State of Utah

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Division of Facilities Construction and Management
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ADDENDUM NO. 4

Date: May 10, 2012

To: Contractors

From: Kurt Baxter - Project Manager

Reference: UVU Student Life Center & Parking Structure
Orem, Utah
DFCM Project No. 10289790

Subject: **Addendum No. 4**

Addendum	1 page
Architects Addendum	139 pages
Total	140 pages

Note: This Addendum shall be included as part of the Contract Documents. Items in this Addendum apply to all drawings and specification sections whether referenced or not involving the portion of the work added, deleted, modified, or otherwise addressed in the Addendum. Acknowledge receipt of this Addendum in the space provided on the Bid Form, if applicable. Failure to do so may subject the Bidder to Disqualification.

4.0 SCHEDULE CHANGES: There are no changes to the project schedule.

4.1 GENERAL: GSBS Architects, please see attached sheets.

Utah Valley University

STUDENT LIFE CENTER & PARKING STRUCTURE

ADDENDUM NO. 3

May 9, 2012

The original specifications and drawings, dated April 27, 2012 for the project referenced above are amended in this Addendum No. 3, dated May 09, 2012.

Receipt of this addendum shall be acknowledged by inserting its number and date in the space provided on the bid form.

This addendum consists of 138 total pages.

Attachments: This addendum includes the following attachments:

Revised architectural specifications and drawings (86 pages) as referred to in addendum items.

Mechanical Addendum (50 Pages)

Item No.	Reference Specification	Product Type	Alternate Manufacturer
3-01	087100	Continuous Door Hinges	Pemko
3-02	087100	Door Closers	Sargent 281 with forged arms

Item No.	Reference Spec/Page	DESCRIPTION
3-03	General	At all exterior wall locations (wall sections, details, etc.) change note "METAL STUD" to read "COLD-FORMED METAL FRAMING".
3-04	General	At all exterior wall locations, the air & vapor barrier will be applied to the exterior face of exterior sheathing.
3-05	General	<u>All</u> spandrel glass locations shall receive mineral wool board insulation with an insulating value of R 20.
3-06	012100	Section 3.3 A Allowance No. 1 Delete "the sum of $72,500" and replace with "the sum of $140,000".
3-07	013100	Modifications have been made to language regarding BIM modeling and clash detection. References to an architect-supported project web site have been removed (information still exists in other sections). See attachment.
3-08	072100	Section 3.8 A modify first sentence to read: Install board insulation in curtain-wall construction **at spandrel panels and** where indicated on Drawings according to curtain-wall manufacturer's written instructions.

3-09	072413	Part 2 – Add Section 2.5 Accessories **2.5 ACCESSORIES** **A. Soffit Vent** **1. Manufacturer: Subject to compliance with requirements, provide Fry Reglet CleanFinish EIFS Soffitt Vent or comparable product.**
3-10	084113	Section 2.2 A item 2 modified to read: Interior Storefront: EFCO Corporation Series 402 **and Series 433 where front plane glazing is required.**
3-11	087100	Doors associated with various hardware sets have been updated to reflect changes to the door schedule. HW Set GL-02 has been added to the specification. See attachment.
3-12	088000	A single point glass to wall connector was added as section 2.9. Glazing types IG-1A and IG-1AT were added. These glazing types are used where insulated glazing is desired, but low-e coatings are not required.
3-13	092900	Section 2.7 – Add section E as follows: E**. Aluminum Partition Closure Piece.** **1. Manufacturers: Subject to compliance with requirements, provide Gordon Interior Specialties – Mullion Mate or approved equal.** **2. Finish: Acrylic-Polyester hybrid powder coat to match exterior aluminum mullion color.**
3-14	AS-103	The colored concrete has been removed from the north entrance and the concrete benches in this area are now shown in the enlarged plan.
3-15	AE-153	In the equipment schedule, add “EQ-2G” in the “TAG” column of Gym Equipment – Volleyball Equipment (MAC GYM). Added “Gym Equipment – Clock Wall Mounted” in three court gym and MAC gym. Added “Misc. Equipment – Ice Maker” to First Aid Room 301-A
3-16	AE-605	Changes have been made to the Glazing Legend clarifying differences between the IG-1 and IG-1A glazing types. See attachment.
3-17	AE-606	Revised door number 122N to read 122N-1 Door information added to doors 311A-4 through 311A-17 – See attachment The location of door 204-1 in the schedule was updated to match its level A door hardware set was assigned to door 101A-2 A door hardware set was assigned to door 400M-1 A door hardware set was assigned to door 211L-1 Legend notation added – “GLS-Glass” under Door Material.

END OF ADDENDUM

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General coordination procedures.
2. Coordination drawings.
3. Requests for Information (RFIs).
4. ~~Project Web site.~~
4. **BIM model clash detection sessions**
5. Project meetings.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

C. Related Requirements:

1. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
2. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
3. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.
4. Section 019113 "General Commissioning Requirements" for coordinating the Work with Owner's Commissioning Authority.

1.3 DEFINITIONS

A. RFI: Request from Owner,Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1. Post copies of list in project meeting room, in temporary field office, on Project Web site, and by each temporary telephone. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

~~B. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections, that depend on each other for proper installation, connection, and operation.~~

~~1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.~~
~~2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.~~
~~3. Make adequate provisions to accommodate items scheduled for later installation.~~

C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

1.6 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:

a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
b. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
f. Indicate required installation sequences.

g. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:

1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
6. Mechanical and Plumbing Work: Show the following:

   a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
   b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
   c. Fire-rated enclosures around ductwork.

7. Electrical Work: Show the following:

   a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.
   b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
   c. Panel board, switch board, switchgear, transformer, busway, generator, and motor control center locations.
   d. Location of pull boxes and junction boxes, dimensioned from column center lines.

8. Fire-Protection System: Show the following:

   a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.

9. Review: Architect will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are Contractor's

responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make changes as directed and resubmit.

10. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Section 013300 "Submittal Procedures."

C. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:

1. File Preparation Format: Same digital data software program, version, and operating system as original Drawings**, Revit 2012**.
~~2. File Preparation Format: , Version Revit 2011, operating in Microsoft Windows operating system.~~
3. File Submittal Format: Submit or post coordination drawing files using Portable Data File (PDF) format.
4. BIM File Incorporation: Develop and incorporate coordination drawing files into Building Information Model established for Project.

~~a. Perform three-dimensional component conflict analysis as part of preparation of coordination drawings. Resolve component conflicts prior to submittal. Indicate where conflict resolution requires modification of design requirements by Architect.~~

5. Architect will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.

a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
b. Digital Data Software Program: Drawings are available in Revit **2012** ~~2011~~.
c. Contractor shall execute a data licensing agreement in the form of Agreement form acceptable to Owner and Architect.

1.7 REQUESTS FOR INFORMATION (RFIs)

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Project number.

3. Date.
4. Name of Contractor.
5. Name of Architect.
6. RFI number, numbered sequentially.
7. RFI subject.
8. Specification Section number and title and related paragraphs, as appropriate.
9. Drawing number and detail references, as appropriate.
10. Field dimensions and conditions, as appropriate.
11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
12. Contractor's signature.
13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

    a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to Architect.

1. Attachments shall be electronic files in Adobe Acrobat PDF format.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.

1. The following Contractor-generated RFIs will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for approval of Contractor's means and methods.
    d. Requests for coordination information already indicated in the Contract Documents.
    e. Requests for adjustments in the Contract Time or the Contract Sum.
    f. Requests for interpretation of Architect's actions on submittals.
    g. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."

    a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Include the following:

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number including RFIs that were returned without action or withdrawn.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect's response was received.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
2. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

G. RFI processing: All RFIs will be submitted in electronic PDF format and processed via Architects project management software website (Newform Info Exchange).

~~1.8 PROJECT WEB SITE~~

~~A. Use Architect's Project Web site for purposes of hosting and managing project communication and documentation until Final Completion. Project Web site shall include the following functions:~~

~~1. Project directory.~~
~~2. Project correspondence.~~
~~3. Meeting minutes.~~
~~4. Contract modifications forms and logs.~~
~~5. RFI forms and logs.~~
~~6. Task and issue management.~~
~~7. Photo documentation.~~
~~8. Schedule and calendar management.~~
~~9. Submittals forms and logs.~~
~~10. Payment application forms.~~
~~11. Drawing and specification document hosting, viewing, and updating.~~
~~12. Online document collaboration.~~
~~13. Reminder and tracking functions.~~
~~14. Archiving functions.~~

~~B. Contractor, subcontractors, and other parties granted access by Contractor to Project Web site shall execute a data licensing agreement in the form of Agreement acceptable to Owner and Architect.~~

1.8 BIM MODEL CLASH DETECTION

A. Contractor is responsible for organizing and running clash detection sessions with subcontractors BIM models

1. At a minimum, the following subcontractor BIM models will be included in the clash detection process. Other subcontractor models will be included if deemed necessary by the architect or owner.
a. Mechanical
b. Mechanical piping
c. Plumbing
d. Electrical
e. Structural Steel
f. Fire Protection

2. Utilize Navisworks for the clash detection process.

3. General contractor shall develop guidelines for subcontractor BIM models and submit to architect and owner for review and approval two weeks prior to the start of the clash detection process.

1.9 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.

1. Conduct the conference to review responsibilities and personnel assignments.
2. Attendees: Authorized representatives of Owner, Owner's Commissioning Authority, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect progress, including the following:

a. Tentative construction schedule.
b. Phasing.
c. Critical work sequencing and long-lead items.
d. Designation of key personnel and their duties.
e. Lines of communications.
f. Procedures for processing field decisions and Change Orders.
g. Procedures for RFIs.
h. Procedures for testing and inspecting.
i. Procedures for processing Applications for Payment.
j. Distribution of the Contract Documents.
k. Submittal procedures.
l. LEED requirements.
m. Preparation of record documents.
n. Use of the premises and existing building.
o. Work restrictions.
p. Working hours.
q. Owner's occupancy requirements.
r. Responsibility for temporary facilities and controls.
s. Procedures for moisture and mold control.
t. Procedures for disruptions and shutdowns.
u. Construction waste management and recycling.
v. Parking availability.
w. Office, work, and storage areas.
x. Equipment deliveries and priorities.
y. First aid.
z. Security.
aa. Progress cleaning.

4. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. LEED Coordination Conference: Contractor will schedule and conduct a LEED coordination conference before starting construction, at a time convenient to Owner Architect, and Contractor.

1. Attendees: Authorized representatives of Owner, Owner's Commissioning Authority, Architect, and their consultants; Contractor and its superintendent and LEED coordinator; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect meeting requirements for LEED certification, including the following:

a. LEED Project Checklist.
b. General requirements for LEED-related procurement and documentation.
c. Project closeout requirements and LEED certification procedures.
d. Role of LEED coordinator.
e. Construction waste management.

f. Construction operations and LEED requirements and restrictions.

3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

D. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect, and Owner's Commissioning Authority of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

a. Contract Documents.
b. Options.
c. Related RFIs.
d. Related Change Orders.
e. Purchases.
f. Deliveries.
g. Submittals.
h. LEED requirements.
i. Review of mockups.
j. Possible conflicts.
k. Compatibility requirements.
l. Time schedules.
m. Weather limitations.
n. Manufacturer's written instructions.
o. Warranty requirements.
p. Compatibility of materials.
q. Acceptability of substrates.
r. Temporary facilities and controls.
s. Space and access limitations.
t. Regulations of authorities having jurisdiction.
u. Testing and inspecting requirements.
v. Installation procedures.
w. Coordination with other work.
x. Required performance results.
y. Protection of adjacent work.
z. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.

5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

E. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 90 days prior to the scheduled date of Substantial Completion.

1. Conduct the conference to review requirements and responsibilities related to Project closeout.
2. Attendees: Authorized representatives of Owner, Owner's Commissioning Authority, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:

    a. Preparation of record documents.
    b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
    c. Submittal of written warranties.
    d. Requirements for completing LEED documentation.
    e. Requirements for preparing operations and maintenance data.
    f. Requirements for delivery of material samples, attic stock, and spare parts.
    g. Requirements for demonstration and training.
    h. Preparation of Contractor's punch list.
    i. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
    j. Submittal procedures.
    k. Coordination of separate contracts.
    l. Owner's partial occupancy requirements.
    m. Installation of Owner's furniture, fixtures, and equipment.
    n. Responsibility for removing temporary facilities and controls.

4. Minutes: Entity conducting meeting will record and distribute meeting minutes.

F. Progress Meetings: Conduct progress meetings at weekly intervals.

1. Coordinate dates of meetings with preparation of payment requests.
2. Attendees: In addition to representatives of Owner, Owner's Commissioning Authority and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

1) Review schedule for next period.

b. Review present and future needs of each entity present, including the following:

1) Interface requirements.
2) Sequence of operations.
3) Resolution of BIM component conflicts.
4) Status of submittals.
5) Status of LEED documentation.
6) Deliveries.
7) Off-site fabrication.
8) Access.
9) Site utilization.
10) Temporary facilities and controls.
11) Progress cleaning.
12) Quality and work standards.
13) Status of correction of deficient items.
14) Field observations.
15) Status of RFIs.
16) Status of proposal requests.
17) Pending changes.
18) Status of Change Orders.
19) Pending claims and disputes.
20) Documentation of information for payment requests.

4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

G. Coordination Meetings: Conduct Project coordination meetings at regular intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.

1. Attendees: In addition to representatives of Owner, Owner's Commissioning Authority and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

   a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
   b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
   c. Review present and future needs of each contractor present, including the following:

      1) Interface requirements.
      2) Sequence of operations.
      3) Resolution of BIM component conflicts.
      4) Status of submittals.
      5) Deliveries.
      6) Off-site fabrication.
      7) Access.
      8) Site utilization.
      9) Temporary facilities and controls.
      10) Work hours.
      11) Hazards and risks.
      12) Progress cleaning.
      13) Quality and work standards.
      14) Change Orders.

3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Commercial door hardware for the following:

   a. Swinging doors.
   b. Fire-rated swinging doors.
   c. Other doors to the extent indicated.

2. Cylinders for doors specified in other Sections.
3. Electrified door hardware.

B. Related Sections include the following:

1. Division 08 Section "Hollow Metal Doors and Frames"
2. Division 08 Section "Aluminum-Framed Entrances and Storefronts"
3. Division 08 Section "Flush Wood Doors"
4. Division 08 Section “Glass doors”
5. Division 08 Section "Overhead Coiling Doors"
6. Division 26 Sections for connections to electrical power system and for low-voltage wiring work.
7. Division 28 Section "Access Control" for access control devices installed at door openings and provided as part of a security access system.
8. Division 28 Section "Intrusion Detection" for detection devices installed at door openings and provided as part of an intrusion detection system.
9. Division 28 Section "Fire Detection and Alarm" for connections to building fire alarm system.

C. Products furnished, but not installed, under this Section include the following. Coordinating, purchasing, delivering, and scheduling remain requirements of this Section.

1. Thresholds, weather stripping, and cylinders for locks specified in other Sections.

1.3 SUBMITTALS

A. Product Data: Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: Details of electrified door hardware, indicating the following:

1. Wiring Diagrams: Power, signal, and control wiring. Include the following:

a. System schematic.
b. Point-to-point wiring diagram.
c. Riser diagram.
d. Elevation of each door.

2. Detail interface between electrified door hardware and fire alarm, access control, security, building control system.
3. Operation Narrative: Describe the operation of doors controlled by electrified door hardware.

C. Samples for Verification: For exposed door hardware of each type, in specified finish, full size. Tag with full description for coordination with the door hardware sets. Submit Samples before, or concurrent with, submission of the final door hardware sets, if requested.

1. Samples will be returned to Contractor. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated into the Work, within limitations of keying requirements.

D. Qualification Data: For Installer.

E. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for locks, latches, and closers as requested.

F. Maintenance Data: For each type of door hardware to include in maintenance manuals. Include final hardware and keying schedule.

G. Warranty: Special warranty specified in this Section.

H. Door Hardware Sets: Prepared by or under the supervision of Architectural Hardware Consultant, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final door hardware sets with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Use same scheduling sequence and format and use same door numbers as in the Contract Documents.
2. Content: Include the following information:

a. Identification number, location, hand, fire rating, and material of each door and frame.

b. Type, style, function, size, quantity, and finish of each door hardware item.
c. Complete designations of every item required for each door or opening including name and manufacturer.
d. Fastenings and other pertinent information.
e. Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
f. Explanation of abbreviations, symbols, and codes contained in schedule.
g. Mounting locations for door hardware.
h. Door and frame sizes and materials.
i. Description of each electrified door hardware function, including location, sequence of operation, and interface with other building control systems.

1) Sequence of Operation: Include description of component functions that occur in the following situations: authorized person wants to enter; authorized person wants to exit; unauthorized person wants to enter; unauthorized person wants to exit.

j. List of related door devices specified in other Sections for each door and frame.

3. Submittal Sequence: Submit the final door hardware sets at earliest possible date, particularly where approval of the door hardware sets must precede fabrication of other work that is critical in Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the door hardware sets.

I. Keying Schedule: Prepared by or under the supervision of Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by lock manufacturer.

1. Installer's responsibilities include supplying and installing door hardware and providing a qualified Architectural Hardware Consultant available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.
2. Installer shall have warehousing facilities in Project's vicinity.
3. Scheduling Responsibility: Preparation of door hardware and keying schedules.
4. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

B. Architectural Hardware Consultant Qualifications: A person who is currently certified by DHI as an Architectural Hardware Consultant and who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project.

C. Source Limitations: Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.

1. Provide electrified door hardware from same manufacturer as mechanical door hardware, unless otherwise indicated. Manufacturers that perform electrical modifications and that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.

D. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252 and UBC Standard 7-2.

1. Test Pressure: After 5 minutes into the test, neutral pressure level in furnace shall be established at 40 inches (1016 mm) or less above the sill.

E. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

F. Keying Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." In addition to Owner, Construction Manager, Contractor, and Architect, conference participants shall also include Installer's Architectural Hardware Consultant and Owner's Security Consultant. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including, but not limited to, the following:

1. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
2. Preliminary key system schematic diagram.
3. Requirements for key control system.
4. Address for delivery of keys.

G. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.5 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.

B. Tag each item or package separately with identification related to the final door hardware sets, and include basic installation instructions, templates, and necessary fasteners with each item or package.

C. Deliver keys to Owner’s Representative by registered mail or overnight package service.

1.6 COORDINATION

A. Coordinate layout and installation of recessed hardware with floor construction. Cast anchoring inserts into concrete. Concrete, reinforcement, and formwork requirements are specified in Division 03.

B. Templates: Distribute door hardware templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

C. Coordinate with aluminum entrance door supplier and glass door supplier for door hardware installation.

D. Electrical System Roughing-in: Coordinate layout and installation of electrified door hardware with connections to power supplies, fire alarm system and detection devices, access control system, security system, and building control system.

E. Existing Openings: Where new hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide for proper operation.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

   a. Structural failures including excessive deflection, cracking, or breakage.
   b. Faulty operation of operators and door hardware.
   c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

2. Warranty Period: Three (3) years from date of Substantial Completion, except as follows:

a. Electromagnetic Locks: Five (5) years from date of Substantial Completion.
b. Exit Devices: Two (2) years from date of Substantial Completion.
c. Manual Closers: Ten (10) years from date of Substantial Completion.

1.8 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

B. Maintenance Service: Beginning at Substantial Completion, provide six (6) months' full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door hardware operation. Provide parts and supplies same as those used in the manufacture and installation of original products.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Products:

a. Finish: Shall be as noted in hardware sets.
b. Manufacture Standard:

1) Butts: Hager, McKinney, Stanley, Ives*
2) Locksets: Schlage*, Sargent, Best*
3) Electrified Locksets: Schlage Electronics*
4) Closers: LCN*
5) Auto Operators: LCN*
6) Exit Devices: Von Duprin*, Sargent
7) Trim: BBW, Rockwood*, Hager, Ives*
8) Weatherstrip: Pemko, Hager, National Guard*
9) Continuous Hinges: HagerRoton, Markar, Ives*

10) Magnetic Door Holders: Rixson, LCN*
11) Rem Mullion: Von Duprin*, Sargent

B. Substitution requests will be made in accordance with Division 01 requirements.

2.2 SCHEDULED HARDWARE

A. Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of finish hardware are indicated in the "Hardware Schedule" at the end of this Section. Products are identified by using hardware designation numbers of the following:

1. Manufacturer's Product Designations: The product designation and name of one manufacturer are listed for each hardware type required for the purpose of establishing minimum requirements. Provide either the product designated or, where more than one manufacturer is specified under the Article "Manufacturers" in Part 2 for each hardware type, the comparable product of one of the other manufacturers that complies with requirements.

2. ANSI/BHMA designations used elsewhere in this Section or in schedules to describe hardware items or to define quality or function are derived from the following standards. Provide products complying with these standards and requirements specified elsewhere in this Section.

a. Butts and Hinges: ANSI A156.1.
b. Bored and Preassembled Locks and Latches: ANSI/BHMA A156.2.
c. Exit Devices: ANSI A156.3.
d. Door Controls - Closers: ANSI A156.4. 180 degree swing only!
e. Auxiliary Locks and Associated Products: ANSI/BHMA A156.5.
f. Architectural Door Trim: ANSI A156.6.
g. Template Hinge Dimensions: ANSI A156.7.
h. Door Controls - Overhead Holders: ANSI A156.8.
i. Mortise Locks and Latches: ANSI A156.13.
j. Closer Holder Release Devices: ANSI A156.15.
k. Auxiliary Hardware: ANSI A156.16.
l. Self-Closing Hinges and Pivots: ANSI A156.17.
m. Materials and Finishes: ANSI A156.18.

2.3 MATERIALS AND FABRICATION

A. Base Metals: Produce hardware units of basic metal and forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware units by applicable ANSI/BHMA A156 series standards for each type of hardware item and with ANSI/BHMA A156.18 for finish designations indicated. Do not furnish "optional" materials or forming methods for those indicated, except as otherwise specified.

B. Fasteners: Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation. Do not provide hardware that has been prepared for self-tapping sheet metal screws, except as specifically indicated.

C. Furnish screws for installation with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of this other work as closely as possible including "prepared for paint" surfaces to receive painted finish.

D. Provide concealed fasteners for hardware units that are exposed when door is closed except to the extent no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless their use is the only means of reinforcing the work adequately to fasten the hardware securely. Where thru-bolts are used as a means of reinforcing the work, provide sleeves for each thru-bolt or use sex screw fasteners.

2.4 HINGES, GENERAL

A. Quantity: Provide the following, unless otherwise indicated:

1. Two Hinges: For doors with heights up to 60 inches.
2. Three Hinges: For doors with heights 61 to 90 inches.

B. Template Requirements: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.

C. Hinge Weight: As indicated in hardware sets.

D. Hinge Base Metal: Unless otherwise indicated, provide the following:

1. Exterior Hinges: Stainless steel with stainless-steel pin.
2. Interior Hinges: Steel with steel pin.
3. Hinges for Fire-Rated Assemblies: Steel with steel pin.

E. Hinge Options: Where indicated in door hardware sets or on Drawings:

1. Safety Stud: Designed for stud in one leaf to engage hole in opposing leaf.
2. Nonremovable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for outswinging doors.
3. Corners: Square.

F. Fasteners: Comply with the following:

1. Machine Screws: For metal doors and frames. Install into drilled and tapped holes.
2. Wood Screws: For wood doors and frames.
3. Threaded-to-the-Head Wood Screws: For fire-rated wood doors.

2.5 CONTINUOUS HINGES

A. Hinges shall be a geared continuous hinge utilizing a single gear section for the door leaf and a separate gear section for the frame side of the door. The door leaf and jamb leaf shall fully mortised where scheduled, and full surface where scheduled.. Geared hinges are to be certified to ANSI 156.25, Grade 2 and UL 10C tested and approved for 90 minutes.

2.6 LOCKS, LATCHES, AND BOLTS

A. Strikes: Provide manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frame, finished to match hardware set, unless otherwise indicated.

B. Lock Throw: Provide 5/8-inch (16-mm) minimum throw of latch on pairs of doors. Comply with UL requirements for throw of bolts and latch bolts on rated fire openings.

C. Flush Bolt Heads: Minimum of 1/2-inch- (13-mm-) diameter rods of brass, bronze, or stainless steel with minimum 12-inch- (300-mm-) long rod for doors up to 84 inches (2100 mm) in height. Provide longer rods as necessary for doors exceeding 84 inches (2100 mm) in height.

D. Mortise Locks: ANSI 156.13, Series 1000, Grade 1, mortise lock for commercial and institutional buildings.

1. Manufacture lock cases from fully wrapped, heavy 12 gage steel with a protected leading edge and screw configuration that limits access to operating parts. Lock components to be manufactured of zinc dichromate plated steel. Latch bolts to have a standard 2 ¾” backset with a full ¾” throw.
2. Latchbolts to be non-handed, field reversible without opening the lock case. Latchbolts to be 2 piece anti-friction, manufactured from stainless steel. Solid latchbolts and/or plastic anti-friction devices are not acceptable.
3. Deadbolts to be 1 ¾” total length have standard 1” throw with a minimum ¾” internal engagement when fully retracted. Deadbolts to be constructed of stainless steel, incorporating a security roller pin with a minimum Rc60 rating for surface hardness.
4. Lever assembly (external) to be one piece design attached by threaded bushing. Lever assembly (internal) to be attached by screw less shank. Lever attachments by common tools (allen nuts and/or set screws) are not acceptable. Thru bolt lever assemblies through the door for positive interlock. Levers to have independent rotation in both directions. Lever operation to be free wheeling (clutch) when in the locked mode.
5. Spring cages are to be incorporated into the lever assemblies. Hub blocking plate to be solid, cast stainless steel. Manufacturers utilizing open hub designs are not acceptable.
6. Spindles to be independent, designed to “break away” at a maximum of 75psi torque. Mounting tabs are to be automatic self adjusting, vertically and horizontally for door bevel and strike alignment.
7. Cylinders to be secured by a cast stainless steel, dual retainer. Manufacturers utilizing screws and/or stamped retainers are not acceptable.

E. Lockset Manufacturers: Subject to compliance with requirements, provide locksets of the following approved manufacturers:

1. Schlage L Series
2. Sargent 8200 Series
3. Best 40 Series

2.7 ACCESS CONTROL LOCKSET

A. Trim shall meet or exceed ANSI Standard A156.25 and A156.2, Grade 1 strength and operational requirements. UL294*, UL10C, Fcc Part 15, ADA, RoHS.

B. Levers to be pressure cast zinc, plated to match BHMA finish symbols.

C. 125 kHz proximity with 0.75” read range with backlit keypad, 13.56 MHz Smart Card multi-technology reader.

D. 5,000 users and audits with less than 1 second credential verification time.

E. Tri-colored LED’s and audible indicators that are field configurable.

F. Hardware wired.

G. Exterior operating temperature range -31 degrees to 151 degrees. Interior operating temperature range 32 degrees to 120 degrees.

H. Standard features to include: Lock/unlock status. Request to Exit switch, Mechanical Key Overide, Battery Status. Optional features to include: Deadbolt position, Request to Enter, Interior Cover Tamper Guard.

I. Panel Interface Board (PIB) communication range up to 4000 feet with wiegand or clock and data up to 500 feet; PIB to Access Control Panel (ACP). 12VDC or 24VDC up to 250mA. 22AWG, 8 conductor shielded Alpha 1298C or equivalent. Meets NEMA 1, 4, 4X, 6.

J. Lockset Manufacturers: Subject to compliance with requirements, provide locksets of the following approved manufacturer:

1. Schlage Electronics AD-300

2.8 KEYING REQUIREMENTS

A. General: Supplier will meet with Owner to finalize keying requirements and obtain final instructions in writing.

B. Review the keying system with the Owner and provide the type required master, grandmaster or great-grandmaster, integrated with Owner's existing system.

C. Cylinders to be provided as noted in hardware sets 0-bitted.

D. Furnish temporary keyed cores for the construction period, and remove these when directed. The construction cores remain property of the supplier and shall be returned to the supplier when they are removed. Contractor shall install the permanent cores in the presence of the owner's representative.

E. Permanent Keys: Secured shipment direct from point of origination to Owner's Representative

1. For estimate: 2 keys per change combination, 5 master keys per group, 5 grand-master keys, 3 control keys.

2.9 PUSH/PULL UNITS

A. Exposed Fasteners: Provide manufacturer's standard exposed fasteners for installation, thru-bolted.

2.10 CLOSERS

A. Accessibility Requirements: Where handles, pulls, latches, locks and other operating devices are indicated to comply with accessibility requirements, comply with the U.S. Architectural Transportations Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

1. Comply with the following maximum opening-force requirements:

a. Interior, Non-fire-rated Hinged Doors: 5 lbf applied perpendicular to door.
b. Fire Doors: Minimum opening force allowable by Authorities Having Jurisdiction (AHJ).

B. Door Closers for Means of Egress Doors: Comply with NFPA 101. Door closers shall not require more than 30 lbf to set door in motion and not more than 15lbf to open door to minimum required width.

C. Cylinder: Shall be of high strength cast iron construction. All door exterior closers shall be tested to ANSI/BHMA A156.4 test requirements by a BHMA certified independent testing laboratory. A written certification showing successful completion of a minimum of 10,000,000 cycles for all exterior door closers must be provided. Cylinder shall have been manufactured and in the marketplace for a minimum of 10 years

D. Size of Units: Unless otherwise indicated, comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory sized closers, adjustable to meet field conditions and requirements for opening force.

E. Surface Closers: BHMA A156.4 Grade 1. Provide type of arm required for closer to be located on non-public side of door, unless otherwise indicated.

1. Full rack-and-pinion type cylinder with removable non-ferrous cover and cast iron body. Double heat-treated pinion shaft, single piece forged piston, chrome silicon steel spring.
2. ISO 2000 certified. Units stamped with date-of-manufacture code.
3. Thru-bolts at wood doors unless doors are provided with closer blocking. Non-sized, non-handed, and adjustable. Place closer inside building, stairs, and rooms.
4. Plates, brackets and special templating when needed for interface with particular header, door and wall conditions and neighboring hardware.
5. Opening pressure: Exterior doors 8.5 lb., interior doors 5 lb., labeled fire doors 15 lb.
6. Separate adjusting valves for closing speed, latching speed and backcheck, fourth valve for delayed action where scheduled.
7. Extra-duty arms at exterior doors scheduled with parallel arm units.
8. Exterior doors do not require seasonal adjustments in temperatures from 120 degrees F to -30 degrees F, furnish data on request.
9. Non-flaming fluid will not fuel door or floor covering fires.

F. Closer Manufacturers: Subject to compliance with requirements, provide closers of the following approved manufacturer:

1. LCN 4040 Series

2.11 DOOR OPERATORS / ADA SPECIAL CLOSERS

A. Where low kinetic energy, as defined by ANSI Standard A156.19, Surface Door Operators shall be electrically powered closers complying with the 1990 ADA requirements for opening force and time to close standards. Full closing force controlled by the hydraulic sweep and latch valves shall be provided when the power or assist cycle ends.

B. Door Operators shall be rack and pinion action with one-piece forged steel pistons.

C. Separate adjusting valves shall be provided for closing speed, latching speed and back-check.

D. Adjusting valves shall be made of a metal material, regulating the fluid through a “V-SLOT” valve, concealed, adjustable only with special wrench, and shall be seated with “O” type rings.

E. Door Operators and supporting equipment shall carry a manufacturers two (2) year warranty.

F. Door Operator shall have built in the following features:

1. Opening Speed adjustment.
2. Opening Force adjustment (15 lb. Maximum).
3. Time Delay.
4. On-board Diagnostics.
5. On-board power supply.
6. Factory default memory.
7. On/off switch.
8. Hold open switch.

9. On-board capabilities to be either wired for simultaneous or sequential operation at vestibules.
10. Out-put triggers for electric strikes or electric latch retraction.

G. Auto Operator Manufacturers: Subject to compliance with requirements, provide auto operators of the following approved manufacturer:

1. LCN 4600 Series

2.12 EXIT DEVICES/PANIC HARDWARE

A. General features: BHMA A156.3, Grade 1.

B. Accessibility Requirements: Where handles, pulls, latches, locks and other operating devices are indicated to comply with accessibility requirements, comply with the U.S. Architectural Transportations Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf.

C. Exit Devices for Means of Egress Doors: Comply with NFPA 101. Exit devices shall not require more than 15lbf to release the latch. Locks shall not require use of a key, tool of special knowledge for operation.

D. Panic Exit Devices: Listed and labeled by a testing and inspecting agency acceptable to AHJ for panic protection, based on testing according to UL 305.

1. Push-through touch pad design. No exposed touch bar fasteners, no exposed cavities when operated. Return stroke fluid dampeners and rubber bottoming dampeners, plus anti-rattle devices.
2. Non-handed basic device design with center case interchangeable with all functions, no extra parts required to effect change of function.

E. Specific features:

1. Non-Fire Rated Devices: As scheduled in hardware sets.
2. Lever Trim: Vandal resistant, forged brass or bronze escutcheon min .130" thickness, match lockset lever design.
3. Fire-Labeled Devices: UL label indicating "Fire Exit Hardware". Vertical rod devices less bottom rod (LBR) unless otherwise scheduled.
4. Electrically Operated Devices: Single manufacturer source for electric latch retraction devices, electrically controlled trim, power transfers, power supplies, monitoring switches and controls.
5. Furnish all exit devices with deadlocking latchbolts.
6. End caps shall provide horizontal adjustment to provide flush alignment with device cover plate. When device end cap is installed, no raised edges will protrude. End cap shall be cast

metal or forged aluminum and have a minimum thickness of (.250"). Plastic or metal stamping will not be acceptable.

7. Provide all shim kits and filler plates to allow flush mounting of exit devices on all types of doors used in this project.
8. Removable Mullions: Removable with single turn of building key. Securely reinstalled without need for key.

F. Exit Device Manufacturers: Subject to compliance with requirements, provide exit devices of the following approved manufacturers:

1. Sargent, 19-43-GL-8000 Series
2. Von Duprin, 98/35A Series

2.13 TRIM AND STOPS

A. Kick plates, mop plates, and armor plates, shall be .050 gauge. Kick plates to be 10” high, mop plates to be 5” high. All plates shall be two (2) inches less full width of door.

B. Push plates, pull plates, door pulls, and miscellaneous door trim shall be shown in the hardware schedule.

C. Doorstops shall be furnished for all doors to prevent damage to doors or hardware from striking adjacent walls or fixtures. Wall stops are preferred. Floor stops are used only where noted in hardware schedule. Where conditions prohibit the use wall type stops, furnish overhead stops either surface mounted or concealed as noted in hardware sets.

2.14 WEATHERSTRIPPING AND SEALS

A. General: Provide continuous weatherstripping on exterior doors and smoke, light, or sound seals on interior doors where indicated or scheduled. Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.15 THRESHOLDS

A. General: Except as otherwise indicated, provide standard metal threshold unit of type, size, and profile as shown or scheduled.

2.16 ELECTRICAL HARDWARE

A. Furnish wiring diagrams to electrical contractor for use in installing electrical hardware products.

B. Electrical contractor to run all wiring and make all final connections for electrified hardware. Hardware supplier shall be responsible to furnish all wiring diagrams to operate electrified hardware. Access control material and electrified hardware to interface at junction boxes.

2.17 HARDWARE FINISHES

A. Match items to the manufacturer's standard color and texture finish for the latch and locksets (or push-pull units if no latch or lock sets).

B. Provide finishes that match those established by BHMA or, if none established, match the Architect's sample.

C. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.

D. The designations used in schedules and elsewhere to indicate hardware finishes are those listed in ANSI/BHMA A156.18, "Materials and Finishes," including coordination with the traditional U.S. finishes shown by certain manufacturers for their products.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Steel Doors and Frames: Comply with DHI A115 Series.

1. Surface-Applied Door Hardware: Drill and tap doors and frames according to ANSI A250.6.

B. Wood Doors: Comply with DHI A115-W Series.

3.3 INSTALLATION

A. Pre-installation conference shall be conducted prior to installation of hardware at Project site. Meet with the, Owner, Contractor, installer, and manufacturers representatives. A separate pre-installation conference shall be conducted prior to the installation of electronic security hardware with the electrical contractor Review catalogs, brochures, templates, installation instructions, and the approved hardware schedule. Survey installation procedures and workmanship, with special emphasis on unusual conditions, as to ensure correct technique of installation, and coordination with other work. Notify participants at least ten, 10 working days before conference.

B. Hardware Installers must have a minimum of five (5) years experience in installation of hardware. Provide verification of installer's qualification to Consultant for approval. All installers to attend review meetings with the hardware distributor.

C. Install hardware using only manufacturer supplied and approved fasteners in strict adherence with manufacturers published installation instructions.

D. Install head seal prior to installation of "PA"-parallel arm mounted door closers and push side mounted door stops/holders. Trim, cut and notch thresholds and saddles neatly to minimally fit the profile of the door frame. Install thresholds and saddles in a bed of caulking completely sealing the underside from water and air penetration.

E. Counter sink through bolt of door pull under push plate during installation.

F. Mounting Heights: Mount door hardware units at heights indicated, as follows, unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. Custom Steel Doors and Frames: DHI's "Recommended Locations for Builders' Hardware for Custom Steel Doors and Frames."
3. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

G. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 09 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

H. Boxed Power Supplies: Locate power supplies as indicated. Verify location with Architect.

1. Configuration: Provide one power supply for each door opening.
2. Configuration: Provide the least number of power supplies required to adequately serve doors with electrified door hardware.

I. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

3.4 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
2. Door Closers: Unless otherwise required by authorities having jurisdiction, adjust sweep period so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches (75 mm) from the latch, measured to the leading edge of the door.

B. Occupancy Adjustment: Approximately six months after date of Substantial Completion, Installer's Architectural Hardware Consultant shall examine and readjust, including adjusting operating forces, each item of door hardware as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.5 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes. Refer to Division 01 Section "Demonstration and Training."

3.7 DOOR HARDWARE SETS

A. The following schedule of hardware sets shall be considered a guide and the supplier is cautioned to refer to general conditions, special conditions, and the full requirements of this section. It shall be the hardware supplier's responsibility to furnish all required hardware.

B. Where items of hardware are not definitely or correctly specified and are required for completion of the Work, a written statement of such omission, error, conflict, or other discrepancy shall be sent to the Architect, prior to date specified for receipt of bids, for clarification by addendum.

C. Adjustments to the Contract Sum will not be allowed for omissions or items of hardware not clarified prior to bid opening.

HW SET: 01
DOOR NUMBER: (Includes but is not limited to the following doors)
117C-1 119-1

EACH TO HAVE:

1	EA	STD COMBINATED CORE	1C7- 2	626	BES
1	EA	CYLINDER	CYLINDER AS REQ'D BY DOOR MFG	626	BES
1			REMAINING HARDWARE BY DOOR MFG		

HW SET: 02
DOOR NUMBER: (Includes but is not limited to the following doors)
227-2

EACH TO HAVE:

1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	KEYSWITCH	653-04	630	SCE
1			REMAINING HARDWARE BY DOOR MFG		

HW SET: 03
DOOR NUMBER: (Includes but is not limited to the following doors)
110D-1 113A-3

EACH TO HAVE:

3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	PANIC HARDWARE	98EO	626	VON
1	EA	SURFACE CLOSER	4040XP SCUSH X TB	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	SET	SEALS	700SA (DO NOT CUT AROUND CLOSER	AL	NGP

			BRACKET)		
1	EA	DOOR SWEEP	C627A	AL	NGP
1	EA	THRESHOLD	425HD	AL	NGP

HW SET: 04
DOOR NUMBER: (Includes but is not limited to the following doors)
100S-1

EACH TO HAVE:

3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	PANIC HARDWARE	98NL 990NL	626	VON
1	EA	RIM CYLINDER	34 LJ 0-BITTED	626	SAR
1	EA	SURFACE CLOSER	4040XP SCUSH X TB	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	SET	SEALS	700SA (DO NOT CUT AROUND CLOSER BRACKET)	AL	NGP
1	EA	DOOR SWEEP	C627A	AL	NGP
1	EA	THRESHOLD	425HD	AL	NGP

HW SET: 05
DOOR NUMBER: (Includes but is not limited to the following doors)
100G-1

EACH TO HAVE:

2	EA	CONTINUOUS HINGE	224HD	628	IVE
1	EA	MULLION	KR4954	689	VON
1	EA	PANIC HARDWARE	98EO 4'	626	VON
1	EA	PANIC HARDWARE	98L 996L 4'	626	VON
1	EA	RIM CYLINDER	1E72	626	BES
1	EA	MORTISE CYLINDER	1E74	626	BES
1	SET	ASTRAGAL	A617A	AL	NGP
2	EA	SURFACE CLOSER	4040XP SCUSH X TB	689	LCN
1	SET	SEALS	700SA (DO NOT CUT AROUND CLOSER BRACKET)	AL	NGP
2	EA	DOOR SWEEP	C627A	AL	NGP
1	EA	THRESHOLD	425HD	AL	NGP

HW SET: 06
DOOR NUMBER: (Includes but is not limited to the following doors)
400T-2

EACH TO HAVE:

6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
2	EA	MANUAL FLUSH BOLT	FB458	626	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	STOREROOM LOCK	LV9080L 06A	626	SCH
1	EA	MORTISE CYLINDER	1E74	626	BES
1	EA	ASTRAGAL	139A	600	NGP
2	EA	SURFACE CLOSER	4040XP SHCUSH X TB	689	LCN
1	SET	SEALS	700SA (DO NOT CUT AROUND CLOSER BRACKET)	AL	NGP
2	EA	DOOR SWEEP	C627A	AL	NGP
1	EA	THRESHOLD	425HD	AL	NGP

HW SET: 07
DOOR NUMBER: (Includes but is not limited to the following doors)
500B-1 501-1 502-1

EACH TO HAVE:

3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	STOREROOM LOCK	LV9080L 06A	626	SCH
1	EA	MORTISE CYLINDER	1E74	626	BES
1	EA	SURFACE CLOSER	4040XP SHCUSH X TB	689	LCN
1	SET	SEALS	700SA (DO NOT CUT AROUND CLOSER BRACKET)	AL	NGP
1	EA	DOOR SWEEP	C627A	AL	NGP
1	EA	THRESHOLD	425HD	AL	NGP

HW SET: 08
DOOR NUMBER: (Includes but is not limited to the following doors)
P101 P102

EACH TO HAVE:

3	EA	HINGE	5BB1HW 4.5 X 4.5	630	IVE
1	EA	STOREROOM LOCK	LV9080L 06A	626	SCH
1	EA	MORTISE CYLINDER	1E74	626	BES
1	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	160S	AL	NGP
1	EA	DOOR SWEEP	601A	CL	NGP
1	EA	THRESHOLD	425HD	AL	NGP

HW SET: 09
DOOR NUMBER: (Includes but is not limited to the following doors)
P104

EACH TO HAVE:

3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	STOREROOM LOCK	LV9080L 06A	626	SCH
1	EA	MORTISE CYLINDER	1E74	626	BES
1	EA	OVERHEAD STOP	900S	630	GLY
1	SET	SEALS	160S	AL	NGP
1	EA	DOOR SWEEP	601A	CL	NGP
1	EA	THRESHOLD	425HD	AL	NGP

HW SET: 10
DOOR NUMBER: (Includes but is not limited to the following doors)
110Q-1

EACH TO HAVE:

1	EA	CONTINUOUS HINGE	224HD	628	IVE
1	EA	FIRE EXIT HARDWARE	98EO-F 4'	626	VON
1	EA	SURFACE CLOSER	4040XP SCUSH X TB	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	SET	SEALS	700SA (DO NOT CUT AROUND CLOSER BRACKET)	AL	NGP
1	EA	DOOR SWEEP	C627A	AL	NGP
1	EA	THRESHOLD	425HD	AL	NGP

HW SET: 11
DOOR NUMBER: (Includes but is not limited to the following doors)
110Z-1

EACH TO HAVE:

6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1	EA	MULLION	KR9954	689	VON
2	EA	PANIC HARDWARE	98EO	626	VON
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
2	SET	ASTRAGAL	A617A	AL	NGP
2	EA	SURFACE CLOSER	4040XP SCUSH X TB	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	SET	SEALS	700SA (DO NOT CUT AROUND CLOSER BRACKET)	AL	NGP
2	EA	DOOR SWEEP	C627A	AL	NGP
1	EA	THRESHOLD	425HD	AL	NGP
2	EA	DOOR POSITION SWITCH	679-05		SCE

1	EA	MOTION DETECTOR	SCAN II-B (REQUEST TO EXIT)	BLK	SCE

EXIT ONLY. DOOR POSITION IS MONITORED BY ACCESS CONTROL SYSTEM. MOTION DETECTOR IS REQUEST TO EXIT.

HW SET: 12
DOOR NUMBER: (Includes but is not limited to the following doors)
110U-7

EACH TO HAVE:

6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1	EA	MULLION	KR9954	689	VON
2	EA	FIRE EXIT HARDWARE	98L-BE-F 996L-BE	626	VON
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	SURFACE CLOSER	4040XP EDA X TB	689	LCN
1	EA	SURFACE CLOSER	4040XP SCUSH X TB	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	160S	AL	NGP

HW SET: 13
DOOR NUMBER: (Includes but is not limited to the following doors)
300C-1

EACH TO HAVE:

6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
2	EA	POWER TRANSFER	EPT-10	689	VON
1	EA	MULLION	KR9954	689	VON
1	EA	FIRE EXIT HARDWARE	RX-98EO-F	626	VON
1	EA	FIRE EXIT HARDWARE	RX-98L-F E996L 3' FS 24VDC	626	VON
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	SURFACE CLOSER	4040XP EDA X TB	689	LCN
1	EA	SURFACE CLOSER	4040XP SCUSH X TB	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	160S	AL	NGP
2	EA	DOOR POSITION SWITCH	679-05		SCE
1	EA	SMART CARD READER	SXF1100	BLK	SCE

CARD IN FROM STAIR. DOOR IS LOCKED FROM THE STAIR SIDE. EXIT DEVICE TRIM WILL FAIL SAFE (UNLOCKED) IN THE EVENT OF A FIRE. DOOR POSITION IS MONITORED THROUGH ACCESS CONTROL SYSTEM. REQUEST TO EXIT IS IN EXIT DEVICE PUSH BAR OF EXIT DEVICES.

HW SET: 14
DOOR NUMBER: (Includes but is not limited to the following doors)
P200D1 P200E1

EACH TO HAVE:

2	EA	POWER TRANSFER	EPT-10	689	VON
2	EA	CONTINUOUS HINGE	112HD EPT	628	IVE
2	EA	FIRE EXIT HARDWARE	QEL-RX-LX-98L-F 996L	626	VON
2	EA	RIM CYLINDER	34 LJ 0-BITTED	626	SAR
1	EA	SURFACE CLOSER	4040XP EDA X TB	689	LCN
1	EA	AUTO-EQUALIZER	4642 REG FC CS	689	LCN
1	SET	SEALS	700SA (DO NOT CUT AROUND CLOSER BRACKET)	AL	NGP
2	EA	DOOR SWEEP	601A	CL	NGP
1	EA	THRESHOLD	425HD	AL	NGP
1	EA	POWER SUPPLY	PS902-2Q	GRY	VON
2	EA	DOOR POSITION SWITCH	679-05		SCE
1	EA	ACTUATOR, JAMB MOUNT	8310-818		LCN
1	EA	ACTUATOR, WALL MOUNT	8310-853		LCN
1	EA	SMART CARD READER	SXF1100	BLK	SCE
1			REF DIV 28 FOR ACCESS CONTROL COMPONENTS		

EXIT DEVICE IS ELECTRONICALLY DOGGED FOR PUSH/PULL OPERATION FOR NORMAL OPERATING HOURS. AFTER HOURS ENTRANCE BY CARD READER. USER PRESENTS CREDENTIAL, EXIT DEVICE LATCH RETRACTS, AUTO OPERATOR OPENS DOOR. EXTERIOR ACTUATOR TURNED OFF/ON THROUGH TIME/CALENDAR FEATURE OF SECURITY SYSTEM. DOOR POSITION MONITORED BY SECURITY SYSTEM. COORDINATE LOCATION OF CARD READER WITH ARCHITECT. ADA OPERATOR FUNCTIONS IN CONCERT WITH INTERIOR OPERATOR. TIMING OF OPERATORS TO BE DETERMINED BY OWNER.

HW SET: 15
DOOR NUMBER: (Includes but is not limited to the following doors)
110U-8

EACH TO HAVE:

3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1	EA	FIRE EXIT HARDWARE	98L-BE-F 996L-BE	626	VON
1	EA	ELECTRIC STRIKE	6300 FSE	630	VON

2	SET	ASTRAGAL	A617A	AL	NGP
1	EA	AUTO-EQUALIZER	4642 REG FC CS	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	160S	AL	NGP
1	EA	ACTUATOR, JAMB MOUNT	8310-818		LCN
1	EA	ACTUATOR, WALL MOUNT	8310-853		LCN

ELECTRIC STRIKE TO FAIL SECURE IN THE EVENT OF A FIRE.
ELECTRIC STRIKE IS POWERED BY ADA OPERATOR.
ADA OPERATOR TO FUNCTION INDEPENDENT OF EXTERIOR OPERATOR.

HW SET: 16
DOOR NUMBER: (Includes but is not limited to the following doors)
110-1

EACH TO HAVE:

6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1	EA	MULLION	KR9954	689	VON
1	EA	FIRE EXIT HARDWARE	98EO-F	626	VON
1	EA	FIRE EXIT HARDWARE	98NL-F 990NL-F (INSTALL ON RHR LEAF)	626	VON
1	EA	RIM CYLINDER	34 LJ 0-BITTED	626	SAR
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	SET	ASTRAGAL	A617A	AL	NGP
1	EA	SENTRONIC CLOSER	4410ME 24VDC	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	MAGNETIC HOLD-OPEN	SEM 7850 (INSTALL ON RHR LEAF)	630	LCN
1	SET	SEALS	160S	AL	NGP

INTERFACE REQUIRED WITH FIRE-LIFE SAFETY SYSTEM FOR IMMEDIATE RELEASE OF DOORS IN THE EVENT OF A FIRE.

HW SET: 17
DOOR NUMBER: (Includes but is not limited to the following doors)
110-3

EACH TO HAVE:

6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1	EA	MULLION	KR9954	689	VON
2	EA	FIRE EXIT HARDWARE	98EO-F	626	VON
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR

1	SET	ASTRAGAL	A617A	AL	NGP
1	EA	SENTRONIC CLOSER	4410ME 24VDC	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	MAGNETIC HOLD-OPEN	SEM 7850 (INSTALL ON LHR LEAF)	630	LCN
1	SET	SEALS	160S	AL	NGP

INTERFACE REQUIRED WITH FIRE-LIFE SAFETY SYSTEM FOR IMMEDIATE RELEASE OF DOORS IN THE EVENT OF A FIRE.

HW SET: 18
DOOR NUMBER: (Includes but is not limited to the following doors)
200E-1

EACH TO HAVE:

8	EA	HINGE	5BB1HW 5 X 4.5 NRP	652	IVE
1	EA	MULLION	KR9954	689	VON
2	EA	FIRE EXIT HARDWARE	98EO-F	626	VON
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	SET	ASTRAGAL	A617A	AL	NGP
1	EA	SENTRONIC CLOSER	4410ME 24VDC	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	MAGNETIC HOLD-OPEN	SEM 7850 (INSTALL ON LHR LEAF)	630	LCN
1	SET	SEALS	160S	AL	NGP

INTERFACE REQUIRED WITH FIRE-LIFE SAFETY SYSTEM FOR IMMEDIATE RELEASE OF DOORS IN THE EVENT OF A FIRE.

HW SET: 19
DOOR NUMBER: (Includes but is not limited to the following doors)
110-2

EACH TO HAVE:

6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1	EA	MULLION	KR9954	689	VON
2	EA	FIRE EXIT HARDWARE	98EO-F	626	VON
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	SET	ASTRAGAL	A617A	AL	NGP
2	EA	SENTRONIC CLOSER	4410ME 24VDC	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	SET	SEALS	160S	AL	NGP

INTERFACE REQUIRED WITH FIRE-LIFE SAFETY SYSTEM FOR IMMEDIATE RELEASE OF DOORS IN THE EVENT OF A FIRE.

HW SET: 20
DOOR NUMBER: (Includes but is not limited to the following doors)
200E-2

EACH TO HAVE:

4	EA	HINGE	5BB1HW 5 X 4.5 NRP	652	IVE
1	EA	POWER TRANSFER	EPT-10	689	VON
1	EA	FIRE EXIT HARDWARE	QEL98NL-F 990NL-F 4'	626	VON
1	EA	RIM CYLINDER	34 LJ 0-BITTED	626	SAR
1	EA	SURFACE CLOSER	4040XP EDA X TB	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	MAGNETIC HOLD-OPEN	SEM 7850	AL	LCN
1	SET	SEALS	160S	AL	NGP
1	EA	POWER SUPPLY	PS902-2Q	GRY	VON
1	EA	SMART CARD READER	SXF1100	BLK	SCE
1			REF DIV 28 FOR ACCESS CONTROL COMPONENTS		

DOOR IS NORMALLY HELD OPEN BY MAG HOLDER. AFTER HOURS ACCESS BY CARD READER. USER PRESENTS CREDENTIAL EXIT DEVICE LATCH RETRACTS USER OPENS DOOR TO ENTER.

HW SET: 21
DOOR NUMBER: (Includes but is not limited to the following doors)
300E-1 300R-1 400B-1 400D-1 400P-1

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	POWER TRANSFER	EPT-10	689	VON
1	EA	FIRE EXIT HARDWARE	RX-98L-F E996L 3' FS 24VDC	626	VON
1	EA	RIM CYLINDER	34 LJ 0-BITTED	626	SAR
1	EA	SURFACE CLOSER	4040XP EDA X TB	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	SET	SEALS	160S	AL	NGP
1	EA	POWER SUPPLY	PS902	GRY	VON
1	EA	DOOR POSITION SWITCH	679-05		SCE
1	EA	SMART CARD READER	SXF1100	BLK	SCE

CARD IN FROM STAIR. DOOR IS LOCKED FROM THE STAIR SIDE. EXIT DEVICE TRIM WILL FAIL SAFE (UNLOCKED) IN THE EVENT OF A FIRE. DOOR POSITION IS MONITORED THROUGH ACCESS CONTROL SYSTEM. REQUEST TO EXIT IS IN EXIT DEVICE PUSH BAR.

HW SET: 22
DOOR NUMBER: (Includes but is not limited to the following doors)
100C-1

EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	MULLION	KR9954	689	VON
2	EA	FIRE EXIT HARDWARE	98L-BE-F 996L-BE	626	VON
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
2	EA	SURFACE CLOSER	4040XP SCUSH X TB	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
2	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	160S	AL	NGP

HW SET: 23
DOOR NUMBER: (Includes but is not limited to the following doors)
200D-1 300B-1

EACH TO HAVE:

2	EA	CONTINUOUS HINGE	224HD	628	IVE
2	EA	FIRE EXIT HARDWARE	9827L-BE-F-LBR 996L-BE 4'	626	VON
1	SET	ASTRAGAL	9605A	CL	NGP
2	EA	SURFACE CLOSER	4040XP EDA X TB	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
2	EA	MAGNETIC HOLD-OPEN	SEM 7850 (INSTALL ON LOWER BOTTOM OF DOOR)	AL	LCN
1	SET	SEALS	160S	AL	NGP

HW SET: 24
DOOR NUMBER: (Includes but is not limited to the following doors)
110D-2 200J-1

EACH TO HAVE:

3	EA	HINGE	5BB1HW 5 X 4.5	652	IVE
1	EA	FIRE EXIT HARDWARE	98L-BE-F 996L-BE 4'	626	VON
1	EA	SURFACE CLOSER	4040XP EDA X TB	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	160S	AL	NGP

HW SET: 25
DOOR NUMBER: (Includes but is not limited to the following doors)
110Q-2 200G-1 200U-1

EACH TO HAVE:

3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1	EA	FIRE EXIT HARDWARE	98L-BE-F 996L-BE	626	VON
1	EA	SURFACE CLOSER	4040XP EDA X TB	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	160S	AL	NGP

HW SET: 26
DOOR NUMBER: (Includes but is not limited to the following doors)
101A-2 **110B-1 110F-1 200F-1 200K-1 200W-1**
300F-1 300T-1 400E-1 400Q-1

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	STOREROOM LOCK	LV9080L 06A	626	SCH
1	EA	MORTISE CYLINDER	1E74	626	BES
1	EA	SURFACE CLOSER	4040XP SCUSH X TB	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	SET	SEALS	160S	AL	NGP

HW SET: 27
DOOR NUMBER: (Includes but is not limited to the following doors)
110D-3 203B-1

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	LV9080L 06A	626	SCH
1	EA	MORTISE CYLINDER	1E74	626	BES
1	EA	SURFACE CLOSER	4040XP REG X TB	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	160S	AL	NGP

HW SET: 28

DOOR NUMBER: (Includes but is not limited to the following doors)
203A-1

EACH TO HAVE:

1	EA	CONTINUOUS HINGE	224HD	628	IVE
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	CLASSROOM LOCK	LV9070L 06A	626	SCH
1	EA	SURFACE CLOSER	4040XP EDA X TB	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	160S	AL	NGP

HW SET: 29
DOOR NUMBER: (Includes but is not limited to the following doors)
400T-3 400T-5

EACH TO HAVE:

1	EA	CONTINUOUS HINGE	224HD	628	IVE
1	EA	PASSAGE SET	L9010 06A	626	SCH
1	EA	SURFACE CLOSER	4040XP EDA X TB	689	LCN
1	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	160S	AL	NGP

HW SET: 30
DOOR NUMBER: (Includes but is not limited to the following doors)
400T-4

EACH TO HAVE:

2	EA	CONTINUOUS HINGE	224HD	628	IVE
1	EA	AUTO FLUSH BOLT	FB31T	630	IVE
1	EA	PASSAGE SET	L9010 06A	626	SCH
1	EA	COORDINATOR	COR X FL X BRACKETS AS REQ'D	628	IVE
1	EA	ASTRAGAL	ASTRAGAL BY DOOR MFG		B/O
2	EA	SURFACE CLOSER	4040XP SCUSH X TB	689	LCN
1	SET	SEALS	160S	AL	NGP

HW SET: 31
DOOR NUMBER: (Includes but is not limited to the following doors)
110G-1 126-1 200M-1 225A-1 300J-1 300P-1
400F-1 400G-1

EACH TO HAVE:

2	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ELEC HINGE	TEF10C	652	MAR
1	EA	ELECT LOCK	AD-300-CY-70-MT-RHO-PD	626	SCE
1	EA	SURFACE CLOSER	4040XP REG X TB	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE
1			POWER SUPPLY BY SECURITY INTEGRATOR		
1			REF DIV 28 FOR ACCESS CONTROL COMPONENTS		
1			REF MISC SET FOR PANEL INTERFACE BOARD		

USER PRESENTS CREDENTIAL, LEVER IS RELEASED, USER OPENS DOOR.
VOLTAGE DRAW ON AD LOCK IS 1.1 AMPS @ 12V OR .6 AMPS @ 24V

HW SET: 32
DOOR NUMBER: (Includes but is not limited to the following doors)
123-1

EACH TO HAVE:

2	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ELEC HINGE	TEF10C	652	MAR
1	EA	ELECT LOCK	AD-300-CY-70-MT-RHO-PD	626	SCE
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE
1			POWER SUPPLY BY SECURITY INTEGRATOR		
1			REF DIV 28 FOR ACCESS CONTROL COMPONENTS		
1			REF MISC SET FOR PANEL INTERFACE BOARD		

USER PRESENTS CREDENTIAL, LEVER IS RELEASED, USER OPENS DOOR.
VOLTAGE DRAW ON AD LOCK IS 1.1 AMPS @ 12V OR .6 AMPS @ 24V

HW SET: 33
DOOR NUMBER: (Includes but is not limited to the following doors)
110N-1 ***400M-1***

EACH TO HAVE:

2	EA	HINGE	5BB1HW 5 X 4.5	652	IVE
1	EA	ELEC HINGE	TEF10C	652	MAR

1	EA	ELECT LOCK	AD-300-CY-70-MT-RHO-PD	626	SCE
1	EA	SURFACE CLOSER	4040XP EDA X TB	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE
1			POWER SUPPLY BY SECURITY INTEGRATOR		
1			REF DIV 28 FOR ACCESS CONTROL COMPONENTS		
1			REF MISC SET FOR PANEL INTERFACE BOARD		

USER PRESENTS CREDENTIAL, LEVER IS RELEASED, USER OPENS DOOR.
VOLTAGE DRAW ON AD LOCK IS 1.1 AMPS @ 12V OR .6 AMPS @ 24V

HW SET: 34
DOOR NUMBER: (Includes but is not limited to the following doors)
211-1

EACH TO HAVE:

2	EA	HINGE	5BB1HW 5 X 4.5	652	IVE
1	EA	ELEC HINGE	TEF10C	652	MAR
1	EA	ELECT LOCK	AD-300-CY-70-MT-RHO-PD	626	SCE
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE
1			POWER SUPPLY BY SECURITY INTEGRATOR		
1			REF DIV 28 FOR ACCESS CONTROL COMPONENTS		
1			REF MISC SET FOR PANEL INTERFACE BOARD		

USER PRESENTS CREDENTIAL, LEVER IS RELEASED, USER OPENS DOOR.
VOLTAGE DRAW ON AD LOCK IS 1.1 AMPS @ 12V OR .6 AMPS @ 24V

HW SET: 35
DOOR NUMBER: (Includes but is not limited to the following doors)
211-2 301A-1 310-1 311A-1 312A-1 401A-1

EACH TO HAVE:

2	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	ELEC HINGE	TEF10C	652	MAR

1	EA	ELECT LOCK	AD-300-CY-70-MT-RHO-PD	626	SCE
1	EA	SURFACE CLOSER	4040XP EDA X TB	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE
1			POWER SUPPLY BY SECURITY INTEGRATOR		
1			REF DIV 28 FOR ACCESS CONTROL COMPONENTS		
1			REF MISC SET FOR PANEL INTERFACE BOARD		

USER PRESENTS CREDENTIAL, LEVER IS RELEASED, USER OPENS DOOR.
VOLTAGE DRAW ON AD LOCK IS 1.1 AMPS @ 12V OR .6 AMPS @ 24V

HW SET: 36
DOOR NUMBER: (Includes but is not limited to the following doors)
125A-1 125C-1 125C-2

EACH TO HAVE:

5	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ELEC HINGE	TEF10C	652	MAR
2	EA	MANUAL FLUSH BOLT	FB458	626	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	ELECT LOCK	AD-300-CY-70-MT-RHO-PD	626	SCE
1	EA	ASTRAGAL	139A	600	NGP
1	EA	SURFACE CLOSER	4040XP REG X TB (ACTIVE LEAF ONLY)	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
2	EA	WALL STOP	WS407CCV	630	IVE
2	EA	SILENCER	SR64	GRY	IVE
1			POWER SUPPLY BY SECURITY INTEGRATOR		
1			REF DIV 28 FOR ACCESS CONTROL COMPONENTS		
1			REF MISC SET FOR PANEL INTERFACE BOARD		

USER PRESENTS CREDENTIAL, LEVER IS RELEASED, USER OPENS DOOR.
VOLTAGE DRAW ON AD LOCK IS 1.1 AMPS @ 12V OR .6 AMPS @ 24V

HW SET: 37
DOOR NUMBER: (Includes but is not limited to the following doors)
201-1 227F-1

EACH TO HAVE:

5	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ELEC HINGE	TEF10C	652	MAR
1	SET	AUTO FLUSH BOLT	FB41P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	ELECT LOCK	AD-300-CY-70-MT-RHO-PD	626	SCE
1	EA	COORDINATOR	COR X FL X BRACKETS AS REQ'D	628	IVE
1	EA	ASTRAGAL	139A	600	NGP
2	EA	SURFACE CLOSER	4040XP REG X TB	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
2	EA	WALL STOP	WS407CCV	630	IVE
2	EA	SILENCER	SR64	GRY	IVE
1			POWER SUPPLY BY SECURITY INTEGRATOR		
1			REF DIV 28 FOR ACCESS CONTROL COMPONENTS		
1			REF MISC SET FOR PANEL INTERFACE BOARD		

USER PRESENTS CREDENTIAL, LEVER IS RELEASED, USER OPENS DOOR.
VOLTAGE DRAW ON AD LOCK IS 1.1 AMPS @ 12V OR .6 AMPS @ 24V

HW SET: 38
DOOR NUMBER: (Includes but is not limited to the following doors)
409-1 **410-1**

EACH TO HAVE:

5	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	ELEC HINGE	TEF10C	652	MAR
1	SET	AUTO FLUSH BOLT	FB41P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	ELECT LOCK	AD-300-CY-70-MT-RHO-PD	626	SCE
1	EA	COORDINATOR	COR X FL X BRACKETS AS REQ'D	628	IVE
1	EA	ASTRAGAL	139A	600	NGP
2	EA	SURFACE CLOSER	4040XP SHCUSH X TB	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
2	EA	SILENCER	SR64	GRY	IVE
1			POWER SUPPLY BY SECURITY INTEGRATOR		
1			REF DIV 28 FOR ACCESS CONTROL COMPONENTS		
1			REF MISC SET FOR PANEL INTERFACE BOARD		

USER PRESENTS CREDENTIAL, LEVER IS RELEASED, USER OPENS DOOR.

VOLTAGE DRAW ON AD LOCK IS 1.1 AMPS @ 12V OR .6 AMPS @ 24V

HW SET: 39
DOOR NUMBER: (Includes but is not limited to the following doors)
114-1

EACH TO HAVE:

1	SET	TOP & BOTTOM PIVOTS	OFFSET PIVOT - PIVOT POINT TBD	626	TBD
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	ELECTROMAGNETIC LOCK	M490P	628	SCE
1	SET	POST PULLS	1-1/4" DIA X 36"	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE
1	EA	PUSHBUTTON	621GID EX-DA	630	SCE
1	EA	MOTION DETECTOR	SCAN II-B (REQUEST TO EXIT)	BLK	SCE
1	EA	SMART CARD READER	SXF1100	BLK	SCE
1			POWER SUPPLY BY SECURITY INTEGRATOR		
1			REF DIV 28 FOR ACCESS CONTROL COMPONENTS		

USER PRESENTS CREDENTIAL, MAG LOCK RELEASES, USER OPENS DOOR. MAG LOCK MAY BE SCHEDULED TO BE RELEASED IN ACCORDANCE WITH TIME AND CALENDAR FEATURE OF ACCESS CONTROL SYSTEM. DOOR IS NOT SELF-CLOSING AND MAY STAND OPEN IF PREFERRED.

HW SET: 40
DOOR NUMBER: (Includes but is not limited to the following doors)
125-1

EACH TO HAVE:

5	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	ELEC HINGE	TEF10C	652	MAR
1	SET	AUTO FLUSH BOLT	FB41P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	ELECT LOCK	AD-300-CY-70-MT-RHO-PD	626	SCE
1	EA	COORDINATOR	COR X FL X BRACKETS AS REQ'D	628	IVE
1	EA	ASTRAGAL	139A	600	NGP
2	EA	SURFACE CLOSER	4040XP EDA X TB	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
2	EA	WALL STOP	WS407CCV	630	IVE
2	EA	SILENCER	SR64	GRY	IVE
1			POWER SUPPLY BY SECURITY		

			INTEGRATOR		
1			REF DIV 28 FOR ACCESS CONTROL COMPONENTS		
1			REF MISC SET FOR PANEL INTERFACE BOARD		

USER PRESENTS CREDENTIAL, LEVER IS RELEASED, USER OPENS DOOR.
VOLTAGE DRAW ON AD LOCK IS 1.1 AMPS @ 12V OR .6 AMPS @ 24V

HW SET: 41
DOOR NUMBER: (Includes but is not limited to the following doors)
302A-1 302C-1

EACH TO HAVE:

5	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	ELEC HINGE	TEF10C	652	MAR
1	SET	AUTO FLUSH BOLT	FB41P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	ELECT LOCK	AD-300-CY-70-MT-RHO-PD	626	SCE
1	EA	COORDINATOR	COR X FL X BRACKETS AS REQ'D	628	IVE
1	EA	ASTRAGAL	139A	600	NGP
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
2	EA	WALL STOP	WS407CCV	630	IVE
2	EA	SILENCER	SR64	GRY	IVE
1			POWER SUPPLY BY SECURITY INTEGRATOR		
1			REF DIV 28 FOR ACCESS CONTROL COMPONENTS		
1			REF MISC SET FOR PANEL INTERFACE BOARD		

USER PRESENTS CREDENTIAL, LEVER IS RELEASED, USER OPENS DOOR.
VOLTAGE DRAW ON AD LOCK IS 1.1 AMPS @ 12V OR .6 AMPS @ 24V

HW SET: 42
DOOR NUMBER: (Includes but is not limited to the following doors)
222B-2 222C-2

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	STOREROOM LOCK	LV9080L 06A	626	SCH
1	EA	SURFACE CLOSER	4040XP REG X TB	689	LCN
1	EA	WALL STOP	WS407CCV	630	IVE

3	EA	SILENCER	SR64	GRY	IVE

HW SET: 43
DOOR NUMBER: (Includes but is not limited to the following doors)
400T-1

EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
2	EA	MANUAL FLUSH BOLT	FB458	626	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	STOREROOM LOCK	LV9080L 06A	626	SCH
1	EA	MORTISE CYLINDER	1E74	626	BES
1	EA	ASTRAGAL	139A	600	NGP
1	EA	SURFACE CLOSER	4040XP EDA X TB (ACTIVE LEAF ONLY)	689	LCN
2	EA	WALL STOP	WS407CCV	630	IVE
2	EA	SILENCER	SR64	GRY	IVE

HW SET: 44
DOOR NUMBER: (Includes but is not limited to the following doors)
101A-1

EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	MANUAL FLUSH BOLT	FB458 (TOP)	630	IVE
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	STOREROOM LOCK	LV9080L 06A	626	SCH
1	EA	ASTRAGAL	139A	600	NGP
2	EA	WALL STOP	WS407CCV	630	IVE
2	EA	SILENCER	SR64	GRY	IVE

HW SET: 45
DOOR NUMBER: (Includes but is not limited to the following doors)
110R-1 115-1 311A-2 400C-1

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	STOREROOM LOCK	LV9080L 06A	626	SCH
1	EA	MORTISE CYLINDER	1E74	626	BES
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 46
DOOR NUMBER: (Includes but is not limited to the following doors)

110J-1	**110J-2**	**125H-1**	**200N-1**	**200N-2**	**300D-1**
300K-1	**300K-2**	**313A-1**	**313A-2**	**400H-1**	**400H-2**
412-2	**II0V-1**				

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	STOREROOM LOCK	LV9080L 06A	626	SCH
1	EA	MORTISE CYLINDER	1E74	626	BES
1	EA	SURFACE CLOSER	4040XP SCUSH X TB	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 47
DOOR NUMBER: (Includes but is not limited to the following doors)

117J-1	**117N-1**

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	STOREROOM LOCK	LV9080L 06A	626	SCH
1	EA	MORTISE CYLINDER	1E74	626	BES
1	EA	SURFACE CLOSER	4040XP EDA X TB	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 48
DOOR NUMBER: (Includes but is not limited to the following doors)

112A-2	**122C-1**	**122R-2**	**124-1**	**201A-1**	**211G-1**
211L-1	**223G-1**	**225-1**	**227J-1**	**305B-2**	**309-2**

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	CLASSROOM LOCK	LV9070L 06A	626	SCH
1	EA	WALL STOP	WS407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 49
DOOR NUMBER: (Includes but is not limited to the following doors)
122A-1

EACH TO HAVE:

4	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	CLASSROOM LOCK	LV9070L 06A	626	SCH
1	EA	WALL STOP	WS407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 50
DOOR NUMBER: (Includes but is not limited to the following doors)
208-1 222E-1 305B-1 309-1

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	CLASSROOM LOCK	LV9070L 06A	626	SCH
1	EA	SURFACE CLOSER	4040XP HEDA X TB	689	LCN
1	EA	WALL STOP	WS407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 51
DOOR NUMBER: (Includes but is not limited to the following doors)
307-1 307-2 309B-1

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	CLASSROOM LOCK	LV9070L 06A	626	SCH
1	EA	WALL STOP	WS407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 52
DOOR NUMBER: (Includes but is not limited to the following doors)
125G-1

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	CLASSROOM LOCK	LV9070L 06A	626	SCH

1	EA	SURFACE CLOSER	4040XP REG X TB	689	LCN
1	EA	WALL STOP	WS407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 53
DOOR NUMBER: (Includes but is not limited to the following doors)
224D-1

EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	MANUAL FLUSH BOLT	FB458 (TOP)	630	IVE
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	CLASSROOM LOCK	LV9070L 06A	626	SCH
1	EA	OVERHEAD STOP	450S-J	630	GLY
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
2	EA	SILENCER	SR64	GRY	IVE

HW SET: 54
DOOR NUMBER: (Includes but is not limited to the following doors)
122B-1 122R-1

EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	AUTO FLUSH BOLT	FB41T	630	IVE
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	CLASSROOM LOCK	LV9070L 06A	626	SCH
1	EA	COORDINATOR	COR X FL X BRACKETS AS REQ'D	628	IVE
1	EA	SURFACE CLOSER	4040XP HEDA X TB	689	LCN
1	EA	SURFACE CLOSER	4040XP SHCUSH X TB	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
2	EA	SILENCER	SR64	GRY	IVE

HW SET: 55
DOOR NUMBER: (Includes but is not limited to the following doors)
128-1

EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	AUTO FLUSH BOLT	FB41T	630	IVE
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR

1	EA	CLASSROOM LOCK	LV9070L 06A	626	SCH
1	EA	COORDINATOR	COR X FL X BRACKETS AS REQ'D	628	IVE
2	EA	SURFACE CLOSER	4040XP HEDA X TB	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
2	EA	WALL STOP	WS407CCV	630	IVE
2	EA	SILENCER	SR64	GRY	IVE

HW SET: 56
DOOR NUMBER: (Includes but is not limited to the following doors)

116A-1	**116B-1**	**116C-1**	**116D-1**	**116F-1**	**116G-1**
116H-1	**122E-1**	**122F-1**	**122G-1**	**122H-1**	**122K-1**
122M-1	**122N**	**122P-1**	**122Q-1**	**125J-1**	**125J-2**
127-1	**201B-1**	**201C-1**	**201D-1**	**211B-1**	**211C-1**
211C-2	**211D-1**	**211E-1**	**211F-1**	**211J-1**	**211K-1**
211M-1	**222B-1**	**222C-1**	**223A-1**	**223B-1**	**223C-1**
223E-1	**223E-2**	**223H-1**	**223J-1**	**223K-1**	**224C-1**
224E-1	**224F-1**	**224G-1**	**224J-1**	**224J-2**	**224K-1**
224M-1	**224N-1**	**224Q-1**	**227A-1**	**227B-1**	**227C-1**
227D-1	**227E-1**				

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	OFFICE LOCK	LV9050L 06A L583-363	626	SCH
1	EA	WALL STOP	WS407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 57
DOOR NUMBER: (Includes but is not limited to the following doors)
224B-1

EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	MANUAL FLUSH BOLT	FB458 (TOP)	630	IVE
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	OFFICE LOCK	LV9050L 06A L583-363	626	SCH
2	EA	WALL STOP	WS407CCV	630	IVE
2	EA	SILENCER	SR64	GRY	IVE

HW SET: 58
DOOR NUMBER: (Includes but is not limited to the following doors)

110Y-2	**114-2**	**305-1**

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	PANIC HARDWARE	98L 996L	626	VON
1	EA	RIM CYLINDER	34 LJ 0-BITTED	626	SAR
1	EA	SURFACE CLOSER	4040XP EDA X TB	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 59
DOOR NUMBER: (Includes but is not limited to the following doors)
110Y-1

EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	PANIC HARDWARE	9827EO	626	VON
1	EA	PANIC HARDWARE	9875L 996L	626	VON
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
2	EA	SURFACE CLOSER	4040XP EDA X TB	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
2	EA	WALL STOP	WS407CCV	630	IVE
2	EA	SILENCER	SR64	GRY	IVE

HW SET: 60
DOOR NUMBER: (Includes but is not limited to the following doors)
112B-1 112E-1

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PUSH PLATE	8200 4" X 16"	630	IVE
1	EA	PULL PLATE	8305-0 4" X 16"	630	IVE
1	EA	SURFACE CLOSER	4040XP HEDA X TB	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP
1	EA	DOOR SWEEP	96VA	CL	NGP

HW SET: 61
DOOR NUMBER: (Includes but is not limited to the following doors)
112D-1

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	SET	POST PULLS	1-1/4" DIA X 12"	630	IVE
1	EA	SURFACE CLOSER	4040XP HEDA X TB	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP
1	EA	DOOR SWEEP	96VA	CL	NGP

HW SET: 62
DOOR NUMBER: (Includes but is not limited to the following doors)
112A-1

EACH TO HAVE:

1	EA	FLOOR CLOSER	5100 HO	626	RIX
1	SET	POST PULLS	1-1/4" DIA X 12"	630	IVE
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
1	EA	DOOR SWEEP	96VA	CL	NGP
1			PERIMETER SOUND SEAL BY FRAME MFG		

HW SET: 63
DOOR NUMBER: (Includes but is not limited to the following doors)
110H-1

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	PRIVACY INDICATOR LK	L9496L 06A L583-363	626	SCH
1	EA	SURFACE CLOSER	4040XP EDA X TB	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
1	EA	DBL WARDROBE HOOK	582	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 64
DOOR NUMBER: (Includes but is not limited to the following doors)
300H-1

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	PRIVACY INDICATOR LK	L9496L 06A L583-363	626	SCH
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS407CCV	630	IVE
1	EA	DBL WARDROBE HOOK	582	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 65

DOOR NUMBER: (Includes but is not limited to the following doors)

116E-1 116E-2 116E-3 116J-1 116J-2 116J-3
116J-4 116J-5 223F-1 223F-2 223F-3

EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	MANUAL FLUSH BOLT	FB458 (TOP)	630	IVE
1	EA	ROLLER LATCH	RL32 (TOP MOUNT)	626	IVE
1	EA	FLUSH PULL	1060	626	TRI
2	EA	OVERHEAD STOP	450S	652	GLY
2	EA	SILENCER	SR64	GRY	IVE

HW SET: 66

DOOR NUMBER: (Includes but is not limited to the following doors)

112-1

EACH TO HAVE:

1	EA	FLOOR CLOSER	328	626	RIX
2	EA	APPLIED STOP	60131	626	RIX
1	EA	TOP PIVOT	345	626	RIX
1	SET	POST PULLS	1-1/4" DIA X 36"	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 67

DOOR NUMBER: (Includes but is not limited to the following doors)

311-1 312-1

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	L9010 06A	626	SCH

1	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP
1	EA	DOOR SWEEP	96VA	CL	NGP

HW SET: AL-01
DOOR NUMBER: (Includes but is not limited to the following doors)
100F-1 110U-3 110U-5 200A-1

EACH TO HAVE:

2	EA	POWER TRANSFER	EPT-10	689	VON
2	EA	CONTINUOUS HINGE	112HD EPT	628	IVE
1	EA	MULLION	KR4954	689	VON
1	EA	PANIC HARDWARE	QEL-RX-98DT 990DT	626	VON
1	EA	PANIC HARDWARE	QEL-RX-98NL 990NL	626	VON
1	EA	RIM CYLINDER	34 LJ 0-BITTED	626	SAR
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
2	EA	SURFACE CLOSER	4040XP EDA X 18PA	689	LCN
2	EA	OVERHEAD STOP	100S-ADJ	630	GLY
1	EA	POWER SUPPLY	PS902-2Q	GRY	VON
2	EA	DOOR POSITION SWITCH	679-05		SCE
1			THRESHOLD AND PERIMETER SEAL BY DOOR MFG		

EXIT DEVICES ARE ELECTRONICALLY DOGGED FOR PUSH/PULL OPERATION FOR NORMAL OPERATING HOURS THROUGH SECURITY SYSTEM. DOOR POSITION MONITORED BY SECURITY SYSTEM. REQUEST TO EXIT IS IN EXIT DEVICE PUSH BAR.

HW SET: AL-02
DOOR NUMBER: (Includes but is not limited to the following doors)
110C-1 110U-6 P200D

EACH TO HAVE:

1	EA	POWER TRANSFER	EPT-10	689	VON
1	EA	CONTINUOUS HINGE	112HD EPT	628	IVE
1	EA	PANIC HARDWARE	QEL-RX-LX-98NL 990NL	626	VON
1	EA	RIM CYLINDER	34 LJ 0-BITTED	626	SAR
1	EA	AUTO-EQUALIZER	4642 REG FC CS	689	LCN
1	EA	OVERHEAD STOP	100S-ADJ	630	GLY
1	EA	POWER SUPPLY	PS902-2Q	GRY	VON
1	EA	DOOR POSITION SWITCH	679-05		SCE
1	EA	ACTUATOR, JAMB MOUNT	8310-818		LCN

1	EA	ACTUATOR, WALL MOUNT	8310-853		LCN
1	EA	SMART CARD READER	SXF1100	BLK	SCE
1			REF DIV 28 FOR ACCESS CONTROL COMPONENTS		
1			THRESHOLD AND PERIMETER SEAL BY DOOR MFG		

EXIT DEVICE IS ELECTRONICALLY DOGGED FOR PUSH/PULL OPERATION FOR NORMAL OPERATING HOURS. AFTER HOURS ENTRANCE BY CARD READER. USER PRESENTS CREDENTIAL, EXIT DEVICE LATCH RETRACTS, AUTO OPERATOR OPENS DOOR. EXTERIOR ACTUATOR TURNED OFF/ON THROUGH TIME/CALENDAR FEATURE OF SECURITY SYSTEM. DOOR POSITION MONITORED BY SECURITY SYSTEM. COORDINATE LOCATION OF CARD READER WITH ARCHITECT. ADA OPERATOR FUNCTIONS IN CONCERT WITH INTERIOR OPERATOR. TIMING OF OPERATORS TO BE DETERMINED BY OWNER.

HW SET: AL-03
DOOR NUMBER: (Includes but is not limited to the following doors)
100B-1

EACH TO HAVE:

2	EA	POWER TRANSFER	EPT-10	689	VON
2	EA	CONTINUOUS HINGE	112HD EPT	628	IVE
1	EA	MULLION	KR4954	689	VON
1	EA	PANIC HARDWARE	QEL-RX-98DT 990DT	626	VON
1	EA	PANIC HARDWARE	QEL-RX-LX-98NL 990NL	626	VON
1	EA	RIM CYLINDER	34 LJ 0-BITTED	626	SAR
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	SURFACE CLOSER	4040XP HEDA X 18PA	689	LCN
1	EA	AUTO-EQUALIZER	4642 REG FC CS	689	LCN
2	EA	OVERHEAD STOP	100S-ADJ	630	GLY
1	EA	POWER SUPPLY	PS902-2Q	GRY	VON
2	EA	DOOR POSITION SWITCH	679-05		SCE
1	EA	ACTUATOR, JAMB MOUNT	8310-818		LCN
1	EA	ACTUATOR, WALL MOUNT	8310-853		LCN
1	EA	BOLLARD POST	8310-866		LCN
1	EA	SMART CARD READER	SXF1100	BLK	SCE
1			REF DIV 28 FOR ACCESS CONTROL COMPONENTS		
1			THRESHOLD AND PERIMETER SEAL BY DOOR MFG		

EXIT DEVICES ARE ELECTRONICALLY DOGGED FOR PUSH/PULL OPERATION FOR NORMAL OPERATING HOURS. AFTER HOURS ENTRANCE BY CARD READER. USER PRESENTS CREDENTIAL, EXIT DEVICE LATCH RETRACTS, AUTO OPERATOR OPENS DOOR. EXTERIOR ACTUATOR TURNED OFF/ON THROUGH TIME/CALENDAR FEATURE OF SECURITY SYSTEM. DOOR POSITION MONITORED BY SECURITY SYSTEM. ADA OPERATOR FUNCTIONS IN CONCERT WITH INTERIOR OPERATOR. TIMING OF OPERATORS TO BE DETERMINED BY OWNER.

CARD READER TO BE LOCATED ON BOLLARD POST WITH EXTERIOR ACTUATOR. COORDINATE LOCATION OF BOLLARD POST WITH ARCHITECT.

HW SET: AL-04
DOOR NUMBER: (Includes but is not limited to the following doors)
100B-3 100B-5 110C-2

EACH TO HAVE:

2	EA	POWER TRANSFER	EPT-10	689	VON
2	EA	CONTINUOUS HINGE	112HD EPT	628	IVE
1	EA	MULLION	KR4954	689	VON
2	EA	PANIC HARDWARE	QEL-RX-98DT 990DT	626	VON
1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
2	EA	SURFACE CLOSER	4040XP HEDA X 18PA	689	LCN
2	EA	OVERHEAD STOP	100S-ADJ	630	GLY
1	EA	POWER SUPPLY	PS902-2Q	GRY	VON
2	EA	DOOR POSITION SWITCH	679-05		SCE
1			THRESHOLD AND PERIMETER SEAL BY DOOR MFG		

EXIT DEVICES ARE ELECTRONICALLY DOGGED FOR PUSH/PULL OPERATION FOR NORMAL OPERATING HOURS THROUGH SECURITY SYSTEM. DOOR POSITION MONITORED BY SECURITY SYSTEM. REQUEST TO EXIT IS IN EXIT DEVICE PUSH BAR.

HW SET: AL-05
DOOR NUMBER: (Includes but is not limited to the following doors)
110U-1

EACH TO HAVE:

2	EA	POWER TRANSFER	EPT-10	689	VON
2	EA	CONTINUOUS HINGE	112HD EPT	628	IVE
1	EA	MULLION	KR4954	689	VON
1	EA	PANIC HARDWARE	QEL-RX-98DT 990DT	626	VON
1	EA	PANIC HARDWARE	QEL-RX-LX-98NL 990NL	626	VON
1	EA	RIM CYLINDER	34 LJ 0-BITTED	626	SAR

1	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	SURFACE CLOSER	4040XP HEDA X 18PA	689	LCN
1	EA	AUTO-EQUALIZER	4642 REG FC CS	689	LCN
2	EA	OVERHEAD STOP	100S-ADJ	630	GLY
1	EA	POWER SUPPLY	PS902-2Q	GRY	VON
2	EA	DOOR POSITION SWITCH	679-05		SCE
1	EA	ACTUATOR, JAMB MOUNT	8310-818		LCN
1	EA	ACTUATOR, WALL MOUNT	8310-853		LCN
1	EA	SMART CARD READER	SXF1100	BLK	SCE
1			REF DIV 28 FOR ACCESS CONTROL COMPONENTS		
1			THRESHOLD AND PERIMETER SEAL BY DOOR MFG		

EXIT DEVICES ARE ELECTRONICALLY DOGGED FOR PUSH/PULL OPERATION FOR NORMAL OPERATING HOURS. AFTER HOURS ENTRANCE BY CARD READER. USER PRESENTS CREDENTIAL, EXIT DEVICE LATCH RETRACTS, AUTO OPERATOR OPENS DOOR. EXTERIOR ACTUATOR TURNED OFF/ON THROUGH TIME/CALENDAR FEATURE OF SECURITY SYSTEM. DOOR POSITION MONITORED BY SECURITY SYSTEM. ADA OPERATOR FUNCTIONS IN CONCERT WITH INTERIOR OPERATOR. TIMING OF OPERATORS TO BE DETERMINED BY OWNER.

CARD READER TO BE LOCATED ON BOLLARD POST WITH EXTERIOR ACTUATOR. COORDINATE LOCATION OF BOLLARD POST WITH ARCHITECT.

HW SET: AL-06
DOOR NUMBER: (Includes but is not limited to the following doors)
228-1 **228A-1**

EACH TO HAVE:

2	EA	CONTINUOUS HINGE	112HD	628	IVE
1	EA	MULLION	KR4954	689	VON
1	EA	PANIC HARDWARE	CD98DT 990DT	626	VON
1	EA	PANIC HARDWARE	CD98NL 990NL	626	VON
1	EA	RIM CYLINDER	34 LJ 0-BITTED	626	SAR
3	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
2	EA	SURFACE CLOSER	4040XP HEDA X 18PA	689	LCN
2	EA	OVERHEAD STOP	100S-ADJ	630	GLY
2	EA	DOOR POSITION SWITCH	679-05		SCE
1			THRESHOLD AND PERIMETER SEAL BY DOOR MFG		

MECHANICALLY DOGGED EXIT DEVICES FOR PUSH/PULL OPERATION.

HW SET: AL-07
DOOR NUMBER: (Includes but is not limited to the following doors)
100-1 P200E2

EACH TO HAVE:

2	EA	CONTINUOUS HINGE	112HD	628	IVE
2	EA	DUMMY TOUCH BAR	350	626	VON
2	EA	DOOR PULL	8105-0 TB	626	IVE
1	EA	SURFACE CLOSER	4040XP HEDA X TB	689	LCN
1	EA	AUTO-EQUALIZER	4642 REG FC CS	689	LCN
2	EA	OVERHEAD STOP	100S-ADJ	630	GLY
1	EA	ACTUATOR, JAMB MOUNT	8310-818		LCN
1			PERIMETER SEAL BY DOOR MFG		

USER PUSHES ACTUATOR, AUTO OPERATOR OPENS DOOR. OPERATOR FUNCTIONS IN CONCERT WITH EXTERIOR OPERATOR. TIMING OF OPERATORS TO BE DETERMINED BY OWNER.

HW SET: AL-08
DOOR NUMBER: (Includes but is not limited to the following doors)
110C-4

EACH TO HAVE:

1	EA	CONTINUOUS HINGE	112HD	628	IVE
1	EA	DUMMY TOUCH BAR	350	626	VON
1	EA	DOOR PULL	8105-0 TB	626	IVE
1	EA	AUTO-EQUALIZER	4642 REG FC CS	689	LCN
1	EA	OVERHEAD STOP	100S-ADJ	630	GLY
1	EA	ACTUATOR, JAMB MOUNT	8310-818		LCN
1			PERIMETER SEAL BY DOOR MFG		

USER PUSHES ACTUATOR, AUTO OPERATOR OPENS DOOR. OPERATOR FUNCTIONS IN CONCERT WITH EXTERIOR OPERATOR. TIMING OF OPERATORS TO BE DETERMINED BY OWNER.

HW SET: AL-09
DOOR NUMBER: (Includes but is not limited to the following doors)
100-3 100-5 110C-5 200A-3 P200A

EACH TO HAVE:

2	EA	CONTINUOUS HINGE	112HD	628	IVE
2	EA	DUMMY TOUCH BAR	350	626	VON
2	EA	DOOR PULL	8105-0 TB	626	IVE
2	EA	SURFACE CLOSER	4040XP HEDA X 18PA	689	LCN
2	EA	OVERHEAD STOP	100S-ADJ	630	GLY
1			PERIMETER SEAL BY DOOR MFG		

HW SET: AL-10
DOOR NUMBER: (Includes but is not limited to the following doors)
306-1 306-2

EACH TO HAVE:

1	EA	CONTINUOUS HINGE	112HD	628	IVE
1	EA	PANIC HARDWARE	35A-L 4'	626	VON
1	EA	RIM CYLINDER	34 LJ 0-BITTED	626	SAR
1	EA	SURFACE CLOSER	4040XP EDA X 18PA	689	LCN
1	EA	OVERHEAD STOP	100S-ADJ	630	GLY
1			PERIMETER SEAL BY DOOR MFG		

HW SET: AL-11
DOOR NUMBER: (Includes but is not limited to the following doors)
117-1 117P-1

EACH TO HAVE:

1	EA	CONTINUOUS HINGE	112HD	628	IVE
1	EA	PANIC HARDWARE	35A-L	626	VON
1	EA	RIM CYLINDER	34 LJ 0-BITTED	626	SAR
1	EA	SURFACE CLOSER	4040XP EDA X 18PA	689	LCN
1	EA	WALL STOP	WS407CCV	630	IVE
1			PERIMETER SEAL BY DOOR MFG		

HW SET: AL-12
DOOR NUMBER: (Includes but is not limited to the following doors)
101-1

EACH TO HAVE:

2	EA	CONTINUOUS HINGE	112HD	628	IVE
1	EA	MULLION	KR4954	689	VON
1	EA	PANIC HARDWARE	CD98DT 990DT	626	VON
1	EA	PANIC HARDWARE	CD98NL 990NL	626	VON

1	EA	RIM CYLINDER	34 LJ 0-BITTED	626	SAR
3	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
2	EA	SURFACE CLOSER	4040XP HEDA X 18PA	689	LCN
2	EA	OVERHEAD STOP	100S-ADJ	630	GLY
1			THRESHOLD AND PERIMETER SEAL BY DOOR MFG		

HW SET: AL-13
DOOR NUMBER: (Includes but is not limited to the following doors)
101-2

EACH TO HAVE:

2	EA	CONTINUOUS HINGE	112HD	628	IVE
1	EA	MULLION	KR4854	689	VON
1	EA	PANIC HARDWARE	CD98DT 990DT	626	VON
1	EA	PANIC HARDWARE	CD98NL 990NL	626	VON
1	EA	RIM CYLINDER	34 LJ 0-BITTED	626	SAR
3	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	ELECTRIC STRIKE	6111 FSE 24VDC	630	VON
2	EA	SURFACE CLOSER	4040XP HEDA X 18PA	689	LCN
2	EA	OVERHEAD STOP	100S-ADJ	630	GLY
1	EA	SMART CARD READER	SXF1100	BLK	SCE
1			POWER SUPPLY BY SECURITY INTEGRATOR		
1			REF DIV 28 FOR ACCESS CONTROL COMPONENTS		
1			THRESHOLD AND PERIMETER SEAL BY DOOR MFG		

CARD IN. USER PRESENTS CREDENTIAL, ELECTRIC STRIKE KEEPER RELEASES, USER OPENS DOOR TO ENTER. EXITING ALWAYS ALLOWED. COORDINATE LOCATION OF CARD READER WITH ARCHITECT.

HW SET: AL-14
DOOR NUMBER: (Includes but is not limited to the following doors)
211A-1

EACH TO HAVE:

1	SET	PIVOT SET	7255	626	IVE
2	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	DEADLOCK	MS1861-01 X DP STRIKE	628	ADA
1	SET	PUSH BARS	HANDLE A	630	BLU
1	EA	CONCEALED CLOSER	6030 BUMPER	689	LCN
2	EA	WALL STOP	WS407CCV	630	IVE

1			REMAINING HARDWARE COMPONENTS BY DOOR MFG		BLU

HW SET: AL-15
DOOR NUMBER: (Includes but is not limited to the following doors)
117-2

EACH TO HAVE:

1	EA		PIVOT AND FLOOR CLOSER W/ STOP BY DOOR MFG	626	BLU
2	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
1	EA	DEADLOCK	MS1861-01 X DP STRIKE	628	ADA
1	SET	PUSH BARS	HANDLE A	630	BLU
1			REMAINING HARDWARE COMPONENTS BY DOOR MFG		BLU

HW SET: AL-16
DOOR NUMBER: (Includes but is not limited to the following doors)
204-1 301-1

EACH TO HAVE:

1	EA	CONTINUOUS HINGE	112HD	313	IVE
1	EA	STD COMBINATED CORE	1C7- 2	626	BES
1	EA	DBL CYL DEADBOLT	83T7M STK (2-3/4" DBLT STRIKE)	613	BES
1	EA	DOOR PULL	8112-5	613	IVE
1	EA	CONCEALED CLOSER	2030 BUMPER	690	LCN
1			THRESHOLD AND PERIMETER SEAL BY DOOR MFG		

HW SET: AL-17
DOOR NUMBER: (Includes but is not limited to the following doors)
302-1 302-2 302-3

EACH TO HAVE:

2	EA		PIVOTS BY DOOR MFG	626	BLU
2	SET	POST PULLS	1-1/4" DIA X 12"	630	IVE
2	EA	CONCEALED CLOSER	2030 H BUMPER	689	LCN
1			REMAINING HARDWARE COMPONENTS BY DOOR MFG		BLU

HW SET: AL-18
DOOR NUMBER: (Includes but is not limited to the following doors)
P500D **P600G**

EACH TO HAVE:

1	EA	CONTINUOUS HINGE	112HD	628	IVE
1	EA	PANIC HARDWARE	98L-BE 996L-BE	626	VON
1	EA	SURFACE CLOSER	4040XP EDA X 18PA	689	LCN
1	EA	OVERHEAD STOP	100S-ADJ	630	GLY
1			THRESHOLD AND PERIMETER SEAL BY DOOR MFG		

HW SET: AL-19
DOOR NUMBER: (Includes but is not limited to the following doors)
100-6

EACH TO HAVE:

1	EA	CONTINUOUS HINGE	112HD	628	IVE
1	EA	PANIC HARDWARE	35A-EO	626	VON
1	EA	SURFACE CLOSER	4040XP HEDA X 18PA	689	LCN
1	EA	OVERHEAD STOP	100S-ADJ	630	GLY
1			PERIMETER SEAL BY DOOR MFG		

HW SET: AL-20
DOOR NUMBER: (Includes but is not limited to the following doors)
116-1

EACH TO HAVE:

1	EA	CONTINUOUS HINGE	112HD	628	IVE
1	EA	PANIC HARDWARE	35A-L	626	VON
1	EA	RIM CYLINDER	34 LJ 0-BITTED	626	SAR
1	EA	ELECTRIC STRIKE	6300 FSE	630	VON
1	EA	SURFACE CLOSER	4040XP EDA X 18PA	689	LCN
1	EA	WALL STOP	WS407CCV	630	IVE
1	EA	SMART CARD READER	SXF1100	BLK	SCE
1			POWER SUPPLY BY SECURITY INTEGRATOR		
1			REF DIV 28 FOR ACCESS CONTROL COMPONENTS		

CARD IN. USER PRESENTS CREDENTIAL, ELECTRIC STRIKE KEEPER RELEASES, USER

ENTERS DOOR.

HW SET: GL-01
DOOR NUMBER: (Includes but is not limited to the following doors)
122-1 222-1 223-1 224-1

EACH TO HAVE:

2	EA		PIVOTS AND HOLD OPEN CLOSERS BY DOOR MFG	626	BLU
2	EA	EXIT DEVICE	H-100-A	630	BLU
2	EA	MORTISE CYL	41 LJ 0-BITTED	626	SAR
2	EA	DOME STOP	FS436	626	IVE
1			REMAINING HARDWARE COMPONENTS BY DOOR MFG		BLU

DOORS MAY BE HELD IN OPEN POSITION WHEN AREA IS OPEN TO THE PUBLIC. AFTERN NORMAL OPERATION HOURS DOORS CLOSED AND LOCKED FOR ENTRANCE. EXITING IS ALWAYS ALLOWED.

MISC ITEMS

16	EA	INTERFACE BOARD	PIB300-2D X RLBD (1 REQ'D FOR 2 LOCKS)	SCE

HW SET: GL-02
DOOR NUMBER: (Includes but is not limited to the following doors)
3114-10 3114-11 3114-12 3114-13 3114-14 3114-15
3114-16 3114-17 3114-4 3114-5 3114-6 3114-7
3114-8 3114-9

EACH TO HAVE:

1	**EA**	**PIVOTS/CLOSER**	**PIVOTS/CLOSER BY DOOR MFG**		**B/O**
1	**EA**	**TOP PATCH FITTING**	**PS22 X 833.312**	**630**	**DOR**
1	**EA**	**BOTTOM PATCH FITTING**	**PT10 X 833.300**	**630**	**DOR**
1	**EA**	**W/C LOCKS**	**910.206 X 910.314**	**630**	**DOR**
1			**REMAINING HARDWARE BY DOOR MFG**		

END OF SECTION 087100

SECTION 088000 - GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:

1. Windows.
2. Doors.
3. Glazed curtain walls.
4. Storefront framing.
5. Glazed entrances.
6. Interior borrowed lites.
7. Architectural window films.

B. Related Sections:

1. Section 057300 "Decorative Metal Railings" for glass panels in railings.
2. Section 084126 "All-Glass Entrances and Storefronts."
3. Section 084413 "Glazed Aluminum Curtain Walls" for glazing sealants. Includes NFRC bid-certificate for assembly performance requirements.
4. Section 088300 "Mirrors."
5. Drawings, sheet AD-151 showing glazing at addition to existing vestibule.

1.3 DEFINITIONS

A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.

C. Interspace: Space between lites of an insulating-glass unit.

1.4 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Delegated Design: Design glass, including comprehensive engineering analysis according to ASTM E 1300 by a qualified professional engineer, using the following design criteria:

1. Wind Design Data: As indicated on Structural Sheets.
2. Vertical Glazing: For glass surfaces sloped 15 degrees or less from vertical, design glass to resist design wind pressure based on glass type factors for short-duration load.
3. Sloped Glazing: For glass surfaces sloped more than 15 degrees from vertical, design glass to resist each of the following combinations of loads:

    a. Outward design wind pressure minus the weight of the glass. Base design on glass type factors for short-duration load.
    b. Inward design wind pressure plus the weight of the glass plus half of the design snow load. Base design on glass type factors for short-duration load.
    c. Half of the inward design wind pressure plus the weight of the glass plus the design snow load. Base design on glass type factors for long-duration load.

4. Glass Type Factors for Wired, Patterned, and Sandblasted Glass:

    a. Short-Duration Glass Type Factor for Wired Glass: 0.5.
    b. Long-Duration Glass Type Factor for Wired Glass: 0.3.
    c. Short-Duration Glass Type Factor for Patterned Glass: 1.0.
    d. Long-Duration Glass Type Factor for Patterned Glass: 0.6.
    e. Short-Duration Glass Type Factor for Sandblasted Glass: 0.5.

5. Probability of Breakage for Sloped Glazing: For glass surfaces sloped more than 15 degrees from vertical, design glass for a probability of breakage not greater than 0.001.
6. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch, whichever is less.
7. Differential Shading: Design glass to resist thermal stresses induced by differential shading within individual glass lites.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

1.5 ACTION SUBMITTALS

A. Product Data: For each glass product and glazing material indicated.

B. LEED Submittals:

1. Product Data for Credit IEQ 4.1: For glazing sealants used inside the weatherproofing system, documentation including printed statement of VOC content.

C. Glass Samples: For each type of glass or combination of glass types; 12 inches square.

D. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

E. Delegated-Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.6 INFORMATIONAL SUBMITTALS

A. Product Certificates: For glass and glazing products, from manufacturer.

B. Warranties: Sample of special warranties.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications for Insulating-Glass Units with Sputter-Coated, Low-E Coatings: A qualified insulating-glass manufacturer who is approved and certified by coated-glass manufacturer.

B. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

C. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.

D. Source Limitations for Glass: Obtain tinted float glass, coated float glass and insulating glass from single source from single manufacturer for each glass type.

E. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.

F. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. GANA Publications: GANA's "Laminated Glazing Reference Manual" and GANA's "Glazing Manual."
2. AAMA Publications: AAMA GDSG-1, "Glass Design for Sloped Glazing," and AAMA TIR-A7, "Sloped Glazing Guidelines."
3. IGMA Publication for Sloped Glazing: IGMA TB-3001, "Guidelines for Sloped Glazing."
4. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

G. Fire-Protection-Rated Glazing Labeling: Permanently mark fire-protection-rated glazing with certification label of a testing agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, test standard, whether glazing is for use in fire doors or other openings, whether or not glazing passes hose-stream test, whether or not glazing has a temperature rise rating of 450 deg F, and the fire-resistance rating in minutes.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

B. Comply with insulating-glass manufacturer's written recommendations for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.9 PROJECT CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or below 40 deg F.

1.10 WARRANTY

A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer's standard form in which coated-glass manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.

1. Warranty Period: 10 years from date of Substantial Completion.

B. Manufacturer's Special Warranty on Laminated Glass: Manufacturer's standard form in which laminated-glass manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

1. Warranty Period: Five years from date of Substantial Completion.

C. Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form in which insulating-glass manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: 10 years from date of Substantial Completion for vertical applications.

2. Warranty Period: 5 years from date of Substantial Completion for sloped applications.

D. Manufacturers Special Warranty on Fully Tempered Glass that has been Heat Soaked: Warrants that heat soaked tempered glass will not break spontaneously as a result of Nickel Sulfide (NiS) inclusions at a rate exceeding 0.5% (5/1000) for a period of five years from the date of manufacturer.

PART 2 - PRODUCTS

2.1 GLASS PRODUCTS, GENERAL

A. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass lites in thicknesses as needed to comply with requirements indicated.

1. Minimum Glass Thickness for Exterior Lites: Not less than 6.0 mm.
2. Thickness of Tinted Glass: Provide same thickness for each tint color indicated throughout Project.

B. Strength: Where float glass is indicated, provide annealed float glass, Kind HS heat-treated float glass, or Kind FT heat-treated float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened glass is indicated, provide Kind HS heat-treated float glass or Kind FT heat-treated float glass as needed to comply with "Performance Requirements" Article. Where fully tempered glass is indicated, provide Kind FT heat-treated float glass.

C. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:

1. For monolithic-glass lites, properties are based on units with lites 6.0 mm thick.
2. For laminated-glass lites, properties are based on products of construction indicated.
3. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
4. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F.
5. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
6. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

2.2 GLASS PRODUCTS

A. Float Glass: ASTM C 1036, Type I, Quality-Q3, Class I (clear) unless otherwise indicated.

B. Heat-Treated Float Glass: ASTM C 1048; Type I; Quality-Q3; Class I (clear) unless otherwise indicated; of kind and condition indicated.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
2. For uncoated glass, comply with requirements for Condition A.
3. For coated vision glass, comply with requirements for Condition C (other coated glass).
4. Fully tempered (FT) glass shall be heat soak tested to eliminate the potential of spontaneous breakage due to nickel-sulfite inclusions.

C. Uncoated Tinted Float Glass: Class 2, complying with other requirements specified.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Guardian CrystalGray or approved equal.
2. Tint Color: Gray.
3. Visible Light Transmittance: 45 percent minimum (insulated panel).

D. Film-Faced Polished Wired Glass: ASTM C 1036, Type II, Class 1 (clear), Form 1, Quality-Q6 and complying with testing requirements in 16 CFR 1201 for Category II materials.

1. Mesh: M2 (square).

E. Ceramic-Coated Spandrel Glass: ASTM C 1048, Condition B, Type I, Quality-Q3, and complying with other requirements specified.

1. Glass: Clear float .
2. Ceramic Coating Color: As selected by Architect from manufacturer's full range .

F. Tinted Ceramic-Coated Spandrel Glass: ASTM C 1048, Condition B, Type I, Quality-Q3, and complying with other requirements specified.

1. Glass: Tinted float.
2. Tint Color: Gray.
3. Ceramic Coating Color: As selected by Architect from manufacturer's full range.

2.3 LAMINATED GLASS

A. Laminated Glass: ASTM C 1172, and complying with testing requirements in 16 CFR 1201 for Category II materials, and with other requirements specified. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.

1. Construction: Laminate glass with polyvinyl butyral interlayer to comply with interlayer manufacturer's written recommendations.
2. Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.
3. Interlayer Color: Clear unless otherwise indicated.

B. Glass: Comply with applicable requirements in "Glass Products" Article as indicated by designations in "Laminated-Glass Types" Article.

2.4 INSULATING GLASS

A. Manufacturers: Subject to compliance with requirements.

B. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190, and complying with other requirements specified.

1. Sealing System: Dual seal, with manufacturer's standard primary and secondary.
2. Spacer: Stainless steel with Thermal Conductivity Equivalent performance value (Keff) of 0.578 Btu/h/h-ft-f.
3. Desiccant: Molecular sieve or silica gel, or blend of both.

C. Glass: Comply with applicable requirements in "Glass Products" Article and in "Laminated Glass" Article as indicated by designations in "Insulating-Glass Types" Article and in "Insulating-Laminated-Glass Types" Article.

2.5 GLAZING GASKETS

A. Dense Compression Gaskets: Molded or extruded gaskets of profile and hardness required to maintain watertight seal, made from the following:

1. Neoprene complying with ASTM C 864.
2. EPDM complying with ASTM C 864.
3. Silicone complying with ASTM C 1115.
4. Thermoplastic polyolefin rubber complying with ASTM C 1115.

2.6 GLAZING SEALANTS

A. General:

1. Compatibility: Provide glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
3. Sealants used inside the weatherproofing system, shall have a VOC content of not more than 250 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Glazing Sealants for Fire-Rated Glazing Products: Products that are approved by testing agencies that listed and labeled fire-resistant glazing products with which they are used for applications and fire-protection ratings indicated.

2.7 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:

1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
2. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

2.8 GLAZING FILM

A. Architectural Window Film: Subject to compliance with requirements, provide 3M Fasara Glace or approved equal.

2.9 SINGLE POINT GLASS TO WALL CONNECTOR

A. **Manufacturer: Subject to compliance with requirements, provide Dorma - Manet Concept Glass / Wall fitting with 60mm connecting arm or equal**.

2.10 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

G. Perimeter Insulation for Fire-Resistive Glazing: Product that is approved by testing agency that listed and labeled fire-resistant glazing product with which it is used for application and fire-protection rating indicated.

2.11 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.

C. Grind smooth and polish exposed glass edges and corners.

2.12 MONOLITHIC-GLASS TYPES

A. Glass Type SG-1 & SG-1T: Clear heat-strengthened float glass or fully tempered float glass.

1. Thickness: 6.0 mm.
2. Provide safety glazing labeling.

B. Glass Type SG-2 & SG-2T: Clear heat-strengthened float glass or fully tempered float glass.

1. Thickness: Meet performance requirements.

C. Glass Type SG-2E: Simulated acid-etched clear heat-strengthened float glass or fully tempered float glass.

1. Thickness: Meet performance requirements.
2. Basis of Design; Subject to compliance with requirements, provide Viracon V-1085 frit.

D. Glass Type SG-3T: Clear fully tempered float glass.

1. Thickness: 10.0 mm.

2.13 LAMINATED-GLASS TYPES

A. Glass Type LG-1: Clear laminated glass with two plies of fully tempered float glass.

1. Thickness: 13/16”
2. Interlayer Thickness: 0.060 inch.

B. Glass Type LG-2: Custom Laminated Mirror.

1. Laminated assembly including frosted, mirrored and clear sections as indicated in Drawings.
2. Thickness: 11/16”
3. Basis of Design: Subject to compliance with requirements, provide product from GlasPro Company of Santa Fe Springs, California or approved equal.

2.14 INSULATING-GLASS TYPES

A. Glass Type IG-1 & IG-1T: Low-e coated, clear insulating glass.

1. Overall Unit Thickness: 1 inch.
2. Thickness of Each Glass Lite: 6.0 mm.
3. Outdoor Lite: Heat-strengthened float glass or Fully tempered float glass as indicated or required by authorities have jurisdiction.
4. Interspace Content: Air.
5. Indoor Lite: Heat-strengthened float glass or Fully tempered float glass as indicated or required by authorities have jurisdiction.
6. Low-E Coating: Pyrolytic or sputtered on second surface.
7. Visible Light Transmittance: 62 percent minimum.
8. Winter Nighttime U-Factor: .29 maximum.
9. Summer Daytime U-Factor: .26 maximum.
10. Solar Heat Gain Coefficient: .29 maximum.
11. Basis of Design: Subject to compliance with requirements, provide Viracon VNE1-63.

B. Glass Type IG-1A & IG-1AT: Clear insulating Glass

1. **Overall Unit Thickness: 1 inch.**
2. **Thickness of Each Glass Lite: 6.0 mm.**
3. **Outdoor Lite: Heat-strengthened float glass or Fully tempered float glass as indicated or required by authorities have jurisdiction.**
4. **Interspace Content: Air.**
5. **Indoor Lite: Heat-strengthened float glass or Fully tempered float glass as indicated or required by authorities have jurisdiction.**

C. Glass Type IG-1S: Low-e, clear insulating spandrel unit within IG-1 and IG-1T areas.

1. Overall Unit Thickness: 1 inch.
2. Thickness of Each Glass Lite: 6.0 mm.
3. Indoor Lite: Heat-strengthened float glass or Fully tempered float glass as indicated or required by authorities have jurisdiction.
4. Interspace Content: Air.
5. Outdoor Lite: Heat-strengthened float glass or Fully tempered float glass as indicated or required by authorities have jurisdiction with.
6. Low-E Coating: Pyrolytic or sputtered on second surface.
7. Opaque coating Location: Forth surface.

D. Glass Type IG-1E: Low-e, simulated acid-etched insulating glass.

1. Overall Unit Thickness: 1 inch.
2. Thickness of Each Glass Lite: 6.0 mm.
3. Indoor Lite: Heat-strengthened float glass with simulated acid etch frit (#3 surface)
   Basis of Design: Subject to compliance with requirements, provide Viracon V-1085 frit.
4. Interspace Content: Air.
5. Outdoor Lite: Heat-strengthened float glass.
6. Low-E Coating: Pyrolytic or sputtered on second surface.
7. Winter Nighttime U-Factor: .29 maximum.
8. Summer Daytime U-Factor: .26 maximum.
9. Solar Heat Gain Coefficient: .29 maximum.

E. Glass Type IG-2 & IG-2T: Low-e coated, tinted insulating glass.

1. Overall Unit Thickness: 1 inch.
2. Thickness of Each Glass Lite: 6.0 mm.
3. Outdoor Lite: Tinted heat-strengthened float glass or fully tempered float glass as indicated or required by authorities have jurisdiction.
4. Interspace Content: Air.
5. Indoor Lite: Clear heat-strengthened float glass or fully tempered float glass as indicated or required by authorities have jurisdiction.
6. Low-E Coating: Pyrolytic or sputtered on second surface.
7. Visible Light Transmittance: 45 percent minimum.
8. Winter Nighttime U-Factor: .29 maximum.
9. Summer Daytime U-Factor: .26 maximum.
10. Solar Heat Gain Coefficient: .23 maximum.
11. Basis of Design: Subject to compliance with requirements, provide Viracon VNE19-63.

F. Glass Type IG-2S: Low-e, tinted insulating spandrel unit within IG-2 and IG-2T areas.

1. Overall Unit Thickness: 1 inch.
2. Thickness of Each Glass Lite: 6.0 mm.
3. Outdoor Lite: Tinted heat-strengthened float glass or fully tempered float glass as indicated or required by authorities have jurisdiction.
4. Interspace Content: Air.
5. Indoor Lite: Clear heat-strengthened float glass or fully tempered float glass as indicated or required by authorities have jurisdiction with.
6. Low-E Coating: Pyrolytic or sputtered on second surface.
7. Opaque coating Location: Forth surface.

2.15 INSULATING-LAMINATED-GLASS TYPES

A. Glass Type IG-3L: Low-e-coated, clear insulating laminated glass.

1. Overall Unit Thickness: 1-3/16 inch.
2. Thickness of Outdoor Lite: 6.0 mm.
3. Outdoor Lite: Heat-strengthened float glass.
4. Interspace Content: Air (3/8”)
5. Indoor Lite: Clear laminated glass with two plies of fully tempered float glass.

   a. Thickness of Each Glass Ply: 6.0 mm.
   b. Interlayer Thickness: 0.060 inch.

6. Low-E Coating: Pyrolytic or sputtered on second surface.
7. Visible Light Transmittance: 61 percent minimum.
8. Solar Heat Gain Coefficient: .29 maximum.
9. U Value: .31maximum.

B. Glass Type IG-4L: Low-e-coated, tinted, insulating laminated glass.

1. Overall Unit Thickness: 1-3/16 inch.
2. Thickness of Outdoor Lite: 6.0 mm.
3. Outdoor Lite: Tinted heat-strengthened float glass.
4. Interspace Content: Air. (3/8”)
5. Indoor Lite: Clear laminated glass with two plies of fully tempered float glass.

   a. Thickness of Each Glass Ply: 6.0 mm.
   b. Interlayer Thickness: 0.060 inch.

6. Low-E Coating: Pyrolytic or sputtered on second third surface.
7. Visible Light Transmittance: 45 percent minimum.
8. Solar Heat Gain Coefficient: .24 maximum.

9. U Value: .31maximum.

2.16 FIRE-PROTECTION-RATED GLAZING TYPES

A. Glass Type F-1: 90-minute fire-rated glazing provided by door manufacturer. See 088810 Special Fire Rated Door and Frame Assembly.

2.17 EXAMINATION

A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:

1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
2. Presence and functioning of weep systems.
3. Minimum required face and edge clearances.
4. Effective sealing between joints of glass-framing members.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

2.18 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that will leave visible marks in the completed work.

2.19 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Adjust glazing channel dimensions as required by Project conditions during installation to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.

D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

G. Provide spacers for glass lites where length plus width is larger than 50 inches.

1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

J. Set glass lites with proper orientation so that coatings face exterior or interior as specified.

K. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

L. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

2.20 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until right before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant.

G. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

H. Apply cap bead of elastomeric sealant over exposed edge of tape.

2.21 GASKET GLAZING (DRY)

A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

C. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

D. Install gaskets so they protrude past face of glazing stops.

2.22 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

2.23 CLEANING AND PROTECTION

A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels and clean surfaces.

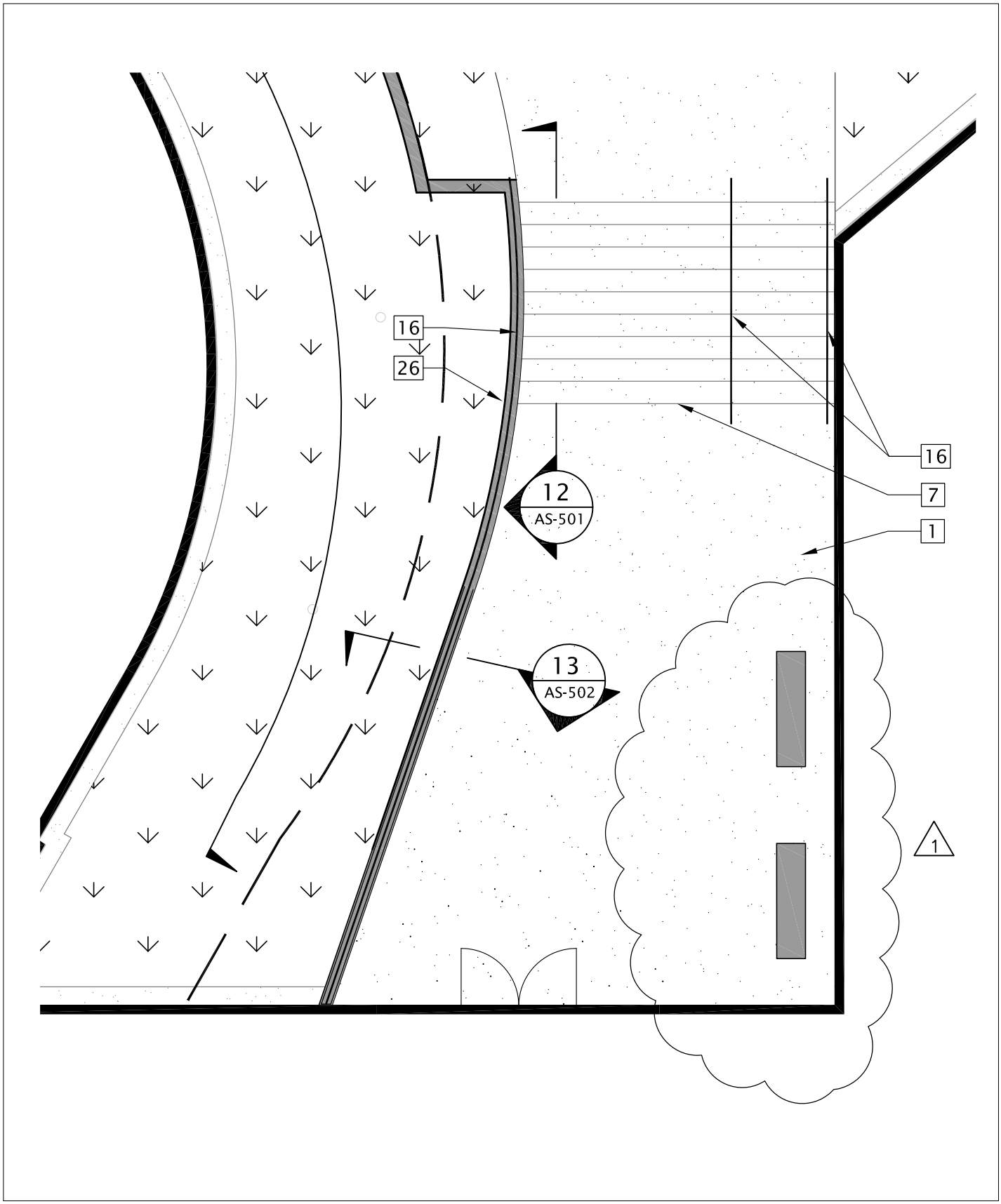
B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer.

C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.

D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

E. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

END OF SECTION 088000



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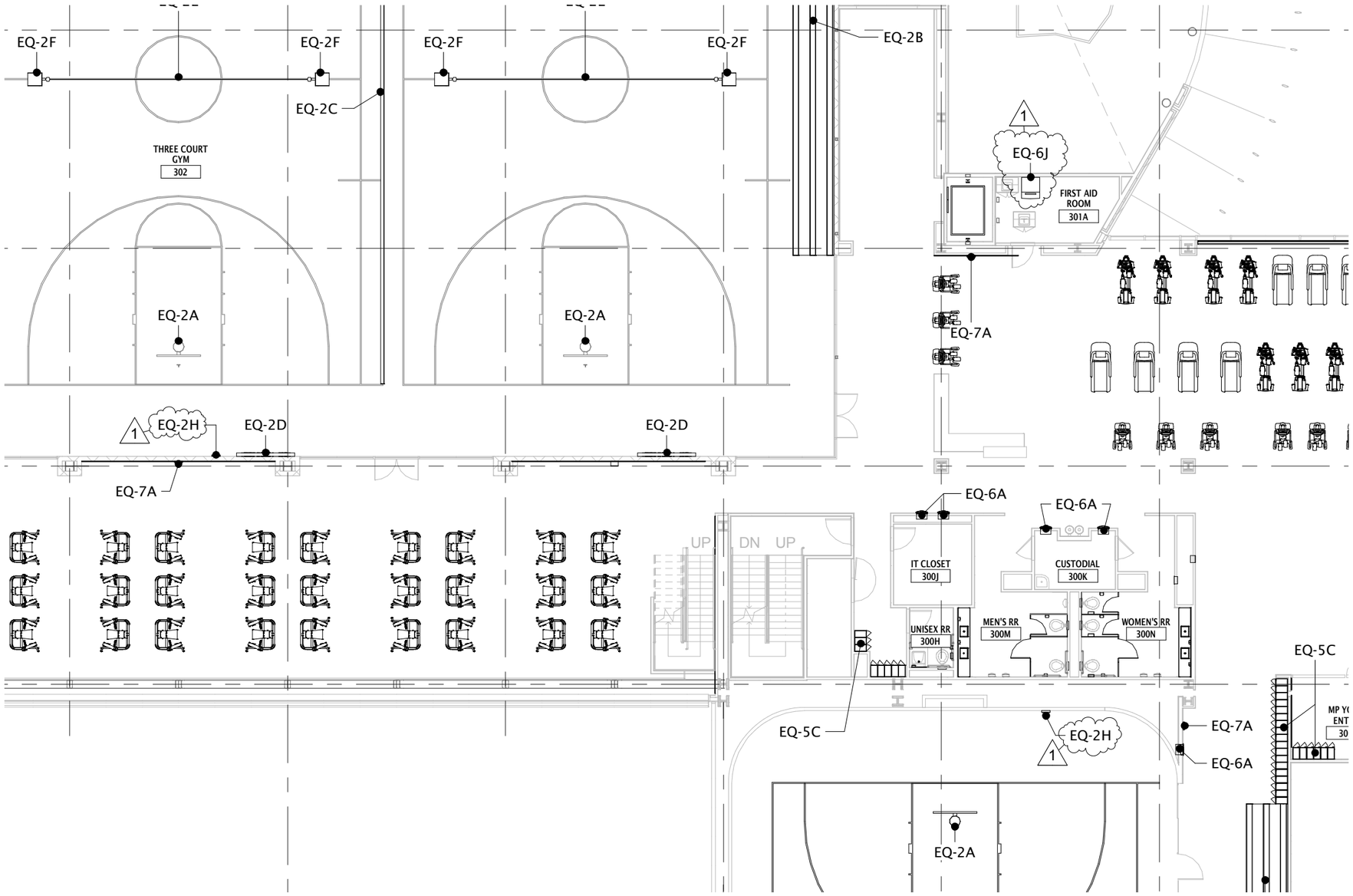
AS-103-01

DFCM PROJECT NO.: #10289790
GSBS PROJECT NO.: 2011.045.00
ISSUED DATE: 05/09/12



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BY: TY

AE-153-01

DFCM PROJECT NO.:	#10289790
GSBS PROJECT NO.:	2011.045.00
ISSUED DATE:	05/09/12

GYM EQUIPMENT - GYM DIVIDER CURTAIN (ALTERNATE #2)

EQ-2C	302	THREE COURT GYM	2	GC	GC	POWER		PROVIDE POWER IN BASE BID, ONLY DIVIDER CURTAIN IS AN ALTERNATE
			2					

1

GYM EQUIPMENT - LARGE CLOCK W/ WIRE CAGE

EQ-2H	302	THREE COURT GYM	1	GC	GC	BATTERY		CONNECTS TO MASTER CLOCK
EQ-2H	306	MAC GYM	1	GC	GC	BATTERY		CONNECTS TO MASTER CLOCK
			2					

GYM EQUIPMENT - SCOREBOARD

EQ-2D	302	THREE COURT GYM	6	OWNER	GC	POWER, DATA	Daktronics BB-2101	GC TO COORDINATE LOCATION OF SERVICES
EQ-2D	306	MAC GYM	2	OWNER	GC	POWER, DATA	Daktronics BB-2101	GC TO COORDINATE LOCATION OF SERVICES
			8					

GYM EQUIPMENT - VOLLEYBALL EQUIPMENT (3 COURT GYM)

EQ-2E	302	THREE COURT GYM	3	OWNER	OWNER	NONE	SLEEVES ARE SA SPORT 214VB	2 SLEEVES PER SET, CONTRACTOR TO COORDINATE LOCATION OF SLEAVES FOR POSTS
			3					

GYM EQUIPMENT - VOLLEYBALL EQUIPMENT (MAC GYM)

1

EQ-2G	306	MAC GYM	1	OWNER	OWNER	NONE	SLEEVES ARE SA SPORT 209	2 SLEEVES PER SET, CONTRACTOR TO COORDINATE LOCATION OF SLEAVES FOR POSTS
			1					

GYM EQUIPMENT - VOLLEYBALL JUDGES STAND

EQ-2F	302	THREE COURT GYM	6	OWNER	OWNER	NONE		
EQ-2F	306	MAC GYM	2	OWNER	OWNER	NONE		
			8					

MISC EQUIPMENT - FIRE EXTINGUISHER AND CABINET, RECESSED

EQ-6B	300	CIRCULATION	2	GC	GC	NONE		
			2					

MISC EQUIPMENT - FIRE EXTINGUISHER AND CABINET, SURFACE MOUNT

EQ-6C	300	CIRCULATION	3	GC	GC	NONE		
EQ-6C	302	THREE COURT GYM	1	GC	GC	NONE		
			4					

1

MISC EQUIPMENT - ICE MAKER

EQ-6J	301A	FIRST AID ROOM	1	OWNER	OWNER	POWER, WATER, DRAIN		
			1					

OFFICE EQUIPMENT - CLOCK, WALL MOUNTED

EQ-7A	300	CIRCULATION	2	GC	GC	BATTERY		CONNECTS TO MASTER CLOCK
EQ-7A	301	CARDIO THEATER	1	GC	GC	BATTERY		CONNECTS TO MASTER CLOCK
EQ-7A	305A	MP STUDIO YOGA/PILATES	1	GC	GC	BATTERY		CONNECTS TO MASTER CLOCK
EQ-7A	307	MP STUDIO SPINNING	1	GC	GC	BATTERY		CONNECTS TO MASTER CLOCK
EQ-7A	309A	MP STUDIO OPEN	1	GC	GC	BATTERY		CONNECTS TO MASTER CLOCK
EQ-7A	311	MP ROOM - DANCE 1	1	GC	GC	BATTERY		CONNECTS TO MASTER CLOCK
EQ-7A	312	MP ROOM - DANCE 2	1	GC	GC	BATTERY		CONNECTS TO MASTER CLOCK
			8					

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OREM, UT 84058

DFCM
4110 STATE OFFICE BUILDING
SALT LAKE CITY, UT 84112

REV.: Addendum-03
BY: TY

AE-153-02

DFCM PROJECT NO.: #10289790
GSBS PROJECT NO.: 2011.045.00
ISSUED DATE: 05/09/12

GLAZING LEGEND	
GLAZING TYPE	DESCRIPTION
FG-1T	1 1/2" CLEAR FIRE RATED
IG-1	1" INSUL. CLEAR - HIGH PERFORMANCE
IG-1A	1" INSUL. CLEAR
IG-1AT	1" INSUL. CLEAR TEMPERED
IG-1S	1" INSUL. CLEAR SPANDREL
IG-1T	1" INSUL. CLEAR TEMPERED - HIGH PERFORMANCE
IG-2	1" INSUL. TINTED
IG-2S	1" INSUL. TINTED SPANDREL
IG-2T	1" INSUL. TINTED TEMPERED
IG-3L	13/16" INSUL. CLEAR LAMINATED
LG-1	13/16" CLEAR LAMINATED
LG-2	11/16" CUSTOM LAMINATED MIRROR
SG-1	1/4" CLEAR
SG-1T	1/4" CLEAR TEMPERED
SG-2	CLEAR
SG-2E	CLEAR ETCHED
SG-2ET	CLEAR ETCHED TEMPERED
SG-2T	CLEAR TEMPERED
SG-3T	1/2" CLEAR TEMPERED

2

2

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DFCM

4110 STATE OFFICE BUILDING
SALT LAKE CITY, UT 84112

REV.: Addendum-03
BY: AK

AE-605-05

DFCM PROJECT NO.: #10289790
GSBS PROJECT NO.: 2011.045.00
ISSUED DATE: 05/09/12

2	311-1	SNGL	2' - 11 1/2"	8' - 0"	1 3/4"		D1b	WD	-	ST	67		-	AL			CL	-		
	311A-1	SNGL	3' - 0"	7' - 0"	1 3/4"		D1	WD	-	ST	35	2"	F1	HM		4 3/8"	PT	-		CARD READER
	311A-4	SNGL	3' - 0"	7' - 0"			D5a	GLS	SG-2ET		GL-02									GLASS SHOWER DOOR
	311A-5	SNGL	3' - 0"	7' - 0"			D5a	GLS	SG-2ET		GL-02									GLASS SHOWER DOOR
	311A-6	SNGL	3' - 0"	7' - 0"			D5a	GLS	SG-2ET		GL-02									GLASS SHOWER DOOR
	311A-7	SNGL	3' - 0"	7' - 0"			D5a	GLS	SG-2ET		GL-02									GLASS SHOWER DOOR
	311A-8	SNGL	3' - 0"	7' - 0"			D5a	GLS	SG-2ET		GL-02									GLASS SHOWER DOOR
	311A-9	SNGL	3' - 0"	7' - 0"			D5a	GLS	SG-2ET		GL-02									GLASS SHOWER DOOR
	311A-10	SNGL	3' - 0"	7' - 0"			D5a	GLS	SG-2ET		GL-02									GLASS SHOWER DOOR
	311A-11	SNGL	3' - 0"	7' - 0"			D5a	GLS	SG-2ET		GL-02									GLASS SHOWER DOOR
	311A-12	SNGL	3' - 0"	7' - 0"			D5a	GLS	SG-2ET		GL-02									GLASS SHOWER DOOR
	311A-13	SNGL	3' - 0"	7' - 0"			D5a	GLS	SG-2ET		GL-02									GLASS SHOWER DOOR
	311A-14	SNGL	3' - 0"	7' - 0"			D5a	GLS	SG-2ET		GL-02									GLASS SHOWER DOOR
	311A-15	SNGL	3' - 0"	7' - 0"			D5a	GLS	SG-2ET		GL-02									GLASS SHOWER DOOR
	311A-16	SNGL	3' - 0"	7' - 0"			D5a	GLS	SG-2ET		GL-02									GLASS SHOWER DOOR
	311A-17	SNGL	3' - 0"	7' - 0"			D5a	GLS	SG-2ET		GL-02									GLASS SHOWER DOOR
	312-1	SNGL	3' - 0"	8' - 0"	1 3/4"		D1b	WD		ST	67			AL			CL			

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DFCM

4110 STATE OFFICE BUILDING
SALT LAKE CITY, UT 84112

REV.: Addendum-03
BY: AK

AE-606

DFCM PROJECT NO.: #10289790
GSBS PROJECT NO.: 2011.045.00
ISSUED DATE: 05/09/12

Colvin Engineering Associates, Inc.
HIGH PERFORMANCE DESIGN

MECHANICAL PORTION OF ADDENDUM NO. 3

UVU SLC & Parking Structure

CEA PROJECT NO. 2011-009.00

May 9, 2012

All contractors submitting proposals for this project shall be governed by the following addendum, changes, and explanations to the bidding documents. Bids shall be submitted in accordance with the following:

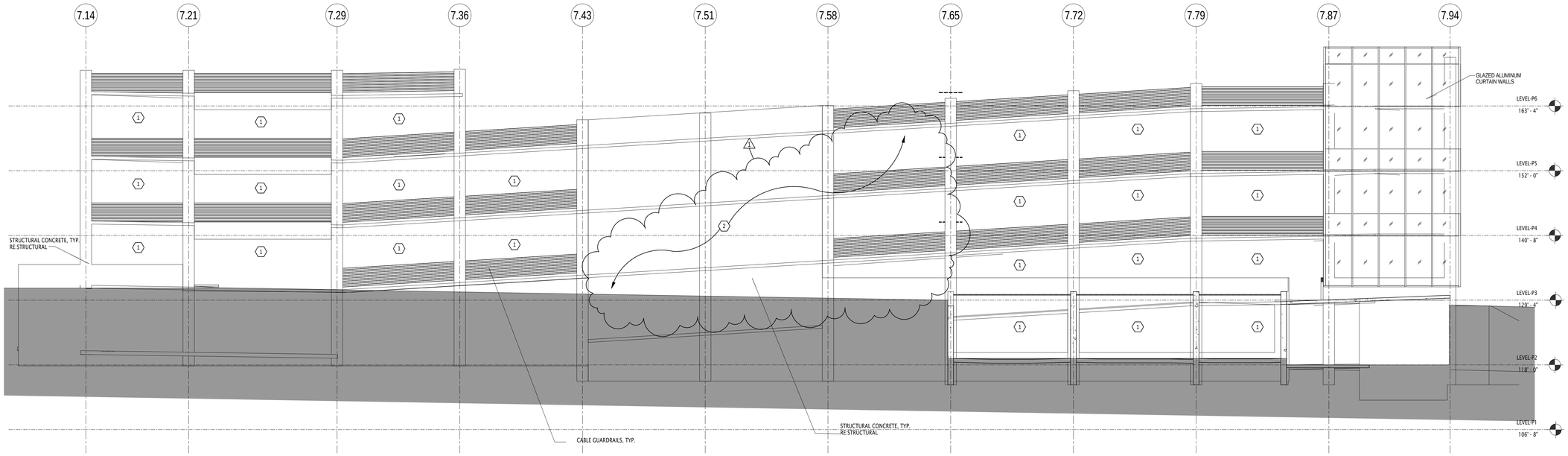
Item No.	Add, Delete or Clarify	Specification Section or Drawing No.	Reference / Description:
1	Clarify	232113	-Modify locations where thermometers are required in part 3.13. -Modify which systems receive propylene glycol and what concentration in part 3.17. -See modified specification text at the end of this narrative.
2	Clarify	MP2.01	-Modify data points associated with cooling tower electronic water level sensing system. -Change VFD controls interface to BACnet.
3	Add/Clarify	MH6.01	-Add EF-9 and EF-10. -Add SA-7 -Add L-6. -Add BCP-3 and BCP-4. -Clarify Inline Solids Separator schedule. -Clarify Air Handler schedule. -Clarify EF-2. -Clarify L-1.
4	Add	MH1.12A	-Add EF-9, L-6, and associated ductwork and accessories for Elevator A exhaust. -Ductwork and grilles serving 2-story space by gridlines 8.5 and 7.9 to 8.0.
5	Clarify	MH1.12A	-Keyed notes #11 and #14.
6	Clarify/Add	MH1.12B	-Keyed notes #1 and #2. -Add keyed note.
7	Add	MH1.12B	-Add VAV box #2-73 and associated reheat coil (RH-10), ductwork, and accessories. -Add SA-8 to inlet of FC-1. -Exhaust ductwork and associated accessories to exhaust Elevator C. -Add return grille in A Dean 201C.
8	Add	MP1.12B	-Add VAV box #2-73 and RH-10. Add associated piping and piping accessories for RH-10. -Add piping for reheat coils serving VAV box numbers 2-29 and 2-30.
9	Add	MH1.11B	-Add SA ductwork and associated accessories for FC-1. -Add keyed note at grease duct termination.

HVAC / Energy Efficient Solutions / CFD Modeling / Air Pollution Control
244 West 300 North, Suite 200 / Salt Lake City, Utah 84103-1147 / 801.322.2400 / FAX 801.322.2416

Item No.	Add, Delete or Clarify	Specification Section or Drawing No.	Reference / Description:
10	Clarify	FF3.01	-See revised east garage wall elevation that shows revised shear wall area and designations of wall openings that require opening protection.
11	Add/Clarify	230900	-See revisions to control sequences and the air handler sequence table. -Fire pump is being added as part of bid alternate for additional parking garage floor. Monitor points on fire pump system identified in revised sequence. This is only part of the bid alternate, not part of the base-bid. -See sequence changes at end of this narrative.
12	Add	211000 FF3.01	-Add a fire pump to the bid alternate for the additional floor of parking garage. -See revised shear wall and openings on sheet FF3.01.
13	Clarify	MH051	-Clarify Keyed Note 1, 2, and 3.
14	Clarify	MH1.13A	-Clarify UH-4 and UH-5 equipment tag. -Clarify floor grille equipment tag.
15	Delete/Clarify	MH1.13B	-Delete Keyed Note 1 -Add keyed note 6.
16	Add/Clarify	MH1.13C	-Add fire/smoke damper near Gridline G1.1-6.96 -Add EUH-2 -Clarify duct size.
17	Add/Clarify	MH1.14A	-Add control dampers CD-37 thru CD-42 -Clarify exhaust air duct.
18	Add/Delete	MH1.14B	-Add fire/smoke dampers. -Delete Keyed Note 1.
19	Clarify	MH1.14C	-Clarify ductwork for FC-9. -Clarify return air grille. -Clarify enlarged mechanical area.
20	Add	MH1.11C	-Add EF-10, associated ductwork, accessories for Elevator Machine Room 110V. -Add CUH-6 for stair heating. -Add view 2-Level 1 Mechanical zone C1.
21	Add/Delete	MH1.21	-Add exhaust fan EF-1 -Add 6” VTR. -Deleted exhaust fan near Gridline G2-7.0
22	Add/Clarify	MH4.01	-Add control dampers CD-43 thru CD-45. -Clarify HX-1. -Clarify 18/18 EA duct callout. -Clarify P-13 and P-14 equipment tag.
23	Add/Clarify	MH6.02	-Add Type 38 to Air Device schedule. -Add UH-15 and UH-16. -Clarify Air Device schedule.
24	Add/Clarify	MH6.03	-Add control dampers CD-34 thru CD-45. -Add EUH-2. -Add CUH-3 thru CUH-6. -Clarify Cabinet Unit Heater Schedule. -Clarify Boiler schedule. -Delete sound attenuator schedule.
27	Add	MP1.12C	-Add piping to reheat coils serving VAV boxes #2-37, #2-38, and #2-70.
28	Add	MH1.11A	-Add CUH-4, CUH5 and UH-15, UH-16 for stair and storage room heating. -Change EH-5 callout to RH-5. -Revise keyed notes.

Item No.	Add, Delete or Clarify	Specification Section or Drawing No.	Reference / Description:
29	Clarify	MH1.12C	-Add riser call out at exhaust duct. -Revise keyed note 12.
30	Add	MP1.11A	-Add piping riser size callouts. -Add piping to cabinet unit heaters and unit heater.
31	Clarify	PL1.11A	-Added notes to clarify existing conditions.
32	Add/Clarify	PL1.11B	-Add piping at sump pump. -Revise piping over wall.
33	Add	PL1.11C	-Add vent piping from interceptors. -Add isolation valves. -Add notes to clarify existing conditions. -Add piping from sump pumps.
34	Add	PL1.12A	-Add isolation valve.
35	Add	PL1.12B	-Add heat trace at deck drain piping. -Add isolation valves.
36	Add	PL1.12C	-Add interceptor vent piping. -Add notes to clarify connection to trench drain. -Add vent line to serve trench drain piping.
37	Clarify	PL1.13B	-Revise routing to floor sink. -Add keyed note to offset.
38	Add	PL1.13C	-Add vent riser for interceptor vent. -Add keyed noted 2 on plan.
39	Add	PL1.14C	-Add interceptor vent piping.
40	Add	PL4.01	-Add isolation valves. -Add keyed note to gas regulator.
41	Clarify	MP1.10	-Route pipes through exterior wall at higher elevation. See attached drawing.
42	Add	PL4.02	-Add isolation valves.
43	Add	PL4.03	-Add keyed note to gas regulator. -Add isolation valves.
44	Add	PL4.04	-Add keyed note 4 to view 2.
45	Add	PL4.05	-Add isolation valves. -Add tags to DWV isometric.
46	Clarify	MP1.13C	-Clarify piping.

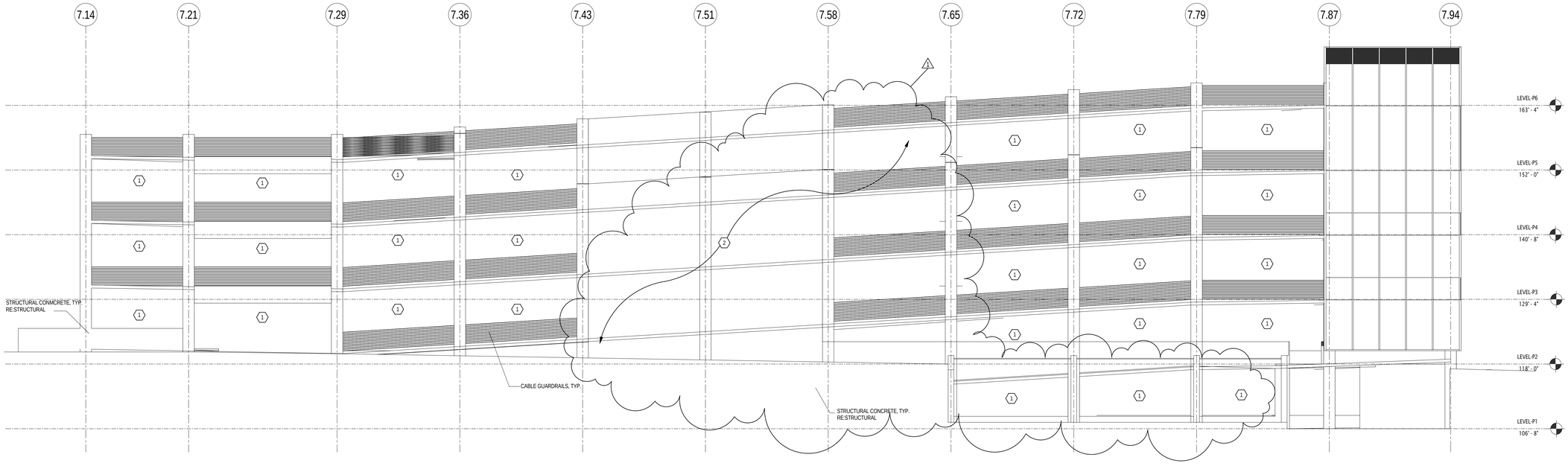
END OF MECHANICAL NARRATIVE FOR ADDENDUM NO. 3



1 FIRE PROTECTION ELEVATION - EAST

SCALE: 1/8" = 1'-0"

6' 0' 4' 8' 12' 16'



2 FIRE PROTECTION ELEVATION - EAST - BID ALTERNATE

SCALE: 1/8" = 1'-0"

6' 0' 4' 8' 12' 16'

KEYED NOTES

1. PROVIDE EXPOSURE PROTECTION AT ALL OPENINGS IN THE EAST WALL OF THE PARKING GARAGE. EXPOSURE PROTECTION SHALL CONSIST OF DRY SYSTEM SPRINKLER HEADS INSTALLED INSIDE THE GARAGE, LOCATED 4" TO 12" OFF THE INSIDE FACE OF THE EAST WALL AND SPACED 6 FEET ON CENTER.
2. NO OPENINGS IN SHEAR WALL.

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REVISIONS:

1	05.09.2012	ADDENDUM 3

LICENSED PROFESSIONAL ENGINEER
NO. 7300766
Roger Lee. Hamlet JR.
04-27-2011
State of Utah

STUDENT LIFE CENTER & PARKING STRUCTURE

Orem, Utah

UTAH VALLEY UNIVERSITY

DRAWN BY:	JMN
CHECKED BY:	RLH
OWNER PROJECT NO.:	
GSBS PROJECT NO.:	2011.045.00
ISSUED DATE:	04.27.2012

FIRE PROTECTION EAST ELEVATIONS

CONSTRUCTION DOCUMENTS

FF3.01

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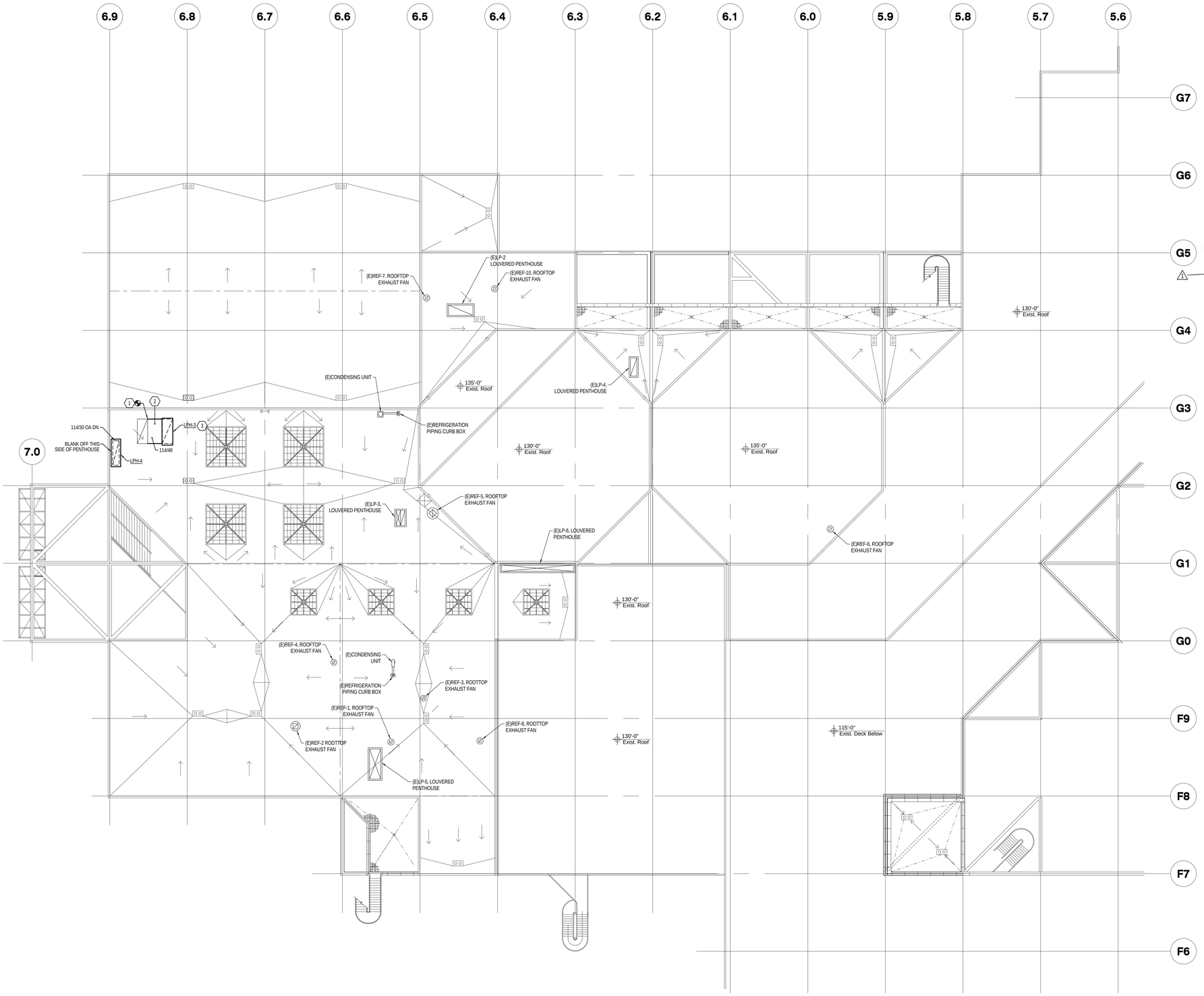

KEYED NOTES

1. 114/48 DUCT DOWN WITH TURNING VANES TO EXISTING RELIEF AIR DAMPER.
2. ROUTE 114/48 RELIEF AIR DUCTWORK ON ROOF TO LOUVERED PENTHOUSE. SEE ARCHITECTURAL DRAWINGS FOR INTEGRATION INTO ROOFING MEMBRANE.
3. TURN 114/48 RELIEF AIR DUCT UP WITH TURNING VANES 12". TERMINATE WITH FLANGED FITTING. LOUVERED PENTHOUSE TO BE ATTACHED TO THIS FLANGE.

1 EXISTING SORENSEN ROOF MECHANICAL PLAN

SCALE: 1/16" = 1'-0"

12' 0' 8' 16' 24' 32'

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1	05.09.2012	ADDENDUM 3

LICENSED PROFESSIONAL ENGINEER NO. 7500 Roger Lee. Hamlet JR. 04-27-2011 State of Utah

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Orem, Utah

UTAH VALLEY UNIVERSITY

DRAWN BY:	JMN
CHECKED BY:	RLH
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GSBS PROJECT NO.:	2011.045.00
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EXISTING SORENSEN ROOF MECHANICAL PLAN

CONSTRUCTION DOCUMENTS

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MH051

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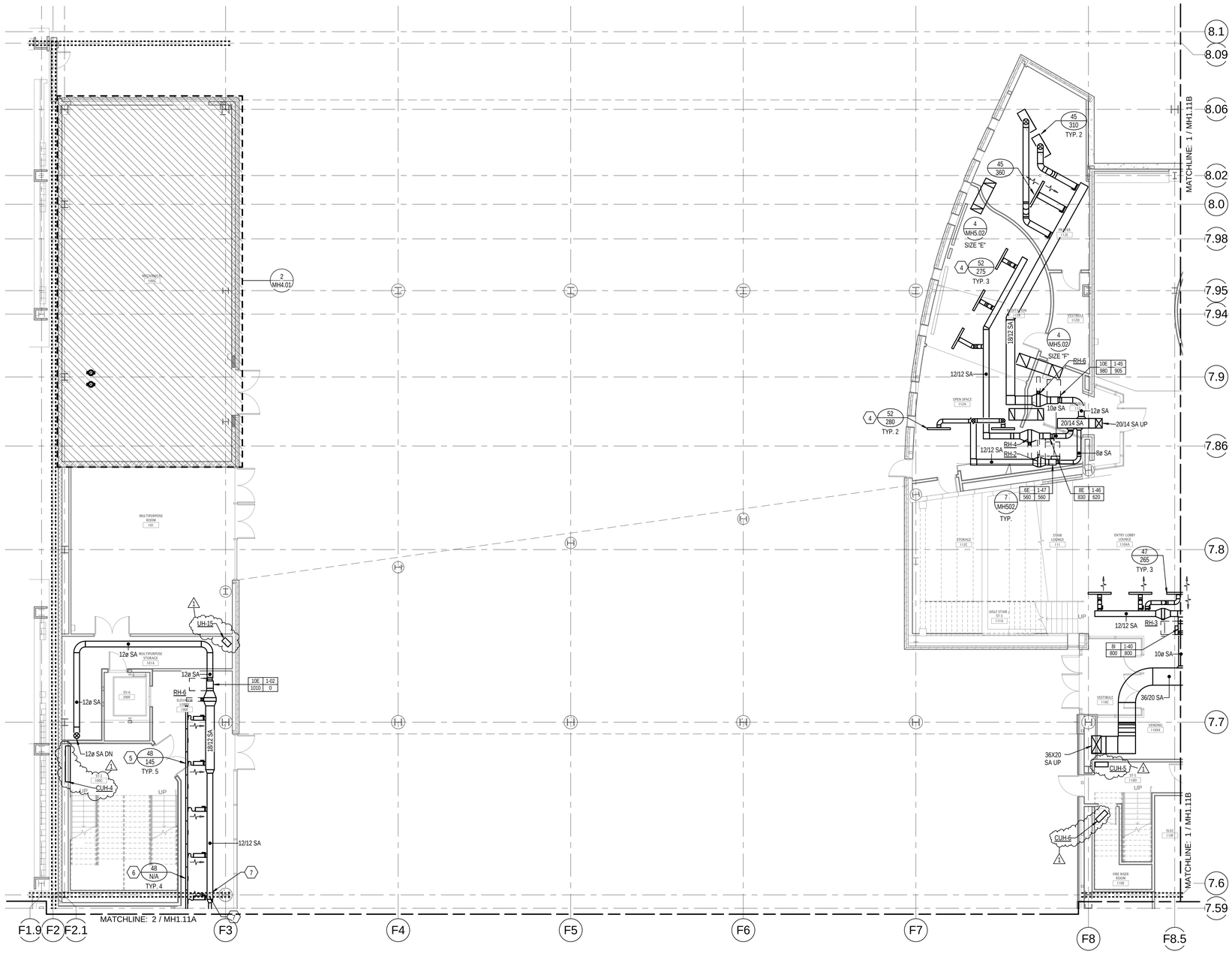
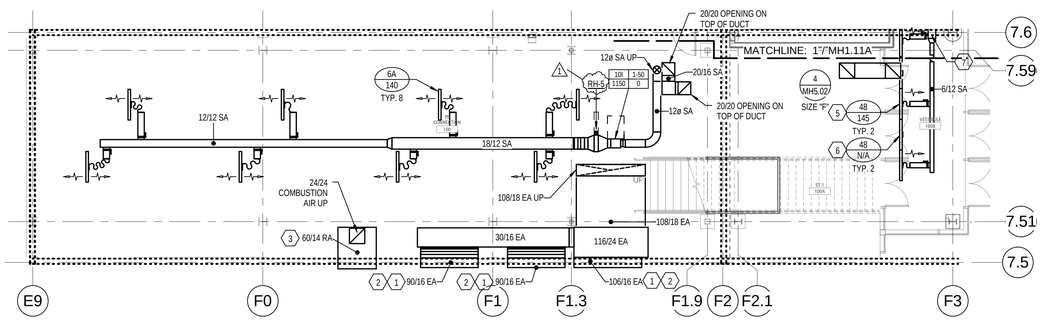


1 LEVEL 1 - MECHANICAL ZONE A

SCALE: 1/8" = 1'-0"



2 LEVEL 1 - MECHANICAL ZONE A1

SCALE: 1/8" = 1'-0"

KEYED NOTES

1. REMOVE EXISTING LOUVER AND EXTEND EXISTING EXHAUST DUCT THROUGH EXISTING OPENING IN WALL. PROVIDE FLEXIBLE DUCT CONNECTION IN DUCT TO ACCOMMODATE 7" OF MOVEMENT ACROSS EXPANSION JOINT.
2. VERIFY AIR FLOW THROUGH EXISTING LOUVER BEFORE ANY WORK. BALANCE SYSTEM AIR FLOW AFTER NEW WORK IS COMPLETED.
3. REMOVE EXISTING OUTSIDE AIR LOUVER AND EXTEND OUTSIDE AIR DUCT AS SHOWN. PROVIDE FLEXIBLE DUCT CONNECTION IN DUCT TO ACCOMMODATE 7" OF MOVEMENT ACROSS EXPANSION JOINT.
4. PROVIDE PRICE CONTROL DAMPER KIT MODEL VCRBEC TO ALLOW FOR BALANCING OF AIR FLOW THROUGH FACE OF SLOT DIFFUSER.
5. LINEAR SLOT DIFFUSERS MUST BE CONTINUOUS. COORDINATE WITH ARCHITECT FOR FINISH AND ARCHITECTURAL APPEAL.
6. RETURN SLOT DIFFUSER TO MATCH NUMBER OF SLOTS AND WIDTHS OF ADJACENT SUPPLY SLOT DIFFUSER FOR A CONTINUOUS APPEARANCE.
7. PROVIDE FLEXIBLE CONNECTION IN LOW PRESSURE DUCT WORK TO ACCOMODATE FOR 7" OF DUCT MOVEMENT ACROSS SEISMIC EXPANSION JOINT.

GENERAL NOTES

A. PROVIDE A RETURN SOUND BOOT AT EACH CEILING RETURN AIR GRILLE THAT IS NOT DUCTED IN ACCORDANCE WITH DETAIL 6 ON SHEET MH5.02.

B. SUPPLY AIR DUCT SERVED BY AIR HANDLERS AH-1 AND AH-2 IS DOUBLE-WALLED FROM THE POINT IT CONNECTS TO THE AIR HANDLERS IN THEIR RESPECTIVE MECHANICAL ROOMS, ALONG ITS ENTIRE LENGTH IN THE SHAFT, TO A POINT 8'-0" BEYOND FIRE/SMOKE DAMPER IN BRANCH DUCTS SERVING EACH FLOOR.

C. INSTALL VAV BOXES IN ACCORDANCE WITH DETAIL 7 ON SHEET MH5.02.

D. INSTALL DUCT MOUNTED HEATING COIL IN ACCORDANCE WITH DETAIL 2 ON SHEET MH5.03.

E. RUNOUTS TO DIFFUSERS ARE TO BE NECK SIZE UNLESS OTHERWISE NOTED ON DRAWINGS.

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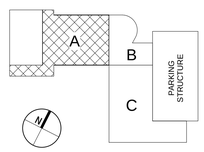
REVISIONS:

1	05.09.2012	ADDENDUM 3



KEYPLAN - NTS

STUDENT LIFE CENTER & PARKING STRUCTURE

Orem, Utah

UTAH VALLEY UNIVERSITY

DRAWN BY:	Author
CHECKED BY:	RLH
OWNER PROJECT NO.:	
GSBS PROJECT NO.:	2011.045.00
ISSUED DATE:	04.27.2012

MECHANICAL FLOOR PLAN LEVEL 1 ZONE A

CONSTRUCTION DOCUMENTS

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MH1.11A

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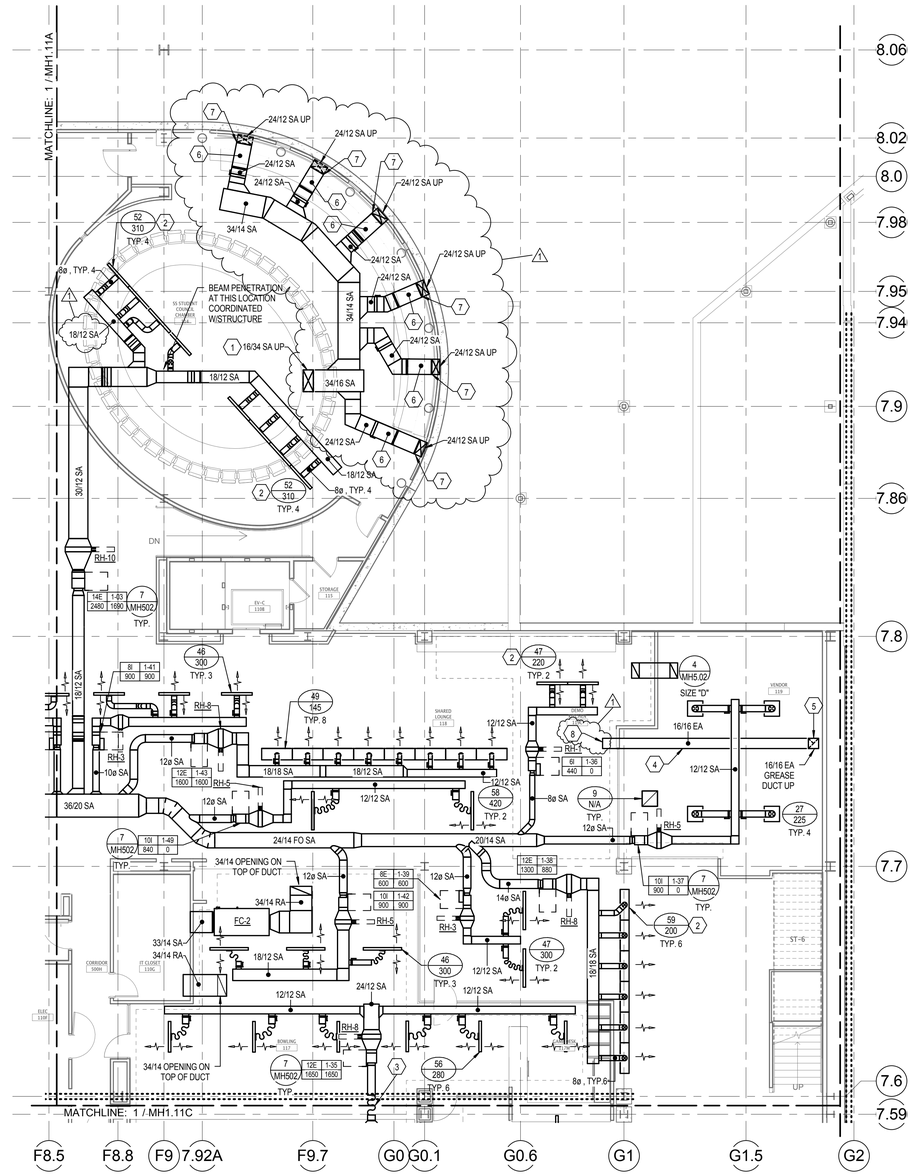

1 LEVEL 1 - MECHANICAL ZONE B

SCALE: 1/8" = 1'-0"

6' 0' 4' 8' 12' 16'

KEYED NOTES

1. INSTALL FIRE/SMOKE DAMPER AT SUPPLY AIR DUCT SLAB PENETRATION IN CEILING SPACE.
2. PROVIDE PRICE CONTROL DAMPER KIT MODEL VCR8EC TO ALLOW FOR BALANCING OF AIR FLOW THROUGH FACE OF SLOT DIFFUSER.
3. PROVIDE FLEXIBLE DUCT CONNECTION IN MEDIUM PRESSURE DUCT TO ACCOMMODATE 7" OF DUCT MOVEMENT ACROSS SEISMIC EXPANSION JOIN.
4. SLOPE GREASE DUCT 1/4" PER 1'-0" TOWARDS GREASE HOOD.
5. INSTALL 12"X12" CLEAN OUT IN BASE OF GREASE DUCT RISER.
6. ROUTE DUCT PARALLEL TO SLOPED CEILING.
7. ELBOW DUCT UP THROUGH SLAB PENETRATION TO SERVE SECOND FLOOR SPACE. SEE STRUCTURAL DRAWINGS AND ARCHITECTURAL DETAIL ON SHEET AE-506.
8. PROVIDE CAPPED GREASE DUCT STUBBED INTO DEMO KITCHEN ABOVE CEILING. GREASE DUCT TO BE EXTENDED AND CONNECTED TO KITCHEN EXHAUST HOOD COLLARS IN FUTURE.

GENERAL NOTES

A. PROVIDE A RETURN SOUND BOOT AT EACH CEILING RETURN AIR GRILLE THAT IS NOT DUCTED IN ACCORDANCE WITH DETAIL 6 ON SHEET MH5.02.

B. SUPPLY AIR DUCT SERVED BY AIR HANDLERS AH-1 AND AH-2 IS DOUBLE-WALLED FROM THE POINT IT CONNECTS TO THE AIR HANDLERS IN THEIR RESPECTIVE MECHANICAL ROOMS, ALONG ITS ENTIRE LENGTH IN THE SHAFT, TO A POINT 8'-0" BEYOND FIRE/SMOKE DAMPER IN BRANCH DUCTS SERVING EACH FLOOR.

C. INSTALL VAV BOXES IN ACCORDANCE WITH DETAIL 7 ON SHEET MH5.02.

D. INSTALL DUCT MOUNTED HEATING COIL IN ACCORDANCE WITH DETAIL 2 ON SHEET MH5.03.

E. RUNOUTS TO DIFFUSERS ARE TO BE NECK SIZE UNLESS OTHERWISE NOTED ON DRAWINGS.

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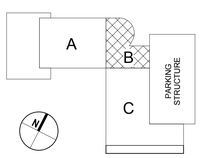
REVISIONS:

1	05.09.2012	ADDENDUM 3



KEYPLAN - NTS

STUDENT LIFE CENTER & PARKING STRUCTURE

Orem, Utah

UTAH VALLEY UNIVERSITY

DRAWN BY:	JMN
CHECKED BY:	RLH
OWNER PROJECT NO.:	
GSBS PROJECT NO.:	2011.045.00
ISSUED DATE:	04.27.2012

MECHANICAL FLOOR PLAN LEVEL 1 ZONE B

CONSTRUCTION DOCUMENTS

MH1.11B

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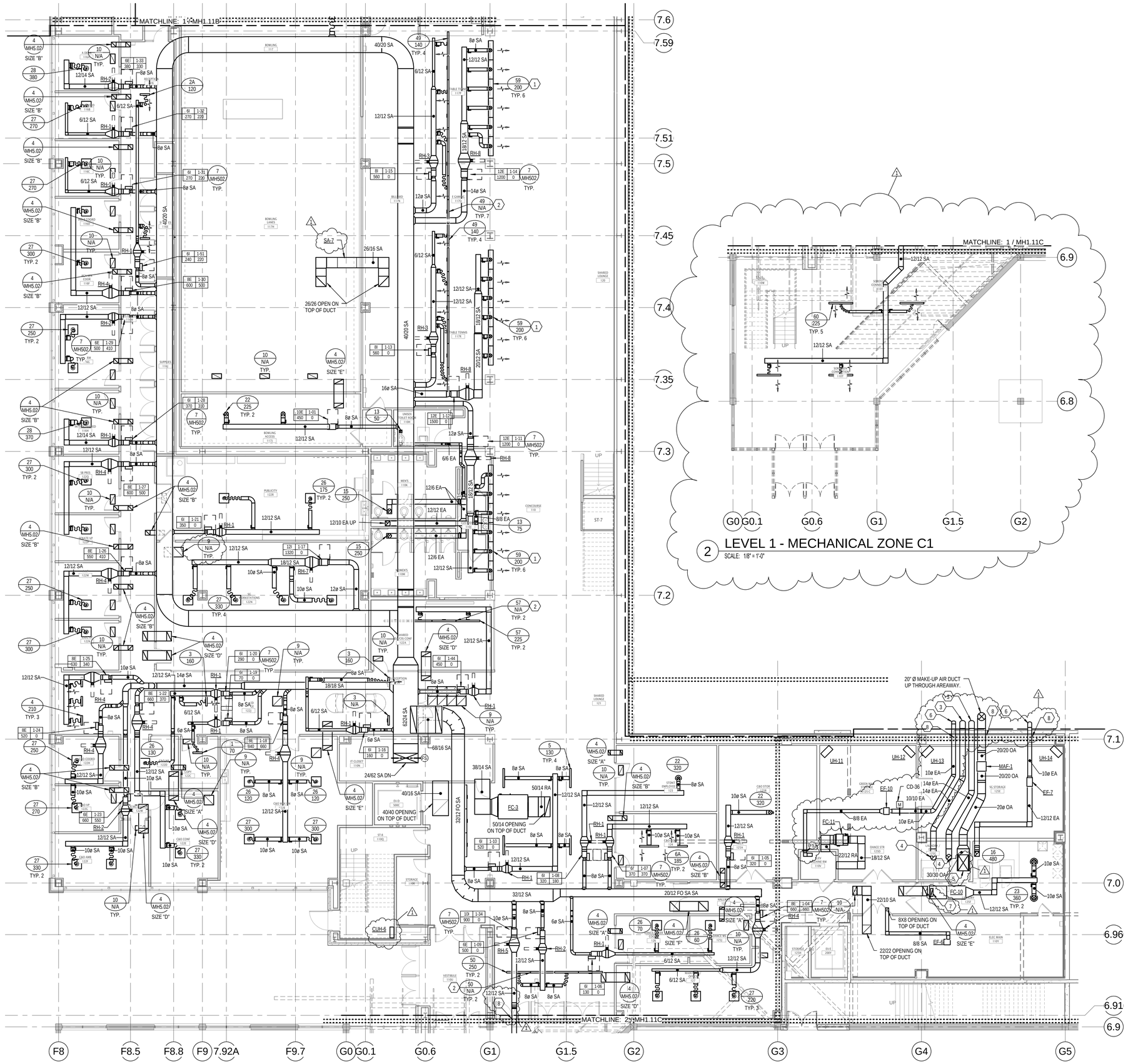

1 LEVEL 1 - MECHANICAL ZONE C

SCALE: 1/8" = 1'-0"

2 LEVEL 1 - MECHANICAL ZONE C1

SCALE: 1/8" = 1'-0"

KEYED NOTES

1. PROVIDE PRICE CONTROL DAMPER KIT MODEL VCR8EC TO ALLOW FOR BALANCING OF AIR FLOW THROUGH FACE OF SLOT DIFFUSER.
2. RETURN SLOT DIFFUSER TO MATCH NUMBER OF SLOTS AND WIDTHS OF ADJACENT SUPPLY SLOT DIFFUSER FOR A CONTINUOUS APPEARANCE.
3. ROUTE DRYER EXHAUST DUCT OUT AND TERMINATE WITH A 45° ELBOW TURNED DOWN INSIDE OF THE AREAWAY. PROVIDE BIRDSCREEN OVER OPENING.
4. CONNECT DRYER EXHAUST TO DUCT. INSTALL ACCESSIBLE CLEANOUT IN DUCTWORK.
5. 26"X40" OPENING IN TOP OF DUCT.
6. TERMINATE WITH A 45° ELBOW TURNED DOWN INSIDE OF AREAWAY. PROVIDE BIRDSCREEN OVER OPENING.
7. 20"X6" OPENING IN TOP OF DUCT.
8. PROVIDE FLEXIBLE DUCT CONNECTION IN MEDIUM PRESSURE DUCT TO ACCOMMODATE 7" OF DUCT MOVEMENT ACROSS SEISMIC EXPANSION JOIN.

GENERAL NOTES

A. PROVIDE A RETURN SOUND BOOT AT EACH CEILING RETURN AIR GRILLE THAT IS NOT DUCTED IN ACCORDANCE WITH DETAIL 6 ON SHEET MH5.02.

B. SUPPLY AIR DUCT SERVED BY AIR HANDLERS AH-1 AND AH-2 IS DOUBLE-WALLED FROM THE POINT IT CONNECTS TO THE AIR HANDLERS IN THEIR RESPECTIVE MECHANICAL ROOMS, ALONG ITS ENTIRE LENGTH IN THE SHAFT, TO A POINT 8'-0" BEYOND FIRE/SMOKE DAMPER IN BRANCH DUCTS SERVING EACH FLOOR.

C. INSTALL VAV BOXES IN ACCORDANCE WITH DETAIL 7 ON SHEET MH5.02.

D. INSTALL DUCT MOUNTED HEATING COIL IN ACCORDANCE WITH DETAIL 2 ON SHEET MH5.03.

E. RUNOUTS TO DIFFUSERS ARE TO BE NECK SIZE UNLESS OTHERWISE NOTED ON DRAWINGS.

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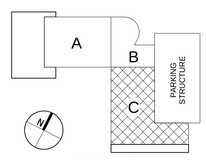

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MECHANICAL FLOOR PLAN LEVEL 1 ZONE C

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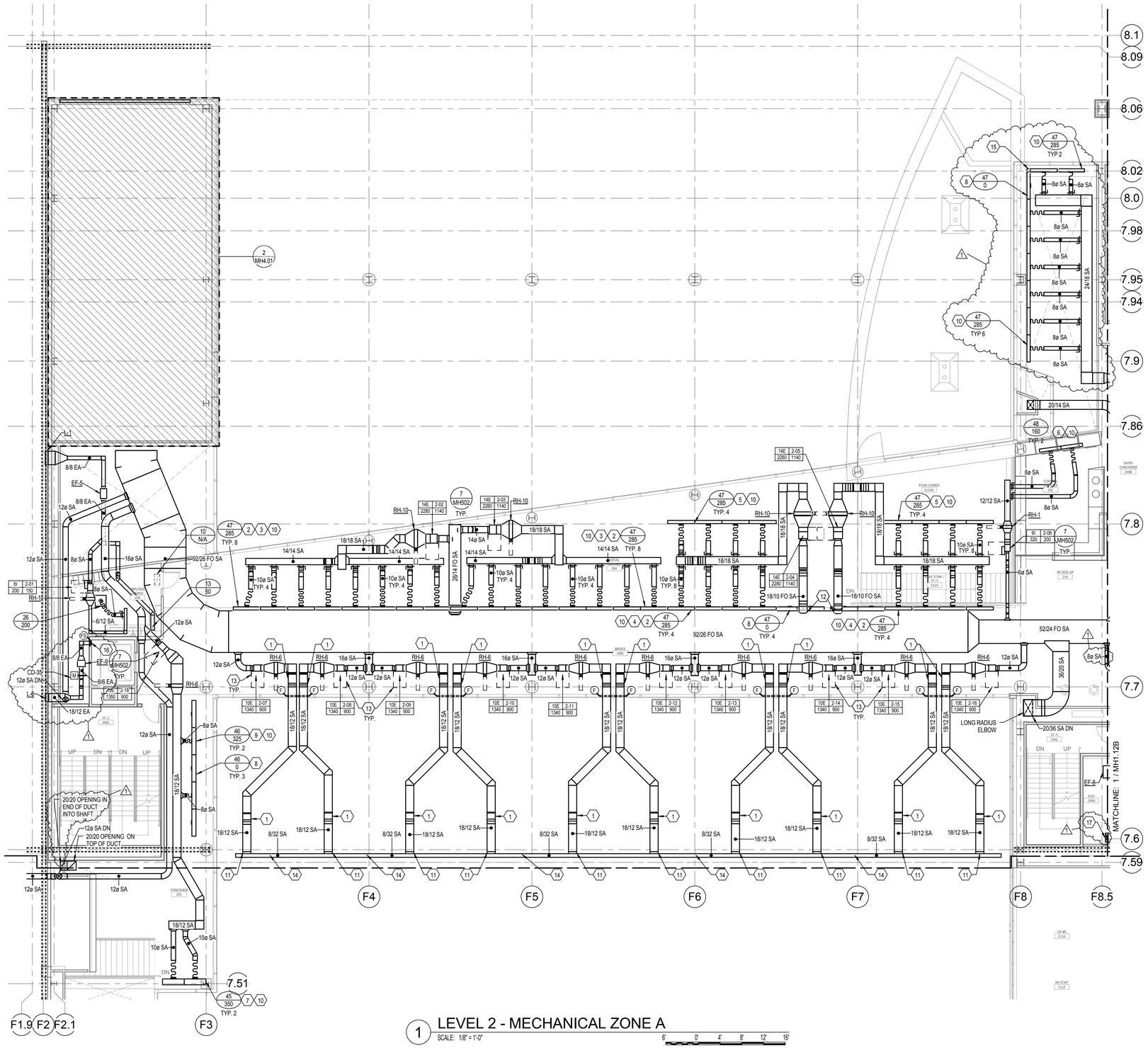


1 LEVEL 2 - MECHANICAL ZONE A

SCALE: 1/8" = 1'-0"

6' 0' 4' 8' 12' 16'

KEYED NOTES

1. PROVIDE OFFSETS IN DUCT AS REQUIRED TO AVOID CONFLICT WITH STRUCTURE.
2. PROVIDE SLOT DIFFUSER WITH EXTRA TALL PLENUM. CONNECT FLEX DUCT TO COLLAR OVER THE TOP OF THE HEATING AND COOLING MAINS. DUCT COLLAR MUST BE TOP JUSTIFIED, AS HIGH AS POSSIBLE ON THE HORIZONTAL FACE OF THE PLENUM BOX. COORDINATE WITH OTHER DISCIPLINES.
3. DIRECT ONE SLOT NORTH AND ONE SLOT SOUTH FOR TWO SLOT LINEAR GRILLES.
4. DIRECT BOTH SLOTS TO THE SOUTH.
5. DIRECT BOTH SLOTS TO THE NORTH.
6. DIRECT ONE SLOT DOWN AND ONE SLOT TO THE SOUTH.
7. DIRECT BOTH SLOTS AT AN AN ANGLE TOWARD THE GLASS. MAXIMUM ANGLE IS APPROXIMATELY 30° FROM HORIZONTAL.
8. FAUX LINEAR SLOT GRILLES. MUST MATCH APPEARANCE OF OTHER SLOTS TO GIVE GRILLES A CONTINUOUS APPEARANCE. SHEETMETAL BLANK-OFF PLATE ON BACK SIDE OF DIFFUSER. PAINT FLAT BLACK.
9. DIRECT ONE SLOT TO THE EAST AND ONE SLOT THE WEST.
10. LINEAR SLOT DIFFUSERS MUST BE CONTINUOUS. COORDINATE WITH ARCHITECT FOR FINISH AND ARCHITECTURAL APPEAL.
11. SEE ARCHITECTURAL DETAIL #20 ON SHEET AE-512 FOR COORDINATION OF DUCT, GRILLES, SLAB, AND STRUCTURE. FLOOR GRILLES SERVED BY THESE BOXES ARE LOCATED ON LEVEL 3. SEE SHEET MH1.13A.
12. ROLL MEDIUM PRESSURE BEVELED OVAL DUCT TAKE-OFF FROM FLAT OVAL MAINS AT AN ANGLE SO THAT THERE IS NO CONFLICT WITH THE 8" Ø HWS AND HWR AND CHS AND CHR CAMPUS MAINS THAT RUN THROUGH THE CEILING SPACE OF THE BRIDGE.
13. KEEP CONTROLS ACCESS ZONE OFF SIDE OF VAV BOX CLEAR OF ALL PIPING, DUCTWORK, OR CONDUIT NOT SERVING THE VAV BOX. PIPING, DUCTWORK, AND CONDUIT MAY BE ROUTED ABOVE THE ELEVATION OF THE TOP OF THE BOX, AVOIDING THE CONTROLS ACCESS ZONE.
14. CONTINUOUS SUPPLY AIR PLENUM FOR GRILLES SERVING MACHINE WEIGHTS 303. SEE DETAIL #20 ON SHEET AE-512 FOR COORDINATION OF DUCT, GRILLES, SLAB, AND STRUCTURE.
15. PROVIDE MANUFACTURES 90° CORNER SO THAT LINEAR DIFFUSERS APPEAR CONTINUOUS.
16. PROVIDE GALVANIZED WIRE MESH SCREEN AT END OF DUCT. SECURE WITH SCREWED FLANGED FRAME.
17. 20"X6" OPENING IN TOP OF DUCT.

GENERAL NOTES

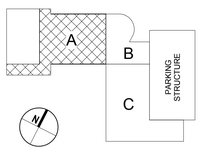
A. PROVIDE A RETURN SOUND BOOT AT EACH CEILING RETURN AIR GRILLE THAT IS NOT DUCTED IN ACCORDANCE WITH DETAIL 6 ON SHEET MH5.02.

B. SUPPLY AIR DUCT SERVED BY AIR HANDLERS AH-1 AND AH-2 IS DOUBLE-WALLED FROM THE POINT IT CONNECTS TO THE AIR HANDLERS IN THEIR RESPECTIVE MECHANICAL ROOMS, ALONG ITS ENTIRE LENGTH IN THE SHAFT, TO A POINT 8'-0" BEYOND FIRE/SMOKE DAMPER IN BRANCH DUCTS SERVING EACH FLOOR.

C. INSTALL VAV BOXES IN ACCORDANCE WITH DETAIL 7 ON SHEET MH5.02.

D. INSTALL DUCT MOUNTED HEATING COIL IN ACCORDANCE WITH DETAIL 2 ON SHEET MH5.03.

E. RUNOUTS TO DIFFUSERS ARE TO BE NECK SIZE UNLESS OTHERWISE NOTED ON DRAWINGS.



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MECHANICAL FLOOR PLAN LEVEL 2 ZONE A

CONSTRUCTION DOCUMENTS

MH1.12A

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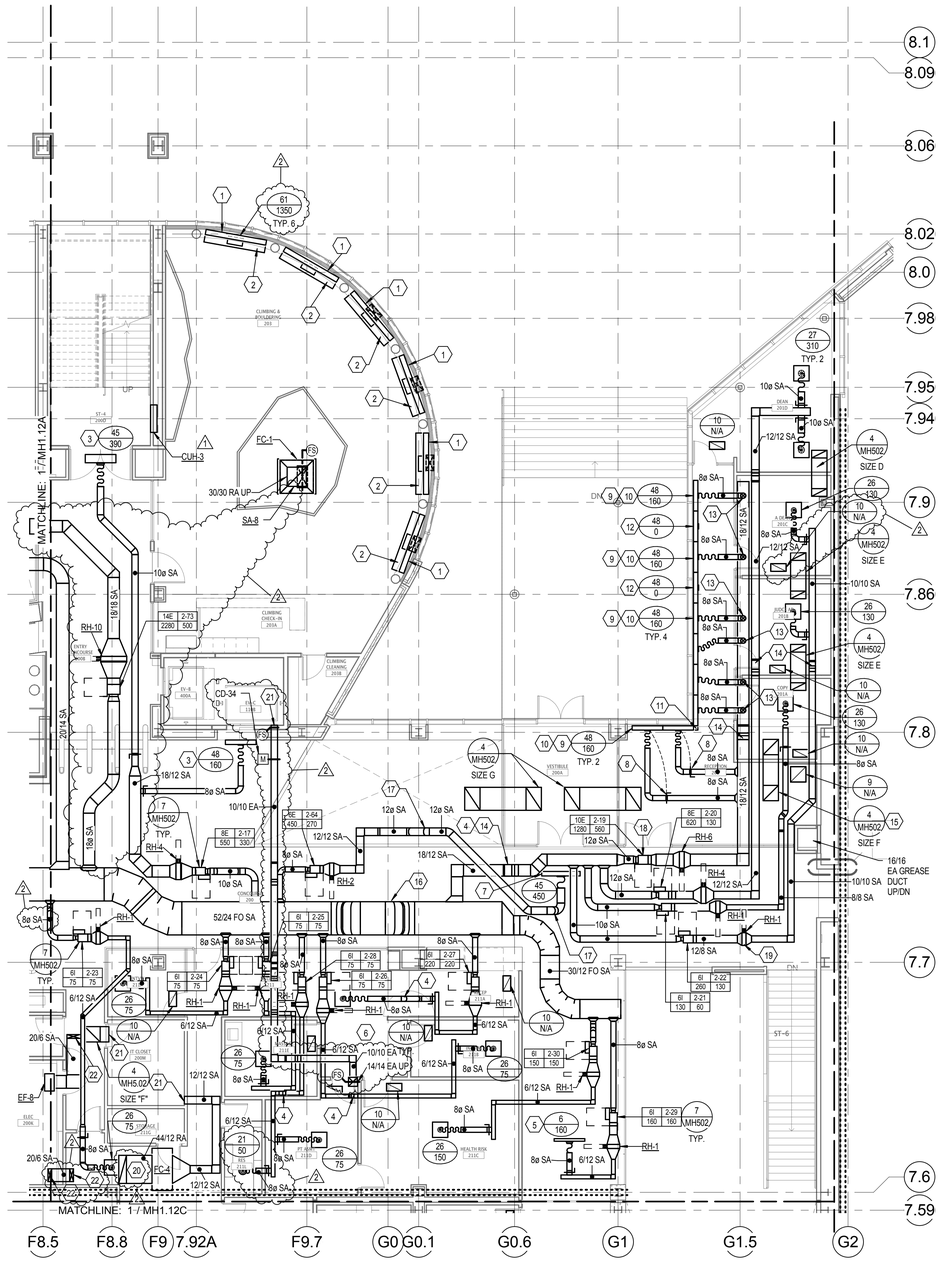


1 LEVEL 2 - MECHANICAL ZONE B
SCALE: 1/8" = 1'-0"

KEYED NOTES

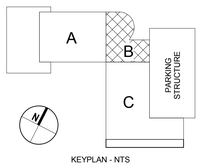
1. 129" X 20" X 14" PLENUM CONCEALED IN ARCHITECTURAL BENCH. SEE ARCHITECTURAL BENCH DETAIL #10 ON SHEET AE-513.
2. 24" X 12" OPENING IN FLOOR. SEE STRUCTURAL DRAWINGS AND ARCHITECTURAL BENCH DETAIL #10 ON SHEET AE-513.
3. DIRECT BOTH SLOTS TO THE SOUTH.
4. PROVIDE OFFSETS IN DUCT AS NECESSARY TO ROUTE DUCT AROUND ROOF AND OVERFLOW DRAINS.
5. DIRECT BOTH SLOTS TO THE NORTH.
6. EXTENSIVE PLUMBING IN THIS AREA. CONTRACTOR MUST COORDINATE INSTALLATION OF DUCTWORK WITH ALL OTHER DISCIPLINES.
7. DIRECT BOTH SLOTS AT AN AN ANGLE TOWARD THE GLASS. MAXIMUM ANGLE IS APPROXIMATELY 30° FROM HORIZONTAL.
8. PROVIDE REMOTE DAMPER OPERATOR THAT RUNS THROUGH THE SUPPLY BRANCH. REMOTE OPERATOR MUST BE ACCESSIBLE THROUGH THE FACE OF THE GRILLE. OPERATOR MUST NOT BE VISIBLE WHEN NOT BEING USED.
9. LINEAR SLOT DIFFUSERS MUST BE CONTINUOUS. COORDINATE WITH ARCHITECT FOR FINISH AND ARCHITECTURAL APPEAL.
10. DIRECT ONE SLOT DOWN ACROSS THE GLASS AND ONE SLOT HORIZONTALLY.
11. PROVIDE MANUFACTURES 90° CORNER SO THAT LINEAR DIFFUSERS APPEAR CONTINUOUS.
12. FAUX LINEAR SLOT GRILLES. MUST MATCH APPEARANCE OF OTHER SLOTS TO GIVE GRILLES A CONTINUOUS APPEARANCE. SHEETMETAL BLANK-OFF PLATE ON BACK SIDE OF DIFFUSER. PAINT FLAT BLACK.
13. PROVIDE BALANCING DAMPER IN VERTICAL TAKE-OFF OF BRANCH DUCTWORK COMING OFF OF 18/12 MAIN. CONTRACTOR TO COORDINATE AND WITH ALL DISCIPLINES SO THAT DAMPERS ARE ACCESSIBLE.
14. PROVIDE OFFSETS IN DUCT AS REQUIRED TO AVOID CONFLICT WITH STRUCTURE.
15. INSTALL RETURN BOOT OVER THE TOP OF THE ROOF DRAINS. COORDINATE INSTALLATION WITH PLUMBING, MECHANICAL PIPING, AND ELECTRICAL.
16. PROVIDE OFFSETS IN DUCT AS REQUIRED TO AVOID CONFLICT WITH ROOF DRAIN PIPING. COORDINATE IN FIELD.
17. PROVIDE OFFSETS AS NECESSARY TO ROUTE SUPPLY BRANCH AROUND STRUCTURE AND OTHER DISCIPLINES. DUCT IS OVERSIZED SO PRESSURE DROP SHOULD BE NEGLIGIBLE.
18. ROUTE MECHANICAL EQUIPMENT AND SHEETMETAL OVER THE TOP OF ROOF DRAINS. NOTE: KEEP MAINTENANCE AREA TO SIDE OF VAV BOX CLEAR OF ANY PIPING, DUCTWORK, OR CONDUIT NOT SERVING THE VAV BOX.
19. MECHANICAL EQUIPMENT AND SHEETMETAL MUST BE INSTALLED FAR ENOUGH TO THE NORTH SO AS NOT TO CONFLICT WITH HORIZONTAL FIRE SHUTTING DEVICES. CONTRACTOR TO COORDINATE ALL DISCIPLINES.
20. PROVIDE 44"X12" OPENING IN TOP OF LINED RETURN AIR DUCT.
21. PROVIDE GALVANIZED WIRE MESH SCREEN AT END OF DUCT. SECURE WITH SCREWED FLANGED FRAME.
22. 20"X6" OPENING IN TOP OF DUCT.

GENERAL NOTES

A. PROVIDE A RETURN SOUND BOOT AT EACH CEILING RETURN AIR GRILLE THAT IS NOT DUCTED IN ACCORDANCE WITH DETAIL 6 ON SHEET MH5.02.
B. SUPPLY AIR DUCT SERVED BY AIR HANDLERS AH-1 AND AH-2 IS DOUBLE-WALLED FROM THE POINT IT CONNECTS TO THE AIR HANDLERS IN THEIR RESPECTIVE MECHANICAL ROOMS, ALONG ITS ENTIRE LENGTH IN THE SHAFT, TO A POINT 8'-0" BEYOND FIRE/SMOKE DAMPER IN BRANCH DUCTS SERVING EACH FLOOR.
C. INSTALL VAV BOXES IN ACCORDANCE WITH DETAIL 7 ON SHEET MH5.02.
D. INSTALL DUCT MOUNTED HEATING COIL IN ACCORDANCE WITH DETAIL 2 ON SHEET MH5.03.
E. RUNOUTS TO DIFFUSERS ARE TO BE NECK SIZE UNLESS OTHERWISE NOTED ON DRAWINGS.

REVISIONS:

1	05.04.2012	ADDENDUM 2
2	05.09.2012	ADDENDUM 3



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MECHANICAL FLOOR PLAN LEVEL 2 ZONE B

CONSTRUCTION DOCUMENTS

MH1.12B

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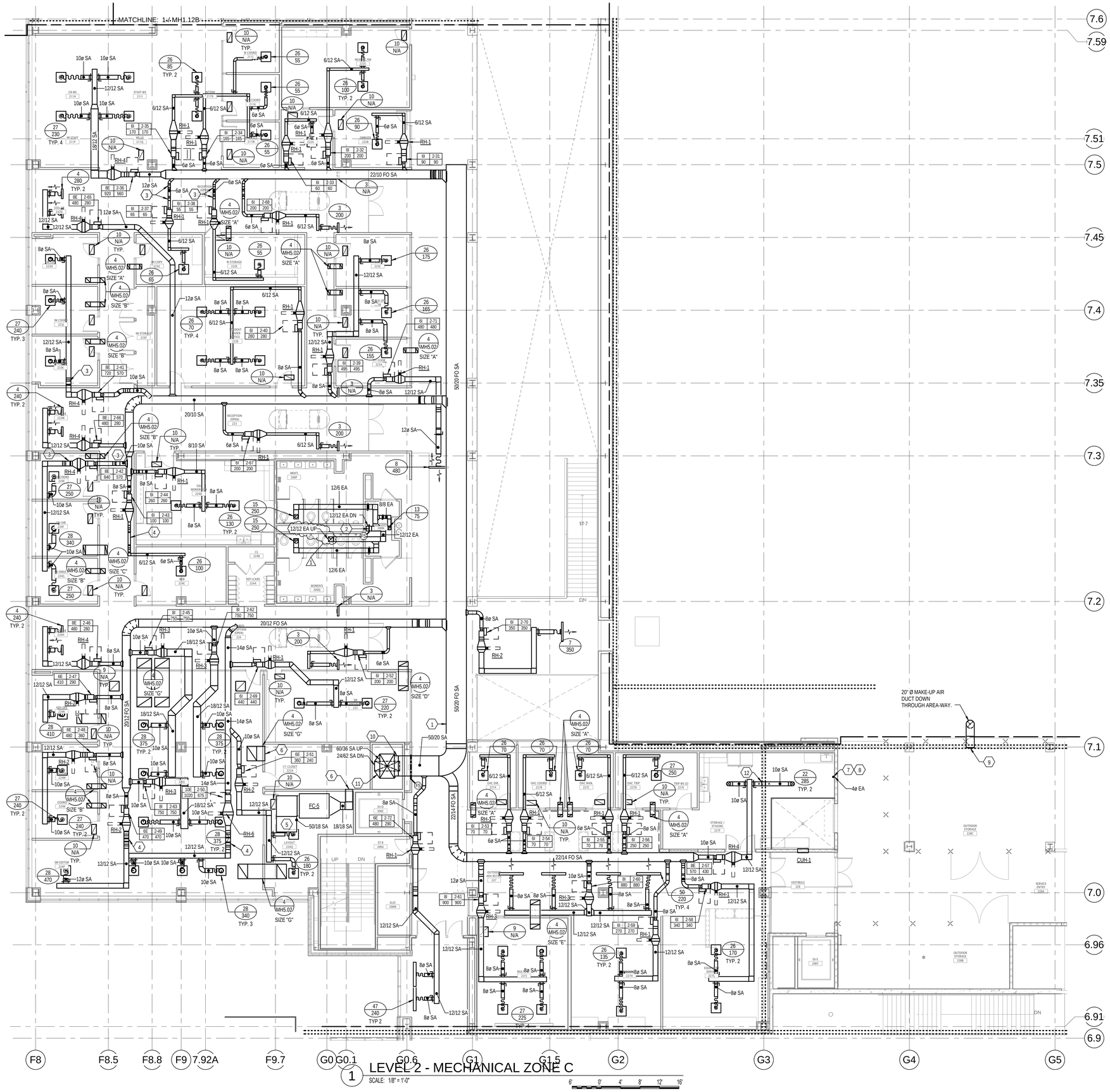

LEVEL 2 - MECHANICAL ZONE C

1 SCALE: 1/8" = 1'-0"

KEYED NOTES

1. DOUBLE WALL SUPPLY AIR DUCT EXTENDS FROM DISCHARGE OF AIR HANDLER AH-2, DOWN THE MECHANICAL SHAFT, THROUGH FLOOR TAKE-OFF DUCTS, THROUGH THE LONG SWEEP ELBOW, AND TWO FEET PAST THE ELBOW.
2. INSTALL FIRE/SMOKE DAMPER IN EXHAUST DUCT AT SLAB PENETRATION. ACTUATOR MUST BE ACCESIBLE.
3. PROVIDE ELBOWS AND OFFSETS AS NECESSARY TO OFFSET AROUND REHEAT PIPING.
4. PROVIDE OFFSETS IN DUCT AS REQUIRED TO AVOID CONFLICT WITH ROOF DRAIN PIPING. COORDINATE IN FIELD.
5. PROVIDE 44"X20" OPENING IN TOP OF LINED RETURN AIR DUCT.
6. PROVIDE GALVANIZED WIRE MESH SCREEN AT END OF DUCT. SECURE WITH SCREWED FLANGED FRAME.
7. CONNECT DRYER EXHAUST TO DUCT. INSTALL ACCESSIBLE CLEANOUT IN DUCTWORK.
8. ROUTE DRYER EXHAUST DUCT UP AND TERMINATE WITH GOOSENECK. GOOSENECK TO BE 24" ABOVE ROOF SURFACE. PROVIDE BIRDSCREEN OVER OPENING.
9. ROUTE MAKE-UP AIR DUCT TIGHT UNDER STORAGE ROOF. COVER OPENING WITH BIRDSCREEN.
10. TRANSITION FROM A 50"X32" TO A 50"X20" AT A 45° ANGLE FROM THE DUCT RISER TAKE-OFF. TAKE-OFF MUST BE IN THE 50"X32" PORTION OF THE DUCT RISER. SEE DETAIL 1 ON SHEET MH5.03 FOR ADDITIONAL INFORMATION.
11. TRANSITION DUCT IN CHASE SO THAT LONG DUCT DIMENSION ROTATES FROM NORTH-SOUTH DIRECTION TO EAST-WEST DIRECTION.
12. PROVIDE FLEXIBLE DUCT CONNECTION ACROSS SEISMIC EXPANSION JOINT TO ACCOMODATE 7" OF MOVEMENT. PROVIDE SEISMIC BRACING ON BOTH SIDES OF FLEXIBLE DUCT CONNECTION. (1)

GENERAL NOTES

A. PROVIDE A RETURN SOUND BOOT AT EACH CEILING RETURN AIR GRILLE THAT IS NOT DUCTED IN ACCORDANCE WITH DETAIL 6 ON SHEET MH5.02.

B. SUPPLY AIR DUCT SERVED BY AIR HANDLERS AH-1 AND AH-2 IS DOUBLE-WALLED FROM THE POINT IT CONNECTS TO THE AIR HANDLERS IN THEIR RESPECTIVE MECHANICAL ROOMS, ALONG ITS ENTIRE LENGTH IN THE SHAFT, TO A POINT 8'-0" BEYOND FIRE/SMOKE DAMPER IN BRANCH DUCTS SERVING EACH FLOOR.

C. INSTALL VAV BOXES IN ACCORDANCE WITH DETAIL 7 ON SHEET MH5.02.

D. INSTALL DUCT MOUNTED HEATING COIL IN ACCORDANCE WITH DETAIL 2 ON SHEET MH5.03.

E. RUNOUTS TO DIFFUSERS ARE TO BE NECK SIZE UNLESS OTHERWISE NOTED ON DRAWINGS.

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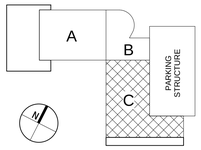

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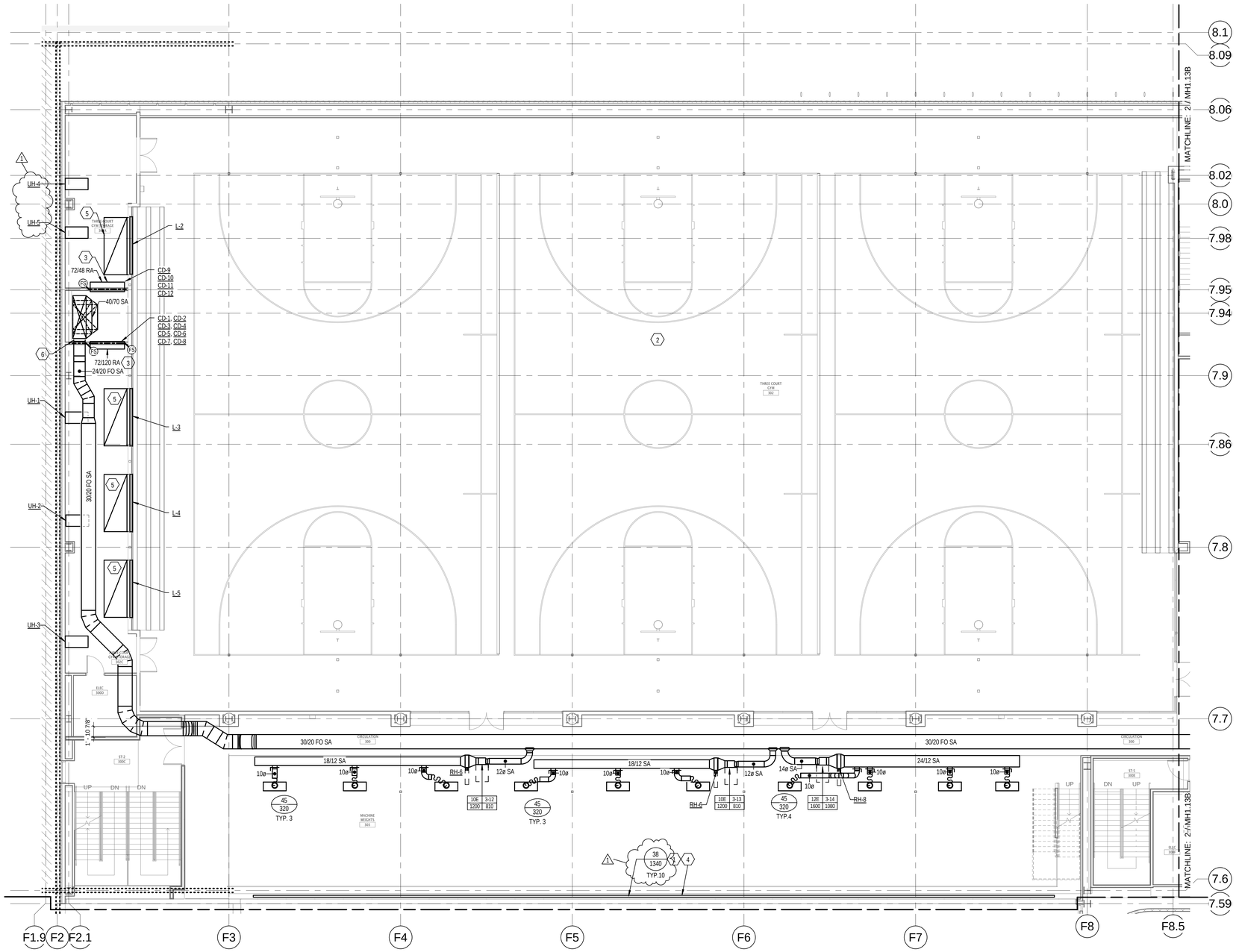

1 LEVEL 3 - MECHANICAL ZONE A

SCALE: 1/8" = 1'-0"

6' 0' 4' 8' 12' 16'

KEYED NOTES

1. SEE ARCHITECTURAL DETAIL FOR FLOOR GRILLE INSTALLATION.
2. SEE SHEET MH1.14A FOR MECHANICAL IN THIS AREA.
3. PROVIDE MANUAL BALANCING DAMPER(S) IN RETURN AIR DUCT.
4. INSTALL LINEAR FLOOR DIFFUSERS SO THAT IT APPEARS CONTINUOUS. OVERALL DIMENSIONS OF FLOOR DIFFUSRS TO BE 140' LONG X 4" WIDE.
5. PROVIDE 120" X 48" OPENING IN TOP OF DUCT.
6. TRANSITION FROM 24"X36" TO 24"X20" AT A 45° ANGLE FROM THE DUCT RISER TAKE-OFF. TAKE-OFF MUST BE IN THE 40"X70" PORTION OF THE DUCT RISER. SEE DETAIL 1 ON SHEET MH5.03 FOR ADDITIONAL INFORMATION.

GENERAL NOTES

A. PROVIDE A RETURN SOUND BOOT AT EACH CEILING RETURN AIR GRILLE THAT IS NOT DUCTED IN ACCORDANCE WITH DETAIL 6 ON SHEET MH5.02.

B. SUPPLY AIR DUCT SERVED BY AIR HANDLERS AH-1 AND AH-2 IS DOUBLE-WALLED FROM THE POINT IT CONNECTS TO THE AIR HANDLERS IN THEIR RESPECTIVE MECHANICAL ROOMS, ALONG ITS ENTIRE LENGTH IN THE SHAFT, TO A POINT 8'-0" BEYOND FIRE/SMOKE DAMPER IN BRANCH DUCTS SERVING EACH FLOOR.

C. INSTALL VAV BOXES IN ACCORDANCE WITH DETAIL 7 ON SHEET MH5.02.

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E. RUNOUTS TO DIFFUSERS ARE TO BE NECK SIZE UNLESS OTHERWISE NOTED ON DRAWINGS.

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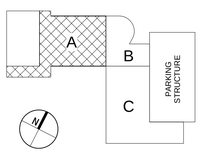

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MECHANICAL FLOOR PLAN LEVEL 3 ZONE A

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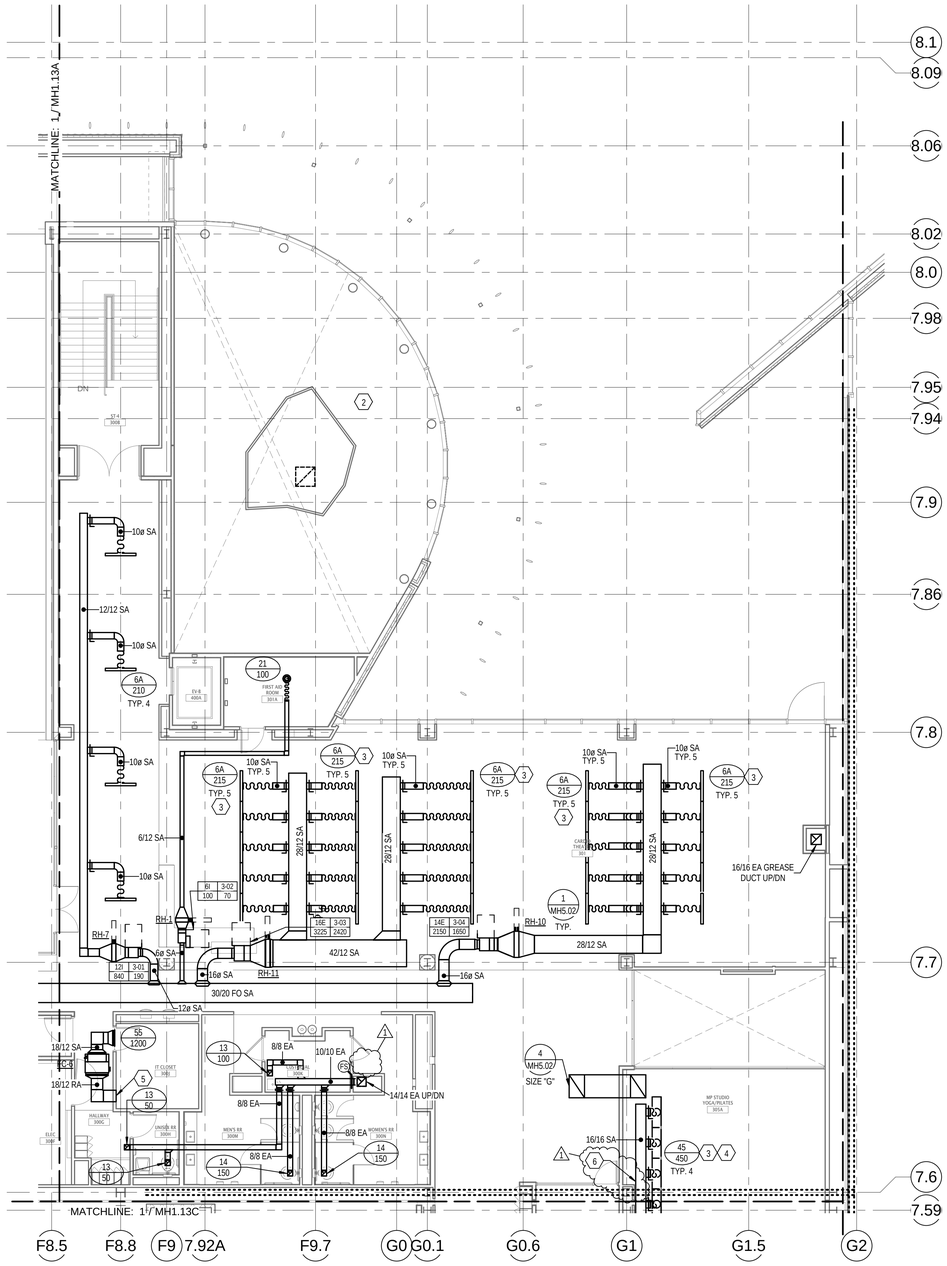

2 LEVEL 3 - MECHANICAL ZONE B

SCALE: 1/8" = 1'-0"

6' 0' 4' 8' 12' 16'

KEYED NOTES

1. NOT USED.
2. SEE SHEET MH1.14B AND MH1.12B FOR MECHANICAL IN THIS AREA.
3. LINEAR SLOT DIFFUSERS MUST BE CONTINUOUS. COORDINATE WITH ARCHITECT FOR FINISH AND ARCHITECTURAL APPEAL.
4. INSTALL CONTINUOUS AIR DEVICE TYPE 53 2'-0" ABOVE LINEAR SLOT DIFFUSERS AND MATCH OVERALL LENGTH. PROVIDE RETURN AIR SOUND BOOT.
5. PROVIDE GALVANIZED WIRE MESH SCREEN AT END OF DUCT. SECURE WITH SCREWED FLANGED FRAME.
6. PROVIDE FLEXIBLE DUCT CONNECTION ACROSS SEISMIC EXPANSION JOINT TO ACCOMODATE 7" OF MOVEMENT. PROVIDE SEISMIC BRACING ON BOTH SIDES OF FLEXIBLE DUCT CONNECTION.

GENERAL NOTES

A. PROVIDE A RETURN SOUND BOOT AT EACH CEILING RETURN AIR GRILLE THAT IS NOT DUCTED IN ACCORDANCE WITH DETAIL 6 ON SHEET MH5.02.

B. SUPPLY AIR DUCT SERVED BY AIR HANDLERS AH-1 AND AH-2 IS DOUBLE-WALLED FROM THE POINT IT CONNECTS TO THE AIR HANDLERS IN THEIR RESPECTIVE MECHANICAL ROOMS, ALONG IT'S ENTIRE LENGTH IN THE SHAFT, TO A POINT 8'-0" BEYOND FIRE/SMOKE DAMPER IN BRANCH DUCTS SERVING EACH FLOOR.

C. INSTALL VAV BOXES IN ACCORDANCE WITH DETAIL 7 ON SHEET MH5.02.

D. INSTALL DUCT MOUNTED HEATING COIL IN ACCORDANCE WITH DETAIL 2 ON SHEET MH5.03.

E. RUNOUTS TO DIFFUSERS ARE TO BE NECK SIZE UNLESS OTHERWISE NOTED ON DRAWINGS.

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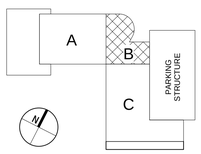
REVISIONS:

1	05.09.2012	ADDENDUM 3

LICENSED PROFESSIONAL ENGINEER NO. 7500 FOR Roger Lee. Hamlet JR. 04-27-2012 State of Utah



KEYPLAN - NTS

STUDENT LIFE CENTER & PARKING STRUCTURE

Orem, Utah

UTAH VALLEY UNIVERSITY

DRAWN BY:	JMN
CHECKED BY:	RLH
OWNER PROJECT NO.:	
GSBS PROJECT NO.:	2011.045.00
ISSUED DATE:	04.27.2012

MECHANICAL FLOOR PLAN LEVEL 3 ZONE B

CONSTRUCTION DOCUMENTS

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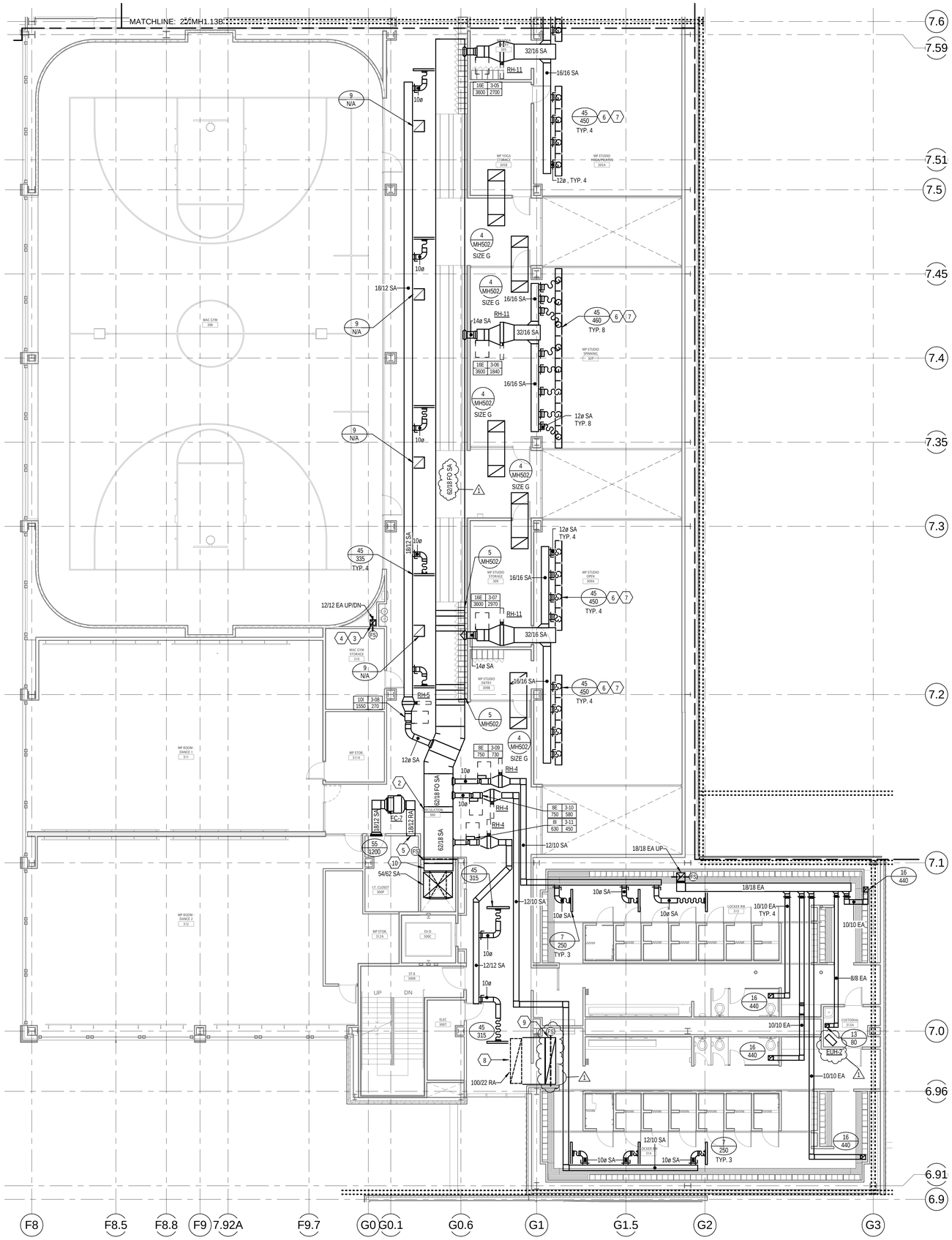
MH1.13B



1 LEVEL 3 - MECHANICAL ZONE C

SCALE: 1/8" = 1'-0"

KEYED NOTES

1. NOT USED.
2. TRANSITION FROM 62/18 TO 62/18 FO DUCT.
3. INSTALL FIRE/SMOKE DAMPER IN EXHAUST DUCT AT SLAB PENETRATION. ACTUATOR MUST BE ACCESIBLE.
4. PROVIDE 12" X 12" ACCESS DOORS TO HORIZONTAL DAMPERS. COORDINATE WITH ARCHITECTURAL.
5. PROVIDE GALVANIZED WIRE MESH SCREEN AT END OF DUCT. SECURE WITH SCREWED FLANGED FRAME.
6. LINEAR SLOT DIFFUSERS MUST BE CONTINUOUS. COORDINATE WITH ARCHITECT FOR FINISH AND ARCHITECTURAL APPEAL.
7. INSTALL CONTINUOUS AIR DEVICE TYPE 53 2'-0" ABOVE LINEAR SLOT DIFFUSERS AND MATCH OVERALL LENGTH. PROVIDE RETURN AIR SOUND BOOT.
8. PROVIDE 96" X 24" OPENING IN TOP OF LINED RETURN AIR DUCT.
9. 100/22 RA DUCT UP THROUGH 4TH FLOOR SLAB OPENING.
10. TRANSITION FROM 62"X34" TO 62"X18" AT A 45° ANGLE FROM THE DUCT RISER TAKE-OFF. TAKE-OFF MUST BE IN THE 54"X62" PORTION OF THE DUCT RISER. SEE DETAIL 1 ON SHEET MH5.03 FOR ADDITIONAL INFORMATION.

GENERAL NOTES

A. PROVIDE A RETURN SOUND BOOT AT EACH CEILING RETURN AIR GRILLE THAT IS NOT DUCTED IN ACCORDANCE WITH DETAIL 6 ON SHEET MH5.02.

B. SUPPLY AIR DUCT SERVED BY AIR HANDLERS AH-1 AND AH-2 IS DOUBLE-WALLED FROM THE POINT IT CONNECTS TO THE AIR HANDLERS IN THEIR RESPECTIVE MECHANICAL ROOMS, ALONG ITS ENTIRE LENGTH IN THE SHAFT, TO A POINT 8'-0" BEYOND FIRE/SMOKE DAMPER IN BRANCH DUCTS SERVING EACH FLOOR.

C. INSTALL VAV BOXES IN ACCORDANCE WITH DETAIL 7 ON SHEET MH5.02.

D. INSTALL DUCT MOUNTED HEATING COIL IN ACCORDANCE WITH DETAIL 2 ON SHEET MH5.03.

E. RUNOUTS TO DIFFUSERS ARE TO BE NECK SIZE UNLESS OTHERWISE NOTED ON DRAWINGS.

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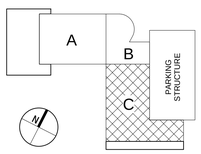

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Orem, Utah

UTAH VALLEY UNIVERSITY

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MECHANICAL FLOOR PLAN LEVEL 3 ZONE C

CONSTRUCTION DOCUMENTS

MH1.13C

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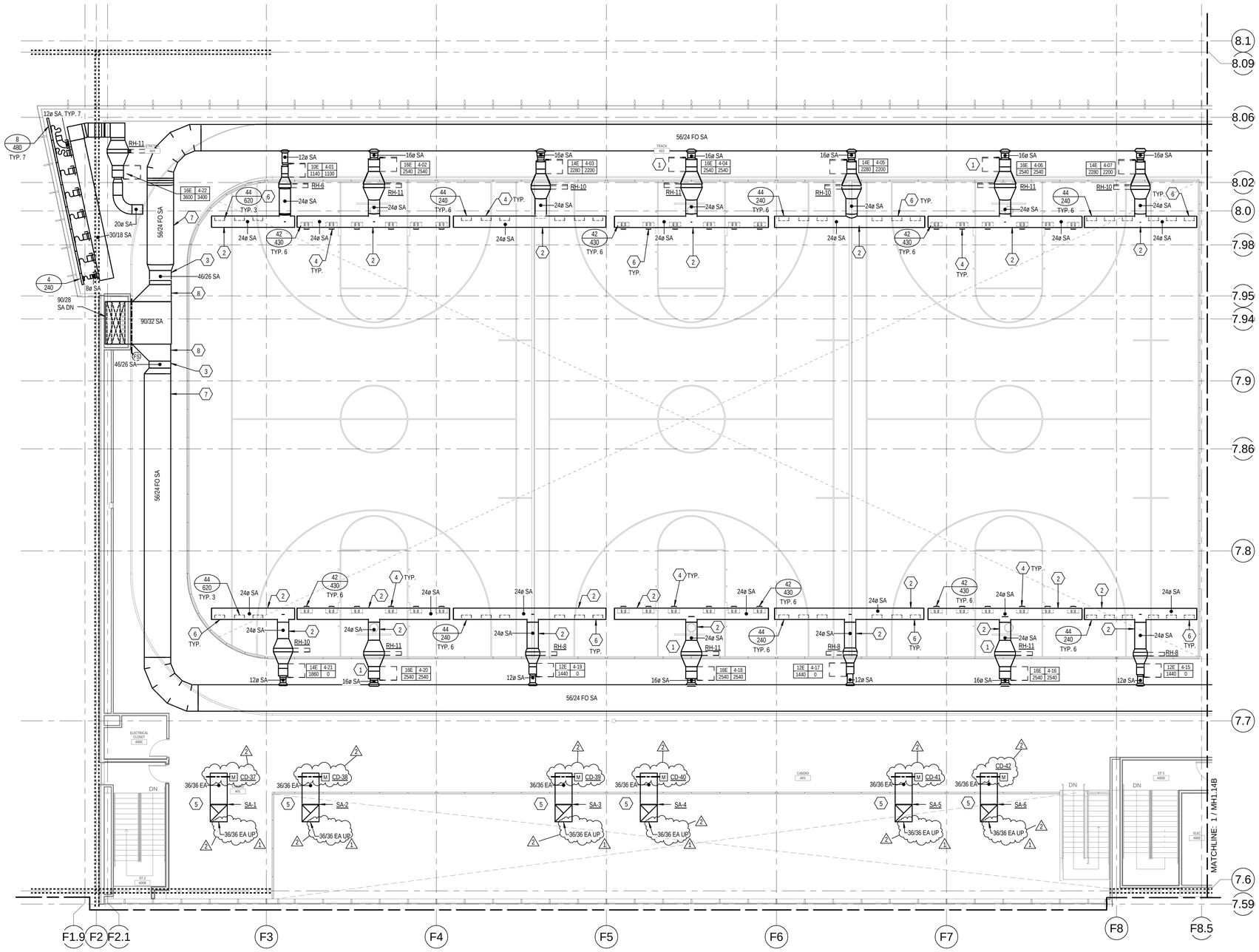

1 LEVEL 4 - MECHANICAL ZONE A

SCALE: 1/8" = 1'-0"

6' 0' 4' 8' 12' 16'

KEYED NOTES

1. DUCTWORK DOWN STREAM OF VAV BOX TO BE INTERNALLY LINED WITH 1" ACOUSTICAL LINING.
2. ROUND DUCT TO BE INSTALLED WITH 1" ACOUSTICAL LINER.
3. TRANSITION FROM 46/26 TO 56/24 FO DUCT.
4. INSTALL SUPPLY AIR GRILLE 30º DOWN FROM HORIZONTAL.
5. SEE SHEET MH1.21 FOR RELIEF AIR FAN LOCATION. PROVIDE SOUND BOOT INTO RELIEF AIR FAN INLET.
6. INSTALL SUPPLY AIR GRILLE 10º DOWN FROM HORIZONTAL.
7. DOUBLE WALL DUCT TO EXTEND 8'-0" BEYOND SHAFT.
8. TRANSITION FROM 82"X32" TO 46"X26" AT A 45° ANGLE. SEE DETAIL 1 ON SHEET MH5.03 FOR ADDITIONAL INFORMATION.

GENERAL NOTES

A. PROVIDE A RETURN SOUND BOOT AT EACH CEILING RETURN AIR GRILLE THAT IS NOT DUCTED IN ACCORDANCE WITH DETAIL 6 ON SHEET MH5.02.

B. SUPPLY AIR DUCT SERVED BY AIR HANDLERS AH-1 AND AH-2 IS DOUBLE-WALLED FROM THE POINT IT CONNECTS TO THE AIR HANDLERS IN THEIR RESPECTIVE MECHANICAL ROOMS, ALONG ITS ENTIRE LENGTH IN THE SHAFT, TO A POINT 8'-0" BEYOND FIRE/SMOKE DAMPER IN BRANCH DUCTS SERVING EACH FLOOR.

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E. RUNOUTS TO DIFFUSERS ARE TO BE NECK SIZE UNLESS OTHERWISE NOTED ON DRAWINGS.

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1	05.04.2012	ADDENDUM 2
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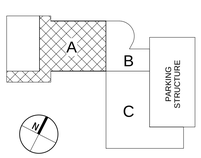

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MECHANICAL FLOOR PLAN LEVEL 4 ZONE A

CONSTRUCTION DOCUMENTS

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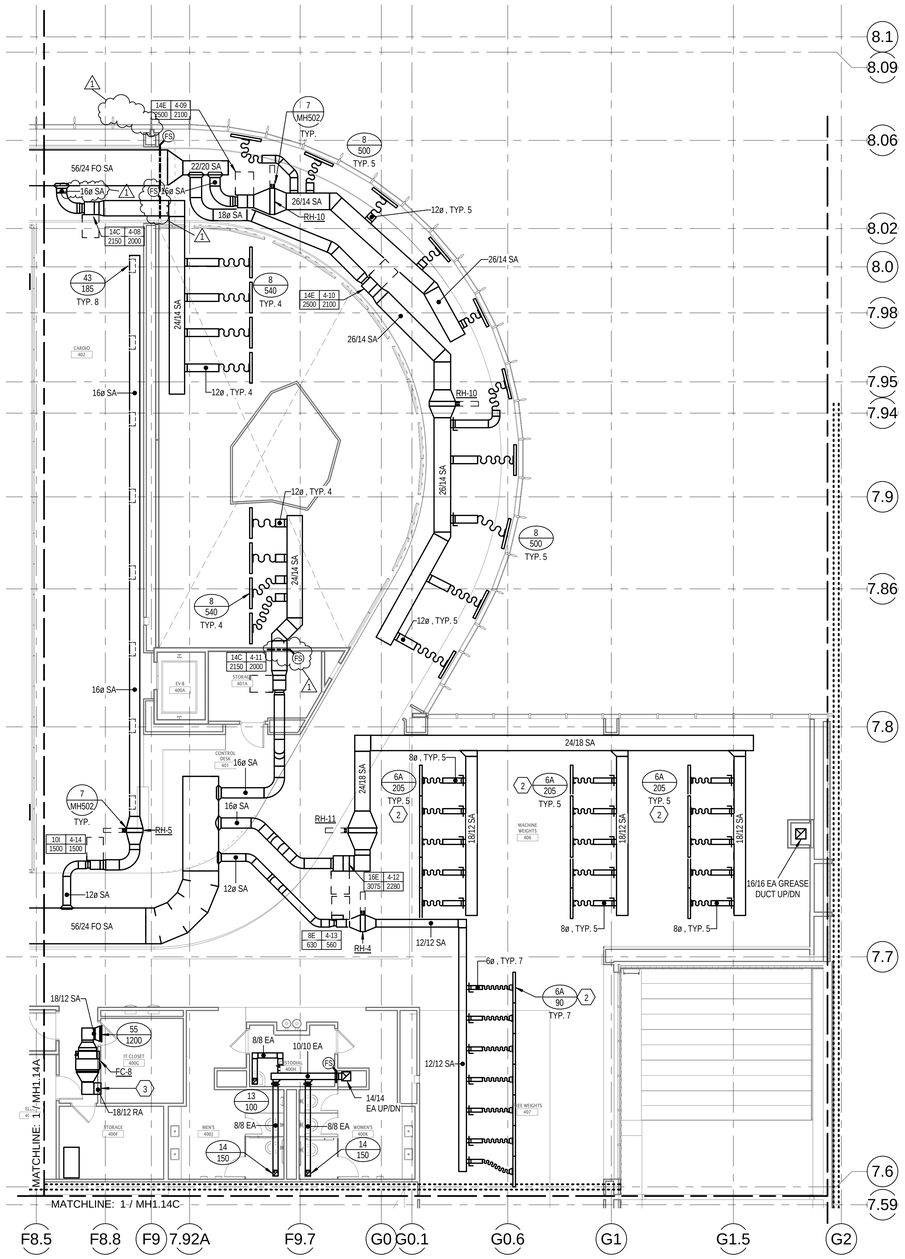

1 LEVEL 4 - MECHANICAL ZONE B

SCALE: 1/8" = 1'-0"

6' 0' 4' 8' 12' 16'

KEYED NOTES

1. NOT USED.
2. LINEAR SLOT DIFFUSERS MUST BE CONTINUOUS. COORDINATE WITH ARCHITECT FOR FINISH AND ARCHITECTURAL APPEAL.
3. PROVIDE GALVANIZED WIRE MESH SCREEN AT END OF DUCT. SECURE WITH SCREWED FLANGED FRAME.

GENERAL NOTES

A. PROVIDE A RETURN SOUND BOOT AT EACH CEILING RETURN AIR GRILLE THAT IS NOT DUCTED IN ACCORDANCE WITH DETAIL 6 ON SHEET MH5.02.

B. SUPPLY AIR DUCT SERVED BY AIR HANDLERS AH-1 AND AH-2 IS DOUBLE-WALLED FROM THE POINT IT CONNECTS TO THE AIR HANDLERS IN THEIR RESPECTIVE MECHANICAL ROOMS, ALONG ITS ENTIRE LENGTH IN THE SHAFT, TO A POINT 8'-0" BEYOND FIRE/SMOKE DAMPER IN BRANCH DUCTS SERVING EACH FLOOR.

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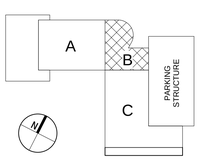
REVISIONS:

1	05.09.2012	ADDENDUM 3



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STUDENT LIFE CENTER & PARKING STRUCTURE

Orem, Utah

UTAH VALLEY UNIVERSITY

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MECHANICAL FLOOR PLAN LEVEL 4 ZONE B

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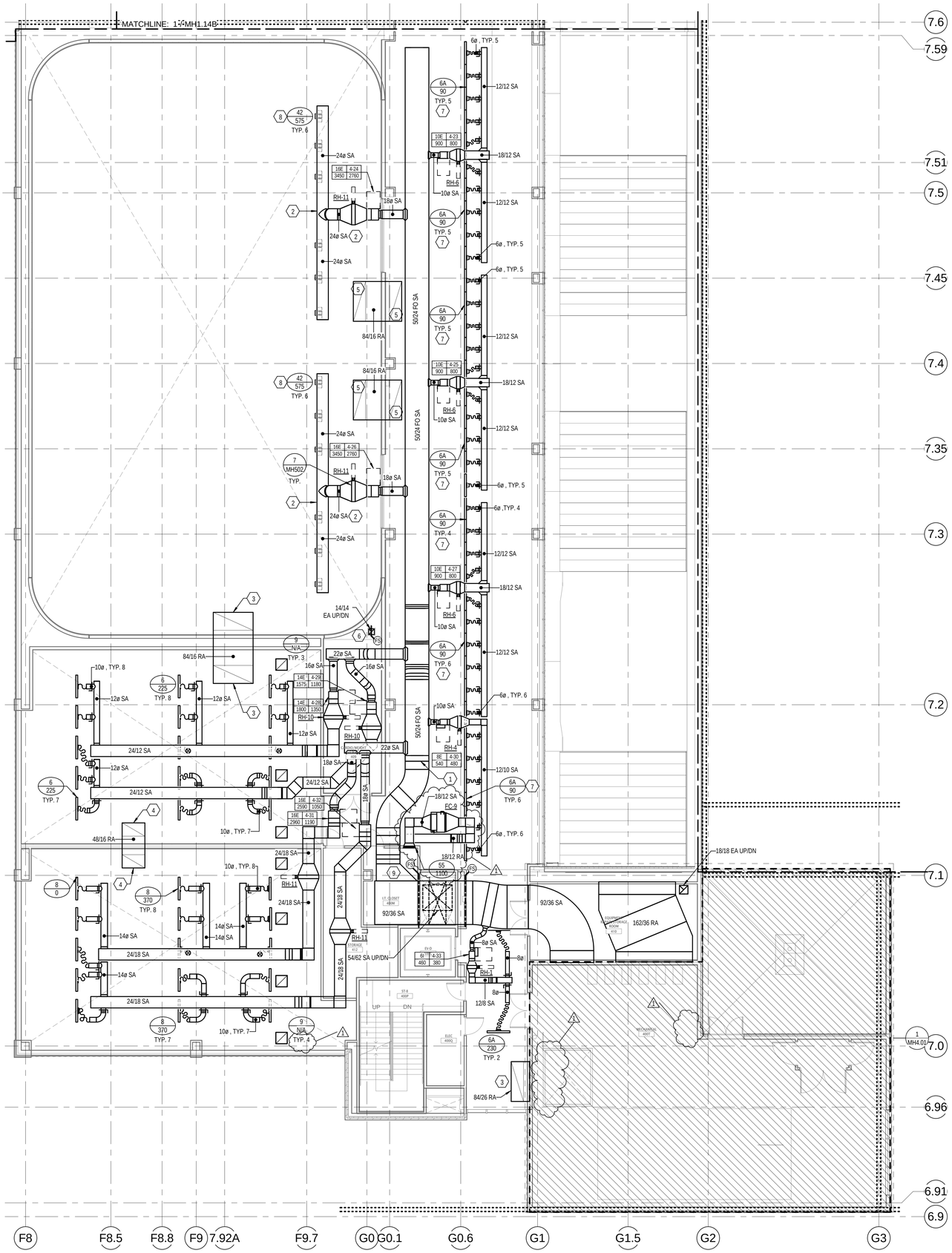
MH1.14B



1 LEVEL 4 - MECHANICAL ZONE C

SCALE: 1/8" = 1'-0"

KEYED NOTES

1. TRANSITION FROM 50/24 TO 50/24 FO DUCT.
2. ROUND DUCT TO BE INSTALLED WITH 1" ACOUSTICAL LINER.
3. PROVIDE 84" X 38" OPENING IN TOP OF RETURN AIR DUCT.
4. PROVIDE 48" X 28" OPENING IN TOP OF RETURN AIR DUCT.
5. PROVIDE FLEXIBLE DUCT CONNECTION IN MEDIUM PRESSURE DUCT TO ACCOMMODATE 7" OF DUCT MOVEMENT ACROSS SEISMIC EXPANSION JOIN.
6. INSTALL FIRE/SMOKE DAMPER IN EXHAUST DUCT AT SLAB PENETRATION. ACTUATOR MUST BE ACCESIBLE.
7. LINEAR SLOT DIFFUSERS MUST BE CONTINUOUS. COORDINATE WITH ARCHITECT FOR FINISH AND ARCHITECTURAL APPEAL.
8. INSTALL SUPPLY AIR GRILLE 30° DOWN FROM HORIZONTAL.
9. TRANSITION FROM 86"X24" TO 50"X24" AT A 45° ANGLE. SEE DETAIL 1 ON SHEET MH5.03 FOR ADDITIONAL INFORMATION.

GENERAL NOTES

A. PROVIDE A RETURN SOUND BOOT AT EACH CEILING RETURN AIR GRILLE THAT IS NOT DUCTED IN ACCORDANCE WITH DETAIL 6 ON SHEET MH5.02.

B. SUPPLY AIR DUCT SERVED BY AIR HANDLERS AH-1 AND AH-2 IS DOUBLE-WALLED FROM THE POINT IT CONNECTS TO THE AIR HANDLERS IN THEIR RESPECTIVE MECHANICAL ROOMS, ALONG ITS ENTIRE LENGTH IN THE SHAFT, TO A POINT 8'-0" BEYOND FIRE/SMOKE DAMPER IN BRANCH DUCTS SERVING EACH FLOOR.

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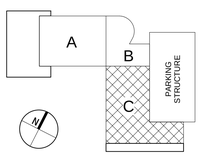
REVISIONS:

1	05.09.2012	ADDENDUM 3

LICENSED PROFESSIONAL ENGINEER
NO. 7 586 7108
Roger Lee. Hamlet JR.
04-27-2012
State of Utah



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MECHANICAL FLOOR PLAN LEVEL 4 ZONE C

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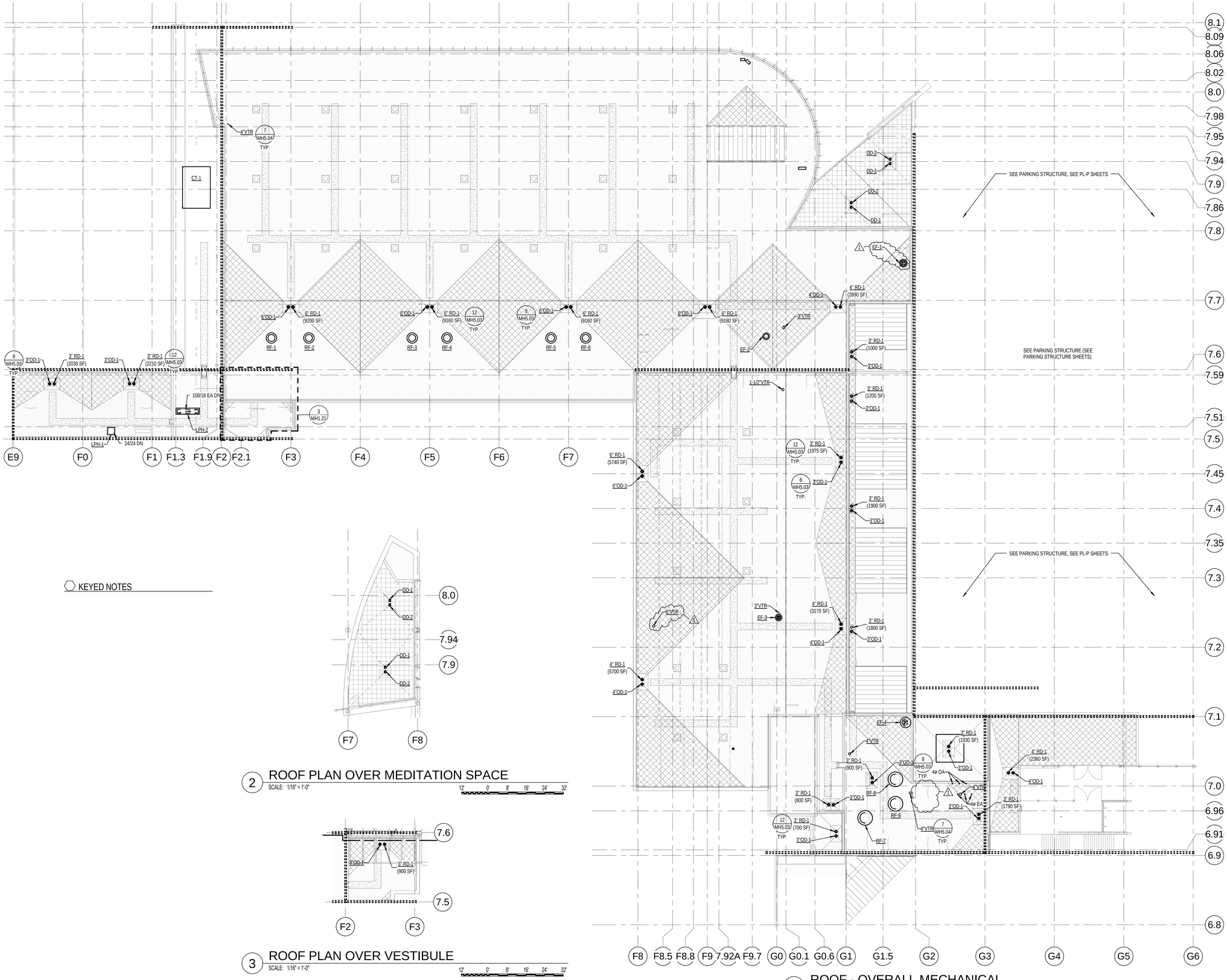
KEYED NOTES



1 ROOF - OVERALL MECHANICAL
SCALE: 1/16" = 1'-0"

2 ROOF PLAN OVER MEDITATION SPACE
SCALE: 1/16" = 1'-0"

3 ROOF PLAN OVER VESTIBULE
SCALE: 1/16" = 1'-0"

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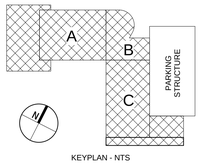

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MECHANICAL ROOF PLAN

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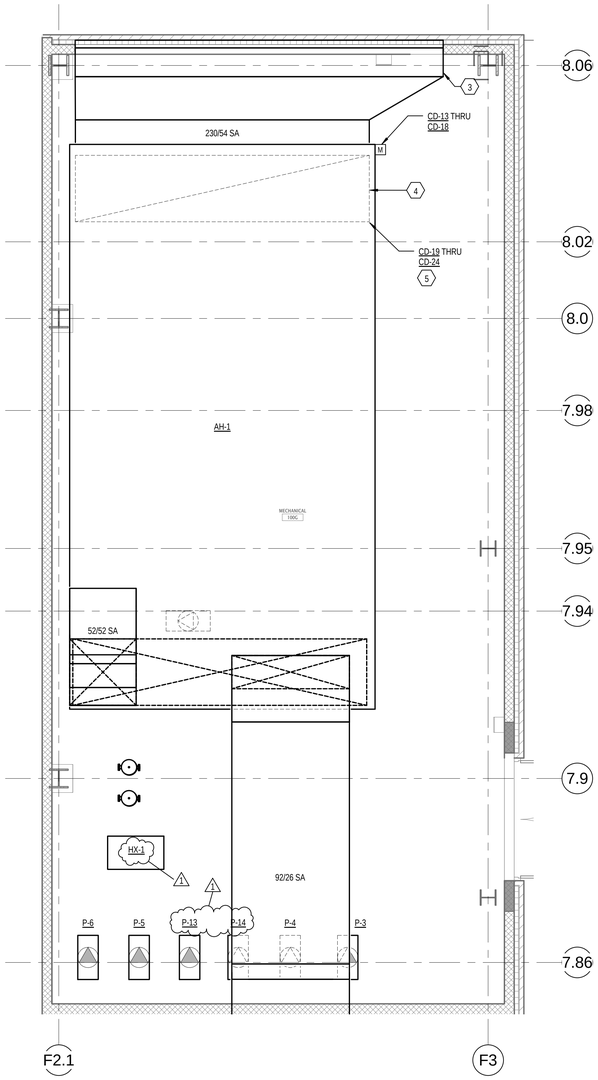
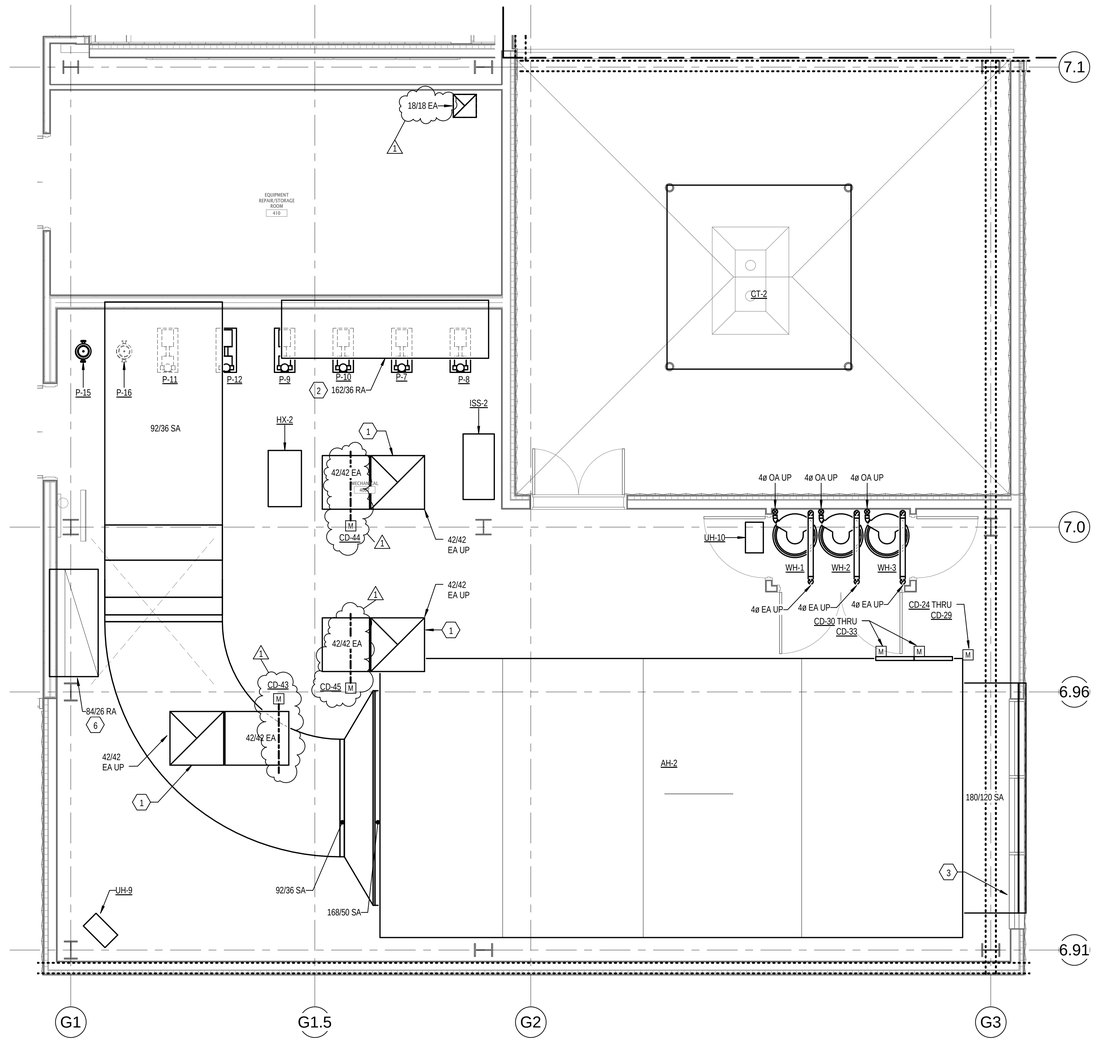


ENLARGED MECHANICAL ROOM LEVEL 1 & 2 ZONE A

2 SCALE: 1/4" = 1'-0"



ENLARGED MECHANICAL ROOM LEVEL 4 ZONE C

1 SCALE: 1/4" = 1'-0"

KEYED NOTES

1. SEE SHEET MH1.21 FOR RELIEF AIR FAN LOCATION. PROVIDE SOUND BOOT INTO RELIEF AIR FAN INLET.
2. PROVIDE 162X36 OPENING IN TOP OF RETURN AIR DUCT.
3. ENCLOSE BRACE FRAME STRUCTURE WITHIN OUTSIDE AIR PLENUM BOX. SEAL AIR TIGHT.
4. PROVIDE GRATING AT RETURN AIR OPENING.
5. INSTALL CONTROL DAMPER ACTUATOR SUCH THAT IT IS ACCESSIBLE FROM UNDERSIDE OF AIR HANDLING UNIT.
6. PROVIDE 84" X 38" OPENING IN TOP OF RETURN AIR DUCT.

GENERAL NOTES

A. PROVIDE A RETURN SOUND BOOT AT EACH CEILING RETURN AIR GRILLE THAT IS NOT DUCTED IN ACCORDANCE WITH DETAIL 6 ON SHEET MH5.02.

B. SUPPLY AIR DUCT SERVED BY AIR HANDLERS AH-1 AND AH-2 IS DOUBLE-WALLED FROM THE POINT IT CONNECTS TO THE AIR HANDLERS IN THEIR RESPECTIVE MECHANICAL ROOMS, ALONG ITS ENTIRE LENGTH IN THE SHAFT, TO A POINT 8'-0" BEYOND FIRE/SMOKE DAMPER IN BRANCH DUCTS SERVING EACH FLOOR.

C. INSTALL VAV BOXES IN ACCORDANCE WITH DETAIL 7 ON SHEET MH5.02.

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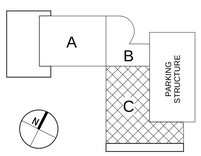

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ENLARGED MECHANICAL ROOMS MECHANICAL PLANS

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1	05.04.2012	ADDENDUM 2
2	05.09.2012	ADDENDUM 3

AIR HANDLING UNIT SCHEDULE (AH)

PLAN CODE	AREA SERVED	MANUFACTURER MODEL	WEIGHT LBS	SUPPLY FAN TYPE	DIA	CLASS	CFM AT ELEV	TSP (SL)	BHP	MOTOR EFF	HP (1)	RPM	VOLT/ PH	SPEED CONTROL
AH-1	NORTH MECHANICAL RM	UNITECH -	72,600	BLOW THRU	27	II	104,860	6.5	8 @ 17.4	PREMIUM	8 @ 25	1914	480 / 3	VFD
AH-2	SOUTH MECHANICAL RM	UNITECH -	58,600	BLOW THRU	27	II	76,750	6.5	6 @ 17.0	PREMIUM	6 @ 20	1898	480 / 3	VFD

PLAN CODE	HEATING COIL CFM AT ELEV	MBH SEN	TOTAL GPM	% PG	WPD (FT)	EWT (ºF)	EAT (ºF)	LAT (ºF)	ROWS / FPF	AIR PD (IN MAX)	COIL SIZE
AH-1	29,519	1,217	228	25	4.0	98	15	54	1 / 11	0.02	6 @ 43.5 x 108
AH-2	22,014	692	132	25	7.1	98	23	54	1 / 8	0.01	6 @ 40.5 X 94

PLAN CODE	COOLING COIL CFM AT ELEV	MBH SEN	MBH TOTAL	TOTAL GPM	% PG	WPD (FT)	EWT (ºF)	EAT (dbºF)	EAT (wbºF)	LAT (dbºF)	LAT (wbºF)	AIR PD (IN MAX)	ROWS / FPI	COIL SIZE
AH-1	(2) 100,720	1,550	2,197	360	0	8.8	48	71.6	62.5	54.6	54.5	0.76	8 / 8	6 @ 43.5 x 108
AH-2	(3) 73,720	1,166	1,689	270	0	12.5	48	71.6	62.5	54.2	54.0	0.65	8 / 8	6 @ 40.5 x 94

PLAN CODE	AIR WASHER MAX AIR VEL (FPM)	AIR PD (IN MAX)	MEDIA DEPTH (IN)	SATURATION EFF %	PUMP GPM	PUMP HP	PUMP VOLT/ PH	MAX SIZE (IN) DEPTH	WIDTH	HEIGHT	PRE-FILTER MAX VEL	% EFF	TYPE	REMARKS	CONTROL
AH-1	480	0.22	12	90	40	0.5	120/1	12	237	123	350	MERV-13	V-BANK -	PROVIDE BACKDRAFT DAMPER FOR EACH FAN	VFD
AH-2	440	0.22	12	90	35	0.5	120/1	12	205	114	350	MERV-13	V-BANK -	PROVIDE BACKDRAFT DAMPER FOR EACH FAN	VFD

1. PROVIDE FAN ARRAY.
2. AIRFLOW AT DESIGN ENTERING CONDITIONS RESULTS IN 97,000 CFM LEAVING THE AIR HANDLER.
3. AIRFLOW AT DESIGN ENTERING CONDITIONS RESULTS IN 71,000 CFM LEAVING THE AIR HANDLER.

AIR HANDLING UNIT SCHEDULE CONT'D (AH)

PLAN CODE	INDIRECT COOLING COIL CFM AT ELEV	MBH SEN	TOTAL GPM	% PG	WPD (FT)	EWT (ºF)	LAT (ºF)	ROWS / FPF	AIR PD (IN MAX)	COIL SIZE
AH-1	(2) 104,860	2,647	1050	0	12.5	66	68.8	8 / 8	0.61	6 @ 43.5 x 108
AH-2	(3) 76,750	1,941	720	0	6.1	66	68.7	8 / 8	0.52	6 @ 40.5 x 94

COOLING TOWER SCHEDULE (CT)

PLAN CODE	FLOW RATE (GPM)	MIN. FLOW RATE (GPM)	TOTAL HEAT REJECTED (MBH)	EWT (ºF)	LWT (ºF)	OSA wb (ºF)	NO. OF CELLS	MIN FAN EFF (%)	ELECTRICAL MOTOR HP	CONTROL	SUMP HEATERS (KW)	VOLTAGE/ PHASE	MAXIMUM DIMENSIONS LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)	MAX. OPERATING WEIGHT (LBS)	MANUFACTURER & MODEL NO	REMARKS
CT-1	1,100	500	3,570	72.5	66	63	1	PREMIUM	40	VFD	2 @ 6KW	460/3	217	144	201	26,000	BAC PT2-1218A-3O1	304 STAINLESS STEEL BASIN
CT-2	750	400	2,430	72.5	66	63	1	PREMIUM	40	VFD	2 @ 4KW	460/3	144	144	192	15,000	BAC PT2-1212A-3N1	304 STAINLESS STEEL BASIN

PUMP SCHEDULE (P)

PLAN CODE	TYPE	DUTY	FLOW (GPM)	PRESSURE (FT)	CONTROL	PUMP SPEED (RPM)	MIN EFF (%)	FLUID	MOTOR LOAD (BHP)	MOTOR HP	MOTOR VOLTAGE/ PHASE	PUMP AND MOTOR WT (LBS)	MANUFACTURER & MODEL NO	REMARKS
P-1	END SUCTION	COOLING TOWER N. MECH RM	1,050	45	CONSTANT	1750	PREMIUM	FW	19.4	25	460/3	2500 (W/ INERTIA BASE)	BELL & GOSSETT 1531 6G	(3)
P-2	END SUCTION	COOLING TOWER N. MECH RM	1,050	45	CONSTANT	1750	PREMIUM	FW	19.4	25	460/3	2500 (W/ INERTIA BASE)	BELL & GOSSETT 1531 6G	(3)
P-3	END SUCTION	CHILLED WATER N. MECH RM	360	30	VFD	1750	PREMIUM	FW	3.5	5	460/3	1150 (W/ INERTIA BASE)	BELL & GOSSETT 1531 4AC	(1)
P-4	END SUCTION	CHILLED WATER N. MECH RM	360	30	VFD	1750	PREMIUM	FW	3.5	5	460/3	1150 (W/ INERTIA BASE)	BELL & GOSSETT 1531 4AC	(1)
P-5	END SUCTION	HEATING WATER N. MECH RM	560	45	VFD	1750	PREMIUM	FW	8.8	10	460/3	1250 (W/ INERTIA BASE)	BELL & GOSSETT 1531 3BC	(1)
P-6	END SUCTION	HEATING WATER N. MECH RM	560	45	VFD	1750	PREMIUM	FW	8.8	10	460/3	1250 (W/ INERTIA BASE)	BELL & GOSSETT 1531 3BC	(1)
P-7	END SUCTION	COOLING TOWER S. MECH RM	720	45	CONSTANT	1750	PREMIUM	FW	10.7	15	460/3	2100 (W/ INERTIA BASE)	BELL & GOSSETT 1531 5BC	(1)
P-8	END SUCTION	COOLING TOWER S. MECH RM	720	45	CONSTANT	1750	PREMIUM	FW	10.7	15	460/3	2100 (W/ INERTIA BASE)	BELL & GOSSETT 1531 5BC	(1)
P-9	INLINE	CHILLED WATER S. MECH RM	270	30	VFD	1750	PREMIUM	FW	2.8	3	460/3	280	BELL & GOSSETT 80 4X4X7	(1)
P-10	INLINE	CHILLED WATER S. MECH RM	270	30	VFD	1750	PREMIUM	FW	2.8	3	460/3	280	BELL & GOSSETT 80 4X4X7	(1)
P-11	END SUCTION	HEATING WATER S. MECH RM	320	45	VFD	1750	PREMIUM	FW	5.3	7.5	460/3	1100 (W/ INERTIA BASE)	BELL & GOSSETT 1531 3BC	(1)
P-12	END SUCTION	HEATING WATER S. MECH RM	320	45	VFD	1750	PREMIUM	FW	5.3	7.5	460/3	1100 (W/ INERTIA BASE)	BELL & GOSSETT 1531 3BC	(1)
P-13	INLINE	IT CLOSET FAN COIL UNITS N. MECH RM	25	28	VFD	1750	PREMIUM	FW	0.6	1	460/3	200	BELL & GOSSETT 80 2X2X7	(1)
P-14	INLINE	IT CLOSET FAN COIL UNITS N. MECH RM	25	28	VFD	1750	PREMIUM	FW	0.6	1	460/3	200	BELL & GOSSETT 80 2X2X7	(1)
P-15	INLINE	IT CLOSET FAN COIL UNITS S. MECH RM	25	28	VFD	1750	PREMIUM	FW	0.6	1	460/3	200	BELL & GOSSETT 80 2X2X7	(1)
P-16	INLINE	IT CLOSET FAN COIL UNITS S. MECH RM	25	28	VFD	1750	PREMIUM	FW	0.6	1	460/3	200	BELL & GOSSETT 80 2X2X7	(1)
P-17	INLINE	AH-1 PRE-HEAT COIL	230	30	CONSTANT	1750	PREMIUM	25% PG	2.5	3	460/3	280	BELL & GOSSETT 80 4X4X7	(1)
P-18	INLINE	AH-1 PRE-HEAT COIL	230	30	CONSTANT	1750	PREMIUM	25% PG	2.5	3	460/3	280	BELL & GOSSETT 80 4X4X7	(1)
P-19	INLINE	AH-2 PRE-HEAT COIL	130	30	CONSTANT	1750	PREMIUM	25% PG	1.6	2	460/3	250	BELL & GOSSETT 80 2-1/2X2-1/2X7	(1)
P-20	INLINE	AH-2 PRE-HEAT COIL	130	30	CONSTANT	1750	PREMIUM	25% PG	1.6	2	460/3	250	BELL & GOSSETT 80 2-1/2X2-1/2X7	(1)
P-21	INLINE	ELEV EQUIPMENT RM	1.6	15	CONSTANT	2650	PREMIUM	FW	0.08	-	120/1	15	BELL & GOSSETT PL-30	
P-22	INLINE	ELEV EQUIPMENT RM	1.6	15	CONSTANT	2650	PREMIUM	FW	0.08	-	120/1	15	BELL & GOSSETT PL-30	
P-23	INLINE	ELEV EQUIPMENT RM	1.6	15	CONSTANT	2650	PREMIUM	FW	0.08	-	120/1	15	BELL & GOSSETT PL-30	
BCP-3	END SUCTION	COMP SCIENCE EQUIPMENT RM	280	30	CONSTANT	1750	PREMIUM	FW	2.8	3	460/3	770	BELL & GOSSETT 1531 3AC	
BCP-4	END SUCTION	COMP SCIENCE EQUIPMENT RM	280	30	CONSTANT	1750	PREMIUM	FW	2.8	3	460/3	770	BELL & GOSSETT 1531 3AC	

1. PROVIDE MAXIMUM IMPELLER.

LOUVER SCHEDULE (L)

PLAN CODE	CFM	MAXIMUM VELOCITY (FPM)	MINIMUM FREE AREA (SQ FT)	MAXIMUM DIMENSIONS (W x H) (IN)	MANUFACTURER & MODEL NO
L-1	50	170	0.31	12" x 12"	RUSKIN ELF6375DX
L-2	26,215	1125	23.3	120" x 48"	RUSKIN ELF6375DX
L-3	26,215	1125	23.3	120" x 48"	RUSKIN ELF6375DX
L-4	26,215	1125	23.3	120" x 48"	RUSKIN ELF6375DX
L-5	26,215	1125	23.3	120" x 48"	RUSKIN ELF6375DX
L-6	300	620	.49	18" x 12"	RUSKIN ELF6375DX

RELIEF FAN SCHEDULE (RF)

PLAN CODE	SYSTEM SERVED	TYPE	CFM @ ELEV	ESP @ ELEV (IN WC)	FAN RPM	MOTOR HP	BHP	EFF	RPM	VOLTAGE/ PHASE	OCTAVE BAND / HZ	1 / 63	2 / 125	3 / 250	4 / 500	5 / 1K	6 / 2K	7 / 4K	8 / 8K	AIR VOLUME CONTROL	METHOD OF CONTROL	FAN DIAMETER (IN)	OPERATING WEIGHT (LBS)	MANUFACTURER & MODEL NO	REMARKS
RF-1	AH-1 BUILDING RELIEF	BELT DRIVE CENTRIFUGAL UPBLAST	13,000	1.0	871	5	4.7	PREMIUM	1725	460/3	INLET	88	93	91	86	78	75	69	63	ATC/VFD	ATC SYSTEM/ DUCT STATIC	54	360	COOK 300 ACRUB	PROVIDE WITH ROOF CURB, BACKDRAFT DAMPER
RF-2	BUILDING RELIEF	BELT DRIVE CENTRIFUGAL UPBLAST	13,000	1.0	871	5	4.7	PREMIUM	1725	460/3	INLET	88	93	91	86	78	75	69	63	ATC/VFD	ATC SYSTEM/ DUCT STATIC	54	360	COOK 300 ACRUB	PROVIDE WITH ROOF CURB, BACKDRAFT DAMPER
RF-3	BUILDING RELIEF	BELT DRIVE CENTRIFUGAL UPBLAST	13,000	1.0	871	5	4.7	PREMIUM	1725	460/3	INLET	88	93	91	86	78	75	69	63	ATC/VFD	ATC SYSTEM/ DUCT STATIC	54	360	COOK 300 ACRUB	PROVIDE WITH ROOF CURB, BACKDRAFT DAMPER
RF-4	BUILDING RELIEF	BELT DRIVE CENTRIFUGAL UPBLAST	13,000	1.0	871	5	4.7	PREMIUM	1725	460/3	INLET	88	93	91	86	78	75	69	63	ATC/VFD	ATC SYSTEM/ DUCT STATIC	54	360	COOK 300 ACRUB	PROVIDE WITH ROOF CURB, BACKDRAFT DAMPER
RF-5	BUILDING RELIEF	BELT DRIVE CENTRIFUGAL UPBLAST	13,000	1.0	871	5	4.7	PREMIUM	1725	460/3	INLET	88	93	91	86	78	75	69	63	ATC/VFD	ATC SYSTEM/ DUCT STATIC	54	360	COOK 300 ACRUB	PROVIDE WITH ROOF CURB, BACKDRAFT DAMPER
RF-6	BUILDING RELIEF	BELT DRIVE CENTRIFUGAL UPBLAST	13,000	1.0	871	5	4.7	PREMIUM	1725	460/3	INLET	88	93	91	86	78	75	69	63	ATC/VFD	ATC SYSTEM/ DUCT STATIC	54	360	COOK 300 ACRUB	PROVIDE WITH ROOF CURB, BACKDRAFT DAMPER
RF-7	BUILDING RELIEF	BELT DRIVE CENTRIFUGAL UPBLAST	19,000	0.75	397	5	4.4	PREMIUM	1725	460/3	INLET	88	87	82	75	71	65	59	55	ATC/VFD	ATC SYSTEM/ DUCT STATIC	76	1100	COOK 490 ACRUB	PROVIDE WITH ROOF CURB, BACKDRAFT DAMPER
RF-8	BUILDING RELIEF	BELT DRIVE CENTRIFUGAL UPBLAST	19,000	0.75	397	5	4.4	PREMIUM	1725	460/3	INLET	88	87	82	75	71	65	59	55	ATC/VFD	ATC SYSTEM/ DUCT STATIC	76	1100	COOK 490 ACRUB	PROVIDE WITH ROOF CURB, BACKDRAFT DAMPER
RF-9	BUILDING RELIEF	BELT DRIVE CENTRIFUGAL UPBLAST	19,000	0.75	397	5	4.4	PREMIUM	1725	460/3	INLET	88	87	82	75	71	65	59	55	ATC/VFD	ATC SYSTEM/ DUCT STATIC	76	1100	COOK 490 ACRUB	PROVIDE WITH ROOF CURB, BACKDRAFT DAMPER

PLATE-AND-FRAME HEAT EXCHANGER SCHEDULE (HX)

PLAN CODE	SYSTEM SERVED	CAPACITY (MBH)	HOT FLOW (GPM)	HOT EWT/LWT (ºF)	HOT PD (FT)	HOT FLUID	COLD FLOW (GPM)	COLD EWT/LWT (ºF)	COLD PD (FT)	COLD FLUID	WEIGHT (LB)	MANUFACTURER & MODEL NO
HX-1	AH-1 PRE-HEAT COILS	1,195	228	100/85	10	WATER	228	83/98	10	25% PG	3,100	BELL & GOSSETT GPX AP47
HX-2	AH-2 PRE-HEAT COILS	944	132	100/85	5	WATER	132	83/98	5	25% PG	4,000	BELL & GOSSETT GPX AP62

IN-LINE SOLIDS SEPARATOR SCHEDULE (ISS)

PLAN CODE	SYSTEM SERVED	PUMP FLOW (GPM)	PUMP HEAD (FT)	INLET/ OUTLET PIPE SIZE (IN)	ELECTRICAL VOLTAGE/ PHASE	AMPS	MAX DIMENSIONS L x W x H (IN)	MAX OPERATING WEIGHT (LBS)	MANUFACTURER & MODEL NO	REMARKS
ISS-1	CT-1	70	60	2.5 / 2.0	460/3	4.8	27 x 30 x 53	500	GRISWOLD CSS-201-LH	PROVIDE WITH CONTACTOR FOR REMOTE START/STOP, PURGE VALVE FURNISEHD BY 232500 CONTRACTOR
ISS-2	CT-2	42	40	2.0 / 2.0	460/3	4.8	27 x 30 x 53	500	GRISWOLD CSS-201-LH	PROVIDE WITH CONTACTOR FOR REMOTE START/STOP, PURGE VALVE FURNISEHD BY 232500 CONTRACTOR

EXHAUST FAN SCHEDULE (EF)

PLAN CODE	AREA SERVED	TYPE	CFM @ ELEV	ESP @ ELEV	FAN RPM	MOTOR BHP	HP	EFFICIENCY %	VOLT/ PH	SONES	DAMPER (GRAVITY OR MOTOR)	METHOD OF CONTROL	OPENING SIZE	MAX OPERATING WT (LBS)	MANUFACTURER & MODEL NO	REMARKS
EF-1	DEMO KITCHEN	UPBLAST CENTRIFUGAL	2,400	1.0	1093	0.75	1.0	PREMIUM	460/3	13.1	GRAVITY	ATC	26"X26"	210	COOK VCR 180V6B	-
EF-2	RESTROOMS LEVELS 3 & 4	UPBLAST CENTRIFUGAL	1200	1.0	1725	.46	0.5	PREMIUM	115/1	14.6	GRAVITY	ATC	24"X24"	150	COOK ACRUD-HP 150RH17D	-
EF-3	RESTROOMS LEVELS 1 & 2	UPBLAST CENTRIFUGAL	2,400	1.0	1093	0.75	1.0	PREMIUM	460/3	13.1	GRAVITY	ATC	26"X26"	210	COOK VCR 180V6B	-
EF-4	DEMO KITCHEN	UPBLAST CENTRIFUGAL	2,400	1.0	1093	0.75	1.0	PREMIUM	460/3	13.1	GRAVITY	ATC	26"X26"	210	COOK VCR 180V6B	-
EF-5	EMPLOYEE LOUNGE 208	INLINE CENTRIFUGAL	50	1.0	2144	0.13	1/6	PREMIUM	460/3	12.1	GRAVITY	ATC	12"X12"	125	COOK 60SQN-B	-
EF-6	ELEC MAIN 110Y	INLINE CENTRIFUGAL	75	0.3	1000	46 WATTS	-	PREMIUM	115/1	1.4	GRAVITY	PROVIDE LINE VOLTAGE THERMOSTAT	6"x6"	20	COOK GN-142	-
EF-7	LAUNDRY 125F	INLINE CENTRIFUGAL	480	0.5	2854	0.38	1/2	PREMIUM	115/1	25	GRAVITY	ATC	12"x12"	135	COOK 70SQN-B	PROVIDE WITH SOLID STATE SPEED CONTROLLER.
EF-8	ELEC 200K	INLINE CENTRIFUGAL	850	.3	904	208 WATTS	-	PREMIUM	115/1	2.0	GRAVITY	PROVIDE LINE VOLTAGE THERMOSTAT	20"x6"	90	COOK GN-822	-
EF-9	ELEVATOR A	INLINE CENTRIFUGAL	300	.5	1200	108 WATTS	-	PREMIUM	115/1	2.0	GRAVITY	ATC	8"x6"	40	COOK GN-520	DIRECT DRIVE MOTOR. PROVIDE WITH SOLID STATE SPEED CONTROLLER.
EF-10	ELEVATOR RM 110V	INLINE CENTRIFUGAL	300	.5	1200	108 WATTS	-	PREMIUM	115/1	2.0	GRAVITY	ATC	8"x6"	40	COOK GN-520	DIRECT DRIVE MOTOR. PROVIDE WITH SOLID STATE SPEED CONTROLLER.

SOUND ATTENUATOR SCHEDULE (SA)

PLAN CODE	SYSTEM SERVED	CFM (ALT)	MAX VEL (FPM)	MAX PRESS DROP	MAX DIMENSIONS (1) LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)	MAX OPERATING WT (LBS)	MANUFACTURER & MODEL NO	OCTAVE BAND / HZ	1 / 63	2 / 125	3 / 250	4 / 500	5 / 1000	6 / 2000	7 / 4000	8 / 8000	POSITION OF BAFFLES
SA-1	RF-1	13,000	1444	0.11	108	36	36	360	VIBRO-ACOUSTICS RED-UHV-FC-L13968	DIL	10	16	16	26	35	30	21	21	VERTICAL
SA-2	RF-2	13,000	1444	0.11	108	36	36	360	VIBRO-ACOUSTICS RED-UHV-FC-L13968	DIL	10	16	16	26	35	30	21	21	VERTICAL
SA-3	RF-3	13,000	1444	0.11	108	36	36	360	VIBRO-ACOUSTICS RED-UHV-FC-L13968	DIL	10	16	16	26	35	30	21	21	VERTICAL
SA-4	RF-4	13,000	1444	0.11	108	36	36	360	VIBRO-ACOUSTICS RED-UHV-FC-L13968	DIL	10	16	16	26	35	30	21	21	VERTICAL
SA-5	RF-5	13,000	1444	0.11	108	36	36	360	VIBRO-ACOUSTICS RED-UHV-FC-L13968	DIL	10	16	16	26	35	30	21	21	VERTICAL
SA-6	RF-6	13,000	1444	0.11	108	36	36	360	VIBRO-ACOUSTICS RED-UHV-FC-L13968	DIL	10	16	16	26	35	30	21	21	VERTICAL
SA-7	BOWLING ALLEY	2,100	727	0.08	144	26	16	300	VIBRO-ACOUSTICS RED-HV-F9-L14049	DIL	9	24	36	50	47	46	45	27	VERTICAL

AIR SEPARATOR (AS)

PLAN CODE	SYSTEM SERVED	CONNECTION SIZE	MAX GPM	PD (FT)	MAX DIMENSIONS (IN) DIAMETER	HEIGHT	FLANGE TO FLANGE	DRY WT (LBS)	MAX OPER WT (LBS)	MANUFACTURER & MODEL NO
AS-1	AH-1 CHILLED WATER	6"	360	0.5	12.8	30.6	27.7	450	620	SPIROVENT SENIOR
AS-2	AH-2 CHILLED WATER	3"	270	0.5	8.6	23.7	20.2	115	175	SPIROVENT SENIOR
AS-3	AH-1 HEATING WATER	8"	560	0.5	16	38.4	33.6	430	710	SPIROVENT SENIOR
AS-4	AH-2 HEATING WATER	6"	320	0.5	12.8	30.6	27.7	450	620	SPIROVENT SENIOR
AS-5	AH-1 PRE-HEAT COIL	2 1/2"	230	0.5	6.3	19	15.7	70	95	SPIROVENT SENIOR
AS-6	AH-2 PRE-HEAT COIL	2"	130	0.5	6.3	19	15.2	60	80	SPIROVENT SENIOR

LOUVERED PENTHOUSE SCHEDULE (LPH)

PLAN CODE	FUNCTION	THROAT SIZE LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)	MINIMUM FREE AREA (SQ FT)	MANUFACTURER & MODEL NO
LPH-1	INTAKE	24	24	24	5.67	RUSKIN PHB6375DXD
LPH-2	EXHAUST	108	18	18	14.22	RUSKIN PHB6375DXD
LPH-3	EXHAUST	114	48	36	44.68	RUSKIN PHB6375DXD
LPH-4	INTAKE	114	30	24	24.06	RUSKIN PHB6375DXD

EXPANSION TANK SCHEDULE (ET)

PLAN CODE	SYSTEM SERVED	WATER TEMP (°F)	% GLYCOL	TANK VOLUME (GAL)	ACCEPTANCE VOLUME (GAL)	PRE-CHARGE (PSI)	MAX DIMENSIONS DIA (IN)	HEIGHT (IN)	OPERATING WT (LBS)	MANUFACTURER & MODEL NO	REMARKS
ET-1	AH-1 CHILLED WATER	48	0	8.0	2.4	14	12	19	130	AMTROL AX-15	1/2" NPT CONNECTION
ET-2	AH-2 CHILLED WATER	48	0	8.0	2.4	14	12	19	130	AMTROL AX-15	1/2" NPT CONNECTION
ET-3	AH-1 HEATING WATER	100	0	68	34.0	14	24	41	950	AMTROL AX-120V	1" NPT CONNECTION
ET-4	AH-2 HEATING WATER	100	0	68	34.0	14	24	41	950	AMTROL AX-120V	1" NPT CONNECTION
ET-5	AH-1 PRE-HEAT COIL	98	25	21.7	11.3	14	16	29	310	AMTROL AX-40V	1/2" NPT CONNECTION
ET-6	AH-2 PRE-HEAT COIL	98	25	8.0	2.4	14	12	19	130	AMTROL AX-15	1/2" NPT CONNECTION

JOB SITE ELEVATION = 4,500 FT
JOB SITE PRESSURE = 12.32 PSI
SELECT ALL EQUIPMENT FOR OPERATION AT JOB SITE ELEVATION
ALL MOTORS TO BE PREMIUM EFFICIENCY

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Roger Lee Hamlet JR.
04-27-2011
State of Utah

STUDENT LIFE CENTER & PARKING STRUCTURE

Orem, Utah

UTAH VALLEY UNIVERSITY

DRAWN BY:	JMN
CHECKED BY:	RLH
OWNER PROJECT NO.:	
GSBS PROJECT NO.:	2011.045.00
ISSUED DATE:	04.27.2012

MECHANICAL SCHEDULES

CONSTRUCTION DOCUMENTS

MH6.01

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AIR DEVICE SCHEDULE

PLAN CODE / GRILLE CFM

PLAN CODE	TYPE & DUTY	FACE SIZE	NECK SIZE	CEILING TYPE (2)	MAX CFM	MAX TP (IN WC)	NC LEVEL MAX	MIN THROW (FT) (T50)	4-WAY MIN THROW (T50)	2-WAY MIN THROW (T50)	MANUFACTURER & MODEL NO	REMARKS
1	LINEAR-SUPPLY	24"L	6"Ø	MATCH CEILING	60	0.04	28	10	-	-	TEMP0 L.D.	1 @ 1" SLOT
2	LINEAR-SUPPLY	24"L	8"Ø	MATCH CEILING	120	0.05	29	11	-	-	TEMP0 L.D.	2 @ 1" SLOT
2A	LINEAR-SUPPLY	24"L	8"Ø	MATCH CEILING	120	0.05	29	10	-	10	TEMP0 L.D.	2 @ 1" SLOT, 2-WAY THROW
3	LINEAR-SUPPLY	24"L	8"Ø	MATCH CEILING	180	0.06	30	12	-	-	TEMP0 L.D.	3 @ 1" SLOT
4	LINEAR-SUPPLY	24"L	10"Ø	MATCH CEILING	240	0.06	31	13	-	-	TEMP0 L.D.	4 @ 1" SLOT
5	LINEAR-SUPPLY	48"L	8"Ø	MATCH CEILING	120	0.04	28	10	-	-	TEMP0 L.D.	1 @ 1" SLOT
6	LINEAR-SUPPLY	48"L	10"Ø	MATCH CEILING	240	0.04	29	11	-	-	TEMP0 L.D.	2 @ 1" SLOT
6A	LINEAR-SUPPLY	48"L	10"Ø	MATCH CEILING	240	0.04	29	10	-	10	TEMP0 L.D.	2 @ 1" SLOT, 2-WAY THROW
7	LINEAR-SUPPLY	48"L	12"ØL	MATCH CEILING	360	0.06	30	12	-	-	TEMP0 L.D.	3 @ 1" SLOT
8	LINEAR-SUPPLY	48"L	12"Ø	MATCH CEILING	480	0.06	31	13	-	-	TEMP0 L.D.	4 @ 1" SLOT
9	PERFORATED RETURN	24" X 24"	22" X 22"	MATCH CEILING	1200	0.05	17	-	-	-	TITUS PAR	-
10	PERFORATED RETURN	24" X 12"	22"X 10"	MATCH CEILING	600	0.06	10	-	-	-	TITUS PAR	-
13	PERFORATED EXHAUST GRILLE	8" X 8"	6" X 6"	MATCH CEILING	120	0.12	10	-	-	-	TITUS 8F	-
14	PERFORATED EXHAUST GRILLE	10" X 10"	8" X 8"	MATCH CEILING	225	0.12	12	-	-	-	TITUS 8F	-
15	PERFORATED EXHAUST GRILLE	12" X 12"	10" X 10"	MATCH CEILING	360	0.12	14	-	-	-	TITUS 8F	-
16	PERFORATED EXHAUST GRILLE	14" x 14"	12" X 12"	MATCH CEILING	550	0.12	16	-	-	-	TITUS 8F	-
21	RADIAL BLADE DIFFUSER	12"Ø	8"Ø	SURFACE	210	0.14	29	8 (1)	-	-	AIR DIFFUSION PRODUCTS DNR	-
22	RADIAL BLADE DIFFUSER	15"Ø	10"Ø	SURFACE	330	0.14	29	10 (1)	-	-	AIR DIFFUSION PRODUCTS DNR	-
23	RADIAL BLADE DIFFUSER	18"Ø	12"Ø	SURFACE	470	0.14	30	12 (1)	-	-	AIR DIFFUSION PRODUCTS DNR	-
26	RADIAL BLADE DIFFUSER	24" X 24"	8"Ø	GRID	210	0.14	29	8 (1)	-	-	AIR DIFFUSION PRODUCTS DNR	-
27	RADIAL BLADE DIFFUSER	24" X 24"	10"Ø	GRID	330	0.14	29	10 (1)	-	-	AIR DIFFUSION PRODUCTS DNR	-
28	RADIAL BLADE DIFFUSER	24" X 24"	12"Ø	GRID	470	0.14	30	12 (1)	-	-	AIR DIFFUSION PRODUCTS DNR	-
31	ADJUSTABLE LOUVERED	24" X 24"	6"Ø	MATCH CEILING	170	0.13	25	ADJUSTABLE	11	18	TITUS TDCA	18" x 18" CORE
38	LINEAR BAR GRILLES	4" WIDE	NA	-	160/LF	0.09	28	21	-	-	PRICE LBMH 25B	GRILLE TO APPEAR CONTINUOUS
42	DRUM LOUVER	26" X 11"	24" X 8"	-	600	0.08	15	54	-	-	AIR CONCEPTS DL-C SERIES	-
43	DUCT MOUNTED PERFORATED GRILLE	14" X 6"	12" X 4"	-	180	0.1	-	21	-	-	AIR CONCEPTS DMPG SERIES	-
44	DUCT MOUNTED PERFORATED GRILLE	26" X 6"	24" X 4"	-	430	0.13	24	32	-	-	AIR CONCEPTS DMPG SERIES	-
45	LINEAR SUPPLY	48"	12"	MATCH CEILING	470	0.05	20	-	-	20	PRICE AS230	2 @ 3" SLOT (5)(3)
46	LINEAR SUPPLY	60"	8"	MATCH CEILING	330	0.02	-	-	-	14	PRICE AS220	2 @ 2" SLOT (5)(3)
47	LINEAR SUPPLY	60"	8"	MATCH CEILING	360	0.16	27	-	-	28	PRICE AS210	2 @ 1" SLOT (5)(3)(4)
48	LINEAR SUPPLY	48"	8"	MATCH CEILING	160	0.04	17	-	-	20	PRICE AS210	2 @ 1" SLOT (5)(3)
49	LINEAR SUPPLY	60"	6"	MATCH CEILING	150	.06	25	20	-	-	PRICE AS210	1 @ 1" SLOT (5)(3)
50	LINEAR SUPPLY	60"	8"	MATCH CEILING	210	0.05	26	16	-	-	PRICE AS215	1 @ 1.5" SLOT (5)(3)
51	LINEAR SUPPLY	48"	8"	MATCH CEILING	210	.07	16	26	-	-	PRICE AS215	1 @ 1.5" SLOT (5)(3) PROVIDE PRICE VCR8EC CONTROL DAMPER KIT AS NOTED ON DRAWINGS
52	LINEAR SUPPLY	48"	8"	MATCH CEILING	360	.04	-	-	-	26	PRICE AS215	2 @ 1.5" SLOT (5)(3) PROVIDE PRICE VCR8EC CONTROL DAMPER KIT AS NOTED ON DRAWINGS
53	LINEAR SUPPLY	48"	6"	SURFACE	480	0.06	24	32	-	-	PRICE AS210	1 @ 3" SLOT (5)(3)
54	LINEAR SUPPLY	48"	8"	MATCH CEILING	300	0.04	17	18	-	-	PRICE AS220	2 @ 2" SLOT (5)(3)
55	LINEAR SUPPLY	26" X 12"	24" X 10"	WALL MOUNTED	1,335	0.18	39	-	-	-	TITUS 300RS	-
56	LINEAR SUPPLY	48"	10"	WALL MOUNTED	280	0.01	-	-	-	-	PRICE AS225	2 @ 2.5" SLOT
57	LINEAR SUPPLY	60"	8"	WALL MOUNTED	300	0.08	17	21	-	-	PRICE AS215	2 @ 1.5" SLOT
58	LINEAR SUPPLY	60"	10	MATCH CEILING	440	0.03	-	-	-	11	PRICE AS230	2 @ 3" SLOT (5)(3)
59	LINEAR SUPPLY	48"	8"	MATCH CEILING	230	0.14	27	34	-	-	PRICE AS210	1 @ 1" SLOT (5)(3)
60	LINEAR SUPPLY	60"	6"	MATCH CEILING	280	0.07	-	-	-	19	PRICE AS215	1.5 @ 2" SLOT (5)(3)
61	LINEAR BAR GRILLES	(6)	NA	SEE BENCH DETAIL ON AE-506	300/LF	-	26	30	-	-	PRICE LBMH 25B	PROVIDE OBD

(1) RECOMMENDED MINIMUM DISTANCE BETWEEN DIFFUSERS IN 9' CEILING.
(2) VERIFY FRAME TYPE OF ALL AIR DEVICES WITH ARCHITECTURAL REFLECTED CEILING PLAN BEFORE ORDERING.
(3) SEE NOTES ON DRAWINGS FOR LOCATIONS WHERE SLOT DIFFUSERS MUST HAVE A CONTINUOUS FRAME.
(4) SEE NOTES ON DRAWINGS FOR DIRECTIONS ON CUSTOM PLENUM BOXES. CONTRACTOR IS RESPONSIBLE TO PROVIDE AN ADEQUATELY SIZED PLENUM.
(5) COMPATIBLE WITH TECHZONE CEILINGS AS REQUIRED.
(6) GRILLE IS 8" WIDE AND APPROXIMATELY 96" LONG. CONTRACTOR MUST FIELD VERIFY EXACT LENGTH OF GRILLE AND COORDINATE WITH OTHER DISCIPLINES. SEE BENCH DETAIL ON AE-506

FAN COIL UNIT SCHEDULE (FC)

PLAN CODE	CFM	ESP (IN WC)	FAN HP	VOLT/ PH	HEATING COIL						COOLING COIL							MAX DIMENSIONS				MANUFACTURER & MODEL NO	ACCESSORIES
					CAPACITY (MBH)	EAT/ LAT (°F)	EWT/ LWT (°F)	GPM	WATER PD (FT)	AIR PD (IN WC)	CAPACITY (MBH)	EAT (DB/ WB) (°F)	LAT (DB/ WB) (°F)	EWT/ LWT (°F)	GPM	WATER PD (FT)	AIR PD (IN WC)	LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)	OPERATING WT (LBS)		
FC-1	8100	0.5	7.5	460/3	115	74/89	100/85	15.7	7	0.22	NA	NA	NA	NA	NA	NA	NA	55	60	102	2800	JOHNSON CONTROLS SOLUTION INDOOR AH	(2) - (3) -
FC-2	1800	0.5	2.3	460/3	NA	NA	NA	NA	NA	NA	29	72/59	55/54	48/62.5	4	9.0	1.11	86	43	22	800	AAON H3-BRA-3-0-26QA-000	- -
FC-3	3250	1.03	4	460/3	NA	NA	NA	NA	NA	NA	55	72/59	55/54	48/62.5	8	6.0	1.16	74	61	27	900	AAON H3-CRA-3-0-28HA-000	- -
FC-4	1200	0.5	2 @ 1/3	115/1	NA	NA	NA	NA	NA	NA	19	72/59	55/53	48/63	2.6	1.9	0.13	33	58	17	290	ENVIRO-TEC HPP-16	- -
FC-5	2250	0.5	4	460/3	NA	NA	NA	NA	NA	NA	32	72/59	55/54	48/62.5	4.5	2.4	0.78	74	61	27	900	AAON H3-CRA-3-0-26HA-000	- -
FC-6	1200	0.5	2 @ 1/3	115/1	NA	NA	NA	NA	NA	NA	19	72/59	55/53	48/63	2.6	1.9	0.13	33	58	17	290	ENVIRO-TEC HPP-16	- -
FC-7	1200	0.5	2 @ 1/3	115/1	NA	NA	NA	NA	NA	NA	19	72/59	55/53	48/63	2.6	1.9	0.13	33	58	17	290	ENVIRO-TEC HPP-16	- -
FC-8	1200	0.5	2 @ 1/3	115/1	NA	NA	NA	NA	NA	NA	19	72/59	55/53	48/63	2.6	1.9	0.13	33	58	17	290	ENVIRO-TEC HPP-16	- -
FC-9	1200	0.5	2 @ 1/3	115/1	NA	NA	NA	NA	NA	NA	19	72/59	55/53	48/63	2.6	1.9	0.13	33	58	17	290	ENVIRO-TEC HPP-16	- -
FC-10	720	0.5	2 @ 1/3	115/1	18,000	72/90	100/85	2.6	1.2	.02	12	72/59	55/53	48/63	1.6	1.5	0.09	33	48	17	270	ENVIRO-TEC HPP-12	- -
FC-11	750	0.5	2 @ 1/3	115/1	NA	NA	NA	NA	NA	NA	12	72/59	55/53	48/63	1.6	1.5	0.09	33	48	17	290	ENVIRO-TEC HPP-12	(1) PROVIDE WITH EMERGENCY BACK-UP POWER.
FC-12	750	0.5	2 @ 1/3	115/1	NA	NA	NA	NA	NA	NA	12	72/59	55/53	48/63	1.6	1.5	0.09	33	48	17	290	ENVIRO-TEC HPP-12	(1) PROVIDE WITH EMERGENCY BACK-UP POWER.
FC-13	750	0.5	2 @ 1/3	115/1	NA	NA	NA	NA	NA	NA	12	72/59	55/53	48/63	1.6	1.5	0.09	33	48	17	290	ENVIRO-TEC HPP-12	(1) PROVIDE WITH EMERGENCY BACK-UP POWER.

(1) PROVIDE FAN COIL UNIT WITH EMERGENCY BACK-UP POWER.
(2) TOP RETURN INLET AND BOTTOM SUPPLY DISCHARGE.
(3) PROVIDE WITH FAN COIL UNIT MANUFACTURERS 18" SUPPORT FRAME AND VIBRATION ISOLATORS.

UNIT HEATER SCHEDULE (UH)

PLAN CODE	AREA SERVED	CFM (ALT)	HEATING CAP (MBH) (LOW SPD)	GPM	WPD (FT)	EWT/ LWT (ºF)	% PPG	EAT (ºF)	MOTOR		MOUNTING	MOUNTING HEIGHT TO BOTTOM OF HEATER	MANUFACTURER & MODEL NO	REMARKS
									HP	VOLT/ PH				
UH-1	3-COURT GYM STOR	700	11.7	5.2	6.0	100/85	NONE	50	1/20	115/1	(1)	8'-0"	TRANE UHSB-A36	HORIZONTAL SPACE SAVING MODEL S
UH-2	3-COURT GYM STOR	700	11.7	5.2	6.0	100/85	NONE	50	1/20	115/1	(1)	8'-0"	TRANE UHSB-A36	HORIZONTAL SPACE SAVING MODEL S
UH-3	3-COURT GYM STOR	700	11.7	5.2	6.0	100/85	NONE	50	1/20	115/1	(1)	8'-0"	TRANE UHSB-A36	HORIZONTAL SPACE SAVING MODEL S
UH-4	3-COURT GYM STOR	700	11.7	5.2	6.0	100/85	NONE	50	1/20	115/1	(1)	8'-0"	TRANE UHSB-A36	HORIZONTAL SPACE SAVING MODEL S
UH-5	3-COURT GYM STOR	700	11.7	5.2	6.0	100/85	NONE	50	1/20	115/1	(1)	8'-0"	TRANE UHSB-A36	HORIZONTAL SPACE SAVING MODEL S
UH-6	STORAGE 400F	700	11.7	5.2	6.0	100/85	NONE	50	1/20	115/1	(1)	8'-0"	TRANE UHSB-A36	HORIZONTAL SPACE SAVING MODEL S
UH-7	STORAGE 410	700	11.7	5.2	6.0	100/85	NONE	50	1/20	115/1	(1)	8'-0"	TRANE UHSB-A36	HORIZONTAL SPACE SAVING MODEL S
UH-8	STORAGE 410	700	11.7	5.2	6.0	100/85	NONE	50	1/20	115/1	(1)	8'-0"	TRANE UHSB-A36	HORIZONTAL SPACE SAVING MODEL S
UH-9	MECH RM 400T	2050	42.6	16.5	1.2	100/85	NONE	50	1/3	115/1	(1)	8'-0"	TRANE UHSB-180	HORIZONTAL SPACE SAVING MODEL S
UH-10	MECH RM 400T	2050	42.6	16.5	1.2	100/85	NONE	50	1/3	115/1	(1)	8'-0"	TRANE UHSB-180	HORIZONTAL SPACE SAVING MODEL S
UH-11	STORAGE 125C	2050	42.6	16.5	1.2	100/85	NONE	50	1/3	115/1	(1)	8'-0"	TRANE UHSB-180	HORIZONTAL SPACE SAVING MODEL S
UH-12	STORAGE 125C	2050	42.6	16.5	1.2	100/85	NONE	50	1/3	115/1	(1)	8'-0"	TRANE UHSB-180	HORIZONTAL SPACE SAVING MODEL S
UH-13	STORAGE 125E	2050	42.6	16.5	1.2	100/85	NONE	50	1/3	115/1	(1)	8'-0"	TRANE UHSB-180	HORIZONTAL SPACE SAVING MODEL S
UH-14	STORAGE 125E	2050	42.6	16.5	1.2	100/85	NONE	50	1/3	115/1	(1)	8'-0"	TRANE UHSB-180	HORIZONTAL SPACE SAVING MODEL S
UH-15	STORAGE 101A	245	1.6	0.8	0.8	100/85	NONE	50	1/20	115/1	(1)	8'-0"	TRANE UHSB-A08	HORIZONTAL SPACE SAVING MODEL S
UH-16	FIRE RISER 110E	245	1.6	0.8	0.8	100/85	NONE	50	1/20	115/1	(1)	8'-0"	TRANE UHSB-A08	HORIZONTAL SPACE SAVING MODEL S

(1) WALL BRACKET (2) HANG FROM CEILING OR ROOF STRUCTURE

VARIABLE FREQUENCY DRIVE SCHEDULE (VFD)

PLAN CODE	SERVICE	BYPASS	MAX AMBIENT TEMPERATURE (°F)	REMARKS
VFD-1	PUMP P-3	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-2	PUMP P-4	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-3	PUMP P-5	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-4	PUMP P-6	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-5	PUMP P-9	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-6	PUMP P-10	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-7	PUMP P-11	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-8	PUMP P-12	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-9	PUMP P-13	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-10	PUMP P-14	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-11	PUMP P-15	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-12	PUMP P-16	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-13	COOLING TOWER CT-1	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-14	COOLING TOWER CT-2	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-15	AH-1 SUPPLY FANS SF-1/SF-2	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-16	AH-1 SUPPLY FANS SF-3/SF-4	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-17	AH-1 SUPPLY FANS SF-5/SF-6	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-18	AH-1 SUPPLY FANS SF-7/SF-8	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-19	AH-2 SUPPLY FANS SF-9/SF-10	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-20	AH-2 SUPPLY FANS SF-11/SF-12	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-21	AH-2 SUPPLY FANS SF-13/SF-14	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-22	RELIEF FAN RF-1	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-23	RELIEF FAN RF-2	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-24	RELIEF FAN RF-3	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-25	RELIEF FAN RF-4	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-26	RELIEF FAN RF-5	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-27	RELIEF FAN RF-6	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-28	RELIEF FAN RF-7	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-29	RELIEF FAN RF-8	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT
VFD-30	RELIEF FAN RF-9	NONE	105	PASSWORD PROTECTED KEYPAD, LOCKING DISCONNECT

VAV

PLAN CODE / BOX NO. / MAX COOLING CFM / MIN CFM

PLAN CODE	INLET SIZE (IN)	DESIGN INLET SP (IN WC)	MAX COOLING AIR FLOW (CFM)	MAX HEATING AIR FLOW (CFM)	MAX NC	MIN CONTROL (CFM)	MAX SP DROP (IN WC COOLING)	USE WITH REHEAT COIL
6C	6	1.0	500	NA	34	80	0.22	NONE/ COOLING ONLY
6I	6	1.0	500	360	34	80	0.22	RH-1
6E	6	1.0	500	500	34	80	0.22	RH-2
8C	8	1.0	800	NA	33	150	0.05	NONE/ COOLING ONLY
8I	8	1.0	900	450	33	150	0.05	RH-3
8E	8	1.0	800	800	33	150	0.05	RH-4
10C	10	1.0	1400	NA	34	230	0.05	NONE/ COOLING ONLY
10I	10	1.0	1400	700	34	230	0.05	RH-5
10E	10	1.0	1400	1400	34	230	0.05	RH-6
12C	12	1.0	1600	NA	34	325	0.05	NONE/ COOLING ONLY
12I	12	1.0	1600	900	34	325	0.05	RH-7
12E	12	1.0	1600	1600	34	325	0.05	RH-8
14C	14	1.0	2500	NA	35	450	0.07	NONE/ COOLING ONLY
14I	14	1.0	2500	1250	35	450	0.07	RH-9
14E	14	1.0	2500	2500	35	450	0.07	RH-10

RE-HEAT COIL SCHEDULE (RH)

PLAN CODE	VAV BOX SERVED	CFM @ ELEV.	MBH	FV (FPM)	AIR SIDE		WATER SIDE			COIL FACE MAX DIMENSIONS (H" x W")	ROWS/ FINS PER IN	MANUFACTURER & MODEL NO.
					EAT/LAT (ºF)	MAX AIR PD (IN WC)	EWT/LWT (ºF)	GPM	MAX PD (F0)			
RH-1	6I	360	11.6	247	54/88	0.1	100/85	1.6	2.4	10.5 x 20	3/10	TEMTROL 5WC-20-10.5X20X3-10AL
RH-2	6E	500	16.7	343	54/88	0.18	100/85	2.3	6.0	10.5 x 20	4/9	TEMTROL 5WC-28-10.5X20X4-9AL
RH-3	8I	450	14.8	246	54/88	0.1	100/85	2.0	4.4	12 x 22	3/10	TEMTROL 5WC-24-12X22X3-10AL
RH-4	8E	800	29.5	416	54/88	0.28	100/85	4.0	3.3	12 x 26	4/10	TEMTROL 5WC16-12X26X4-10AL
RH-5	10I	700	22.5	216	54/88	0.07	100/85	3.1	0.8	18 x 26	3/10	TEMTROL 5WC-12-18X26X3-10AL
RH-6	10E	1400	46.9	431	54/88	0.3	100/85	6.4	11.1	18 x 26	4/10	TEMTROL 5WC-24-18X26X4-10AL
RH-7	12I	900	29.3	258	54/88	0.1	100/85	4.0	3.8	18 x 28	3/10	TEMTROL 5WC-18-18X28X3-10AL
RH-8	12E	1600	52.7	427	54/88	0.3	100/85	7.1	5.0	18 x 30	4/10	TEMTROL 5WC-16-18X30X4-10AL
RH-9	14I	1250	40.5	257	54/88	0.1	100/85	5.5	2.9	19.5 x 36	3/10	TEMTROL 5WC-12-19.5X36X3-10AL
RH-10	14E	2500	83.3	429	54/88	0.3	100/85	11.2	7.4	21 x 40	4/10	TEMTROL 5WC-14-21X40X4-10AL
RH-11	16E	3500	111.8	467	54/88	0.3	100/85	15	4.2	22.5 x 48	4/10	TEMTROL 5WC-8-22.5X48X4-10AL

JOB SITE ELEVATION = 4,500 FT
JOB SITE PRESSURE = 12.32 PSI
SELECT ALL EQUIPMENT FOR OPERATION AT JOB SITE ELEVATION
ALL MOTORS TO BE PREMIUM EFFICIENCY

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REVISIONS:

1	05.09.2012	ADDENDUM 3

STUDENT LIFE CENTER & PARKING STRUCTURE

Orem, Utah

UTAH VALLEY UNIVERSITY

DRAWN BY: JMN
CHECKED BY: RLH
OWNER PROJECT NO.:
GSBS PROJECT NO.: 2011.045.00
ISSUED DATE: 04.27.2012

MECHANICAL SCHEDULES

CONSTRUCTION DOCUMENTS

MH6.02

ELECTRIC UNIT HEATER SCHEDULE (EUH)

PLAN CODE	ELECTRICAL TYPE	ELECTRICAL TOTAL KW	ELECTRICAL NO OF STEPS	ELECTRICAL VOLT/ PH	ELECTRICAL FAN HP	CFM (ALT)	MOUNTING	EAT (°F)	MANUFACTURER & MODEL NO	REMARKS
EUH-1	VERTICAL	2.6	1	277/1	1/30	360	OVERHEAD BRACKET	60	CHROMALOX HVH-02-71-00	PROVIDE WITH CONTACTOR, NO LINE-VOLTAGE THERMOSTAT.
EUH-2	VERTICAL	2.6	1	277/1	1/30	360	OVERHEAD BRACKET	60	CHROMALOX HVH-02-71-00	PROVIDE WITH CONTACTOR, NO LINE-VOLTAGE THERMOSTAT.

CABINET UNIT HEATER SCHEDULE (CUH)

PLAN CODE	AREA SERVED	CFM @ ELEV	MIN HEATING CAPACITY (MBH) (LOW SPD)	GPM	MAX WPD (FT)	EWT/ LWT (ºF)	% PPG	EAT/ MAX LAT (ºF)	MOTOR HP	MOTOR VOLT/ PH	MOUNTING	CONFIG	MAX DIMENSIONS W x H x D (IN)	MANUFACTURER & MODEL NO	REMARKS
CUH-1	VESTIBULE 228	350	6.4	1.4	2.5	100 / 85	0	70 / 90	.22	120/1	RECESSED WALL	INVERTED FLOW	27 x 26 x 10	TRANE MODEL "N" FFNB04	-
CUH-2	VESTIBULE P200E	350	6.4	NA	NA	NA / NA	NA	70 / 90	.22	208/1	WALL/FLOOR	- / -	40 x 26 x 10	TRANE MODEL "B" FFBB04	ELECTRIC HEAT COILS
CUH-3	STAIR-4 200D	600	8.1	1.2	0.4	100 / 85	0	70 / 90	.22	120/1	RECESSED WALL	INVERTED FLOW	43 x 27 x 10	TRANE MODEL "N" FFNB06	-
CUH-4	STAIR-2 100C	920	21.4	8.2	11.2	100 / 85	0	70 / 90	.22	120/1	RECESSED WALL	INVERTED FLOW	75 x 29 x 10	TRANE MODEL "N" FFNB12	-
CUH-5	STAIR-5 110D	550	7.1	1.1	1.7	100 / 85	0	70 / 90	.22	120/1	WALL/FLOOR	INVERTED FLOW	48 x 29 x 10	TRANE MODEL "M" FFMB06	FLOOR MOUNTED, BACK FLUSH TO WALL, WITH 4" BASE.
CUH-6	STAIR-8 110Q	550	6.9	1.0	1.5	100 / 85	0	70 / 90	.22	120/1	WALL/FLOOR	INVERTED FLOW	48 x 29 x 10	TRANE MODEL "M" FFMB06	FLOOR MOUNTED, BACK FLUSH TO WALL, WITH 4" BASE.

MAKE-UP AIR FAN (MAF)

PLAN CODE	AREA SERVED	TYPE	CFM @ ELEV	ESP @ ELEV	FAN RPM	MOTOR BHP	MOTOR HP	MOTOR EFFICIENCY %	MOTOR VOLT/ PH	SONES	DAMPER (GRAVITY OR MOTOR)	METHOD OF CONTROL	OPENING SIZE	MAX OPERATING WT (LBS)	MANUFACTURER & MODEL NO	REMARKS
MAF-1	DRYER 125G	INLINE CENTRIFUGAL	3,200	0.5	1634	.94	1.0	PREMIUM	115/1	24	GRAVITY	INTERLOCK W/ DRYER	20"X20"	225	COOK 150SQN-B	PROVIDE WITH SOLID STATE SPEED CONTROLLER

FORCED DRAFT CONDENSING BOILER SCHEDULE (B)

PLAN CODE	MBH CAPACITY OUTPUT @ 4400 FT.	MBH CAPACITY INPUT @ SEA LEVEL	ASME PRESS. RATING (PSI)	OPERATING PRESSURE	MIN. EFFICIENCY % (*)	FLUE CATEGORY	FLUE SIZE	GPM	PRESS. DROP (FT.HD.)	MAX. SIZE LENGTH (IN)	MAX. SIZE WIDTH (IN)	MAX. SIZE HEIGHT (IN)	MAX. SIZE OPERATING WT.(LBS)	ELECTRICAL FLA	ELECTRICAL VOLTAGE & PHASE	MIN. GAS PRESSURE (IN. W.C.)	MAKE & MODEL	REMARKS
B-3	5,520	6,000	150	80	92	IV	14"	280	12	156	49	88	9,300	13	460/3	11	FULTON VANTAGE 6000	-
B-4	5,520	6,000	150	80	92	IV	14"	280	12	156	49	88	9,300	13	460/3	11	FULTON VANTAGE 6000	-

CONTROL DAMPER SCHEDULE (CD)

PLAN CODE	SERVICE	TYPE	AIR FLOW VOLUME (CFM)	DIMENSIONS WIDTH (IN)	DIMENSIONS HEIGHT (IN)	MAX FACE VELOCITY (FPM)	METHOD OF CONTROL	BLADE ORIENTATION	MANUFACTURER & MODEL NO
CD-1	RETURN AIR	MOTORIZED/ 2-POSITION	9,100	36	30	1,215	ATC	OPPOSED BLADE	RUSKIN CD40X2 (1)
CD-2	RETURN AIR	MOTORIZED/ 2-POSITION	9,100	36	30	1,215	ATC	OPPOSED BLADE	RUSKIN CD40X2 (1)
CD-3	RETURN AIR	MOTORIZED/ 2-POSITION	9,100	36	30	1,215	ATC	OPPOSED BLADE	RUSKIN CD40X2 (1)
CD-4	RETURN AIR	MOTORIZED/ 2-POSITION	9,100	36	30	1,215	ATC	OPPOSED BLADE	RUSKIN CD40X2 (1)
CD-5	RETURN AIR	MOTORIZED/ 2-POSITION	9,100	36	30	1,215	ATC	OPPOSED BLADE	RUSKIN CD40X2 (1)
CD-6	RETURN AIR	MOTORIZED/ 2-POSITION	9,100	36	30	1,215	ATC	OPPOSED BLADE	RUSKIN CD40X2 (1)
CD-7	RETURN AIR	MOTORIZED/ 2-POSITION	9,100	36	30	1,215	ATC	OPPOSED BLADE	RUSKIN CD40X2 (1)
CD-8	RETURN AIR	MOTORIZED/ 2-POSITION	9,100	36	30	1,215	ATC	OPPOSED BLADE	RUSKIN CD40X2 (1)
CD-9	RETURN AIR	MOTORIZED/ 2-POSITION	6,100	36	24	1,050	ATC	OPPOSED BLADE	RUSKIN CD40X2 (1)
CD-10	RETURN AIR	MOTORIZED/ 2-POSITION	6,100	36	24	1,050	ATC	OPPOSED BLADE	RUSKIN CD40X2 (1)
CD-11	RETURN AIR	MOTORIZED/ 2-POSITION	6,100	36	24	1,050	ATC	OPPOSED BLADE	RUSKIN CD40X2 (1)
CD-12	RETURN AIR	MOTORIZED/ 2-POSITION	6,100	36	24	1,050	ATC	OPPOSED BLADE	RUSKIN CD40X2 (1)
CD-13	AH-1 OUTSIDE AIR	MOTORIZED/ MODULATING	17,480	38	54	1,230	ATC	PARALLEL BLADE	RUSKIN CD40X2 (1)
CD-14	AH-1 OUTSIDE AIR	MOTORIZED/ MODULATING	17,480	38	54	1,230	ATC	PARALLEL BLADE	RUSKIN CD40X2 (1)
CD-15	AH-1 OUTSIDE AIR	MOTORIZED/ MODULATING	17,480	38	54	1,230	ATC	PARALLEL BLADE	RUSKIN CD40X2 (1)
CD-16	AH-1 OUTSIDE AIR	MOTORIZED/ MODULATING	17,480	38	54	1,230	ATC	PARALLEL BLADE	RUSKIN CD40X2 (1)
CD-17	AH-1 OUTSIDE AIR	MOTORIZED/ MODULATING	17,480	38	54	1,230	ATC	PARALLEL BLADE	RUSKIN CD40X2 (1)
CD-18	AH-1 OUTSIDE AIR	MOTORIZED/ MODULATING	17,480	38	54	1,230	ATC	PARALLEL BLADE	RUSKIN CD40X2 (1)
CD-19	AH-1 RETURN AIR	MOTORIZED/ MODULATING	16,170	38	54	1,135	ATC	PARALLEL BLADE	RUSKIN CD40X2 (1)
CD-20	AH-1 RETURN AIR	MOTORIZED/ MODULATING	16,170	38	54	1,135	ATC	PARALLEL BLADE	RUSKIN CD40X2 (1)
CD-21	AH-1 RETURN AIR	MOTORIZED/ MODULATING	16,170	38	54	1,135	ATC	PARALLEL BLADE	RUSKIN CD40X2 (1)
CD-22	AH-1 RETURN AIR	MOTORIZED/ MODULATING	16,170	38	54	1,135	ATC	PARALLEL BLADE	RUSKIN CD40X2 (1)
CD-23	AH-1 RETURN AIR	MOTORIZED/ MODULATING	16,170	38	54	1,135	ATC	PARALLEL BLADE	RUSKIN CD40X2 (1)
CD-24	AH-1 RETURN AIR	MOTORIZED/ MODULATING	16,170	38	54	1,135	ATC	PARALLEL BLADE	RUSKIN CD40X2 (1)
CD-25	AH-2 OUTSIDE AIR	MOTORIZED/ MODULATING	15,350	40	44	1,260	ATC	PARALLEL BLADE	RUSKIN CD40X2 (1)
CD-26	AH-2 OUTSIDE AIR	MOTORIZED/ MODULATING	15,350	40	44	1,260	ATC	PARALLEL BLADE	RUSKIN CD40X2 (1)
CD-27	AH-2 OUTSIDE AIR	MOTORIZED/ MODULATING	15,350	40	44	1,260	ATC	PARALLEL BLADE	RUSKIN CD40X2 (1)
CD-28	AH-2 OUTSIDE AIR	MOTORIZED/ MODULATING	15,350	40	44	1,260	ATC	PARALLEL BLADE	RUSKIN CD40X2 (1)
CD-29	AH-2 OUTSIDE AIR	MOTORIZED/ MODULATING	15,350	40	44	1,260	ATC	PARALLEL BLADE	RUSKIN CD40X2 (1)
CD-30	AH-2 RETURN AIR	MOTORIZED/ MODULATING	17,750	30	60	1,420	ATC	PARALLEL BLADE	RUSKIN CD40X2 (1)
CD-31	AH-2 RETURN AIR	MOTORIZED/ MODULATING	17,750	30	60	1,420	ATC	PARALLEL BLADE	RUSKIN CD40X2 (1)
CD-32	AH-2 RETURN AIR	MOTORIZED/ MODULATING	17,750	30	60	1,420	ATC	PARALLEL BLADE	RUSKIN CD40X2 (1)
CD-33	AH-2 RETURN AIR	MOTORIZED/ MODULATING	17,750	30	60	1,420	ATC	PARALLEL BLADE	RUSKIN CD40X2 (1)
CD-34	ELEVATOR-C SHAFT 110B	MOTORIZED/ MODULATING	300	10	10	440	ATC	PARALLEL BLADE	RUSKIN CD60 (1)
CD-35	ELEVATOR-A SHAFT 200F	MOTORIZED/ MODULATING	300	8	6	900	ATC	PARALLEL BLADE	RUSKIN CD60 (1)
CD-36	ELEVATOR MACHINE ROOM 110V	MOTORIZED/ MODULATING	300	10	10	440	ATC	PARALLEL BLADE	RUSKIN CD60 (1)
CD-37	RF-1	MOTORIZED/ 2-POSITION	13,000	36	36	1445	ATC	OPPOSED BLADE	RUSKIN CD40X2 (1)
CD-38	RF-2	MOTORIZED/ 2-POSITION	13,000	36	36	1445	ATC	OPPOSED BLADE	RUSKIN CD40X2 (1)
CD-39	RF-3	MOTORIZED/ 2-POSITION	13,000	36	36	1445	ATC	OPPOSED BLADE	RUSKIN CD40X2 (1)
CD-40	RF-4	MOTORIZED/ 2-POSITION	13,000	36	36	1445	ATC	OPPOSED BLADE	RUSKIN CD40X2 (1)
CD-41	RF-5	MOTORIZED/ 2-POSITION	13,000	36	36	1445	ATC	OPPOSED BLADE	RUSKIN CD40X2 (1)
CD-42	RF-6	MOTORIZED/ 2-POSITION	13,000	36	36	1445	ATC	OPPOSED BLADE	RUSKIN CD40X2 (1)
CD-43	RF-7	MOTORIZED/ 2-POSITION	19,000	42	42	1555	ATC	OPPOSED BLADE	RUSKIN CD40X2 (1)
CD-44	RF-8	MOTORIZED/ 2-POSITION	19,000	42	42	1555	ATC	OPPOSED BLADE	RUSKIN CD40X2 (1)
CD-45	RF-9	MOTORIZED/ 2-POSITION	19,000	42	42	1555	ATC	OPPOSED BLADE	RUSKIN CD40X2 (1)

(1) PROVIDE END SWITCHES ON DAMPER.

JOB SITE ELEVATION = 4,500 FT
JOB SITE PRESSURE = 12.32 PSI
SELECT ALL EQUIPMENT FOR OPERATION AT JOB SITE ELEVATION
ALL MOTORS TO BE PREMIUM EFFICIENCY

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REVISIONS:

1	05.04.2012	ADDENDUM 2
2	05.09.2012	ADDENDUM 3

STUDENT LIFE CENTER & PARKING STRUCTURE

Orem, Utah

UTAH VALLEY UNIVERSITY

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MECHANICAL SCHEDULES

CONSTRUCTION DOCUMENTS

MH6.03

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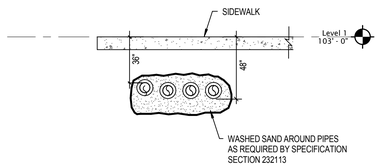
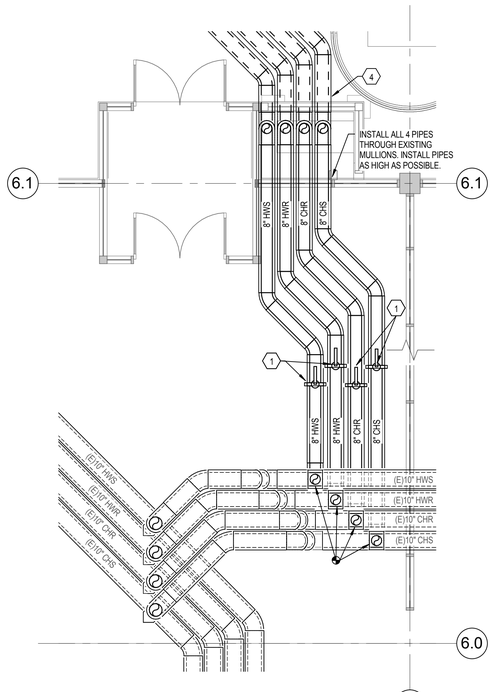
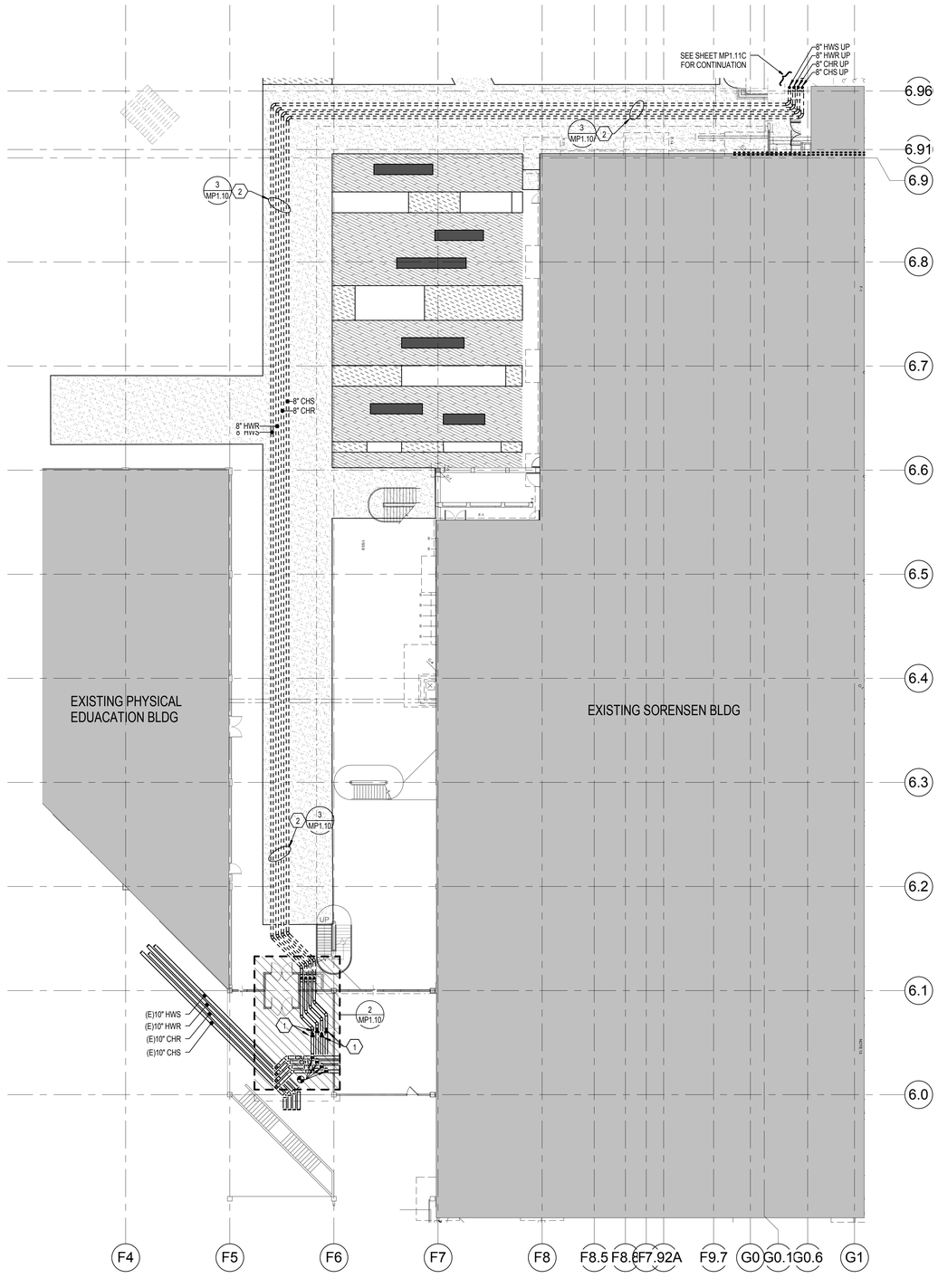


3 BELOW-GRADE PIPE DETAIL
SCALE: NONE



2 ENLARGED MECHANICAL PIPING IN VESTIBULE
SCALE: 1/4" = 1'-0"



1 LEVEL 1 MECHANICAL PIPING UNDERGROUND PLAN
SCALE: 1/16" = 1'-0"

KEYED NOTES

1. BUTTERFLY VALVE FOR MANUAL ISOLATION. INCLUDE LOCKABLE HASP.
2. BELOW GRADE PIPE TO BE INSTALLED WITH BOTTOM OF PIPE INSULATION 48" BELOW TOP OF SIDEWALK, AND TOP OF PIPE INSULATION 36" BELOW TOP OF SIDEWALK.
3. TRANSITION FROM STEEL PIPE TO PLASTIC PIPE 12" ABOVE SLAB-ON-GRADE INSDIE VESTIBULE. USE A FLANGE TO JOIN PLASTIC TO STEEL PIPE.
4. VERTICAL PIPE CONTINUES BELOW GRADE INSIDE FOOTPRINT OF VESTIBULE. TOP OF PIPE INSULATION AT TOP OF HORIZONTAL BURIED PIPE SHALL BE 36" BELOW FINISHED GRADE.

GENERAL NOTES

A. INSULATE BURIED GVAC PIPES AS REQUIRED BY SPECIFICATION SETION 230700.
B. COORDINATE WITH BELOW-GRADE UTILITIES SHOWN ON THE SITE UTILITY DRAWINGS.

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LEVEL 1 MECHANICAL PIPING UNDERGROUND PLAN

CONSTRUCTION DOCUMENTS

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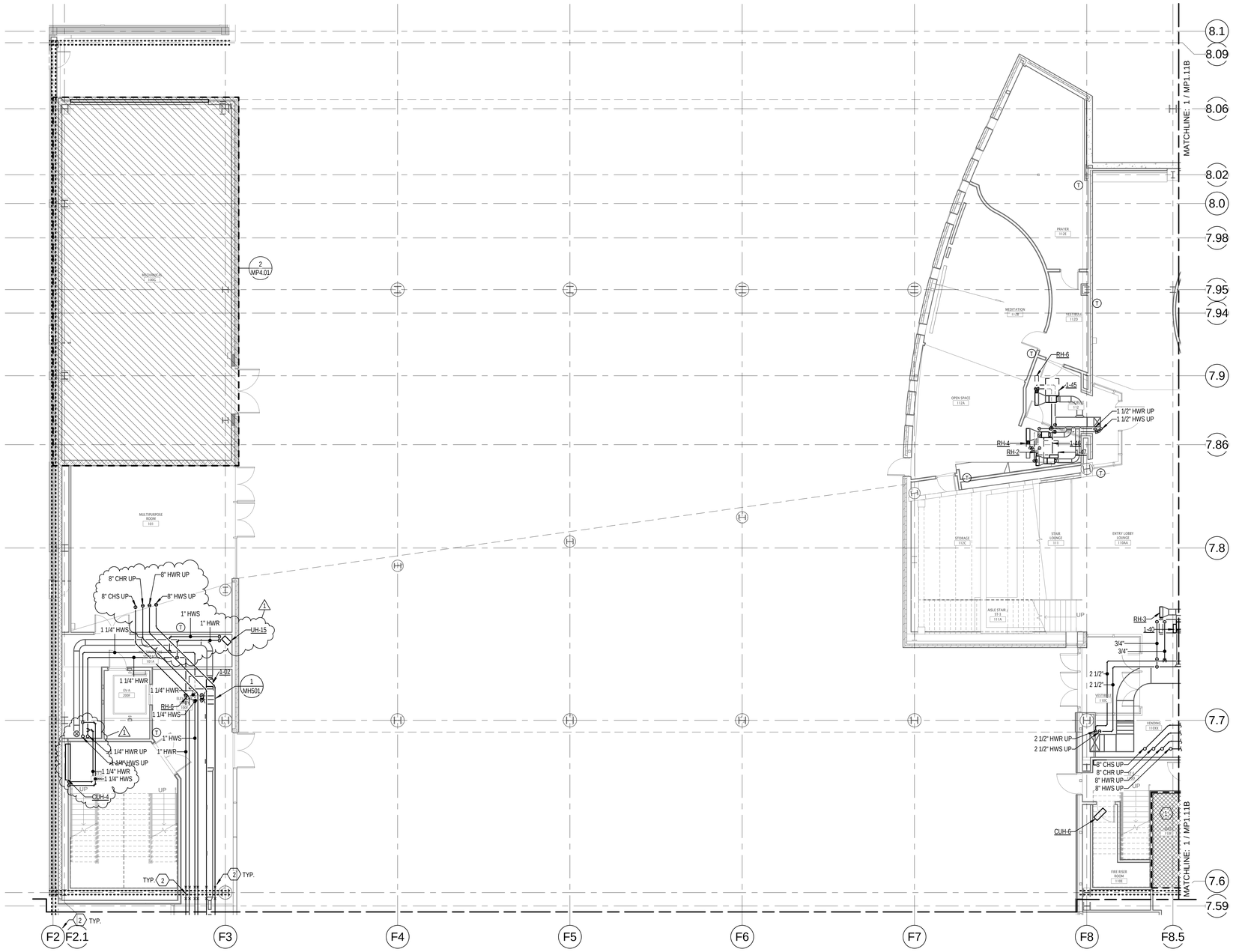
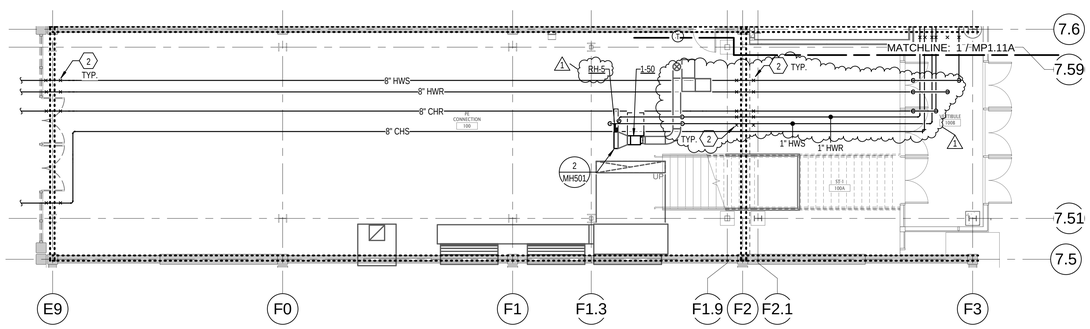


1 LEVEL 1 - MECHPIPING ZONE A

SCALE: 1/8" = 1'-0"



2 LEVEL 1 - MECHPIPING ZONE A1

SCALE: 1/8" = 1'-0"

KEYED NOTES

1. DO NOT ROUTE ANY PIPING ABOVE ELECTRICALIT ROOMS AND ELEVATORS OR ELEVATOR EQUIPMENT ROOMS. TYPICAL.
2. PROVIDE METRAFLEX METRALOOP EXPANSION JOINT IN MECHANICAL PIPING DESIGNED FOR 7" OF MOVEMENT ACRGSS SEISMIC EXPANSION JOINT. PROVIDE SEISMIC BRACING ON BOTH SIDES OF EXPANSION JOINT.

GENERAL NOTES

A. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL, IT ROOMS OR ELEVATOR MACHINE ROOMS.

B. ALL MANUAL VALVES, AUTOMATIC CONTROL VALVES, STRAINERS, AND CIRCUIT SETTERS SHALL BE INSTALLED WHERE ACCESSIBLE ABOVE LAY-IN CEILING. COORDINATE WITH LATEST AVAILABLE ARCHITECTURAL CEILING PLAN.

C. KEEP CONTROLS ACCESS ZONE OFF SIDE OF VAV BOX CLEAR OF ALL PIPING. PIPING MAY BE ROUTED ABOVE THE ELEVATION OF THE TOP OF THE VAV BOX, AVOIDING THE CONTROLS ACCESS ZONE.

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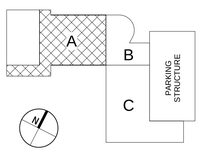
1	05.09.2012	ADDENDUM 3



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MECHANICAL PIPING FLOOR PLAN LEVEL 1 ZONE A

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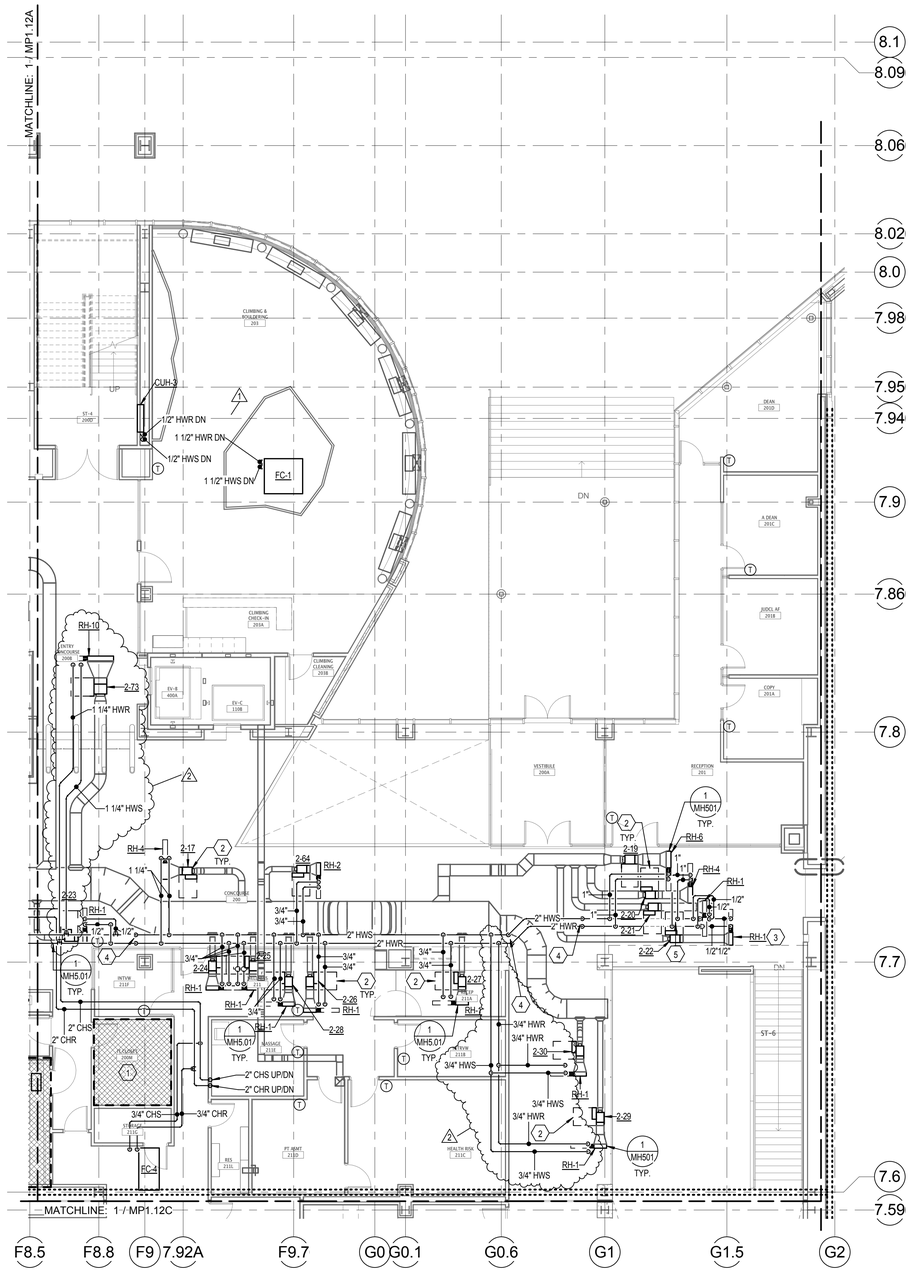

1 LEVEL 2 - MECHPIPING ZONE B
SCALE: 1/8" = 1'-0"

6' 0' 4' 8' 12' 16'

KEYED NOTES

1. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL/IT ROOMS AND ELEVATORS OR ELEVATOR EQUIPMENT ROOMS. TYPICAL.
2. KEEP CONTROLS ACCESS ZONE OFF SIDE OF VAV BOX CLEAR OF ALL PIPING, DUCTWORK, OR CONDUIT NOT SERVING THE VAV BOX. PIPING, DUCTWORK, AND CONDUIT MAY BE ROUTED ABOVE THE ELEVATION OF THE TOP OF THE BOX, AVOIDING THE CONTROLS ACCESS ZONE.
3. PROVIDE A THREE-WAY HEATING WATER CONTROL VALVE IN THE REHEAT PIPING FOR THE LAST ZONE OF THE REHEAT SUPPLY MAIN FOR THIS FLOOR. REFER TO DETAIL 2 ON SHEET MH501.
4. COORDINATE PIPING WITH STRUCTURE. PROVIDE ELBOWS AS NECESSARY.
5. ROUT PIPING ABOVE VAV CONTROLS ACCESS ZONE LOCATE BALANCING.

GENERAL NOTES

A. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL, IT ROOMS OR ELEVATOR MACHINE ROOMS.
B. ALL MANUAL VALVES, AUTOMATIC CONTROL VALVES, STRAINERS, AND CIRCUIT SETTERS SHALL BE INSTALLED WHERE ACCESSIBLE ABOVE LAY-IN CEILING. COORDINATE WITH LATEST AVAILABLE ARCHITECTURAL CEILING PLAN.
C. KEEP CONTROLS ACCESS ZONE OFF SIDE OF VAV BOX CLEAR OF ALL PIPING. PIPING MAY BE ROUTED ABOVE THE ELEVATION OF THE TOP OF THE VAV BOX, AVOIDING THE CONTROLS ACCESS ZONE.

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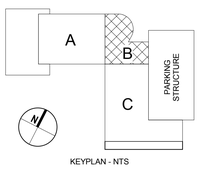
1	05.04.2012	ADDENDUM 2
2	05.09.2012	ADDENDUM 3



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MECHANICAL PIPING FLOOR PLAN LEVEL 2 ZONE B

CONSTRUCTION DOCUMENTS

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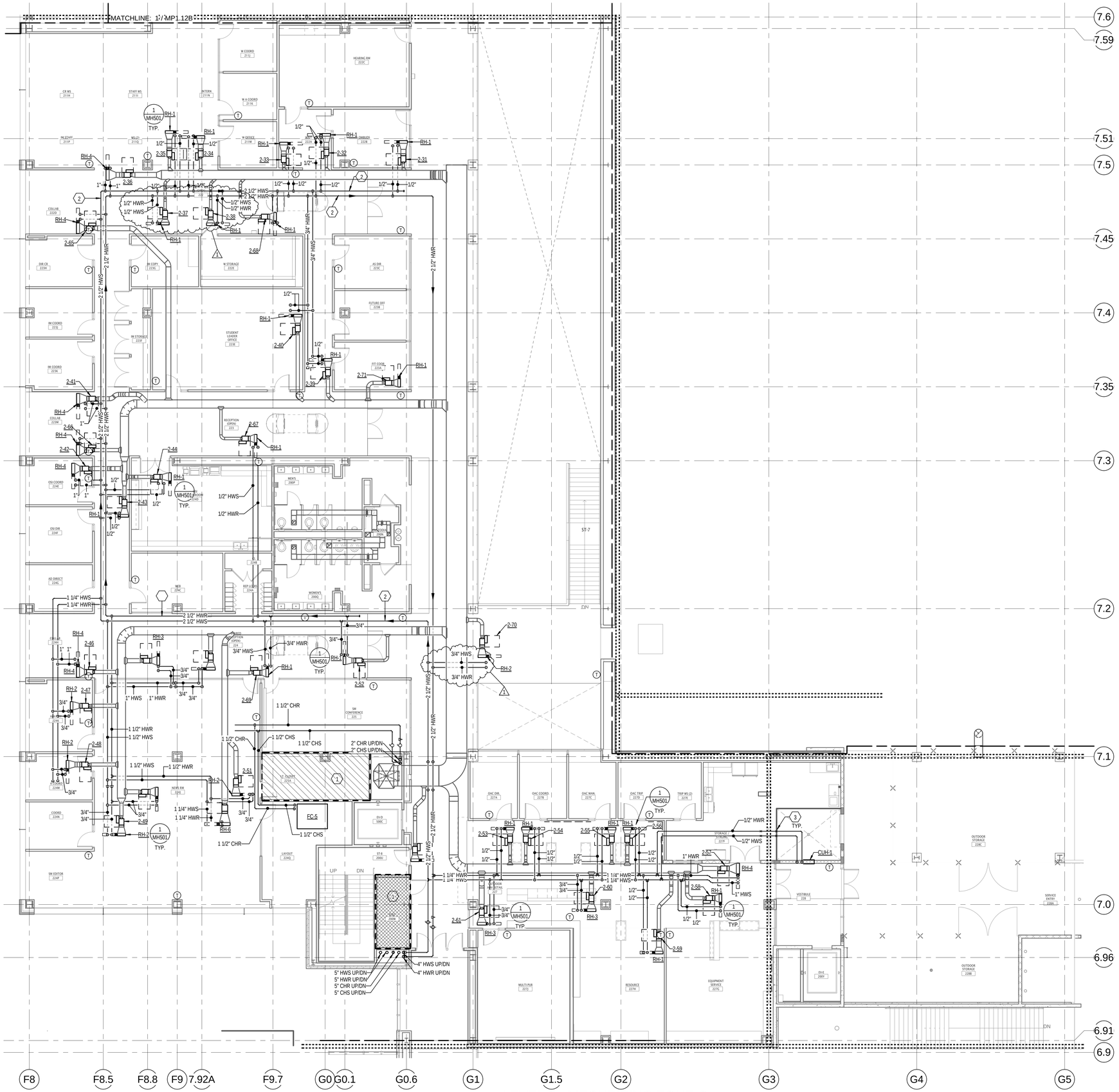

1 LEVEL 2 - MECHPIPING ZONE C

SCALE: 1/8" = 1'-0"

KEYED NOTES

1. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL/IT ROOMS AND ELEVATORS OR ELEVATOR EQUIPMENT ROOMS. TYPICAL.
2. RUN REHEAT PIPING (HWS AND HWR) TIGHT TO BOTTOM OF 2-PLY ACOUSTICAL CEILING.
3. PROVIDE METRAFLEX METRALOOP EXPANSION JOINT IN MECHANICAL PIPING DESIGNED FOR 7" OF MOVEMENT ACROSS SEISMIC EXPANSION JOINT. PROVIDE SEISMIC BRACING ON BOTH SIDES OF EXPANSION JOINT.

GENERAL NOTES

A. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL, IT ROOMS OR ELEVATOR MACHINE ROOMS.

B. ALL MANUAL VALVES, AUTOMATIC CONTROL VALVES, STRAINERS, AND CIRCUIT SETTERS SHALL BE INSTALLED WHERE ACCESSIBLE ABOVE LAY-IN CEILING. COORDINATE WITH LATEST AVAILABLE ARCHITECTURAL CEILING PLAN.

C. KEEP CONTROLS ACCESS ZONE OFF SIDE OF VAV BOX CLEAR OF ALL PIPING. PIPING MAY BE ROUTED ABOVE THE ELEVATION OF THE TOP OF THE VAV BOX, AVOIDING THE CONTROLS ACCESS ZONE.

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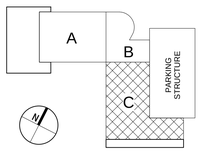

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MECHANICAL PIPING FLOOR PLAN LEVEL 2 ZONE C

CONSTRUCTION DOCUMENTS

MP1.12C

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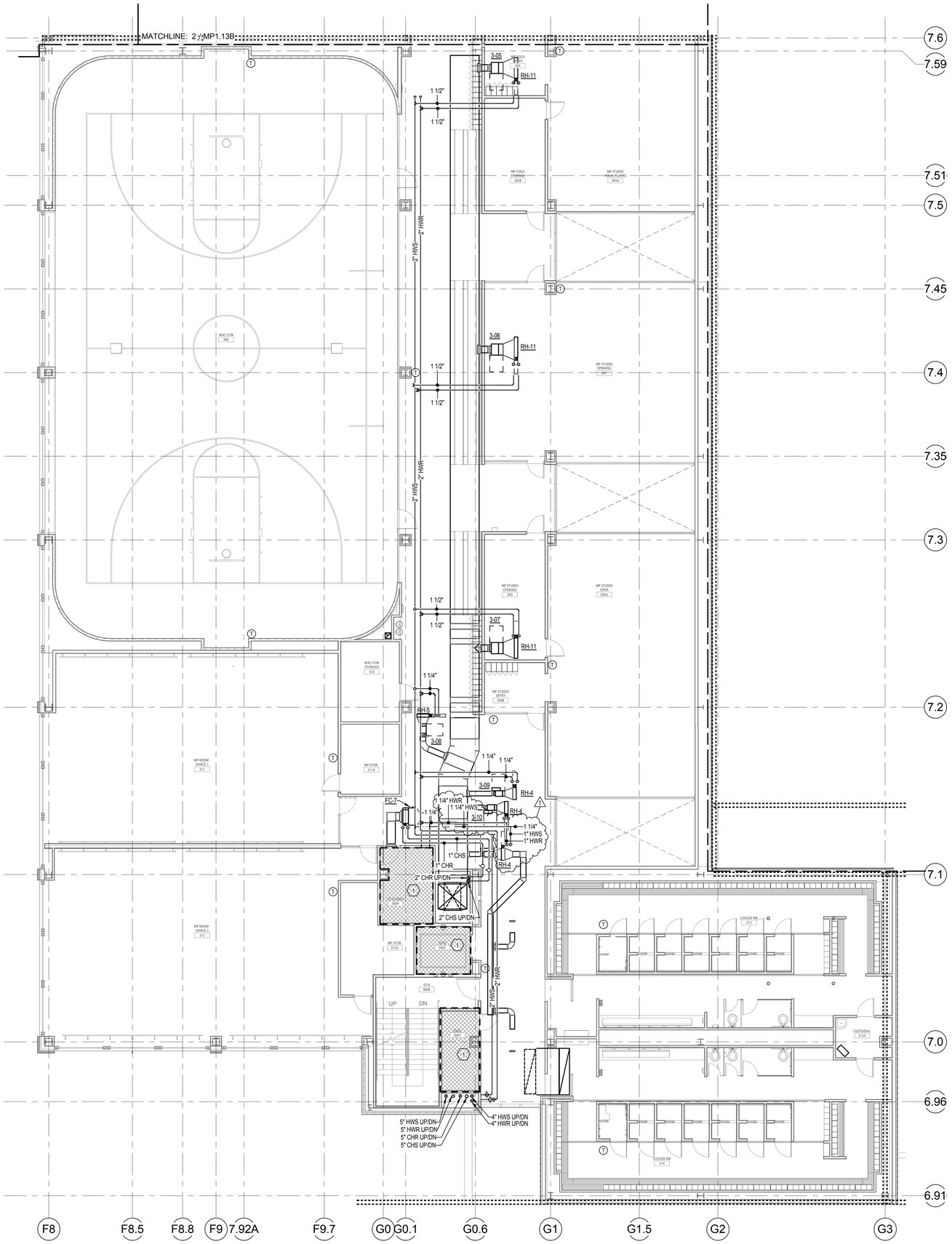

1 LEVEL 3 - MECHPIPING ZONE C

SCALE: 1/8" = 1'-0"

6' 0" 4' 8' 12' 16'

KEYED NOTES

1 DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL/IT ROOMS AND ELEVATORS OR ELEVATOR EQUIPMENT ROOMS. TYPICAL.

GENERAL NOTES

A. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL, IT ROOMS OR ELEVATOR MACHINE ROOMS.

B. ALL MANUAL VALVES, AUTOMATIC CONTROL VALVES, STRAINERS, AND CIRCUIT SETTERS SHALL BE INSTALLED WHERE ACCESSIBLE ABOVE LAY-IN CEILING. COORDINATE WITH LATEST AVAILABLE ARCHITECTURAL CEILING PLAN.

C. KEEP CONTROLS ACCESS ZONE OFF SIDE OF VAV BOX CLEAR OF ALL PIPING. PIPING MAY BE ROUTED ABOVE THE ELEVATION OF THE TOP OF THE VAV BOX, AVOIDING THE CONTROLS ACCESS ZONE.

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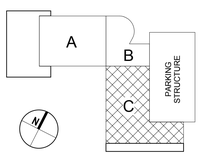
1	05.09.2012	ADDENDUM 3



KEYPLAN - NTS

STUDENT LIFE CENTER & PARKING STRUCTURE

Orem, Utah

UTAH VALLEY UNIVERSITY

DRAWN BY:	JMN
CHECKED BY:	RLH
OWNER PROJECT NO.:	
GSBS PROJECT NO.:	2011.045.00
ISSUED DATE:	04.27.2012

MECHANICAL PIPING FLOOR PLAN LEVEL 3 ZONE C

CONSTRUCTION DOCUMENTS

MP1.13C

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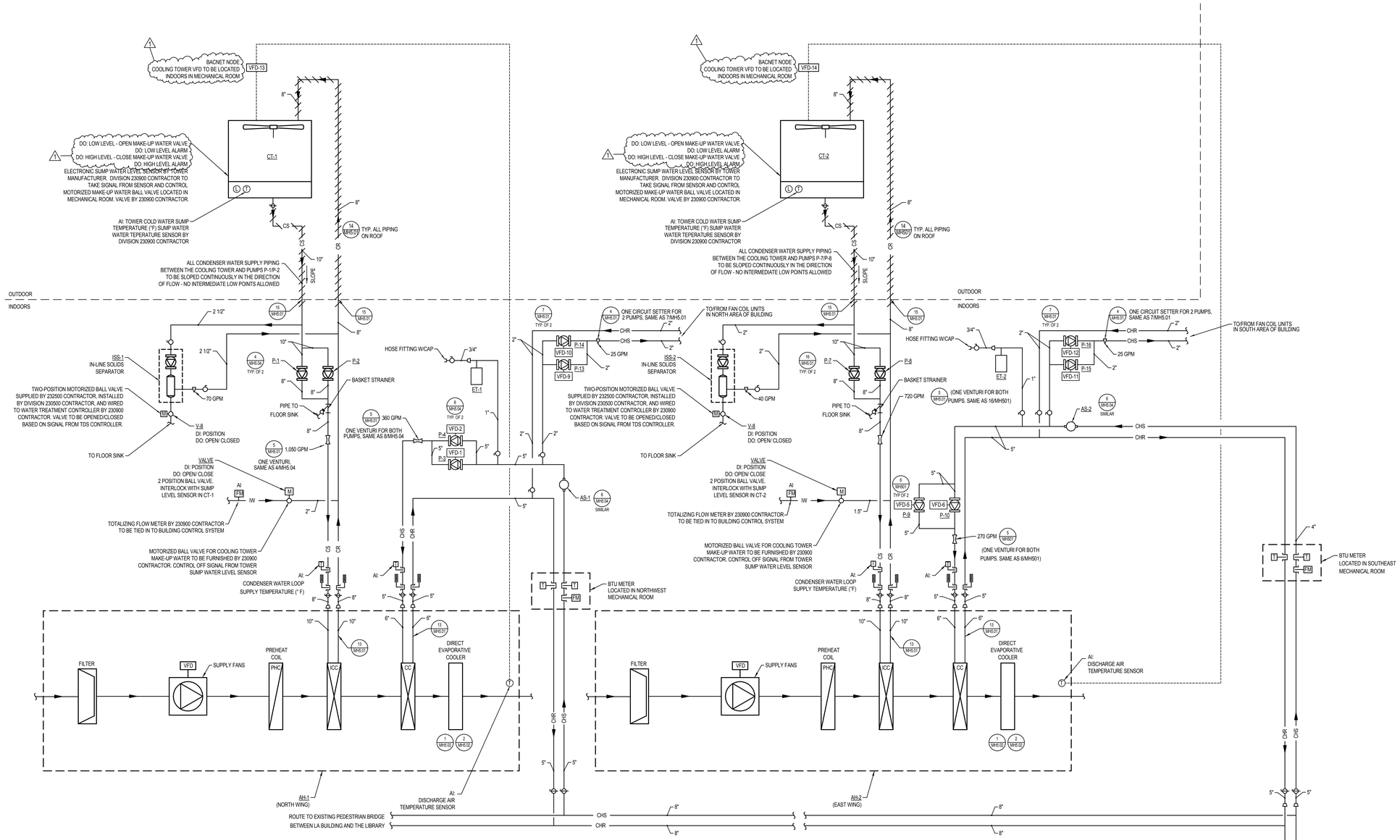

1 CHILLED WATER PIPING SCHEMATIC
SCALE: NONE

STUDENT LIFE CENTER & PARKING STRUCTURE

Orem, Utah

UTAH VALLEY UNIVERSITY

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CHILLED WATER PIPING SCHEMATIC

CONSTRUCTION DOCUMENTS

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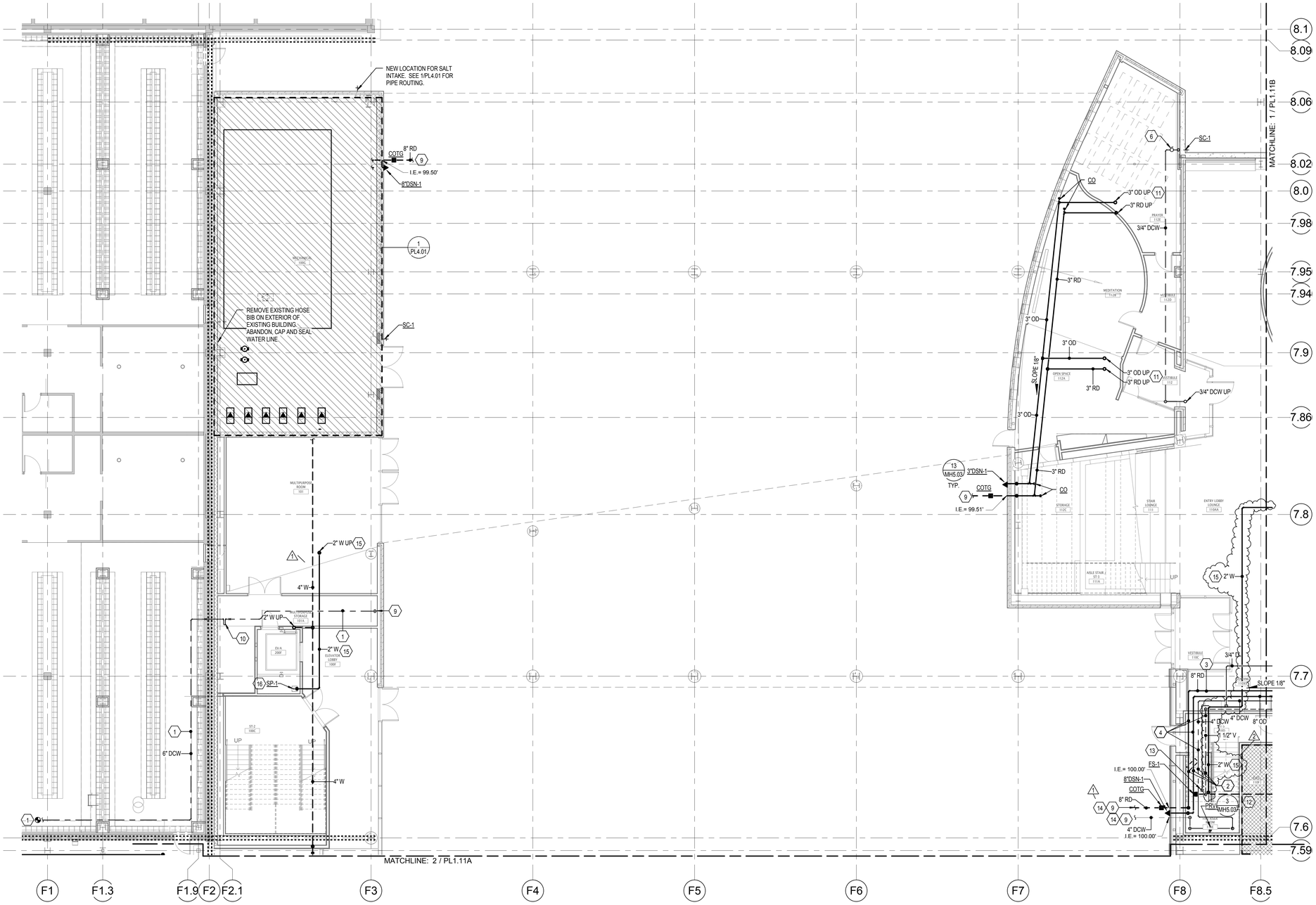
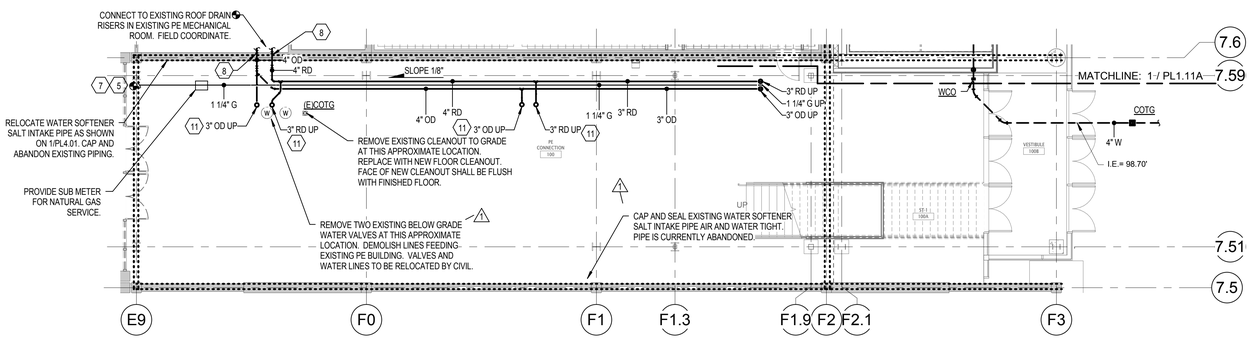


1 LEVEL 1 - PLUMBING ZONE A
SCALE: 1/8" = 1'-0"



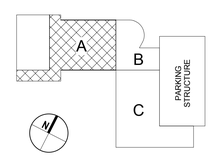
2 LEVEL 1 - PLUMBING ZONE A1
SCALE: 1/8" = 1'-0"

KEYED NOTES

1. ROUTE NEW HIGH PRESSURE WATER LINE FROM EXISTING PRV IN PE BUILDING MECHANICAL ROOM INTO LOCKER ROOM ABOVE CEILING AREA THAT IS GOING TO BE DEMOLISHED. SEE ARCHITECTURAL PLANS FOR DEMOLISHED CEILING AREA. ROUTE WATER LINE THROUGH LOCKER ROOM INTO MULTIPURPOSE STORAGE ROOM 101A IN NEW STUDENT LIFE BUILDING. DROP LINE DOWN BELOW GRADE AND CONNEC TO NEW WATER LINE PROVIDED BY CIVIL.
2. PIPING IS TO SLOPE DOWN ALONG AND TIGHT TO BOTTOM OF STAIR RISERS.
3. PLUMBING PIPES IN THIS AREA ARE TO BE CLOSELY COORDINATED WITH MECHANICAL PIPING AND DUCTWORK. PLUMBING IS TO BE ROUTED BELOW MECHANICAL PIPING. AND DUCTWORK.
4. ROUTE PLUMBING PIPING WITHIN FIRE RATED CHASE PROVIDED BY ARCHITECT.
5. ROUTE 1 1/4" 5 PSI NATURAL GAS TO CONCOURSE. CONNECT TO EXISTING CAMPUS NATURAL GAS SYSTEM. FIELD COORDINATE EXACT TIE IN LOCATION.
6. PROVIDE ISOLATION VALVE AS REQUIRED IN AN ACCESSIBLE LOCATION. COORDINATE LOCATION WITH CEILING PLANS. ALL VALVES SHALL BE LOCATED ABOVE AN ACCESSIBLE CEILING UNLESS OTHERWISE NOTED. TYPICAL.
7. PROVIDE METRAFLEX METRALOOP EXPANSION JOINT IN GAS PIPING DESIGNED FOR 7" OF MOVEMENT ACROSS SEISMIC EXPANSION JOINT. PROVIDE SEISMIC BRACING ON BOTH SIDES OF EXPANSION JOINT.
8. PROVIDE SEISMIC BRACING ON BOTH SIDES OF EXPANSION JOINT WITH A NO HUB COUPLING IN BETWEEN ON ALL DOMESTIC WASTE, VENT AND ROOF DRAIN PIPING CROSSING ANY EXPANSION JOINT. NO HUB COUPLING TO BE A DESIGN FAILURE POINT IN THE EVENT OF SEISMIC MOTION.
9. SEE CIVIL FOR CONTINUATION.
10. PROVIDE METRAFLEX METRALOOP COPPER EXPANSION JOINT DESIGNED FOR 7" OF MOVEMENT ACROSS SEISMIC EXPANSION JOINT. PROVIDE SEISMIC BRACING ON BOTH SIDES OF EXPANSION JOINT.
11. SEE ROOF PLAN ON SHEET MH1.21 FOR CONTINUATION.
12. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL OR IT ROOMS. TYPICAL.
13. DROP CONDENSATE DRAIN TO FLOOR DRAIN/SINK, SERVICE SINK OR SINK TAIL PIECE. PROVIDE AIR GAP AS REQUIRED.
14. COORDINATE LOCATION OF DOMESTIC COLD WATER, FIRE AND ROOF DRAIN AS IT ENTERS THE BUILDING WITH GENERAL CONTRACTOR. PIPES ARE TO BE ROUTED THROUGH VOID SPACE CREATED BY FOOTINGS. SEE STRUCTURAL PLANS AND DETAIL C4/SF203 FOR LOCATION.
15. 2" PUMPED WASTE FROM ELEVATOR PIT SUMP. PUMP TO INDIRECT RECEPTOR AS SHOWN. PROVIDE AIR GAP AS REQUIRED.
16. PROVIDE SUMP PUMP INSIDE 12" X 12" X18" DEEP PIT SPECIFIED BY ARCHITECT. COORDINATE LOCATION WITH ARCHITECTRAL PLANS.
17. PROVIDE SLEEVE FOR WASTE PIPE AS IT PASSES BELOW FOOTINGS. EXTEND SLEEVE 12" BEYOND EDGES OF FOOTINGS ON EACH SIDE.

GENERAL NOTES

A. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL, IT ROOMS OR ELEVATOR MACHINE ROOMS.
B. ALL SANITARY SEWER AND ROOF DRAIN PIPING SHALL BE SLOPED AT 1/8" PER FOOT MINIMUM.



KEYPLAN - NTS

STUDENT LIFE CENTER & PARKING STRUCTURE

Orem, Utah

UTAH VALLEY UNIVERSITY

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PLUMBING FLOOR PLAN LEVEL 1 ZONE A

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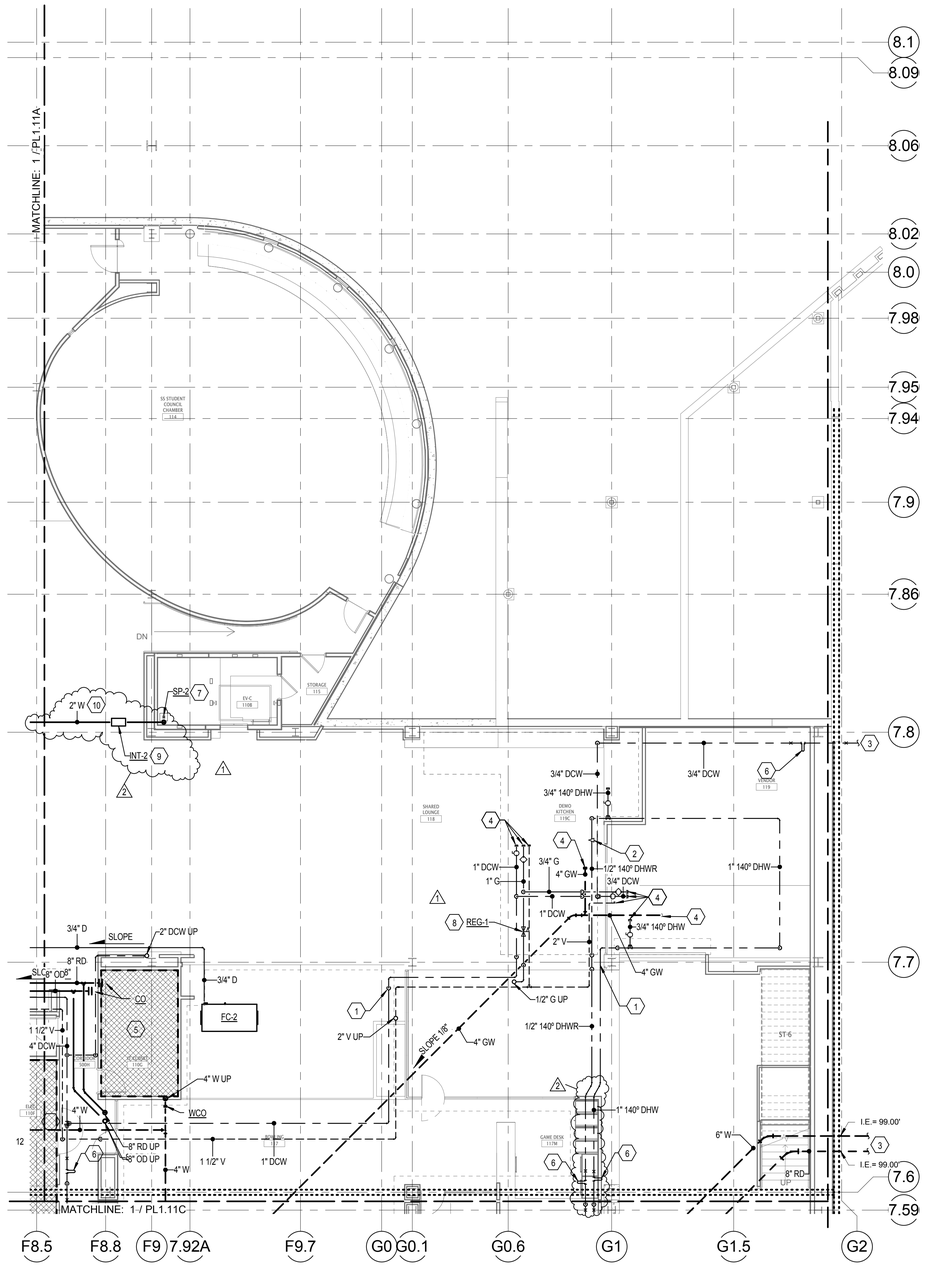

1 LEVEL 1 - PLUMBING ZONE B

SCALE: 1/8" = 1'-0"

KEYED NOTES

1. PROVIDE OFFSETS IN PIPE AS REQUIRED TO AVOID CONFLICT WITH STRUCTURE. TYPICAL.
2. PROVIDE CIRCUIT SETTER IN AN ACCESSIBLE LOCATION. COORDINATE WITH CEILING PLANS. ALL CIRCUIT SETTERS ARE TO BE INSTALLED ABOVE ACCESSIBLE CEILINGS UNLESS OTHERWISE NOTED. BALANCE TO 0.5 GPM.
3. SEE PARKING STRUCTURE PLANS FOR CONTINUATION.
4. PROVIDE DOMESTIC HOT AND COLD WATER, VENT, WASTE AND NATURAL GAS STUB OUTS FOR TENANT SPACE/DEMO KITCHEN. PROVIDE ISOLATION VALVES AND CAP WATER AND AIR TIGHT ABOVE CEILING.
5. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL OR IT ROOMS. TYPICAL.
6. PROVIDE METRAFLEX METRALOOP COPPER EXPANSION JOINT DESIGNED FOR 7" OF MOVEMENT ACROSS SEISMIC EXPANSION JOINT. PROVIDE SEISMIC BRACING ON BOTH SIDES OF EXPANSION JOINT.
7. PROVIDE SUMP PUMP INSIDE 12" X 12" X18" DEEP PIT SPECIFIED BY ARCHITECT. COORDINATE LOCATION WITH ARCHITECTRAL PLANS.
8. INSTALL NATURAL GAS PRESSURE REGULATOR IN AN ACCESSIBLE LOCATION. VENT AS REQUIRED.
9. PROVIDE OIL INTERCEPTOR ABOVE CEILING. ROUTE WASTE LINE FROM INTERCEPTOR TO ~~FLOOR SINK/SERVICE SINK AS SHOWN~~.
10. 2" PUMPED WASTE FROM ELEVATOR PIT SUMP. PUMP TO INDIRECT RECEPTOR AS SHOWN. PROVIDE AIR GAP AS REQUIRED.

GENERAL NOTES

A. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL, IT ROOMS OR ELEVATOR MACHINE ROOMS.
B. ALL SANITARY SEWER AND ROOF DRAIN PIPING SHALL BE SLOPED AT 1/8" PER FOOT MINIMUM.

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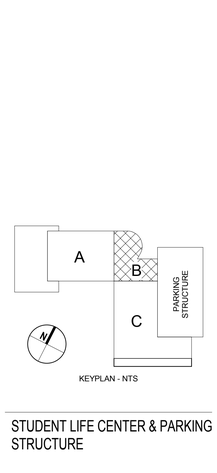

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UTAH VALLEY UNIVERSITY

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PLUMBING FLOOR PLAN LEVEL 1 ZONE B

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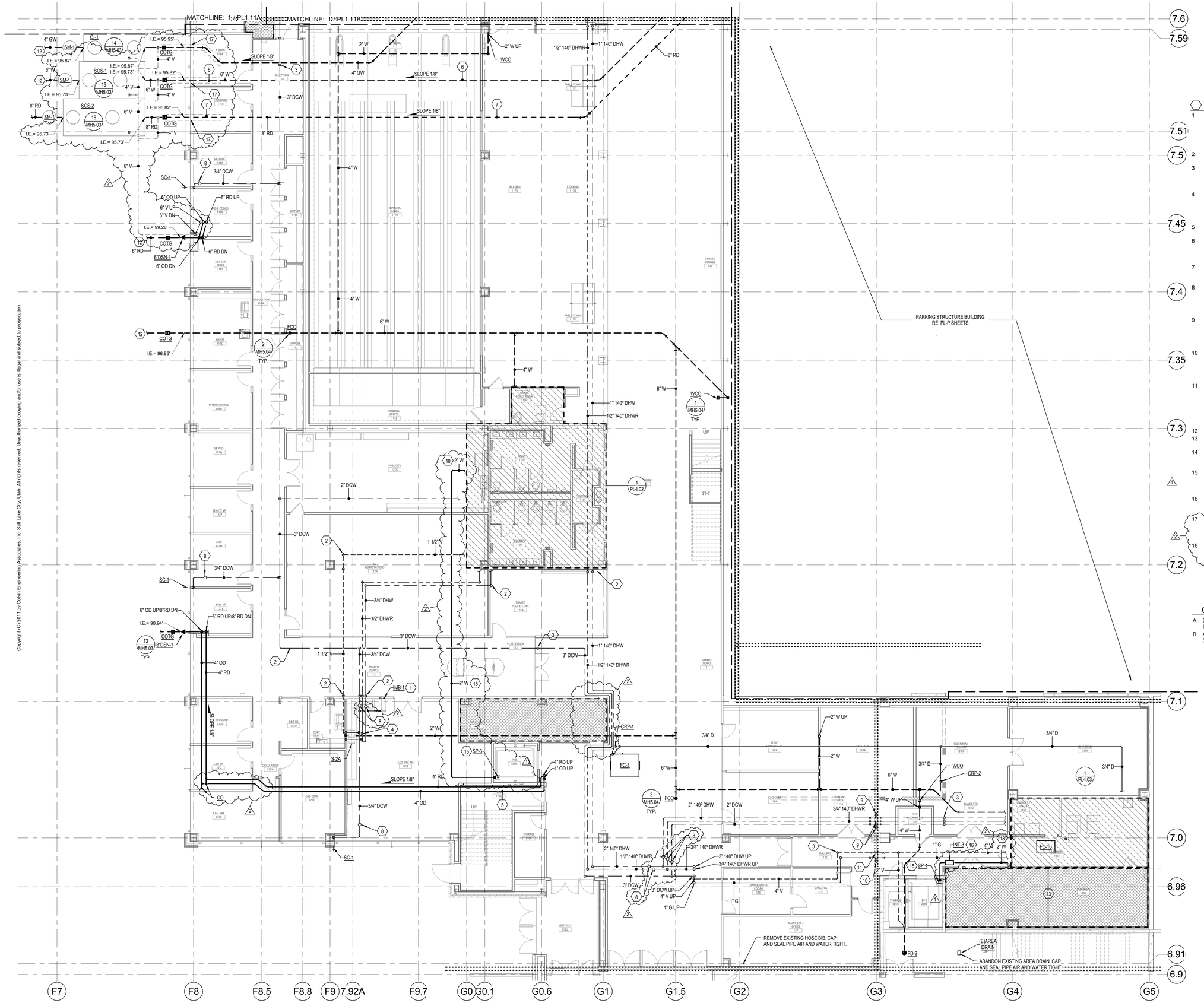

1 LEVEL 1 - PLUMBING ZONE C

SCALE: 1/8" = 1'-0"

KEYED NOTES

1. PROVIDE 1/2" COLD WATER CONNECTION TO ICE MAKER AT REFRIGERATOR WITH ICE MAKER BOX. SEE PLUMBING FIXTURE SCHEDULE FOR MODEL NUMBER. PROVIDE VACUUM BREAKER AND ISOLATION VALVE IN AN ACCESSIBLE LOCATION.
2. PROVIDE OFFSETS IN PIPE AS REQUIRED TO AVOID CONFLICT WITH STRUCTURE. TYPICAL.
3. PROVIDE OFFSETS IN PIPE AS REQUIRED TO AVOID CONFLICT WITH DUCT WORK. COORDINATE WITH HVAC PLANS AND IN THE FIELD. TYPICAL.
4. PROVIDE CIRCUIT SETTER IN AN ACCESSIBLE LOCATION. COORDINATE WITH CEILING PLANS. ALL CIRCUIT SETTERS ARE TO BE INSTALLED ABOVE ACCESSIBLE CEILINGS UNLESS OTHERWISE NOTED. BALANCE TO 0.5 GPM.
5. ROUTE PLUMBING PIPING WITHIN FIRE RATED CHASE PROVIDED BY ARCHITECT.
6. WASTE LINE FROM PARKING STRUCTURE TO SAND OIL INTERCEPTOR. DO NOT CONNECT ANY UTILITIES FROM STUDENT LIFE CENTER BUILDING.
7. ROOF DRAIN LINE FROM PARKING STRUCTURE. DO NOT CONNECT ANY UTILITIES FROM STUDENT LIFE CENTER BUILDING.
8. PROVIDE ISOLATION VALVE AS REQUIRED IN AN ACCESSIBLE LOCATION. COORDINATE LOCATION WITH CEILING PLANS. ALL VALVES SHALL BE LOCATED ABOVE AN ACCESSIBLE CEILING UNLESS OTHERWISE NOTED. TYPICAL.
9. PROVIDE METRAFLEX METRALOOP COPPER EXPANSION JOINT DESIGNED FOR 7" OF MOVEMENT ACROSS SEISMIC EXPANSION JOINT. PROVIDE SEISMIC BRACING ON BOTH SIDES OF EXPANSION JOINT.
10. PROVIDE METRAFLEX METRALOOP EXPANSION JOINT IN GAS PIPING DESIGNED FOR 7" OF MOVEMENT ACROSS SEISMIC EXPANSION JOINT. PROVIDE SEISMIC BRACING ON BOTH SIDES OF EXPANSION JOINT.
11. PROVIDE SEISMIC BRACING ON BOTH SIDES OF EXPANSION JOINT WITH A NO HUB COUPLING IN BETWEEN ON ALL DOMESTIC WASTE, VENT AND ROOF DRAIN PIPING CROSSING ANY EXPANSION JOINT. NO HUB COUPLING TO BE A DESIGN FAILURE POINT IN THE EVENT OF SEISMIC MOTION.
12. SEE CIVIL FOR CONTINUATION.
13. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL OR IT ROOMS. TYPICAL.
14. DROP CONDENSATE DRAIN TO FLOOR DRAIN/SINK, SERVICE SINK OR SINK TAIL PIECE. PROVIDE AIR GAP AS REQUIRED.
15. PROVIDE SUMP PUMP INSIDE 12" X 12" X18" DEEP PIT SPECIFIED BY ARCHITECT. COORDINATE LOCATION WITH ARCHITECTRAL PLANS.
16. PROVIDE OIL INTERCEPTOR ABOVE CEILING. ROUTE WASTE LINE FROM INTERCEPTOR TO FLOOR SINK/SERVICE SINK AS SHOWN.
17. PROVIDE SLEEVE FOR WASTE PIPE AS IT PASSES BELOW FOOTINGS. EXTEND SLEEVE 12" BEYOND EDGES OF FOOTINGS ON EACH SIDE.
18. 2" PUMPED WASTE FROM ELEVATOR PIT SUMP. PUMP TO INDIRECT RECEPTOR AS SHOWN. PROVIDE AIR GAP AS REQUIRED.

GENERAL NOTES

A. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL, IT ROOMS OR ELEVATOR MACHINE ROOMS.
B. ALL SANITARY SEWER AND ROOF DRAIN PIPING SHALL BE SLOPED AT 1/8" PER FOOT MINIMUM.

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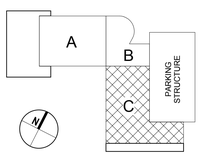

KEYPLAN - NTS

STUDENT LIFE CENTER & PARKING STRUCTURE

Orem, Utah

UTAH VALLEY UNIVERSITY

DRAWN BY:	JLW
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PLUMBING FLOOR PLAN LEVEL 1 ZONE C

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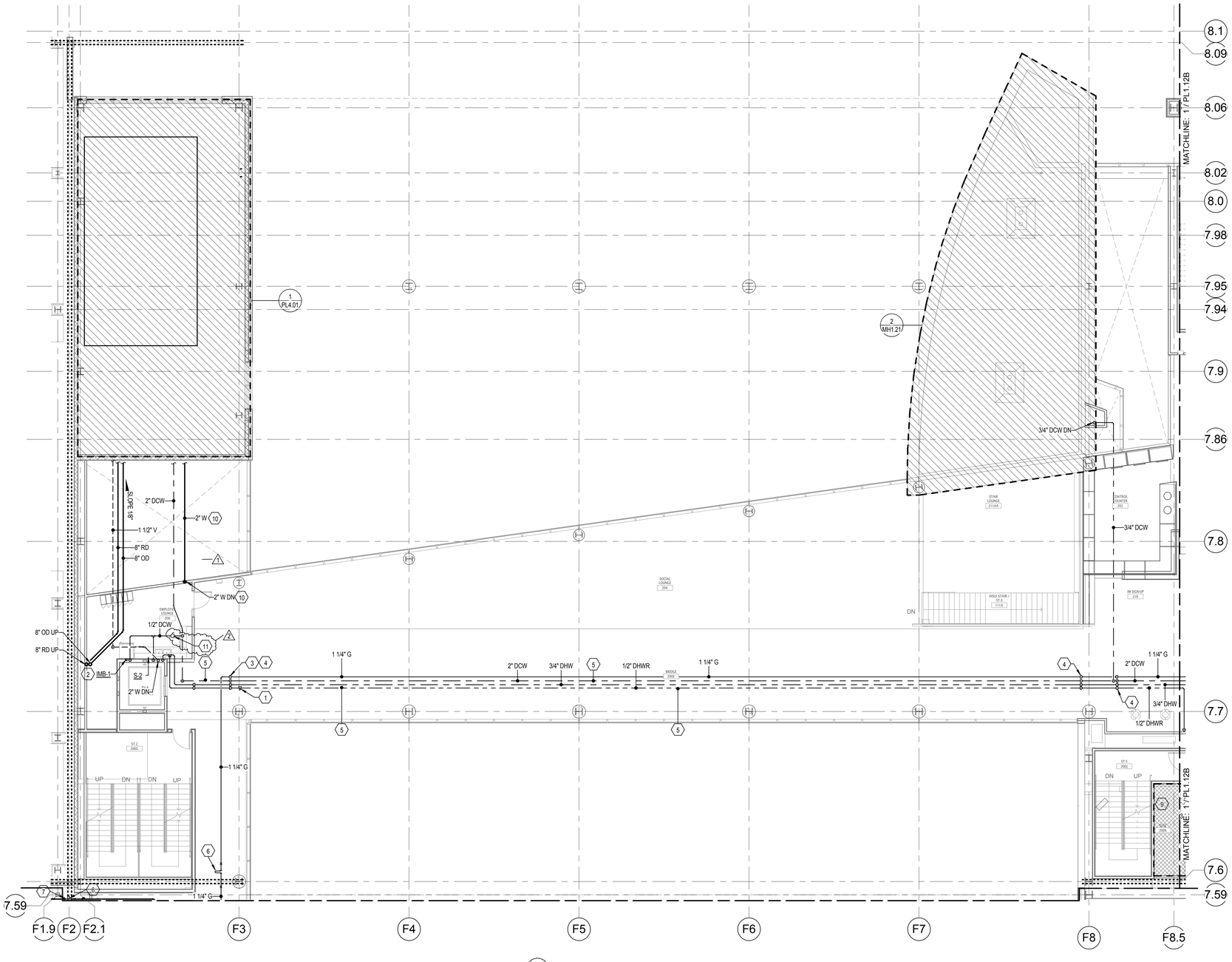
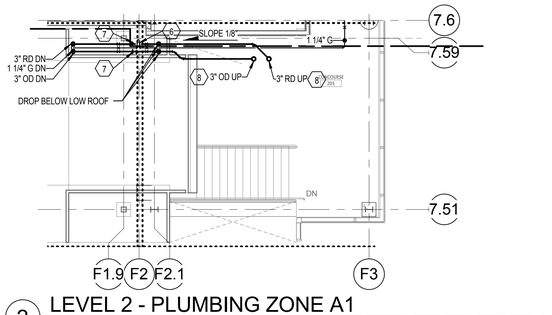


1 LEVEL 2 - PLUMBING ZONE A

SCALE: 1/8" = 1'-0"



2 LEVEL 2 - PLUMBING ZONE A1

SCALE: 1/8" = 1'-0"

KEYED NOTES

1. PROVIDE CIRCUIT SETTER IN AN ACCESSIBLE LOCATION. COORDINATE WITH CEILING PLANS. ALL CIRCUIT SETTERS ARE TO BE INSTALLED ABOVE ACCESSIBLE CEILINGS UNLESS OTHERWISE NOTED. BALANCE TO 0.5 GPM.
2. PROVIDE 1/2" COLD WATER CONNECTION TO ICE MAKER AT REFRIGERATOR WITH ICE MAKER BOX. SEE PLUMBING FIXTURE SCHEDULE FOR MODEL NUMBER. PROVIDE VACUUM BREAKER AND ISOLATION VALVE IN AN ACCESSIBLE LOCATION.
3. PROVIDE OFFSETS IN PIPE AS REQUIRED TO AVOID CONFLICT WITH DUCT WORK. COORDINATE WITH HVAC PLANS AND IN THE FIELD. TYPICAL.
4. PROVIDE OFFSETS IN PIPE AS REQUIRED TO AVOID CONFLICT WITH STRUCTURE. TYPICAL.
5. PLUMBING PIPES IN THIS AREA ARE TO BE CLOSELY COORDINATED WITH MECHANICAL PIPING AND DUCTWORK. PROVIDE OFFSETS AS REQUIRED.
6. PROVIDE METRAFLEX METRALOOP EXPANSION JOINT IN GAS PIPING DESIGNED FOR 7" OF MOVEMENT ACROSS SEISMIC EXPANSION JOINT. PROVIDE SEISMIC BRACING ON BOTH SIDES OF EXPANSION JOINT.
7. PROVIDE SEISMIC BRACING ON BOTH SIDES OF EXPANSION JOINT WITH A NO HUB COUPLING IN BETWEEN ON ALL DOMESTIC WASTE, VENT AND ROOF DRAIN PIPING CROSSING ANY EXPANSION JOINT. NO HUB COUPLING TO BE A DESIGN FAILURE POINT IN THE EVENT OF SEISMIC MOTION.
8. SEE ROOF PLAN ON SHEET MH1.21 FOR CONTINUATION.
9. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL OR IT ROOMS. TYPICAL.
10. 2" PUMPED WASTE FROM ELEVATOR PIT SUMP. PUMP TO INDIRECT RECEPTOR AS SHOWN. PROVIDE AIR GAP AS REQUIRED. (1)
11. PROVIDE ISOLATION VALVE AS REQUIRED IN AN ACCESSIBLE LOCATION. COORDINATE LOCATION WITH CEILING PLANS. ALL VALVES SHALL BE LOCATED ABOVE AN ACCESSIBLE CEILING UNLESS OTHERWISE NOTED. TYPICAL. (2)

GENERAL NOTES

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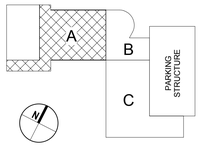

KEYPLAN - NTS

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Orem, Utah

UTAH VALLEY UNIVERSITY

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PLUMBING FLOOR PLAN LEVEL 2 ZONE A

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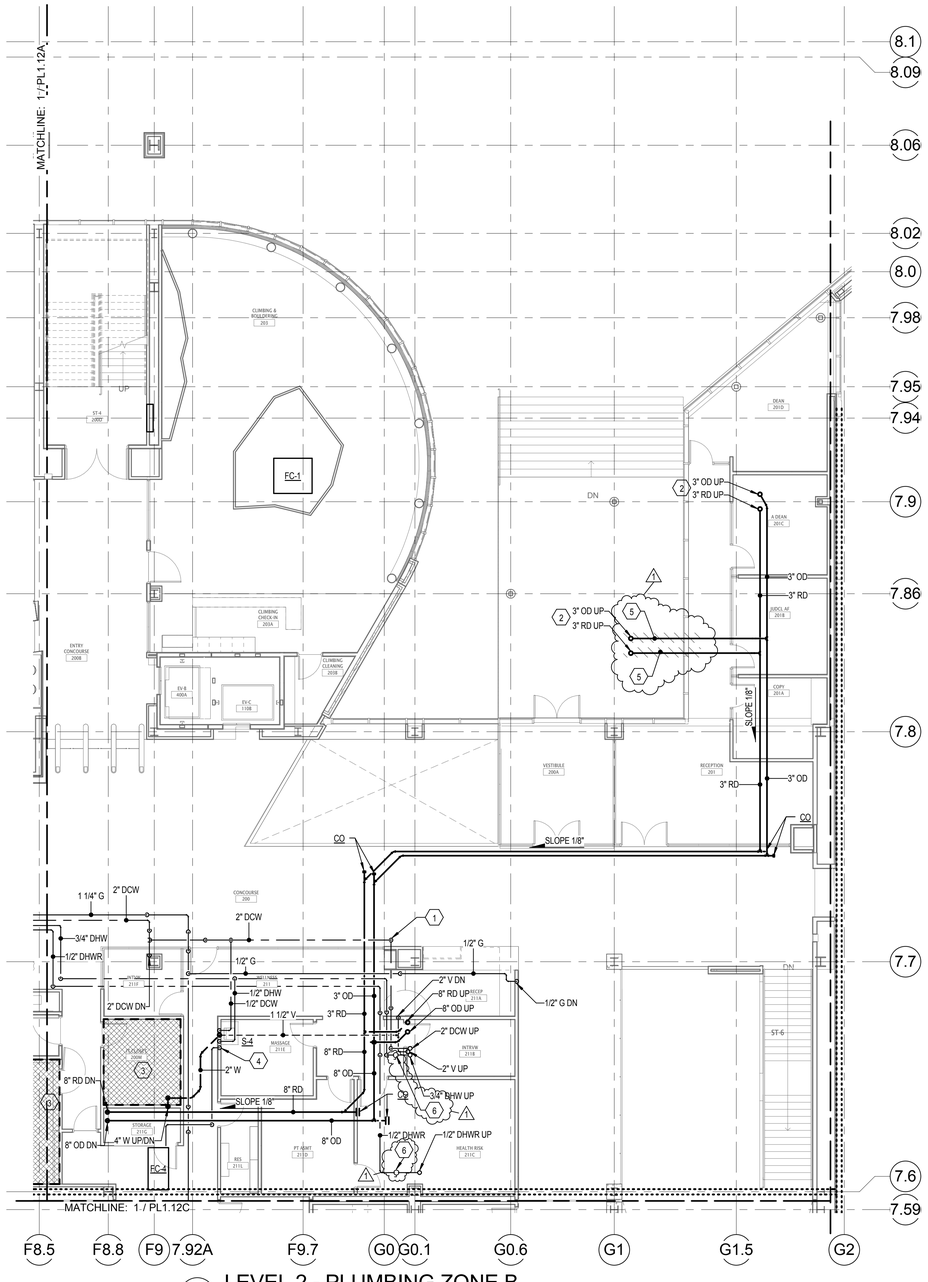

1 LEVEL 2 - PLUMBING ZONE B

SCALE: 1/8" = 1'-0"

KEYED NOTES

1. PROVIDE OFFSETS IN PIPE AS REQUIRED TO AVOID CONFLICT WITH STRUCTURE. TYPICAL.
2. SEE ROOF PLAN ON SHEET MH1.21 FOR CONTINUATION.
3. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL OR IT ROOMS. TYPICAL.
4. DROP CONDENSATE DRAIN TO FLOOR DRAIN/SINK, SERVICE SINK OR SINK TAIL PIECE. PROVIDE AIR GAP AS REQUIRED.
5. PROVIDE HEAT TRACE ON ROOF DRAIN PIPING FROM DECK DRAIN INTO THE BUILDING. EXTEND HEAT TRACE 18" INSIDE THE BUILDING BEFORE TERMINATING.
6. PROVIDE ISOLATION VALVE AS REQUIRED IN AN ACCESSIBLE LOCATION. COORDINATE LOCATION WITH CEILING PLANS. ALL VALVES SHALL BE LOCATED ABOVE AN ACCESSIBLE CEILING UNLESS OTHERWISE NOTED. TYPICAL.

GENERAL NOTES

A. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL, IT ROOMS OR ELEVATOR MACHINE ROOMS.

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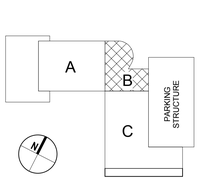

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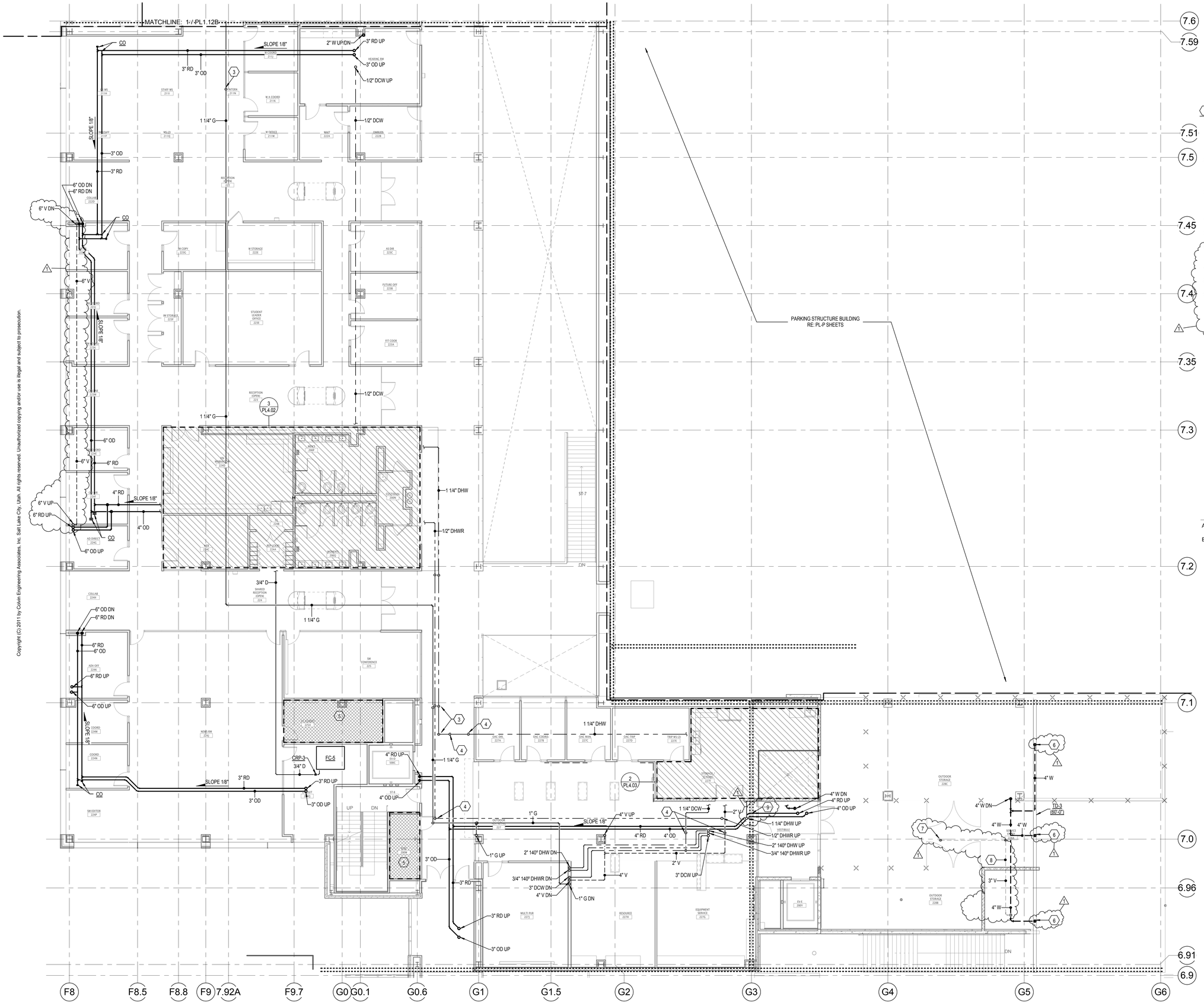

1 LEVEL 2 - PLUMBING ZONE C

SCALE: 1/8" = 1'-0"

6' 0' 4' 8' 12' 16'

KEYED NOTES

1. PROVIDE 1/2" COLD WATER CONNECTION TO ICE MAKER AT REFRIGERATOR WITH ICE MAKER BOX. SEE PLUMBING FIXTURE SCHEDULE FOR MODEL NUMBER. PROVIDE VACUUM BREAKER AND ISOLATION VALVE IN AN ACCESSIBLE LOCATION.
2. PROVIDE SHOCK ARRESTOR AT THE END OF COLD WATER BRANCH IN AN ACCESSIBLE LOCATION. PROVIDE ACCESS DOOR AS REQUIRED WHEN NOT MOUNTED ABOVE AN ACCESSIBLE CEILING. TYPICAL.
3. PROVIDE OFFSETS IN PIPE AS REQUIRED TO AVOID CONFLICT WITH DUCT WORK. COORDINATE WITH HVAC PLANS AND IN THE FIELD. TYPICAL.
4. PROVIDE OFFSETS IN PIPE AS REQUIRED TO AVOID CONFLICT WITH STRUCTURE. TYPICAL.
5. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL OR IT ROOMS. TYPICAL.
6. CONNECT TO TRENCH DRAIN AT THIS APPROXIMATE LOCATION. TRENCH DRAIN TO SLOPE TOWARDS DRAIN CONNECTIONS.
7. CONNECT 3" VENT BELOW FLOOR TO 4" VENT LINE INSIDE LAUNDRY 125F BELOW.
8. ROUTE VENT PIPE BELOW FLOOR IN LEVEL 1 CEILING SPACE.
9. PROVIDE SEISMIC BRACING ON BOTH SIDES OF EXPANSION JOINT WITH A NO HUB COUPLING IN BETWEEN ON ALL DOMESTIC WASTE, VENT AND ROOF DRAIN PIPING CROSSING ANY EXPANSION JOINT. NO HUB COUPLING TO BE A DESIGN FAILURE POINT IN THE EVENT OF SEISMIC MOTION.

GENERAL NOTES

A. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL, IT ROOMS OR ELEVATOR MACHINE ROOMS.
B. ALL SANITARY SEWER AND ROOF DRAIN PIPING SHALL BE SLOPED AT 1/8" PER FOOT MINIMUM.

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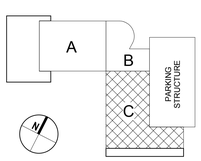
1	05.09.2012	ADDENDUM 3



KEYPLAN - NTS

STUDENT LIFE CENTER & PARKING STRUCTURE

Orem, Utah

UTAH VALLEY UNIVERSITY

DRAWN BY:	JLW
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ISSUED DATE:	04.27.2012

PLUMBING FLOOR PLAN LEVEL 2 ZONE C

CONSTRUCTION DOCUMENTS

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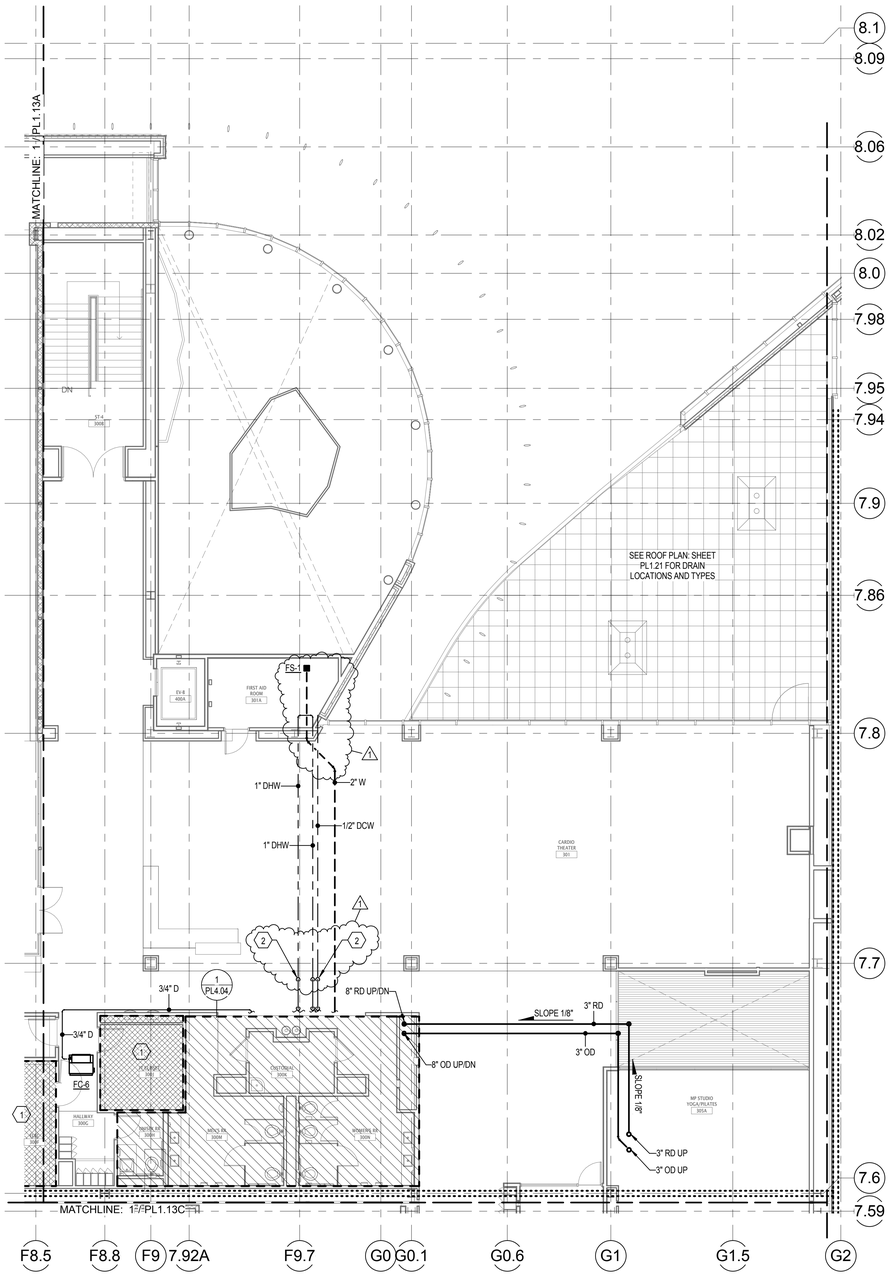


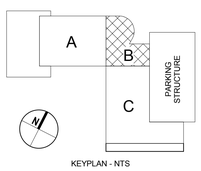
1 LEVEL 3 - PLUMBING ZONE B
SCALE: 1/8" = 1'-0"

KEYED NOTES

1. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL OR IT ROOMS. TYPICAL.
2. PROVIDE OFFSETS IN PIPE AS REQUIRED TO AVOID CONFLICT WITH DUCT WORK. COORDINATE WITH HVAC PLANS AND IN THE FIELD. TYPICAL.

GENERAL NOTES

A. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL, IT ROOMS OR ELEVATOR MACHINE ROOMS.
B. ALL SANITARY SEWER AND ROOF DRAIN PIPING SHALL BE SLOPED AT 1/8" PER FOOT MINIMUM.



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PLUMBING FLOOR PLAN LEVEL 3 ZONE B

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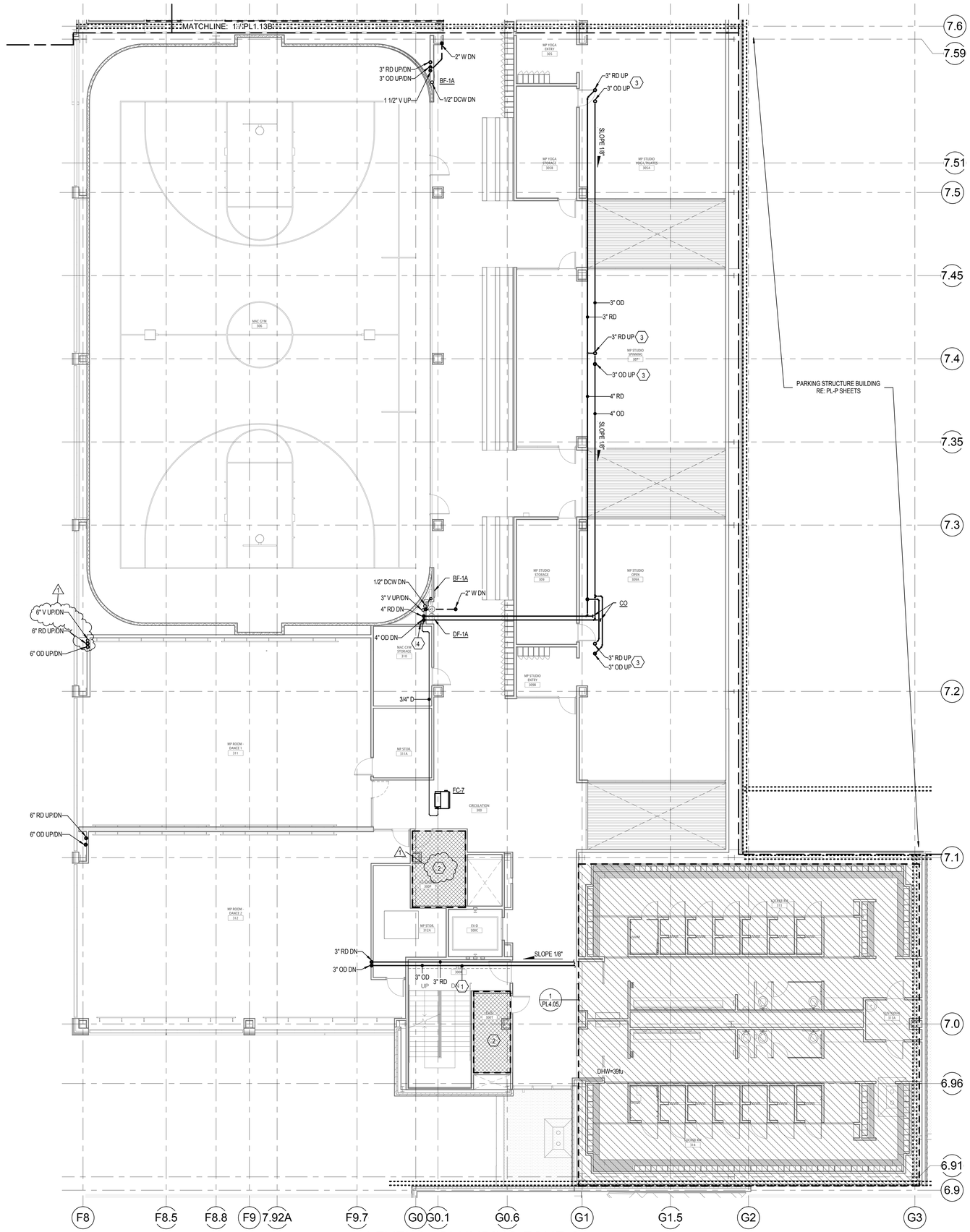

1 LEVEL 3 - PLUMBING ZONE C

SCALE: 1/8" = 1'-0"

KEYED NOTES

1. ROUTE PLUMBING PIPING WITHIN FIRE RATED CHASE PROVIDED BY ARCHITECT.
2. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL OR IT ROOMS. TYPICAL.
3. SEE ROOF PLAN ON SHEET MH1.21 FOR CONTINUATION.
4. DROP CONDENSATE DRAIN TO FLOOR DRAIN/SINK, SERVICE SINK OR SINK TAIL PIECE. PROVIDE AIR GAP AS REQUIRED.

GENERAL NOTES

A. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL, IT ROOMS OR ELEVATOR MACHINE ROOMS.

B. ALL SANITARY SEWER AND ROOF DRAIN PIPING SHALL BE SLOPED AT 1/8" PER FOOT MINIMUM.

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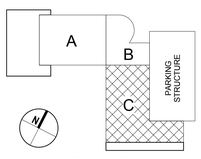

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PLUMBING FLOOR PLAN LEVEL 3 ZONE C

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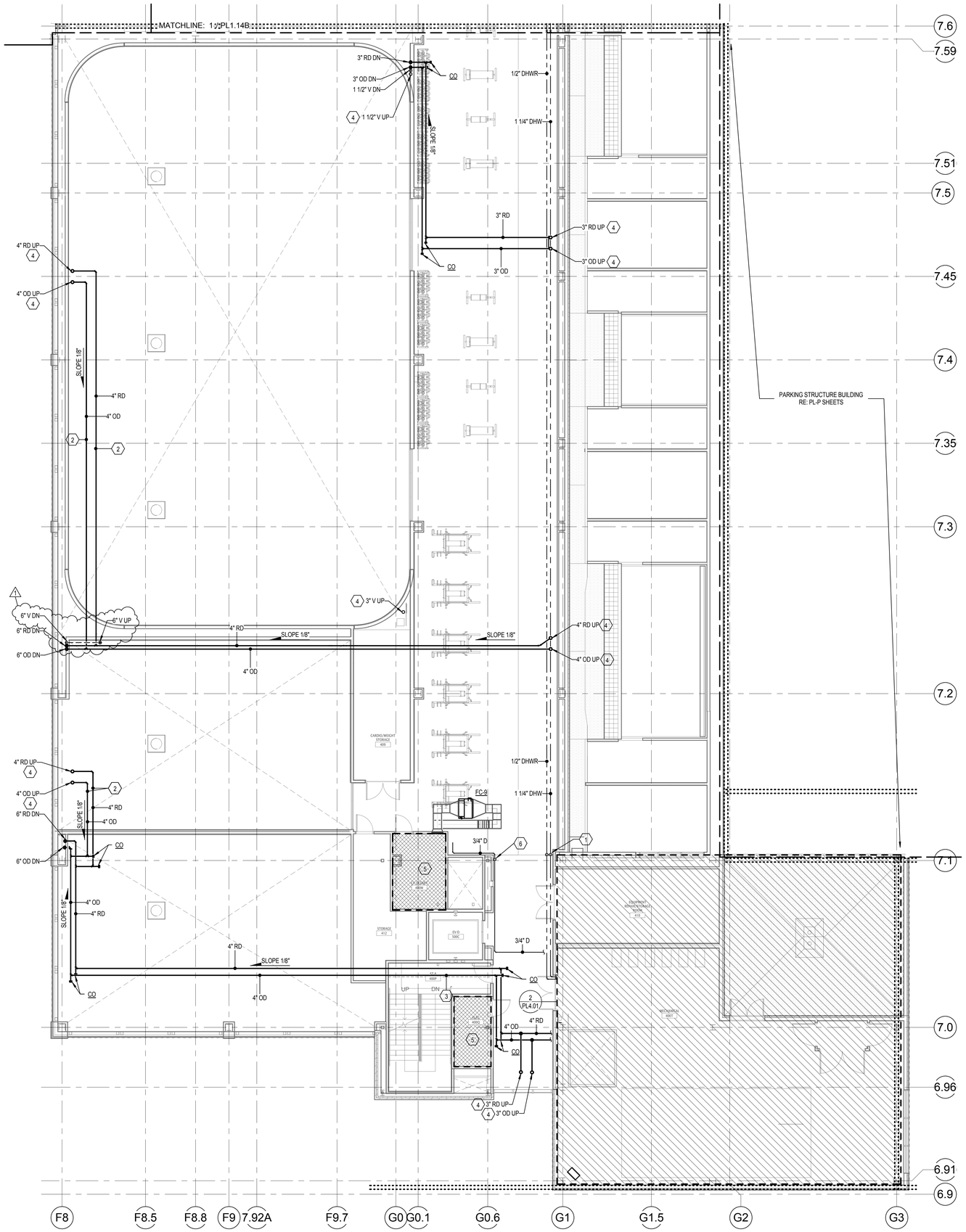

1 LEVEL 4 - PLUMBING ZONE C

SCALE: 1/8" = 1'-0"

6' 0' 4' 8' 12' 16'

KEYED NOTES

1. PROVIDE OFFSETS IN PIPE AS REQUIRED TO AVOID CONFLICT WITH STRUCTURE. TYPICAL.
2. ROUTE PIPE BETWEEN WEBS IN JOIST. FIELD COORDINATE WITH STRUCTURE.
3. ROUTE PLUMBING PIPING WITHIN FIRE RATED CHASE PROVIDED BY ARCHITECT.
4. SEE ROOF PLAN ON SHEET MH1.21 FOR CONTINUATION.
5. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL OR IT ROOMS. TYPICAL.
6. PROVIDE OFFSETS IN PIPE AS REQUIRED TO AVOID CONFLICT WITH DUCT WORK. COORDINATE WITH HVAC PLANS AND IN THE FIELD. TYPICAL.

GENERAL NOTES

A. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL, IT ROOMS OR ELEVATOR MACHINE ROOMS.

B. ALL SANITARY SEWER AND ROOF DRAIN PIPING SHALL BE SLOPED AT 1/8" PER FOOT MINIMUM.

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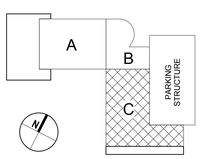
1	05.09.2012	ADDENDUM 3



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PLUMBING FLOOR PLAN LEVEL 4 ZONE C

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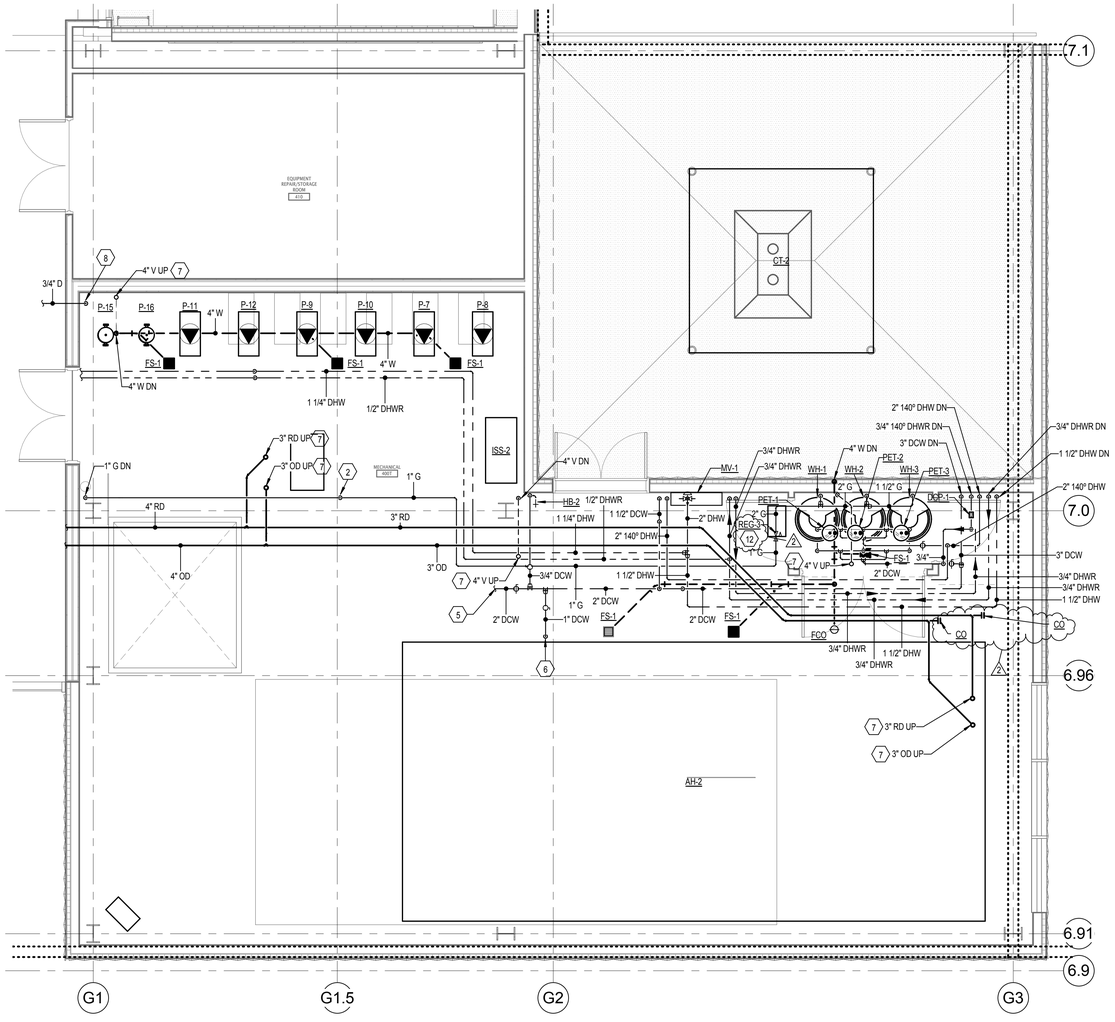
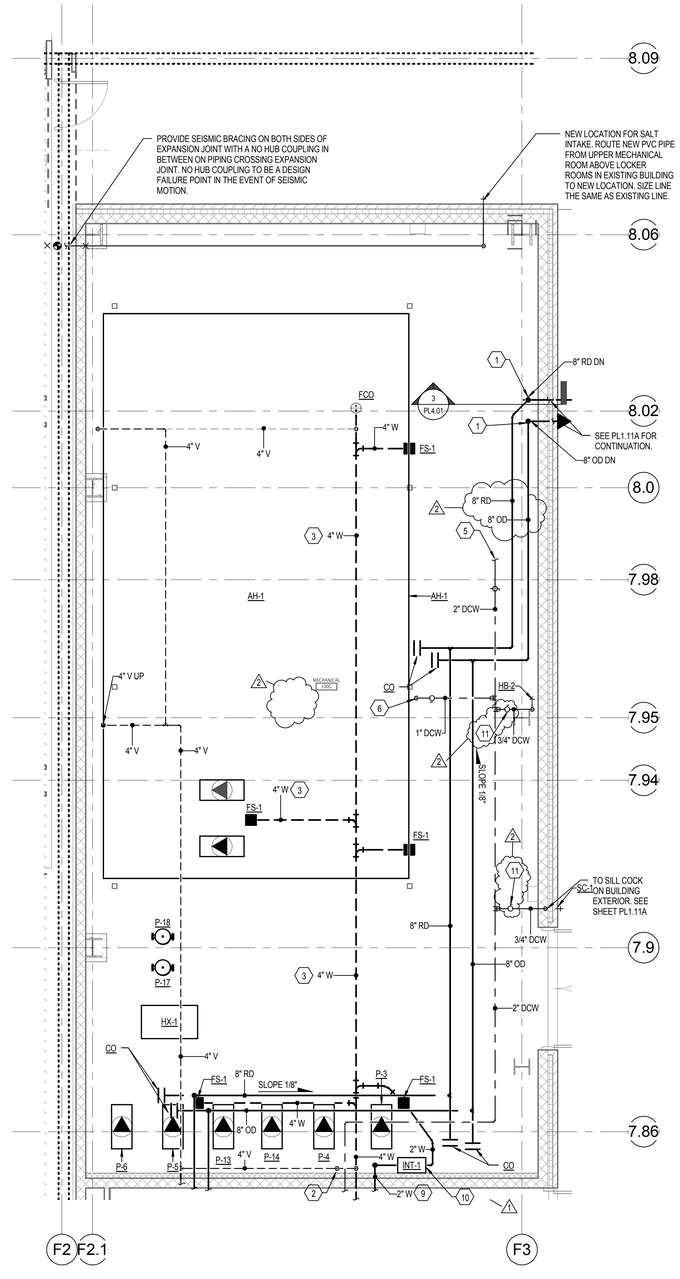
1	05.04.2012	ADDENDUM 2
2	05.09.2012	ADDENDUM 3



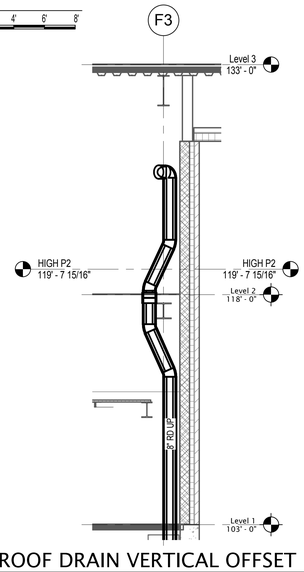
LEVEL 4 - ENLARGED MECHANICAL ROOM PLUMBING - ZONE C

2 SCALE: 1/4" = 1'-0"



LEVEL 1 - ENLARGED MECHANICAL ROOM PLUMBING - ZONE A

1 SCALE: 1/4" = 1'-0"



ROOF DRAIN VERTICAL OFFSET

3 PL4.01 1/4" = 1'-0"

KEYED NOTES

1. PROVIDE OFFSETS IN VERTICAL PIPE AS REQUIRED TO AVOID CONFLICT WITH STRUCTURE ALONG EXTERIOR WALL. SEE SECTION ON THIS SHEET.
2. PROVIDE OFFSETS IN PIPE AS REQUIRED TO AVOID CONFLICT WITH DUCT WORK. COORDINATE WITH HVAC PLANS AND IN THE FIELD. TYPICAL.
3. COMBINATION WASTE AND VENT.
4. NOT USED.
5. ROUTE 2" COOLING TOWER MAKE-UP TO CONDENSER WATER SUPPLY. PROVIDE BACK FLOW PREVENTER AND ISOLATION VALVES. COORDINATE TIE-IN LOCATION WITH MECHANICAL PIPING SCHEMATICS.
6. PROVIDE 1" COLD WATER CONNECTION TO EVAPORATIVE MEDIA IN AIR HANDLER. COORDINATE CONNECTION LOCATION WITH HVAC/MECHANICAL CONTRACTOR.
7. SEE ROOF PLAN ON SHEET MH1.21 FOR CONTINUATION.
8. DROP CONDENSATE DRAIN TO FLOOR DRAIN/SINK, SERVICE SINK OR SINK TAIL PIECE. PROVIDE AIR GAP AS REQUIRED.
9. 2" PUMPED WASTE FROM ELEVATOR PIT SUMP. PUMP TO INDIRECT RECEPTOR AS SHOWN. PROVIDE AIR GAP AS REQUIRED.
10. PROVIDE OIL INTERCEPTOR ON FLOOR. ROUTE WASTE LINE FROM INTERCEPTOR TO FLOOR SINK/SEPUCF SINK AS SHOWN.
11. PROVIDE ISOLATION VALVE AS REQUIRED IN AN ACCESSIBLE LOCATION. COORDINATE LOCATION WITH CEILING PLANS. ALL VALVES SHALL BE LOCATED ABOVE AN ACCESSIBLE CEILING UNLESS OTHERWISE NOTED. TYPICAL.
12. INSTALL NATURAL GAS PRESSURE REGULATOR IN AN ACCESSIBLE LOCATION. VENT AS REQUIRED.

GENERAL NOTES

A. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL, IT ROOMS OR ELEVATOR MACHINE ROOMS.

B. ALL SANITARY SEWER AND ROOF DRAIN PIPING SHALL BE SLOPED AT 1/8" PER FOOT MINIMUM.

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ENLARGED MECHANICAL ROOMS PLUMBING PLANS

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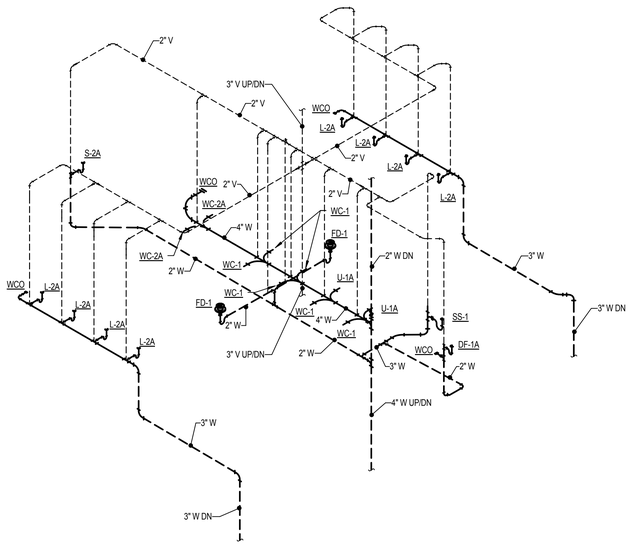
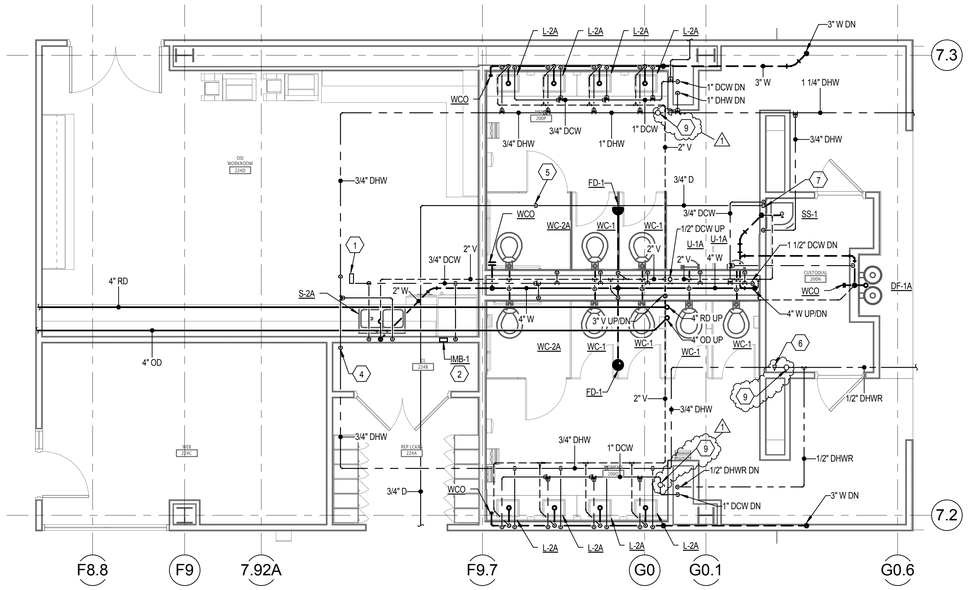
1	05.09.2012	ADDENDUM 3



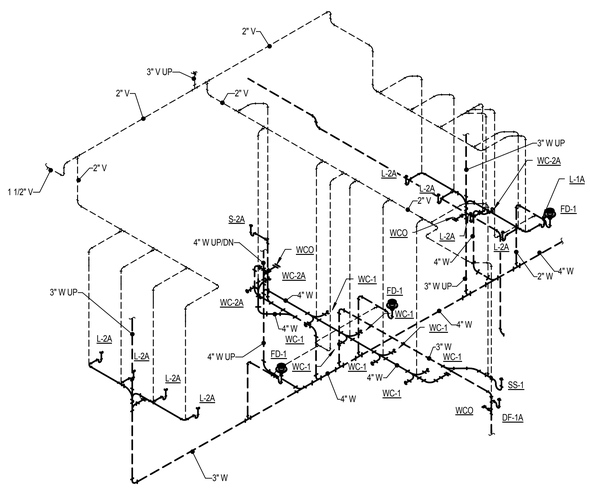
4 LEVEL 2 - RESTROOM GROUP DWV ISOMETRIC
SCALE:



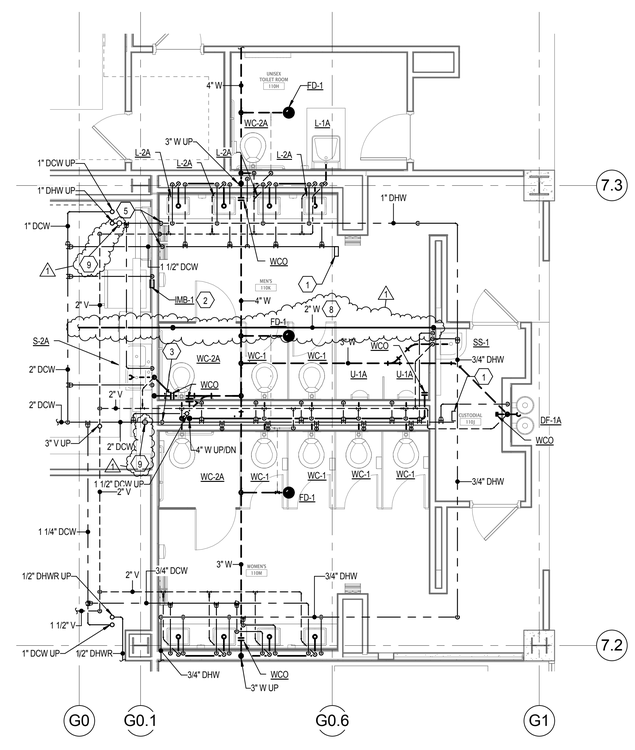
3 LEVEL 2 - ENLARGED RESTROOM PLUMBING
SCALE: 1/4" = 1'-0"
3' 0' 2' 4' 6' 8'

KEYED NOTES

1. PROVIDE SHOCK ARRESTOR AT THE END OF COLD WATER BRANCH IN AN ACCESSIBLE LOCATION. PROVIDE ACCESS DOOR AS REQUIRED WHEN NOT MOUNTED ABOVE AN ACCESSIBLE CEILING. TYPICAL.
2. PROVIDE 1/2" COLD WATER CONNECTION TO ICE MAKER AT REFRIGERATOR WITH ICE MAKER BOX. SEE PLUMBING FIXTURE SCHEDULE FOR MODEL NUMBER. PROVIDE VACUUM BREAKER AND ISOLATION VALVE IN AN ACCESSIBLE LOCATION.
3. DROP 2" DOMESTIC COLD WATER DOWN IN PLUMBING CHASE. ROUTE BELOW EXHAUST DUCT TO WATER CLOSETS AND URINALS.
4. PROVIDE OFFSETS IN ROOF DRAIN PIPE TO AVOID CONFLICT WITH WASTE PIPING AT THIS APPROXIMATE LOCATION.
5. PROVIDE OFFSETS IN PIPE AS REQUIRED TO AVOID CONFLICT WITH DUCT WORK. COORDINATE WITH HVAC PLANS AND IN THE FIELD. TYPICAL.
6. PROVIDE CIRCUIT SETTER IN AN ACCESSIBLE LOCATION. COORDINATE WITH CEILING PLANS. ALL CIRCUIT SETTERS ARE TO BE INSTALLED ABOVE ACCESSIBLE CEILINGS UNLESS OTHERWISE NOTED. BALANCE TO 0.5 GPM.
7. DROP CONDENSATE DRAIN TO FLOOR DRAIN/SINK, SERVICE SINK OR SINK TAIL PIECE. PROVIDE AIR GAP AS REQUIRED.
8. 2" PUMPED WASTE FROM ELEVATOR PIT SUMP. PUMP TO INDIRECT RECEPTOR AS SHOWN. PROVIDE AIR GAP AS REQUIRED.
9. PROVIDE ISOLATION VALVE AS REQUIRED IN AN ACCESSIBLE LOCATION. COORDINATE LOCATION WITH CEILING PLANS. ALL VALVES SHALL BE LOCATED ABOVE AN ACCESSIBLE CEILING UNLESS OTHERWISE NOTED. TYPICAL.



2 LEVEL 1 - RESTROOM GROUP DWV ISOMETRIC
SCALE:



1 LEVEL 1 - ENLARGED RESTROOM PLUMBING
SCALE: 1/4" = 1'-0"
3' 0' 2' 4' 6' 8'

GENERAL NOTES

A. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL, IT ROOMS OR ELEVATOR MACHINE ROOMS.
B. ALL SANITARY SEWER AND ROOF DRAIN PIPING SHALL BE SLOPED AT 1/8" PER FOOT MINIMUM.

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LEVEL 1 & 2 ENLARGED PLUMBING PLANS

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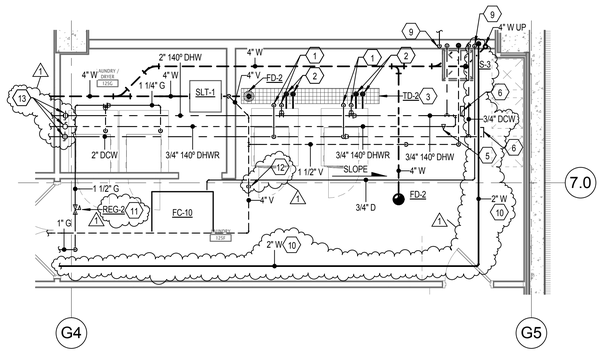
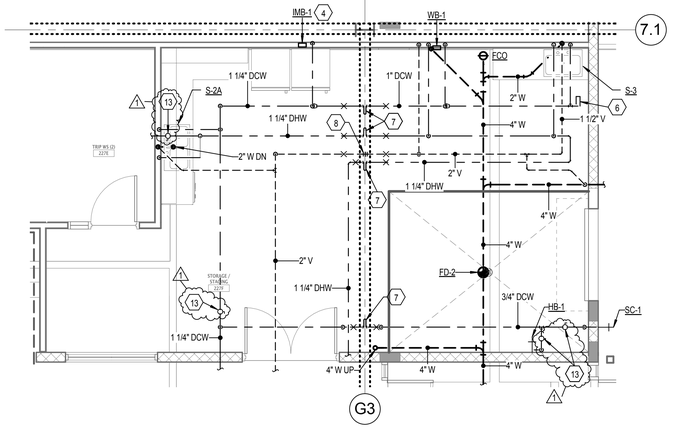


LEVEL 1 - ENLARGED LAUNDRY ROOM PLUMBING

1 SCALE: 1/4" = 1'-0"



LEVEL 2 - ENLARGED STORAGE/STAGING PLUMBING

2 SCALE: 1/4" = 1'-0"

KEYED NOTES

1. 1 1/4" 140ºF DOMESTIC HOT AND 1 1/4" DOMESTIC COLD WATER TO WASHING MACHINE. PROVIDE ISOLATION VALVES AND BACK FLOW PREVENTERS AS REQUIRED. BRANCH TO TWO (2) 3/4" HOT AND TWO (2) 3/4" COLD WATER CONNECTIONS. COORDINATE ALL REQUIREMENTS WITH MANUFACTURER.
2. PROVIDE TWO (2) 3" DRAINS FROM WASHER. ROUTE TO TROUGH DRAIN. PROVIDE A MINIMUM 1" AIR GAP. COORDINATE ALL REQUIREMENTS WITH MANUFACTURER.
3. CAST IN PLACE TRENCH DRAIN BY STRUCTURAL. SLOPE BOTTOM OF TRENCH TOWARDS WASTE OUTLET. SEE STRUCTURAL DRAWINGS FOR DIMENSIONS. SEE PLUMBING SCHEDULE FOR FRAME AND GRATE SPECIFICATIONS. PROVIDE FLOOR DRAIN AT END OF TRENCH AT WASTE CONNECTION.
4. PROVIDE 1/2" COLD WATER CONNECTION TO ICE MAKER AT REFRIGERATOR WITH ICE MAKER BOX. SEE PLUMBING FIXTURE SCHEDULE FOR MODEL NUMBER. PROVIDE VACUUM BREAKER AND ISOLATION VALVE IN AN ACCESSIBLE LOCATION.
5. PROVIDE CIRCUIT SETTER IN AN ACCESSIBLE LOCATION. COORDINATE WITH CEILING PLANS. ALL CIRCUIT SETTERS ARE TO BE INSTALLED ABOVE ACCESSIBLE CEILINGS UNLESS OTHERWISE NOTED. BALANCE TO 1.5 GPM.
6. PROVIDE SHOCK ARRESTOR AT THE END OF COLD WATER BRANCH IN AN ACCESSIBLE LOCATION. PROVIDE ACCESS DOOR AS REQUIRED WHEN NOT MOUNTED ABOVE AN ACCESSIBLE CEILING. TYPICAL.
7. PROVIDE METRAFLEX METRALOOP COPPER EXPANSION JOINT DESIGNED FOR 7" OF MOVEMENT ACROSS SEISMIC EXPANSION JOINT. PROVIDE SEISMIC BRACING ON BOTH SIDES OF EXPANSION JOINT.
8. PROVIDE SEISMIC BRACING ON BOTH SIDES OF EXPANSION JOINT WITH A NO HUB COUPLING IN BETWEEN ON ALL DOMESTIC WASTE, VENT AND ROOF DRAIN PIPING CROSSING ANY EXPANSION JOINT. NO HUB COUPLING TO BE A DESIGN FAILURE POINT IN THE EVENT OF SEISMIC MOTION.
9. DROP CONDENSATE DRAIN TO FLOOR DRAIN/SINK. SERVICE SINK OR SINK TAIL PIECE. PROVIDE AIR GAP AS REQUIRED.
10. 2" PUMPED WASTE FROM ELEVATOR PIT SUMP. PUMP TO INDIRECT RECEPTOR AS SHOWN. PROVIDE AIR GAP AS REQUIRED.
11. INSTALL NATURAL GAS PRESSURE REGULATOR IN AN ACCESSIBLE LOCATION. VENT AS REQUIRED.
12. SEE PL1.12C FOR 3" VENT CONTINUATION.
13. PROVIDE ISOLATION VALVE AS REQUIRED IN AN ACCESSIBLE LOCATION. COORDINATE LOCATION WITH CEILING PLANS. ALL VALVES SHALL BE LOCATED ABOVE AN ACCESSIBLE CEILING UNLESS OTHERWISE NOTED. TYPICAL.

GENERAL NOTES

A. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL, IT ROOMS OR ELEVATOR MACHINE ROOMS.
B. ALL SANITARY SEWER AND ROOF DRAIN PIPING SHALL BE SLOPED AT 1/8" PER FOOT MINIMUM.

REVISIONS:

1	05.09.2012	ADDENDUM 3

STUDENT LIFE CENTER & PARKING STRUCTURE

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LEVEL 1 & 2 ENLARGED PLUMBING PLANS

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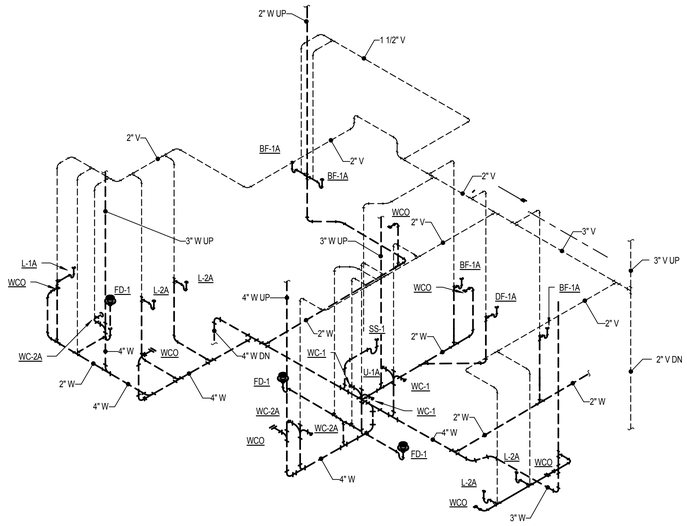
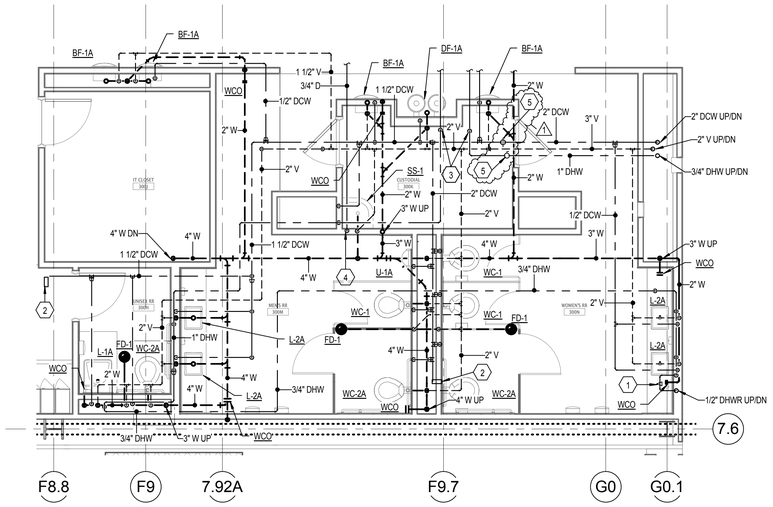


3 LEVEL 3 - RESTROOM GROUP DWV ISOMETRIC
SCALE:



1 LEVEL 3 - ENLARGED RESTROOM PLUMBING
SCALE: 1/4" = 1'-0"

3' 0' 2' 4' 6' 8'

KEYED NOTES

1. PROVIDE CIRCUIT SETTER BELOW COUNTER IN ACCESSIBLE LOCATION. BALANCE TO 0.5 GPM.
2. PROVIDE SHOCK ARRESTOR AT THE END OF COLD WATER BRANCH IN AN ACCESSIBLE LOCATION. PROVIDE ACCESS DOOR AS REQUIRED WHEN NOT MOUNTED ABOVE AN ACCESSIBLE CEILING. TYPICAL.
3. PROVIDE OFFSETS IN PIPE AS REQUIRED TO AVOID CONFLICT WITH STRUCTURE. TYPICAL.
4. DROP CONDENSATE DRAIN TO FLOOR DRAIN/SINK, SERVICE SINK OR SINK TAIL PIECE. PROVIDE AIR GAP AS REQUIRED.
5. PROVIDE ISOLATION VALVE AS REQUIRED IN AN ACCESSIBLE LOCATION. COORDINATE LOCATION WITH CEILING PLANS. ALL VALVES SHALL BE LOCATED ABOVE AN ACCESSIBLE CEILING UNLESS OTHERWISE NOTED. TYPICAL.

CANNONDESIGN
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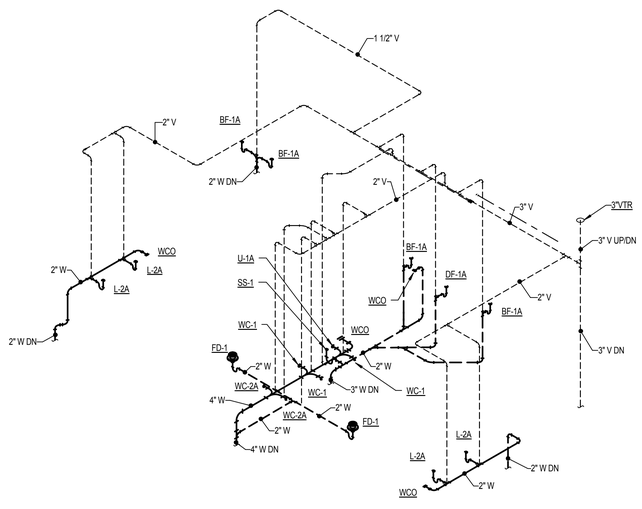
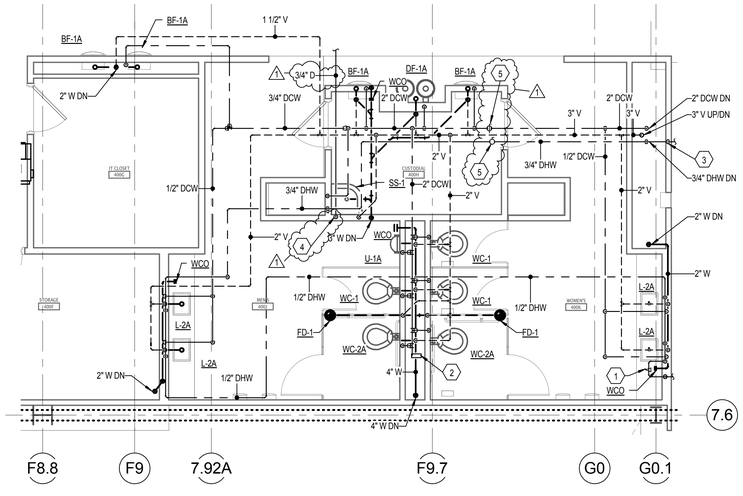
REVISIONS:

1	05.09.2012	ADDENDUM 3



4 LEVEL 4 - RESTROOM GROUP DWV ISOMETRIC
SCALE:



2 LEVEL 4 - ENLARGED RESTROOM PLUMBING
SCALE: 1/4" = 1'-0"

3' 0' 2' 4' 6' 8'

GENERAL NOTES

A. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL, IT ROOMS OR ELEVATOR MACHINE ROOMS.
B. ALL SANITARY SEWER AND ROOF DRAIN PIPING SHALL BE SLOPED AT 1/8" PER FOOT MINIMUM.

STUDENT LIFE CENTER & PARKING STRUCTURE

Orem, Utah

UTAH VALLEY UNIVERSITY

DRAWN BY:	JLW
CHECKED BY:	RLH
OWNER PROJECT NO.:	
GSBS PROJECT NO.:	2011.045.00
ISSUED DATE:	04.27.2012

LEVEL 3 & 4 ENLARGED PLUMBING PLANS

CONSTRUCTION DOCUMENTS

Colvin Engineering Associates, Inc.
244 West 300 North Suite 200
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PL4.04

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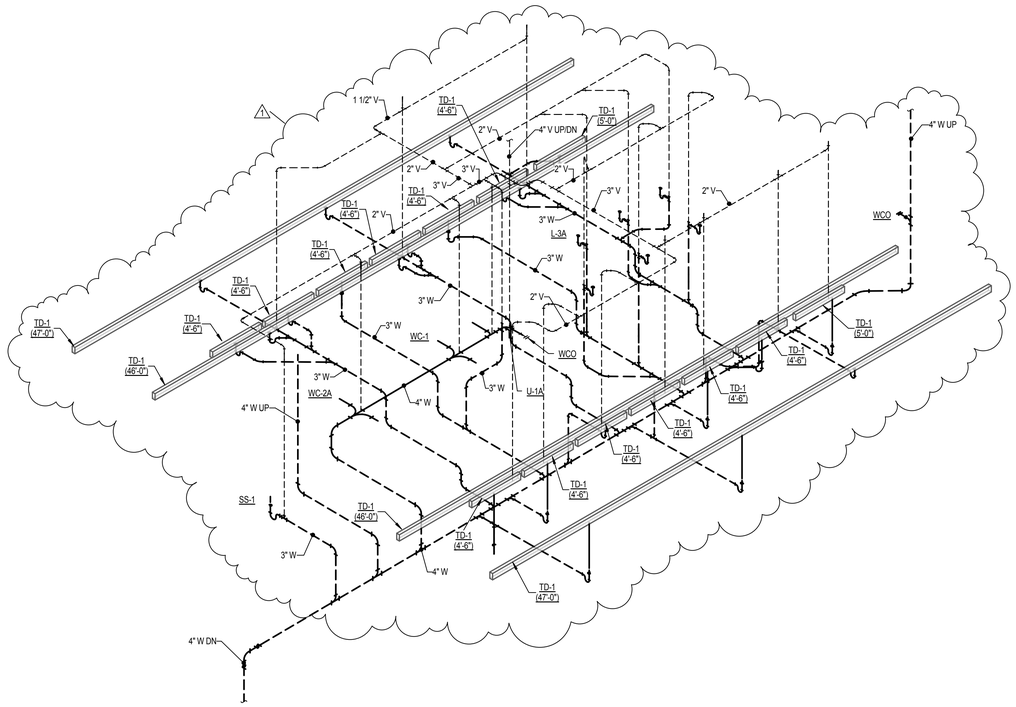
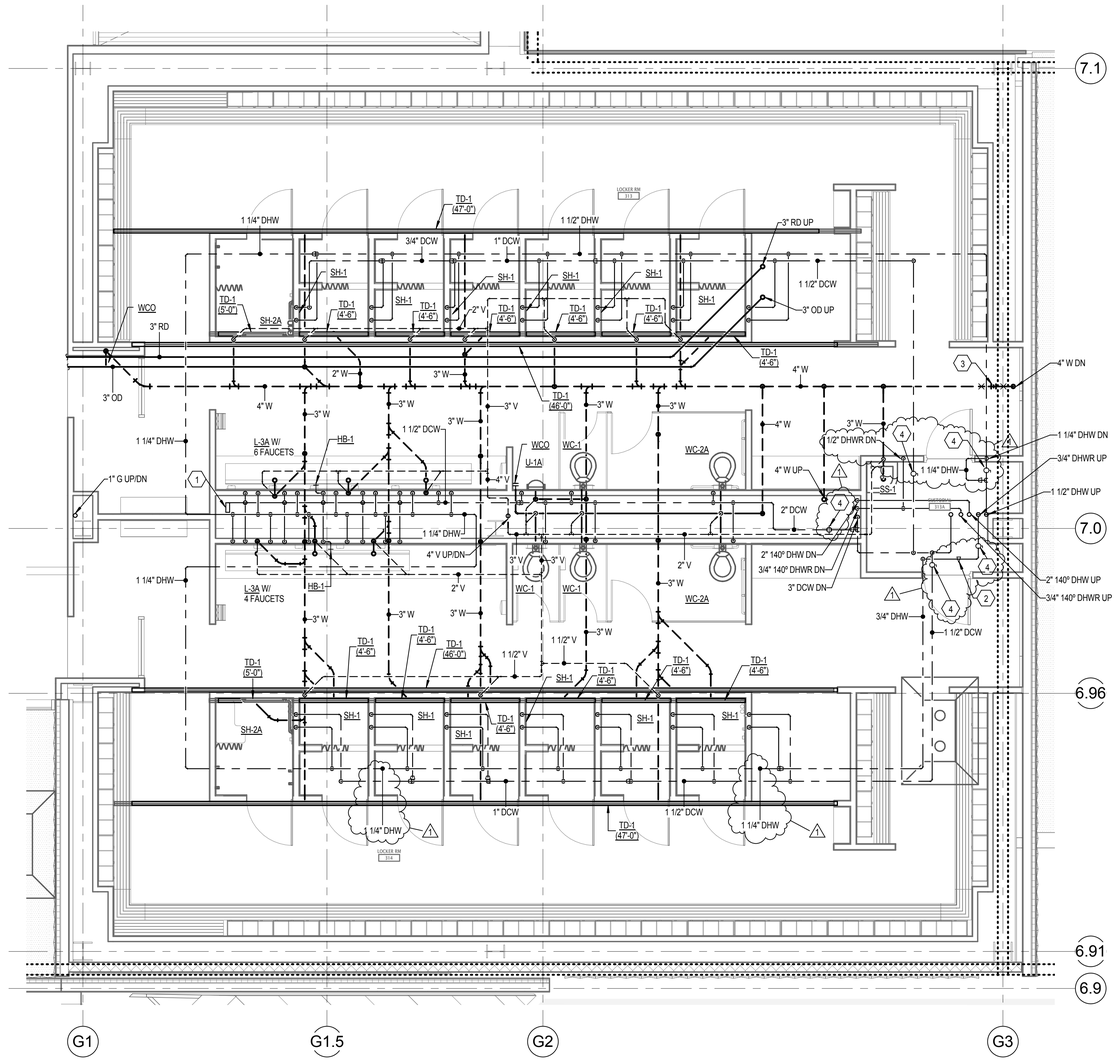
REVISIONS:

1	05.09.2012	ADDENDUM 3



2 LEVEL 3- LOCKER ROOM DWV ISOMETRIC
SCALE: NONE



1 LEVEL 3 - ENLARGED LOCKER ROOM PLUMBING
SCALE: 1/4" = 1'-0"

3' 0' 2' 4' 6' 8'

GENERAL NOTES

A. DO NOT ROUTE ANY PIPING ABOVE ELECTRICAL, IT ROOMS OR ELEVATOR MACHINE ROOMS.
B. ALL SANITARY SEWER AND ROOF DRAIN PIPING SHALL BE SLOPED AT 1/8" PER FOOT MINIMUM.

KEYED NOTES

1. PROVIDE SHOCK ARRESTOR AT THE END OF COLD WATER BRANCH IN AN ACCESSIBLE LOCATION. PROVIDE ACCESS DOOR AS REQUIRED WHEN NOT MOUNTED ABOVE AN ACCESSIBLE CEILING. TYPICAL.
2. PROVIDE CIRCUIT SETTER IN AN ACCESSIBLE LOCATION. COORDINATE WITH CEILING PLANS. ALL CIRCUIT SETTERS ARE TO BE INSTALLED ABOVE ACCESSIBLE CEILINGS UNLESS OTHERWISE NOTED. BALANCE TO 1.5 GPM.
3. PROVIDE SEISMIC BRACING ON BOTH SIDES OF EXPANSION JOINT WITH A NO HUB COUPLING IN BETWEEN ON ALL DOMESTIC WASTE, VENT AND ROOF DRAIN PIPING CROSSING ANY EXPANSION JOINT. NO HUB COUPLING TO BE A DESIGN FAILURE POINT IN THE EVENT OF SEISMIC MOTION.
4. PROVIDE ISOLATION VALVE AS REQUIRED IN AN ACCESSIBLE LOCATION. COORDINATE LOCATION WITH CEILING PLANS. ALL VALVES SHALL BE LOCATED ABOVE AN ACCESSIBLE CEILING UNLESS OTHERWISE NOTED. TYPICAL.

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STUDENT LIFE CENTER & PARKING STRUCTURE

Orem, Utah

UTAH VALLEY UNIVERSITY

DRAWN BY:	JLW
CHECKED BY:	RLH
OWNER PROJECT NO.:	
GSBS PROJECT NO.:	2011.045.00
ISSUED DATE:	04.27.2012

LEVEL 3 ENLARGED LOCKER ROOM PLUMBING PLAN

CONSTRUCTION DOCUMENTS

PL4.05

N. Record Drawings shall include all variations from the approved Working Plans, for whatever reason, including those occasioned by modifications, change orders, optional materials and/or required coordination between trades. Variations shall be indicated in sufficient detail to accurately reflect the as-built conditions. Upon completion of the work, before final acceptance, the Fire Protection Contractor shall deliver to the Owner, two (2) additional full size sets of hard copies ,one set of PDF and AutoCAD drawing data files on CD.

1.10 PROJECT CONDITIONS

A. Contractor shall not install any piping until he has assured himself that the piping can be run as contemplated in cooperation with Contractors of other Divisions of the Work and the physical constraints of the Structural and Architectural Work.

1.11 ALTERNATES

A. See specification section 012300 – Alternates for a description of the alternate that consists of adding ½ floor of parking to the garage identified in the base-bid pacakge. Provide pricing for adding dry sprinklers and standpipes for the alternate ½ floor of parking garage as necessary. **In addition to necessary sprinklers and standpipe extensions, the add-alternate will require a diesel engine driven fire pump to serve the parking garage only due to the increased number of openings in the east garage wall that require opening protection. Design system so sprinkler pipes operate off city water pressure, pump only turns on when flow exceeds 1,000 gpm.**

1.12 WARRANTIES

A. Provide original copies of all warranties and extended warranties for specific equipment where specified and in accordance with Section 230500.

PART 2 - PRODUCTS

2.1 PRODUCT LISTINGS AND APPROVALS

A. All system components for which UL listings categories exist shall be listed by Underwriters Laboratories (UL) or Factory Mutual Research (FM).

1. All components shall be listed in the current edition of the UL Fire Protection Equipment Directory. Components shall be delivered to the project site with factory applied UL stickers.
2. Components for which UL listing approvals are “pending” are not acceptable.

2.7 BACKFLOW PREVENTER

A. Backflow Preventer: Provide backflow preventer in heated room shown in drawings, in accordance with Section 230529.

1. Double check assembly, U.L. Classified, FM Approved, with shut-off valves. Ames C200, or equal.

2.8 ROOF MANIFOLD

A. Cast brass, straight or angle pattern. Provide roof manifold of size, style, and pattern required. Provide control valve, stem extension, wall or floor stand, index plate, and cap and chain. Valve body to be located indoors in a heated space, with a PIV-style stem extension that allows valve be actuated by a person outdoors on the roof. Valve body immediately availlable for use at rooftop vave will not require PIV extension.

2.10 AIR COMPRESSOR

A. Acceptable Manufacturers: Quincy, Ingersoll-Rand, Grinnell or equal.

B. Provide an automatic air compressor complete with 30 gallon minimum receiver, auto receiver drain, air cooled after cooler, belt guard, auto start stop - H.O.A., starter, panel, relief valve, pressure reducing valve in conformance with NFPA-13.

C. The air compressor shall be of sufficient horsepower and free air output to provide restoration of the total pipe volume in the system in 20 minutes or less, but no larger than 2 HP.

D. Air compressor shall be a two stage reciprocating type mounted on a horizontal or vertical receiver and shall not be less than 1 HP. Note the electrical service being provided for the compressor is 460V/3 phase. Voltage and phase shall be verified with Division 26 contractor, and motors furnished for proper electrical characteristics.

E. Provide a low pressure trouble alarm (NCO Bell) with sensor on inlet side of P.R.V. (between P.R.V. and receiver) set at 10 psig above required system maintenance pressure.

F. Provide air maintenance assembly.

2.11 FIRE PUMP (PART OF ADD-ALTERNATE ONLY)

A. **Acceptable Manufacturers: Wheeler, Allis-Chalmers, Patterson, Fairbanks - Morse, Peerless, Aurora, Chicago, Armstrong.**

B. **Diesel Engine Driven:**

1. **Size pump and engine for hydraulically calculated duty at project altitude of 4,500 ft. Basis of design pump is Aurora model 6-481-15, flow is 1,500 gpm with 115 feet of head, BHP = 57, 60 HP motor, 1,750 RPM. Provide pressure relief discharge cone and limit startup to less than 175 psi with city combined pressure. System pressure is provided by city water supply. Provide with bypass feed supply.**
2. **Provide the following accessories: 1/2" automatic air release valve and casing relief valve, suction and discharge gauges, coupling guard, 120V block heater, double-wall fuel tank w/legs (8 hr min. supply) with leak detection/monitoring of containment space, fill port on tank, complete fuel system, fill port on engine, engine hot start, standby batteries and appropriate charger, oil pan heater, city bypass for 130 psi static pressure, and city test loop. Fuel tank shall include high tank level alarm, low tank level alarm, and liquid detected in containment, and one dry contact for each alarm that will be connected to by the 230900 contractor. Include muffler and flexible connector for exhaust outlet.**
3. **Controller U.L. & F.M. approved. Type 3 R NEMA enclosure, minimum run timer, remote shutdown interlock, digital battery voltage display, all operation and alarm functions required by NFPA #20, alpha numeric display for pump system status and alarm conditions. Controller to include two 120V power connection points for two battery chargers and for powering controls. Also power controller from batteries if 120 V power is lost. Include contact to signal when to open ventilation dampers and start cooling fan before pump is started.**
4. **Note no jockey pump is required.**
5. **Diesel engine exhaust and tank vent shall be routed to roof of parking. Coordinate routing with 230500 contractor. Coordinate sleeves through garage structure with general contractor.**

2.12 FIRE PUMP TEST HEADER (PART OF ADD-ALTERNATE ONLY)

A. **Cast brass, gate valves, caps and chains. Provide index plate "FIRE PUMP TEST HEADER". Include hose threads on discharge so hose can be connected to header to route test water to the street or curb.**

B. **Finish: Polished chrome.**

3.13 THERMOMETERS AND GAUGES FOR CHILLER AND BOILER INSTALLATION

A. Contractor shall furnish and install a set of four adjustable, indicating type, mercury filled thermometers of the separable socket adjustable type in glass faced metal cases. They shall be placed in the piping adjacent to the machine in the following locations:

1. Heating water line entering boiler.
2. Chilled water line entering ~~chiller~~ **heat exchanger**.
3. Heating water line leaving boiler.
4. Chilled water line leaving ~~chiller~~ **heat exchanger**.
5. Where indicated on plans, details and schematics.

B. Thermometer bulb shall project sufficiently into pipe (at least 1/3 of nominal pipe diameter) to accurately measure water temperature. Cases shall clear insulation.

C. Contractor shall provide and install gauge valves and gauges so that water pressure difference across these vessels is indicated.

D. Mount thermometers and gauges in a readily accessible location and easily read in a standing position from the equipment room floor.

E. Provide a shut-off valve on the branch line to each pressure gauge located in the system.

3.14 BACKFLOW PREVENTER

A. Provide on cold water make-up line to heating water and chilled water piping systems. Locate on high pressure side of reducing valve on system water make-up line.

3.15 TESTS

A. General: Provide test pump, gauges, meters, other instruments, materials, and labor, in connection with tests.

B. Relief Valve: Install a 1” safety relief valve, set at a pressure no more than 5 psig less than the relief valve on boiler or chiller evaporator barrel, to protect against damage by expanding liquid or other source of overpressure during test or normal operation. Discharge of this system relief valve shall be piped to the glycol fill tank for recovery of glycol should relief valve be discharged.

C. Pressure Tests: Before testing piping systems, remove or otherwise protect from damage, control devices, air vents and other parts which are not designed to stand pressure used in testing piping.

D. Hydrostatic Pressure: Test hydronically, piping for all services (except pneumatic system compressed air) to 125 psi or 1.5 times the maximum working pressure, whichever is greater, for at least six consecutive hours, during which time pressure shall remain constant without pumping. Subject welded joints to the hammer test, and copper joints to soap suds while under hydrostatic pressure.

3.16 CLEANING OF PIPING SYSTEMS

A. Provide for the cleaning of the HVAC Water Piping Systems after hydrostatic tests have been completed and prior to the operating tests in accordance with Section 232500 - HVAC Water Treatment.

B. 232113 Contractor is to provide bypasses and isolation valves as required by 232500 Contractor to allow circulation of cleaning solution in new piping system without allowing system cleaning solution to circulate through existing piping system. Division 232113 Contractor is responsible for removing and cleaning strainers in new or existing system plugged by cleaning of new system. Simply blowing down strainers is unacceptable.

3.17 ANTIFREEZE GLYCOL TREATMENT

A. After each system has been cleaned and flushed as described in "CLEANING OF PIPING SYSTEMS", it shall be filled with a solution of water and the following percentage by volume of inhibited propylene glycol:

~~Chilled Water System at AH-1 25%~~
Preheat Coil System at AH-1 **and AH-**2 ~~40%~~ **25%**
~~Heat Recovery Coil System 40%~~

B. Provide inhibited propylene glycol of type and formula specified for use in above described systems. Do not use any of the following:

1. Ethylene glycol
2. Standard automotive anti-freeze
3. Any solution with oil-base additives

3.18 HVAC WATER TREATMENT

A. Provide valved tees and piping and 3/4 inch threadolets for water treatment apparatus in accordance with Section 232500 HVAC Water Treatment Contractor instructions.

END OF SECTION 232113

direct evaporative cooler sump flush nozzle and evaporative media flush. Allow valve to remain open for 5 minutes (programmable) before shutting.

4) Close motorized ball valve at sump drain 10 minutes (programmable, after media has dried) after sump flush/media flush solenoid valve has closed. Because the air handler operates continuously, the supply fans will continue moving air across the direct evaporative cooler, aiding in drying out the media.
5) Execute the flush portion of the sequence individually for each air washer (portion of sequence where solenoid valve to flush nozzle is open). This allows the size of the make-up water line to be reduced.
6) Direct Evaporative Cooler Sump Overflow Monitoring: Provide a cable leak detector across the width of the air handler just downstream of the evaporative air washers, and a water detector in each overflow pipe of each air washer. Upon detection of water at any of these devices, close the fill solenoid valves on all air washers and generate an alarm. Air handler can continue operating with indirect evaporative cooling and chilled water. A manual reset is required to open the fill valves serving the direct evaporative air washers.

Direct evaporative cooler start-up for the first time during an occupied period will proceed as follows:

1) Verify that direct evaporative cooler sump drain motorized ball valve is fully closed.
2) Open the solenoid valve leading to the direct evaporative cooler make-up water float valve.
3) 5 minutes later (programmable, after sump has filled) enable the direct evaporative cooler Recirculation pump.

The 230900 Contractor is referred to Detail 2/Sheet MH504 to review valve layout and piping of the direct evaporative cooler.

5. The control system shall monitor the pressure drop across the filter bank in the air handler. The instantaneous pressure drop shall be indicated on the control system graphical interface Generate an alarm calling for filters to be changed once the pressure drop measured across the filters exceeds 0.8” W.C. (adjustable)

6. Monitor operation of supply fans, coil circulating pumps, and evaporative cooler circulating pumps with adjustable setpoint current switches. Generate an alarm on the operator’s work station and generate an email or pager notification whenever a failure is detected.

7. Monitor all pressure relief doors inside air handlers AH-1 and AH-2. Each pressure relief door includes a factory provided end switch. Generate an alarm when the end switch at any door indicates the door is open.

These pumps serve chilled water fan coils in floor-by-floor IT rooms. There are two sets of pumps, one set per mechanical room, and each set serves a different group of fan coil units. Pumps are in a lead/lag configuration.

Upon a call for cooling from any of these fan coils, start the lead pump and modulate its speed to satisfy the differential pressure sensor located in the piping on the first floor. Upon failure of a pump, start the back-up pump and generate an alarm.

U. Glycol Make-Up

Provide controls for the two glycol make-up systems as indicated on detail 10 on sheet MH5.01. Display all pressure readings and alarms on the 230900 controls system.

V. Hydraulic Elevator Exhaust Fans:

Run continuously during scheduled occupied hours. These fans operate at a constant operating speed. Equip each fan with a two-position motorized damper at the point it connects to the exhaust duct system. Open damper when fan is in operation, and close the damper when the fan is off. Monitor fan motor status with an adjustable setpoint current switch. Fan failure or an uncommanded change of status is to generate an alarm.

W. Fire Pump (Add-Alternate Only)

A diesel driven fire pump is included in the bid alternate for an additional floor of parking garage. Monitor the fire pump controller for fuel tank leakage alarm, low fuel level condition, and high fuel level condition.

Monitor pump control panel to determine when pump is operating, and open the two 2-position motorized dampers in pump room wall and operate the pump room ventilation fan whenever pump is operating. Shut off fan and close dampers when pump is off.

END OF SECTION 230900

Sequence of Operation for IDEC Systems:
In general, the mechanical equipment is controlled by the building automation system. The supply fans operate subject to the building automation system and ionization detectors. Building warm-up and life safety modes of operation have not been addressed here. All time periods and setpoints shall be "programmable".

Mode	OSA Temp.	DAT Setpoint	Sensor Used for Control	Mode Description			
				Mode Switch	Equipment Action	Economizer Action	Relief Fan(s) Action
Economizer	Below DAT	54°	Discharge Air Sensor	Operate in Economizer Mode when outside air is below DAT	All chilled and condenser pumps "off". Supply fan speed controlled by duct static pressure setpoint. No condenser water flow thru chiller.	Modulate economizer to maintain discharge air temperature.	Relief fan VFD's modulate in unison to maintain building static pressure differential setpoint.
Indirect Evap	Above DAT	54°	Discharge Air Sensor and OSA Sensor	START (Indirect) When outside air is above DAT for 15 minutes STOP When outside air is 3°F below DAT for 30 minutes. Minimum mode run time: 30 minutes.	Run the lead condenser water pump. Modulate cooling tower speed to maintain discharge air temperature.	Modulate cooling tower speed to maintain discharge air temperature. OSA dampers 100% open. RA dampers 100% closed.	Relief fan VFD's modulate in unison to maintain building static pressure differential setpoint.
Indirect Evap plus Direct Evap	Above DAT	54° or less	Discharge Air Sensor	START (Direct) When discharge air is above setpoint for 15 minutes and Indirect evap mode is operating. STOP Do not turn off direct evap until the air handler shuts down at the end of the day, even if DAT is far below setpoint.	Indirect evap mode continues to run. Modulate cooling tower speed to maintain discharge air temperature. Run evap media pump(s).	Modulate cooling tower speed to maintain discharge air temperature. OSA dampers 100% open. RA dampers 100% closed.	Relief fan VFD's modulate in unison to maintain building static pressure differential setpoint.
Indirect Evap plus Mechanical Cooling (Chiller)	Above DAT	54°	Disharge Air Sensor	START (Chilled water pumps P-3 /P-4 or P9/P-10) When discharge air is above setpoint for 15 minutes and Indirect Evap mode and Direct Evap mode is operating. STOP At end of daily occupied period.	Start lead chilled water pump of P-3/P-4 (AH-1) or P-9/P-10 (AH-2). Modulate pump speed to maintain discharge air temperature setpoint. Indirect mode continues to run with cooling tower at full speed. Direct mode continues to run.	OSA dampers 100% open. RA dampers 100% closed.	Relief fan VFD's modulate in unison to maintain building static pressure differential setpoint.