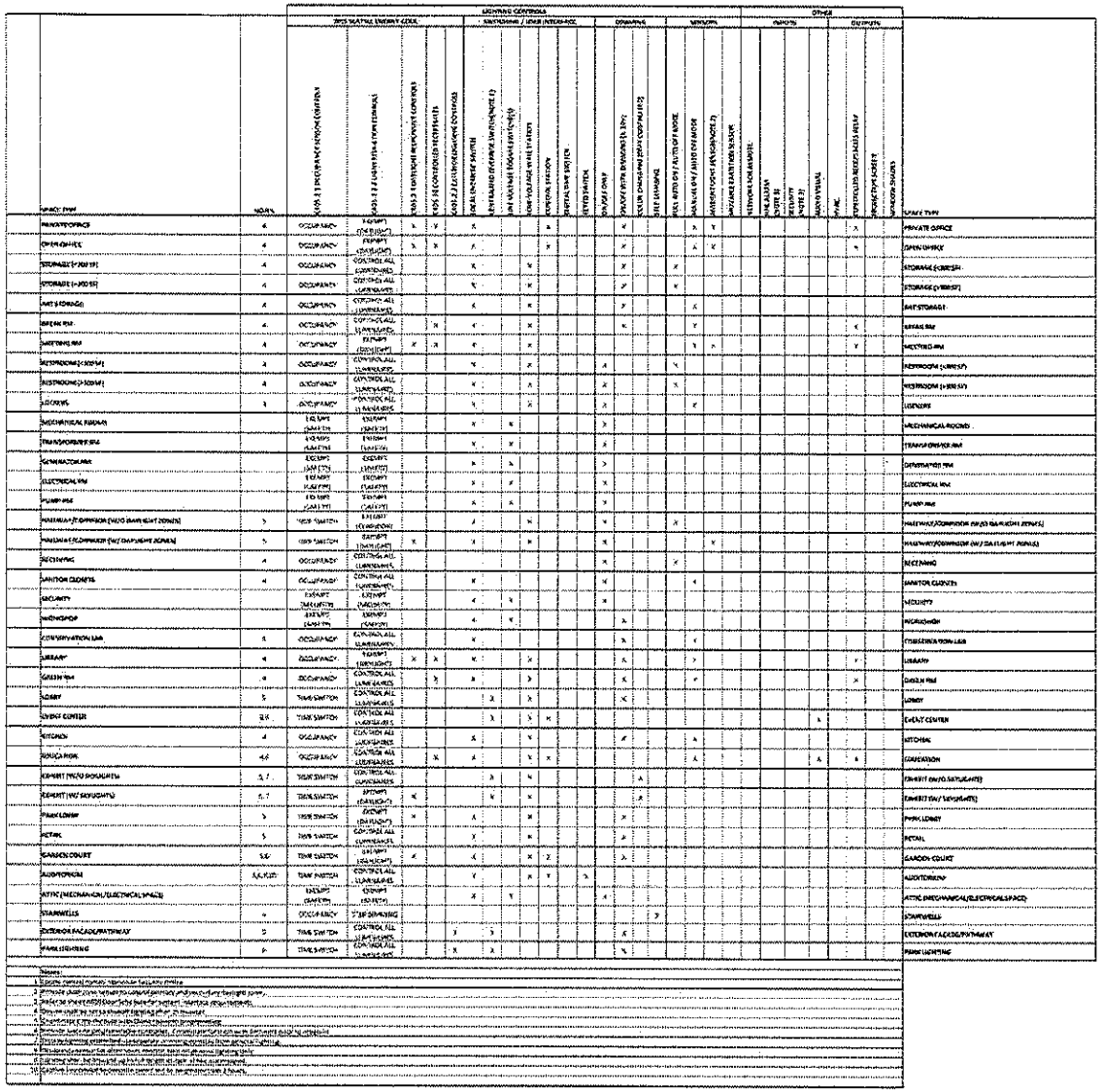
Asian Art Museum Expansion & Renovation

Construction Documents

FOR REFERENCE ONLY

Enlarged Plan - SCL Vault

E505



SPACE TYPE	NOTES
PRIVATE OFFICE	
OPEN OFFICE	
STORAGE (<100 SF)	
STORAGE (>100 SF)	
ART STORAGE	
BREAK RM	
MEETING RM	
RESTROOM (<100 SF)	
RESTROOM (>100 SF)	
LOUNGE	
MECHANICAL ROOMS	
TRANSFORMER RM	
DISTRIBUTION RM	
ELECTRICAL RM	
PUMP RM	
HALLWAY (CORRIDOR >50 FT)	
HALLWAY (CORRIDOR <50 FT)	
RECEIVING	
JANITOR CLOSETS	
SECURITY	
WORKSHOP	
CONSERVATION LAB	
LIBRARY	
GUEST RM	
LOBBY	
EVENT CENTER	
KITCHEN	
CAFE	
EXHIBIT (W/O SKYLIGHTS)	
EXHIBIT (W/ SKYLIGHTS)	
PARK LOBBY	
RETAIL	
GARDEN COURT	
AUDITORIUM	
ATTIC (MECHANICAL/ELECTRICAL SPACE)	
STAIRWELLS	
EXTERIOR FACADE/PATHWAY	
PARK LIGHTING	

Notes:
1. Electric manual override required per Section 130.1(d).
2. Perimeter daylit zone refers to daylight primary and secondary daylight zones.
3. Per Section 130.1(d)3.B, daylit zone shall be separately controlled.
4. Skylight daylit zone refers to skylight primary and secondary daylight zones.
5. Per Section 130.1(d)3.A, daylit zone shall be separately controlled.
6. Per Section 130.1(d)3.C, daylit zone shall be separately controlled.
7. Per Section 130.1(d)3.D, daylit zone shall be separately controlled.
8. Per Section 130.1(d)3.E, daylit zone shall be separately controlled.
9. Per Section 130.1(d)3.F, daylit zone shall be separately controlled.
10. Per Section 130.1(d)3.G, daylit zone shall be separately controlled.

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ASIAN ART MUSEUM

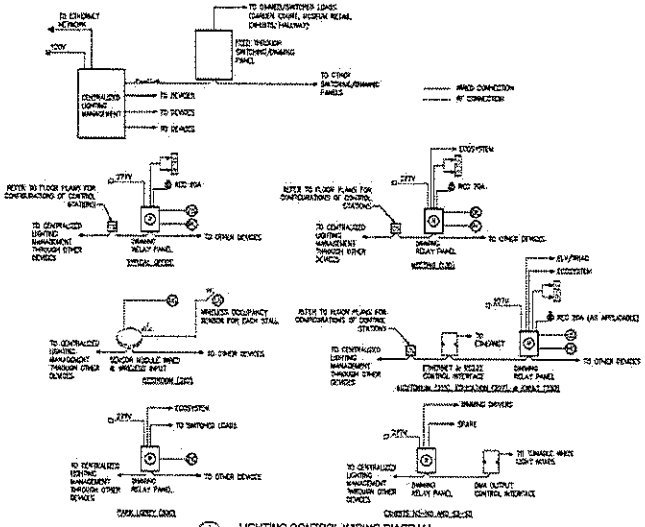
Asian Art Museum Expansion & Renovation

Construction Documents

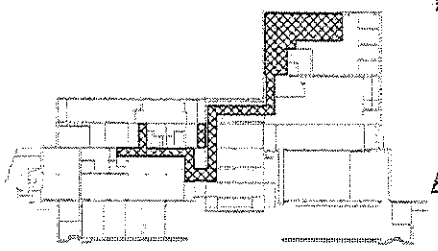
FOR REFERENCE ONLY

Lighting Controls Matrix

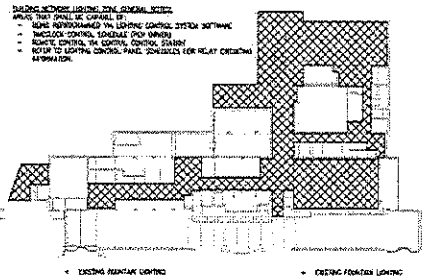
E601



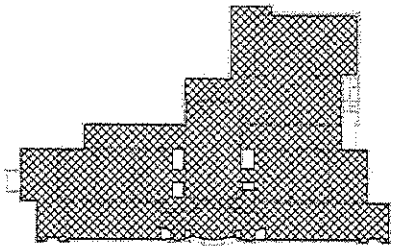
1 LIGHTING CONTROL WIRING DIAGRAM
SCALE: NOT TO SCALE



1 LEVEL 1 BUILDING NETWORK LIGHTING ZONE
SCALE: NOT TO SCALE



2 LEVEL 2 BUILDING NETWORK LIGHTING ZONE
SCALE: NOT TO SCALE



3 LEVEL 3 BUILDING NETWORK LIGHTING ZONE
SCALE: NOT TO SCALE

LCP2 LIGHTING CONTROL PANEL SCHEDULE

PANEL	CIRCUIT	LOAD	DESCRIPTION	VOLTAGE	NOTES	DRAWING
A1	1	1.2	LEVEL 1 - MAIN LOBBY (NE) TRACK	120V		E602
A1	2	0.6 A	LEVEL 1 - MAIN LOBBY (NW) TRACK	120V		E602
A1	3	0.6 A	LEVEL 1 - MAIN LOBBY (SW) TRACK	120V	KEYNOTE 1	E602
A1	4	0.6 A	LEVEL 1 - MAIN LOBBY (SE) TRACK	120V	KEYNOTE 1	E602
A2	1	1.2	LEVEL 2 - MAIN LOBBY (NE) TRACK	120V		E602
A2	2	0.6 A	LEVEL 2 - MAIN LOBBY (NW) TRACK	120V		E602
A2	3	0.6 A	LEVEL 2 - MAIN LOBBY (SW) TRACK	120V		E602
A2	4	0.6 A	LEVEL 2 - MAIN LOBBY (SE) TRACK	120V		E602
A3	1	1.2	LEVEL 3 - MAIN LOBBY (NE) TRACK	120V		E602
A3	2	0.6 A	LEVEL 3 - MAIN LOBBY (NW) TRACK	120V		E602
A3	3	0.6 A	LEVEL 3 - MAIN LOBBY (SW) TRACK	120V		E602
A3	4	0.6 A	LEVEL 3 - MAIN LOBBY (SE) TRACK	120V		E602
A4	1	1.2	LEVEL 4 - MAIN LOBBY (NE) TRACK	120V		E602
A4	2	0.6 A	LEVEL 4 - MAIN LOBBY (NW) TRACK	120V		E602
A4	3	0.6 A	LEVEL 4 - MAIN LOBBY (SW) TRACK	120V		E602
A4	4	0.6 A	LEVEL 4 - MAIN LOBBY (SE) TRACK	120V		E602
B1	1	0.6 A	LEVEL 1 - ENTRANCE (NE) TRACK	120V		E602
B1	2	0.6 A	LEVEL 1 - ENTRANCE (NW) TRACK	120V		E602
B1	3	0.6 A	LEVEL 1 - ENTRANCE (SW) TRACK	120V		E602
B1	4	0.6 A	LEVEL 1 - ENTRANCE (SE) TRACK	120V		E602
B2	1	0.6 A	LEVEL 2 - ENTRANCE (NE) TRACK	120V		E602
B2	2	0.6 A	LEVEL 2 - ENTRANCE (NW) TRACK	120V		E602
B2	3	0.6 A	LEVEL 2 - ENTRANCE (SW) TRACK	120V		E602
B2	4	0.6 A	LEVEL 2 - ENTRANCE (SE) TRACK	120V		E602
B3	1	0.6 A	LEVEL 3 - ENTRANCE (NE) TRACK	120V		E602
B3	2	0.6 A	LEVEL 3 - ENTRANCE (NW) TRACK	120V		E602
B3	3	0.6 A	LEVEL 3 - ENTRANCE (SW) TRACK	120V		E602
B3	4	0.6 A	LEVEL 3 - ENTRANCE (SE) TRACK	120V		E602
B4	1	0.6 A	LEVEL 4 - ENTRANCE (NE) TRACK	120V		E602
B4	2	0.6 A	LEVEL 4 - ENTRANCE (NW) TRACK	120V		E602
B4	3	0.6 A	LEVEL 4 - ENTRANCE (SW) TRACK	120V		E602
B4	4	0.6 A	LEVEL 4 - ENTRANCE (SE) TRACK	120V		E602
C1	1	0.6 A	LEVEL 1 - ENTRANCE (NE) TRACK	120V		E602
C1	2	0.6 A	LEVEL 1 - ENTRANCE (NW) TRACK	120V		E602
C1	3	0.6 A	LEVEL 1 - ENTRANCE (SW) TRACK	120V		E602
C1	4	0.6 A	LEVEL 1 - ENTRANCE (SE) TRACK	120V		E602
C2	1	0.6 A	LEVEL 2 - ENTRANCE (NE) TRACK	120V		E602
C2	2	0.6 A	LEVEL 2 - ENTRANCE (NW) TRACK	120V		E602
C2	3	0.6 A	LEVEL 2 - ENTRANCE (SW) TRACK	120V		E602
C2	4	0.6 A	LEVEL 2 - ENTRANCE (SE) TRACK	120V		E602
C3	1	0.6 A	LEVEL 3 - ENTRANCE (NE) TRACK	120V		E602
C3	2	0.6 A	LEVEL 3 - ENTRANCE (NW) TRACK	120V		E602
C3	3	0.6 A	LEVEL 3 - ENTRANCE (SW) TRACK	120V		E602
C3	4	0.6 A	LEVEL 3 - ENTRANCE (SE) TRACK	120V		E602
C4	1	0.6 A	LEVEL 4 - ENTRANCE (NE) TRACK	120V		E602
C4	2	0.6 A	LEVEL 4 - ENTRANCE (NW) TRACK	120V		E602
C4	3	0.6 A	LEVEL 4 - ENTRANCE (SW) TRACK	120V		E602
C4	4	0.6 A	LEVEL 4 - ENTRANCE (SE) TRACK	120V		E602
D1	1	0.6 A	LEVEL 1 - ENTRANCE (NE) TRACK	120V		E602
D1	2	0.6 A	LEVEL 1 - ENTRANCE (NW) TRACK	120V		E602
D1	3	0.6 A	LEVEL 1 - ENTRANCE (SW) TRACK	120V		E602
D1	4	0.6 A	LEVEL 1 - ENTRANCE (SE) TRACK	120V		E602
D2	1	0.6 A	LEVEL 2 - ENTRANCE (NE) TRACK	120V		E602
D2	2	0.6 A	LEVEL 2 - ENTRANCE (NW) TRACK	120V		E602
D2	3	0.6 A	LEVEL 2 - ENTRANCE (SW) TRACK	120V		E602
D2	4	0.6 A	LEVEL 2 - ENTRANCE (SE) TRACK	120V		E602
D3	1	0.6 A	LEVEL 3 - ENTRANCE (NE) TRACK	120V		E602
D3	2	0.6 A	LEVEL 3 - ENTRANCE (NW) TRACK	120V		E602
D3	3	0.6 A	LEVEL 3 - ENTRANCE (SW) TRACK	120V		E602
D3	4	0.6 A	LEVEL 3 - ENTRANCE (SE) TRACK	120V		E602
D4	1	0.6 A	LEVEL 4 - ENTRANCE (NE) TRACK	120V		E602
D4	2	0.6 A	LEVEL 4 - ENTRANCE (NW) TRACK	120V		E602
D4	3	0.6 A	LEVEL 4 - ENTRANCE (SW) TRACK	120V		E602
D4	4	0.6 A	LEVEL 4 - ENTRANCE (SE) TRACK	120V		E602
E1	1	0.6 A	LEVEL 1 - ENTRANCE (NE) TRACK	120V		E602
E1	2	0.6 A	LEVEL 1 - ENTRANCE (NW) TRACK	120V		E602
E1	3	0.6 A	LEVEL 1 - ENTRANCE (SW) TRACK	120V		E602
E1	4	0.6 A	LEVEL 1 - ENTRANCE (SE) TRACK	120V		E602
E2	1	0.6 A	LEVEL 2 - ENTRANCE (NE) TRACK	120V		E602
E2	2	0.6 A	LEVEL 2 - ENTRANCE (NW) TRACK	120V		E602
E2	3	0.6 A	LEVEL 2 - ENTRANCE (SW) TRACK	120V		E602
E2	4	0.6 A	LEVEL 2 - ENTRANCE (SE) TRACK	120V		E602
E3	1	0.6 A	LEVEL 3 - ENTRANCE (NE) TRACK	120V		E602
E3	2	0.6 A	LEVEL 3 - ENTRANCE (NW) TRACK	120V		E602
E3	3	0.6 A	LEVEL 3 - ENTRANCE (SW) TRACK	120V		E602
E3	4	0.6 A	LEVEL 3 - ENTRANCE (SE) TRACK	120V		E602
E4	1	0.6 A	LEVEL 4 - ENTRANCE (NE) TRACK	120V		E602
E4	2	0.6 A	LEVEL 4 - ENTRANCE (NW) TRACK	120V		E602
E4	3	0.6 A	LEVEL 4 - ENTRANCE (SW) TRACK	120V		E602
E4	4	0.6 A	LEVEL 4 - ENTRANCE (SE) TRACK	120V		E602
F1	1	0.6 A	LEVEL 1 - ENTRANCE (NE) TRACK	120V		E602
F1	2	0.6 A	LEVEL 1 - ENTRANCE (NW) TRACK	120V		E602
F1	3	0.6 A	LEVEL 1 - ENTRANCE (SW) TRACK	120V		E602
F1	4	0.6 A	LEVEL 1 - ENTRANCE (SE) TRACK	120V		E602
F2	1	0.6 A	LEVEL 2 - ENTRANCE (NE) TRACK	120V		E602
F2	2	0.6 A	LEVEL 2 - ENTRANCE (NW) TRACK	120V		E602
F2	3	0.6 A	LEVEL 2 - ENTRANCE (SW) TRACK	120V		E602
F2	4	0.6 A	LEVEL 2 - ENTRANCE (SE) TRACK	120V		E602
F3	1	0.6 A	LEVEL 3 - ENTRANCE (NE) TRACK	120V		E602
F3	2	0.6 A	LEVEL 3 - ENTRANCE (NW) TRACK	120V		E602
F3	3	0.6 A	LEVEL 3 - ENTRANCE (SW) TRACK	120V		E602
F3	4	0.6 A	LEVEL 3 - ENTRANCE (SE) TRACK	120V		E602
F4	1	0.6 A	LEVEL 4 - ENTRANCE (NE) TRACK	120V		E602
F4	2	0.6 A	LEVEL 4 - ENTRANCE (NW) TRACK	120V		E602
F4	3	0.6 A	LEVEL 4 - ENTRANCE (SW) TRACK	120V		E602
F4	4	0.6 A	LEVEL 4 - ENTRANCE (SE) TRACK	120V		E602
G1	1	0.6 A	LEVEL 1 - ENTRANCE (NE) TRACK	120V		E602
G1	2	0.6 A	LEVEL 1 - ENTRANCE (NW) TRACK	120V		E602
G1	3	0.6 A	LEVEL 1 - ENTRANCE (SW) TRACK	120V		E602
G1	4	0.6 A	LEVEL 1 - ENTRANCE (SE) TRACK	120V		E602
G2	1	0.6 A	LEVEL 2 - ENTRANCE (NE) TRACK	120V		E602
G2	2	0.6 A	LEVEL 2 - ENTRANCE (NW) TRACK	120V		E602
G2	3	0.6 A	LEVEL 2 - ENTRANCE (SW) TRACK	120V		E602
G2	4	0.6 A	LEVEL 2 - ENTRANCE (SE) TRACK	120V		E602
G3	1	0.6 A	LEVEL 3 - ENTRANCE (NE) TRACK	120V		E602
G3	2	0.6 A	LEVEL 3 - ENTRANCE (NW) TRACK	120V		E602
G3	3	0.6 A	LEVEL 3 - ENTRANCE (SW) TRACK	120V		E602
G3	4	0.6 A	LEVEL 3 - ENTRANCE (SE) TRACK	120V		E602
G4	1	0.6 A	LEVEL 4 - ENTRANCE (NE) TRACK	120V		E602
G4	2	0.6 A	LEVEL 4 - ENTRANCE (NW) TRACK	120V		E602
G4	3	0.6 A	LEVEL 4 - ENTRANCE (SW) TRACK	120V		E602
G4	4	0.6 A	LEVEL 4 - ENTRANCE (SE) TRACK	120V		E602

LCP1 LIGHTING CONTROL PANEL SCHEDULE

PANEL	CIRCUIT	LOAD	DESCRIPTION	VOLTAGE	NOTES	DRAWING
A1	1	0.6 A	LEVEL 1 - MEZZANINE (NW) TRACK	120V		E602
A1	2	0.6 A	LEVEL 1 - MEZZANINE (NE) TRACK	120V		E602
A1	3	0.6 A	LEVEL 1 - MEZZANINE (SW) TRACK	120V	KEYNOTE 1	E602
A1	4	0.6 A	LEVEL 1 - MEZZANINE (SE) TRACK	120V	KEYNOTE 1	E602
A2	1	0.6 A	LEVEL 2 - MEZZANINE (NW) TRACK	120V		E602
A2	2	0.6 A	LEVEL 2 - MEZZANINE (NE) TRACK	120V		E602
A2	3	0.6 A	LEVEL 2 - MEZZANINE (SW) TRACK	120V	KEYNOTE 1	E602
A2	4	0.6 A	LEVEL 2 - MEZZANINE (SE) TRACK	120V	KEYNOTE 1	E602
A3	1	0.6 A	LEVEL 3 - MEZZANINE (NW) TRACK	120V		E602
A3	2	0.6 A	LEVEL 3 - MEZZANINE (NE) TRACK	120V		E602
A3	3	0.6 A	LEVEL 3 - MEZZANINE (SW) TRACK	120V	KEYNOTE 1	E602
A3	4	0.6 A	LEVEL 3 - MEZZANINE (SE) TRACK	120V	KEYNOTE 1	E602
A4	1	0.6 A	LEVEL 4 - MEZZANINE (NW) TRACK	120V		E602
A4	2	0.6 A	LEVEL 4 - MEZZANINE (NE) TRACK	120V		E602
A4	3	0.6 A	LEVEL 4 - MEZZANINE (SW) TRACK	120V	KEYNOTE 1	E602
A4	4	0.6 A	LEVEL 4 - MEZZANINE (SE) TRACK	120V	KEYNOTE 1	E602
B1	1	0.6 A	LEVEL 1 - MEZZANINE (NW) TRACK	120V		E602
B1	2	0.6 A	LEVEL 1 - MEZZANINE (NE) TRACK	120V		E602
B1	3	0.6 A	LEVEL 1 - MEZZANINE (SW) TRACK	120V		E602
B1	4	0.6 A	LEVEL 1 - MEZZANINE (SE) TRACK	120V		E602
B2	1	0.6 A	LEVEL 2 - MEZZANINE (NW) TRACK	120V		E602
B2	2	0.6 A	LEVEL 2 - MEZZANINE (NE) TRACK	120V		E602
B2	3	0.6 A	LEVEL 2 - MEZZANINE (SW) TRACK	120V		E602
B2	4	0.6 A	LEVEL 2 - MEZZANINE (SE) TRACK	120V		E602
B3	1	0.6 A	LEVEL 3 - MEZZANINE (NW) TRACK	120V		E602
B3	2	0.6 A	LEVEL 3 - MEZZANINE (NE) TRACK	120V		E602
B3	3	0.6 A	LEVEL 3 - MEZZANINE (SW) TRACK	120V		E602
B3	4	0.6 A	LEVEL 3 - MEZZANINE (SE) TRACK	120V		E602
B4	1	0.6 A	LEVEL 4 - MEZZANINE (NW) TRACK	120V		E602
B4	2	0.6 A	LEVEL 4 - MEZZANINE (NE) TRACK	120V		E602
B4	3	0.6 A	LEVEL 4 - MEZZANINE (SW) TRACK	120V		E602
B4	4	0.6 A	LEVEL 4 - MEZZANINE (SE) TRACK	120V		E602
C1	1	0.6 A	LEVEL 1 - MEZZANINE (NW) TRACK	120V		E602
C1	2	0.6 A	LEVEL 1 - MEZZANINE (NE) TRACK	120V		E602
C1	3	0.6 A	LEVEL 1 - MEZZANINE (SW) TRACK	120V		E602
C1	4	0.6 A	LEVEL 1 - MEZZANINE (SE) TRACK	120V		E602
C2	1	0.6 A	LEVEL 2 - MEZZANINE (NW) TRACK	120V		E602
C2	2	0.6 A	LEVEL 2 - MEZZANINE (NE) TRACK	120V		E602
C2	3	0.6 A	LEVEL 2 - MEZZANINE (SW) TRACK	120V		E602
C2	4	0.6 A	LEVEL 2 - MEZZANINE (SE) TRACK	120V		E602
C3	1	0.6 A	LEVEL 3 - MEZZANINE (NW) TRACK	120V		E602
C3	2	0.6 A	LEVEL 3 - MEZZANINE (NE) TRACK	120V		E602
C3	3	0.6 A	LEVEL 3 - MEZZANINE (SW) TRACK	120V		E602
C3	4	0.6 A	LEVEL 3 - MEZZANINE (SE) TRACK	120V		E602
C4	1	0.6 A	LEVEL 4 - MEZZANINE (NW) TRACK	120V		E602
C4	2	0.6 A	LEVEL 4 - MEZZANINE (NE) TRACK	120V		E602
C4	3	0.6 A	LEVEL 4 - MEZZANINE (SW) TRACK	120V		E602
C4	4	0.6 A	LEVEL 4 - MEZZANINE (SE) TRACK	120V		E602
D1	1	0.6 A	LEVEL 1 - MEZZANINE (NW) TRACK	120V		E602
D1	2	0.6 A	LEVEL 1 - MEZZANINE (NE) TRACK	120V		E602
D1	3	0.6 A	LEVEL 1 - MEZZANINE (SW) TRACK	120V		E602
D1	4	0.6 A	LEVEL 1 - MEZZANINE (SE) TRACK	120V		E602
D2	1	0.6 A	LEVEL 2 - MEZZANINE (NW) TRACK	120V		E602
D2	2	0.6 A	LEVEL 2 - MEZZANINE (NE) TRACK	120V		E602
D2	3	0.6 A	LEVEL 2 - MEZZANINE (SW) TRACK	120V		E602
D2	4	0.6 A	LEVEL 2 - MEZZANINE (SE) TRACK	120V		E602
D3	1	0.6 A	LEVEL 3 - MEZZANINE (NW) TRACK	120V		E602
D3	2	0.6 A	LEVEL 3 - MEZZANINE (NE) TRACK	120V		E602
D3	3	0.6 A	LEVEL 3 - MEZZANINE (SW) TRACK	120V		E602
D3	4	0.6 A	LEVEL 3 - MEZZANINE (SE) TRACK	120V		E602
D4	1	0.6 A	LEVEL 4 - MEZZANINE (NW) TRACK	120V		E602
D4	2	0.6 A	LEVEL 4 - MEZZANINE (NE) TRACK	120V		E602
D4	3	0.6 A	LEVEL 4 - MEZZANINE (SW) TRACK	120V		E602
D4	4	0.6 A	LEVEL 4 - MEZZANINE (SE) TRACK	120V		E602
E1	1	0.6 A	LEVEL 1 - MEZZANINE (NW) TRACK	120V		E602
E1	2	0.6 A	LEVEL 1 - MEZZANINE (NE) TRACK	120V		E602
E1	3	0.6 A	LEVEL 1 - MEZZANINE (SW) TRACK	120V		E602
E1	4	0.6 A	LEVEL 1 - MEZZANINE (SE) TRACK	120V		E602
E2	1	0.6 A	LEVEL 2 - MEZZANINE (NW) TRACK	120V		E602
E2	2	0.6 A	LEVEL 2 - MEZZANINE (NE) TRACK	120V		E602
E2	3	0.6 A	LEVEL 2 - MEZZANINE (SW) TRACK	120V		E602
E2	4	0.6 A	LEVEL 2 - MEZZANINE (SE) TRACK	120V		E602
E3	1	0.6 A	LEVEL 3 - MEZZANINE (NW) TRACK	120V		E602
E3	2	0.6 A	LEVEL 3 - MEZZANINE (NE) TRACK	120V		E602
E3	3	0.6 A	LEVEL 3 - MEZZANINE (SW) TRACK	120V		E602
E3	4	0.6 A	LEVEL 3 - MEZZANINE (SE) TRACK	120V		E602
E4	1	0.6 A	LEVEL 4 - MEZZANINE (NW) TRACK	120V		E602
E4	2	0.6 A	LEVEL 4 - MEZZANINE (NE) TRACK	120V		E602
E4	3	0.6 A	LEVEL 4 - MEZZANINE (SW) TRACK	120V		E602
E4	4	0.6 A	LEVEL 4 - MEZZANINE (SE) TRACK	120V		E602
F1	1	0.6 A	LEVEL 1 - MEZZANINE (NW) TRACK	120V		E602
F1	2	0.6 A	LEVEL 1 - MEZZANINE (NE) TRACK	120V		E602
F1	3	0.6 A	LEVEL 1 - MEZZANINE (SW) TRACK	120V		E602
F1	4	0.6 A	LEVEL 1 - MEZZANINE (SE) TRACK	120V		E602
F2	1	0.6 A	LEVEL 2 - MEZZANINE (NW) TRACK	120V		E602
F2	2	0.6 A	LEVEL 2 - MEZZANINE (NE) TRACK	120V		E602
F2	3	0.6 A	LEVEL 2 - MEZZANINE (SW) TRACK	120V		E602
F2	4	0.6 A	LEVEL 2 - MEZZANINE (SE) TRACK	120V		E602
F3	1	0.6 A	LEVEL 3 - MEZZANINE (NW) TRACK	120V		E602
F3	2	0.6 A	LEVEL 3 - MEZZANINE (NE) TRACK	120V		E602
F3	3	0.6 A	LEVEL 3 - MEZZANINE (SW) TRACK	120V		E602
F3	4	0.6 A	LEVEL 3 - MEZZANINE (SE) TRACK	120V		E602
F4	1	0.6 A	LEVEL 4 - MEZZANINE (NW) TRACK	120V		E602
F4	2	0.6 A	LEVEL 4 - MEZZANINE (NE) TRACK	120V		E602
F4	3	0.6 A	LEVEL 4 - MEZZANINE (SW) TRACK	120V		E602
F4	4	0.6 A	LEVEL 4 - MEZZANINE (SE) TRACK	120V		E602
G1	1	0.6 A	LEVEL 1 - MEZZANINE (NW) TRACK	120V		E602
G1	2	0.6 A	LEVEL 1 - MEZZANINE (NE) TRACK	120V		E602
G1	3	0.6 A	LEVEL 1 - MEZZANINE (SW) TRACK	120V		E602
G1	4	0.6 A	LEVEL 1 - MEZZANINE (SE) TRACK	120V		E602
G2	1	0.6 A	LEVEL 2 - MEZZANINE (NW) TRACK	120V		E602
G2	2	0.6 A	LEVEL 2 - MEZZANINE (NE) TRACK	120V		E602
G2	3	0.6 A	LEVEL 2 - MEZZANINE (SW) TRACK	120V		E602
G2	4	0.6 A	LEVEL 2 - MEZZANINE (SE) TRACK	120V		E602
G3	1	0.6 A	LEVEL 3 - MEZZANINE (NW) TRACK	120V		E602
G3	2	0.6 A	LEVEL 3 - MEZZANINE (NE) TRACK	120V		E602
G3	3	0.6 A	LEVEL 3 - MEZZANINE (SW) TRACK	120V		E602
G3	4	0.6 A	LEVEL 3 - MEZZANINE (SE) TRACK	120V		E602
G4	1	0.6 A	LEVEL 4 - MEZZANINE (NW) TRACK	120V		E602
G4	2	0.6 A	LEVEL 4 - MEZZANINE (NE) TRACK	120V		E602
G4	3	0.6 A	LEVEL 4 - MEZZANINE (SW) TRACK	120V		E602
G4	4	0.6 A	LEVEL 4 - MEZZANINE (SE) TRACK	120V		E602

LIGHTING CONTROL PANEL SCHEDULE GENERAL NOTES:
1. PROVIDE POWER CIRCUIT TO CONTROL SYSTEM PER MANUFACTURER'S REQUIREMENTS.
2. CONTROL SWITCHES/STATIONS SHOWN ON PLANS.
3. MOUNT LABEL FOR ALL SWITCHES PER OWNER'S DIRECTION.
4. AUTOMATIC DAYLIGHT DIMMING TO BEGIN AT 40FC AND DIM TO MINIMUM AT 10FC.
LOCATE PHOTOCELLS PER MANUFACTURER'S RECOMMENDATIONS.

LIGHTING CONTROL PANEL SCHEDULE KEY NOTES:
1. PROVIDE WITH AUTOMATIC TRANSFER SWITCH OF EMERGENCY CIRCUITS IN THE EVENT OF NORMAL POWER LOSS.

LCPN LIGHTING CONTROL PANEL SCHEDULE

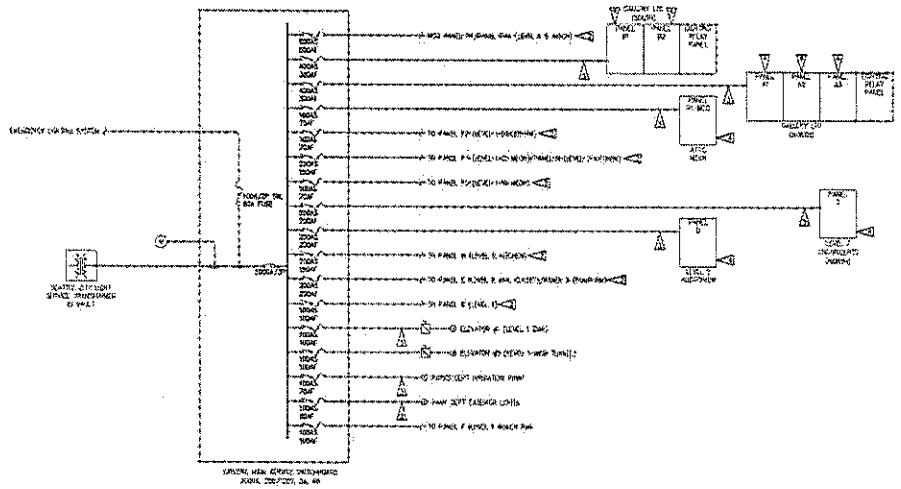
PANEL	CIRCUIT	LOAD	DESCRIPTION	VOLTAGE	NOTES	DRAWING
N1	1	0.6 A	LEVEL 1 - ENTRANCE (N) DECK/TERRACE	277V	KEYNOTE 1	E602
N1	2	0.6 A	LEVEL 1 - ENTRANCE (NE) TRACK	120V		E602
N1	3	0.6 A	LEVEL 1 - ENTRANCE (NW) TRACK	120V		E602
N1	4	0.6 A	LEVEL 1 - ENTRANCE (SW) TRACK	120V		E602
N2	1	0.6 A	LEVEL 2 - ENTRANCE (NE) TRACK	120V		E602
N2	2	0.6 A	LEVEL 2 - ENTRANCE (NW) TRACK	120V		E602
N2	3	0.6 A	LEVEL 2 - ENTRANCE (SW) TRACK	120V		E602
N2	4	0.6 A	LEVEL 2 - ENTRANCE (SE) TRACK	120V		E602
N3	1	0.6 A	LEVEL 3 - ENTRANCE (NE) TRACK	120V		E602
N3	2	0.6 A	LEVEL 3 - ENTRANCE (NW) TRACK	120V		E602
N3	3	0.6 A	LEVEL 3 - ENTRANCE (SW) TRACK	120V		E602
N3	4	0.6 A	LEVEL 3 - ENTRANCE (SE) TRACK	120V		E602
N4	1	0.6 A	LEVEL 4 - ENTRANCE (NE) TRACK	120V		E602
N4	2	0.6 A	LEVEL 4 - ENTRANCE (NW) TRACK	120V		E602
N4	3	0.6 A	LEVEL 4 - ENTRANCE (SW) TRACK	120V		E602
N4	4	0.6 A	LEVEL 4 - ENTRANCE (SE) TRACK	120V		E602
P1	1	0.6 A	LEVEL 1 - GARDEN (NE) TRACK	120V		E602
P1	2	0.6 A	LEVEL 1 - GARDEN (NW) TRACK	120V		E602
P1	3	0.6 A	LEVEL 1 - GARDEN (SW) TRACK	120V		E602
P1	4	0.6 A	LEVEL 1 - GARDEN (SE) TRACK	120V		E602
P2	1	0.6 A	LEVEL 2 - GARDEN (NE) TRACK	120V		E602
P2	2	0.6 A	LEVEL 2 - GARDEN (NW) TRACK	120V		E602
P2	3	0.6 A	LEVEL 2 - GARDEN (SW) TRACK	120V		E602
P2	4	0.6 A	LEVEL 2 - GARDEN (SE) TRACK	120V		E602
P3	1	0.6 A	LEVEL 3 - GARDEN (NE) TRACK	120V		E602
P3	2	0.6 A	LEVEL 3 - GARDEN (NW) TRACK	120V		E602
P3	3	0.6 A	LEVEL 3 - GARDEN (SW) TRACK	120V		E602
P3	4	0.6 A	LEVEL 3 - GARDEN (SE) TRACK	120V		E602
P4	1	0.6 A	LEVEL 4 - GARDEN (NE) TRACK	120V		E602
P4	2	0.6 A	LEVEL 4 - GARDEN (NW) TRACK	120V		E602
P4	3	0.6 A	LEVEL 4 - GARDEN (SW) TRACK	120V		E602
P4	4	0.6 A	LEVEL 4 - GARDEN (SE) TRACK	120V		E602

LCPS LIGHTING CONTROL PANEL SCHEDULE

PANEL	CIRCUIT	LOAD	DESCRIPTION	VOLTAGE	NOTES	DRAWING
S1	1	1.2	LEVEL 1 - EXHIBITION (NE) TRACK	120V		E602
S1	2	0.6 A	LEVEL 1 - EXHIBITION (NW) TRACK	120V		E602
S1	3	0.6 A	LEVEL 1 - EXHIBITION (SW) TRACK	120V		E602
S1	4	0.6 A	LEVEL 1 - EXHIBITION (SE) TRACK	120V		E602
S2	1	1.2	LEVEL 2 - EXHIBITION (NE) TRACK	120V		E602
S2	2	0.6 A	LEVEL 2 - EXHIBITION (NW) TRACK	120V		E602
S2	3	0.6 A	LEVEL 2 - EXHIBITION (SW) TRACK	120V		E602
S2	4	0.6 A	LEVEL 2 - EXHIBITION (SE) TRACK	120V		E602
S3	1	1.2	LEVEL 3 - EXHIBITION (NE) TRACK	120V		E602
S3	2	0.6 A	LEVEL 3 - EXHIBITION (NW) TRACK	120V		E602
S3	3	0.6 A	LEVEL 3 - EXHIBITION (SW) TRACK	120V		E602
S3	4	0.6 A	LEVEL 3 - EXHIBITION (SE) TRACK	120V		E602
S4	1	1.2	LEVEL 4 - EXHIBITION (NE) TRACK	120V		E602
S4	2	0.6 A	LEVEL 4 - EXHIBITION (NW) TRACK	120V		E602
S4	3	0.6 A	LEVEL 4 - EXHIBITION (SW) TRACK	120V		E602
S4	4	0.6 A	LEVEL 4 - EXHIBITION (SE) TRACK	120V		E602
T1	1	1.2	LEVEL 1 - EXHIBITION (NE) TRACK	120V		E602
T1	2	0.6 A	LEVEL 1 - EXHIBITION (NW) TRACK	120V		E602
T1	3	0.6 A	LEVEL 1 - EXHIBITION (SW) TRACK	120V		E602
T1	4	0.6 A	LEVEL 1 - EXHIBITION (SE) TRACK	120V		E602
T2	1	1.2	LEVEL 2 - EXHIBITION (NE) TRACK	120V		E602
T2	2	0.6 A	LEVEL 2 - EXHIBITION (NW) TRACK	120V		E602
T2	3	0.6 A	LEVEL 2 - EXHIBITION (SW) TRACK	120V		E602
T2	4	0.6 A	LEVEL 2 - EXHIBITION (SE) TRACK	120V		E602
T3	1	1.2	LEVEL 3 - EXHIBITION (NE) TRACK	120V		E602
T3	2	0.6 A	LEVEL 3 - EXHIBITION (NW) TRACK	120V		E602
T3	3	0.6 A	LEVEL 3 - EXHIBITION (SW) TRACK	120V		E602
T3	4	0.6 A	LEVEL 3 - EXHIBITION (SE) TRACK	120V		E602
T4	1	1.2	LEVEL 4 - EXHIBITION (NE) TRACK	120V		E602
T4	2	0.6 A	LEVEL 4 - EXHIBITION (NW) TRACK	120V		E602
T4	3	0.6 A	LEVEL 4 - EXHIBITION (SW) TRACK	120V		E602
T4	4	0.6 A	LEVEL 4 - EXHIBITION (SE) TRACK	120V		E602
U1	1	1.2	LEVEL 1 - EXHIBITION (NE) TRACK	120V		E602
U1	2	0.6 A	LEVEL 1 - EXHIBITION (NW) TRACK	120V		E602
U1	3	0.6 A	LEVEL 1 - EXHIBITION (SW) TRACK	120V		E602
U1	4	0.6 A	LEVEL 1 - EX

FLAG NOTES:

1. DEMOLISH EXISTING SWITCHBOARD ENCLOSURE AND BARRIER ACCESS PATHWAYS AS ALLOWABLE FOR NEW FEEDERS SHOWN ON SHEET E602.
2. DEMOLISH EXISTING PANEL AND FEEDER BACK TO SOURCE.
3. DEMOLISH EXISTING FEEDER BACK TO SOURCE. PROVIDE NEW FEEDER AS SHOWN ON SHEET E602.
4. EXISTING PANEL TO BE REPLACED IN KIND. REFER TO SHEET E602 FOR NEW SERVICE PANEL SPECIFICATIONS.



LMN Architecture Urban Design Interiors

Stantec

SAM ASIAN ART MUSEUM

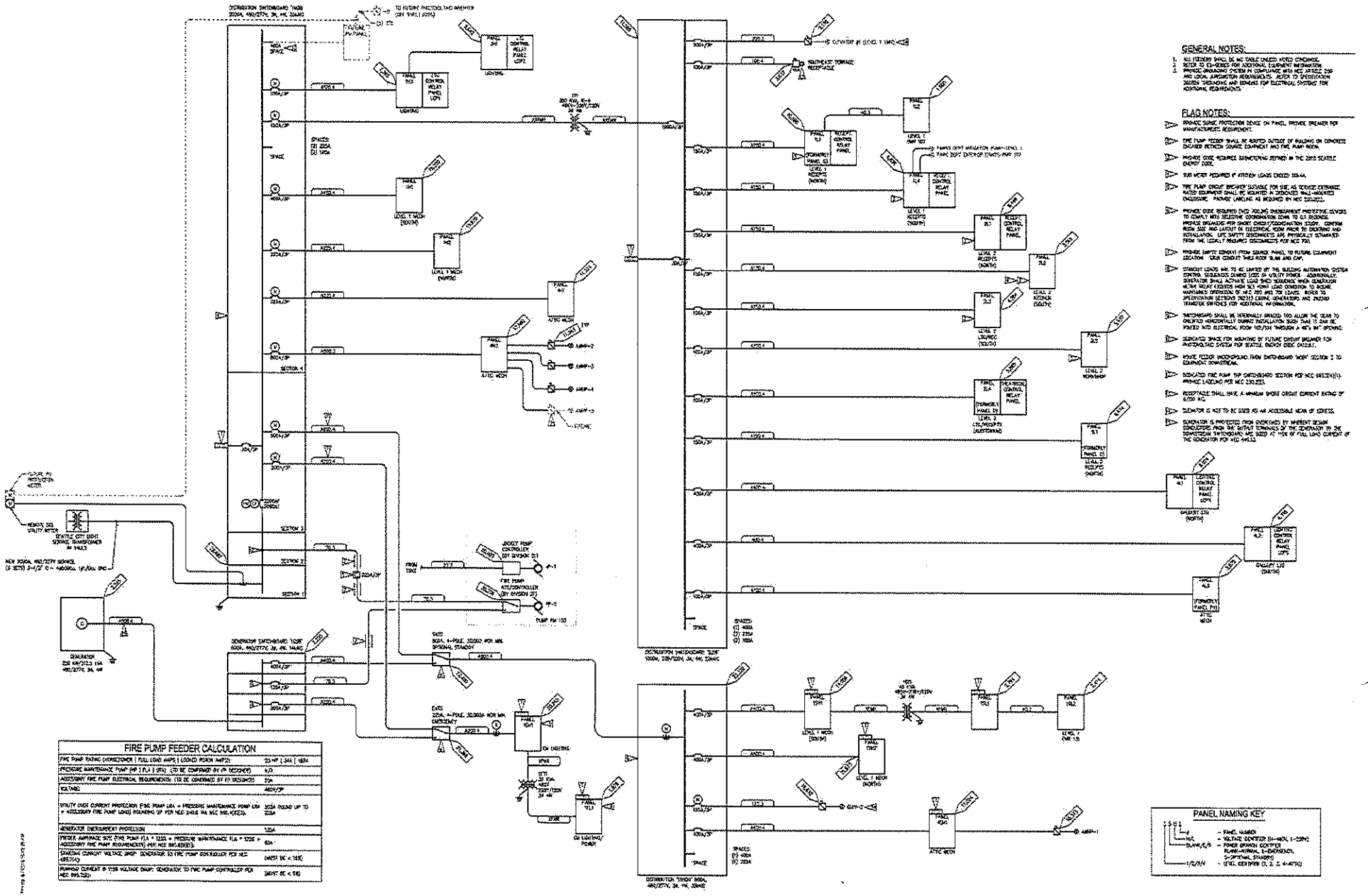
Asian Art Museum Expansion & Renovation

Construction Documents

FOR REFERENCE ONLY

Demo Power One Line Diagram

E801



GENERAL NOTES:

1. ALL FEEDERS SHALL BE MC CABLE UNLESS NOTED OTHERWISE. REFER TO E3-SERIES FOR ADDITIONAL EQUIPMENT INFORMATION. PROVIDE GROUNDING SYSTEM IN COMPLIANCE WITH NEC ARTICLE 250 AND LOCAL JURISDICTION REQUIREMENTS. REFER TO SPECIFICATIONS SECTION "GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS" FOR ADDITIONAL REQUIREMENTS.

FLAG NOTES:

1. PROVIDE SURGE PROTECTION DEVICE ON PANEL. PROVIDE BREAKER PER MANUFACTURER'S REQUIREMENTS.
2. FIRE PUMP FEEDER SHALL BE ROUTED OUTSIDE OF BUILDING OR CONCRETE ENCASED BETWEEN SOURCE EQUIPMENT AND FIRE PUMP ROOM.
3. PROVIDE GFCI RECEPTACLE (REFINED IN THE 2015 SEATTLE ENERGY CODE).
4. SUB METER REQUIRED IF KITCHEN LOADS EXCEED 50kVA.
5. FIRE PUMP CIRCUIT BREAKER SUITABLE FOR USE AS SERVICE-ENTRANCE RATED EQUIPMENT SHALL BE MOUNTED IN DEDICATED WALL-MOUNTED ENCLOSURE. PROVIDE LABELING AS REQUIRED BY NEC 230.2(E).
6. PROVIDE GFCI REQUIRED EXIT POLING ENCLOSURE PROTECTIVE DEVICES TO COMPLY WITH SELECTIVE COORDINATION (DOWN TO 0.1 SECONDS). PROVIDE BREAKERS PER SHORT CIRCUIT/COORDINATION STUDY. CONFIRM ROOM SIZE AND LAYOUT OF ELECTRICAL ROOM PRIOR TO ORDERING AND INSTALLATION. LIFE SAFETY DOCUMENTS ARE PHYSICALLY SEPARATED FROM THE LEGALLY REQUIRED DOCUMENTS PER NEC 700.
7. PROVIDE 3-WAY CONDUIT FROM SOURCE PANEL TO FUTURE EQUIPMENT LOCATION - 1-INCH CONDUIT SHALL ROOF PLANE AND EAVE.
8. STANDBY LOADS ARE TO BE LIMITED BY THE BUILDING AUTOMATION SYSTEM CONTROL SEQUENCES DURING LOSS OF UTILITY POWER. ADDITIONALLY, GENERATOR SHALL AUTOMATE LOAD SHED SEQUENCE WHEN GENERATOR MEAN POWER EXCEEDS 90% OF 4-HOUR LOAD CONDITION TO INCLUDE MAINTAINED OPERATION OF AIR 2 AND AIR 700 LOADS. REFER TO SPECIFICATION SECTION 260519 FOR GENERATORS AND ENGINE TRANSFER SWITCHES FOR ADDITIONAL INFORMATION.
9. SWITCHBOARD SHALL BE INTERNALLY BRACED TO ALLOW THE GEAR TO ORIENTED HORIZONTALLY DURING INSTALLATION. SUCH THAT IS CAN BE PULLED INTO ELECTRICAL ROOM VIA 7'0H THROUGH A 48"L 84" OPENING.
10. DEDICATED SPACE FOR MOUNTING OF FUTURE CIRCUIT BREAKER FOR PHOTOVOLTAIC SYSTEM PER SEATTLE ENERGY CODE 2015.01.
11. ROUTE FEEDER UNDERGROUND FROM SWITCHBOARD "NORTH" SECTION 2 TO EQUIPMENT DOWNSTREAM.
12. DEDICATED FIRE PUMP TAP SWITCHBOARD SECTION PER NEC 240.21(B)(1)(3). PROVIDE LABELING PER NEC 230.2(E).
13. RECEPTACLE SHALL HAVE A MINIMUM SHORE CIRCUIT CURRENT RATING OF 6,000 AIC.
14. ELEVATOR IS NOT TO BE USED AS AN ACCESSIBLE MEAN OF EGRESS.
15. GENERATOR IS PROTECTED FROM OVERLOADS BY INHERENT DESIGN. CONDUCTORS FROM THE OUTPUT TERMINALS OF THE GENERATOR TO THE DOWNSTREAM SWITCHBOARD ARE SIZED AT 115% OF FULL LOAD CURRENT OF THE GENERATOR PER NEC 445.13.

FIRE PUMP FEEDER CALCULATION

FIRE PUMP RATING (HORSEPOWER | FULL LOAD AMPS | LOCKED ROTOR AMPS):	25 HP | 34A | 183A
PRESSURE MAINTENANCE JOCKEY PUMP (HP | FLA | LRA) (TO BE CONFIRMED BY FP DESIGNER):	N/A
ACCESSORY FIRE PUMP ELECTRICAL REQUIREMENTS: (TO BE CONFIRMED BY FP DESIGNER)	20A
VOLTAGE:	480V/3P
UTILITY OVER CURRENT PROTECTION (FIRE PUMP LRA + PRESSURE MAINTENANCE PUMP LRA + ACCESSORY FIRE PUMP LOAD) ROUNDING UP PER NEC 240.6 VIA NEC 695.4(B)(2)):	300A / ROUND UP TO 300A
GENERATOR OVERCURRENT PROTECTION:	125A
[FIRE PUMP AMPERAGE SIZE (FIRE PUMP FLA + 20A) + PRESSURE MAINTENANCE FLA + 20A] + ACCESSORY FIRE PUMP REQUIREMENTS] PER NEC 695.4(B)(2)(3):	80A
STANDBY CURRENT VOLTAGE DROP: GENERATOR TO FIRE PUMP CONTROLLER PER NEC 695.7(A):	(MUST BE < 15%)
RUNNING CURRENT @ 115% VOLTAGE DROP: GENERATOR TO FIRE PUMP CONTROLLER PER NEC 695.7(B):	(MUST BE < 5%)

PANEL NAMING KEY

LMN Architects Urban Design Interiors

Stantec

SAM ASIAN ART MUSEUM

Asian Art Museum Expansion & Renovation

Construction Documents

FOR REFERENCE ONLY

New Power One Line Diagram

E802

COPPER FEEDER SCHEDULE

FEEDER TAG	CONDUITS MET	CONDUITS SETS	CONDUITS RNC	CONDUCTORS PER SET PHASE/NEUTRAL	CONDUCTORS PER SET GROUND	NOTES
[illegible]	3.00"	10	4.00"	(4) 500 KCMIL	500 KCMIL	–
[illegible]	3.50"	10	4.00"	(3) 600 KCMIL	500 KCMIL	–
[illegible]	3.50"	8	4.00"	(4) 600 KCMIL	500 KCMIL	–
[illegible]	3.50"	8	4.00"	(3) 600 KCMIL	500 KCMIL	–
[illegible]	3.00"	8	4.00"	(4) 500 KCMIL	400 KCMIL	–
[illegible]	3.00"	8	4.00"	(3) 500 KCMIL	400 KCMIL	–
[illegible]	3.50"	6	4.00"	(4) 600 KCMIL	350 KCMIL	–
[illegible]	3.50"	6	4.00"	(3) 600 KCMIL	350 KCMIL	–
[illegible]	3.50"	5	4.00"	(4) 600 KCMIL	250 KCMIL	–
[illegible]	3.50"	5	4.00"	(3) 600 KCMIL	250 KCMIL	–
[illegible]	3.50"	5	4.00"	(3) 500 KCMIL, (2) 400 KCMIL-N	#4/0	7
[illegible]	3.50"	4	4.00"	(4) 600 KCMIL	#4/0	–
[illegible]	3.50"	4	4.00"	(3) 600 KCMIL	#4/0	–
[illegible]	3.50"	3	4.00"	(4) 600 KCMIL	#3/0	–
[illegible]	3.50"	3	4.00"	(3) 600 KCMIL	#3/0	–
[illegible]	3.50"	3	4.00"	(3) 500 KCMIL, (2) 400 KCMIL-N	#2/0	7
[illegible]	3.00"	3	4.00"	(4) 400 KCMIL	#2/0	–
[illegible]	3.00"	3	4.00"	(3) 400 KCMIL	#2/0	–
[illegible]	3.50"	2	4.00"	(3) 600 KCMIL, (2) 300 KCMIL-N	#1/0	7
[illegible]	3.00"	3	4.00"	(4) 300 KCMIL	#1/0	–
[illegible]	3.00"	3	4.00"	(3) 300 KCMIL	#1/0	–
[illegible]	3.50"	2	4.00"	(4) 500 KCMIL	#1/0	–
[illegible]	3.00"	2	4.00"	(3) 500 KCMIL	#1/0	–
[illegible]	3.00"	2	4.00"	(4) 500 KCMIL	–	–
[illegible]	3.00"	2	4.00"	(4) 350 KCMIL	#1	–
[illegible]	2.50"	2	3.00"	(3) 350 KCMIL	#1	–
[illegible]	3.00"	2	4.00"	(3) 300 KCMIL, (2) 250 KCMIL-N	#2	7
[illegible]	2.50"	2	3.00"	(4) 250 KCMIL	#2	–
[illegible]	2.50"	2	2.50"	(3) 250 KCMIL	#2	–
[illegible]	2.50"	2	3.00"	(4) #4/0	#2	–
[illegible]	2.00"	2	2.50"	(3) #4/0	#2	–
[illegible]	2.50"	2	3.00"	(3) #4/0	#1/0	7
[illegible]	2.50"	2	3.00"	(4) #4/0	#2	–
[illegible]	2.00"	2	2.50"	(3) #4/0	#2	–
[illegible]	3.50"	1	4.00"	(4) 500 KCMIL	#2	–
[illegible]	3.50"	1	4.00"	(3) 500 KCMIL	#2	–
[illegible]	3.00"	1	3.00"	(4) 350 KCMIL	#4	–
[illegible]	2.50"	1	3.00"	(3) 350 KCMIL	#4	–

FEEDER TAG	CONDUITS MET	CONDUITS SETS	CONDUITS RNC	CONDUCTORS PER SET PHASE/NEUTRAL	CONDUCTORS PER SET GROUND	NOTES
[illegible]	2.00"	1	3.00"	(4) 250 KCMIL	#4	–
[illegible]	2.50"	1	3.00"	(3) 250 KCMIL	#4	–
[illegible]	3.00"	1	3.00"	(3) 250 KCMIL, (2) #4/0-N	#4	7
[illegible]	2.50"	1	3.00"	(4) #4/0	#4	–
[illegible]	2.00"	1	2.50"	(3) #4/0	#4	–
[illegible]	2.50"	1	2.50"	(3) #4/0, (2) #3/0-N	#4	7
[illegible]	2.00"	1	2.50"	(4) #3/0	#6	–
[illegible]	2.00"	1	2.50"	(3) #3/0	#6	–
[illegible]	2.00"	1	2.00"	(4) #2/0	#6	–
[illegible]	1.50"	1	2.00"	(3) #2/0	#6	–
[illegible]	2.00"	1	2.00"	(3) #1/0, (2) #4/0-N	#4	–
[illegible]	2.00"	1	2.00"	(4) #1/0	#6	–
[illegible]	1.50"	1	2.00"	(3) #1/0	#6	–
[illegible]	1.50"	1	1.50"	(4) #1	#6	–
[illegible]	1.25"	1	1.50"	(3) #1	#6	–
[illegible]	1.50"	1	2.00"	(3) #1, (1) #4/0-N	#6	7
[illegible]	1.25"	1	1.50"	(4) #1	#8	–
[illegible]	1.25"	1	1.50"	(3) #1	#8	–
[illegible]	1.25"	1	1.00"	(4) #2	#8	–
[illegible]	1.25"	1	1.50"	(3) #2	#8	–
[illegible]	1.25"	1	1.50"	(4) #2	#8	–
[illegible]	1.25"	1	1.50"	(3) #2	#6	–
[illegible]	1.25"	1	1.50"	(4) #4	#8	–
[illegible]	1.40"	1	1.50"	(3) #4	#8	–
[illegible]	1.25"	1	1.50"	(4) #4	#8	–
[illegible]	1.00"	1	1.50"	(3) #4	#8	–
[illegible]	1.25"	1	1.00"	(3) #4, (1) #1-N	#8	7
[illegible]	1.00"	1	1.00"	(4) #6	#10	–
[illegible]	0.75"	1	1.00"	(3) #6	#10	–
[illegible]	1.00"	1	1.50"	(3) #1, (1) #2-N	#10	7
[illegible]	1.00"	1	1.00"	(4) #8	#10	–
[illegible]	0.75"	1	1.00"	(3) #8	#10	–
[illegible]	0.75"	1	1.00"	(4) #8	#10	–
[illegible]	0.75"	1	1.00"	(3) #8	#10	–
[illegible]	0.75"	1	1.00"	(4) #10	#10	–
[illegible]	0.75"	1	1.00"	(3) #10	#10	–
[illegible]	0.75"	1	1.00"	(4) #12	#12	–
[illegible]	0.75"	1	1.00"	(3) #12	#12	–
[illegible]						8
[illegible]						9
[illegible]						10

NOTES:
1. CONDUCTORS AND CONDUITS SHOWN IN THIS SCHEDULE ARE BASED ON COPPER CONDUCTORS WITH THHN/THWN INSULATION.
2. THIS SCHEDULE SHALL BE USED WHERE THE FEEDER TAG ON FEEDERS MATCHES THE CORRESPONDING FEEDER TAG IN THIS SCHEDULE.
3. PROVIDE GROUND WIRE NOTED ABOVE IN ALL FEEDERS AND BRANCH CIRCUITS. WHERE MULTIPLE CONDUITS ARE INDICATED PROVIDE NOTED GROUND WIRE IN EACH CONDUIT.
4. NOT ALL FEEDERS ARE NECESSARILY USED ON THIS PROJECT.
5. NOMINAL AMPACITIES GREATER THAN 100 AMPS ARE FOR 75 DEG C TERMINATIONS.
6. "MET" = EMT, IMC, GRC, RMC, OR PVC COATED GRC TYPE CONDUITS. "RNC" = PVC 40, PVC 80 OR FIBERGLASS TYPE CONDUITS ROUTED UNDERGROUND. REFER TO SCHED ON DRAWINGS IF "RNC" CONDUITS ARE ROUTED ABOVEGROUND. CONDUIT SIZES NOTED ON SINGLE-LINE DIAGRAM OR ON PLANS SUPERSEDE SIZES NOTED ABOVE IF LARGER.
7. OVERSIZED (173% MIN.) NEUTRAL FOR FEEDERS CONNECTED TO A K-13 OR HIGHER RATED TRANSFORMER.
8. REFER TO TRANSFORMER SCHEDULE (COPPER CONDUCTORS) FOR PRIMARY AND SECONDARY FEEDER SIZES. USE STANDARD & K-4 RATED COLUMN.
9. REFER TO TRANSFORMER SCHEDULE (COPPER CONDUCTORS) FOR PRIMARY AND SECONDARY FEEDER SIZES. USE K-13+ RATED COLUMN.
10. REFER TO MCC OR PANEL SCHEDULES FOR FEEDER SIZES TO EQUIPMENT NOTED WITH THIS TAG.

TRANSFORMER SCHEDULE (COPPER CONDUCTORS)

KVA	480V PRIMARY C.B.	480V PRIMARY FEEDER	208Y/120V SECONDARY C.B.	STANDARD & K-4 RATED FEEDER	K-13+ RATED FEEDER	GROUND AWG	WT.	MINIMUM EFFICIENCY
15	30/3	[illegible]	50/3	[illegible]	[illegible]	#8	275	97.89%
30	50/3	[illegible]	100/3	[illegible]	[illegible]	#6	340	98.23%
45	70/3	[illegible]	150/3	[illegible]	[illegible]	#6	475	98.40%

NOTES:
1. THIS SCHEDULE APPLIES TO 480V TO 208Y/120V DRY TYPE STEP-DOWN TRANSFORMERS ONLY.
2. ON ONE-LINE DIAGRAMS AND SCHEDULES WHERE FEEDERS AND CIRCUIT BREAKERS ARE SHOWN AS "XFR", PROVIDE RESPECTIVE FEEDERS, GROUND CONDUCTORS AND BREAKERS NOTED ABOVE. PROVIDE SECONDARY BREAKER NOTED ABOVE AS MAIN CIRCUIT BREAKER INTEGRAL IN DISTRIBUTION, PANEL AND SWITCH BOARDS. UON.
3. GROUND CONDUCTOR SIZES INDICATED ABOVE SUPERSEDE GROUND CONDUCTORS SHOWN ON FEEDER SCHEDULE. ROUTE COPPER GROUNDING CONDUCTOR TO GROUNDING ELECTRODE PER NEC. PROVIDE BONDING ALSO PER NEC. COMMON LEAD OF LARGEST REQUIRED SIZE MAY BE EMPLOYED TO SERVE MULTIPLE TRANSFORMERS.
4. NOT ALL TRANSFORMER SIZES INDICATED IN THIS SCHEDULE ARE NECESSARILY USED ON THIS PROJECT.
5. WEIGHTS INDICATED ABOVE ARE APPROXIMATE. ACTUAL VALUES MAY VARY. CONFIRM WITH SUBMITTAL INFO.

ALUMINUM MC CABLE FEEDER SCHEDULE

FEEDER TAG	CONDUITS SETS	CONDUITS SIZE	CONDUCTORS PER SET PHASE/NEUTRAL	CONDUCTORS PER SET GROUND	NOTES
[illegible]	12	3.0"	(4) 500 KCMIL	600 KCMIL	–
[illegible]	12	2.8"	(3) 500 KCMIL	600 KCMIL	–
[illegible]	8	3.1"	(4) 400 KCMIL	400 KCMIL	–
[illegible]	8	2.8"	(3) 600 KCMIL	600 KCMIL	–
[illegible]	8	3.3"	(4) 600 KCMIL	600 KCMIL	–
[illegible]	8	2.8"	(3) 600 KCMIL	600 KCMIL	–
[illegible]	6	3.1"	(4) 600 KCMIL	400 KCMIL	–
[illegible]	6	2.8"	(3) 600 KCMIL	400 KCMIL	–
[illegible]	5	3.0"	(4) 600 KCMIL	300 KCMIL	–
[illegible]	5	2.7"	(3) 600 KCMIL	250 KCMIL	–
[illegible]	4	2.7"	(4) 500 KCMIL	250 KCMIL	–
[illegible]	4	2.5"	(3) 500 KCMIL	250 KCMIL	–
[illegible]	3	3.2"	(3) 600 KCMIL	#4/0	6
[illegible]	3	2.8"	(4) 600 KCMIL	#4/0	–
[illegible]	3	2.6"	(3) 600 KCMIL	#4/0	–
[illegible]	3	2.6"	(4) 400 KCMIL	#3/0	–
[illegible]	3	2.4"	(3) 400 KCMIL	#3/0	–
[illegible]	2	2.6"	(3) 500 KCMIL	#2/0	6
[illegible]	2	2.6"	(4) 500 KCMIL	#2/0	–
[illegible]	2	2.4"	(3) 500 KCMIL	#2/0	–
[illegible]	2	2.8"	(3) 400 KCMIL	#1/0	6
[illegible]	2	2.2"	(4) 350 KCMIL	#1/0	–
[illegible]	2	2.2"	(3) 300 KCMIL	#1/0	–
[illegible]	2	2.6"	(3) 300 KCMIL	#1/0	6
[illegible]	2	2.2"	(4) 300 KCMIL	#1/0	–
[illegible]	2	2.0"	(3) 300 KCMIL	#1/0	–
[illegible]	2	2.5"	(3) 250 KCMIL	#1	6
[illegible]	2	2.1"	(4) 250 KCMIL	#1	–
[illegible]	2	1.9"	(3) 250 KCMIL	#1	–

FEEDER TAG	CONDUITS SETS	CONDUITS SIZE	CONDUCTORS PER SET PHASE/NEUTRAL	CONDUCTORS PER SET GROUND	NOTES
[illegible]	2	2.2"	(3) #4/0	#1	6
[illegible]	2	1.9"	(4) #4/0	#1	–
[illegible]	2	1.75"	(3) #4/0	#1	–
[illegible]	1	2.4"	(5) 500 KCMIL	#2	4
[illegible]	1	2.4"	(4) 500 KCMIL	#2	–
[illegible]	1	2.4"	(3) 500 KCMIL	#2	–
[illegible]	1	2.4"	(4) 350 KCMIL	#2	–
[illegible]	1	2.4"	(5) 350 KCMIL	#2	–
[illegible]	2	1.4"	(3) #1/0	#1/0	–
[illegible]	2	1.4"	(3) #1/0	#2	–
[illegible]	1	2.6"	(3) 300 KCMIL	#2	6
[illegible]	1	2.2"	(4) 300 KCMIL	#2	–
[illegible]	1	2.2"	(3) 300 KCMIL	#2	–
[illegible]	1	2.3"	(5) 250 KCMIL	#2	6
[illegible]	1	2.1"	(4) 250 KCMIL	#2	–
[illegible]	1	1.9"	(3) 250 KCMIL	#2	–
[illegible]	1	2.2"	(5) #4/0	#4	4
[illegible]	1	1.9"	(4) #4/0	#4	–
[illegible]	1	1.75"	(3) #4/0	#4	–
[illegible]	1	1.75"	(4) #2/0	#4	–
[illegible]	1	1.6"	(3) #3/0	#4	–
[illegible]	1	1.5"	(4) #2/0	#4	–
[illegible]	1	1.4"	(3) #2/0	#4	–
[illegible]					7
[illegible]					8

NOTES:
1. RACEWAY SIZE BASED ON SOUTHWIRE ALUMAFLEX MC PVC JACKETED AL THHN/THWN-2 CONDUCTORS. ACTUAL SIZE MUST BE VERIFIED WITH SPECIFIC MANUFACTURER. ALL 5 CONDUCTOR CABLE SIZES HAVE BEEN ESTIMATED.
2. THIS SCHEDULE SHALL BE USED WHERE THE FEEDER TAG ON FEEDERS MATCHES THE CORRESPONDING FEEDER TAG IN THIS SCHEDULE.
3. PROVIDE GROUND WIRE NOTED ABOVE IN ALL FEEDERS AND BRANCH CIRCUITS. WHERE MULTIPLE CONDUITS ARE INDICATED PROVIDE NOTED GROUND WIRE IN EACH CONDUIT.
4. NOT ALL FEEDERS ARE NECESSARILY USED ON THIS PROJECT.
5. NOMINAL AMPACITIES GREATER THAN 100 AMPS ARE FOR 75 DEG C TERMINATIONS.
6. OVERSIZED (173% MIN.) NEUTRAL FOR FEEDERS CONNECTED TO A K-13 OR HIGHER RATED TRANSFORMER.
7. REFER TO TRANSFORMER SCHEDULE (ALUMINUM CONDUCTORS) FOR PRIMARY AND SECONDARY FEEDER SIZES. USE STANDARD & K-4 RATED COLUMN.
8. REFER TO TRANSFORMER SCHEDULE (ALUMINUM CONDUCTORS) FOR PRIMARY AND SECONDARY FEEDER SIZES. USE K-13+ RATED COLUMN.

TRANSFORMER SCHEDULE (ALUMINUM CONDUCTORS)

KVA	480V PRIMARY C.B.	480V PRIMARY FEEDER	208Y/120V SECONDARY C.B.	STANDARD & K-4 RATED FEEDER	K-13+ RATED FEEDER	GROUND AWG	WT.	MINIMUM EFFICIENCY
75	125/3	[illegible]	225/3	[illegible]	[illegible]	#1/0	[illegible]	98.60%
112.5	175/3	[illegible]	400/3	[illegible]	[illegible]	#1/0	[illegible]	98.74%
150	225/3	[illegible]	600/3	[illegible]	[illegible]	#3/0	[illegible]	98.83%
225	350/3	[illegible]	800/3	[illegible]	[illegible]	#4/0	[illegible]	98.94%
300	450/3	[illegible]	1000/3	[illegible]	[illegible]	250KCMIL	[illegible]	99.02%

NOTES:
1. THIS SCHEDULE APPLIES TO 480V TO 208Y/120V DRY TYPE STEP-DOWN TRANSFORMERS ONLY.
2. ON ONE-LINE DIAGRAMS AND SCHEDULES WHERE FEEDERS AND CIRCUIT BREAKERS ARE SHOWN AS "XFR", PROVIDE RESPECTIVE FEEDERS, GROUND CONDUCTORS AND BREAKERS NOTED ABOVE. PROVIDE SECONDARY BREAKER NOTED ABOVE AS MAIN CIRCUIT BREAKER INTEGRAL IN DISTRIBUTION, PANEL AND SWITCH BOARDS. UON.
3. GROUND CONDUCTOR SIZES INDICATED ABOVE SUPERSEDE GROUND CONDUCTORS SHOWN ON FEEDER SCHEDULE. ROUTE COPPER GROUNDING CONDUCTOR TO GROUNDING ELECTRODE PER NEC. PROVIDE BONDING ALSO PER NEC. COMMON LEAD OF LARGEST REQUIRED SIZE MAY BE EMPLOYED TO SERVE MULTIPLE TRANSFORMERS.
4. NOT ALL TRANSFORMER SIZES INDICATED IN THIS SCHEDULE ARE NECESSARILY USED ON THIS PROJECT.
5. WEIGHTS INDICATED ABOVE ARE APPROXIMATE. ACTUAL VALUES MAY VARY. CONFIRM WITH SUBMITTAL INFO.

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Construction Documents

FOR REFERENCE ONLY

Feeder Schedule

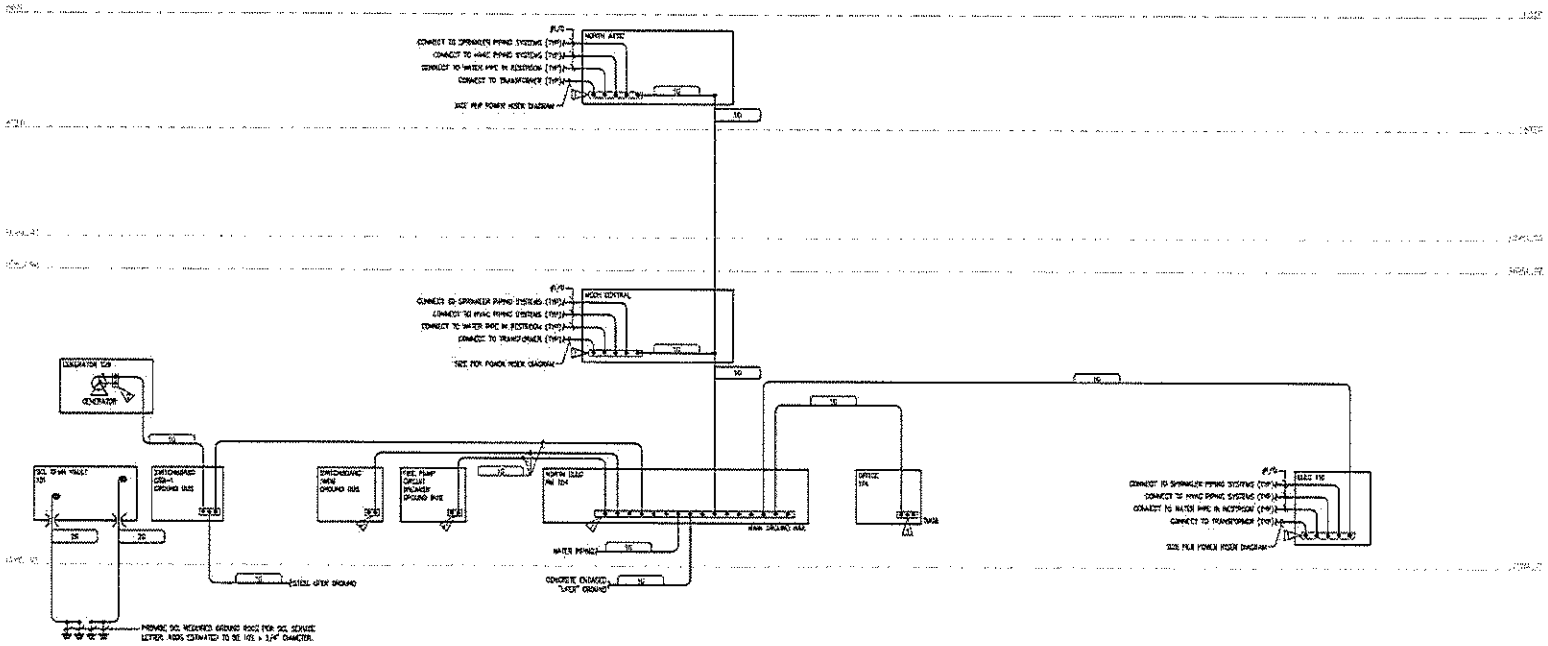
E803

FLAG NOTES:

GROUND BAR

PROVIDE NEUTRAL GROUND BOND PER NEC 250.102

GROUNDING CONDUCTOR:
10 - (1) 6 ALUM BARE COPPER
20 - (1) 500 kcmil THIN COPPER



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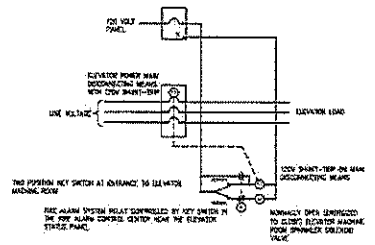
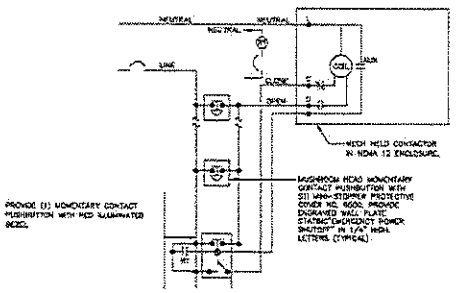
Grounding Riser Diagram

E804

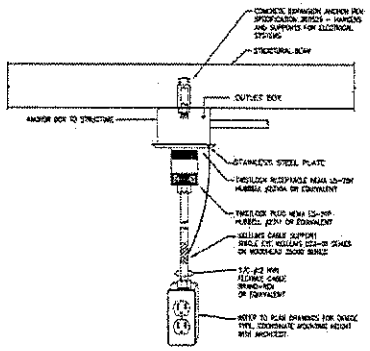


4 E901 ELEVATOR/SPRINKLER CONTROL DIAGRAM
SCALE: NOT TO SCALE

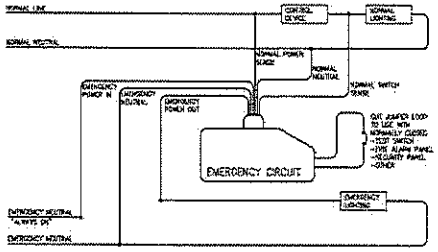


NOTES:
1. QUANTITIES OF CONTROL STATIONS SHALL BE AS NOTED ON THE DRAWINGS.
2. PROVIDE #12 MIN. WIRING IN 1/2" CONDUIT AS INDICATED IN DIAGRAM FROM CONTROL STATIONS TO CONTACTOR. WIRING IS NOT INDICATED ON FLOOR PLANS.

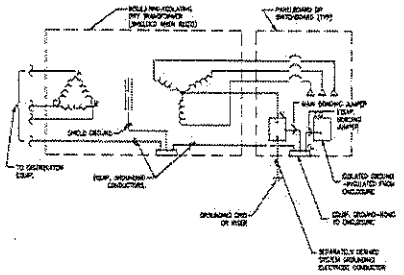
3 E901 WORKSHOP EQUIPMENT EPO DIAGRAM
SCALE: NOT TO SCALE



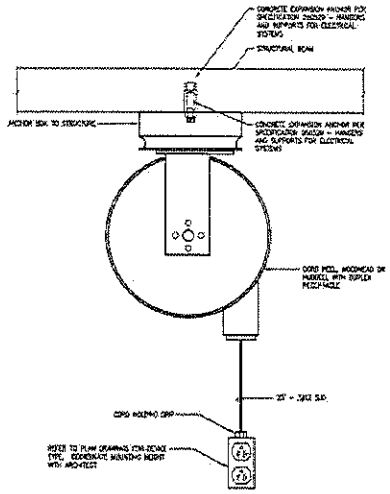
1 E901 CORD DROP DETAIL
SCALE: NOT TO SCALE



2 E901 EMERGENCY LIGHTING CONTROL UNIT
SCALE: NOT TO SCALE



4 E901 TRANSFORMER GROUNDING DIAGRAM
SCALE: NOT TO SCALE



2 E901 CORD REEL ASSEMBLY DETAIL
SCALE: NOT TO SCALE

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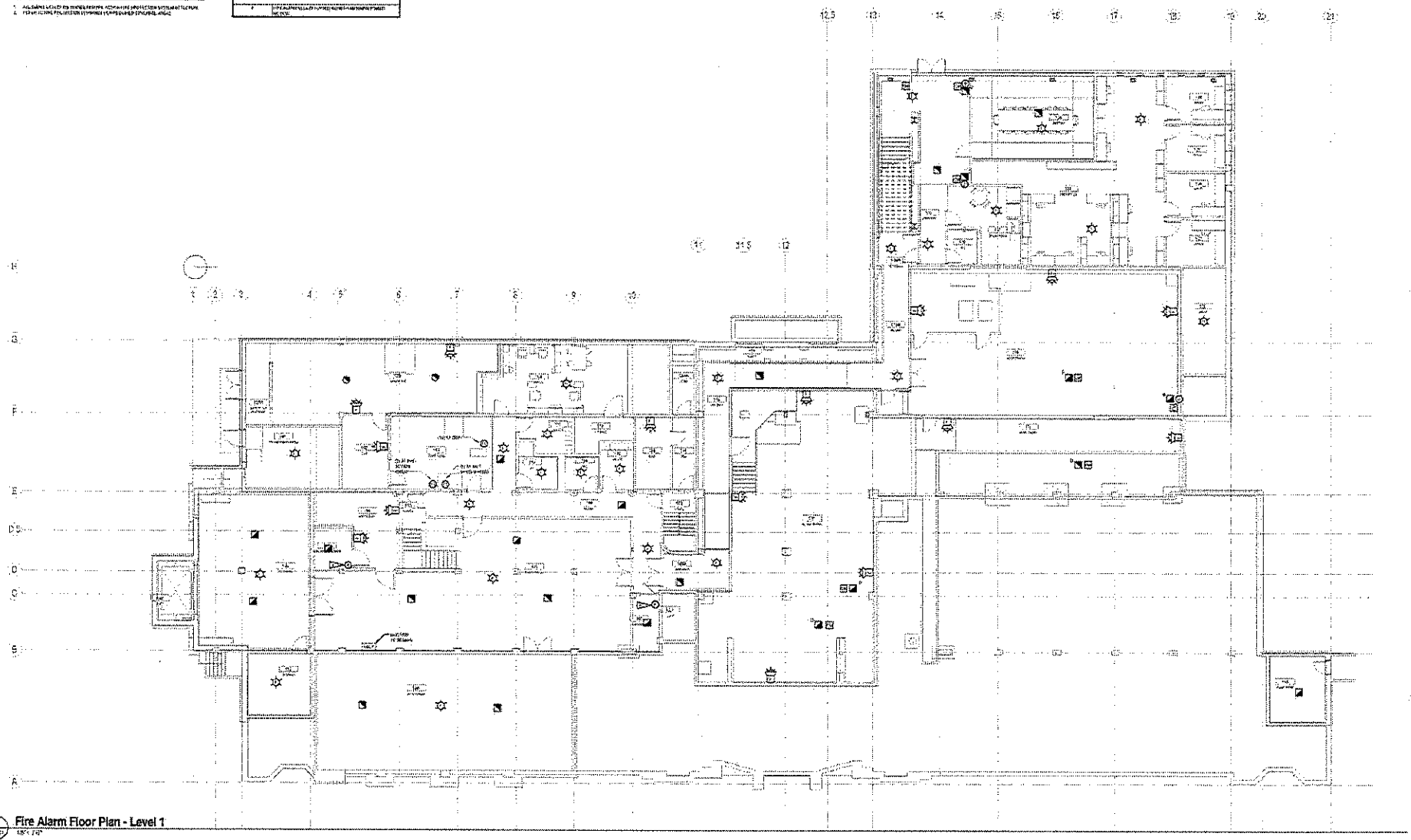
Electrical Details

E901

FIRE ALARM GENERAL NOTES



1 FA201 Fire Alarm Floor Plan - Level 1

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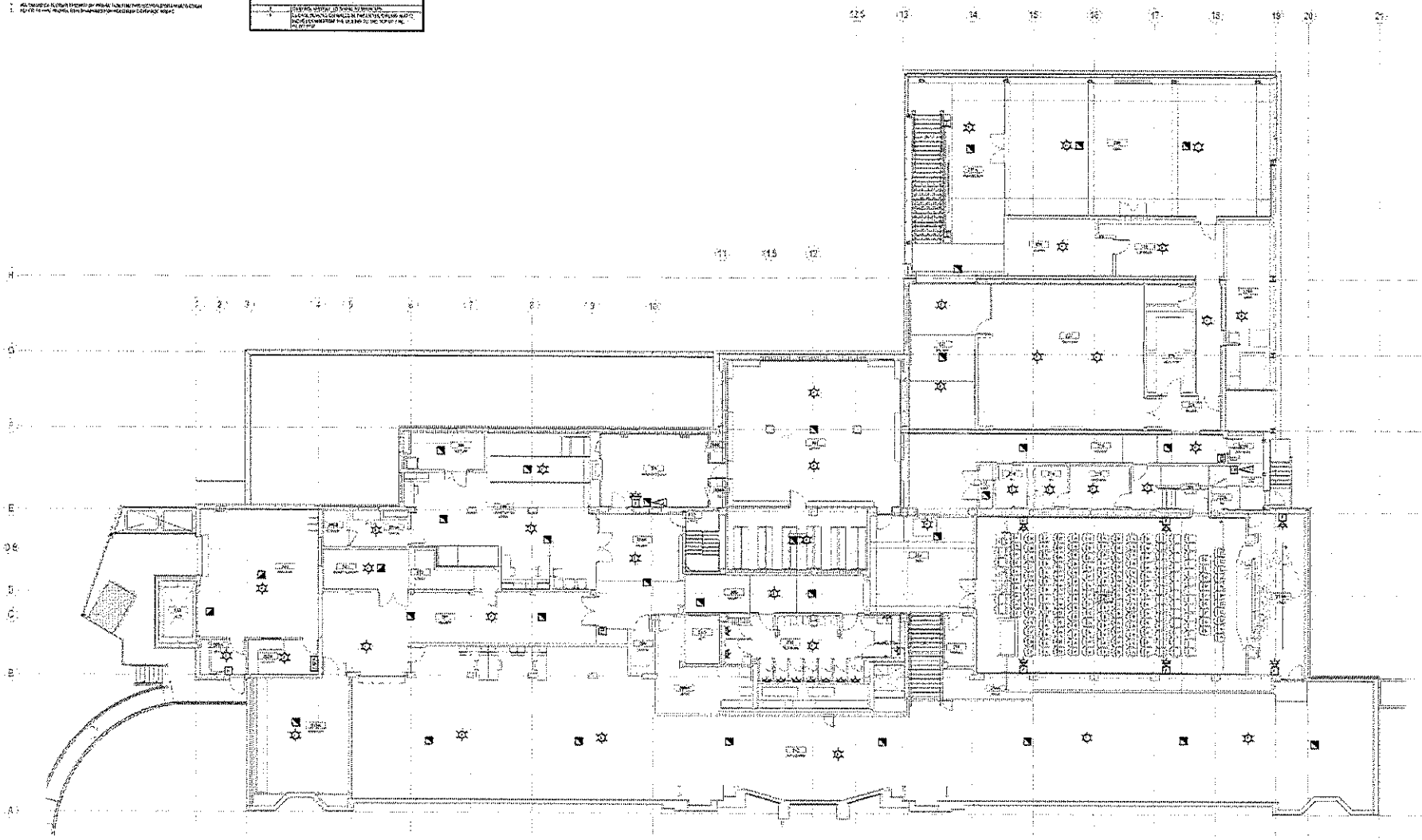
Fire Alarm Floor Plan - Level 1

FA201

FIRE ALARM GENERAL NOTES

#	Plan Notes
1	[illegible]
2	[illegible]
3	[illegible]



1 Fire Alarm Floor Plan - Level 2

TRUE NORTH PLAN NORTH

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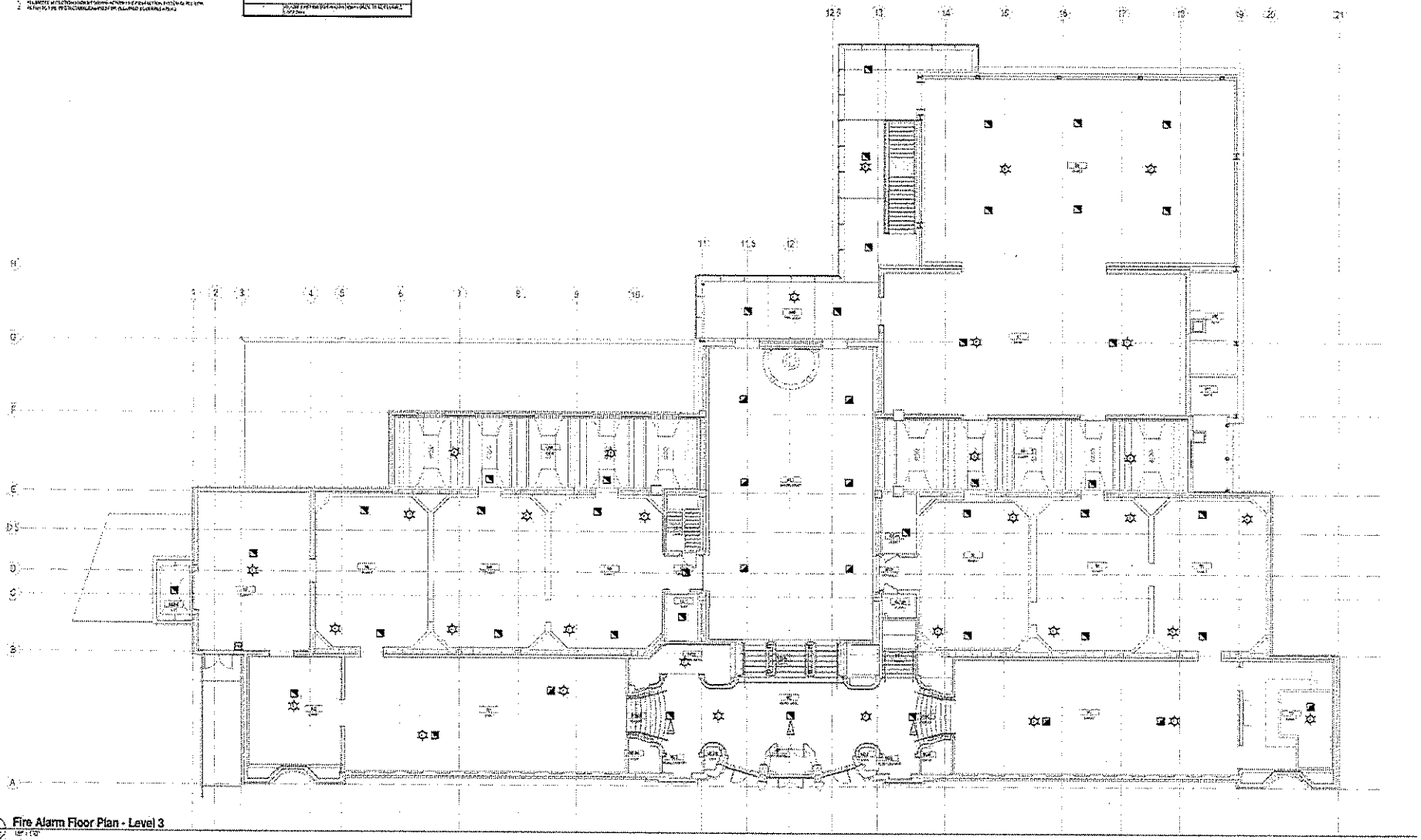
Fire Alarm Floor Plan - Level 2

FA202

FIRE & ARM GENERAL NOTES

#	Filing Notes



1 Fire Alarm Floor Plan - Level 3

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Construction Documents

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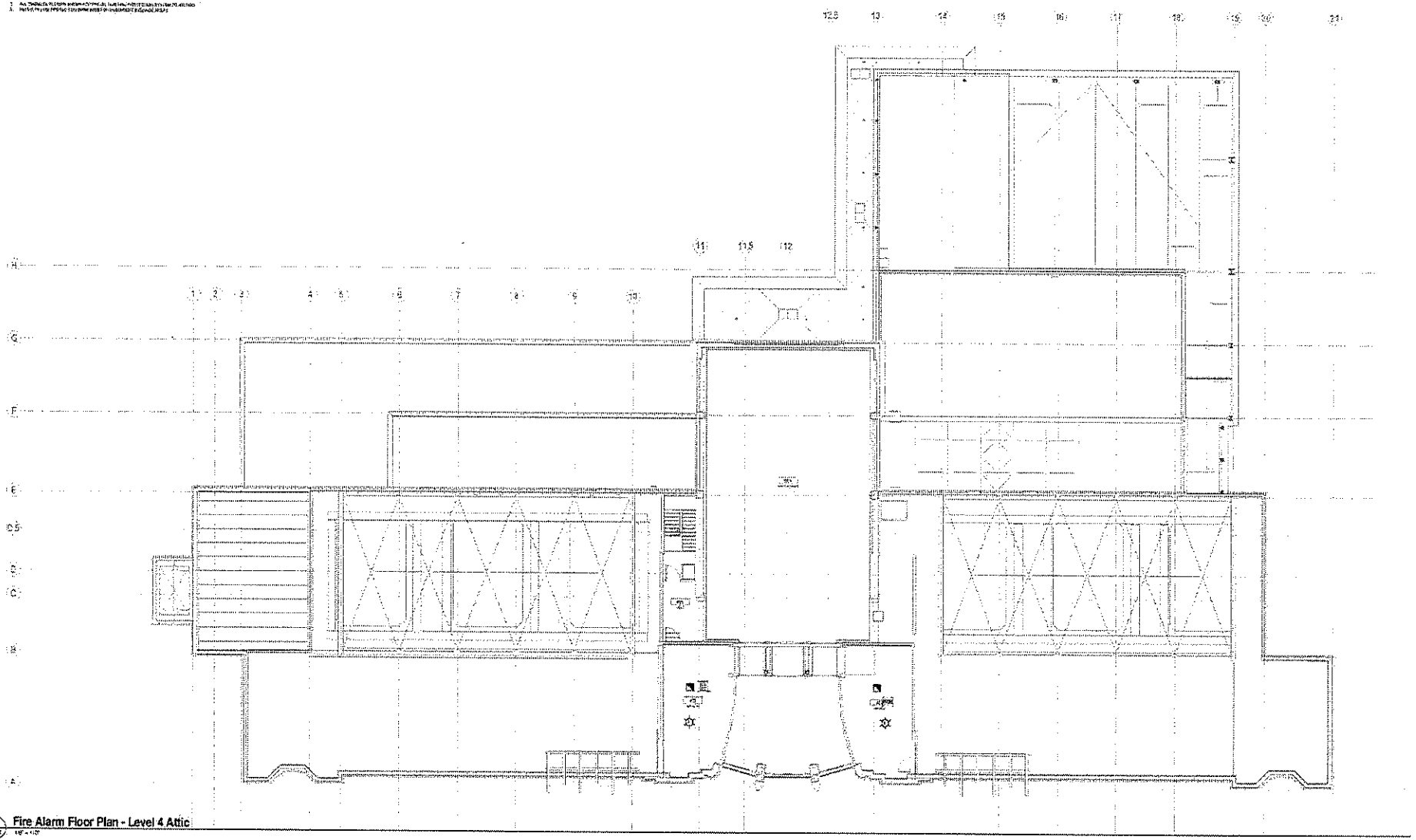
Fire Alarm Floor Plan - Level 3

FA203

FIRE ALARM GENERAL NOTES



1 Fire Alarm Floor Plan - Level 4 Attic
1/8" = 1'-0"

TRUE NORTH PLAN NORTH

0 4 8 16 32

LMN Architects Urban Design Planners

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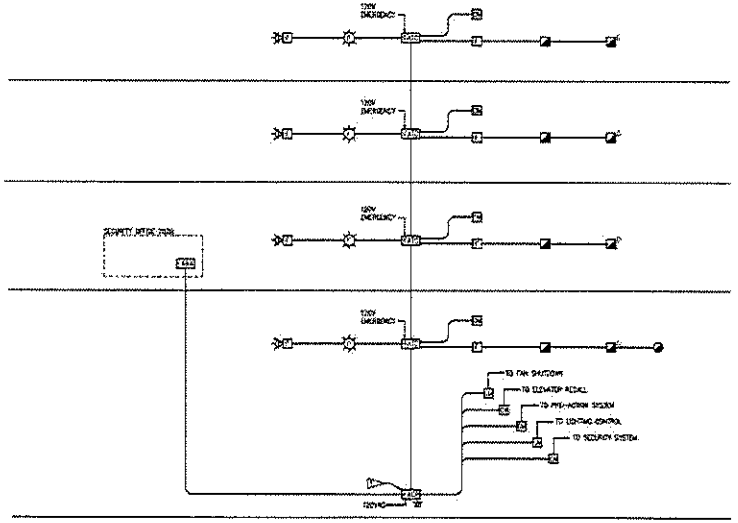
Fire Alarm Floor Plan - Level 4 Attic

FA204

FLAG NOTES:

1. EXISTING FACP TO REMAIN.



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New Fire Alarm One Line Diagram

FA801

SYMBOLS AND ABBREVIATIONS

TELECOM

- OUTLET (WALL MOUNTED)
- OUTLET (FLOOR, FLUSH MOUNTED)
- OUTLET (CEILING MOUNTED)
- WIRELESS ACCESS POINT; (2) CAT6 CABLES WITH 25' EDL
- WAP

TELECOM OUTLET TYPES

- PROVIDES QUANTITY OF DATA JACKS, PASSTHROUGH JACKETS PROVIDED, WHERE NO QUANTITY IS NOTED, (2) CAT6 CABLES, JACKS AND FACEPLATE.
- MOUNTED 3" ABOVE COUNTER BACKSPLASH
- TELEPHONE HANDSET OUTLET (WALL MOUNTED)
- TV TELEVISION
- TC TELECLOCK

TELECOM - MISCELLANEOUS

- CABLE TRAY WITH FLANGE SIDE RAILS AND LADDER RUNGS
- RUNWAY CABLE TRAY
- J RINGLESS CABLE SUPPORT, J-HOOK SYSTEM
- TELECOMMUNICATIONS GROUNDING BAR
- TELECOMMUNICATIONS MAIN GROUNDING BAR

CIRCUITS

- EXISTING RACEWAY OR WORK MARKED AND SHOWN, FIELD VERIFY CONDITIONS
- RACEWAY BELOW SLAB OR UNDERGROUND
- RACEWAY-UP
- RACEWAY-DOWN
- RACEWAY STUB-OUT WITH BUSHING
- CIRCUIT CONTINUATION
- JUNCTION BOX
- PULL BOX

ELECTRONIC SECURITY

DEVICES SHOWN ARE CONDUIT AND BACKBOX ONLY, SEE

- DEVICE IDENTIFICATION
- CCTV CAMERA, FIXED POSITION, (1) CAT6 CABLE
- ACP ACCESS CONTROL PANEL
- CARD READER
- CARD READER/KEYPAD COMBINATION
- EMERGENCY ALARM BUTTON
- DOOR CONTACT SWITCH
- GLASS BREAK SENSORS
- ELECTRIC LOCK
- ELECTRIC STRIKE
- ELECTRIC LATCH RETRACTOR
- INTRUSION ARM/DISARM
- INTRUSION DETECTION PANEL
- MASTER INTERCOM STATION, AUDIO ONLY
- SLAVE INTERCOM STATION, AUDIO ONLY
- KEYPAD
- MOTION DETECTOR (CEILING MOUNTED)
- PSP POWER SUPPLY PANEL

WORK DEFINITION

- FLAG NOTE
- REVISION IDENTIFICATION
- EQUIPMENT IDENTIFICATION
- EQUIPMENT IDENTIFICATION
- DETAIL REFERENCE
- DETAIL REFERENCE INDICATING SHEET REFERENCE
- SECTION REFERENCE
- SECTION REFERENCE INDICATING SHEET REFERENCE
- ELEVATION REFERENCE
- PROJECT NORTH REFERENCE
- PROJECT NORTH REFERENCE W/TRUE NORTH REFERENCE
- NEW WORK
- EXISTING
- DEMO

ABBREVIATIONS

ABV	ABOVE	MCC	MOTOR CONTROL CENTER
AC	3" ABOVE COUNTER BACKSPLASH	MH	MANHOLE
ACM	ABOVE COUNTER MOUNT	MM	MULTIMODE
AFF	ABOVE FINISHED FLOOR	MTD	MOUNTED
AG	ABOVE GRADE	MC	NOT IN CONTRACT
AV	AUDIO/VISUAL	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
AWG	AMERICAN WIRE GAUGE	OFOI	OWNER FURNISHED OWNER INSTALLED
BLG	BUILDING	PB	PULLBOX
CM	CEILING MOUNTED	POS	POINT(S) OF SALE
COMM	COMMUNICATIONS	PW	PAIR
C	CONDUIT	R	RACEWAY
CO	CONDUIT ONLY	RO	RACEWAY ONLY
CTRL	CONTROL	RECEPT	RECEPTACLE
CU	COPPER	S.P	RISING
D	DATA	SM	SINGLEMODE
DMC	DIRECT MEDIA CONTROL	SPECS	SPECIFICATIONS
DED	DEDICATED	TELECOM	TELECOMMUNICATIONS
DEV	DEVICE	TGB	TELECOMMUNICATIONS GROUNDING BUSBAR
DN	DOWN	TMGB	TELECOMMUNICATIONS MAIN GROUNDING BUSBAR
EF	ENTRANCE FACILITY	TR	TELECOMMUNICATIONS ROOM
ER	EQUIPMENT ROOM/EMERGENCY	TV	TELEVISION
F	FROM	TYP	TYPICAL
FB	FLOOR BOX	UC	UNDER COUNTER
FMOE	FURNISHED BY OWNER, INSTALLED BY CONTRACTOR	UON	UNLESS OTHERWISE NOTED
FO	FIBER OPTIC(S)	UTP	UNSHIELDED TWISTED PAIR
FOC	FACE OF COLUMN	V	VOICE
GLNG	GLAZING	WCL	WARFY COAST LOCATION
GFCI/D	GROUND FAULT CIRCUIT INTERRUPTER	WP	WOOD PROJECTOR
HH	HAND HOLE	W	WALLPHONE
J-BOX	JUNCTION BOX	WAP	WIRELESS ACCESS POINT
		WP	WEATHERPROOF

OUTLET MOUNTING HEIGHTS

SPECIAL OUTLET HEIGHTS ARE SHOWN ON THE ELECTRICAL DRAWINGS OR ON THE ARCHITECTURAL DRAWINGS. IF SPECIAL OUTLET HEIGHTS ARE NOT SHOWN OR DESIGNED, THEN LOCATE OUTLETS AS NOTED BELOW. OUTLET HEIGHTS ARE MEASURED FROM THE FINISHED FLOOR TO THE CENTERLINE OF THE OUTLET UNLESS OTHERWISE NOTED.

CMS READER	48 INCHES (1200 mm)
TELECOM OUTLET, STANDARD	18 INCHES (460 mm) VERTICALLY MOUNTED
TELECOM OUTLET, WALL PHONE	42 INCHES (1060 mm) VERTICALLY MOUNTED

SHEET INDEX

T000 TELECOM SYMBOLS AND ABBREVIATIONS

T101 TELECOM FLOOR PLAN – LEVEL 1 DEMO
T102 TELECOM FLOOR PLAN – LEVEL 2 DEMO
T103 TELECOM FLOOR PLAN – LEVEL 3 DEMO
T104 TELECOM FLOOR PLAN – LEVEL 4 ATTIC DEMO

T201 TELECOM FLOOR PLAN – LEVEL 1
T202 TELECOM FLOOR PLAN – LEVEL 2
T203 TELECOM FLOOR PLAN – LEVEL 3
T204 TELECOM FLOOR PLAN – LEVEL 4 ATTIC

T401 SECURITY INFRASTRUCTURE FLOOR PLAN – LEVEL 1
T402 SECURITY INFRASTRUCTURE FLOOR PLAN – LEVEL 2
T403 SECURITY INFRASTRUCTURE FLOOR PLAN – LEVEL 3
T404 SECURITY INFRASTRUCTURE FLOOR PLAN – LEVEL 4 ATTIC

T601 TELECOM RISERS
T602 TELECOM DETAILS

GENERAL NOTES

1. COMPLY WITH THE NATIONAL ELECTRICAL CODE AS ADOPTED AND AMENDED BY THE LOCAL AUTHORITY HAVING JURISDICTION.
2. THE LOCATIONS OF COMMUNICATIONS DEVICES INDICATED ON ARCHITECTURAL PLANS ELEVATIONS OR SECTIONS SHALL TAKE PRECEDENCE OVER LOCATIONS INDICATED ON THE TELECOM DRAWINGS.
3. REFER TO THE ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF CEILING MOUNTED TELECOM DEVICES.

COMMUNICATIONS PATHWAY NOTES

PROVIDED BY CONTRACTOR

1. COMPLY WITH CURRENT EDITION OF NATIONAL ELECTRICAL CODE.
2. COORDINATE INSTALLATION OF CONDUITS, LOW VOLTAGE SYSTEMS CABLE SUPPORTS, AND CABLE TRAYS WITH OTHER COMPONENTS AND SYSTEMS EQUIPMENT INSTALLED WITHIN CEILING AREAS.
3. REFER TO SPECIFICATION DIVISIONS 26 AND 27 FOR INSTALLATION INSTRUCTIONS FOR CONDUITS, LOW VOLTAGE SYSTEMS CABLE SUPPORTS, CABLE TRAYS, PULL BOXES AND FLOOR BOXES.
4. MAINTAIN MINIMUM BEND RADIUS OF 10X O.D. FOR CONDUITS GREATER THAN OR EQUAL TO 2" DIAMETER. MAINTAIN MINIMUM BEND RADIUS OF 6X O.D. FOR CONDUITS GREATER THAN 1" DIAMETER BUT LESS THAN 2" DIAMETER.
5. REAM THE ENDS OF ALL CONDUITS AND INSTALL WITH A GROMMETED LOCKNUT AND PLASTIC BUSHING.
6. GROUND ALL CONDUITS AND CABLE TRAYS TO APPROPRIATE COMMUNICATIONS GROUNDING BUSBAR.
7. INSTALL AND LEAVE IN PLACE A NYLON PULL CORD IN ALL CONDUITS.
8. INSTALL CABLE TRAYS AT A MINIMUM OF 3" FROM CORRIDOR WALLS.
9. REFER TO MECHANICAL DRAWINGS FOR SHEET METAL AND PLUMBING MOUNTING DETAILS AND CLEARANCES. WORK MECHANICAL CONTRACTOR PRIOR TO PERFORMING PATHWAY ROUGH-IN WORK.
10. THERE SHALL BE NO MORE THAN 360 DEGREES OF BEND IN ANY ONE CONDUIT RUN WITHOUT INCLUSION OF A PULL BOX.
11. ALL RACEWAYS, DEVICES AND JUNCTION BOXES IN CONCRETE AND DRY WALL SHALL BE FLUSH MOUNTED UNLESS OTHERWISE NOTED.
12. RACEWAYS SHALL NOT BE INSTALLED IN CONCRETE FLOOR OR CEILING SLABS EXCEPT WHERE SPECIFICALLY INDICATED.
13. REFER TO ARCHITECTURAL LIFE SAFETY PLANS FOR FIRE RATED WALLS.

COMMUNICATIONS OUTLET NOTES

1. COMPLY WITH CURRENT EDITION OF THE NATIONAL ELECTRICAL CODE AND ANY GUIDELINES FOR HEALTHCARE ZONE.
2. THE LOCATIONS AND MOUNTING HEIGHT OF COMMUNICATION OUTLETS INDICATED ON ARCHITECTURAL PLANS, INTERIOR ELEVATIONS AND/OR SECTIONS SHALL TAKE PRECEDENCE OVER LOCATIONS INDICATED ON THE TELECOM DRAWINGS. COORDINATE BEFORE PERFORMING ROUGH-IN WORK.
3. CONTRACTOR TO COORDINATE FINAL MOUNTING HEIGHT, LOCATION, & DIMENSIONS OF BOX, FIRE ALARM, SECURITY AND ELECTRICAL COMMUNICATIONS OUTLETS IN THE FIELD WITH EQUIPMENT VENDOR PRIOR TO PERFORMING ROUGH-IN WORK.
4. REFER TO ARCHITECTURAL FURNITURE AND ENGINEERING PLANS FOR ROUTING OF CABLES BETWEEN CONCRETE PACKED AND FINAL OUTLET LOCATIONS.

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Telecom Symbols and Abbreviations

T000

TELECOM DEMO GENERAL NOTES

#	Plan Notes
1	
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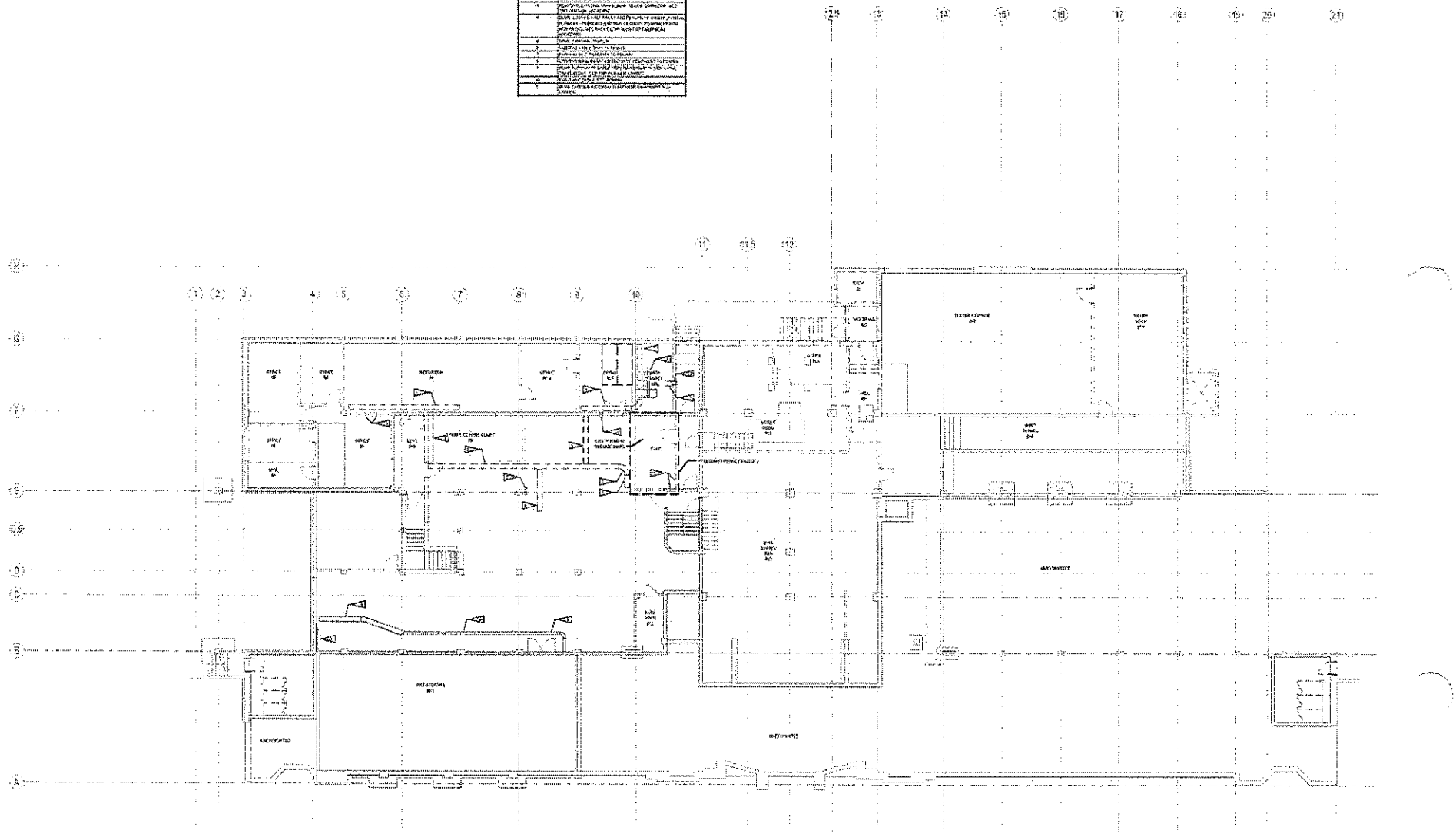

1 TELECOM FLOOR PLAN - LEVEL 1 DEMO
1/16" = 1'-0"

TRUE NORTH PLAN NORTH

0' 4' 8' 16' 32'

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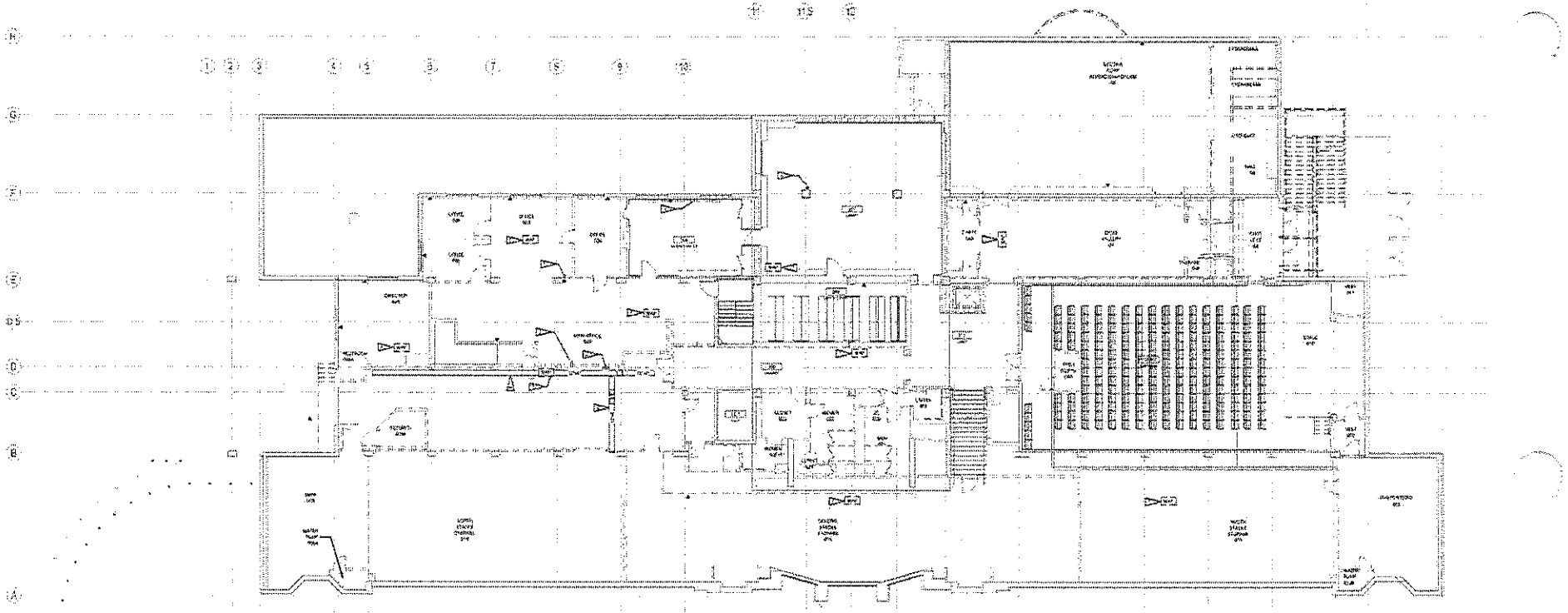
Telecom Floor Plan - Level 1 Demo

T101

TELECOM DEMO GENERAL NOTES



1 T102 TELECOM FLOOR PLAN - LEVEL 2 DEMO

TRUE NORTH PLAN NORTH

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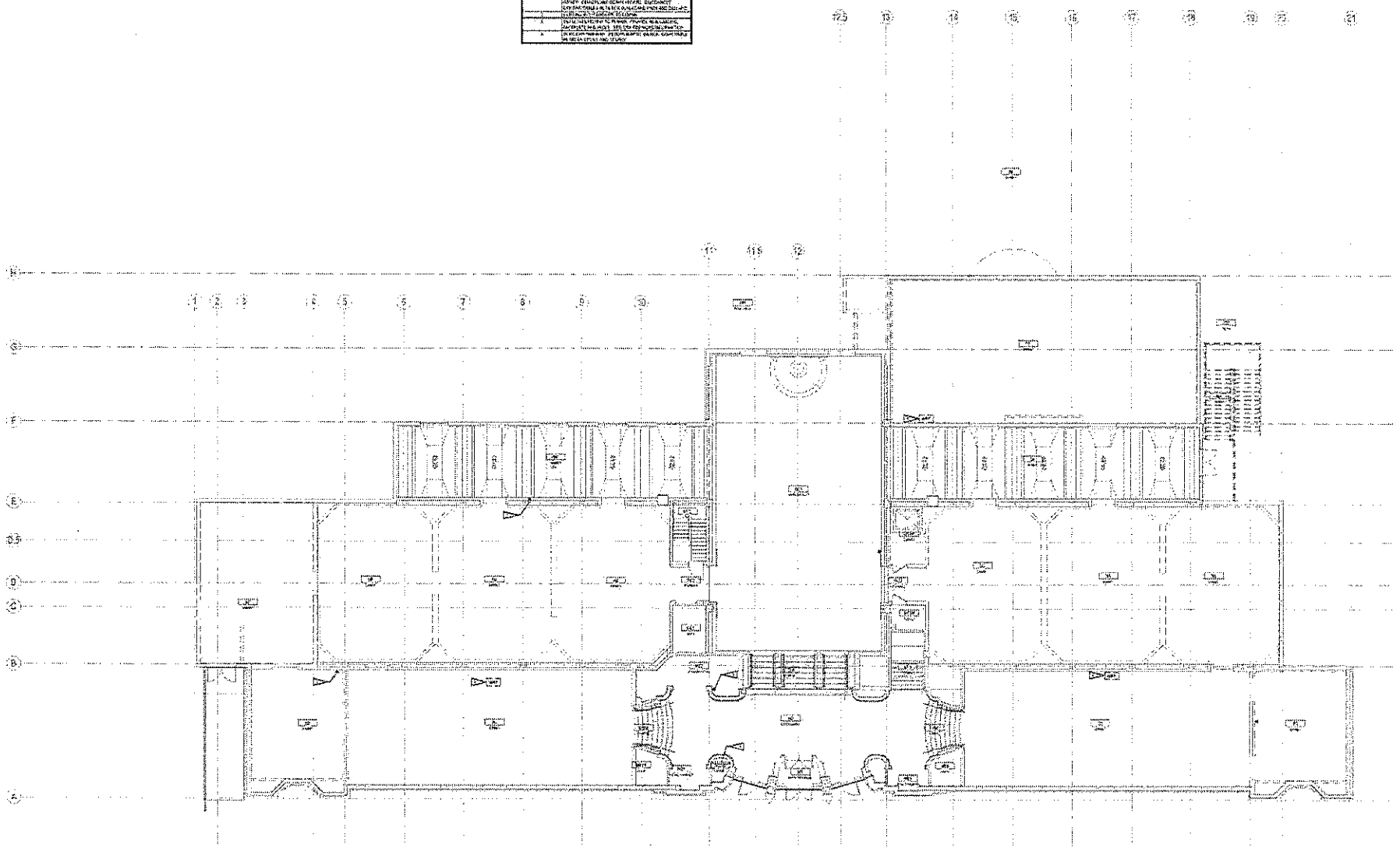
Telecom Floor Plan - Level 2 Demo

T102

TELECOM DEMO GENERAL NOTES

#	Key Notes



1 TELECOM FLOOR PLAN - LEVEL 3 DEMO
1/16" = 1'-0"

TRUE NORTH PLAN NORTH

0' 4' 8' 16' 32'

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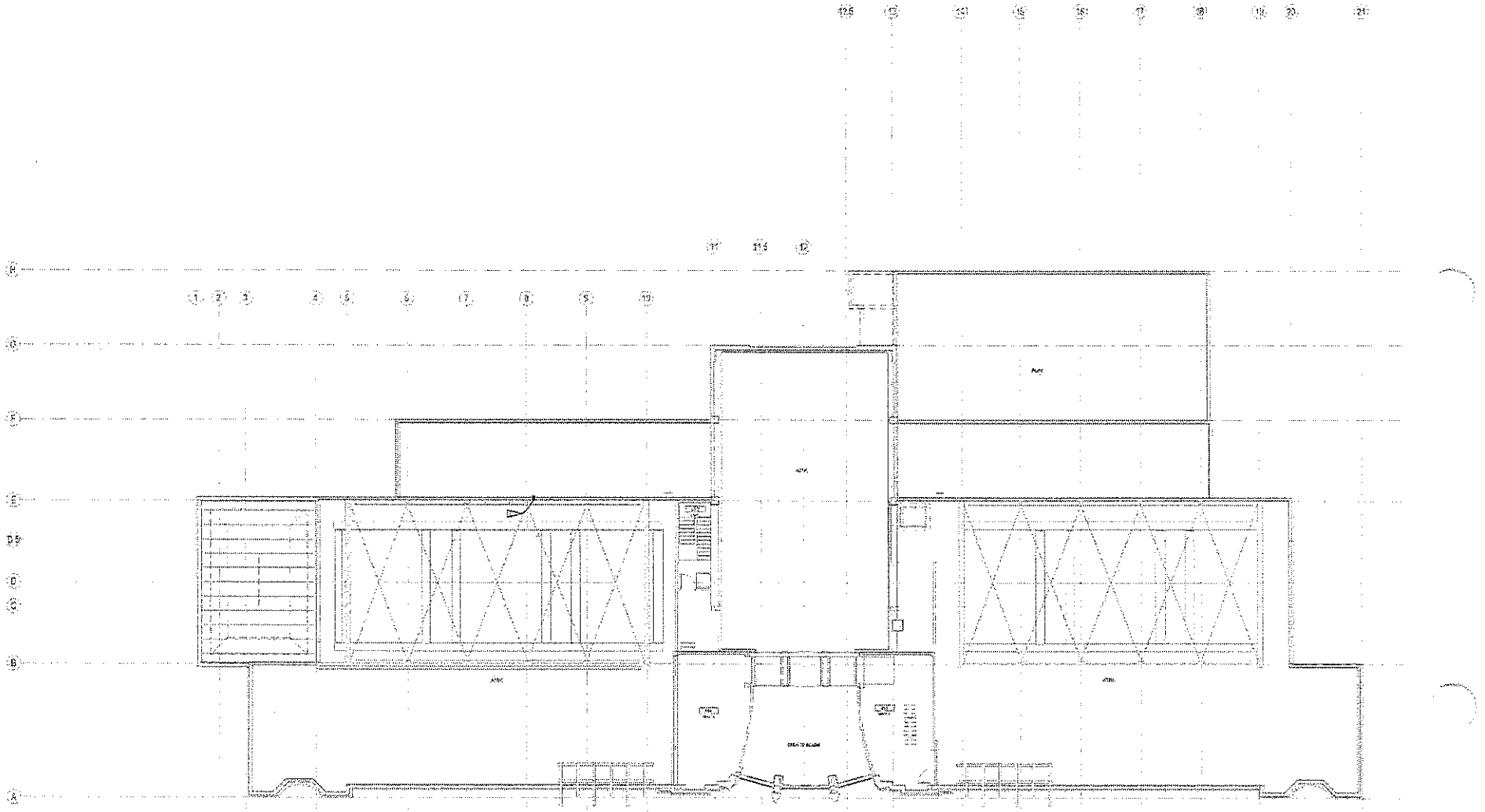
Telecom Floor Plan - Level 3 Demo

T103

TELECOM DEMO GENERAL NOTES



1 TELECOM FLOOR PLAN - LEVEL 4 ATTIC DEMO
1/16" = 1'-0"

TRUE NORTH PLAN NORTH

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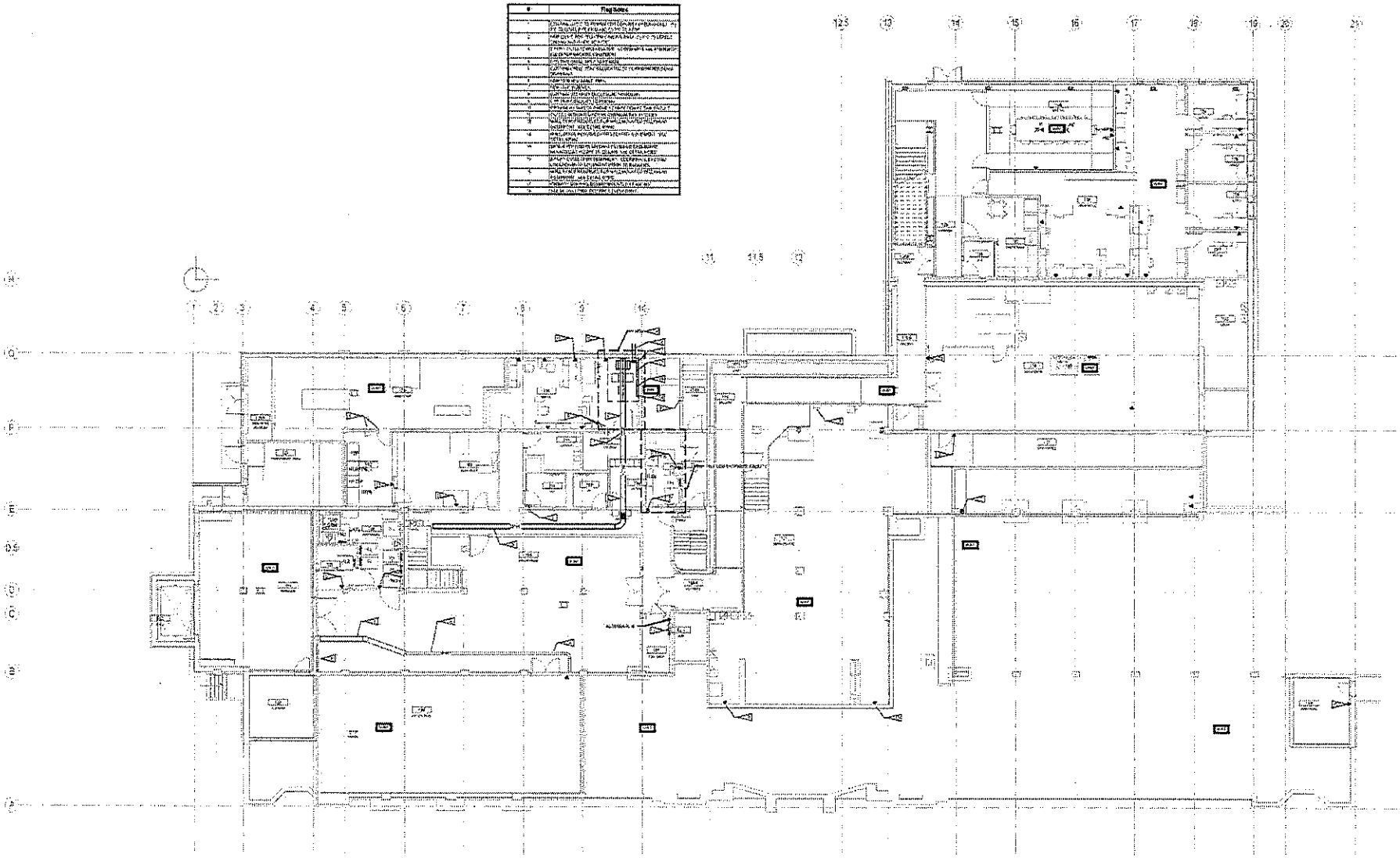
Telecom Floor Plan - Level 4 Attic Demo

T104



1 TELECOM FLOOR PLAN - LEVEL 1

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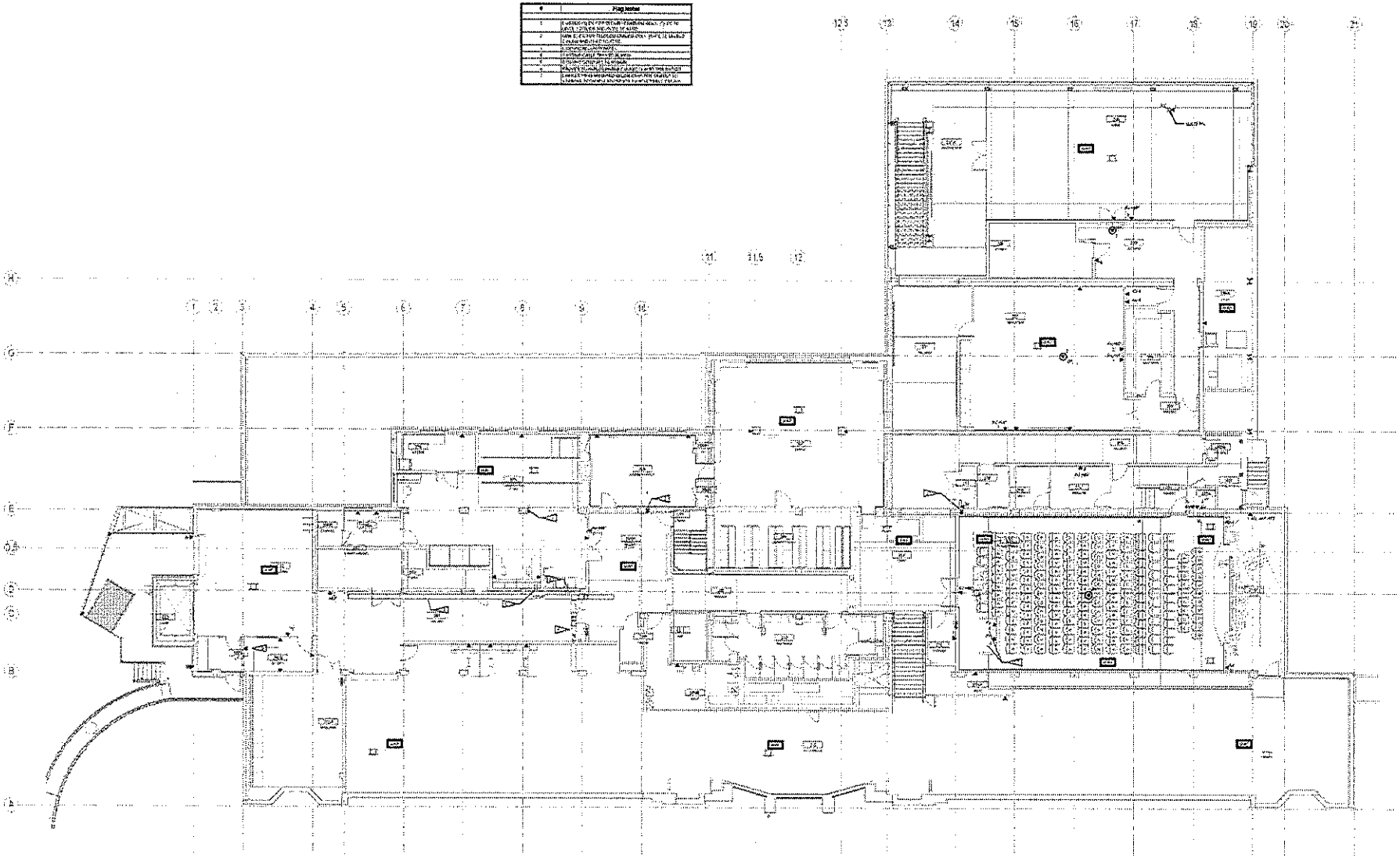
Telecom Floor Plan - Level 1

T201



1 TELECOM FLOOR PLAN - LEVEL 2
1/32" = 1'-0"

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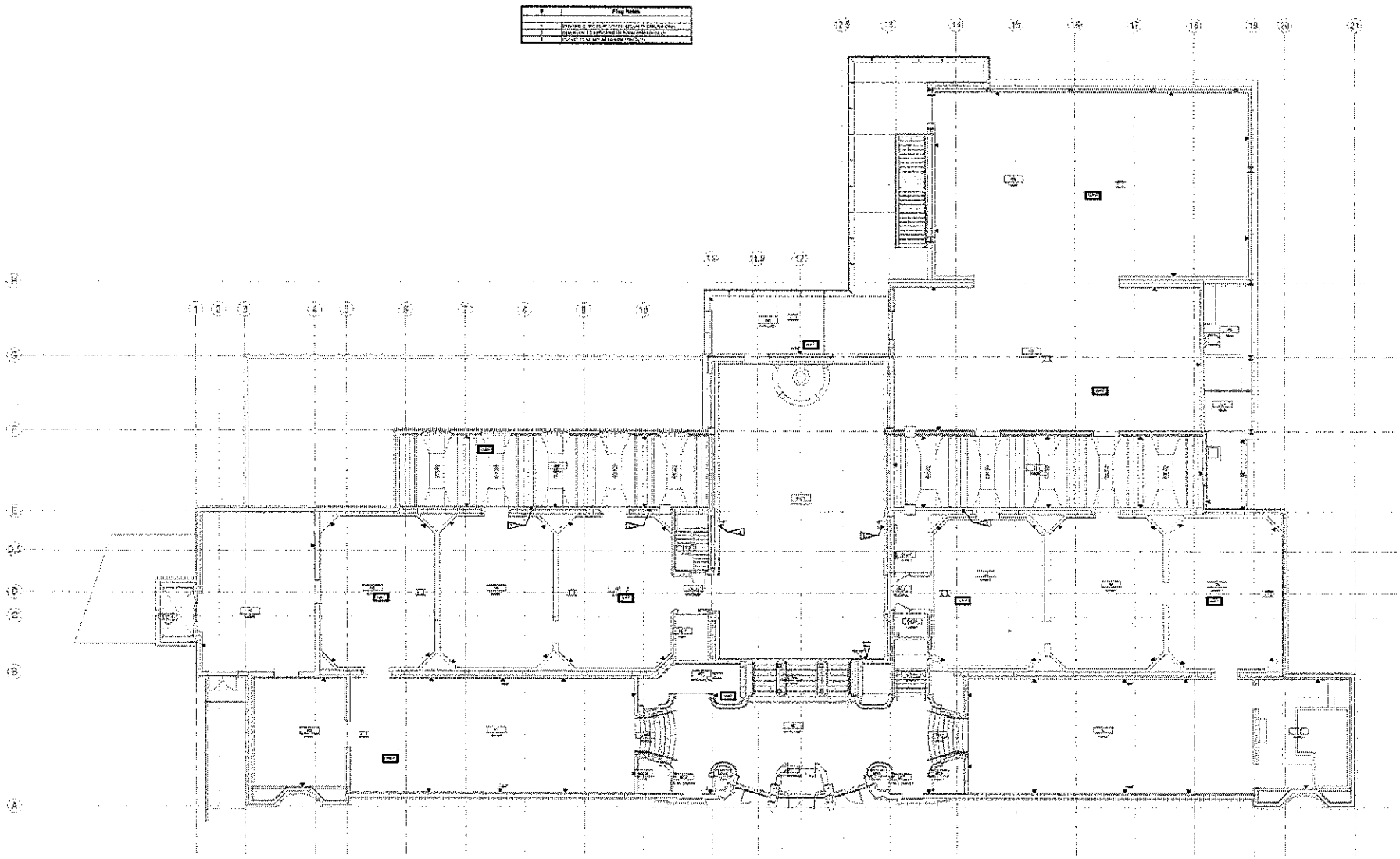
Telecom Floor Plan - Level 2

T202



1 TELECOM FLOOR PLAN - LEVEL 3
1/8" = 1'-0"

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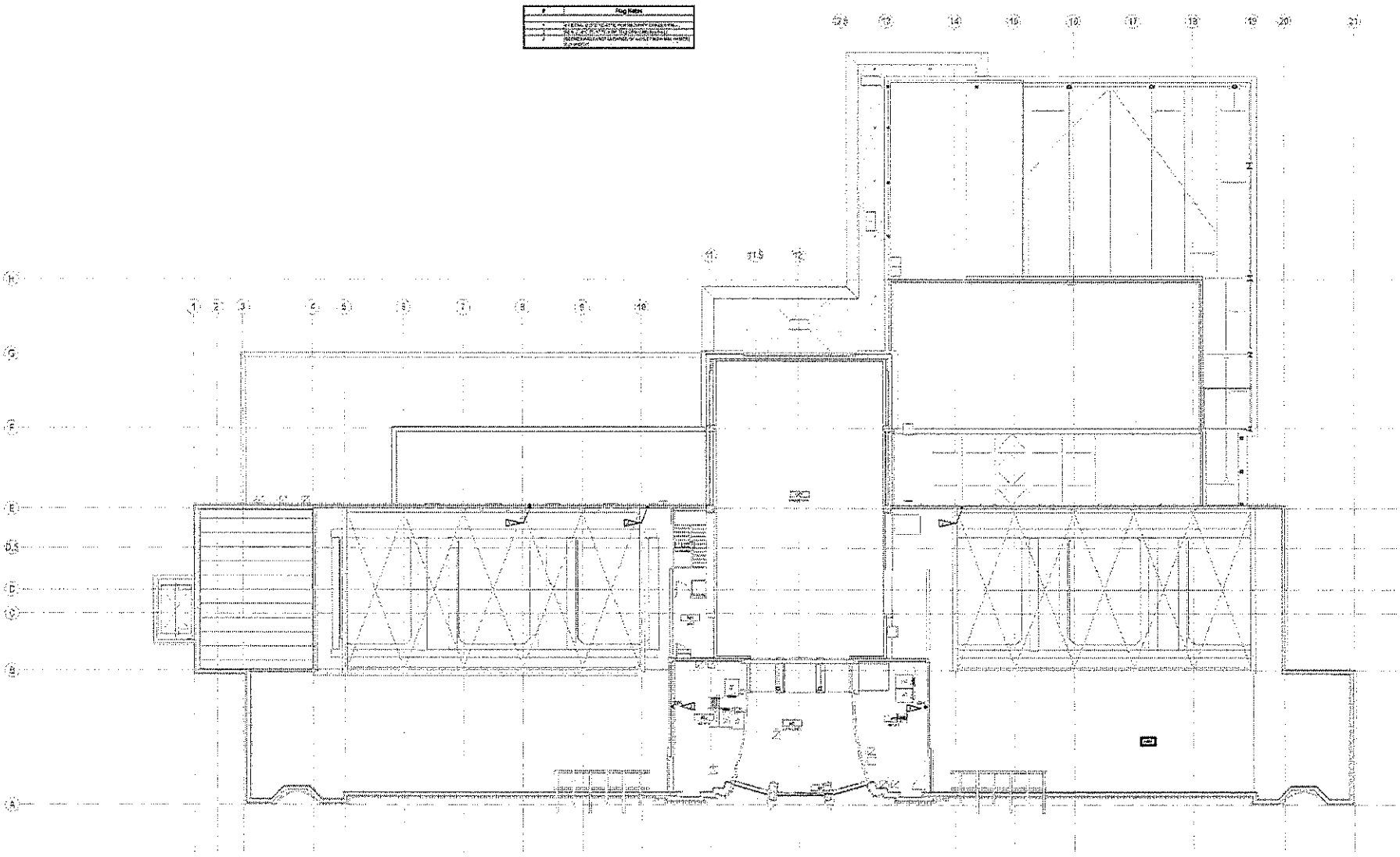
T203



1 T204 TELECOM FLOOR PLAN - LEVEL 4 ATTIC
1/8" = 1'-0"

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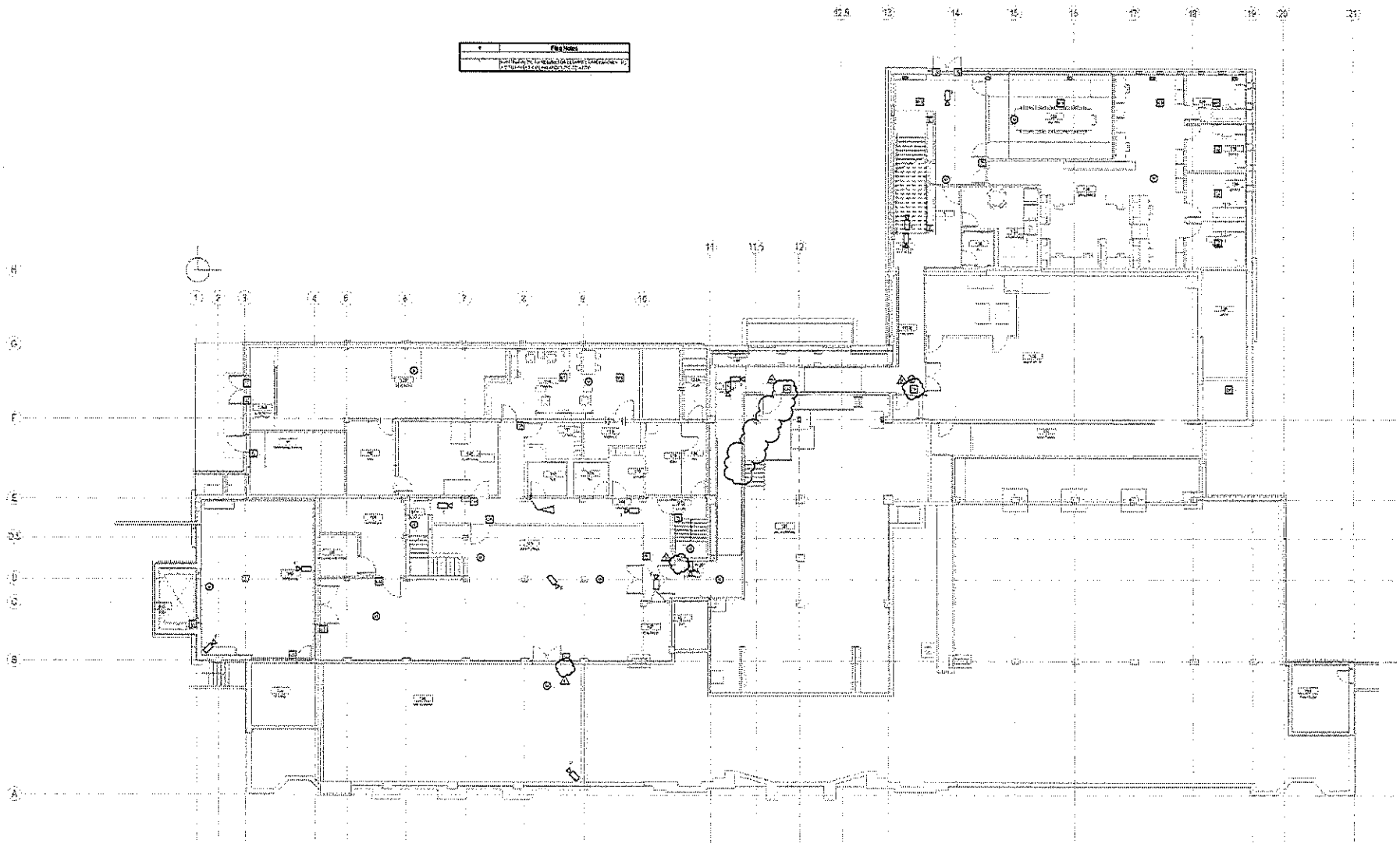
Telecom Floor Plan - Level 4 Attic

T204



1 SECURITY INFRASTRUCTURE FLOOR PLAN - LEVEL 1

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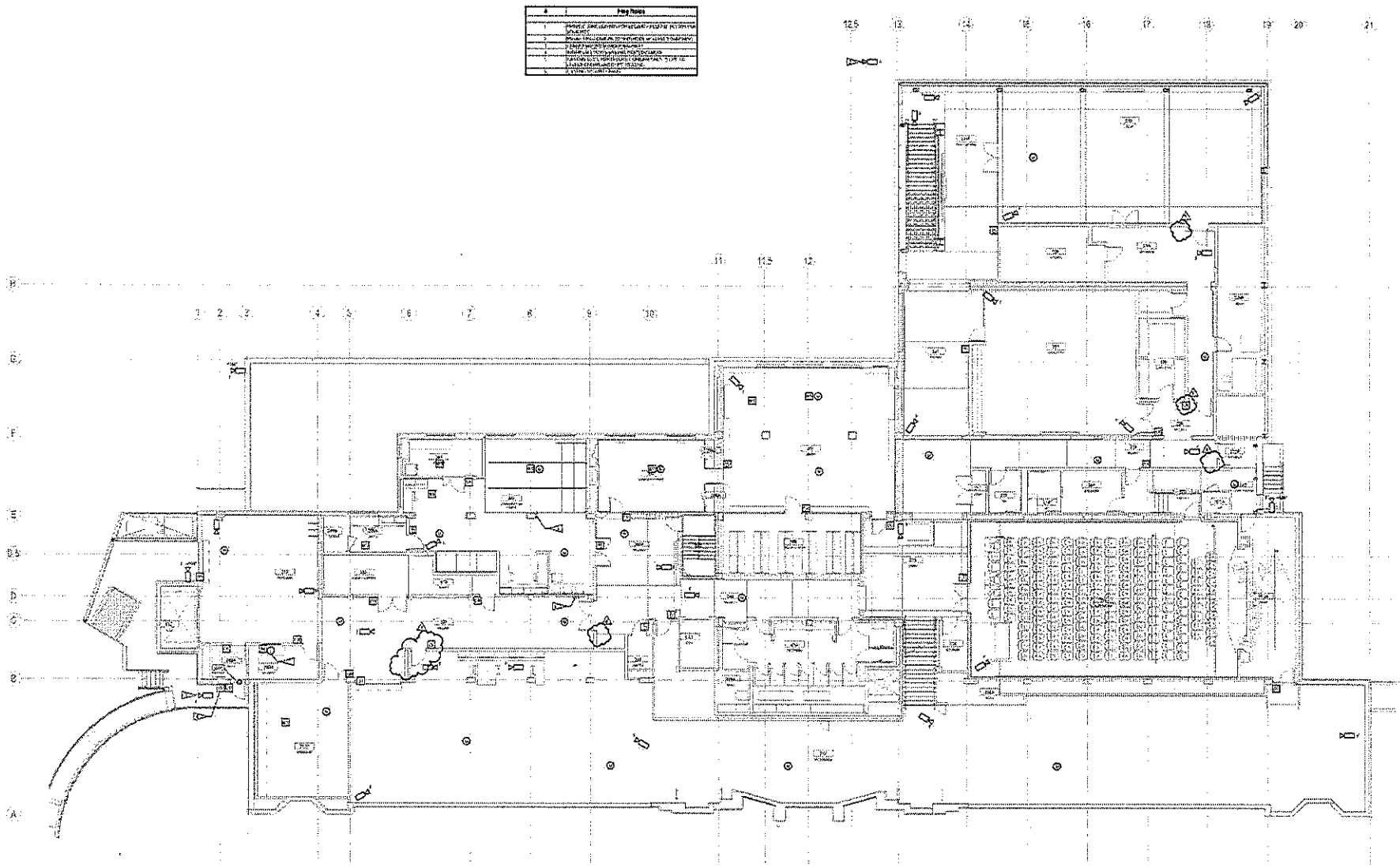
Security Infrastructure Floor Plan - Level 1

T401



1 SECURITY INFRASTRUCTURE FLOOR PLAN - LEVEL 2
1/8" = 1'-0"

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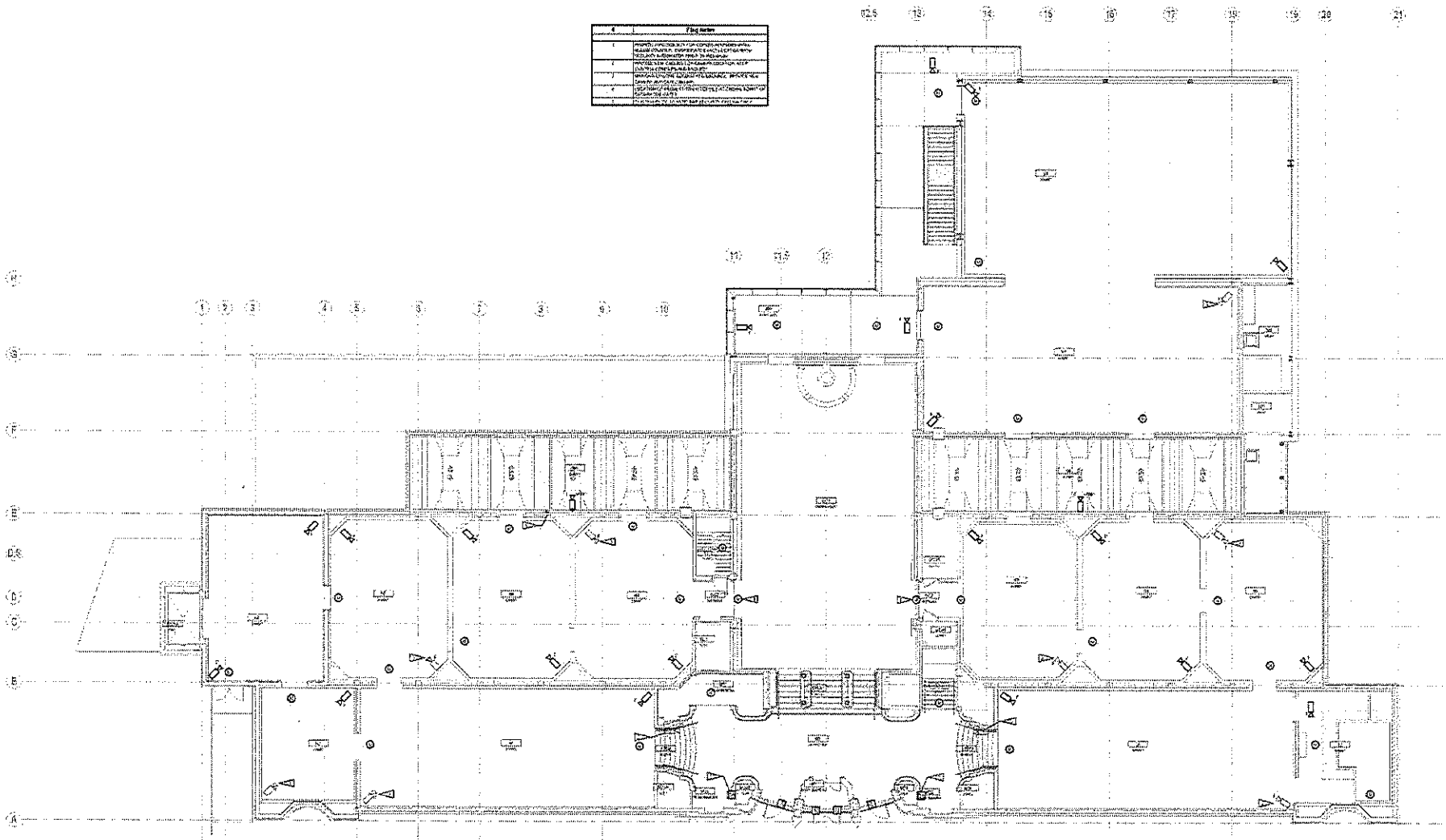
Security Infrastructure Floor Plan - Level 2

T402



1 SECURITY INFRASTRUCTURE FLOOR PLAN - LEVEL 3

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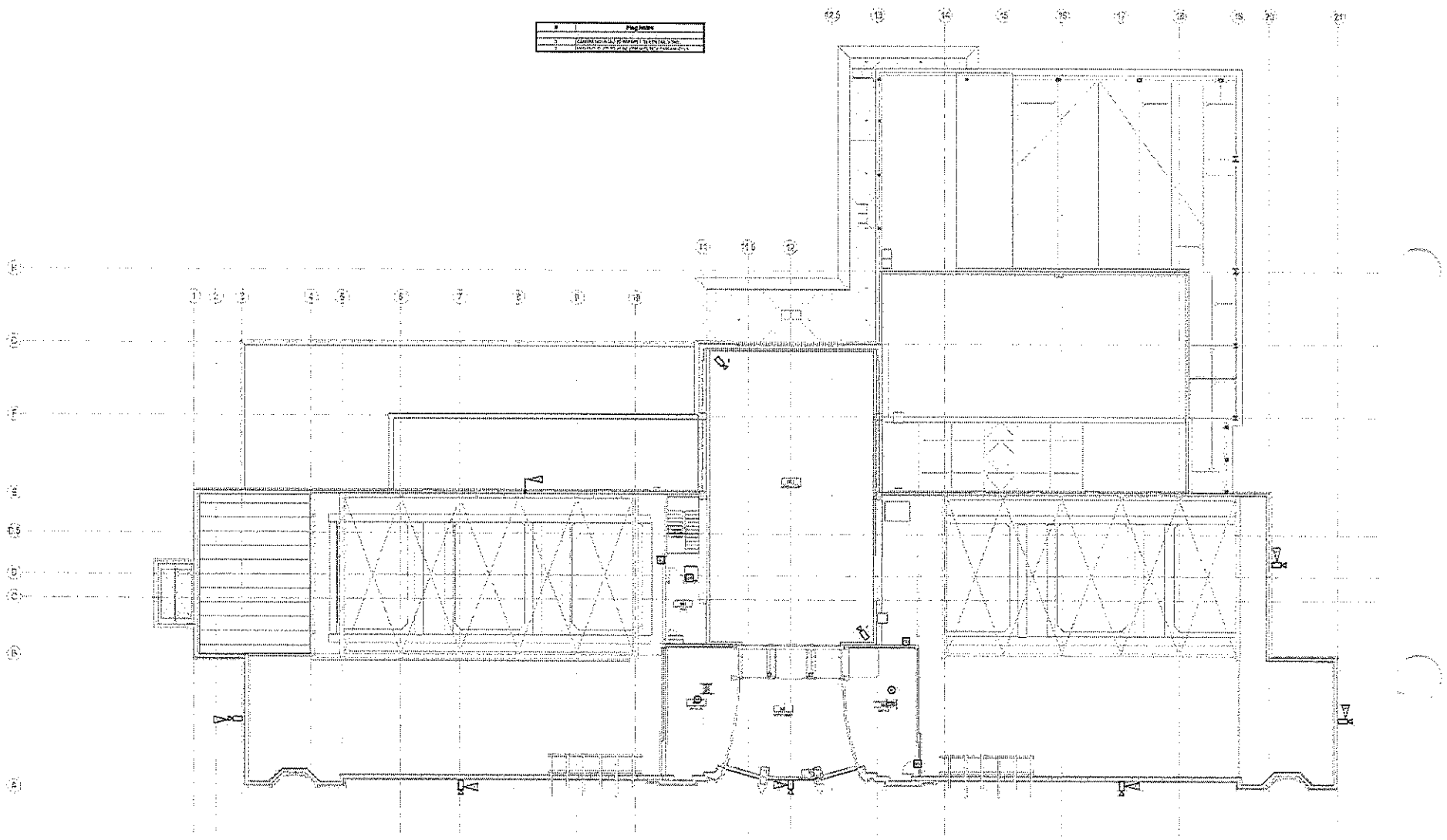
Security Infrastructure Floor Plan - Level 3

T403



1 SECURITY INFRASTRUCTURE FLOOR PLAN - LEVEL 4 ATTIC
1/64" = 1'-0"

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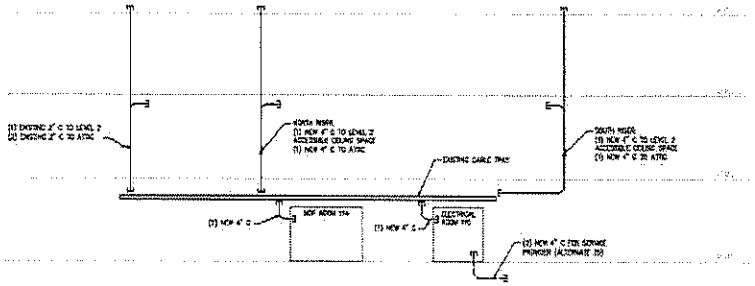
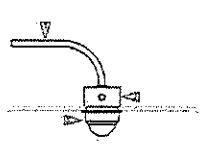
Security Infrastructure Floor Plan - Level 4

T404

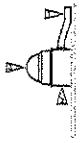


1 SYSTEMS PATHWAY ONE-LINE DIAGRAM



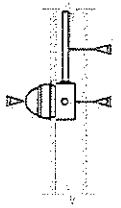
DETAIL FLAG NOTES:

2 CEILING CAMERA - FLUSH MOUNT



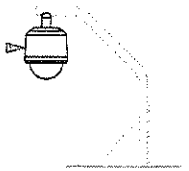
DETAIL FLAG NOTES:

3 WALL CAMERA - SURFACE MOUNT



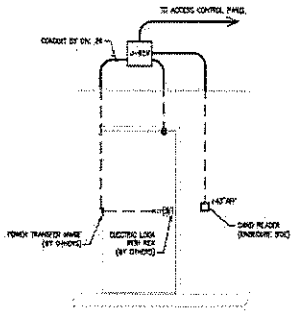
DETAIL FLAG NOTES:

4 WALL CAMERA - FLUSH MOUNT

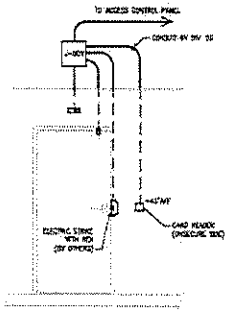


DETAIL FLAG NOTES:

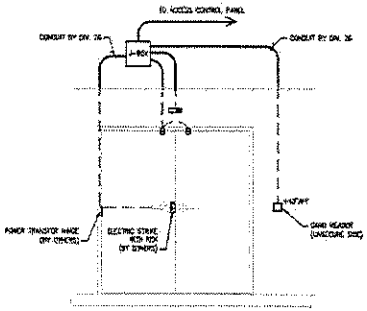
5 ROOF CAMERA - PARAPET MOUNT



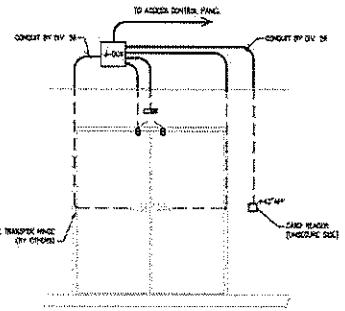
6 ROUGH-IN SINGLE DOOR - MONITOR ONLY



7 ROUGH-IN SINGLE DOOR - CARD ACCESS



8 ROUGH-IN DOUBLE DOOR - CARD ACCESS



9 ROUGH-IN DOUBLE DOOR - CARD ACCESS

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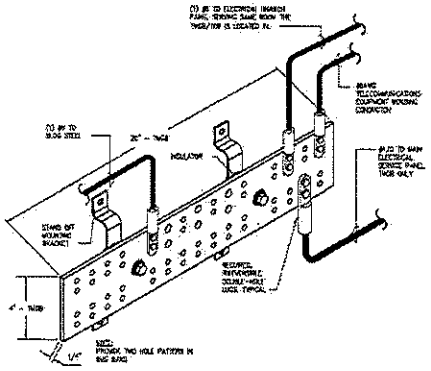
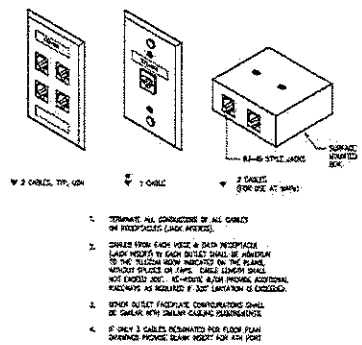
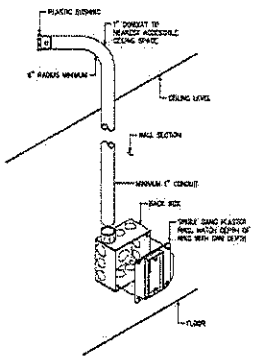
T801



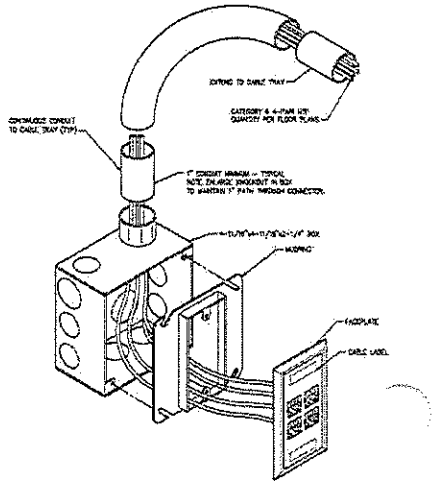
TYPICAL (TMGB) COMMUNICATIONS GROUND BUS BAR DETAIL



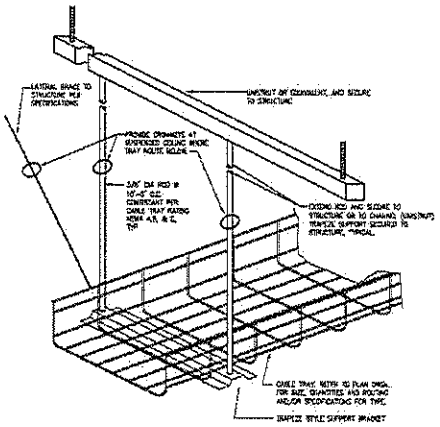
TYPICAL COMMUNICATIONS OUTLET FACEPLATE CONFIGURATIONS



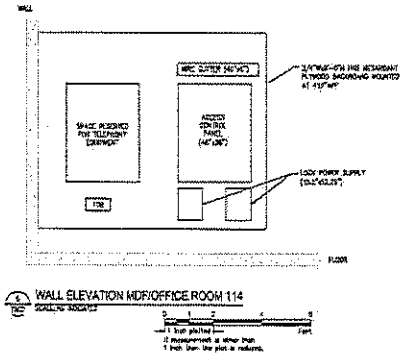
TYPICAL COMMUNICATIONS RACEWAY AND OUTLET DETAIL



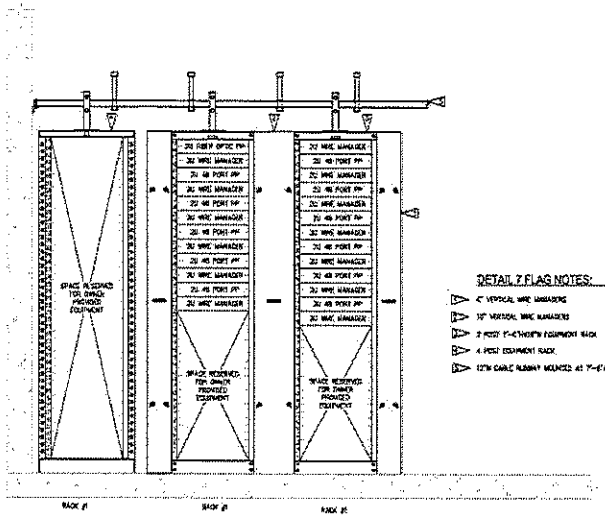
TELECOMMUNICATIONS OUTLET



WIRE BASKET CABLE TRAY SUPPORT TYPICAL



WALL ELEVATION MDF/OFFICE ROOM 114



MDF RACK ELEVATIONS

DETAIL 7 FLAG NOTES:

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Telecomm Details

T802

AV SYMBOL	DESIGNATION	ROUGH-IN	MOUNTING HEIGHT	WEIGHT	DETAIL	COORDINATION ITEMS
	CEILING SPEAKER - FLUSH MOUNTED	CUSTOM BY AV CONTRACTOR	FLUSH IN FINISHED CEILING	10	-	
	SUBWOOFER - SURFACE MOUNTED - SD	4" SQUARE BOX, 3" DEEP (MIN) WITH SINGLE-GANG MUD RING	96"AFF (UNLESS NOTED)	10	-	
	WALL SPEAKER - SURFACE MOUNTED	4" SQUARE BOX, 3" DEEP (MIN) WITH SINGLE-GANG MUD RING	96"AFF (UNLESS NOTED)	10	-	
	A/V CONNECTION BOX, 1-GANG	4" SQUARE BOX, 3" DEEP (MIN) WITH SINGLE-GANG MUD RING	18"AFF (UNLESS NOTED)	-	-	
	A/V CONNECTION BOX, 2-GANG	4" SQUARE BOX, 3" DEEP (MIN) WITH TWO-GANG MUD RING	18"AFF (UNLESS NOTED)	-	-	ADJACENT
	A/V CONNECTION BOX, 4-GANG	4-GANG BOX, 3" DEEP (MIN) WITH FOUR-GANG MUD RING	18"AFF (UNLESS NOTED)	-	-	ADJACENT
	INTERCOM CONNECTION BOX, 4-GANG	4" SQUARE BOX, 3" DEEP (MIN) WITH SINGLE-GANG MUD RING	48"AFF (UNLESS NOTED)	-	-	
	A/V PULL BOX	8"H x 8"W x 6"D	18"AFF (UNLESS NOTED)	-	-	ADJACENT
	A/V CONNECTION BOX	HOFFMAN A2C16X14X3	18"AFF (UNLESS NOTED)	-	AV501	ADJACENT
	AUDIOVISUAL EQUIPMENT RACK SLIDE OUT	SIZE AS NEEDED FOR CONDUIT - 8"H x 8"W x 4"D MINIMUM	18"AFF (UNLESS NOTED)	-	-	ADJACENT + DATA
	PTZ CAMERA - WALL MOUNT	4" SQUARE BOX, 3" DEEP (MIN) WITH SINGLE-GANG MUD RING	96"AFF (UNLESS NOTED)	10	-	ADJACENT
	CEILING MOUNTED VIDEO PROJECTOR	4" CEILING BOX, 3.5" DEEP (MIN) WITH TWO-GANG MUD RING	FLUSH IN FINISHED CEILING	100	-	ADJACENT
	VIDEO DISPLAY CONNECTION BOX - WALL MOUNT	FSR PWB - 270 WALL BOX	60"AFF (UNLESS NOTED)	250	-	INSIDE BOX 2 DATA
	VIDEO DISPLAY CONNECTION BOX - WALL MOUNT	FSR PWB - 270 WALL BOX	60"AFF (UNLESS NOTED)	250	-	INSIDE BOX 3 DATA
	LOW VOLTAGE CONTROL SWITCH - PROJ. SCREEN	4" SQUARE BOX, 3" DEEP (MIN) WITH SINGLE-GANG MUD RING	LIGHT SWITCH HEIGHT	-	-	
	LOW VOLTAGE CONTROL - PROJ. SCREEN	PROJECTION SCREEN CASE	-	-	-	HARD WIRED LOW VOLTAGE CONNECTION
	WIRELESS MIC ANTENNA CONNECTION BOX - WALL MOUNTED	4" SQUARE BOX, 3" DEEP (MIN) WITH SINGLE-GANG MUD RING	96"AFF (UNLESS NOTED)	5	-	
	ASSISTED LISTENING CONNECTION BOX - CEILING MOUNTED	4" SQUARE BOX, 3" DEEP (MIN) WITH SINGLE-GANG MUD RING	FLUSH IN FINISHED CEILING	5	-	
	MULTIDISCIPLINE FLOOR BOX W/ AV REQUIREMENTS	REFER TO ELECTRICAL DRAWINGS	-	-	-	INSIDE BOX
	CONTROL PANEL - CP	4" SQUARE BOX, 3" DEEP (MIN) WITH TWO-GANG MUD RING	LIGHT SWITCH HEIGHT	-	-	(POE) INSIDE BOX

AV SHEET INDEX

AV000 AV SYMBOLS AND ABBREVIATIONS
AV201 AUDIO VISUAL FLOOR PLAN - LEVEL 1
AV202 AUDIO VISUAL FLOOR PLAN - LEVEL 2
AV203 AUDIO VISUAL FLOOR PLAN - LEVEL 3
AV701 AUDIO VISUAL RCP - LEVEL 1
AV702 AUDIO VISUAL RCP - LEVEL 2
AV501 AUDIO VISUAL DETAILS
AV601 AUDIO VISUAL SINGLELINES - AUDITORIUM ROOM 215
AV602 AUDIO VISUAL SINGLELINES - EVENT ROOM 230 & EDUCATION ROOM 237
AV603 AUDIO VISUAL SINGLELINES - WRITING ROOM 122, CONSERVATION STUDIO 205, GARDEN COURT 102, GREENROOM & INTERCOM

CABLE TYPES (AV CABLES PROVIDED BY CONTRACTOR)

THE FOLLOWING DEFINE "X" IN THE CONDUIT/CABLE CALLOUT:

A: LINE LEVEL AUDIO
M: MICROPHONE LEVEL AUDIO
S: SPEAKER LEVEL AUDIO
V: VIDEO
C: CONTROL/DATA
R: RF
F: FIBER
X: NO SPECIFIC DESIGNATION

SYMBOL CALLOUTS

BOX TYPE / BOX NUMBER

CONDUIT/CABLE CALLOUT

NUMBER OF CONDUITS (OMIT IF ONE) - CONDUIT SIZE (OMIT IF 3/4") - CABLE TYPE (PROVIDED BY AV CONTRACTOR)

(#)"C:X

WORK DEFINITION

- FLAG NOTE
- REVISION BUBBLE
- REVISION SYMBOL
- DETAIL SYMBOL
- ELEVATION SYMBOL
- EXISTING EQUIPMENT OR DEVICE
- REMOVE EXISTING EQUIPMENT
- EXISTING WALLS
- IDENTIFICATION SYMBOL FOR EQUIPMENT

CIRCUITS

- RACEWAY CONCEALED IN CEILING OR WALL
- RACEWAY CONCEALED UNDERFLOOR OR UNDERGROUND
- RACEWAY UP
- RACEWAY DOWN
- RACEWAY STUB-OUT WITH BUSHING
- HOME RUN TO PANEL OR LOCATION NOTED
- CIRCUIT CONTINUATION
- CABLE TRAY

DIAGRAM NOTES

- FULL NORMAL PATCH POINT
- HALF NORMAL PATCH POINT
- UNNORMALLED PATCH POINT
- JACK/PATCH/CONNECTION POINT

OTHER SYMBOLS (FOR COORDINATION ONLY)

THESE SYMBOLS ARE SHOWN FOR REFERENCE ONLY AND ONLY REPRESENT THE REQUIREMENTS OF POWER AND DATA FOR AV SYSTEMS. SEE E-SERIES SHEETS FOR SPECIFIC POWER AND DATA REQUIREMENTS.

- SINGLE RECEPTACLE POWER OUTLET
- DUPLEX POWER OUTLET
- QUAD POWER OUTLET
- EQUIPMENT POWER CONNECTION
- DATA OUTLET

ABBREVIATIONS

[illegible]

ARCHITECTURAL NOTES

1. PROVIDE ADDITIONAL BACKING AS REQUIRED FOR EQUIPMENT LOADS INDICATED IN TABLE ON THIS SHEET. PROVIDE BACKING FOR A MINIMUM OF THREE TIMES (3x) THE WEIGHT SHOWN ON TABLE.
2. THESE DRAWINGS ARE INTENDED ONLY AS DESIGN INPUT TO THE ARCHITECT AND THE DESIGN TEAM. [illegible]
3. [illegible]

CONTRACTOR NOTES

1. UNLESS OTHERWISE SPECIFIED, ALL AUDIOVISUAL EQUIPMENT SHOWN IS FOR REFERENCE ONLY. SUCH EQUIPMENT WILL BE PROVIDED AND INSTALLED BY THE AV CONTRACTOR, NOT THE GENERAL CONTRACTOR OR THE ELECTRICAL CONTRACTOR UNLESS NOTED IN THE SPECIFICATIONS.
2. [illegible]

AV SYSTEM NOTES

1. [illegible]
2. [illegible]

ELECTRICAL NOTES

1. THE LOCATIONS OF ELECTRICAL DEVICES OR LIGHTING FIXTURES INDICATED ON ARCHITECTURAL PLANS, ELEVATIONS OR SECTIONS TAKE PRECEDENCE OVER LOCATIONS INDICATED ON THE AV-SERIES DRAWINGS.
2. THE ELECTRICAL CONTRACTOR SHALL PROVIDE: ALL CONDUIT, WIREWAYS, AND PERMANENTLY INSTALLED JUNCTION BOXES AND EQUIPMENT IN FLOORS, WALLS, CEILINGS, PRE-INSTALL CEILING SPEAKER BACK-CANS, [illegible]
3. [illegible]
4. [illegible]
5. [illegible]
6. [illegible]
7. [illegible]
8. [illegible]
9. [illegible]
10. [illegible]
11. [illegible]
12. [illegible]
13. [illegible]
14. [illegible]
15. [illegible]

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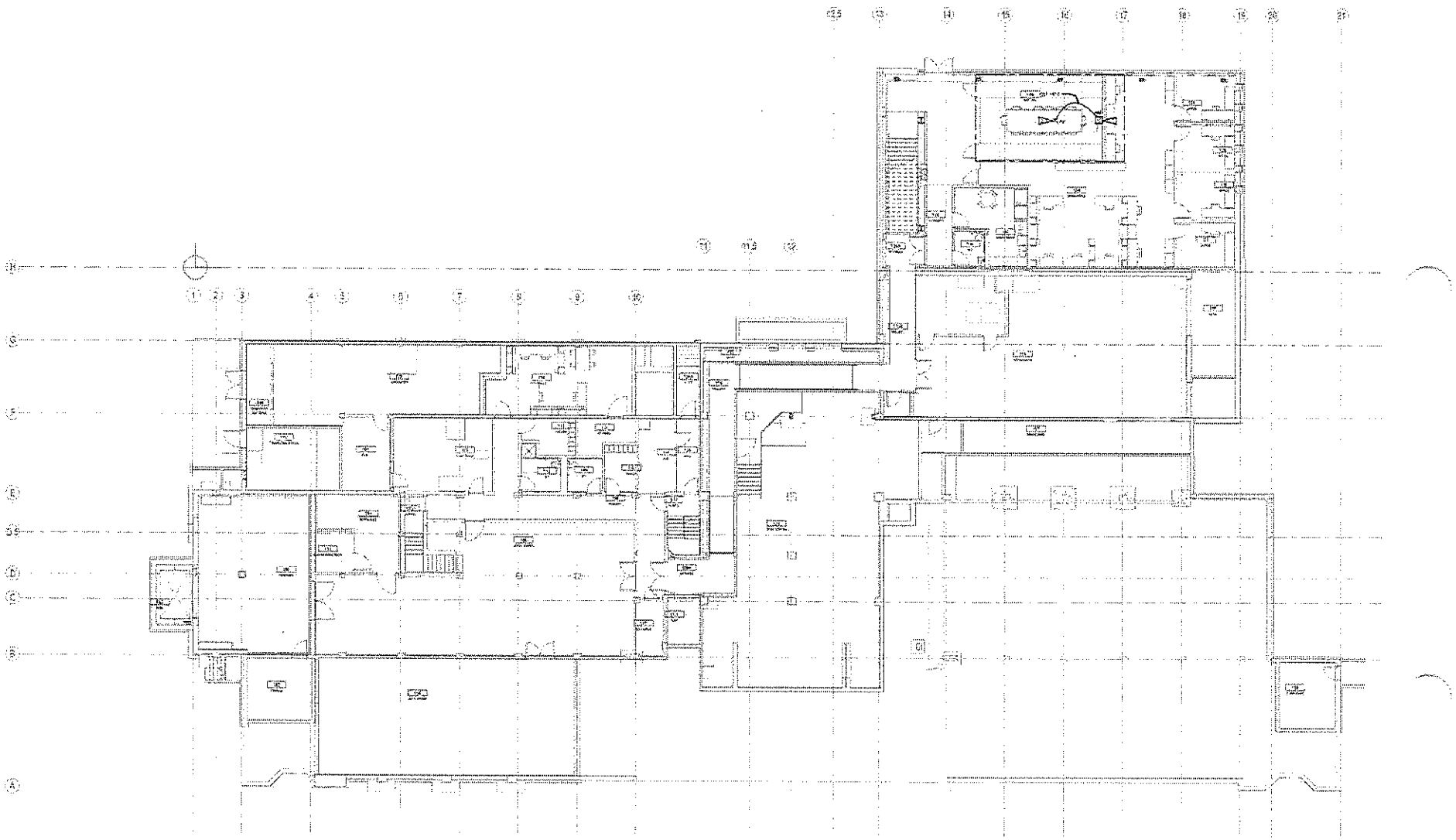
AV SYMBOLS AND ABBREVIATIONS

AV000



1 Audio Visual Floor Plan - Level 1

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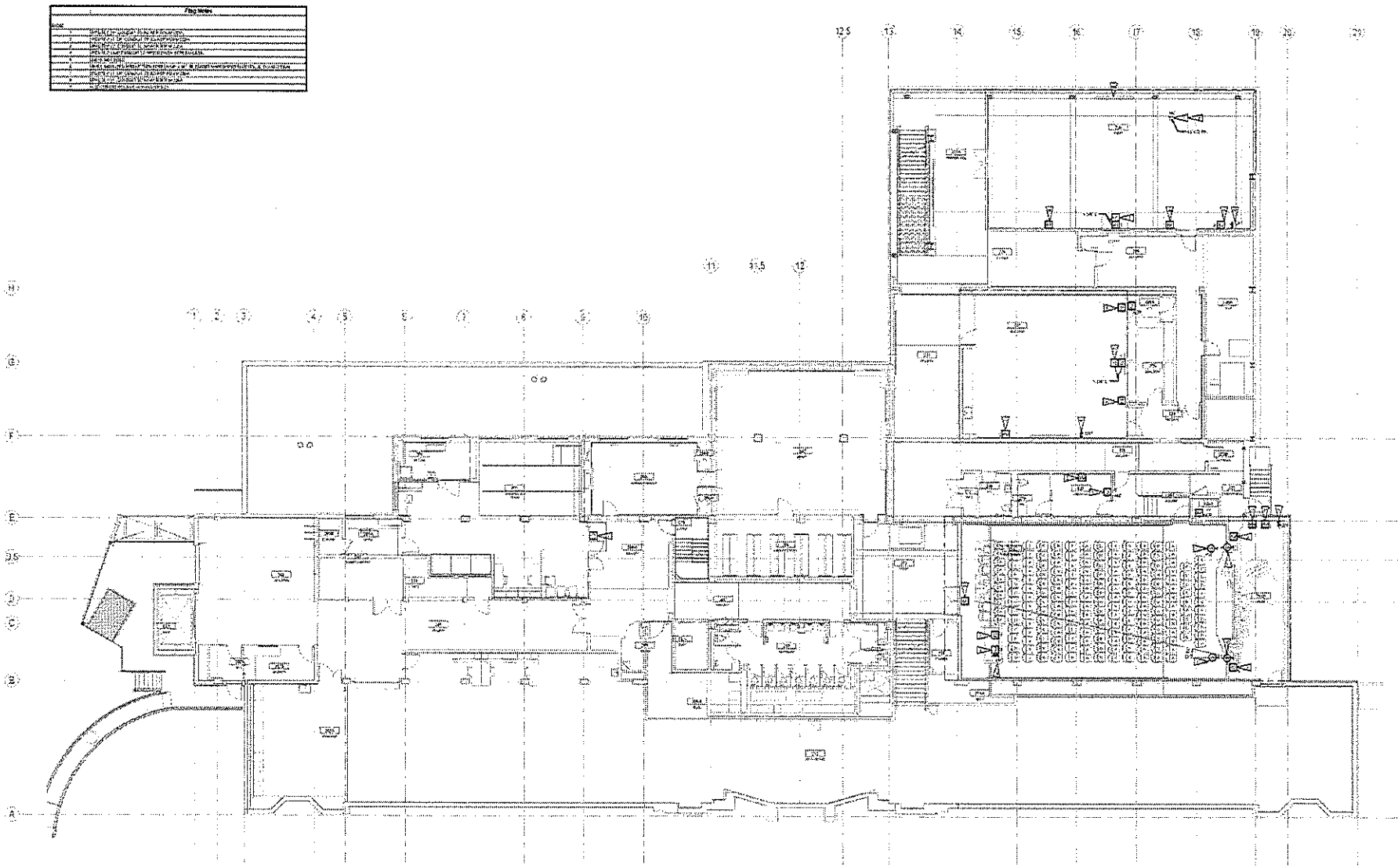
Audio Visual Floor Plan - Level 1

AV201



1 AV202 Audio Visual Floor Plan - Level 2
1/8" = 1'-0"

TRUE NORTH PLAN NORTH

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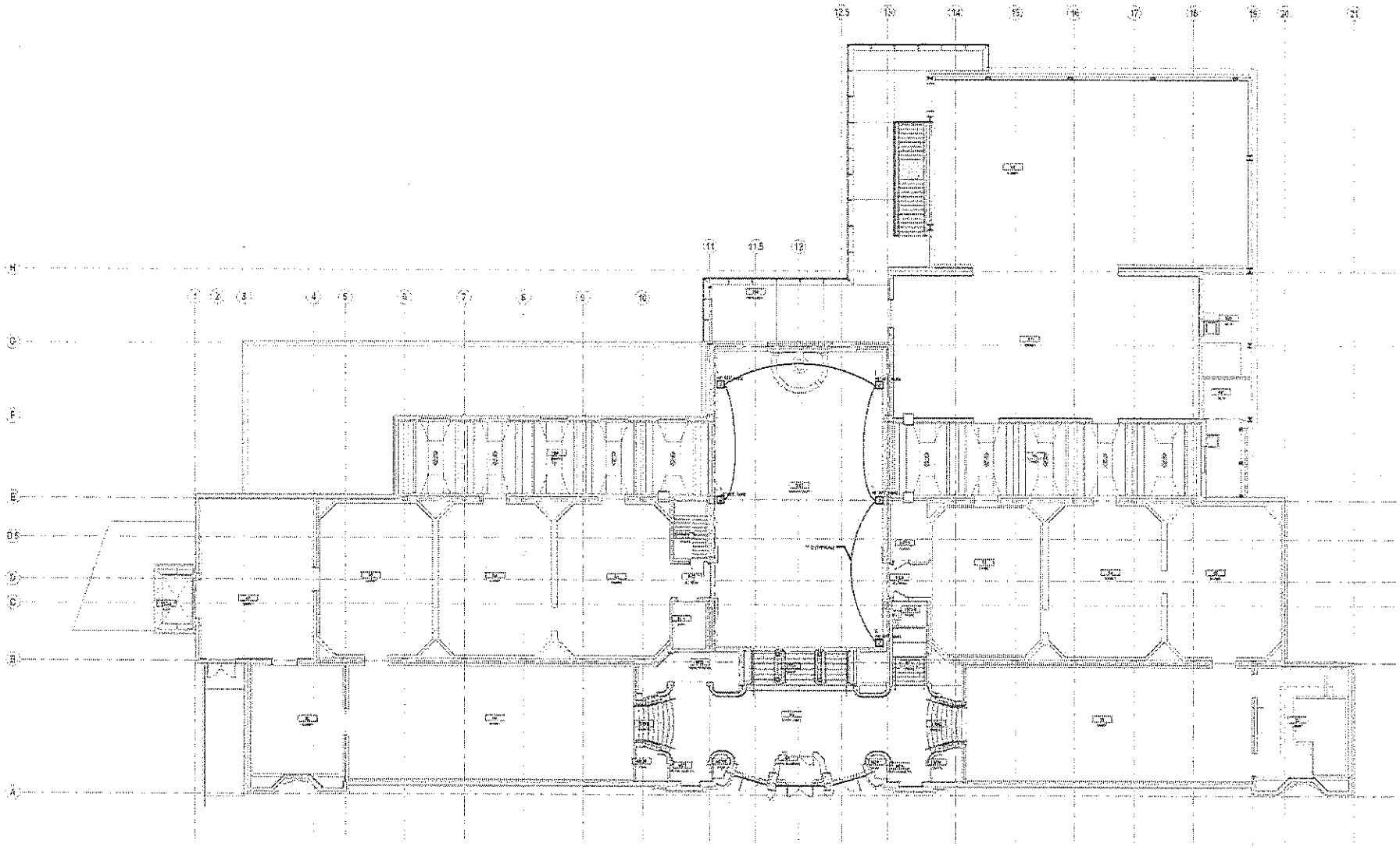
Audio Visual Floor Plan - Level 2

AV202



1 Audio Visual Floor Plan - Level 3
1/8" = 1'-0"

TRUE NORTH PLAN NORTH

0' 4' 8' 16' 32'

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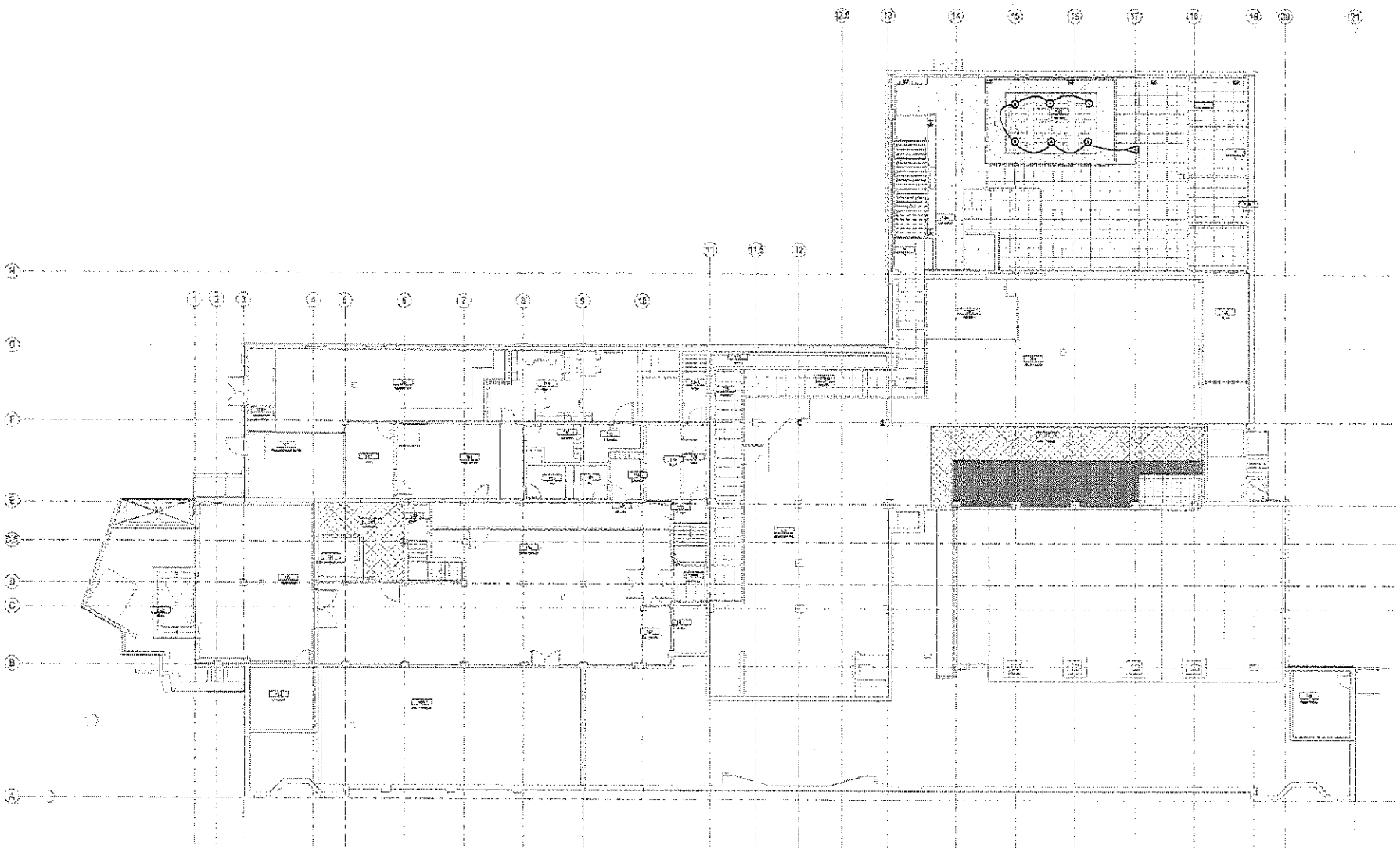
Audio Visual Floor Plan - Level 3

AV203

	1	Flag Notes
Symbol		Description of Symbol or Abbreviation

AV GENERAL NOTES



2 Audio Visual RCP - Level 1

TRUE NORTH PLAN NORTH

0 4 8 16 32

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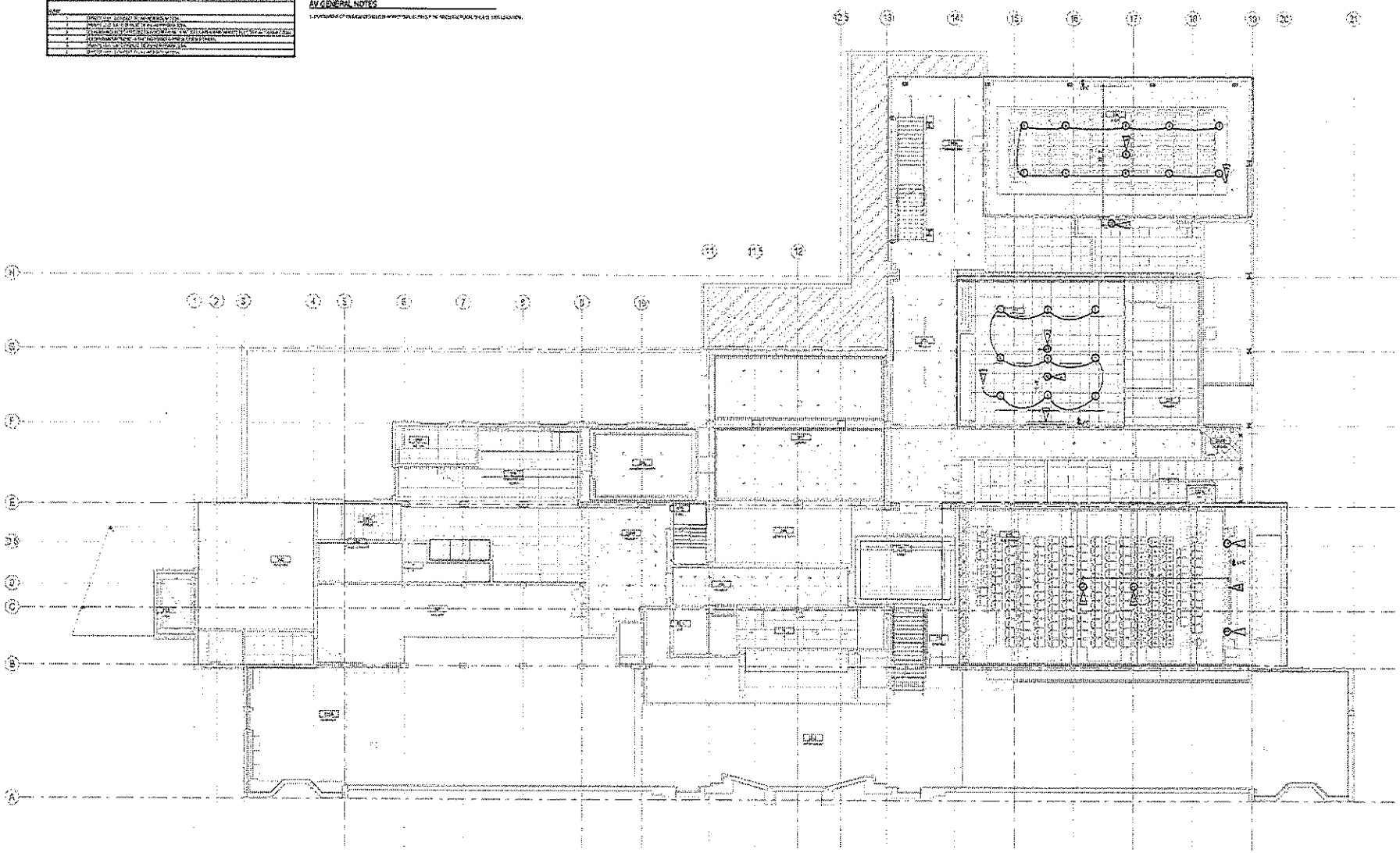
Audio Visual RCP - Level 1

AV701

Flag Notes	
Note	
1	[illegible]
2	[illegible]
3	[illegible]
4	[illegible]
5	[illegible]
6	[illegible]

AV GENERAL NOTES

[illegible]



2 Audio Visual RCP - Level 2

TRUE NORTH PLAN NORTH

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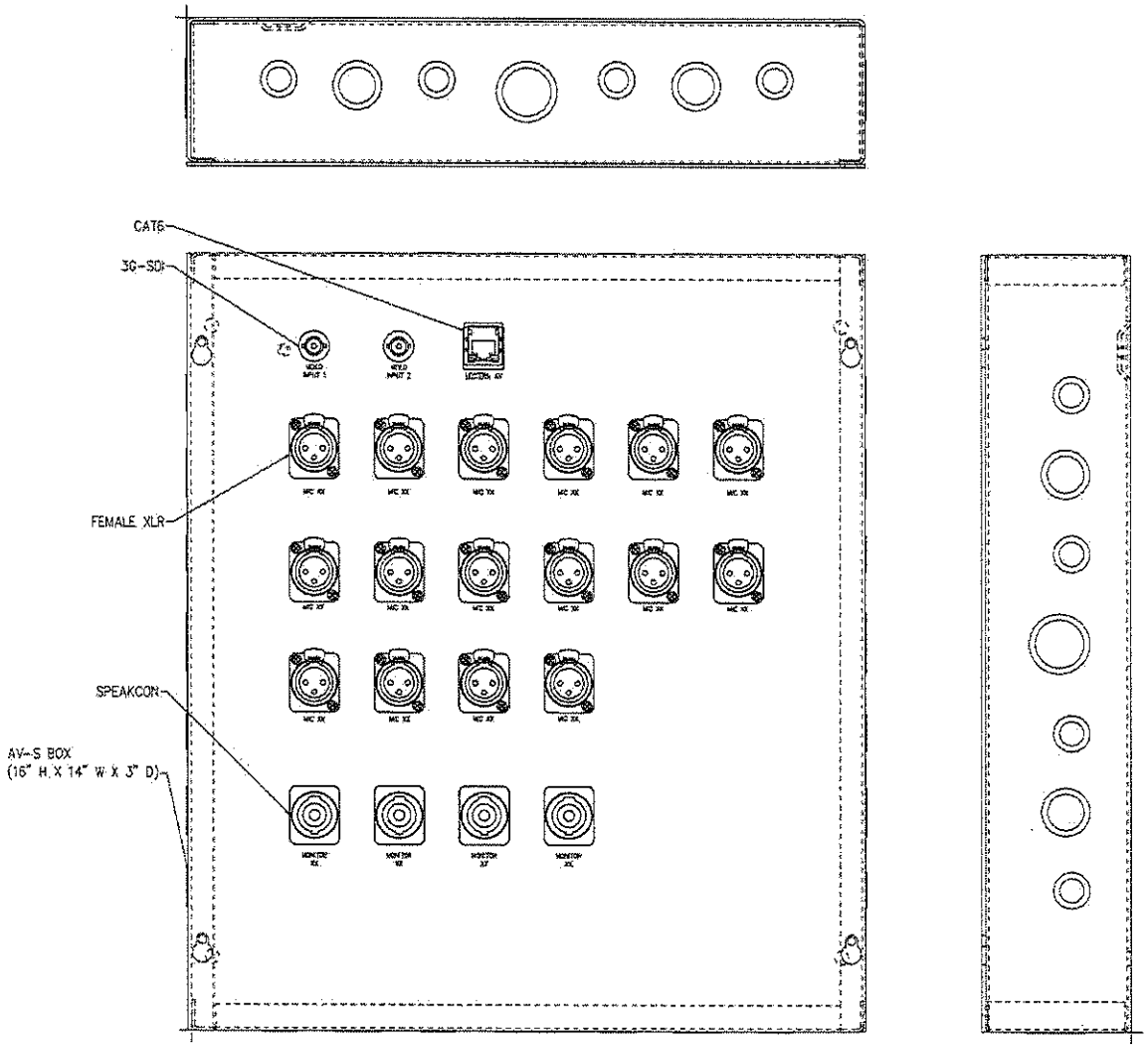
Audio Visual RCP - Level 2

AV702



AV-S BOX DETAIL

TYPICAL OF 2

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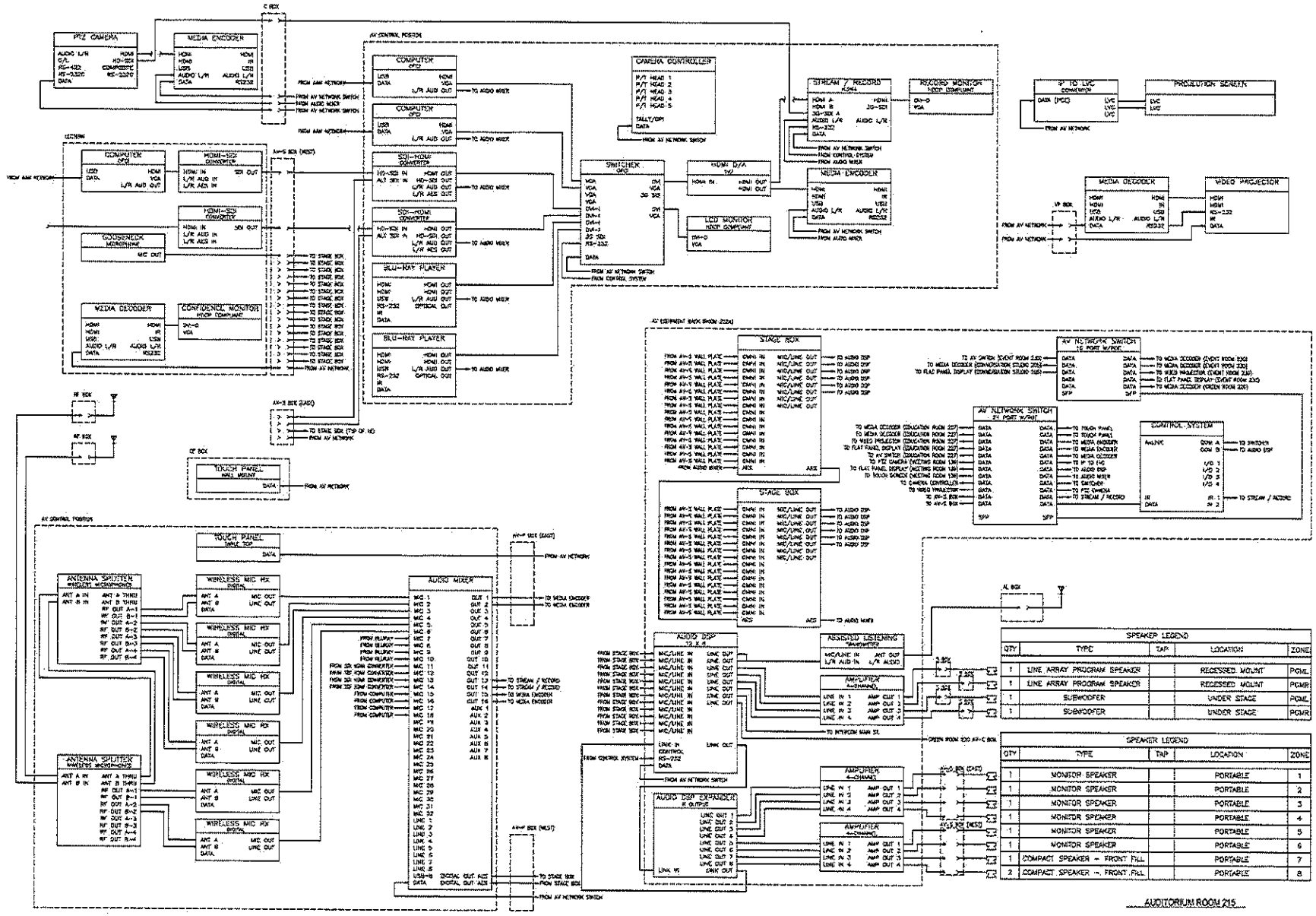
Audio Visual Details

AV801



SPEAKER LEGEND				
QTY	TYPE	TAP	LOCATION	ZONE
1	LINE ARRAY PROGRAM SPEAKER		RECESSED MOUNT	PGML
1	LINE ARRAY PROGRAM SPEAKER		RECESSED MOUNT	PGMR
1	SUBWOOFER		UNDER STAGE	PGML
1	SUBWOOFER		UNDER STAGE	PGMR

SPEAKER LEGEND				
QTY	TYPE	TAP	LOCATION	ZONE
1	MONITOR SPEAKER		PORTABLE	1
1	MONITOR SPEAKER		PORTABLE	2
1	MONITOR SPEAKER		PORTABLE	3
1	MONITOR SPEAKER		PORTABLE	4
1	MONITOR SPEAKER		PORTABLE	5
1	MONITOR SPEAKER		PORTABLE	6
1	COMPACT SPEAKER – FRONT FILL		PORTABLE	7
2	COMPACT SPEAKER – FRONT FILL		PORTABLE	8

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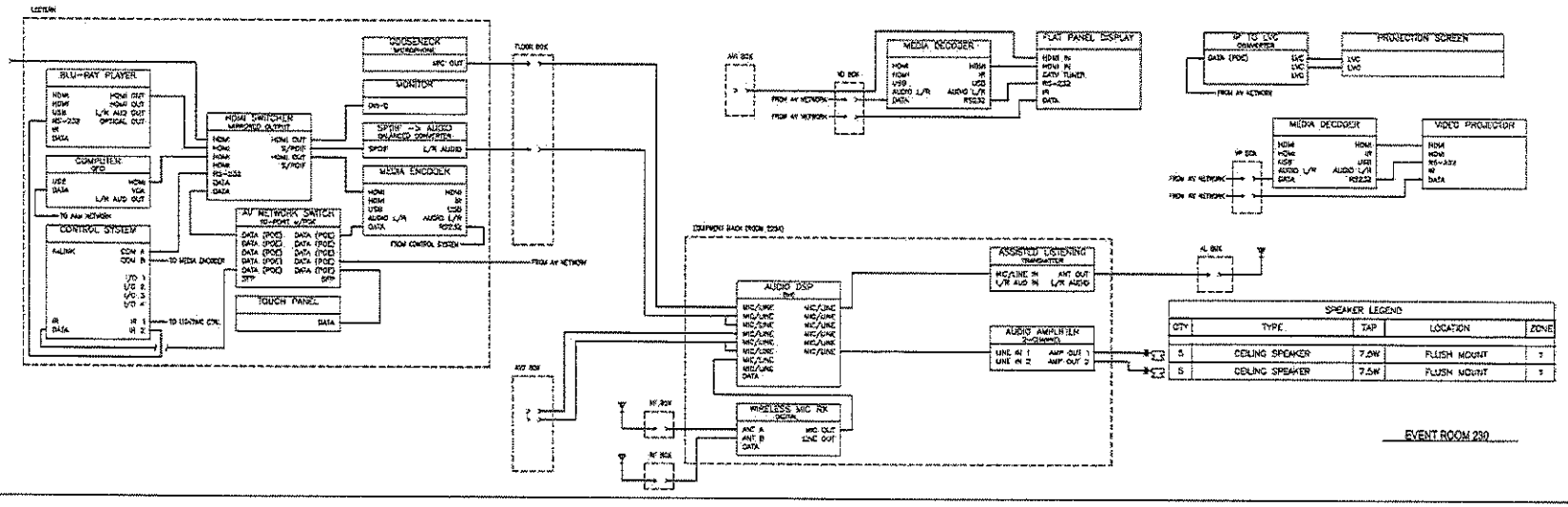
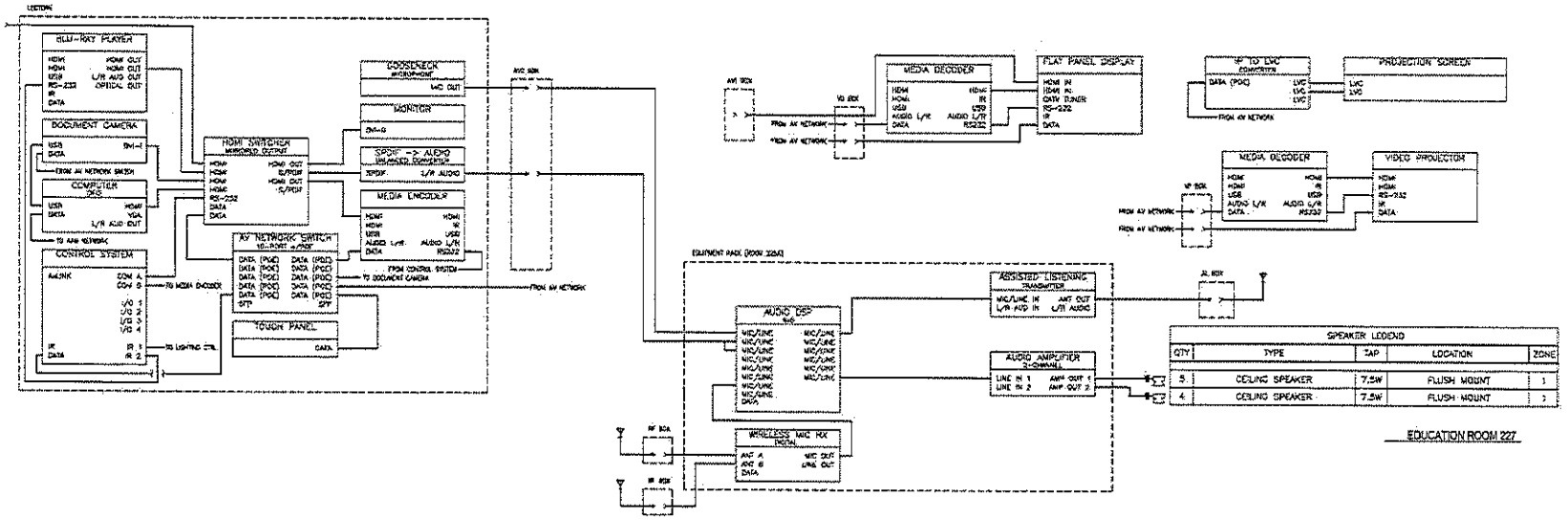
Audio Visual Singleline

AV901



EVENT ROOM 230



EDUCATION ROOM 227

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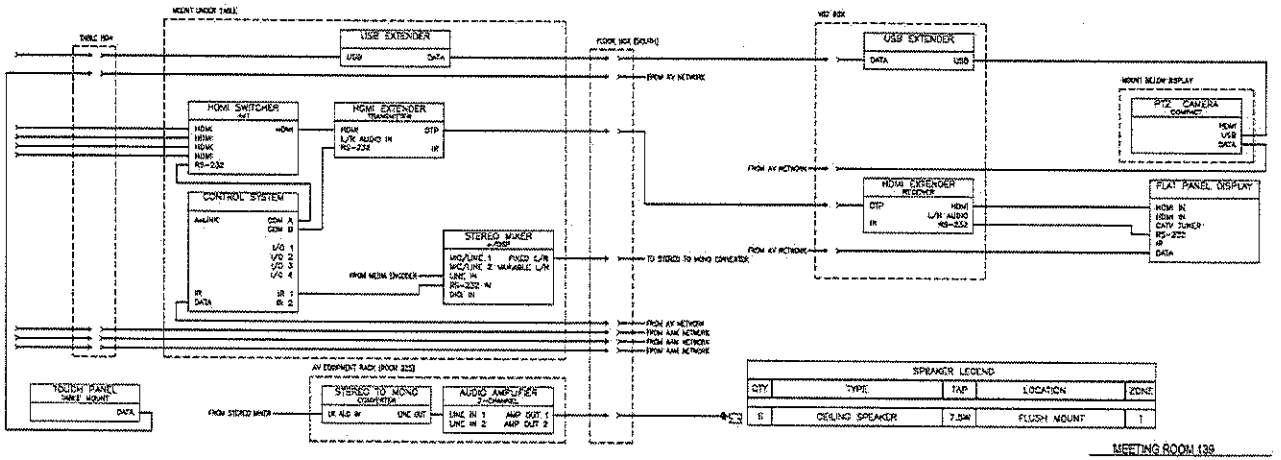
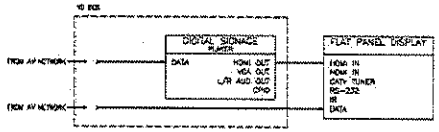
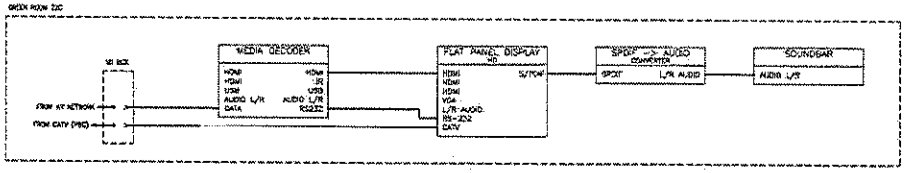
AV902



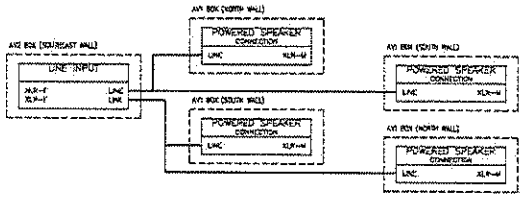
MEETING ROOM 139



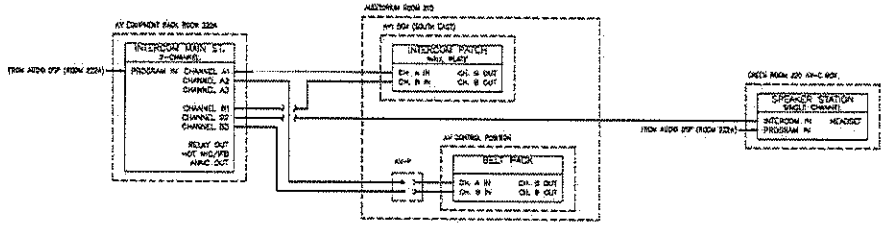
CONSERVATION STUDIO 205



GREEN ROOM 220



GARDEN COURT ROOM GC1



INTERCOM

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Audio Visual Singleline

AV903

VT01 GENERAL ELEVATOR INFORMATION
VT02 PLANS AND SECTION, ELEVATOR 2

INDEX OF DRAWINGS

VT01 / SCALE: NTS

ELEVATOR 2 TRAVEL: 8' 10½" (NOM)

SUMMARY OF ELEVATORS

VT01 / SCALE: NTS

ABBREVIATIONS

VT01 / SCALE: NTS

GENERAL NOTES

VT01 / SCALE: NTS

1. THESE DRAWINGS FOR GENERAL INFORMATION ONLY. REQUIREMENTS OF INDIVIDUAL VENDORS MAY VARY.
2. WORK (MINIMUM) TO BE COORDINATED BY ARCHITECT, CONSULTING AND ENGINEERING FIRMS, NATIONAL INSPECTOR, DIRECTIONAL, ELECTRICAL AND MECHANICAL CONSULTS.
3. FIELD VERIFY ALL EXISTING DIMENSIONS.
4. REVIEW GENERAL DIMENSIONS FOR ELEVATOR EQUIPMENT SPECIFIED IN THE CASE OF VARIANCE OF ACTUAL EQUIPMENT TO.
5. VERTICAL STRUCTURAL SUPPORT AND SEAL APPROPRIATE IS PROVIDED BY MACHINE ROOM IN THE CASE OF REINFORCED CONCRETE, MASONRY CONSTRUCTION.

ELEVATOR ELECTRICAL AND MECHANICAL REQUIREMENTS

VT01 / SCALE: NTS

POWER FEEDER REQUIREMENTS
(MAIN POWER SUPPLY: 480-3-60 ASSUMED)

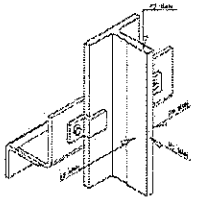
ELEVATOR NUMBER	CAPACITY (POUNDS)	SPEED (FPM)	TRACTION (EFFICIENCY)	HOISTING MOTOR HP	MOTOR STARTING AMPS			FULL LOAD AMPS		MOTOR REQUIRED (AMPS)	CONTROLLER (AMPS)
					LOCKED ROTOR	VOLTAGE DROP %	MAX. VOLTS	NOMINAL	MAXIMUM	BRANCH CIRCUIT PROTECTION PER LINE	CONDUCTOR SIZE PER LINE
2	3,500	150	N/A	30 (EACH)	121	265	3.17	42	N/A	ADJUST*	

* MAY ADJUST BASED ON AS APPLICABLE

NOTES:
1. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL POWER WIRING, CONDUIT, DISCONNECTS, AND CONTROLLERS AS REQUIRED BY THE ELEVATOR EQUIPMENT MANUFACTURER AND LOCAL CODES.
2. MAIN POWER TO BE PROVIDED AT EACH CONTROLLER. PROVIDE ELECTROMAGNETIC NOISE FILTERING PER MANUFACTURER'S RECOMMENDATIONS.
3. MAIN POWER SUPPLY VOLTAGE TO BE WITHIN ±10% OF NOMINAL VOLTAGE SHOWN.
4. ALL SUPPLY CONDUCTORS SHALL BE COPPER.
5. VOLTAGE DROP CALCULATIONS ARE BASED ON THE FOLLOWING:
   - 3Ø, 208V: 1% DROP = 2.08V FOR 100' CIRCUIT LENGTH
   - 3Ø, 480V: 1% DROP = 4.80V FOR 100' CIRCUIT LENGTH
   - 3Ø, 600V: 1% DROP = 6.00V FOR 100' CIRCUIT LENGTH
6. MACHINE SHALL BE SUPPLIED WITH ONE SET OF 3 PHASE POWER FEEDERS SIZED AS SHOWN ON THE DRAWINGS. PROVIDE ONE SET OF 3 PHASE POWER FEEDERS SIZED AS SHOWN ON THE DRAWINGS FROM THE 208/120V 400AMP EMERGENCY PANEL LOCATED IN MECHANICAL ROOM.
7. MOTOR: 460VOLT, 60HZ, 3PHASE NON-SYNCHRONOUS.
8. THE SELECTION OF WIRE SIZING (SHOWN) IS NONCONFORMING WITH MANUFACTURER'S INSTRUCTIONS TO BE SIZED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, CONSULTING ELECTRICAL AND MECHANICAL.
9. PROVIDE 600V TELEPHONE SERVICE LINE TO EACH CAR CONTROLLER (IF APPLICABLE).
10. PROVIDE GFCI CONVENIENCE OUTLETS FOR MACHINE ROOM AND MACHINERY SPACES, AS REQUIRED BY CODE.
11. PROVIDE HOME MACHINE WITH VOLTAGE TO MATCH SUPPLY VOLTAGE PROVIDED HERE.

ADDITIONAL POWER AND DISCONNECT REQUIREMENTS IN MACHINE ROOM

ADDITIONAL SYSTEM	CONTROL METHOD	ADDITIONAL VOLTAGE	ADDITIONAL CAPACITY
CAR LIGHT AND FAN WITH VARIABLE CONVENIENCE	EACH CONTROLLER	120V/1-60	8% AMP PER CAR
INTERCOM SYSTEM (IF APPLICABLE)	AT AMPLIFIER	120V/1-60	1 AMP MAX



RAIL FORCES MAXIMUM ON EACH GUIDE RAIL
(FORCES ARE IN KIPS)

	ELEVATOR VENDOR	T	RDOM/RC (R)
NORMAL STRESS	CAR #1	3.1	CAR WEIGHT, FACE OF CAR RAIL
	CAR #2	4.1	CAR WEIGHT, SIDE OF CAR RAIL — LOADING OF BUSHING
	CWT #1	N/A	CWT WEIGHT, FACE OF CWT RAIL
	CWT #2	N/A	CWT WEIGHT, SIDE OF CWT RAIL
FREE FALL OVER SPEED	CAR #1	5.8	CAR WEIGHT, FACE OF CAR RAIL
	CAR #2	7.9	CAR WEIGHT, SIDE OF CAR RAIL — LOADING OF BUSHING
	CWT #1	N/A	CWT WEIGHT, FACE OF CWT RAIL
	CWT #2	N/A	CWT WEIGHT, SIDE OF CWT RAIL
SAFETY STOP	CAR #1	5.8	CAR WEIGHT, FACE OF CAR RAIL
	CAR #2	7.9	CAR WEIGHT, SIDE OF CAR RAIL — LOADING OF BUSHING
	CWT #1	N/A	CWT WEIGHT, FACE OF CWT RAIL
	CWT #2	N/A	CWT WEIGHT, SIDE OF CWT RAIL

FOR CASE WHERE MACHINE ROOM GETS SMALL MODIFY, PROVIDE ADDITIONAL LATERAL SUPPORTS WHERE THE TOP REMAINS FOR LARGE CLEAR RAIL FORCES DUE TO MAST MECHANIC, DEFLECTION CHANGE, AND SMALL END MOTOR LOADS (NORMAL FORCES) AS AND AS CAN BE SEEN: 3.2 KN (2.0 K) FOR SOME APPLICATIONS. * COORDINATE LOCATION AND SUPPORT WITH ELEVATOR CONTRACTOR.

ASME A17.1

BUILDING SUPPORTS TO RESIST HORIZONTAL FORCES WITH A TOTAL DEFLECTION AT SUPPORT POINTS NOT IN EXCESS OF 3 MM (1/8") UNDER NORMAL CONDITIONS.

* THESE READINGS DO NOT INCLUDE SAFETY/OVERLAP WITH THE BUFFER READINGS.

** BUILDING SUPPORTS FOR GUIDE RAIL ATTACHMENT SHALL RESIST HORIZONTAL FORCES WITH A TOTAL DEFLECTION NOT IN EXCESS OF 6.4 MM WHEN USED FOR A ACCELERATION OF FREE NORMAL CONDITIONS.

IBC

** BUILDING SUPPORTS FOR GUIDE RAIL ATTACHMENT SHALL RESIST HORIZONTAL FORCES DURING SEISMIC CONDITIONS.

ALL CALCULATIONS USED FOR SEISMIC CALCULATIONS:
SEISMIC DESIGN CATEGORY = D
ELEVATOR IMPORTANCE FACTOR (Ie) = 1.5 (ALL ELEVATORS)
TDD = 0.0852
HORIZONTAL ACCELERATION COEFFICIENT = (EXISTING 0.3SDS FOR EACH

RAIL FORCES

VT01 / SCALE: NTS

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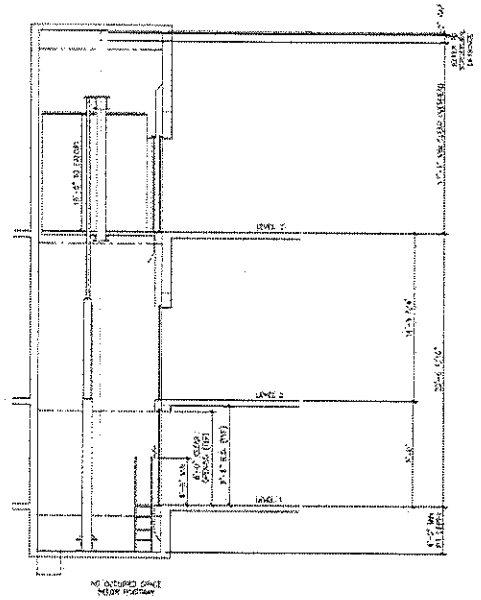
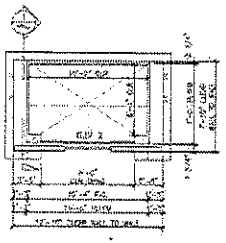
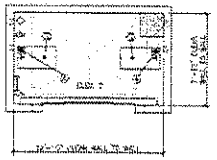
GENERAL ELEVATOR INFORMATION **VT01**



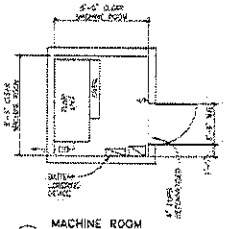
HOISTWAY SECTION
ELEVATOR 2
SCALE: 1/4" = 1'-0"
DATE: 10.30.14 @ 100 FPM
LU LOADING



HOISTWAY PLAN
ELEVATOR 2
SCALE: 1/4" = 1'-0"
DATE: 10.30.14 @ 100 FPM
LU LOADING



PIT PLAN
ELEVATOR 2
SCALE: 1/4" = 1'-0"
DATE: 10.30.14 @ 100 FPM
LU LOADING



MACHINE ROOM
ELEVATOR 2
SCALE: 1/4" = 1'-0"
DATE: 10.30.14 @ 100 FPM
LU LOADING

HOISTWAY NOTES:

1. PROVIDE 48" (1219 MM) HIGH RAIL (OR OTHER APPROVED METHOD) AT FACADE LEADING TO OUTSIDE AIR FOR ELEVATOR.
2. PROVIDE 36" (914 MM) CLEAR WORK AREA AT HOISTWAY DOOR FOR ELEVATOR CONSTRUCTION.
3. PROVIDE STRUCTURAL SUPPORT FOR CAR GUIDE RAIL BRACKETING AT 60" (1524 MM) MAX. VERTICAL SPACING THROUGH TOP OF HOISTWAY. IF SAID BRACKETS CANNOT BE PROVIDED BY HOISTWAY PERIMETER BEAMS AT EACH FLOOR, AND IF ELEVATOR CONTRACTOR CANNOT PROVIDE BRACKETING FROM TOP AND BOTTOM FLANGES OF HOISTWAY PERIMETER BEAMS, TO REDUCE THE SPAN AS NEEDED, PROVIDE INTERMEDIATE SUPPORT BEAMS OR CONSTRUCTION VERTICAL TOPOGRAPHY BETWEEN FLOOR BEAMS.
4. ALL VERTICAL DIMENSIONS THAT ARE TRANSFERRED FROM A BUILDING FLOOR ELEVATION ARE CONSIDERED TO THE FINISH FLOOR ELEVATION.
5. PROVIDE FULL-HEIGHT DOOR/METAL OR WOOD/WOOD STUD HOISTWAY WALLS FOR DOOR RAIL BRACKETING.
6. PROVIDE ON ADDITIONAL HORIZONTAL STRUCTURAL SUPPORT FOR RAIL BRACKETING AS REQUIRED FOR CAR FOR A HEIGHT OF HOISTWAY WALL WIDTH SIDES OF HOISTWAY.
7. HOISTWAY WALL TO MEMBER HEIGHT AT ANY DOOR OPENING SHALL NOT BE LESS THAN 8'-0" (2438 MM) AT FRONT OR SIDE WALLS OF HOISTWAY (TYP.).

MACHINE ROOM NOTES:

1. PROVIDE 2'-0" (610 MM) X 3'-0" (914 MM) MINIMUM FOR HYDRAULIC OIL LINE, AND 1'-0" (305 MM) X 1'-0" (305 MM) (4" X 4") BLOCKOUT FOR ELECTRICAL CONDUIT FOR CREW ELEVATOR. VERIFY LOCATION WITH ELEVATOR CONTRACTOR.
2. PROVIDE 4'-0" (1219 MM) HIGH OIL LINE WITH ELEVATOR CONTRACTOR. THE MACHINE ROOM AND HOISTWAY SHALL BE LOCATED ON THE SAME SIDE OF AN EXPANSION JOINT.
3. PROVIDE ADEQUATE LIGHTING TO MAINTAIN MIN. 200 LUX (19 FC) ILLUMINATION AT MACHINE ROOM FLOOR.
4. COORDINATE LIGHT FIXTURES AND UTILITY OUTLETS LOCATION WITH ELEVATOR CONTRACTOR.
5. FOR EQUIPMENT IN THE MACHINE ROOM, A CLEARANCE OF NOT LESS THAN 450 MM (18") SHALL BE PROVIDED IN THE DIRECTION(S) REQUIRED FOR MAINTENANCE AND A CLEAR AISLE OF NOT LESS THAN 600 MM (24") SHALL BE PROVIDED TO ALL COMPONENTS THAT REQUIRE MAINTENANCE.
6. PROVIDE 3-PHASE MACHINE ROOM FEEDER WITH DISCONNECTING MEANS FOR EACH ELEVATOR CONTROLLER. FEEDER FOR CAR LIGHTING, VENTILATION SYSTEM AND RECEPTACLE FOR EACH ELEVATOR. THESE DISCONNECTING MEANS SHALL INCLUDE OVERCURRENT PROTECTION, SHALL BE LOCATED IN THE MACHINE ROOM, AND SHALL MEET NEC® REQUIREMENTS.
7. LOCATE MACHINE ROOM WITHIN 10'-0" (3048 MM) OF HOISTWAY.
8. 4" (1000) RECOMMENDED
9. ELEVATOR CONTRACTOR PROVIDE PERMANENT MEANS TO ACCESS UNDERSIDE OF CAR AS REQUIRED.

PIT NOTES:

PIT REACTION TABLE

	REACTION LOADING IN KIPS
VT01	28.0 EACH
VT02	24.0 EACH

1. REACTIONS HAVE BEEN DOUBLED FOR IMPACT.
2. REACTIONS DO NOT ACCOUNT FOR COUNTERWEIGHTS.
3. PROVIDE ADEQUATE LIGHTING TO MAINTAIN MIN. 100 LUX (10 FC) ILLUMINATION AT PIT FLOOR.
4. PROVIDE PIT ACCESS LADDER(S) ON DOOR(S), LIGHT SWITCH(ES), LIGHT(S), AND GFCI-PROTECTED UTILITY OUTLET(S).
5. PROVIDE 2'-0" (610 MM) X 3'-0" (914 MM) MINIMUM FOR HYDRAULIC OIL LINE, AND 1'-0" (305 MM) X 1'-0" (305 MM) (4" X 4") BLOCKOUT FOR ELECTRICAL CONDUIT FOR EACH ELEVATOR. VERIFY LOCATION WITH ELEVATOR CONTRACTOR.
6. VERIFY DEPTH OF OIL LINE WITH ELEVATOR CONTRACTOR.
7. COORDINATE LIGHT FIXTURES AND UTILITY OUTLETS LOCATION WITH ELEVATOR CONTRACTOR.
8. PROVIDE ADEQUATE CONSTRUCTION CLEARANCE AS REQUIRED FOR BUFFER AND HYDRAULIC CYLINDER FUNCTIONS.
9. PROVIDE PERIMETER PIT DRAIN OR SUMP WITH GRATING COVER LEVEL WITH PIT FLOOR.

All drawings, specifications and ideas, designs and arrangements represented thereon are and shall remain the property of LMN Architects and shall not be used in whole or in part for any other project without the written authorization of LMN Architects. Visual contact with these drawings shall constitute prima facie evidence of the acceptance of these restrictions.

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Architect

SAM ASIAN ART MUSEUM

Consultant

Revisions
No. Date Description

Asian Art Museum Expansion & Renovation

1400 East Prospect Street
Seattle, Washington 98112

Construction Documents

Issued

Title

Sheet Number

FOR REFERENCE ONLY

Drawn: GJ
Checked: Checker
Project No.: 1402.01
Date: 08/29/17

PLANS AND HOISTWAY SECTION ELEVATOR 2

VT02

LEASE

BY AND BETWEEN

**THE CITY OF SEATTLE,
A WASHINGTON MUNICIPAL CORPORATION,
AS LANDLORD**

AND

**SAAM BUILDING LANDLORD, LLC,
A WASHINGTON LIMITED LIABILITY COMPANY,
AS TENANT**

DATED: _____, 2017

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LEASE

This LEASE ("Lease"), dated as of _____, 2017, is by and between the SAAM BUILDING LANDLORD, LLC, a Washington limited liability company ("Tenant"), and the CITY OF SEATTLE, a Washington municipal corporation ("City").

RECITALS

A. City is the owner of that certain improved parcel of real property located in the City of Seattle, King County, Washington legally described on, and also depicted on, Exhibit A hereto, together with all appurtenances, rights and privileges now belonging or appertaining thereto (the "Property").

B. The Volunteer Park Museum was constructed during the Depression (early 1930s) by the Art Institute of Seattle, predecessor-in-interest to the Seattle Art Museum ("SAM"), a Washington nonprofit corporation, and upon completion, was conveyed to the City.

C. The Volunteer Park Museum served as the only location of SAM for half a century.

D. With the relocation of SAM's principal venue downtown, the Volunteer Park Museum Building became the home for SAM's internationally recognized Asian art collection and was rechristened SAM's Asian Art Museum Building (the "SAAM Building"). The SAAM Building is located on, and part of, the Premises (defined below).

E. City and SAM were parties to that certain Agreement dated January 20, 1932 authorized by Ordinance 61998 of the City of Seattle to provide for operation and maintenance by SAM of the SAAM Building ("Original Operating Agreement"). The Original Operating Agreement has been amended pursuant to that certain Amendatory Agreement dated July 3, 1975 authorized by Ordinance 104662 ("1975 Amendment"), that certain Supplemental Agreement dated March 25, 1981 authorized by Ordinance 109767 ("1981 Amendment"), and Amendatory Agreement last executed November 1, 1994 authorized by Ordinance 117277 ("1994 Amendment"). The Original Operating Agreement, as amended by the 1975 Amendment, the 1981 Amendment and the 1994 Amendment is referred to herein as the "Operating Agreement"). The Operating Agreement expired by its terms, however, pursuant to that certain letter agreement dated January 22, 2008 from Charles Ng to Nancy Zwieback ("Letter Agreement"), the terms and conditions of the Operating Agreement remained in effect until the parties entered into a new agreement.

F. City and SAM both recognize that the SAAM Building requires substantial renovation, including systems replacement, seismic stabilization and other major improvements. In connection therewith, City and SAM entered into that certain Project Development Agreement dated _____, 2017 (as now or hereafter amended, the "Development Agreement"). Tenant became a party to the Development Agreement pursuant to that certain Joinder Agreement dated _____, 2017. Pursuant to the Development Agreement, City has agreed to enter into a new lease of the SAAM Building to Tenant. Tenant intends to master lease ("Master Lease") the SAAM Building to a Tax Credit Entity ("Master Tenant"), and Master Tenant intends to

sublease the SAAM Building initially to SAM to operate an Asian Art Museum, as more particularly described in Exhibit B (the "Museum") and, upon expiration of the sublease to SAM, to a subtenant that agrees to operate the SAAM Building as a museum (in each case, a "Sublease").

G. The City's 2017 Adopted Capital Budget includes a total of $19,000,000 in City funding allocated to the Project (defined below). The additional funds required to complete the Project are a combination of proceeds secured pursuant to the Federal Historic Tax Credits allowable under Section 47 of the Internal Revenue Code (the "Code") in connection with the "certified rehabilitation" of a "certified historic structure" ("HRTCs"), private donations and other public funds.

H. SAM and the City have determined that accessing HRTCs available for the rehabilitation elements of the Project would be highly beneficial and have agreed that the City will lease the SAAM building to SAAM Building Landlord, LLC in order to position the Project to claim such tax credits provided that the Master Tenant initially subleases the SAAM Building to SAM to operate an Asian Art Museum, as more particularly described in Exhibit B. HRTCs are currently estimated to yield some Six Million Dollars ($6,000,000) toward total Project costs. Nevertheless, the tax credit structure envisioned under the Development Agreement and this Lease ensures that the SAAM continues to provide the public benefits required under this Lease and the envisioned tax credit structure contemplates continued SAM management of the Project and operation of the SAAM. As a result, the City concurs that adequate consideration has been provided for enabling participation in the tax credit transaction (the "HRTC Transaction"). In connection with the HRTC Transaction, SAM has or will form one or more Washington limited liability entities that would be eligible to claim or convey to others the right to claim federal historic rehabilitation tax credits for the renovation of the SAAM Building (each a "Tax Credit Entity" and collectively, "Tax Credit Entities").

I. SAM will be the sole member of a Blocker LLC and Blocker LLC is the managing member of Tenant.

J. Tenant is executing this Lease to facilitate the rehabilitation of the historic SAAM Building (the "Project", as further defined in the Development Agreement), and to evidence its agreement to provide, directly or indirectly, certain public benefits, and more specifically described on Exhibit B hereto, and to agree to perform such public benefit obligations in addition to its other obligations hereunder.

K. This Lease clarifies the parties' rights and obligations with respect to the operation of the SAAM Building. Therefore, concurrently herewith, City and SAM entered into a Termination Agreement, pursuant to which the Operating Agreement is terminated in its entirety and is of no further force or effect.

L. City believes it serves an important public function to have a vibrant and successful Museum at the SAAM Building and to see that the SAAM Building is maintained over time.

M. The parties have agreed that this Lease is in the best interests of all parties to facilitate the rehabilitation and operation of the Museum in the SAAM Building. Thus, the parties are entering into this Lease for the Premises on the terms and conditions set forth herein.

AGREEMENT

NOW, THEREFORE, in consideration of the mutual covenants and conditions contained herein, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, City and Tenant agree as follows:

ARTICLE 1
DESCRIPTION OF THE PREMISES

1.1 Recitals. The above Recitals are hereby incorporated by this reference.

1.2 Lease of Premises. This Lease becomes effective (the "Effective Date") on the date first written above. As of the Effective Date, City as landlord hereby leases to Tenant as tenant, and Tenant hereby leases from City, subject to the obligations, terms, and conditions contained herein, the SAAM Building located on a portion of the Property (including, without limitation, the terrace on the west side of the building shown on Exhibit A-1 hereto (the "Terrace") (collectively, the "Premises"). The purpose of this Lease is to provide for the on-going rights and obligations of the parties with respect to the Premises for the Term.

1.3 Tax Credit Structure. Following completion of the Project and placement of the SAAM Building into service, Tenant will lease the Premises to Master Tenant, who will in turn sublease the Premises to SAM. SAM will thereafter operate or cause to be operated the Museum in the SAAM Building. The forms of such lease and sublease shall be consistent with and subject to this Lease. Such structure is designed to comply with requirements for historic rehabilitation tax credits and must remain in effect during the period required under the Code and the Master Lease is in effect (for such credits to be available for tax credit investors (the "Tax Credit Compliance Period").

1.4 Alternative Lease. In the event renovation of the SAAM Building proceeds without the benefit of HRTCs, this Lease shall be amended and restated to be by and between the City as Landlord and SAM as Tenant.

1.5 Access. To operate the SAAM Building for the purposes permitted under this Lease, City hereby grants to Tenant, its successors and assigns, for the Term, on the terms and conditions of this Lease, a right of entry in and through Volunteer Park, 24 hours per day (the "Access Right"). The memorandum of this Lease that is recorded on the Effective Date shall provide notice of this Access Right.

1.5.1 Sidewalk and Driveway Access. The Access Right includes the right of Tenant, its invitees, licensees, employees, contractors, service providers and permitted subtenants and assignees ("Permitted Users") to use all sidewalks depicted on Exhibit A-1 hereto ("Sidewalks") for pedestrian ingress and egress and to use all open park roads, and the driveway

area depicted on Exhibit A-1 hereto ("Driveway") for vehicular ingress, egress, loading and unloading. If the Driveway is gated or otherwise secured so as to restrict access to the Driveway area, Permitted Users of the Driveway shall be provided with a means of access through such gate or security system free of charge.

1.5.2 Reserved.

1.5.3 Adjacent Park Property Use. Tenant may use the portions of Volunteer Park adjacent to the SAAM Building and depicted on Exhibit A-1 attached hereto (the "Adjacent Park Area") for pedestrian ingress and egress to the Premises by Permitted Users. In addition, Tenant shall secure Event Permits from the Department of Parks and Recreation that will allow Tenant to use the Adjacent Park Area for Museum events, including without limitation, private events held at the Museum ("Private Events"), such permits to be coordinated through and subject to any reasonable date restrictions imposed by the Department of Parks and Recreation, and such permits specifying that Tenant's events shall not detract from or unreasonably conflict with public use of Volunteer Park. Tenant shall have the right to temporarily close the Adjacent Park Area for the duration of such Private Events and for any additional period reasonably required to set up or to clean up the area used for such Private Events. Tenant shall not obstruct members of the public from entering upon and using and enjoying the Adjacent Park Area for park purposes except for occasional closures for Private Events, and such other future temporary construction activities and fencing near the SAAM Building reasonably approved in advance by the Department. City, at its sole cost and expense, shall be responsible for the maintenance, repair, and replacement, of the Adjacent Park Area except for maintenance, repair and replacement occasioned by Tenant's use of the Adjacent Park Area for Private Events or construction. City shall maintain and operate the Adjacent Park Area to the same standards that it maintains and operates other portions of Volunteer Park. City will not block or obstruct, or permit the blocking or obstruction of the Adjacent Park Area (including without limitation the points of ingress and egress from the SAAM Building) or modify the Adjacent Park Property Area except for occasional, temporary obstructions for park events. Such obstructions shall not materially interfere with public access to the Museum or Tenant's ability to use the Premises and the SAAM Building for their intended purposes. City will consult with Tenant to minimize any impacts from any temporary blockage or obstruction.

1.6 Utilities. City has previously installed water lines, electric services, sewer lines and pipes, conduits for communications, meters, fire department connections and hydrants and other utility facilities to serve the Premises. City, at City's sole cost and expense, shall keep all portions of these utilities and related facilities located outside of the Premises and that do not exclusively serve the Premises in good condition and repair and Tenant shall keep all portions of these utilities and related facilities located within the Premises or located outside of the Premises but that exclusively serve the Premises, in good condition and repair at all times, the cost for which shall be an Operating Expense, payable as provided in this Lease. Except as otherwise set forth in the Development Agreement, Tenant shall be responsible for utility charges for its usage.

Tenant may install additional utilities and upgrade or repair utilities in the Premises at its sole cost and with the prior written approval of the Superintendent of Parks and Recreation ("Superintendent"), which approval shall not be unreasonably withheld or delayed. In doing such work, Tenant shall not disturb the vegetation and topography and improvements on the Property.

Upon completion of such reconstruction, maintenance, repair or other permitted activity, Tenant shall immediately restore all disturbed topography and vegetation to their condition immediately prior to the initiation of such maintenance or repair to the Superintendent's reasonable satisfaction and, as to the installation of any new utilities by Tenant, Tenant shall thereafter be responsible for their maintenance and repair.

1.7 Public Parking. Visitors to the Museum and the SAAM Building shall be permitted to use the parking areas within Volunteer Park for parking on a basis no less favorable than City makes those areas available to other visitors to Volunteer Park. The parties acknowledge and agree that as of the execution of this Lease, parking within Volunteer Park is open to the public, including without limitation, Tenant's employees, contractors, agents, volunteers, visitors and invitees, on a first-come first-served basis and free of charge. City shall provide Tenant with written notice at least sixty (60) days prior to requiring paid parking within Volunteer Park and, if the Sidewalk or Driveways described above are gated or otherwise secured so as to restrict area, Visitors shall be provided with a means of access through such gate or security system to the Sidewalk or Driveways free of charge.

1.8 As-Is Condition. Except as specifically required in the Development Agreement or in this Lease, City has no obligation to contribute to the cost of the Project, nor shall City be obligated to perform any construction or make any improvements in connection with the Project. The acceptance of possession of the Premises by Tenant on the Effective Date shall be conclusive evidence that Tenant accepts the Premises in their then "as-is" condition, subject to City's obligations under the Development Agreement and this Lease, which include, without limitation, (i) contributing to certain costs, as set forth in the Development Agreement; and (ii) providing the City Operating Support Payments (as defined below). Tenant hereby acknowledges that City has made and makes no representations or warranties, express or implied, regarding the condition of the Premises or its suitability for the intended use. Tenant confirms that it has had ample opportunity to inspect the Premises and is familiar with its condition.

1.9 Signage. Tenant shall have the right to place informational and directional signage in Volunteer Park (but outside of the Premises) to inform the public about the location of and access to the Museum, with the Superintendent's prior written consent, not to be unreasonably withheld, conditioned or delayed. Tenant shall develop for the Superintendent's approval a signage plan for the installation of appropriate signage for the Museum within Volunteer Park (but outside of the Premises). In determining whether to approve such signage plan the Superintendent may consider, among other factors, Tenant's needs for public awareness of the location of and access to the Museum; the signage needs of other Volunteer Park uses; the design, scale, placement and materials proposed for such signage; and compatibility of the proposed signage with other Volunteer Park installations. Tenant may request modifications of the signage plan from time to time and such changes are also subject to the approval of the Superintendent as to size, location and content. Notwithstanding anything herein to the contrary, the parties acknowledge and agree that, if applicable, such signage shall be subject to the review and approval of the City's Landmarks Preservation Board.

The parties recognize that the Project will entail installation of a signage system for the SAAM Building, which system will be approved by the Superintendent pursuant to the

Development Agreement. During the Term, Tenant shall maintain all exterior signage installed on the SAAM Building and Premises pursuant to the Development Agreement. Tenant shall also have the right to (i) install and maintain free-standing signage on the exterior of the Premises with the Superintendent's prior written consent (not to be unreasonably withheld, conditioned or delayed); and (ii) install and maintain permanent free-standing signage within or near the Adjacent Park Area identifying the Museum, directing Visitors to the main entrance and identifying the Gardner Center for Asian Art and Ideas ("Gardner Center"), the design of such signage shall be subject to the Superintendent's prior written consent (not to be unreasonably withheld, conditioned or delayed). The signage system will support a continuing display of banners and signs advertising events and exhibits at the Premises and the presence of the Museum. Such banners and signs shall not be subject to approval by the Superintendent and need not conform to sign regulations for Volunteer Park, so long as they relate to the Museum and events and exhibits at the Museum. In addition, Tenant may install temporary signage at reasonable locations to identify the entrance to Volunteer Park, to advertise special events on the Premises, subject to the approval of the Superintendent of the Department.

1.10 Covenant and Warranty of Quiet Possession. City covenants and warrants that Tenant's peaceable and quiet occupation, use and enjoyment of the Premises shall not be disturbed by City or anyone claiming by or through City. City shall defend at its expense any third party claims asserted that would interfere with Tenant's (and its permitted successors and assigns) right to such occupancy, use, and enjoyment of the Premises or City's title to the Premises.

ARTICLE 2
TERM

2.1 Term. All obligations of City and Tenant hereunder shall commence and be binding on the parties as of the Effective Date. Tenant shall be entitled to and shall take possession of the Premises upon the Effective Date. This Lease shall be and continue in full force and effect for a term (the "Term") that commences on the Effective Date and continues for approximately fifty-five (55) years, ending on _____, 2072, unless sooner terminated pursuant to the provisions hereof.

ARTICLE 3
CONSIDERATION, PUBLIC BENEFITS AND EXPENSE ALLOCATION

3.1 Consideration. During the Term, as consideration for this Lease, Tenant shall at its expense (except as otherwise set forth herein or in the Development Agreement) (i) undertake the Project, including rehabilitation of the SAAM Building for Museum purposes and the construction and installation of museum exhibits; (ii) subject to Article 6 below, maintain and operate the SAAM Building as a museum open to the public and in a condition suitable for museum and other museum-related purposes; and (iii) subject to Section 6.3 below, maintain the Historic Features, all as further provided below. In addition, to support Tenant's lease of the Premises, Tenant shall provide the Public Benefits and perform the Property Operation Activities, all as further provided below. "Rent" as used herein means the duties and obligations to be undertaken by Tenant set forth in this Section 3.1 and as further detailed in Sections 3.2 through 3.7 below. The parties agree that there is no monetary consideration or monetary rent that is owed by Tenant to City

hereunder. Rather, the consideration for this Lease consists of the Public Benefits to be provided and the rehabilitation, maintenance and operation of the SAAM Building by Tenant as provided herein.

3.2 Redevelopment. Tenant shall rehabilitate and redevelop the SAAM Building to be suitable for Museum uses as provided in the Development Agreement. From and after the date the SAAM Building is placed in service and the Museum re-opens in the SAAM Building to the public ("Opening Date"), Tenant shall ensure that the SAAM Building is maintained in good operating condition and state of repair and in a condition suitable for the Public Benefits to be provided, subject to the terms and conditions of this Lease, including without limitation, as described in Article 6 below.

3.3 Public Benefits. A central element of this Lease is the identification of and Tenant's commitment to the ongoing provision of certain public benefits as described herein. In fulfillment of Tenant's commitment, from and after the Opening Date, Tenant shall perform or ensure the provision of certain "Public Benefits" identified in Exhibit B during the Term of this Lease, all at no cost to City, except as otherwise set forth herein. At the Superintendent's request from time to time throughout the Term, but no more frequently than annually, Tenant will produce a report documenting the Public Benefits that Tenant has provided during the designated time period (the "Public Benefits Report"). The Public Benefits Report shall include such information as the Superintendent may reasonably request but at a minimum shall contain a description of the benefits provided; the number of persons served, by date and age group, if known; and the value of any fee discounts or scholarships provided. In addition, on or before the Opening Date, Tenant shall provide the Superintendent with a report documenting the public benefits provided during the last full year of its operations to use as a benchmark against future reporting.

3.4 Equity and Inclusion Value Statement. In addition to the Public Benefits set forth in Exhibit B, the parties share the core value of ensuring resources such as the Museum are operated with deliberate attention to promoting equity, access and inclusion. Therefore, Tenant will particularly develop programs, and will conduct outreach, to serve historically underserved populations and creating more equitable access, including geographic equity, to the Museum's resources. To achieve such results, Tenant shall implement a variety of strategies, such as the following:

(a) Adopt and implement staffing policies aimed at developing and sustaining a diverse staff and Board of Directors that reflect the diversity of the community;

(b) Lowering economic and physical barriers, as well as barriers to understanding, so that art is accessible to everyone;

(c) Exhibiting art from the world's diverse cultures;

(d) Providing free and low cost access to the Museum and performances and programs sponsored by the Museum, as described in Exhibit B;

(e) Supporting partnerships and collaborative relationships with diverse regional and community based cultural organizations, including conducting at least three (3) meetings per year between these organizations and SAM's Education and Community Advisory Committee or a future similar group;

(f) Providing experiential learning opportunities, such as internships and apprenticeships, along with outreach to diverse and underserved populations and communities; and

(g) Providing trainings to the Museum's employees and Board of Directors on best practices related to race, equity and inclusion.

3.5 Hours of Operation and Public Access. Notwithstanding the Public Benefits, the SAAM Building will be open to the public only during regular hours of operation as determined by Tenant but consistent with the requirements of Exhibit B. Tenant may restrict access to the SAAM Building as necessary for security purposes. Tenant shall continuously operate or cause to be operated the Museum on the Premises throughout the Term; provided that Tenant may close portions of the SAAM Building to the public for offices, ancillary services, installation or repairs, as Tenant deems necessary or desirable from time to time and may temporarily close the entire SAAM Building for emergencies, alterations or significant repairs. Tenant may use any portion of the SAAM Building for its purposes when the SAAM Building is not open to the general public. Nothing herein shall limit Tenant's ability to regulate use of the catering kitchen, restrooms or other facilities consistent with Museum security needs or to address unruly or inappropriate behavior.

3.6 Property Operating Expenses. Subject to Article 6 below, Tenant shall bear all costs and expenses during the Term that are associated with the improvement, restoration, repair, remodeling, replacement, maintenance, operation, lease and management of the SAAM Building and the Museum (the "Property Operation Activities"). "Property Operating Expenses" shall include, without any limitation, costs and expenses associated with the following:

3.6.1 Insurance premiums and deductibles as required under this Lease or as Tenant may elect;

3.6.2 All charges for public and private utility services, including but not limited to electricity, gas, heating, air conditioning, telephone and telecommunications service, garbage, janitorial services, sewer and water services;

3.6.3 Permits, licenses and certificates necessary for the Property Operation Activities;

3.6.4 Expenses incurred to comply with any Laws with respect to the operation of the Museum in the SAAM Building (excluding expenses that are the responsibility of City under this Lease); and

3.6.5 Management, operation, repair, maintenance and restoration of the SAAM Building to the extent required of Tenant hereunder, including, without limitation, any of the building systems and their equipment and components.

As of the Effective Date, Tenant shall be responsible for direct payment of all Property Operating Expenses accruing from and after the Effective Date as and when any such expenses are due. The parties shall cooperate to arrange for direct billing of all Property Operating Expenses from the service provider to Tenant.

3.7 Real Estate Taxes. Tenant shall bear all cost and expense of any taxes and assessments related to the Premises accruing during the Term, including without any limitation the following (collectively, "Real Estate Taxes"):

3.7.1 General real estate taxes levied against the SAAM Building or taxes in lieu thereof;

3.7.2 Special assessments or taxes in the nature of improvement or betterment assessments;

3.7.3 Any taxes relating to operation of the Premises by Tenant; and

3.7.4 All taxes on personal property and intangibles of Tenant on or used in connection with the Premises.

As of the Effective Date, Tenant shall be responsible for direct payment of all Real Estate Taxes, if any, accruing during the Term before any such taxes are delinquent, subject to the protest rights described below. The parties may agree to implement direct billing of all Real Estate Taxes to Tenant, with appropriate notice to City. All Real Estate Taxes that are payable by Tenant pursuant hereto for the tax year in which the Term commences, as well as during the year in which the Term expires, shall be prorated between City and Tenant on an actual per diem basis. If any of the Real Estate Taxes that Tenant is obligated to pay in whole or in part is permitted by law to be paid in installments, Tenant may pay the taxes in installments. Any exemption for property tax, in lieu tax or leasehold excise tax will accrue to the benefit of Tenant (i.e., it will have no obligation to pay such taxes under this Section 3.7 to the extent of such exemption).

Tenant may contest the validity or amount, including the assessed valuation upon the Premises, of any Real Estate Taxes that Tenant in good faith believes is excessive, improper or invalid. In such event, if permitted by the taxing authority, the payment thereof may be deferred during the pendency of such contest, if diligently prosecuted. If City, in its reasonable discretion, determines the challenge has merit, City agrees to join at Tenant's request in any such contest to the extent such joinder is a prerequisite to such prosecution under statute, regulation or administrative practice. In connection with a judicial or administrative challenge to any assessment, Tenant may take advantage of any stay in collection available under statute, regulation, or court or administrative order or rules. Nothing herein contained, however, shall be so construed as to allow such items to remain unpaid for such length of time as shall permit the Premises, or any part thereof, to be sold by any governmental authority for the nonpayment of the

taxes. Within thirty (30) days after the amount of such contested item is finally determined to be due, Tenant shall pay the amounts so determined, together with any penalties, interest and expenses associated with such contest.

ARTICLE 4
USE OF PREMISES

4.1 Use of Premises. Tenant shall use the Premises, including the SAAM Building, for museum purposes (including the public display of art, cultural and special events and activities sponsored by the Gardner Center), ancillary purposes (including catering services and a gift shop), functions and events hosted or sponsored by Tenant (including short term event rentals of five (5) consecutive days or less, to be coordinated through and subject to any reasonable date restrictions imposed by the Parks and Recreation Department), and related office, educational, research, administrative, storage and back-of-house uses only or (ii) any other lawful museum-related purpose. The use of the Premises shall comply with this Lease, any easements, covenants, restrictions, as well as all laws, statutes, ordinances, regulations, rules and other governmental requirements of any kind applicable to the Premises (hereinafter "Laws"). Although the Premises are located in a City park area managed by City's Department of Parks and Recreation ("Department"), prohibitions on the serving and consumption of alcoholic beverages on the Premises shall not apply and Tenant may permit alcoholic beverages to be served on the Premises (e.g., in the SAAM Building and on the Terrace) and at Private Events within the Adjacent Park Area, but not elsewhere within Volunteer Park, provided that Tenant is responsible for seeing that all required liquor permits/licenses are obtained and for any Private Event during which alcoholic beverages will be served, Tenant shall fence off any portion of the Adjacent Park Area in which alcoholic beverages may be consumed.

4.2 Prohibited Activities. Nothing shall be done by Tenant or its officers, directors or employees upon or about the Premises that violates any Law. Tenant will not do or keep anything in or upon the Premises that may prevent the obtaining of any insurance required under this Lease or carried with respect to the Premises or that may void any such insurance. Tenant agrees to adopt and implement a policy prohibiting any person, except for law enforcement officers and on-duty security personnel, from possessing firearms on the Premises or in the SAAM Building.

4.3 Compliance with Laws. Subject to Article 6 below, Tenant shall be solely responsible, at its sole cost (as between Tenant and City), for compliance with Laws affecting the design, construction and operation of the SAAM Building and those affecting their use of the Premises throughout the Term. City agrees that Tenant shall have the right to reasonably contest, at Tenant's sole cost, any asserted or alleged violation of any Laws in the name of either of the City or Tenant, as Tenant deem appropriate.

ARTICLE 5
ALTERATIONS

5.1 Alterations. "Alterations" are any alterations, additions or improvements made by Tenant to the SAAM Building. Tenant may, from time to time, at its own cost and expense and with the written consent of City, which shall not be unreasonably withheld, make alterations to the

SAAM Building, except as provided below. Notwithstanding the foregoing, Tenant shall have the right to make temporary alterations, additions or improvements for art display and exhibitry without the City's prior consent, provided that, Tenant shall not make any alterations to the SAAM Building or the Premises that affect the SAAM Building public entry and amenities (i.e., restrooms) without City's prior written consent, which will not be unreasonably withheld. Changes to any exhibitry, whether fixed or temporary exhibits, are not subject to City review or approval. In no event shall City be obligated to maintain, repair or replace any Alterations or equipment installed by Tenant that City would otherwise be obligated to maintain, repair or replace pursuant to the terms of this Lease, where Tenant did not obtain the prior written consent of City. Alterations to the Historic Features must be in compliance with Section 6.3. Notwithstanding anything herein to the contrary, the parties acknowledge and agree that the SAAM Building is a designated City of Seattle landmark and subject to certain Controls and Incentives. Accordingly, any Alterations performed by Tenant hereunder shall be consistent with such Controls and Incentives. In addition, at City's request, Tenant shall deliver to City a complete set of all as-built or other building plans.

5.2 Surrender of Alterations. Subject to the terms of Section 9.1 relating to damage and destruction, upon expiration or earlier termination of the Term of this Lease (including any renewals thereof), whether by lapse of time or otherwise (including any holdover period), Tenant, at its expense, shall: (a) remove all of Tenant's moveable, unaffixed personal property, goods and effects and those of all persons claiming under Tenant from the SAAM Building and the Premises; (b) to the extent required by City, remove all of its exhibitry and exhibitry-related casework; and (c) promptly and peacefully surrender the Premises (including surrender of all Tenant's improvements, alterations and additions installed in the SAAM Building or on the Premises) in at least as good a condition as at the conclusion of the Project, reasonable wear and tear, Landlord's maintenance obligations hereunder and casualty excepted. Any property left on the Premises more than thirty (30) days after the expiration or termination of the Term shall be deemed to have been abandoned and to have become the property of City to dispose of as City deems expedient and Tenant shall be liable for all reasonable costs associated with the disposal of such property. Tenant hereby waives all claims for damages that may be caused by City re-entering and taking possession of the Premises or removing and storing Tenant's property as herein provided. No such reentry shall be considered or construed to be a forcible entry.

Notwithstanding the foregoing, nothing herein shall give City any right whatsoever to the Museum Property, as further provided in Section 8 below.

5.3 Alteration Construction. In conducting any construction work on the Premises, Tenant shall cause all work to be done according to industry standard practices and shall comply with or cause compliance with all Laws. Tenant shall obtain or cause to be obtained and maintain in effect, as necessary, all building permits, licenses and other governmental approvals that may be required in connection with such work and such insurance as Tenant, in consultation with City, determine reasonable for the scope and scale of the work to be undertaken.

5.4 Mechanic's Liens. Tenant shall have no authority, express or implied, to create or place any lien or encumbrance of any kind or nature upon, or in any manner to bind, the interest of City in the Premises for any claim in favor of any person dealing with Tenant, including those

who may furnish materials or perform labor for any construction or repairs to the Premises. Each such claim shall affect and each such lien shall attach to, if at all, only the leasehold interest granted to Tenant by this Lease. Tenant will pay or cause to be paid all sums payable by them on account of any labor performed or materials furnished in connection with any work performed on the Premises. Tenant will discharge, by bond or otherwise, any mechanic's or materialman's lien filed against the Premises for work claimed to have been done for, or materials claimed to have been furnished to Tenant, within sixty (60) days after filing. Tenant shall indemnify, defend and hold City harmless from any and all loss, cost or expense based on or arising out of asserted claims or liens against the leasehold estate or against the right, title and interest of City in the Premises or under the terms of this Lease.

ARTICLE 6
OPERATION, MAINTENANCE AND SUPPORT

6.1 Operation. Tenant shall procure and maintain at its expense all permits and approvals that may be required for any use made of the Premises. Tenant shall comply with the requirements of any Laws (i) regarding the condition of the Premises (except for conditions that City is obligated to maintain under this Lease); or (ii) relating to the lawful use of the Premises. Tenant shall conduct the Museum operations on the Premises in compliance with all terms and conditions of this Lease.

6.2 Maintenance and Repair.

6.2.1 Operating Expenses. Except for City's obligations under Section 6.2.2 below, Tenant, at its sole cost and expense (as between Tenant and City), without cost or charge to or contribution by City except as otherwise expressly set forth herein, shall be responsible for and shall perform all routine and regular repairs and maintenance to the Premises (Property Operating Expenses, defined above) throughout the Term. Following completion of the Project, but subject to the terms of this Lease, Tenant shall at all times maintain the SAAM Building in good operational order, condition and repair. If Tenant fails to perform its obligations under this section following sixty (60) days' prior written notice (or such shorter period as may be necessitated by an emergency or dangerous condition, or such longer time as may be needed provided that Tenant is diligently pursuing the necessary work) from City to Tenant, City may perform such work and Tenant shall be responsible for reimbursing City for the reasonable cost thereof.

6.2.2 Major Maintenance Expenses. City, at its sole cost and expense (as between Tenant and City), without cost or charge to or contribution by Tenant, shall be responsible for and shall perform all improvements, repairs, replacements, restoration and maintenance to (i) the structural portions of the SAAM Building, including without limitation, the roof, foundations, glazing, façade and exterior walls; (ii) the SAAM Building systems, including without limitation, the electrical, plumbing, mechanical, and fire and life safety systems (collectively "SAAM Building Systems"), but specifically excluding the heating, ventilation and air conditioning systems and other equipment or systems that the parties reasonably agree are unique to Tenant's operations collectively, ("SAAM Museum Systems"); (iii) all capital repairs and replacements of the portion of the SAAM Building not covered under clauses (i) and (ii) above; and (iv) the areas

of Volunteer Park outside of the exterior walls of the SAAM Building, including without limitation, the Adjacent Park Property (including, without limitation, the steps leading to the principal entrance to the SAAM Building at its western façade), parking areas, sidewalks, gardens, lawns, irrigation systems, curbs, gutters, open spaces and existing exterior lighting not connected to the SAAM Building, throughout the Term in a manner that provides adequate support for the Premises and its use as contemplated by this Lease and in good, clean and safe condition compatible with Museum use.

To ensure adequate planning and budgeting in connection with City's obligations under this Section 6.2.2, upon completion of the Project, Tenant will provide City with a thirty (30) year plan for capital repairs and replacements to be performed on the SAAM Building, which may include, without limitation, (i) the structure of the SAAM Building, the loading docks, the structural elements of the roof, the roof membrane, slab, foundation, and exterior walls of the SAAM Building; and (ii) the SAAM Building Systems. Every five (5) years thereafter, Tenant will provide City with an updated capital repair and replacement plan. The parties agree to cooperate in seeking and obtaining additional funding through public or private grants for such capital expenditures.

6.3 Maintenance of Historic Features. The SAAM Building contains certain historic elements and features (the "Historic Features"). The Historic Features are described in the SAAM Building's landmark listings with the City of Seattle Landmarks Preservation Board and the National Register of Historic Places. City shall be responsible for and shall perform, at its sole cost and expense, all improvements, repairs, restoration, preservation and maintenance (including cleaning) of the Historic Features on the exterior of the SAAM Building throughout the Term required by and in compliance with the Historic Requirements (defined below), which shall include, without limitation, the Wilkinson sandstone on the Terrace and west façade of the SAAM Building. With respect to the Historic Features on the interior of the SAAM Building, throughout the Term, Tenant shall be responsible for and shall perform, at its sole cost and expense, all preservation and maintenance (including cleaning) and all improvements, repairs, and restoration, required by and in compliance with the Historic Requirements. The "Historic Requirements" are those imposed by the National Register of Historic Places and the City of Seattle Landmarks Preservation Board, all with regard to the Historic Features.

6.4 Reserved.

6.5 Operating Support.

6.5.1 City Operating Support Payments. On an annual, calendar year basis during the Term, but only to the extent that SAM is operating a museum in the SAAM Building (providing that the foregoing condition shall not apply to temporary closures of the SAAM Building for repairs, maintenance, the construction of alterations or improvements or force majeure events), City will budget certain amounts to be paid to SAM annually ("City Operating Support Payment") to be used to help defray SAM's costs of operating and maintaining the SAAM Building, as required under this Lease. For the calendar year in which the occupancy permit for the renovated SAAM is issued ("Support Payment Year One"; and each subsequent calendar year shall be referred to herein individually as a "Support Payment Year" and collectively as "Support Payments

Years"), the City Operating Support Payment shall be made within thirty (30) days of the date the occupancy permit is issued, pro-rated to reflect any partial calendar year of occupancy. Thereafter, throughout the Term, the City Operating Support Payment shall be made on or before April 1 of each year. City anticipates that a portion of the City Operating Support Payment may consist of real estate excise tax ("REET") receipts and any such funds received by SAM shall therefore be used for expenditures for which REET funds may be applied as described in Ch. 82.45 RCW. Tenant shall keep (or cause SAM to keep) complete and accurate records and books with respect to operating and maintenance expenses and shall provide City with copies of relevant records reasonably promptly upon City's request. Tenant shall cause SAM to separately account for operating and maintenance expenses. The City's annual City Operating Support Payment shall be made in the amounts described below and may partially consist of REET funds as follows:

6.5.1.1 Beginning with Support Payment Year One and for each of the four ensuing Support Payment Years, the City Operating Support Payment shall be Two Hundred Fifty Thousand Dollars ($250,000). Beginning with Support Payment Year Six and for each of the four ensuing Support Payment Years, the City Operating Support Payment shall be Two Hundred Seventy-Five Thousand Dollars ($275,000). Beginning with Support Payment Year 11 and for each of the four ensuing Support Payment Years, the City Operating Support Payment shall be Three Hundred Thousand Dollars ($300,000). Thereafter, the City Operating Support Payment shall increase by Fifty Thousand Dollars ($50,000) every five Support Payment Years.

6.5.1.2 Beginning in City Operating Support Payment Year 11, the City may provide up to Fifty Thousand Dollars ($50,000) of each annual City Operating Support Payment made during that five year cycle from REET funds. Beginning in City Operating Support Payment Year 16 and for every Support Payment Year thereafter, the City may provide up to twenty-five percent (25%) of each annual City Operating Support Payment due in any particular Support Payment Year from REET funds. Under no circumstances, may the total City Support Payment, including any discretionary REET funding and other City funds, be less than the amount scheduled to be provided under this Lease. Exhibit C provides the schedule for all such City Operating Support Payments through the end of the Term and indicates the maximum portion of REET funds that may be provided in any given Support Payment Year.

6.5.2 Tenant's Failure to Maintain. If City reasonably determines that Tenant has failed to maintain the SAAM Building in good condition and repair as measured by its performance under Section 6.2 above, then City may withhold the all or part of the City Operating Support Payments until such time as Tenant completes the necessary maintenance and repairs.

6.6 Placement of Art in the Park. From time to time, Tenant may request that certain artworks be placed in Volunteer Park surrounding the SAAM Building. Such a request shall be in writing and accompanied by details of the nature and proposed location of the artwork and the plans for installation. Tenant shall apply for and obtain a Revocable Use Permit from the Parks and Recreation Department to perform the work of installing and removing any artwork on Park property outside of the Premises. If approved by City in its reasonable discretion, Tenant (as between Tenant and City) shall be responsible for the cost of installation and maintenance of the artwork. The placement of such artwork in Volunteer Park shall be at the risk of Tenant and City shall not be responsible for any damage to or loss of such artwork. Following installation, Tenant

may remove the artwork at its discretion, upon receiving a Revocable Use Permit to perform the removal work (if removal work was not included in the original Revocable Use Permit). In no event shall City perform any maintenance or repair of artwork placed in Volunteer Park pursuant to this Section 6.6.

ARTICLE 7
ENVIRONMENTAL

7.1 Hazardous Substances.

7.1.1 For the purposes of this Lease, (a) the term "Environmental Law" means any federal, state or local law, statute, ordinance, regulation or order pertaining to hazardous substances or materials, including without limitation those defined in this Section 7.1 as "Hazardous Substances"; and (b) the term "Hazardous Substance" means any hazardous or toxic substance, material or waste, pollutants or contaminants, as defined, listed or regulated now or in the future by any federal, state or local law, ordinance, code, regulation, rule, order or decree regulating, relating to or imposing liability or standards of conduct concerning, any Hazardous Substances, including without limitation, (i) chlorinated solvents, (ii) petroleum products or by-products, (iii) asbestos, (iv) polychlorinated biphenyls, (v) lead-based paint, and (vi) mold, fungus and other microbial matter.

7.1.2 Tenant agrees that:

(a) Neither Tenant nor its employees, agents, contractors, assignees, subtenants, licensees or invitees will use, generate, manufacture, produce, store, release, discharge or dispose of on, under or about the Premises, or transport to or from the Premises, any Hazardous Substances except in such quantities as are typically used in connection with the construction, rehabilitation, operation and use of property of the similar sort for the uses permitted under this Lease and the Development Agreement, and then only in compliance with all Environmental Laws.

(b) Tenant shall give prompt written notice to City of:

(i) Any proceeding or inquiry by any governmental authority known to Tenant with respect to the presence or release of any Hazardous Substance on, in, about or from the Premises or the SAAM Building, or relating to any loss or injury resulting from any Hazardous Substance, all caused or alleged to be caused by Tenant or its employees, agents, contractors, assignees, subtenants or invitees;

(ii) All claims made or threatened by any third party in writing against Tenant with respect to the Premises or the SAAM Building relating to any loss or injury resulting from any Hazardous Substance caused or alleged to be caused by Tenant;

(iii) Discovery after the Effective Date by Tenant of any occurrence or condition on the Premises or the SAAM Building that could cause them to be subject to any restrictions on occupancy or use under any Environmental Law; and

(iv) Any release of a Hazardous Substance on or from the Premises or the SAAM Building by Tenant.

(c) Excluded from all obligations of Tenant under this Section 7.1 are any obligations, claims or liabilities arising out of the use or condition of or events occurring with respect to (i) Volunteer Park or surrounding City property or property in the vicinity, or out of the use thereof or the use of the Premises by members of the public, or (ii) Hazardous Substances existing on, under, in or about the Premises, Volunteer Park or surrounding City property or property in the vicinity prior to the Effective Date unless arising in whole or in part from Tenant's conduct.

(d) Except as provided in Sections 7.2 and 13.1.2, Tenant shall protect, indemnify, pay the defense costs of and hold harmless City Parties (as defined in Section 13.1.2) from any loss, damage, cost, expense, claim, suit, action, penalty or liability (collectively, "Claims"), including, without limitation, reasonable attorneys' fees and costs and the costs of any required or necessary repairs or cleanup of the Premises or the SAAM Building and the implementation of any remediation or other plans required by any Environmental Law directly or indirectly arising out of or attributable to the presence, use, generation, manufacture, production, storage, release, discharge or disposal of a Hazardous Substance on, under or emanating from the Premises or the SAAM Building (i) on or after the Effective Date and (ii) caused by Tenant, its employees, agents, assignees, subtenants or licensees.

7.1.3 The indemnity provisions of this Section 7.1 shall survive expiration or termination of this Lease.

7.2 City Environmental Obligations.

7.2.1 City shall give prompt written notice to Tenant of:

(a) Any proceeding or inquiry by any governmental authority known to City with respect to the presence or release of any Hazardous Substance on, in, about or from the Premises or the SAAM Building;

(b) All claims made or threatened by any third party in writing against City with respect to the Premises or the SAAM Building relating to any loss or injury resulting from any Hazardous Substance; and

(c) City's discovery of any occurrence or condition on the Premises or the SAAM Building that could cause them to be subject to any restrictions on use under any Environmental Law.

Excluded from City's obligations under this Section 7.2 are any obligations, claims or liabilities arising out of the use or condition of the SAAM Building on or after the Effective Date caused by Tenant or its employees, agents, assignees, subtenants or licensees that are the responsibility of Tenant under Section 7.1.2.

7.2.2 Except as provided in Sections 7.1 and 13.2, City shall protect, indemnify, pay the defense costs of and hold harmless Tenant and its board members, officers, employees, volunteers, and agents from any Claims, including, without limitation, reasonable attorneys' fees, expenses and costs and the costs of any required or necessary repairs or cleanup of the Premises and the implementation of any remediation or other plans required by any Environmental Law directly or indirectly arising out of or attributable to the presence, use, generation, manufacture, production, storage, release, discharge or disposal of a Hazardous Substance on, under or emanating from the Premises, or, to the extent caused by City, its employees, agents, subcontractors, assignees or licensees.

7.2.3 The indemnity provisions of this Section 7.2 shall survive expiration or termination of this Lease.

ARTICLE 8
MUSEUM PROPERTY

8.1 Museum Property. Notwithstanding anything in this Lease to the contrary, City shall have no interest in, lien on or right of any kind to any trade fixtures, display cases, exhibits, art, artifacts, personal property or the Museum collection located in or used in connection with the SAAM Building, or in Volunteer Park ("Museum Property"), however installed or located in the SAAM Building, on the Premises or in Volunteer Park. All Museum Property shall be and remain at all times the property of Tenant or the other owners thereof as the case may be. Notwithstanding the foregoing, if Tenant fails to properly maintain (in accordance with the approval of the Superintendent granted under Section 6.6 above) any Museum Property installed or located outside of the SAAM Building but in Volunteer Park following thirty (30) days' prior written notice (or such shorter period as may be necessitated by an emergency or dangerous condition) from City to Tenant and such failure is creating an unsafe condition, City may perform such maintenance on Tenant's behalf or may dispose of the same without recourse to Tenant to the extent necessary to remedy such unsafe condition, and Tenant shall be responsible for reimbursing City for the reasonable cost thereof.

ARTICLE 9
DAMAGE AND DESTRUCTION

9.1 Repair and Rebuilding. If all or part of the SAAM Building is damaged or destroyed, then Tenant shall at its sole cost (as between City and Tenant) complete the repair and rebuilding thereof (the "Rebuilding"), provided that: (a) Tenant determines that such Rebuilding is economically, legally and operationally feasible; (b) sufficient insurance proceeds are available and/or Tenant raises the costs of such repairs from private donations or other sources; and (c) the Rebuilding will be complete at least five (5) years before the end of the Term. Notwithstanding the foregoing, Tenant shall in any event be required to repair or restore any damage and destruction to the extent necessary to bring the SAAM Building and Premises into a safe and sanitary condition and to remove debris (although not to the condition required for occupancy); provided that, so long as the Master Lease is in effect, Tenant's repair and restoration obligations shall be limited to the extent that Tenant has sufficient insurance proceeds to perform the same. All Rebuilding shall be

done in consultation with City and the plans therefor shall be subject to City's reasonable approval. Nothing herein shall require Tenant to repair and restore damage to Museum Property.

If Tenant will be restoring the SAAM Building, then Tenant shall apply for any permits or approvals required in connection with such Rebuilding diligently after the applicable insurance claims have been adjusted and proceeds thereof made available to Tenant and other funding, if necessary, has been arranged, and after Tenant has approved of the plans for Rebuilding. Tenant shall commence Rebuilding promptly after issuance of such permits and approvals and thereafter diligently pursue completion of such Rebuilding.

If the SAAM Building is not repaired or restored as provided herein, then this Lease shall terminate on a date mutually agreed by the parties. Tenant and City shall cooperate in settling the loss with the insurance company and Tenant agrees to contribute to City all rights Tenant has to all insurance proceeds (net of recovery costs agreed by the parties to be reasonable third party costs for such recovery and deductibles) for the loss of the SAAM Building (excluding that received for Museum Property) as a result of such damage and destruction.

9.2 No City Liability. In no event shall City be liable to Tenant for destruction or damage by casualty to any of Museum Property, except for Claims for which City indemnifies Tenant pursuant to Section 13.2 hereof.

ARTICLE 10
CONDEMNATION

10.1 Taking. "Taking" means a taking by condemnation or by the exercise of the power of eminent domain by a public or quasi-public authority or entity, whether or not there is a taking of title, or a conveyance in lieu thereof. If there is a taking of the entire Premises or the SAAM Building, then this Lease shall terminate as of the earlier of the date title to the Premises is transferred or the date Tenant is dispossessed by the Taking authority, in which case Tenant shall be released from all further obligations hereunder.

City further agrees that in any Taking by City pursuant to its power of eminent domain that results in the termination of this Lease, the measure of the damages to Tenant for the value of the SAAM Building shall be the cost to replace such facility, meaning funds sufficient to pay for a substitute facility of at least equal size, function, and capacity.

10.2 Termination for Material Interference. If there is a Taking of part of the Premises or SAAM Building that in Tenant's reasonable judgment materially interferes with Tenant's ability to use the Premises for the purposes set forth herein, which interference cannot be feasibly, economically, operationally or legally remediated, then Tenant shall have the right to terminate this Lease by giving City notice of its election within sixty (60) days after the Taking. If this Lease is so terminated, then it shall terminate on the earlier of the date when title is transferred, the date Tenant is dispossessed by the Taking authority or thirty (30) days following Tenant's notice; provided that such termination shall in no event extinguish or diminish Tenant's right under Section 10.3 to receive a portion of the award payable on account of the Taking.

If the Taking does not materially interfere with Tenant's ability to operate the Premises for the purposes set forth in this Lease, then this Lease shall continue in full force and effect as to the part not taken, except that Tenant need not operate a Museum or provide the Public Benefits in the space so taken.

10.3 Taking Award. The parties are entitled to the following portions of any award or settlement in lieu thereof payable on account of a Taking:

(a) City shall be entitled to all amounts attributable to the value of the land comprising the Premises; and

(b) Tenant shall be entitled to receive:

(i) All amounts attributable to the value of the SAAM Building at the time of the Taking, provided that such funds are used for a replacement facility in Seattle. Such replacement facility shall be of comparable scale and quality to the SAAM Building and provide public benefits consistent with those enumerated in Exhibit B for the useful life of that facility. In selecting the location for a replacement facility, Tenant shall give priority consideration to a leasehold interest in any suitable City-owned site or facility that City may propose for such purpose. The term of the Tenant lease in any such City-owned site or facility shall be long enough to justify the investment that will be necessary to replace the Museum and in no event less than the remaining term of this Lease when the SAAM Building is taken;

(ii) All amounts attributable to the Museum Property; and

(iii) Tenant's relocation expenses.

If Tenant has not started construction on a replacement facility in Seattle within seven (7) years after the Taking and payment of the Taking proceeds to Tenant (with such extensions as City may grant in its reasonable discretion), then the Taking proceeds described in Section 10.3(b)(i) above shall be contributed to City and Tenant shall have no further claim to them. The provisions of this Section 10 shall survive expiration or termination of this Lease.

ARTICLE 11
ACCESS TO PREMISES

11.1 Access. City and City's agents, employees, and representatives shall have the right to access, enter and inspect the Premises and the SAAM Building at any reasonable time during the Operating Hours when Museum staff is on Premises to escort the inspector for the purpose of ascertaining the condition of the Premises or the SAAM Building, monitoring compliance with this Lease or for any other purpose permitted under the terms of this Lease. City understands that Museum operating and security requirements prohibit unaccompanied, unsupervised access (including inspection), except as specifically provided herein. Except in cases of emergency when prior notice is not possible, City, in its capacity as the landlord under this Lease, shall have the right to enter the SAAM Building only upon reasonable prior notice to Tenant. In exercising such

rights, the parties shall cooperate and shall take all reasonable steps to avoid disruption or unnecessary interference with Tenant's use and operations of the Premises.

ARTICLE 12
INSURANCE, WAIVER OF CLAIMS AND LIMITATION OF LIABILITY

12.1 Insurance. The parties agree to maintain throughout the Term, the insurance described below:

12.1.1 Tenant's Insurance Coverages and Limits. Tenant shall, at its sole cost and expense, maintain, and cause its subtenant(s), if any, to maintain in full force and effect the following minimum limits of insurance, and adhere to all terms and conditions set forth below, throughout the entire Lease Term:

(a) Commercial General Liability (CGL) written on an occurrence form at least as broad as ISO CG 00 01, with Minimum Limits of Liability:

$1,000,000 per Occurrence
$2,000,000 General Aggregate
$2,000,000 Products/Completed Operations Aggregate
$1,000,000 Personal/Advertising Injury Liability
$ 1,000,000 Damage to Premises Rented to You

Employers Liability/Washington Stop
$1,000,000 Each Accident/Each Disease/Policy Limit

Alternatively, may be evidenced as Employer's Liability insurance under Part B of a Workers Compensation insurance policy.

Coverage shall include: Premises and Operations; Broad Form Property Damage (Including Completed Operations); Liability assumed under an Insured Contract (including tort liability of another assumed in a business contract); Personal Injury and Advertising Liability; Independent Contractors; Severability of Interest Clause; Waiver of Subrogation endorsement in favor of Owner as required by contract; General Aggregate Limits of Insurance shall apply separately; "Claims Made" and "Modified Occurrence" policy forms are not acceptable.

The limits of liability described above are minimum limits of liability only. Regardless of provisions to the contrary under the terms of any insurance policy maintained by Tenant, the specification of any such minimum limits shall neither be (1) intended to establish a maximum limit of liability to be maintained by Tenant regarding this Lease, nor (2) construed as limiting the liability of any of Tenant's insurers, which must continue to be governed by the stated limits of liability of the relevant insurance policies.

(b) Automobile Liability insurance at least as broad as ISO CA 00 01 including coverage for owned, non-owned, leased or hired vehicles as applicable, with a minimum limit of $1,000,000 each accident for bodily injury and property damage.

(c) Workers' Compensation insurance securing Tenant's liability for industrial injury to its employees in accordance with the provisions of Title 51 of the Revised Code of Washington.

(d) Umbrella or Excess Liability insurance if and as necessary to maintain total CGL and Automobile Liability insurance limits of $5,000,000 Each Occurrence and be no less broad than coverages described above.

(e) Broad-Form All Risk Property Insurance under which the buildings, structures, Tenant's furniture, trade fixtures, equipment and inventory ("Business Personal Property") and all alterations, additions and improvements that Tenant makes to the Premises are insured throughout the Lease Term in an amount not less than the replacement cost new thereof (which shall be evaluated on an annual basis), against the following hazards: (i) loss from the perils of fire and other risks of direct physical loss (earthquake optional), not less broad than provided by the insurance industry standard "Causes of Loss - Special Form" (ISO form CP 1030 or equivalent); (ii) loss or damage from water leakage or sprinkler systems now or hereafter installed in or on the Premises; (iii) loss or damage by explosion of steam boilers, pressure vessels, or above-ground oil or gasoline storage tanks or similar apparatus now or hereafter installed on the Premises; (iv) loss from business interruption or extra expense, with sufficient coverage to provide for the payment of fixed costs during any interruption of Tenant's business. Coverage shall contain a waiver of coinsurance or agreed amount endorsement(s). Such coverage shall not be subject to any coinsurance provisions. City shall be named as a loss payee, as its interest may appear, as respects property insurance covering the buildings, structures, alterations, additions and improvements under such policy; provided that the foregoing shall not apply during any period that the Master Lease is in effect. This insurance shall begin coincident with the termination of the Builder's Risk insurance during the Development Agreement to ensure complete coverage of all property.

(f) After termination of the Development Agreement and during such time as Tenant is engaged in the performance of other renovation of the Premises, the Tenant shall maintain in full force and effect "All Risks" Builder's Risk Property insurance or equivalent for the portion of the Premises under renovation, including fire and flood, on a replacement cost new basis. In the event of a claim under the builder's risk policy, Tenant or its contractor(s) shall be responsible for paying any deductible under the policy. It shall be Tenant's responsibility to properly coordinate with the City's Risk Management Division the placement of Builder's Risk Property insurance prior to any new construction on, or structural alteration of, the Premises.

In the event that the City deems insurance to be inadequate to protect Tenant and the City, Tenant shall increase coverages and/or liability limits as the City shall deem reasonably adequate within sixty (60) days after the date of written notice.

12.1.2 Terms and Conditions for Tenant's Insurance.

(a) The City of Seattle as Additional Insured. The CGL insurance and, in addition, Excess and/or Umbrella liability insurance, if any, shall include "The City of Seattle, its officers, officials, employees, agents and volunteers" as additional insureds. Tenant's insurance shall be primary and non-contributory to any insurance maintained by or available to the City.

(b) Required Separation of Insured Provision; Cross-Liability Exclusion and other Endorsements Prohibited. Tenant's insurance policy shall include a "separation of insureds" or "severability" clause that applies coverage separately to each insured and additional insured, except with respect to the limits of the insurer's liability. Tenant's insurance policy shall not contain any provision, exclusion or endorsement that limits, bars, or effectively precludes the City of Seattle from coverage or asserting a claim under the Tenant's insurance policy on the basis that the coverage or claim is brought by an insured or additional insured against an insured or additional insured under the policy. Tenant's failure to comply with any of the requisite insurance provisions shall, at the discretion of the City of Seattle, shall serve as grounds for the City to procure or renew insurance coverage with any related costs of premiums to be repaid by Tenant or reduced and/or offset against the Agreement.

(c) Cancellation Notice. Coverage shall not be cancelled without thirty (30) days' prior written notice to the City of such cancellation, except that notice need only be ten (10) days in cases of cancellation for non-payment of premium.

(d) Minimum Security Requirements. Each insurance policy required hereunder shall be (1) subject to reasonable approval by City that it conforms with the requirements of this Section, and (2) be issued by an insurer rated A–:VII or higher in the then-current A. M. Best's Key Rating Guide and licensed to do business in the State of Washington unless procured under the provisions of chapter 48.15 RCW (Unauthorized insurers).

(e) Deductible. Any deductible must be disclosed to, and shall be subject to reasonable approval by, the City. The cost of any claim falling within a deductible shall be the responsibility of Tenant.

12.1.3 Evidence of Insurance. On or before the Commencement Date, and thereafter not later than the last business day prior to the expiration date of each such policy, the following documents must be delivered to City at its notice address as evidence of the insurance coverage required to be maintained by Tenant:

(a) Certification of insurance documenting compliance with the coverage, minimum limits and general requirements specified herein;

(b) A copy of the policy's declarations pages, showing the insuring company, policy effective dates, limits of liability and the Schedule of Forms and Endorsements specifying all endorsements listed on the policy including any company-specific or manuscript endorsements;

(c) A copy of the CGL insurance policy provision(s) and endorsements expressly including the City of Seattle and its officers, elected officials, employees, agents and volunteers as additional insureds (whether on ISO Form CG 20 26 or an equivalent additional insured or blanket additional insured policy wording), showing the policy number, and the original signature and printed name of the representative of the insurance company authorized to sign such endorsement; and

(d) Pending receipt of the documentation specified in this Section, Tenant may provide a copy of a current complete binder. An ACORD certificate of insurance will not be accepted in lieu thereof.

Evidence of Insurance as set forth above, shall be issued to:

City of Seattle
Department of Parks and Recreation
100 Dexter Avenue North
Seattle, WA 98109-5199
Attn: Property Management

12.1.4 Assumption of Property Risk. Except to the extent of City's negligence or willful misconduct, but subject to Section 12.2 below, the placement and storage of Tenant's Business Personal Property in or about the Premises shall be the responsibility, and at the sole risk, of Tenant.

12.1.5 Adjustments of Claims. The Tenant shall provide for the prompt and efficient handling of all claims for bodily injury, property damage or theft arising out of the activities of the Tenant under this Lease.

12.1.6 Tenant's Responsibility. The procuring of the policies of insurance required by this Lease shall not be construed to limit the Tenant's liability hereunder. Notwithstanding said insurance, but subject to Section 12.2 below, the Tenant shall be obligated for the full and total amount of any damage, injury or loss caused by negligence of the Tenant, or any of its agents, officers and employees or through use or occupancy of the Premises.

12.2 Waiver of Recovery and Subrogation. City and Tenant release and relieve the other from any liability they might otherwise have and waive their entire right of recovery for loss or damage to property located within or constituting a part or all of the Premises or the SAAM Building to the extent that the loss or damage either (a) is actually covered by the injured party's property insurance, or (b) if the injured party failed to maintain insurance as required under this Lease, would have been covered under the terms and conditions of the property insurance the injured party is required to carry under Section 12.1, whichever is greater. This waiver applies regardless of the cause or origin of the claim including without limitation loss due to the negligent acts or omissions of City or Tenant, or their respective officers, directors, council members, employees, agents, contractors, invitees, Tenant's assignees or subtenants. The parties shall have their property insurers endorse the applicable insurance policies to reflect the foregoing waiver of claims, provided however, that the endorsement shall not be required if the applicable policy of insurance permits the named insured to waive rights of subrogation on a blanket basis, in which case the blanket waiver shall be acceptable; and provided further, that the failure to obtain such endorsement, when required, shall not impair the effectiveness of this waiver and/or release between City and Tenant.

12.3 Limitation of Liability. In no event shall City, its successors or assigns, have any recourse whatsoever for any damages payable, obligations assumed or indemnifications proffered by Tenant under this Lease to SAM's (a) archives or art collection and proceeds from the sale of

art; (b) otherwise restricted funds, including but not limited to restricted pledges of funds and restricted funds held within SAM's endowment; (c) interests in real estate; and (d) proceeds, rents or other income derived from SAM real estate that may be pledged or otherwise committed to repayment of Museum Development Authority obligations guaranteed by the City. Under no circumstances shall City have any recourse whatsoever to Tenant's officers, trustees, directors, agents, employees, contractor or licensees for any debt or obligation created by this Lease.

12.4 Reallocation of Insurance Responsibilities. Notwithstanding the allocations of responsibility to insure contained in Section 12.1 above, the parties may by mutual agreement decide to reallocate such responsibilities, including which party shall insure the SAAM Building and allocating the cost thereof in an appropriate way among the parties. The parties will engage in good faith discussions, including consulting with their insurance professionals, to agree on the preferred arrangements for purchasing the insurance and sharing the cost thereof, which may change from time to time by mutual agreement. In addition, the parties may by mutual agreement amend the insurance requirements of this Lease from time to time as appropriate to address changes in insurance practices and the insurance needs of the parties consistent with their rights and obligations hereunder.

ARTICLE 13
INDEMNIFICATION

13.1 Tenant's Indemnification.

13.1.1 Subject to the waiver of recovery and subrogation in Section 12.2 above, Tenant shall indemnify, pay the defense costs of and hold harmless City and its council members and employees from Claims for damages, costs, personal injury, death or for loss or damage to property that arise out of or relate to: (a) the acts or omissions of Tenant, its employees, agents, contractors, affiliates or licensees in the development, improvement, operation, maintenance or use of the Premises or conduct of the Project; or (b) any breach or default by Tenant in the performance of any obligation on Tenant's part to be performed under this Lease.

13.1.2 This indemnity does not apply: (a) to Claims to the extent they are caused by the acts, omissions or misconduct of City Parties; or (b) to damages, claims, suits, actions or liabilities waived under Section 12.2 above. The term "City Parties" means City, its council members, agents, employees, contractors and licensees.

13.1.3 Subject to Section 13.3, the foregoing indemnity shall also include reasonable costs, expenses and attorneys' fees incurred in connection with any indemnified Claim or incurred by City in successfully establishing the right to indemnity. Tenant shall have the right to assume the defense of any Claim subject to this indemnity. City agrees to cooperate fully with Tenant and its counsel in any matter in which Tenant elects to defend, provided that Tenant promptly reimburses City for reasonable costs and expenses incurred in connection with its duty to cooperate.

13.2 City's Indemnification.

13.2.1 Subject to the waiver of recovery and subrogation in Section 12.2 above, City shall indemnify, pay the defense costs of and hold harmless Tenant and its officers, directors, trustees, agents, employees, volunteers, contractors and licensees from Claims for damages, costs, personal injury, death or for loss or damage to property that arise out of or relate to the acts or omissions of any City Parties in performing their obligations under this Lease.

13.2.2 This indemnity does not apply: (a) to Claims to the extent they are caused by the acts or omissions or misconduct of the Tenant, including its officers, directors, trustees, agents, employees, volunteers, contractors, affiliates and licensees; or (b) to damages, claims, suits, actions or liabilities waived under Section 12.2 above.

13.2.3 Subject to Section 13.3, the foregoing indemnity shall also include reasonable costs, expenses and attorneys' fees incurred in connection with any indemnified Claim or incurred by Tenant in successfully establishing the right to indemnity. City shall have the right to assume the defense of any Claim subject to this indemnity. Tenant agrees to cooperate fully with City and City's counsel in any matter in which City elects to defend, provided that City promptly reimburses Tenant for reasonable costs and expenses incurred in connection with its duty to cooperate.

13.3 Joint, Comparative or Concurrent Negligence of Willful Misconduct. If the parties are determined to be jointly and severally liable in any action, then each party's duty to indemnify and defend shall be proportionate to such party's allocable share of joint, comparative or concurrent negligence or willful misconduct.

13.4 Waiver of Indemnity. City and Tenant agree that the foregoing indemnities specifically include, without limitation, Claims brought by either party's employees against the any other party. THE FOREGOING INDEMNITIES ARE EXPRESSLY INTENDED TO CONSTITUTE A WAIVER OF EACH PARTY'S IMMUNITY UNDER WASHINGTON'S INDUSTRIAL INSURANCE ACT, RCW TITLE 51, TO THE EXTENT NECESSARY TO PROVIDE THE OTHER PARTY OR PARTIES WITH A FULL AND COMPLETE INDEMNITY FROM CLAIMS MADE BY EACH PARTY AND ITS EMPLOYEES, TO THE EXTENT OF THEIR NEGLIGENCE. CITY AND TENANT ACKNOWLEDGE THAT THE INDEMNIFICATION PROVISIONS OF THIS ARTICLE WERE SPECIFICALLY NEGOTIATED AND AGREED UPON BY THEM.

ARTICLE 14
ASSIGNMENT AND SUBLETTING

14.1 Assignment and Subletting. Except as expressly set forth herein, no party may directly or indirectly make or permit an assignment, transfer, sublease or other alienation of such party's rights or obligations under this Lease at any time without the prior written consent of the other parties. Notwithstanding the foregoing: (i) Tenant may enter into the Master Lease; (ii) Master Tenant may enter into a Sublease; (iii) in the ordinary course of business for purposes consistent with normal Museum operations, Tenant may enter into licenses or concessions for catering services and a gift store, and permit short term event rentals (not to exceed five (5) consecutive days per event), which agreements shall be permitted hereunder; and (iv) upon

expiration of the Master Lease, Tenant may assign its interest under this Lease to a nonprofit entity that agrees to be the successor operator of the Museum and assumes all of Tenant's obligations hereunder, subject to the consent of City, such consent not to be unreasonably withheld provided that the successor tenant is either controlled by Tenant or can demonstrate to City's reasonable satisfaction that it can successfully operate the Museum; provided that, during the Tax Credit Compliance Period, Tenant may assign its interest under this Lease to any entity that agrees to operate the SAAM Building as a museum and assumes all of Tenant's obligations hereunder, without the consent of City. Nothing in this Section 14.1 shall change the requirements of Section 3.3 above under which Tenant provides certain Public Benefits as the operator of the SAAM Building.

14.2 Assignment at the Expiration of the Tax Credit Compliance Period. At the expiration of the Tax Credit Compliance Period, Tenant may assign its interest under this Lease to SAM without the prior consent of City, at which point, SAM Building Landlord, LLC shall be automatically released from all obligations relating to the Premises under this Lease.

ARTICLE 15
DEFAULT AND REMEDIES

15.1 Tenant's Default. Each of the following constitutes a default by Tenant under this Lease ("Default"):

15.1.1 Tenant transfers its rights and obligations under this Lease in contravention of Article 14;

15.1.2 Tenant fails to perform or observe any covenant, provision or obligation of Tenant under this Lease not specifically addressed in another section of this Section 15.1, including failure to perform the Public Benefits or Museum operations obligations under Sections 3.3, 3.4 and 3.5, within ninety (90) days of the date of written notice of default from City (or if the breach requires longer than ninety (90) days to cure, Tenant fails to start curing the default within ninety (90) days after receipt of written notice and to thereafter diligently prosecute the cure thereof to completion); provided that the foregoing shall not apply to any period when the City agrees in writing that Tenant is performing any non-standard repair, maintenance, alteration or expansion of the SAAM Building or any period when, following written notice by the City, Landlord is performing any renovation to the SAAM Building or to portions of Volunteer Park adjacent to the SAAM Building, including, without limitation, the Adjacent Park Area that warrant a temporary stop to Tenant's performance under this Lease;

15.1.3 Tenant vacates, abandons or ceases to use the Premises for Museum operations for sixty (60) consecutive calendar days or longer, subject to excuse for force majeure reasons or periods of reconstruction following casualty or condemnation; provided that the foregoing shall not apply to any period when Tenant is performing any non-standard repair, maintenance, alteration or expansion of the SAAM Building reasonably approved in advance by City;

15.1.4 Tenant consolidates, dissolves or liquidates or takes an equivalent action or an involuntary case is commenced (other than by City) under any federal or state bankruptcy, reorganization, insolvency, moratorium or similar statute against Tenant, or a custodian, receiver, trustee, assignee for the benefit of creditors or other similar official is appointed to take possession, custody, or control of the property of Tenant unless such case, petition or appointment is dismissed, set aside or withdrawn or ceases to be in effect within ninety (90) days after the date such case is commenced or the date of said filing or appointment; or Tenant becomes insolvent or admits in writing its inability to pay its debts as they mature, or commences any voluntary case or files any petition or action for relief relating to any bankruptcy, reorganization, insolvency or moratorium law, or any other law or laws for the relief of, or relating to, debtors; or Tenant makes an assignment for the benefit of creditors or enters into an agreement of composition with its creditors; or Tenant fails generally to pay its debts as they become due; or Tenant fails to have discharged promptly any judgment, execution, garnishment or attachment of such consequence as could impair the ability of Tenant to carry on its operations or to fulfill its obligations under this Lease;

15.1.5 A court enters an order, judgment or decree approving a petition filed against Tenant seeking an arrangement, composition, liquidation, dissolution or similar relief under the present or future federal, state or other statute, law or regulation relating to bankruptcy, insolvency or other relief for debtors (other than at the instigation of City), and the order, judgment or decree remains unvacated or unstayed for one hundred twenty (120) days.

15.2 City's Remedies for Tenant's Default. If a Tenant Default occurs, then the parties shall use the dispute resolution procedures set forth in Section 18 hereof. If the mediation required pursuant to Section 18 hereof does not resolve the Dispute, then City may exercise any one or more of the following:

15.2.1 Terminate this Lease upon one hundred eighty (180) days' prior written notice; provided that, in no event may City terminate the Lease during the first ten (10) years of the initial Term.

15.2.2 Hold Tenant liable for all actual damages (but no punitive, indirect or consequential damages) and reasonable expenses, except attorneys' fees incurred by City in enforcing its remedies for any Default; and

15.2.3 Exercise any other legal or equitable right or remedy that it may have; provided that, notwithstanding anything herein to the contrary, in no event shall City have the right to require specific performance of Tenant's obligations hereunder.

In the event of a termination under Section 15.2, all improvements (excluding Museum Property) constructed or installed by Tenant upon the Premises shall become the property of City without the necessity of any deed or conveyance from Tenant to City.

15.3 City's Exigent Circumstances. Notwithstanding anything in Sections 15.2 to the contrary, if a Default by Tenant has occurred that involves an imminent danger to public health or safety, then City shall not be required to exhaust all the dispute resolution procedures set forth in Section 18 before exercising its remedy under Sections 15.2 hereunder, but the parties shall

nonetheless work together in good faith to try to resolve such dispute in accordance with such dispute resolution procedures.

15.4 City's Default. The failure of City to perform or observe any obligation of City under this Lease within ninety (90) days of the date of written notice from Tenant (or if the breach requires longer than ninety (90) days to cure, the failure of City to start curing within ninety (90) days after receipt of written notice and thereafter to diligent prosecute such cure to completion) shall constitute a default by City under this Lease ("City Default"):

15.5 Tenant's Remedies for City's Default. If a City Default occurs, then the parties shall use the dispute resolution procedures set forth in Section 18 hereof. If the mediation required pursuant to Section 18 hereof does not resolve the Dispute, then Tenant may exercise one or more of the following:

15.5.1 Terminate this Lease upon one hundred eighty (180) days prior written notice. Then and in any such event, all improvements (excluding Museum Property) constructed or installed by Tenant upon the Premises shall become the property of City without the necessity of any deed or conveyance from Tenant to City;

15.5.2 Hold City liable for all actual damages (but no punitive, indirect or consequential damages) and reasonable expenses except attorneys' fees incurred by Tenant in enforcing its remedies for any City Default;

15.5.3 Tenant may cease or suspend the provision of some or all of the Public Benefits to the extent that the City Default makes it impossible or impractical to provide the same; and

15.5.4 Tenant may exercise any other legal or equitable right or remedy that they may have.

15.6 Tenant's Exigent Circumstances. Notwithstanding anything in Sections 15.5 to the contrary, if a City Default has occurred that involves an imminent danger to public health or safety, then Tenant shall not be required to exhaust all the dispute resolution procedures set forth in Section 18 before exercising its remedies under Sections 15.5 or 15.6 hereunder, but the parties shall nonetheless work together in good faith to try to resolve such dispute in accordance with such dispute resolution procedures.

ARTICLE 16
NOTICES

16.1 Notices. All notices, demands or requests that may or are required to be given by one party to the other under this Lease shall be given in writing and delivered personally, or sent by U.S. certified mail, postage prepaid, return receipt requested, or nationally recognized overnight air carrier, and addressed to City's address or Tenant's address, as follows:

If to the City:	City of Seattle Department of Finance 700 5th Avenue, Suite 5200 Seattle, WA 98104-5058 Attn: Finance Director Phone: 206.684.8079 Email: glen.lee@seattle.gov
And:	City of Seattle Department of Parks and Recreation 100 Dexter Avenue North Seattle, WA 98109-5199 Attn: Superintendent Phone: 206.684.8022 Email: jesus.aguirre@seattle.gov
Copy to:	Helaine Honig City of Seattle Law Department 701 5th Avenue, Suite 2050 Seattle, WA 98104-7097 Phone: 206.684.8222 Email: helaine.honig@seattle.gov
If to Tenant:	Seattle Art Museum 1300 1st Avenue Seattle, WA 98101-2003 Attn: Illsley Ball Nordstrom Director and CEO Phone: 206.654.3142 Email: kimr@seattleartmuseum.org
Copy to:	Seattle Art Museum 1300 1st Avenue Seattle, WA 98101-2003 Attn: Richard Beckerman, Chief Operating Officer Phone: 206.654.3150 Email: richardb@seattleartmuseum.org
Copy to:	Gerry Johnson Pacifica Law Group LLP 1191 2nd Avenue, Suite 2000 Seattle, WA 98101-3404 Phone: 206.245.1700 Email: gerry.johnson@pacificalawgroup.com

Notices shall be deemed to have been given upon receipt or attempted delivery where delivery is not accepted. Either party may change its address and/or those receiving copies of notices upon written notice given to the other.

ARTICLE 17
MEMORANDUM OF AGREEMENT

17.1 Memorandum. This Lease shall not be recorded except as permitted in this Article 17. The parties shall promptly execute and record, at Tenant's cost, a short form memorandum describing the Premises and stating the Term, the Effective Date and any other information the parties reasonably agree to include and/or necessary for any financing with respect to the Project.

ARTICLE 18
DISPUTE RESOLUTION

18.1 In General; Mediation. In the event of any dispute or difference that shall arise between the parties relating to the construction, meaning, enforcement or effect of this Lease, or of the rights or liabilities of the parties hereunder, the parties shall first follow the procedures in this section before filing or initiating a lawsuit. The parties shall make their best efforts to resolve disputes as expeditiously as possible through good faith negotiations at the lowest possible decision-making level, and in the event such negotiations are unsuccessful, the matter shall be referred to the Superintendent and the Director/CEO of Tenant's Managing Member. If those officials are unable to resolve the dispute within a period of thirty (30) days after the matter has been formally referred to them for resolution, they shall meet during the immediately succeeding seven (7) days to select a mediator to assist in the resolution of such dispute. Tenant and City agree to participate in mediation with the agreed upon mediator for a reasonable amount of time and in good faith. The cost of the mediation shall be shared equally between Tenant and City.

ARTICLE 19
MISCELLANEOUS

19.1 No Partnership. Nothing contained in this Lease shall create any partnership, joint venture or other relationship between Tenant and City. It is the intent of the parties that this Lease creates a leasehold estate in the Premises and that the relationship of the parties hereunder is that of landlord and tenant only.

19.2 Successors. This Lease shall bind and inure to the benefit of City, its successors and assigns, Tenant and its successors and assigns.

19.3 Severability. If any provision of this Lease is determined to be invalid or unenforceable, then that provision and the remainder of this Lease shall continue in effect and be enforceable to the fullest extent permitted by law. It is the intention of the parties that if any provision of this Lease is capable of two constructions, one of which would render the provision void, and the other of which would render the provision valid, then the provision shall have the meaning that renders it valid.

19.4 Integration and Amendments. Together with the Development Agreement, this Lease contains the entire integrated agreement between the parties as to the matters covered herein and supersedes any oral statements or representations or prior written matter not contained in this instrument as to the matters set forth herein. This Lease shall not be modified except by a written document signed by City and Tenant (or their successors in title) upon passage of an ordinance by the City Council.

19.5 Governing Law; Venue. This Lease shall be governed by and construed and enforced in accordance with the laws of the State of Washington.

19.6 No Waiver. Failure of either party to complain of any act or omission on the part of the other, no matter how long the failure may continue, shall not constitute a waiver of any rights under this Lease. No waiver by any party of any breach of any provisions of this Lease shall be deemed a waiver of a breach of any other provision of this Lease or a consent to any subsequent breach of any other provision. If any action of any party requires the consent or approval of another, consent or approval given on one occasion shall not be deemed a consent to or approval of that action on any other occasion. No extension of time for performance of any obligation or act shall be deemed an extension of the time for performance of any other obligation or act.

19.7 Construction. The following rules shall apply to the construction of this Lease unless the context otherwise requires:

(a) Words describing the singular number shall include the plural number and vice versa, except where otherwise indicated.

(b) All references herein to particular articles, sections or exhibits are references to articles, sections or exhibits of this Lease, unless otherwise expressly stated.

(c) The headings and table of contents herein are solely for convenience of reference and shall not constitute a part of this Lease nor shall they affect its meaning, construction or effect.

(d) This Lease shall not be construed as if it had been prepared by one of the parties, but rather as if all parties had prepared it.

19.8 Time. Time is of the essence of every provision of this Lease.

19.9 Cumulative Remedies. The rights and remedies that either party may have under this Lease or at law or in equity, upon any breach, are distinct, separate and cumulative and shall not be deemed inconsistent with each other, and no one of them shall be deemed to be exclusive of any other.

19.10 Authority. Each party hereto warrants that it has the authority to enter into this Lease and to perform its obligations hereunder and that all necessary approvals, acts or resolutions

to authorize this transaction have been taken, and the signatories, by executing this Lease, warrant that they have the authority to bind the respective parties.

19.11 Consents and Approvals. In any instance when either party's consent or approval is required under this Lease, such consent or approval shall not be unreasonably withheld, conditioned or delayed. No permission, consent, or approval of City contained herein or given pursuant to this Lease is, or shall be construed as, a representation or assurance that the matter consented to or approved complies with applicable Laws, nor shall any such consent or approval be construed to authorize any failure to comply with such Laws. No action of the Superintendent in implementation of this Lease shall constitute or excuse any official action by any other City department or official that may be required by law, ordinance, rule or regulation.

19.12 Counterparts. This Lease may be executed in counterparts for the convenience of the parties, and such counterparts shall together constitute one Lease.

19.13 Force Majeure. Except as otherwise expressly provided in this Lease, time periods for any party's performance under any provisions of this Lease shall be suspended for periods of time during which such performance is prevented due to circumstances beyond such party's reasonable control, including without limitations, strikes, embargoes, shortages of labor or materials, governmental regulations, acts of God, unforeseen site conditions, casualty, war or other strife.

19.14 Exhibits. Exhibits A through C attached hereto are hereby incorporated herein and made a part of this Lease, and the term "Lease" shall include all exhibits hereto.

19.15 Limitation on Third Party Rights. Nothing in this Lease expressed or implied is intended or shall be construed to give to any person other than City or Tenant any legal or equitable right, remedy or claim under or in respect of this Lease or any covenant, condition or provision herein contained; and all such covenants, conditions and provisions are and shall be held to be for the sole and exclusive benefit of City and Tenant.

19.16 Rights Reserved by City. City reserves the right to do the following, without liability of any kind, so long as such actions do not substantially interfere with Tenant's rights under this Lease or its ability to operate the Museum and provide the Public Benefits:

19.16.1 Appearance, Size and Location of Volunteer Park. Increase, reduce, and change in any manner whatsoever the number, appearance, dimension, and locations of Volunteer Park walks, buildings, landscaping, parking, and service areas, and make improvements, alterations, and additions to the portions of the Premises that are located outside of the Museum Building.

19.16.2 Traffic Regulation. Regulate all traffic within and adjacent to Volunteer Park.

19.16.3 Admission Charges. Impose a reasonable charge for use of facilities (other than the Museum) within Volunteer Park, including parking facilities.

19.16.4 Rules and Regulation Promulgation. Promulgate, from time to time, reasonable rules and regulations regarding the use and occupancy of any area of Volunteer Park; provided that no such rule or regulation that would directly or indirectly affect any right granted to Tenant by this Lease shall be promulgated without City having given prior written notice of such action to Tenant and at least thirty (30) days to comment on such proposed action unless such promulgation is because of a declared emergency.

19.16.5 Days and Hours for Operations. Determine the hours Volunteer Park will be open to the public. Nevertheless, regardless of park hours, City cannot restrict or block access to the Premises, SAAM Building or the Adjacent Park Property area (recognizing that the hours when the Museum is open to the general public ("Operating Hours") or hosting events at the SAAM Building (including, without limitation, Private Events) may be different from the hours than when the park is open).

19.16.6 Park Concessions Determine the size, number, type and identity of concessions and operations being conducted or undertaken at Volunteer Park other than in the SAAM Building, the Premises or the Adjacent Park Property Area.

[signatures on next page]

IN WITNESS WHEREOF, this Lease is executed on the day and year first above written.

City:

CITY OF SEATTLE, a Washington municipal corporation

By: _____
Jesús Aguirre, Superintendent
Department of Parks & Recreation

TENANT:

SAAM BUILDING LANDLORD, LLC, a Washington limited liability company

By: SAM-SAAM Renovation, LLC, a Washington limited liability company
Its: Manager

By: Seattle Art Museum, a Washington nonprofit corporation
Its: Manager

By:_____
Kimerly Rorschach, CEO

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

I certify that I know or have satisfactory evidence that Jesús Aguirre is the person who appeared before me, and said person acknowledged that he signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the Superintendent of the Department of Parks & Recreation of the City of Seattle, to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: _____

(Seal or stamp)

_____
(Signature)

_____
(Printed Name)
Notary Public
My appointment expires _____

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

I certify that I know or have satisfactory evidence that Kimerly Rorschach is the person who appeared before me, and said person acknowledged that she signed this instrument, on oath stated that she was authorized to execute the instrument and acknowledged it as the Chief Executive Officer of the Seattle Art Museum, which is the Manager of SAM-SAAM Renovation, LLC, which is the Manager of the SAAM Building Landlord, LLC, a Washington limited liability company, to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: _____

(Seal or stamp)

_____
(Signature)

_____
(Printed Name)
Notary Public
My appointment expires _____

EXHIBIT A

Legal Description of Volunteer Park

The Northeast Quarter of the Northeast Quarter (NE 1/4 NE 1/4) of Section Twenty-Nine (29) in Township Twenty-Five (25) north of Range Four (4) east W.M.; Also beginning at the Northeast corner of the Southeast Quarter (SE 1/4)of the Northeast Quarter (NE 1/4) of Section Twenty-Nine (29) in Township Twenty-Five (25) North Range Four (4) east, W.M. King County, Washington, thence South along the line between Sections Twenty-Nine (29) and Twenty-Eight(28) a distance of one hundred seven and seventy-seven hundredths (107.77)feet, thence north 89°55' West, a distance of one thousand, three hundred forty-two and fifty-three hundredths (1342.53) feet more or less to the centerline of the Northeast Quarter (NE 1/4) of said Section 29, thence along said centerline North 0°13'30" West, a distance of eighty-six and eighty-seven hundredths (86.87) more or less feet to the centerline of the Northeast Quarter(NE 1/4) of said Section Twenty-Nine (29), thence along the last named centerline of the Northeast Quarter (NE 1/4) of said Section Twenty-Nine (29)north 89°11'30" east, a distance of one thousand three hundred forty-two and eighty-nine hundredths (1342.89) feet to the place of beginning. Also, the East one-half (E 1/2) of blocks "E" and "F" of Phinney Addition to the City of Seattle as recorded in Vol. 1, page 175, of King County Plats. Also, Eleventh (11) Avenue North in the City of Seattle, from the North line of Furth Addition to the North line of Phinneys Addition as vacated by Ordinance #26793.

EXHIBIT A-1

Site Plan

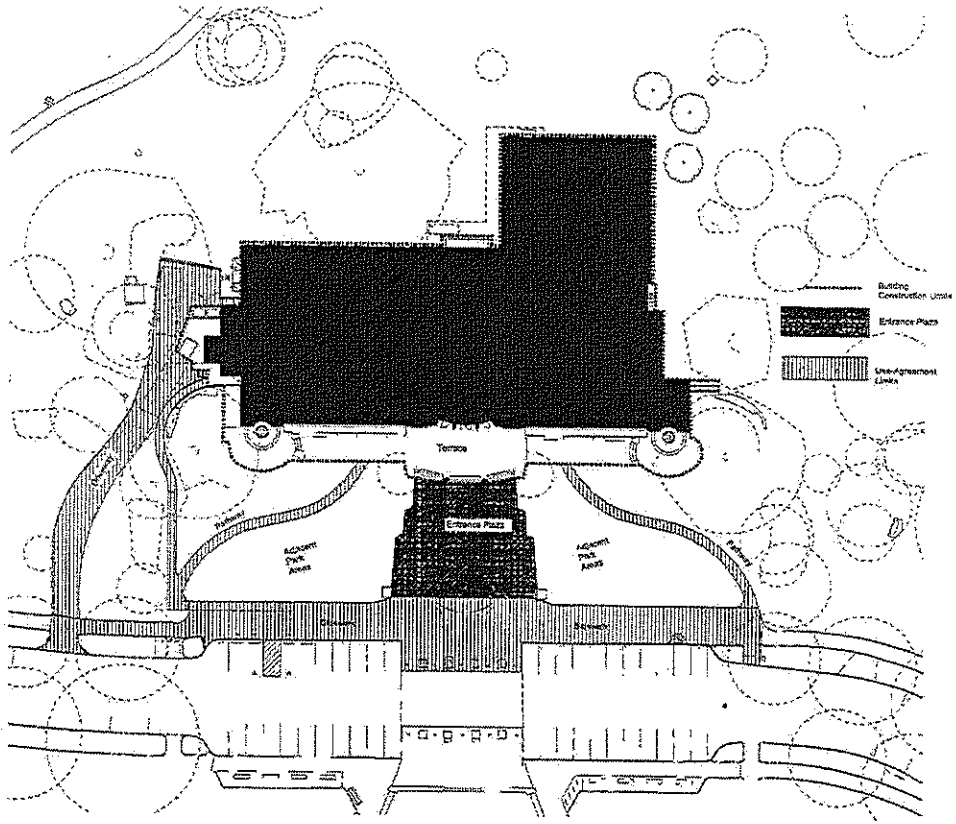

EXHIBIT B

Public Benefits

Public Benefits and Reporting Requirements

The Seattle Art Museum (SAM) is a leading creative cultural institution committed to preserving and sharing works of art from global cultures with the broadest possible audience. The SAM institution fills an important public role and has a truly city-wide reach. From this unique position, SAM is committed to advancing the City's goals of making available in a meaningful and effective way, the benefits and opportunities of cultural programming and resources to everyone in Seattle, particularly including those communities and geographic areas that historically have been underserved. The City recognizes that SAM, as a non-profit institution, funds its programs and operations by contributions from the public, supplemented by a small amount of earned revenue. In partial consideration for the public support for the development, rehabilitation and ongoing operation of the SAAM Building in Seattle's Volunteer Park, and in fulfillment of its educational and public service mission and ongoing commitment to the community, Tenant (which for purposes of this Exhibit shall include any successor operator of the Museum) agrees that from and after the Opening Date of the Museum through the Term of the Lease, it will cause the SAAM Building to be operated as an integrated, publicly accessible art museum with exhibits and programs devoted to global cultures, including related space for meeting and educational functions, a resource center that is open to the public and the operation of a book store/gift shop, all as further set forth below:

1. Opening Hours and General Admissions. The Museum will be open for public access in the SAAM Building at least forty (40) hours per week, fifty (50) weeks per year, subject to an admissions policy that shall include, without limitation, the following benefits, which are quantified and valued in Exhibit B-1:

(a) General public admission donation amount may be subject to a reasonable expected admission donation;

(b) Every day the Museum is open to the public, any member of the public unable to pay the standard admission fee will be admitted (excluding special events and special exhibitions) upon payment of whatever amount he or she determines he or she can pay, but in no event less than one (1) cent per person. The Museum shall take adequate measures to clearly inform the public of this benefit, including by posting conspicuous signage in the Museum, the content and location of which shall be subject to Superintendent approval, which will not be unreasonably withheld, and by identifying this benefit in marketing and outreach materials covering public activities at the Museum;

(c) At least four (4) days per calendar month will be regularly scheduled when admission to the Museum (excluding special events) is free of charge; and

(d) Children of elementary and middle school age (fourteen (14) years or younger) will be admitted free of charge every day the Museum is open to the public. This excludes school and group admissions, special events and programs.

2. School Programs. Tenant will develop and offer on-going educational programs for elementary, middle and high school classrooms and provide reduced fee and other assistance to students from schools that participate in federal free or reduced price school lunch programs. Such programs may include, without limitation, guided gallery tours and art workshops in an art studio with the assistance of teaching artists. Tenant will collaborate with the Seattle Public School District (SPSD) to ensure that opportunities and programs provided by the Museum are available to all students of SPSD regardless of ability to pay.

(a) Tenant will offer free group school tours and transportation to all Seattle Public Schools. Discounts will be available to other Title I schools or schools that participate in federal free or reduced lunch programs;

(b) Tenant will offer in-school art education programs where Museum art educators visit classrooms and provide education sessions focusing on Asian art and culture;

(c) Tenant may also offer internships and/or volunteer service opportunities to high school or college students; and

(d) The number and value of the school programs to be offered are specified in Exhibit B-1.

3. Museum Programming. Tenant is required and is committed to actively advance the City's goals of serving historically underserved populations and creating equitable access to cultural programs. To that end, Tenant shall provide on an annual basis, a variety of free and low fee programming (some of which programming may be coordinated by the Gardner Center for Asian Arts and Ideas), including but not limited to the following:

(a) Workshops guided by teaching artists on a day each month that the Museum is open to the public for free, with activities such as costumes for creative play, performances, family-friendly movies, books, and sketching tours;

(b) Day Camps during the summer for elementary school age children, focusing on art-making activities, tours of galleries and special exhibits and use of outdoor spaces;

(c) Special Cultural Celebrations that will include performances and visual arts demonstrations, such as dance, music and textiles, highlighting global cultures;

(d) Coordinated and supported programing in the Volunteer Park Amphitheater space, which may include, without limitation, the screening of films, music or dance performances;

(e) Lectures and panel discussions by and among artists, critics, curators and scholars relating to the art in the special exhibits and addressing pressing issues in art and society; which may include international speakers invited to the Museum in partnership with the University of Washington Jackson School of International Studies; and

(f) The number of each program offered annually, and the value of its discounts, scholarships, or free admission is specified in Exhibit B-1.

4. Meeting and Educational Space. Subject to Tenant's use of meeting room space within the SAAM Building and school groups' use of educational space within the SAAM Building, Tenant will provide meeting room space for noncommercial use by community organizations on a first-come, first-served basis, during hours when the Museum is open to the public, and subject to demand for such meeting space, Tenant's rules regarding use of such space and Tenant's scheduling convenience and execution of use agreements required by Tenant (including appropriate indemnities and agreements to pay for costs as hereafter described). The parties recognize that separate, dedicated meeting space will not be included in the Project design and such meetings would need to occur in Museum areas that also serve other functions. There shall be no facility rental fee for such meetings, but Tenant shall be compensated for (and may require advance payment of) audio/visual, special security or staffing, special set up and other event special needs and costs, if Tenant elects to provide the same. Tenant shall publicize the availability of such meeting space by, at a minimum, posting notice thereof in a prominent position on its website.

5. Outreach. Tenant will engage in a variety of outreach efforts to attract and include populations and youth from a variety of cultures and economic backgrounds. Tenant will develop and implement marketing and outreach policies that ensure information about all Museum programming and events, including those listed above, and related assistance benefits (such as discounts and scholarships) is thoroughly and effectively disseminated in a geographically equitable manner, which includes ensuring information is disseminated in all parts of the city, including within the general community and inside schools, in historically underserved areas such as Rainier Beach, South Park and North Lake City. SAM partners with the City of Seattle and Seattle Public Schools in these efforts through active participation in The Creative Advantage. Outreach efforts for SAAM will naturally focus on programs related to Asian art and cultures. At least once per year Tenant shall provide to the Parks and Recreation Department a written Outreach Plan showing how Tenant is providing information and other outreach in schools that participate in federal free or reduced price school lunch programs. A description and copies of all outreach and marketing materials disseminated during the previous year with description of the distribution medium and area associated with each will be included in this Plan. The number and description of specific outreach efforts are specified in Exhibit B-1.

6. Financial Assistance and Economic Accessibility. Tenant will offer financial assistance in the form of scholarships, reduced fees and free admission to participate in programs, camps, tours and other activities for low-income youth and/or adults in the City. This financial

assistance will enable individuals from underserved communities, who otherwise could not afford it, to participate in fee-based workshops and camps. Tenant shall ensure that all Museum activities and programs are economically accessible to those who could not otherwise afford them. Mechanisms may include, but not be limited to scholarships, lower than market fees, and free programs and activities. The Tenant shall not turn away individuals from the Museum or its programs solely for an inability to pay the fee. Tenant shall provide a minimum of $50,000 of financial assistance for such programs and such minimum will escalate annually at a rate equivalent to the escalation of City operating support as shown on Exhibit C.

7. Resource Center. Tenant will maintain a center with resources that may include books, catalogues, journals, videos, online resources and ephemera as a free reference collection for the public. Currently, the McCaw Foundation Library serves as the resource center and is dedicated to Chinese, Japanese, Korean, Indian, and Southeast Asian art.

8. Public Restrooms. Tenant will make restrooms to be located in the SAAM Building available for public use during Operating Hours without requiring payment of Museum admission charges.

9. Reporting. Tenant shall provide the City with annual performance measurement data quantifying specifically how Tenant is delivering the services and programs set forth herein. Specifically, on or before the end of the first quarter of each year during the Lease Term, Tenant shall submit to the Seattle Parks and Recreation Department an annual Public Benefit Report in a form provided or approved by the Superintendent similar to the schedule in Exhibit B-1, which shall include for the previous year, at a minimum:

(a) Number of Museum attendees, including free and discounted admissions; and the estimated value of such discounts

(b) Number and description of all Museum programs by type, the estimated value of free and/or discounted programs and direct scholarships and estimated number of people served;

(c) Number of school groups attending, including name of each group's school, number of students served and the value of the free or discounted costs, including transportation

(d) Number and description of each internship or student volunteer opportunity;

(e) Frequency of public use of meeting rooms, i.e. number of times per year rooms made available to community free of charge;

(f) Number and description of all Community Organization Partnership committee meetings, including names of attendees and copy of agendas; and

(g) Description of culturally diverse special exhibitions.

10. Initial Value of Public Benefits and Future Evaluation of Public Benefits and Program Changes. Tenant agrees that it will provide at an initial level and value public benefits as summarized in this Exhibit and Exhibit B-1. The parties recognize that over the Term of the Lease Tenant or the City may develop new programs or strategies that may more effectively achieve the desired equity outcomes. Five (5) years following the Effective Date and every five (5) years thereafter during the Term, City and Tenant shall review the public benefits outlined herein and, if reasonably approved by both parties, shall modify this Exhibit and Exhibit B-1 to reflect changed circumstances with the community. Both parties acknowledge that this level and value is expected to increase over the Term of the Lease and will be evaluated every five (5) years following the Effective Date in conjunction with the program evaluation.

11. Approved Program Changes. At the end of every five-year evaluation period, Tenant may, upon written approval from the Superintendent, make changes to the programs listed above to provide replacement programming of equal or better value, as determined by the Superintendent.

Exhibit B-1
Public Benefits and Reporting Requirements

Description	Benchmark (FY16 number of occurences)	No. of Annual Occurrences*	Total Served Annually	Annual Full Cost	Annual Benefit of Discount	Method of Valuation
Admissions						
No. of attendees on various free days, First Thurs., Sr. Days, Free Family Saturdays	25,476	27,500	27,500	$ 220,000	$ 220,000	No. of attendees x $8, adjusting for variance in admission donation 43% of all attendance is free
Kids Under 14	2,093	2,600	2,600	$ 13,000	$ 13,000	Priced at student rate of $5
Donation Policy - request lower donation or free	317	350	350	$ 2,800	$ 2,800	No. of attendees x $8
Total Free Admissions	27,886	30,450	30,450	$ 235,800	$ 235,800	
School Programs						
School Group Tours: Free or Discount to Qualifying Schools	2,214 students, 98 tours	100 tours	3,000	$ 20,000	$ 15,000	Full Price $200, assumes free for all Seattle Public Schools (100 x $200)
School Group Bus Transportation: Free to Qualifying Schools	40 bus round trips	75 RT bus trips	2,625	$ 13,125	$ 13,125	Cost of $175 per bus round trip 75 x $175
In School Programs and In Classroom Art Education: Free or Discount to Qualifying Schools	7 programs	10 programs	350	$ 2,700	$ 1,350	Cost of Art Educator and Curriculum 1 Art Educator @ $55/hr x 4 hrs x 10 programs – $2,200 plus supplies @ $500. Assumes 50% free or discounted.
Total School Programs		8	5,975	$ 35,825	$ 29,475	
Museum Programs						
Family Days with Ongoing Art Workshops: Free Museum Admission	7 events, 5,000 attendees	8	9,000	$ 4,900	$ 4,900	Cost of 2 Art Educators and Supplies: 2 educators ea. day for 5 hrs ea. @ $55/hr– 5x55x2–$553/day. X 8 events - $4,400 plus supplies $500
Large Community Events: Free Admission, Art Workshops, Music and Dance Performances, Food, Local Art Installations - Diwali, Lunar New Year	3	1	2,000	$ 5,000	$ 5,000	Actual Cost - $5,000 per event
Lectures - Gardner Center Saturday University: Discounted Fee Structure	18 talks, 4,649 attendees	20	5,000	$ 60,000	$ 36,000	Actual speaker cost and travel expenses averages $3,000 per event less average income of $1,200 per event
Free Gardner Center Focused Lectures/Programs	14 lectures, 1,025 attendees	15	1,500	$ 15,000	$ 15,000	Actual cost $1,000 per event includes speaker fees, catering, A/V
Summer Day Camps	3 camps, 120 kids, 12 free	3	120	$ 38,000	$ 4,800	12 kids free, full tuition $400/wk
Volunteer Park Amphitheater: Event/Performance	1 events, 126 attendees	2	300	$ 1,750	$ 1,750	Actual cost, fee to performers, outdoor equipment rental, $875 each event
Total Museum Programs		49	16,920	$ 134,650	$ 67,450	
Meeting Rooms - Community Space						
Free Usage: Meeting rooms/ auditorium used by community groups free of charge Volunteer Park Trust, FSOP	10 free uses	15	300	$ 6,000	$ 6,000	Based on Standard Rental Rate of $400 per event for Alvord Board room
Totals		30,514	53,645	$ 412,275	$ 338,725	

Outreach Efforts		
Annual mailers to targeted schools informing of SAAM school programs		4
Digital media posts to subscribing educators and interested parties		15
On site community meetings		6
Offsite community meetings		4

* Annual occurrences provided for 2019 - 2024 period

EXHIBIT C

City Operating Support Payments Schedule

Support Payment Years	City Operating Support Payment	REET Maximum Portion
1-5	$250,000	-----
6-10	$275,000	-----
11-15	$300,000	not more than $50,000
16-20	$350,000	not more than $100,000
21-25	$400,000	not more than 25% of total payment
26-30	$450,000	not more than 25% of total payment
31-35	$500,000	not more than 25% of total payment
36-40	$550,000	not more than 25% of total payment
41-45	$600,000	not more than 25% of total payment
46-50	$650.000	not more than 25% of total payment
51-55	$700,000	not more than 25% of total payment