ADDENDUM 4 (PENDING DSA APPROVAL)

HAMMEL, GREEN AND ABRAHAMSON, INC.,
ARCHITECTS & ENGINEERS
1918 Main Street, Third Floor
Santa Monica, CA 90405

PROJECT: **Santa Ana College**
Science Center

DATE: 10/2/2017

OWNER: **RSCCD**
2323 N. Broadway, Suite 112
Santa Ana, CA 92706

DSA File No.: 30-C2
DSA Applications No.: 04-115788
HGA Commission No.: 3584-001-00

CONSTRUCTION MANAGER:

BERNARDS
3633 E. Inland Empire Blvd., Suite 800
Ontario, CA 91764

The additions, revisions, omissions, corrections and clarifications contained herein shall be made to drawings and specifications for the project and shall be included in scope of work and bids to be submitted. Additionally, reference documents, such as as-built documentation of existing buildings, are provided to further quantify the scope of work. References made below to specifications, drawings, and other documents shall be used as a general guide only. Bidders and Contractors shall determine for themselves the work affected by Addendum items.

RFP

None

SPECIFICATIONS (All revisions to the specification are noted in underline or ~~strikeout~~ with the corresponding addendum reference "ADD-3")

Item AD-4-1: Revise SECTION 012300
Item AD-4-2: Revise SECTION 055000
Item AD-4-3: Revise SECTION 071326
Item AD-4-4: Revise SECTION 088000
Item AD-4-5: Revise SECTION 098413
Item AD-4-6: Revise SECTION 099600
Item AD-4-7: Revise SECTION 230910

DRAWINGS

ARCHITECTURAL:

Item AD-4-8: Revise A011

- Material ID <RAIL-4> modified

Item AD-4-9: Revise A061

- Boundaries of Alternate #6.
- Added outline of future Health Science Building footprint for reference

Item AD-4-10: Revise A082

- Updated Threshold information.
- Added note 10 and 11.

Item AD-4-11: Revise A211

- Added floor box in Science Learning Center

Item AD-4-12: Revise A221

- <FDS-1> at Electrical Closet threshold
- Clarified Note C

Item AD-4-13: Revise A222

- <CS-2> inside Electrical Closet
- Clarified Note C

Item AD-4-14: Revise A223

- <CS-2> inside Electrical Closet
- Clarified Note C

Item AD-4-15: Revise A673

- Clarified attachments in detail 5

ELECTRICAL

Item AD-4-16: Revise E1.2

- ENLARGED SITE ELECTRICAL PLAN, revise as indicated.

Item AD-4-17: Revise E3.0

- LEVEL 01 POWER PLAN, revise as indicated.

TELECOM

Item AD-4-18: Revise T1.5

- LEVEL 01 TELECOM PLAN, revise as indicated.

DRAWINGS – AS-BUILT

None

RESPONSES TO PRE-BID CLARIFICATION ("PBC")

None

ATTACHMENTS:

Item AD-4-1: Revise SECTION 012300 (2 sheets)

Item AD-4-2: Revise SECTION 055000 (10 sheets)
Item AD-4-3: Revise SECTION 071326 (6 sheets)
Item AD-4-4: Revise SECTION 088000 (12 sheets)
Item AD-4-5: Revise SECTION 098413 (4 sheets)
Item AD-4-6: Revise SECTION 099600 (6 sheets)
Item AD-4-7: Revise SECTION 230910 (9 sheets)
Item AD-4-8: Revise A011 (1 sheet)
Item AD-4-9: Revise A061 (1 sheet)
Item AD-4-10: Revise A082 (1 sheet)
Item AD-4-11: Revise A211 (1 sheet)
Item AD-4-12: Revise A221 (1 sheet)
Item AD-4-13: Revise A222 (1 sheet)
Item AD-4-14: Revise A223 (1 sheet)
Item AD-4-15: Revise A673 (1 sheet)
Item AD-4-16: Revise E1.2 (1 sheet)
Item AD-4-17: Revise E3.0 (1 sheet)
Item AD-4-18: Revise T1.5 (1 sheet)

END OF ADDENDUM 4

SECTION 012300

ALTERNATES

Revised, Addendum #4, 10/02/2017

Revised, Addendum #3, 09/22/2017

Revised, Addendum #2, 09/01/2017

PART 1 – GENERAL

1.01 SECTION INCLUDES:

A. This Section specifies administrative and procedural requirements governing alternate bid items.

1.02 RELATED SECTIONS:

A. Instructions to Bidders.

B. Bid Form and Designation of Subcontractors.

C. Section 011100: Summary of Work.

PART 2 – PRODUCTS (Not applicable)

PART 3 – EXECUTION

3.01 SPECIFIC

A. Bid alternate item is an amount proposed by bidder and stated on the Bid and Acceptance Form for certain Work defined in the Bidding Documents that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change in either the amount of Work to be completed, the Contract Documents, or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. The amount added or deducted from the base bid is the net addition to or deducted from the base bid to incorporate bid item Work into the Work. Unless noted otherwise, no other adjustments are made to the Contract Amount, Milestones, or the Contract Time.

3.02 PROCEDURES

A. Contractor shall modify or adjust affected adjacent Work as necessary to completely and fully integrate Owner accepted bid alternate Work.

1. Include as part of each bid alternate item, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not mentioned as part of the bid alternate item.

B. Accepted bid alternate items are subject to the same terms and conditions as other Work of the Contract Documents.

3.03 SCHEDULE OF BID ALTERNATE ITEMS: (See the Contract Documents for Additional Information)

~~A. Alternate 1 (ADD): Provide a 3 year extended warranty for the following work categories: Site Utilities, Landscape, Elevator, Plumbing, HVAC, Electrical, Communications, Laboratory Equipment, Laboratory Fume Hoods, and General Contractor.~~ ***ADD-2***

B. Alternate 1 (ADD): Provide <MP-1> cladding at horizontal portion of the north canopy in lieu of using <TPO-1> thermoplastic single ply roofing. Drain locations shall remain unchanged. See sheet A445 for additional info. ***ADD-2***

~~*C.* Alternate 2 (ADD): Provide a 3-year extended warranty for Work of the following the following work categories: Site Utilities, Landscape, Elevator, Plumbing, HVAC, Electrical, Communications, Laboratory Equipment, Laboratory Fume Hoods, and General Contractor. ***ADD-2*** ***ADD-3***~~

C. Alternate 2 (ADD): Provide a 3-year extended warranty for Work of the following specification sections: 115315 Fume Hoods and Other Air Containment Units; 115343 Laboratory Service Fittings and Fixtures; 115350 Laboratory Equipment; 142423 Hydraulic Elevators; 211313 Automatic Sprinkler System; Division 22 Plumbing (all sections); Division 23 Heating, Ventilating, and Air-Conditioning (HVAC) (all sections); Division 26 Electrical (all sections); Division 33 Utilities (all sections). ***ADD-3***

D. Alternate 3 (ADD): Use Quarter Sawn Hickory, NHLA Grade FAS at exposed and semi-exposed conditions in lieu of using Plain sawn Maple, NHLA Grade FAS and Quarter Cut Hickory with Transparent finish for veneer in lieu of Plain-sliced White Maple and Stain color for all lab casework. See Spec Section 115310 for additional info. ***ADD-2***

E. Alternate ~~3~~ 4 (DEDUCT): Use high performance paint <HPC-1> on steel handrails for all stairs instead of stainless steel handrails. ***ADD-2***

F. Alternate 5 (DEDUCT): Provide Custom Aluminum Perforated Panels in lieu of Extruded Aluminum Fins (FIN-1) at Mural supporting structure per Construction Documents. See Drawing Sheet A474 for additional information and specification Section 055000, ***ADD-3***

G. Alternate 6 (DEDUCT): Eliminate all hardscape, landscaping, underground utilities, drainage, irrigation, and lighting within the Alternate #6 boundary as defined in sheet A061, and leave area as cleared and rough graded site:

- Provide construction fencing around defined area until July 2020.
- Reduce a quantity of twenty-two (22) Fixture type SL1 walkway lighting fixtures including lighting fixture heads, poles, concrete bases and associated conduit and wiring. Maintain circuit continuity of all Type SL1 lighting fixtures that are remaining.
- Reduce approximately 750 feet of pipe within Alternate #6 area and any drains associated with the pipes. Site storm drain lines to be adjusted to omit the site storm drain lines in the alternate area and connect to CMP unit.
- The 48”x120’ length perforated polymer coated CMP, temporary pre-treatment structure (open bottom catch basin), and all storm drains located outside the boundaries, but connected to the CMP unit, shall remain in place.
- Remove curb inlets within Alternate #6 area and provide temporary drainage to direct flow from Parking Lot 6 to the street.
- Proposed fire hydrant at the northeast corner of the limit of work to remain in place.
- Maintain access to existing fire lane at northeast corner of limit of work.
- SWPPP to include entire limit of work at the start of the Science Center (SC) construction. Contractor to provide 2” thick crushed aggregate base or other type of temporary stabilization over the Alternate #6 area upon completion of the SC project. The SC project will close out with a notice of termination (NOT). ***ADD-4***

END OF SECTION 012300

SECTION 055000
METAL FABRICATIONS

Revised, Addendum #4, 10/02/2017
Revised, Addendum #3, 09/22/2017
Revised, Addendum #2, 09/01/2017

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Miscellaneous and ornamental metal, except structural steel framing as specified in Section 051200 and defined as structural steel in AISC "Code of Standard Practice".
   2. Supports, anchorage and accessories for miscellaneous metal and ornamental metal work.
   3. Shop prime paint on ferrous metal.
   4. Shop prime for (Section 099600) high performance coating, where indicated.
   5. Pre-engineered metal stair system as follows:
      a. Engineering of metal stair system including handrails and connections to building structure.
      b. Steel pan type stairs and landings, with integral handrails and balusters, plates, angles, hangers, struts and welds for securing to building structure.
   6. Steel handrails and guardrails.
   7. Galvanized metal gratings and supports.
   8. Steel framing, supports and mounting plates at overhead doors.
   9. Ladders.
   10. Bollards.
   11. Sliding metal gate.
   12. Metal fin.
   13. Perforated Metal
      a. (MET FAB-10)
      b. Bid Alternate for (FIN-1) ***ADD-3***

B. Related Sections:
   1. Section 017325 - Seismic Restraint Requirements for Nonstructural Components
   2. Section 033000 – Cast-In-Place Concrete.
   3. Section 042000 - Unit Masonry.
   4. Section 051200 - Structural Steel Framing.
   5. Section 089100 - Louvers.
   6. Section 099000 – Painting: Finish painting.
   7. Section 099600 - High Performance Coatings: Coating of Architecturally Exposed metal fabrication steel (AES), stair and handrail/guardrail assemblies and metal fabrications as indicated. ***ADD-4***
   8. Section 012300 – Alternates: Identification of Bid Alternate to replace stainless steel handrail/guardrails with HPC-coated steel handrail/guardrails. ***ADD-4***

1.2 REFERENCES

A. AWS D1.1 - Structural Welding Code.

B. SSPC PS7.01 - Steel Structures Painting Council.

C. Specification for Design of Cold-Formed Steel Structural Members by American Iron and Steel Institute.

D. ANSI A14.3 Safety Code for Fixed Ladders.

1.3 STAIR SYSTEM DESCRIPTION

A. General: Provide complete stair and landing systems including stringers, landing framing, treads, landings, connections and other components necessary for the support and installation of stairs and landings, comply with NAAMM requirements for Service Class Stairs.

B. Structural Performance of Stairs: Provide metal stairs capable of withstanding following structural loads without exceeding allowable design working stress of materials involved, including anchors and connections. Apply each load to produce maximum stress in each component of metal stairs.
   1. Treads and Platforms of Metal Stairs: Capable of withstanding uniform live load of 100 lb/sq ft or concentrated load of 300 lb/sq ft on area of 4 sq. in., whichever produces greater stress.
   2. Stair Framing: Capable of withstanding stresses resulting from loads specified above in addition to stresses resulting from railing system loads.
   3. Design and construct stair components and connections capable of withstanding seismic forces in any direction and capable of accommodating seismic relative displacements. Refer to Section 017325 for seismic design, loading and deflection criteria.
   4. Egress stair components and connections as defined in the life safety plan or as indicated in the Section 017325 Responsibility Matrix shall be designed as a “Designated Seismic Systems”
   5. Limit deflection of treads, platforms, and framing members to L/360 or 1/4 inch, whichever is less.

C. Structural Performance of Handrails and Railings: Provide handrails and railings capable of withstanding following structural loads without exceeding allowable design working stress of materials for handrails, railings, anchors, and connections:
   1. Handrails and Top Rails of Guards:
      a. Uniform load of 50 lbf/ ft. (0.73 kN/m) applied in any direction.
      b. Concentrated load of 200 lbf (0.89 kN) applied at any point and in any direction.
      c. Uniform and concentrated loads need not be assumed to act concurrently.
   2. Intermediate Rails, Balusters and Panel Fillers Not Serving as Top Rails:
      a. Concentrated load of 50 lbf (0.22 kN) applied normal to the plane of the rail or panel on an area not to exceed 1 sq. ft. (0.093 sq. m).
      b. Infill load and other loads need not be assumed to act concurrently.

1.4 SUBMITTALS

A. Comply with Section 013300.

B. Shop Drawings: Indicate dimensions, description of materials and finishes; include plans, elevations, sections, and details of railings and their connections and reactions to building structure. Show anchorage and accessory items. Provide templates for anchors and bolts specified for installation under other Sections, and installation procedures, including specific requirements indicated.
   1. Indicate design criteria and reactions to structure.
   2. Construction details, sizes of metal sections, thickness of metals, profiles, attachments, dimensions and field joints, method of support from structure, and finishes.
   3. Work to be built-in or provided by other Sections.
   4. Welding: Indicate welded connections, both shop and field, using standard AWS welding symbols. Indicate net weld lengths.
   5. Provide shop drawings signed and sealed by qualified professional engineer responsible for their preparation licensed in State where project is located.

C. Calculations: Structural design shall be performed by a Professional Engineer, licensed in the state where Project is located, indicating structural integrity of members, anchors, fasteners and connections to building structure, in accordance with specified criteria. Submit signed engineering calculations concurrently with the shop drawings to Architect/Engineer upon request.
   1. Engineering Responsibility: Calculations shall be reviewed for stated design assumptions, general compliance to specified requirements, and forces imposed on structure. The accuracy of the design calculations shall be the sole responsibility of the Contractor’s Professional Engineer.

D. Welding Certificates: Copies of certificates for welding procedures and personnel.

1.5 QUALITY ASSURANCE

A. Applicable Standards: AISC "Specifications for Design of Cold-Formed Steel Structural Members" and AWS "Structural Welding Code".

B. Qualification for Welding Work: Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure".

C. Field Measurements: Take field measurements prior to fabrication to insure proper fitting of work.

D. Shop Assembly: Preassemble metal items in shop to greatest extent possible, so as to minimize field splicing and assembly. Disassemble units only to extent necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

E. Fabricator Qualifications: Firm experienced in producing metal fabrications similar to those indicated for this Project and with record of successful in-service performance, as well as sufficient production capacity to produce required units.

F. Professional Engineer Qualifications: Professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of kind indicated. Engineering services are defined as those performed for installations of handrails and railing systems that are similar to those indicated for this Project in material, design, and extent of work.

1.6 HANDLING AND STORAGE

A. Load, unload, handle and store work in manner that will not bend, deform or otherwise damage metal. Store so metal and shop coats will not be subject to weather or moisture, store off ground and provide covering for metal in storage.

1.7 COORDINATION

A. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

PART 2 PRODUCTS

2.1 MATERIALS

A. Metal Surfaces: For fabrication of miscellaneous metal work items which will be exposed to view, use only materials which are smooth and free of surface blemishes, including pitting, seam marks, roller marks, rolled trade names and roughness. Select steel for exposed work to provide best possible appearance.

B. Steel Plates, Shapes and Bars: ASTM A36.

C. Steel Tubing: ASTM A501 or ASTM A500.

D. Steel Pipe: ASTM A53, Type S, Grade A, standard weight and extra-strong as required, galvanized and plain.

E. Galvanized Sheet Metal: ASTM A526 or A527, G-90 coating designation with both sides of metal prime painted.

F. Galvanizing: ASTM A123, hot dip galvanizing, thickness Grade 55 unless otherwise indicated.

1. Galvanize exterior steel fabrications, steel at exterior wall locations, and where steel is exposed to weather.

G. Fasteners: As indicated and recommended by manufacturer. Provide zinc- coated fasteners for exterior use or where built into exterior walls.

1. Provide stainless steel fasteners where indicated and where dissimilar metals are connected. Where dissimilar metals are connected, provide neoprene spacer or washer for isolation.

H. Stainless Steel: ASTM A167, Type 304 with #4 finish. Passivate exterior stainless steel.

I. Metal Primer Paint: Provide comparable primer recommended by finish coat manufacturer which is lead and chromate free, Low VOC complying with VOC guidelines.

1. Primer for Metal to Receive High Performance Coatings (HPC): See Section 099600 for products to be applied by this Section.
2. Primer to Receive Fire Protection Treatment: See applicable Division 7 Section for primer to be applied by this Section.
3. Primers for Painting: See Section 099000 and Section 099600 for primers to be applied by this Section. ***ADD-4***

2.2 FABRICATION

A. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to radius of 1/32 inch, unless otherwise shown. Form bent metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

B. Weld corners and seams continuously and in accordance with AWS. At exposed connections, grind exposed welds smooth and flush to match and blend with adjoining surfaces.

C. Form exposed connections with hairline joints which are flush and smooth, using concealed fasteners wherever possible.

D. Fabricate and space anchoring devices to provide adequate support. Cut, reinforce, drill and tap metal work to receive finish hardware and similar items.

E. Shop Painting: Remove scale, rust and other deleterious materials before shop coat of paint is applied. Apply shop coat of metal primer to fabricated metal items in accordance with manufacturer's printed instructions, with full coverage of joints, corners and edges.

F. Primer: High Performance Coating: At high performance painting use SSPC-6, complying with Section 099600.

1. Apply shop primer after surface preparation in compliance with primer manufacturer's instructions at a rate to provide uniform dry film thickness of 1.5 mils, maintain minimum coverage at joints, corners, edges and exposed surfaces.

2.3 HANDRAILS AND RAILINGS

A. (RAIL-3), (RAIL-4), (RAIL-5), (RAIL-6) ~~and (MET RAIL-1), (MET RAIL-2), (MET RAIL-4) and (MET RAIL-5)~~ Types and Handrail Sizes: Refer to Material Identification Codes. ***ADD-3***

B. Cope intersections of rails and posts, weld joints and grind smooth. Butt weld end-to-end joints of railing or use welding connectors.

1. Galvanize exterior handrails and railings unless indicated otherwise ***ADD-4***

C. Weld corners and seams continuously and in accordance with recommendations of AWS. Grind exposed welds smooth and flush, to match and blend with adjoining surface. Discoloration of finished surfaces is not acceptable.

D. Form exposed connections with flush, smooth, hairline joints, using concealed fasteners. Provide for anchorage to supporting structure. Fabricate and space anchoring devices as indicated and required for adequate support.

E. Provide brackets, flanges, and anchors for railing posts and for handrail supports. Provide inserts and sleeves for anchorage to concrete or masonry work.

F. Form simple and compound curves by bending pipe in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross-section of pipe throughout entire bend without buckling, twisting or otherwise deforming exposed surfaces of pipe.

G. Provide wall returns at ends of wall-mounted handrails, except where otherwise indicated.

H. Close exposed ends of pipe by welding 3/16 inch thick steel plate in place or by use of prefabricated fittings.

2.4 STAIR FABRICATION

A. (MET FAB-1): Shop fabricated steel stair, steel pan concrete filled.

B. General:

1. Verify dimensions on site prior to shop fabrication.
2. Fit and shop assemble sections in largest practical sizes, easily handled through building openings.
3. Accurately form and fit components and connections. Grind exposed edges and welds smooth and flush.
4. Accurately form components required for proper anchorage of stairs and landings, and integral railings to each other and to building structure.
5. Thoroughly clean surfaces of rust, scale, grease, and foreign matter prior to galvanizing or prime painting. Allow to dry thoroughly before applying priming material.

C. Fabrication of Stairs and Landings:
1. Fabricate stairs with closed risers and treads of pan construction.
2. Form treads and risers from sheet stock.
3. Properly secure tread pans to stringers with clip angles welded in place.
4. Form stringers of rolled steel channels or steel plate sections, as required to meet performance requirements. Weld fascia plates of minimum 14 gage thick sheet stock across channel toes, where applicable.
5. Form landings of sheet stock. Reinforce underside of landings with angles, tees as required.
   a. Fabricate stairs, landings and component connections to support live loads of minimum 100 lb./sq.ft. with deflection of stairs and landings not exceeding 1/360 of span when underside is to be finished with gypsum board and 1/240 of span when underside is not being finished.

D. Concrete Materials and Properties: Comply with requirements in Division 3 Section "Cast-in-Place Concrete" for normal-weight, ready-mixed concrete with minimum 28-day compressive strength of 3000 psi, unless higher strengths are indicated.

E. Fabrication of Handrails and Guardrails:
1. Handrails: Handrails shall have an outside diameter of 1-1/2".
2. Inside handrails shall be continuous and shall sweep around smoothly at landings.
3. Outside handrails shall be mounted on wall brackets as required to meet performance requirements and shall have extensions at top and bottom of stair runs as indicated on the Drawings and required by accessibility standards.
4. Intermediate Guard Configuration: Intermediate guard shall be configured as indicated on drawings.
   a. Provide railing system consisting of 1-1/2 inch round sloping strands following each stair run and 1-1/2 inch round top rails that continuously sweep around at each corner.
5. At top floor of stair system and at each floor landing (except lower level) provide 3'-6" high guard rails.
6. Continue handrail and intermediate guard system down to the lower level where concrete stairs are indicated.

2.5 METAL SUPPORT ASSEMBLY

A. (MSA) Metal Support Assembly Manufacturer and Type:
1. Unistrut Corporation:
   a. Unistrut Metal Framing.
   b. UMS Boom Supports
2. Cooper B-Line Strut Systems,
3. Hilti USA:
   a. Hilti Strut Framing.
   b. Hilti Medical Equipment Supports.
4. Or District approved equal.
5. Propriety equipment supports systems to be approved by the Architect.

B. (MSA-1) Individual Metal Support Assembly: Metal support assembly designed to provide support for individual piece of equipment,
1. Provide support assembly for individual pieces of equipment as shown on the architectural reflected ceiling plan.
2. Verify loading, deflection criteria and tolerance requirements with equipment supplier. See structural drawings for special loading requirements.

3. Design and construct assembly, including anchorage, to withstand seismic forces in any direction. Refer to Section 017325 for seismic loading criteria and restraint requirements.
4. Provide lateral diagonal bracing, orthogonal in two directions to prevent assembly from racking due to seismic forces.
5. Verify bolting plate assembly requirements with equipment supplier.
6. located and spaced as indicated on Drawings or as required by the equipment supplier.

2.6 METAL GRATINGS

A. (GRT-1) Galvanized Metal Gratings: Borden Metal Products Type B size 5 pressure locked steel gratings with 1-1/4 inch by 1/8 inch bearing bars at 1-3/16 inch centers and 3/4 inch by 1/8 inch cross bars at 4 inch centers, galvanized finish in accordance with ASTM A123.

2.7 METAL GRILLES

A. (GRL-1) Aluminum ceiling grille.

B. (GRL-2) Aluminum wall grille.

2.8 METAL LADDERS

A. (MET FAB-2) Interior Steel Ladder:
1. Comply with ANSI A14.3, unless otherwise indicated.
2. Height as indicated on Drawings.
3. Siderails: Continuous, 3/8 by 2-1/2 inch steel flat bars, with eased edges. Space siderails 16 inches apart, unless otherwise indicated.
4. Rungs: 3/4 inch diameter steel bars at 12 inches on center.
5. Fit rungs in centerline of siderails; plug-weld and grind smooth on outer rail faces.
6. Provide nonslip surfaces on top of each rung, either by coating rung with aluminum-oxide granules set in epoxy-resin adhesive or by using a type of manufactured rung filled with aluminum-oxide grout.
7. Support each ladder at top and bottom, and not more than 60 inches o.c. with welded or bolted steel brackets.
8. Prime with zinc-rich primer.

2.9 BOLLARDS

A. (MET FAB-8) Removable Bollards: Trafficguard Model TL 1004 R, or District approved equal, as indicated on Drawings and consisting of the following components:
1. 5 inch dia. pipe.
2. Exposed pipe above footing: 36” high.
3. Concrete footing per manufacturer’s written instructions with sleeve for pipe in concrete footing.
4. Tamper proof lock provided for securing cover when bollard removed.

B. (MET FAB-9) Bollards Imbedded in Concrete: Trafficguard Model RFP 4560 R, or District approved equal. Hot-dipped galvanized steel pipe, 5 inch dia., concrete filled, crowned cap, prime paint finish only the exposed top 3'-6".
1. Anchor bollards in place with concrete footings. Place concrete and vibrate or tamp for consolidation. Support and brace bollards in position until concrete has cured.
2. Fill bollards solidly with concrete, mounding top surface to shed water.

2.10 SLIDING METAL GATE

A. (GATE-1) Sliding Metal Gate: Ameristar PassPort II ~~Classic~~ Majestic Industrial Roll Gate System as manufactured by Ameristar Fence Products, Inc., Tulsa, OK, (888) 333-3422, www.ameristarfence.com ***ADD-3***
1. Steel material for roll gate components (i.e. pickets, rails, diagonals and uprights), shall be commercial steel with a minimum yield strength of 45,000 psi.
2. Ornamental picket material shall be 1” square x 14 Ga. Tubing. Picket spacing shall be 4-3/4”. Material for toprails, uprights and diagonals rails shall be 2” square x 12 Ga. Material for the bottom rail shall be 2” x 4” x 11 Ga. Posts shall be a minimum of 4” square x 11 Ga.

3. Pickets/pales, rails, uprights and posts shall be precut to specified lengths. Diagonals shall be precut to specified lengths and angles. Frame materials shall be joined by welding. Pickets/pales shall be face welded to roll gate frame.
4. The manufactured roll gates and bolt-on panels (if applicable) shall be subjected to the PermaCoat® thermal stratification coating process (high-temperature, in-line, multi-stage, multi-layer) including, as a minimum, a six-stage pre-treatment/wash (with zinc phosphate), an electrostatic spray application of an epoxy base, and a separate electrostatic spray application of a polyester finish. The base coat shall be a thermosetting epoxy powder coating (gray in color) with a minimum thickness of 2 mils. The topcoat shall be a "no-mar" TGIC polyester powder coat finish with a minimum thickness of 2 mils. The custom color shall be selected by the Architect ~~from manufacturer's standard colors~~ as a match to the coating on adjacent (RAIL-4) elements. ***ADD-4***

2.11 METAL FIN

A. (FIN-1) Metal Fin: Extruded aluminum fin, 12' x 3" x 3/8", finish: Light Gray (powder coat).
1. Profile, Attachment Method, and Fasteners: As indicated on Drawings.
2. Color and Finish: Match to (MP-3B) ***ADD 3***

2.12 PERFORATED METAL *ADD-3*

A. (MET FAB-10) Perforated Flat Metal:
1. General: Perforated panels shall be fabricated with a ¾ inch wide non-perforated border wrapping all installed applications.
2. Material: 12 guage aluminum
3. Perforations: 3/16-inch diameter round perforations 5/16-inch staggered row centers. 33 percent openness.
4. Finish: Mill Finish
   a. Basis of Design Manufacturers: McNichols, or Equal
5. Attachment/Fasteners:
   a. Stainless Steel fasteners at 6 inch o.c., through border into steel bar backup with stainless steel washers

B. BID ALTERNATE for (FIN-1):
1. Bid Alternate 5: In lieu of (FIN-1), provide custom aluminum perforated panel as follows:
   a. Basis of Design: "Image Wall" as manufactured by Zahner; www.imagewall.com/resources
   b. Material: 0.125-inch perforated aluminum
   c. Finish: Match to (MP-3B)

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions under which miscellaneous metal items are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Provide setting drawings, diagrams, templates, instructions and directions for installation of anchorages, such as concrete inserts, anchor bolts, and miscellaneous items having integral anchors, which are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.

B. Provide anchorage devices and fasteners where necessary for securing miscellaneous metal items to in-place construction; including threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws and other connectors as required.

C. Perform cutting, drilling and fitting required for installation of miscellaneous metal items. Set work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Provide temporary bracing or anchors in formwork for items which are to be built into concrete, masonry or similar construction.

D. Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind joints smooth and touch up shop paint coat. Do not weld, cut or abrade surfaces of exterior units which have been hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.

E. Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, and methods used in correcting welding work.

F. Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting. Apply by brush or spray to provide minimum dry film thickness of 2 mils.

G. Install metal gratings and supports according to reviewed shop drawings and manufacturer instructions.

3.3 METAL SUPPORT ASSEMBLY

A. Examination
   1. Verification of Conditions: Examine areas and conditions under which Work is to be performed and identify conditions detrimental to proper or timely completion.
      a. Do not proceed until unsatisfactory conditions have been corrected.
   2. Take field measurements; report interferences with structural framing, mechanical systems, or other obstructions to Architect.

B. Installation
   1. Install equipment support systems and accessories in accordance with reviewed shop drawings and manufacturer's printed instructions.
      a. Install before extensive electrical, mechanical, ceiling framing or room finish work.
   2. Provide anchorage devices and fasteners for securing equipment support systems to in-place construction.
   3. Attach to structure by means of imbedded concrete inserts, through bolts or by direct attachment to structural framing. If expansion anchors are used to anchor metal framing to support structure locate in such manner that anchor bolt is loaded in shear.
   4. Set system accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels.

3.4 METAL STAIR ERECTION

A. Erect stairs square, level, plumb and free from distortion or defects detrimental to appearance and performance.

B. Provide necessary anchors, plates, angles, hangers and struts as required for connecting stairs to the structure.

C. Ensure alignment with adjacent construction. Coordinate with related work to ensure no interruption in installation.

D. Perform necessary cutting and altering for installation of work of other sections. Do not perform any other additional cutting without review of Architect.

E. Field bolt and weld to match standard of shop bolting and welding. Hide bolts and screws whenever possible. Where not hidden, use flush countersunk fastenings, unless indicated otherwise. Make mechanically fastened joints flush hairline butted. Grind welds smooth and flush.

F. Touch up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA for touching up shop-painted surfaces.
   1. Apply by brush or spray to provide minimum 2-mil dry film thickness.

3.5 HANDRAILS AND RAILINGS

A. Provide anchorage devices and fasteners for securing handrails and railings to in-place construction.

B. Adjust railing prior to securing in-place to ensure proper matching at butting joints and correct alignment. Secure posts and rail ends to building construction.

C. Anchor steel pipe rails in concrete by means of galvanized pipe sleeves set and anchored into concrete. Provide steel plate closure secured to bottom of sleeve and of width and length not less than one inch greater than sleeve. After post is inserted into sleeve, fill sleeve solid with quick-setting hydraulic cement.

D. Anchor rail ends to supporting structure with flanges welded to rail ends and bolted to supporting members in accordance with reviewed shop drawings. Secure handrails to walls with wall brackets and end fittings.

3.6 SLIDING METAL GATE INSTALLATION

A. Gateposts shall be set in accordance with the spacing's shown in the construction plans. The "Earthwork" and "Concrete" sections of this specification shall govern post base material requirements. 6" wheels shall be bolted to the gate (between the wheel plates welded near the ends of the gate bottom rail). The gate shall be set upright with the V-grooved wheels positioned over the pre-installed steel V-track that traverses the gate opening. Roller guides shall be affixed to the gateposts at a height even with the gate toprail to hold the gate in a vertical position. Gate stops shall be welded to the end of the gate or track so gate cannot pass rollers in either direction.

END OF SECTION

SECTION 071326
SELF-ADHERING SHEET WATERPROOFING

Revised, Addendum #4, 10/02/2017

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Self -adhering modified bituminous sheet waterproofing system (WP-6), including protection course and drainage sheets, for horizontal applications and vertical below-grade applications.

B. Related Sections:

1. Section 033000 - Cast-in-Place Concrete.
2. Section 072100 - Thermal Insulation: Foundation wall insulation.
3. Section 072670 - Moisture Barrier.
4. Section 079000 - Joint Protection.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer's instructions for surface conditioner compatibility, elastic flashing, joint cover sheet, and joint and crack sealants, with temperature range for application of waterproofing membrane.

B. Product Data: Include manufacturer's written instructions for evaluating, preparing, and treating substrate, technical data, and tested physical and performance properties of waterproofing.

C. Shop Drawings: Show locations and extent of waterproofing. Include details for substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.

D. Samples: Provide sample of waterproof membrane materials.

1. 12-by-12-inch square of waterproofing and flashing sheet.

E. Sample Warranty: Copy of special waterproofing manufacturer's and Installer's warranty stating obligations, remedies, limitations, and exclusions before starting waterproofing.

F. LEED Submittals:

1. Product Certificates for Credit MR 5: For products and materials required to comply with requirements for regional materials, certificates indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating distance to Project, cost for each regional material, and fraction by weight that is considered regional.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who is authorized, approved, or licensed by waterproofing manufacturer to install manufacturer's products.

B. Pre-Installation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review requirements for waterproofing, including surface preparation specified under other Sections, substrate condition and pretreatment, minimum curing period, forecasted weather conditions, special details and sheet flashings, installation procedures, testing and inspection procedures, and protection and repairs

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to Project site in original packages with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.

B. Store materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by waterproofing manufacturer.

C. Remove and replace materials that cannot be applied within their stated shelf life.

D. Store rolls according to manufacturer's written instructions.

E. Protect stored materials from direct sunlight.

1.5 PROJECT CONDITIONS

A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended by waterproofing manufacturer. Do not apply waterproofing to a damp or wet substrate.

1. Do not apply waterproofing in snow, rain, fog, or mist.

B. Maintain adequate ventilation during preparation and application of waterproofing materials.

C. Weather: Proceed with waterproofing and associated work only when existing and forecasted weather conditions will permit work to be performed in accordance with manufacturers' recommendations and warranty requirements.

1.6 WARRANTY

A. Special Manufacturer's Warranty: Written warranty, signed by waterproofing manufacturer agreeing to replace waterproofing material that does not comply with requirements or that does not remain watertight during specified warranty period.

1. Warranty does not include failure of waterproofing due to failure of substrate prepared and treated according to requirements or formation of new joints and cracks in substrate exceeding 1/16 inch in width.
2. Warranty Period: Five years.

B. Special Installer's Warranty: Written waterproofing Installer's warranty, signed by Installer, covering Work of this Section, for warranty period of two years.

PART 2 PRODUCTS

2.1 WATERPROOFING SYSTEM

A. Provide complete waterproofing system in accordance with waterproofing Manufacturer’s written recommendations and requirements for warranty.

B. Source Limitations: Provide waterproofing system components from single source from single manufacturer. Provide accessory products including drainage panel and protection course from sources as recommended in writing by waterproofing manufacturer.

C. Material Compatibility: Waterproofing materials shall be compatible with one another and with adjacent work under conditions of service and application required, and as demonstrated by waterproofing manufacturer based on testing and field experience.

D. Performance Requirements: Installed waterproofing system shall withstand thermally induced movement and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Waterproofing system shall remain watertight.

2.2 MODIFIED BITUMINOUS SHEET MEMBRANE WATERPROOFING

A. (WP-6) Modified Bituminous Sheet Membrane: 60-mil (1.5 mm) thick, self-adhering sheet consisting of 56 mils of rubberized asphalt laminated to a 4-mil-thic polyethylene-film reinforcement, with release liner on adhesive side; formulated for application with primer or surface conditioner that complies with VOC limits of authorities having jurisdiction.

1. Products and Manufacturers:
   a. Bituthane 4000 by Grace Construction Products with Bituthene Deck Prep.
   b. CCW Miradri 860/861 by Carlisle Coatings and Waterproofing.
   c. Blueskin WP 200 by Henry Company.

d. 650 Membrane by Polyguard Products, Inc..
e. Sealtight MEL-ROL by W. R. Meadows.
f. Mapethene HT (or LT depending on temperature at installation) by Mapei ***ADD-4***
g. Or District approved equal.

2. Physical Properties:
a. Membrane Tensile Strength; ASTM D 412, Die C, modified: 250 psi minimum.
b. Ultimate Elongation; ASTM D 412, Die C, modified: 300 percent minimum.
c. Low-Temperature Flexibility; ASTM D 1970, at minus 20 deg F: Pass.
d. Crack Cycling; ASTM C 836, after 100 cycles of 1/8-inch movement: Unaffected.
e. Puncture Resistance; ASTM E 154: 40 lbf minimum.
f. Water Absorption; ASTM D 570, after 48-hour immersion at 70 deg F: 0.2 percent weight-gain maximum.
g. Water Vapor Permeance; ASTM E 96, Water Method: 0.05 perms maximum.
h. Hydrostatic-Head Resistance; ASTM D 5385: 200 feet, minimum.

B. Concealed Strip Flashing: Self-adhering, rubberized-asphalt strips of same material and thickness as sheet waterproofing.

2.3 AUXILIARY MATERIALS

A. Furnish auxiliary materials recommended by waterproofing manufacturer for intended use and compatible with sheet waterproofing.

1. Furnish liquid-type auxiliary materials complying with VOC limits of authorities having jurisdiction.

B. Primer: Liquid waterborne or VOC compliant solvent borne primer recommended for substrate by manufacturer of sheet waterproofing material.

C. Surface Conditioner: Liquid, waterborne surface conditioner recommended for substrate by manufacturer of sheet waterproofing material.

D. Liquid Membrane: Elastomeric, two-component liquid, cold fluid applied, trowel grade or low viscosity.

E. Substrate Patching Membrane: Low-viscosity, two-component, asphalt-modified coating.

F. Mastic, Adhesives, and Tape: Liquid mastic and adhesives, and adhesive tapes recommended by waterproofing manufacturer.

G. Metal Termination Bars: Aluminum bars, approximately 1 by 1/8 inch thick, predrilled at 9-inch centers.

2.4 PROTECTION COURSE

A. Protection Course: Perimeter insulation (INSUL-1), refer to Section 072100 - Thermal Insulation.

2.5 MOLDED-SHEET DRAINAGE SYSTEM

A. Preformed Geocomposite Drainage Sheet System (for Horizontal Applications): Composite subsurface drainage sheet consisting of a high impact studded polystyrene drainage core; covered on one side with a nonwoven, needle-punched polypropylene filter fabric; and on the other side with a high backing film.

1. Product and Manufacturer:
a. Hydroduct 660 by Grace Construction Products.
b. Or District approved equal.

2.6 INSULATION

A. Foundation Wall Insulation: Comply with Section 072100 - Thermal Insulation for (INSUL-1).

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance.
   1. Verify that concrete has cured and aged for minimum time period recommended by waterproofing manufacturer.
   2. Verify that concrete is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D4263.
   3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for waterproofing application.

B. Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.

C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.

D. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids.

E. Prepare, fill, prime, and treat joints and cracks in substrates. Remove dust and dirt from joints and cracks according to ASTM D4258.
   1. Install sheet strips and center over treated construction and contraction joints and cracks exceeding a width of 1/16 inch.

F. Bridge and cover isolation joints, expansion joints, and discontinuous deck-to-wall joints with overlapping sheet strips.
   1. Invert and loosely lay first sheet strip over center of joint. Firmly adhere second sheet strip to first and overlap to substrate.

G. Corners: Prepare, prime, and treat inside and outside corners according to ASTM D 6135.
   1. Install membrane strips centered over vertical inside corners. Install 3/4-inch fillets of liquid membrane on horizontal inside corners and as follows:
      a. At footing-to-wall intersections, extend liquid membrane each direction from corner or install membrane strip centered over corner.

H. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through waterproofing and at drains and protrusions according to ASTM D 6135.

3.3 MODIFIED BITUMINOUS SHEET-WATERPROOFING APPLICATION

A. Install self-adhering sheets according to waterproofing manufacturer's written instructions and recommendations in ASTM D6135.

B. Apply primer to substrates at required rate and allow to dry. Limit priming to areas that will be covered by sheet waterproofing in same day. Reprime areas exposed for more than 24 hours.

C. Apply and firmly adhere sheets over area to receive waterproofing. Accurately align sheets and maintain uniform 2-1/2-inch minimum lap widths and end laps. Overlap and seal seams and stagger end laps to ensure watertight installation.
   1. When ambient and substrate temperatures range between 25 and 40 deg F, install self-adhering, rubberized-asphalt sheets produced for low-temperature application. Do not use low-temperature sheets if ambient or substrate temperature is higher than 60 deg F.

D. Apply continuous sheets over sheet strips bridging substrate cracks, construction, and contraction joints.

E. Seal exposed edges of sheets at terminations not concealed by metal counterflashings or ending in reglets with mastic or sealant.

F. Termination Bars: Securely fasten top termination of membrane with continuous metal termination bar anchored into substrate and cover with detailing tape.
   1. Install termination bar 2” below finish grade, coordinate with precast exterior finish transition locations.
   2. Apply compatible sealant at top edge of termination bar. Refer to section 079000 - Joint Protection.

G. Install sheet waterproofing and auxiliary materials to tie into adjacent waterproofing.

H. Repair tears, voids, and lapped seams in waterproofing not complying with requirements. Slit and flatten fishmouths and blisters. Patch with sheets extending 6 inches beyond repaired areas in all directions.

I. Correct deficiencies in or remove sheet waterproofing that does not comply with requirements, repair substrates, reapply waterproofing, and repair sheet flashings.

3.4 PROTECTION COURSE, DRAINAGE PANELS AND INSULATION INSTALLATION

A. Protection Course: Install protection course with butted joints before installing drainage panels.

B. Drainage Panel: Place and secure molded-sheet drainage panels according to manufacturer's written instructions. Use adhesives that do not penetrate waterproofing. Lap edges and ends of geotextile to maintain continuity. Ensure that drainage channels are aligned and free of obstructions. Protect installed molded-sheet drainage panels during subsequent construction.

C. Foundation Wall Insulation: Install insulation over drainage panels in compliance with Section 072100 - Thermal Insulation.

3.5 PROTECTION AND CLEANING

A. Do not permit foot or vehicular traffic on unprotected membrane.

B. Protect waterproofing from damage and wear during remainder of construction period.

C. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.

D. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION

SECTION 088000
GLAZING

Revised, Addendum #4, 10/02/2017
Revised, Addendum #3, 09/22/2017

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Monolithic vision glass.
      a. Laminated glass.
   2. Insulated vision glass.
      a. Insulated laminated glass
      b. Insulated spandrel glass.
      c. Insulated laminated spandrel glass.
   3. Fire-rated glazing
   4. Accessories, glazing and setting materials.

B. Related Sections:
   1. Section 017325 - Seismic Restraint Requirements for Nonstructural Components
   2. Section 079000 – Joint Protection.
   3. Section 084113 – Aluminum Entrances and Storefronts: Glass stops and glazing gaskets.
   4. Section 084114 – Aluminum Interior Doors and Frames: Glass stops and glazing gaskets.
   5. Section 084400 – Aluminum Curtain Walls, Windows and Entrances: Glass and glazing in curtain wall, window and entrance system.
   6. Section 102813 – Toilet Accessories: Metal-framed mirror units.

1.2 DEFINITIONS

A. Manufacturer: A firm that produces primary glass or fabricated glass as defined in referenced glazing publications.

B. Interspace: Space between lites of an insulating-glass unit that contains dehydrated air or a specified gas.

C. Deterioration of Coated Glass: Defects developed from normal use attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in metallic coating.

D. Deterioration of Laminated Glass: Defects developed from normal use attributed to the manufacturing process and not to causes other than glass breakage and practices for 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.

E. Deterioration of Insulating Glass: Failure of the hermetic seal under normal use attributed to the manufacturing process and not to causes other than glass breakage and practices for 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.

1.3 PERFORMANCE REQUIREMENTS

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

B. Glass Design: Glass thicknesses indicated are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites for various size openings in nominal thicknesses indicated, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:

1. Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E 1300, according to the following requirements:
   a. Specified Design Wind Loads: Determine design wind loads applicable to Project from basic wind speed indicated in miles per hour at 33 feet above grade, according to ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 6.4.2, "Analytic Procedure," based on mean roof heights above grade indicated on Drawings.
   b. Specified Design Seismic Loads: Determine design seismic loads applicable to Project, required by ASCE 7 and Section 017325
   c. Specified Design Snow Loads: As indicated, but not less than snow loads applicable to Project, required by ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 7, "Snow Loads."
   d. Probability of Breakage for Vertical Glazing: 8 lites per 1000 for lites set vertically or not more than 15 degrees off vertical and under wind action.
      1) Load Duration: 60 seconds or less.
   e. Maximum Lateral Deflection: For the following types of glass supported on all four edges, provide thickness required that limits center deflection at design wind pressure to 1/50 times the short side length or 1 inch, whichever is less.
      1) For monolithic-glass lites heat treated to resist wind loads.
      2) For insulating glass.
      3) For laminated-glass lites.
   f. Minimum Glass Thickness for Exterior Lites: Not less than 6 mm.
   g. Thickness of Tinted and Heat-Absorbing Glass: Provide the same thickness for each tint color indicated throughout Project.

C. Seismic Movements: Glass in glazed curtain walls, glazed storefronts and glazed partitions shall meet relative displacement requirements to resist fallout as indicated in Section 017325 in accordance with ASCE 7, Section 13.5.9.

D. Thermal Movements: Provide glazing that allows for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures acting on glass framing members and glazing components. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

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

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

1. For monolithic-glass lites, properties are based on units with lites 6 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 with lites 6 mm thick and a nominal 1/2-inch- wide interspace.
4. Center-of-Glass U-Values: NFRC 100 methodology using LBL WINDOW 6.3 computer program, expressed as Btu/ square foot x h x degree F.
5. Center-of-Glass Solar Heat Gain Coefficient: NFRC 200 methodology using LBL WINDOW 6.3 computer program.
6. Solar Optical Properties: NFRC 300

1.4 APPLICABLE STANDARDS

A. Safety Glazing: Conform to Safety Standard for Architectural Glazing Materials (CPSC 16 CFR 1201). Tempered glass and wire glass shall conform to requirements of ANSI Z97.1, with permanent label in accordance with statutes.

B. ASTM E 2190 Standard Specification for Insulating Glass Unit Performance and Evaluation *(replaces ASTM E773, E774 CBA, CAN / CGSB 12.8)*Flat Glass: ASTM C 1036, Flat Glass. Flat Glass Marketing Association (FGMA) Glazing Manual.

C. Fire-Resistance-Rated Wire Glass: Provide wire glass products that are identical to those tested per ASTM E163 (UL 9) and are labeled and listed by UL or other testing and inspecting agency acceptable to authorities having jurisdiction.

D. Heat Treated Flat Glass: ASTM C 1048, Heat Treated Flat Glass.

E. Laminated Glass: ASTM C 1172 – Standard Specification for Laminated Architectural Flat Glass; Comply with applicable quality requirements for cut sizes of flat laminated glass consisting of two or more lites of glass bonded with interlayer material for use in building glazing.

1.5 SUBMITTALS

A. Product Data: Provide for structural, physical and environmental characteristics, size limitations, special handling or installation requirements.

B. Shop Drawings:

1. Review curtain wall and window shop drawings and submit acceptance of details as suitable for proposed glass products.

C. Calculations: Structural design shall be performed by a Professional Engineer, licensed in the state where Project is located. Signed engineering calculations shall be submitted to Architect/Engineer

1. Structural design calculations are required per IBC Section 2403, for glass not supported on 4 sides, including glass supports and framing, indicating structural integrity of glass size, glass support members, anchors, fasteners and connections to building, in accordance with specified criteria.
2. Structural design calculations for seismic design forces and relative displacements are required for glass in glazed curtain walls, glazed storefronts and glazed partitions in accordance with Section 017325.
3. Engineering Responsibility: Calculations shall be reviewed for stated design assumptions, general compliance to specified requirements, and forces imposed on glass structure. The accuracy of the design calculations shall be the sole responsibility of the Contractor's Professional Engineer.

D. Samples: Submit samples of sandblasted/frosted, spandrel, decorative and wire glass, and glazing sealant, for color selection and appearance acceptance.

E. Insulating Glass Certification: Submit data verifying compliance with IGCC, Class A level.

F. Compatibility Certification: After testing and review, certify compatibility of materials in contact and in close proximity to glazing sealant materials.

G. Wind Pressure and Thermal Stress Analysis: Submit thermal stress analysis of glass where thermal stress may occur.

H. LEED Submittal:

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

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance; and who employs glass installers for this Project who are certified under the National Glass Association Glazier Certification Program as Level 2 (Senior Glaziers) or Level 3 (Master Glaziers).

B. Elastomeric Glazing Sealant Product Testing: Obtain sealant test results for product test reports in "Submittals" Article from a qualified testing agency based on testing current sealant formulations within a 36-month period.

1. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated, as documented according to ASTM E 548.
2. Test elastomeric glazing sealants for compliance with requirements specified by reference to ASTM C 920, and where applicable, to other standard test methods.

C. Single Source Responsibility: Provide materials obtained from one source for each type of insulating glass and glazing product indicated.

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

E. Fire-Rated Window 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 257.

F. Safety Glass: Category II materials complying with testing requirements in 16 CFR 1201 and ANSI Z97.1.
   1. Subject to compliance with requirements, permanently mark safety glass with certification label of Safety Glazing Certification Council or another certification agency acceptable to authorities having jurisdiction.

G. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the following inspecting and testing agency:
   1. Insulating Glass Certification Council.

H. Mockups: Before glazing, build mockups for each glass product indicated below to verify selections made under sample Submittals and to demonstrate aesthetic effects and qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for the completed Work:
   1. Build mockups in the combination with curtain wall mockup requirements.
   2. Build mockups with the glass to match glazing systems required for Project, including typical lite size, framing systems, and glazing methods:
   3. Notify Architect seven days in advance of dates and times when mockups will be constructed.
   4. Obtain Architect's approval of mockups before starting fabrication.
   5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
   6. Demolish and remove mockups when directed.

1.7 PRODUCT HANDLING

A. Deliver and store glass and glazing in manufacturer's protective covering. Handle glass and glazing with care to prevent damage.

1.8 PROJECT/SITE 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 liquid glazing sealants when ambient and substrate temperature conditions are outside limits permitted by glazing sealant manufacturer or below 40 deg F (4.4 deg C).

1.9 GLASS WARRANTY

A. Warranty for Insulating Units: Warranty sealed insulating glass units for minimum period of ten (10) years, with manufacturer's replacement guarantee, covering as minimum: Defective or failure of seal; material vision obstruction as result of dust collection or film formation between panels or other similar failure and the following specific conditions:
   1. Reflective glass whose reflective coating cracks, peels or discolors shall be replaced at no charge (material only) for minimum ten (10) year period beginning on date of Substantial Completion.
   2. In addition to replacement of insulated units, provide removal and reinstallation of new units without cost to Owner during first five (5) years of guarantee.

B. Spandrel Glass Warranty: Spandrel glass whose opacifier delaminates, cracks, peels, wrinkles, discolors, or stains shall be replaced at no charge (material only) for minimum five (5) year period beginning on date of Substantial Completion.

C. Laminated Glass Warranty: Laminated glass that delaminates shall be replaced at no charge (material only) for minimum 5 years beginning on date of Substantial Completion.

D. Glazing installer shall coordinate glass and glazing installation with framing systems, and install glass and glazing in accordance with manufacturer's instructions, so that guarantee is maintained.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers for Glass Substrate:

1. AFG Industries.
2. ACH Float Glass Operations (Versalux)
3. Guardian Industries.
4. Pilkington.
5. PPG Industries Glass Group.

B. Acceptable Fabricators for Insulated Glass Units:

1. Any manufacturer/fabricator with "CBA" classification.

C. Acceptable Fabricators for Metallic Coated Units:

1. Viracon Incorporated.
2. Tempglass Eastern.
3. PPG Industries Glass Group.

2.2 SINGLE GLASS

A. (GL-1) Clear Float Glass: 1/4 inch thickness; comply with ASTM C1036, Type I (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select).

B. (GL-1T) Clear Tempered Glass: 1/4 inch thickness; comply with ASTM C1036, Type I (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select), and further processed to comply with ASTM C1048, Kind FT (fully tempered).

2.3 MONOLITHIC BACK PAINTED GLASS

A. (GL-6) Back Painted Glass: LI BP Straight White (Lustre Finish) by GlassPro, 1/4 inch thickness.

B. (GL-7) Back Painted Glass: LI BP Yellow by GlassPro, 1/4 inch thickness

C. (GL-7T) Back Painted Tempered Glass: LI BP Yellow by GlassPro, 1/4 inch thickness

D. (GL-8) Back Painted Glass: LI BP True Fog White (Starphire) by GlassPro, 1/4 inch thickness.

E. (GL-8T) Back Painted Tempered Glass: LI BP True Fog White (Starphire) by GlassPro, 1/4 inch thickness. ***ADD-3***

2.4 LAMINATED MONOLITHIC GLASS

A. (GL-15) Laminated, Tempered Clear Glass: LI Super Red (Tempered) by GlassPro, 9/16 inch thick laminated, tempered glass. Edges ground smooth for exposed conditions.

2.5 INSULATING GLASS

A. (GL-21) Clear Low-E Insulated Glass Unit: One inch thick unit constructed of 1/4 inch clear heat strengthened exterior light, 1/2 inch air space using fabricators black warm edge spacer, and 1/4 inch clear heat strengthened interior. High performance low-emissivity coating on No. 2 surface and argon gas in cavities. Glass thickness and thickness of individual glass plies are minimum. One or both plies heat strengthened where required for wind pressure or thermal stress.

1. Visible transmittance: 59 percent.

2. Exterior reflectance: 27 percent.
3. Shading coefficient: 0.43
4. Nighttime Winter U-value: 0.30 BTU/hour/square foot maximum.
5. Nighttime Summer U-value: 0.29 BTU/hour/square foot maximum.
6. SHGC: 0.37
7. LSG: 1.59
8. Acceptable products:
   a. Viracon: Solarscreen 2000, VRE 1-65.
   b. Comparable product of other specified manufacturers.

B. (GL-21L) Clear Laminated Low-E Insulated Glass Unit: 1-1/16 inch thick laminated, insulated, low-e coated glass unit constructed of 1/4 inch clear ~~heat strengthened~~ tempered exterior light, 1/2 inch air space using fabricators black warm edge spacer, and 2 layers of 1/8 inch clear heat strengthened inboard light laminated with 0.060 inch clear PVB inner layer. High performance low-emissivity coating on No. 2 surface and argon gas in cavities. Glass thickness and thickness of individual glass plies are minimum. ***ADD-3***

1. Visible transmittance: 59 percent.
2. Exterior reflectance: 27 percent.
3. Shading coefficient: 0.43
4. Nighttime Winter U-value: 0.30 BTU/hour/square foot maximum.
5. Nighttime Summer U-value: 0.29 BTU/hour/square foot maximum.
6. SHGC: 0.37
7. LSG: 1.59
8. Acceptable products:
   a. Viracon: Solarscreen 2000, VRE 1-65.
   b. Comparable product of other specified manufacturers.

C. (GL-21T) Clear Tempered Low-E Insulated Glass Unit: One inch thick unit constructed of 1/4 inch clear tempered exterior light, 1/2 inch air space using fabricators black warm edge spacer, and 1/4 inch clear tempered interior. High performance low-emissivity coating on No. 2 surface and argon gas in cavities. Glass thickness and thickness of individual glass plies are minimum. One or both plies heat strengthened where required for wind pressure or thermal stress.

1. Visible transmittance: 59 percent.
2. Exterior reflectance: 27 percent.
3. Shading coefficient: 0.43
4. Nighttime Winter U-value: 0.30 BTU/hour/square foot maximum.
5. Nighttime Summer U-value: 0.29 BTU/hour/square foot maximum.
6. SHGC: 0.37
7. LSG: 1.59
8. Acceptable products:
   a. Viracon: Solarscreen 2000, VRE 1-65, tempered.
   b. Comparable product of other specified manufacturers.

D. (GL-23) Clear Insulated Coated Silkscreen, Low-E Insulated Glass Unit: One inch thick unit constructed of 1/4 inch clear heat strengthened exterior light with No. 5065 on No. 2 (V933 – Warm Gray Viraspan #2), 1/2 inch air space using fabricators black warm edge spacer, and 1/4 inch clear heat strengthened interior. High performance low-emissivity coating on No. 2 surface and argon gas in cavities. Glass thickness and thickness of individual glass plies are minimum. One or both plies heat strengthened where required for wind pressure or thermal stress.

1. Visible transmittance: 39 percent.
2. Exterior reflectance: 27 percent.
3. Shading coefficient: 0.31
4. Nighttime Winter U-value: 0.30 BTU/hour/square foot maximum.
5. Nighttime Summer U-value: 0.27 BTU/hour/square foot maximum.
6. SHGC: 0.27
7. LSG: 1.44
8. Acceptable products:
   a. Viracon: Solarscreen 2000, VRE 1-65 screened.
   b. Comparable product of other specified manufacturers.

c. Ceramic Frit Screened onto Surface #2: 1/8” dots, 30% coverage unless indicated otherwise. ***ADD-4***

F. (GL-23L) Clear Laminated Insulated Coated Silkscreen, Low-E Insulated Glass Unit: 1-1/16 inch thick laminated, insulated, low-e coated glass unit constructed of 1/4 inch clear ~~heat strengthened~~ tempered exterior light with No. 5065 on No. 2 (V933 – Warm Gray Viraspan #2), 1/2 inch air space using fabricators black warm edge spacer, and 2 layers of 1/8 inch clear heat strengthened inboard light laminated with 0.060 inch clear PVB inner layer. High performance low-emissivity coating on No. 2 surface and argon gas in cavities. Glass thickness and thickness of individual glass plies are minimum. One or both plies heat strengthened where required for wind pressure or thermal stress. ***ADD-3***

1. Visible transmittance: 39 percent.
2. Exterior reflectance: 27 percent.
3. Shading coefficient: 0.31
4. Nighttime Winter U-value: 0.30 BTU/hour/square foot maximum.
5. Nighttime Summer U-value: 0.27 BTU/hour/square foot maximum.
6. SHGC: 0.27
7. LSG: 1.44
8. Acceptable products:
   a. Viracon: Solarscreen 2000, VRE 1-65 screened.
   b. Comparable product of other specified manufacturers.
   c. Ceramic Frit Screened onto Surface #2: 1/8" dots, 30% coverage unless indicated otherwise. ***ADD-4***

G. (GL-24T) Clear Tempered Low-E Insulated Glass Unit: 5/8 inch thick unit constructed of 5/16 inch clear tempered exterior light, 1/2 inch air space using fabricators black warm edge spacer, and 5/16 inch clear tempered interior. High performance low-emissivity coating on No. 2 surface and argon gas in cavities. Glass thickness and thickness of individual glass plies are minimum. One or both plies heat strengthened where required for wind pressure or thermal stress.

1. Acceptable products:
   a. International Green House, clear tempered Low-E insulated.
   b. Comparable product of other specified manufacturers.

2.6 SPANDREL GLASS

A. (GL-41) Insulated Tinted Spandrel Glass Units: One inch thick tinted insulated glass unit, 1/4 inch tinted outboard light with Viraspan V908 #2, 1/2 inch air space using fabricators warm edge spacer, 1/4 inch clear VE-48 #4 inboard light (ceramic coating on the fourth surface).

1. Nighttime Winter U-value: 0.31 BTU/hour/square foot maximum.
2. Nighttime Summer U-value: 0.29 BTU/hour/square foot maximum.
3. Product:
   a. Viracon: Solarscreen VE 1-48 tinted, glass, with ceramic frit.

B. (GL-41L) Insulated Laminated Tinted Spandrel Glass Units: 1-1/16 inch thick laminated tinted insulated glass unit, 1/4 inch tinted, tempered outboard light with Viraspan V908 #2, 1/2 inch air space using fabricators warm edge spacer, 2 layers of 1/8 inch clear VE-48 #4 inboard light laminated with 0.060 inch clear PVB inner layer (ceramic coating on the fourth surface). ***ADD-3***

1. Nighttime Winter U-value: 0.31 BTU/hour/square foot maximum.
2. Nighttime Summer U-value: 0.29 BTU/hour/square foot maximum.
3. Product:
   a. Viracon: Solarscreen VE 1-48 tinted, glass, with ceramic frit.

C. (GL-41T) Insulated Tinted Tempered Spandrel Glass Units: One inch thick tinted tempered insulated glass unit, 1/4 inch tinted tempered outboard light with Viraspan V908 #2, 1/2 inch air space using fabricators warm edge spacer, 1/4 inch clear tempered VE-48 #4 inboard light (ceramic coating on the fourth surface).

1. Nighttime Winter U-value: 0.31 BTU/hour/square foot maximum.
2. Nighttime Summer U-value: 0.29 BTU/hour/square foot maximum.
3. Product:
   a. Viracon: Solarscreen VE 1-48 tinted, glass, with ceramic frit.

~~D. (GL-41TL) Insulated Laminated Tinted Tempered Spandrel Glass Units: 1-1/16 inch thick laminated tinted tempered insulated glass unit, 1/4 inch tinted tempered outboard light with Viraspan V908 #2, 1/2 inch air space using fabricators warm edge spacer, 2 layers of 1/8 inch clear tempered VE-48 #4 inboard light laminated with 0.060 inch clear PVB inner layer (ceramic coating on the fourth surface).~~

~~1. Nighttime Winter U-value: 0.31 BTU/hour/square foot maximum.~~
~~2. Nighttime Summer U-value: 0.29 BTU/hour/square foot maximum.~~
~~3. Product:~~
~~a. Viracon: Solarscreen VE 1-48 tinted, glass, with ceramic frit.~~ ***ADD-3***

2.7 FIRE-RATED GLAZING

A. (GL-62) Laminated Ceramic Glazing: Proprietary product in the form of two lites of clear ceramic glazing material laminated together to produce a laminated lite of 5/16-inch nominal thickness; polished on both surfaces; weighing 4 lb/sq. ft.; and as follows:
   1. Fire-Protection Rating: 45 min. rated, and permanently labeled by a testing and inspecting agency acceptable to authorities having jurisdiction.
   2. Polished on both surfaces, transparent.
   3. Product: Subject to compliance with requirements, provide "FireLite Plus" manufactured by Nippon Electric Glass Co., Ltd. and distributed by Technical Glass Products.
   4. Other Acceptable Manufacturer: Vetrotech Saint-Gobain.

B. (GL-63) Laminated Glass with Intumescent Interlayers: Proprietary product in the form of multiple lites of Condition A (uncoated surfaces), Type I (transparent glass, flat), Class 1 (clear), Kind FT (fully tempered) float glass laminated with intumescent interlayers to produce a laminated lite of 1-5/8-inch nominal thickness; and as follows:
   1. Fire-Protection Rating: 60 min. rated, and permanently labeled by a testing and inspecting agency acceptable to authorities having jurisdiction.
   2. Product: Subject to compliance with requirements, provide "Pilkington Pyrostop 60-361" distributed by Technical Glass Products.
   3. Other Acceptable Manufacturer: Vitrotech Saint-Gobain, or District approved equal.

2.8 ACCESSORIES

A. Framing for Butt Glazing: Aluminum or stainless steel angles as indicated. Anchor to ceiling and floor substrates with appropriate fasteners in locations as indicated.

B. Setting Blocks: 100% silicone with a durameter hardness of 85±5, chemically compatible with glazing sealant or compound, length as recommended by glass manufacturer.

C. Spacers and Shims: 100% silicone with a durameter hardness of 85±5, chemically compatible with glazing sealant or compound, length as recommended by glass manufacturer.

D. Glazing Tape: Butyl or silicone preshimmed tape similar to Tremco 440 Tape.

2.9 EXTERIOR GLAZING

A. Glazing gaskets, sealant backers within glazing pockets, and continuous glass spacer pads at structural silicone shall be black heat cured silicone rubber conforming to ASTM C1115-00, Type C. Norton V2100 Thermalbond Tape is acceptable as a glass spacer pad when used in conjunction with structural silicone.

B. Gaskets for dry glazed system shall be silicone, EPDM, neoprene or Santoprene. Sponge gaskets shall be extruded black neoprene with hardness of 40 +/- 5 durometer Shore A and conforming to ASTM C 509-00. Design sponge gaskets to provide 20% to 35% compression. Dense gaskets shall be black extrusions with Shore A hardness of 75 +/- 5 for hollow profiles and 60 +/- 5 for solid profiles, and conforming to ASTM C1115-00, Type C or to ASTM C 864-99. Injection mold corners of gaskets where compatible with installation procedures.

C. Structural Glazing System:
   1. Sealant: GE Ultraglaze SSG 4000 by General Electric or 795 by Dow Corning. Verify compatibility of sealant with secondary seal of dual seal insulating glass system.

2. Maximum design stress on Structural Silicone Sealant shall not exceed 20 ps

2.10 INTERIOR GLAZING

A. Type and Manufacturer: Mono one-part acrylic-terpolymer sealant or Proglaze silicone sealant by Tremco, color as selected from manufacturers standard colors.

B. Other Acceptable Manufacturers: General Electric, DAP, PTI, Pecora.

C. Fire-Rated Glazing System: As recommended by fire-rated glass manufacturer.

D. Butt Glazing System: Tremco silicone structural "butt" glazing system, color as selected from manufacturer's standard range.

2.11 FABRICATION

A. Heat-Treated Float Glass: ASTM C 1048. Fabricate using horizontal roller heating process only. Roll wave distortion parallel to bottom edge of glass as installed. Deviation from flatness at any peak (peak to valley deviation): shall not exceed 0.003 inches in the center of a lite and shall not exceed 0.008 inches within 10.5 inches of the leading or trailing edge.

B. Insulating Glass Units:
   1. Fabricate using both primary and secondary seals and as otherwise required to comply with the IGCC CBA classification.
   2. Fabricate using glass from the same manufacturer throughout the Project.
   3. Seal Construction: Dual seal design with primary seal of PIB and Silicone Secondary Seal, unless specifically indicated otherwise.

A. Edge Finishing: Fabricate finished edges to produce smooth, polished edges without chips, scratches, or warps.
   1. Non-Exposed Finished Edge, Typical: Flat polished.
   2. Butt-Glazed Lites: 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.
   3. Exposed Edges: Grind smooth and polish exposed glass edges and corners, unless noted otherwise.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Examine areas and conditions under which Work is to be performed and identify conditions detrimental to proper or timely completion.
   1. Verify glazing channels are free of burrs, irregularities, and debris.
   2. Verify glass is free of edge damage or face imperfections.
   3. Inspect door and frames to determine that frames, sash, and stops are set true and straight. Sash rabbets and stops shall be clean and dry at time of glazing.
   4. Do not proceed until unsatisfactory conditions have been corrected.

B. Beginning of installation means acceptance of substrate.

3.2 PREPARATION

A. Provide glass manufacturer's recommended edge clearances when sizing glass.

B. Remove protective coatings from surfaces to be glazed.

C. Clean glass and glazing surfaces to remove dust, oil, and contaminants, and wipe dry.

D. Verify measurements of sash and openings at Project.
   1. Dimensions shown or indicated are given only as a guide for estimating purposes, and actual size shall be determined by measurement of the actual openings. Accurately cut glass to fit openings with proper clearances and setting block height.

E. Coordinate with and check Shop Drawings furnished by other suppliers of Work affecting this Section to avoid field installation problems.

F. Before glazing metal sash, remove oil, lacquer, or other material to which the compound will not readily adhere or which will tend to delaminate from metal and cause a leak through the glazing seal.

3.3 INSTALLATION

A. Comply with glass fabricators recommendations.

B. Except where curtain wall, window, entrance or glass manufacturer recommends otherwise, comply with Flat Glass Marketing Association (FGMA) Sealant Manual and FGMA Glazing Manual.

C. Glaze insulated units as recommended by glass and frame manufacturers.

D. Do not apply glazing materials at temperatures below manufacturer's recommendations or to damp or frosted surfaces. Apply glazing material according to the manufacturer's instructions using proper primers as required.

E. Set glass using neoprene setting blocks and spacers to insure proper edge clearance and uniform beads of compound. Clearances shall conform to FGMA Glazing Manual requirements. Center glass in glazing rabbets.

1. Butt glazing requirements: Apply mildew resistant silicone sealant to flush depth of joint as indicated by sealant manufacturer.

F. Check openings to confirm proper clearance at perimeters and between glass and stops.

1. Clean surfaces of rabbet (including stops) and surface of glass which will come into contact with sealant. Use solvents and methods which insure clean, dry surfaces without film or foreign material when sealant is placed.

G. Remove and replace glazing beads carefully to avoid marking or defacing any portion of frame, sash, or fastenings.

1. Set glass in full bed of glazing tape or sealant. Clean glazing material after stops are installed. Clean excess compound, etc. from glass after setting in conformance with glass manufacturer's recommendations.
2. If recommended prime surfaces prior to glazing.

H. Set glass with reams (waves) running horizontally. Set glass with factory attached labels in place.

I. Setting Blocks: Place setting blocks at locations recommended by glass manufacturer, generally between 1/4 points and 6 inches from corner, except at glazed doors.

1. At glazed doors, provide one block at sill, located 3 inches up from edge of glass at hinge side; one block at hinge side jamb, located 3 inches up from lower edge of glass; one block at head, located 3 inches from edge of glass at latch side of door; and, one block at jamb at lock side of door, located 3 inches down from edge of glass at top corner.
2. Use blocks of length required to properly support glass. Offset approximately 1 inch from shims.

J. Glass Installation in Steel (Hollow Metal) Frames:

1. Glaze frames using pre-shimmed tape on both sides. Firmly glaze in place with joints sealed, free of rattles.
2. Set glass on setting blocks with a full bed of sealant or glazing tape.

K. Glass Installation in Aluminum Frames:

1. Glaze aluminum frames using preformed EPDM elastomeric glazing extrusion separately or in combination with sealant and pre-shimmed glazing tape in compliance with aluminum frame supplier's recommendations.
2. Set glass on setting blocks as recommended by manufacturer.
3. Apply tape and/or sealant to produce uniform sight line even with frame.
4. Set glass in gaskets with corners sealed.

L. Glazing Sealant: Along entire bottom edge of light, and up at least 6 inches at each jamb, gun in continuous full bed of sealant to fill voids.

1. Fill entire space, full width of pane, full depth of glass, with sufficient sealant to form heel along inside face and edge of glass.
2. At other edges (top and sides) gun in continuous heel bead of sealant along edges of glass perimeter to set stop against and into, acting as fill between glass and stop.
3. Immediately after setting glass, at entire perimeter of glass, gun in sealant between stop and glass so space above spacer is completely filled, without voids.
4. Place sealant flush with daylight edge of stops, with slight watershed at exterior. Provide straight, smooth surface meeting at opening corners with sharp intersection.
5. Leave no sealant on exposed surfaces of stops and glass.

M. Apply structural sealant carefully in uniform thickness pushing bead ahead of nozzle and making sure that entire cavity is filled. Air pockets or voids along edges are not acceptable.

1. Tool joint immediately after application.
2. Tool neatly, forcing sealant into contact with joint sides, eliminating internal voids and insuring good substrate contact.
3. Do not tool with soap or detergent solutions.
4. Install silicone structural butt glazing system in accordance with manufacturer's printed instructions.

3.4 CLEANING

A. Remove surplus materials.

B. Final cleaning of glass by Contractor.

END OF SECTION

SECTION 098413
FIXED SOUND -ABSORPTIVE PANELS

Revised, Addendum #4, 10/02/2017

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Acoustical wall panels.
   2. Acoustical sonic baffles.

B. Related Sections:
   1. Section 095100 - Acoustical Ceilings.

1.2 SUBMITTALS

A. Shop Drawings: Submit shop drawings of acoustical panel suspension system and layout in accordance with Section 013300.

B. Samples: Submit samples of acoustical panels and suspension systems in accordance with Section 013300.

1.3 QUALITY ASSURANCE

A. Approved Installer: Installation of acoustical wall panels shall be by manufacturer's approved installer.

B. Fire Performance Characteristics: Provide acoustical panels with surface-burning characteristics as indicated, which have been determined by testing in accordance with ASTM E84.

C. Mock-ups: Before installing acoustical wall panels, build mock-ups for each form of construction and finish required to verify selections made under sample Submittals and to demonstrate aesthetic effects and qualities of materials and execution.
   1. Obtain Architect’s approval of mock-ups before starting acoustical wall panel fabrication.
   2. Maintain mock-ups during construction in an undisturbed condition as standard for judging completed Work.
   3. Approved mock-ups may become part of completed Work if undisturbed at time of Substantial Completion.

1.4 PRODUCT HANDLING

A. Deliver acoustical panel materials in manufacturer's protective packaging. Store and handle materials with care to prevent damage.

1.5 PROJECT CONDITIONS

A. Environmental Requirements: Maintain temperature and humidity in area of installation as recommended by acoustical unit manufacturer.

B. Coordination: Coordinate acoustical panel work with Mechanical and Electrical work, for proper and timely installation of work.

1.6 EXTRA MATERIALS

A. Deliver extra materials to Owner. Furnish extra materials described below matching products installed, packaged with protective covering for storage and identified with appropriate labels:
   1. Fabric Finish: Maintenance stock of fabric finish used in identical dye lot, amount equal to 2 percent of total yardage required.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
   1. Decoustics Limited
   2. PSI-Panel Solutions,
   3. Conwed Incorporated,
   4. Sound Concepts,
   5. Golterman and Sabo,
   6. Acoustics Associates.
   7. Armstrong Soundsoak Panels
   8. USG Interiors
   9. Or District approved equal.

2.2 MATERIALS

A. Core: Constructed of not less than 6 lb/cu ft density semi rigid fiberglass core,
   1. Provide boards free of surface defects and face sanded to uniform thickness which will not vary by more than 0.010 inches.
   2. Boards shall not vary from determined sizes by more than 0.020 inches vertically, horizontally, and corner to corner.

B. Edges: Harden board edges using modified polyester resin. Cured resin shall achieve Barcol hardness of 34.
   a. Edge penetration of fiberglass panel shall not be less than 0.1875 inches in depth.

C. Fabric Covering: Manufacture fabric of fire retardant polyester yarn. After market treatments are not acceptable.
   1. (FABRIC): Refer to Material Identification Codes.
   2. Applied Treatments: Stain resistance similar to Scotchgard. ***ADD-4***

D. Suspension System:
   ~~1. Manufacturer's standard concealed mechanical panel clips factory-attached to back of panels and concealed wall-clips attached to wall surface.~~
   2. Impaling Clips and Adhesives. ***ADD-4***

2.3 ACOUSTICAL WALL PANELS

A. Acoustical Wall Panels (AWP-2), (AWP-3), (AWP-4) and (AWP-5): Decoustics Type HIR panels by Decoustics Limited, fabric wrapped rigid tackable panel with resin-hardened edges.
   1. Core: Fiberglass.
   2. Thickness: 1-1/8 inch.
   3. Size: As indicated.
   4. Edge: Square.
   5. Finish:
      a. (FABRIC) Types and Colors: Refer to Material Identification Codes.

2.4 ACOUSTICAL SONIC BAFFLES

A. (ASB-1) Acoustical Sonic Baffles: SONEX Rondo Baffles by Pinta Acoustic, Inc., Minneapolis, MN (800) 662-0032, www.pinta-acoustic.com
   1. Manufactured from Pinta's willtec foam.
   2. Diameter: 6 inch.
   3. Lengths: as indicated on Drawings.
   4. Integral Custom Colors: Refer to Material Identification Codes.
   5. Installation: hung vertically using 1/16 inch cable or lightweight chain.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrate surfaces and conditions under which acoustical wall panel work is to be performed. not proceed with work until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install acoustical sonic baffles in accordance with reviewed shop drawings and manufacturer's printed instructions.

B. Install acoustical wall panels and accessories in accordance with reviewed shop drawings and manufacturer's printed instructions.

C. Install fabric-wrapped panels vertical and plumb; true in line; and with fabric installed square to grain. Match and level fabric pattern and grain.

1. Cut boards to sizes required by field dimension

D. Edges: Fill and sand edges as required to ensure straightness and sharp profile.

1. Soft edge treatment is not acceptable

E. Provide for shimming and adjustments as required to maintain consistent alignment of joints and of finished panel faces.

F. Coordinate installation of panel suspension system with work of other trades. Secure supports to structure as recommended by system manufacturer.

3.3 CLEANING

A. Clean panels with fabric facing, upon completion of installation, to remove dust and other foreign materials from facing, using dry brush or vacuum or both.

B. Clean panels with vinyl facing, upon completion of installation, to remove dust and other foreign materials from facing, using warm water and clean sponge, wipe dry.

END OF SECTION

SECTION 099600
HIGH-PERFORMANCE COATINGS

Revised, Addendum #4, 10/02/2017

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Coating and finishing of Architecturally Exposed Metal Fabrication Steel (AES) materials and other non-AES steel materials where indicated, with high performance coatings (HPC), ~~except as specified~~. ***ADD-4***

2. Preparation of surfaces for high performance coating and finishing.

B. Related Sections:

1. Section 051200 – Structural Steel Framing: Shop priming for High Performance Coatings.
2. Section 055000 - Metal Fabrications: Shop priming for High Performance Coatings.
3. Section 099000 – Painting.

1.2 MOCK-UP

A. Job Site Sample Areas: Make sample application on project surfaces to extent of 1 system on 1 unit of 1 area as directed by Architect.

1. Obtain acceptance of sample field application before making additional applications.
   a. Accomplish work to equal or exceed standards established by approved samples.
   b. Protect and maintain approved field samples through completion of project.
2. High Performance Coating Sample Area: One small area of architecturally exposed steel (AES) of project will be selected by Architect to represent typical job surface and condition for application of high performance coating.
   a. Apply coating in this area in accordance with reviewed color schedule and as specified.
   b. After sample area is accepted, this area will be used for comparison in evaluation of other high performance coating applications.

1.3 SUBMITTALS

A. Samples: Submit coating finish samples in accordance with Section 013300, for color selection and finish acceptance.

1. Architect reserves right to select color or finish from manufacturer specified, as necessary, to achieve desired color or finish.
   a. Mix coating to match chips, where necessary.
2. Schedule: For acceptance, submit 3 copies of complete schedule showing each product by brand name proposed to be used at each surface and location.
   a. Generally follow specified outline and list number of coats.
   b. Submit within 30 days after award of contract.

B. Product Data: Include primers for each coating system specified.

1. Material List: Provide inclusive list of required coating materials.
   a. Indicate each material and cross-reference specific coating, finish system, and application.
   b. Identify each material by manufacturer's catalog number and general classification.
2. Manufacturer’s Information: Provide manufacturer’s technical information, including label analysis and instructions for handling, storing and applying each coating material proposed for use.

1.4 QUALITY ASSURANCE

A. Single-Source Responsibility: Provide primers and undercoat coating produced by same manufacturer as finish coats.

B. Compatibility: Provide materials that are compatible with one another and substrates indicated under conditions of service and application, as demonstrated by manufacturer of coating system based on testing and field experience.

C. Provide protection during removal of existing rust, coatings, or other films from steel. Surface preparation of steel by sanding, scraping or other means may create dust or particles containing lead or other hazardous substances.

1. Protect roofing membrane as required, coordinate with membrane manufacturer.

D. Coordination of Work: Review other sections in which primers are provided to ensure compatibility of total systems for various substrates.

1. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

E. Approved Applicator: Applicator shall have not less than 3 years of successful experience in installation of similar coating systems and shall be certified in writing as manufacturer's licensed or approved applicator.

F. Sheen Types:

1. Manufacturer's standard sheen for specified product.
   a. Flat: Less than 5 units based on 60 degrees.
   b. Eggshell: 5 to 20 units based on 60 degrees.
   c. Satin/Low Luster: 15 to 35 units based on 60 degrees.
   d. Semi-gloss: 30 to 65 units based on 60 degrees.
   e. Gloss: Above 65 units based on 60 degrees.

G. Owner reserves the right to have testing agency test materials used as often as deemed necessary during period when coatings are being applied to ensure that product materials being used comply with specified requirements.

1.5 MAINTENANCE MATERIALS

A. Leave on premises, where directed by Architect, not less than one unopened gallon of each color used.

B. Tightly seal containers and clearly label for identification.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver coating materials in sealed original labeled containers, bearing manufacturer's name, type of coating, brand name, color designation and instructions for mixing or reducing.

B. Provide adequate storage facilities. Store coating materials at minimum ambient temperature of 45 degrees F. in well ventilated area. Restrict storage to coating materials and related equipment.

C. Take precautionary measures to prevent fire hazards and spontaneous combustion. Comply with health and fire regulations.

1.7 PROJECT CONDITIONS

A. Environmental Requirements: Comply with manufacturer's recommendations for environmental conditions under which coating and finishing can be applied.

1. Do not apply finish in areas where dust is being generated.

B. Measure moisture content of surfaces using electronic moisture meter.

1. Do not apply finishes unless moisture contents of surfaces are below manufacturer's maximums.

C. Ensure surface temperature or surrounding air temperature is between 50 degrees F. and 90 degrees F. before applying finishes.

1. Minimum application temperature for exterior work is 50 degrees F.

D. Provide adequate continuous ventilation and sufficient heating facilities to maintain temperatures above 45 degrees F. for 24 hours before, during and 48 hours after application of finishes.

E. Provide minimum 25 foot candles of lighting on surfaces to be finished.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. (HPC-1) High Performance Coatings Manufacturers:
   1. ICI/Dulux,
   2. Pittsburg Paints,
   3. Tnemec Company, Inc.,
   4. AkzoNobel Devow Performance Coatings
   5. Or approved substitute; submit for approval.

B. Materials: Coating or finish materials selected for each type of surface shall be product of single manufacturer.

C. Colors: As selected by Architect.

2.2 MIXING AND TINTING

A. Deliver coatings and enamel ready-mixed to job site. Accomplish job mixing and job tinting only when acceptable. Use tinting colors recommended by manufacturer for specific type of finish.

2.3 MATERIALS

A. Refer to attached high performance coating and finishing schedule.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to receive high performance coatings for conditions that would adversely affect execution, permanence or quality of work and which cannot be put into acceptable condition through preparatory work.
   1. Do not proceed with surface preparation or coating application until conditions are suitable.

3.2 PREPARATION OF SURFACES

A. Perform preparation and cleaning procedures in accordance with coating manufacturer's instructions and as specified, for each particular substrate condition.
   1. Remove mildew, by scrubbing with solution of detergent, bleach and warm water.
      a. Rinse with clean water and allow surface to dry completely.
   2. Remove surface contamination from aluminum surfaces requiring finish by steam, high pressure water or solvent washing.
      a. Apply etching primer or acid etch.
      b. Apply coating immediately if acid etching.
   3. Provide barrier coats over incompatible primers or remove and reprime as required.
      a. Notify Architect in writing of anticipated problems in using specified coating systems with substrate primed by others.

B. Finishes for steel labeled Architecturally Exposed Steel shall comply with these additional requirements: smooth exposed surface and edges, including welds, by grinding and fill depressions, voids and holes with weld material and/or auto body filler, sand smooth, prime and coat.

C. Clean surfaces to be coated before applying coating or surface treatment. Remove oil and grease with clean cloths and cleaning solvents prior to mechanical cleaning.
   1. Program cleaning and coating so that dust and other contaminants from cleaning process will not fall in wet, newly coated surfaces.
      a. Apply compatible sealer or primer.

D. Equipment used for blast cleaning shall be of type that has proper oil and water filters and traps on compressors and/or tanks so that sandblasting material is not being re-contaminated by oil and water in the air blast.

E. Ferrous Metals: Clean non-galvanized, ferrous surfaces that have not been shop-coated of oil, grease, loose mill scale and other foreign substances by solvent or mechanical cleaning, complying with The Society for Protective Coatings (SSPC)-SP6.

1. Touch-up shop-applied prime coats which have damaged or bare areas. Wire-brush, solvent clean, and touch-up with same primer as shop coat.
   a. Clean unprimed steel surfaces by washing with solvent. Apply treatment of phosphoric acid solution, ensuring weld joints, bolts and nuts are similarly cleaned.
   b. Prime surfaces to indicate defects. Coat after defects have been remedied.
   c. Sand and scrape shop primed steel surfaces to remove loose primer and rust. Feather out edges to make touch-up patches inconspicuous.
   d. Clean surfaces with solvent. Prime bare steel surfaces. (Prime steel including shop primed steels.)

3.3 MATERIALS PREPARATION

A. Mix and prepare coating materials in accordance with manufacturer's directions.

B. Store materials not in actual use in tightly covered containers.

1. Maintain containers used in storage, mixing, and application of coating in clean condition, free of foreign materials and residue.

C. Stir materials before application to produce mixture of uniform density, and as required during application of materials.

1. Do not stir film which may form on surface into material.
2. Remove film and, if necessary, strain material before using.

3.4 APPLICATION

A. Schedule Coatings: Apply first coat to surfaces that have been cleaned, pre-treated or otherwise prepared for coating as soon as practicable after preparation and before subsequent surface deterioration.

1. Number of coats and film thickness required is the same regardless of application method employed.

B. Apply high performance coating with brush, roller, spray, or other acceptable practice in accordance with manufacturer's directions.

1. Use brushes best suited for type of material being applied. Use rollers of carpet, velvet back, or high pile sheep wool recommended by coating manufacturer for material and texture required.
   a. Apply each coat at proper consistency.
   b. Each coat shall be slightly darker than preceding coat unless otherwise approved by Architect.
   c. Provide finish coats which are compatible with prime coatings used.

C. Do not apply succeeding coats until previous coat has completely dried, unless directed otherwise by manufacturer.

1. Sand between each enamel or varnish coat application with fine sandpaper, or rub surfaces with pumice stone where required to produce even, smooth surface in accordance with coating manufacturer's directions.

D. Apply additional coats when undercoats, or other conditions show through final coat, until coating film is of uniform finish, color and appearance.

1. Give special attention to insure that surfaces, including edges, corners, crevices, welds, and exposed fasteners receive film thickness equivalent to that of flat surfaces.
   a. Apply each material at not less than manufacturer's recommended spreading rate, to provide total dry film thickness as recommended.

b. Apply first-coat material to surfaces that have been cleaned, pre-treated or otherwise prepared for coating as soon as practicable after preparation and before subsequent surface deterioration.

E. Allow sufficient time between successive coatings to permit proper drying.
   1. Do not recoat until coat has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat does not cause lifting or loss of adhesion of undercoat.

F. Prime Coats: Recoat primed and sealed areas where there is evidence of suction spots or unsealed areas in first coat, to assure finish coat with no burn-through or other defects due to insufficient sealing.

G. Stipple Enamel Finish: Roll and redistribute coating to even and fine texture. Leave no evidence of rolling such as laps, irregularities in texture, skid marks, or other surface imperfections.

H. Brush Application: Brush-out and work brush coats onto surfaces in even film.
   1. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropeyness, or other surface imperfections will not be acceptable.
   2. Neatly draw glass and color break lines.

3.5 CLEANING

A. As work proceeds and upon completion, promptly remove coating where spilled, splashed or spattered.
   1. Touch up and restore damaged or defaced coated areas.

B. During progress of work keep premises free from unnecessary accumulation of tools, equipment, surplus materials and debris.
   1. Remove at end of each work day.

C. Upon completion of work clean coating-spattered surfaces and leave premises neat and clean, to satisfaction of Owner’s Representative.

3.6 PROTECTION

A. Adequately cover or otherwise protect finished work of other trades and other surfaces from coating and damage.
   1. Repair damage as result of inadequate or unsuitable protection as acceptable to Owner’s Representative.
      a. Furnish sufficient drop cloths, shields and protective equipment to prevent spray or droppings from fouling surfaces not being coated and in particular, surfaces within storage and preparation area.
      b. Place cotton waste, cloths and material which may constitute fire hazard in closed metal containers and remove daily from site.

B. Provide "Wet Paint" signs as required to protect newly coated finishes. Remove temporary protective wrappings provided by others for protection of their work after completion of coating operations.

3.7 FIELD QUALITY CONTROL

A. Comply with these additional requirements; smooth exposed surface and edges at steel, including welds, by grinding and fill depressions, voids and holes with weld material and/or auto body filler, sand smooth, prime and coat as recommended by coating manufacturer. Apply by brush or spray to provide minimum dry film thickness of 2 mils or as recommended by coating manufacturer. Insure that coating film is complete and undamaged as approved by Owner’s Representative.

3.8 EXTERIOR COATING SYSTEM FOR AES (AESS) MATERIALS AND OTHER STEEL *ADD-4*

A. (HPC-1) System: Low VOC Waterborne Aliphatic Urethane Semi-Gloss Enamel over Polyamide Epoxy Primer: Provide at exposed steel columns, exposed steel structural bracing, steel stair framing, steel handrails/guardrails, exterior steel fencing (similar to RAIL-4), all colors as indicated on Drawings: ***ADD-4***

1. TNEMEC:
   a. Primer: 1 Coat Low VOC primer compatible with finish coats and recommended by manufacturer for intended application.
   b. Finish: 2 Coats Endura-Shield Aliphatic Acrylic Polyurethane Semi-Gloss 1081 Series.
2. ICI/Dulux
   a. Primer: 1 Coat Devoe Coatings Devran Polyamide Epoxy Primer.
   b. Finish: 2 Coats Devoe Coatings Devthane Aliphatic Semi-Gloss Enamel.
3. Pittsburg Paints:
   a. Primer: 1 Coat Aquapon Polyamide-Epoxy Zinc Rich Primer.
   b. Finish: 2 Coats Pitthane High Build Semi-Gloss urethane Enamel.
4. Diamond Vogel Paints:
   a. Primer: 1 Coat Multi-E-Poxy 180 Epoxy Mastic.
   b. Finish: 2 Coats Multi-Thane 340 High Solids Acrylic Polyurethane Semi-Gloss.

END OF SECTION

SECTION 230910
LABORATORY TRACKING SYSTEM AND AIRFLOW CONTROL

Revised, Addendum #4, 10/02/2017

PART 1 GENERAL

1.1 SUMMARY

A. Related Sections include the following:
   1. Refer to Section 115313 – FUME HOODS AND OTHER AIR CONTAINMENT UNITS, for fume hood testing requirements.

B. Furnish and install Phoenix Medium Pressure Accel II Valves, Accutrol Accuvalve, Critical Room Control CRC valves or equal for all laboratory spaces as shown on the drawings. The existing campus Building Automation System (BAS) is Tridium Vykon Niagara 4. The ~~Phoenix~~ system shall be integrated to the building Energy Management Control System (EMCS). Provide interface device as necessary between laboratory airflow control system and the Tridium Vykon Energy Management Control System. **ADD-4**

C. The ~~Phoenix CELERIS~~ system will be used for all laboratory spaces that have chemical fume hoods requiring high speed (<1 second speed of response) actuator capacities for proper VAV control. The ~~Phoenix CELERIS~~ system with low speed electric actuation will be used for all laboratory spaces with no fume hoods but have additional sequence requirements as noted by schedules and/or sequence of operation. All laboratory airflow control system shall be furnished and installed to control the airflow into and out of laboratory rooms. The exhaust flow rate of a laboratory fume hood shall be precisely controlled to maintain a constant average face velocity into the fume hood. The system shall have the capabilities to provide constant face velocity at either a standard in use or a standby level based on an operator being present in front of the fume hood. The laboratory control system shall vary the amount of the makeup supply air into the room to operate the laboratories at the lowest possible airflow rates necessary to maintain temperature control, achieve minimum ventilation rates, and maintain laboratory pressurization in relation to adjacent spaces. The laboratory airflow control system shall be capable of operating as a standalone system, or as a system integrated with the building automation system. **ADD-4**

D. Installation of the air valves is by Division 23. Wiring and interface to the Energy Management Control System is to be furnished by Division 25. Start-up and System Commissioning to be furnished by Division 23 and 25.

E. See Commissioning Requirements Section 019113.

1.2 REFERENCE STANDARD

A. The latest published edition of a reference shall be applicable to this project unless identified by a specific edition date.

B. All reference amendments adopted prior to the effective date of this Contract shall be applicable to this project.

C. All material, installation and workmanship shall comply with the applicable requirements and standards addressed within all references.

1.3 SUBMITTALS

A. Product Data: submit product data for all devices furnished for the laboratory airflow control system. Each air valve shall have the listed product name, model ordering number, design air flow rates and differential pressure requirements across the valve.

B. Record Drawings: submit complete point-to-point wiring diagrams for each applicable room configuration as shown on the drawings.

C. Submit as-built drawings listing all control device, and controller configuration for each controller.

D. Submit shop drawings and GUI submittal at the same time to allow for review of Lab control integration into the Tridium Niagra based controllers such as Vykon JACE Global Controllers.

1.4 TRAINING

A. Provide forty hours (5 days) training for Owner's operation personnel in the use and maintenance of the laboratory airflow control system. Training shall be conducted during normal working houses and consist of both hands-on and classroom training at the job site.

B. All training shall be videotaped and submitted to Owner for their record.

1.5 WARRANTY

A. Warranty shall commence upon the date of acceptance and extend for a period of two years. Defects in materials and system performance shall be repaired by manufacturer at no cost to the Owner.

B. During the warranty period, if a service contract for the routine care, calibration, parts replacement, or upgrade of the system is required or recommended by the manufacturer, or such a contract is to be offered to the Owner during or after the warranty period, such contract and services shall also be included during the warranty period at no cost to the Owner.

PART 2 PRODUCTS

2.1 GENERAL

A. All materials shall meet or exceed all applicable referenced standard, federal, state and local requirements, and conform to codes and ordinances of authorities having jurisdiction.

2.2 MANUFACTURER

A. Phoenix™ Controls Corporation.

B. Accutrol. **ADD-4**

~~B.~~ C. Critical Room Control. **ADD-4**

~~C.~~ D. Or equal.

2.3 LABORATORY AIR FLOW CONTROL SYSTEM

A. The laboratory air flow control system (LACS) shall be microprocessor based airflow control system that is used for research laboratories and other critical environments. The system shall have BACnet interfaced for bi-directional communication with the RSCCD Tridium Niagra Vykon JACE Global Control building automation system. The airflow control system shall provide data values, alarms, and set points used in each room environment control scheme to the EMCS and also provide remote diagnostics and comprehensive report and trends through the EMCS.

B. Each individual lab zone shall have a dedicated laboratory airflow control system. Each dedicated laboratory airflow control system shall support a minimum of twenty (20) network controlled airflow devices.

C. The laboratory airflow control system shall employ individual average face velocity controllers that directly measure the area of the fume hood sash opening and proportionally control the hood's exhaust airflow to maintain a constant face velocity over a minimum range of 20% to 100% of sash travel.

D. The hood exhaust airflow control device shall respond to the fume hood sash opening by achieving 90% of its commanded value within one second of the sash reaching 90% of its final position with no more than 5% overshoot or undershoot of the required airflow. Rate of sash movement shall be between 1.0 to 1.5 feet per second.

E. The hood exhaust airflow control device shall have a capability of automatically switching between in-use and standby levels based on operator presence immediately in front of the hood. A presence and motion sensor shall activate the switching. The airflow control device shall achieve the required in-use commanded value in less than one second from the moment of detection with no more than a 5% overshoot or undershoot.

F. The controller shall be integrated via BACnet with the following points as minimum. The EMCS contractor shall make the following points available on the GUI.

1. Fume Hood Exhaust Flow (CFM).
2. Supply / Makeup Airflow (CFM).
3. General Exhaust Airflow (CFM).
4. Total Lab Exhaust Flow (CFM).
5. Total Lab Supply Flow (CFM).
6. Room Offset (CFM).
7. Fume Hood Exhaust Low Flow Alarm.
8. Fume Hood Sash Position.
9. Computed Sash Flow (CFM).
10. Room differential pressure (using a through the wall differential pressure sensor).
11. Common Fume Hood Emergency Exhaust Alarm (Digital Contact).
12. Occupied, Unoccupied, and Emergency modes (command and status) of operation and associated command able and adjustable points, i.e. temperature set point, minimum and maximum airflow set point.

G. The control unit shall also accept direct input signals from the EMCS.

2.4 FUME HOOD CONTROLLER

A. Linear controller shall be installed on the sash mullion of each hood and shall provide user interface/alarm function and a linear control system, which translates the sash position into a proportional control signal to modulate the hood's exhaust air valve. Hood airflow shall be varies to maintain a nominally constant face velocity at the hood opening. No air velocity sensors shall be employed. Hood airflow shall be varied to maintain a constant face velocity over no less than a 5 to 1 change in the sash open area (change in sash position).

B. Fume hood control system shall respond to and maintain the face velocity set point to ensure fume hood containment.

C. Provide a fume hood controller to receive a sash position signal from the sash sensor, process this signal and then output an exhaust airflow control signal to the hood exhaust valve.

D. The face velocity and minimum exhaust flow level of the fume hood shall be set at the fume hood monitor via trim pot adjustments. Accurate adjustments of the face velocity shall be provided at the minimum and maximum sash positions.

E. An emergency exhaust switch with an audible and dedicated visual alarm shall be provided on each fume hood monitor to override the sash sensor and command maximum exhaust airflow. Dedicated push to start, push to stop, push button switches shall force the hood exhaust volume control device to its full flow position and force the supply valve to its specified minimum or maximum position.

F. Fume hood controller shall have a visual and an audible annunciator to alarm the occurrence of a low face velocity. Muting of the annunciator will not cancel the visual alarm until the low flow condition is no longer present. The fume hood alarm shall be initiated by:

1. A differential pressure switch located across a hood exhaust valve that senses a reduction in airflow of approximately 20 percent of set point.
2. When the airflow value sent to the hood exhaust valve by the control unit is different than the actual airflow feedback value.
3. The sash being raised above a specified height and/or specified area for fume hoods not sized for 100 percent opening.
4. The alarm wire being disconnected.

G. The fume hood controller shall include an LCD readout to indicate face velocity of hood, green LED indication for normal operation, yellow LED an audible alarm for an unsafe flow condition, yellow LED and audible alarm for night energy waste alert and red LED and audible alarm to indicate emergency exhaust operation.

H. A pushbutton switch shall be provided to mute the audible alarms. The mute mode is automatically reset when the alarm condition ceases.

I. Each of the flows and system "offset" shall be adjustable.

J. A set of input contacts shall be provided inside the hood controller to remotely command the Emergency Exhaust mode from an external SPST contact.

K. Momentary or extended losses of power shall not change or affect any of the control system's set points, calibration settings, or emergency exhaust mode status. After power returns the system shall continue operation exactly as before without need of operator intervention. Under no circumstances shall loss of power command the exhaust system to full flow upon return of power.

L. Control power for the hood controller shall be provided from the supply air control panel.

2.5 FUME HOOD SASH POSITION SENSOR

A. A sash sensor shall be provided to measure hood sash position and output a sash position signal to the hood controller. The sash sensor shall consist of a precision ten turn potentiometer mechanically coupled to a constant tension spring reel. A stainless steel, vinyl-coated cable shall be attached to the spring reel. Expected lifetime based on manufacturer's component data and tests shall be over 200,000 full height sash movements.

B. The hood sash position sensor shall be designed to meet the UL 913, Class 1, Division 1, Groups C and D, and methane standard for intrinsically safe equipment used in hazardous locations.

2.6 AIRFLOW CONTROL DEVICES

A. The airflow control device shall be a Phoenix Accel II Venturi valve, Accutrol Accuvalve, Critical Room Control CRC valves or equal, with an option for 100% shut off capabilities. The valve assembly manufacturer's Quality Management System shall be registered to ISO 9001-2000. The valve body is constructed of 16 gauge spun aluminum with continuous welded seam, composite Teflon shaft bearings, and a spring grade stainless steel spring in the slider assembly. Supply valves to be insulated with 3/8" flexible closed cell polyethelene insulation material. Airflow devices have an operating range of 32-122°F ambient at 10-90%RH. **ADD-4**

B. The airflow control valve shall be pressure independent over its specified differential static pressure operating ranges. An integral pressure independent assembly shall respond and maintain specific airflow within one second of a change in duct static pressure irrespective of the magnitude of pressure and/or flow change or quantity of airflow controllers on a manifold system.

C. The airflow control device shall maintain accuracy within +/-5% of signal over an airflow turndown range as shown in the table below and stated by the Venturi's original manufacturer's sizing chart in the "Ideal Selection Range" without exceeding 2000 FPM velocity through any airflow device and have no deviation or loss of accuracy through the entire range of the flow device.

Pressure Drop Range	Airflow	Turndown	Valve Type
0.6- 3.0 in w.c. Medium Pressure	Devices up to 1,000 CFM	20 to 1	Standard
	Devices up to 1,500 CFM	16 to 1	Standard
	Devices up to 2,500 CFM	12 to 1	Standard
	Devices up to 850 CFM	17 to 1	Shutoff
	Devices up to 1,300 CFM	14 to 1	Shutoff

D. No minimum entrance or exit duct diameters shall be required to ensure accuracy and/or pressure independence.

E. The airflow control device shall be constructed of one of the following three types or classes:

1. Class A – Body and cone of uncoated aluminum, shaft uncoated stainless steel.
2. Class B – Body and cone with phenolic coating, PFA coated stainless steel shaft. (For standard fume hood, snorkel and biological safety cabinet application).

3. Class C – Body, cone and hardware with phenolic coating, PFA coated stainless steel shaft (for highly corrosive fume hood application)

F. For two position or VAV operation, an electric actuator shall be factory mounted to the valve. Loss of control power shall cause the actuator to fail in last position. When failed in last position, pressure independent airflow control is to be maintained by the airflow control device during power failure. Electrical actuators that fail in last position exclusively are not acceptable. Tracking pair low speed electric actuators fail in last position, but will continue to control airflow and be pressure independent with not power.

G. The controller for the airflow control devices shall be microprocessor based and operate using a peer-to-peer control architecture. The room level airflow control devices shall function as a standalone network or can be fully integrated with EMCS.

H. The room level control network shall utilize a BACnet peer to peer communications protocol.

I. There shall be no reliance on external or building level control devices to perform room level control functions. Each laboratory control system shall have the capability of performing: Fume hood control, Pressurization control, Temperature control and implement Occupancy and Emergency mode control schemes.

J. The laboratory airflow control system shall integrate digitally with the EMCS through BACnet Ethernet connect.

K. Each airflow control device shall be factory calibrated to the job specific airflows as detailed on the plans and specifications using NIST traceable air stations and instrumentation having a combined accuracy of at least ±1% of signal over the entire range of measurement. Electronic airflow control devices shall be further calibrated and their accuracy verified to ±5% of signal at a minimum of forty-eight different airflows across the full operating range of the device. All flow data for any given device shall be stored at the factory and be available on presentation of the unique serial number within 24 hours. Flow data for all valves shall be stored at a location away from the factory for disaster recovery purposes.

L. All airflow control devices shall be individually marked with device specific, factory calibration data. At a minimum, it should include: tag number, serial number, model number, eight point characterization information (for electronic devices), and quality control inspection numbers. All information shall be stored by the manufacturer for use with as built documentation

M. Valves will be selected and sized to not exceed the flow and pressure ranges in the following table:

Description	Size	Operating Range in CFM Single	Dual	Valve Type
M- Medium Pressure 0.6” – 3.0	8”	35 - 650		Standard
	10”	50 - 900		Standard
	12”	90 - 1350	180 - 2850	Standard
	14”	200 - 2300	400 - 4750	Standard
M- Medium Pressure 0.6” – 3.0	8”	35 - 500		Shut - Off
	10”	50 - 800		Shut - Off
	12”	90 - 1200	180 - 2500	Shut - Off
	14”	200 - 1500	400 - 3000	Shut - Off

N. The shutoff airflow control device shall have a shutoff and casing leakage of no more than:

Static Pressure Across Valve in Shutoff	Airflow	Shutoff Leakage	Casing Leakage
5.0 in w.c.	Shutoff devices up to 850 CFM	6 CFM	0.12 CFM/ ft²
	Shutoff devices up to 1,300 CFM	6 CFM	0.12 CFM/ ft²
	Low leakage shutoff devices up to 850 CFM	0.005 CFM	0.010 CFM/ ft²
	Low leakage shutoff devices up to 1,300 CFM	0.010 CFM	0.010 CFM/ ft²

O. 100% shutoff sequence can be initiated through a universal input or remotely via the local area network from the EMCS or a local display unit. 100% shutoff confirmation is available through a local digital output or an integrated point. The 100% shutoff confirmation is required by positive position verification.

2.7 CONTROL FUNCTION

A. The airflow control devices shall utilize a peer-to-peer, distributed control architecture to perform room-level control functions. Master/Slave control schemes shall not be acceptable. Control functions shall at a minimum include, pressurization, temperature, humidity control and respond to occupancy and emergency control command.

B. Pressurization Control

1. The laboratory control system shall control supply and auxiliary exhaust airflow devices in order to maintain a volumetric offset (either positive or negative). Offset shall be maintained regardless of any change in flow or static pressure. This offset shall be field adjustable and represents the volume of air, which will enter (or exit) the room from the corridor or adjacent spaces.
2. The pressurization control algorithm shall sum the flow values of all Supply and Exhaust airflow devices and command appropriate controlled devices to new set points to maintain the desired offset. The offset shall be adjustable.
3. With the ~~Celeris~~ system, the pressurization control algorithm shall support the ability to regulate the distribution of total supply airflow across multiple supply airflow control devices or total general exhaust airflow across multiple exhaust airflow control devices in order to optimize air distribution in the space. **ADD-4**
4. Where shown on the drawings, differential room pressure is to be monitored by a Critical Room Control. (CRC-RM)
   a. The room pressure controller (Controllers) shall be capable of measuring the differential pressure between two individual spaces at all locations shown on the prints. Each room shall have its own controller capable of stand-alone operation. Each monitor is capable of both visual and audible alarms. Each monitor will use direct pressure measurement utilizing industrial quality differential pressure transducer technology.
   b. Implied pressure measurement systems utilizing thermal (hot wire or thermal mass) air velocity measurement are not acceptable.
   c. Each monitor shall have an easy to navigate microprocessor based controller with full color TFT touch screen interface. Touch screen shall be capable of displaying room conditions in full color i.e. Red screen for alarm. All settings and programming shall be made via simple touch screen.
   d. Display shall be fully programmable with custom graphics and fonts. Monitor will store all settings in nonvolatile memory. Monitor to be capable to incorporate custom JPEG's or BMP's for display. Monitor will continually display room differential pressure. Monitor settings shall be accessed via programmable and password protected touch screen. Monitor shall be capable of custom color, graphics and messages per the owner. Monitor shall be recess mounted. Supply voltage shall be 24 volt ac/dc.
   e. The sensor shall continuously monitor and or control bi-directional room pressurization using direct pressure sensing referenced to the adjacent space. Wall / ceiling mounted assembly fittings and stainless steel cover plate shall be provided with the controller as a complete unit.
   f. Performance:
      1) Each monitor will use direct pressure measurement utilizing industrial quality differential pressure transducer technology.

2) Accuracy Class (F.S.): shall be 0.4 - 0.8%. Accuracy includes the effects of linearity, hysteresis and repeatability. Stability maximum change F.S./year .5%. Monitor shall be bi-directional. Operating temperature shall be -40 to 180 degrees F. The room pressure controller shall be factory calibrated. The room pressure transducer shall factory calibrated with NIST traceable standards.
3) Each Monitor shall incorporate a high speed microprocessor based controller, designed for critical environment control applications.
4) Each monitor shall have four (4) universal analog inputs for 4-20mA, 0-5V and 0-10V jumper selectable.
5) Each monitor shall have two (2) 0-10V and two (2) 4-20mA analog outputs, four (4) digital inputs, and four (4) digital Contact (relay) outputs.
6) Each controller shall have a two (2) wire RS485 serial network interface.
7) The room pressure monitor shall be mounted in the corridor adjacent to the lab entrance. Monitor shall be in clear view for staff in corridor

C. Temperature Control

1. The laboratory control system shall regulate the space temperature through a combination of volumetric thermal override and control of reheat coils and/or auxiliary temperature control devices. The laboratory control system shall support up to four separate temperature zones for each pressurization zone. Each zone shall have provisions for monitoring up to five (5) temperature inputs and calculating a straight-line average to be used for control purposes. Separate cooling and heating set points shall be writable from the EMCS, with the option of a local offset adjustment.
2. Temperature control shall be implemented through the use of independent primary cooling and heating control functions, as well as an auxiliary temperature control function, which may be used for either supplemental cooling or heating. Cooling shall be provided as a function of thermal override of conditioned air with both supply and exhaust airflow devices responding simultaneously so as to maintain the desired offset. Heating shall be provided through modulating control of a properly sized reheat coil.
3. The laboratory control system shall also provide the built-in capability for being configured for Hot Deck/Cold Deck temperature control.
4. The auxiliary temperature control function shall offer the option of either heating or cooling mode and to operate as either a stand-alone temperature control loop, or staged to supplement the corresponding primary temperature control loop.

D. Occupancy Control

1. The laboratory control system shall have the ability to change the minimum ventilation (supply airflow) and temperature control set points, based on the occupied state, in order to reduce energy consumption when the space is not occupied. The occupancy state may be set by either the EMCS, as a scheduled event, or through the use of a local occupancy sensor or switch. The laboratory control system shall support a local occupancy override button that allows a user to override the occupancy mode and set the space to occupied, for a predetermined interval. The override interval shall be configurable for 1 to 1,440 minutes. The local occupancy sensor/switch, or bypass button shall be given priority over an EMCS command.

E. Emergency Mode Control

1. The laboratory control system shall provide a means of overriding temperature and pressurization control in response to a command indicating an emergency condition exists and airflow control devices are to be driven to a specific flow set point. The system shall support up to four (4) emergency control modes. The emergency control modes may be initiated either by a local contact input, or EMCS command.
2. Once an Emergency mode is invoked, pressurization and temperature control are overridden for the period that the mode is active. Emergency modes shall have a priority scheme allowing a more critical mode to override a previously set condition.

F. Airflow Shutoff Control

1. The airflow control devices shown on the drawings and schedules as type SOV shall be capable of shut off function. Each device shall be capable of accepting a digital input to switch each individual air valve from the set point flow to shutoff position. This valve shall utilize an electric actuator with fail to last position operation. Feedback shall be available to indicate flow and shutoff. Confirmation of shut off shall be available through a digital output. These valves shall also be capable of network operation and being commanded to shutoff position from the EMCS.

2.8 TERMINAL UNIT CONNECTIONS

A. Single valve terminal unit duct connections shall consist of round inlet connections suitable for flanged and bolted connection to rigid round duct as detailed on the Drawings. If circular bolt flanges are not noted on the drawings, then the Controls Valve Draw band Clamp kit shall be utilized on both the inlet and outlet connections to the ductwork. Standard slip-in duct connections with sheet metal screws and sealer is not acceptable. Where multiple valves are employed, a common inlet plate suitable for slip connection to a single rectangular duct inlet duct shall be factory installed on the terminal unit using a press fit and silicone seal connection.

2.9 EMCS INTEGRATION

A. The room controllers shall be capable of direct communications with the existing campus Tridium Vykon system via BACnet open protocol.

B. The EMCS shall be interfaced to allow remote monitoring of specified controller outputs and inputs and shall be capable of resetting room temperature set point.

C. The EMCS interface must be installed and fully operational before the control system will be accepted.

D. The airflow control device shall have provisions to connect to a notebook PC commissioning tool and every node on the network shall be accessible from any point in the system.

2.10 CONDUIT AND WIRING SYSTEM

A. Cabling for these systems shall be either fiber optic, 24 AWG shielded twisted copper pair, or a mix of both. The Owner will consider exceptions to this requirement only if the laboratory tracking systems and constant volume valve manufacturer provides technical documentation, demonstrating that:
   1. This system will not function unless a different type of cable is used.
   2. The National Electrical Code requires cables to be shielded

PART 3 EXECUTION

3.1 PREPARATION

A. Provide a Project Manager, who shall, as a part of the Project Manager's duties, be responsible for the following activities:
   1. Coordination between the Contractor and all other trades and Owner's Representative.
   2. Scheduling of manpower, material delivery, equipment installation, and checkout.
   3. Maintenance of construction records such as Project scheduling, manpower planning, and AutoCAD Drawings for Project coordination and As-Built Drawings.

3.2 CALIBRATION

A. Each airflow control valve shall be factory calibrated to the Project specific airflows as detailed on the Contract Documents. Valve shall be electronically calibrated / characterized at the factory by certified NIST traceable air stations. The valve's characterization shall be determined at eight (8) unique airflows including a test of the valve's pressure independence at three (3) different static pressures. A total of nineteen (19) airflow checks shall be performed and recorded for each air valve. All information shall be stored on computer diskette in ASCII format for future retrieval or for hard copy printout.

B. Field adjustment shall not be required other than minor changes as required by the TAB Firm. Accuracies and performance shall be guaranteed as specified irrespective of field conditions.

C. Air shall be maintained plus or minus 5 percent of the design air quantity setting (subject to valve maximum and minimum CFM limits) over an inlet static pressure rate of 0.6 to 3.0 inches static pressure.

3.3 INSTALLATION

A. Installation shall meet or exceed all applicable federal, state and local requirements, referenced standards and conform to codes and ordinances of authorities having jurisdiction.

B. All installation shall be in accordance with manufacturer's published recommendations.

C. Coordinate hood installation provisions with the project hood supplier.

D. Coordinate the placement and installation of the sash position sensor with project hood supplier or manufacturer.

3.4 FIELD QUALITY CONTROL

A. During the Test and Balance and commissioning, the laboratory controls contractor shall be required to perform testing, measurement and commissioning activities with the test and balance agency and the commissioning authority.

END OF SECTION

MATERIAL IDENTIFICATION CODES

SPEC SECTION	ABBREV.	DESCRIPTION
061000	AB	**AIR BARRIER**
		AB-1: Fluid applied, vapor permeable membrane air barrier
095100	ACT	**ACOUSTIC CEILING TILE**
		ACT-1: Removed from project.
		ACT-2: Armstrong Fine Fissured, 24"x48", tegular edge, 9/16" grid
		ACT-3: Armstrong, Soundscape Shapes, 48" x 48" x 7/8"
		ACT-4: Armstrong, MetalWorks, Finish: M15 Perforation, Color: Effects Oak, Custom Installation
		ACT-5: Armstrong, Woodworks Linear, Color: Oak
061000	AF	**ASPHALT FELT**
		AF-1: 15# Asphalt Felt
	AFS	**ALUMINUM FRAMING SYSTEM**
084114		AFS-1: Interior window wall (2" x 4.5"), center glazed for 1/4" glass. Basis of Design: Arcadia AR450 Series, Color: PT-5D
084114		AFS-1A: Interior window wall (2" x 4.5"), center glazed for 1" glass. Basis of Design: Arcadia AR450 Series, Color: PT-5D
084113		AFS-2: Exterior storefront (2-1/4" x 6"), front glazed for 1" glass. Basis of Design: Arcadia TC670 Series, Color to match PPG UC121215 Duranar Dark Gray
083100	AP	**ACCESS PANEL**
		AP-1: Non-rated, flush metal, Color to match wall or ceiling (provide as needed for access)
		AP-2: Fire-rated, recessed door with gypsum panel insert, Color to match wall or ceiling (provide as needed for access)
		AP-3: Non-rated, recessed door with gypsum panel insert, Color to match wall or ceiling (provide as needed for access)
098413	ASB	**ACOUSTICAL SONIC BAFFLES**
		ASB-1A: Acousticas sonic baffles, 6" dia., varying lengths, Integrated Custom Color: PT-4C
		ASB-1B: Acousticas sonic baffles, 6" dia., varying lengths, Integrated Custom Color: Dunn-Edwards, DET421, Le Corbusier Crush, Finish: flat
		ASB-1C: Acousticas sonic baffles, 6" dia., varying lengths, Integrated Custom Color: Dunn-Edwards, DET449, Citrus Notes, Finish: flat
098413	AWP	**ACOUSTICAL WALL PANEL**
		AWP-1: Removed from project.
		AWP-2: 1-1/8" thick, fabric wrapped panel (Decoustics Type HIR), installation: wrapped on site, fabric: FABRIC-1. See elevations for dimensions.
		AWP-3: 1-1/8" thick, fabric wrapped panel (Decoustics Type HIR), installation: wrapped on site, fabric: FABRIC-2. See elevations for dimensions.
		AWP-4: 1-1/8" thick, fabric wrapped panel (Decoustics Type HIR), installation: wrapped on site, fabric: FABRIC-3. See elevations for dimensions.
		AWP-5: 1-1/8" thick, fabric wrapped panel (Decoustics Type HIR), installation: wrapped on site, fabric: FABRIC-4. See elevations for dimensions.
102813	BA	**BUILDING ACCESSORIES**
		BA-2: Mop and broom holder with shelf, length 36"
083324	CD	**COILING DOOR (OVERHEAD)**
		CD-1: 90 min. fire-rated, prefinished, motorized, Basis of Design: Cookson FDO-A Auto Test Motor
054000	CEM SHTG	**CEMENT BOARD SHEATHING**
		CEM SHTG-1: Not used
102813	CH	**COAT HOOK**
		CH-1: Single coat hook
		CH-2: Double coat hook
042000	CMU	**CONCRETE MASONRY UNIT**
		Decorative Concrete Masonry Units
		CMU-11: Burnished, normal weight units. Basis of Design: Orco Block, 4" T x 8" D x 16" W, Color: Black 100MW
		CMU-12: Burnished, normal weight units. Basis of Design: Orco Block, 4" T x 12" D x 16" W, Color: Black 100MW
074244	CPNL	**COMPOSITE PANEL SYSTEM**
		CPNL-1: Solid phenolic panels (ESR-1687), 3/8" thick, Trespa Meteon FR, exterior. Color: Carmine Red
		CPNL-2: Solid phenolic panels (ESR-1687), 3/8" thick, Trespa Virtuon, interior. Color: Elegant Oak
		CPNL-3: Solid phenolic panels (ESR-1687), 3/8" thick, Trespa Meteon Uni Colors, Finish: Diffuse, Color: Mid Grey Satin
		CPNL-4: Removed from project
096800	CPT	**CARPET**
		Roll Goods
		CPT-1: Tandus, Aniline #04733, color: Stonework #44206, custom Powerbond order (broadloom installation)
		CPT-2: Removed from project
096813	CPT	**CARPET TILE**
		CPT-50: Tandus, Geo Tile #00979, color: Charcoal #00154
108000	CRB	**CEDAR RAISED BED**
		CRB-1: Deep Root Cedar Raised Bed (exterior), Mfr: Gardener's Supply Co., Size: 48" x 96" x 15"
031500	CS	**CONCRETE SEALER**
		CS-2: 30% type
093000	CTA	**CERAMIC TILE ACCESSORIES**
		CTA-1: Schluter metal trim
093000	CTB	**CERAMIC TILE - BASE**
		CTB-1: Crossville, RetroActive, color: Empress White - RA A215-RA, size: 2" x 12", grout: 1/4", color: GR-1
093000	CTF	**CERAMIC TILE - FLOOR**
		CTF-1: Crossville, Shades, color: Ink UPS, size: 12" x 24", installation: see enlarged restroom plan, grout: GR-1
093000	CTW	**CERAMIC TILE - WALL**
		CTW-1: Crossville, RetroActive, color: Empress White - RA A215-RA, size: 3" x 12", grout: 1/4" GR-1, finish: unpolished and graffiti resistant
		CTW-2: Crossville, RetroActive, color: Empress White - RA A215-RA, size: 4" x 12", grout: 1/4" GR-1, finish: unpolished and graffiti resistant
		CTW-3: Crossville, RetroActive, color: Empress White - RA A215-RA, size: 6" x 12", grout: 1/4" GR-1, finish: unpolished and graffiti resistant
084400	CW	**CURTAIN WALL (GLAZED ALUMINUM)**
		CW-1: Pre-fabricated, field assembled, pressure plate, aluminum framing for 1" glass, 2-1/2" x 7" deep. Basis of Design: Arcadia T500 (OPG 2900 Series), Color to match PPG UC121215 Duranar Dark Gray
		CW-2: Pre-fabricated, field assembled, pressure plate, aluminum framing for 1" glass, 2-1/4" x 6" deep. Basis of Design: Arcadia T500 (OPG 6000 Series), Color to match PPG UC121215 Duranar Dark Gray
		CW-3: Pre-fabricated, field assembled, pressure plate, fire-rated steel frame system for 1 5/8" glass (Pilkington Pyrostop), 2-3/8" x 8" deep. Basis of Design: Technical Glass Products (Fireframes Curtainwall Series), Color to match PPG UC121215 Duranar Dark Gray
101220	DWS	**DISPLAY WALL SYSTEM**
		DWS-1: Display Case (recessed), MFR: Poblocki, Size: 48" x 96" x 20"
		DWS-2: Display Case (recessed), MFR: Poblocki, Size: 48" x 96' x 10"
108000	EVAC	**EMERGENCY EVACUATION CHAIR**
		EVAC-1: Emergency Evacuation Chair with storage cabinet, MFR: Stryker, Model #: 6254, Cabinet Color: TBD
064000	FABRIC	**FABRIC**
		FABRIC-1: Maharam, Study, color: 466269-003, Solarium
		FABRIC-2: Maharam, Dapper, color: 466316-021 Very
		FABRIC-3: Luna Textiles, Hardcopy color: HCY-5535, Ringer
		FABRIC-4: Maharam, Mimic color: 466136-016, Laser
096613	FDS	**FLOOR DIVIDER STRIP (TERRAZZO)**
		FDS-1: 1/8" zinc
104400	FE	**FIRE EXTINGUISHER**
		FE-4: 10 lbs extinguisher on wall bracket
		FE-5: Not used
104400	FEC	**FIRE EXTINGUISHER CABINET**
		FEC-3: Semi-recessed, glass panel
079000	FGS	**FOAM GASKET SEAL**
		FGS-1: Open Cell foam
055000	FIN	**METAL FIN**
		FIN-1: Extruded Aluminum Fin, Size: 12" x 3" x 3/8", Finish to match MP-3B; Color to match MP-3B
078100	FP	**FIREPROOFING (Spray Fire Resistive Materials)**
		FP-1: Not used
		FP-2: Cementitious fireproofing, medium density (exposed)
		FP-3: Not used
078443	FRJS	**FIRE RESISTIVE JOINT SYSTEM**
		FRJS-1: Head of interior partitions
		FRJS-2: Edge of slab to curtain wall
		FRJS-3: Exterior stud walls
064400	FRP	**FIBERGLASS REINFORCED PANEL**
		FRP-1: (4x8 sheet, textured surface, color white)
061000	FRT	**FIRE RETARDANT TREATED**
		FRT-1: Fire retardant treated wood materials
078400	FSTOP	**FIRESTOPPING**
		FSTOP: Thru-penetration fire stops at all locations, except slab edges
104400	FVC	**FIRE VALVE CABINET**
		FVC-1: Recessed with glass door
055000	GATE	**SLIDING METAL GATE**
		GATE-1: Sliding metal gate
102813	GB	**GRAB BARS**
		GB-1: Stainless steel grab bars, 36" long
		GB-2: Stainless steel grab bars, 42" long
088000	GL	**GLASS, GLAZING**
		Monolithic Glass
		GL-1: Clear annealed glass, 1/4" unless otherwise indicated
		GL-1T: Tempered clear annealed glass, 1/4" unless otherwise indicated
		GL-1TL: Tempered, laminated clear annealed glass, 1/4" unless otherwise indicated
		Monolithic Back Painted Glass
		GL-6: LI BP Straight White (Lustre Finish) by GlasPro, 1/4"
		GL-7: Yellow by GlasPro, 1/4"
		GL-7T: Tempered, Yellow by GlasPro, 1/4"
		GL-8: True Fog White (Starphire) by GlasPro, 1/4"
		GL-8T: Tempered, True Fog White (Starphire) by GlasPro, 1/4"
		Laminated Monolithic Glass
		GL-15: Laminated, tempered, LI Super Red by GlassPro, 9/16"
		Insulated Glass
		GL-21: 1" Insulated, Low-e, Clear, 1/4", 1/2", 1/4", VRE1-65 HS/HS
		GL-21L: 1" Insulated, Low-e, Clear, laminated, 1/4", 1/2", 1/4", VRE1-65 HS/HS
		GL-21T: 1" Insulated, Low-e, Clear, tempered, 1/4", 1/2, 1/4", VRE1-65 HS/HS
		GL-23: 1" insulated, fritted screen, Low-e, 1/4", 1/2", 1/4"
		GL-23L: 1" insulated, fritted screen, Low-e, laminated, 1/4", 1/2", 1/4"
		GL-24T: 5/8" insulated (for GreenHouse), Mfr:International Green House
		Spandrel Glass
		GL-41: 1" clear, insulated unit with ceramic frit 1/4", 1/2", 1/4", Color to match ICD #1-0016 Charcoal
		GL-41L: 1" clear, insulated unit with ceramic frit, laminated 1/4", 1/2", 1/4", Color to match ICD #1-0016 Charcoal
		GL-41T: 1" clear, insulated unit with ceramic frit, tempered 1/4", 1/2", 1/4", Color to match ICD #1-0016 Charcoal
		GL-41TL: Not used
		Fire-Rated Glazing
		GL-62: Laminated, 45 min. fire-rated and impact safe-rated unit, 5/16"
		GL-63: Laminated, 60 min. fire-rated unit, 1-5/8"
055000	GRL	**GRILLE (ARCHITECTURAL)**
		GRL-1: Not used
		GRL-2: Not used
064000	GROM	**GROMMET**
		GROM-1: Not used
		GROM-2: Computer cable grommet, rectangular 2" by 4"
093000	GR	**GROUT**
		GR-1: Polymer-modified tile grout, Mapei, Color: Charcoal
		GR-2: Removed from project
055000	GRT	**METAL GRATING**
		GRT-1: Not used
092900	GYP BD	**GYPSUM BOARD**
		5/8" Gypsum Panels
		GYP BD-1: 5/8" fire-rated type "X" wallboard
		GYP BD-2: 5/8" fire-rated type "X" water-resistant wallboard
		1/2" Gypsum Panels
		GYP BD-11: Not used
		GYP BD-14: Not used
		Special Gypsum Panels
		GYP BD-21: 1" shaft liner
		GYP BD-25: Not used
		GYP BD-26: Not used
		GYP BD-35: Not used
		GYP BD-36: 5/8" impact-resistant gypsum board
092913	GYP SHTG	**GYPSUM SHEATHING**
		GYP SHTG-1: Not used
		GYP SHTG-2: 5/8" type "X" fiberglass faced gypsum sheathing (wall)
		GYP SHTG-3: Not used
		GYP SHTG-4: 5/8" fiberglass faced gypsum sheathing (roof)
092900	GYP TRIM	**GYPSUM BOARD TRIM & ACCESSORIES**
		GYP TRIM-1: Not used
		GYP TRIM-2: Not used
		GYP TRIM-3: Metal reveal
102813	HD	**HAND/HAIR DRYER**
		HD-1: Hand dryer, recessed, automatic activated
040519	HORIZ REINF	**HORIZONTAL WALL REINFORCEMENT**
		HORIZ REINF-1: Truss type
		HORIZ REINF-2: Ladder type
099600	HPC	**HIGH PERFORMANCE COATING**
		HPC-1: Epoxy primer, aliphatic urethane coating
072100	INSUL	**INSULATION**
		Rigid Insulation
		INSUL-1: Perimeter insulation (extruded polystyrene) for below grade
		INSUL-2: Rigid wall insulation (extruded polystyrene)
		INSUL-5: Not used
		Polyisocyanurate Insulation
		INSUL-15: Isocyanurate board insulation with foil facing
		Fiberglass/Mineral Wool Insulation
		INSUL-20: Unfaced fiberglass batt insulation
		INSUL-21: Not used
		INSUL-24: Mineral wool batt insulation
		INSUL-25: Curtain wall insulation
		Acoustical Insulation
092900		INSUL-40: Acoustical Batts (for use with interior stud walls)
108000	LKB	**LOCK BOX**
		LKB-1: Recessed aluminum lock box
089100	LVR	**LOUVER (METAL)**
		LVR-1: 4" deep, aluminum 2 coat fluoropolymer finish. Manufacturer: Airolite, Model K609. Color: To be selected by Architect (provide as needed)
040519	MA	**MASONRY ACCESSORIES**
		MA-1: Control joint filler
		MA-2: Deflection joint material
		MA-3: Column wrap
		MA-4: Bond breaker
072670	MB	**MOISTURE BARRIER**
		MB-1: Self-adhering cavity wall membrane (Permabarrier)
075216	MBIT	**MODIFIED BITUMEN ROOFING**
		MBIT-1: SBS modified bitumen roofing system
	MCW	**MANUFACTURED CASEWORK**
123213		MCW-2: Not used
123110		MCW-5: Not used
076210	MEMB FLASH	**MEMBRANE FLASHING (NON-EXPOSED LINERS)**
		MEMB FLASH-1: (Rubberized asphalt, self-adhering)
		MEMB FLASH-2: (EPDM, self-adhering)
055000	MET FAB	**METAL FABRICATION**
		MET FAB-1: Shop fabricated steel stair, steel pan concrete filled
		MET FAB-2: Interior steel ladder (elevator), painted
		MET FAB-8: Bollards, 5" dia. steel, removable. Manufacturer: Trafficguard Model TL 1004 R
		MET FAB-9: Bollards; 5" dia. steel, embedded in concrete. Manufacturer: Trafficguard Model RFP 4560 R
		MET FAB-10: Perforated Flat Metal, Manufacturer: McNichols, Color to match PT-5E
092216	MET FURG	**METAL FURRING (INTERIOR)**
		MET FURG-1: Hat channels
		MET FURG-2: Z-furring
		MET FURG-3: Cold-rolled steel channels
		MET FURG-4: Resilient furring channels
		MET FURG-5: Foam furring channel (U shaped) (thermal studs)
055000	MET RAIL	**METAL RAILING**
		MET RAIL-1: Not used
		MET RAIL-2: Not used
		MET RAIL-4: Not used
		MET RAIL-5: Not used
092216	MET STUD	**METAL STUD FRAMING SYSTEM (INTERIOR)**
		MET STUD-1: Non-load bearing, size as indicated, 20 GA.
		MET STUD-2: Shaft wall studs, gauge & SRE designed for rating & span
102813	MIR	**MIRROR (FRAMED)**
		MIR-1: Framed mirror w/o shelf, size as indicated, w / Johnson Defender Film
101100	MKBD	**MARKER BOARD**
		MKBD-1A: Dry-type marker board, low gloss, 5'x10'
		MKBD-1B: Dry-type marker board, low gloss, 5'x12'
		MKBD-1C: Dry-type marker board, low gloss, 5'x16'
		MKBD-1D: Dry-type marker board, low gloss, 4'x6'
		MKBD-1E: Dry-type marker board, low gloss, 4'x8'
		MKBD-1F: Dry-type marker board, low gloss, 4'x10'
		MKBD-1G: Dry-type marker board, low gloss, 4'x12'
		MKBD-1H: Dry-type marker board, low gloss, 4'x16'
	MP	**MANUFACTURED METAL PANEL**
074243		MP-1A: Composite aluminum panel with return, (4 mm) (wet sealed), Alpolic, Color: Mica MZG Grey (ESR-2653)
074243		MP-1B: Composite aluminum panel with return, (4 mm) (wet sealed), Alpolic, Color: Oer Red (ESR-2653)
074243		MP-1C: Composite aluminum panel with return, (4 mm) (wet sealed), Alpolic, Color: Matte Cloud White (ESR-2653)
074213		MP-2A: 1" thick, corrugated aluminum panels, horiz, exposed fasteners, Basis of Design: Morin VB 36, Color: Weathered Zinc (Mica)
074213		MP-2B: Removed from project
074213		MP-3A: 1" thick, panels, Basis of Design: SAF M-3000, Color to match Alpolic Mica MZG Grey
074213		MP-3B: 1" thick, panels, Basis of Design: SAF M-3000, Color to match Alpolic RRM Grey, Finish: Gloss
055000	MSA	**METAL SUPPORT ASSEMBLY**
		MSA-1: Suport system for floor/ceiling hung equipment
064000	PLAM	**PLASTIC LAMINATE**
		PLAM-1: Removed from project
		PLAM-2: Wilsonart, plastic laminate to match WD-1
		PLAM-3: Pionite, Suede, Color: Ingot Gray SG211
		PLAM-4: Removed from project
		PLAM-5: Removed from project
	PLAS	**PLASTER**
092523		PLAS-11A: Exterior horizontal limestone plaster, 7/8" thick, metal lath. Basis of Design: Thermocromex, Tandour Finish, Integrated Color: #P75
092523		PLAS-11B: Exterior horizontal limestone plaster, 7/8" thick, metal lath. Basis of Design: Thermocromex, Tandour Finish, Integrated Color: #LM-17931
092400		PLAS-12: Exterior vertical portland cement plaster, 3/4" thick, metal lath. Color: To be selected by Architect
092400		PLAS-13: Exterior horiz portland cement plaster soffit, 3/4" thick, direct-applied to gypsum sheathing. Color: To be selected by Architect
092523		PLAS-14A: Exterior vertical limestone plaster, 7/8" thick, metal lath. Basis of Design: Thermocromex, Tandour Finish, Integrated Color: #P75
092523		PLAS-14B: Exterior vertical limestone plaster, 7/8" thick, metal lath. Basis of Design: Thermocromex, Tandour Finish, Integrated Color: #LM-17931
092400	PLTR	**PLASTER TRIM**
		PLTR-1: Stockton Aluminum Plaster Channel Screed, PCS, 3/4" wide
		PLTR-2: Stockton Aluminum Drip Screed, Vented, DS, 7/8 inch
061000	PPT	**PRESSURE PRESERVATIVE TREATED**
		PPT-1: Preservative treatment for wood
077233	PRC	**PREFABRICATED ROOF CURB**
		PRC-1: Not used
115213	PS	**PROJECTION SCREEN**
		PS-1: Removed from project
		PS-2: Removed from project
099000	PT	**PAINT**
		PT-1A: Dunn-Edwards, color: DEW382 Faded Grey, finish: Semi-Gloss
		PT-1B: Dunn-Edwards, color: DEW382 Faded Grey, finish: Gloss
		PT-1C: Dunn-Edwards, color: DEW382 Faded Grey, finish: Flat
		PT-1D: Dunn-Edwards, color: DEW382 Faded Grey, finish: Gloss Enamel
		PT-2A: Dunn-Edwards, color: DE6376 Looking Glass, finish: Semi-Gloss
		PT-2D: Dunn-Edwards, color: DE6376 Looking Glass, finish: Gloss Enamel
		PT-3A: Dunn-Edwards, color: DE5292 Acorn Squash, finish: Semi-Gloss
		PT-3C: Dunn-Edwards, color: DE5292 Acorn Squash, finish: Flat
		PT-4A: Dunn-Edwards, color: DET422 Attar of Rose, finish: Semi-Gloss
		PT-4C: Dunn-Edwards, color: DET422 Attar of Rose, finish: Flat
		PT-4D: Dunn-Edwards, color: DET422 Attar of Rose, finish: Gloss Enamel
		PT-4F: Dunn-Edwards, color: DET422 Attar of Rose, finish: High Performance (exterior use)
		PT-5D: Dunn-Edwards, color: DE6370 Legendary Gray, finish: Gloss Enamel
		PT-5E: Dunn-Edwards, color: DE6370 Legendary Gray, finish: Evershield Semi-Gloss
102813	PTC	**PAPER TOWEL CABINET**
		PTC-1: Recessed Automatic Paper Towel Dispenser and Waste Receptacle
		PTC-2: Semi-Recessed Automatic Paper Towel Dispenser
055000	RAIL	**RAILING (STAIR)**
		RAIL-3: Ext. exit stair handrail, 1.5" diameter steel pipe, wall-mounted or mounted to guardrail, stainless steel
		RAIL-4: Ext. exit stair guardrail, steel barstock painted <HPC-1>, color to match <PT-5> 4
		RAIL-5: Interior stair handrail, 1.5" diameter steel pipe, wall mounted or mounted to guardrail, stainless steel
		RAIL-6: Interior stair guardrail, steel barstock painted PT-5
096500	RB	**RESILIENT BASE**
		RB-1: 4" rubber cove base, Johnsonite, Burnt Umber 63
		RB-2: 4" rubber non-cove base, Johnsonite, Burnt Umber 63
096500	RSF	**RESILIENT SHEET FLOORING**
		RSF-1: Forbo Marmoleum Fresco 3866 Eternity, thickness: 2.5mm
		RSF-2: Forbo Marmoleum Real 3139 Lava, thickness: 2.5mm
		RSF-3: Nora, Norament Round, color: Dust Grey
102813	SDISP	**SOAP DISPENSER**
		SDISP-1: Automatic Wall-mounted Soap Dispenser
079000	SLNT	**SEALANT**
		SLNT: Sealant Schedule - Refer to Specifications
076210	SMF	**SHEET METAL FLASHING AND TRIM**
		SMF-1: Prefinished galvanized steel
		SMF-2: Not used
102813	SNC	**SANITARY NAPKIN CABINET (VENDING)**
		SNC-1: Recessed Napkin/ Tampon Vendor
102813	SND	**SANITARY NAPKIN DISPOSAL**
		SND-1: Surface-mounted Sanitary Napkin Disposal
078700	SMOK	**SMOKE CONTAINMENT SYSTEM**
		SMOK-1: Smoke containment system
064000	SSF	**SOLID SURFACE FABRICATION**
		SSF-1: Corian, Color: Silver Birch @ Restrooms
		SSF-2: LG, Color: T017 Andromeda
		SSF-3: Corian, color: Royal Red @ Custom Seating
054000	STL FURG	**STEEL EXTERIOR FURRING (EXTERIOR)**
		STL FURG-1: Hat channels, galvanized
		STL FURG-2: Z-furring, galvanized
054000	STL STUD	**STEEL STUD FRAMING SYSTEMS (EXTERIOR)**
		STL STUD-1: Structural steel studs, 16 ga. galv, typical
102113.19	T COMP	**TOILET COMPARTMENTS**
		T COMP-7: In Pro, Bio Prism, color: Meteorite
096623	TER	**TERRAZZO**
		TER-3: Epoxy terrazzo floor. Color: White (Custom Mixture: #10049-1-Z), divider strip: <FDS-1>
		TER-4: Epoxy terrazzo floor. Color: Red (custom mixture TBD by Architect), divider strip: <FDS-1>
		TER-5: Precast epoxy terrazzo stair tread. Color: Red (custom mixture TBD by Architect), black epoxy abrasives < >
093000	THS	**THRESHOLD STRIP**
		THS-2: Marble at ceramic tile
101100	TKBD	**TACK BOARD**
		TKBD-1A: (Integrally colored synthetic cork in aluminum frame), Size: 6' X 6'
		TKBD-1B: (Integrally colored synthetic cork in aluminum frame), Size: 5' X 6'
		TKBD-1C: (Integrally colored synthetic cork in aluminum frame), Size: 4' X 6'
		TKBD-1D: (Integrally colored synthetic cork in aluminum frame), Size: 4' X 4'
		TKBD-1E: (Integrally colored synthetic cork in aluminum frame), Size: 3' X 6'
102813	TPH	**TOILET PAPER HOLDER**
		TPH-3: Removed from project
		TPH-4: Surface mounted, double roll, for 2 stalls
075400	TPO	**THERMOPLASTIC SINGLE PLY ROOFING**
		TPO-1: Mech anchored, flat insulation with thermal barrier on metal deck
096500/ 096800/ 096813	TRS	**TRANSITION STRIP**
		TRS-1: Removed from project
		TRS-2: Carpet to resilient
		TRS-3: Concrete to resilient
		TRS-4: Terrazzo to resilient/carpet, metal transition strip
102813	TSC	**TOILET SEAT COVER DISPENSER**
		TSC-2: Surface mounted type
102813	US	**UTILITY SHELF**
		US-3: 8 deep, length 34", stainless steel
031500	UVB	**VAPOR BARRIER**
		UVB-3: 15 mil reinforced polyethylene sheet underfloor vapor retarder
072600	VR	**VAPOR RETARDER - WALLS**
		VR-1: Not used
097200 097210	VWC	**VINYL WALL COVERING**
		VWC-1: Custom Vinyl Wall Covering, Graphic: Custom Colored Graphic, MFR: RIOT Creative Imaging
		VWC-1B: Removed from project
		VWC-1C: Removed from project
102226.10	VWS	**VERTICAL WALL SYSTEM**
		VWS-1: Automatic vertical folding acoustical wall system. Manufacturer: Skyfold Classic 51
102600	WCG	**WALL CORNER GUARD**
		WCG-4: Stainless steel cornerguard, 2"x 2" leg, recessed
064000	WD	**WOOD (TYPE AND FINISH)**
		WD-1: Hickory, quartersawn, clear coat
061000	WD BLKG	**WOOD BLOCKING**
		WD BLKG-1: Exposed or concealed wood blocking
061000	WD SHTG	**WOOD SHEATHING**
		Concealed Sheathing
		WD SHTG-1: Not used
		WD SHGT-3: Not used
		Roof and Miscellaneous
		WD SHTG-9: Exposed for paint, 3/4", FRT, exposure 2
	WP	**WATERPROOFING**
071326		WP-6: 60 mil. Self-adhering rubberized asphalt with polyethelene sheet
071416		WP-7: Not used
071616		WP-8: Crystalline waterproofing (Elevator Pit)
102600	WR	**WALL RAIL**
		WR-1: Inpro, product: 500 Wall Guard, color: Pewter Gray 0107
102813	WRC	**WASTE RECEPTACLE**
		WRC-1: Free standing waste
		WRC-2: Remove from project
092900	WRT	**WALL REVEAL TRIM**
		WRT-1: 1/2" reveal X 5/8" deep
		WRT-2: 3/4" reveal X 5/8" deep
		WRT-3: 2" reveal X 3/4" deep
	WT	**WINDOW TREATMENT**
122113		WT-1: Horizontal Blinds
		WT-2: Removed from project
122126		WT-3: MechoShade, Single Manual Shade, color: Charcoal, opening: 3%
122126		WT-4: MechoShade, Double Automatic Shades, color: TBD Black-Out, color: Dark Grey 0711 - opening: 3%
122126		WT-5: MechoShade, Double Manual Shades, color: TBD Black-Out, color: Dark Grey 0711 - opening: 3%

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SCIENCE CENTER
SANTA ANA COLLEGE
RANCHO SANTIAGO COMMUNITY COLLEGE DISTRICT
1530 W. 17TH ST.
SANTA ANA, CA 92706

SANTA ANA COLLEGE

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE STATE OF CA.

NAME: JAMES G. MATSON
DATE: MAY 16, 2017
REGISTRATION NUMBER: C13036

NO	DESCRIPTION	DATE
3	Addendum 3	9/22/17
4	Addendum 4	10/02/17

ISSUANCE HISTORY - THIS SHEET
DRAWN BY: AD REVIEW BY:

HGA NO: 3584-001-00

MATERIAL ID CODES

DATE: JULY 06, 2017

ADDENDA PACKAGE

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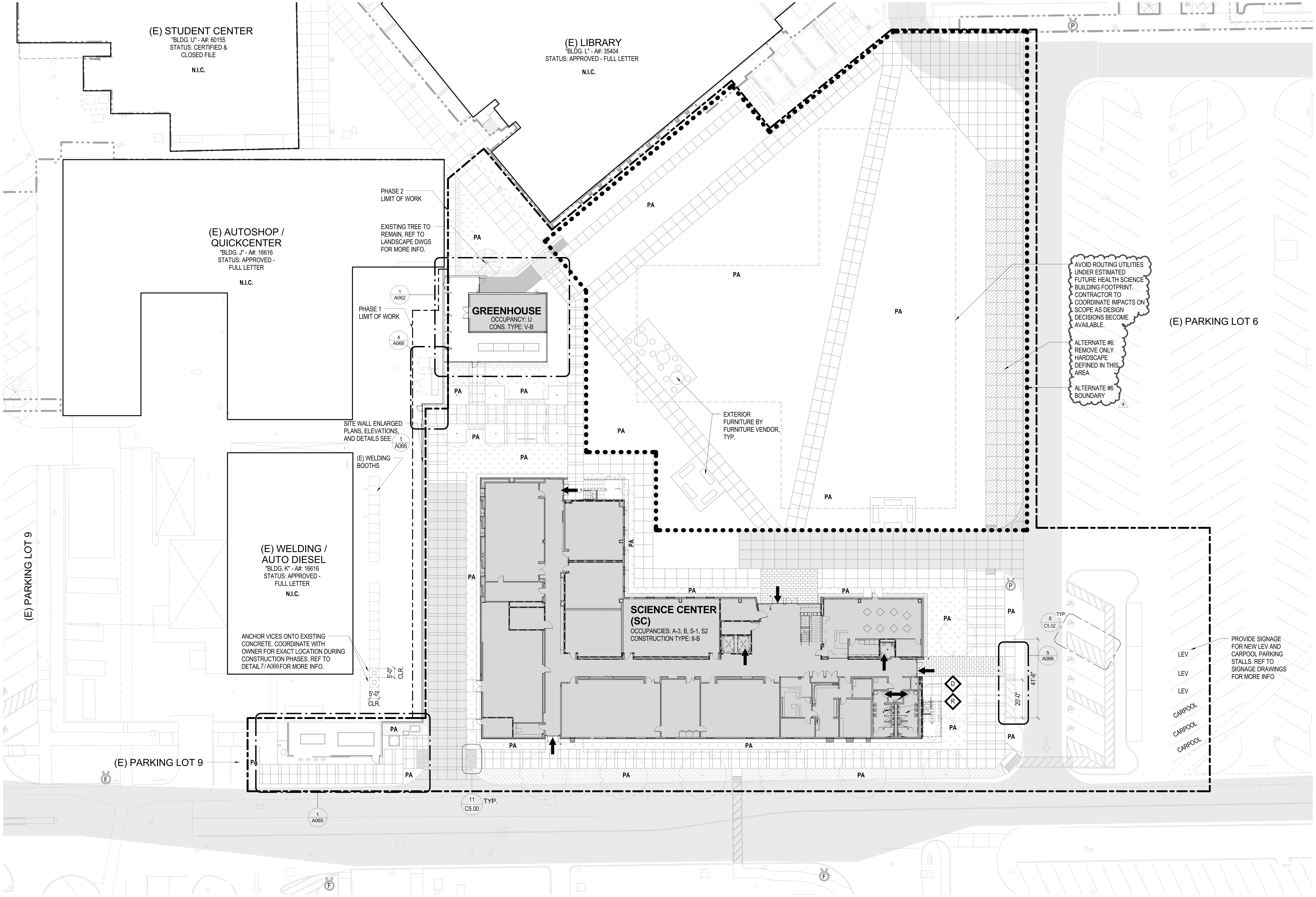

1 SITE PLAN ENLARGED
1" = 20'-0"

SITE LEGEND

Symbol	Description	Symbol	Description
	FIRE ACCESS	D	DRINKING FOUNTAIN ALONG P.O.T.
PA	PLANTER AREA	R	RESTROOMS ALONG P.O.T.
	LIMIT OF WORK	F	EXISTING FIRE HYDRANT
	DETECTABLE WARNING MIN. 3'-0" IN DIRECTION OF TRAVEL WHERE OCCURS (TYP.)	P	PROPOSED FIRE HYDRANT
	POINT OF ACCESS	LEV	PARKING STALL FOR LOW EMITTING VEHICLE
	ALTERNATE #6	CARPOOL	PARKING STALL FOR CARPOOL VEHICLE

PARKING LOT ANALYSIS - # OF SPACES PER LOT

		COMPACT	REGULAR	ACCESSIBLE	VAN ACCESSIBLE	TOTAL	DELTA
LOT #6	EXISTING	0	674	15	11	700	
	NEW	3	463	15	11	489	-208
LOT #9	EXISTING	0	35	5	1	41	
	NEW	0	16	5	1	22	-19

NOTE: CONSTRUCTION PHASING PER OWNER REQUIREMENTS.

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NAME: JAMES G. MATSON
DATE: MAY 16, 2017
REGISTRATION NUMBER: C13036

NO	DESCRIPTION	DATE
2	Addendum 2	9/1/17
3	Addendum 3	9/22/17
4	Addendum 4	10/02/17

ISSUANCE HISTORY - THIS SHEET

DRAWN BY: SK REVIEW BY: TE

HGA NO: 3584-001-00

ENLARGED ARCHITECTURAL SITE PLAN

DATE: JULY 06, 2017

A061

ADDENDA PACKAGE

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IDENTIFICATION		DOOR					FRAME			DETAILS								
DOOR NUMBER	ROOM NAME	WIDTH	HEIGHT	TYPE	GLAZING TYP	FINISH	TYPE	GLAZING TYP	FINISH	HEAD	JAMB	SILL/ THRESHOLD	RATING (MIN)	HDWE GROUP	ELEC	ALARM	SECURITY TYPE	NOTES
100-1A	CORRIDOR	6' - 0"	7' - 6"	STL-FR	GL-63	NOTE 9	SF3	GL-63	NOTE 9	6/A443	3/A443	10D/A081	60 MIN.	SH-1	X	X	CR	PH, ADO
100A	CORRIDOR	6' - 0"	7' - 6"	STL-FR	GL-63	NOTE 9	SF5	GL-63	NOTE 9	6/A443	3/A443	10D/A081	60 MIN.	SH-1A	X	X	CR	PH, ADO
100B	CORRIDOR	6' - 0"	8' - 0"	AL	GL-1T	NOTE 8	CW3	GL-1T	NOTE 8	2/A434	1/A456	10D/A081	--	SH-1A.1	X	X	CR	PH, ADO
101A	RESTROOM	3' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9E/A081	--	HW-2	--	--	--	--
102A	MEN'S RESTROOM	3' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9E/A081	--	HW-1	--	--	--	--
103-1A	MODEL STORAGE / LOCKERS	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	9B/A081	--	HW-5C	--	--	--	--
103-2A	WORK ROOM	3' - 0"	7' - 6"	AL-FG	GL-1T	PT-5D	F1	--	PT-5D	5B/A081	2/A451	--	--	HW-1B	--	--	--	--
103A	SCIENCE LEARNING CENTER	3' - 0"	7' - 6"	WD-NV	GL-62	WD-1	HM-100A	GL-62	PT-5D	3B/A081	3A/A081	9C/A081	45 MIN.	SH-7A	--	X	CR	WMR, PH, DPS
103B	SCIENCE LEARNING CENTER	3' - 0"	8' - 0"	AL-FG	GL-1T	NOTE 7	SF1	GL-1T	NOTE 7	1/A431 SIM	4/A451	10D/A081	--	SH-6	--	X	CR	--
103C	SCIENCE LEARNING CENTER	11' - 0"	11' - 0"	CD-1	--	--	--	--	--	2/A667	7/A664	--	90 MIN.	MFR	X	--	--	--
103D	SCIENCE LEARNING CENTER	15' - 0"	11' - 0"	CD-1	--	--	--	--	--	2/A667	7/A664	--	90 MIN.	MFR	X	--	--	--
104A	WOMEN'S RESTROOM	3' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9E/A081	--	HW-1	--	--	--	--
105A	LOBBY	6' - 0"	8' - 0"	AL	GL-1T	NOTE 8	CW1	GL-1T	NOTE 8	1/A431	1/A452	10D/A081	--	SH-1A.1	X	X	CR	PH, ADO
105B	LOBBY	6' - 0"	8' - 0"	AL	GL-1T	NOTE 8	CW1	GL-1T	NOTE 8	1/A431	1/A452	10D/A081	--	SH-4	--	X	CR	PH, DPS
106A	CUSTODIAL	3' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9D/A081	--	HW-5	--	--	--	--
107A	MACHINE ROOM	4' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	--	45 MIN.	SH-5A	--	X	--	--
109A	BDF	4' - 0"	7' - 6"	HM-F	--	PT-4D	HM-001	--	PT-4D	6B/A081	6A/A081	--	45 MIN.	SH-2A.1	--	X	CR	--
110A	VESTIBULE	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-110A	GL-7(T), GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B.1	--	X	CR	
110C	CONFERENCE	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	9B/A081	--	HW-1A	--	--	--	--
111A	LARGE CLASSROOM	3' - 0"	7' - 6"	WD-NV	GL-62	WD-1	HM-110A	GL-62T, GL-7(T)	PT-5D	3B/A081	3A/A081	--	45 MIN.	SH-9	--	X	CR	PH
111B	LARGE CLASSROOM	3' - 0"	7' - 6"	WD-NV	GL-62	WD-1	HM-110A	GL-62T, GL-7(T)	PT-5D	3B/A081	3A/A081	--	45 MIN.	SH-9A	--	X	I/L111A	PH, WMR, ADB
113-1A	LARGE CLASSROOM (DIVISIBLE)	3' - 0"	7' - 6"	WD-NV	GL-62	WD-1	HM-110A	GL-62T, GL-7(T)	PT-5D	3B/A081	3A/A081	--	45 MIN.	SH-9A	--	X	CR	PH
113-2A	LARGE CLASSROOM (DIVISIBLE)	3' - 0"	7' - 6"	WD-NV	GL-62	WD-1	HM-110A	GL-62T, GL-7(T)	PT-5D	3B/A081	3A/A081	--	45 MIN.	SH-9	--	X	CR	PH
114A	ELECTRICAL CLOSET	6' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	--	--	SH-14	--	X	--	--
114B	ELECTRICAL CLOSET	6' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9D/A081	--	SH-14	--	X	--	--
115A	MULTI DISC COMPUTER LAB	3' - 0"	7' - 6"	WD-NV	GL-62	WD-1	HM-110A	GL-62T, GL-7(T)	PT-5D	3B/A081	3A/A081	--	--	SH-2B	--	X	CR	--
116-1A	OPEN OFFICE	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	10B/A081	--	SH-2B.1	--	X	CR	--
116-1B	OFFICE	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	10B/A081	--	SH-2B.1	--	X	CR	--
116A	RECEPTION	3' - 0"	7' - 6"	AL-FG	GL-1T	PT-5D	F5	--	PT-5D	2B/A081	2A/A081	9C/A081	--	SH-15	--	X	CR	I/L
116B	RECEPTION	3' - 0"	2' - 6"	WD-F	--	PLAM-2	--	--	PT-5D	--	6A/A081	--	--	HW-3B	--	--	--	DOUBLE ACTING
118A	GEOLOGY / EARTH SCIENCE LAB	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-110A	GL-7(T), GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B.3	--	X	CR	ADB
118B	GEOLOGY / EARTH SCIENCE LAB	4' - 6"	7' - 6"	WD-NV2	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	6A/A081	10B/A081	--	SH-7E	--	X	I/L 118A	ADB, UNEQUAL: 3'-0", 1'-6"
120A	GEOLOGY / PHYSICAL SCIENCE PREP & STORAGE	4' - 6"	7' - 6"	WD-NV2	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	6A/A081	--	--	SH-7B	--	X	CR	UNEQUAL: 3'-0", 1'-6"
120B	GEOLOGY / PHYSICAL SCIENCE LAB & LECTURE	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	--	--	HW-3A	--	--	--	--
120C	GEOLOGY / EARTH SCIENCE LAB	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	--	--	HW-3A	--	--	--	--
122A	GEOLOGY / PHYSICAL SCIENCE LAB & LECTURE	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-110A	GL-7(T), GL-1	PT-5D	2B/A081	2A/A081	--	--	SH-2B.3	--	X	CR	--
122B	GEOLOGY / PHYSICAL SCIENCE LAB & LECTURE	4' - 6"	7' - 6"	WD-NV2	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	6A/A081	--	--	SH-7E	--	X	I/L 122A	ADB, UNEQUAL: 3'-0", 1'-6"
124A	STORAGE	3' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9C/A081 SIM.	--	SH-12	--	X	CR	--
126A	EMERGENCY ELECTRICAL	3' - 0"	7' - 6"	HM-F	--	NOTE 6	HM-001	--	NOTE 6	6B/A081	6A/A081	10A/A081	--	SH-8	--	X	--	PH
128A	MECHANICAL ROOM	6' - 0"	7' - 6"	HM-F	--	NOTE 6	HM-001	--	NOTE 6	6B/A081	6A/A081	10A/A081	--	SH-5	--	X	--	
128B	MECHANICAL ROOM	3' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9D/A081	--	SH-2A	--	X	CR	--
130A	MAIN ELECTRICAL	4' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9D/A081	45 MIN.	SH-13	--	X	--	PH
132A	ENGINEERING PREP & STORAGE	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-110A	GL-7(T), GL-1	PT-5D	2B/A081	2A/A081	9D/A081	--	SH-12	--	X	CR	--
132B	ENGINEERING PREP & STORAGE	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	--	--	HW-3A	--	--	--	--
134A	ENGINEERING LAB	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-110A	GL-7(T), GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B.3	--	X	CR	ADB
134B	ENGINEERING LAB	6' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-11B	--	--	I/L 134A	EPH, ADB
200-1A	CORRIDOR	6' - 0"	7' - 6"	STL-FR	GL-63	NOTE 9	SF3	GL-63	NOTE 9	6/A443	3/A443	10D/A081	60 MIN.	SH-1B	X	X	CR	PH
200-1B	CORRIDOR	3' - 0"	7' - 6"	WD-NV	GL-62	WD-1	HM-001	--	PT-5D	2B/A081	2A/A081	9B/A081	45 MIN.	HW-7	--	--	--	PH, MHO
200-1C	STAIR #2	3' - 0"	7' - 6"	GATE	--	PT-5E	--	--	--	NOTE 4	NOTE 4	--	--	HW-20	--	--	--	PH
200A	CORRIDOR	6' - 0"	7' - 6"	STL-FR	GL-63	NOTE 9	SF5	GL-63	NOTE 9	6/A443	3/A443	10D/A081	60 MIN.	SH-1B	X	X	CR	PH
200B	STAIR #1	3' - 0"	7' - 6"	GATE	--	PT-5E	--	--	--	NOTE 4	NOTE 4	--	--	HW-20	--	--	--	PH
201-1A	OFFICE	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B.1	--	X	CR	ADB
201-2A	OFFICE	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B.1	--	X	CR	ADB
201-3A	OFFICE	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B.1	--	X	CR	ADB
201-4A	OFFICE	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B.1	--	X	CR	ADB
201-5A	OFFICE	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B.1	--	X	CR	ADB
201-6A	OFFICE	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B.1	--	X	CR	ADB
201-7A	OFFICE	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B.1	--	X	CR	ADB
201A	CORRIDOR	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-110A	GL-7(T), GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B.1	--	X	CR	ADB
201B	CORRIDOR	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	10B/A081	--	SH-2.1	--	X	CR	ADB
202A	MEN'S RESTROOM	3' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9E/A081	--	HW-1	--	--	--	--
203A	RESTROOM	3' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9E/A081	--	HW-2	--	--	--	--
204A	WOMEN'S RESTROOM	3' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9E/A081	--	HW-1	--	--	--	--
206A	CUSTODIAL	3' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9D/A081	--	HW-5	--	--	--	--
208A	CLASSROOM	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-110A	GL-7(T), GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B.1	--	X	CR	ADB
209A	STAFF ROOM	3' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	--	--	HW-3C	--	--	--	--
210A	ELEC. CLOSET	3' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9D/A081	--	HW-5	--	--	--	--
211A	IDF	4' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9D/A081	--	SH-2A	--	X	CR	--
212A	MOLECULAR BIOLOGY LAB	4' - 6"	7' - 6"	WD-NV2	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	6A/A081	10B/A081	--	SH-7E	--	X	CR	ADB, UNEQUAL: 3'-0", 1'-6"
212B	MOLECULAR BIOLOGY LAB	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-110A	GL-7(T), GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B	--	X	I/L212A	ADB
213A	PHYSIOLOGY LAB	4' - 6"	7' - 6"	WD-NV2	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	6A/A081	10B/A081	--	SH-7E	--	X	CR	ADB, UNEQUAL: 3'-0", 1'-6"
213B	PHYSIOLOGY LAB	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-110A	GL-7(T), GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B	--	X	I/L213A	ADB
213C	PHYSIOLOGY LAB	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	--	--	HW-3A	--	--	--	--
214A	MOLECULAR BIOLOGY PREP & STORAGE	4' - 6"	7' - 6"	WD-NV2	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	6A/A081	--	--	SH-7B	--	X	CR	UNEQUAL: 3'-0", 1'-6"
214B	MICROBIOLOGY LAB	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	--	--	HW-3A	--	--	--	--
214C	MOLECULAR BIOLOGY LAB	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	--	--	HW-3A	--	--	--	--

IDENTIFICATION		DOOR					FRAME			DETAILS								
DOOR NUMBER	ROOM NAME	WIDTH	HEIGHT	TYPE	GLAZING TYP	FINISH	TYPE	GLAZING TYP	FINISH	HEAD	JAMB	SILL/ THRESHOLD	RATING (MIN)	HDWE GROUP	ELEC	ALARM	SECURITY TYPE	NOTES
215A	ANATOMY & PHYSIOLOGY PREP & STORAGE	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-110A	GL-7(T)	PT-5D	2B/A081	2A/A081	--	--	SH-2D	--	X	CR	--
215B	ANATOMY LAB	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	--	--	HW-3A	--	--	--	--
216A	MICROBIOLOGY LAB	4' - 6"	7' - 6"	WD-NV2	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	6A/A081	--	--	SH-7	--	X	I/L216B	PH, UNEQUAL: 3'-0", 1'-6"
216B	MICROBIOLOGY LAB	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-110A	GL-7(T), GL-1	PT-5D	2B/A081	2A/A081	--	--	SH-2B	--	X	CR	--
217-1A	CADAVER ROOM	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	10B/A081	--	HW-12A	--	--	--	ADB
217A	ANATOMY LAB	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-110A	GL-1	PT-5D	2B/A081	2A/A081	--	--	SH-2B	--	X	CR	--
217B	ANATOMY LAB	4' - 6"	7' - 6"	WD-NV2	GL-1	WD-1	HM-100A	GL-7(T), GL-1	PT-5D	2B/A081	6A/A081	--	--	SH-7	--	X	I/L 217A	UNEQUAL: 3'-0", 1'-6"
218A	GENERAL BIOLOGY LAB	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-110A	GL-7(T), GL-1	PT-5D	2B/A081	2A/A081	--	--	SH-2C	--	X	CR	--
218B	GENERAL BIOLOGY LAB	4' - 6"	7' - 6"	WD-NV2	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	6A/A081	--	--	SH-7B	--	X	I/L 218A	DPS, UNEQUAL: 3'-0", 1'-6"
220A	ORGANISMAL BIOLOGY LAB	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	--	--	HW-3A	--	--	--	--
220B	GENERAL BIOLOGY LAB	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	--	--	HW-3A	--	--	--	--
220C	GENERAL & ORGANISMAL PREP & STORAGE	4' - 6"	7' - 6"	WD-NV2	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	6A/A081	--	--	SH-7B	--	X	CR	UNEQUAL: 3'-0", 1'-6"
222A	WASTE	3' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	10A/A081	--	SH-2B.1	--	X	CR	ADB
224A	ELEC. CLOSET	6' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9D/A081	--	SH-14	--	X	--	--
224B	ELEC. CLOSET	6' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9D/A081	--	SH-14	--	X	--	--
226A	ORGANISMAL BIOLOGY LAB	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-110A	GL-7(T), GL-1	PT-5D	2B/A081	2A/A081	9B/A081	--	SH-2B	--	X	CR	--
226B	ORGANISMAL BIOLOGY LAB	4' - 6"	7' - 6"	WD-NV2	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	6A/A081	--	--	SH-7	--	X	I/L 226A	UNEQUAL PAIR: 3'-0", 1'-6"
300-1A	CORRIDOR	6' - 0"	7' - 6"	STL-FR	GL-63	NOTE 9	SF4	GL-63	NOTE 9	6/A443	3/A443	10D/A081	60 MIN.	SH-1B	--	X	CR	PH
300A	CORRIDOR	6' - 0"	7' - 6"	STL-FR	GL-63	NOTE 9	SF5	GL-63	NOTE 9	6/A443	3/A443	10D/A081	60 MIN.	SH-1B	--	X	CR	PH
301-1A	OFFICE	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B.1	--	X	CR	ADB
301-2A	OFFICE	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B.1	--	X	CR	ADB
301-3A	OFFICE	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B.1	--	X	CR	ADB
301-4A	OFFICE	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B.1	--	X	CR	ADB
301-5A	OFFICE	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B.1	--	X	CR	ADB
301-6A	OFFICE	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B.1	--	X	CR	ADB
301-7A	OFFICE	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B.1	--	X	CR	ADB
301A	CORRIDOR	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-110A	GL-7(T), GL-1	PT-5D	2B/A081	2A/A081	10B/A081	---	SH-2B	--	X	CR	ADB
301B	CORRIDOR	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	10B/A081	--	SH-2.1	--	X	CR	ADB
302A	MEN'S RESTROOM	3' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9E/A081	--	HW-1	--	--	--	--
303A	RESTROOM	3' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9E/A081	--	HW-2	--	--	--	--
304A	WOMEN'S RESTROOM	3' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9E/A081	--	HW-1	--	--	--	--
306A	CUSTODIAL	3' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9D/A081	--	HW-5	--	--	--	--
307A	IDF	4' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9D/A081	--	SH-2A	--	X	CR	--
308A	CLASSROOM	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-110A	GL-7(T), GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B.1	--	X	CR	ADB
309A	CHEMISTRY LAB	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-110A	GL-7(T), GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B	--	X	CR	ADB
309B	CHEMISTRY LAB	4' - 6"	7' - 6"	WD-NV2	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	6A/A081	--	--	SH-7	--	X	I/L 309A	UNEQUAL: 3'-0", 1'-6"; ADB
310A	ELEC. CLOSET	3' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9D/A081	--	SH-5A	--	X	--	--
311A	WASTE	3' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	10B/A081	--	SH-2B.2	--	X	CR	--
312A	PHYSICS LAB	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-110A	GL-7(T), GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2	--	X	CR	ADB
312B	PHYSICS LAB	4' - 6"	7' - 6"	WD-NV2	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	6A/A081	10B/A081	--	SH-7C.1	--	X	I/L 312A	ADB, UNEQUAL: 3'-0", 1'-6"
313A	CHEMISTRY PREP & STORAGE	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-110A	GL-7(T), GL-1	PT-5D	2B/A081	2A/A081	--	--	SH-2D	--	X	CR	--
313B	CHEMISTRY PREP & STORAGE	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	--	--	HW-3A	--	--	--	--
313C	CHEMISTRY PREP & STORAGE	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	--	--	HW-3A	--	--	--	--
314A	PHYSICS PREP & STORAGE	4' - 6"	7' - 6"	WD-NV2	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	6A/A081	--	--	SH-7B	--	X	CR	UNEQUAL: 3'-0", 1'-6"
314B	PHYSICS LAB	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	--	--	HW-3D	--	--	--	--
315A	CHEMISTRY LAB	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-110A	GL-7(T), GL-1	PT-5D	2B/A081	2A/A081	--	--	SH-2B	--	X	CR	--
315B	CHEMISTRY LAB	4' - 6"	7' - 6"	WD-NV2	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	6A/A081		--	SH-7	--	X	I/L 315A	UNEQUAL: 3'-0", 1'-6"
316A	CHEMISTRY LAB	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-110A	GL-7(T), GL-1	PT-5D	2B/A081	2A/A081	--	--	SH-2B	--	X	CR	--
316B	CHEMISTRY LAB	4' - 6"	7' - 6"	WD-NV2	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	6A/A081	--	--	SH-7	--	X	I/L 316A	UNEQUAL: 3'-0", 1'-6"
318A	CHEMISTRY PREP & STORAGE	4' - 6"	7' - 6"	WD-NV2	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	6A/A081	--	--	SH-7B	--	X	CR	UNEQUAL: 3'-0", 1'-6"
318B	CHEMISTRY LAB	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	--	--	HW-3A	--	--	--	--
320-1A	INSTRUMENT ROOM	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	--	--	SH-2C.1	--	X	CR	--
320A	ORGANIC CHEMISTRY LAB	4' - 6"	7' - 6"	WD-NV2	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	6A/A081	--	--	SH-7B	--	X	CR	UNEQUAL: 3'-0", 1'-6"
320B	ORGANIC CHEMISTRY LAB	3' - 0"	7' - 6"	WD-D	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	--	--	HW-5E	--	--	--	DUTCH DOOR
322-1A	CHEMICAL STORAGE	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	--	45 MIN.	HW-5B	--	--	--	--
322-2A	CHEMICAL STORAGE	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	--	45 MIN.	HW-5B	--	--	--	--
322A	CHEMISTRY LAB	3' - 0"	7' - 6"	WD-F	--	WD-1	HM-001	--	PT-5D	6B/A081	6A/A081	--	--	HW-3A	--	--	--	--
322B	CENTRALIZED PREP & STORAGE	4' - 6"	7' - 6"	WD-NV2	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	6A/A081	--	--	SH-7B	--	X	CR	UNEQUAL: 3'-0", 1'-6"
324A	ELEC. CLOSET	6' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9D/A081	--	SH-14	--	X	--	--
324B	ELEC. CLOSET	6' - 0"	7' - 6"	HM-F	--	PT-2D	HM-001	--	PT-5D	6B/A081	6A/A081	9D/A081	--	SH-14	--	X	--	--
326A	CHEMISTRY LAB	3' - 0"	7' - 6"	WD-NV	GL-1	WD-1	HM-110A	GL-7(T), GL-1	PT-5D	2B/A081	2A/A081	10B/A081	--	SH-2B.1	--	X	CR	--
326B	CHEMISTRY LAB	4' - 6"	7' - 6"	WD-NV2	GL-1	WD-1	HM-100A	GL-1	PT-5D	2B/A081	6A/A081	--	--	SH-7	--	X	I/L 326A	UNEQUAL: 3'-0", 1'-6"
400A	STAIR #1	4' - 0"	7' - 6"	GATE	--	NOTE 6	--	--	--	NOTE 4	NOTE 4	--	--	SH-18	--	X	--	--
S1A	GENERATOR	4' - 0"	6' - 10"	HM-F	--	PT-2D	HM-001	--	PT-5D	8A/A081	8B/A081	--	--	SH-8	X	X	CR	--
S1B	GENERATOR	20' - 0"	8' - 0"	SLIDING GATE	--	PT-5E	--	--	--	NOTE 5	NOTE 5	--	--	HW-13	--	--	--	--
S2A		3' - 0"	7' - 6"	GATE	--	PT-5E	--	--	--	NOTE 4	NOTE 4	--	--	HW-18	--	--	--	--
SC001A	GREENHOUSE	6' - 0"	7' - 10"	AL	GL-21	PT-5D	MFR	GL-24T	PT-5D	5/A081	5/A081	--	--	SH-19	X	X	CR	PH
SC001B	GREENHOUSE	3' - 0"	7' - 6"	GATE	--	PT-5E	--	--	--	NOTE 4	NOTE 4	--	--	SH-20	--	X	CR	PH
SC001C	GREENHOUSE	3' - 0"	7' - 6"	GATE	--	PT-5E	--	--	--	NOTE 4	NOTE 4	--	--	SH-20	--	X	CR	PH

NOTES:

1. REFER TO SHEET A081 FOR ALL HEAD, JAMB, SILL, AND GLAZING DETAILS, UNLESS NOTED OTHERWISE.
2. REFERENCE CW/SF FRAME TYPES ON SHEET A491.
3. REFERENCE F FRAME TYPES ON SHEET A630.
4. REFERENCE SHEET A067 FOR GATE DETAILS.
5. REFERENCE SHEET A065 FOR SLIDING GATE DETAILS.
6. COLOR TO MATCH <MP-2A> COLOR
7. COLOR TO MATCH <AFS-2> COLOR
8. COLOR TO MATCH <CW-1> COLOR
9. COLOR TO MATCH <CW-3> COLOR
10. REFER TO DOOR HARDWARE SPECS FOR ADDITIONAL HARDWARE REQUIREMENTS.
11. ALL EXTERIOR GATE TO BE PAINTED <HPC-1>, UON. COLOR AS INDICATED ON DOOR SCHEDULE.

ABBREVIATIONS

ADB	AUTOMATIC DOOR BOTTOM	**I/L**	INTERLOCK, CR AT INDICATED DOOR UNLOCKS
ADO	AUTOMATIC DOOR OPERATOR	**MFR**	MANUFACTURER
AL	CLEAR ANODIZED ALUMINUM	**MHO**	MAGNETIC HOLD OPEN
CR	CARD READER	**MP**	METAL PANEL
DPS	DOOR POSITION SWITCH	**PH**	PANIC HARDWARE
EC	ELECTRONIC HARDWARE WITHOUT A CARD READER	**FS**	FIRE SHUTTER
EML	OMNI CARD READER STAND ALONE	**WMR**	WALL-MOUNTED READER
EH	ELECTRIC PANIC HARDWARE		

HGA.
1918 Main Street, Third Floor
Santa Monica, California 90405
Telephone 310.557.7600

STRUCTURAL ENGINEER
SAIFUL BOUQUET
155 N LAKE AVE
PASADENA, CA 91101
626-304-2616

MECHANICAL & PLUMBING ENGINEER
STANTEC CONSULTING INC
14130 RIVERSIDE DR. # 201
SHERMAN OAKS, CA 91423
818-377-8220

ELECTRICAL ENGINEER
FBA ENGINEERING
150 PAULARINO AVE. #A120
COSTA MESA, CA 92626
949-852-9995

CIVIL ENGINEER
KPFF CONSULTING ENGINEERS
700 SOUTH FLOWER ST. #2100
LOS ANGELES, CA 90017
213-418-0201

LANDSCAPE ARCHITECT
LYNN CAPOUYA, INC.
17992 MITCHELL SOUTH, #110
IRVINE, CA 92614
949-756-0150

LABORATORY CONSULTANT
RESEARCH FACILITIES DESIGN
3965 FIFTH AVE. #400
SAN DIEGO, CA 92103
619-297-0159

SCIENCE CENTER
SANTA ANA COLLEGE

RANCHO SANTIAGO
COMMUNITY COLLEGE
DISTRICT

1530 W. 17TH ST.
SANTA ANA, CA 92706

SANTA ANA COLLEGE

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE STATE OF CA.

C13036
SEPTEMBER 30, 2019
RENEWAL DATE

NAME: JAMES G. MATSON
DATE: MAY 16, 2017
REGISTRATION NUMBER: C13036

NO	DESCRIPTION	DATE
2	Addendum 2	9/1/17
3	Addendum 3	9/22/17
4	Addendum 4	10/02/17

ISSUANCE HISTORY - THIS SHEET

DRAWN BY: SK
REVIEW BY: TE

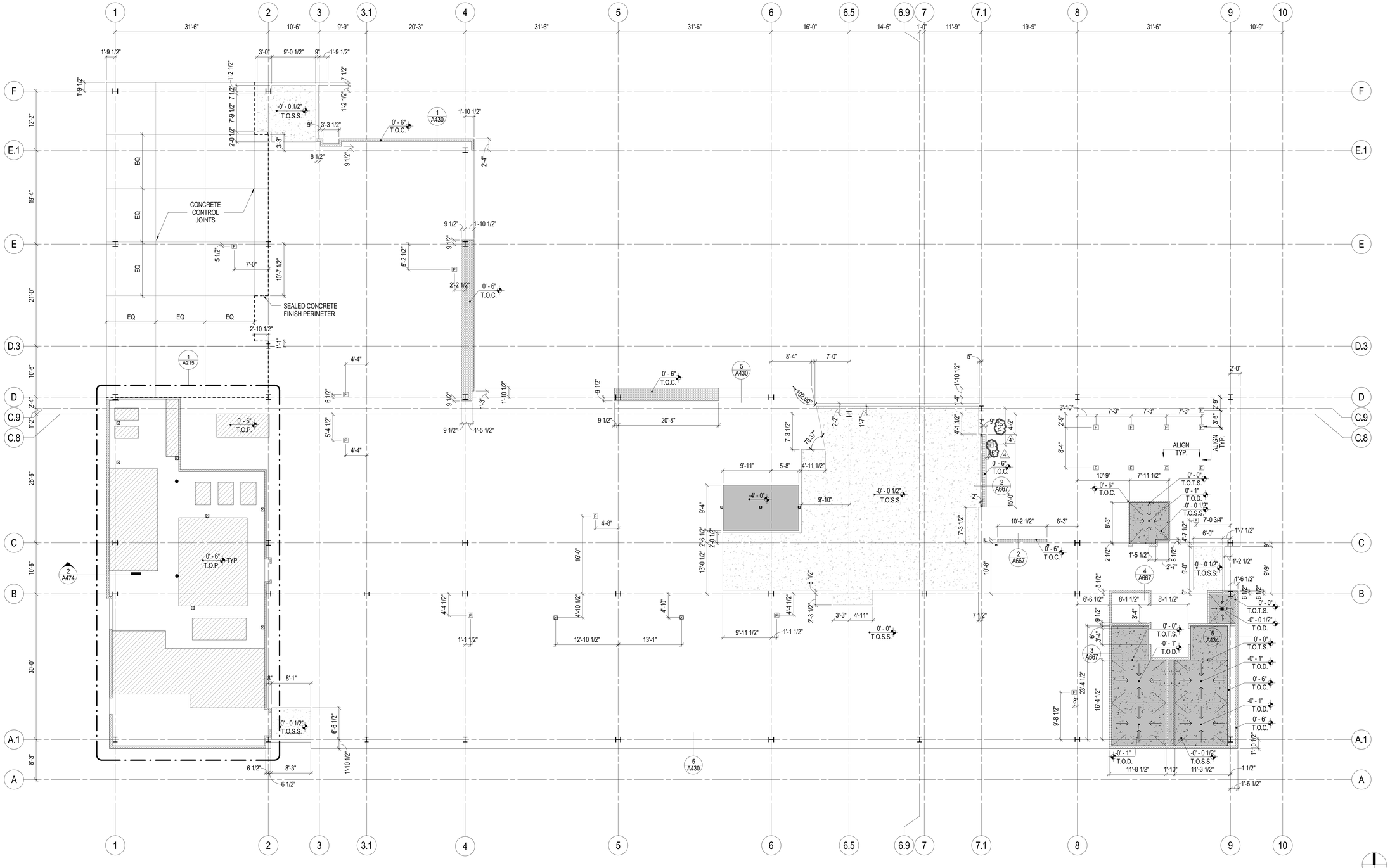
HGA NO: 3584-001-00

DOOR AND FRAME SCHEDULE

DATE: JULY 06, 2017

A082

ADDENDA PACKAGE



1 SLAB EDGE PLAN - LEVEL 01
1/8" = 1'-0"

SLAB PLAN LEGEND

NOTE:
1. EDGE OF SLAB CONDITION AT EXPOSED SLAB EDGE VARIES - SEE BUILDING ELEVATIONS AND DETAILS
2. TYPICAL STRUCTURAL SLAB DEPRESSION AT TOPPING SLAB LOCATIONS = -2" U.O.N.
3. ALL SLOPES ON WALKABLE SURFACES SHALL BE A MAXIMUM 2%
4. SLAB PLANS ARE INTENDED TO SHOW PRIMARY CURBS, DEPRESSIONS AND PENETRATIONS ON EACH FLOOR AND ROOF LEVELS. HOWEVER THEY ARE NOT INTENED TO BE AN EXHAUSTIVE REPRESENTATION OF EVERY PENETRATION NECESSARY TO ACCOMODATE ALL LINES, UTILITIES, FLOOR BOXES, POKE THROUGHS, ETC FOR MEP, AV, IT, LAB MEP, ETC.
5. DIMENSIONS AT FLOOR BOXES SHOWN ON ALL SLAB PLANS ARE APPROXIMATE. CONTRACTOR TO COORDINATE EXACT LOCATION OF FLOOR BOXES WITH APPROVED FURNITURE PLANS, TYP. ON ALL LEVELS.

- STRUCTURAL CONCRETE SLAB OR SLAB ON GRADE PER STRUCTURAL DRAWINGS
- SLAB OPENING
- CONCRETE PAD - SEE PLAN FOR HEIGHT
- DIRECTION OF DOWN SLOPE
- SLOPED TOPPING SLAB OVER STRUCTURAL SLAB. SEE PLANS FOR POINT ELEVATIONS
- TOP OF TOPPING SLAB, TYPICAL EACH SIDE, U.O.N.
- STRUCTURAL CONCRETE SLAB - 48" DEPRESSION REQUIRED FOR ELEVATOR PIT
- STRUCTURAL CONCRETE SLAB - SEE PLAN FOR DEPRESSION REQUIRED FOR FLOOR FINISH
- CONCRETE CURB - WIDTH TO MATCH WALL STUD SIZE ABOVE, U.O.N.
- BUILDING CONTROL POINT - SEE CIVIL DRAWINGS
- POINT ELEVATION
- FLOOR DRAIN PER PLUMBING DRAWINGS
- FLOOR SINK PER PLUMBING DRAWINGS
- FLOOR BOX PER AV DRAWINGS

T.O.S.S. TOP OF STRUCTURAL SLAB
T.O.T.S. TOP OF TOPPING SLAB
T.O.D. TOP OF DRAIN
T.O.C. TOP OF CURB
T.O.P. TOP OF PAD

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SANTA ANA COLLEGE

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE STATE OF CA.

LICENSED ARCHITECT JAMES G. MATSON C-13036 RENEWAL DATE: SEPTEMBER 30 2019 STATE OF CALIFORNIA

NAME: JAMES G. MATSON
DATE: MAY 16, 2017
REGISTRATION NUMBER: C13036

NO	DESCRIPTION	DATE
2	Addendum 2	9/1/17
3	Addendum 3	9/22/17
4	Addendum 4	10/02/17

ISSUANCE HISTORY - THIS SHEET

DRAWN BY: MS | REVIEW BY: Approver

HGA NO: 3584-001-00

FIRST LEVEL SLAB PLAN

DATE: JULY 06, 2017

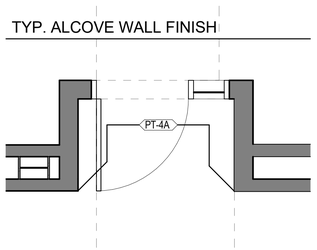
A211

ADDENDA PACKAGE

MS 9/27/2017 3:14:01 PM C:\Users\tstacy\Documents\Revit Local Files\A18-3584-001-00_SAC-SC_tstacy.rvt

1 FLOOR FINISH PLAN - LEVEL 01
1/8" = 1'-0"

TYP. ALCOVE WALL FINISH



FINISH PLAN LEGEND

= TER-3
= TER-4
= CS-2
= RSF-1
= RSF-2
= CPT-50
= CPT-1

KEYNOTES - FINISH PLAN

#	DESCRIPTION
1	GYPSUM BOARD TO RECEIVE LEVEL 5 FINISH AT THIS LOCATION.
2	SPECIALTY ACOUSTIC WALL PANEL DESIGN. SEE ELEVATION FOR DETAIL.
3	CTW TO EXTEND FROM CTB TO 6'-8" A.F.F. UON.
4	SEE STAIR DETAILS FOR TERRAZZO DESIGN AT THIS LOCATION.
5	PROVIDE CHAIR RAIL <WR-1> ACROSS FULL WIDTH OF WALL. REFER TO INTERIOR ELEVATIONS FOR MORE INFO.
6	INSTALL 3/4" PLYWOOD ON ALL WALLS TO 8'-0" A.F.F. PAINT PER FINISH SCHEDULE.

GENERAL NOTES - FLOOR FINISH PLAN

A. SEE SHEET A011 - MATERIAL ID CODES FOR ADDITIONAL FINISH INFORMATION.
B. ALL MISCELLANEOUS ACCESS PANELS, FEC, GRILLES, DIFFUSERS TO BE PAINTED TO MATCH THE SURFACE ON WHICH THEY OCCUR.
4/C ALL EXPOSED STRUCTURE STEEL COLUMNS AND BRACES TO BE PAINTED <HPC-1>, COLOR TO MATCH PT-1D UON, TYP. ALL OTHER EXPOSED STRUCTURE TO BE PAINTED <PT-1D> UON, TYP. ALL EXPOSED STEEL STAIR ELEMENTS TO BE PAINTED <HPC-1>, COLOR TO MATCH GUARDRAIL.
D. FLOOR MATERIAL TRANSITIONS TO OCCUR AT CENTERLINE OF DOOR UON.
E. RB - RESILIENT BASE: STRAIGHT BASE (RB-2) AT CARPET, COVED BASE (RB-1) AT HARD FLOOR FINISHES (RSF, TER, CS).
F. THE BASE AT LOWER CABINETS TO MATCH THE WALL BASE OF THE ROOM IN WHICH IT OCCURS UON IN MILLWORK DETAILS.
G. ALL CONCRETE CURBS TO RECEIVE THE WALL BASE OF THE ROOM IN WHICH IT OCCURS UON.
H. ALL WALLS TO BE PAINTED <PT-1A> UNO, TYP. CORRIDOR WALLS TO BE PAINTED <PT-1A> ABOVE AND <PT-2A> BELOW HORIZONTAL RUNNING GYP TRIM UNO, TYP.

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NAME: JAMES G. MATSON
DATE: MAY 16, 2017
REGISTRATION NUMBER: C13036

NO	DESCRIPTION	DATE
3	Addendum 3	9/22/17
4	Addendum 4	10/02/17

ISSUANCE HISTORY - THIS SHEET

DRAWN BY: AD | REVIEW BY: Approver

HGA NO: 3584-001-00

FIRST LEVEL FINISH PLAN

DATE: JULY 06, 2017

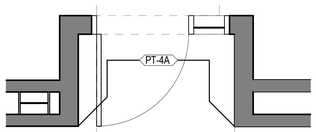
A221

ADDENDA PACKAGE

AD 9/27/2017 3:14:05 PM C:\Users\tatsoy\Documents\Revit Local Files\A16-3584-001-00_SAC-SC_tatsoy.rvt

1 FLOOR FINISH PLAN - LEVEL 02
1/8" = 1'-0"

TYP. ALCOVE WALL FINISH



FINISH PLAN LEGEND

- = TER-3
- = TER-4
- = CS-2
- = RSF-1
- = RSF-2
- = CPT-50
- = CPT-1

KEYNOTES - FINISH PLAN

#	DESCRIPTION
1	GYPSUM BOARD TO RECEIVE LEVEL 5 FINISH AT THIS LOCATION.
2	SPECIALTY ACOUSTIC WALL PANEL DESIGN. SEE ELEVATION FOR DETAIL.
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4	SEE STAIR DETAILS FOR TERRAZZO DESIGN AT THIS LOCATION.
5	PROVIDE CHAIR RAIL <WR-1> ACROSS FULL WIDTH OF WALL. REFER TO INTERIOR ELEVATIONS FOR MORE INFO.
6	INSTALL 3/4" PLYWOOD ON ALL WALLS TO 8'-0" A.F.F. PAINT PER FINISH SCHEDULE.

GENERAL NOTES - FLOOR FINISH PLAN

A. SEE SHEET A011 - MATERIAL ID CODES FOR ADDITIONAL FINISH INFORMATION.
B. ALL MISCELLANEOUS ACCESS PANELS, FEC, GRILLES, DIFFUSERS TO BE PAINTED TO MATCH THE SURFACE ON WHICH THEY OCCUR.
4 C. ALL EXPOSED STRUCTURE STEEL COLUMNS AND BRACES TO BE PAINTED <HPC-1>. COLOR TO MATCH PT-1D UON. TYP. ALL OTHER EXPOSED STRUCTURE TO BE PAINTED <PT-1D> UON, TYP. ALL EXPOSED STEEL STAIR ELEMENTS TO BE PAINTED <HPC-1>, COLOR TO MATCH GUARDRAIL.
D. FLOOR MATERIAL TRANSITIONS TO OCCUR AT CENTERLINE OF DOOR UON.
E. RB - RESILIENT BASE: STRAIGHT BASE (RB-2) AT CARPET, COVED BASE (RB-1) AT HARD FLOOR FINISHES (RSF, TER, CS).
F. THE BASE AT LOWER CABINETS TO MATCH THE WALL BASE OF THE ROOM IN WHICH IT OCCURS UON IN MILLWORK DETAILS.
G. ALL CONCRETE CURBS TO RECEIVE THE WALL BASE OF THE ROOM IN WHICH IT OCCURS UON.
H. ALL WALLS TO BE PAINTED <PT-1A> UNO, TYP. CORRIDOR WALLS TO BE PAINTED <PT-1A> ABOVE AND <PT-2A> BELOW HORIZONTAL RUNNING GYP TRIM UNO, TYP.

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LICENSED ARCHITECT JAMES G. MATSON REGISTERED PROFESSIONAL ENGINEER SEPTEMBER 30, 2017 RENEWAL DATE STATE OF CALIFORNIA

NAME: JAMES G. MATSON
DATE: MAY 16, 2017
REGISTRATION NUMBER: C13036

NO	DESCRIPTION	DATE
4	Addendum 4	10/02/17

ISSUANCE HISTORY - THIS SHEET

DRAWN BY: AD | REVIEW BY: Approver

HGA NO: 3584-001-00

SECOND LEVEL FINISH PLAN

DATE: JULY 06, 2017

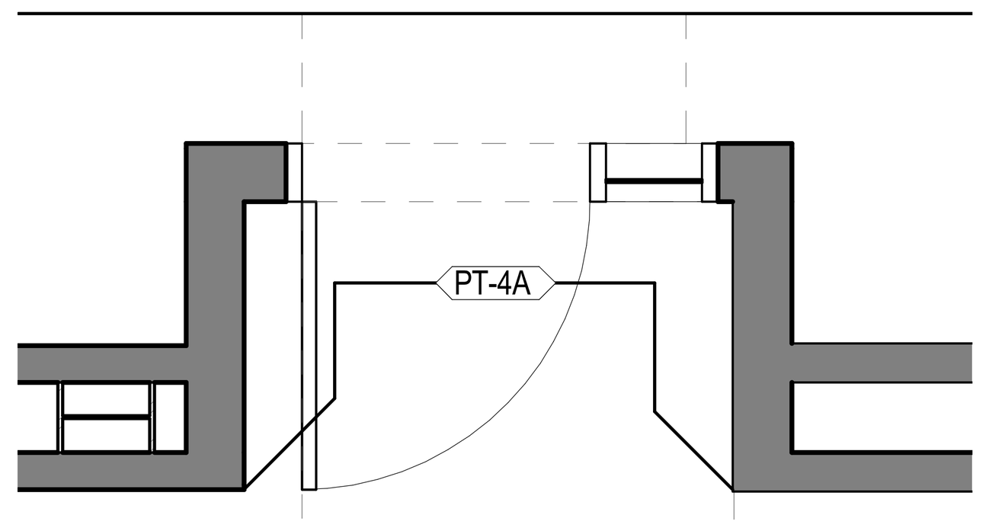
A222

ADDENDA PACKAGE

AD 9/27/2017 3:14:10 PM C:\Users\tatsoy\Documents\Revit Local Files\A16-3584-001-09_SAC-SC_tatsoy.rvt

1 FLOOR FINISH PLAN - LEVEL 03
1/8" = 1'-0"

TYP. ALCOVE WALL FINISH



FINISH PLAN LEGEND

- = TER-3
- = TER-4
- = CS-2
- = RSF-1
- = RSF-2
- = CPT-50
- = CPT-1

KEYNOTES - FINISH PLAN

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4	SEE STAIR DETAILS FOR TERRAZZO DESIGN AT THIS LOCATION.
5	PROVIDE CHAIR RAIL <WR-1> ACROSS FULL WIDTH OF WALL. REFER TO INTERIOR ELEVATIONS FOR MORE INFO.
6	INSTALL 3/4" PLYWOOD ON ALL WALLS TO 8'-0" A.F.F. PAINT PER FINISH SCHEDULE.

GENERAL NOTES - FLOOR FINISH PLAN

A. SEE SHEET A011 - MATERIAL ID CODES FOR ADDITIONAL FINISH INFORMATION.
B. ALL MISCELLANEOUS ACCESS PANELS, FEC, GRILLES, DIFFUSERS TO BE PAINTED TO MATCH THE SURFACE ON WHICH THEY OCCUR.
C. ALL EXPOSED STRUCTURE STEEL COLUMNS AND BRACES TO BE PAINTED <HPC-1>, COLOR TO MATCH PT-1D UON, TYP. ALL OTHER EXPOSED STRUCTURE TO BE PAINTED <PT-1D> UON, TYP. ALL EXPOSED STEEL STAIR ELEMENTS TO BE PAINTED <HPC-1>, COLOR TO MATCH GUARDRAIL.
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LICENSED ARCHITECT — JAMES G. MATSON — C13036 — SEPTEMBER 30, 2017 RENEWAL DATE — STATE OF CALIFORNIA

NAME: JAMES G. MATSON
DATE: MAY 16, 2017
REGISTRATION NUMBER: C13036

NO	DESCRIPTION	DATE
4	Addendum 4	10/02/17

ISSUANCE HISTORY - THIS SHEET

DRAWN BY: AD | REVIEW BY: Approver

HGA NO: 3584-001-00

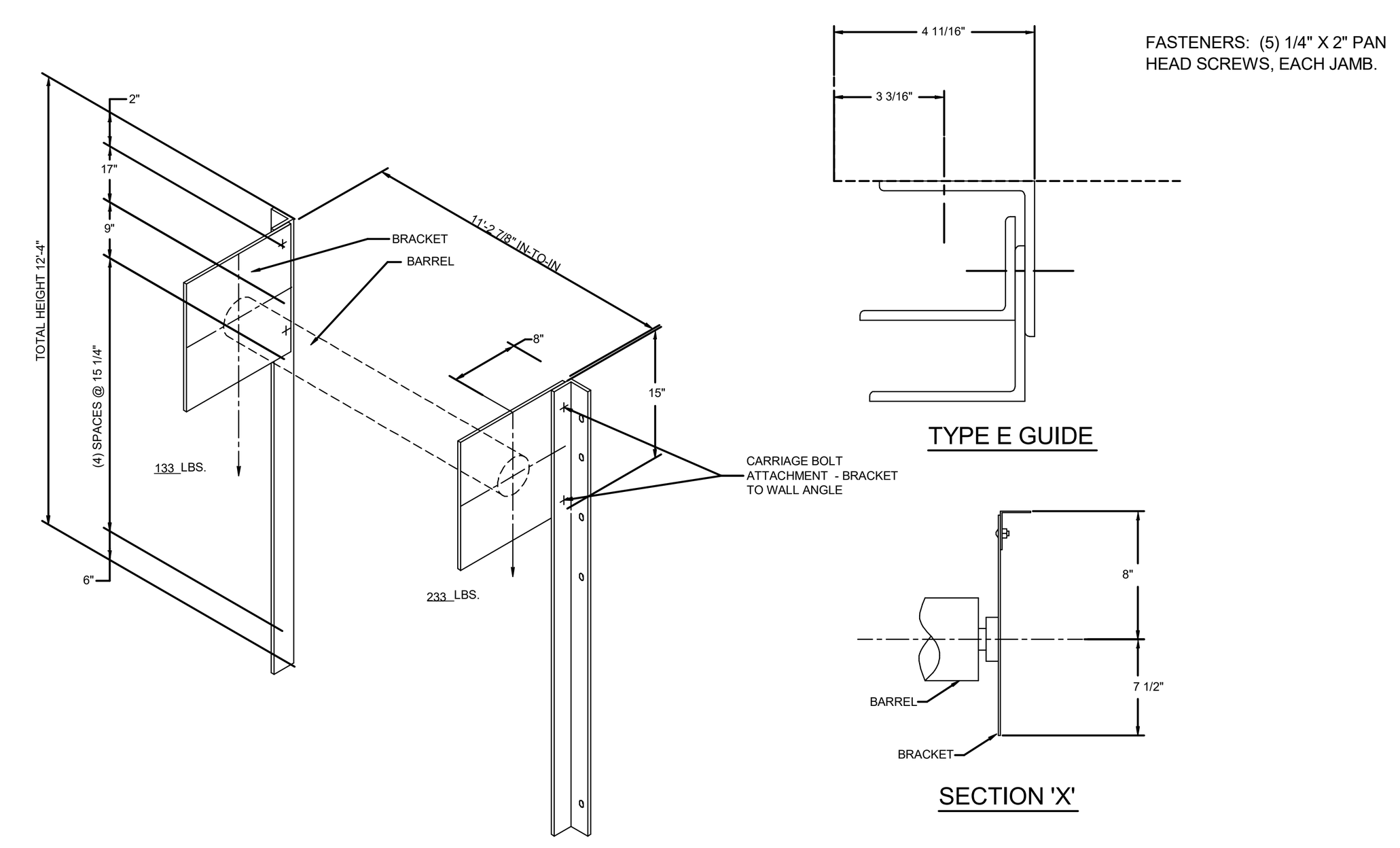
THIRD LEVEL FINISH PLAN

DATE: JULY 06, 2017

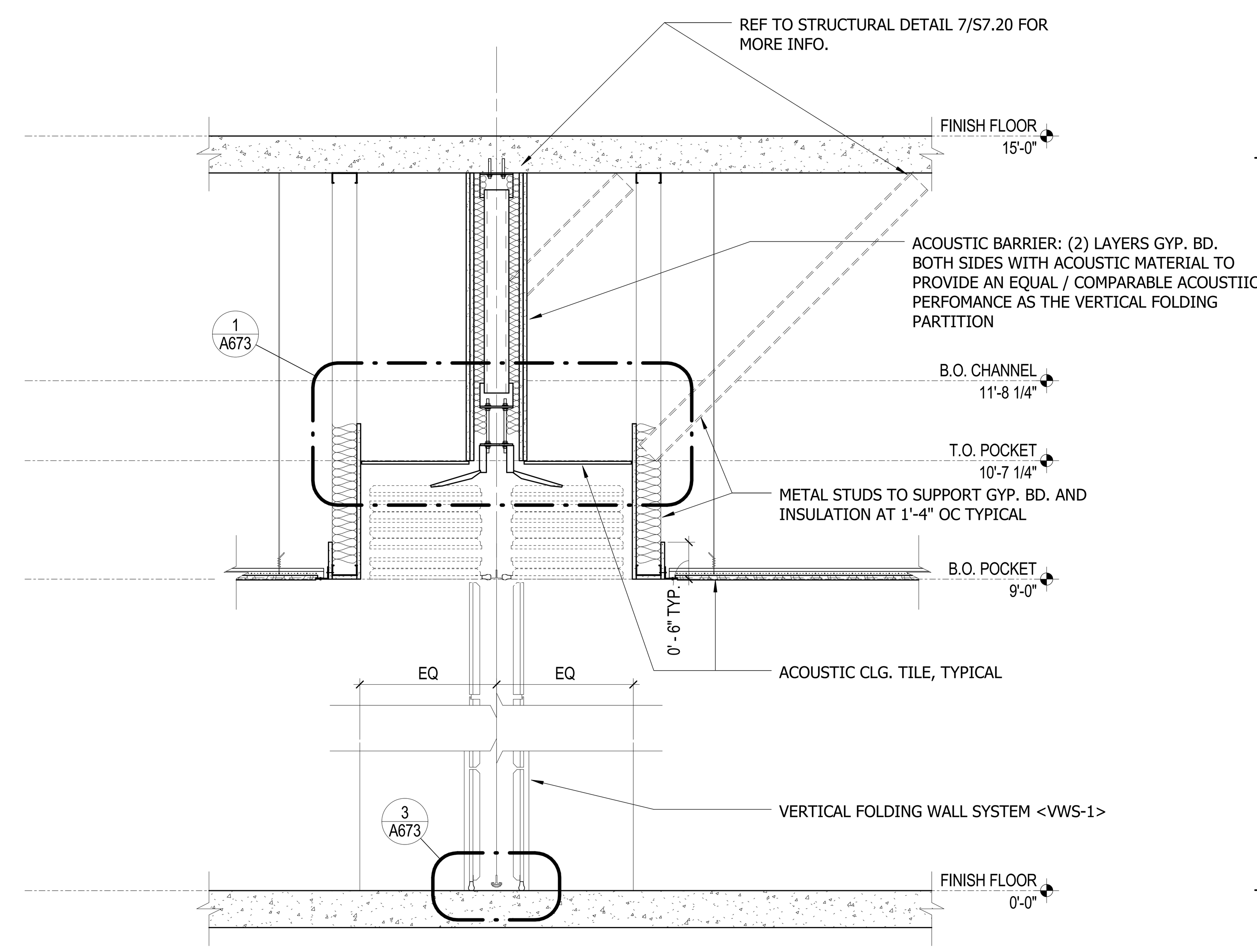
A223

ADDENDA PACKAGE

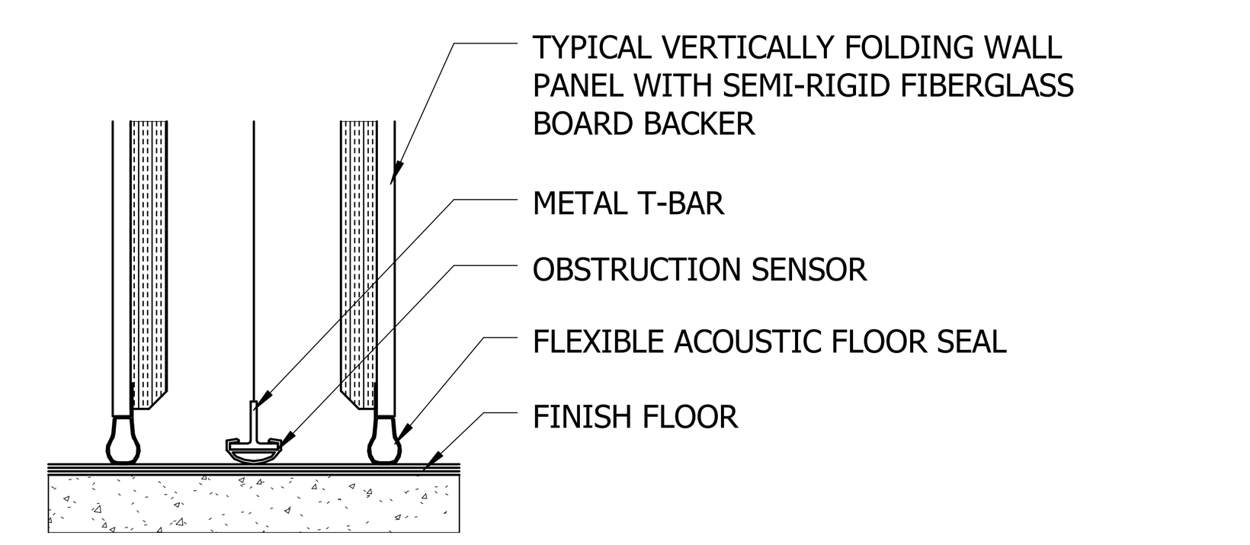
9/27/2017 3:14:13 PM
AD



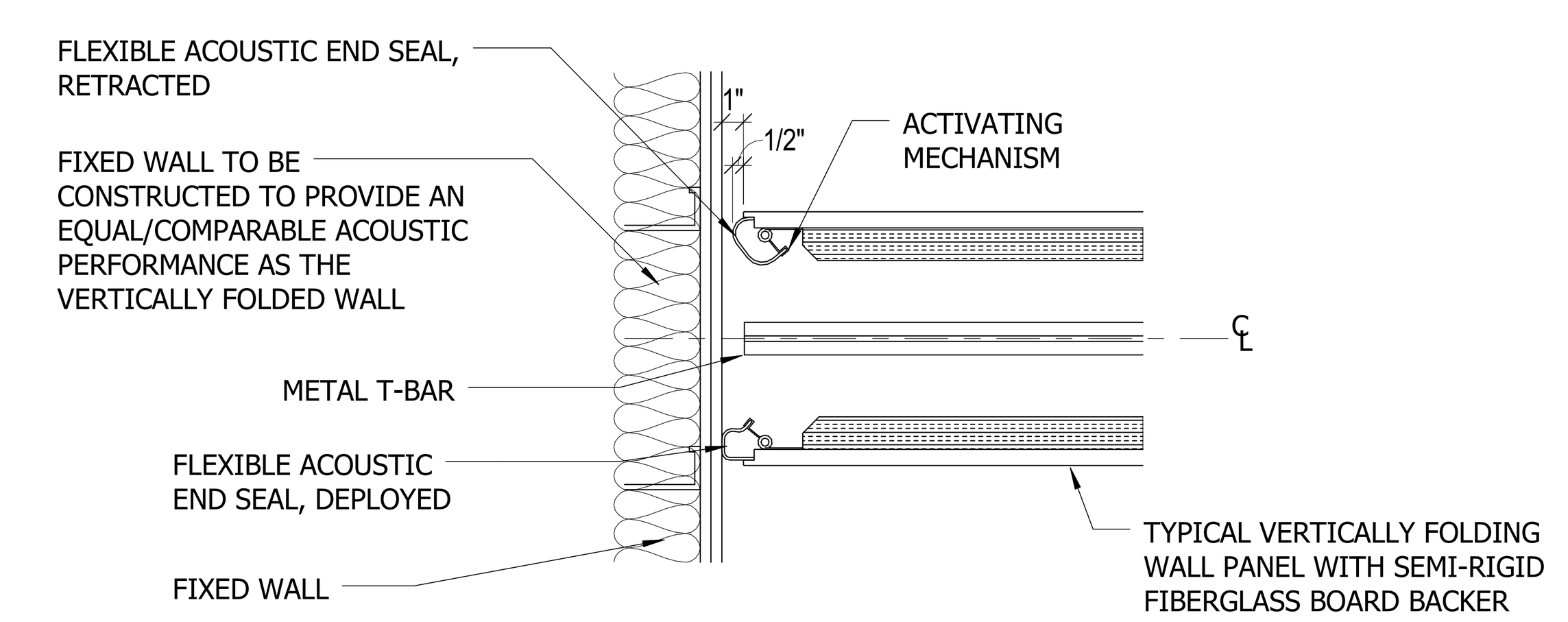
6 OVERHEAD COILING DOOR ATTACHMENT DETAIL
3" = 1'-0"



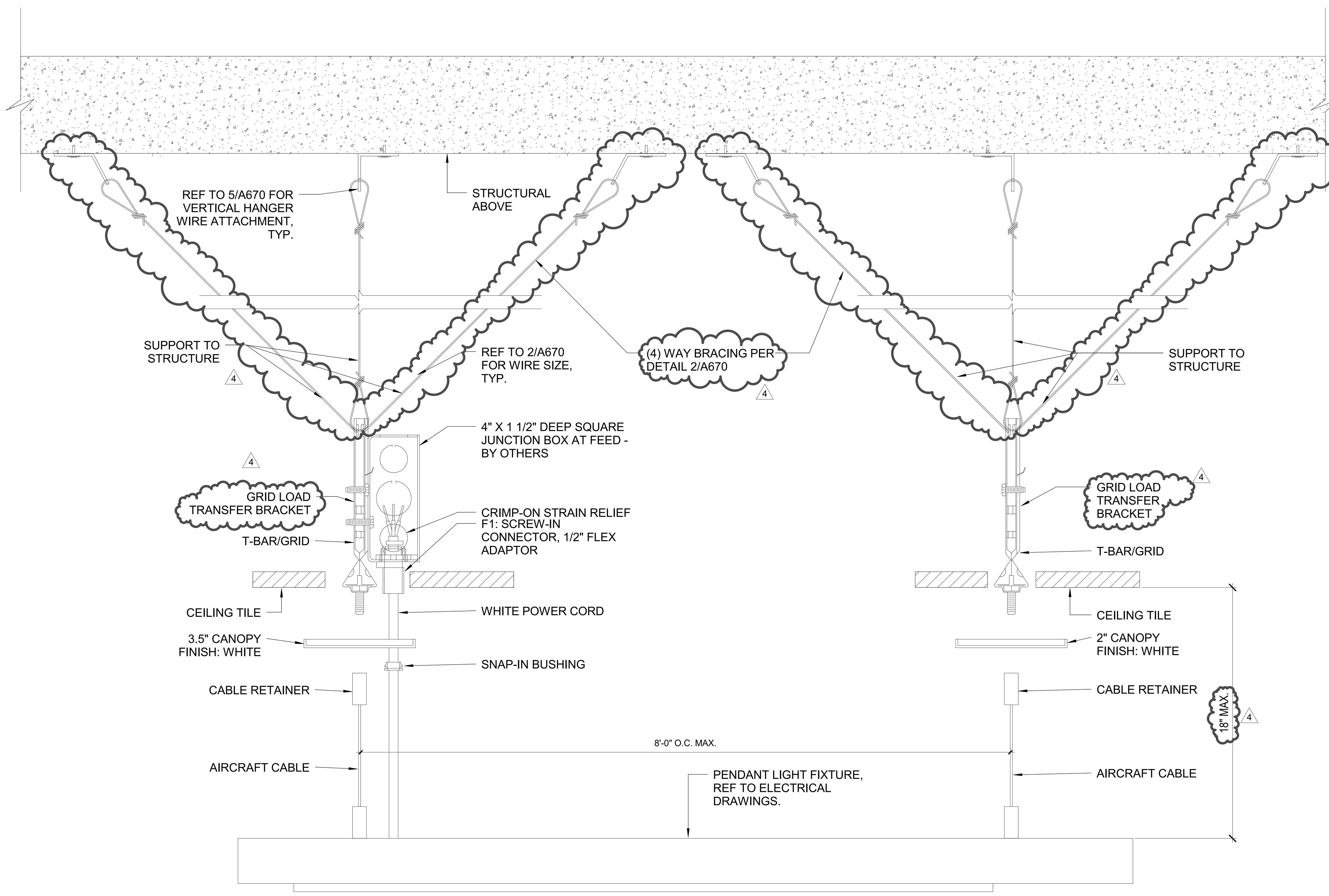
4 VERTICAL FOLDING WALL - STRUCTURAL SUPPORT
3/4" = 1'-0"



3 VERTICAL FOLDING WALL - FLOOR SEAL DETAIL
1 1/2" = 1'-0"

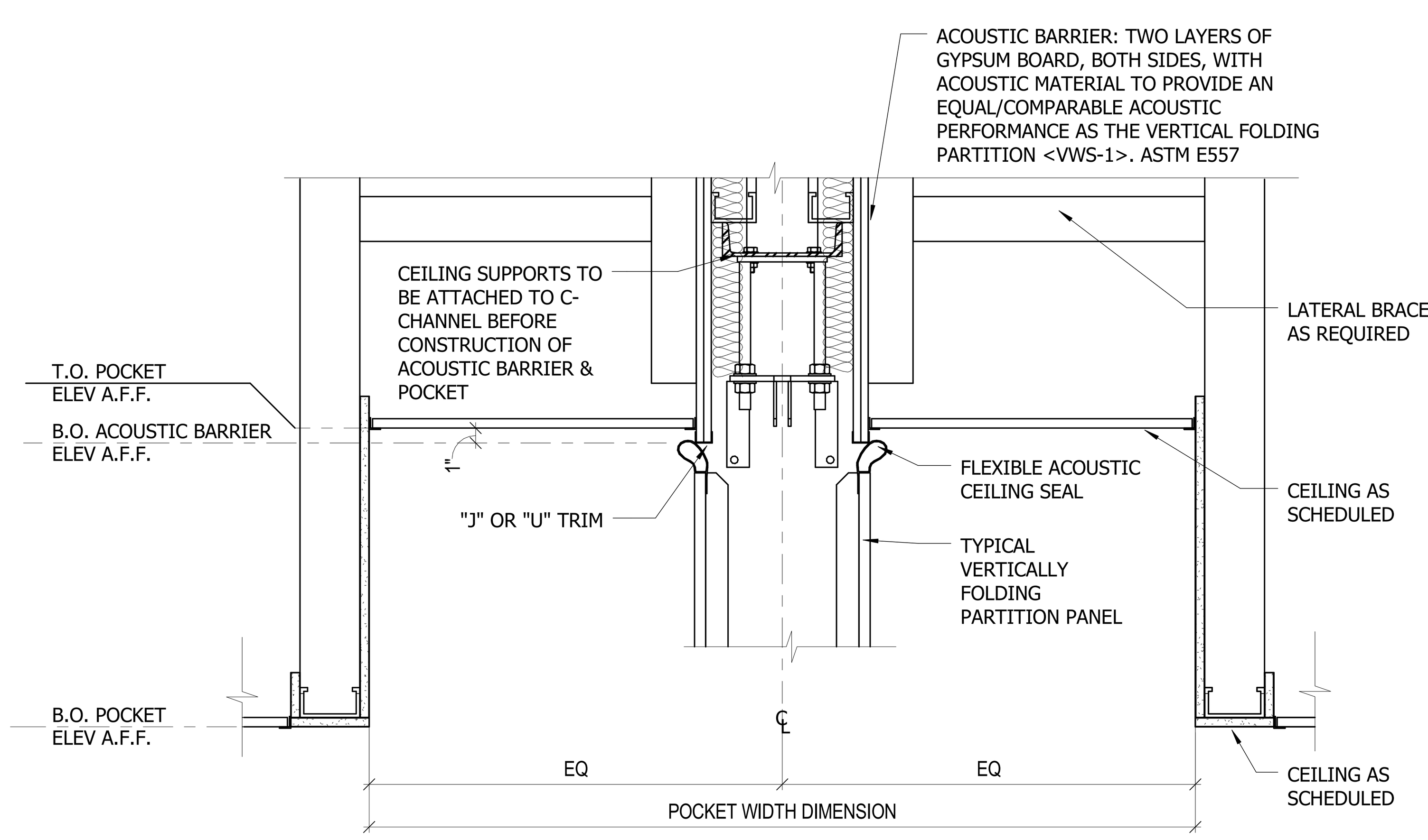


2 VERTICAL FOLDING WALL - END SEAL DETAIL
1 1/2" = 1'-0"



4 NOTE: PER DSA IR 25-2.13, PENDANT LIGHT FIXTURES WEIGHING MORE THAN 20 LBS SHALL BE PROVIDED WITH A COMPRESSION STRUT DIRECTLY ADJACENT TO EACH ATTACHMENT POINT OF THE LIGHT FIXTURE SUSPENSION CABLE TO THE ACT GRID CEILING. COMPRESSION STRUTS REQUIRED FOR THE OVERALL GRID SYSTEM (PER DETAIL 2/A670) CAN BE UTILIZED AT THESE CONDITIONS; HOWEVER, ADDITIONAL COMPRESSION STRUTS SHALL BE PROVIDED TO ENSURE THAT EVERY PENDANT FIXTURE ATTACHMENT POINT HAS A COMPRESSION STRUT WITHIN 8" ALONG THE MAIN RUNNER. REF TO SHEET E0.5 FOR LIGHT FIXTURE SCHEDULE.

5 SUSPENDED LIGHT FIXTURE MOUNTING DETAIL
N.T.S.



1 VERTICALLY FOLDING WALL - POCKET DETAIL
1 1/2" = 1'-0"

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NAME: JAMES G. MATSON
DATE: MAY 16, 2017
REGISTRATION NUMBER: C13036

NO	DESCRIPTION	DATE
1	Addendum 1	8/23/17
4	Addendum 4	10/02/17

ISSUANCE HISTORY - THIS SHEET

DRAWN BY: SK REVIEW BY: TE

HGA NO: 3584-001-00

VERTICAL WALL SYSTEM DETAILS AND INTERIOR DETAILS

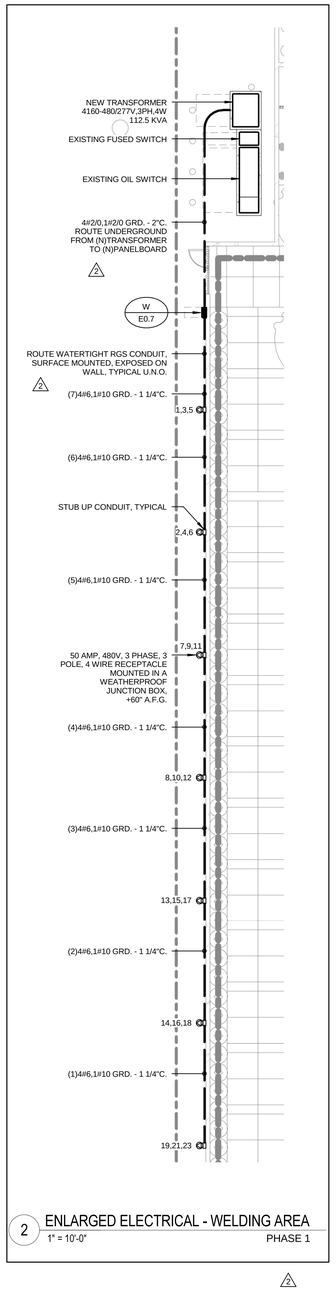
DATE: JULY 06, 2017

A673

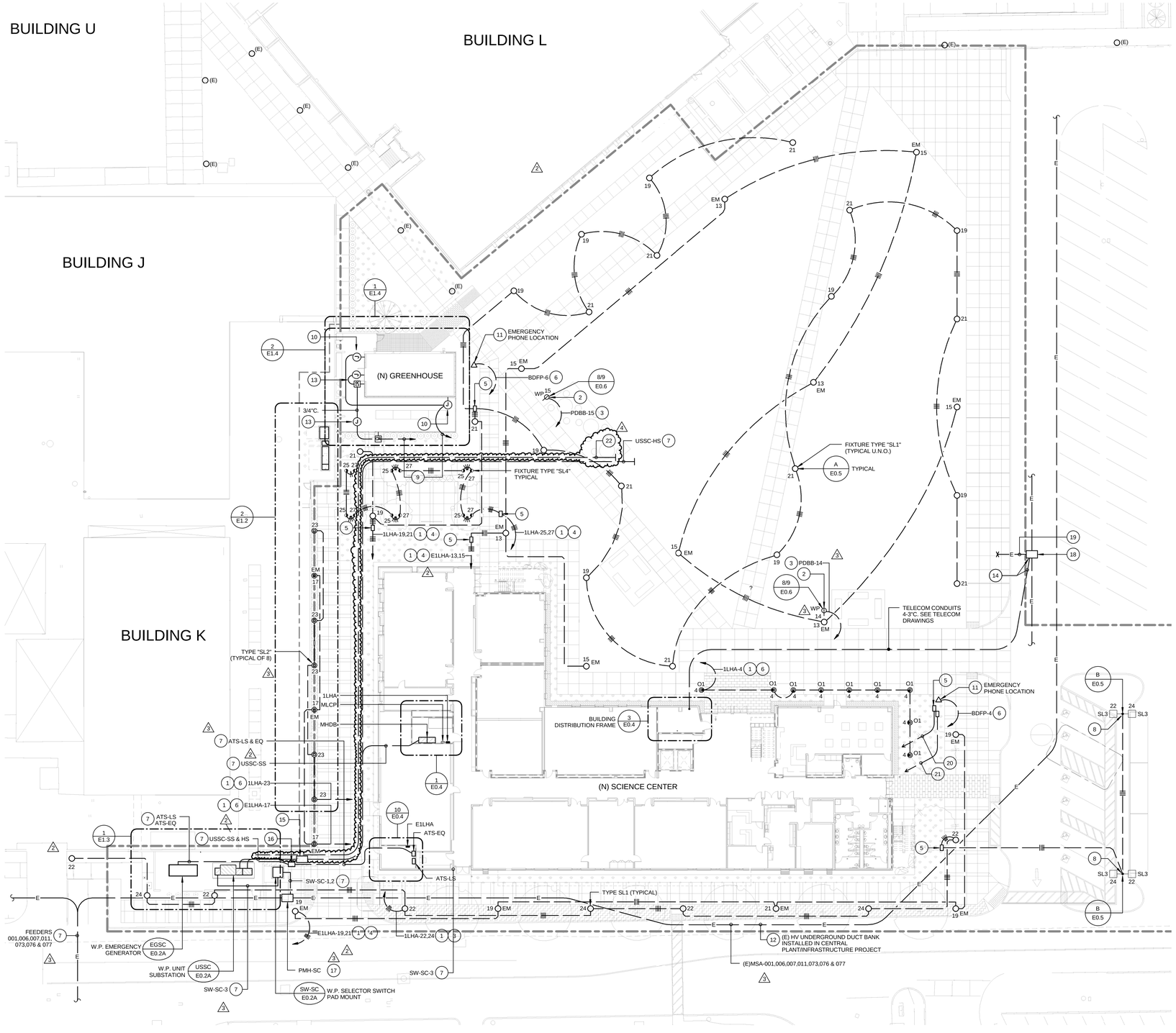
ADDENDA PACKAGE

9/27/2017 3:14:19 PM C:\Users\tsalazar\Documents\Revit Local Files\A16-3584-001-00 SAC SC_tsalazar.rvt

SK



2 ENLARGED ELECTRICAL - WELDING AREA
1" = 10'-0" PHASE 1



1 ENLARGED SITE ELECTRICAL PLAN
1" = 20'-0"

PLAN NOTES:

1. ROUTE VIA MASTER LIGHTING CONTROL PANEL "MLCP".
2. PROVIDE 250V, 50 AMP, 3 POLE TWISTLOCK RECEPTACLE IN LOCKING ENCLOSURE MOUNTED IN CONCRETE PEDESTAL FOR EVENT POWER.
3. PROVIDE 3#6, 1#10 GRD. - 1 1/4"C.
4. PROVIDE 4#10, 1#10 GRD. - 1"C.
5. PROVIDE 17" X 30" X 36" DEEP PRECAST CONCRETE PULLBOX WITH BOLT DOWN TRAFFIC RATED COVER. ENGRAVE COVER TO READ: "LIGHTING".
6. PROVIDE 2 # 12 - 1 # 12 GRD. - 1"C.
7. REFERENCE SINGLE LINE DIAGRAM SHEET E0.2A FOR FEEDER REQUIREMENTS. CONCRETE ENCASE ALL DUCT BANKS IN ACCORDANCE WITH SPECIFICATION SECTION 260543.
8. PROVIDE CONDUIT IN LIGHTING POLE FOR SECURITY CAMERA AS PER DETAIL C/SE4.02.
9. PROVIDE 3/4"C. TO SECURITY ACCESS CONTROL PANEL IN ROOM 109.
10. W.P. JUNCTION BOX FOR SECURITY CAMERA AS PER DETAIL F/SE4.02.
11. EMERGENCY PHONE BY SECURITY CONTRACTOR. PROVIDE 120V CIRCUIT AS SHOWN.
12. FIELD VERIFY EXACT LOCATION.
13. PROVIDE JUNCTION BOXES FOR CARD READERS AS PER DETAILS ON SHEETS SE4.01 AND SE4.02.
14. CORE THE EXISTING COMMUNICATIONS VAULT AND PROVIDE FOUR(4) 3" CONDUITS UNDERGROUND TO THE SCIENCE CENTER BUILDING DISTRIBUTION FRAME ROOM. SEE TELECOM DRAWINGS FOR CABLING REQUIREMENTS.
15. PROVIDE 3'-0"X5'-0"X3'-0" PRECAST CONCRETE PULLBOX WITH BOLT DOWN TRAFFIC RATED TORSION SPRING COVER. ENGRAVE COVER TO READ "ELECTRICAL".
16. PROVIDE 2'-0"X3'-0"X3'-0" PRECAST CONCRETE PULLBOX WITH BOLT DOWN TRAFFIC RATED COVER. ENGRAVE COVER TO READ "ELECTRICAL".
17. PROVIDE 5'-0" X 10'-6" X 7'-0" DEEP INTERCEPT TYPE MANHOLE. INTERCEPT EXISTING MULTI-FEEDER MV DUCT BANK. BREAK OUT AND REMOVE EXISTING CONCRETE ENCASEMENT AROUND ENTIRE DUCT BANK FOR INTERCEPTION OF CONDUITS AND FEEDERS. PROVIDE ALL LABOR AND MATERIALS TO COMPLY WITH THIS PROVISION.
18. EXISTING COMMUNICATIONS VAULT INSTALLED IN THE CAMPUS INFRASTRUCTURE PROJECT. FIELD VERIFY THE EXACT LOCATION.
19. EXISTING FOUR(4) 3" CONDUIT ONLY STUBBED OUT IN CAMPUS INFRASTRUCTURE PROJECT.
20. PROVIDE 1"C.O. TO PANELBOARD 1LHA FOR FUTURE DIGITAL SIGN.
21. PROVIDE 1"C.O. TO BDF.
22. PROVIDE TWO(2) 4" CONDUIT FROM THE EMERGENCY GENERATOR YARD TO FUTURE HEALTH SCIENCES BUILDING.

SITE PLAN PERFORMANCE NOTES

1. ELECTRICAL CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN EXCAVATING AND TRENCHING ON THIS SITE TO AVOID EXISTING DUCTS, PIPING OR CONDUIT, ETC., AND TO PREVENT HAZARD TO PERSONNEL AND/OR DAMAGE TO EXISTING UNDERGROUND UTILITIES OR STRUCTURES WHETHER OR NOT SHOWN OR DETAILED AND INSTALLED BY THIS OR ANY OTHER CONTRACTS. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE DISTRICT SHOULD SUCH UNIDENTIFIED CONDITIONS BE DISCOVERED. THESE DRAWINGS AND SPECIFICATIONS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY.

2. HEAVY DUTY PAVEMENT FOR FIRE LANE SHALL BE PROVIDED WHERE UNDERGROUND CONDUITS OCCUR. REFER TO CIVIL DRAWING 4/C5.00.

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I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE STATE OF CA

NAME: JAMES G. MATSON
DATE: MAY 16, 2017
REGISTRATION NUMBER: C13036

NO	DESCRIPTION	DATE
2	ADDENDUM 2	9/1/17
3	ADDENDUM 3	9/22/17
4	ADDENDUM 4	10/02/17

ISSUANCE HISTORY - THIS SHEET

DRAWN BY: FBA | REVIEW BY: R. Rogers

HGA NO: 3584-001-00

ENLARGED SITE ELECTRICAL PLAN

DATE: JULY 06, 2017

E1.2

ADDENDA PACKAGE

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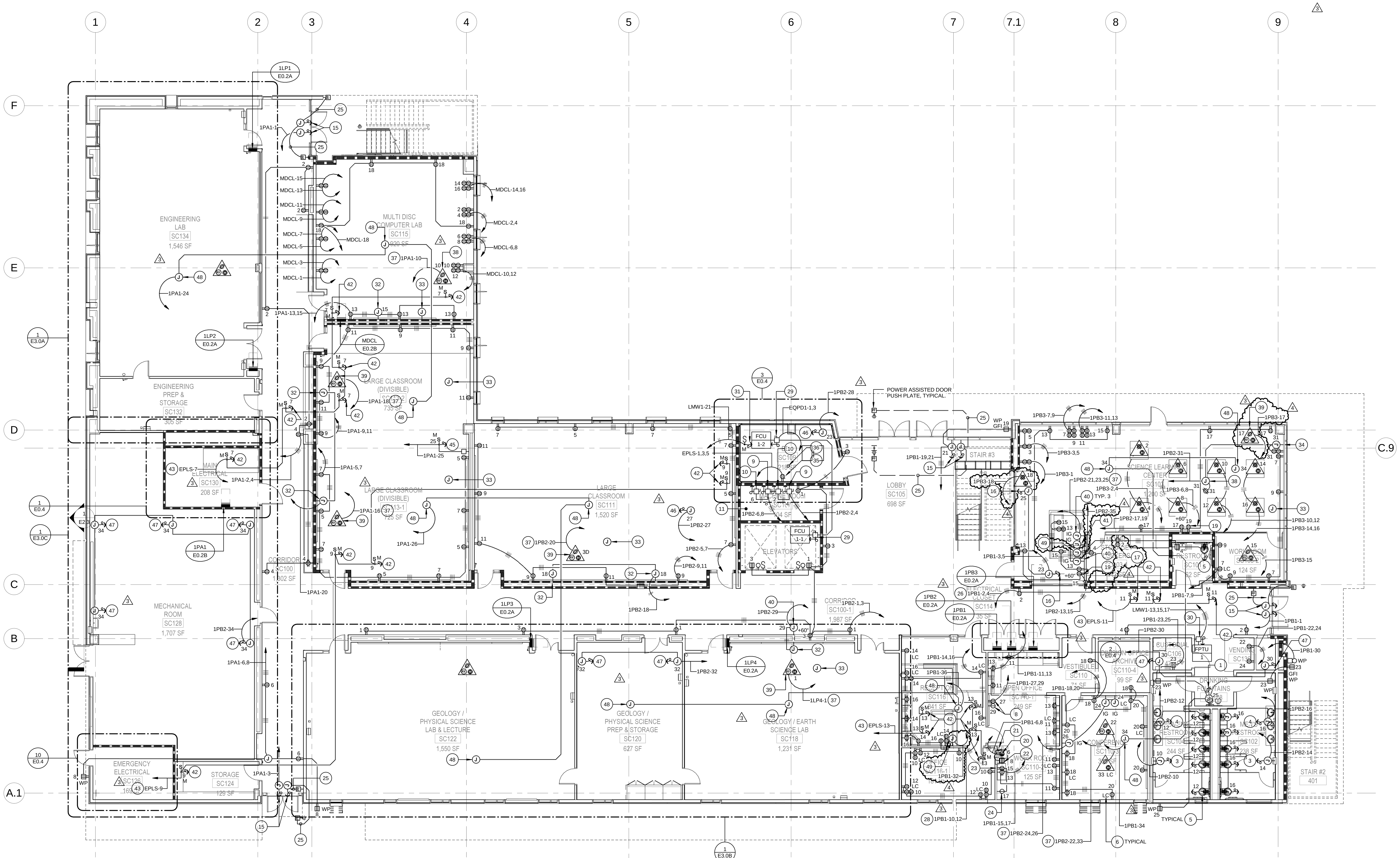
GENERAL NOTE:

1. UNLESS OTHERWISE NOTED, ALL CONDUIT SHALL BE ¾"C. – 2#12 AND 1#12 GROUND.
2. REFER TO TELECOM DRAWINGS FOR 120V. CLOCK CIRCUIT REQUIREMENTS. (3)



1 — LEVEL 01 POWER PLAN
1/8" = 1'-0"

(40) J-BOX FOR VIDEO DISPLAY: FSR-INC PWB-253 WITH REQUIRED ACCESSORIES AND COVER., WALL MOUNTED. PROVIDE ONE DUPLEX RECEPTACLE. COORDINATE LOCATION WITH AV CONTRACTOR.

(41) J-BOX VIDEO DISPLAY: FSR-INC PWB-253 WITH REQUIRED ACCESSORIES AND COVER, WALL MOUNTED. PROVIDE ONE DUPLEX RECEPTACLE WITH ISOLATED GROUND (SEE DETAIL ON AV0.02P). COORDINATE LOCATION WITH AV CONTRACTOR.

(42) PROVIDE CONNECTION TO SMOKE FIRE DAMPERS AS REQUIRED. VERIFY EXACT LOCATION WITH MECHANICAL DRAWINGS PRIOR TO ROUGH-IN.

(43) ROUTE CIRCUIT THROUGH FIRE ALARM RELAY MODULE ABOVE PANEL "EPLS" AS REQUIRED.

(44) NOT USED. (3)

(45) PROVIDE CONNECTION TO MOTORIZED PARTITION PER MANUFACTURER'S REQUIREMENTS. (3)

(46) FOR CONNECTION TO CONDENSATE PUMP.

(47) FOR CONNECTION TO TRAP PRIMER.

(48) J-BOX FOR CONNECTION TO MECHANICAL DEVICES IN THIS AREA. REFER TO MECHANICAL DRAWINGS FOR EXACT QUANTITY AND LOCATIONS.

(49) FUTURE HARDWIRE CONNECTION FOR PANEL SYSTEM. (4)

(31) FOR CDP-1: PROVIDE FUSED DISCONNECT SWITCH AND CONNECT TO EQUIPMENT AS PER MANUFACTURER'S REQUIREMENTS. COORDINATE MOUNTING LOCATION WITH MECHANICAL. RUN 3/4"C - 1#12 & 1#12 - G TO DISCONNECT SWITCH FOR CDP-1 ON 2ND FLOOR.

(32) J-BOX FOR VIDEO PROJECTOR: 4.7" SQUARE BOX DEEP W/2GMR MOUNTED AT 8'-6" AFF WITH ONE DUPLEX RECEPTACLE. COORDINATE LOCATION WITH AV CONTRACTOR.

(33) J-BOX FOR AV DISTRIBUTION: HOFFMAN ASG 12X12X6 WITH COVER ABOVE CEILING. COORDINATE LOCATION WITH AV CONTRACTOR.

(34) J-BOX FOR PROJECTION SCREEN: 4.7" SQUARE BOX DEEP W/2GMR MOUNTED IN CEILING SPACE WITH ONE DUPLEX RECEPTACLE. COORDINATE LOCATION WITH AV CONTRACTOR.

(35) FOR SECURITY ACCESS CONTROL PANEL. VERIFY EXACT LOCATION WITH SECURITY CONTRACTOR.

(36) 3/4"C - 4#12 & 1#10 - G UP TO RECEPTACLE FOR SECURITY ACCESS CONTROL PANEL ON SECOND FLOOR.

(37) PROVIDE ISOLATED GROUND WIRE. SEE DETAILS ON AV0.02P.

(38) J-BOX FOR VIDEO PROJECTOR: 4.7" SQUARE BOX DEEP W/2GMR MOUNTED IN CEILING SPACE WITH ONE DUPLEX RECEPTACLE WITH ISOLATED GROUND (SEE DETAIL ON AV0.02P). COORDINATE LOCATION WITH AV CONTRACTOR.

(39) FOR LECTERN. VERIFY EXACT LOCATION WITH ARCHITECT.

(19) FOR CONNECTION TO DIGITAL DISPLAY.

(20) FOR CONNECTION TO DISPOSAL.

(21) ENGRAVE SWITCH CONFIGURE TO READ: "DISPOSAL".

(22) FOR CONNECTION TO COFFEE MAKER.

(23) FOR CONNECTION TO MICROWAVE OVEN. REFER TO ARCHITECTURAL INTERIOR ELEVATIONS FOR MOUNTING HEIGHT.

(24) FOR CONNECTION TO REFRIGERATOR.

(25) PROVIDE 3/4"C. WITH CONTROLLED WIRING IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.

(26) PROVIDE 4#12, 1#12 GRD. - 3/4"C. TO IPBI – 2, 4.

(27) PROVIDE 4#12, 1#12 GRD. - 3/4"C. TO IPBI – 6, 8.

(28) PROVIDE 4#12, 1#12 GRD. - 3/4"C. TO IPBI – 10, 12.

(29) PROVIDE FUSED DISCONNECT SWITCH AND CONNECT TO EQUIPMENT AS PER MANUFACTURER'S REQUIREMENTS. COORDINATE MOUNTING LOCATION WITH MECHANICAL.

(30) FOR FPTU-1: PROVIDE FUSED DISCONNECT SWITCH AND CONNECT TO EQUIPMENT AS PER MANUFACTURER'S REQUIREMENTS. COORDINATE MOUNTING LOCATION WITH MECHANICAL. RUN 3/4"C - 3#12 & 1#12 - G TO DISCONNECT SWITCH FOR FPTU-2 ON 2ND FLOOR (SEE NOTE 13/E3.1).

(8) FOR CONNECTION TO COPIER.

(9) CONNECTION TO ELEVATOR CONTROLLER IN ACCORDANCE WITH THE ELEVATOR MANUFACTURER'S REQUIREMENTS.

(10) CONNECTION TO ELEVATOR CAB LIGHTS, EF, CONV. RECEPTACLES, ETC. IN ACCORDANCE WITH THE ELEVATOR MANUFACTURER'S REQUIREMENTS.

(11) INSTALL ALL ELECTRICAL DEVICES IN THE ELEVATOR MACHINE ROOM IN LOCATIONS PER THE ELEVATOR MANUFACTURER'S INSTALLATION REQUIREMENTS. (3)

(12) NOT USED.

(13) NOT USED.

(14) FOR CONNECTION TO VENDING MACHINES.

(15) CONNECT TO POWER ASSISTED DOOR IN ACCORDANCE WITH THE DOOR MANUFACTURER'S REQUIREMENTS.

(16) CONNECT TO OVERHEAD COILING DOOR IN ACCORDANCE WITH THE DOOR MANUFACTURER'S REQUIREMENTS.

(17) FOR CONNECTION TO LAPTOP CART.

(18) NOT USED. (3)

PLAN NOTES:

(1) CONNECT TO ELECTRIC WATER COOLER IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S REQUIREMENTS.

(2) FOR CONNECTION TO REFRIGERATOR, +36".

(3) CONNECT TO THE HAND DRYER IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S REQUIREMENTS. VERIFY THE MOUNTING HEIGHT WITH THE ARCHITECTURAL INTERIOR ELEVATIONS.

(4) CONNECT TO AUTOMATIC LAV TRANSFORMER/POWER SUPPLIES. TRANSFORMER/POWER SUPPLIES SHALL BE MOUNTED IN A LOCKING STAINLESS STEEL ENCLOSURE MOUNTED UNDER THE LAV'S. PROVIDE CONTROL WIRING AND CONNECTIONS TO THE SENSOR OPERATED FAUCETS IN ACCORDANCE WITH THE FAUCET MANUFACTURER'S REQUIREMENTS.

(5) CONNECT TO AUTOMATIC URINAL AND WATER CLOSET TRANSFORMER/POWER SUPPLIES. TRANSFORMER/POWER SUPPLIES SHALL BE MOUNTED IN A LOCKING STAINLESS STEEL ENCLOSURE MOUNTED AT THE URINALS AND WATER CLOSETS. PROVIDE CONTROL WIRING AND CONNECTIONS TO THE FLUSH VALVES IN ACCORDANCE WITH THE FLUSH VALVE MANUFACTURER'S REQUIREMENTS.

(6) INDICATES PROVIDE SPLIT WIRED DUPLEX RECEPTACLE CONTROLLED BY THE RESPECTIVE ROOMS LIGHTING CONTROLS IN ACCORDANCE WITH THE 2013 CEC TITLE 24 SECTION 130.1(C). TYPICAL FOR ALL RECEPTACLES IN PRIVATE OFFICES, OPEN OFFICE AREAS, RECEPTION, LOBBY, CONFERENCE ROOMS, KITCHENETTES AND COPY ROOMS. RECEPTACLES SHALL BE GREEN IN COLOR.

(7) NOT USED.

(3)

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NAME: JAMES G. MATSON
DATE: MAY 16, 2017
REGISTRATION NUMBER: C13036

NO	DESCRIPTION	DATE
3	ADDENDUM 3	9/22/17
4	ADDENDUM 4	10/02/17

ISSUANCE HISTORY - THIS SHEET

DRAWN BY: FBA | REVIEW BY: R. Rogers

HGA NO: 3584-001-00

LEVEL 01 POWER PLAN

DATE: JULY 06, 2017

E3.0

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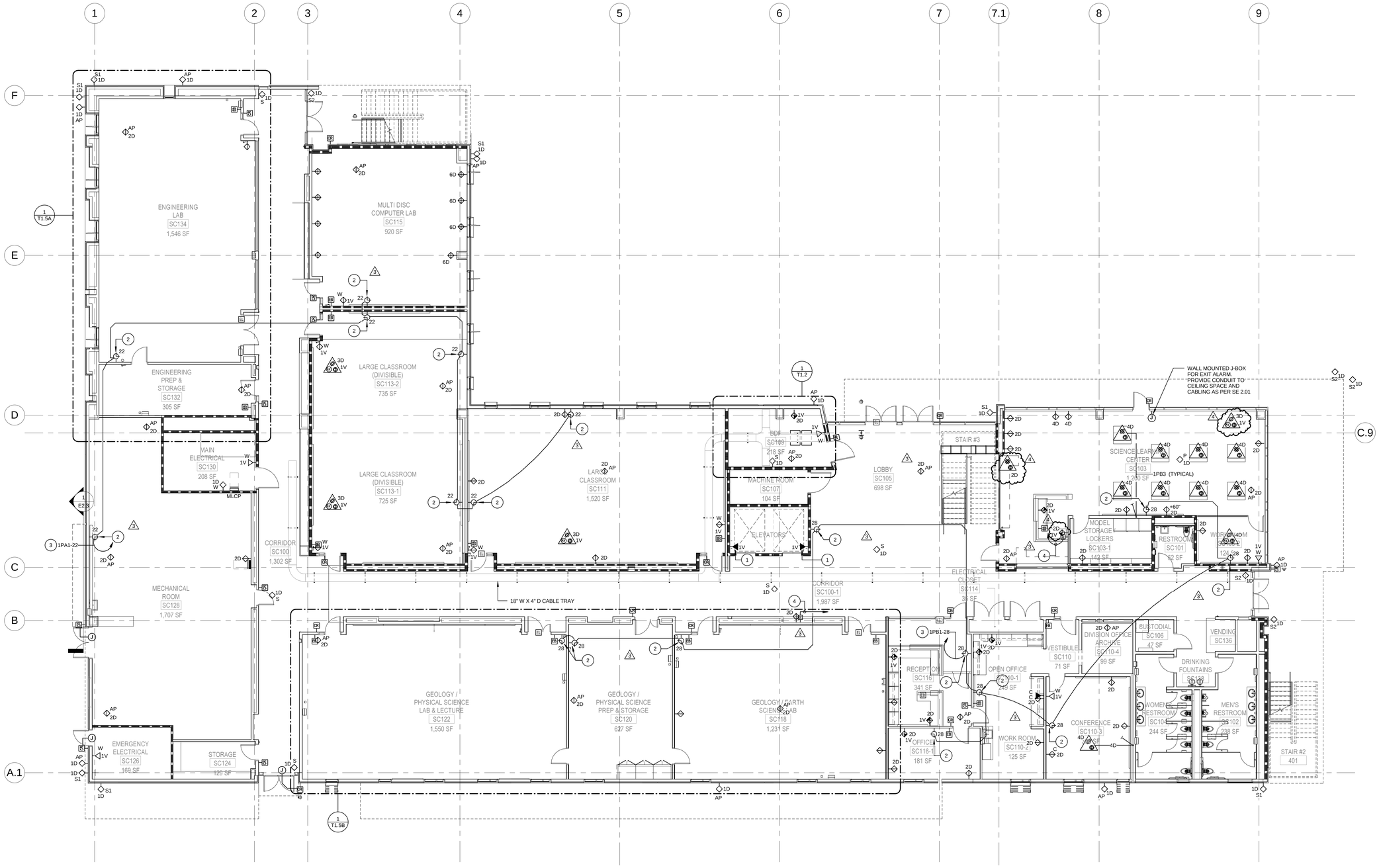

1 LEVEL 01 TELECOM PLAN
1/8" = 1'-0"

PLAN NOTES:

1. CONNECT TO ELEVATOR CAB TELEPHONE(S) IN ACCORDANCE WITH THE ELEVATOR EQUIPMENT MANUFACTURER'S REQUIREMENTS.
2. CONNECT TO 120V. CLOCK. VERIFY LOCATION WITH ARCHITECT.
3. PROVIDE 2#12, 1#12 GRD. - 1/2"C. TO PANEL INDICATED.
4. PROVIDE 1"C. WITH COAX CABLE TO BDF ROOM SC109. VERIFY LOCATION AND PROVIDE CABLE AS SPECIFIED.

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DRAWN BY: FBA | REVIEW BY: R. Rogers

HGA NO: 3584-001-00

LEVEL 01 TELECOM PLAN

DATE: JULY 06, 2017

T1.5

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