METHOD STUDIO INC.

BID ADDENDUM NO. 3

Date: November 13, 2020

PROJECT: **BYU Idaho Engineering Technology Center (ETC)**
Rexburg, ID

ARCHITECT: **Method Studio, Inc**.
160 West 2nd South, Ste. 201
Rexburg, Idaho 83440
p.208-701-0068

OWNER: **BYU Idaho**
BYU Idaho Project #: 12005

ARCHITECT'S
PROJECT NO.: 20.0220

TO ALL BIDDERS:
This Addendum forms a part of the Contract Documents and modifies the original Bidding Documents dated October 27, 2020. Receipt of this Addendum must be acknowledged to Headwaters Construction and by Headwaters Construction.

Questions / Comments:

1. BYUI Review (item #3) - Sheet M101 - All the thermostats and HVAC controls need to be updated to work with JCI 10 not just the new components

   Response: This is already covered in the drawings. All new and existing HVAC equipment will have updated controls.

2. BYUI Review (item #4) - Sheet MI - Mechanical control sequence and schedule pages are missing. I think we need to review and have a plan for the building controls and the snow melt controls.

   Response: See attached updated control specifications and sequence of operation from JCI.

3. BYUI Review (item #5) - Sheet M101 - In the tool room, I remember having a new unit hang from the ceiling that utilized hot water and a DX unit for cooing. similar to the one in the engine lab. Did I misunderstand or did it change? I would like to reconsider this option. Then we can discuss not using Carrier as a manufacturer for RT 9 (M302)

   Response: If the decision is made to delete all the existing Steam unit heaters and replace with hot water, we will change this room to an air handler with D/X condensing unit similar to the engine lab. This may have to be a post bid addendum change.

4. BYUI Review (item #6) - Sheet M - I would like to Discuss a full hot water system instead of a partial steam system in the building as an add alternate or a change in design. I think in the long run it is the best solution.

   Response: We will evaluate these costs and propose to BYUI. This may have to be a post bid addendum change.

5. BYUI Review (item #7) - Sheet M302 - Remove wording 3 way mixing valve & arrow

   Response: 3 Way valve in snow melt detail E has been deleted.

6. BYUI Review (item #8) - Sheet M302 - Run vent to the outside, not to the ceiling. Also condensate return should connect to pressurized condensate back to the Central Energy Facility. It says "to existing heat exchanger in mezzanine mechanical room"

   Response: Refer to attached mechanical documents.

7. BYUI Review (item #9) - Sheet MD100 - We need to discuss the option about making the heating system from steam to hydronics. Demo all steam unit heaters and associated piping.

   Response: We will evaluate these costs and propose to BYUI. This may have to be a post bid addendum change.

8. BYUI Review (item #10) - Sheet P100 - Install heating water convertor and pumps to recirculate hot water to each unit heater. Install new heating coil unit heaters and associated hot water supply and return piping to each unit heater

   Response: We will evaluate these costs and propose to BYUI. This may have to be a post bid addendum change.

9. BYUI Review (item #11) - Sheet P301 - Add an isolation valve on 3/4" cold water line before/upstream of interior hose bibb.

   Response: Isolation valve has been added as requested to detail D. See attached mechanical documents.

10. Site Walkthrough Questions from subcontractors on 11/11/20

    a. Questions regarding carpet came up

       Response: Carpet will be selected and installed by the owner and will not be part of the bid. A note has been added to attached finish schedule for clarity.

    b. Who is going to provide construction for plastic laminate ceiling clouds?

       Response: Headwaters will clarify who provides installation. See attached RCP details and finish schedule for cloud finish clarification.

    c. RB-1 and RB-2 is called out in the schedule. Where is RB-1 being called out in the drawings?

       Response: RB-01 can be seen in the finish plans and interior elevations, RB-02 + RB-03 will be at the millwork and has been keynoted in interior elevations. Note has been added to finish schedule and updated locations in drawings are clouded and tagged.

    d. Existing mechanical mezzanine room 202 shows sealed concrete. Is this correct?

       Response: No, this will be epoxy and will roll up the wall as a base to help seal the room. See attached finish plans.

    e. Is there information on epoxy's in the specifications?

       Response: Yes, see attached added specification.

    f. Is there a roof spec?

       Response: Yes, see attached added roof specification

    g. Do new masonry walls need to go all the way to existing deck?

       Response: No, there will be a gap. See C1 & D1/SE-511. Provide Insulation in gap.

    h. Electrical – Please clarify where exterior lights are going to be demolished and replaced.

       Response: Refer to attached electrical documents.

    i. Electrical – Electrical demolition is to general. Please clarify.

       Response: Refer to attached electrical documents.

    j. Electrical – need clarification on note 11 of sheet EE101b. Tunnel does not extend to new IT room.

       Response: Refer to attached electrical documents.

    k. Electrical – Data in High Bay shop, is it exposed with j-hooks, or is there a cable tray?

       Response: Refer to attached electrical documents.

    l. Does existing roof have warranty?

       Response: Yes, patch and repair will need to be identical and follow all manufacturer instructions to maintain existing warranty. The following information has been added to the roofing specifications regarding the existing roof:

To the best of our understanding and knowledge, the existing record drawings provided by the Owner indicate that the existing roof is a Sarnifil roofing system with a fully adhered 60 mil PVC membrane and a vapor barrier under the insulation. The Contractor shall inspect the existing roofing system, including existing substrate and roof deck conditions, and provide a full report to the Architect and the Owner of all existing conditions, including those that are not in conformance with current adopted building codes and manufacturer's requirements and recommendations of the roofing system. As part of the inspection, the Contractor shall engage a technical representative of the roofing system to inspect the existing roofing system and report on the roofing system's compliance with the warranty requirements of the manufacturer.

As indicated in the drawings, the existing roofing system (including, roofing insulation, vapor barrier, decks, etc.) is to be modified to receive various appurtenances, including skylights, walkway pads, and other elements. Where modification of the existing roofing system is required per contract documents, the Contractor shall modify the existing roofing system in such a manner and in accordance with manufacturer's written instructions and recommendations to maintain existing warranty. Additionally, where the existing roofing system transitions to new roofing system, the Contractor shall install a weathertight transition in accordance with the manufacturer's written instructions and recommendations that will not void warranty for existing roofing system.

m. Question from owner – can we revise the purchasing printer location and the layout of the new reception area?

Response: Yes, see attached sheet AI101b for clarification.

11. Contractor RFI 03 – (Timeless Tile Traditions email via Headwaters – 11/12/20) – TL-03 calls out 2 tiles in one. Looking for clarification on whether it is a mix or what their intentions are on that.

Response: The tile will be Retro Active 2.0 Patterns, just the patterned tile not a mix of both. See attached revised finish schedule.

12. Contractor RFI 04 – (OEC Construction email via Headwaters – 11/12/20) – Collection of Questions

a. Corner Guards: 1) Spec calls for corner guards "at all outside gypsum board corners" in 1.2/A/1 (summary and 2.2./A. 2) Spec then calls for them at "all exposed outside corners building wide except at lobby" in 3.5/A (schedule). 3) Finally, the plans call for them "All exposed finish corners in high traffic areas, QTY4" in the finish schedule AF601. So, where do they go? My initial instinct was to only quote them as 1), but I'm worried that'll look bad.

Response: Corner guard locations have been clarified on sheet AF101.

b. Grab bars: Accessory schedule on AF601 shows the 18" and 36" grab bars as Bobrick's 68616 series grab bars, but those are "L" shaped bars 1-1/2" OD while the details on AE401 make a pretty convincing case for just straight grab bars. Additionally, the 42" grab bar is called out as Bobrick's 5806 series which is 1-1/4" OD. My plan is to bid these all as 5806 series straight grab bars.

Response: Bid 5806 Series. See updated schedule.

c. Janitor Room: No mop/broom holder? Say the Bobrick 239-34 or similar?

Response: Mop/broom holder will be owner furnished and owner installed.

d. No spec for interior signage:

Response: All wayfinding signage is owner provided and owner installed. There will be some branding signage that is not considered wayfinding signage (Details D2, D4 & D5/GI004). This branding signage will need to be submitted in a submittal process with shop drawings for approval. This will be submitted to the owner (University communications) and to the architect prior to purchasing and installation. See attached revised signage note on sheet GI004.

e. Fire extinguisher cabinets: Spec calls JL Industries Cosmopolitan series as the BoD, in cold-rolled steel cabinet and stainless door and trim, but plans point to JL industries Academy series, an aluminum cabinet. My plan is to bid the Cosmopolitan cabinet unless you want the Academy cabinet.

Response: Provide Academy (aluminum) cabinet per the drawings as the basis of design.

f. Roller Window Shades: Spec calls these at the south and west walls, but the south end of the Engines Lab is missing the 12.05 callout at its window. Should it get a shade?

Response: Yes, this got missed. Also added a keynote for the north west existing high bay shop windows to have window shades. See updated attached drawings.

g. Mirrors: Accessories Schedule shows these as 24"x42" frameless but scaling the drawing on AE401 puts them at 24"x40". 2" won't make that large an impact on pricing at this point, but I'd like to get you as accurate a proposal as possible.

Response: The schedule has been updated to be 24"x40". See attached.

13. Contractor RFI 05 – (Headwaters Construction email – 11/12/20) – The following equipment is called to be **contractor furnished, contractor installed.** No other information has been provided for these pieces of equipment, i.e. manufacture, product model, detail, etc. We either needs this information to accurately price or we need to come up with an allowance to include tor these items. Let me know how you would like to proceed.

Sheet AI101a
Mark A-1 – 2'x5' Work Bench
Mark AT-7 – Task Chair
Mark A-12 – Heavy duty shelving
Mark A-19 – Heavy Duty Delivery Shelf
Mark AT-1 – Heavy duty shelving

Sheet AI101b
Mark AT-1 – Heavy duty shelving
Marl EL-1 – 2'x5' Work Bench
Mark EL-8 – White Board (are these the same as MB-02 from sheet AF601?)
Mark EL-9 – Shop Stool
Mark CS-1 – 5'x5' Wood top project table
Mark CS-3 – 3'x8' stainless steel teaching work bench
Mark CS-34 – 5'x5' stainless steel project table
Mark CS-40 – 2'x5' stainless steel top worktable

Response: These items have all been revised to be OFOI (owner furnished and owner installed), except for the white board. The white board will be contractor furnished and contractor installed. The specifications for this have been added to the drawings. Please see this and additional changes to equipment and furniture in the attached drawings.

14. Contractor RFI 06 – (Headwaters Construction email – 11/12/20) – I am working with Kyle from McGee. We are confused. The equipment schedule calls out a Mohawk lift, but doesn't provide any further information. The lift you reference below doesn't appear to be the same type. Can you help clean this up? What lift are we supposed to pursue pricing for?

Response: Use Rotary two post hoist – Model number SP012U7T5 (12,000 lb capacity). This has been revised on equipment sheet. See attached.

DRAWINGS & SPECIFICATIONS:

Civil:

1. See attached civil documents.

Architectural:

1. Specification adjustments –
    a. Section 033543 – 3.5.C.4: Change 3000 (grit grinding/polishing pad) to ", up to 3,200". Note that the Protective Application Treatment is to be the integral sealer as provided by the manufacturer. Proposed gloss and aggregate exposure to be determined and approved by Architect during mock-up.

    b. Section 044200- 2.3.B.1: Change from match existing to "As indicated in drawings and approved by Architect during submittal process."

    c. Section 055000- 2.7.A.1: Change steel tops to concrete filled and rounded concrete top.

    d. Section 055000- 2.8.A: Refer to drawings for overall dimensions.

    e. Section 055213- Exterior handrail and railings to be steel and to be powder-coated per specified color. Color and finish to be approved by Architect during submittal process.

    f. Section 064116- 2.3.C.1: Replace Architect's sample with "As indicated in drawings."

    g. Section 064116- 2.2.J.1: Replace Match Architect's sample, see finish schedule with "As indicated in drawings."

    h. Section 123661.19 "Solid Surface Countertops": Omit.

2. Architectural specifications related to the attached Table of Contents have been added.
3. Sheet GI002 – Added missing architecture tags symbols
4. Sheet GI004 – Adjusted signage note for clarification
5. Sheet GI101 – Removed rating for room 142, added fire extinguisher and adjusted square footage for room tags in east wing.
6. Sheet AD101 – Clarification in keynotes for existing refrigerator and cabinets and an added general note. Items to be salvaged for re-use will not be returned to owner. Added area for concrete demolition where new concrete curing closet is going to go.
7. Sheet AD131 – Clarification on ceiling and light fixtures in RCP demo plan and revised keynote.
8. Sheet AE101 – Added keynotes to infill areas in north west offices and conference room.
9. Sheet AE111 – Added area to pour new concrete to allow floor drain in new concrete curing room. Also added keynotes on east side clarifying that the slab needs to pour over existing foundation.
10. Sheet AE121 – Revised note in right column.
11. Sheet AE131- Added ceiling tags and window shade keynotes.
12. Sheet AE201 – Adjusted grading lines and adjust foundation to be visible graphically in elevations. Removed foundation detail from upper wall on elevation B1.
13. Sheet AE311 – adjusted keynotes to show aluminum wood look soffit to match RCP's.
14. Sheet AE401 – Mop/broom holder added as owner furnished and owner installed.
15. Sheet AE421 – Marker board clarification and rubber base clarification
16. Sheet AE421, AE422, AE423, AE424 – Added casework key tag to interior elevation sheets
17. Sheet AE422 – Revised keynote for columns in high bay shop to be new columns.
18. Sheet AE424 – Added elevations with FRP to all walls in auto storage room and base clarification
19. Sheet AE501 – Revised gypsum board description for wall types PS6a, PS6b, PS3a, PS3b, to be cement backer board where there is tile.

20. Sheet AE521 – Provided damp proofing in lieu of water proofing at foundation in detail D5 and clarified title of D1 detail to be for restrooms.
21. Sheet AE522 – Wood ceiling cloud material clarification. B6 detail clarified to be non-structural metal stud detail.
22. Detail D1/AE571 – Adjusted tile backer to have double layer of fiber cement board for detail D1. Clarified and added additional support to bench in detail A5.
23. Detail A1/AE901 – Clarified countertop materials
24. Sheet AF101 – Clarification to finish in auto storage room.
25. Sheet AF102 – Revised finish to mechanical room 202 to be epoxy and roll up wall as base.
26. Sheet AF601 – Clarifications, additions and adjustments made to finish and accessory schedule.
27. Sheets AI101a and AI101b – revised CFCI, OFCI AND OFOI information. Revised information on automotive lifts.

Structural:

1. Refer to attached Structural Documents.

Mechanical:

2. Refer to attached Mechanical Documents.

Electrical:

2. Refer to attached Electrical Documents.

END OF ADDENDUM THREE

Addendum #3
SPECIFICATIONS FOR CIVIL SITE WORK
ENGINEERING TECHNOLOGY CENTER
BRIGHAM YOUNG UNIVERSITY – IDAHO
14 Nov 2020

Following is discussion of changes made to the Drawings and specifications for the Civil/Site Work on the BYUI Engineering Technology Center (DTC).

DRAWINGS

The following changes have been made to the Civil/Site Work Drawings as a part of Addendum #3. Changes to the Drawings are noted with a revision cloud for quick identification.

C101 – showed reference to protective bollard to be constructed at the northeast corner of the building by the new stairway access.

Showed a reference to a connecting pipeline for a 4" roof drain from the mechanical room in the southeast building extension that runs north to an existing storm drain catch basin.

Included an aerial photograph of the facility under the Drawing line work for better visualization of the work and existing conditions.

C102 – added asphalt cut lines coinciding with the new 4" roof drain line on the east side. Note that this only includes the portion that is additional to the asphalt removal areas previously shown.

Clarification is also given that the excavation quantity showed in the "Estimated In-Place Quantities" on this Drawing does *not* include excavation associated with the 4" sewer service line or the 4" roof drain line.

C103 – showed reference to the protective bollard, and also to constructing the 4" roof drain line to be connected to the existing catch basin on the east side.

Increased the quantity for asphalt repair and construction to reflect the additions. Added line items and quantities for the 8" bollard and 4" roof drain.

C104 – no changes.

C105 – added a detail for the protective bollard.

Adjusted the riser and tread dimensions on the stairway to be reconstructed.

SPECIFICATIONS

The following changes have been made to the Civil/Site Work Specifications as a part of Addendum #3.

Site Work – clarification is given in the "Clearing and Grubbing" section that the University will remove the 3" caliper oak tree previously called to be removed by the contractor to facilitate widening of the north driveway. It is the only tree of its kind on campus and the University will relocate it to another preferred location.

Protective Bollard – add the following in reference to the protective bollard. It is required to construct an 8" protective bollard off the new access stairway at the northeast corner of the building. Follow the detail given on the Drawings and locate the center of the bollard 16" northeast of the stairway corner.

Use Schedule 40 steel pipe for the bollard. Paint the exterior of the bollard in two coats of epoxy paint, safety yellow color, extending a minimum of 12" below the ground surface. Fill the bollard with concrete during placement and finish with a slightly curved dome in the concrete at the top of the bollard extending 1.5" above the top of the bollard at the center. Place the foundation concrete as shown on the Drawings, noting the requirement for 6" of concrete under the bottom of the bollard.

Roof Drain – add the following in reference to the roof drain. It is required to extend a 4" roof drain coming out through the new mechanical room on the southeast building addition northward under the parking lot pavement to connect with the existing storm drain catch basin approximately 120 ft. to the north. Work includes excavation, furnishing and placing the pipeline, and backfill.

Use Schedule 40 PVC for the pipeline and provide a long-radius sweep for the 90° bend where the pipeline alignment turns northward. Use non-shrink grout for the connection of the pipeline to the existing concrete catch basin structure.

Follow the provisions of the Standard Specifications for the installation of the roof drain pipeline, considering it to be a storm drain pipeline. Begin by conducting excavation at the existing catch basin to determine the necessary connection elevation and conditions for making an appropriate connection.

Determine the pipeline slope necessary to assure adequate drainage in the new pipeline while maintaining maximum possible depth below the asphalt parking lot surface and new improvements to be constructed in the area. Coordinate with the work of the plumbing trade to establish the proper elevation of the roof drain piping coming out from the building through the new foundation that will be necessary to meet these conditions of slope and cover.

Core drill the existing south catch basin wall at the location and elevation necessary to make proper connection. Grout the pipeline in place and take particular precaution to properly backfill and support the pipeline in the area adjacent to the catch basin structure and also near the new concrete building foundation. Provide sand or crusher rejects for bedding of the pipeline at least 2" below the pipe bottom and 2" above the top of pipe for shading.

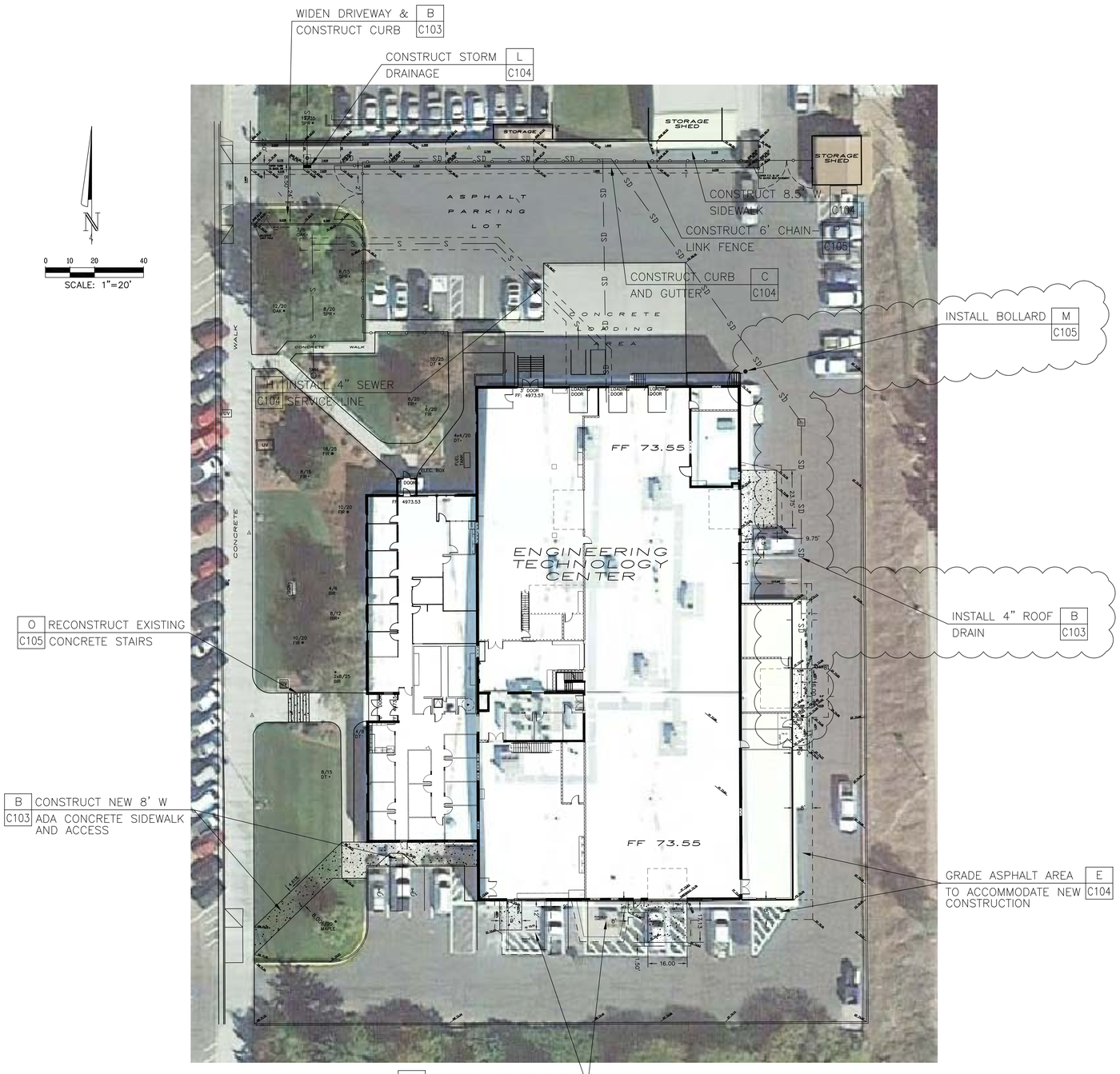
Backfill the pipeline to the subgrade elevation of the asphalt repair section shown on the Drawings. Compact the backfill and pipe bedding to 96% of optimum density. The University will provide compaction testing.

Then place the pit run gravel, crushed gravel, and asphalt pavement associated with the asphalt repair section to complete the trench backfill and repair. Follow the provisions of the specifications for construction of the asphalt repair section.

Measure the location of the 90° bend to at least two surface landmarks and record the information on the record drawings of the construction.

-- End of Civil/Site Work Addendum #3 Information --

-CIVIL/SITE WORK PLANS-



CIVIL SITE PLAN

1" = 20FT

GENERAL NOTES

1. USE IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION, 2017 EDITION.
2. MATERIALS: SEE SPECIAL PROVISIONS.
3. CHECK ALL DISTANCES AND DATA PRIOR TO THE START OF CONSTRUCTION. IN CASE OF CONFLICT, NOTIFY THE ENGINEER IMMEDIATELY SO THAT CLARIFICATION MAY BE MADE PRIOR TO THE START OF WORK.
4. GENERAL LOCATIONS AND SIZES OF UTILITIES ARE SHOWN ON THE PLANS. THEY ARE TO BE USED FOR GENERAL INFORMATION ONLY. NOTIFY THE APPROPRIATE UTILITY COMPANIES WHEN CONSTRUCTION MIGHT INTERFERE WITH NORMAL OPERATION OF ANY UTILITIES AND HAVE THE APPROPRIATE UTILITY COMPANY FIELD-LOCATE ANY UTILITY INSTALLATIONS WHICH MIGHT BE AFFECTED BY CONSTRUCTION PRIOR TO BEGINNING WORK IN THAT AREA. MAINTAIN SERVICE OF EXISTING UTILITIES AND RESTORE ANY UTILITIES DAMAGED DUE TO CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER. CALL IDAHO DIGLINE 800-342-1585 FOR FIELD LOCATES PRIOR TO ANY EXCAVATION.
5. SECURE SOURCES FOR DISPOSAL SITES AND ANY ADDITIONAL MATERIALS THAT MAY BE NECESSARY FOR PROPER CONSTRUCTION OF THIS PROJECT.
6. MAKE ARRANGEMENTS FOR WATER REQUIRED FOR TESTING, COMPACTION AND DUST CONTROL MEASURES.
7. PROVIDE TRAFFIC CONTROL SIGNING IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
8. ANY QUANTITIES SHOWN ARE FOR INFORMATION ONLY. CONTRACTOR MUST VERIFY
9. RETAIN AND PROTECT ALL AREAS AND FEATURES NOT SPECIFICALLY CALLED FOR IMPROVEMENT.

DETAIL CALL-OUT

A / C101 — DETAIL LETTER. (TYP.) / SHEET ON WHICH DETAIL IS SHOWN (TYP.)

DETAIL NAME A

SECTION CALL-OUT

2 / DT-2 — SECTION NO. (TYP.) / SHEET ON WHICH SECTION IS SHOWN. (TYP.)

SECTION 2

method studio
360 west aspen avenue
salt lake city, utah 84101
801 532 4422

PROFESSIONAL ENGINEER REGISTERED WINSTON R DYER 4315 5 Nov 20 STATE OF IDAHO WINSTON R DYER

CIVIL ENGINEER
DYER GROUP LLC
343 E 4th N SUITE 108
REXBURG, ID 83440-6001
CONTACT: WINSTON DYER
(208) 390-9700
wdyer@thedyergroup.com

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project#:
byu idaho project#: 12005
date: october 27, 2020

revisions :

ADDENDUM #2
10 NOV 2020
ADDENDUM #3
14 NOV 2020

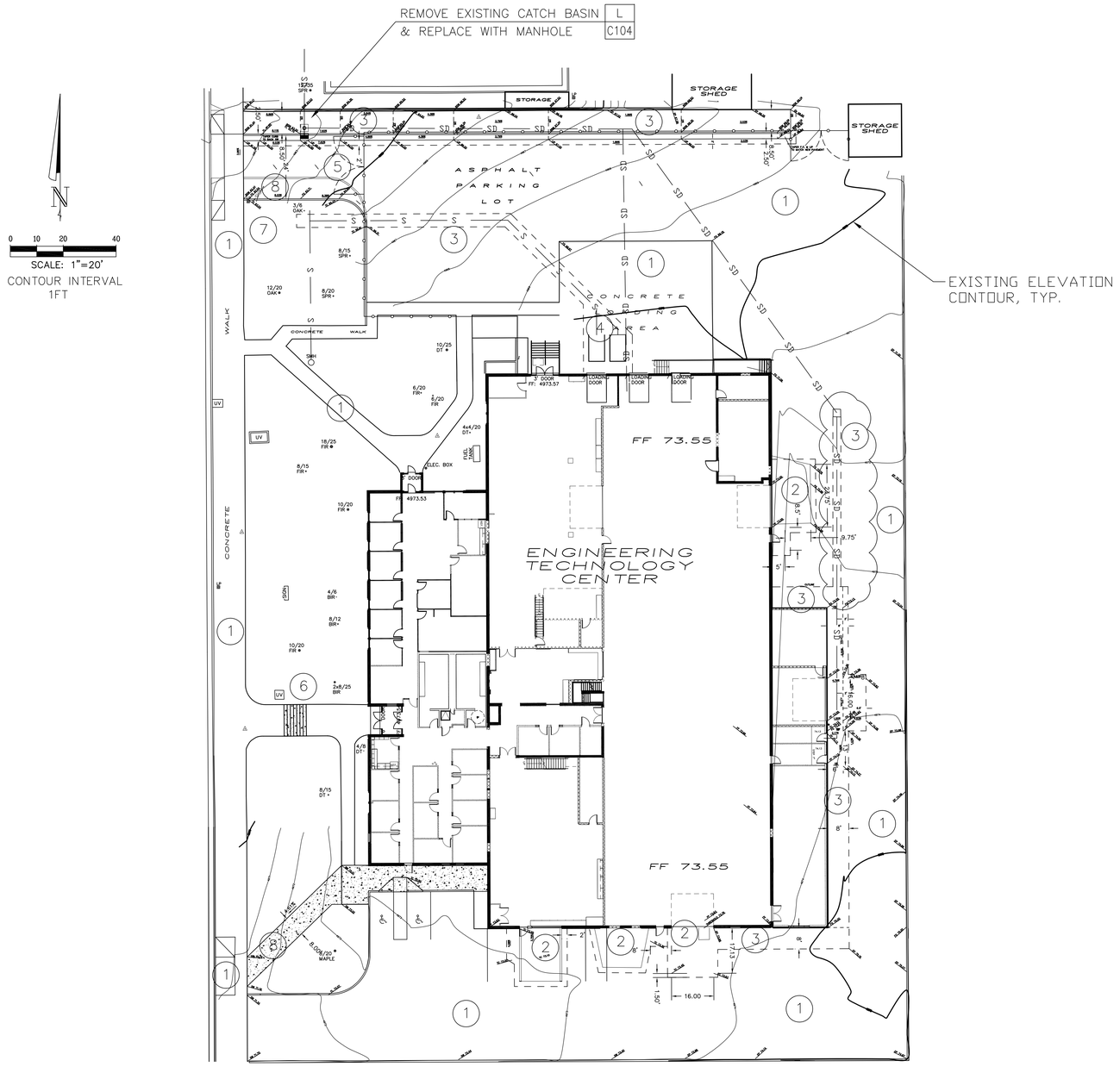
title:

CIVIL SITE PLAN

sheet:

C101

100% construction documents



DEMOLITION PLAN
1" = 20FT
A

KEYED NOTES

1. RETAIN AND PROTECT EXISTING FEATURES, COMPONENTS, AND LANDSCAPING NOT SPECIFICALLY CALLED FOR IMPROVEMENT.
2. REMOVE DESIGNATED CONCRETE RAMPS AND PADS
3. CUT AND REMOVE ASPHALT SURFACE
4. CUT AND REMOVE CONCRETE SURFACE
5. REMOVE CONCRETE CURB
6. REMOVE CONCRETE STAIRS. (WARNING: STEAM TUNNEL BENEATH!)
7. REMOVE AND SALVAGE BUILDING SIGN, REMOVE AND REINSTALL LIGHT POLE
8. CLEAR AND GRUB AREA

ESTIMATED IN-PLACE QUANTITIES

(FOR INFORMATION ONLY, CONTRACTOR TO VERIFY)

CLEARING & GRUBBING	85 SY
EXCAVATION (INCL ASPHALT & CONCRETE)	220 CY

method studio
360 west aspen avenue
salt lake city, utah 84101
801 532 4422

PROFESSIONAL ENGINEER REGISTERED 4315 5 Nov 20 STATE OF IDAHO WINSTON R DYER

CIVIL ENGINEER
DYER GROUP LLC
343 E 4th N SUITE 108
REXBURG, ID 83440-6001
CONTACT: WINSTON DYER
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project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project#:
byuidaho project#: 12005
date: october 27, 2020

revisions :

ADDENDUM #2
10 NOV 2020
ADDENDUM #3
14 NOV 2020

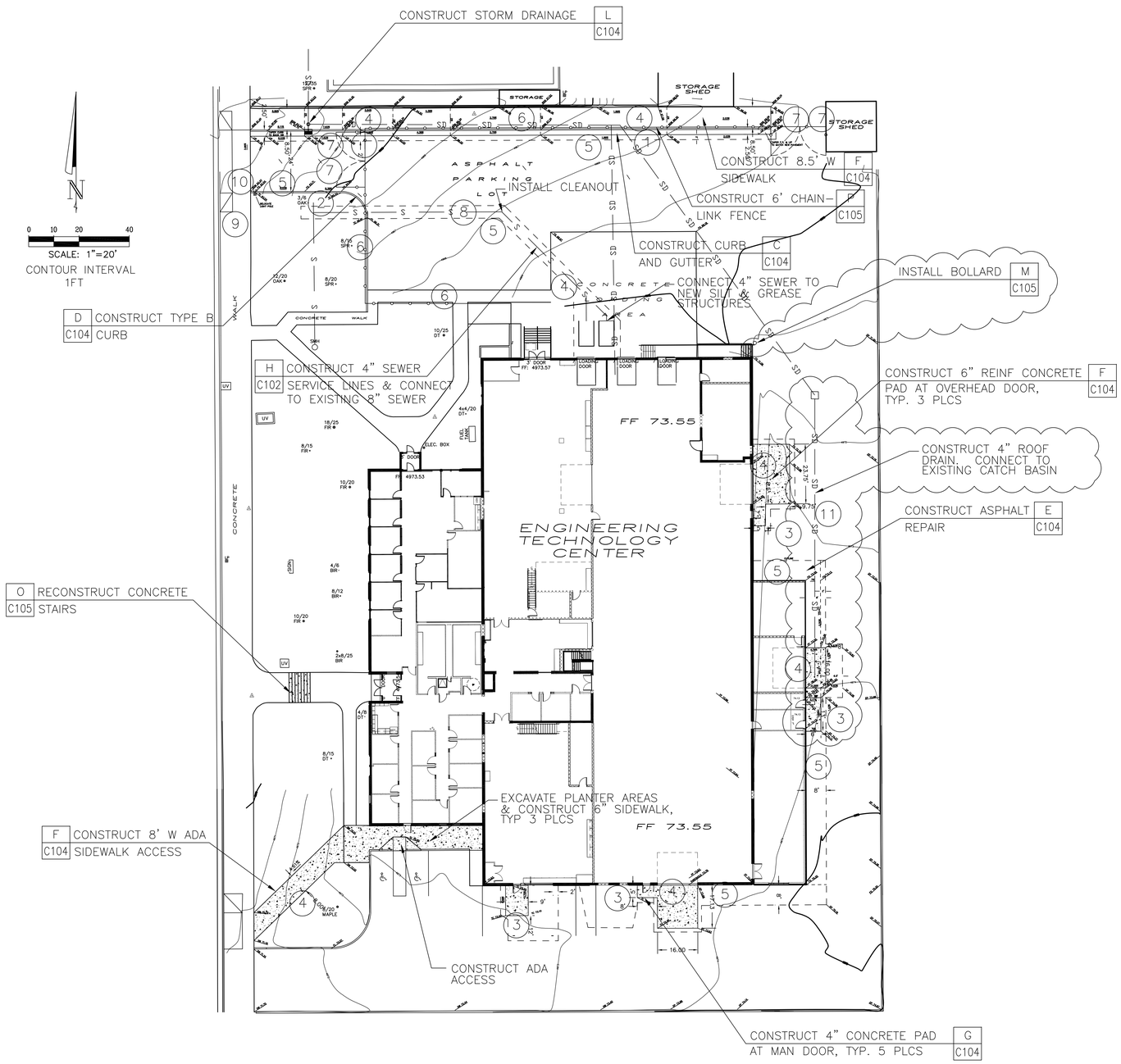
title:

DEMOLITION PLAN

sheet:

C102

100% construction documents



SITE WORK IMPROVEMENTS B

1" = 20FT

KEYED NOTES

1. TYPE A CURB AND GUTTER
2. TYPE B CURB
3. 4" CONCRETE PAD
4. 6" REINFORCED CONCRETE SIDEWALK, PAD OR CONCRETE REPAIR
5. ASPHALT REPAIR
6. 6' CHAINLINK FENCE
7. 12' DOUBLE SWING GATE
8. 4" SEWER SERVICE LINE
9. REINSTALL LIGHT POLE
10. EXTEND 3 EA. 4" PVC UTILITY SLEEVES
11. 4" ROOF DRAIN

ESTIMATED IN-PLACE QUANTITIES

(FOR INFORMATION ONLY, CONTRACTOR TO VERIFY)

ASPHALT REPAIR, CONSTRUCTION	400 SY
TYPE A CURB AND GUTTER	210 LF
TYPE B CURB	55 LF
4" CONCRETE PAD	25 SY
6" SIDEWALK, CONCRETE PAD AND CONCRETE REPAIR	310 SY
6' CHAINLINK FENCE	295 LF
12' DOUBLE SWING GATE	4 EACH
4" SEWER SERVICE LINE	145 LF
REPLACE CONCRETE STAIRS	1 LS
STORM DRAIN IMPROVEMENTS	1 LS
REINSTALL LIGHT POLE	1 EACH
4" PVC UTILITY SLEEVES	30 LF
8" BOLLARD	1 EACH
4" ROOF DRAIN	125 LF

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360 west aspen avenue
salt lake city, utah 84101
801 532 4422

PROFESSIONAL ENGINEER REGISTERED WINSTON R DYER 4315 5 Nov 20 STATE OF IDAHO

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343 E 4th N SUITE 108
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wdyer@thedyergroup.com

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project#:
byu idaho project#: 12005
date: october 27, 2020

revisions :

ADDENDUM #2
10 NOV 2020
ADDENDUM #3
14 NOV 2020

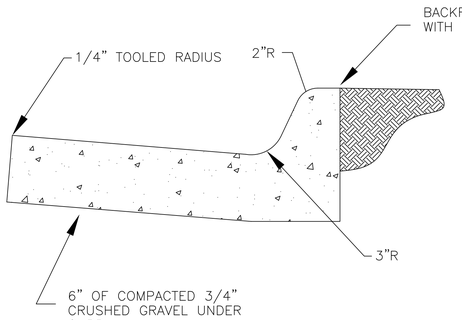
title:

SITE WORK

sheet:

C103

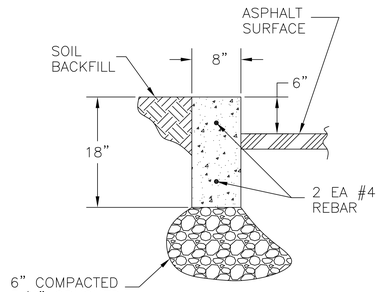
100% construction documents



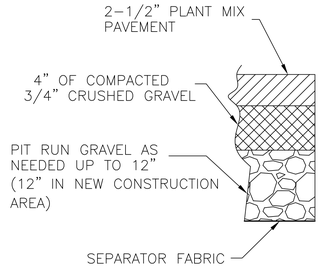
CURB NOTES:

1. JOINTS AT 10FT SPACING.
2. PREFORMED EXPANSION JOINT FILLER AT CORNERS AND ENDS.
3. MATCH EXISTING GRADE AND ELEVATIONS WHERE TYING TO EXISTING FEATURES.

TYPE A CURB — C
NTS



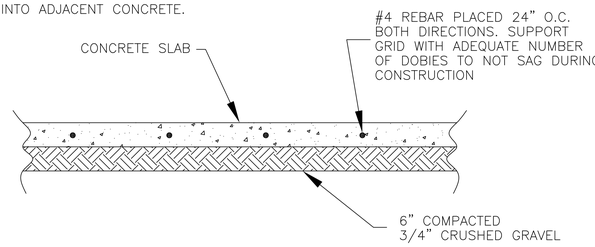
TYPE B CURB — D
NTS



ASPHALT REPAIR — E
NTS

SIDEWALK NOTES:

1. JOINTS AT 5FT SPACING
2. EXPANSION JOINTS AT 40FT. SPACING, CORNERS & ENDS
3. SEE SPECIFICATIONS FOR CURING AND FINISHING.
4. DOWEL INTO ADJACENT CONCRETE.



6" REINFORCED CONCRETE SIDEWALK — F
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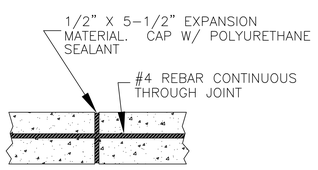
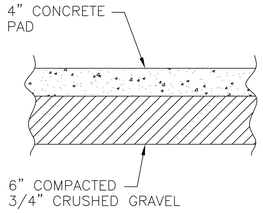


EXPANSION JOINT



4" CONCRETE DOOR PAD — G
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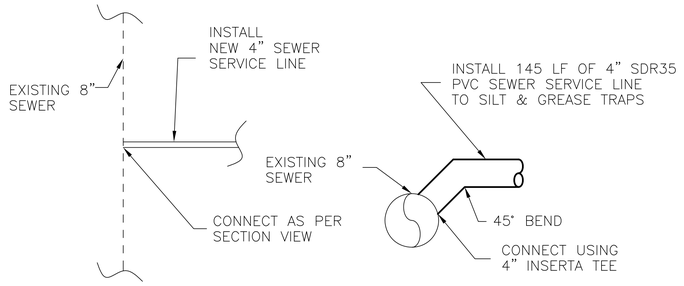

SEWER CONNECTION — H
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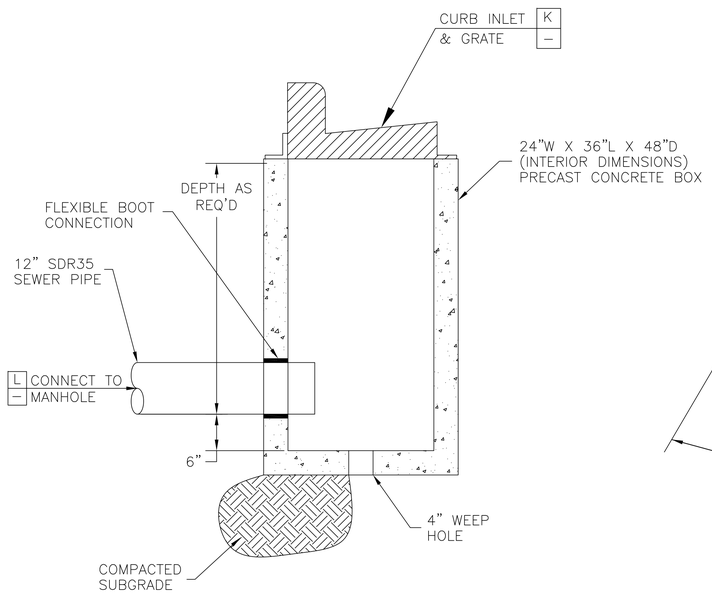

CATCH BASIN — J
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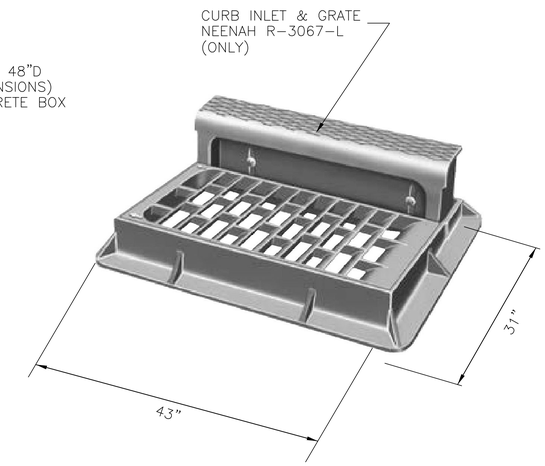

CURB INLET & GRATE — K
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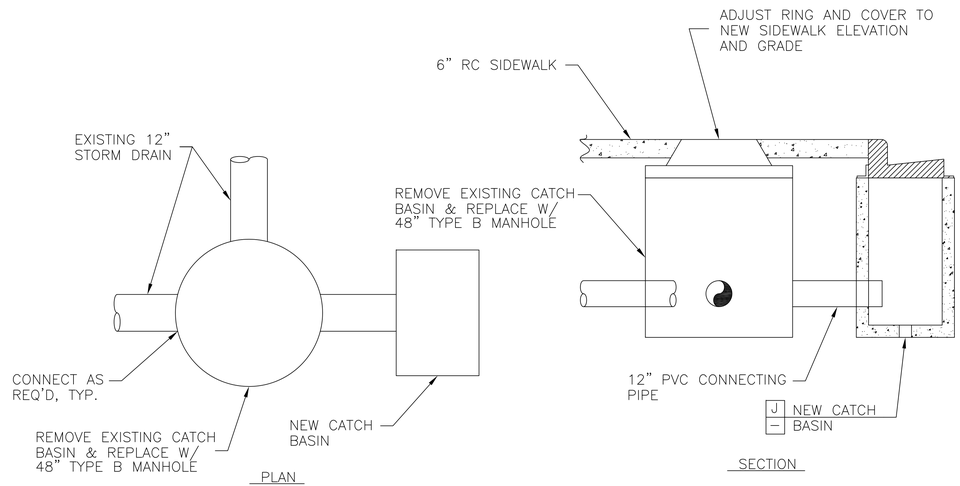

STORM DRAIN CONNECTION — L
NTS

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project#:
byuidaho project#: 12005
date: october 27, 2020

revisions :

ADDENDUM #2
10 NOV 2020

ADDENDUM #3
14 NOV 2020

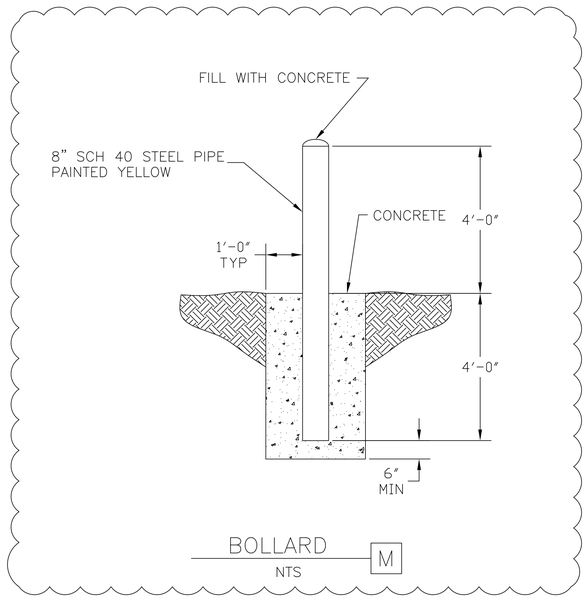
title:

CIVIL DETAILS

sheet:

C104

100% construction documents



BOLLARD M

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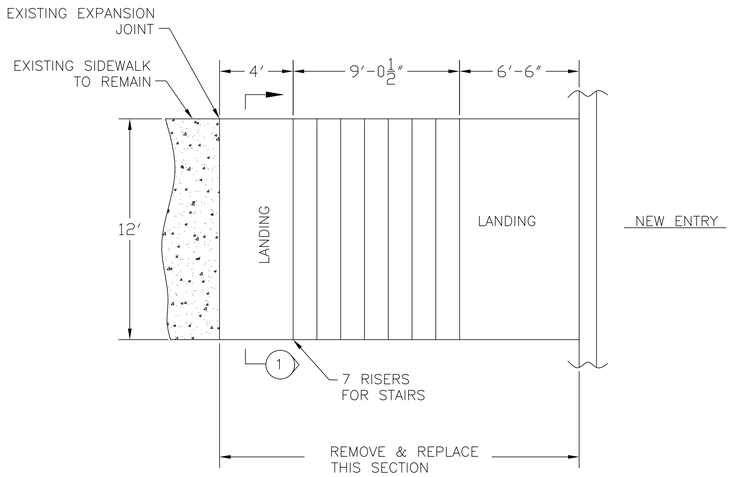

PLAN

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EXISTING STAIRS

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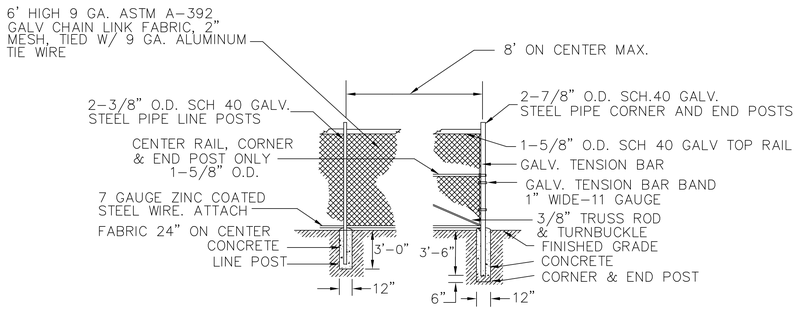
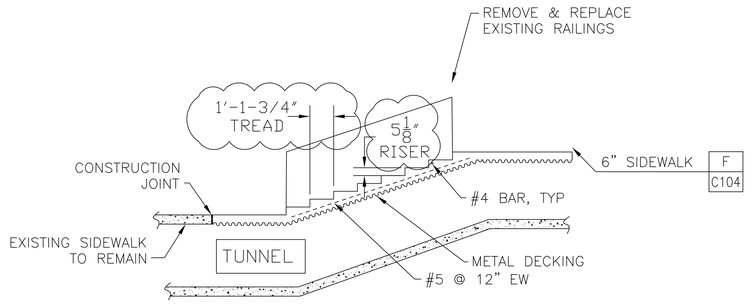


FENCE NOTES

1. FABRIC SELVAGE KNUCKLED AT TOP AND BOTTOM
2. INSTALL WITH FULL HEIGHT PRIVACY SLATS, COLOR BY OWNER
3. USE 6-5/8" OD GALVANIZED GATE POSTS.
4. USE 12' DOUBLE SWING GATES W/ LOCKING LATCH AND CENTER DROP ROD.
5. USE POWDER COATED POSTS AND RAILS, COLOR BY OWNER

CHAIN LINK FENCE P

NTS



ELEVATION

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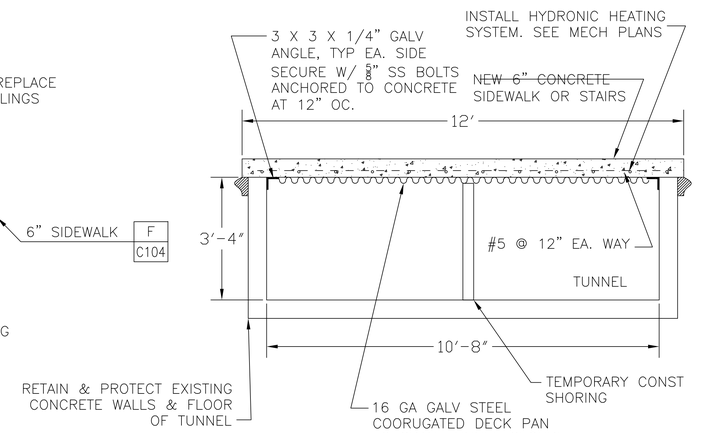

SECTION 1

NTS

RECONSTRUCT CONCRETE STAIRS O

NTS

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project:

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Rexburg, ID 83440

project#:
byu idaho project#: 12005
date: october 27, 2020

revisions :

ADDENDUM #2
10 NOV 2020
ADDENDUM #3
14 NOV 2020

title:

CIVIL DETAILS

sheet:

C105

100% construction documents

Addendum #3 Specifications:

062023	Interior Finish Carpentry
071113	Bituminous Dampproofing
072100	Thermal Insulation
072500	Weather Barriers
072726	Fluid-Applied Membrane Air Barriers
074213.23	Metal Composite Material Wall Panels
075419	Polyvinyl-Chloride (PVC) Roofing
076200	Sheet Metal Flashing and Trim
077200	Roof Accessories
079200	Joint Sealants
071800	Traffic Coatings
071900	Water Repellants
086200	Unit Skylights
086250	Tubular Daylighting Devices
099123	Interior Painting
099600	High-Performance Coatings
102113.19	Solid Plastic Toilet Compartments (omit Phenolic Toilet Compartments)
104413	Fire Protection Cabinets

SECTION 062023 - INTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Interior trim
2. Plastic-laminated interior plywood paneling.
3. Fire-rated plastic-laminated interior plywood paneling ceiling system.

B. Related Requirements:

1. Section 061053 "Miscellaneous Rough Carpentry" for furring, blocking, and other carpentry work not exposed to view.
2. Section 099123 "Interior Painting" for priming and back priming of interior finish carpentry.
3. Section 092216 “Non-Structural Metal Framing” for framing of suspension systems for interior fire-rated plastic-laminated plywood ceiling system.

1.3 DEFINITIONS

A. MDF: Medium-density fiberboard.

B. MDO: Plywood with a medium-density overlay on the face.

C. PVC: Polyvinyl chloride.

1.4 PERFORMANCE REQUIREMENTS

A. Fire-Resistance Ratings: As tested according to ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials, dimensions, profiles, textures, and colors and include construction and application details.

1. Include data for wood-preservative treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained. Include chemical-treatment manufacturer's written instructions for finishing treated material.
2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced before shipment to Project site to levels specified.

B. Samples: For each exposed product and for each color and texture specified.

C. Samples for Initial Selection: For each type of product involving selection of colors, profiles, or textures.

D. Samples for Verification:

1. For each species and cut of lumber and panel products with nonfactory-applied finish, with half of exposed surface finished; 50 sq. in. (300 sq. cm) for lumber and 8 by 10 inches (200 by 250 mm) for panels.
2. For foam-plastic moldings, with half of exposed surface finished; 50 sq. in. (300 sq. cm).
3. For each finish system and color of lumber and panel products with factory-applied finish, 50 sq. in. (300 sq. cm) for lumber and 8 by 10 inches (200 by 250 mm) for panels.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber, plywood, and other panels flat with spacers between each bundle to provide air circulation.

1. Protect materials from weather by covering with waterproof sheeting, securely anchored.
2. Provide for air circulation around stacks and under coverings.

B. Deliver interior finish carpentry materials only when environmental conditions comply with requirements specified for installation areas. If interior finish carpentry materials must be stored in other than installation areas, store only where environmental conditions comply with requirements specified for installation areas.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install interior finish carpentry materials until building is enclosed and weatherproof, wet-work in space is completed and nominally dry, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

B. Do not install finish carpentry materials that are wet, moisture damaged, or mold damaged.

1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with applicable rules of any rules-writing agency certified by the American Lumber Standard Committee's (ALSC) Board of Review. Grade lumber by an agency certified by the ALSC's Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. For exposed lumber, mark grade stamp on end or back of each piece, or omit grade stamp and provide certificates of grade compliance issued by grading agency.

2.2 FIRE-RETARDANT-TREATED PLYWOOD

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.

1. Use treatment that does not promote corrosion of metal fasteners.

2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D3201/D3201M at 92 percent relative humidity.
3. Design Value Adjustment Factors: Treated lumber plywood shall be tested according to ASTM D5516 and design value adjustment factors shall be calculated according to ASTM D6305. Span ratings after treatment shall be not less than span ratings specified.

C. Kiln-dry material after treatment to a maximum moisture content of 15 percent. Do not use material that is warped or does not comply with requirements for untreated material.

D. Identify fire-retardant-treated plywood with appropriate classification marking of qualified testing agency.

E. Application: Treat plywood indicated on Drawings, and the following: CL8.

2.3 INTERIOR TRIM

A. Hardwood Moldings for Transparent Finish (Stain or Clear Finish):

1. Species: Match existing as approved by Architect.
2. Maximum Moisture Content: 9 percent.
3. Finger Jointing: Not allowed.
4. Matching: Selected for compatible grain and color.
5. Base Pattern: BYI-Idaho Standard base.
6. Finish: Match existing stain and finish.

2.4 PANELING

A. Plywood Paneling:
1. Softwood Plywood: DOC PS 1 or PS 2
2. Construction: Veneer core.
3. Plywood Thickness: As indicated in drawings.
4. Panel Size: As indicated in drawings.
5. Glue Bond: Type II (interior).

B. Fire-Rated High-Pressure Decorative Laminate: Nevamar Type NK61, grades as indicated or if not indicated, as required by quality standard.

1. Flame spread index and smoke developed index; ASTME-84 or UL 723.
   a. Class B
   b. Flame spread index 50; smoke developed index 35-85

2. Horizontal Surfaces: Grade HGS.
3. Vertical Surfaces: Grade HGS.
4. Edges: Grade HGS.

5. Pattern Direction: As approved by Architect.
6. Adhesive: As required by plastic laminate manufacturer to meet fire spread index and smoke developed index.
   a. Panolam Industries International Technical Bulletin (07/2018): Cascophen G1131/Cascoset G1131B 2-part Resorcinol glue.
7. All work should be assembled and installed in compliance with current adopted fire codes.

C. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or if not indicated, as required by quality standard.

1. Horizontal Surfaces: Grade HGS.
2. Vertical Surfaces: Grade HGS.
3. Edges: Grade HGS.
4. Pattern Direction: As approved by Architect.

D. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
1. As indicated in drawings.

2.5 MISCELLANEOUS MATERIALS

A. Fasteners for Interior Finish Carpentry: Nails, screws, and other anchoring devices of type, size, material, and finish required for application indicated to provide secure attachment, concealed where possible.

B. Paneling Adhesive: Comply with paneling manufacturer's written instructions for adhesives.

C. Multipurpose Construction Adhesive: Formulation, complying with ASTM D3498, that is recommended for indicated use by adhesive manufacturer.

2.6 FABRICATION

A. Back out or kerf backs of the following members, except those with ends exposed in finished work:

1. Interior standing and running trim, except shoe and crown molds.

B. Ease edges of lumber less than 1 inch (25 mm) in nominal thickness to 1/16-inch (1.5-mm) radius and edges of lumber 1 inch (25 mm) or more in nominal thickness to 1/8-inch (3-mm) radius.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine finish carpentry materials before installation. Reject materials that are wet, moisture damaged, and mold damaged.

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

3.2 PREPARATION

A. Clean substrates of projections and substances detrimental to application.

B. Before installing interior finish carpentry, condition materials to average prevailing humidity in installation areas for a minimum of 24 hours.

3.3 INSTALLATION, GENERAL

A. Do not use materials that are unsound; warped; improperly treated or finished; inadequately seasoned; too small to fabricate with proper jointing arrangements; or with defective surfaces, sizes, or patterns.

B. Install interior finish carpentry level, plumb, true, and aligned with adjacent materials.

1. Use concealed shims where necessary for alignment.
2. Scribe and cut interior finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.
3. Where face fastening is unavoidable, countersink fasteners, fill surface flush, and sand unless otherwise indicated.
4. Install to tolerance of 1/8 inch in 96 inches (3 mm in 2438 mm) for level and plumb. Install adjoining interior finish carpentry with 1/32-inch (0.8-mm) maximum offset for flush installation and 1/16-inch (1.5-mm) maximum offset for reveal installation.
5. Coordinate interior finish carpentry with materials and systems in or adjacent to it. Provide cutouts for mechanical and electrical items that penetrate interior finish carpentry.

3.4 INSTALLATION OF STANDING AND RUNNING TRIM

A. Install trim with minimum number of joints as is practical, using full-length pieces from maximum lengths of lumber available.

1. Do not use pieces less than 24 inches (610 mm) long, except where necessary.
2. Stagger joints in adjacent and related standing and running trim.
3. Cope at returns, miter at outside corners, and cope at inside corners to produce tight-fitting joints with full-surface contact throughout length of joint.
4. Use scarf joints for end-to-end joints.
5. Plane backs of casings to provide uniform thickness across joints where necessary for alignment.
6. Match color and grain pattern of trim for transparent finish (stain or clear finish) across joints.
7. Install trim after gypsum-board joint finishing operations are completed.
8. Install without splitting; drill pilot holes before fastening where necessary to prevent splitting.
9. Fasten to prevent movement or warping.
10. Countersink fastener heads on exposed carpentry work and fill holes.

3.5 INSTALLATION OF PANELING

A. Plywood Paneling: Select and arrange panels on each wall to minimize noticeable variations in grain character and color between adjacent panels.

1. Leave 1/4-inch (6-mm) gap to be covered with trim at top, bottom, and openings.
2. Install with uniform tight joints between panels.
3. Attach panels to supports with manufacturer's recommended panel adhesive and fasteners.
4. Space fasteners and adhesive as recommended by panel manufacturer.
5. Conceal fasteners to greatest practical extent.
6. Nailing: Space fasteners 4 inches (100 mm) o.c. at panel perimeter and 8 inches (200 mm) o.c. at intermediate supports unless otherwise noted.
7. Install in full lengths without end joints.
8. Fasten paneling with trim screws, set below face and filled.
9. Refer to Section 092216 “Non-Structural Metal Framing” for framing of suspension systems for interior fire-rated plastic-laminated plywood paneling ceiling system.

3.6 ADJUSTING

A. Replace interior finish carpentry that is damaged or does not comply with requirements.

1. Interior finish carpentry may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

B. Adjust joinery for uniform appearance.

3.7 CLEANING

A. Clean interior finish carpentry on exposed and semiexposed surfaces.

B. Restore damaged or soiled areas and touch up factory-applied finishes if any.

3.8 PROTECTION

A. Protect installed products from damage from weather and other causes during construction.

B. Remove and replace finish carpentry materials that are wet, moisture damaged, and mold damaged.

1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 062023

SECTION 071113 - BITUMINOUS DAMPPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Cold-applied, emulsified-asphalt dampproofing.
   2. Application: All below-grade footings, foundations, and walls for both concrete and concrete masonry units.

B. Related Requirements:

   1. Section 033000 "Cast-in-Place Concrete" for bituminous vapor retarders under slabs-on-grade.
   2. Section 042200 "Concrete Unit Masonry" for mortar parge coat on masonry surfaces.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 FIELD CONDITIONS

A. Weather Limitations: Proceed with application only when existing and forecasted weather conditions permit dampproofing to be performed according to manufacturers' written instructions.

B. Ventilation: Provide adequate ventilation during application of dampproofing in enclosed spaces. Maintain ventilation until dampproofing has cured.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain primary dampproofing materials and primers from single source from single manufacturer. Provide protection course and auxiliary materials recommended in writing by manufacturer of primary materials.

2.2 PERFORMANCE REQUIREMENTS

A. VOC Content: Products shall comply with VOC content limits of authorities having jurisdiction unless otherwise indicated.

2.3 COLD-APPLIED, EMULSIFIED-ASPHALT DAMPPROOFING

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

1. BASF Corporation
2. Henry Company
3. W.R. Meadows, Inc.

B. Trowel Coats: ASTM D1227, Type II, Class 1.

C. Fibered Brush and Spray Coats: ASTM D1227, Type II, Class 1.

D. Brush and Spray Coats: ASTM D1227, Type III, Class 1.

2.4 AUXILIARY MATERIALS

A. Furnish auxiliary materials recommended in writing by dampproofing manufacturer for intended use and compatible with bituminous dampproofing.

B. Emulsified-Asphalt Primer: ASTM D1227, Type III, Class 1, except diluted with water as recommended in writing by manufacturer.

C. Asphalt-Coated Glass Fabric: ASTM D1668/D1668M, Type I.

D. Patching Compound: Epoxy or latex-modified repair mortar of type recommended in writing by dampproofing manufacturer.

E. Protection Course: Extruded-polystyrene board insulation, unfaced, ASTM C578, Type X, 1/2 inch (13 mm) thick.

F. Protection Course: Smooth-surfaced roll roofing complying with ASTM D6380/D6380M, Class S, Type III.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for surface smoothness, maximum surface moisture content, and other conditions affecting performance of the Work.

B. Proceed with application only after substrate construction and penetrating work have been completed and unsatisfactory conditions have been corrected.

3.2 PREPARATION

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

B. Mask or otherwise protect adjoining exposed surfaces from being stained, spotted, or coated with dampproofing. Prevent dampproofing materials from entering and clogging weep holes and drains.

C. Clean substrates of projections and substances detrimental to dampproofing work; fill voids, seal joints, and remove bond breakers if any.

D. Apply patching compound to patch and fill tie holes, honeycombs, reveals, and other imperfections; cover with asphalt-coated glass fabric.

3.3 APPLICATION, GENERAL

A. Comply with manufacturer's written instructions for dampproofing application, cure time between coats, and drying time before backfilling unless otherwise indicated.

1. Apply dampproofing to provide continuous plane of protection.
2. Apply additional coats if recommended in writing by manufacturer or to achieve a smooth surface and uninterrupted coverage.

B. Where dampproofing footings and foundation walls, apply from finished-grade line to top of footing; extend over top of footing and down a minimum of 6 inches (150 mm) over outside face of footing.

1. Extend dampproofing 12 inches onto intersecting walls and footings, but do not extend onto surfaces exposed to view when Project is completed.

2. Install flashings and corner protection stripping at internal and external corners, changes in plane, construction joints, cracks, and where indicated as "reinforced," by embedding an 8-inch- (200-mm-) wide strip of asphalt-coated glass fabric in a heavy coat of dampproofing. Dampproofing coat for embedding fabric is in addition to other coats required.

C. Where dampproofing exterior face of inner wythe of exterior masonry cavity walls, lap dampproofing at least 1/4 inch (6 mm) onto flashing, masonry reinforcement, veneer ties, and other items that penetrate inner wythe.

1. Extend dampproofing over outer face of structural members and concrete slabs that interrupt inner wythe.
2. Lap dampproofing at least 1/4 inch (6 mm) onto shelf angles supporting veneer.

D. Concrete Foundations and Parged Masonry Foundation Walls: Apply two brush or spray coats at not less than 1.5 gal./100 sq. ft. (0.6 L/sq. m) for first coat and 1 gal./100 sq. ft. (0.4 L/sq. m) for second coat, one fibered brush or spray coat at not less than 3 gal./100 sq. ft. (1.2 L/sq. m), or one trowel coat at not less than 4 gal./100 sq. ft. (1.6 L/sq. m).

E. Unparged Masonry Foundation Walls: Apply primer and one trowel coat at not less than 5 gal./100 sq. ft. (2 L/sq. m).

F. Unexposed Face of Concrete Retaining Walls: Apply one brush or spray coat at not less than 1.25 gal./100 sq. ft. (0.5 L/sq. m).

G. Unexposed Face of Masonry Retaining Walls: Apply primer and one brush or spray coat at not less than 1.25 gal./100 sq. ft. (0.5 L/sq. m).

H. Concrete Backup for Brick Veneer Assemblies: Apply one brush or spray coat at not less than 1 gal./100 sq. ft. (0.4 L/sq. m).

I. Masonry Backup for Brick Veneer Assemblies: Apply primer and one brush or spray coat at not less than 1 gal./100 sq. ft. (0.4 L/sq. m).

J. Exterior Face of Inner Wythe of Cavity Walls: Apply primer and one brush or spray coat at not less than 1 gal./100 sq. ft. (0.4 L/sq. m).

3.4 PROTECTION COURSE INSTALLATION

A. Install protection course over completed-and-cured dampproofing. Comply with dampproofing-material and protection-course manufacturers' written instructions for attaching protection course.

1. Support protection course over cured coating with spot application of adhesive type recommended in writing by protection-board manufacturer.

3.5 PROTECTION

A. Correct dampproofing that does not comply with requirements; repair substrates, and reapply dampproofing.

END OF SECTION 071113

SECTION 071800 - TRAFFIC COATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes traffic coatings and pavement markings for the following applications:

1. As indicated on the Drawings.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include installation instructions and details, material descriptions, dry or wet film thickness requirements, and finish.

B. Shop Drawings: For traffic coatings.

1. Include details for treating substrate joints and cracks, flashings, deck penetrations, and other termination conditions that are not included in manufacturer's product data.
2. Include plans showing layout of pavement markings, lane separations, and defined parking spaces. Indicate, with international symbol of accessibility, spaces allocated for people with disabilities.

C. Samples for Initial Selection: For each type of exposed finish.

D. Samples for Verification: For each type of exposed finish, prepared on rigid backing.

1. Provide stepped Samples on backing to illustrate buildup of traffic coatings.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates: For each type of traffic coating.

C. Field quality-control reports.

D. Sample Warranty: For manufacturer's warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For traffic coatings to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Mockups: Build mockups to set quality standards for materials and execution.

1. Build mockup for each traffic coating and substrate to receive traffic coatings.
2. Size: 200 sq. ft. of each substrate to demonstrate surface preparation, joint and crack treatment, thickness, texture, color, and standard of workmanship.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Apply traffic coatings within the range of ambient and substrate temperatures recommended in writing by manufacturer. Do not apply traffic coatings to damp or wet substrates, when temperatures are below 40 deg F, when relative humidity exceeds 85 percent, or when temperatures are less than 5 deg F above dew point.

1. Do not apply traffic coatings in snow, rain, fog, or mist, or when such weather conditions are imminent during the application and curing period. Apply only when frost-free conditions occur throughout the depth of substrate.

B. Do not install traffic coating until items that penetrate membrane have been installed.

C. Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 40 deg F for oil-based materials, and not exceeding 95 deg F.

1.9 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace traffic coating that fails in materials or workmanship within specified warranty period.

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

a. Adhesive or cohesive failures.
b. Abrasion or tearing failures.
c. Surface crazing or spalling.
d. Intrusion of water, oils, gasoline, grease, salt, deicer chemicals, or acids into deck substrate.

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

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations:

1. Obtain traffic coating system, including aggregates, sheet flashings, joint sealants, and substrate repair materials from single manufacturer.
2. Obtain pavement-marking paint from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Material Compatibility: Provide primers; base coat, intermediate coat, and topcoat; and accessory materials that are compatible with one another and with substrate under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

2.3 TRAFFIC COATING

A. Traffic Coating to meet or exceed BYU-Idaho standard requirements. Manufacturer's standard, traffic-bearing, seamless, high-solids-content, cold liquid-applied, elastomeric, water-resistant membrane system with integral wearing surface for pedestrian traffic vehicular traffic and equipment-room floor; according to ASTM C 957/C 957M.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Basis of Design: Sherwin-Williams Company (The).
    b. Or equivalent as approved by Architect.

B. Primer: Liquid primer as recommended in writing for substrate and conditions by traffic-coating manufacturer.

1. Material: Epoxy.

C. Preparatory and Base Coats: epoxy.

1. Thicknesses: Minimum dry- film thickness as recommended in writing by manufacturer for substrate and service conditions indicated.

D. Intermediate Coat: epoxy.

1. Thicknesses: Minimum dry- film thickness as recommended in writing by manufacturer for substrate and service conditions indicated, measured excluding aggregate.
2. Aggregate Content: As recommended in writing by traffic-coating manufacturer for substrate and service conditions indicated.

E. Topcoat: epoxy.

1. Thicknesses: Minimum dry- film thickness as recommended in writing by manufacturer for substrate and service conditions indicated, measured excluding aggregate.
2. Aggregate Content: As recommended in writing by traffic-coating manufacturer for substrate and service conditions indicated.
3. Color: As selected by Architect from manufacturer's full range.

F. Aggregate: Manufacturer's standard aggregate for each use indicated of particle sizes, shape, and minimum hardness recommended in writing by traffic-coating manufacturer.

G. Fire-Test-Response Characteristics: Provide traffic-coating materials with the fire-test-response characteristics as determined by testing identical products according to test method below for deck type and slopes indicated by an independent testing and inspecting agency that is acceptable to authorities having jurisdiction.

1. Class A roof covering according to ASTM E 108.

H. ENERGY STAR Listing: Provide traffic coating that is listed on the DOE's ENERGY STAR "Roof Products Qualified Product List" for low-slope roof products.

I. Energy Performance: Provide traffic coating with an initial Solar Reflectance Index of not less than 0.70 and emissivity of not less than 0.75 when tested according to CRRC-1.

2.4 ACCESSORY MATERIALS

A. Joint Sealants: As specified in Section 079200 "Joint Sealants."

B. Sheet Flashing: Nonstaining sheet material recommended in writing by traffic-coating manufacturer.

1. Thickness: Minimum 60 mils .

C. Adhesive: Contact adhesive recommended in writing by traffic-coating manufacturer.

D. Reinforcing Strip: Fiberglass mesh recommended in writing by traffic-coating manufacturer.

2.5 PAVEMENT MARKINGS

A. Pavement-Marking Paint: Alkyd-resin type, lead and chromate free, ready mixed, complying with AASHTO M 248, Type N; colors complying with FS TT-P-1952.

1. Color: As approved by Architect from manufacturer’s full selection.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, surface smoothness, and other conditions affecting performance of traffic-coating work.

B. Verify that substrates are visibly dry and free of moisture.

1. Test for moisture according to ASTM D 4263.
2. Test for moisture content by method recommended in writing by traffic-coating manufacturer.

C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of traffic-coating work.

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

1. Begin coating application only after substrate construction and penetrating work have been completed.
2. Begin coating application only after minimum concrete-curing and -drying period recommended in writing by traffic-coating manufacturer has passed and after substrates are dry.
3. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Clean and prepare substrates according to ASTM C 1127 and manufacturer's written instructions to produce clean, dust-free, dry substrate for traffic-coating application. Remove projections, fill voids, and seal joints if any, as recommended in writing by traffic-coating manufacturer.

B. Priming: Unless manufacturer recommends in writing against priming, prime substrates according to manufacturer's written instructions.

1. Limit priming to areas that will be covered by traffic-coating material on same day. Reprime areas exposed for more time than recommended by manufacturer.

C. Schedule preparation work so dust and other contaminants from process do not fall on wet, newly coated surfaces.

D. Mask adjoining surfaces not receiving traffic coatings to prevent overspray, spillage, leaking, and migration of coatings. Prevent traffic-coating materials from entering deck substrate penetrations and clogging weep holes and drains.

E. Concrete Substrates: Mechanically abrade surface to a uniform profile acceptable to manufacturer, according to ASTM D 4259. Do not acid etch.

1. Remove grease, oil, paints, and other penetrating contaminants from concrete.
2. Remove concrete fins, ridges, and other projections.
3. Remove laitance, glaze, efflorescence, curing compounds, concrete hardeners, form-release agents, and other incompatible materials that might affect coating adhesion.
4. Remove remaining loose material to provide a sound surface, and clean surfaces according to ASTM D 4258.

3.3 TERMINATIONS AND PENETRATIONS

A. Prepare vertical and horizontal surfaces at terminations and penetrations through traffic coatings and at expansion joints, drains, and sleeves according to ASTM C 1127 and manufacturer's written instructions.

B. Provide sealant cants at penetrations and at reinforced and nonreinforced, floor-to-wall butt joints.

C. Terminate edges of floor-to-floor expansion joints with preparatory base-coat strip.

D. Install sheet flashings at floor-to-wall joints, and bond to floor and wall substrates according to manufacturer's written recommendations.

E. Extend traffic coating system 4 inches minimum vertically, at all wall conditions, where traffic coating system is designated, unless noted otherwise.

3.4 JOINT AND CRACK TREATMENT

A. Prepare, treat, rout, and fill joints and cracks in substrates according to ASTM C 1127 and manufacturer's written recommendations. Before coating surfaces, remove dust and dirt from joints and cracks according to ASTM D 4258.

1. Comply with recommendations in ASTM C 1193 for joint-sealant installation.

B. Apply reinforcing strip in traffic-coating system where recommended in writing by traffic-coating manufacturer.

3.5 TRAFFIC-COATING APPLICATION

A. Apply traffic coating according to ASTM C 1127 and manufacturer's written instructions.

B. Apply coats of specified compositions for each type of traffic coating at locations as indicated on Drawings.

C. Start traffic-coating application in presence of manufacturer's technical representative.

D. Verify that wet-film thickness of each coat complies with requirements every 100 sq. ft..

E. Uniformly broadcast and embed aggregate in each coat indicated to receive aggregate according to manufacturer's written instructions. After coat dries, sweep away excess aggregate.

F. Apply traffic coatings to prepared wall terminations and vertical surfaces to height indicated; omit aggregate on vertical surfaces.

G. Cure traffic coatings. Prevent contamination and damage during coating application and curing.

3.6 PAVEMENT MARKINGS

A. Do not apply pavement-marking paint for striping and other markings until layout, colors, and placement have been verified with Architect and traffic coating has cured.

B. Sweep and clean surface to eliminate loose material and dust.

C. Apply pavement-marking paint with mechanical equipment to produce markings of dimensions indicated with uniform straight edges. Apply at manufacturer's recommended rates for a minimum wet-film thickness of 15-mils .

1. Apply graphic symbols and lettering with paint-resistant, die-cut stencils, firmly secured to surface. Mask an extended area beyond edges of each stencil to prevent paint application beyond stencil. Apply paint so that it cannot run beneath stencil.
2. Broadcast glass beads uniformly into wet pavement-marking paint at a rate of 6 lb/gal. .

3.7 FIELD QUALITY CONTROL

A. Testing Agency: Provide an allowance to engage a qualified testing agency to perform the following field tests and inspections:

1. Materials Testing:

a. Samples of material delivered to Project site shall be taken, identified, sealed, and certified in presence of Contractor.
b. Testing agency shall perform tests for characteristics specified, using applicable referenced testing procedures.
c. Testing agency shall verify thickness of coatings during traffic-coating application for each 600 sq. ft. of installed traffic coating or part thereof.

2. Electronic Leak-Detection Testing:

a. Testing agency shall test each deck area for leaks using an electronic leak-detection method that locates discontinuities in the traffic-coating membrane.
b. Testing agency shall perform tests on abutting or overlapping smaller areas as necessary to cover entire test area.
c. Testing agency shall create a conductive electronic field over the area of traffic coating to be tested and electronically determine locations of discontinuities or leaks, if any, in the traffic coating.
d. Testing agency shall provide survey report indicating locations of discontinuities, if any.

B. Final Traffic-Coating Inspection: Arrange for traffic-coating manufacturer's technical personnel to inspect membrane installation on completion.

1. Notify Architect or Owner 48 hours in advance of date and time of inspection.

C. Waterproofing will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

3.8 PROTECTING AND CLEANING

A. Protect traffic coatings from damage and wear during remainder of construction period.

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

END OF SECTION 071800

SECTION 071900 - WATER REPELLENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes penetrating water-repellent treatments for the following vertical and horizontal surfaces:

1. Cast-in-place concrete.
2. Concrete unit masonry
3. Brick

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: For each type of water repellent and substrate indicated.

1.3 INFORMATIONAL SUBMITTALS

A. Product certificates.

1.4 QUALITY ASSURANCE

A. Preinstallation Conference: Conduct conference at Project site.

B. Field Sample:

1. Install at Project site or pre-selected area of building an area for field sample, as directed by Architect.
2. Provide mockup of at least 100 square feet to include surface preparation, sealant joint, and juncture details and allow for evaluation of repellent performance and finish.
3. Conduct RILEM test before and after field sample has cured three days. Adjust application until required repellent performance is achieved.
4. Apply material in strict accordance with manufacturer’s written application instructions.
5. Obtain Architect’s written approval of field sample before start of material application, including approval of aesthetics, color, texture, and appearance.
6. Manufacturer’s representative will review surface preparation, application, and workmanship.
7. Field sample will be standard for judging workmanship on remainder of Project.

8. Field sample must be maintained during construction for workmanship comparison.
9. Field sample must not be altered, moved, or destroyed until Work is completed and approved by Architect.

1.5 PROJECT CONDITIONS

A. Weather and Substrate Conditions: Do not proceed with application of water repellent under any of the following conditions, except with written instructions from the manufacturer:

1. Ambient air and surface temperature is less than 50 degrees F.
2. Concrete surfaces and mortar have cured less than 28 days.
3. Rain or temperatures below 50 degrees F are predicted within 24 hours.
4. Application is earlier than 24 hours after surface has been wet.
5. Substrate is frozen or surface temperature is less than 50 degrees F.
6. Windy conditions exist that may cause water repellent to be blown onto surface not intended to be coated.

1.6 WARRANTY

A. General Warranty: The special warranty specified in the article shall not deprive the owner of other rights the owner may have under other provisions of the contract documents and shall be in addition to, and run concurrent with, other warranties made by the contractor under requirements of the contract documents.

B. Special Warranty: Submit a written warranty, executed by the applicator and water repellent manufacturer, covering materials, agreeing to repair or replace materials that fail to provide water repellency within the specified warranty period. Warranty does not include deterioration or failure of coating due to unusual weather phenomena, failure of prepared and treated substrate, formation of new joints and cracks in excess of 1.5 mm (1/16 inch) wide, fire, vandalism or abuse by maintenance equipment.

C. Warranty Period: Five (5) years from date of Substantial Completion.

D. Contractor Verification - Applicator must comply with manufacturer’s warranty requirements providing written verification of total size of surface area covered and total gallons of product applied. This document will be accompanied with copies of invoices for product applied to project, including credits for any returned merchandise.

E. Final Inspection - Manufacturer will issue the Special Warranty after completing final inspection of the Project confirming that the performance of the sealer is equal to the test wall and after receiving the completed Contractor Verification documents.

PART 2 - PRODUCTS

2.1 PENETRATING WATER REPELLENTS

A. Silane/Siloxane-Blend, Penetrating Water Repellent: Clear, silane and siloxane blend with 400 g/L or less of VOCs.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. OKON Co., Inc., Division of Rust-Oleum
b. ZINSSER Co., Inc., an RPM company; S-20.
c. Prosoco Inc.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements and conditions affecting performance of the Work.

1. Verify that surfaces are clean and dry according to water-repellent manufacturer's requirements. Check moisture content in representative locations by method recommended by manufacturer.
2. Inspect for previously applied treatments that may inhibit penetration or performance of water repellents.
3. Verify that there is no efflorescence or other removable residues that would be trapped beneath the application of water repellent.
4. Verify that required repairs are complete, cured, and dry before applying water repellent.

B. Test pH level according to water-repellent manufacturer's written instructions to ensure chemical bond to silica-containing or siliceous minerals.

3.2 PREPARATION

A. Cleaning: Before application of water repellent, clean substrate of substances that could impair penetration or performance of product according to water-repellent manufacturer's written instructions.

B. Coordination with Mortar Joints: Do not apply water repellent until pointing mortar for joints adjacent to surfaces receiving water-repellent treatment has been installed and cured.

C. Coordination with Sealant Joints: Do not apply water repellent until sealants for joints adjacent to surfaces receiving water-repellent treatment have been installed and cured.

1. Water-repellent work may precede sealant application only if sealant adhesion and compatibility have been tested and verified using substrate, water repellent, and sealant materials identical to those required.

3.3 APPLICATION

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect the substrate before application of water repellent and to instruct Applicator on the product and application method to be used.

B. LOCATIONS: Apply water repellent at all exposed interior and exterior concrete, concrete masonry unites, and brick. Apply a heavy-saturation coating of water repellent, on surfaces required for treatment by the Architect, using low-pressure spray to the point of saturation. Remove excess material; do not allow material to puddle beyond saturation. Comply with manufacturer's written instructions for application procedure unless otherwise indicated.

C. Apply a second saturation coating, repeating first application. Comply with manufacturer's written instructions for limitations on drying time between coats and after precipitation and/or wetting of surfaces between coats. Consult manufacturer's technical representative if written instructions are not applicable to Project conditions.

3.4 CLEANING

A. Immediately clean water repellent from adjoining surfaces and surfaces soiled or damaged by water-repellent application as work progresses. Correct damage to work of other trades caused by water-repellent application.

B. Comply with manufacturer's written cleaning instructions.

END OF SECTION 07 1900

SECTION 072100 - THERMAL INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Foam-plastic board insulation.
   2. Glass-fiber blanket insulation.
   3. Acoustical blanket insulation.
   4. Spray polyurethane foam insulation.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.4 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each product.

B. Research/Evaluation Reports: For foam-plastic insulation, from ICC-ES.

1.5 QUALITY ASSURANCE

A. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

B. Protect foam-plastic board insulation as follows:

1. Do not expose to sunlight except to necessary extent for period of installation and concealment.
2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site before installation time.
3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.

PART 2 - PRODUCTS

2.1 FOAM-PLASTIC BOARD INSULATION

A. Extruded-Polystyrene Board Insulation: ASTM C 578, of type and minimum compressive strength indicated below, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E 84.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    1. DiversiFoam Products.
    2. Dow Chemical Company (The).
    3. Owens Corning.
    4. Pactiv Building Products.
2. Type IV, 25 psi (173 kPa).

2.2 GLASS-FIBER BLANKET INSULATION

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. CertainTeed Corporation.
2. Johns Manville.
3. Owens Corning.

B. Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.

2.3 ACOUSTICAL INSULATION

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. CertainTeed "CertaPro AcoustaTherm Batts"
2. Johns-Mansville "Sound Control Batts"
3. Owens Corning "Sound Attenuation Fire Batt Insulation/ MW

B. Unfaced acoustical insulation batts produced by combining mineral-glass fibers with thermosetting resins to comply with ASTM C665, Type I.
   1. Thickness: Nominal 3-1/2 inches, unless otherwise indicated.
   2. Minimum density: 2 lb/cu.ft to 3 lb/cu.ft
   3. Outlet Box Pads: As specified in Section 07 9219 “Acoustical Joint Sealants”
   4. Acoustical Sealant: As specified in Section 07 9219 “Acoustical Joint Sealants”.

2.3 SPRAY POLYURETHANE FOAM INSULATION

A. Closed-Cell Polyurethane Foam Insulation: ASTM C 1029, Type II, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E 84.

   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

      1. BASF Corporation.
      2. Dow Chemical Company (The).
      3. Gaco Western Inc.
      4. Henry Company.

   2. Minimum density of 1.5 lb/cu. ft. (24 kg/cu. m), thermal resistivity of 6.2 deg F x h x sq. ft./Btu x in. at 75 deg F (43 K x m/W at 24 deg C).

B. Spray Applied Intumescent Thermal Barrier for sprayed foam insulation: Product to be compatible with manufacturer of sprayed polyurethane insulation and have a current ESR Report available. Apply at all locations where spray foam insulation is exposed without other thermal barrier.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      1. Icynene Inc. (DC 315)
      2. Equivalents as approved by Architect.

2.4 INSULATION FASTENERS

A. Adhesively Attached, Spindle-Type Anchors: Plate welded to projecting spindle; capable of holding insulation of specified thickness securely in position indicated with self-locking washer in place.

   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1. AGM Industries, Inc.; Series T TACTOO Insul-Hangers.
2. Gemco; Spindle Type.

2. Plate: Perforated, galvanized carbon-steel sheet, 0.030 inch (0.762 mm) thick by 2 inches (50 mm) square.
3. Spindle: Copper-coated, low-carbon steel; fully annealed; 0.105 inch (2.67 mm) in diameter; length to suit depth of insulation indicated.

B. Anchor Adhesive: Product with demonstrated capability to bond insulation anchors securely to substrates indicated without damaging insulation, fasteners, and substrates.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1. AGM Industries, Inc.; TACTOO Adhesive.
2. Gemco; Tuff Bond Hanger Adhesive.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrates of substances that are harmful to insulation or vapor retarders, including removing projections capable of puncturing vapor retarders, or that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications indicated.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Extend insulation to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.3 INSTALLATION OF BELOW-GRADE INSULATION

A. On vertical surfaces, set insulation units using manufacturer's recommended adhesive according to manufacturer's written instructions.

1. If not otherwise indicated, extend insulation a minimum of 24 inches (610 mm) below exterior grade line.

3.4 INSTALLATION OF INSULATION FOR FRAMED CONSTRUCTION

A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

B. Glass-Fiber Blanket Insulation: Install in cavities formed by framing members according to the following requirements:

1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
3. Maintain 3-inch (76-mm) clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
4. For metal-framed wall cavities where cavity heights exceed 96 inches (2438 mm), support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.

C. Spray-Applied Insulation: Apply spray-applied insulation according to manufacturer's written instructions. Do not apply insulation until installation of pipes, ducts, conduits, wiring, and electrical outlets in walls is completed and windows, electrical boxes, and other items not indicated to receive insulation are masked. After insulation is applied, make flush with face of studs by using method recommended by insulation manufacturer.

D. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:
1. Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.

3.5 PROTECTION

A. Protect installed insulation and vapor retarders from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or

enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 07 2100

SECTION 072500 - WEATHER BARRIERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Flexible flashing.

B. Related Requirements:
   1. Section 072726 " Fluid-Applied Membrane Air Barriers " for air barrier system.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For flexible flashing, from ICC-ES.

PART 2 - PRODUCTS

2.1 FLEXIBLE FLASHING

A. Rubberized-Asphalt Flashing: Composite, self-adhesive, flashing product consisting of a pliable, rubberized-asphalt compound, bonded to a cross-laminated polyethylene film with release liner backing to produce an overall thickness of not less than 0.040 inch (40 mil).

   1. Provide flexible flashing recommended by air barrier manufacturer to produce a complete air-barrier assembly and compatible with primary air-barrier material.
   2. Flame Propagation Test: Materials and construction shall be as tested according to NFPA 285.

B. Primer for Flexible Flashing: Product recommended in writing by flexible flashing manufacturer for substrate.

PART 3 - EXECUTION

3.1 FLEXIBLE FLASHING INSTALLATION

A. Apply flexible flashing where indicated to comply with manufacturer's written instructions for air barrier system to form a seal with adjacent construction and maintain a continuous air barrier.

1. Prime substrates as recommended by flashing and air barrier manufacturer.
2. Lap seams and junctures with other materials at least 4 inches.
3. Lap flashing at all sides of openings in accordance with air barrier manufacturer written requirements and recommendations.
4. After flashing has been applied, roll surfaces with a hard rubber or metal roller to ensure that flashing is completely adhered to form a seal and maintain a continuous air barrier.

END OF SECTION 072500

SECTION 072726 - FLUID-APPLIED MEMBRANE AIR BARRIERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes fluid-applied, vapor-permeable membrane air barriers.

B. Related Requirements:
   1. Section 072500 "Weather Barriers" for weather barriers, including flexible flashing

1.3 DEFINITIONS

A. Air-Barrier Material: A primary element that provides a continuous barrier to the movement of air.

B. Air-Barrier Accessory: A transitional component of the air barrier that provides continuity.

C. Air-Barrier Assembly: The collection of air-barrier materials and accessory materials applied to an opaque wall, including joints and junctions to abutting construction, to control air movement through the wall.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.
   1. Review air-barrier requirements and installation, special details, mockups, air-leakage and bond testing, air-barrier protection, and work scheduling that covers air barriers.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include manufacturer's written instructions for evaluating, preparing, and treating substrate; technical data; and tested physical and performance properties of products.

B. Shop Drawings: For air-barrier assemblies.
1. Show locations and extent of air barrier. Include details for substrate joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
2. Include details of interfaces with other materials that form part of air barrier.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates: From air-barrier manufacturer, certifying compatibility of air barriers and accessory materials with Project materials that connect to or that come in contact with the barrier.

C. Product Test Reports: For each air-barrier assembly, for tests performed by a qualified testing agency.

1.7 ACTION SUBMITTALS

A. Product Data: For each type of product.
1. Include manufacturer's written instructions for evaluating, preparing, and treating each substrate; technical data; dry film thickness; and tested physical and performance properties of products.

B. Shop Drawings: For air-barrier assemblies.
1. Show locations and extent of air-barrier materials, accessories, and assemblies specific to Project conditions.
2. Include details for substrate joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
3. Include details of interfaces with other materials that form part of air barrier.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Mockups: Build mockups to set quality standards for materials and execution.
1. Build integrated mockups of exterior wall assembly as shown on Drawings, incorporating backup wall construction, external cladding, window, storefront, door frame and sill, insulation, ties and other penetrations, and flashing to demonstrate surface preparation, crack and joint treatment, application of air

barriers, and sealing of gaps, terminations, and penetrations of air-barrier assembly.
   a. Coordinate construction of mockups to permit inspection by Owner's testing agency of air barrier before external insulation and cladding are installed.
   b. Include junction with roofing membrane, building corner condition, and foundation wall intersection.
   c. If Architect determines mockups do not comply with requirements, reconstruct mockups and apply air barrier until mockups are approved.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

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

B. Protect stored materials from direct sunlight.

1.10 FIELD CONDITIONS

A. Environmental Limitations: Apply air barrier within the range of ambient and substrate temperatures recommended by air-barrier manufacturer.
   1. Protect substrates from environmental conditions that affect air-barrier performance.
   2. Do not apply air barrier to a damp or wet substrate or during snow, rain, fog, or mist.

1.11 WARRANTY

A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace air barrier system that do not comply with performance and other requirements specified in this Section within specified warranty period.

   1. Warranty Period: Two (2) years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer's standard form in which air barrier manufacturer agrees to furnish materials to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

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

C. Special warranties specified in this article exclude deterioration or failure from the following:

1. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the air barrier exceeding manufacturer's written specifications.
2. Disintegration of joint substrates from natural causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Source Limitations: Obtain primary air-barrier materials and air-barrier accessories from single source from single manufacturer.

B. VOC Content: 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and complying with VOC content limits of authorities having jurisdiction.

2.2 PERFORMANCE REQUIREMENTS

A. General: Air barrier shall be capable of performing as a continuous vapor-permeable air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air-barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.

B. Air-Barrier Assembly Air Leakage: Maximum 0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft., when tested according to ASTM E 283 or ASTM E 783.

2.3 VAPOR-PERMEABLE MEMBRANE AIR-BARRIER

A. Fluid-Applied, Vapor-Permeable Membrane Air Barrier: Elastomeric, modified bituminous or synthetic polymer membrane.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. Elastomeric, Modified Bituminous Membrane:
         1) BASF Corporation; MasterSeal AWB 660 Air/Water-Resistive Barrier.
         2) Henry Company; Air-Bloc 17.
         3) Meadows, W. R., Inc.; Air-Shield LMP.
         4) Tremco Incorporated, an RPM company; ExoAir 220R.

      b. Synthetic Polymer Membrane:
         1) Carlisle Coatings & Waterproofing Inc.; Barritech VP.
         2) Grace, W. R., & Co. - Conn.; Perm-A-Barrier VP.

3) Henry Company; Air-Bloc 33.
4) Tremco Incorporated, an RPM company; ExoAir 230.

2. Physical and Performance Properties:
   a. Air Permeance: Maximum 0.0012 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. pressure difference; ASTM E 2178.
   b. Vapor Permeance: Minimum 10 perms; ASTM E 96.
   c. Ultimate Elongation: Minimum 200 percent; ASTM D 412, Die C.

2.4 ACCESSORY MATERIALS

A. General: Accessory materials recommended by air-barrier manufacturer to produce a complete air-barrier assembly and compatible with primary air-barrier material.

B. Primer: Liquid waterborne or solvent-borne primer recommended for substrate by air-barrier material manufacturer.

C. Counterflashing Strip: Modified bituminous, 40-mil-thick, self-adhering sheet consisting of 32 mils of rubberized asphalt laminated to an 8-mil-thick, cross-laminated polyethylene film with release liner backing.

D. Joint Reinforcing Strip: Air-barrier manufacturer's glass-fiber-mesh tape.

E. Substrate-Patching Membrane: Manufacturer's standard trowel-grade substrate filler.

F. Sprayed Polyurethane Foam Sealant: One- or two-component, foamed-in-place, polyurethane foam sealant, 1.5- to 2.0-lb/cu. ft density; flame-spread index of 25 or less according to ASTM E 162; with primer and noncorrosive substrate cleaner recommended by foam sealant manufacturer.

G. Adhesive-Coated Transition Strip: Vapor-permeable, 17-mil-thick, self-adhering strip consisting of an adhesive coating over a permeable laminate with a permeance value of 37 perms.

H. Joint Sealant: ASTM C 920, single-component, neutral-curing silicone; Class 100/50 (low modulus), Grade NS, Use NT related to exposure, and, as applicable to joint substrates indicated, Use O. Comply with Section 07 9200 "Joint Sealants."

I. Termination Mastic: Air-barrier manufacturer's standard cold fluid-applied elastomeric liquid; trowel grade.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

1. Verify that substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.
2. Verify that concrete has cured and aged for minimum time period recommended by air-barrier manufacturer.
3. Verify that concrete is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
4. Verify that masonry joints are flush and completely filled with mortar.

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

3.2 SURFACE PREPARATION

A. Clean, prepare, treat, and seal substrate according to manufacturer's written instructions. Provide clean, dust-free, and dry substrate for air-barrier application.

B. Mask off adjoining surfaces not covered by air barrier 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 in concrete with substrate-patching membrane.

E. Remove excess mortar from masonry ties, shelf angles, and other obstructions.

F. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.

G. Cover gaps in substrate plane and form a smooth transition from one substrate plane to another with stainless-steel sheet mechanically fastened to structural framing to provide continuous support for air barrier.

3.3 APPLICATION

A. Apply air barrier to substrate, fastener heads, joints, rough openings, penetrations, and all other appurtenances as required by manufacturer’s written instructions and recommendations.

B. Concrete and Masonry: Prepare, treat, rout, and fill joints and cracks in substrate according to ASTM C 1193 and air-barrier manufacturer's written instructions. Remove dust and dirt from joints and cracks complying with ASTM D 4258 before coating surfaces.
   1. Prime substrate and apply a single thickness of air-barrier manufacturer's recommended preparation coat extending a minimum of 3 inches along each side of joints and cracks. Apply a double thickness of fluid air-barrier material and embed a joint reinforcing strip in preparation coat.

C. Sheathing: Fill joints greater than 1/4 inch with sealant according to ASTM C 1193 and air-barrier manufacturer's written instructions. Apply first layer of fluid air-barrier material at joints. Tape joints with joint reinforcing strip after first layer is dry. Apply a second layer of fluid air-barrier material over joint reinforcing strip.

3.4 TRANSITION STRIP INSTALLATION

A. General: Install strips, transition strips, and accessory materials according to air-barrier manufacturer's written instructions to form a seal with adjacent construction and maintain a continuous air barrier.

B. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by fluid air-barrier material on same day. Reprime areas exposed for more than 24 hours.
   1. Prime sheathing with number of prime coats needed to achieve required bond, with adequate drying time between coats.

C. Connect and seal exterior wall air-barrier material continuously to roofing-membrane air barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.

D. At end of each working day, seal top edge of strips and transition strips to substrate with termination mastic.

E. Apply joint sealants forming part of air-barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

F. Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply modified bituminous transition strip so that a minimum of 3 inches of coverage is achieved over each substrate. Maintain 3 inches of full contact over firm bearing to perimeter frames with not less than 1 inch of full contact.
   1. Modified Bituminous Transition Strip: Roll firmly to enhance adhesion.

G. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, and doors, and miscellaneous penetrations of air-barrier material with foam sealant.

H. Seal strips and transition strips around masonry reinforcing or ties and penetrations with termination mastic.

I. Seal top of through-wall flashings to air barrier with an additional 6-inch-wide, counterflashing strip.

J. Seal exposed edges of strips at seams, cuts, penetrations, and terminations not concealed by metal counterflashings or ending in reglets with termination mastic.

K. Repair punctures, voids, and deficient lapped seams in strips and transition strips. Slit and flatten fishmouths and blisters. Patch with transition strips extending 6 inches beyond repaired areas in strip direction.

3.5 FLUID AIR-BARRIER MEMBRANE INSTALLATION

A. General: Apply fluid air-barrier material to form a seal with strips and transition strips and to achieve a continuous air barrier according to air-barrier manufacturer's written instructions. Apply fluid air-barrier material within manufacturer's recommended application temperature ranges.
   1. Apply primer to substrates at required rate and allow it to dry.
   2. Limit priming to areas that will be covered by fluid air-barrier material on same day. Reprime areas exposed for more than 24 hours.
   3. Prime sheathing with number of prime coats needed to achieve required bond, with adequate drying time between coats.

B. Membrane Air Barriers: Apply a continuous unbroken air-barrier membrane to substrates according to the following thickness. Apply air-barrier membrane in full contact around protrusions such as masonry ties.
   1. Vapor-Permeable Membrane Air Barrier: Total dry film thickness as recommended in writing by manufacturer to meet performance requirements applied in one or more equal coats.

C. Apply strip and transition strip a minimum of 1 inch onto cured air-barrier material or strip and transition strip over cured air-barrier material overlapping 3 inches onto each surface according to air-barrier manufacturer's written instructions.

D. Do not cover air barrier until it has been tested and inspected by Owner's testing agency.

E. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air-barrier components.

3.6 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Inspections: Air-barrier materials, accessories, and installation are subject to inspection for compliance with requirements. Inspections may include the following:
   1. Continuity of air-barrier system has been achieved throughout the building envelope with no gaps or holes.
   2. Continuous structural support of air-barrier system has been provided.
   3. Masonry and concrete surfaces are smooth, clean, and free of cavities, protrusions, and mortar droppings.

4. Site conditions for application temperature and dryness of substrates have been maintained.
5. Maximum exposure time of materials to UV deterioration has not been exceeded.
6. Surfaces have been primed, if applicable.
7. Laps in strips and transition strips have complied with minimum requirements and have been shingled in the correct direction (or mastic has been applied on exposed edges), with no fishmouths.
8. Termination mastic has been applied on cut edges.
9. Strips and transition strips have been firmly adhered to substrate.
10. Compatible materials have been used.
11. Transitions at changes in direction and structural support at gaps have been provided.
12. Connections between assemblies (air-barrier and sealants) have complied with requirements for cleanliness, surface preparation and priming, structural support, integrity, and continuity of seal.
13. All penetrations have been sealed.

C. Tests: Provide allowance for the following tests:
1. Adhesion Testing: Air-barrier assemblies will be tested for minimum air-barrier adhesion of 30 lbf/sq. in. according to ASTM D 4541 for each 600 sq. ft. of installed air barrier or part thereof.

D. Air barriers will be considered defective if they do not pass tests and inspections.
1. Apply additional air-barrier material, according to manufacturer's written instructions, where inspection results indicate insufficient thickness.
2. Remove and replace deficient air-barrier components for retesting as specified above.

E. Repair damage to air barriers caused by testing; follow manufacturer's written instructions.

3.7 CLEANING AND PROTECTION

A. Protect air-barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.
1. Protect air barrier from exposure to UV light and harmful weather exposure as required by manufacturer. If exposed to these conditions for more than 30 days, remove and replace air barrier or install additional, full-thickness, air-barrier application after repairing and preparing the overexposed membrane according to air-barrier manufacturer's written instructions.
2. Protect air barrier from contact with incompatible materials and sealants not approved by air-barrier manufacturer.

B. Clean spills, stains, and soiling from construction that would be exposed in the completed work using cleaning agents and procedures recommended by manufacturer of affected construction.

C. Remove masking materials after installation.

END OF SECTION 072726

SECTION 074213.23 - METAL COMPOSITE MATERIAL WALL PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes metal composite material wall panels.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, metal composite material panel Installer, metal composite material panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal composite material panels, including installers of doors, windows, and louvers.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to metal composite material panel installation, including manufacturer's written instructions.
4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
5. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that affect metal composite material panels.
6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
7. Review temporary protection requirements for metal composite material panel assembly during and after installation.
8. Review procedures for repair of panels damaged after installation.
9. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

B. Shop Drawings:

1. Include fabrication and installation layouts of metal composite material panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment assembly, trim, flashings, closures, and accessories; and special details.
2. Accessories: Include details of the flashing, trim and anchorage, at a scale of not less than 1-1/2 inches per 12 inches.

C. Samples for Selection: For each type of metal composite material panel indicated with factory-applied color finishes.

1. Include similar Samples of trim and accessories involving color selection.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each product, tests performed by a qualified testing agency.

C. Field quality-control reports.

D. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal composite material panels to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Build mockup of typical metal composite material panel assembly as shown on Drawings or as directed by Architect, including corner, soffits, supports, attachments, and accessories.
2. Water-Spray Test: Conduct water-spray test of mockup of metal composite material panel assembly, testing for water penetration according to AAMA 501.2.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, metal composite material panels, and other manufactured items so as not to be damaged or deformed. Package metal composite material panels for protection during transportation and handling.

B. Unload, store, and erect metal composite material panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal composite material panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal composite material panels to ensure dryness, with positive slope for drainage of water. Do not store metal composite material panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on metal composite material panels during installation.

1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal composite material panels to be performed according to manufacturers' written instructions and warranty requirements.

1.10 COORDINATION

A. Coordinate metal composite material panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.11 WARRANTY

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

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

a. Structural failures including rupturing, cracking, or puncturing.

b. Deterioration of metals and other materials beyond normal weathering.

2. Warranty Period: Two years from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal composite material panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide metal composite material panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 330:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.
3. Deflection Limits: For wind loads, no greater than 1/240 of the span.

B. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E 283 at the following test-pressure difference:

1. Test-Pressure Difference: 1.57 lbf/sq. ft. (75 Pa).

C. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E 331 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations 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. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.2 METAL COMPOSITE MATERIAL WALL PANELS

A. Metal Composite Material Wall Panel Systems: Provide factory-formed and -assembled, metal composite material wall panels fabricated from two metal facings that are bonded to a solid, extruded thermoplastic core; formed into profile for installation method indicated. Include attachment assembly components, panel stiffeners, and accessories required for weathertight system.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. 3A Composites USA, Inc.; Alucobond.
b. Alcoa Inc.; Reynobond FR.
c. Alucoil North America; Larsen FR.
d. Mitsubishi Plastics Composites America; Alpolic Aluminum Faced Composite Panel.
e. Petersen Aluminum Corporation; PAC-CLAD

2. Wall Panel System Manufacturers:

a. Noorda BEC (Building Envelope Contractor), Series NRS-2000 System, 2160 West 1700 South, Salt Lake City, Utah 84104, 801.503.3000, Fax 801.503.3004, www.noorda.com.
b. Steel Encounters, Inc.
c. Lindford Contract Glazing.
d. Engineered Wall Systems.

B. Aluminum-Faced Composite Wall Panels: Formed with 0.020-inch-thick, coil-coated aluminum sheet facings.

1. Panel Thickness: 0.157 inch.
2. Core: Standard.
3. Exterior Finish: Three-coat fluoropolymer where indicated.

a. Color: From manufacturer’s full range as approved by Architect.

C. Attachment Assembly Components: Formed from extruded aluminum.

D. Attachment Assembly: Rainscreen principle system.

E. System Type:

1. Provide an open joint rout and return drained/back ventilated rainscreen system.

2.3 MISCELLANEOUS MATERIALS

A. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal composite material panels unless otherwise indicated.

B. Flashing and Trim: Provide flashing and trim formed from same material as metal composite material panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal composite material panels.

C. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal composite material panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.

D. Panel Sealants: ASTM C 920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal composite material panels and remain weathertight; and as recommended in writing by metal composite material panel manufacturer.

2.4 FABRICATION

A. General: Fabricate and finish metal composite material panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.

3. Sealed Joints: Form non-expansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
5. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.

    a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal wall panel manufacturer for application but not less than thickness of metal being secured.

2.5 FINISHES

A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Aluminum Panels and Accessories:
1. Three-Coat Fluoropolymer: AAMA 620. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal composite material panel supports, and other conditions affecting performance of the Work.

1. Examine wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal composite material wall panel manufacturer.
2. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal composite material wall panel manufacturer.

a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Examine roughing-in for components and assemblies penetrating metal composite material panels to verify actual locations of penetrations relative to seam locations of metal composite material panels before installation.

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

3.2 METAL COMPOSITE MATERIAL PANEL INSTALLATION

A. General: Install metal composite material panels according to manufacturer's written instructions in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to supports unless otherwise indicated. Anchor metal composite material panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving metal composite material panels.
2. Flash and seal metal composite material panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal composite material panels are installed.
3. Install screw fasteners in predrilled holes.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Install flashing and trim as metal composite material panel work proceeds.
6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
7. Align bottoms of metal composite material panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:

1. Aluminum Panels: Use aluminum or stainless-steel fasteners for surfaces exposed to the exterior; use aluminum or galvanized-steel fasteners for surfaces exposed to the interior.

C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal composite material panel manufacturer.

D. Attachment Assembly, General: Install attachment assembly required to support metal composite material wall panels and to provide a complete weathertight wall system, including subgirts, perimeter extrusions, tracks, drainage channels, panel clips, and anchor channels.

1. Include attachment to supports, panel-to-panel joinery, panel-to-dissimilar-material joinery, and panel-system joint seals.

E. Installation: Attach metal composite material wall panels to supports at locations, spacings, and with fasteners recommended by manufacturer to achieve performance requirements specified.
   1. Rainscreen Systems: Do not apply sealants to joints unless otherwise indicated.

F. Rainscreen-Principle Installation: Install using manufacturer's standard assembly with vertical channel that provides support and secondary drainage assembly, draining at base of wall. Notch vertical channel to receive support pins. Install vertical channels supported by channel brackets or adjuster angles and at locations, spacings, and with fasteners recommended by manufacturer. Attach metal composite material wall panels by inserting horizontal support pins into notches in vertical channels and into flanges of panels. Leave horizontal and vertical joints with open reveal.

   1. Install wall panels to allow individual panels to be installed and removed without disturbing adjacent panels.
   2. Do not apply sealants to joints unless otherwise indicated.

G. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

   1. Install components required for a complete metal composite material panel assembly including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal composite material panel manufacturer; or, if not indicated, provide types recommended in writing by metal composite material panel manufacturer.

H. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.

   1. Install exposed flashing and trim that is without buckling and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof performance.
   2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

3.3 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align metal composite material wall panel units within installed tolerance of 1/4 inch in 20 feet, non-accumulative, on level, plumb, and location lines as indicated, and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing agency to perform field tests and inspections.

B. Water-Spray Test: After installation, test area of assembly as directed by Architect for water penetration according to AAMA 501.2.

C. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect completed metal composite material wall panel installation, including accessories.

D. Metal composite material wall panels will be considered defective if they do not pass test and inspections.

E. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.

F. Prepare test and inspection reports.

3.5 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal composite material panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal composite material panel installation, clean finished surfaces as recommended by metal composite material panel manufacturer. Maintain in a clean condition during construction.

B. After metal composite material panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

C. Replace metal composite material panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074213.23

SECTION 075419 - POLYVINYL-CHLORIDE (PVC) ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Adhered polyvinyl chloride (PVC) roofing system.
2. Vapor retarder.
3. Roof insulation.
4. Cover board.
5. Walkways.

B. Section includes installation of sound-absorbing insulation strips in ribs of roof deck. Sound-absorbing insulation strips are furnished under Section 053100 "Steel Decking."

C. Related Requirements:

1. Section 061053 "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.
2. Section 072100 "Thermal Insulation" for insulation beneath the roof deck.
3. Section 076200 "Sheet Metal Flashing and Trim" for metal roof flashings and counterflashings.
4. Section 079200 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.
5. Section 221423 "Storm Drainage Piping Specialties" for roof drains.

1.3 DEFINITIONS

A. Roofing Terminology: Definitions in ASTM D1079 and glossary in NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" apply to work of this Section.

1.4 PREINSTALLATION MEETINGS

A. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, air barrier Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review deck substrate requirements for conditions and finishes, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

B. Preinstallation Roofing Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, air barrier Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. For insulation and roof system component fasteners, include copy of FM Approvals' RoofNav and SPRI's Directory of Roof Assemblies listing.

B. Shop Drawings: Include roof plans, sections, details, and attachments to other work, including the following:

1. Layout and thickness of insulation.
2. Base flashings and membrane terminations.
3. Flashing details at penetrations.
4. Tapered insulation thickness and slopes.
5. Roof plan showing orientation of steel roof deck and orientation of roof membrane, fastening spacings, and patterns for mechanically fastened roofing system.
6. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
7. Tie-in with air barrier.

C. Samples for Verification: For the following products:

1. Roof membrane and flashing, of color required.
2. Walkway pads or rolls, of color required.

D. Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind uplift performance requirements.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and manufacturer.

B. Product data for each component and accessory.

C. Manufacturer Certificates:

1. Performance Requirement Certificate: Signed by roof membrane manufacturer, certifying that roofing system complies with requirements specified in "Performance Requirements" Article.

a. Submit evidence of compliance with performance requirements.

2. Special Warranty Certificate: Signed by roof membrane manufacturer, certifying that all materials supplied under this Section are acceptable for special warranty.

D. Product Test Reports: For roof membrane and insulation, tests performed by independent qualified testing agency indicating compliance with specified requirements.

E. Evaluation Reports: For components of roofing system, from ICC-ES.

F. Sample Warranties: For manufacturer's special warranties.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing system to include in maintenance manuals.

B. Certified statement from existing roof membrane manufacturer stating that existing roof warranty has not been affected by Work performed under this Section.

1.8 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is UL listed listed in FM Approvals' RoofNav and listed in SPRI's Directory of Roof Assemblies for roofing system identical to that used for this Project.

B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

1.10 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.11 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.

1. Special warranty includes roof membrane, base flashings, roof insulation, fasteners, cover boards, and other components of roofing system.
2. Warranty Period: 20 years from date of Substantial Completion.

B. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section, including all components of roofing system such as roof membrane, base flashing, roof insulation, fasteners, cover boards, vapor retarders, and walkway products, for the following warranty period:

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

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional design professional, licensed in the state of the Project, as defined in Section 014000 "Quality Requirements," to design the roofing system.

B. General Performance: Installed roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roof system and flashings shall remain watertight.

1. Accelerated Weathering: Roof membrane shall withstand 2000 hours of exposure when tested according to ASTM G152, ASTM G154, or ASTM G155.
2. Impact Resistance: Roof membrane shall resist impact damage when tested according to ASTM D3746, ASTM D4272/D4272M, or the "Resistance to Foot Traffic Test" in FM Approvals 4470.

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

D. Wind Uplift Resistance: Design roofing system to resist the following wind uplift pressures when tested according to FM Approvals 4474, UL 580, or UL 1897.

E. FM Approvals' RoofNav Listing: Roof membrane, base flashings, and component materials shall comply with requirements in FM Approvals 4450 or FM Approvals 4470 as part of a roofing system, and shall be listed in FM Approvals' RoofNav for Class 1 or

noncombustible construction, as applicable. Identify materials with FM Approvals Certification markings.

1. Fire/Windstorm Classification: Class 1A-90 minimum.
2. Hail-Resistance Rating: FM Global Property Loss Prevention Data Sheet 1-34 MH.

F. SPRI's Directory of Roof Assemblies Listing: Roof membrane, base flashings, and component materials shall comply with requirements in FM Approvals 4450 or FM Approvals 4470 as part of a roofing system, and shall be listed in SPRI's Directory of Roof Assemblies for roof assembly identical for that specified for this Project.

G. Energy Performance: Roofing system shall have an initial solar reflectance of not less than 0.70 and an emissivity of not less than 0.75 when tested according to CRRC-1.

2.2 POLYVINYL CHLORIDE (PVC) ROOFING

A. PVC Sheet: ASTM D4434/D4434M, Type II, Thermoplastic membrane, fiberglass scrim reinforced, with lacquer coating, and factory-applied felt backing.
1. Manufacturer: Sika Corporation
   a. Sarnafil G410-60
2. Thickness: 60 mils (minimum thickness)
3. Exposed Face Color: White.

B. Source Limitations: Obtain components for roofing system from roof membrane manufacturer or manufacturers approved by roof membrane manufacturer.

2.3 AUXILIARY ROOFING MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with other roofing components.

1. Adhesives and Sealants: Comply with VOC limits of authorities having jurisdiction.

B. Sheet Flashing: Manufacturer's standard sheet flashing of same material, type, reinforcement, thickness, and color as PVC sheet.

C. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer.

D. Roof Vents: As recommended by roof membrane manufacturer.

1. Size: Not less than 4-inch diameter.

E. Bonding Adhesive: Manufacturer's standard.

F. Slip Sheet: Manufacturer's standard, of thickness required for application.

G. Metal Termination Bars: Manufacturer's standard, predrilled stainless steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.

H. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roofing components to substrate, and acceptable to roofing system manufacturer.

I. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.4 VAPOR RETARDER

A. Polyethylene Film: ASTM D4397, 10 mils thick, minimum

1. Manufacturer: Sika Corporation
   a. Sarnavap-10
2. Adhesive: Manufacturer's standard lap adhesive, listed by FM Approvals for vapor retarder application.

2.5 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured by PVC roof membrane manufacturer, approved for use in FM Approvals' RoofNav listed roof assemblies, and approved for use in SPRI's Directory of Roof Assemblies listed roof assemblies.

1. Manufacturer: Sika Corporation
   a. Sarnatherm ISO Fiber Reinforced Felt Facer
   b. Sarnatherm ISO Coated Glass Facer
   c. Sarnatherm EPS
   d. Sarnatherm XPS
2. Thickness:
   a. Base and Upper Layers: As required for R-value (thermal resistance) of rigid insulation indicated in Drawings.

B. Tapered Insulation: Provide factory-tapered insulation boards.

1. Material: Match roof insulation.
2. Minimum Thickness: 1/4 inch.
3. Slope:

   a. Roof Field: 1/4 inch per foot unless otherwise indicated on Drawings.
   b. Saddles and Crickets: 1/2 inch per foot unless otherwise indicated on Drawings.

2.6 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with other roofing system components.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer.

C. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer

D. Coated Primed Cover Board: ASTM C1177/C1177M, glass-mat, water-resistant gypsum board:

1. Manufacturer: Georgia-Pacific Gypsum, LLC
   a. DensDeck Prime Roof Board.
2. Thickness: 1/4 inch minimum.
3. Surface Finish: Factory primed.

2.7 ASPHALT MATERIALS

A. Roofing Asphalt: ASTM D312/D312M, Type III.

2.8 WALKWAYS

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls, provided by roofing system manufacturer.

1. Size: Approximately 36 by 60 inches minimum.
2. Color: Contrasting with roof membrane.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

1. Verify that roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.

2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.

3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Section 053100 "Steel Decking."

4. All roof surfaces, including parapets and adjoining surfaces, shall be free of water, ice, and snow.

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

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing system installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Install sound-absorbing insulation strips according to acoustical roof deck manufacturer's written instructions.

3.3 INSTALLATION OF ROOFING, GENERAL

A. Install roofing system according to roofing system manufacturer's written instructions, FM Approvals' RoofNav, SPRI's Directory of Roof Assemblies listed roof assembly requirements, and FM Global Property Loss Prevention Data Sheet 1-29.

B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

C. Install roof membrane and auxiliary materials to tie into existing roofing to maintain weathertightness of transition and to not void warranty for existing roofing system.

D. Coordinate installation and transition of roofing system component serving as an air barrier with air barrier specified under Section 072726 "Fluid-Applied Membrane Air Barriers."

3.4 INSTALLATION OF VAPOR RETARDER

A. Polyethylene Film: Loosely lay polyethylene-film vapor retarder in a single layer over area to receive vapor retarder, side and end lapping each sheet a minimum of 4 and 6 inches, respectively.

1. Seal to all roof penetrations and at perimeter area.

2. Extend vertically up parapet walls and projections to a minimum height equal to height of the insulation and cover board.
3. Continuously seal side and end laps with tape.

B. Completely seal vapor retarder at terminations, obstructions, and penetrations to prevent air movement into roofing system.

3.5 INSTALLATION OF INSULATION

A. Coordinate installing roofing system components, so insulation is not exposed to precipitation, other sources or moisture, or left exposed at end of workday.

B. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Install tapered insulation to conform to slopes indicated.

D. Install insulation to achieve required thickness and R-value. Use at least 2 layers of insulation when total insulation thickness exceeds 2.7 inches.

E. Installation Over Metal Decking:

1. Install base layers of insulation staggered in both directions not less than 12 inches between layers.
   a. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
   b. Make joints between adjacent insulation boards not more than 1/4 inch in width.
   c. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches.

      1) Trim insulation so that water flow is unrestricted.

   d. Fill gaps exceeding 1/4 inch with insulation.
   e. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
   f. Install base layer of insulation to metal decks in accordance with the following:

      1) Install each layer of insulation to substrate at the spacing rate and application according to manufacturer’s written requirements, FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification, and SPRI's Directory of Roof Assemblies listed roof assembly requirements for specified Wind Uplift Load Capacity and FM Global Property Loss Prevention Data Sheet 1-29.

2) Where fasteners are used, fasteners shall not penetrate bottom flute on steel decks.

2. Install upper layers of insulation and tapered insulation with joints of each layer offset both directions not less than 12 inches from previous layer of insulation.

a. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
b. Make joints between adjacent insulation boards not more than 1/4 inch in width.
c. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches.
d. Trim insulation so that water flow is unrestricted.
e. Fill gaps exceeding 1/4 inch with insulation.
f. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
g. Install each layer of insulation to substrate at the spacing rate and application according to manufacturer's written requirements, FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification, and SPRI's Directory of Roof Assemblies listed roof assembly requirements for specified Wind Uplift Load Capacity and FM Global Property Loss Prevention Data Sheet 1-29.

3.6 INSTALLATION OF COVER BOARDS

A. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 12 inches in each direction.

1. Trim cover board neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
2. At internal roof drains, conform to slope of drain sump.

a. Trim cover board so that water flow is unrestricted.

3. Cut and fit cover board tight to nailers, projections, and penetrations.
4. Install cover board to substrate at the spacing rate and application according to manufacturer's written requirements, FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification, and SPRI's Directory of Roof Assemblies listed roof assembly requirements for specified Wind Uplift Load Capacity and FM Global Property Loss Prevention Data Sheet 1-29.

3.7 INSTALLATION OF ADHERED ROOF MEMBRANE

A. The surface of the insulation or substrate shall be inspected prior to installation of the roof membrane. The substrate shall be clean, dry, free from debris and smooth with no surface roughness or contamination. Broken, delaminated, wet or damaged insulation boards shall be removed and replaced.

B. Accurately align roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

C. Apply roofing with side laps shingled with slope of roof deck where possible.

D. Adhere roof membrane over area to receive roofing according to roofing system manufacturer's written instructions.

E. Make sure seam areas are free of debris, dirt, and dust, overlap membrane sheets, and hot-air weld side and end laps of roofing and sheet flashings according to manufacturer's most current requirements to ensure a watertight seam installation.

1. Verify in-field weld strength of seams a minimum of twice daily, repair seam sample areas.
2. Test lap edges with probe to verify seam weld continuity.
3. If any tears or voids in lapped seams are found repair using appropriate approved technique.

F. Unroll roof membrane and allow to relax before installing.

G. Start installation of roofing in presence of roofing system manufacturer's technical personnel.

H. Adhesive: Install roof membrane as required by manufacturer’s written instructions and recommendations.

I. Install roofing membrane at deck-drain flanges of roof drains as required by manufacturer’s written instructions and recommendations.

3.8 INSTALLATION OF BASE/FIELD FLASHING

A. Install all sheet flashings and preformed flashing accessories according to roofing system most current manufacturer's written instructions and requirements.

B. Apply bonding adhesive to substrate and underside of sheet flashing at the manufacturer’s required rate. Do not apply to seam area of flashing.

C. Flash penetrations and inside/outside corners with appropriate prefab flashing components as provided by manufacturer. Custom in-field fabrications shall be approved by the Architect and manufacturer’s technical representative prior to installation.

D. Firmly roll membrane flashing into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

E. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

F. Terminate and seal top of sheet flashings and mechanically anchor to substrate by approved manufacturer's most current roofing details and associated required and recommended accessories.

3.9 INSTALLATION OF WALKWAYS

A. Flexible Walkways: Install walkway products according to manufacturer's written instructions.

1. Install flexible walkways at the following locations:
   a. Perimeter of each rooftop unit.
   b. Between each rooftop unit location, creating a continuous path connecting rooftop unit locations.
   c. Between each roof hatch and each rooftop unit location or path connecting rooftop unit locations.
   d. Top and bottom of each roof access ladder.
   e. Between each roof access ladder and each rooftop unit location or path connecting rooftop unit locations.
   f. Locations indicated on Drawings.
   g. As required by roof membrane manufacturer's warranty requirements.
2. Provide minimum clearance between adjoining pads as required by manufacturer's written instructions and recommendations.
3. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.10 FIELD QUALITY CONTROL

A. Testing Agency: Provide allowance to engage a qualified testing agency to inspect substrate conditions, surface preparation, roof membrane application, sheet flashings, protection, and drainage components, and to furnish reports to Architect.

B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion, in presence of Architect, and to prepare inspection report.

C. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.

D. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition

free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.11 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing, inspect roofing system for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

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

3.12 ROOFING INSTALLER'S WARRANTY

A. Provide the following roofing installer’s warranty or equivalent:

B. WHEREAS _____ of _____, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:

1. Owner:
2. Address:
3. Building Name/Type:
4. Address:
5. Area of Work:
6. Acceptance Date: _____.
7. Warranty Period:
8. Expiration Date: _____.

C. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

D. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period Roofing Installer will, at Roofing Installer's own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

E. This Warranty is made subject to the following terms and conditions:

1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:

a. lightning;
b. peak gust wind speed exceeding ( );
c. fire;
d. failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
e. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
f. vapor condensation on bottom of roofing; and
g. activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.

2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.
5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.
6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

F. IN WITNESS THEREOF, this instrument has been duly executed this _____ day of _____, _____.

1. Authorized Signature: _____.
2. Name: _____.
3. Title: _____.

END OF SECTION 075419

SECTION 07 6200 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Formed low-slope roof sheet metal fabrications.
   2. Manufactured reglets with counterflashing.
   3. Formed equipment support flashing.
   4. Formed overhead-piping safety pans.

B. Related Requirements:
   1. Section 061053 "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.
   2. Section 075419 "Polyvinyl-Chloride (PVC) Roofing" for installation of sheet metal flashing and trim integral with roofing system.
   3. Section 077200 "Roof Accessories" for set-on-type curbs, equipment supports, roof hatches, vents, and other manufactured roof accessory units.

1.3 COORDINATION

A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.

B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

   1. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   2. Review special roof details, roof drainage, roof-penetration flashing, equipment curbs, and condition of other construction that affect sheet metal flashing and trim.

3. Review requirements for insurance and certificates if applicable.
4. Review sheet metal flashing observation and repair procedures after flashing installation.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.

B. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details.
2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled work.
3. Include identification of material, thickness, weight, and finish for each item and location in Project.
4. Include details for forming, including profiles, shapes, seams, and dimensions.
5. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
6. Include details of termination points and assemblies.
7. Include details of roof-penetration flashing.
8. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, and counterflashings as applicable.
9. Include details of special conditions.
10. Include details of connections to adjoining work.
11. Detail formed flashing and trim at scale of not less than 1-1/2 inches per 12 inches.

C. Samples for Selection: For each type of sheet metal and accessory indicated with factory-applied finishes.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

B. Product Certificates: For each type of coping and roof edge flashing that is ANSI/SPRI/FM 4435/ES-1 tested and FM Approvals approved.

C. Product Test Reports: For each product, for tests performed by a qualified testing agency.

D. Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sheet metal flashing and trim, and its accessories, to include in maintenance manuals.

1.8 QUALITY ASSURANCE

A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1. For copings and roof edge flashings that are ANSI/SPRI/FM 4435/ES-1 tested and FM Approvals approved, shop shall be listed as able to fabricate required details as tested and approved.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.

1. Build mockup of typical roof edge, including fascia, approximately 10 feet long, including supporting construction cleats, seams, attachments, underlayment, and accessories.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.

1. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
2. Protect stored sheet metal flashing and trim from contact with water.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.10 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested according to ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. FM Approvals Listing: Manufacture and install copings that are listed in FM Approvals' "RoofNav" and approved for the windstorm classification as required by the Owner’s Insurance Carrier. Identify materials with name of fabricator and design approved by FM Approvals.

D. SPRI Wind Design Standard: Manufacture and install copings capable of resisting required design pressures according to SPRI ES-1 and project wind design requirements.

1. Wind Design Requirements: As indicated on Drawings.

E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

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

2.2 SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Sheet Flashing and Trim for Specified Roofing System

1. PVC-Coated Heat-Weldable Steel Sheet: Provide 24-gauge zinc-coated (galvanized) steel sheet according to ASTM A 653, G90 coating designation; with a 20 mil (0.5 mm) unsupported membrane compromised of the same material of the manufacturer's roof membrane, laminated to one side.
   a. Manufacturer: Sika Corporation
      1) Sarnaclad
   b. Surface: Smooth, flat.
   c. Exposed Finish:
      1) PVC Sheet: ASTM D4434/D4434M, Type II, Thermoplastic membrane with lacquer coating
   d. Color: Match color of PVC-Roofing Membrane.
   e. Concealed Finish: Manufacturer's standard.
2. Miscellaneous flashing and trim: Wall and curb flashing, reglets, perimeter edge flashing, corner flashings, penetration flashings, post flashings, drain flashings, and all other miscellaneous flashings and trim to be obtained from specified manufacturer for roofing system.
3. Source Limitations: Obtain, provide, and install all necessary and required components for flashing and trim associated with the roofing system from specified roof membrane manufacturer.

C. Other Sheet Flashing and Trim Conditions:

1. Metallic-Coated Steel Sheet: Provide 22-gauge zinc-coated (galvanized) steel sheet according to ASTM A 653, G90 coating designation; pre-painted by coil-coating process to comply with ASTM A 755.
   a. Surface: Smooth, flat.
   b. Exposed Coil-Coated Finish:
      1) Three-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
   c. Color: As selected by Architect from manufacturer's full range.
   d. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil.

2. Pre-Manufactured Reglets: Units of type, material, and profile required, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated with factory-mitered and -welded corners and junctions and with interlocking counterflashing on exterior face, of same metal as reglet.
   a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      1) Cheney Flashing Company.
      2) Fry Reglet Corporation.
      3) Heckmann Building Products, Inc.
   b. Material: 0.022 inch-thick., zinc-coated (galvanized) steel sheet according to ASTM A 653, G90 coating designation; pre-painted by coil-coating process to comply with ASTM A 755.
   c. Surface-Mounted Type: Provide with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
   d. Accessories:
      1) Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where Drawings show reglet without metal counterflashing.
      2) Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing's lower edge.
   e. Exposed Coil-Coated Finish:
      1) Three-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
   f. Color: As selected by Architect from manufacturer's full range.
   g. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil.

2.3 MISCELLANEOUS MATERIALS

A. Specified Roofing System: Provide all necessary and required materials, components, fasteners, tape, sealants, adhesives, and all other miscellaneous items as required for the complete and fully functional roofing flashing and trim system installation as required in accordance with the written instructions and recommendations by manufacturer, performance, and warranty requirements of specified roofing system.

B. Other Sheet Flashing and Trim Conditions: In general, provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended

by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

1. Underlayment Self-Adhering, High-Temperature Sheet: Rubberized-Asphalt Flashing: Composite, self-adhesive, flashing product consisting of a pliable, rubberized-asphalt compound, bonded to a cross-laminated polyethylene film with release liner backing to produce an overall thickness of not less than 0.040 inch (40 mil) specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer according to written recommendations of underlayment manufacturer.

    a. Provide flexible flashing recommended by air barrier manufacturer to produce a complete air-barrier assembly and compatible with primary air-barrier material and single-ply roofing system.
    b. Flame Propagation Test: Materials and construction shall be as tested according to NFPA 285.
    c. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F or higher.
    d. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F or lower.
2. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.

3. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.

    a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
    b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.

4. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel according to ASTM A 153 or ASTM F 2329.
5. Solder:
    a. For Zinc-Coated (Galvanized) Steel: ASTM B 32, Grade Sn50, 50 percent tin and 50 percent lead or Grade Sn60, 60 percent tin and 40 percent lead with maximum lead content of 0.2 percent.
6. Elastomeric Sealant: ASTM C 920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
7. Bituminous Coating: Cold-applied asphalt emulsion according to ASTM D 1187.

2.4 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.

1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
2. Obtain field measurements for accurate fit before shop fabrication.
3. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
4. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
2. Use lapped expansion joints only where indicated by the Architect.

D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard and by FM Global Property Loss Prevention Data Sheet 1-49 for application, but not less than thickness of metal being secured.

G. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use.

H. Do not use graphite pencils to mark metal surfaces.

2.5 FLASHING AND TRIM FABRICATIONS FOR SPECIFIED ROOFING SYSTEM

A. All flashings and trim shall be installed concurrently with the roof membrane as the job progresses. No temporary flashings shall be allowed without the prior written approval of the Architect and manufacturer's technical representative.

1. If any water and/or moisture is allowed to enter under the newly completed roofing due to incomplete flashings, the affected area shall be removed and replaced at the Contractor's expense.

B. Details, fabrication practices, and installation methods shall conform to the requirements of the following:

1. Specified Roofing Manufacturer's written instructions and recommendations.
2. Performance and warranty requirements of the specified roofing system.
3. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - latest issue.

2.6 MISCELLANEOUS SHEET METAL FABRICATIONS

A. Overhead-Piping Safety Pans: Fabricate from the following materials:
1. Galvanized Steel: 0.040 inch thick.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.

1. Verify compliance with requirements for installation tolerances of substrates.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

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

3.2 UNDERLAYMENT INSTALLATION

A. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free. Prime substrate if recommended by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures. Apply in shingle fashion to shed water,

with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Roll laps and edges with roller. Cover underlayment within 14 days.

3.3 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
3. Space cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
5. Torch cutting of sheet metal flashing and trim is not permitted.
6. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

1. Coat concealed side of sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.

D. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

F. Seal joints as required for watertight construction.

1. Use sealant-filled joints unless otherwise indicated. Embed hooked flanges of joint members not less than 1 inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F.
2. Prepare joints for flashing and trim for the specified roofing system in accordance with the requirements of the specified roofing manufacturer’s written instructions and recommendations.
3. Prepare other joints and apply sealants to comply with requirements in Section 07 9200 "Joint Sealants."

3.4 ROOF FLASHING INSTALLATION

A. General: Provide and install roofing flashing and trim and all other required and necessary appurtenances to comply with performance and warranty requirements of specified roofing system, roofing manufacturer's written installation instructions, and cited sheet metal standards. Set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant. All work is to be installed to resist uplift and outward forces according to recommendations in FM Global Property Loss Prevention Data Sheet 1-49 for FM Approvals' listing for required windstorm classification. All work includes roof edge flashing, copings, pipe and post counterflashing, counterflashing, reglets, counterflashing, equipment-support flashing, roof penetration flashing, and all other miscellaneous flashing and trim.

3.5 WALL FLASHING INSTALLATION

A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

B. Reglets: Installation of reglets is specified in Section 04 2000 "Unit Masonry."

3.6 MISCELLANEOUS FLASHING INSTALLATION

A. Overhead-Piping Safety Pans: Suspend pans from structure above, independent of other overhead items such as equipment, piping, and conduit, unless otherwise

indicated on Drawings. Pipe and install drain line to plumbing waste or drainage system.

3.7 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.8 CLEANING AND PROTECTION

A. Clean off excess sealants.

B. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended by sheet metal flashing and trim manufacturer. Maintain sheet metal flashing and trim in clean condition during construction.

C. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 076200

SECTION 077200 - ROOF ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Roof curbs.
2. Equipment supports.
3. Pipe and duct supports.
4. Pipe portals.
5. Preformed flashing sleeves.

B. Related Requirements:
1. Section 076200 "Sheet Metal Flashing and Trim" for shop- and field-formed flashing and miscellaneous trim and accessories.
2. Section 086200 "Unit Skylights" for single- and double-glazed domed plastic skylights with curb frame.
3. Division 23 for associated mechanical equipment and components.

1.3 COORDINATION

A. Coordinate layout and installation of roof accessories with roofing membrane and base flashing and interfacing and adjoining construction to provide a leakproof, weathertight, secure, and noncorrosive installation.

B. Coordinate dimensions with rough-in information or Shop Drawings of equipment to be supported.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of roof accessory.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: For roof accessories.

1. Include plans, elevations, keyed details, and attachments to other work. Indicate dimensions, loadings, and special conditions. Distinguish between plant- and field-assembled work.

C. Samples: For each exposed product and for each color and texture specified, prepared on Samples of size to adequately show color.

D. Delegated-Design Submittal: For all roof accessories and shall comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1. Detail mounting, securing, and flashing of roof-mounted items to roof structure. Indicate coordinating requirements with roof membrane system.
2. Wind-Restraint Details: Detail fabrication and attachment of wind restraints. Show anchorage details and indicate quantity, diameter, and depth of penetration of anchors.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Roof plans, drawn to scale, and coordinating penetrations and roof-mounted items. Show the following:

1. Size and location of roof accessories specified in this Section.
2. Method of attaching roof accessories to roof or building structure.
3. Other roof-mounted items including mechanical and electrical equipment, ductwork, piping, and conduit.
4. Required clearances.

B. Sample Warranties: For manufacturer's special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For roof accessories to include in operation and maintenance manuals.

1.7 WARRANTY

A. Special Warranty on Painted Finishes: Manufacturer's standard form in which manufacturer agrees to repair finishes or replace roof accessories that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General Performance: All roof accessories shall meet all performance and warranty requirements of the specified roofing system, including wind-restraint, exposure to weather, and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.

B. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design roof curbs and equipment supports to comply with wind performance requirements, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

2.2 ROOF CURBS

A. Roof Curbs: Internally reinforced roof-curb units capable of supporting superimposed live and dead loads, including equipment loads and other construction indicated on Drawings, bearing continuously on roof structure, and capable of meeting performance requirements; with welded or mechanically fastened and sealed corner joints, straight sides, and integrally formed deck-mounting flange at perimeter bottom.

1. Provide roof curbs that are compatible and acceptable to specified roofing system manufacturer.

B. Size: Coordinate dimensions with roughing-in information or Shop Drawings of equipment to be supported.

C. Supported Load Capacity: Coordinate load capacity with information on Shop Drawings of equipment to be supported.

D. Material: Aluminum sheet, 0.125 inch thick, minimum.

1. Finish: Factory prime coating.
2. Color: As indicated in drawings. Match adjacent painted surfaces.

E. Construction:

1. Curb Profile: Profile as indicated on Drawings compatible with roofing system.
2. On ribbed or fluted metal roofs, form deck-mounting flange at perimeter bottom to conform to roof profile.
3. Fabricate curbs to minimum height of 12 inches above roofing surface unless otherwise indicated.
4. Top Surface: Level top of curb, with roof slope accommodated by sloping deck-mounting flange or by use of leveler frame.
5. Sloping Roofs: Where roof slope exceeds 1:48, fabricate curb with perimeter curb height tapered to accommodate roof slope so that top surface of perimeter curb is level. Equip unit with water diverter or cricket on side that obstructs water flow.
6. Insulation: Factory insulated with 1-1/2-inch-thick glass-fiber board insulation.
7. Liner: Same material as curb, of manufacturer's standard thickness and finish.
8. Nailer: Factory-installed wood nailer under top flange on side of curb, continuous around curb perimeter.
9. Wind Restraint Straps and Base Flange Attachment: Provide wind restraint straps, welded strap connectors, and base flange attachment to roof structure at perimeter of curb, of size and spacing required to meet wind uplift requirements.
10. Platform Cap: Where portion of roof curb is not covered by equipment, provide weathertight platform cap formed from 3/4-inch-thick plywood covered with metal sheet of same type, thickness, and finish as required for curb.
11. Metal Counterflashing: Manufacturer's standard, removable, fabricated of same metal and finish as curb.
12. Security Grille: Provide for as required by Architect.
13. Damper Tray: As required, provide damper tray or shelf with opening size as required by the mechanical engineer.

2.3 EQUIPMENT SUPPORTS

A. Equipment Supports: Internally reinforced perimeter or rail-type metal equipment supports capable of supporting superimposed live and dead loads between structural supports, including equipment loads and other construction indicated on Drawings, spanning between structural supports; capable of meeting performance requirements; with welded corner joints, and integrally formed structure-mounting flange at bottom.

B. Size: Coordinate dimensions with roughing-in information or Shop Drawings of equipment to be supported.

C. Supported Load Capacity: Coordinate load capacity with information on Shop Drawings of equipment to be supported.

D. Material: Aluminum sheet, 0.125-inch-thick minimum.

1. Finish: Two-coat fluoropolymer.
2. Color: As selected by Architect from manufacturer's full range.

E. Construction:

1. Curb Profile: Profile as indicated on Drawings compatible with roofing system.
2. Insulation: Factory insulated with 1-1/2-inch-thick glass-fiber board insulation.
3. Liner: Same material as equipment support, of manufacturer's standard thickness and finish.
4. Nailer: Factory-installed continuous wood nailers 3-1/2 inches minimum wide under top flange on side of curb, continuous around support perimeter.
5. Wind Restraint Straps and Base Flange Attachment: Provide wind restraint straps, welded strap connectors, and base flange attachment to roof structure at perimeter of curb of size and spacing required to meet wind uplift requirements.
6. Platform Cap: Where portion of equipment support is not covered by equipment, provide weathertight platform cap formed from 3/4-inch-thick plywood covered with metal sheet of same type, thickness, and finish as required for curb.
7. Metal Counterflashing: Manufacturer's standard, removable, fabricated of same metal and finish as equipment support.
8. On ribbed or fluted metal roofs, form deck-mounting flange at perimeter bottom to conform to roof profile.
9. Fabricate equipment supports to minimum height of 12 inches above roofing surface unless otherwise indicated.
10. Sloping Roofs: Where roof slope exceeds 1:48, fabricate each support with height to accommodate roof slope so that tops of supports are level with each other. Equip supports with water diverters or crickets on sides that obstruct water flow.
11. Security Grille: As required by Architect. Contractor shall coordinate and confirm locations with Architect.

2.4 PIPE AND DUCT SUPPORTS

A. Fixed-Height Cradle-Type Pipe Supports: Polycarbonate pipe stand accommodating up to 1-1/2-inch-diameter pipe or conduit; with provision for pipe retainer and with manufacturer's support pad or deck plate as recommended for penetration-free installation over roof membrane type; as required for quantity of pipe runs and sizes.

B. Fixed-Height Roller-Bearing Pipe Supports: Polycarbonate pipe stand with stainless steel roller carrying assembly accommodating up to 7-inch-diameter pipe or conduit; with provision for pipe retainer and with manufacturer's support pad or deck plate as recommended for penetration-free installation over roof membrane type; as required for quantity of pipe runs and sizes.

C. Adjustable-Height Roller-Bearing Pipe Supports: Polycarbonate pipe stand base, pipe support, and roller housing, with stainless steel threaded rod designed for adjusting support height, accommodating up to 18 inch diameter pipe or conduit; with provision for pipe retainer and with manufacturer's support pad or deck plate as recommended for penetration-free installation over roof membrane type; as required for quantity of pipe runs and sizes.

D. Adjustable-Height Structure-Mounted Pipe Supports: Extruded-aluminum tube, filled with urethane insulation; 2 inches in diameter; accommodating up to 7-inch-diameter pipe or conduit, with provision for pipe retainer; with aluminum baseplate, specified roofing system compatible base seal, manufacturer's recommended hardware for mounting to structure or structural roof deck as indicated, stainless steel roller and retainer, and extruded-aluminum carrier assemblies; as required for quantity of pipe runs and sizes.

E. Curb-Mounted Pipe Supports: Galvanized steel support with welded or mechanically fastened and sealed corner joints, straight sides, and integrally formed deck-mounting flange at perimeter bottom; with adjustable-height roller-bearing pipe support accommodating up to 20-inch-diameter pipe or conduit and with provision for pipe retainer; as required for quantity of pipe runs and sizes.

F. Duct Supports: Extruded-aluminum, urethane-insulated supports, 2 inches in diameter; with manufacturer's recommended hardware for mounting to structure or structural roof deck.
   1. Finish: Manufacturer's standard.

2.5 PIPE PORTALS

A. Curb-Mounted Pipe Portal: Insulated roof-curb units with welded or mechanically fastened and sealed corner joints, straight sides, and integrally formed deck-mounting flange at perimeter bottom; with weathertight curb cover with single or multiple collared openings and pressure-sealed conically shaped protective caps, compatible with specified roofing system. Base sized for piping indicated, with stainless steel snaplock swivel clamps.

B. Flashing Pipe Portal: Formed aluminum membrane-mounting flashing flange and sleeve with collared opening and pressure-sealed conically shaped protective cap compatible with specified roofing system and sized for piping indicated, with stainless steel snaplock swivel clamps.

2.6 PREFORMED FLASHING SLEEVES

A. Exhaust Vent Flashing: Double-walled metal flashing sleeve or boot, insulation filled, with integral deck flange, 12 inches high minimum, with removable metal hood and slotted metal collar.
   1. Metal: Aluminum sheet, 0.063 inch minimum thickness.
   2. Diameter: As indicated on Drawings.
   3. Finish: Manufacturer's standard.

B. Vent Stack Flashing: Metal flashing sleeve, uninsulated, with integral deck flange.
   1. Metal: Aluminum sheet, 0.063 inch (1.60 mm) thick.
   2. Height: As required.
   3. Diameter: As indicated on Drawings.

4. Finish: Manufacturer's standard.

2.7 METAL MATERIALS

A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A653/A653M, G90 (Z275) coating designation.
   1. Exposed Coil-Coated Finish: Pre-painted by the coil-coating process to comply with ASTM A755/A755M. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
      a. Two-Coat Fluoropolymer Finish: AAMA 621. System consisting of primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight.
   2. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester-backer finish consisting of prime coat and wash coat, with a minimum total dry film thickness of 0.5 mil (0.013 mm).

B. Aluminum Sheet: ASTM B209 (ASTM B209M), manufacturer's standard alloy for finish required, with temper to suit forming operations and performance required.
   1. Exposed Coil-Coated Finish: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
      a. Two-Coat Fluoropolymer Finish: AAMA 2605. System consisting of primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight.
   2. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester-backer finish consisting of prime coat and wash coat, with a minimum total dry film thickness of 0.5 mil (0.013 mm).

C. Aluminum Extrusions and Tubes: ASTM B221 (ASTM B221M), manufacturer's standard alloy and temper for type of use, finished to match assembly where used; otherwise mill finished.

D. Stainless Steel Sheet and Shapes: ASTM A240/A240M or ASTM A666, Type 304.

2.8 MISCELLANEOUS MATERIALS

A. Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturers for a complete installation.

B. Acrylic Glazing: ASTM D4802, thermoformable, monolithic sheet, manufacturer's standard, Type UVA (formulated with UV absorber), Finish 1 (smooth or polished).

C. Polycarbonate Glazing: Thermoformable, monolithic polycarbonate sheets manufactured by extrusion process, burglar-resistance rated according to UL 972 with

an average impact strength of 12 to 16 ft-lbf/in. of width when tested according to ASTM D256, Method A (Izod).

D. Insulation:
1. Cellulosic-Fiber Board Insulation: ASTM C208, Type II, Grade 1, thickness as required.
2. Glass-Fiber Board Insulation: ASTM C726, nominal density of 3 lb/cu. ft. (48 kg/cu. m), thermal resistivity of 4.3 deg F x h x sq. ft./Btu x in. at 75 deg F (29.8 K x m/W at 24 deg C), thickness as required.
3. Polyisocyanurate Board Insulation: ASTM C1289, thickness and thermal resistivity as required.

E. Wood Nailers: Softwood lumber, pressure treated with waterborne preservatives for aboveground use, acceptable to authorities having jurisdiction, containing no arsenic or chromium, and complying with AWPA C2; not less than 1-1/2 inches (38 mm) thick.

F. Security Grilles: 3/4-inch (19-mm) diameter, ASTM A1011/A1011M steel bars spaced 6 inches (150 mm) o.c. in one direction and 12 inches (300 mm) o.c. in the other; factory finished as follows:

1. Surface Preparation: Remove mill scale and rust, if any, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or SSPC-SP 8, "Pickling."
2. Factory Priming for Field-Painted Finish: Apply shop primer specified below immediately after surface preparation and pretreatment.
3. Shop Primer: Manufacturer's or fabricator's standard, fast-curing, lead- and chromate-free, universal primer; selected for resistance to normal atmospheric corrosion, for compatibility with substrate and field-applied finish paint system indicated, and for capability to provide a sound foundation for field-applied topcoats under prolonged exposure.

G. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

H. Underlayment:

1. Felt: ASTM D226/D226M, Type II (No. 30), asphalt-saturated organic felt, nonperforated.
2. Polyethylene Sheet: 6-mil- (0.15-mm-) thick polyethylene sheet complying with ASTM D4397.
3. Slip Sheet: Building paper, 3 lb/100 sq. ft. (0.16 kg/sq. m) minimum, rosin sized.
4. Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils (0.76 to 1.0 mm) thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.

I. Fasteners: Roof accessory manufacturer's recommended fasteners suitable for application and metals being fastened. Match finish of exposed fasteners with finish of

material being fastened. Provide nonremovable fastener heads to exterior exposed fasteners. Furnish the following unless otherwise indicated:

1. Fasteners for Zinc-Coated or Aluminum-Zinc Alloy-Coated Steel: Series 300 stainless steel or hot-dip zinc-coated steel according to ASTM A153/A153M or ASTM F2329.
2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
3. Fasteners for Stainless Steel Sheet: Series 300 stainless steel.

J. Gaskets: Manufacturer's standard tubular or fingered design of neoprene, EPDM, PVC, or silicone or a flat design of foam rubber, sponge neoprene, or cork.

K. Elastomeric Sealant: ASTM C920, elastomeric polymer sealant as required and recommended by roofing membrane and accessory manufacturers for installation indicated; low modulus; of type, grade, class, and use classifications required to seal joints and remain watertight.

L. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for expansion joints with limited movement.

M. Asphalt Roofing Cement: ASTM D4586/D4586M, asbestos free, of consistency required for application.

2.9 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.

B. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

C. Verify dimensions of roof openings for roof accessories.

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

3.2 INSTALLATION

A. Install roof accessories according to manufacturer's written instructions.

1. Install roof accessories level; plumb; true to line and elevation; and without warping, jogs in alignment, buckling, or tool marks.
2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.

B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

1. Coat concealed side of uncoated aluminum and stainless-steel roof accessories with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing roof accessories directly on cementitious or wood substrates, install a course of underlayment and cover with manufacturer's recommended slip sheet.
3. Bed flanges in thick coat of roofing cement (compatible with specified roofing system) where required by manufacturers of roof accessories for waterproof performance.

C. Roof Curb Installation: Install each roof curb so top surface is level.

D. Equipment Support Installation: Install equipment supports so top surfaces are level with each other.

E. Roof-Hatch Installation:

1. Verify that roof hatch operates properly. Clean, lubricate, and adjust operating mechanism and hardware.
2. Attach safety railing system to roof-hatch curb.
3. Attach ladder-assist post according to manufacturer's written instructions.

F. Pipe Support Installation: Comply with MSS SP-58 and MSS SP-89. Install supports and attachments as required to properly support piping. Arrange for grouping of parallel runs of horizontal piping, and support together.

1. Pipes of Various Sizes: Space supports for smallest pipe size or install intermediate supports for smaller diameter pipes as specified for individual pipe hangers.

G. Preformed Flashing-Sleeve and Flashing Pipe Portal Installation: Secure flashing sleeve to roof membrane according to flashing-sleeve manufacturer's written instructions; flash sleeve flange to surrounding roof membrane according to roof membrane manufacturer's instructions.

H. Security Grilles: Weld bar intersections and, using tamper-resistant bolts, attach the ends of bars to structural frame or primary curb walls.

I. Seal joints with approved sealant as required by roof membrane and accessory manufacturers.

3.3 REPAIR AND CLEANING

A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing according to ASTM A780/A780M.

B. Touch up factory-primed surfaces with compatible primer ready for field painting according to Section 099113 "Exterior Painting."

C. Clean exposed surfaces according to manufacturer's written instructions.

D. Clean off excess sealants.

E. Replace roof accessories that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 077200

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Nonstaining silicone joint sealants.
   2. Urethane joint sealants.
   3. Mildew-resistant joint sealants.
   4. Latex joint sealants.
   5. Butyl-rubber sealants.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

D. Joint-Sealant Schedule: Include the following information:

   1. Joint-sealant application, joint location, and designation.
   2. Joint-sealant manufacturer and product name.
   3. Joint-sealant formulation.
   4. Joint-sealant color.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Product Test Reports: For each kind of joint sealant, for tests performed by a qualified testing agency.

C. Sample Warranties: For special warranties.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

B. Product Testing: Test joint sealants using a qualified testing agency.

1. Testing Agency Qualifications: Qualified according to ASTM C1021 to conduct the testing indicated.

C. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.7 FIELD CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.8 WARRANTY

A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

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

B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: 20 years from date of Substantial Completion.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 NONSTAINING SILICONE JOINT SEALANTS

A. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C1248.

B. Silicone, Nonstaining, S, NS, 100/50, T, NT: Nonstaining, single-component, nonsag, plus 100 percent and minus 50 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 100/50, Uses T and NT.

1. Subject to compliance with requirements, provide one of the following:
   a. Dow Corning
   b. Pecora Corporation.
   c. Sika Corporation, Construction Products Division.
   d. Tremco Incorporated.

2.3 URETHANE JOINT SEALANTS

A. Urethane, S, NS, 100/50, T, NT: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type S, Grade NS, Class 100/50, Uses T and NT.

1. Subject to compliance with requirements, provide one of the following:
   a. Pacific Polymers International, Inc.
   b. Sika Corporation, Constructin Products Division.
   c. Tremco Incorporated.

2.4 MILDEW-RESISTANT JOINT SEALANTS

A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.

B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.

1. Subject to compliance with requirements, provide one of the following:
   a. Dow Corning
   b. Pecora Corporation.
   c. Sika Corporation, Construction Products Division.
   d. Tremco Incorporated.

2.5 LATEX JOINT SEALANTS

A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.

1. Subject to compliance with requirements, provide one of the following:
   a. Pecora Corporation.
   b. Schnee-Morehead, Inc.
   c. Tremco Incorporated.

2.6 BUTYL JOINT SEALANTS

A. Butyl-Rubber-Based Joint Sealants: ASTM C1311.

1. Subject to compliance with requirements, provide one of the following:
   a. Dow Corning
   b. Tremco Incorporated.
   c. Pecora Corporation.

2.7 JOINT-SEALANT BACKING

A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin) or any other types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.8 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.

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

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

    a. Concrete.
    b. Masonry.
    c. Unglazed surfaces of ceramic tile.

3. Remove laitance and form-release agents from concrete.
4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

    a. Metal.
    b. Glass.
    c. Porcelain enamel.
    d. Glazed surfaces of ceramic tile.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C1193 unless otherwise indicated.

3.4 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces.

1. Joint Locations:
   a. Isolation and contraction joints in cast-in-place concrete slabs.
   b. Joints between different materials listed above.
   c. Other joints as indicated on Drawings.

2. Joint Sealant: Urethane, S, NS, 100/50, T, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

B. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:

   a. Construction joints in cast-in-place concrete.
   b. Joints between plant-precast architectural concrete units.
   c. Control and expansion joints in unit masonry.
   d. Joints between metal panels.
   e. Joints between different materials listed above.
   f. Perimeter joints between materials listed above and frames of doors, windows, and louvers.
   g. Control and expansion joints in ceilings and other overhead surfaces.
   h. Other joints as indicated on Drawings.

2. Joint Sealant: Silicone, Nonstaining, S, NS, 100/50, T, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

C. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.

1. Joint Locations:

   a. Isolation joints in cast-in-place concrete slabs.
   b. Control and expansion joints in stone flooring.
   c. Control and expansion joints in tile flooring.
   d. Other joints as indicated on Drawings.

2. Joint Sealant: Urethane, S, NS, 100/50, T, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

D. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:

   a. Control and expansion joints on exposed interior surfaces of exterior walls.
   b. Tile control and expansion joints.

c. Vertical joints on exposed surfaces of unit masonry concrete walls and partitions.
d. Other joints as indicated on Drawings.

2. Joint Sealant: Urethane, S, NS, 100/50, T, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

E. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement.

1. Joint Locations:

a. Control joints on exposed interior surfaces of exterior walls.
b. Perimeter joints between interior wall surfaces and frames of interior doors windows.
c. Other joints as indicated on Drawings.

2. Joint Sealant: Acrylic latex.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

F. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:

a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
b. Tile control and expansion joints where indicated.
c. Other joints as indicated on Drawings.

2. Joint Sealant: Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

G. Joint-Sealant Application: Concealed mastics.

1. Joint Locations:

a. Aluminum thresholds.
b. Sill plates.
c. Other joints as indicated on Drawings.

2. Joint Sealant: Butyl-rubber based.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION 079200

SECTION 08 62 00 – UNIT SKYLIGHTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

A. Dynamic dome unit skylight with formed curb counterflashing for mounting on site-built or prefabricated roof curbs, for flat, low-slope and steep-slope roofing applications.

1.3 RELATED REQUIREMENTS

A. Division 07 roofing section for flashing and roofing terminations at unit skylight curbs.

B. Section 077200 "Roof Accessories" for manufactured metal roof curbs for unit skylights.

1.4 REFERENCE STANDARDS

A. General: Applicable edition of references cited in this Section is current edition published on date of issue of Project specifications, unless otherwise required by building code in force.

B. American Architectural Manufacturers Association (www.aama.net), Window & Door Manufacturers Association (www.wdma.com), Canadian Standards Association (www.csagroup.org/us/en/services)

1. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/ Specification for Windows, Doors, and Skylights (NAFS)
2. CSA A440S1-09 – Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440
3. AAMA 502 – Voluntary Specification for Field Testing of Newly Installed Fenestration Products
4. AAMA 2603 – Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum and Panels

C. ASTM International: www.astm.org:
1. ASTM D1003 – Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics
2. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings

3. ASTM E283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
4. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
5. ASTM E408 - Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques
6. ASTM E1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials
7. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes

D. Code of Federal Regulations:

1. 29 CFR 1910.23 (e) (8) - Occupational Safety and Health Standards for Walking-Working Surfaces to Guard Floor and Wall Openings and Holes

E. Factory Mutual (FM): www.fmglobal.com

1. FM 4430 - Approval Standard for Heat and Smoke Vents
2. FM 4431 - Approval Standard for Skylights

F. Illuminating Engineering Society of North America (IESNA): www.ies.org:

1. IESNA – The Lighting Handbook.

G. National Fenestration Rating Council: www.nfrccommunity.org:

1. NFRC 100 - Procedure for Determining Fenestration Product U-factors
2. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence

H. National Fire Protection Association: www.nfpa.org:

1. NFPA 70 - National Electrical Code

I. Underwriters Laboratory: www.ul.com

1. UL 793 – Standard for Automatically Operated Roof Vents for Smoke and Heat

1.5 COORDINATION

A. Coordinate dimensions, locations, and details of skylight curbs specified in Section 077200 "Roof Accessories" with unit skylight curb flashings. Verify requirements for roofing system terminations.

B. Coordinate unit skylight interior termination locations with structural layout, ceiling layouts, and other ceiling-mounted items.

1.6 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site prior to delivery of unit skylight and installation of roof deck.

1.7 ACTION SUBMITTALS

A. Product Data: For unit skylights. Include standard construction details, product performance characteristics, and material descriptions, dimensions of individual components and profiles, and finishes.

1. Include test reports of qualified independent testing agency or third-party certificates verifying compliance with performance requirements.

B. Shop Drawings: For unit skylight work. Include plans, elevations, sections, details, and connections to supporting structure and other adjoining work.

1. Include plans, elevations, sections, details, and connections to supporting structure and other adjoining work.

C. Aluminum Finish Samples: For each type of exposed finish required, in a representative section of each prismatic unit skylight in manufacturer's standard size.

D. Glazing Samples: For each color and finish of glazing indicated, 12 inches (300 mm) square and of same thickness indicated for the final Work.

1.8 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified manufacturer.

B. Warranty: Sample of special warranty.

1.9 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data.

1.10 QUALITY ASSURANCE

A. Manufacturer Qualifications: A manufacturer capable of fabricating prismatic unit skylights that meet or exceed performance requirements indicated and of documenting this performance by inclusion in lists and by labels, test reports, and calculations.

B. Installer Qualifications: An installer acceptable to prismatic unit skylight manufacturer for installation of units required for this Project.

1.11 WARRANTY

A. Manufacturer's Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of skylights that fail in materials or workmanship under normal use within specified warranty period.

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

a. Uncontrolled water leakage.
b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
c. Yellowing of acrylic glazing.
d. Breakage of polycarbonate glazing.
e. Deterioration of insulating-glass hermetic seal.

2. Warranty Period:

a. 15 Years: Polycarbonate dome skylights including hail breakage for hailstones 2 inches and less in diameter. Mill finished aluminum skylight frames.

b. 10 Years: Yellowing of acrylic and polycarbonate skylight domes.
c. 5 Years: Acrylic and impact modified acrylic dome skylights, skylight model CDS with polycarbonate dome, aluminum curbs, external safety cage, internal safety screen accessory, internal security bars accessory, ventilation curb extension.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide products of **VELUX America LLC**, Greenwood, SC 29648; www.VELUXusa.com; (800) 878-3589, specifications@veluxusa.com.

B. Substitutions: None allowed by Owner.

C. Source Limitations: Obtain unit skylights through single source from single manufacturer.

2.2 DYNAMIC DOME UNIT SKYLIGHT (Model CD-2)

A. System Description: Dynamic dome, curb mounted fixed skylight utilizing extruded aluminum frame counter-flashing with welded corners, an interior 100% thermally broken gasket for condensation drainage, structural sealant, and accessories, as required to meet installation and performance requirements indicated. Dynamic dome skylights shall be suitable for installation on roof curbs ranging from 0 degrees up to 60 degrees from horizontal.

1. Basis of Design: **VELUX America LLC, Model CD- 2 Dynamic Dome Skylight**.

B. Dynamic Dome: Height 30% of skylight width, vacuum formed with precise repeating geometric patterns, and overall shape to maximize strength and daylight at low solar elevation angles 10 to 40 degrees. Outer dome shall be formed from smooth sheet and not prismatic in order to transmit all incident daylight through outer dome. Initial rise of the dome shall be at an angle of at least 60 degrees to horizontal in order to harvest daylight at low solar elevation angles 10 through 40 degrees. [Provide polycarbonate domes with integral UV blocking cap layer that prevents long-term yellowing, and insures material strength and performance stability.] [Light diffusion 100%.]

1. Double dome (2P1C2):
   a. Polycarbonate (LuxGuard Plus) - Outer dome polycarbonate, 0.150 inches in thickness, color clear, with UV blocking cap layer. Inner dome prismatic polycarbonate, 0.118 inches in thickness, color white.

C. Aluminum Frame Counter-flashing: Maintenance-free, extruded aluminum, grade 6063-T5, 0.06 inch (1.5 mm) thick with neutral grey powder coat finish. Counter-flashing frames completely welded in corners and counter flashes curb a minimum of 1.625 inches (41 mm). Provide aluminum frame with at least 0.75 inch (19 mm) continuous ledge on each side of the skylight that is a pinch free access for stacking, manual transportation and mounting of skylights.

1. Unit Sizes: As indicated on Drawings.

D. 100% Thermally Broken Gasket for Condensation Drainage: Factory applied black thermoplastic gasket encapsulates the entire interior aluminum frame assembly providing a thermal break weather seal and drainage for condensation. The gasket design allows positive condensation to the exterior of the curb without exposed drainage openings in the aluminum frame that can introduce air infiltration into the skylight. The thermally broken gasket construction allows for a dry installation of skylight to the curb, eliminating weather seal strips or caulking at the top of the curb.

E. Structural Sealant: Factory applied silicone sealant, gray color, bonding the dome to the aluminum frame and suitable for external exposure.

2.3 CURBS:

A. Aluminum Curb: Factory insulated aluminum curb, 1.5 inches in thickness with 20 gauge mill finished aluminum exterior and 22 gauge mill finished aluminum interior. Curb factory insulated with 1.5 inches of polyisocyanurate board providing an R-value of 8.5. Width and length of curb shall be coordinated with unit sizes as indicated with 12 inch minimum curb height. Curb roof mounting flange shall be a minimum 2.75 inches in width. Basis of Design: VELUX America LLC, Model CCAM.

2.4 FALL PROTECTION AND SECURITY ACCESSORIES

A. Interior safety screen accessory: Fall protection safety screen constructed from 0.1875 inch steel mesh with a 6 inch on center grid spacing welded to 18 gauge steel z-bar support frame continuous on each side with welded corners. Interior safety screen frame mounts to top of 1.5 inches curb with safety screen mesh located not more than 1.5 inches below top of curb. Safety screen factory primed with white finish. Safety screen shall meet fall protection requirements by supporting a minimum static load of 400 pounds per square foot. Interior safety screen accessory width and length designation shall be as indicated on drawing. Basis of Design: VELUX America LLC, Model CRGA ICD.

2.5 PERFORMANCE REQUIREMENTS

A. Unit Skylight Standard, Dynamic Dome model [CD-] [CE-] certified to AAMA/WDMA/CSA 101/I.S.2/A440 (NAFS-11 or previous) as follows:

1. Performance Grade (Primary Designator): SKP-PG30 1670 x 2885 (66 x102)

2. Design Pressure (DP): Minimum DP = +/- 30 psf (+/- 14.40 KPa). Dome shall not invert at positive design pressure.

3. Water Test Pressure: Minimum 4.6 psf (220 Pa) with no leakage at 5 gallons per minute spray rate.

4. Air Leakage Rate: Maximum 0.05 cfm/ft^2 (0.3 L/s/m^2)

B. Daylighting: Provide daylighting photometric performance comparable to basis of design product at layout indicated, based upon daylighting profile of March 21, 9:00 am local time, at Project location by simulation in accordance with IESNA guidelines.

C. Air Infiltration: Maximum air leakage through tested size of 0.05 cfm/sq. ft. (0.3 L/s/sq. m) of fixed area as determined according to ASTM E 283 at a static-air-pressure differential of 1.57 lbf/sq. ft. (75Pa.)

D. Water Penetration under Static Pressure: No evidence of water penetration through unit when tested according to ASTM E 331 at a static-air-pressure differential of 4.6 lbf/sq. ft. (220 Pa).

E. Windborne-Debris Resistance:
1. Provide unit skylights capable of resisting impact from windborne debris, based on the pass/fail criteria as determined from testing glazed units representative of those specified, according to ASTM E 1886 and ASTM E 1996. Missile Level D, and +65/-65 psf cycle pressure.

F. Fire Testing for Roof Assemblies with Fire Classifications: Unit skylight tested in accordance with and listed as passing Class B Burning Brand test as described in ASTM E 108.

G. Dome Burn Rate: Tested in accordance with ASTM D 635 with a documented rating of CC1 for LuxGuard Plus (polycarbonate).

H. Dome Smoke Density Rating: Testing in accordance with ASTM D 2843 with a documented performance value less than or equal to 75.

I. Dome Self-Ignition Temperature: Tested in accordance with ASTM D 1929 with a documented performance value greater than or equal to 650 degrees Fahrenheit.

J. Factory Mutual: Skylights Factory Mutual 4431 approved.

K. Dome Hail Resistance: Exterior dome tested in accordance with Factory Mutual 4430 to meet severe hail with 2.0 inch ice balls.

L. Energy Performance ratings for any size commercial curb mounted unit skylight with dynamic dome as follows:

1. Thermal Transmittance: NFRC 100 maximum U-factor:

a. Double Dome:
1) Impact Modified Acrylic (1S1N2): 0.74
2) LuxGuard and LuxGuard Plus (3P1C2 and 2P1C2): 0.73

2. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum SHGC:

a. Double Dome:
1) Impact Modified Acrylic (1S1N2): 0.48
2) LuxGuard and LuxGuard Plus (3P1C2 and 2P1C2): 0.46

3. Visible Transmittance (Vt) and Percent Haze: ASTM D 1003:

a. Double Dome:
1) Impact Modified Acrylic (1S1N2): Vt = 68.9%, Haze = 100%
2) LuxGuard (3P1P2): Vt = 61.9%, Haze = 100%
3) LuxGuard Plus (2P1P2): Vt = 61.1%, Haze = 100%

M. Fall Protection Standard Compliance: 29 CFR 1910.23: Skylight dome and safety screen tested to support a minimum of 400 pounds over 1 square foot of the surface.

2.6 MATERIALS

A. Joint Sealants: As specified in Section 079200 "Joint Sealants."

B. Mastic Sealants: Polyisobutylene; nonhardening, nonskinning, nondrying, nonmigrating sealant.

2.7 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

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

3.2 INSTALLATION

A. Install unit skylights in accordance with manufacturer's written instructions and approved shop drawings. Coordinate installation of units with installation of substrates, air and vapor retarders, roof insulation, roofing membrane, and flashing as required to ensure that each element of the Work performs properly and that finished installation is weather tight.

1. Anchor unit skylights securely to supporting substrates.
2. Install unit skylights on curbs specified in another section with tops of curbs parallel to finished roof slope.

B. Where metal surfaces of unit skylights will contact incompatible metal or corrosive substrates, including preservative-treated wood, apply bituminous coating on concealed metal surfaces, or provide other permanent separation recommended in writing by unit skylight manufacturer.

C. For custom flashings, install unit skylight curb counter-flashing to produce weatherproof seal with curb and overlap with roofing system termination at top of curb.

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Provide allowance to engage testing agency to perform tests and inspections.

1. Test for water leaks according to AAMA 502 after installation and curing of sealants but prior to installation of interior finishes.
2. Perform test for total area of each unit skylight.

B. Work will be considered defective if it does not pass tests and inspections.

C. Additional testing and inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

D. Prepare test and inspection reports.

3.4 CLEANING AND PROTECTION

A. Clean exposed unit skylight surfaces according to manufacturer's written instructions. Touch up damaged metal coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.

B. Replace glazing that has been damaged during construction period.

C. Protect unit skylight surfaces from contact with contaminating substances resulting from construction operations.

END OF SECTION 086200

SECTION 086250 - TUBULAR DAYLIGHTING DEVICES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

A. Tubular daylighting devices and accessories.

1.3 RELATED SECTIONS

A. Division 07 roofing section for flashing and roofing terminations at unit skylight curbs.

B. Section 077200 "Roof Accessories" for manufactured metal roof curbs for unit skylights.

1.4 REFERENCES

A. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

B. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

C. ASTM A 463/A 463M - Standard Specification for Steel Sheet, Aluminum Coated, by the Hot Dip Process.

D. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc Coated (Galvanized), by the Hot Dip Process.

E. ASTM A 792/A 792M - Standard Specification for Steel Sheet, 55 percent Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

F. ASTM E 108 - Standard Test Methods for Fire Tests of Roof Coverings.

G. ASTM E 283 - Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

H. ASTM E 308 - Standard Practice for Computing the Colors of Objects by Using the CIE System.

I. ASTM E 330 - Structural Performance of Exterior Windows, Curtain Walls and

Doors.

J. ASTM E 547 - Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain walls by Cyclic Air Pressure Difference.

K. ASTM E 1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.

L. ASTM E 1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricane.

M. ASTM D 635 - Test Method for Rate of Burning and/or Extent of Time of Burning of Self-Supporting Plastics in a Horizontal Position.

N. ASTM D 1929 - Test Method for Ignition Properties of Plastics.

O. ASTM D 2843 - Standard Test Method for Density of Smoke from the Burning or Decomposition of Plastics.

P. ASTM F 1642 - Standard Test Method for Glazing and Glazing Systems Subject to Airblast Loading.

Q. ASTM F 2912 - Standard Specification for Glazing and Glazing Systems Subject to Airblast Loading.

R. AAMA/WDMA/CSA 101/I.S.2/A440 - Standard/Specification for Windows, Doors, and Unit Skylights; 2011.

S. FM Standard 4431 - The Approval Standard for Skylights.

T. FEMA P-361 - Safe Rooms for Tornadoes and Hurricanes.

U. ICC 500 - Standard for the Design and Construction of Storm Shelters.

V. UL 2108 - Low Voltage Lighting Systems.

W. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products

X. ANSI C63.4-2014 - American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

Y. ICC-ES AC-16 - Acceptance Criteria for Plastic Skylights; 2008.

Z. Florida Building Code TAS 201 - Impact Test Procedures.

AA. Florida Building Code TAS 202 - Criteria for Testing Impact and Non Impact Resistant Building Envelope Components Using Uniform Static Air Pressure Loading.

BB. Florida Building Code TAS 203 - Criteria for Testing Products Subject to Cyclic Wind Pressure Loading.

CC. IBC Section 1710 - Load Test Procedure for Wind Load Testing on Rooftop Daylight Collecting System - Structural Performance Testing - Devised by ATI PE); 2012.

DD. IBC Section 2606.7.2 - Installation - Diffuser Fall Out Test (Devised by PE); 2012.

EE. OSHA 29 CFR - 1910.23 (e)(8) (Guarding Requirements for Skylights); 1926 Subpart M (Fall Protection); 1926.501(b)(4)(i); 1926.501(i)(2); 1926.501(b)(4)(ii).

1.5 PERFORMANCE REQUIREMENTS

A. SOLAMASTER 330 DS-O / 330 DS-C (OPEN/CLOSED CEILING)
1. AAMA/WDMA/CSA 101/IS2/A440, Class CW-PG80, size tested 21 inch (530 mm) diameter, Type TDDOC and Type TDDCC.
a. Air Infiltration Test:
1) Air infiltration will not exceed 0.30 cfm/sf aperture with a pressure delta of 1.57 psf across the tube when tested in accordance with ASTM E 283.
b. Water Resistance Test:
1) Passes water resistance; no uncontrolled water leakage with a pressure differential of 10.7 psf (512 Pa) or 15 percent of the design load (whichever is greater) and a water spray rate of 5 gallons/hour/sf for 24 minutes when tested in accordance with ICC-ES AC-16, ASTM E 547 and ASTM E 331.
c. Uniform Load Test: All units tested with a safety factor of (3) for positive pressure and (2) for negative pressure, acting normal to plane of roof in accordance with ASTM E 330.
1) No breakage, permanent damage to fasteners, hardware parts, or damage to make daylighting system inoperable or cause excessive permanent deflection of any section when tested at a Positive Load of 150 psf (7.18 kPa) or Negative Load of 70 psf (3.35 kPa).
2. Hurricane Resistance:
a. Meets Florida Building Code TAS, 201, TAS, 202 and TAS 203 for Impact and non-impact components or HVHZ and non-HVHZ applications.
b. Meets ASTM E 1886 and ASTM E1996 for missile and cyclic pressure differential testing for TDI Windstorm zones.
3. Fire Testing:
a. Fire Rated Roof Assemblies:
1) When used with the Dome Edge Protection Band, all domes meet fire rating requirements as described in the International Building Code for Class A, B, and C roof assemblies.
b. Self-Ignition Temperature - Greater than 650 degrees F per ASTM D-1929.
c. Smoke Density: Rating no greater than 450 per ASTM E 84 in way intended for use. Classification C.

d. Rate of Burn and/or Extent: Maximum Burning Rate: 2.5 inches/min (62 mm/min) Classification CC-2 per ASTM D 635.
e. Rate of Burn and/or Extent: Maximum Burn Extent: 1 inch (25 mm) Classification CC-1 per ASTM D 635.

4. Fall Protection Performance:
   a. Passes fall protection test: No penetration of dome or curb cap when subject to 400 lb (160 Kg)/42 inch (1066 mm) impact drop test when tested in accordance with OSHA 29 CFR 1926.506(c) Safety Net Systems.
   b. Passes fall protection test: California State OSHA Fall Protection Code of Regulations, Title 8, Section 3212 (e)(1) Skylight Screens.
5. LED Light Kit:
   a. TUVus Marking and Certification for North American Market
   b. FCC: This device complies with part 15 of the FCC Rules

1.6 SUBMITTALS

A. Submit under provisions of Section 013000.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Data sheets showing roof dome assembly, flashing base, reflective tubes, diffuser assembly, and accessories.
   4. Installation requirements.

C. Shop Drawings. Submit shop drawings showing layout, profiles and product components, including rough opening and framing dimensions, anchorage, roof flashings and accessories.

D. Electrical wiring diagrams and recommendations for power and control wiring.

E. Verification Samples: As requested by Architect.

F. Test Reports: Independent testing agency or evaluation service reports verifying compliance with specified performance requirements.

G. Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features:
   1. LED Luminaires: Include estimated useful life, calculated based on IES LM-80 test data.
   2. In order to meet LM-80 lifetime projections, LM-80 Max Drive Current must not be exceeded. Lumen maintenance and lifetime predictions are valid for drive current and case temperature conditions used for LM-80 testing as included in the applicable LM-80 test report for these products.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of twenty years experience in the top lighting industry. Secondary products shall be acceptable to the primary manufacturer.

B. Installer Qualifications: All products shall be installed by a single installer with a minimum of five years demonstrated experience, with adequate equipment, skilled workers, and practical experience to meet the project schedule.

C. Skylights shall conform with authorities having jurisdiction and be designed to meet design criteria of the project location and the following:
   1. Skylights must be certified by NFRC.
   2. Skylights must be Tested and labeled in accordance with AAMA/WDMA/CSA 101/I.S.2/A440.
   3. Skylights must have Factory Mutual (FM) Approval Class Number 4431.
   4. On projects which fall under the jurisdiction of the Florida Building Code, Skylights are required to have a current Florida Building Code (FBC) Number to meet the High Velocity Hurricane Zone (HVHZ) requirements and are required for acceptance of Work specified in this section. Skylight must comply with the jurisdictional code body's submittal data and supporting drawings and documentation. Where the code body's acceptance criteria differs from these specifications regarding components and hardware, the code body's requirements shall govern.
   5. Meet or exceed OSHA 200 pound (90 kg) Drop Tests expressed in 29 CFR 1910.23(e)(8)
   6. Skylights shall provide minimum 69 psf (3.30 kPa) design load.

D. LED Lighting and controls shall be designed to meet criteria of the project, and conform with authorities having jurisdiction, and the following:
   1. Integration with Building Management Systems (BMS) and Heating, Ventilation and Air Conditioning (HVAC) equipment.
   2. Product Safety Marking, Certifying compliance with:
      a. UL 1598 - Luminaires
      b. UL 2108 - Low Voltage Lighting Systems.
      c. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products
   3. FCC Rules Part 15

E. Pre-Installation Meeting: Contractor shall convene a pre-installation meeting on the project site minimum one week before beginning work of this Section. The meeting shall include the Architect or Owner's Representative and representatives of all related trades to:
   1. Coordinate between the at least the following trades.
      a. Roofing to install the flashing, skylight, and LED Light Kit (when specified)
      b. Electrical to wire components and program lighting controls.
   2. Verify project requirements and site logistics.

3. Assess integrity of the roofing system and building structure.
4. Review manufacturer's installation instructions and warranty requirements.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver products in manufacturer's original containers, dry, undamaged, seals and labels intact.

B. Store products in manufacturer's unopened packaging until ready for installation.

1.9 PROJECT CONDITIONS

A. Coordinate delivery schedule with the Contractor and project schedule to minimize on site storage.

B. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

C. Store materials in a dry area, protected from freezing, staining, contamination or damage.

1.10 WARRANTY

A. Daylighting Device: Manufacturer's standard warranty for 10 years.

B. Electrical Parts: Manufacturer's standard warranty for 5 years, unless otherwise indicated.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Solatube International, Inc., which is located at: Solatube International 2210 Oak Ridge Way; Vista, CA 92081-8341; Toll Free Tel: 888-765-2882; Tel: (760) 477-1120; Fax: (760) 597-4488; Email:request info (commsales@solatube.com); Web:http://www.solatube.com

B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 TUBULAR DAYLIGHTING DEVICES

A. Tubular Daylighting Devices General: Transparent roof-mounted skylight dome and self-flashing curb, reflective tube, and ceiling level diffuser assembly, transferring sunlight to interior spaces; complying with ICC AC-16.

B. SolaMaster Series: Solatube Model 330 DS, 21 inch (530 mm) Daylighting System:
1. Model:
   a. Solatube Model 330 DS-O Open Ceiling. AAMA Type TDDOC.
2. Capture Zone:

a. Roof Dome Assembly: Transparent, UV and impact resistant dome with flashing base supporting dome and top of tube.
    1) Dome Glazing: Type DP, 0.115 inch (3 mm) minimum thickness polycarbonate classified as CC1 material.
    2) Tube Ring: Attached to top of base section; 0.090 inch (2.3 mm) nominal thickness injection molded high impact PVC; to prevent thermal bridging between base flashing and tubing and channel condensed moisture out of tubing. Attached to the base of the dome ring using butyl glazing rope 0.24 inch (6 mm) diameter; to minimize air infiltration.
    3) Dome Seal: Adhesive backed weatherstrip, 0.63 inch (16 mm) tall by 0.28 inch (7 mm) wide.
    4) LightTracker Reflector, made of aluminum sheet, thickness 0.015 inch (0.4 mm) with Spectralight Infinity. Positioned in the dome to capture low angle sunlight.
b. Dome Options:
    1) Security Bar: Type B Security Bar 0.375 inch (9.5 mm) stainless steel bar across flashing diameter opening.
    2) Security Kit: Type SK Dome Security Kit, rivets with nylon spacers to replace dome screws.
    3) Dome Edge Protection Band: Type PB, for fire rated Class A, B or C roof applications. Galvanized steel. Nominal thickness of 0.039 inch (1 mm). For use with all flashings types.
    4) Secondary Diffuser: Type SS, Acrylic plastic classified as CC2 material. Thickness shall not be less than 0.100 inches.
c. Flashings:
    1) Roof Flashing Base:
        a) One Piece: One piece, seamless, leak-proof flashing functioning as base support for dome and top of tube. Sheet steel, corrosion resistant conforming to ASTM A 653/A 653M or ASTM A 463/A 463M or ASTM A792/A 792M, 0.028 inch (0.7 mm) plus or minus .006 inch (.015 mm) thick.
            1) Base Style: Type F4, Self Mounted, 4 inches (102 mm) high.
d. Curbs: Metal Insulated Roof Curb: Corrosion resistant 18 Gauge hot-dipped galvanized steel conforming to ASTM A 653 G90 with continuous welded seams, integrated base plate for water tightness and extra strength, lined with 1-1/2 inch fiberglass fireproof sound attenuating thermal insulation, factory installed 2 by 2 treated wood nailer secured to top ledge of curb. Curb designed for single-ply roofing, lightweight fill or tapered insulation low slope roof types.
    1) C12- 12-inch-high minimum metal insulated curb
    2) Flashing Options:
        a) Flashing Insulator: Thermal isolation material is for use under the following flashing types: Type F4, F8, or F11.
        b) Roof Flashing Turret Extensions: Provide manufacturer's standard extension tubes for applications as requiring:

1) Type T48: Additional lengths of 48 inches (1200 mm) extension.

3. Transfer Zone:
   a. Extension Tubes: Aluminum sheet, thickness 0.018 inch (0.5 mm).
      1) Reflective Tubes:
         a) Reflective extension tube, Type EXX and Type EL with total length of run as indicated on the Drawings.
         b) Interior Finish: Spectralight Infinity with INFRAREDuction Technology combining ultra-high Visible Light reflectance with Ultra-low Infrared (IR) reflectance.
      2) Tube Options
         a) Extension Tube Angle Adapter: Provide manufacturer's standard adapters for applications requiring:
            1) Type A1 one 0 to 90 degree extension tube angle adapter.
            2) Type A2 two 0 to 90 degree extension tube angle adapters.
         b) Top Tube Angle Adapter: Type TA, reflective 45 degree adjustable Top Tube Angle Adapter, 16 inches (406 mm) long.
         c) Top Tube Angle Adapter and Bottom Tube Angle Adapter Kit: Type AK, reflective 45 degree adjustable top and bottom angle adapters (one each), 16 inches (406 mm) long
         d) Bottom Tube Angle Adapter: Type BA, reflective 45 degree adjustable Bottom Tube Angle Adapter, 16 inches (406 mm) long.
         e) Thermal Insulation Panel: Type TIP, high-performance dual-glazed, thermally-broken tube insulation system.
         f) Open ceiling trim ring: Type R, ABS Plastic, White; nominal thickness of 0.04 inch (1 mm).
         g) Wire Suspension Kit: Type E, Use the wire suspension kit when additional bracing to the structure is required.
4. Delivery Zone:
   a. Diffuser Assemblies for Tubes Not Penetrating Ceilings (Open Ceiling): Solatube Model 330 DS-O. 21 inch (530 mm) diameter diffuser attached directly to bottom of tube.
      1) Lens: Type L2, Prismatic lens designed to maximize light output and diffusion. Visible Light Transmission shall be greater than 90 percent at 0.100 inch (2.5 mm) thick. Classified as CC2.
      2) Diffuser Seal: Open cell foam, acrylic adhesive backed, 0.75 inch (19 mm) wide by 0.125 inch (3.2 mm) thick to minimize condensation and bug, dirt and air infiltration per ASTM E 283.
      3) Diffuser Trim Ring: Injection molded acrylic. Nominal wall thickness 0.172 inches (4.4 mm).
   b. Delivery Zone Options
      1) Daylight Dimmer - 0 to 10 V Dimmer Control: Provide an electrical actuator dimmer controller, auxiliary switch(s), and cable as specified in Section 13800; Common Work Results Electrical

Section 16000; and Lighting Equipment and Controls Section 16500.

a) Low Voltage Daylight Dimmer: Type D1, is an Electro-mechanically actuated daylight valve; 0-10 V Control, Class-2, UL Listed. Low voltage Daylight Dimmer, an electrical actuator provides for programmable (0 to 10VDC) scene-based dimming control for daylight output between 2 and 100 percent, auxiliary 12VDC dimming control for daylight output between 2 and 100 percent, or auxiliary ON/OFF control. Input voltage: 24VAC at 50 or 60 Hz.
   1) Programmable (0 to 10VDC) Control: requires electrical actuator controller or building automation controller capable of producing a signal between 0 and +10 VDC (Min 50mA) to incrementally modulate up to 50 daisy chained Daylight Dimmers (Current Sinking) between fully closed at 0 to 1 volts to fully open at 9 to 10 volts.
   2) Auxiliary 12VDC Dimming Control: requires 12VDC Dimming Switch (Current Sourcing; 12VDC power supply not required).
      a) Requires CL-2 (Min), 18AWG, stranded copper, two conductor, twisted cable from lighting controller to first dimmer and interconnecting between subsequent dimmers.
   3) Auxiliary ON/OFF Control: requires commercial or residential single pole electric light switch.
      a) 12VDC dimming control requires CL-2 (Min), 22 AWG, stranded, three conductor, twisted cable from switch to first dimmer and CL-2 (Min), 18 AWG, stranded copper, two conductor, twisted cable; interconnecting subsequent dimmers.

b) Power can be transformed from line voltage through use of a UL Listed Class-2, 24VAC Transformer.

2) LED Light Kit: Including driver and light engine two piece field assembly, bracket mounted inside system, cTUVus Listed.
   a) Type (LED); Long-lasting, high performance, non-replaceable light source, LED integrated in Light Engine.
   b) Electrical Input (AC~) 100-240V, 1.1A, 50/60Hz; 277V, 0.5A, 50/60Hz
   c) Light Engine: CCT 4,000 degrees K, CRI 80, at 1440 mA Nom Drive Current and Tc 25 degrees C: Typ Pulsed Flux 12,075 lm
   d) LED Output: 10,000 delivered lumens.
   e) Lumen Maintenance Rating (L70): =60,000 Hr/105 degrees C Case Temp: (87.66%) of Initial (lm), Per (TM-21)

5. Accessories
   a. Optional Low-voltage Transformer: Solatube Remote Transformer, Type TR20, is a 20VA, 24VAC, 50/60HZ, UL Listed, UL Category XOKV7, CE

Marked, Class-2 Transformer with cover plate mounting system configured for easy field assembly onto standard 4.06 inch by 4.06 inch (103 mm by 103 mm) square junction box: Inherently Limited, Primary: 120VAC, 208VAC, 240VAC, and 277VAC. For use with Daylight Dimmer Type D1 only.

b. Optional Switch: Type S1, is a Low-voltage 0-10V Class 2 control switch (white) required to operate 0-10V Daylight Dimmer. Note: only one switch is required per set of up to 50 synchronously controlled dimmers. For use with 0-10V Daylight Dimmer, Type D1, only.

6. Catalog Number: S330DS-O-DP-B-SK-SS-PB-F4-T48-FI-AK-EXX-A1-A2-E-TIP-R-TA-BA-L2-D1-TR20-S1-LED-C12

2.3 ACCESSORIES

A. Fasteners: Same material as metals being fastened, non-magnetic steel, non-corrosive metal of type recommended by manufacturer, or injection molded nylon.

B. Suspension Wire: Steel, annealed, galvanized finish, size and type for application and ceiling system requirement.

C. Sealant: Polyurethane or copolymer based elastomeric sealant as provided or recommended by manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. Examine openings, substrates, structural support, anchorage, and conditions for compliance with requirements for installation tolerances and other conditions.

C. If substrate and rough opening preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Coordinate requirements for power supply, conduit and wiring.

C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's printed instructions.

B. Coordinate installation with substrates, air and vapor retarders, roof insulation, roofing membrane, and flashing to ensure that each element of the Work performs properly and that finished installation is weather tight.

1. Install flashing to produce weatherproof seal with curb and overlap with roofing system termination at top of curb.
2. Provide thermal isolation when components penetrate or disrupt building insulation. Pack fibrous insulation in rough opening to maintain continuity of thermal barriers.
3. Coordinate attachment and seal of perimeter air and vapor barrier material.

C. Where metal surfaces of tubular unit skylights will contact incompatible metal or corrosive substrates, including preservative-treated wood, provide permanent separation as recommended by manufacturer

D. Align device free of warp or twist, maintain dimensional tolerances.

E. After installation of first unit, field test to determine adequacy of installation. Conduct water test in presence of Owner, Architect, or Contractor, or their designated representative. Correct if needed before proceeding with installation of subsequent units.

F. Inspect installation to verify secure and proper mounting. Test each fixture to verify operation, control functions, and performance. Correct deficiencies.

3.4 CLEANING AND PROTECTION

A. Clean exposed unit skylight surfaces according to manufacturer's written instructions. Touch up damaged metal coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.

B. Replace glazing that has been damaged during construction period.

C. Protect unit skylight surfaces from contact with contaminating substances resulting from construction operations.

END OF SECTION 086250

SECTION 099123 – INTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes surface preparation and field painting of the following:

1. Exposed interior items and surfaces.
2. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.

B. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically mention an item or a surface, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate color or finish, the Architect will select from standard colors and finishes available.

1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.

C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.

1. Prefinished items include the following factory-finished components:

a. Architectural woodwork and casework.
b. Acoustical wall panels.
c. Metal toilet enclosures.
d. Metal lockers.
e. Finished mechanical and electrical equipment-electrical panels exposed in walls other than storage rooms, electric room, mechanical room or other utility type room may not be painted, all others to match wall

surface color.
f. Light fixtures.
g. Distribution cabinets.

2. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:

a. Foundation spaces.
b. Furred areas.
c. Ceiling plenums.
d. Utility tunnels.
e. Pipe spaces.
f. Duct shafts.
g. Elevator shafts.

3. Finished metal surfaces include the following:

a. Anodized aluminum.
b. Stainless steel.
c. Chromium plate.
d. Copper.
e. Bronze and brass.

4. Operating parts include moving parts of operating equipment and the following:

a. Valve and damper operators.
b. Linkages.
c. Sensing devices.
d. Motor and fan shafts.

5. Labels: Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

D. Related Sections include the following:

1. Division 6 Section "Interior Architectural Woodwork" for shop primed and prefinished interior architectural woodwork.
2. Division 8 Section "Steel Doors and Frames" for shop priming steel doors and frames.
3. Division 8 Section “Flush Wood Doors” for prefinished doors.
4. Division 9 Section "Gypsum Board Assemblies" for surface preparation for gypsum board.
5. Divisions 22, 23 and 26: Painting of mechanical and electrical work is specified in these Divisions respectively.

E. Reference the Painting and Decorating Contractor's of America (PDCA) Technical Manual as a reference for a "type 1 standard job".

F. When epoxy or lacquer materials are specified, include a requirement for providing positive ventilation of the spaces, and a requirement that the application be made after 5:00pm on Friday (to allow odors to dissipate over the weekend, or other acceptable time).

1.3 DEFINITIONS

A. General: Standard coating terms defined in ASTM D 16 apply to this Section.

1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
2. Eggshell refers to low-sheen finish with a gloss range between 5 and 20 when measured at a 60-degree meter.
3. Satin refers to low-sheen finish with a gloss range between 15 and 35 when measured at a 60-degree meter.
4. Semigloss refers to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter.
5. Full gloss refers to high-sheen finish with a gloss range more than 65 when measured at a 60-degree meter.

1.4 SUBMITTALS

A. Product Data: For each paint system specified. Include block fillers and primers.

1. Material List: Provide an inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. 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.
3. Certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).

B. Samples for Verification: Of each color and material to be applied, with texture to simulate actual conditions, on representative Samples of the actual substrate.

1. Provide stepped Samples, defining each separate coat, including block fillers and primers. Use representative colors when preparing Samples for review.

Resubmit until required sheen, color, and texture are achieved.

2. Provide a list of materials and applications for each coat of each sample. Label each sample for location and application.
3. Submit Samples on the following substrates for the Architect's review of color and texture only:

    a. Painted Wood: Provide two 12-inch- square samples of each color and material on hardboard.
    b. Stained or Natural Wood: Provide two 4-by-8-inch samples of natural- or stained-wood finish on actual wood surfaces specified.
    c. Ferrous Metal: Provide two 4-inch- square samples of flat metal and two 8-inch- long samples of solid metal for each color and finish.
    d. Gypsum Wallboard: Provide paint draw-downs for each color and finish specified, labeled with paint type (name and number) and Color (name and number).
    e. Acoustical Speaker Cloth Fabric: Provide a minimum 24 inch by 24 inch piece of fabric painted with specified paint color to match gypsum wallboard Theater “clouds” with acrylic waterbased paint and airsprayed to preserve acoustical transparency.

C. Qualification Data: For firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

D. The contractor shall submit "as-built" color and material schedule for each substrate and finish system with the project closeout documents, including:

1. Descriptive location (room number, etc.)
2. Manufacturer
3. Paint type (name and number)
4. Color (name and number)

1.5 QUALITY ASSURANCE

A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and extent to that indicated for this Project with a record of successful in-service performance.

B. Source Limitations: Obtain block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.

C. Benchmark Samples (Mockups): Provide a full-coat benchmark finish sample of each type of coating and substrate required on the Project. Comply with procedures specified in PDCA P5. Duplicate finish of approved prepared samples.

1. The Architect will select one room or surface to represent surfaces and conditions for each type of coating and substrate to be painted.

    a. Wall Surfaces: Provide samples on at least 100 sq. ft. of wall surface.
    b. Small Areas and Items: The Architect will designate an item or area as required.

2. After permanent lighting and other environmental services have been activated, apply coatings in this room or to each surface according to the Schedule or as specified. Provide required sheen, color, and texture on each surface.

    a. After finishes are accepted, the Architect will use the room or surface to evaluate coating systems of a similar nature.

3. Final approval of colors will be from job-applied samples.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:

1. Product name or title of material.
2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.
8. VOC content.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain containers used in storage in a clean condition, free of foreign materials and residue.

1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.7 PROJECT CONDITIONS

A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 and 90 deg F.

B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 and 95 deg F.

C. Do not apply when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

1.8 EXTRA MATERIALS

A. A. Furnish extra paint materials from the same production run as the materials applied in the quantities described below. Package paint materials in unopened, factory-sealed containers for storage and identify with labels describing contents. Deliver extra materials to the Owner.

1. Quantity: Furnish the Owner with extra paint materials in the quantities indicated below:

a. Interior, Satin Acrylic Finish: One case of each color applied.
b. Interior, Satin Acrylic Enamel: 2 gal. of each color applied.

2. Quantity: Furnish the Owner with an additional 5 percent, but not less than 1 gal. or 1 case, as appropriate, of each material and color applied.

PART 2 - PRODUCTS

2.1 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide block fillers, primers, undercoats, and finish-coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable. Top-of-the-line products for approved manufacturers are:

1. Benjamin Moore & Co.
2. ICI Paints.
3. Kelly-Moore Paints.

4. Kwal-Howells Paint.
5. Porter Paints.
6. Sherwin-Williams Company (The).
7. As specified in drawings
8. Or equivalent

C. Colors: Provide color specified in finish schedule or matching color as approved by the Architect. See finish schedule.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with the Applicator present, under which painting will be performed for compliance with paint application requirements.

1. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.

B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

1. Notify the Architect about anticipated problems using the materials specified over substrates primed by others.

3.2 PREPARATION

A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.

B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease before cleaning.

1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.

1. Provide barrier coats over incompatible primers or remove and reprime.
2. Cementitious Materials: Prepare concrete and concrete masonry block, surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.

    a. Use abrasive blast-cleaning methods if recommended by paint manufacturer.
    b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces where moisture content exceeds that permitted in manufacturer's written instructions.
    c. Clean concrete floors to be sealed with a 5 percent solution of muriatic acid or other etching cleaner. Flush the floor with clean water to remove acid, neutralize with ammonia, rinse, allow to dry, and vacuum before sealing.

3. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.

    a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood-filler. Sand smooth when dried.
    b. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and backsides of wood, including cabinets, counters, cases, and paneling.
    c. When transparent finish is required, backprime with spar varnish.
    d. Backprime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on backside.
    e. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.

4. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that

comply with the Steel Structures Painting Council's (SSPC) recommendations.

a. Blast steel surfaces clean as recommended by paint system manufacturer and according to requirements of SSPC-SP 10.
b. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
c. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with the same primer as the shop coat.

5. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.

D. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions.

1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
3. Use only thinners approved by paint manufacturer and only within recommended limits.

E. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of the same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.3 APPLICATION

A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.

1. Paint colors, surface treatments, and finishes are indicated in the schedules.
2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
3. Provide finish coats that are compatible with primers used.
4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convector covers, covers for finned-tube radiation, grilles, and similar

components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.

5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before the final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
6. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
7. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
8. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
9. Finish interior of wall and base cabinets and similar field-finished casework to match exterior.
10. Sand lightly between each succeeding enamel or varnish coat.
11. The color of each coat shall be slightly varied.

B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
2. Omit primer on metal surfaces that have been shop primed and touchup painted.
3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.

C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.

1. Brushes: Use brushes best suited for the type of material applied. Use brush of appropriate size for the surface or item being painted.
2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.

3. Spray Equipment: Use airless spray equipment with orifice size as recommended by the manufacturer for the material and texture required.

D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.

E. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and in occupied spaces.

F. Mechanical items to be painted include, but are not limited to, the following:

1. Piping, pipe hangers, and supports.
2. Heat exchangers.
3. Tanks.
4. Ductwork.
5. Insulation.
6. Motors and mechanical equipment.
7. Accessory items.

G. Electrical items to be painted include, but are not limited to, the following:

1. Conduit and fittings.
2. Switchgear.
3. Panelboards.

H. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.

I. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn through or other defects due to insufficient sealing.

J. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

K. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.

1. Provide low sheen finish for final coats.

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

M. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.4 FIELD QUALITY CONTROL

A. The Owner reserves the right to invoke the following test procedure at any time and as often as the Owner deems necessary during the period when paint is being applied:

1. The Owner will engage the services of an independent testing agency to sample the paint material being used. Samples of material delivered to the Project will be taken, identified, sealed, and certified in the presence of the Contractor.
2. The testing agency will perform appropriate tests for the following characteristics as required by the Owner:

    a. Quantitative material analysis.
    b. Abrasion resistance.
    c. Apparent reflectivity.
    d. Flexibility.
    e. Washability.
    f. Absorption.
    g. Accelerated weathering.
    h. Dry opacity.
    i. Accelerated yellowness.
    j. Recoating.
    k. Skinning.
    l. Color retention.
    m. Alkali and mildew resistance.

3. The Owner may direct the Contractor to stop painting if test results show material being used does not comply with specified requirements. The Contractor shall remove noncomplying paint from the site, pay for testing, and repaint surfaces previously coated with the rejected paint. If necessary, the Contractor may be required to remove rejected paint from previously painted surfaces if, on repainting with specified paint, the 2 coatings are incompatible.
4. The Owner will preform inspection after each primer and finish coat, prior to application of the succeeding coat.

3.5 CLEANING

A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.

1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

3.6 PROTECTION

A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.

B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.

1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.7 INTERIOR PAINT SCHEDULE (see drawings for location of finishes and colors)

A. Gypsum Board and CMU: Provide the following finish systems over interior gypsum board and CMU surfaces:
1. Semigloss, Hybrid Waterborne Alkyd-Enamel Finish: 2 finish coats over a primer, typical as indicated in drawings.

a. Gypsum Board Primer: Premium latex-based, interior primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.6 mils.
b. CMU Block Primer: Water Blocking, interior primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness 2.4-3.6 mils.
c. First and Second Coats: Semigloss, hybrid waterborne alkyd-enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of 2.5 – 3.5 mils.

B. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:

1. Satin or eggshell, Acrylic-Enamel Finish: 2 finish coats over a primer, typical unless noted otherwise.

a. Primer: Alkali-resistant, acrylic-latex, interior primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.0 mil.
b. First and Second Coats: Low-luster (eggshell or satin), acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.8 mils.

2. Semigloss, Acrylic-Enamel Finish: 2 finish coats over a primer, typical in Toilet and Janitor rooms.

a. Primer: Latex-based, interior primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
b. First and Second Coats: Semigloss, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils.

3. Water Based Satin Primer:: 2 finish coats.

a. First and Second Coats: Satin, acrylic, polymer interior water based primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 3 mils.

1) Rosco: Tough-prime.

C. Woodwork and Hardboard: Provide the following paint finish systems over new, interior wood surfaces; noted as paint (opaque) finish.

1. Semigloss, Acrylic-Enamel Finish: 2 finish coats over a wood undercoater.

a. Undercoat: Alkyd- or acrylic-latex-based, interior wood undercoater, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
b. First and Second Coats: Semigloss, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils.

2. Water Based Satin Primer:

a. First and Second Coats: Satin, acrylic polymer, watre based primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 3 mils.

D. Stained and Dyed Woodwork: Provide the following stained finishes over

new, interior woodwork:

1. Alkyd-Based, Satin-Varnish Finish: 2 finish coats of an alkyd-based, clear-satin varnish over a sealer coat and an alkyd-based, interior wood stain.

    a. Stain Coat: Alkyd-based, interior wood stain applied at spreading rate recommended by the manufacturer.
    b. Sealer Coat: Clear sanding sealer applied at spreading rate recommended by the manufacturer.
    c. First and Second Finish Coats: Alkyd-based or polyurethane varnish, as recommended by the manufacturer, applied at spreading rate recommended by the manufacturer.

2. Aniline Wood Dye, Satin Varnish Finish: 2 Finish coats of an alkyd-based, clear-satin varnish over Aniline dyed wood. Colors as per Finish Schedule.

E. Natural-Finish Woodwork: Provide the following natural finishes over new, interior woodwork:

1. Alkyd-Based, Satin-Varnish Finish: 2 finish coats of an alkyd-based, clear-satin varnish over a sanding sealer.

    a. Sealer Coat: Clear sanding sealer applied at spreading rate recommended by the manufacturer.
    b. First and Second Finish Coats: Alkyd-based or polyurethane varnish, as recommended by the manufacturer, applied at spreading rate recommended by the manufacturer.

F. Ferrous Metal: Provide the following finish systems over ferrous metal:

1. Semigloss, Acrylic-Enamel Finish: One finish coat over an enamel undercoater and a primer.

    a. Primer: Quick-drying, rust-inhibitive, alkyd-based or epoxy-metal primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils.
    b. Undercoat: Alkyd, interior enamel undercoat or semigloss, acrylic-latex, interior enamel, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.3 mils.
    c. Finish Coat: Semigloss, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.3 mils.

G. Zinc-Coated Metal: Provide the following finish systems over zinc-coated metal:

1. Semigloss, Acrylic-Enamel Finish: 2 finish coats over a primer.

a. Primer: Galvanized metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than
1.2 mils.

b. First and Second Coats: Semigloss, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils.

END OF SECTION 099123

SECTION 099600 - HIGH-PERFORMANCE COATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes surface preparation and application of high-performance coating systems.

1.3 DEFINITIONS

A. Gloss Level 5: 35-70 units at 60 degrees, according to ASTM D 523.

B. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

C. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include preparation requirements and application instructions.

B. Samples: For each type of coating system and in each color and gloss of topcoat indicated.

1. Submit Samples on rigid backing, 8 inches square.
2. Step coats on Samples to show each coat required for system.
3. Label each coat of each Sample.

C. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. VOC content.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Coatings: 5 percent, but not less than 1 gal. of each material and color applied.

1.6 QUALITY ASSURANCE

A. Mockups: Apply mockups of each coating system indicated to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each coating system specified in Part 3.

a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft..
b. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on mockups.

a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.8 FIELD CONDITIONS

A. Apply coatings only when temperature of surfaces to be coated and surrounding air temperatures are between 50 and 95 deg F.

B. Do not apply coatings when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

C. Do not apply exterior coatings in snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Sherwin-Williams Company (The).
2. Or Equivalent as approved by Architect.

B. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to products listed in other Part 2 articles for the paint category indicated.

2.2 HIGH-PERFORMANCE COATINGS, GENERAL

A. Material Compatibility:

1. Provide materials for use within each coating system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a coating system, provide products recommended in writing by manufacturers of topcoat for use in coating system and on substrate indicated.

3. Provide products of same manufacturer for each coat in a coating system.

B. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction and, for interior coatings applied at project site, the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

1. Flat Paints and Coatings: 50 g/L.
2. Nonflat Paints and Coatings: 150 g/L.
3. Primers, Sealers, and Undercoaters: 200 g/L.
4. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.
5. Floor Coatings: 100 g/L.

6. Shellacs, Clear: 730 g/L.
7. Shellacs, Pigmented: 550 g/L.

C. Colors: As selected by Architect from manufacturer's full range.

2.3 METAL PRIMERS

A. Primer, Rust-Inhibitive, high build catalyzed polyamide/bisphenol epoxy.

1. Sherwin Williams (SW), Recoatable Epoxy Primer, B67, applied at the rate of 6.0 to 9.0 mils wet/4.0 to 6.0 mils dry.

2.4 POLYURETHANE COATINGS

A. Polyurethane, Two-Component, Pigmented, Gloss (Gloss Level 6):

1. Sherwin Williams (SW), Acrolon 218 HS Acrylic Polyurethane, B65-600/V600, applied at the rate of 4.5 to 9.0 mils wet/3.0 to 6.0 mils dry per coat.

2.5 EPOXY COATINGS

A. Epoxy, High-build, Two-Component, Semi-gloss (Gloss Level 5):

1. Sherwin Williams (SW), Macropoxy 646-100, B58-600 Series, at 5.0 to 10 mils (0.127 to 0.254 mm) dry, per coat.

2.6 SOURCE QUALITY CONTROL

A. Testing of Coating Materials: Owner reserves the right to invoke the following procedure:

1. Owner will engage the services of a qualified testing agency to sample coating materials. Contractor will be notified in advance and may be present when samples are taken. If coating materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying coating materials from Project site, pay for testing, and recoat surfaces coated with rejected materials. Contractor will be required to remove rejected materials from previously coated surfaces if, on recoating with complying materials, the two coatings are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

C. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

B. Clean substrates of substances that could impair bond of coatings, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce coating systems indicated.

C. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:

1. SSPC-SP 10/NACE No. 2, "Near-White Blast Cleaning."

D. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied coatings.

3.3 APPLICATION

A. Apply high-performance coatings according to manufacturer's written instructions and recommendations.

1. Use applicators and techniques suited for coating and substrate indicated.
2. Coat surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, coat surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Coat back sides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
4. Do not apply coatings over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of the same material are to be applied. Tint undercoats to match color of finish coat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.

D. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test coatings for dry film thickness.

1. Contractor shall touch up and restore coated surfaces damaged by testing.
2. If test results show that dry film thickness of applied coating does not comply with coating manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with coating manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, as approved by Architect,

and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

3.6 EXTERIOR HIGH-PERFORMANCE COATING SCHEDULE

A. Steel Substrates:

1. Pigmented Polyurethane over High-Build Epoxy System:

a. Prime Coat: Primer, epoxy, anti-corrosive, for metal.

1) Sherwin Williams (SW), Recoatable Epoxy Primer, B67, applied at the rate of 6.0 to 9.0 mils wet/4.0 to 6.0 mils dry.

b. Intermediate Coat: Epoxy, high-build, low gloss.

1) Sherwin Williams (SW), Macropoxy 646 Fast Cure Epoxy, B58-600/V600, applied at the rate of 7.0 to 13.5 mils wet/5.0 to 10.0 mils dry.

c. Topcoat: Polyurethane, two-component, pigmented, gloss (Gloss Level 6).

1) Sherwin Williams (SW), Acrolon 218 HS Acrylic Polyurethane, B65-600/V600, applied at the rate of 4.5 to 9.0 mils wet/3.0 to 6.0 mils dry per coat.

B. Galvanized-Metal Substrates:

1. Pigmented Polyurethane System:

a. Prime Coat: Primer, epoxy, anti-corrosive, for metal.

1) Sherwin Williams (SW), Recoatable Epoxy Primer, B67, applied at the rate of 6.0 to 9.0 mils wet/4.0 to 6.0 mils dry.

b. Intermediate Coat: Polyurethane, two-component, pigmented, gloss (Gloss Level 6).

c. Topcoat: Polyurethane, two-component, pigmented, gloss (Gloss Level 6).

1) Sherwin Williams (SW), Acrolon 218 HS Acrylic Polyurethane, B65-600/V600, applied at the rate of 4.5 to 9.0 mils wet/3.0 to 6.0 mils dry per coat.

3.7 INTERIOR HIGH-PERFORMANCE COATING SCHEDULE

A. CMU Substrates:

1. Epoxy System:

a. Block Filler:

1) S-W Cement-Plex 875 Acrylic Block Filler B42 Series, at 10 to 20 mils (0.254 to 0.508 mm) dry, per coat.

b. Intermediate Coat: Epoxy, matching topcoat.
c. Topcoat: Epoxy, high-build, semi-gloss:

1) S-W Macropoxy 646-100, B58-600 Series, at 5.0 to 10 mils (0.127 to 0.254 mm) dry, per coat.

B. Steel Substrates:

1. Pigmented Polyurethane over High-Build Epoxy System:

a. Prime Coat: Primer, epoxy, rust inhibitive, for metal.

1) Sherwin Williams (SW), Recoatable Epoxy Primer, B67, applied at the rate of 6.0 to 9.0 mils wet/4.0 to 6.0 mils dry.

b. Intermediate Coat: Epoxy, high-build, low gloss.

1) Sherwin Williams (SW), Macropoxy 646 Fast Cure Epoxy, B58-600/V600, applied at the rate of 7.0 to 13.5 mils wet/5.0 to 10.0 mils dry.

c. Topcoat: Polyurethane, two-component, pigmented, gloss (Gloss Level 6).

1) Sherwin Williams (SW), Acrolon 218 HS Acrylic Polyurethane, B65-600/V600, applied at the rate of 4.5 to 9.0 mils wet/3.0 to 6.0 mils dry per coat.

C. Galvanized-Metal Substrates:

2. Pigmented Polyurethane System:

a. Prime Coat: Primer, epoxy, as recommended in writing by topcoat manufacturer.

1) Sherwin Williams (SW), Recoatable Epoxy Primer, B67, applied at the rate of 6.0 to 9.0 mils wet/4.0 to 6.0 mils dry.

b. Intermediate Coat: Polyurethane, two-component, pigmented, gloss (Gloss Level 6).
c. Topcoat: Polyurethane, two-component, pigmented, gloss (Gloss Level 6).

1) Sherwin Williams (SW), Acrolon 218 HS Acrylic Polyurethane, B65-600/V600, applied at the rate of 4.5 to 9.0 mils wet/3.0 to 6.0 mils dry per coat.

END OF SECTION 099600

SECTION 102113.19 - SOLID PLASTIC TOILET COMPARTMENTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes
   1. Solid plastic toilet compartments including the following:
      a. Floor mounted overhead-braced toilet compartments.
      b. Floor mounted urinal screens.

B. Related Sections:
   1. Section 06 10 00 - Rough Carpentry.
   2. Section 102800 "Toilet, Bath, and Laundry Accessories" for toilet tissue dispensers, grab bars, purse shelves, and similar accessories.

1.3 REFERENCES

A. ASTM International (ASTM):
   1. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
   2. ASTM B 85 - Standard Specification for Aluminum-Alloy Die Castings.
   3. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

B. National Fire Protection Association (NFPA) 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.

1.4 ACTION SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

B. Shop Drawings: Provide layout drawings and installation details with location and type of hardware required.

C. Selection Samples: For each finish product specified, two complete sets of color

chips representing manufacturer's full range of available colors and patterns.

D. Verification Samples: For each finish product specified, two samples representing actual product, color, and patterns.

1.5 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of toilet compartment, from manufacturer.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For toilet compartments to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: A company regularly engaged in manufacture of products specified in this section, and whose products have been in satisfactory use under similar service conditions for not less than 5 years.

B. Installer Qualifications: A company regularly engaged in installation of products specified in this Section, with a minimum of 5 years experience.

C. Performance Requirements:
   1. Fire Resistance: Partition materials shall comply with the following requirements, when tested in accordance with the ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials:
      a. Class A flame spread/smoke developed rating, tested to ASTM E84.
   2. Material Fire Ratings:
      a. National Fire Protection Association (NFPA) 286: Pass.

D. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities" and ICC/ANSI A117.1 for toilet compartments designated as accessible.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

1.9 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of toilet fixtures, walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements before fabrication.

B. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.10 WARRANTY

A. Manufacturer guarantees its plastic against breakage, corrosion, and delamination under normal conditions for 25 years from the date of receipt by the customer. If materials are found to be defective during that period for reasons listed above, the materials will be replaced free of charge. (Labor not included in warranty.)

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Scranton Products, which is located at: 801 E. Corey St.; Scranton, PA 18505; Toll Free Tel: 800-445-5148; Fax: 855-376-6161; Email:request info (info@scrantonproducts.com); Web:http://www.scrantonproducts.com

B. Substitutions: Not permitted.

2.2 MATERIAL

A. Plastic Panels: High density polyethylene (HDPE) suitable for exposed applications, waterproof, non-absorbent, and graffiti-resistant textured surface;
   1. Fire-resistance Rating: Class A.

B. Aluminum Extrusions: ASTM B221, 6463-T5 alloy and temper.

C. Aluminum Die Castings: ASTM B85, A380 alloy.

D. Stainless Steel Castings: ASTM A167, Type 304.

E. Rubber: Abrasion resistant Styrene Butadiene Rubber, 65 to 80 Shore A durometer, black.

2.3 SOLID PLASTIC TOILET COMPARTMENTS AND SCREENS

A. Basis of Design: Eclipse Toilet Partitions as manufactured by and supplied by Scranton Products.
   1. Toilet-Enclosure Style: Floor mounted overhead-braced.
   2. Urinal-Screen Style: Floor anchored.

B. Doors, Panels, and Pilaster Construction: High density polyethylene (HDPE), fabricated from SEQ CHAPTER 1extruded polymer resins, forming single thickness panel.
   1. Waterproof and nonabsorbent, with self-lubricating surface, resistant to marks by pens, pencils, markers, and other writing instruments.
   2. Thickness: 1 inch (25 mm).
   3. Edges: Shiplap.

C. Panel Color: As selected by Architect from manufacturer's full range.

D. Doors and Dividing Panels Options (final selection and approval by Owner and Architect):
   1. Standard Privacy:
      a. Height: 55 inches (1397 mm) high and mounted at 14 inches (356 mm) above the finished floor.
   2. High Privacy:
      a. Height: 62 inches (1575 mm) high and mounted at 8 to 14 inches (203 to 356 mm) above the finished floor.
   3. Extra Privacy:
      a. Height: 71-1/2 inches (1816 mm) high and mounted at 4 inches (102 mm) above the finished floor.

E. Metal Posts: 82.75 inches (2102 mm) high, heavy duty extruded aluminum, clear anodized finish, fastened to foot with stainless steel tamper resistant screw.

F. Urinal-Screen Post: Square aluminum tube with clear anodized finish; with shoe and sleeve cap match that on compartments.

G. Hidden Shoe (Foot): One-piece molded polyethylene invisible shoe inserted into metal post and secured to metal post with stainless steel tamper resistant screw.

H. Headrail Cap and Corner Cap: One-piece molded polyethylene secured to metal post with stainless steel tamper resistant screw; adjustable to level headrail to finished floor.

I. Wall Brackets: Continuous heavy-duty extruded aluminum, clear anodized finish, inserted into slotted panel and fastened to panels with stainless steel tamper resistant screws.
   1. Type: Single Ear bracket aluminum.
   2. Type: Double ear bracket aluminum.
   3. Options:
      a. Length: 54 inches (1372 mm).
      b. Length: 65 inches (1651 mm).
      c. Length: 71 inches (1803 mm).

J. Headrail: Heavy duty extruded aluminum, designer anti-grip design, clear anodized finish, fastened to headrail bracket with stainless steel tamper resistant screw and to headrail cap or corner cap with stainless steel tamper resistant screw.
   1. Headrail Brackets: Heavy duty extruded aluminum, clear anodized finish, secured to wall with stainless steel tamper screws.

K. Door Hardware:
   1. Hinges:
      a. Edge-mounted helix style stainless steel continuous hinge.
         1) Closing degree: 5 degrees.
         2) Comes to a full close on its own weight
   2. Occupancy Indicator Latch and Housing:
      a. Material: Satin stainless steel.

b. Occupancy indicators: Green for occupied and red not occupied.
c. Slide bolt and button.

3. Coat Hook and Door Bumper Combination:
   a. Material: Chrome plated Zamak
   b. Handicap Door: Equip with second door pull and door stop.
4. Door Pulls: Chrome plated Zamak

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Examine areas to receive toilet partitions, screens, and shower compartments for correct height and spacing of anchorage/blocking and plumbing fixtures that affect installation of partitions. Report discrepancies to the architect.

3.3 INSTALLATION

A. Provide all parts, components, fasteners, and all other appurtenances as required to install in accordance with manufacturer's written instructions and approved Shop Drawings.

B. Install partitions rigid, straight, plumb, and level.

C. Locate bottom edge of doors and panels above finished floor as required by regulatory accessibility requirements.

D. Clearance at vertical edges of doors shall be uniform top to bottom and shall not exceed 3/8 inch (9.5 mm).

E. No evidence of cutting, drilling, and/or patching shall be visible on the finished work.

F. Finished surfaces shall be cleaned after installation and be left free of imperfections.

3.4 ADJUSTING

A. Adjust doors and latches to operate correctly.

3.5 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 102113.19

SECTION 104413 - FIRE PROTECTION CABINETS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Fire-protection cabinets for the following:

a. Portable fire extinguishers.

B. Related Requirements:

1. Section 104416 "Fire Extinguishers."

1.3 PREINSTALLATION CONFERENCE

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to fire-protection cabinets including, but not limited to, the following:

a. Schedules and coordination requirements.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Show door hardware, cabinet type, trim style, and panel style. Include roughing-in dimensions and details showing recessed-, semirecessed-, or surface-mounting method and relationships of box and trim to surrounding construction.

B. Shop Drawings: For fire-protection cabinets. Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each type of exposed finish required.

D. Product Schedule: For fire-protection cabinets. Indicate whether recessed, semirecessed, or surface mounted. Coordinate final fire-protection cabinet schedule with fire-extinguisher schedule to ensure proper fit and function.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For fire-protection cabinets to include in maintenance manuals.

1.6 COORDINATION

A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

B. Coordinate sizes and locations of fire-protection cabinets with wall depths.

PART 2 - PRODUCTS

2.1 FIRE-PROTECTION CABINET

A. Cabinet Type: Suitable for fire extinguisher.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Guardian Fire Equipment, Inc.
b. JL Industries, Inc.; a division of the Activar Construction Products Group; Cosmopolitan Series.
c. Larsens Manufacturing Company.
d. Potter Roemer LLC.

B. Cabinet Construction: Nonrated.

C. Cabinet Material: Aluminum sheet.

1. Shelf: Same metal and finish as cabinet.

D. Semirecessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).

1. Square-Edge Trim: 1-1/4- to 1-1/2-inch backbend depth.

E. Cabinet Trim Material: Aluminum sheet.

F. Door Material: Aluminum sheet.

G. Door Style: Vertical duo panel with frame.

H. Door Glazing: Tempered float glass (clear).

I. Door Hardware: Manufacturer's standard door-operating hardware of proper type for

cabinet type, trim style, and door material and style indicated.

1. Provide projecting door pull and friction latch.
2. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.

J. Accessories:

1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.

2. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as directed by Architect.

   a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER."

      1) Location: Applied to cabinet door.
      2) Application Process: Silk-screened.
      3) Lettering Color: Black.
      4) Orientation: Vertical.

K. Materials:

1. Aluminum: ASTM B221 (ASTM B221M) for extruded shapes and aluminum sheet, with strength and durability characteristics of not less than Alloy 6063-T5 for aluminum sheet.
   a. Finish: Baked enamel or powder coat.
   b. Color: As selected by Architect from full range of industry colors and color densities.

2. Stainless Steel: ASTM A 666, Type 304.

   a. Finish: No. 4 directional satin finish.

3. Tempered Float Glass: ASTM C 1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).

2.2 FABRICATION

A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.

2. Weld joints and grind smooth.
3. Provide factory-drilled mounting holes.
4. Prepare doors and frames to receive locks.

B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles.

2. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch thick.
3. Fabricate door frames of one-piece construction with edges flanged.
4. Miter and weld perimeter door frames.

C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.3 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's AMP 500, "Metal Finishes Manual for Architectural and Metal Products," for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces of fire-protection cabinets from damage by applying a strippable, temporary protective covering before shipping.

C. Finish fire-protection cabinets after assembly.

D. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls and partitions for suitable framing depth and blocking where semirecessed cabinets will be installed.

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

3.2 PREPARATION

A. Prepare recesses for semirecessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION

A. General: Install fire-protection cabinets in locations and at mounting heights indicated or, if not indicated, at heights indicated below:
1. Fire-Protection Cabinets: 54 inches above finished floor to top of cabinet.

B. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.

1. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.

3.4 ADJUSTING AND CLEANING

A. Remove temporary protective coverings and strippable films, if any, as fire-protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.
B. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.
C. On completion of fire-protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.
D. Touch up marred finishes, or replace fire-protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire-protection cabinet and mounting bracket manufacturers.
E. Replace fire-protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 104413

ABBREVIATION SCHEDULE

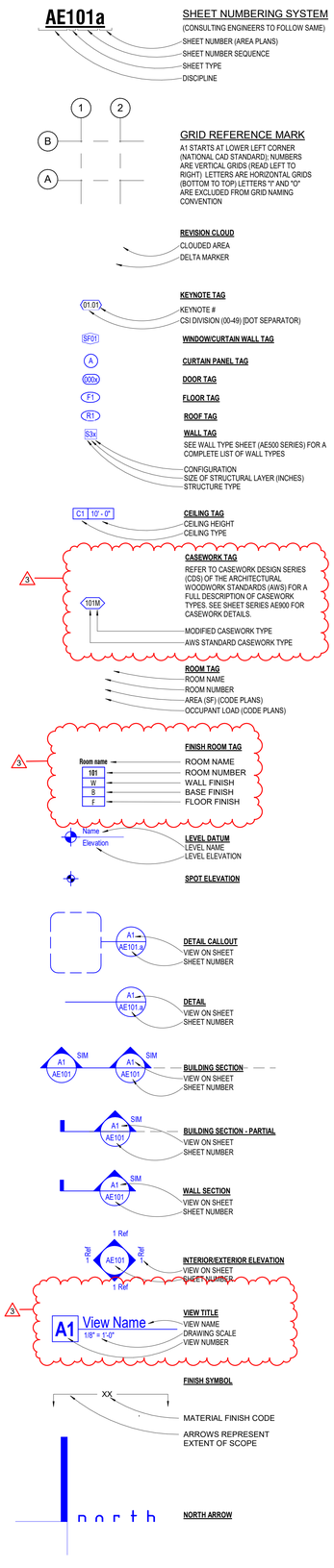
0	
#	NUMBER OR POUND
&	AND
2:1 SL	2 HORIZONTAL TO 1 VERTICAL SLOPE
@	AT
[	CHANNEL
±	PLUS MINUS
≤	LESS THAN OR EQUAL TO
≥	GREATER THAN OR EQUAL TO
A	
AB	ANCHOR BOLT
AC	APSHALTIC CONCRETE
ACST	ACOUSTIC
AD	AREA DRAIN
ADJ	ADJUSTABLE
AFF	ABOVE FINISH FLOOR
AL	ALUMINUM
ALT	ALTERNATE
ARCH	ARCHITECTURAL, ARCHITECT, ARCHITECTURE
ASPH	ASPHALT
B	
B	BASELINE
B	BOTTOM
BEJ	BRICK EXPANSION JOINT
BLDG	BUILDING
BLK	BLOCK
BM	BEAM
BO	BOARD
BRG	BEARING
BSMT	BASEMENT
C	
C&G	CURB & GUTTER
CAP	CAPACITY
CEM	CEMENT
CG	CORNER GUARD
CIP	CAST IN PLACE, CAST IRON PIPE
CIR	CIRCULATING
CJ	CONTROL JOINT
CL	CENTERLINE
CL	CENTERLINE
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNITS
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
CPT	CARPET
CSK	COUNTERSUNK
CT	CERAMIC TILE
CTR	CENTER
D	
D	DEPTH
DET	DETAIL
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIM	DIMENSION
DN	DOWN
DS	DOWNSPOUT
DWG	DRAWING
E	
E	EAST
E/P	EDGE OF PAVEMENT
EA	EACH
EL	ELEVATION
ELECT	ELECTRICAL
ELEV	ELEVATOR
EMER	EMERGENCY
EQ	EQUAL
EQUIP	EQUIPMENT
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
EXIST	EXISTING
EXP	EXPANSION
EXP JT	EXPANSION JOINT
EXT	EXTERIOR
F	
F.V.	FIELD VERIFY
FD	FLOOR DRAIN
FDN	FOUNDATION
FE	FIRE EXTINGUISHER
FFE	FINISHED FLOOR ELEVATION
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FIN	FINISH
FLR	FLOOR
FR	FRAME
FTG	FOOTING
FXTR	FIXTURE
G	
G	GROUND
GA	GA
GALV	GALVANIZED
GL	GLASS
GR	GRADE
GRD	GROUND
GWB	GYPSUM WALL BOARD
H	
HB	HOSE BIBB
HC	HANDICAPPED
HDW	HARDWARE
HGT	HEIGHT
HORZ	HORIZONTAL
HR	HOUR
HW	HOT WATER
I	
ID	INSIDE DIAMETER

ABBREVIATION SCHEDULE

IE	INVERT ELEVATION
INSUL	INSULATION
INT	INTERIOR
INTX	INTERSECTION
INV	INVERT
J	
JB	JUNCTION BOX
JCT	JUNCTION
JST	JOIST
JT	JOINT
L	
L	ANGLE
L	LENGTH
LC	LENGTH OF CURVE
LDC	LEAD COVERED
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LT	LIGHT
M	
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MET	METAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MTD	MOUNTED
MTG	MOUNTING
MULL	MULLION
MWP	MEMBRANE WATERPROOFING
N	
N	NORTH
NA	NOT APPLICABLE
NE	NORTHEAST
NEC	NATIONAL ELECTRIC CODE
NEUT	NEUTRAL
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
NW	NIORTHWEST
O	
OA	OUTSIDE AIR
OA	OUTSIDE AIR
OC	ON CENTER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OPP	OPPOSITE
OVHD	OVERHEAD
P	
PI	POINT IF INTERSECTION
PL	PLATE
PLAS	PLASTER
PLYWD	PLYWOOD
PNL	PANEL
PNT	PAINT
PRELIM	PRELIMINARY
PRESS	PRESSURE
PRIM	PRIMARY
PRTN	PARTITION
PT	POINT, POINT OF TANGENT
Q	
QT	QUARRY TILE
R	
R	RADIUS
RA	RETURN AIR
RB	RESILIENT VINYL BASE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
RECP	RECEPTACLE
REINF	REINFORCEMENT
REQD	REQUIRED
REV	REVISION
RF	ROOF
RFLCP	REFLECTIVE CEILING PLAN
RM	ROOM
RVT	RESILIENT VINYL TILE
S	
S	SOUTH
SCH	SCHEDULE
SD	STORM DRAIN
SE	SOUTHEAST
SECT	SECTION
SHT	SHEET
SIM	SIMILAR
SL	SLOPE
SPEC	SPECIFICATION
SQ	SQUARE
STL	STEEL
SUSP	SUSPENDED
T	
T	TOP
T&B	TOP AND BOTTOM
TEL	TELEPHONE
TEMP	TEMPORARY
TERM	TERMINAL
THK	THICK/THICKNESS
THRSLD	THRESHOLD
TO	TOP OF
TOS	TOP OF STEEL, TOP OF SLAB
TOW	TOP OF WALL
TYP	TYPICAL
U	
UNO	UNLESS NOTED OTHERWISE
V	
VCT	VINYL COMPOSITION TILE
VENT	VENTILIATING
VERT	VERTICAL
VEST	VESTIBULE
VWC	VINYL WALL COVERING
W	
W	WIDTH, WEST
W/	WITH
W/O	WITHOUT
WC	WATER CLOSET
WD	WIDTH
WT	WEIGHT
WWF	WELDED WIRE FABRIC
X	
X	TRANSFORMER

ARCHITECTURAL SYMBOLS

(SEE RESPECTIVE DISCIPLINES FOR SYMBOLS NOT DEFINED HERE)



MATERIAL LEGEND

02 SITE CONSTRUCTION

- EARTH (existing)
- EARTH (backfill)
- DRAINAGE FILL COMPACTED FILL

03 CONCRETE

- CONCRETE - CAST-IN-PLACE
- CONCRETE - PRECAST

04 MASONRY

- BRICK
- CONCRETE MASONRY UNITS
- GROUT

05 METALS

- STEEL
- ALUMINUM

06 WOODS AND PLASTICS

- CONTINUOUS WOOD
- INTERMITTENT WOOD/BLOCKING
- SHEATHING
- FINISH WOOD
- HARDBOARD
- PARTICLE BOARD

07 THERMAL & MOISTURE PROTECTION

- BATT INSULATION
- LOOSE FILL INSULATION
- RIGID INSULATION
- FIRE SPRAY

09 FINISHES

- GYPSUM BOARD

DEFERRED ITEMS

- FIRE SPRINKLER SYSTEM PLANS
- FIRE ALARM PLANS

MISCELLANEOUS GENERAL NOTES

1. THE PROJECT MANUAL, UNDER SEPARATE COVER, IS AN INTEGRAL PART OF THESE CONSTRUCTION DRAWINGS.
2. PLANS, SECTIONS, ELEVATIONS, DETAILS AND DIMENSIONS LABELED "TYPICAL" SHALL APPLY TO ALL SITUATION OCCURRING THAT ARE THE SAME OR SIMILAR TO THOSE SPECIFICALLY KEYED ON THE DRAWINGS.
3. ALL WORK, MATERIALS, AND METHODS SHALL BE IN CONFORMANCE WITH THE CODES, ORDINANCES AND REGULATIONS OF ALL GOVERNMENTAL AGENCIES HAVING JURISDICTION AT THE PROJECT LOCATION.
4. UNLESS OTHERWISE INDICATED IN THE CONSTRUCTION DOCUMENTS AS BEING NOT IN CONTRACT (N.I.C.) OR EXISTING, ALL ITEMS, MATERIALS AND INSTALLATION OF SAME ARE PART OF THE CONTRACT AS DEFINED BY THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL ACCESSORIES, COMPONENTS AND ASSEMBLIES REQUIRED FOR THE WORK DEPICTED OR SPECIFIED.
5. CONTRACTORS ARE RESPONSIBLE FOR ALL WORK REGARDLESS OF THE LOCATION OF THE INFORMATION ON THE DOCUMENTS.
6. KEEP SITE CLEAN AND CLEAR OF DEBRIS AND IN ORDERLY CONDITION THAT DOES NOT DETRACT FROM THE SURROUNDING SITE AND REPAIR ANY DAMAGE CAUSED BY WORK OF THE CONTRACT.
7. ALL DIMENSIONS ARE TO THE FACE OF METAL OR WOOD STUD FRAMED WALLS AND TO THE FACE OF CONCRETE AND MASONRY WALLS AS SHOWN, UNLESS NOTED OTHERWISE.
8. INSTALL SEALANT AT EXTERIOR SIDE OF ALL JOINTS, SEAMS, CONNECTIONS OR OPENINGS WHICH WOULD ALLOW WATER OR AIR INFILTRATION EXCEPT AS NOTED OTHERWISE. SEALANT COLOR TO MATCH ADJACENT SURFACE. COLOR REQUIRES ARCHITECTS APPROVAL.
9. DOOR OPENINGS IN FRAME CONSTRUCTION WHICH ARE NOT DIMENSIONED ARE EITHER CENTERED IN THE WALL, FACE OF JAMB OR LOCATED 4" FROM THE FACE OF STUD TO THE FINISHED JAMB.
10. ALL SPECIAL ACCESSIBLE FACILITIES SHALL BE IDENTIFIED WITH APPROVED SIGNAGE.
11. THE CONTRACTOR IS RESPONSIBLE FOR PRODUCING A WEATHER TIGHT BUILDING, DETAILS AND OMISSIONS TO DRAWINGS NOTWITHSTANDING. ALL DRAWING CONFLICTS WHICH MAY NOT ALLOW A WEATHERTIGHT CONDITION SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT.
12. DISCREPANCIES BETWEEN ACTUAL CONDITIONS AND PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT. CONTRACTOR SHALL SUBMIT SPECIFIC DISCREPANCIES FOR ARCHITECT REVIEW.
13. PROVIDE FULL METAL BACKING PLATE (16 GAUGE X 6" HIGH SECURED TO 3 STUDS MIN.) OR WOOD BLOCKING AS REQUIRED TO SECURELY ANCHOR ALL WALL MOUNTED EQUIPMENT (CABINETS, TOILET ROOM ACCESSORIES, HARDWARE, ETC.). BLOCKING SHALL PROVIDE A RIGID CONNECTION CAPABLE OF SUPPORTING DESIGN LOADS. PROVIDE A 16 GAUGE X 6" STL. STUD/TRACK SECURED TO 2 STUDS TO SECURELY SUPPORT ALL WALL STOPS (DOOR BUMPER).
14. COORDINATE WITH ALL TRADES, SIZES AND LOCATIONS OF ALL OPENINGS FOR MECHANICAL, PLUMBING AND ELECTRICAL EQUIPMENT. EQUIPMENT PADS OR BASES, AS WELL AS ELECTRIC POWER, WATER, AND DRAIN INSTALLATIONS, BEFORE PROCEEDING WITH WORK. CONTRACTOR SHALL PROVIDE COORDINATION DRAWINGS FOR PROPER PLACEMENT OF ALL TRADES' WORK. ANY CONCERNS, SPACE LIMITATIONS OR STRUCTURAL CONFLICTS, SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT. A REASONABLE RESPONSE TIME SHALL BE ALLOWED AS NOTED IN THE SPECIFICATIONS.
15. ALL FLOOR OR WALL OPENINGS REQUIRED FOR PIPES, DUCTS, CONDUITS,ETC. SHALL BE SEALED IN AN APPROVED MANNER.
16. FIRE SPRINKLER DESIGN TO BE DONE BY A CERTIFIED SUB-CONTRACTOR AND WILL REQUIRE APPROVALS BY THE CITY AND STATE FIRE MARSHAL. APPROVALS BY THE FIRE MARSHAL ARE TO BE OBTAINED BY THE CONTRACTOR PRIOR TO SUBMITTAL TO ARCHITECT. SUBMITTAL TO THE ARCHITECT ALSO INDICATES THAT THE CONTRACTOR HAS REVIEWED AND COORDINATED FIRE-SPRINKLER PIPING LOCATIONS WITH ALL TRADES.
17. ROOMS ENCLOSED WITH RATED WALLS REQUIRE RATED DOORS. ANY DUCTS PASSING THROUGH WALLS REQUIRE FIRE DAMPERS AND OR FIRE/SMOKE DAMPERS. ANY CONDUIT OR PIPING REQUIRES RATED SEALANT AT JOINTS.
18. GENERAL STRUCTURAL NOTES GOVERN TYPICAL CONDITIONS WHETHER OR NOT SPECIFICALLY DETAILED OR NOTED.
19. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE AND LOCATE ELECTRICAL, DATA AND PHONE RECEPTACLES, SWITCHES, ETC. TO AVOID CASEWORK, DOORS, ETC.
20. THE DRAWINGS AND SPECIFICATIONS INDICATE THE GENERAL SCOPE OF THE PROJECT IN TERMS OF THE ARCHITECTURAL AND STRUCTURAL DESIGN CONCEPT. THE DIMENSIONS OF THE BUILDING, THE TYPE OF STRUCTURAL, MECHANICAL, ELECTICAL AND UTILITY SYSTEMS AND MAJOR ARCHITECTURAL ELEMENTS OF CONSTRUCTION AS "SCOPE" DOCUMENTS.
21. THE DRAWINGS AND SPECIFICATIONS DO NOT NECESSARILY INDICATE OR DESCRIBE ALL WORK REQUIRED FOR THE FULL PERFORMANCE AND COMPLETION OF THE WORK. CONTRACTS SHALL BE LET ON THE BASIS OF SUCH DOCUMENTS, WITH THE UNDERSTANDING THAT THE CONTRACTOR IS TO FURNISH ALL ITEMS REQUIRED FOR PROPER COMPLETION OF THE WORK WITH OUT ADJUSTMENT TO CONTRACT PRICE. IT IS INTENDED THAT THE WORK TO BE OF SOUND AND QUALITY CONSTRUCTION AND THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE INCLUSION OF ADEQUATE AMOUNTS TO COVER INSTALLATION OF ALL ITEMS INDICATED, DESCRIBED OR REASONABLY IMPLIED.
22. OWNER WILL PROVIDE ANY NEEDED STUDY AND REMOVAL OF ASBESTOUS PRIOR TO CONSTRUCTION.
23. OWNER WILL REMOVE ALL FURNITURE, SHELVING AND EQUIPMENT PRIOR TO CONSTRUCTION.

DRAWING INDEX

method studio
360 west aspen avenue
salt lake city, utah 84101
801 532 4422

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project#: 20.0220
byu idaho project#: 12005
date: october 27, 2020

revisions :

3	Addendum #3	11/13/2020

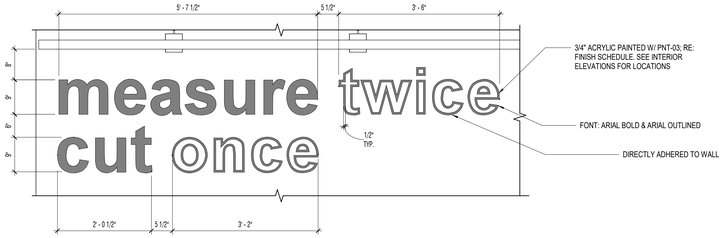
title:

General Information

sheet:

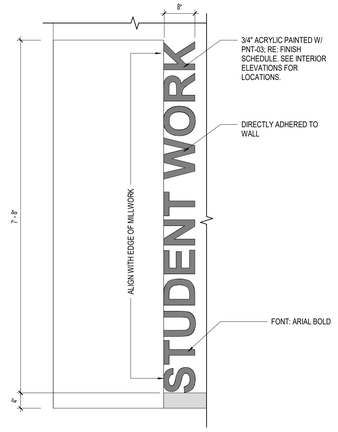
GI002

100% construction documents



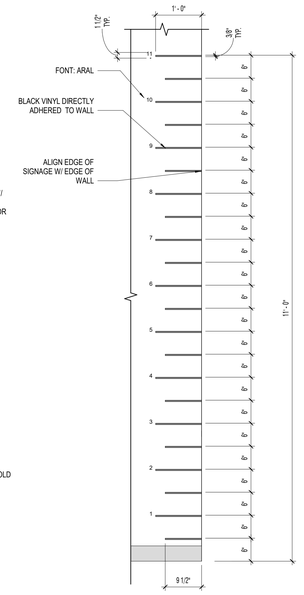
D2 Student Collaboration Signage Detail 2
3/4" = 1'-0"

3 * NOTE: ALL ROOM AND WAYFINDING SIGNAGE IS BY OWNER. PROVIDE BRANDING SIGNAGE SUBMITTALS AND SHOP DRAWINGS TO OWNER (UNIVERSITY COMMUNICATIONS) AND ARCHITECT FOR APPROVAL PRIOR TO PURCHASING AND INSTALLATION



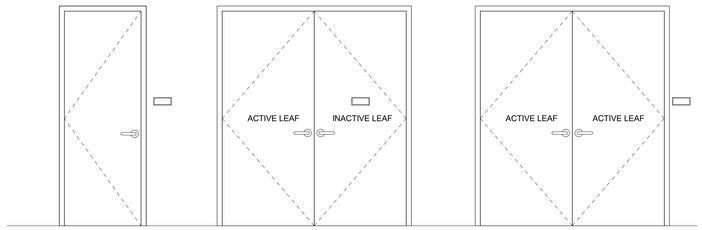
D4 Student Collaboration Signage - Student Work
3/4" = 1'-0"

3 * NOTE: ALL ROOM AND WAYFINDING SIGNAGE IS BY OWNER. PROVIDE BRANDING SIGNAGE SUBMITTALS AND SHOP DRAWINGS TO OWNER (UNIVERSITY COMMUNICATIONS) AND ARCHITECT FOR APPROVAL PRIOR TO PURCHASING AND INSTALLATION

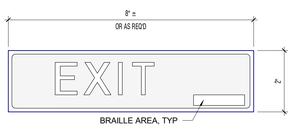


D5 Student Collaboration Signage Detail
3/4" = 1'-0"

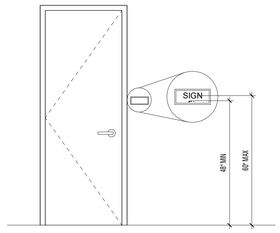
3 * NOTE: ALL ROOM AND WAYFINDING SIGNAGE IS BY OWNER. PROVIDE BRANDING SIGNAGE SUBMITTALS AND SHOP DRAWINGS TO OWNER (UNIVERSITY COMMUNICATIONS) AND ARCHITECT FOR APPROVAL PRIOR TO PURCHASING AND INSTALLATION



NOTE:
-ROOM SIGNAGE AND WAYFINDING BY OWNER
-CHARACTER SIZE AND BRAILLE LOCATION PER ANSI A117.1, CH. 7



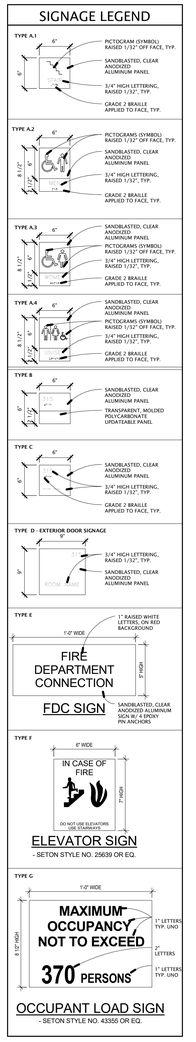
EXIT SIGN



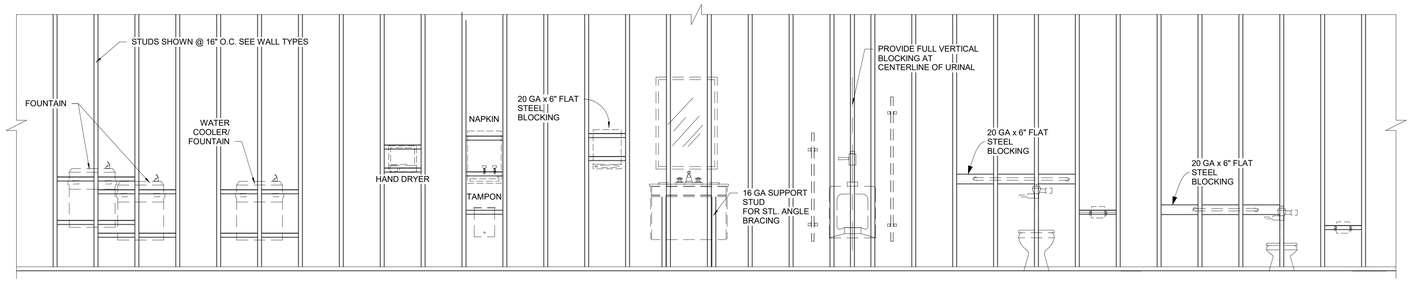
SIGN HEIGHT ABOVE THE FLOOR. TACTILE CHARACTERS SHALL BE 48 INCHES MINIMUM ABOVE THE FLOOR. MEASURED TO THE BASELINE OF THE LOWEST TACTILE CHARACTER AND 60 INCHES MAXIMUM ABOVE THE FLOOR. MEASURED TO THE BASELINE OF THE HIGHEST TACTILE CHARACTER. (ICC/ANSI 703.3.10)

SIGN LOCATION. WHERE A TACTILE SIGN IS PROVIDED AT A DOOR, THE SIGN SHALL BE ALONGSIDE THE DOOR AT THE LATCH SIDE. WHERE A TACTILE SIGN IS PROVIDED AT DOUBLE DOORS WITH ONE ACTIVE LEAF, THE SIGN SHALL BE LOCATED ON THE INACTIVE LEAF. WHERE A TACTILE SIGN IS PROVIDED AT DOUBLE DOORS WITH TWO ACTIVE LEAVES, THE SIGN SHALL BE TO THE RIGHT OF THE RIGHT HAND DOOR. WHERE THERE IS NO WALL SPACE ON THE LATCH SIDE OF A SINGLE DOOR, OR TO THE RIGHT SIDE OF DOUBLE DOORS, SIGNS SHALL BE ON THE NEAREST ADJACENT WALL. SIGNS SHALL BE ON THE NEAREST SHALL BE LOCATED SO THAT A CLEAR FLOOR AREA 18 INCHES MINIMUM BUY 18 INCHES MINIMUM, CENTERED ON THE TACTILE CHARACTERS, IS PROVIDED BEYOND THE ARC OF THE ANY DOOR SWING BETWEEN THE CLOSED POSITION AND 45 DEGREE OPEN POSITION. (ICC/ANSI 703.311)

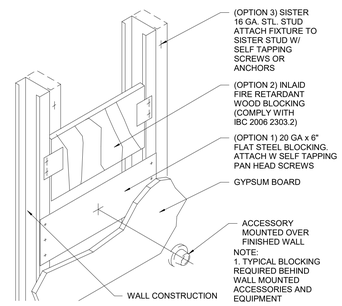
SIGNAGE LEGEND



SIGNAGE LOCATIONS



TYPICAL BLOCKING DETAILS



NOTE:
1. TYPICAL BLOCKING REQUIRED BEHIND WALL MOUNTED ACCESSORIES AND EQUIPMENT

method studio
360 west aspen avenue
salt lake city, utah 84101
801 532 4422

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project#: 20.0220
byu idaho project#: 12005
date: october 27, 2020

revisions :

3	Addendum #3	11/13/2020

title:

Signage and Blocking Details

sheet:

GI004

100% construction documents

OCCUPANT LOAD SCHEDULE BY ROOM LEVEL 01

Room #	Room Name	Function of Space	Area Per Occupant	# of Occupants	Occupancy Use & Classification
Level 1					
101	VESTIBULE	Circulation	0 SF	0	Group B
102	RECEPTION	Business Areas	150 SF	2	Group B
103	CORRIDOR	Circulation	0 SF	0	Group B
104	OFFICE	Business Areas	150 SF	1	Group B
105	OFFICE (N.I.C.)	Business Areas	150 SF	1	Group B
106	OFFICE (N.I.C.)	Business Areas	150 SF	1	Group B
107	OFFICE (N.I.C.)	Business Areas	150 SF	1	Group B
108	OFFICE (N.I.C.)	Business Areas	150 SF	1	Group B
109	OFFICE (N.I.C.)	Business Areas	150 SF	1	Group B
110	OFFICE	Business Areas	150 SF	2	Group B
111	OPEN OFFICE	Business Areas	150 SF	5	Group B
111A	VESTIBULE (N.I.C.)	Circulation	0 SF	0	Group B
111B	BREAK ROOM	Assembly without fixed seats - Unconcentrated (tables and chairs)	15 SF	9	Group B
112	OFFICE	Business Areas	150 SF	4	Group B
113	OFFICE (N.I.C.)	Business Areas	150 SF	1	Group B
114	CONFRENCE ROOM (N.I.C.)	Assembly without fixed seats - Unconcentrated (tables and chairs)	15 SF	25	Group B
115	MEN'S	Restrooms / Mothers Room	0 SF	0	Group B
116	JANITOR	Accessory Storage Areas, Mechanical Equipment Room	300 SF	1	Group B
117	WOMEN'S	Restrooms / Mothers Room	0 SF	0	Group B
118	CORRIDOR	Circulation	0 SF	0	Group B
119	OFFICE	Business Areas	150 SF	1	Group B
120	OFFICE	Business Areas	150 SF	1	Group B
121	OFFICE	Business Areas	150 SF	1	Group B
122	OFFICE	Business Areas	150 SF	2	Group B
123	OFFICE	Business Areas	150 SF	1	Group B
124	OFFICE	Business Areas	150 SF	1	Group B
125	OFFICE	Business Areas	150 SF	1	Group B

OCCUPANT LOAD SCHEDULE BY ROOM LEVEL 01

Room #	Room Name	Function of Space	Area Per Occupant	# of Occupants	Occupancy Use & Classification
126	SEATING	Assembly without fixed seats - Unconcentrated (tables and chairs)	15 SF	4	Group B
127	OFFICE	Business Areas	150 SF	1	Group B
128	OFFICE	Business Areas	150 SF	1	Group B
129	OFFICE	Business Areas	150 SF	1	Group B
130	BREAK ROOM	Assembly without fixed seats - Unconcentrated (tables and chairs)	15 SF	9	Group B
131	CORRIDOR	Circulation	0 SF	0	Group B
132	CM / CE LAB	Educational - Shops and other Vocational room areas	50 SF	49	Group F
132A	CM/CE TOOL ROOM	Educational - Shops and other Vocational room areas	50 SF	5	Group F
132B	FIRE RISER	Accessory Storage Areas, Mechanical Equipment Room	300 SF	1	Group B
133	OFFICE	Business Areas	150 SF	1	Group B
134	OFFICE	Business Areas	150 SF	1	Group B
135	I.T.	Accessory Storage Areas, Mechanical Equipment Room	300 SF	1	Group B
136	STUDENT COLLABORATION	Assembly without fixed seats - Unconcentrated (tables and chairs)	15 SF	41	Group B
137	HIGH BAY SHOP	Educational - Shops and other Vocational room areas	50 SF	81	Group F
137A	CONCRETE TOOLS	Educational - Shops and other Vocational room areas	50 SF	3	Group F
137B	CURING CLOSET	Educational - Shops and other Vocational room areas	50 SF	2	Group F
137C	CM TOOL STORAGE	Educational - Shops and other Vocational room areas	50 SF	4	Group F
138	AUTOMOTIVE SHOP	Educational - Shops and other Vocational room areas	50 SF	243	Group F
138A	CUSTODIAL	Educational - Shops and other Vocational room areas	50 SF	2	Group F
138B	AUTO TOOL ROOM	Educational - Shops and other Vocational room areas	50 SF	12	Group F
138C	TOOL BOX STORAGE	Educational - Shops and other Vocational room areas	50 SF	4	Group F
139	CORRIDOR	Circulation	0 SF	0	Group B
140	CE STORAGE	Accessory Storage Areas, Mechanical Equipment Room	300 SF	2	Group F
141	MECH	Accessory Storage Areas, Mechanical Equipment Room	300 SF	1	Group F
142	AUTO STORAGE	Accessory Storage Areas, Mechanical Equipment Room	300 SF	1	Group F
143	ENGINES LAB	Educational - Shops and other Vocational room areas	50 SF	24	Group F
144	SOILS STORAGE AND COMPACTION	Accessory Storage Areas, Mechanical Equipment Room	300 SF	2	Group F
Level 1				559	

GRAPHIC LEGEND

FIRE BARRIER RATING

1 HOUR RATED WALL FIRE BARRIER, UL263

2 HOUR RATED WALL FIRE BARRIER, UL ####

PATH OF EGRESS

COMMON PATH OF EGRESS (CPE)
ALLOWABLE DISTANCE = 100'-0"
TOTAL USED DISTANCE = 91'-0"
as per 2018 IBC Table 1006.2.1

TRAVEL DISTANCE (TD)
ALLOWABLE EXIT DISTANCE (F-1 & B) = 250'-0"
TOTAL USED EXIT DISTANCE = 245'-0"
as per 2018 IBC Table 1017.2

POINT AT WHICH A CHOICE OF 2 EXITS BECOMES AVAILABLE

FIRE EXTINGUISHER

FIRE EXTINGUISHER IN SEMI-RECESSED CABINET — FE 1

FIRE EXTINGUISHER SURFACE MOUNTED ON WALL HOOK — FE 2

EXIT WIDTH TAG

REQUIRED AND PROVIDED DOOR OPENING SIZE (IN INCHES) BASED OFF NUMBER OF EXITING OCCUPANTS
as per 2018 IBC Section 1005.3.2

DOOR
OCC. 10
Req. 2"
Prov. 36"

REQUIRED AND PROVIDED STAIR OPENING SIZE (IN INCHES) BASED OFF NUMBER OF EXITING OCCUPANTS
as per 2018 IBC Section 1005.3.1

STAIR
OCC. 10
Req. 3"
Prov. 60"

GENERAL NOTE: SEE SERIES AE500 SHEETS FOR ADDITIONAL WALL TYPES

CODE ANALYSIS

APPLICABLE CODES

International Building Code: **2018**
International Mechanical Code: **2015**
International Plumbing Code: **2017**
International Fire Code: **2015**
International Energy: Conservation Code **2015**
National Electrical Code: **2017**
Uniform Code for Building: Conservation
ADA Accessibility Guidelines: **A117.1.2009**

A. Occupancy and Group:
Change in Use: YES __X__ NO ____ Mixed Occupancy: YES __X__ NO ____
Special Use and Occupancy (i.e. High Rise, Covered Mall): NO

B. Seismic Design Category: **C** Design Wind Speed: **112 mph**

C. Type of Construction (circle one):
I/A I/B II/A II/B III/A III/B IV/A IV/B V/A (V/B circled)

D. Fire Resistance Rating - Requirements for the Exterior Walls based on the fire separation distance (in hours):
North: **0** East: **0** South: **0** West: **0**

E. Mixed Occupancies: B, F-1 Non-separated Uses: B, F-1

F. Sprinklers:
Required: Yes Provided: Yes Type of Sprinkler System: NFPA 13

G. Number of Stories: **1** Building Height: **21' - 4"**

H. Actual Area per Floor (square feet): 31,220 sf

J. Tabular Area: **25000**

K. Area Modifications -

a) Single Occupancy (multistory buildings):
$A_a = [A_t + (NS \times I_f)] \times S_a$ $I_f = [F/P - 0.25]\ W/30$

b) Mixed Occupancy (multistory buildings):
$A_a = [A_t + (NS \times I_f)]$ $I_f = [F/P - 0.25]\ W/30$

c) Sum of the Ratio Calculation for Mixed Occupancies
Actual Area/Allowable Area ≤ 1 **0 SF / 0 SF =**

d) Total Allowable Area for:
1) One Story:
2) Two Story: $A_a(2)$
2) Three Story: $A_a(3)$

e) Unlimited Area Building - No Code Section:

N/A EXISTING TO REMAIN

L. Fire Resistance Rating Requirements for Building Elements (hours) -

ELEMENT	HOURS	ASSEMBLY LISTING
Primary Structural Frame	0	N/A
Bearing Walls - Exterior	0	N/A
Bearing Walls - Interior	0	N/A
Nonbearing Walls/Partitions - Exterior	0	N/A
Nonbearing Walls/Partitions - Interior	0	N/A
Floor construction and associated secondary members	0	N/A
Roof construction and associated secondary members	0	N/A
Exterior Doors & Windows	0	N/A
Shaft Enclosures	0	N/A
Fire Barriers	N/A	N/A
Fire Walls	N/A	N/A
Fire Partitions	N/A	N/A
Smoke Partitions	N/A	N/A

M. Design Occupant Load: **560**
Exit Width Required: **SEE CODE PLAN**
Exit Width Provided: **SEE CODE PLAN**

N. Minimum Number of Plumbing Fixtures (see tables within code plans for calculations and counts based on Occupancy Use Classification).

FOOTNOTES:

1) In case of conflict with the U.S. Department of Justice Federal Registers Parts I through V - ADA Guidelines and specific reference to the International Building Code Accessibility Chapters, the more restrictive requirement shall govern.

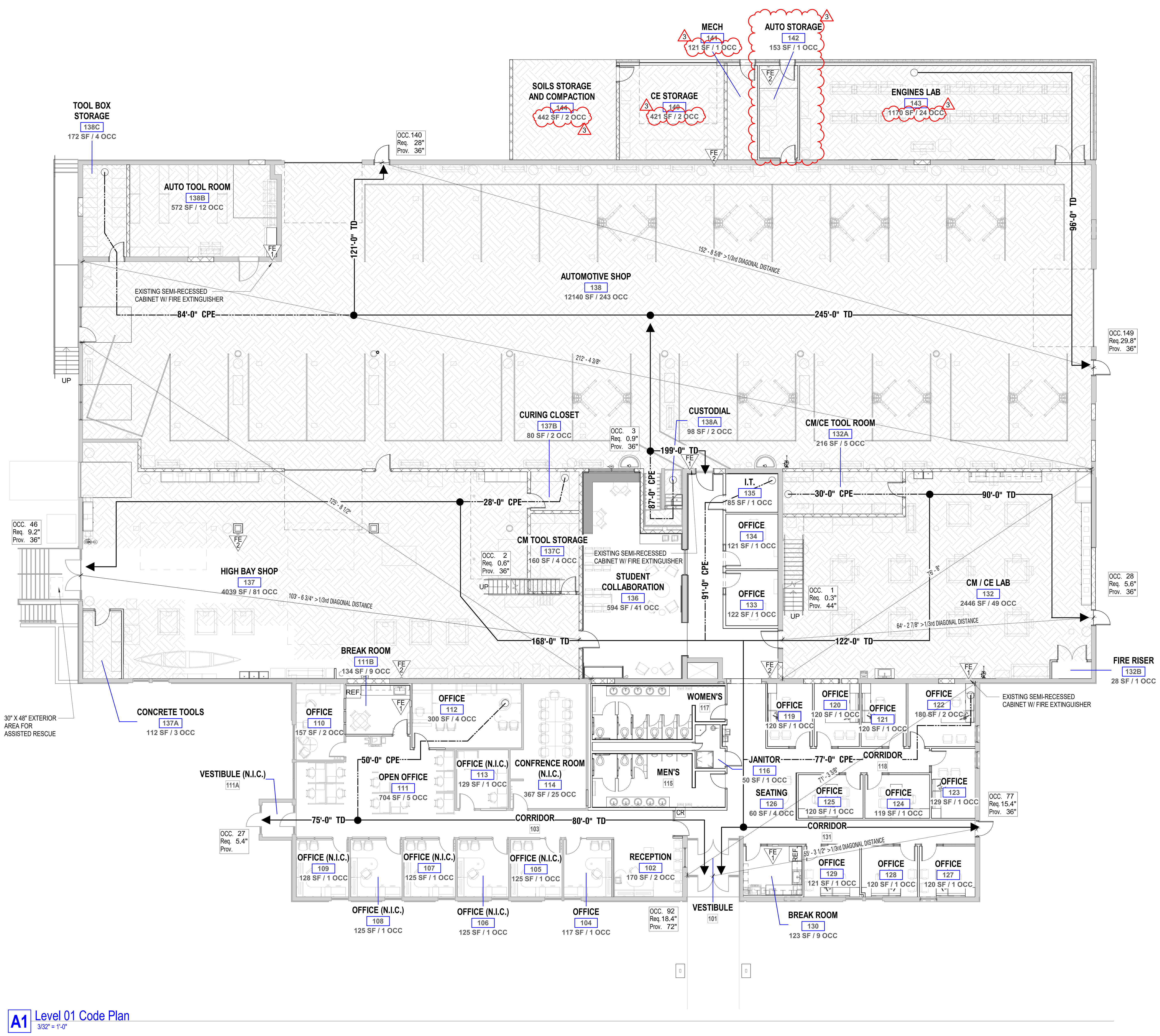
2) Additional Code Information shall be provided at the discretion of the Building Official for Complex Buildings, including, but not limited to -
a. High Rise Requirements
b. Atriums
c. Performance Base Criteria
d. Means or Egress Criteria
e. Fire Assembly Locator Sheet
f. Exterior and Interior Accessibility Route
g. Fire Stopping, including tested design number
h. Fire Penetration Details

3) See Code Plan sheets for Additional information.

Plumbing Fixture Counts

Occupancy Group		# of Occupants		W.C.s	Urinals	Lavs.	Drinking Fountains	Showers	Serv. Sinks
F		438	M = 219	2.19	0	1.59	2	0	1
			F = 219	2.19	-	2.19		0	
B		127	M = 63.5	2.27	0	1.59	2	0	1
			F = 63.5	2.27	-	2.19		0	
Totals	Req'd:	M		4.46	0	3.78	1.09	0	2
		F		4.46	-	3.78		0	
	Prov: (34 tot.)	M		3	3*	6	2	0	2
		F		6	-	6		0	

*Urinals may be substituted for up to 67% of the required water closets in assembly and educational occupancies, and may be substituted for up to 50% of the required water closets in all other occupancies. (Ch 424.2 International Plumbing Code)



A1 Level 01 Code Plan
3/32" = 1'-0"

north

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KELLY BOYD MORGAN — LICENSED ARCHITECT — STATE OF IDAHO
10-27-2020

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project#: 20.0220
byu idaho project#: 12005
date: october 27, 2020

revisions :

3 Addendum #3 11/13/2020

title:

Code Analysis & Code Plan Level 01

sheet:

GI101

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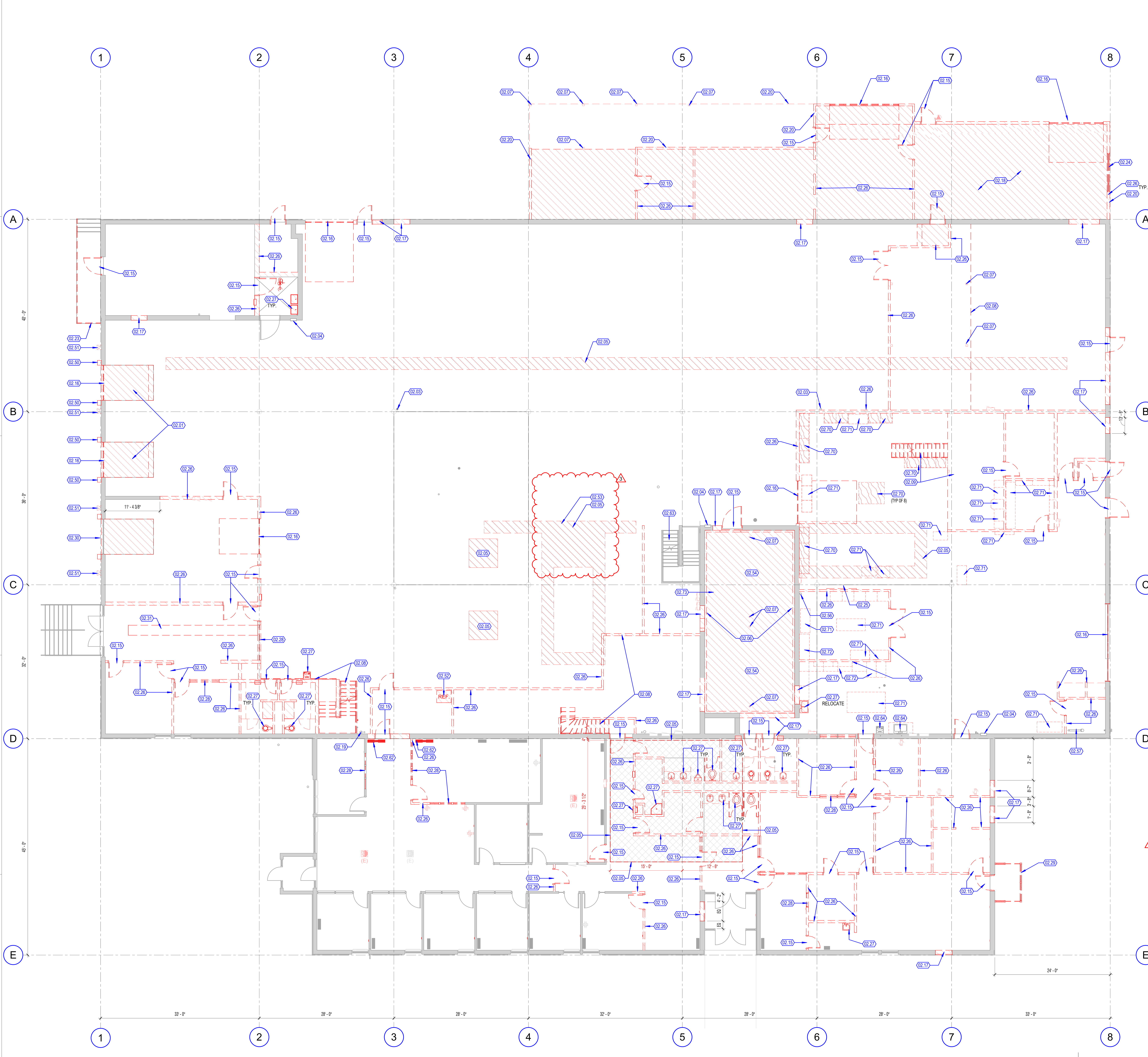

A1 Level 01 Demolition Plan
1/8" = 1'-0"

GENERAL NOTES

1. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS, MATERIALS, FINISHES, AND DIMENSIONS BEFORE AND AFTER DEMOLITION AND CONTACT THE ARCHITECT WITH ANY UNFORESEEN CONDITIONS OR DISCREPANCIES
2. GENERAL CONTRACTOR SHALL PROTECT EXISTING STRUCTURE/ASSEMBLIES/EQUIPMENT AS REQUIRED FROM DEMOLITION WORK. REPAIR, PATCH AND/OR REPLACE EXISTING CONSTRUCTED ITEMS AND EQUIPMENT THAT ARE TO REMAIN AS REQUIRED FOR NEW CONSTRUCTION. NEW FINISHES TO MATCH EXISTING ADJACENT FINISHES
3. GENERAL CONTRACTOR SHALL PATCH AND REPAIR TO MATCH EXISTING FINISHES AT WALLS, FLOORS, CEILINGS/SOFFITS, ETC... AS REQUIRED IN ARES NOT SPECIFICALLY CALLED OUT IN THE DRAWINGS BUT ARE IMPACTED BY CONSTRUCTION
4. GENERAL CONTRACTOR TO PATCH/REPAIR ALL AREAS RESULTING FROM DEMOLITION AND PREPARE SUCH SURFACES TO RECEIVE SCHEDULED FINISHES
5. CAP ALL PLUMBING IN FLOORS AND WALLS TO BE DEMOLISHED. CAPS TO BE BELOW FLOOR SLAB OR INSIDE WALLS TO REMAIN. REMOVE ALL WIRING AND DEVICES IN FLOORS AND WALLS TO BE REMOVED. RE-ROUTE LINES AS REQUIRED
6. REFER TO MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS FOR ADDITIONAL DEMOLITION COORDINATION
7. GENERAL CONTRACTOR TO PREVENT WATER BUILD-UP AND/OR DAMAGE FOUNDATIONS ON THE CONSTRUCTION SITE OR ADJACENT AREAS
8. GENERAL CONTRACTOR TO KEEP AN ACTIVE PEDESTRIAN PATHWAY TO AND AT EGRESS ROUTES FREE OF OBSTRUCTIONS AT ALL TIMES. GENERAL CONTRACTOR TO PROVIDE PROTECTION TO PEDESTRIANS BEFORE DEMOLITION (IBC 3303)
9. GENERAL CONTRACTOR TO MAINTAIN EXITS, EXISTING STRUCTURAL ELEMENTS, APPLIED FIREPROOFING PROTECTION DEVICES, AND SANITARY SAFEGUARDS AT ALL TIMES DURING DEMOLITION AND CONSTRUCTION
10. REFER TO SITE DEMOLITION PLAN FOR LOCATION OF LIMIT OF DISTURBANCE
11. OWNER WILL HAVE ALL EQUIPMENT, FURNISHINGS AND SHELVING REMOVED BEFORE CONSTRUCTION. COORDINATE EXISTING EQUIPMENT LOCATION IN NEW LAYOUT WITH FLOOR PLANS AND OWNER
12. GENERAL CONTRACTOR TO PROTECT IN-FLOOR DUCTING AND UTILITIES TO REMAIN AT ALL AREAS WHERE THE FLOOR SLAB IS INDICATED TO BE REMOVED
13. AT ALL AREAS WHERE FLOOR TILE IS TO BE REMOVED, GENERAL CONTRACTOR TO REMOVE ADDITIONAL SETTING MATERIAL AS REQUIRED TO ENSURE NEW FLOOR FINISH TRANSITIONS WILL BE LEVEL
14. PRESERVE AND PROTECT ALL EXISTING MECHANICAL CONTROL LINES DURING ALL PHASES OF DEMOLITION AND NEW CONSTRUCTION.
15. SALVAGE ALL DOORS THAT WORTH RE-USING (VERIFY W/ OWNER) AND RE-USE WITHIN PROJECT WHERE POSSIBLE / FIT PROJECT PARAMETERS
16. SALVAGE ALL EXISTING FIRE EXTINGUISHER CABINETS (IF RE-USABLE). COORDINATE W/ NEW LOCATIONS, RE: CODE FLOOR PLANS
17. TUNNEL LOCATIONS IN TUNNEL PLAN ON SHEET AE100
18. EXISTING OPENINGS THAT WILL REQUIRE INFILL HAVE EXISTING ANGLE IRON TO SUPPORT THAT OPENING. LEAVE ANGLE IRON IN PLACE, UNLESS OTHERWISE NOTED IN STRUCTURAL DRAWINGS
19. ANY SHELVING OR FURNITURE LEFT BEHIND AND IS NOT NOTED TO BE SALVAGED, PLEASE CHECK WITH OWNER FIRST TO SEE IF IT IS TO BE SAVED AND RE-USED. (3)

KEYED NOTES

02.01 REMOVE LOADING DOCK EQUIPMENT - ANGLE IRON AND FLANGE WELDED TO ANGLE IRON TO REMAIN. PREPARE VOID FOR CONCRETE INFILL, RE: STRUCTURAL
02.03 EXISTING ROOF DRAIN PIPE TO REMAIN
02.04 EXISTING FIRE EXTINGUISHER CABINET TO REMAIN
02.05 SAW CUT EXISITNG CONCRETE FLOOR FOR NEW TRENCH FLOOR DRAIN, NEW SLAB, NEW UTILITIES OR NEW FOOTINGS. COORD. W/ FLOOR PLAN/STRUCTURAL.
02.06 REMOVE INTERIOR INSULATION AND PANELING AT WALLS AND CEILING
02.07 REMOVE EXISTING COLUMN
02.08 REMOVE STAIRS & MEZZANINE STRUCTURES
02.09 REMOVE MEZZANINE WALLS, FLOOR, CEILING AND STAIRS, TYP.
02.15 REMOVE EXISTING DOOR
02.16 REMOVE EXISTING OVERHEAD DOOR
02.17 CUT NEW ROUGH OPENINGS FOR EITHER NEW OVERHEAD DOOR, MAN DOOR, WINDOW AND/OR WALL OPENING. COORD. W/ FLOOR PLAN AND STRUCTURAL - SALVAGE ALL CMU POSSIBLE TO LATER BE USED FOR INFILL
02.18 FLOOR ELEVATION IN THIS ROOM TO BE LOWERED TO 100'-0". SO THAT IT WILL MATCH MAIN BUILDING - REMOVE CONCRETE AND PAVING TO PREPARE FOR NEW CONCRETE SLAB ON GRADE
02.19 STEAM AND MAIN ELECTRICAL CONDUIT TO REMAIN, RE: MECH & ELEC - SALVAGE EXISTING UNISTRUTS AND RE-USE ON NEW WING WALL FOR SUPPORT. SEE FLOOR PLANS
02.20 REMOVE EXISTING ROOF AND STRUCTURE
02.23 REMOVE EXISTING GAURDRAIL, PATCH AND REPAIR CONCRETE.
02.24 REMOVE EXISTING WINDOW
02.25 SALVAGE AND RELOCATE EXISTING PROJECTOR. RE: FLOOR PLAN
02.26 REMOVE AND DISPOSE OF EXISTING WALL
02.27 REMOVE EXISTING PLUMBING FIXTURES, TOILET ACCESSORIES, PARTITION WALLS, COUNTERS, ETC.- COORDINATE DISPOSAL OR REUSE AND RELOCATION WITH OWNER
02.28 REMOVE AND DISPOSE OF EXISTING WINDOW SYSTEM
02.29 REMOVE AND DISPOSE OF EXISTING VESTIBULE AND STRUCTURE. PATCH AND REPAIR WALLS, SIDEWALK, ETC. AS NEEDED.
02.30 EXISTING OVERHEAD DOOR TO REMAIN.
02.31 REMOVE EXISTING CABINETRY, COUNTERS, ETC.
02.50 REMOVE WEATHER SEAL, BUMPER GUARD AND ADJUSTABLE CLOSURE AROUND LOADING DOCK DOOR
02.51 REMOVE MANIFOLD AND GLYCOL SYSTEM PIPES W/ COVERS TO HEATED PAD. PATCH AND REPAIR EXISTING EXTERIOR WALL WHERE HOLE IS CREATED FROM REMOVING PIPE
(3) 02.52 SALVAGE REFRIGERATOR FOR RE-USE
02.53 PROVIDE CUT UNDER NEW CMU AND STEEL COLUMN LOCATIONS THAT SUPPORT MEZZANINE
02.54 REMOVE TOP, EXISTING REFRIGERATOR CONCRETE SLAB AND FOAM GLASS LAYER DIRECTLY UNDERNEATH. LEAVE BOTTOM, CONCRETE SLAB ON GRADE
02.56 PIPE TO REMAIN AND BE PROTECTED DURING DEMOLITION AND CONSTRUCTION
02.57 FIRE RISER EQUIPMENT WILL BE UPDATED PER DELEGATED DESIGN
02.62 REMOVE EXISTING FLOOR REGISTER(S)
02.63 EXISTING STAIRS TO REMAIN
02.64 EXISTING PLUMBING EQUIPMENT TO REMAIN
(3) 02.70 SALVAGE EXISTING CABINETS AND COUNTERTOP FOR RE-USE. SEE FLOOR PLANS AND ELEVATIONS FOR NEW LOCATIONS.
02.71 SALVAGE EXISTING CABINETS AND SHELVING FOR RE-USE.
02.72 REMOVE AND DISPOSE OF EXISTING COUNTERTOPS. SALVAGE EXISTING CABINETS FOR RE-USE. SEE FLOOR PLANS AND ELEVATIONS FOR NEW LOCATIONS.
02.73 REMOVE AND DISPOSE OF ALL FREEZER EQUIPMENT, INCLUDING FREON.

DEMOLITION LEGEND

- DEMOLISH EXISTING WALLS, SEE KEYNOTES
- DEMOLISH EXISTING, SEE KEYNOTES
- EXISTING TO REMAIN
- EXISTING WALLS TO REMAIN
- DEMOLISH EXISTING ROOF / FLOOR / CEILING, SEE KEYNOTES

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STATE OF IDAHO
KELLY BOYD MORGAN
AR-985149
LICENSED ARCHITECT
10-27-2020

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project#: 20.0220
byu idaho project#: 12005
date: october 27, 2020

revisions :

1	Addendum #1	11/5/20
3	Addendum #3	11/13/2020

title:

Demolition Plan - Level 1

sheet:

AD101

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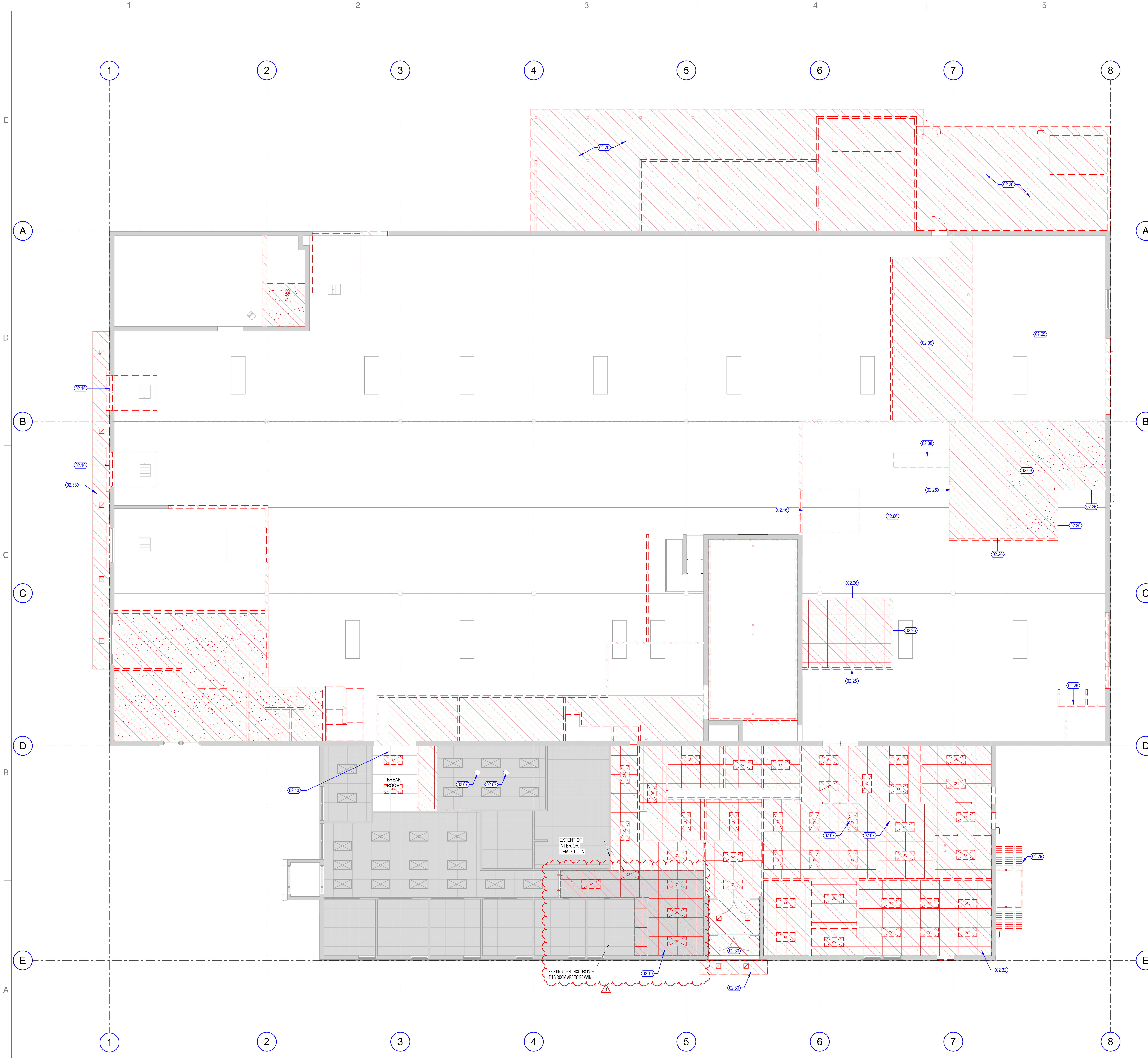

A1 Level 1 Reflected Ceiling Demolition Plan
1/8" = 1'-0"

north

GENERAL NOTES

1. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS, MATERIALS, FINISHES, AND DIMENSIONS BEFORE AND AFTER DEMOLITION AND CONTACT THE ARCHITECT WITH ANY UNFORESEEN CONDITIONS OR DISCREPANCIES
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13. AT ALL AREAS WHERE FLOOR TILE IS TO BE REMOVED, GENERAL CONTRACTOR TO REMOVE ADDITIONAL SETTING MATERIAL AS REQUIRED TO ENSURE NEW FLOOR FINISH TRANSITIONS WILL BE LEVEL
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15. SALVAGE ALL DOORS THAT WORTH RE-USING (VERIFY W/ OWNER) AND RE-USE WITHIN PROJECT WHERE POSSIBLE / FIT PROJECT PARAMETERS
16. SALVAGE ALL EXISTING FIRE EXTINGUISHER CABINETS (IF RE-USABLE). COORDINATE W/ NEW LOCATIONS, RE: CODE FLOOR PLANS
17. TUNNEL LOCATIONS IN TUNNEL PLAN ON SHEET AE100
18. EXISTING OPENINGS THAT WILL REQUIRE INFILL HAVE EXISTING ANGLE IRON TO SUPPORT THAT OPENING. LEAVE ANGLE IRON IN PLACE, UNLESS OTHERWISE NOTED IN STRUCTURAL DRAWINGS
19. ANY SHELVING OR FURNITURE LEFT BEHIND AND IS NOT NOTED TO BE SALVAGED, PLEASE CHECK WITH OWNER FIRST TO SEE IF IT IS TO BE SAVED AND RE-USED.

KEYED NOTES

02.08	REMOVE STAIRS & MEZZANINE STRUCTURES
02.09	REMOVE MEZZANINE WALLS, FLOOR, CEILING AND STAIRS, TYP.
02.10	REMOVE AND SET ASIDE CEILING SYSTEM AND LIGHT FIXTURES IN EXISTING PURCHASING AREA. SAFELY STORE CEILING TILES, LIGHT FIXTURES AND EQUIPMENT SO THAT THEY CAN BE REINSTALLED.
02.16	REMOVE EXISTING OVERHEAD DOOR
02.20	REMOVE EXISTING ROOF AND STRUCTURE
02.26	REMOVE AND DISPOSE OF EXISTING WALL
02.29	REMOVE AND DISPOSE OF EXISTING VESTIBULE AND STRUCTURE. PATCH AND REPAIR WALLS, SIDEWALK, ETC. AS NEEDED.
02.32	REMOVE AND DISPOSE OF EXISTING CEILING
02.33	REMOVE EXISTING SOFFIT AND LIGHT FIXTURES AND PREP FOR NEW SOFFIT AND LIGHT FIXTURES. RE: ELECTRICAL FOR NEW LIGHT FIXTURES.
02.65	REMOVE EXISTING PLYWOOD SHEATHING. PROTECT EXISTING TRUSSES FROM DAMAGE
02.66	REMOVE EXISTING METAL CEILING, PROTECT EXISTING TRUSSES FROM DAMAGE
02.67	PREPARE, DEMO EXISTING CEILING / ROOF / STRUCTURE FOR NEW SKYLIGHT, RE: ROOF PLAN AND RCP

DEMOLITION LEGEND

- DEMOLISH EXISTING WALLS, SEE KEYNOTES
- DEMOLISH EXISTING, SEE KEYNOTES
- EXISTING TO REMAIN
- EXISTING WALLS TO REMAIN
- DEMOLISH EXISTING ROOF / FLOOR / CEILING, SEE KEYNOTES

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STATE OF IDAHO · KELLY BOYD MORGAN · AR-985149 · LICENSED ARCHITECT
10-27-2020

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project#: 20.0220
byu idaho project#: 12005
date: october 27, 2020

revisions :

3 Addendum #3 11/13/2020

title:

Reflected Ceiling Demolition Plan - Level 1

sheet:

AD131

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GENERAL NOTES - FLOOR PLAN

1 GENERAL CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS AND SHALL REPORT TO THE ARCHITECT ANY UNKNOWN CONDITIONS, ERRORS, OR CONFLICTS IN THE DRAWINGS BEFORE BEGINNING WORK
2 DO NOT SCALE DRAWINGS
3 ALL EXPOSED INTERIOR COLUMNS TO BE PAINTED
4 ALL EXPOSED EXTERIOR STEEL TO BE GALVANIZED UNLESS NOTED OTHERWISE
5 SEE SHEET GI003 FOR TYPICAL MOUNTING HEIGHTS. PROVIDE SOLID BLOCKING IN WALLS FOR ALL WALL-MOUNTED ITEMS WHETHER BLOCKING IS DEPICTED IN DRAWINGS OR NOT.
6 COORDINATE ALL EQUIPMENT AND ACCESSORIES, INCLUDING ITEMS THAT ARE OFCOI, WITH OWNER
7 SEE SHEET SERIES AE500 FOR WALL AND ASSEMBLY TYPES
8 SEE SHEET SERIES AE600 FOR DOOR & WINDOW TYPES
9 ALL EXPOSED INTERIOR COLUMNS TO BE PAINTED WITH INTUMESCENT PAINT
10 SEE WALL SECTION SHEET SERIES AE310 FOR WALL TYPES AT SPECIFIED LOCATION
11 SEE ELEVATIONS AND FINISH SCHEDULES FOR SURFACE TREATMENTS AT WALLS
12 SEE ELEVATIONS, SECTIONS, AND DETAILS FOR ADDITIONAL WALL CONSTRUCTION INFORMATION
13 ALL DEMOLITION TO BE COORDINATED WITH PHASING PLAN SHEET GI103

KEYED NOTES

02.11 EXISTING STEAM LINE TO REMAIN
03.01 BACKFILL EXISTING LOADING BAY RECESSES AND TOP WITH CONCRETE
04.04 CMU CONTROL JOINT
05.01 NEW LANDING, STAIRS AND GUARDRAIL AND RAILING (POWDER COATED - COLOR TO BE SELECTED BY OWNER AND ARCHITECT.)
05.03 COLUMN WRAP PROTECTION - SENTRY CONCRETE WRAP CW0244-48
05.10 NEW MEZZANINE ABOVE
05.16 STEEL DOWNSPOUT PROTECTOR, RE: E1AE521
06.04 INFILL WALLS WITH FRAMING AND GYP BD. FINISH TO MATCH EXISTING, TYP.
08.01 NEW OPENING IN EXISTING WALL
08.02 36" x 36" TUNNEL / FLOOR ACCESS HATCH W/ DETENTION LOCK
09.32 PAINTED, STRIPED WALKING PATH
10.21 ADA ACTUATOR
11.01 DUMPSTER LOCATION
11.03 12' X 16' STALL WITH 2' PAINTED STRIPING
11.04 12' X 18' STALL WITH 2' PAINTED STRIPING
11.05 CONCRETE WASH OUT. RE: INTERIOR FURNISHINGS AND EQUIPMENT PLANS AND SCHEDULES
21.01 EXISTING FIRE EXTINGUISHER CABINET
21.02 NEW, SURFACE-MOUNTED FIRE EXTINGUISHER
21.03 NEW SEMI-RECESSED EXTINGUISHER CABINET
22.08 FLOOR DRAIN, RE PLUMBING
22.09 HAND WASH SINK, RE: PLUMBING
22.10 EMERGENCY EYEWASH STATION, RE: PLUMBING
22.15 LAMBS TONGUE DRAIN / SECONDARY DRAINAGE, RE: PLUMBING
22.20 EXISTING ROOF DRAIN LINE
22.25 SALVAGED, RELOCATED SINK, RE: PLUMBING
26.01 TELEVISION MONITOR. OWNER FURNISHED OWNER INSTALLED.

A1 Floor Plan - Level 1
1/8" = 1'-0"

north

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STATE OF UTAH
SCOTT BOYD ROSE
LICENSED ARCHITECT
10-27-2020

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
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project#: 20.0220
byuidaho project#: 12005
date: october 27, 2020

revisions :

1 Addendum #1 11/5/20
3 Addendum #3 11/13/2020

title:

Floor Plan - Level 1

sheet:

AE101

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GENERAL NOTES - SLAB EDGE

1 COORDINATE SLAB EDGE PLANS WITH STRUCTURAL DRAWINGS
2 COORDINATE SLAB EDGE PLANS WITH MECHANICAL DRAWINGS FOR HOUSEKEEPING PADS, SIZE, AND EXACT LOCATION
3 COORDINATE SLAB EDGE PLANS WITH WALL TYPES FOR ACOUSTIC ISOLATION TREATMENTS
4 SLAB EDGE SHOWS MAIN AREAS OF CONCRETE SLAB ON GRADE, IT DOES NOT SHOW ALL LOCATIONS FOR PATCH AND REPAIR - COORDINATE THESE WITH MECHANICAL, ELECTRICAL, PLUMBING AND STRUCTURAL DRAWINGS

KEYED NOTES

03.01 BACKFILL EXISTING LOADING BAY RECESSES AND TOP WITH CONCRETE
03.09 CONCRETE STEP. VERIFY HEIGHT WITH FUTURE SURVEY AND CIVIL DRAWINGS. RE: STRUCTURAL
03.10 RECESSED SLAB AREA, RE: STRUCTURAL
03.12 SLAB TO ROLL OVER CONCRETE AT DOORS.

FLOOR LEGEND

NEW FLOOR, SEE FLOOR TAG FOR TYPE
SEE SHEET AE501 FOR FLOOR ASSEMBLIES

NEW FLOOR, RECESS 2" FOR TILE TO SLOPE TO DRAINS
SEE STRUCTURAL FOR CLARIFICATION

SLOPE FLOOR TO FLOOR DRAIN AT MINIMAL SLOPE IN CONCRETE CURING ROOM. SEE FLOOR PLAN FOR WALL LOCATIONS.

NOTE THAT SOME OF THE NEW CONCRETE IS OVER AN EXISTING TUNNEL. SEE SHEET AE100 AND STRUCTURAL

NEW HATCH LOCATION SEE FLOOR PLANS AND DETAILS

NEW CONCRETE IN THIS AREA. SEE DEMOLITION PLANS, STRUCTURAL, MECHANICAL AND PLUMBING.

A1 Slab Edge Plan - Level 1
1/8" = 1'-0"

north

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STATE OF UTAH · SCOTT BOYD ROBERTS · 10995114 · LICENSED ARCHITECT
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2	Addendum #2	11/9/2020
3	Addendum #3	11/13/2020

title:

Slab Edge Plan

sheet:

AE111

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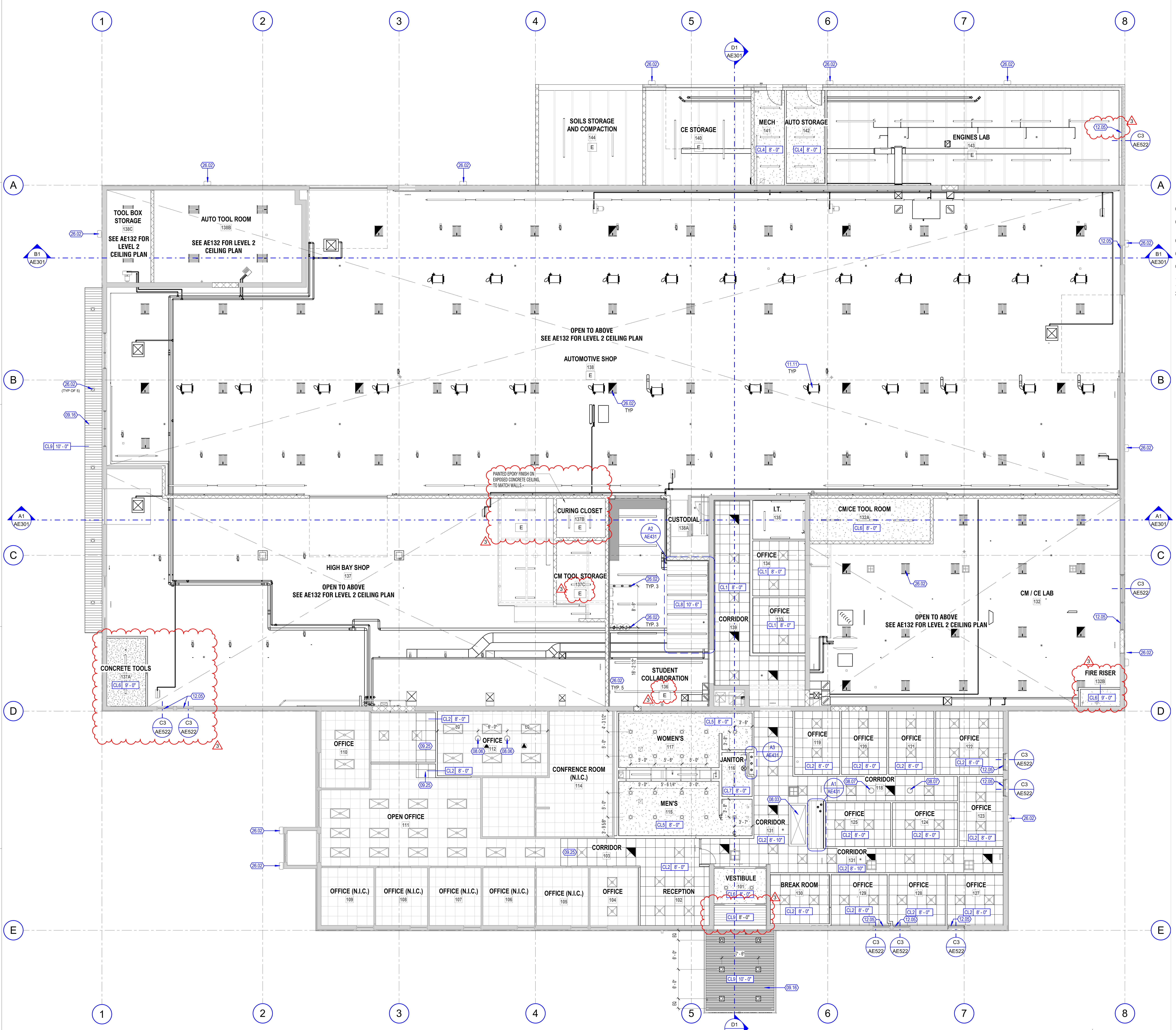

A1 Ceiling Plan - Level 1
1/8" = 1'-0"

GENERAL NOTES - CEILING PLAN

1. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS AND SHALL REPORT TO THE ARCHITECT ANY UNKNOWN CONDITIONS, ERRORS, OR CONFLICTS IN THE DRAWINGS BEFORE BEGINNING WORK
2. DO NOT SCALE DRAWINGS
3. CEILING GRID SHOWN IS ONLY A GRAPHIC REPRESENTATION OF CEILING. CONTRACTOR SHALL VERIFY ACTUAL GRID LAYOUT/LOCATION IN THE FIELD. CONTRACTOR SHALL CENTER GRIDS IN ROOMS, UNLESS NOTED OTHERWISE
4. VERIFY AND COORDINATE ALL MECHANICAL DUCT, GRILLE, DIFFUSER, AND VENT LOCATIONS, LAYOUT, AND QUANTITIES WITH MECHANICAL DRAWINGS.
5. VERIFY AND COORDINATE ALL ELECTRICAL FIXTURE, LIGHT, SMOKE DETECTOR, AND EXIT DEVICE LOCATIONS, LAYOUT, AND QUANTITIES WITH ELECTRICAL DRAWINGS
6. CONTRACTOR TO MAXIMIZE CEILNG HEIGHT DEPENDENT ON DUCTWORK LOCATIONS.
7. SEE SHEET SERIES AE530 FOR TYPICAL FIXTURE SUPPORT, CLIP ANGLES, AND SEISMIC BRACING DETAILS
8. PROVIDE DEFLECTION TRACKS AT TOP OF ALL COLD FORMED METAL FRAMING WALLS; SEE SHEET SERIES AE500

KEYED NOTES

08.03	3' x 8' SKYLIGHT - COORDINATE LOCATION WITH EXISTING ROOF TRUSSES, ELEC / STRUCT AND INTERIORS. VERIFY LOCATION W/ ARCHITECT BEFORE DEMOLITION AND INSTALLATION.
08.06	NEW RIGID SUN TUNNEL / TUBE SKYLIGHT W/ BAFFLES - COORDINATE LOCATIONS W/ EXISTING ROOF TRUSSES AND LIGHTING. CENTER IN ROOM (BOTH WAYS). VERIFY LOCATION W/ ARCHITECT PRIOR TO INSTALLATION. RE: ELECTRICAL FOR BAFFLE INFORMATION
08.07	NEW RIGID SUN TUNNEL / TUBE SKYLIGHT W/ NO BAFFLES - COORDINATE LOCATIONS W/ EXISTING ROOF TRUSSES AND LIGHTING. VERIFY LOCATION W/ ARCHITECT PRIOR TO INSTALLATION.
09.16	NEW METAL SOFFIT AND SIDING. CANOPY FRAMING IS TO REMAIN. REMOVE AND REPLACE LIGHT FIXTURES, RE: ELECTRICAL
09.25	NEW SUSPENDED CEILING SYSTEM TO MATCH EXISTING, ADJACENT CEILING IN FINISH, COLOR, LAYOUT AND HEIGHT
11.11	AUTOMOTIVE EXHAUST SYSTEM, RE: MECHANICAL
12.05	ROLLER SHADE, RS-01; RE: FINISH SCHEDULE
26.02	LIGHT FIXTURE, RE: ELECTRICAL

CEILING LEGEND

CL1	2' x 2' LAY-IN ACOUSTICAL TILE & SUSPENSION SYSTEM; ACP-01, RE: FINISH SCHEDULE
CL2	2' x 2' LAY-IN ACOUSTICAL TILE & SUSPENSION SYSTEM WITH INSULATION ABOVE; ACP-01, RE: FINISH SCHEDULE
CL4	GYPSUM BOARD ON SUSPENSION SYSTEM, PAINTED PNT-02; RE: FINISH SCHEDULE
CL5	GYPSUM BOARD ON SUSPENSION SYSTEM WITH INSULATION ABOVE, PAINTED PNT-02; RE: FINISH SCHEDULE
CL6	GYPSUM BOARD ON METAL FRAMING, PAINTED PNT-02; RE: FINIH SCHEDULE
CL7	GYPSUM BOARD ON METAL FRAMING WITH INSULATION ABOVE, PAINTED PNT-02; RE: FINISH SCHEDULE
CL8	WOOD CLOUD ON SUSPENSION SYSTEM, RE: DETAIL
CL9	WOOD-LIKE, ALUMINUM PANELS - KNOTWOOD OR EQUAL
	2'x8' ACOUSTIC PANEL; ACP-03, RE: FINISH SCHEDULE
	2'x4' ACOUSTIC PANEL; ACP-04, RE: FINISH SCHEDULE
E	EXPOSED STRUCTURE
	SUPPLY DIFFUSER, SEE MECHANICAL
	RETURN GRILLE, SEE MECHANICAL
	LIGHT FIXTURE, SEE ELECTRICAL
	2'x2' LIGHT FIXTURE, SEE ELECTRICAL
	2'x4' LIGHT FIXTURE, SEE ELECTRICAL
	1'x4' LIGHT FIXTURE, SEE ELECTRICAL
	RECESSED LIGHT FIXTURE, SEE ELECTRICAL

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STATE OF IDAHO
KELLY BOYD MORGAN
AR-985149
LICENSED ARCHITECT
10-27-2020

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project#: 20.0220
byu idaho project#: 12005
date: october 27, 2020

revisions :

3	Addendum #3	11/13/2020

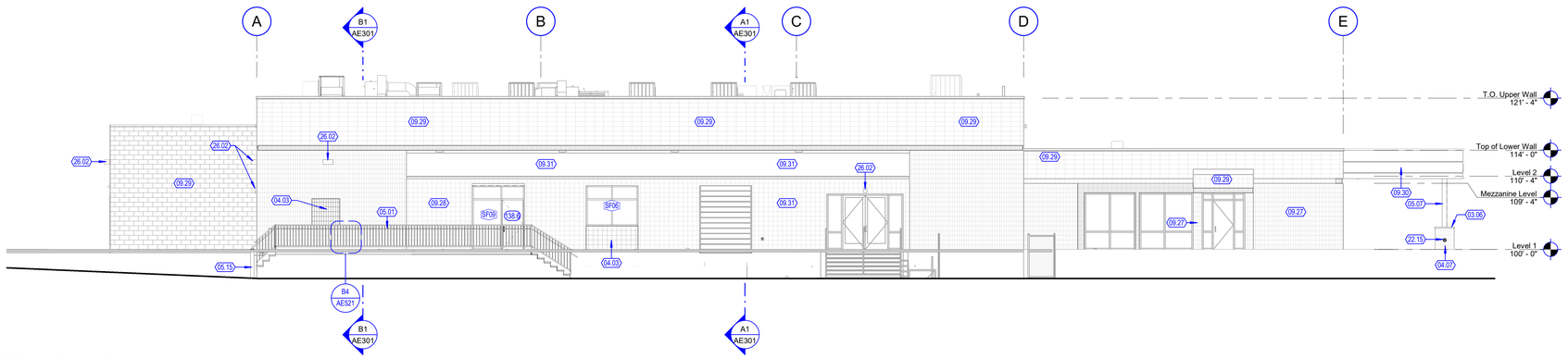
title:

Reflected Ceiling Plan - Level 1

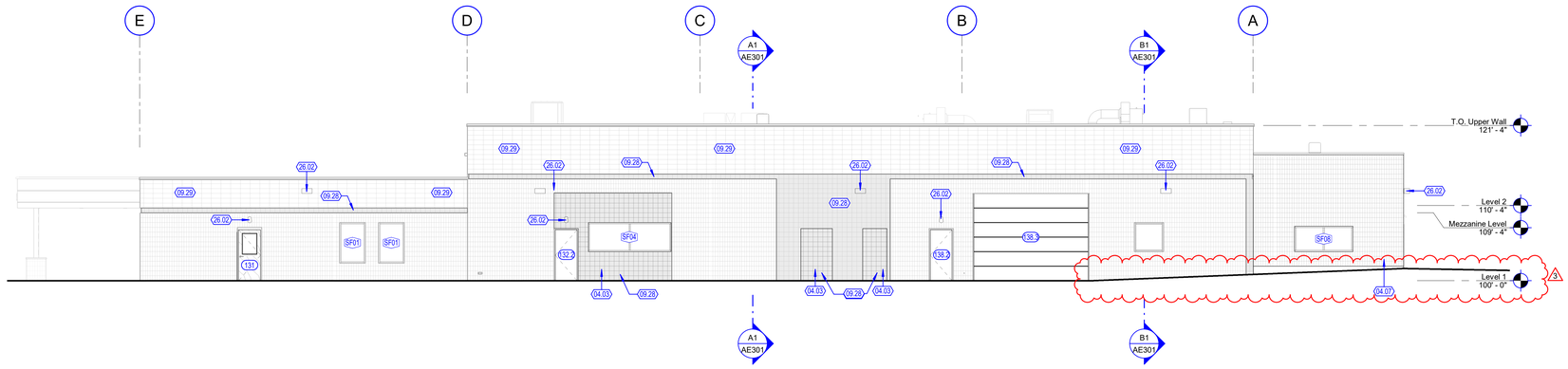
sheet:

AE131

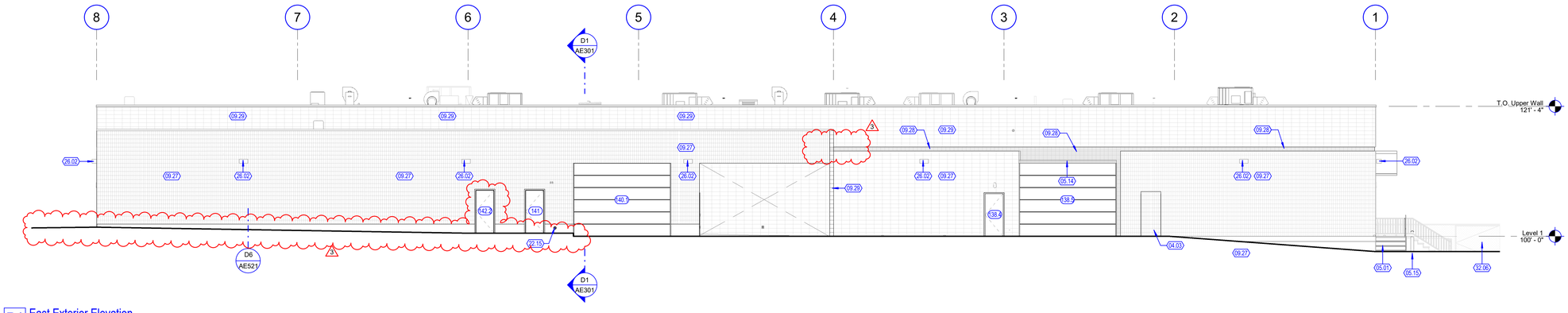
100% construction documents



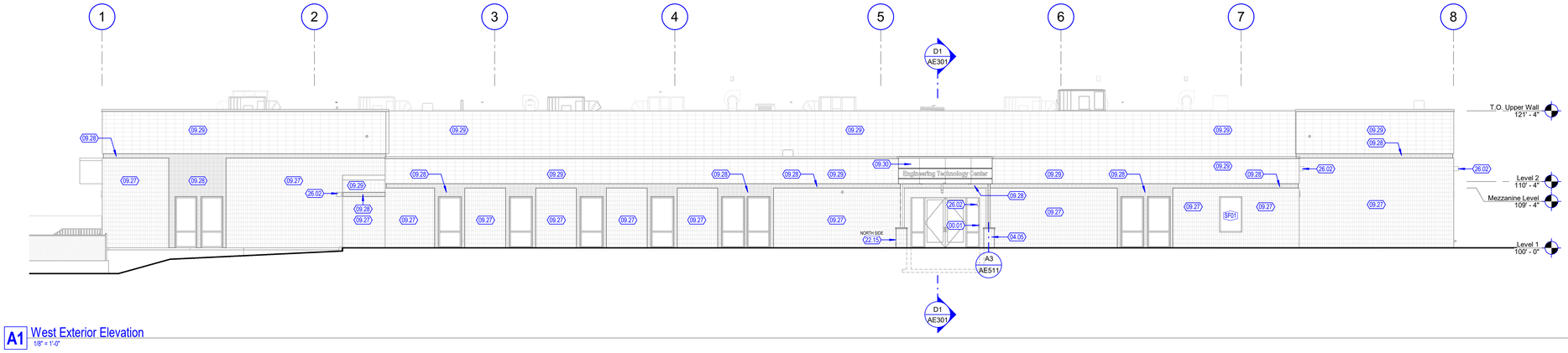
E1 North Exterior Elevation
1/8" = 1'-0"



D1 South Exterior Elevation
1/8" = 1'-0"



B1 East Exterior Elevation
1/8" = 1'-0"



A1 West Exterior Elevation
1/8" = 1'-0"

GENERAL NOTES

A. ALL EXPOSED STRUCTURAL EXTERIOR STEEL SHALL BE GALVANIZED WITHOUT CHROMATE COATING, SHOP PRIMED WITH HIGH PERFORMANCE COATING

B. SEE SHEET SERIES AE500 FOR WALL AND ASSEMBLY TYPES

C. SEE SHEET SERIES AE600 FOR DOOR AND WINDOW TYPES

D. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS AND SHALL REPORT TO THE ARCHITECT ANY UNKNOWN CONDITIONS, ERRORS, OR CONFLICTS IN THE DRAWINGS BEFORE BEGINNING WORK

E. DO NOT SCALE THE DRAWINGS

F. COORDINATE ALL EQUIPMENT AND ACCESSORIES, INCLUDING ITEMS THAT ARE OWNER FURNISHED, OWNER INSTALLED

G. SEE SECTIONS, AND DETAILS FOR ADDITIONAL WALL CONSTRUCTION INFORMATION

H. EXISTING PLANTS AND TREES ARE NOT REPRESENTED IN THE EXTERIOR ELEVATIONS. OWNER WILL PROVIDE ANY TREE RELOCATION OR TRIMMING THAT IS NEEDED. COORDINATE WITH OWNER

J. ALL SMOOTH EXISTING AND INFILL CMU BLOLOK WILL BE PAINTED. COLORS TO BE SELECTED BY ARCHITECT AND OWNER

KEYED NOTES

00.01 ADA PUSH PLATE ACTUATOR, RE: ELECTRICAL AND ARCHITECTURAL
03.06 PRECAST CONCRETE CAP
04.03 INFILL WITH SALVAGED CMU - MATCH ADJACENT (WHERE APPLIES), RE: DIMENSION PLANS AND WALL TYPES
04.05 4" THICK SPLIT-FACE CMU BLOCK TO MATCH EXISTING, ADJACENT
04.07 NEW, FLUTED BLOCK TO MATCH EXISTING OR USED FROM SALVAGED BLOCK
05.01 NEW LANDING, STAIRS AND GUARDRAIL AND RAILING (POWDER COATED - COLOR TO BE SELECTED BY OWNER AND ARCHITECT)
05.07 NEW COLUMN, PRIME IN FACTORY AND PAINT IN FIELD. COLOR TO BE SELECTED BY OWNER AND ARCHITECT, RE: STRUCT
05.14 STEEL ANGLE AT MASONRY OPENING, PAINT TO MATCH ADJACENT CMU, RE: STRUCTURAL
05.15 NEW 6" DIAMETER STEEL BOLLARD (CONCRETE FILLED / CONCRETE DOME TOP), PAINT (COLOR TO BE SELECTED BY OWNER / ARCHITECT)
09.27 FLUTED, SPLIT FACE CMU - NO PAINT
09.28 PAINT ALL LOWER, EXISTING OR NEW RECESSED CMU FIELD COLOR "A" - COLOR TO BE SELECTED BY OWNER AND ARCHITECT
09.29 PAINT ALL UPPER, SMOOTH CMU BLOCK FIELD COLOR "B" - COLOR TO BE SELECTED BY OWNER AND ARCHITECT
09.30 ACM PANEL SYSTEM
09.31 EXISTING MATERIALS / COLORS TO REMAIN
22.15 LAMBS TONGUE DRAIN / SECONDARY DRAINAGE, RE: PLUMBING
26.02 LIGHT FIXTURE, RE: ELECTRICAL
32.06 NEW CHAINLINK FENCE, RE: SITE PLAN

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STATE OF IDAHO · SCOTT BOYD MAXFIELD · 10496 · LICENSED ARCHITECT
10-27-2020

project:

BYUI Engineering Technology Center (ETC)

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project#: 20.0220
byu idaho project#: 12005
date: october 27, 2020

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3	Addendum #3	11/13/2020

title:

Exterior Elevations

sheet:

AE201

100% construction documents

KEYED NOTES

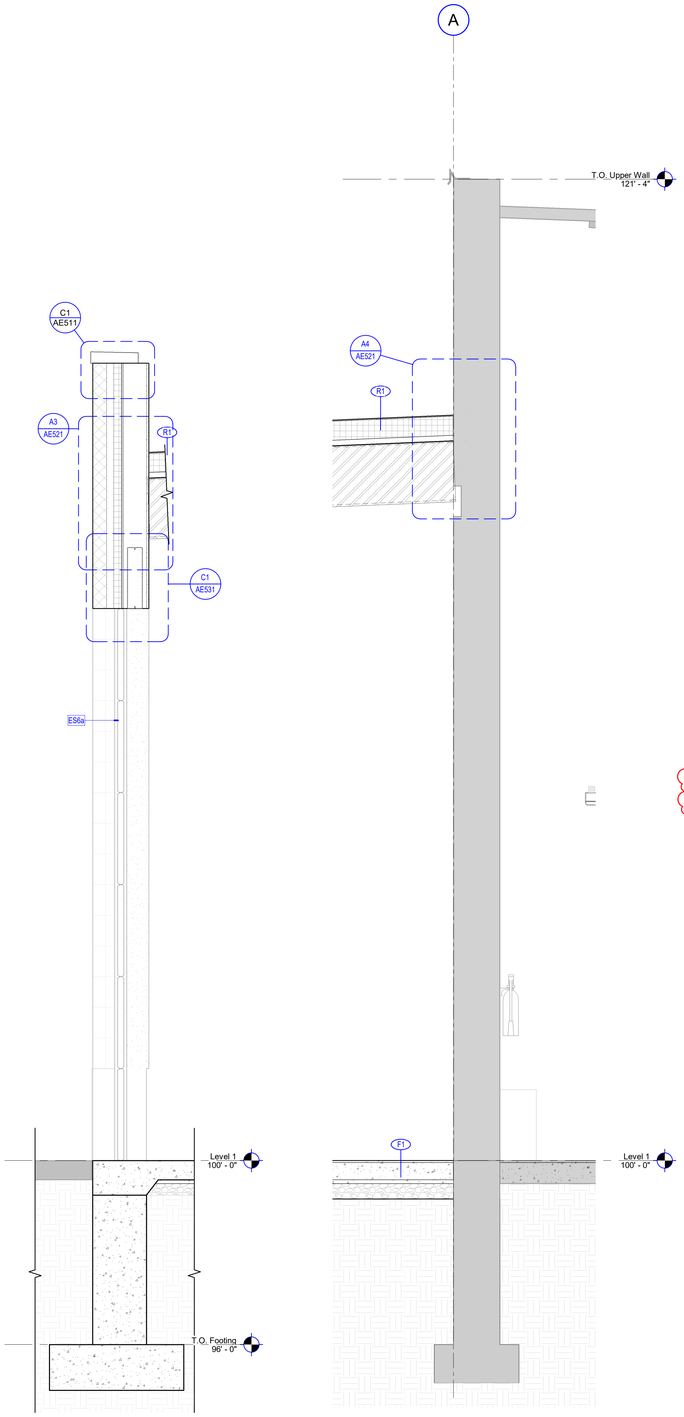
02.36 EXISTING STOREFRONT / DOOR SYSTEM TO REMAIN
02.38 EXISTING EXTERIOR WALL TO REMAIN
02.39 EXISTING FOUNDATION TO REMAIN
02.41 EXISTING STEAM TUNNEL TO REMAIN
03.06 PRECAST CONCRETE CAP
05.07 NEW COLUMN. PRIME IN FACTORY AND PAINT IN FIELD. COLOR TO BE SELECTED BY OWNER AND ARCHITECT, RE: STRUCT
05.08 NEW BEAM, RE: STRUCT
05.09 NEW ROOF FRAMING, RE: STRUCT
07.01 ROOF / OVERFLOW DRAIN, RE: ROOF PLAN AND PLUMB.
26.04 RECESSED LIGHTING, RE: ELECTRICAL

ASSEMBLY TYPES

ROOF R1 5" RIGID INSULATION ON 1 1/2" METAL DECK

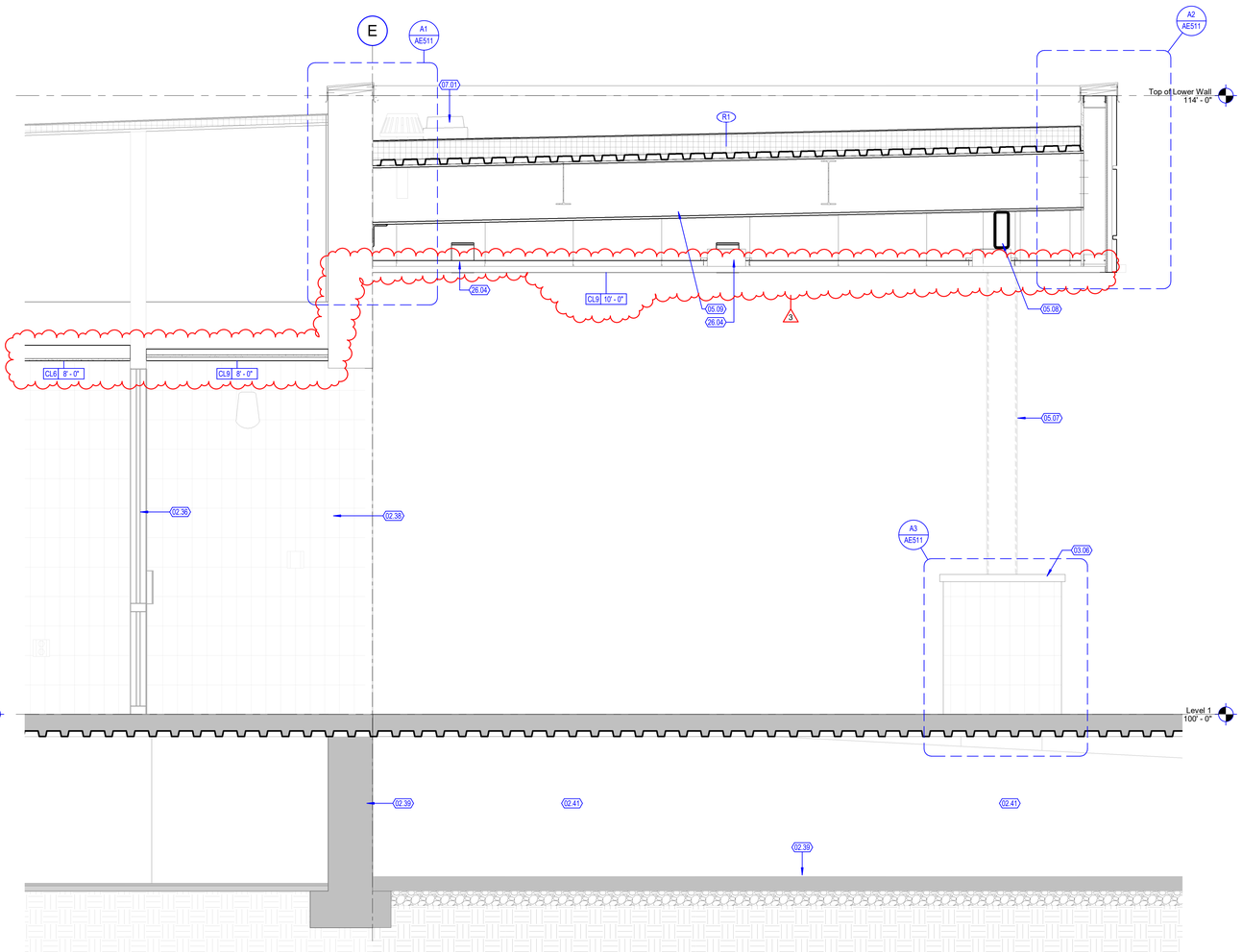
FLOOR F2 6" CONCRETE
F3 CONCRETE ON 1 1/2" METAL DECK (5 1/4" TOTAL THICKNESS)
F4 CONCRETE (5 1/4" THICK)

NOTE: SEE AE500 SHEET SERIES FOR COMPLETE ASSEMBLY TYPES



A1 Wall Section
3/4" = 1'-0"

A2 Wall Section
3/4" = 1'-0"



A3 Entry Canopy Section
3/4" = 1'-0"

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STATE OF IDAHO
SCOTT BOYD MADSEN
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10-27-2020

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project#: 20.0220
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title:

Wall Sections

sheet:

AE311

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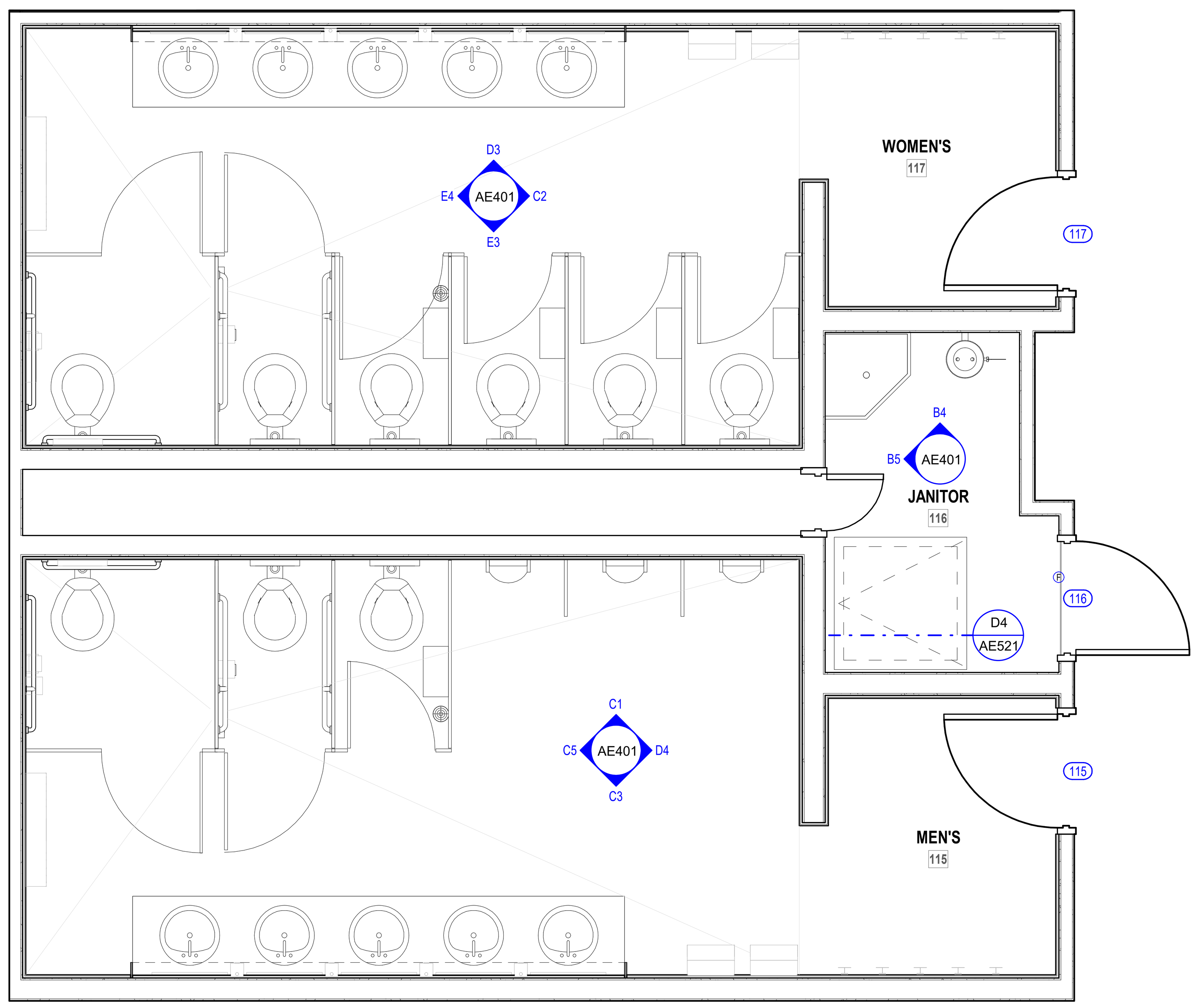
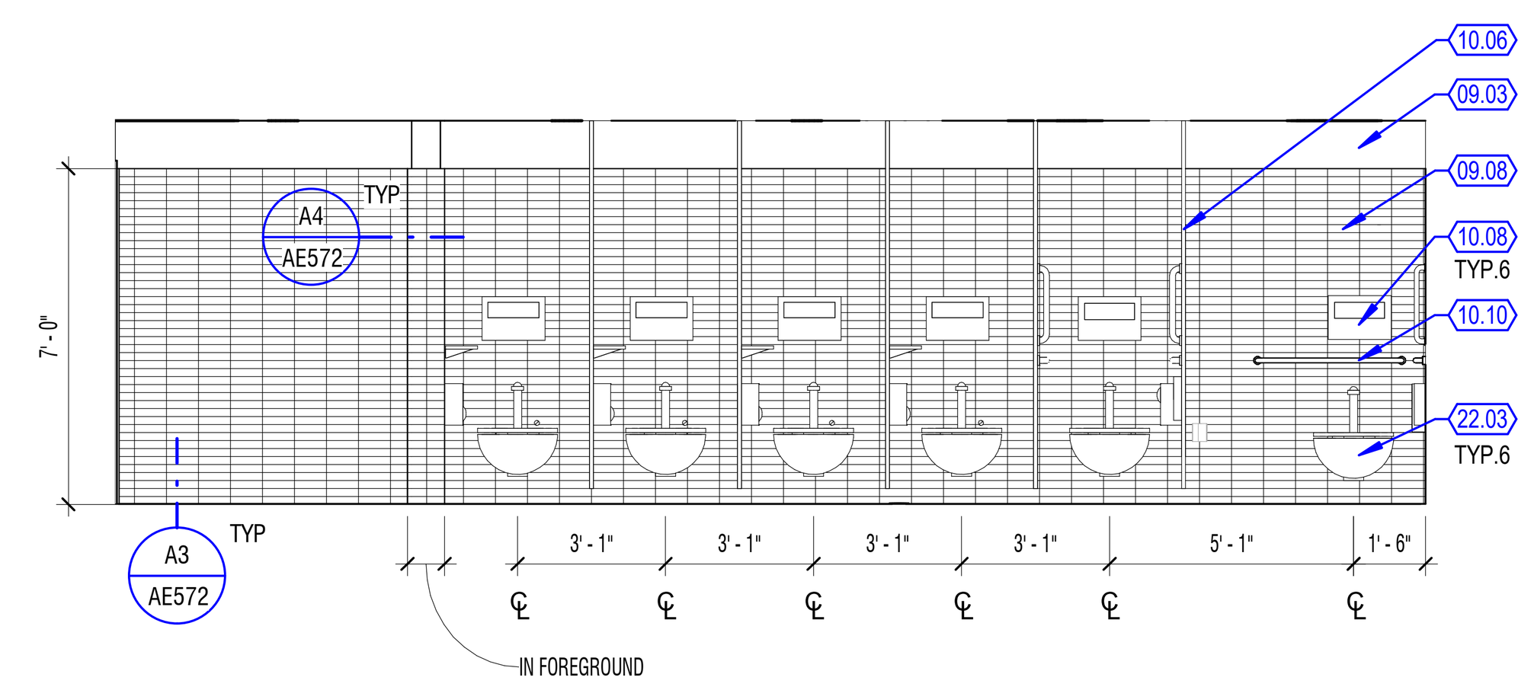
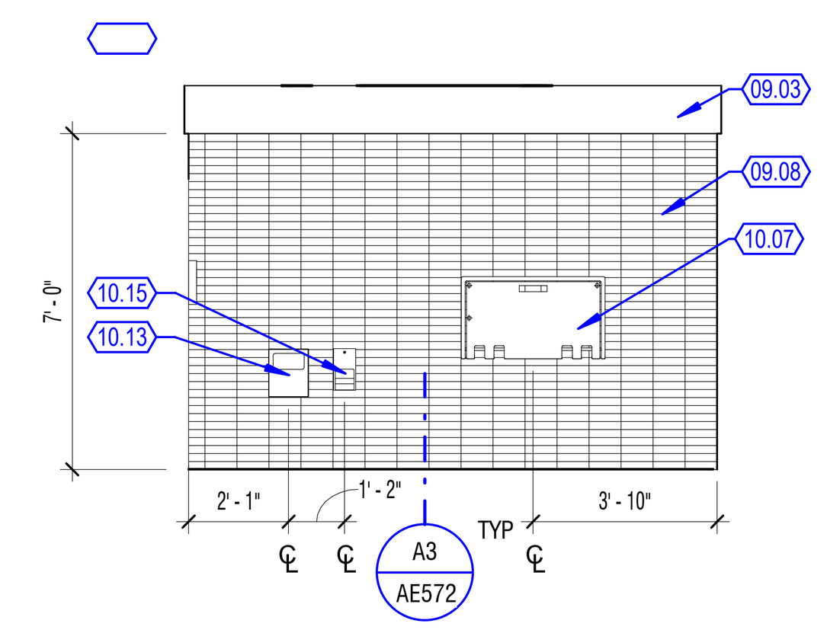


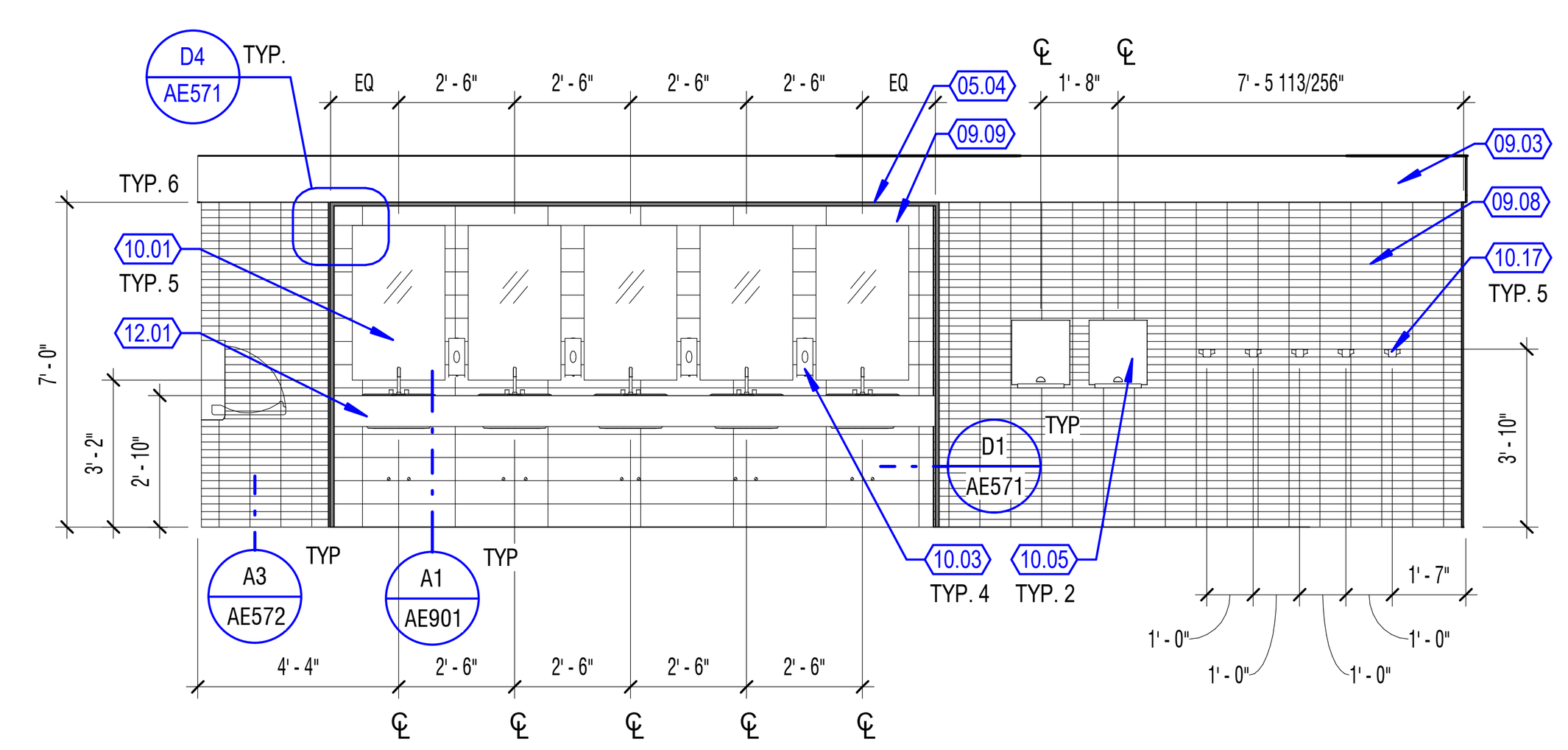
D1 Enlarged Plan - Restroom
3/8" = 1'-0"



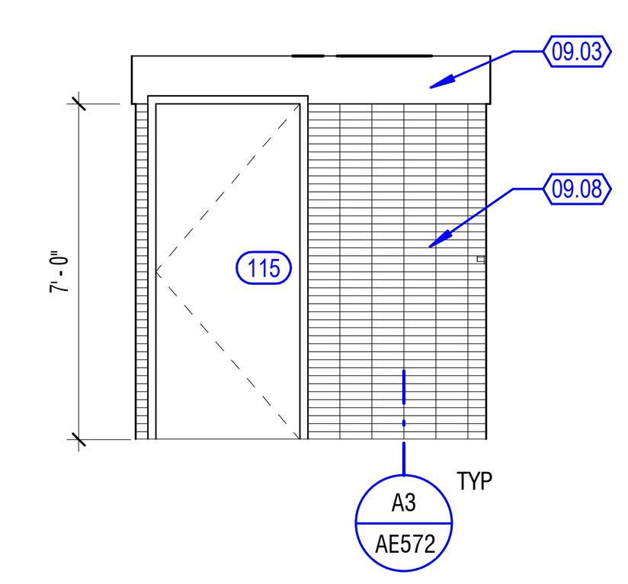
E3 Women's Restroom - Elev 3
1/4" = 1'-0"



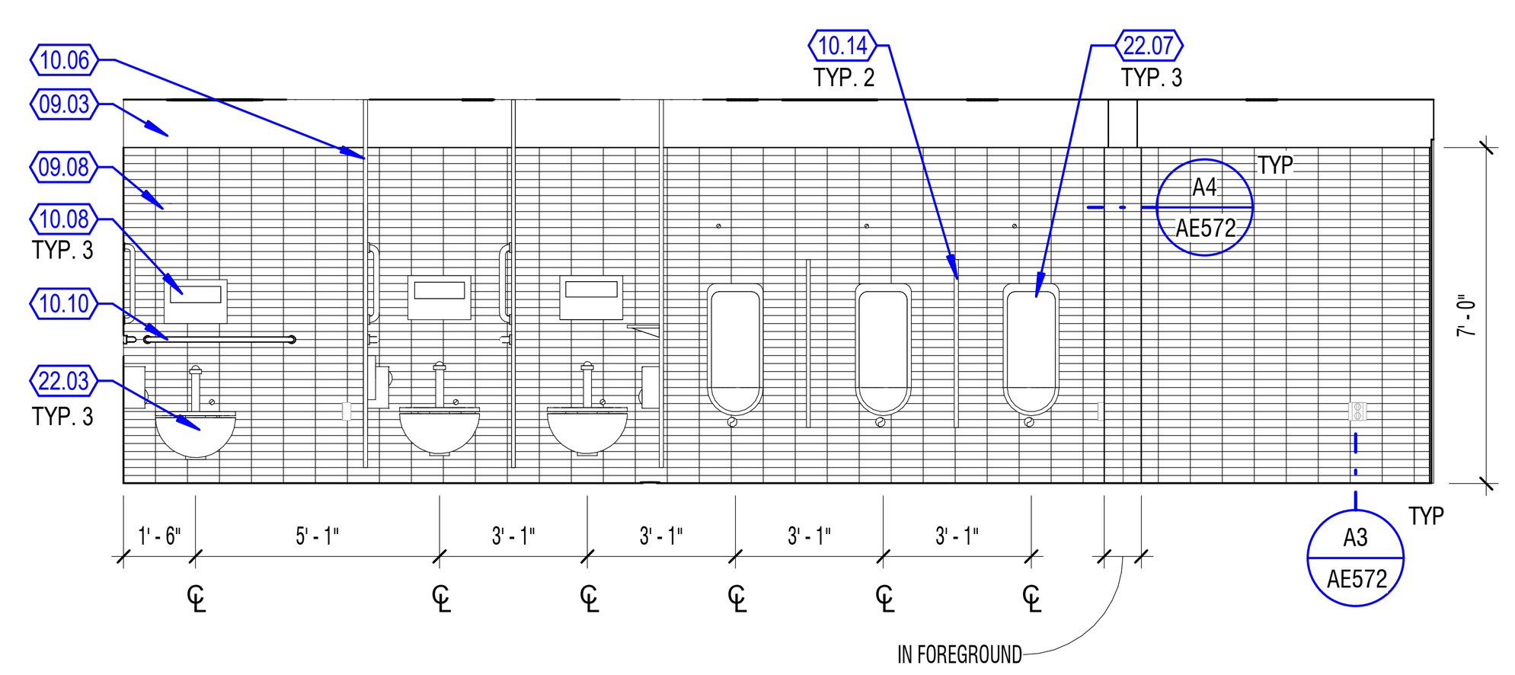
E4 Women's Restroom - Elev 4
1/4" = 1'-0"



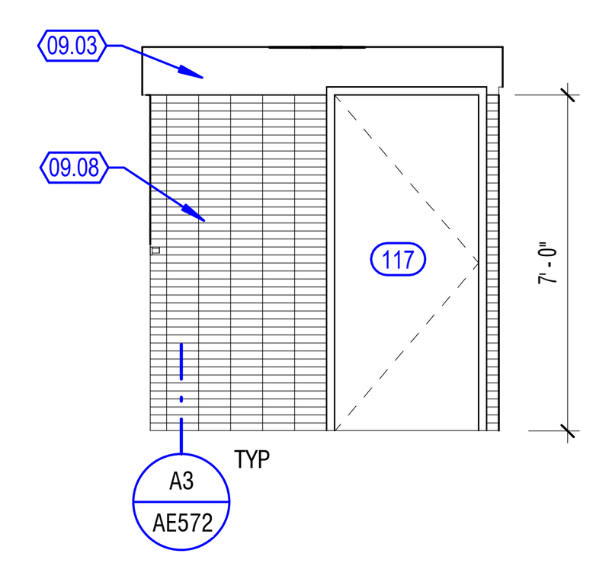
D3 Women's Restroom - Elev 1
1/4" = 1'-0"



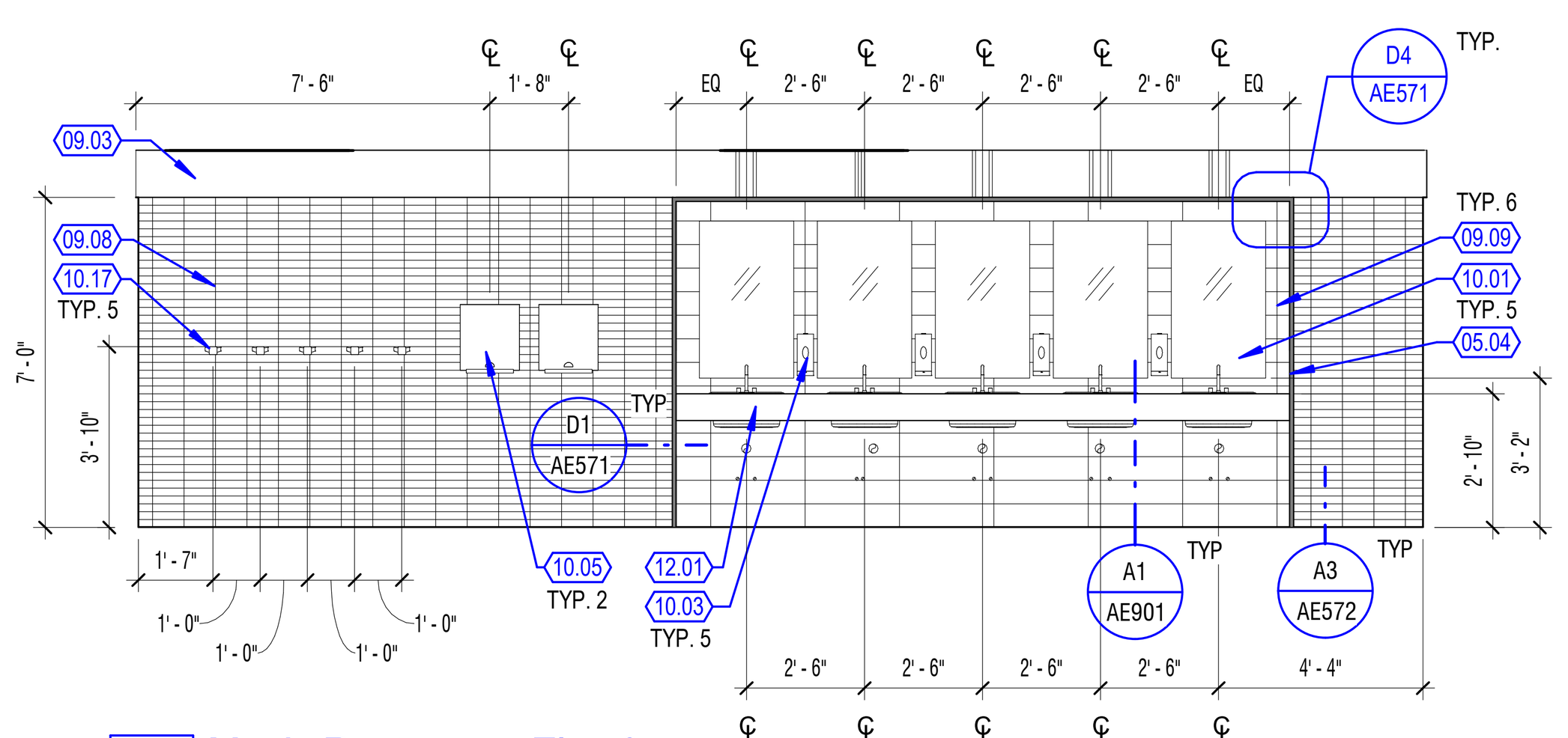
D4 Men's Restroom - Elev 2
1/4" = 1'-0"



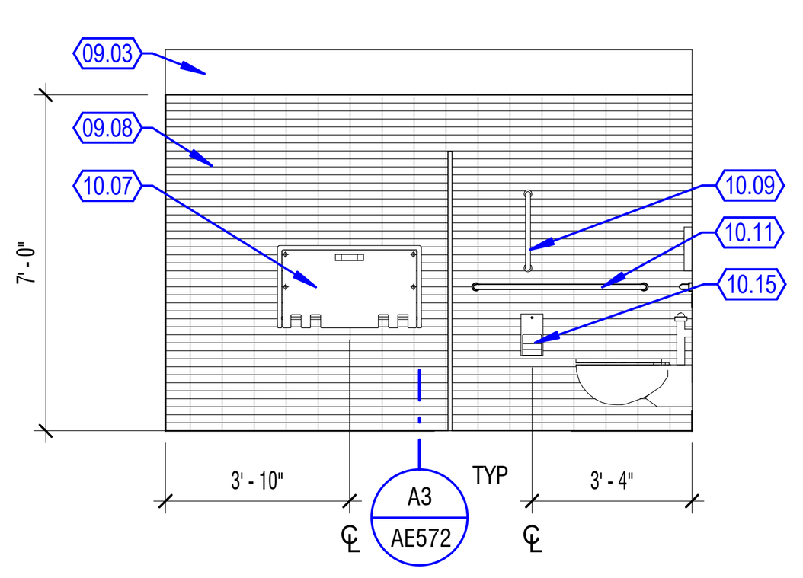
C1 Men's Restroom - Elev 1
1/4" = 1'-0"



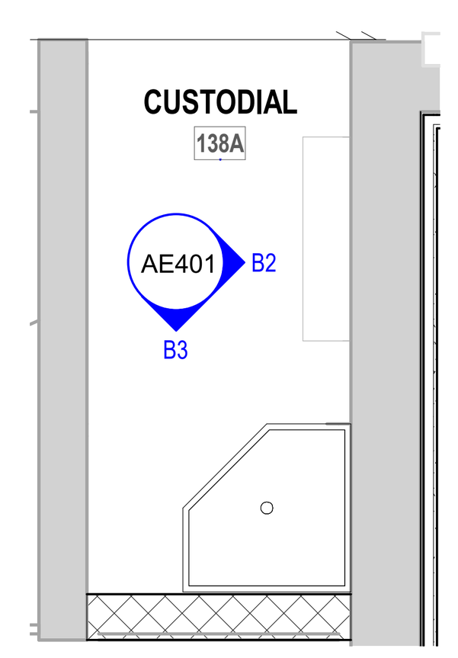
C2 Women's Restroom - Elev 2
1/4" = 1'-0"



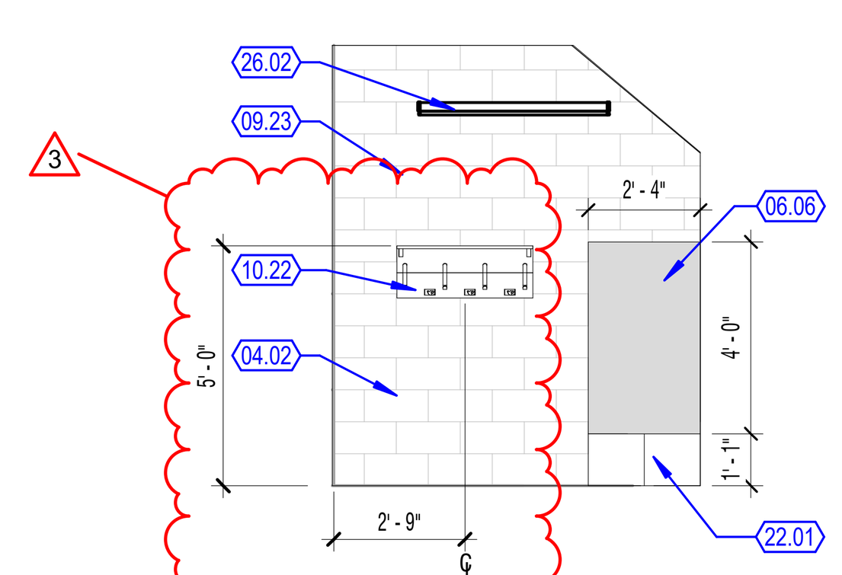
C3 Men's Restroom - Elev 3
1/4" = 1'-0"



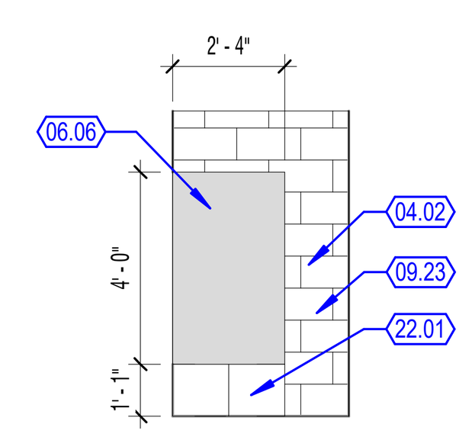
C5 Men's Restroom - Elev 4
1/4" = 1'-0"



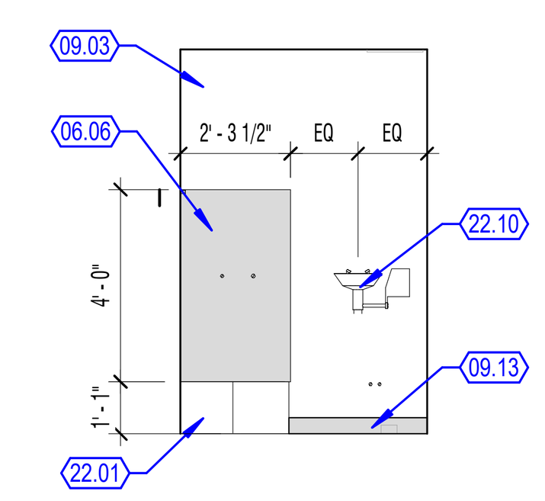
B1 Enlarged Plan - Custodial
3/8" = 1'-0"



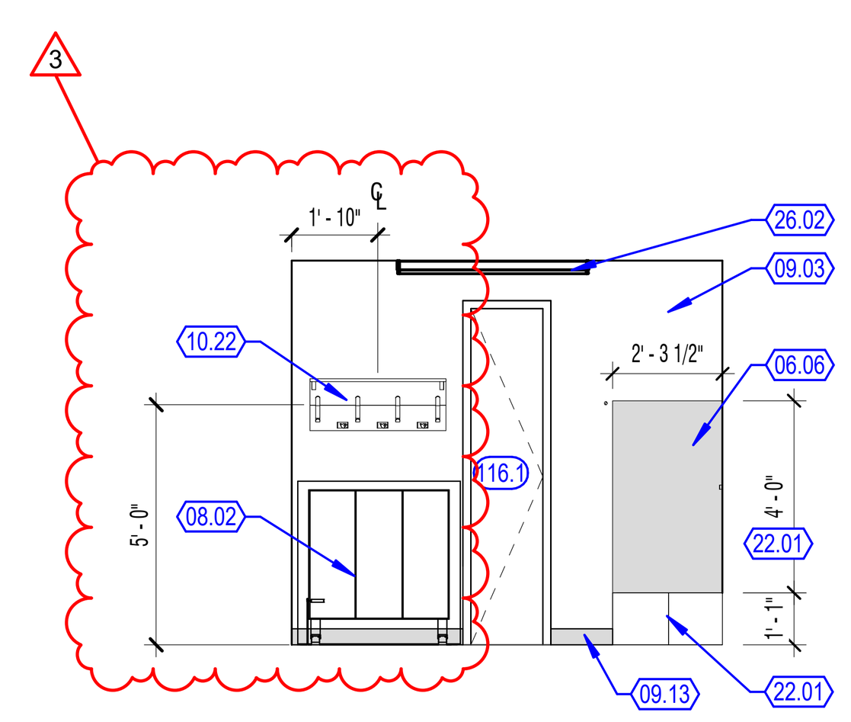
B2 Custodial - Elev 1
1/4" = 1'-0"



B3 Custodial - Elev 2
1/4" = 1'-0"



B4 Janitor - Elev 1
1/4" = 1'-0"



B5 Janitor - Elev 2
1/4" = 1'-0"

GENERAL NOTES - INT PLAN/ELEV

1. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS AND SHALL REPORT TO THE ARCHITECT ANY UNKNOWN CONDITIONS, ERRORS, OR CONFLICTS IN THE DRAWINGS BEFORE BEGINNING WORK
2. DO NOT SCALE DRAWINGS
3. SEE SHEET GI003 FOR TYPICAL MOUNTING HEIGHTS. PROVIDE SOLID BLOCKING IN WALLS FOR ALL WALL-MOUNTED ITEMS WHETHER BLOCKING IS DEPICTED IN DRAWINGS OR NOT.
4. UPPER, LOWER, AND TALL MILLWORK CABINETS NOT TO EXCEED 36" IN WIDTH
5. UNLESS NOTED OTHERWISE, MATCH UPPER CABINET WIDTH DIMENSIONS TO BASE CABINETS - TYP.
6. ALL ELECTRICAL AND DATA OUTLETS ABOVE COUNTER TOPS SHOULD BE MOUNTED HORIZONTALLY
7. PROVIDE SAFETY INSULATION ON ALL EXPOSED SUPPLY WATER LINES AND WASTE LINES
8. PROVIDE ALUMINUM EDGE MOULDING @ ALL TILE TO H.M. DOOR TRANSITIONS
9. PROVIDE METAL TRIM AT ALL OUTSIDE EDGES ON TILE WALLS. SEE: FINISH SCHEDULE
10. PROVIDE METAL TRIM AT ALL TILE TO FLOOR TRANSITIONS. SEE: FINISH SCHEDULE
11. ALL EXPOSED STEEL COLUMNS TO BE PAINTED TO MATCH ADJACENT WALL
12. ALL MILLWORK INTERIOR FINISH TO BE WHITE MELAMINE, UNLESS NOTED OTHERWISE
13. COUNTERTOP EDGE PROFILES TO BE SQUARE EDGE. IF SHOWN IN ELEVATION, PROVIDE 4" BACKSPLASH
14. ALL WOOD WALLCOVERING GRAIN TO RUN VERTICALLY, UNLESS NOTED OTHERWISE
15. CALLED OUT RESTROOM ACCESSORIES TO BE INSTALLED AT EVERY STALL
16. PAINT CMU WALLS CLEANLY TO GROUND

KEYED NOTES

04.02	NEW CMU WALL - MATCH EXISTING
05.04	HOT ROLLED STEEL, MP-01; RE: FINISH SCHEDULE
06.06	FIBER-GLASS REINFORCED PANEL, FRP-01; RE: FINISH SCHEDULE
08.02	36" x 36" TUNNEL / FLOOR ACCESS HATCH W/ DETENTION LOCK
09.03	FIELD PAINT, PNT-01 RE: FINISH SCHEDULE
09.08	TILE TL-02, RE: FINISH SCHEDULE
09.09	TILE TL-03, RE: FINISH SCHEDULE
09.13	RUBBER BASE, RB-01; RE: FINISH SCHEDULE
09.23	EPOXY PAINT, PNT-06, RE: FINISH SCHEDULE
10.01	MIRROR, RE: ACCESSORY SCHEDULE
10.03	SOAP DISPENSER WALL MOUNTED, RE: ACCESSORY SCHEDULE
10.05	PAPER TOWEL DISPENSER, RE: ACCESSORY SCHEDULE
10.06	TOILET PARTITION, RE: ACCESSORY SCHEDULE
10.07	BABY CHANGING STATION, RE: ACCESSORY SCHEDULE
10.08	TOILET SEAT COVER DISPENSER, RE: ACCESSORY SCHEDULE
10.09	18" GRAB BAR, RE: ACCESSORY SCHEDULE
10.10	36" GRAB BAR, RE: ACCESSORY SCHEDULE
10.11	42" GRAB BAR, RE: ACCESSORY SCHEDULE
10.13	SANITARY NAPKIN DISPOSAL, RE: ACCESSORY SCHEDULE
10.14	URINAL PARTITION, RE: ACCESSORY SCHEDULE
10.15	TOILET TISSUE DISPENSER, RE: ACCESSORY SCHEDULE
10.17	COAT HOOK, RE; ACCESSORY SCHEDULE
10.22	MOP/BROOM HOOK, RE: ACCESSORY SCHEDULE
12.01	QUARTZ, QTZ-01 RE: FINISH SCHEDULE
22.01	MOP SINK, RE: PLUMBING
22.03	TOILET FIXTURE, RE: PLUMBING
22.07	URINAL, RE: PLUMBING
22.10	EMERGENCY EYEWASH STATION, RE: PLUMBING
26.02	LIGHT FIXTURE, RE: ELECTRICAL

NEW & EXISTING WALL LEGEND

- NEW CMU WALL
- EXISTING CMU WALL
- NEW CMU INFILL TO MATCH EXISTING CMU WALL

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revisions :

3 Addendum #3 11/13/2020

title:

Enlarged Plans & Interior Elevations

sheet:

AE401

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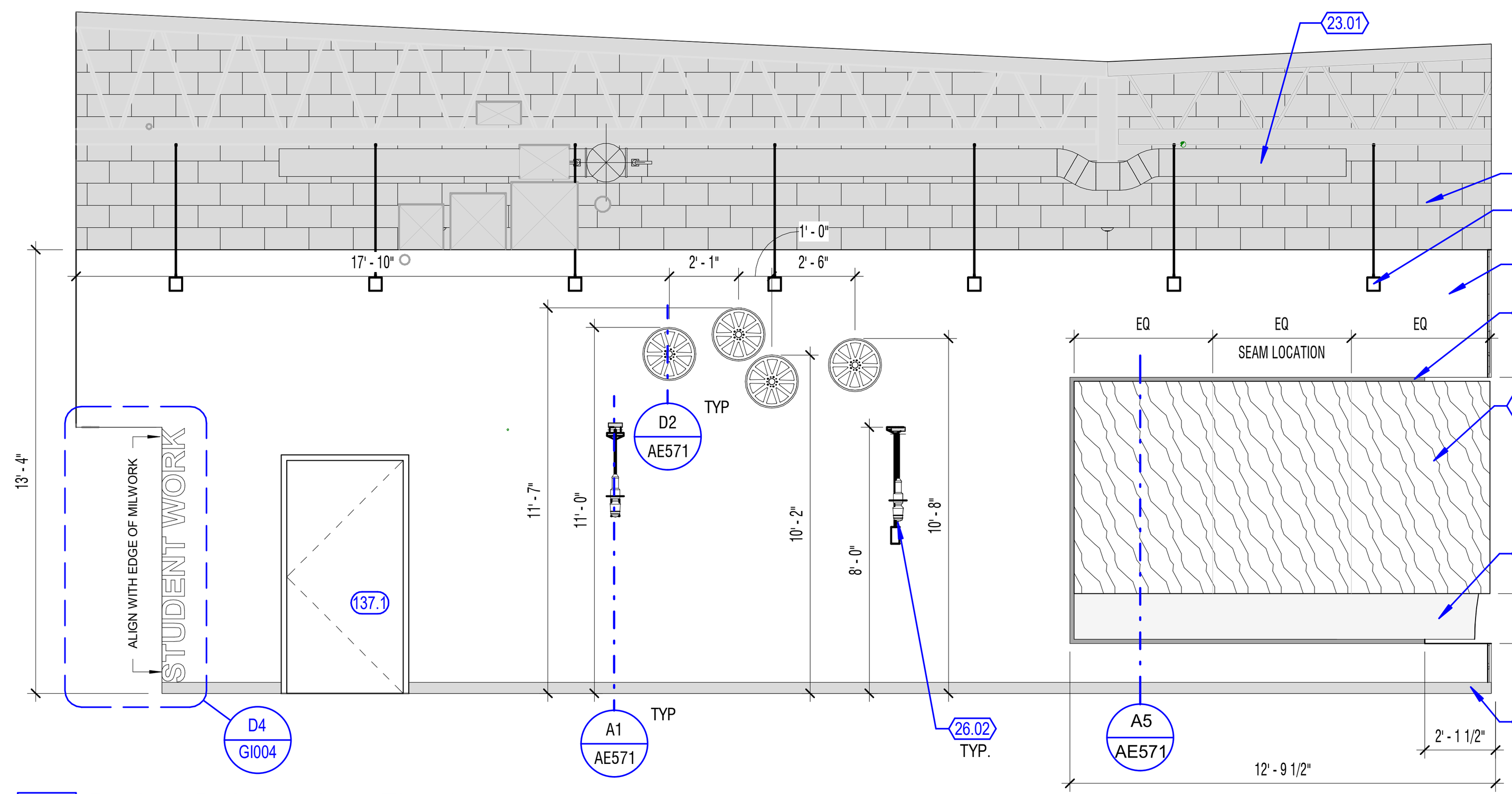
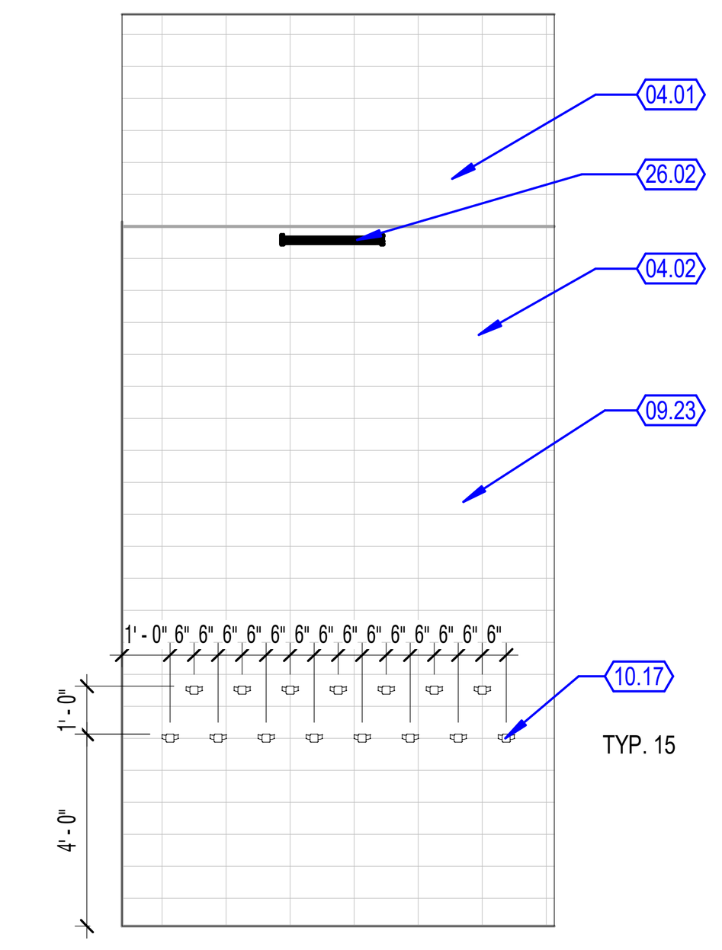
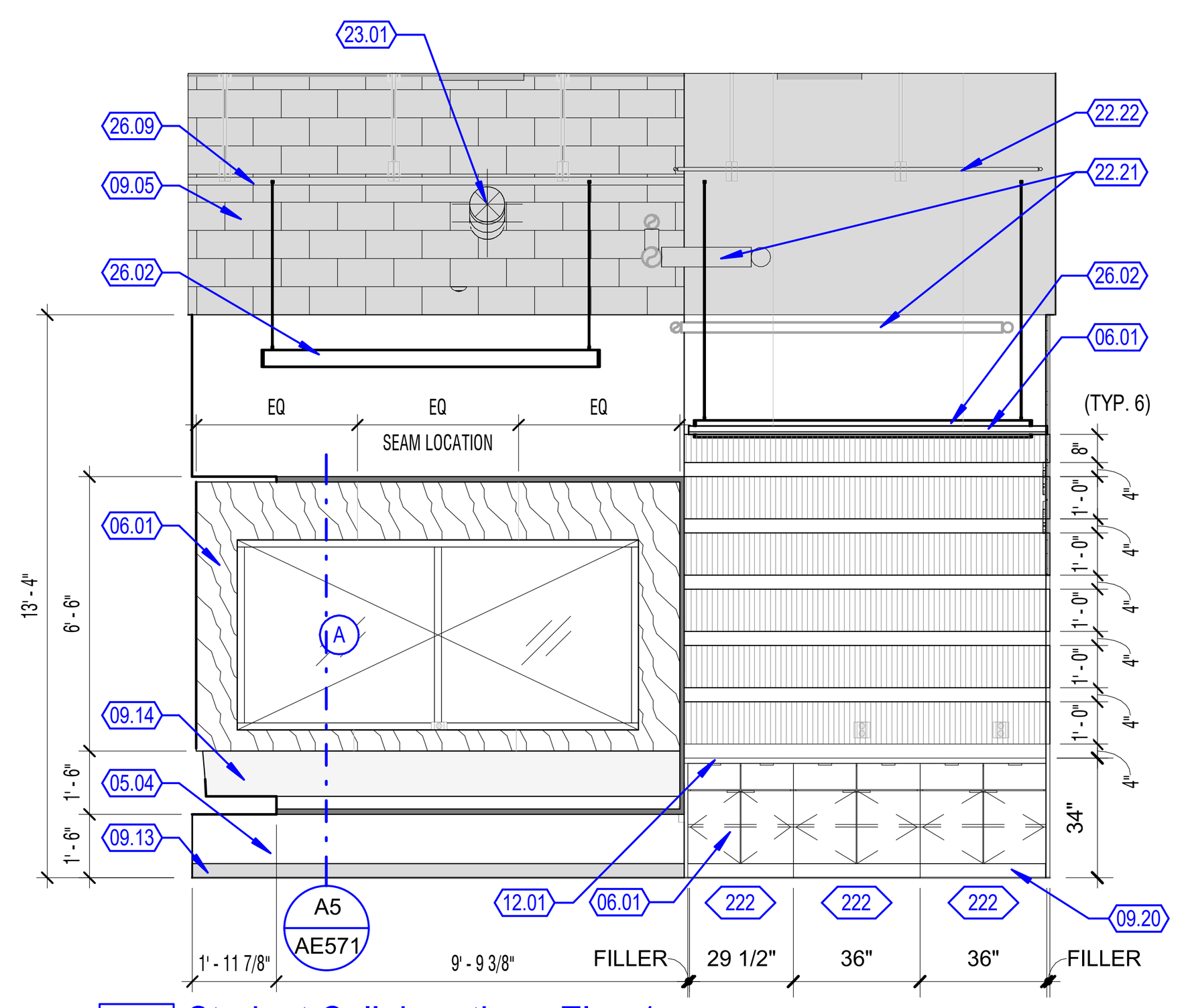


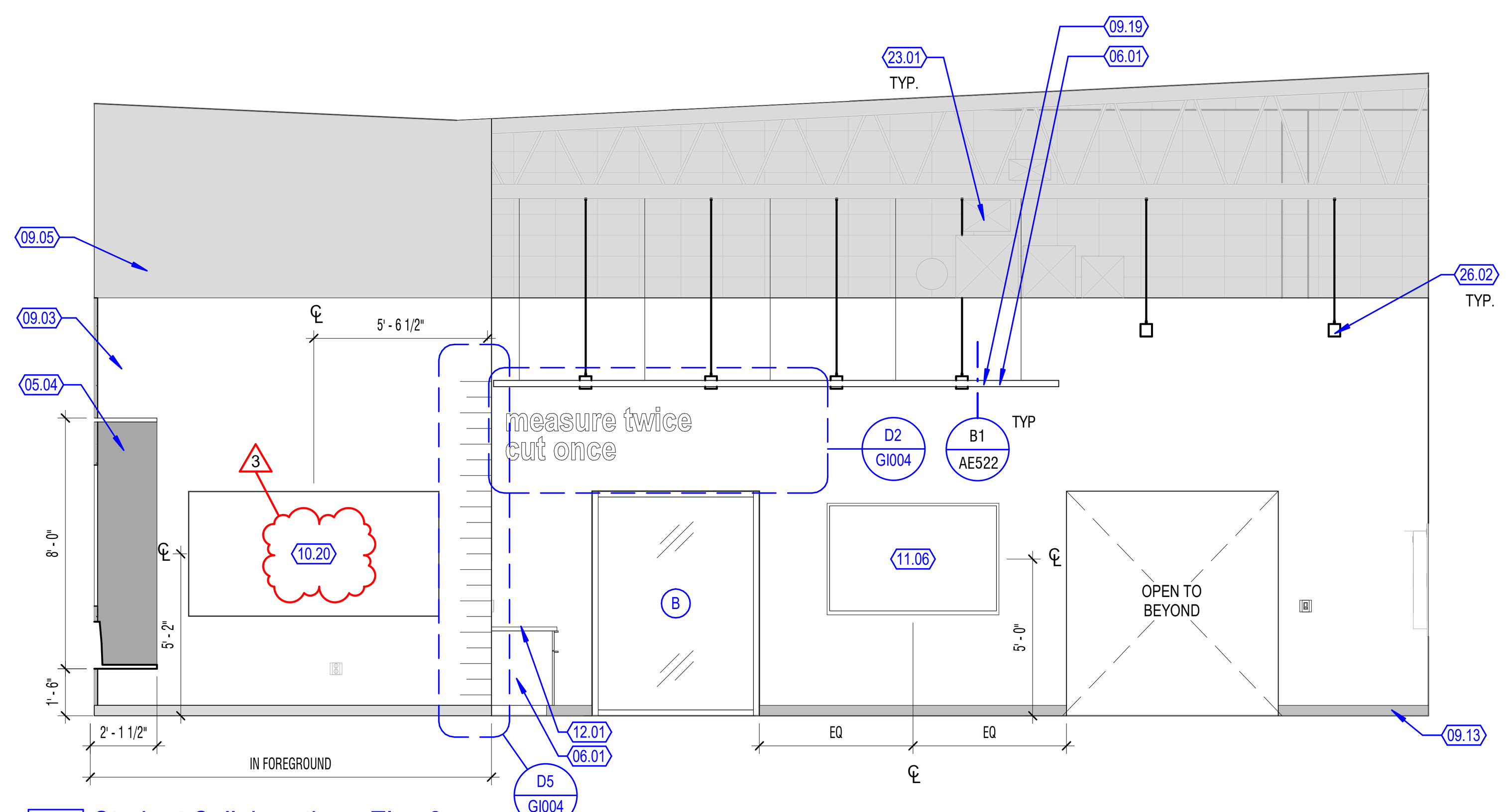
D1 Student Collaboration - Elev 4
1/4" = 1'-0"



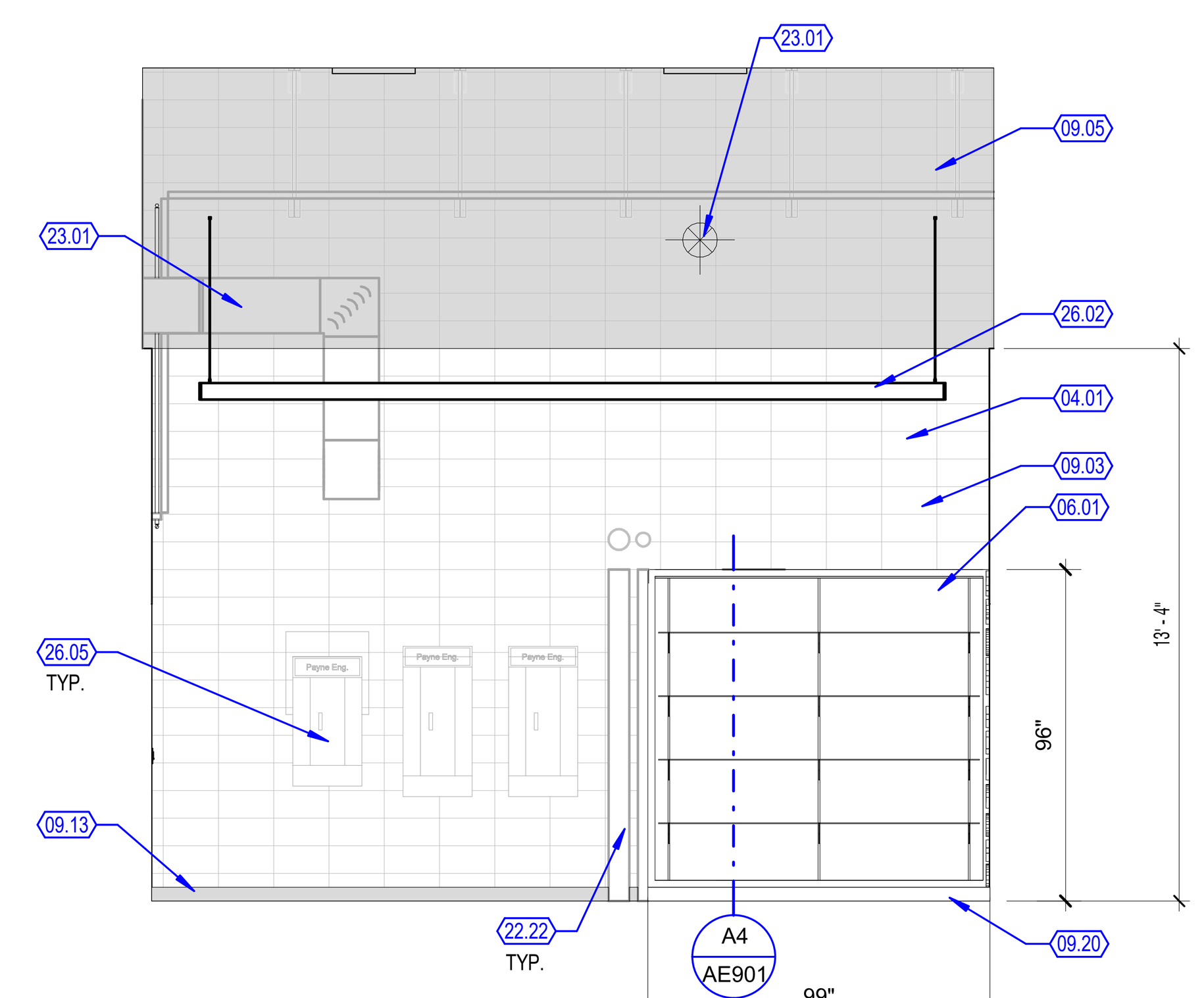
D3 Tool Room
1/4" = 1'-0"



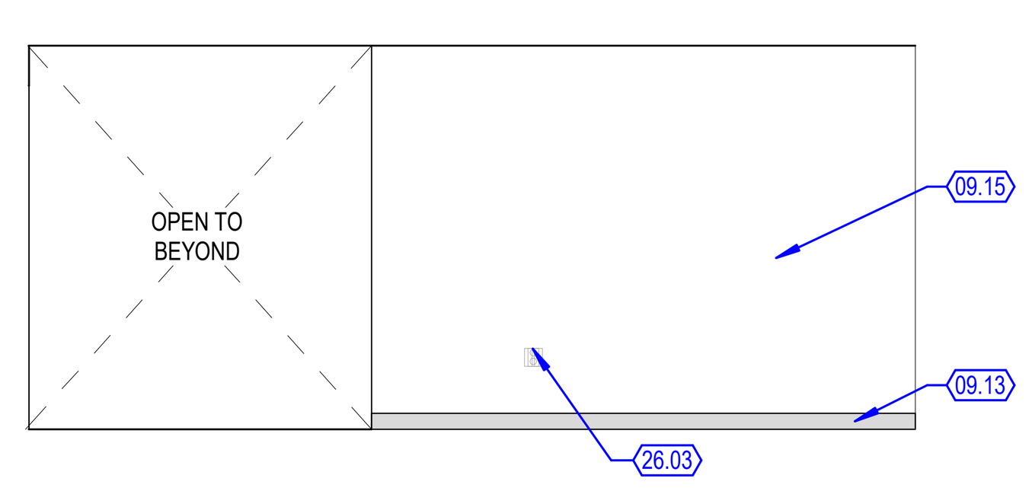
C1 Student Collaboration - Elev 1
1/4" = 1'-0"



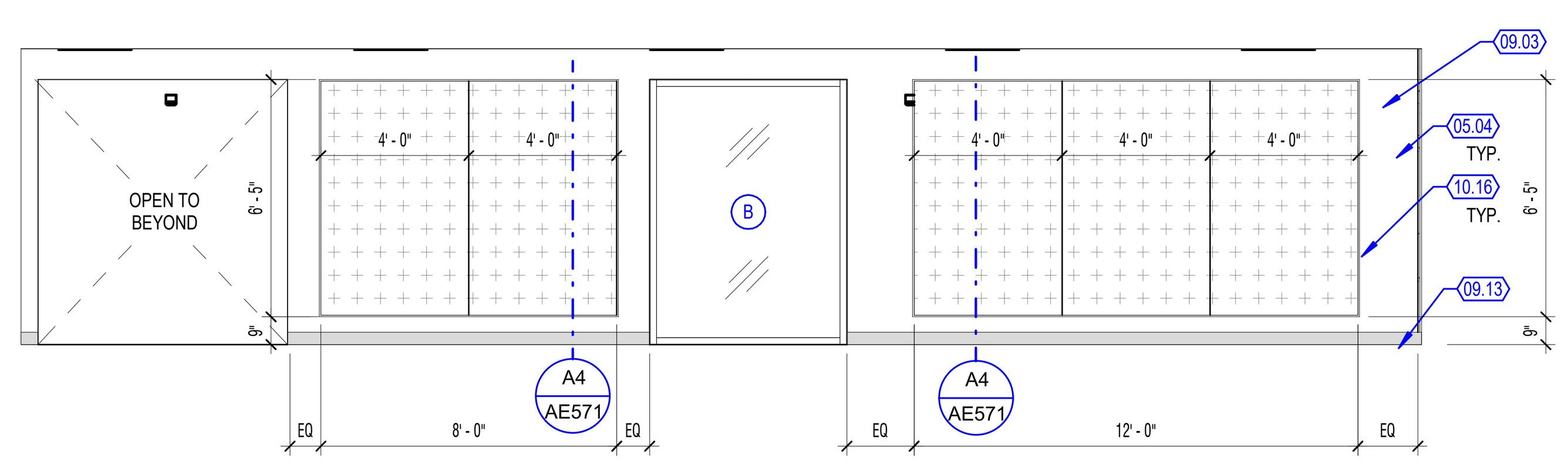
C2 Student Collaboration - Elev 2
1/4" = 1'-0"



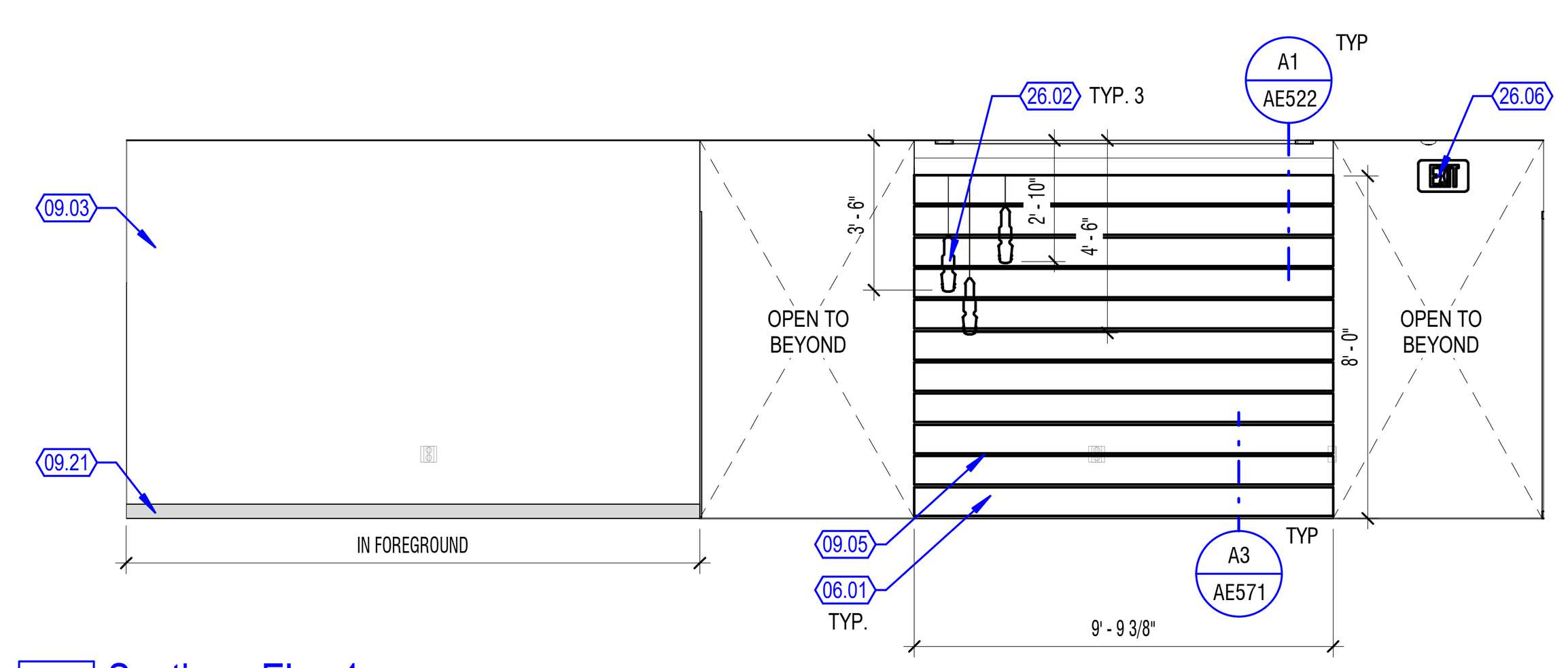
C4 Student Collaboration - Elev 3
1/4" = 1'-0"



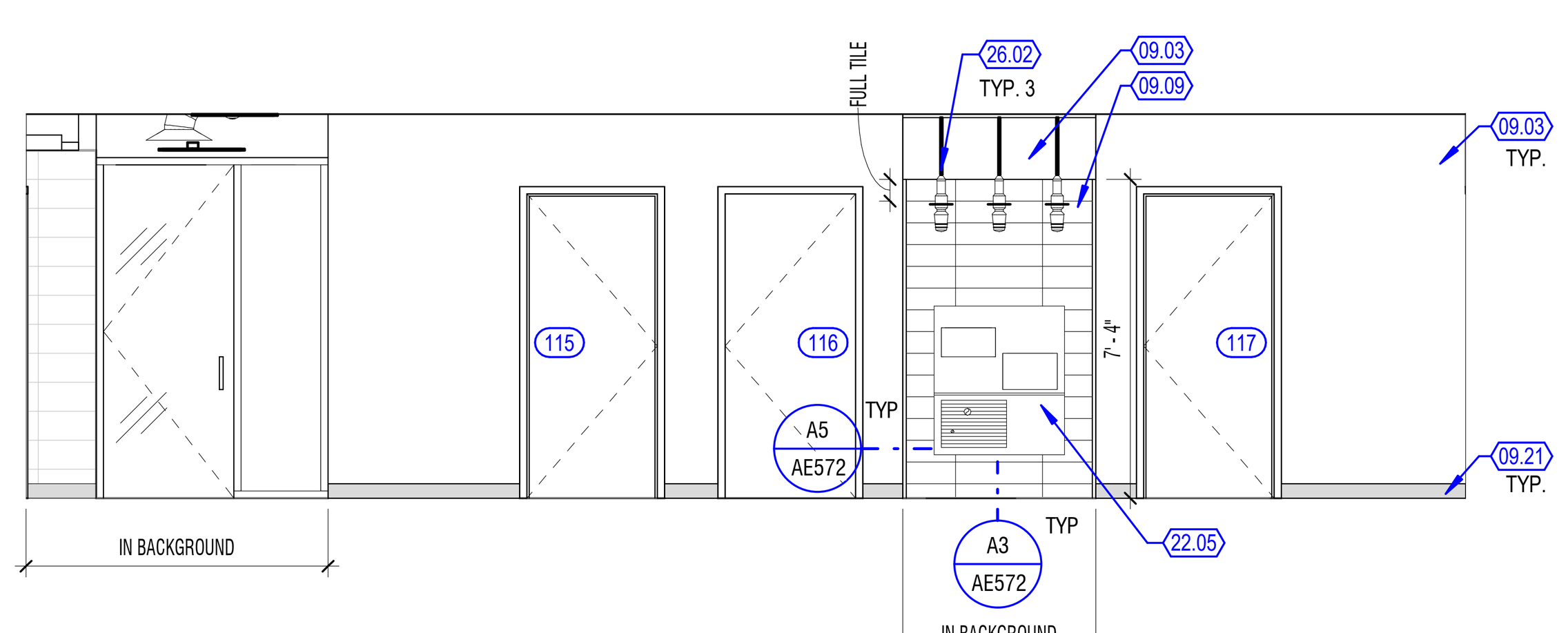
B1 Corridor - Elev 1
1/4" = 1'-0"



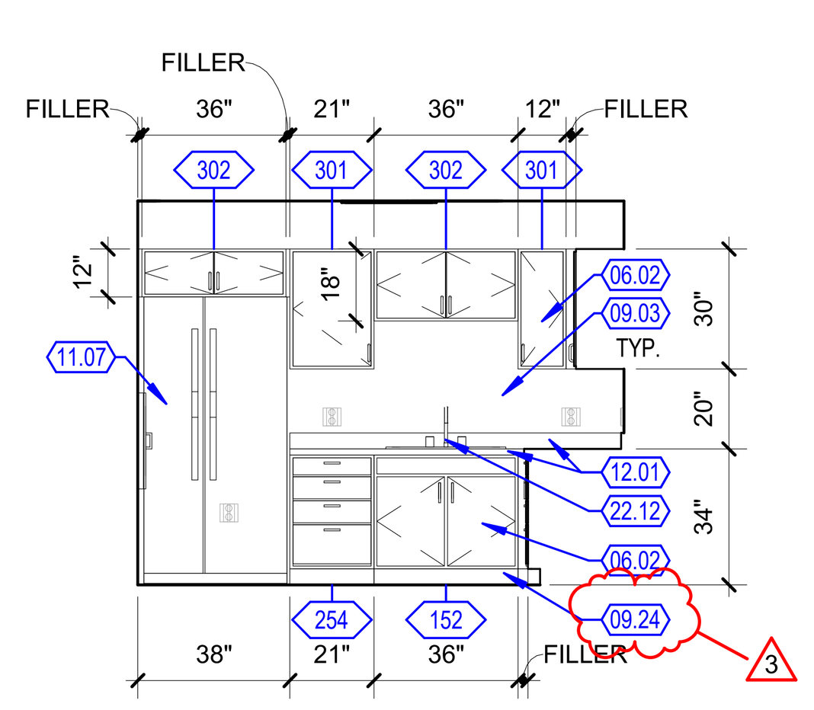
B2 Corridor - Elev 2
1/4" = 1'-0"



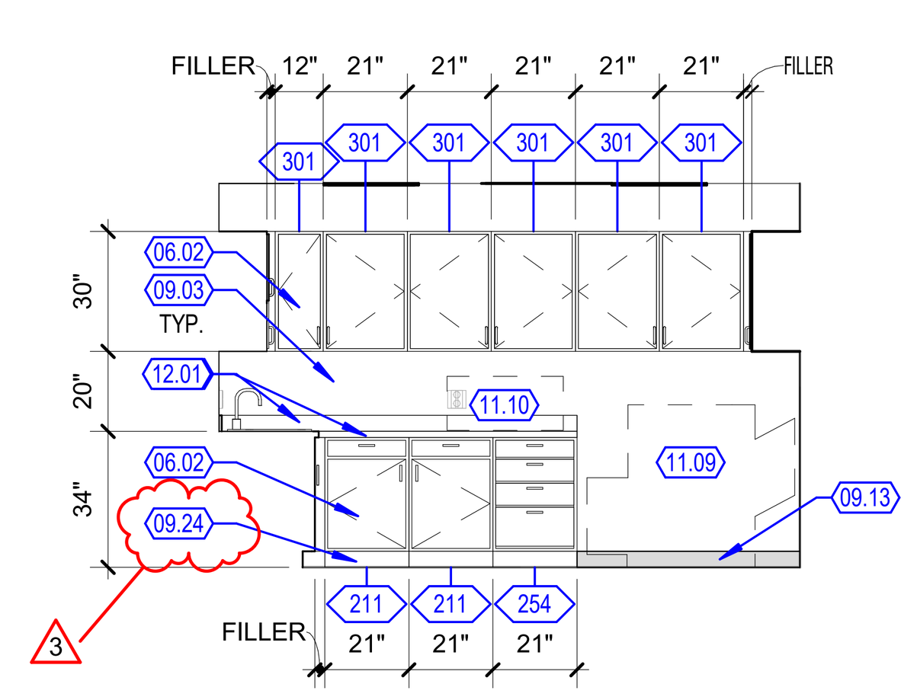
B4 Seating - Elev 1
1/4" = 1'-0"



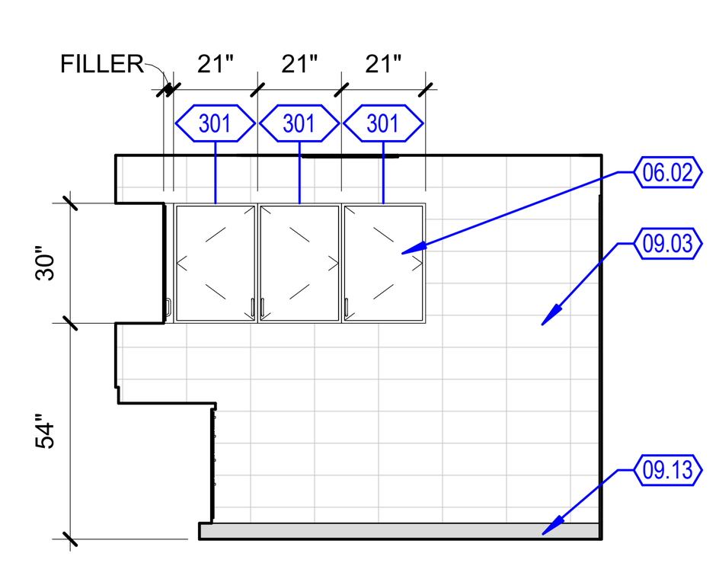
A1 Seating - Elev 2
1/4" = 1'-0"



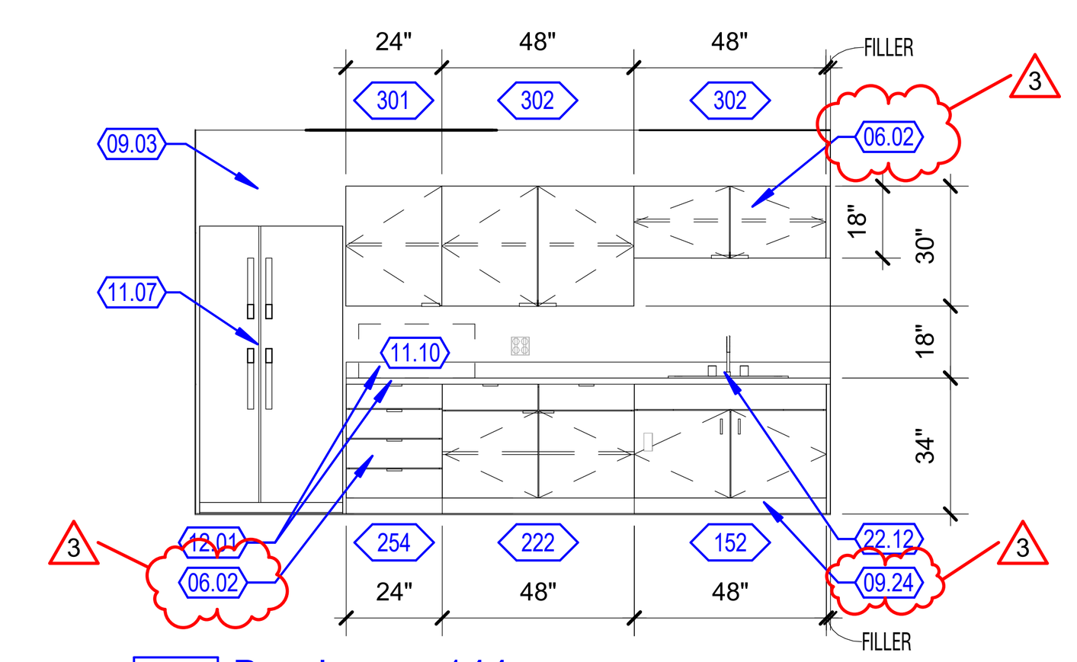
A2 Breakroom 130 - Elev 1
1/4" = 1'-0"



A3 Breakroom 130 - Elev 2
1/4" = 1'-0"



A4 Breakroom 130 - Elev 3
1/4" = 1'-0"



A5 Breakroom 144
1/4" = 1'-0"

GENERAL NOTES - INT PLAN/ELEV

1. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS AND SHALL REPORT TO THE ARCHITECT ANY UNKNOWN CONDITIONS, ERRORS, OR CONFLICTS IN THE DRAWINGS BEFORE BEGINNING WORK
2. DO NOT SCALE DRAWINGS
3. SEE SHEET GI003 FOR TYPICAL MOUNTING HEIGHTS. PROVIDE SOLID BLOCKING IN WALLS FOR ALL WALL-MOUNTED ITEMS WHETHER BLOCKING IS DEPICTED IN DRAWINGS OR NOT.
4. UPPER, LOWER, AND TALL MILLWORK CABINETS NOT TO EXCEED 36" IN WIDTH
5. UNLESS NOTED OTHERWISE, MATCH UPPER CABINET WIDTH DIMENSIONS TO BASE CABINETS - TYP.
6. ALL ELECTRICAL AND DATA OUTLETS ABOVE COUNTER TOPS SHOULD BE MOUNTED HORIZONTALLY
7. PROVIDE SAFETY INSULATION ON ALL EXPOSED SUPPLY WATER LINES AND WASTE LINES
8. PROVIDE ALUMINUM EDGE MOULDING @ ALL TILE TO H.M. DOOR TRANSITIONS
9. PROVIDE METAL TRIM AT ALL OUTSIDE EDGES ON TILE WALLS. SEE: FINISH SCHEDULE
10. PROVIDE METAL TRIM AT ALL TILE TO FLOOR TRANSITIONS. SEE: FINISH SCHEDULE
11. ALL EXPOSED STEEL COLUMNS TO BE PAINTED TO MATCH ADJACENT WALL
12. ALL MILLWORK INTERIOR FINISH TO BE WHITE MELAMINE, UNLESS NOTED OTHERWISE
13. COUNTERTOP EDGE PROFILES TO BE SQUARE EDGE. IF SHOWN IN ELEVATION, PROVIDE 4" BACKSPLASH
14. ALL WOOD WALLCOVERING GRAIN TO RUN VERTICALLY, UNLESS NOTED OTHERWISE
15. CALLED OUT RESTROOM ACCESSORIES TO BE INSTALLED AT EVERY STALL
16. PAINT CMU WALLS CLEANLY TO GROUND

KEYED NOTES

04.01	EXISTING CMU WALL
04.02	NEW CMU WALL - MATCH EXISTING
05.04	HOT ROLLED STEEL, MP-01; RE: FINISH SCHEDULE
06.01	PLASTIC LAMINATE; PL-01; RE: FINISH SCHEDULE
06.02	PLASTIC LAMINATE; PL-02 RE: FINISH SCHEDULE
09.03	FIELD PAINT, PNT-01 RE: FINISH SCHEDULE
09.05	ACCENT PAINT, PNT-03 RE: FINISH SCHEDULE
09.09	TILE TL-03, RE: FINISH SCHEDULE
09.13	RUBBER BASE, RB-01; RE: FINISH SCHEDULE
09.14	UPHOLSTERY, FB-01; RE: FINISH SCHEDULE
09.15	WALL GRAPHIC, LEVEL 5 FINISH
09.19	CEILING CLOUD, SEE DETAIL A5/AE531 & A3/AE531
09.20	RUBBER BASE, RB-02 RE: FINISH SCHEDULE
09.21	CARPET BASE, CB-01 RE: FINISH SCHEDULE
09.23	EPOXY PAINT, PNT-06, RE: FINISH SCHEDULE
09.24	RUBBER BASE, RB-03, RE: FINISH SCHEDULE
10.16	TACK BOARD DISPLAY, RE: ACCESSORY SCHEDULE
10.17	COAT HOOK, RE: ACCESSORY SCHEDULE
10.20	MARKER BOARD, MB-02; RE: FINISH SCHEDULE
11.06	TELEVISION MONITOR, RE: ACCESSORY SCHEDULE
11.07	REFRIGERATOR, RE: APPLIANCE SCHEDULE
11.09	COPY MACHINE, OWNER PROVIDED OWNER INSTALLED
11.10	MICROWAVE, RE: APPLIANCE SCHEDULE
12.01	QUARTZ, QTZ-01 RE: FINISH SCHEDULE
22.05	ADA DRINKING FOUNTAIN, RE: PLUMBING
22.12	UNDERMOUNT SINK, RE: PLUMBING
22.21	STEAM PIPES, RE: PLUMBING
22.22	WATER LINE, RE: PLUMBING
23.01	MECHANICAL EQUIPMENT RE: MECHANICAL
26.02	LIGHT FIXTURE, RE: ELECTRICAL
26.03	ELECTRICAL OUTLET, RE: ELECTRICAL
26.05	ELECTRICAL PANEL, RE: ELECTRICAL
26.06	EXIT SIGN, RE: ELECTRICAL
26.09	ELECTRICAL CONDUIT, RE: ELECTRICAL

NEW & EXISTING WALL LEGEND

- NEW CMU WALL
- EXISTING CMU WALL
- NEW CMU INFILL TO MATCH EXISTING CMU WALL

CASEWORK TAG KEY

REFER TO CASEWORK DESIGN SERIES (CDS) OF THE ARCHITECTURAL WOODWORK STANDARDS (AWS) FOR A FULL DESCRIPTION OF CASEWORK TYPES. SEE SHEET SERIES AE900 FOR CASEWORK DETAILS.

AWS STANDARD CASEWORK TYPE — 101M — DENOTES MODIFIED CASEWORK TYPE

Extra Shelf — DESCRIPTION OF CASEWORK MODIFICATION

method studio
360 west aspen avenue
salt lake city, utah 84101
801 532 4422

STATE OF IDAHO — KELLY BOYD MORAN — AR-985149 — LICENSED ARCHITECT
10-27-2020

project:
BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project#: 20.0220
byu idaho project#: 12005
date: october 27, 2020

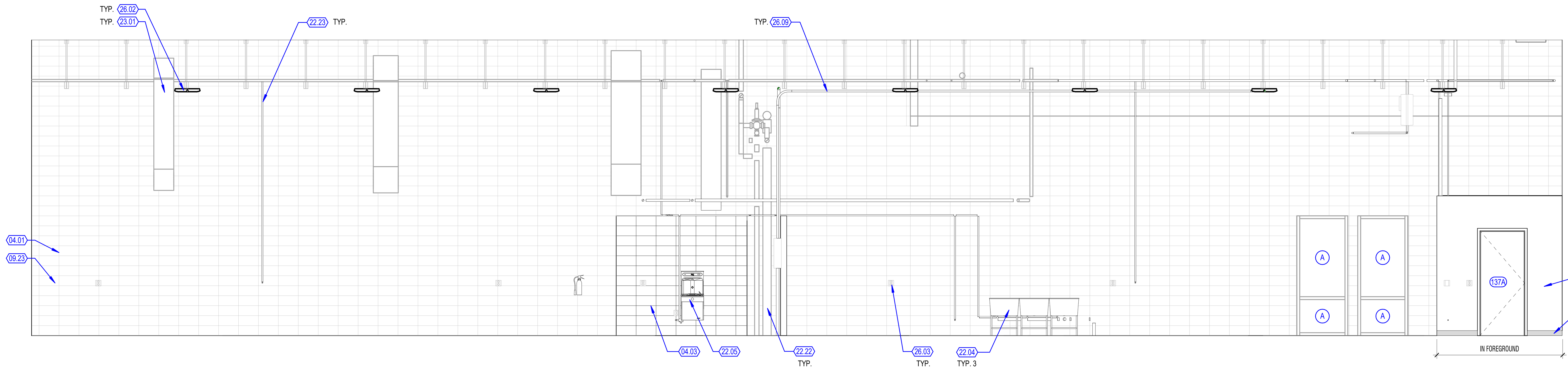
revisions :

3	Addendum #3	11/13/2020

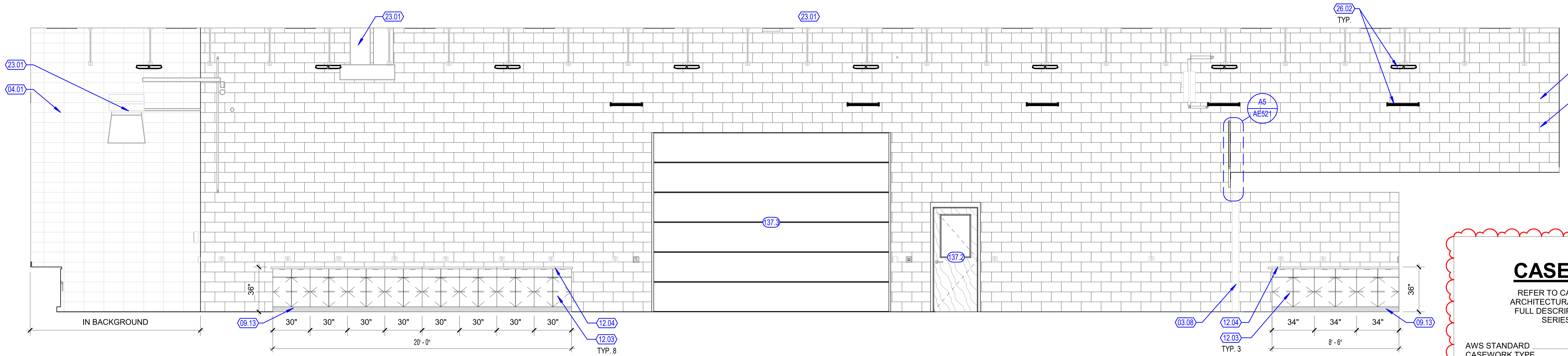
title:
Interior Elevations

sheet:
AE421

100% construction documents



E1 High Bay Shop - Elev 3
1/4" = 1'-0"



C1 High Bay Shop - Elev 1
1/4" = 1'-0"

CASEWORK TAG KEY

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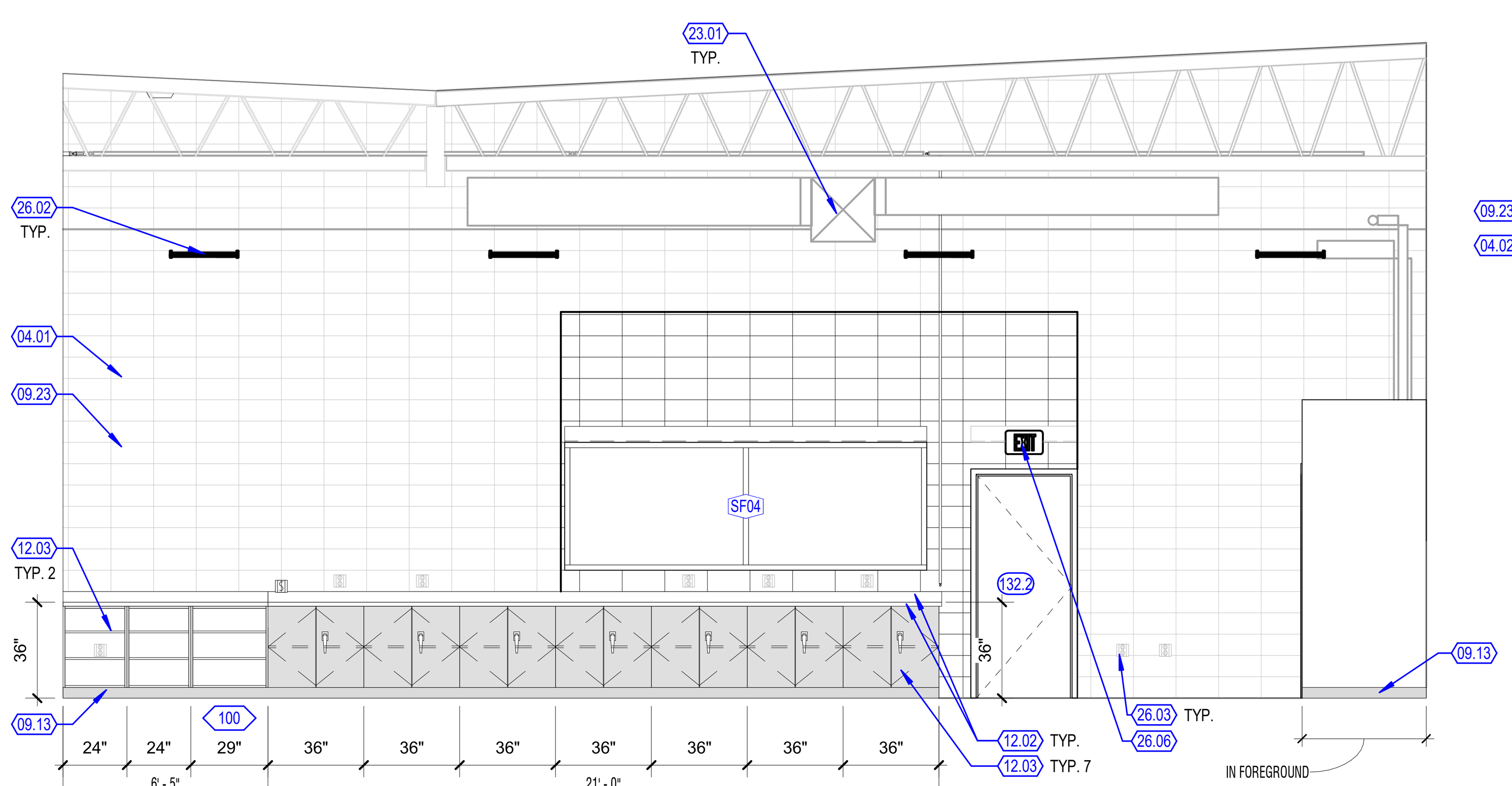
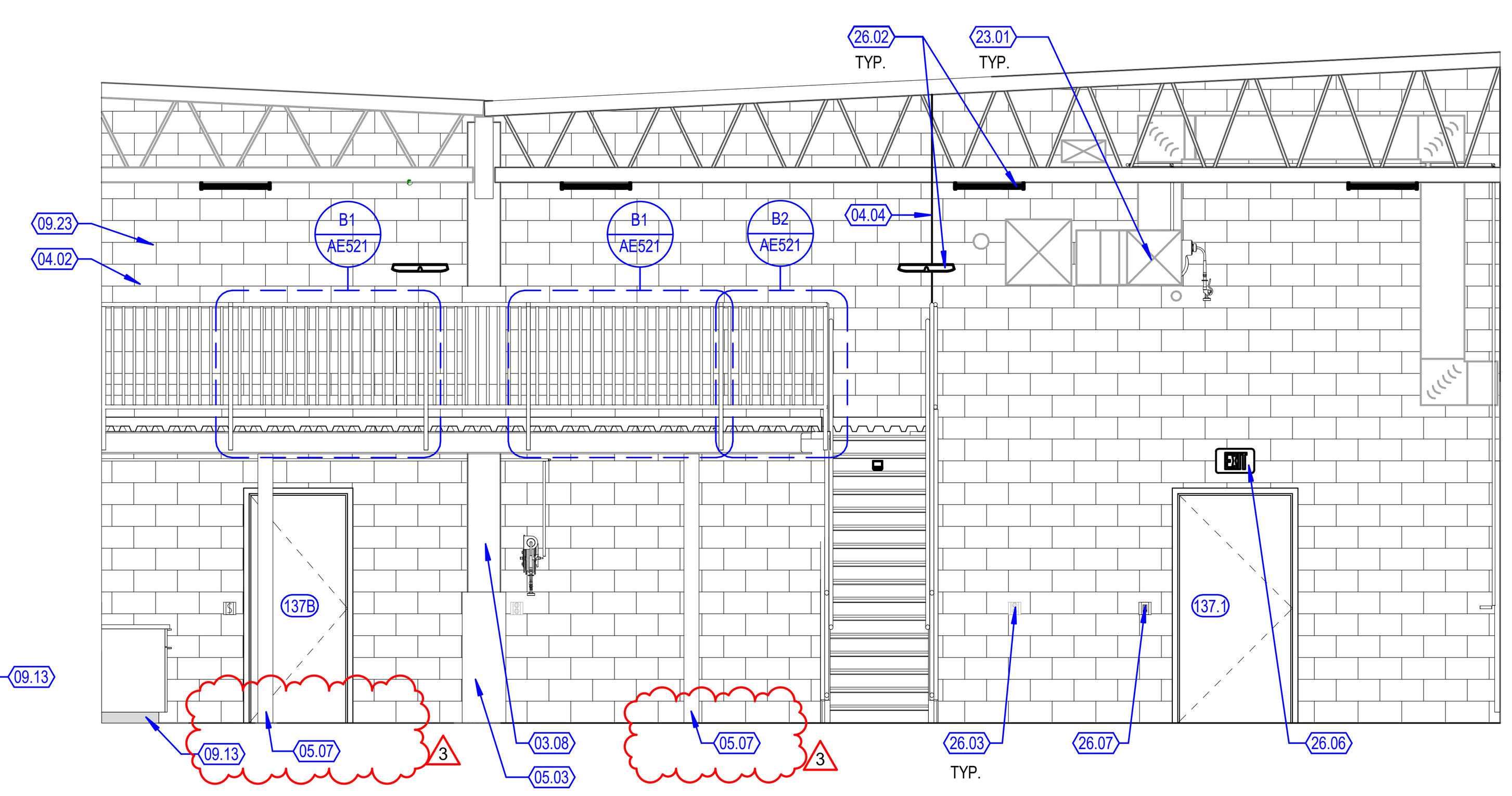
AWS STANDARD CASEWORK TYPE — 101M — DENOTES MODIFIED CASEWORK TYPE

Extra Shelf — DESCRIPTION OF CASEWORK MODIFICATION

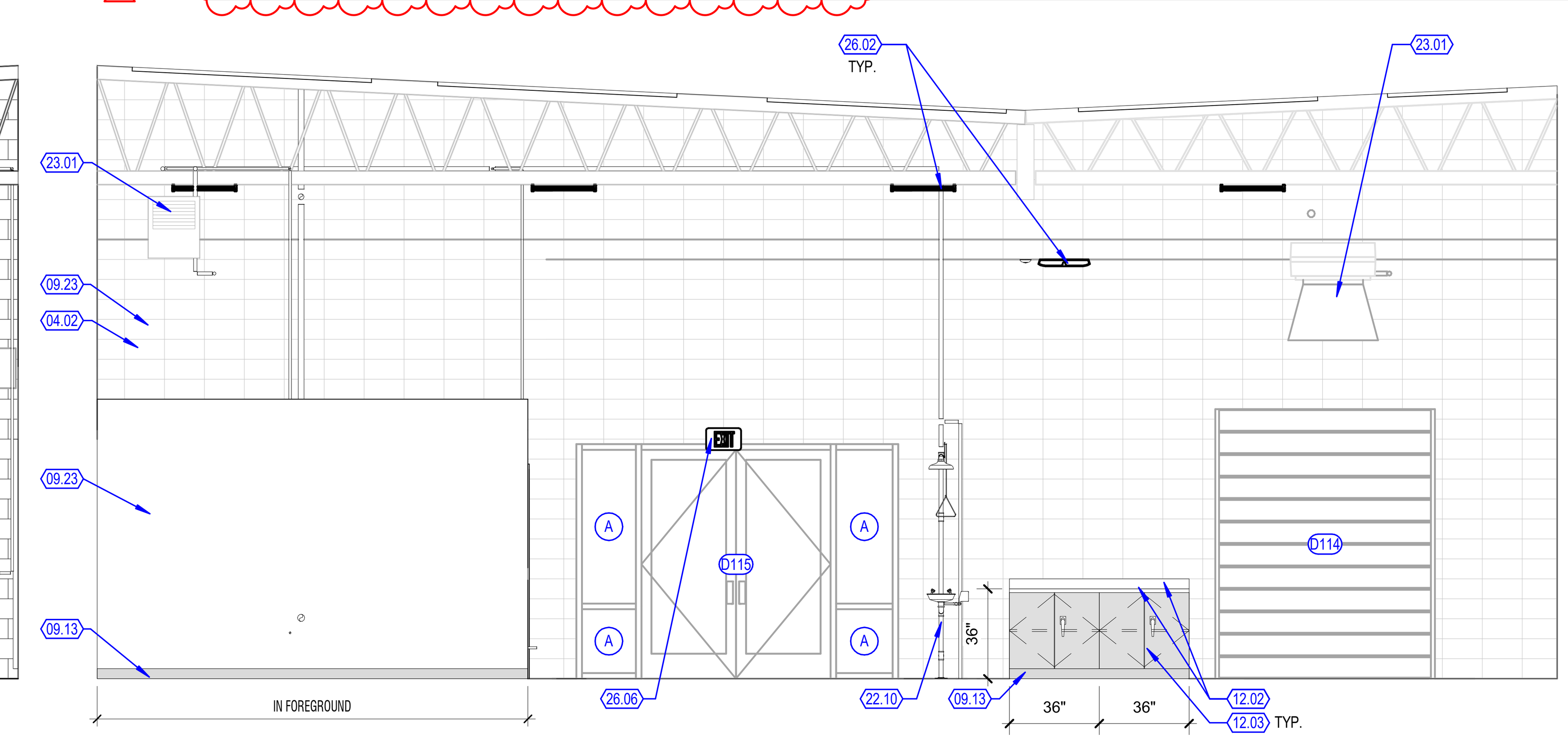
3



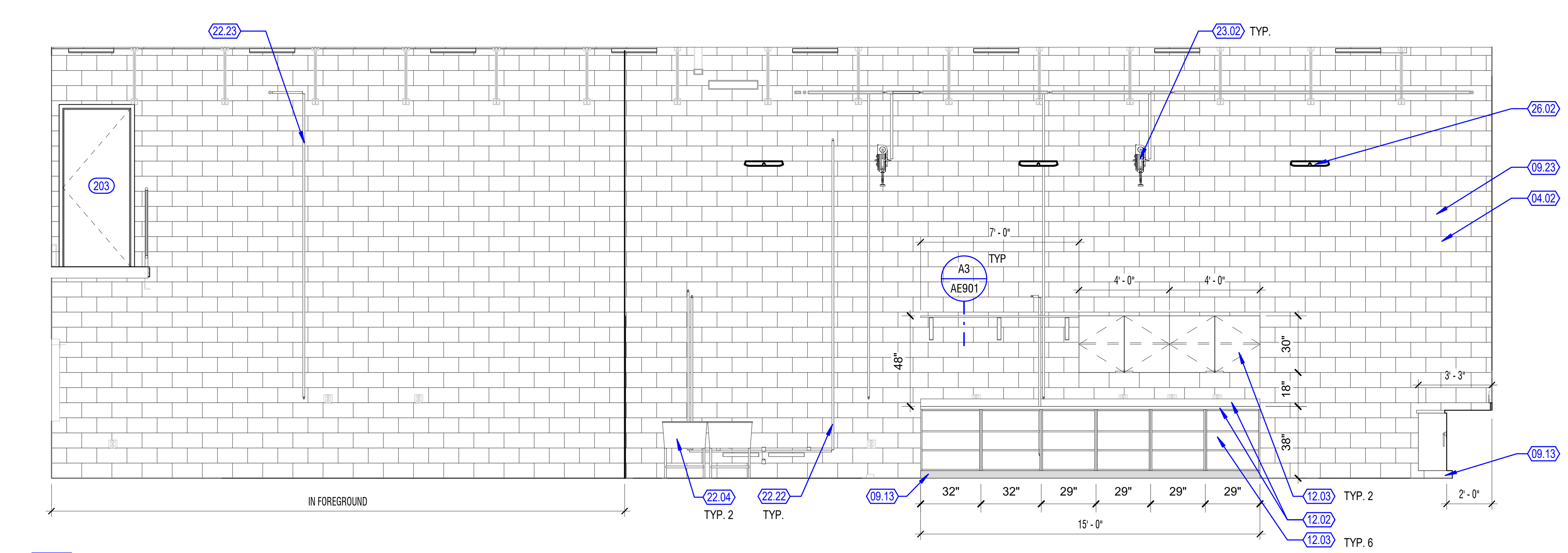
B1 CM/CE Lab - Elev 2
1/4" = 1'-0"



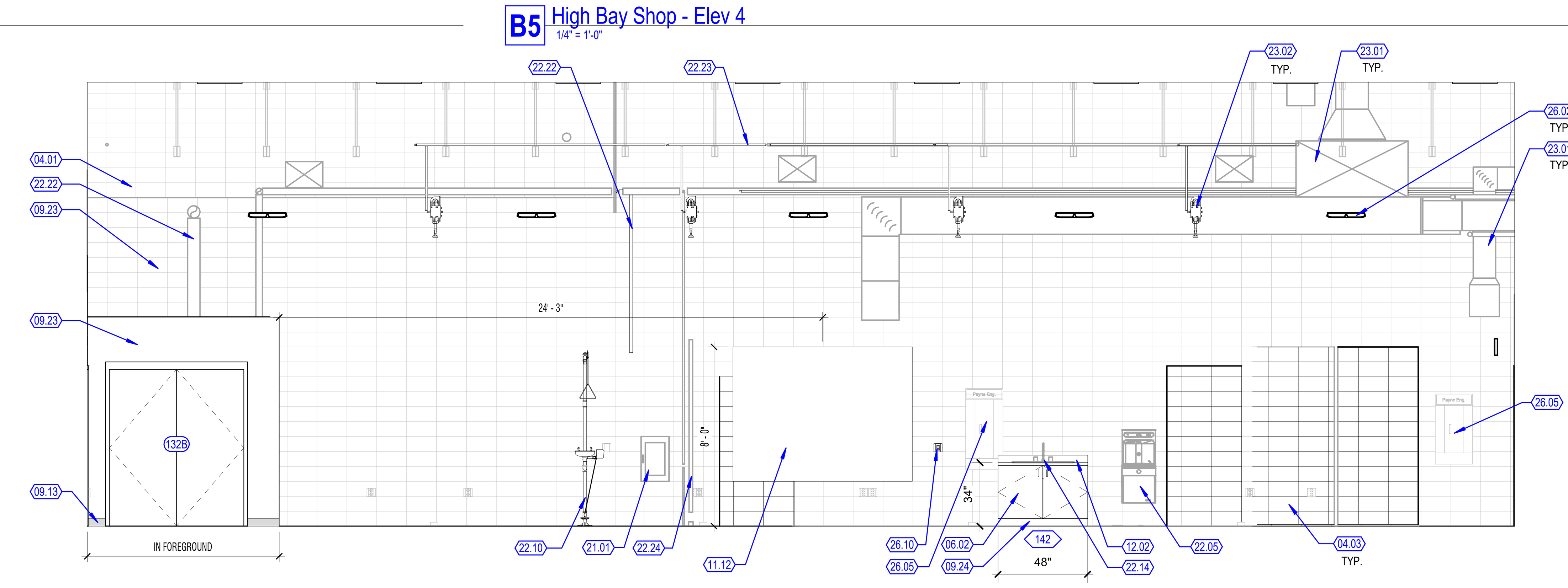
B3 High Bay Shop - Elev 2
1/4" = 1'-0"



B5 High Bay Shop - Elev 4
1/4" = 1'-0"



A1 CM/CE Lab - Elev 1
1/4" = 1'-0"



A4 CM/CE Lab - Elev 3
1/4" = 1'-0"

GENERAL NOTES - INT PLAN/ELEV

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2. DO NOT SCALE DRAWINGS
3. SEE SHEET GI003 FOR TYPICAL MOUNTING HEIGHTS. PROVIDE SOLID BLOCKING IN WALLS FOR ALL WALL-MOUNTED ITEMS WHETHER BLOCKING IS DEPICTED IN DRAWINGS OR NOT.
4. UPPER, LOWER, AND TALL MILLWORK CABINETS NOT TO EXCEED 36" IN WIDTH
5. UNLESS NOTED OTHERWISE, MATCH UPPER CABINET WIDTH DIMENSIONS TO BASE CABINETS - TYP.
6. ALL ELECTRICAL AND DATA OUTLETS ABOVE COUNTER TOPS SHOULD BE MOUNTED HORIZONTALLY
7. PROVIDE SAFETY INSULATION ON ALL EXPOSED SUPPLY WATER LINES AND WASTE LINES
8. PROVIDE ALUMINUM EDGE MOULDING @ ALL TILE TO H.M. DOOR TRANSITIONS
9. PROVIDE METAL TRIM AT ALL OUTSIDE EDGES ON TILE WALLS. SEE: FINISH SCHEDULE
10. PROVIDE METAL TRIM AT ALL TILE TO FLOOR TRANSITIONS. SEE: FINISH SCHEDULE
11. ALL EXPOSED STEEL COLUMNS TO BE PAINTED TO MATCH ADJACENT WALL
12. ALL MILLWORK INTERIOR FINISH TO BE WHITE MELAMINE, UNLESS NOTED OTHERWISE
13. COUNTERTOP EDGE PROFILES TO BE SQUARE EDGE. IF SHOWN IN ELEVATION, PROVIDE 4" BACKSPLASH
14. ALL WOOD WALLCOVERING GRAIN TO RUN VERTICALLY, UNLESS NOTED OTHERWISE
15. CALLED OUT RESTROOM ACCESSORIES TO BE INSTALLED AT EVERY STALL
16. PAINT CMU WALLS CLEANLY TO GROUND

KEYED NOTES

03.08 EXISTING CONCRETE COLUMN
04.01 EXISTING CMU WALL
04.02 NEW CMU WALL - MATCH EXISTING
04.03 INFILL WITH SALVAGED CMU - MATCH ADJACENT (WHERE APPLIES), RE: DIMENSION PLANS AND WALL TYPES
04.04 CMU CONTROL JOINT
05.03 COLUMN WRAP PROTECTION - SENTRY CONCRETE WRAP CW0244-48
05.07 NEW COLUMN, PRIME IN FACTORY AND PAINT IN FIELD. COLOR TO BE SELECTED BY OWNER AND ARCHITECT, RE: STRUCT
06.02 PLASTIC LAMINATE; PL-02 RE: FINISH SCHEDULE
09.13 RUBBER BASE, RB-01; RE: FINISH SCHEDULE
09.23 EPOXY PAINT, PNT-06, RE: FINISH SCHEDULE
09.24 RUBBER BASE, RB-03, RE: FINISH SCHEDULE
11.12 EXISTING PROJECTOR SCREEN, RE: EQUIPMENT SCHEDULE
12.02 STAINLESS STEEL COUNTERTOP, ST-01; RE: FINISH SCHEDULE
12.03 EXISTING CASEWORK
12.04 EXISTING BUTCHER BLOCK COUNTERTOPS
21.01 EXISTING FIRE EXTINGUISHER CABINET
22.04 UTILITY SINK, RE: PLUMBING
22.05 ADA DRINKING FOUNTAIN, RE: PLUMBING
22.10 EMERGENCY EYEWASH STATION, RE: PLUMBING
22.14 EXISTING SINK
22.22 WATER LINE, RE: PLUMBING
22.23 AIR LINE, RE: PLUMBING
22.24 VENT PIPING, RE: PLUMBING
23.01 MECHANICAL EQUIPMENT RE: MECHANICAL
23.02 AIR HOSE, RE: MECHANICAL
26.02 LIGHT FIXTURE, RE: ELECTRICAL
26.03 ELECTRICAL OUTLET, RE: ELECTRICAL
26.05 ELECTRICAL PANEL, RE: ELECTRICAL
26.06 EXIT SIGN, RE: ELECTRICAL
26.07 CARD READER, RE: ELECTRICAL
26.09 ELECTRICAL CONDUIT, RE: ELECTRICAL
26.1[illegible] LIGHT SWITCH, RE: ELECTRICAL

NEW & EXISTING WALL LEGEND

	NEW CMU WALL
	EXISTING CMU WALL
	NEW CMU INFILL TO MATCH EXISTING CMU WALL

method studio

360 west aspen avenue
salt lake city, utah 84101
801 532 4422

STATE OF IDAHO — KELLY BOYD MORGAN — AR-985149 — LICENSED ARCHITECT
10-27-2020

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project#: 20.0220
byu idaho project#: 12005
date: october 27, 2020

revisions :

3	Addendum #3	11/13/2020

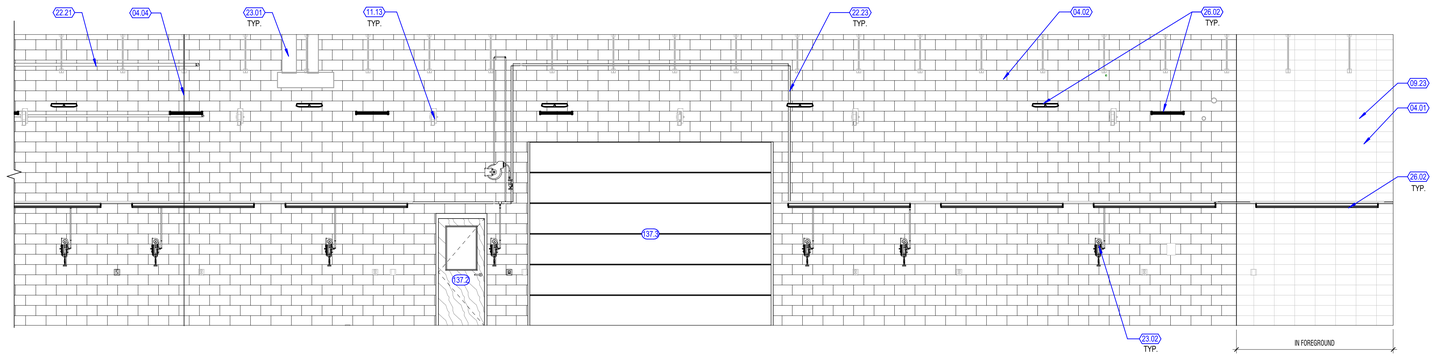
title:

Interior Elevations

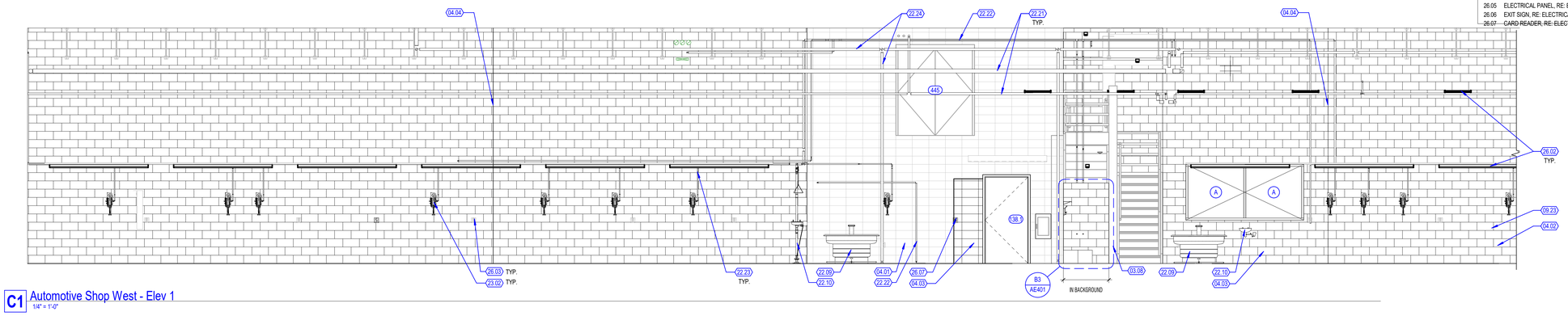
sheet:

AE422

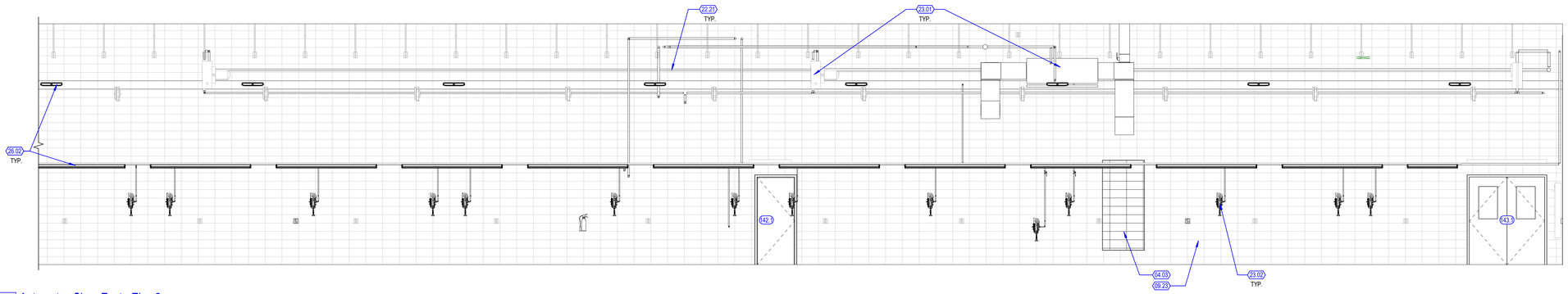
100% construction documents



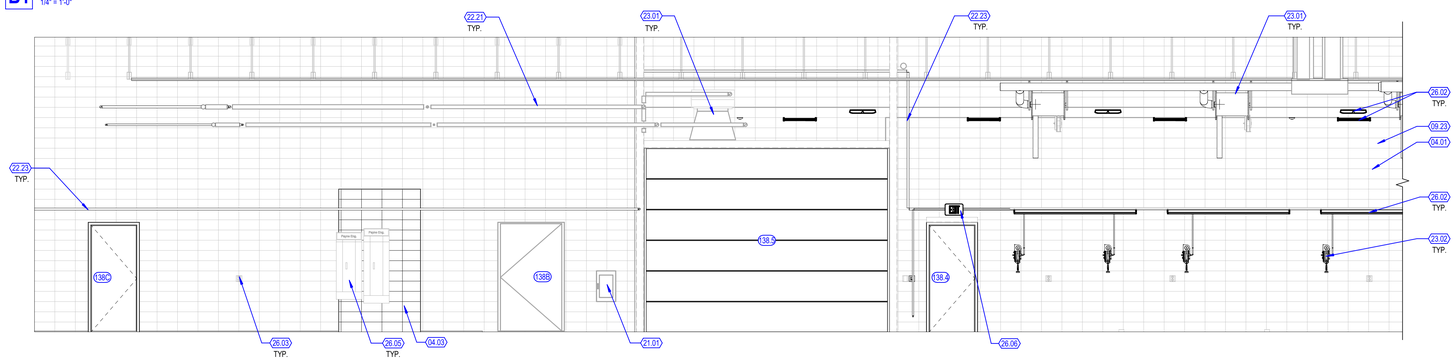
D1 Automotive Shop West - Elev 2
1/4" = 1'-0"



C1 Automotive Shop West - Elev 1
1/4" = 1'-0"



B1 Automotve Shop East - Elev 2
1/4" = 1'-0"



A1 Automotive Shop East - Elev 1
1/4" = 1'-0"

GENERAL NOTES - INT PLAN/ELEV

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2 DO NOT SCALE DRAWINGS
3 SEE SHEET GI003 FOR TYPICAL MOUNTING HEIGHTS. PROVIDE SOLID BLOCKING IN WALLS FOR ALL WALL-MOUNTED ITEMS WHETHER BLOCKING IS DEPICTED IN DRAWINGS OR NOT.
4 UPPER, LOWER, AND TALL MILLWORK CABINETS NOT TO EXCEED 36" IN WIDTH
5 UNLESS NOTED OTHERWISE, MATCH UPPER CABINET WIDTH DIMENSIONS TO BASE CABINETS - TYP.
6 ALL ELECTRICAL AND DATA OUTLETS ABOVE COUNTER TOPS SHOULD BE MOUNTED HORIZONTALLY
7 PROVIDE SAFETY INSULATION ON ALL EXPOSED SUPPLY WATER LINES AND WASTE LINES
8 PROVIDE ALUMINUM EDGE MOULDING @ ALL TILE TO H.M. DOOR TRANSITIONS
9 PROVIDE METAL TRIM AT ALL OUTSIDE EDGES ON TILE WALLS. SEE: FINISH SCHEDULE
10 PROVIDE METAL TRIM AT ALL TILE TO FLOOR TRANSITIONS. SEE: FINISH SCHEDULE
11 ALL EXPOSED STEEL COLUMNS TO BE PAINTED TO MATCH ADJACENT WALL
12 ALL MILLWORK INTERIOR FINISH TO BE WHITE MELAMINE, UNLESS NOTED OTHERWISE
13 COUNTERTOP EDGE PROFILES TO BE SQUARE EDGE. IF SHOWN IN ELEVATION, PROVIDE 4" BACKSPLASH
14 ALL WOOD WALLCOVERING GRAIN TO RUN VERTICALLY, UNLESS NOTED OTHERWISE
15 CALLED OUT RESTROOM ACCESSORIES TO BE INSTALLED AT EVERY STALL
16 PAINT CMU WALLS CLEANLY TO GROUND

KEYED NOTES

03.08 EXISTING CONCRETE COLUMN
04.01 EXISTING CMU WALL
04.02 NEW CMU WALL - MATCH EXISTING
04.03 INFILL WITH SALVAGED CMU - MATCH ADJACENT (WHERE APPLIES), RE: DIMENSION PLANS AND WALL TYPES
04.04 CMU CONTROL JOINT
09.23 EPOXY PAINT, PNT-06, RE: FINISH SCHEDULE
11.13 EXISTING CORD REEL
21.01 EXISTING FIRE EXTINGUISHER CABINET
22.09 HAND WASH SINK, RE: PLUMBING
22.10 EMERGENCY EYEWASH STATION, RE: PLUMBING
22.21 STEAM PIPES, RE: PLUMBING
22.22 WATER LINE, RE: PLUMBING
22.23 AIR LINE, RE: PLUMBING
22.24 VENT PIPING, RE: PLUMBING
23.01 MECHANICAL EQUIPMENT RE: MECHANICAL
23.02 AIR HOSE, RE: MECHANICAL
26.02 LIGHT FIXTURE, RE: ELECTRICAL
26.03 ELECTRICAL OUTLET, RE: ELECTRICAL
26.05 ELECTRICAL PANEL, RE: ELECTRICAL
26.06 EXIT SIGN, RE: ELECTRICAL
26.07 CARD READER, RE: ELECTRICAL

NEW & EXISTING WALL LEGEND

NEW CMU WALL
EXISTING CMU WALL
NEW CMU INFILL TO MATCH EXISTING CMU WALL

CASEWORK TAG KEY

REFER TO CASEWORK DESIGN SERIES (CDS) OF THE ARCHITECTURAL WOODWORK STANDARDS (AWS) FOR A FULL DESCRIPTION OF CASEWORK TYPES. SEE SHEET SERIES AE900 FOR CASEWORK DETAILS.

3

AWS STANDARD CASEWORK TYPE
101M
Extra Shelf
DENOTES MODIFIED CASEWORK TYPE
DESCRIPTION OF CASEWORK MODIFICATION

method studio
360 west aspen avenue
salt lake city, utah 84101
801 532 4422

STATE OF IDAHO · SCOTT BOYD MUIR · LICENSED ARCHITECT
10-27-2020

project:
BYUI Engineering Technology Center (ETC)

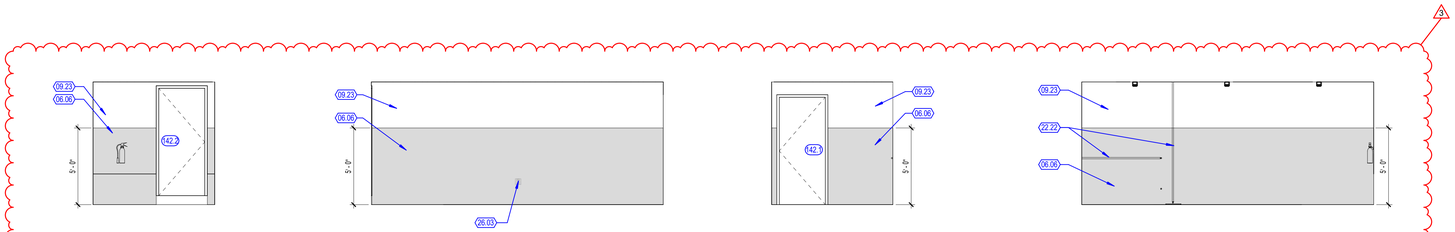
525 South Center Street
Rexburg, ID 83440

project#: 20.0220
byu idaho project#: 12005
date: october 27, 2020

revisions :
3 Addendum #3 11/13/2020

title:
Interior Elevations

sheet:
AE423
100% construction documents

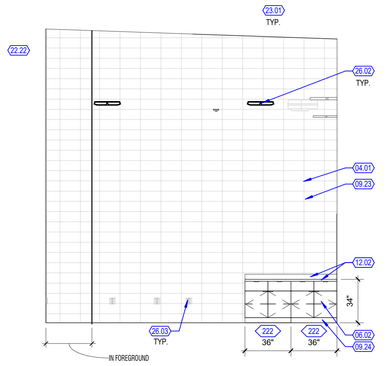


C1 Auto Storage - Elev 1 — 1/4" = 1'-0"

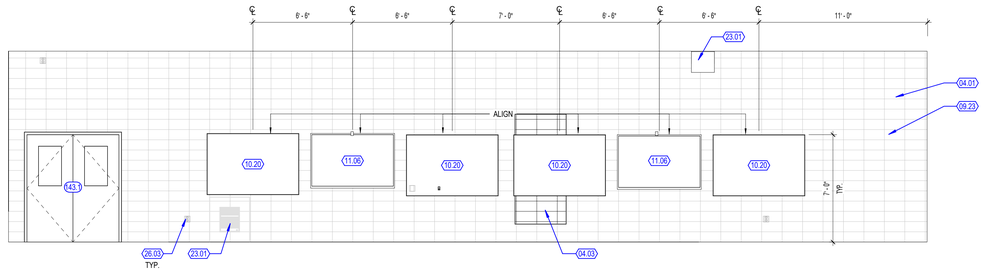
C2 Auto Storage - Elev 2 — 1/4" = 1'-0"

C3 Auto Storage - Elev 3 — 1/4" = 1'-0"

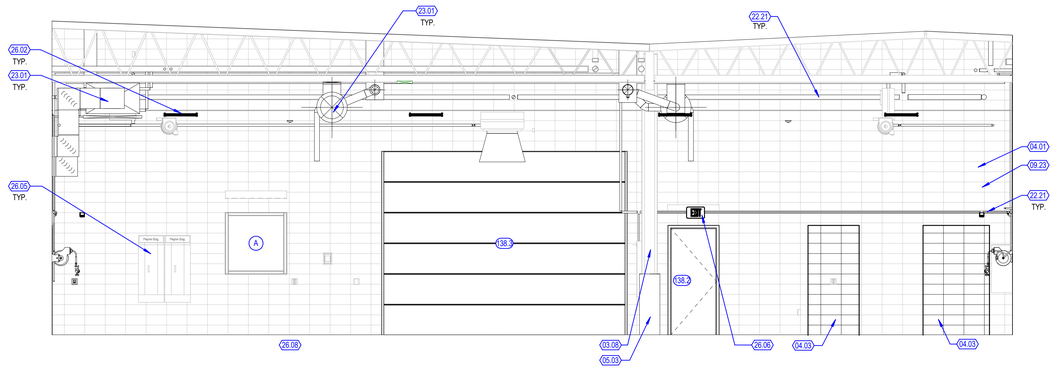
C4 Auto Storage - Elev 4 — 1/4" = 1'-0"



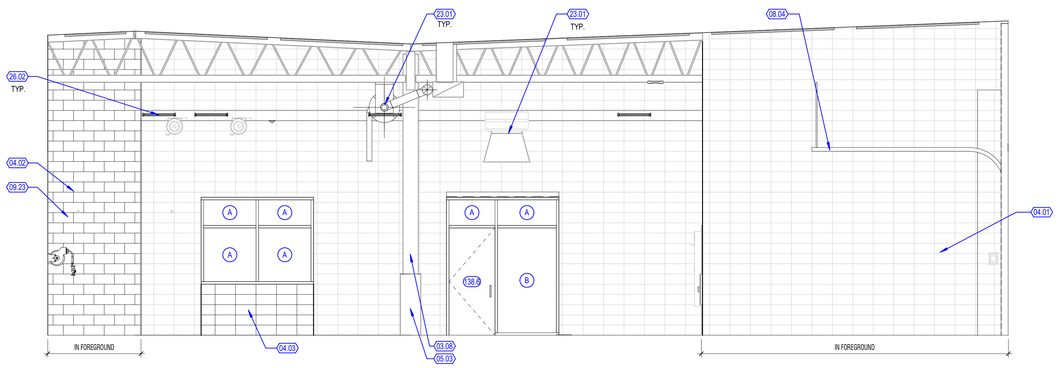
B1 Auto Tool Room - Elev 2 — 1/4" = 1'-0"



B2 Engines Lab - Elev 1 — 1/4" = 1'-0"



A1 Automotive Shop - South — 1/4" = 1'-0"



A4 Automotive Shop - North — 1/4" = 1'-0"

GENERAL NOTES - INT PLAN/ELEV

1. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS AND SHALL REPORT TO THE ARCHITECT ANY UNKNOWN CONDITIONS, ERRORS, OR CONFLICTS IN THE DRAWINGS BEFORE BEGINNING WORK
2. DO NOT SCALE DRAWINGS
3. SEE SHEET G1003 FOR TYPICAL MOUNTING HEIGHTS. PROVIDE SOLID BLOCKING IN WALLS FOR ALL WALL-MOUNTED ITEMS WHETHER BLOCKING IS DEPICTED IN DRAWINGS OR NOT.
4. UPPER, LOWER, AND TALL MILLWORK CABINETS NOT TO EXCEED 36" IN WIDTH
5. UNLESS NOTED OTHERWISE, MATCH UPPER CABINET WIDTH DIMENSIONS TO BASE CABINETS - TYP.
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KEYED NOTES

03.08 EXISTING CONCRETE COLUMN
04.01 EXISTING CMU WALL
04.02 NEW CMU WALL - MATCH EXISTING
04.03 INFILL WITH SALVAGED CMU - MATCH ADJACENT (WHERE APPLIES), RE: DIMENSION PLANS AND WALL TYPES
05.03 COLUMN WRAP PROTECTION - SENTRY CONCRETE WRAP CW0244-48
06.02 PLASTIC LAMINATE; PL-02 RE: FINISH SCHEDULE
06.06 FIBER-GLASS REINFORCED PANEL, FRP-01; RE: FINISH SCHEDULE
08.04 OVER HEAD DOOR TRACK
09.23 EPOXY PAINT, ENT-06, RE: FINISH SCHEDULE
09.24 RUBBER BASE, RB-03, RE: FINISH SCHEDULE
10.20 MARKER BOARD, MB-02, RE: FINISH SCHEDULE
11.06 TELEVISION MONITOR; RE: ACCESSORY SCHEDULE
12.02 STAINLESS STEEL COUNTERTOP, ST-01; RE: FINISH SCHEDULE
22.21 STEAM PIPES, RE: PLUMBING
22.22 WATER LINE, RE: PLUMBING
23.01 MECHANICAL EQUIPMENT RE: MECHANICAL
23.02 AIR HOSE, RE: MECHANICAL
26.02 LIGHT FIXTURE, RE: ELECTRICAL
26.03 ELECTRICAL OUTLET, RE: ELECTRICAL
26.05 ELECTRICAL PANEL, RE: ELECTRICAL
26.06 EXIT SIGN, RE: ELECTRICAL

NEW & EXISTING WALL LEGEND

	NEW CMU WALL
	EXISTING CMU WALL
	NEW CMU INFILL TO MATCH EXISTING CMU WALL

CASEWORK TAG KEY

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method studio
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salt lake city, utah 84101
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10-27-2020

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byu idaho project#: 12005
date: october 27, 2020

revisions :

3 Addendum #3 11/13/2020

title:

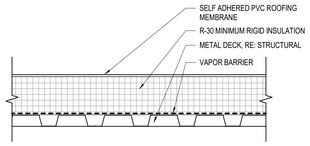
Interior Elevation

sheet:

AE424

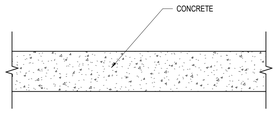
100% construction documents

ROOF ASSEMBLIES

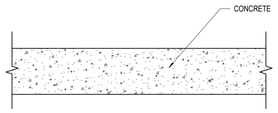


R1 5" Rigid Insulation on 1 1/2" Metal Deck

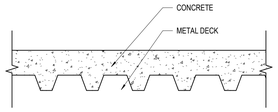
FLOOR ASSEMBLIES



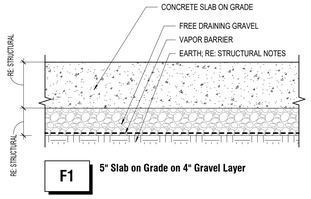
F4 Concrete (5 1/4" Total Thickness), re: structural



F2 6" or 8" Concrete, re: structural



F3 Concrete on 1 1/2" Metal Deck (5 1/4" Total Thickness)



F1 5" Slab on Grade on 4" Gravel Layer

GENERAL NOTES - WALL TYPES

1. REFER TO AE100 SHEET SERIES FOR LOCATION OF WALL TYPES.

2. REFER TO SCHEDULES & DETAILS FOR FINISHES.

3. "LINE OF STRUCTURE" AS SHOWN AT THE HEAD CONDITIONS OF EACH WALL TYPE IS DIAGRAMMATIC ONLY AND DOES NOT INDICATE THE EXACT CONSTRUCTION CONDITION. FIRE RATED WALLS ARE TO TERMINATE AT STRUCTURAL MEMBERS WITH A FIRE RESISTANT RATING. WHERE REQUIRED APPROPRIATE FRAMING AND GYP BOARD IS TO BE INSTALLED AND OFFSET AROUND STRUCTURAL MEMBERS OR OTHER OBSTRUCTIONS SUCH AS PIPING OR DUCTWORK, TO MAINTAIN THE FIRE RESISTANCE RATING. NON-RATED WALLS THAT CONTINUE TO STRUCTURE ARE TO TERMINATE AT PROPER LOCATIONS TO MAINTAIN THE INTENT OF THE CONTINUOUS PLANE OF ONE LAYER OF GYP BOARD AS A NOISE, SMOKE OR OTHER TYPE OF BARRIER. SEE HEAD AND SILL DETAILS FOR MORE INFORMATION.

4. ALL RATED WALLS SHALL BE CONSTRUCTED FIRST AND HAVE CONTINUITY PRIORITY OVER NON-RATED WALLS. SECONDARY, OR NON-RATED WALLS, ARE TO ABUTT, BUT NOT PENETRATE THE RATED WALLS.

5. FIRESTOPPING TO BE PROVIDED AT ALL PENETRATIONS THROUGH RATED WALLS AS SPECIFIED. COORDINATE WITH CODE PLANS.

6. APPROPRIATE SUBMITTAL INFORMATION MUST BE PROVIDED TO SUBSTANTIATE THAT THE MATERIALS AND ASSEMBLY USED BY THE CONTRACTOR HAVE BEEN TESTED BY A RECOGNIZED TESTING AGENCY TO MEET THE FIRE RESISTANCE RATING SCHEDULED ON THESE WALL TYPES.

7. ALL GYPSUM WALL BOARD MUST BE MOISTURE RESISTANT AT THE FOLLOWING LOCATIONS:
   a. TOILET ROOMS
   b. WET WALLS
   c. SHOWERS
   d. JANITOR'S CLOSETS

8. SOUND ATTENUATION BLANKETS SHALL EXTEND THE FULL HEIGHT OF THE WALLS.

9. SPACING OF THE METAL STUDS HAS NOT BEEN INDICATED ON THE WALL TYPES OR DETAILS. STUD SPACING IS TO BE DETERMINED BY THE HEIGHT OF THE PARTITION AS SHOWN IN THE TABLE BELOW. EACH STUD GOING TO STRUCTURE AND EXCEEDING ALLOWABLE HEIGHTS SHALL BE BRACED 45 DEGREES DIAGONALLY 12" ABOVE CEILING WITH EQUAL SIZE METAL STUDS. THIS TABLE IS TO BE USED FOR THE INTERIOR WALL TYPES ONLY AND DOES NOT APPLY TO EXTERIOR STUDS. STUDS IN DOUBLE STUD WALL CONFIGURATIONS ARE TO BE EVENLY STAGGERED RELATIVE TO THE ADJACENT STUD LAYOUT.

11. REFER TO INTERIOR DETAILS FOR ADDITIONAL INFORMATION.

12. UL DESIGN NUMBERS REFER TO FIRE RESISTANCE IN MOST CURRENT EDITION OF THE UL DIRECTORY.

13. IN PARTITIONS WITHOUT GYP BOARD ON BOTH SIDES, SUPPORT INSULATION WITH WIRE MESH TO STRUCTURE .

14. MAINTAIN 1/2" SPACE BETWEEN FLOOR SLAB AND BOTTOM OF GYP BOARD ON ALL WALLS.

15. STOP STUD 1" BELOW METAL RUNNER (TOP TRACK) TO ALLOW FOR VERTICAL EXPANSION; DO NOT ATTACH STUDS OR GYP BOARD TO TOP TRACK.

16. SEE STRUCTURAL DRAWINGS FOR EXTERIOR METAL STUD WALL SPACING, GUAGES, BRACING, AND CONNECTIONS.

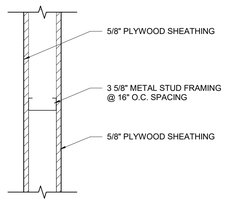
17. PROVIDE NEOPRENE FLASHING BETWEEN ALL DISSIMILAR METALS, TYPICAL.

18. EXTERIOR SILL PLATES OR TRACKS TO BE SET IN 3 DISTINCT BEADS OF CONTINUOUS SEALANT.

FACING ON SIDES OF STUDS	STUD SPAC'G ON CENTER	STUD DEPTH 2 1/2" MAX. HT.	STUD DEPTH 3 5/8" MAX. HT.	STUD DEPTH 6" MAX. HT.
1 LAYER 5/8" GYP BD - 1 SIDE ONLY	16 24	11'-0" 9'-9"	14'-6" 12'-9"	14'-6" 12'-9"
1 LAYER 5/8" GYP BD - EACH SIDE	16 24	12'-0" 10'-9"	16'-0" 13'-6"	16'-0" 13'-6"
2 LAYER 5/8" GYP BD - EACH SIDE	16 24		16'-9" 13'-6"	20'-0" 15'-0"

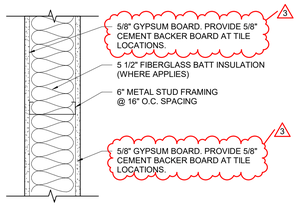
- HEIGHT IS DISTANCE FROM THE FLOOR TO THE STRUCTURE, NOT FLOOR TO CEILING
- BRACING AT MIDPIOINT PREQUIRED FOR ALL WALLS OVER 12'-0" HIGH

PARTITION WALL ASSEMBLIES

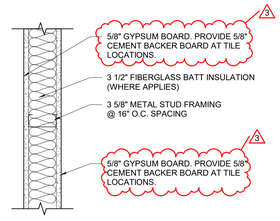


PS3d - PLYWOOD ONLY ON ONE SIDE

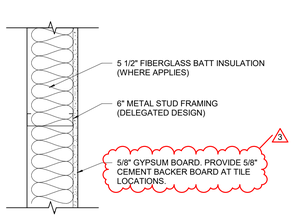
PS3c FIRE RATING: / FIRE TEST: / SOUND RATING: / SOUND TEST:



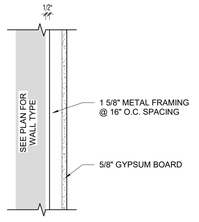
PS6b FIRE RATING: / FIRE TEST: / SOUND RATING: / SOUND TEST:



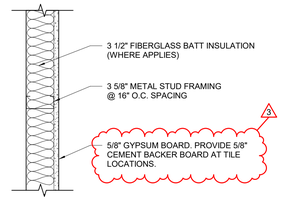
PS3b FIRE RATING: 1 HR / FIRE TEST: UL263 / SOUND RATING: 45 / SOUND TEST:



PS6a FIRE RATING: / FIRE TEST: / SOUND RATING: / SOUND TEST:



PS2a FIRE RATING: / FIRE TEST: / SOUND RATING: / SOUND TEST:



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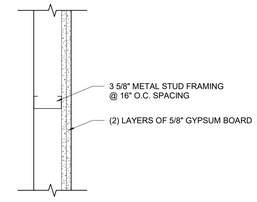
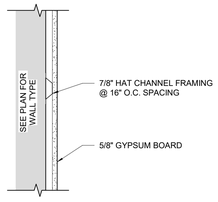
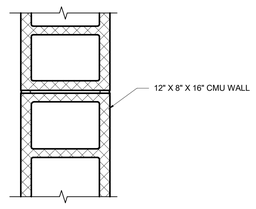


PS3e FIRE RATING: 1 HR / FIRE TEST: UL V497 / SOUND RATING: / SOUND TEST:

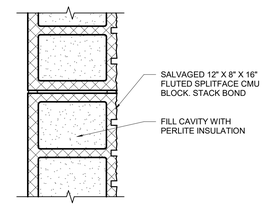


PS1a FIRE RATING: / FIRE TEST: / SOUND RATING: / SOUND TEST:

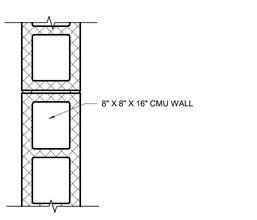
CMU WALL ASSEMBLIES



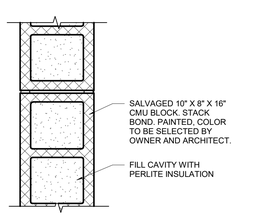
PM12 FIRE RATING: / FIRE TEST: / SOUND RATING: / SOUND TEST:



S1 FIRE RATING: / FIRE TEST: / SOUND RATING: / SOUND TEST:

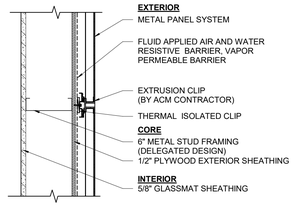


PM8 FIRE RATING: / FIRE TEST: / SOUND RATING: / SOUND TEST:

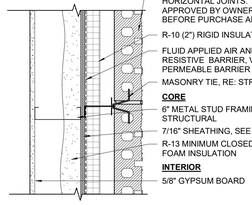


S2 FIRE RATING: / FIRE TEST: / SOUND RATING: / SOUND TEST:

EXTERIOR WALL ASSEMBLIES



ES6b FIRE RATING: / FIRE TEST: / SOUND RATING: / SOUND TEST:



ES6a FIRE RATING: / FIRE TEST: / SOUND RATING: / SOUND TEST:

GENERAL NOTES - HORIZONTAL ASSEMBLIES

A. FIRESTOPPING TO BE PROVIDED AT ALL PENETRATIONS THROUGH RATED ROOFS AND FLOORS AS SPECIFIED. COORDINATE WITH CODE PLANS

B. APPROPRIATE SUBMITTAL INFORMATION MUST BE PROVIDED TO SUBSTANTIATE THAT THE MATERIALS AND ASSEMBLY USED BY THE CONTRACTOR HAVE BEEN TESTED BY A RECOGNIZED TESTING AGENCY TO MEET THE FIRE RESISTANCE RATING SCHEDULED ON THESE ROOF AND FLOOR TYPES

C. REFER TO AE300 SERIES FOR BUILDING AND WALL SECTIONS

D. UL DESIGN NUMBERS REFER TO FIRE RESISTANCE IN MOST CURRENT EDITION OF THE UL DIRECTORY

E. MAINTAIN 1/2" SPACE BETWEEN FLOOR SLAB AND BOTTOM OF GYP BOARD ON ALL WALLS

F. STOP STUD 1" BELOW METAL RUNNER (TOP TRACK) TO ALLOW FOR VERTICAL EXPANSION; DO NOT ATTACH STUDS OR GYP BOARD TO TOP TRACK.

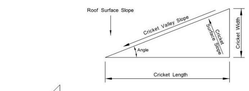
G. PROVIDE NEOPRENE FLASHING BETWEEN ALL DISSIMILAR METALS, TYPICAL

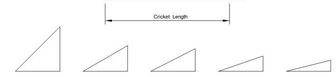
H. CRICKET AT ALL MECHANICAL ITEMS, SKYLIGHTS, AND ROOF HATCHES; 1/4" PER FOOT BACKSLOPE MINIMUM

I. PROVIDE ROOFTOP WALKING PAD PATHWAY TO ALL AIR HANDLER UNITS, EXHAUST FANS, AND SPLIT UNITS ON ROOF

CRICKET DESIGN REQUIREMENTS

LENGTH TO WIDTH RATIOS & VALLEY SLOPES





Roof Surface Slope (inches / ft.)	1 to 1 Length to Width Ratio		1.73 to 1 Length to Width Ratio		2 to 1 Length to Width Ratio		3 to 1 Length to Width Ratio		4 to 1 Length to Width Ratio	
	Cricket Angle	Valley Slope	Cricket Angle	Valley Slope	Cricket Angle	Valley Slope	Cricket Angle	Valley Slope	Cricket Angle	Valley Slope
1/16"/ft.	45 °	1/25"/ft.	30 °	1/32"/ft.	27 °	1/36"/ft.	19 °	1/51"/ft.	14 °	1/66"/ft.
1/8"/ft.	45 °	1/11"/ft.	30 °	1/16"/ft.	27 °	1/18"/ft.	19 °	2/51/ft.	14 °	1/33"/ft.
3/16"/ft.	45 °	2/13"/ft.	30 °	3/32"/ft.	27 °	1/12"/ft.	19 °	3/51"/ft.	14 °	3/66"/ft.
1/4"/ft.	45 °	2/11"/ft.	30 °	1/8"/ft.	27 °	1/9"/ft.	19 °	4/51"/ft.	14 °	2/33"/ft.
3/8"/ft.	45 °	4/10"/ft.	30 °	3/16"/ft.	27 °	1/6"/ft.	19 °	5/51"/ft.	14 °	1/11"/ft.
1/2"/ft.	45 °	4/11"/ft.	30 °	1/4"/ft.	27 °	2/9"/ft.	19 °	6/51"/ft.	14 °	4/33"/ft.
3/4"/ft.	45 °	8/10"/ft.	30 °	3/8"/ft.	27 °	1/3"/ft.	19 °	7/51"/ft.	14 °	2/11"/ft.
1"/ft.	45 °	8/11"/ft.	30 °	1/2"/ft.	27 °	4/9"/ft.	19 °	8/51"/ft.	14 °	8/33"/ft.

The above cricket valley slopes and angles are approximate and are intended to show the relationship between the length to width ratios and valley slopes. This information is not a recommendation, it is rather a factual representation to help industry professionals properly size crickets for commercial roofing.

The information clearly shows the need for wider crickets when using low "roof surface slopes" in order to achieve adequate valley slopes. Projects that utilize the same cricket width all over the roof will have valley slopes that vary considerably. While this approach may be easier to install, it does not achieve consistent drainage.

The same length to width ratio should not be used for different roof surface slopes without first realizing the effect on the valley slope. For example, a cricket with a length to width ratio of 4 to 1 installed on 1/4"/ft. roof surface slope has a valley slope of approx. 2/33"/ft.(approx. 1/16"/ft.). The same cricket installed on 1/8"/ft. roof surface slope has a valley slope of approx. 1/33"/ft. This is why each unique roof surface slope should have its own unique length to width ratio for crickets.

One final point, increasing the cricket surface slope has absolutely no effect on the valley slope.

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STATE OF IDAHO · SCOTT BOYD MAY · 15096 · LICENSED ARCHITECT
10-27-2020

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project#: 20.0220
byuidaho project#: 12005
date: october 27, 2020

revisions :

3	Addendum #3	11/13/2020

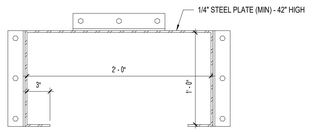
title:

Wall Types & Horizontal Assemblies

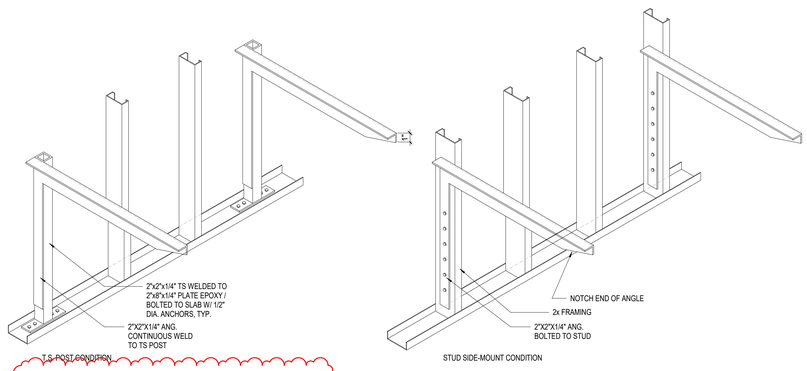
sheet:

AE501

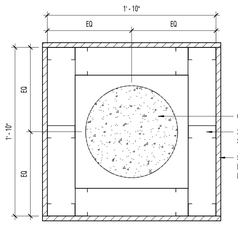
100% construction documents



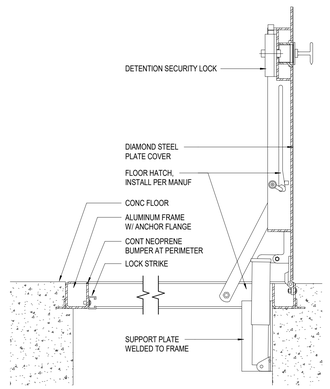
E1 Steel Downspout Protector
1 1/2" = 1'-0"



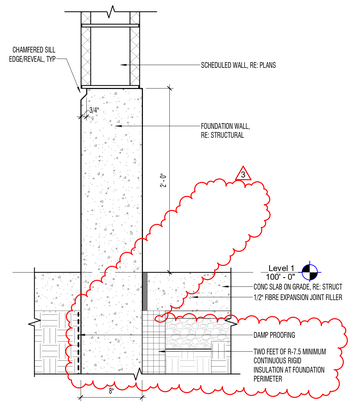
D1 Hidden Support Bracket @ Restroom Countertops
1" = 1'-0"



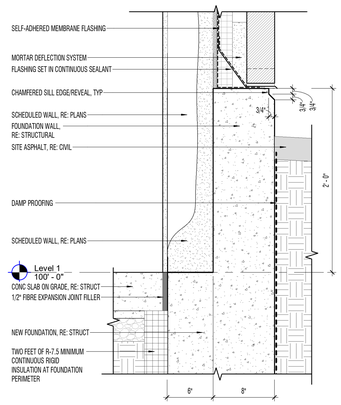
D3 Typical Column Wrap / Framing
1 1/2" = 1'-0"



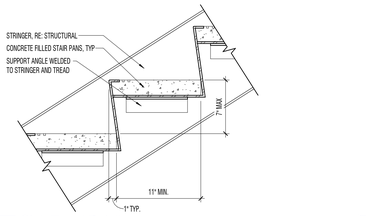
D4 Floor Access Hatch
1 1/2" = 1'-0"



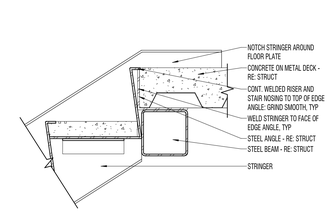
D5 Slab Edge at Exterior Storage
1 1/2" = 1'-0"



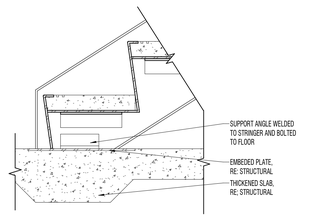
D6 Slab Edge at Engines Lab
1 1/2" = 1'-0"



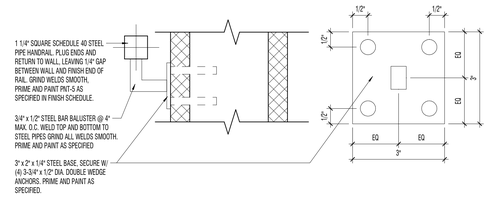
C1 Stair Tread Detail
1 1/2" = 1'-0"



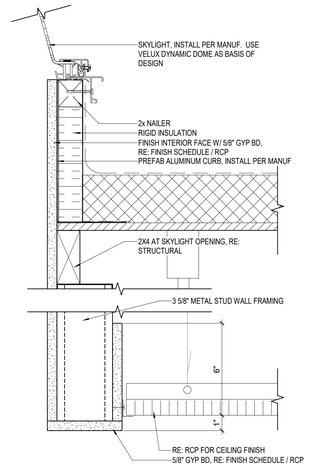
C2 Top of Stair Detail
1 1/2" = 1'-0"



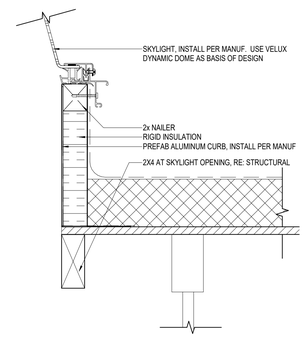
C3 Bottom of Stair Detail
1 1/2" = 1'-0"



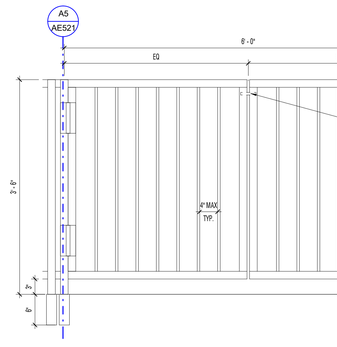
C4 Handrail to Wall Detail
3" = 1'-0"



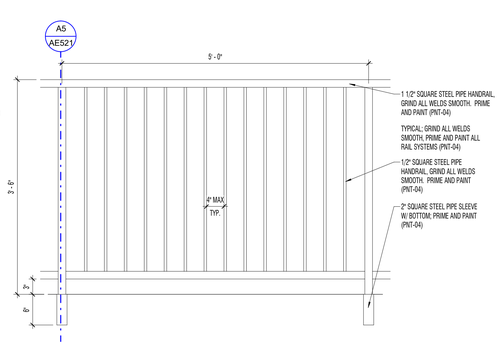
B5 Skylight Detail - Seating Area
3" = 1'-0"



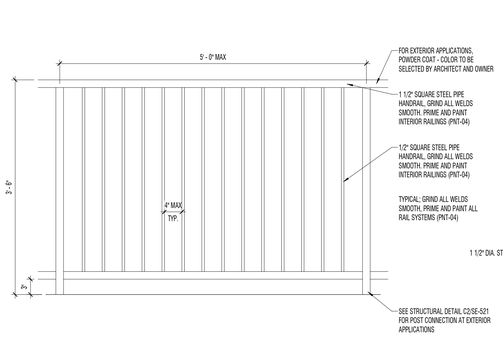
B6 Skylight Detail - Shop
3" = 1'-0"



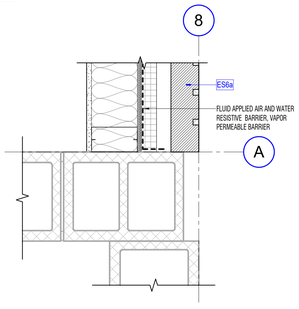
B1 Mezzanine Guardrail Gate
1" = 1'-0"



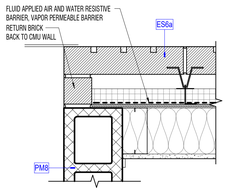
B2 Mezzanine Guardrail
1" = 1'-0"



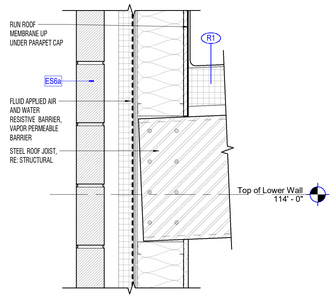
B4 Guardrail
1" = 1'-0"



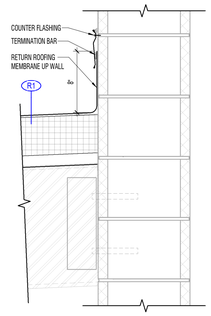
A1 Plan Detail
1 1/2" = 1'-0"



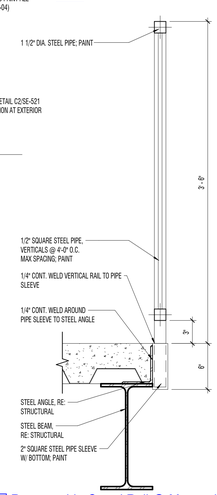
A2 Plan Detail
1 1/2" = 1'-0"



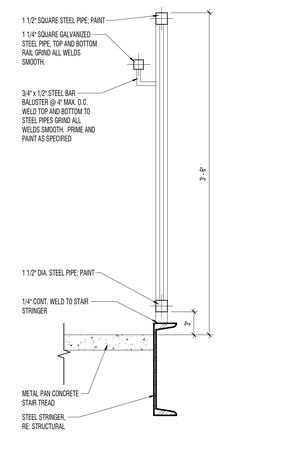
A3 Roof Connection - Lower
1 1/2" = 1'-0"



A4 Roof Connection - Upper
1 1/2" = 1'-0"



A5 Removeable Guard Rail @ Mezzanine
1 1/2" = 1'-0"



A6 Stair Handrail Section
1 1/2" = 1'-0"

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10-27-2020

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project#: 20.0220
byuidaho project#: 12005
date: october 27, 2020

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1	Addendum #1	11/5/20
2	Addendum #2	11/9/2020
3	Addendum #3	11/13/2020

title:

General Construction Details

sheet:

AE521

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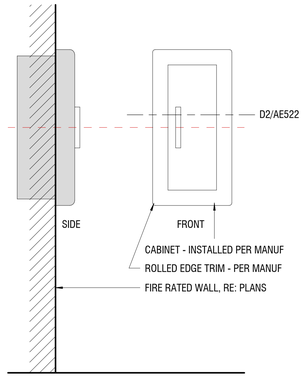
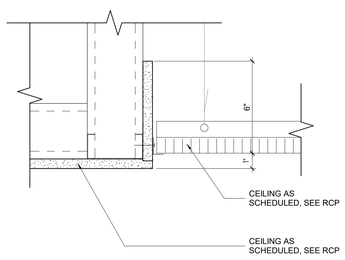
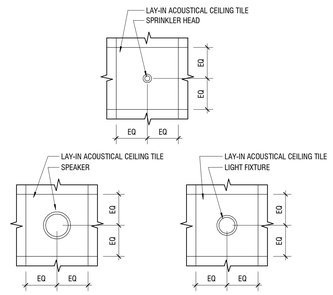


FIRE RATED CABINET TO BE INSTALLED PER MANUF INSTRUCTIONS. INSTALLATION INSTRUCTIONS MUST BE STRICTLY ADHERED TO IN ORDER TO OBTAIN FIRE RATING. JL AMBASSADOR 1015V10-FX2 - ANSI/UL-1479 (ASTM E814). BASIS OF DESIGN.

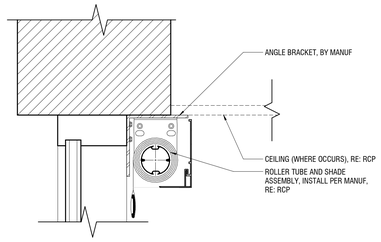
D1 Fire Extinguisher Cabinet - Elevation
1" = 1'-0"



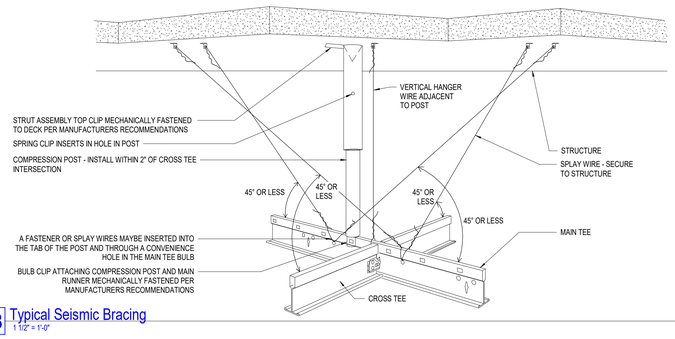
C1 Ceiling Material Transition
3" = 1'-0"



C2 Typical Fixture Placement
1 1/2" = 1'-0"



C3 Recessed Curtain
3" = 1'-0"

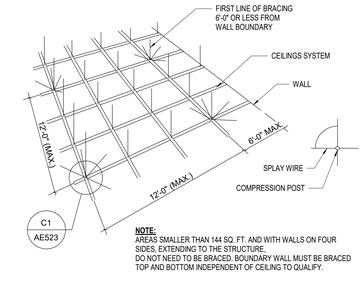


D3 Typical Seismic Bracing
1 1/2" = 1'-0"

COMPRESSION POST ALLOWABLE LENGTHS TABLE			
MATERIAL	TYP. ALLOWABLE LENGTH	MATERIAL	TYP. ALLOWABLE LENGTH
13/16" X 13/32" STRUT 19 GA	24"	1 1/4" X 1 1/4" STRUT 14 GA	84"
1 5/8" X 13/16" STRUT 12 GA	48"	1 5/8" X 1 3/8" STRUT 12 GA	96"
13/16" X 13/16" STRUT 19 GA	54"	1 5/8" X 1 5/8" STRUT 12 GA	108"
1 5/8" X 1" STRUT 12 GA	60"	1 5/8" X 2 7/16" STRUT 12 GA	120"
3 5/8" X 1 1/4" STRUT 16 GA	82"		

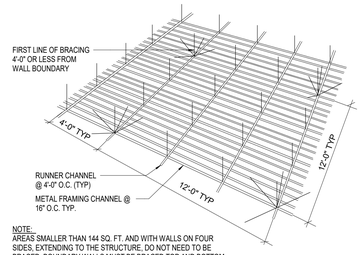
NOTES
1. THE INFORMATION PROVIDED IS FOR QUICK REFERENCE ONLY. OTHER RESTRICTIONS AND EXEMPTIONS MAY APPLY.
2. WALL MOLDING SHOULD NOT BE USED AS STRUTS.
3. A STRUCTURAL ENGINEER SHOULD BE CONSULTED FOR LENGTHS GREATER THAT 14'.

NOTES
1. ALL SPLAY WIRES TO BE IN LINE WITH ATTACHED COMPONENT
2. ALL SPLAY WIRES TO BE TAUT AND TIED BOTH ENDS WITH MINIMUM OF THREE TURNS IN 1" OF RUN
3. COMPLY WITH IBC 2012, ASTM C635, ASTM C636 AND CISCA STANDARDS
4. SPLAY WIRES SHALL ATTACH TO STRUCTURAL GIRDER OR JOIST ONLY, DO NOT ATTACH TO ROOF DECK
5. METAL COMPRESSION POST (STRUT) FASTENED TO THE MAIN RUNNER SHALL BE EXTENDED TO AND FASTENED TO THE STRUCTURAL MEMBERS SUPPORTING THE ROOF OR FLOOR ABOVE. COMPRESSION POSTS & SPLAY WIRES TO BE INSTALLED EVERY 12' O.C. BOTH DIRECTIONS STARTING 6' FROM WALL. SEE COMPRESSION POST ALLOWABLE LENGTHS TABLE FOR SIZES. SEE DETAILS FOR TYPICAL BRACING
6. ALL LIGHT FIXTURES SHALL BE POSITIVELY ATTACHED TO THE SUSPENDED CEILING SYSTEM. WHEN INTERMEDIATE SYSTEMS ARE USED, ATTACH NO. 12 GAGE HANGERS TO THE GRID MEMBERS WITHIN 3" OF EACH CORNER OF EACH FIXTURE. LIGHT FIXTURES WEIGHING LESS THAN 56 LBS. SHALL HAVE TWO NO. 12 GAGE HANGERS CONNECTED FROM THE FIXTURE HOUSING TO THE STRUCTURE ABOVE. COMPLY WITH IBC 2012
7. ALL LIGHT FIXTURES SHALL BE POSITIVELY ATTACHED 20 LBS, AND SHALL BE POSITIVELY ATTACHED TO THE CEILING SUSPENSION MAIN RUNNERS. TERMINALS OR SERVICES WEIGHING 20 LBS., BUT NOT MORE THAT 56 LBS., SHALL IN ADDITION HAVE TWO NO. 12 GAGE HANGERS CONNECTED TO THE CEILING SYSTEM HANGERS OR TO THE STRUCTURE ABOVE. TERMINALS OR SERVICES WEIGHING MORE THAN 56 LBS. SHALL BE SUPPORTED DIRECTLY FROM THE STRUCTURE ABOVE BY APPROVED HANGERS. COMPLY WITH IBC 2012
8. ALL GRID SYSTEM IN SEISMIC ZONE D OR GREATER ARE REQUIRED TO BE HEAVY DUTY. REFER REQUIREMENTS TO ASCE 7 REQUIREMENTS
9. CEILINGS WITHOUT RIGID BRACING MUST HAVE 2" OVERSIZED TRIM RINGS FOR SPRINKLERS AND OTHER PENETRATIONS, COORDINATE WITH SPECIFICATIONS



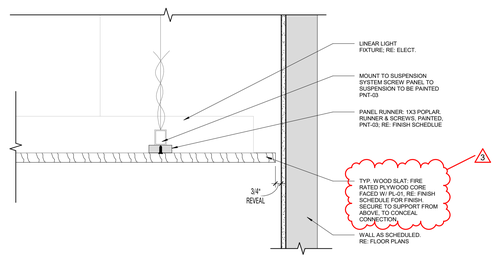
NOTE:
AREAS SMALLER THAN 144 SQ. FT. AND WITH WALLS ON FOUR SIDES, EXTENDING TO THE STRUCTURE.
DO NOT NEED TO BE BRACED. BOUNDARY WALL MUST BE BRACED TOP AND BOTTOM INDEPENDENT OF CEILING TO QUALIFY.

C5 Seismic Bracing - Lay-In Tile Ceiling
12" = 1'-0"

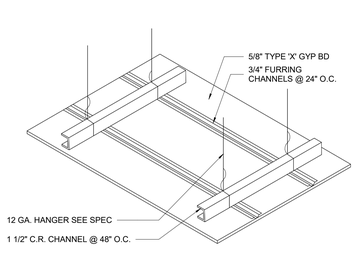


NOTE:
AREAS SMALLER THAN 144 SQ. FT. AND WITH WALLS ON FOUR SIDES, EXTENDING TO THE STRUCTURE, DO NOT NEED TO BE BRACED. BOUNDARY WALLS MUST BE BRACED TOP AND BOTTOM INDEPENDENT OF CEILING TO QUALIFY

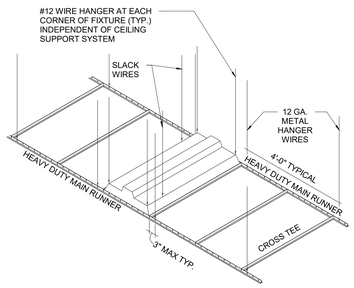
C6 Seismic Bracing - Gyp Bd Ceiling
12" = 1'-0"



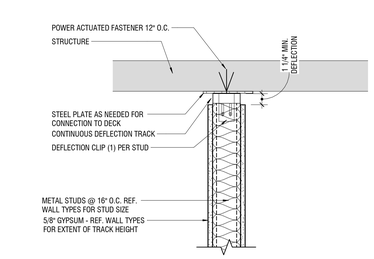
B1 Wood Cloud Detail 2
1 1/2" = 1'-0"



B2 Suspended Ceiling Channels
3" = 1'-0"

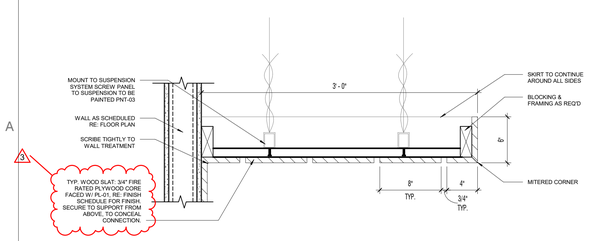


B4 Typical Ceiling Fixture Support
1/64" = 1'-0"

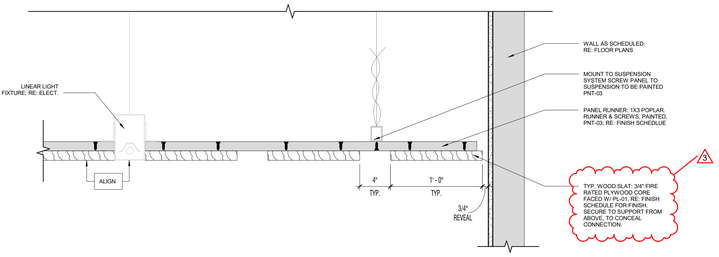


3 NOTE: RE: STRUCTURAL DRAWINGS FOR MASONRY WALL CONNECTION

B6 Deck Height Connection @ Non-structural Mtl Stud
1 1/2" = 1'-0"

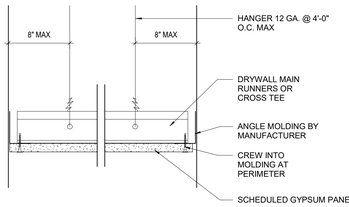


A1 Wood Cloud @ Seating
1 1/2" = 1'-0"

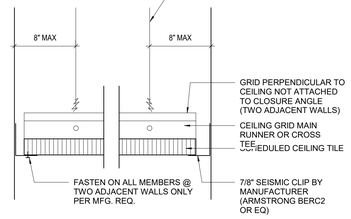


A2 Wood Cloud Detail
1 1/2" = 1'-0"

NOTES:
1. ALL HANGER WIRES TO BE IN LINE WITH ATTACHED COMPONENT OR SHALL BE COUNTERSLOPED NOT GRATER THAN 1/6.
2. ALL HANGERS WIRES RO BE TAUT AND TIED BOTH ENDS W/ MIN, OD 4 TURNS IN 1" OF RUN.



A5 Clip Angle at Gyp Bd Ceiling
1 1/2" = 1'-0"



A6 Clip Angle at Lay-In Ceiling
1 1/2" = 1'-0"

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LICENSED ARCHITECT 6710870 JOSEPH FLINT SMITH STATE OF UTAH
11/26/2019

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project#: 20.0220
date: october 27, 2020

revisions :
3 Addendum #3 11/13/2020

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General Construction Details

sheet:

AE522

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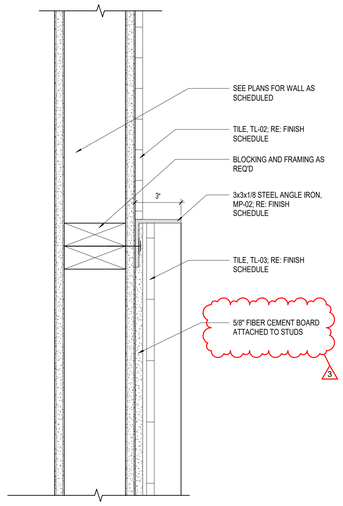
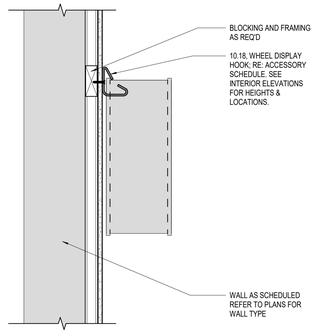
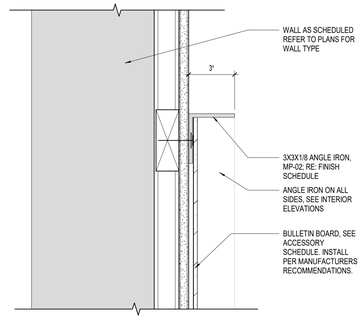


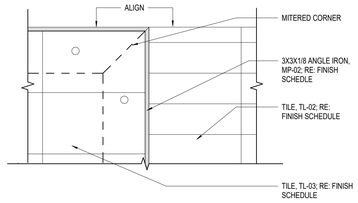
D1 Restroom Shroud - Plan
3" = 1'-0"



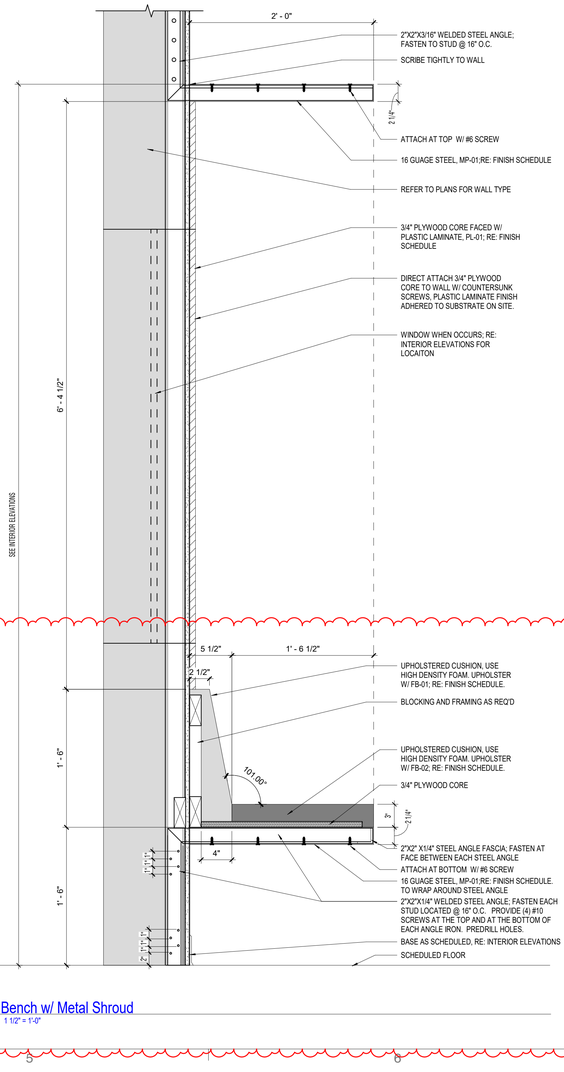
D2 Rim Mounting Detail
1 1/2" = 1'-0"



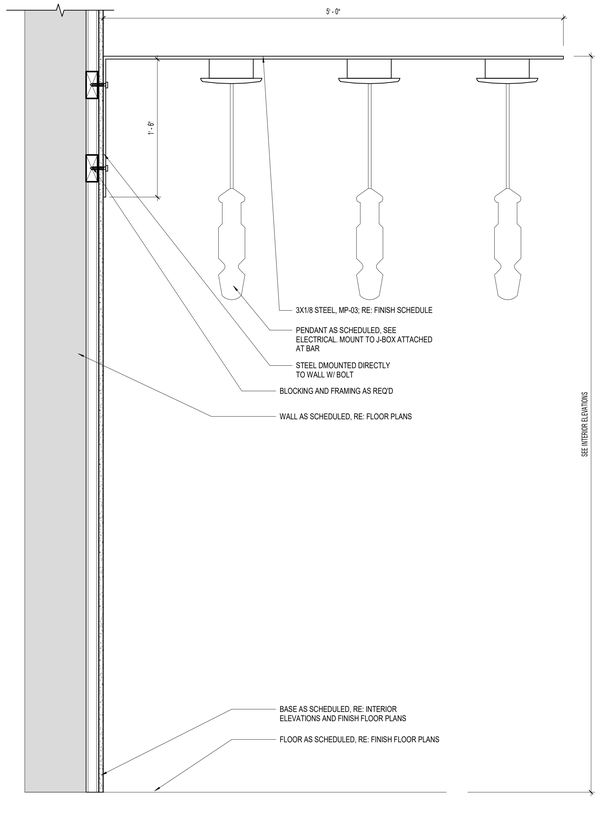
D3 Display Board Shroud Detail
3" = 1'-0"



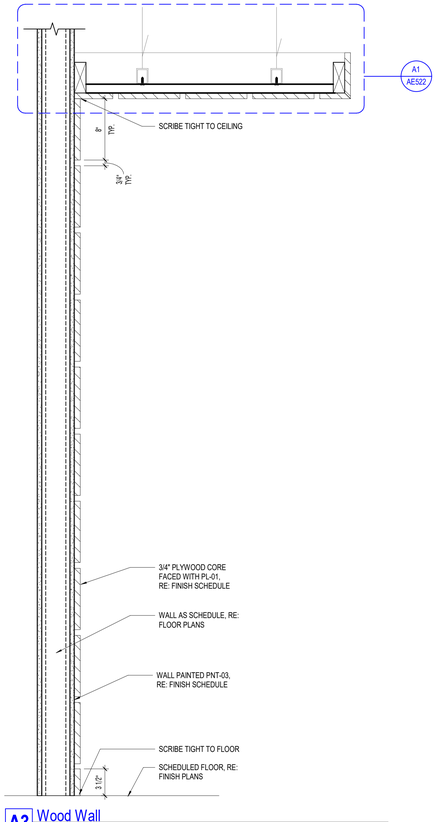
D4 Restroom Shroud Corner Detail
3" = 1'-0"



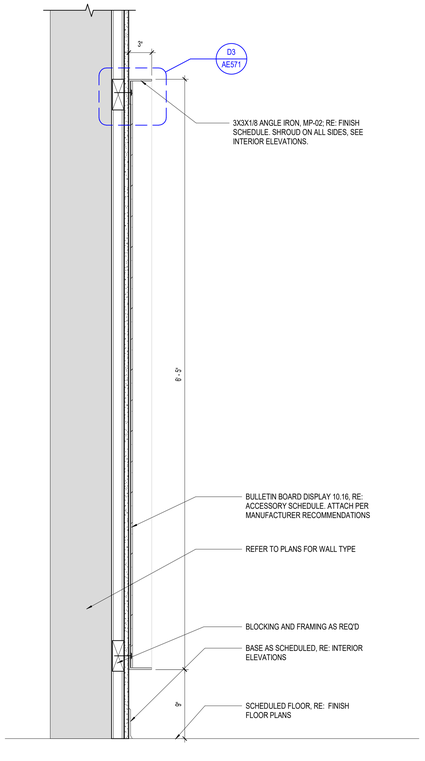
A5 Bench w/ Metal Shroud
1 1/2" = 1'-0"



A1 Pendants at Student Collaboration
1 1/2" = 1'-0"



A3 Wood Wall
1 1/2" = 1'-0"



A4 Student Display Bulletin Board
1 1/2" = 1'-0"

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project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
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project#: 20.0220
byuidaho project#: 12005
date: october 27, 2020

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Interior Details

sheet:

AE571

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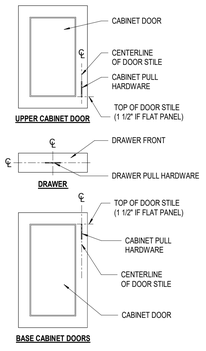
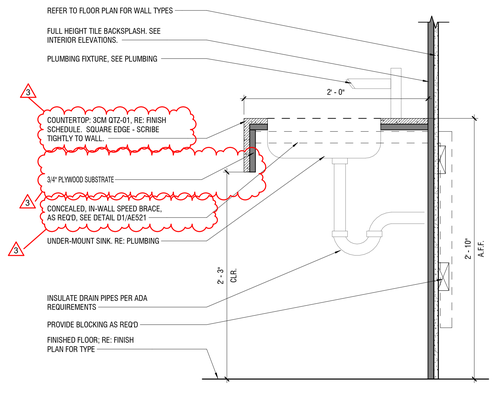
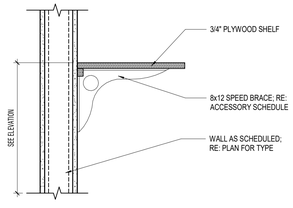


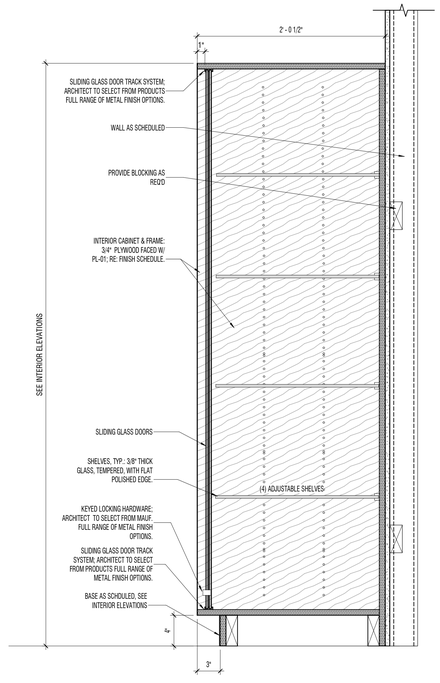
B1 Millwork Hardware Locations
3/4" = 1'-0"



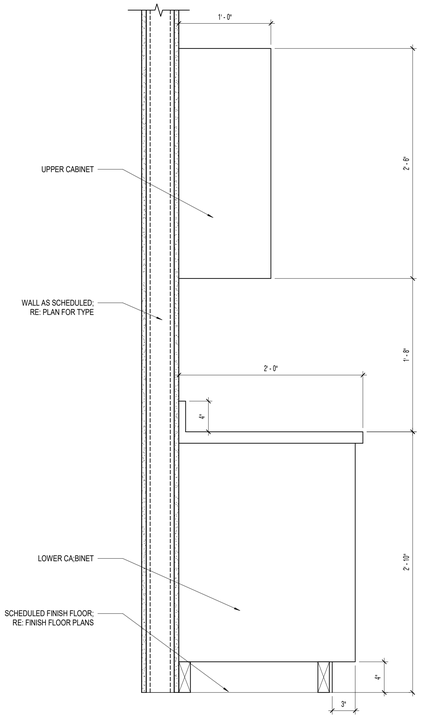
A1 Restroom Counter @ Sink
1 1/2" = 1'-0"



A3 Storage Shelf
1 1/2" = 1'-0"



A4 Display Case
1 1/2" = 1'-0"



A5 Typical Casework Dimensions
1 1/2" = 1'-0"

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STATE OF IDAHO · SALT BOYD MATTHEWS · 18498 · REGISTERED ARCHITECT
10-27-2020

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project#: 20.0220
byu idaho project#: 12005
date: october 27, 2020

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Casework Details

sheet:

AE901

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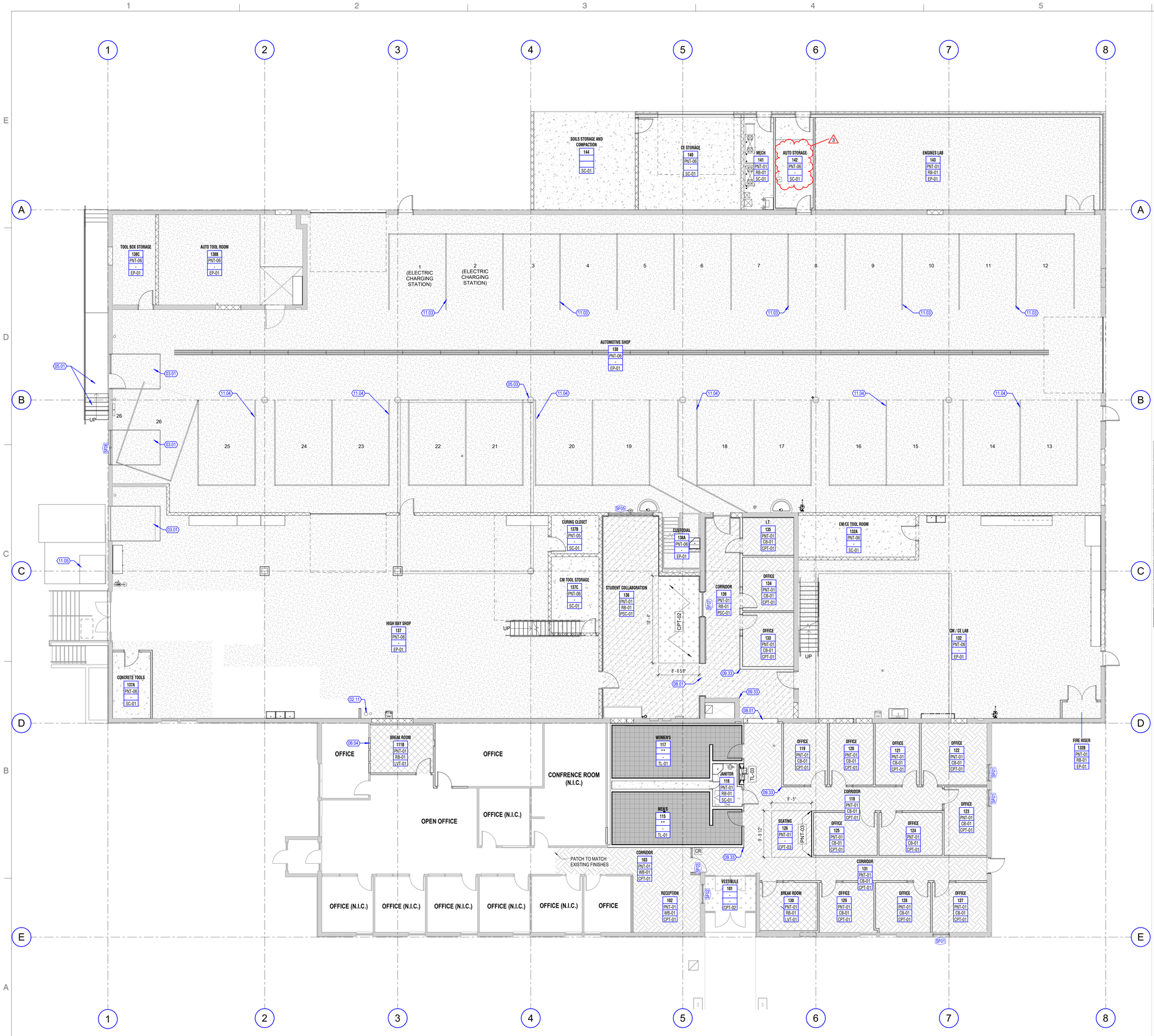

A1 Level 1 Finish Plan
1/8" = 1'-0"

GENERAL NOTES - FINISH PLAN

1 SEE FLOOR PLANS FOR INTERIOR ELEVATIONS
2 ALL METAL STUDS WALLS TO DECK ABOVE, UNLESS NOTED OTHERWISE; SEE SHEET SERIES AE500 FOR WALL TYPES
3 PROVIDE DEFLECTION TRACKS AT ALL STUD WALLS, SEE DETAILS ON SHEET SERIES AE500
4 ALL MATERIALS TO BE INSTALLED PER SPECIFIC MANUFACTURER'S INSTALLATION RECOMMENDATIONS
5 ALL EXPOSED METAL TO BE INSTALLED PER SPECIFIC MANUFACTURER'S INSTALLATION RECOMMENDATIONS
6 FLOORING MATERIAL TRANSITIONS TO OCCUR AT CENTER LINE OF DOOR THRESHOLDS, UNLESS NOTED OTHERWISE
7 PREPARE FLOORS/WALLS TO RECIEVE FINISH MATERIAL. REFER TO MANUFACTURERS RECOMMENDATIONS FOR SURFACE PREPERATION. NOTIFY ARCHITECT IF CONDITIONS ARE INADEQUATE FOR REQUIRED INSTALLATION.
8 REFER TO ROOM FINISH SCHEDULE AND MATERIAL LEGEND ON SHEET SERIES AF600 FOR MORE INFORMATION
9 SEE DIMENSION PLAN SHEET SERIES AE120 FOR WALL TYPE LOCATIONS; SEE SHEET SERIES AE500 FOR WALL TYPE AND ASSEMBLY DESCRIPTIONS
10 CONTRACTOR TO PROVIDE SOLID BLOCKING AT ALL CASE WORK, FIXED FURNISHINGS AND EQUIPMENT. COORDINATE WITH ELEVATIONS, SECTIONS, FURNITURE AND FIXTURE SHEETS, AND SPECIFICATIONS. SEE SHEET SERIES AE900 FOR TYPICAL DETAILS
11 CREATE A CLEAN, STRAIGHT TRANSITION LINE FROM POLISHED SEALED CONCRETE FLOORING TO SEALED CONCRETE FLOORING UNDER DOORS. USE APPROPRIATE MEANS TO ACHIEVE A CLEAN TRANSITION
12 TILE INSTALLER TO FOLLOW TCNA & ANSI GUIDELINES, SEE SPECIFICAITONS.
13 ALL GROUT TO BE SEALED
14 ALL FLOOR CHANGES TO HAVE TRANSITION STRIP, SEE SCHEDULE.

KEYED NOTES

02.11 EXISTING STEAM LINE TO REMAIN
03.01 BACKFILL EXISTING LOADING BAY RECESSES AND TOP WITH CONCRETE
05.01 NEW LANDING, STAIRS AND GUARDRAIL AND RAILING (POWDER COATED - COLOR TO BE SELECTED BY OWNER AND ARCHITECT.)
05.03 COLUMN WRAP PROTECTION - SENTRY CONCRETE WRAP CW0244-48
06.04 INFILL WALLS WITH FRAMING AND GYP BD. FINISH TO MATCH EXISTING, TYP.
08.01 NEW OPENING IN EXISTING WALL
09.33 CORNER GUARD CG-01, RE: FINISH SCHEDULE
11.03 12' X 16' STALL WITH 2" PAINTED STRIPING
11.04 12' X 18' STALL WITH 2" PAINTED STRIPING
11.05 CONCRETE WASH OUT. RE: INTERIOR FURNISHINGS AND EQUIPMENT PLANS AND SCHEDULES

FLOOR FINISH LEGEND

CONCRETE - SEALED	SC-01
CONCRETE - POLISHED	PSC-01
FEILD CARPET	CPT-01
ACCENT CARPET	CPT-02
ACCENT CARPET	CPT-03
LUXURY VINYL TILE	LVT-01
EPOXY FLOORING	EP-01
TILE	TL-01

** SEE ENLARGED FINISH PLANS + INTERIOR ELEVATIONS + FINISH SCHEDULE SHEET FOR MORE INFORMATION *

FINISH KEY

Room name
101
W
B
F
→ ROOM NAME
→ ROOM NUMBER
→ WALL FINISH
→ BASE FINISH
→ FLOOR FINISH

XXX
→ MATERIAL FINISH CODE
→ ARROWS REPRESENT EXTENT OF SCOPE

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STATE OF IDAHO · SCOTT BOYD MOSER · 15496 · REGISTERED ARCHITECT
10-27-2020

project:
BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

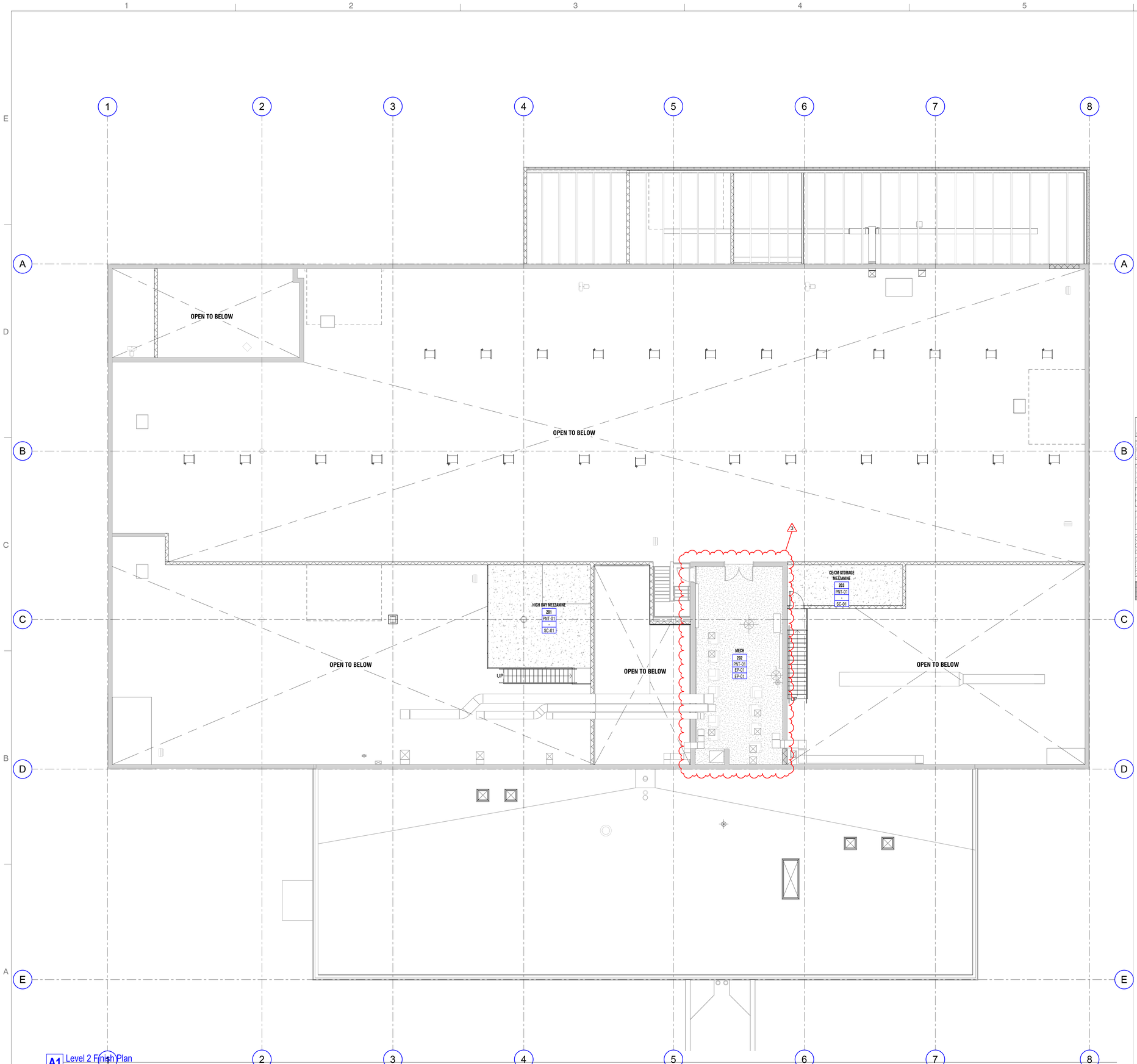
project#: 20.0220
byuidaho project#: 12005
date: october 27, 2020

revisions :
3 Addendum #3 11/13/2020

title:
Finish Plan - Level 1

sheet:
AF101

100% construction documents



GENERAL NOTES - FINISH PLAN

1 SEE FLOOR PLANS FOR INTERIOR ELEVATIONS
2 ALL METAL STUDS WALLS TO DECK ABOVE, UNLESS NOTED OTHERWISE; SEE SHEET SERIES AE500 FOR WALL TYPES
3 PROVIDE DEFLECTION TRACKS AT ALL STUD WALLS, SEE DETAILS ON SHEET SERIES AE500
4 ALL MATERIALS TO BE INSTALLED PER SPECIFIC MANUFACTURER'S INSTALLATION RECOMMENDATIONS
5 ALL EXPOSED METAL TO BE INSTALLED PER SPECIFIC MANUFACTURER'S INSTALLATION RECOMMENDATIONS
6 FLOORING MATERIAL TRANSITIONS TO OCCUR AT CENTER LINE OF DOOR THRESHOLDS, UNLESS NOTED OTHERWISE
7 PREPARE FLOORS/WALLS TO RECIEVE FINISH MATERIAL. REFER TO MANUFACTURERS RECOMMENDATIONS FOR SURFACE PREPERATION. NOTIFY ARCHITECT IF CONDITIONS ARE INADEQUATE FOR REQURED INSTALLATION.
8 REFER TO ROOM FINISH SCHEDULE AND MATERIAL LEGEND ON SHEET SERIES AF600 FOR MORE INFORMATION
9 SEE DIMENSION PLAN SHEET SERIES AE120 FOR WALL TYPE LOCATIONS; SEE SHEET SERIES AE500 FOR WALL TYPE AND ASSEMBLY DESCRIPTIONS
10 CONTRACTOR TO PROVIDE SOLID BLOCKING AT ALL CASE WORK, FIXED FURNISHINGS AND EQUIPMENT. COORDINATE WITH ELEVATIONS, SECTIONS, FURNITURE AND FIXTURE SHEETS, AND SPECIFICATIONS. SEE SHEET SERIES AE900 FOR TYPICAL DETAILS
11 CREATE A CLEAN, STRAIGHT TRANSITION LINE FROM POLISHED SEALED CONCRETE FLOORING TO SEALED CONCRETE FLOORING UNDER DOORS. USE APPROPRIATE MEANS TO ACHIEVE A CLEAN TRANSITION
12 TILE INSTALLER TO FOLLOW TCNA & ANSI GUIDELINES, SEE SPECIFICAITONS.
13 ALL GROUT TO BE SEALED
14 ALL FLOOR CHANGES TO HAVE TRANSITION STRIP, SEE SCHEDULE.

KEYED NOTES

FLOOR FINISH LEGEND

CONCRETE - SEALED	SC-01
CONCRETE - POLISHED	PSC-01
FEILD CARPET	CPT-01
ACCENT CARPET	CPT-02
ACCENT CARPET	CPT-03
LUXURY VINYL TILE	LVT-01
EPOXY FLOORING	EP-01
TILE	TL-01

** SEE ENLARGED FINISH PLANS + INTERIOR ELEVATIONS+ FINISH SCHEDULE SHEET FOR MORE INFORMATION *

FINISH KEY

A1 Level 2 Finish Plan
1/8" = 1'-0"

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3 Addendum #3 11/13/2020

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Finish Plan - Mezzanine

sheet:

AF102

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FINISH SCHEDULE

SCHEDULED MATERIALS AND FINISHES SHALL BE USED FOR BASIS OF DESIGN U.N.O.

CODE	PRODUCT TYPE	MANUFACTURER	STYLE	COLOR	SPECIFICATION	FINISH NOTES/ REMARKS
DIVISION 03 - CONCRETE						
PS-01	POLISHED SEALED CONCRETE				UP TO 3200 GRIT HIGH GLOSS POLISHED FINISH, SILICATE HARDENER/SEALER AND PENETRATING SEALER; SEE SPECIFICATION FOR ADDITIONAL INFORMATION. GENERAL CONCRETE FINISH. SEE FINISH PLAN FOR LOCATIONS. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.	
SC-01	SEALED CONCRETE				SEE FINISH PLAN FOR LOCATIONS. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.	
DIVISION 05 - METALS						
MP-01	HOT ROLLED STEEL	-	16 GAUGE STEEL	CLEAR COAT	SEE INTERIOR ELEVATIOS FOR LOCATION	
MP-02	STEEL ANGLE IRON	-	3X3X1/8	CLEAR COAT	SEE INTERIOR ELEVATIOS FOR LOCATION	
MP-03	HOT ROLLED STEEL	-	3X1/8	CLEAR COAT	SEE INTERIOR ELEVATIOS FOR LOCATION	
DIVISION 06 - WOODS, PLASTICS & COMPOSITES						
FRP-01	FIBERGLASS REINFORCED PANEL	MARLITE	STANDARD FRP - SMOOTH	S 100G WHITE	@ JANOTOR & CUSTODIAL, SEE INTERIOR ELEVATIONS FOR LOCATION	
PL-01	PLASTIC LAMINATE	NEVAMAR	FIRE RATED HIGH PRESSURE LAMINATE	GLISTENING TRAILS - WH1000	SEE INTERIOR ELEVATIONS FOR LOCATION	
PL-02	PLASTIC LAMINATE	WILSONART	78 FINEGRAIN FINISH WITH AEON	MONTANA WALNUT	@ BREAKROOM & AUTO TOOL ROOM, SEE INTERIOR ELEVATIONS FOR LOCATIONS	
PL-03	PLASTIC LAMINATE	WILSONART	38 FINE VELVET TEXTURE FINISH	PEARL SOAPSTONE	@ AUTO TOOL ROOM, SEE INTERIOR ELEVATIONS FOR LOCATIONS	
DIVISION 09 - BASE & TRANSITIONS						
CB-01	CARPET WALL BASE	INTERFACE	4" FREQUENCY II	REPENTED 9422	SEE INTERIOR ELEVATIONS AND FINISH PLANS FOR LOCATIONS	NIC: SUGGESTED CARPET BASE, OWNER PROVIDED/ OWNER INSTALLED.
RB-01	RUBBER WALL BASE	JOHNSONITE	4" TOE	63 BURNT UMBER B	SEE INTERIOR ELEVATIONS AND FINISH PLANS FOR LOCATIONS	
RB-02	RUBBER WALL BASE	JOHNSONITE	4" TOELESS	TA1 TANNERY WB	@ CASEWORK, SEE INTERIOR ELEVATIONS FOR LOCATIONS	TO BE USED W/ PL-01 CASEWORK
RB-03	RUBBER WALL BASE	JOHNSONITE	4" TOELESS	76 CINNAMON	@ CASEWORK, SEE INTERIOR ELEVATIONS FOR LOCATIONS	TO BE USED W/ PL-02 CASEWORK
WB-01	WOOD WALL BASE	BYU-IDAHO STANDARD	4"	TO MATCH EXISTING	SEE INTERIOR ELEVATIONS AND FINISH PLANS FOR LOCATIONS	WOOD STAINED TO MATCH EXISTING
DIVISION 09 - CEILINGS						
ACP-01	ACOUSTICAL CEILING PANEL	USG	HALCYON LOGIX ACOUSTICAL PANELS, 2X2	WHITE	SEE REFLECTED CEILING PLANS FOR LOCATIONS. INSTALL PER MANUFACTURERS RECOMMENDATIONS.	SQUARE EDGE. 0.95 NRC RATING.
ACP-03	SPECIALTY CEILING	ARMSTRONG	TECTUM DIRECT-ATTACH CEILING, 2x8, NO DESIGN	TO MATCH DECK PAINT	SEE REFLECTED CEILING PLANS FOR LOCATIONS. INSTALL PER MANUFACTURERS RECOMMENDATIONS.	
ACP-04	SPECIALTY CEILING	ARMSTRONG	TECTUM DIRECT-ATTACH CEILING, 2x4, NO DESIGN	TO MATCH DECK PAINT	SEE REFLECTED CEILING PLANS FOR LOCATIONS. INSTALL PER MANUFACTURERS RECOMMENDATIONS.	
DIVISION 09 - FLOORS						
CPT-01	CARPET TILE	INTERFACE	FREQUENCY II, 19X19	REPENTED 9422	@ COORIDORS, LOBBY, RECEPTIONS, SEE FINISH FLOOR PLANS FOR LOCATIONS. INSTALL PER MANUFACTURER RECOMMENDATION	FIELD CARPET; NIC: SUGGESTED CARPET, OWNER PROVIDED/ OWNER INSTALLED.
CPT-02	CARPET TILE	INTERFACE	STEP REPEAT SR699, 19x19	IRON	@ STUDENT COLLABORATION, SEE FINISH PLANS FOR LOCATIONS. INSTALL PER MANUFACTURERS RECOMMENDATIONS.	ACCENT CARPET; NIC: SUGGESTED CARPET, OWNER PROVIDED/ OWNER INSTALLED.
CPT-03	CARPET TILE	INTERFACE	ON LINE 138700AKOO, 9x39	PEPPER 103788	@ SEATING, SEE FINISH PLANS FOR LOCATIONS. INSTALL PER MANUFACTURERS RECOMMENDATIONS.	ACCENT CARPET; NIC: SUGGESTED CARPET, OWNER PROVIDED/ OWNER INSTALLED.
EP-01	EPOXY FLOORING	BYU-IDAHO STANDARD	TBD	TO MATCH EXISTING	SEE FINISH PLANS FOR LOCATIONS. INSTALL PER MANUFACTURER RECOMMENDATIONS.	
LVT-01	LUXURY VINYL TILE	DALTILE	BELLANT, 36x36	BL32 CONCRETE GREY	@ BREAKROOMS, SEE FINISH FLOOR PLANS FOR LOCATIONS. INSTALL PER MANUFACTURER RECOMMENDATION	
DIVISION 09 - PAINT & WALLCOVERING						
FW-01	FELT WALLCOVERING	FILZFELT	RIBSY 24X6X5/8	175 GRAPHITE	@ STUDENT COLLABORATION RE: ELEVATIONS FOR DIMENSIONS AND LOCATION. INSTALLATION PER MANUFACTURER'S RECOMMENDATIONS.	TO BE PRECUT PLANKS.
PNT-01	FIELD WALL PAINT	SHERWIN WILLIAMS	-	SHELL WHITE (BYU-IDAHO CUSTOM COLOR)	FIELD PAINT SEE FINISH PLANS AND INTERIOR ELEVATIONS FOR LOCAITONS.	MEDIUM LUSTER FINISH
PNT-02	CEILING PAINT	SHERWIN WILLIAMS	-	SHELL WHITE (BYU-IDAHO CUSTOM COLOR)	RE: REFLECTED CEILING PLANS FOR LOCATIONS.	MATTE FINISH
PNT-03	CEILING PAINT	SHERWIN WILLIAMS	-	IRON ORE	@ STUDENT COLLABORATION EXPOSED CEILING AND WALL, SEATING AREA WALL RE: INTERIOR ELEVAITONS AND REFLECTED CEILING PLANS.	MATTE FINISH
PNT-04	DOOR JAMB PAINT	SHERWIN WILLIAMS	-	IRON ORE	@ DOOR, STAIRS, JAMBS, RAILS RE: DOOR SCHEDULE AND FLOOR PLANS	SEMI-GLOSS FINISH
PNT-05	2 PART EPOXY WALL PAINT	SHERWIN WILLIAMS	PRO INDUSTRIAL HIGH PERFORMANCE EPOXY	SHELL WHITE (BYU-IDAHO CUSTOM COLOR)	@ CONCRETE CURING ROOM RE: INTERIOR ELEVAITONS AND REFLECTED CEILING PLANS.	SEMI-GLOSS FINISH
PNT-06	EPOXY WALL PAINT	CLOVERDALE (ALKALIDE ENAMEL)	-	RENAISSANCE	@ SHOPS, RE: INTERIOR ELEVAITONS AND REFLECTED CEILING PLANS.	SEMI-GLOSS FINISH
DIVISION 09 - TILE						
TL-01	FLOOR TILE	DALTILE	VERTUO 12X24	MAESTRO VR10	@ RESTROOMS, SEE FINISH PLANS FOR LOCATIONS. INSTALLATION PER MANUFACTURER'S RECOMMENDATIONS, 1/8" GROUT JOINT, GROUT TO BE SELECTED BY ARCHITECT FROM FULL COLOR RANGE	
TL-02	WALL TILE	DALTILE	COLOR WHEEL LINEAR 2X8	MATTE ARCTIC WHITE 0790	@ RESTROOMS, SEE INTERIOR ELEVATIONS FOR LOCATIONS. INSTALLATION PER MANUFACTURER'S RECOMMENDATIONS, 1/8" GROUT JOINT, GROUT TO BE SELECTED BY ARCHITECT FROM FULL COLOR RANGE	
TL-03	WALL TILE	CROSSVILLE	RETRO ACTIVE 2.0 PATTERNS, 6x24	ROYAL NAVY PATTERN	@ RESTROOMS, DRINING FOUNTAIN, SEE INTERIOR ELEVATIONS FOR LOCAITONS. INSTALLATION PER MANUFACTURER'S RECOMMENDATIONS, 1/8" GROUT JOINT, GROUT TO BE SELECTED BY ARCHITECT FROM FULL COLOR RANGE	
DIVISION 10 - SPECIALTIES						
CG-01	CORNER GUARD	KOROGARD	GS15, 1-1/2"	STAINLESS STEEL	@ ALL EXPOSED FINISH CORNERS IN HIGH TRAFFIC AREAS, QTY 4. MOUNT AT 5" AFF. INSTALL PER MANUFACTURERS RECOMMENDATIONS. SEE FINISH PLANS FOR LOCATION & QTY.	
FE-01	FIRE CABINET	JL ACADEMY	SEMI-RECESSED	ALUMINUM	SEE INTERIOR ELEVATIONS FOR LOCATIONS, INSTALL PER MANUFACTURERS RECOMMENDATIONS.	
MB-02	MARKER BOARD	ADP LEMCO	PORCELAIN, 24 GUAGE, ALUMINUM BACKING & TRIM, 4X6	STANDARD OFF WHITE	@ STUDENT COLLABORATION & SHOPS, SEE INTERIOR ELEVATIONS FOR LOCATION. INSTALL PER MANUFACTURER RECOMMENDATIONS.	CONTRACTOR PROVIDED, CONTRACTOR INSTALLED
DIVISION 12 - FURNISHINGS						
FB-01	UPHOLSTERY	DESIGNTEX	BILLIARD CLOTH 3549-804	PEWTER	@ STUDENT COLLABORATION, SEE INTERIOR ELEVATIONS AND CASEWORK DETAILS FOR LOCATIONS.	
FB-02	UPHOLSTERY	MOMENTUM	SILICA	ARCHITECT TO SELECT FROM FULL RANGE OF COLORS	@ STUDENT COLLABORATION, SEE INTERIOR ELEVATIONS AND CASEWORK DETAILS FOR LOCATIONS.	
QTZ-01	QUARTZ COUNTERTOP	PENTAL QUARTZ 3CM	BC217P	SPARKLING GRAY	@ BREAKROOMS, STUDENT COLLAB, RESTROOMS, SEE INTERIOR ELEVATIONS FOR LOCATIONS. INSTALL PER MANUFACTURER RECOMMENDATIONS.	
RS-01	MANUAL ROLLER SHADE	MECHO 5 MANUAL SHADE - EXTENDED BRACKET	EQUINOX BLACKOUT	GRAPHITE 0117	@ SOUTH AND WEST WINDOWS, SEE RCP'S FOR LOCATION & QUANTITY. SEE SPECIFICATIONS FOR MORE INFORMATION.	0% OPEN
SS-01	SOLID SURFACE	CORIAN SOLID SURFACE	3CM	WHITE JASMINE	@ WINDOW SILLS, SEE WINDOW DETAILS FOR LOCATION	
ST-01	STAINLESS STEEL COUNTERTOP	-	14 GAUGE	-	@ SHOP COUNTERTOPS, SEE INTERIOR ELEVATIOS FOR LOCATION	SATIN FINISH

GENERAL NOTES

A. ALL MATERIALS LISTED MUST BE APPROVED BY SUBMITTAL PROCESS TO THE ARCHITECT
B. CONTRACTOR TO PREPARE 3' X 3' ON-SITE PAINT MOCK-UP FOR COLOR APPROVAL BY ARCHITECT PRIOR TO COMMENCING PAINTING WORK
C. UNLESS NOTED OTHERWISE, TILE INSTALLER IS TO FOLLOW TNCA & ANSI STANDARDS; ALL APPROPRIATE TRIM PIECES TO BE INCLUDED WITH TILE
D. NO SUBSTITUTIONS OR OMISSIONS PERMITTED WITHOUT PRIOR WRITTEN APPROVAL FROM ARCHITECT
E. ARCHITECT TO SELECT FROM FULL RANGE OF COLORS AND FINISHES OFFERED BY MANUFACTURERS, INCLUDING CUSTOM
F. USE CRACK ISOLATION MEMBRANCE UNDERA ALL TILE INSTALLATIONS

ACCESSORY SCHEDULE

SCEDULED MATERIALS AND FINISHES SHALL BE USED FOR BASIS OF DESIGN U.N.O.

CODE	PRODUCT TYPE	MANUFACTURER	MAKE/MODEL	FINISH	PROVIDED/INSTALLED BY	COMMENTS
05.03	COLUMN WRAP PROTECTION	CROWN	351096-040 ROUND YELLOW	12"	CONTRACTOR PROVIDED/CONTRACTOR INSTALLED	INSTALL PER MANUFACTURER'S RECOMMENDATIONS
10.01	MIRROR	-	POLISHED EDGE	24"X40" FRAMELESS	CONTRACTOR PROVIDED/CONTRACTOR INSTALLED	USE MIRROR ADHESIVE, DIRECT GLUE TO WALL, NO HARDWARE. SEE ELEVATIONS FOR MOUNTING HEIGHTS.
10.02	URINAL PARTITION	SCRANTON PRODUCTS	HINY HIDERS, WALL MOUNTED	GREY, ORANGE PEEL	CONTRACTOR PROVIDED/CONTRACTOR INSTALLED	INSTALL PER MANUFACTURER'S RECOMMENDATIONS
10.03	SOAP DISPENSER - WALL MOUNTED	WAXIE	1250ML CLEAN TOUCH MANUAL FOAM DISPENSER #386317	CHROME/BLACK	OWNER PROVIDED/OWNER INSTALLED	INSTALL PER MANUFACTURER'S RECOMMENDATIONS
10.05	PAPER TOWEL DISPENSER	BOBRICK	SURFAC-MOUNTED PAPER TOWEL DISPENSER / B-262	SATIN STAINLESS STEEL	OWNER PROVIDED/OWNER INSTALLED	INSTALL PER MANUFACTURER'S RECOMMENDATIONS
10.06	TOILET PARTITION	SCRANTON PRODUCTS	HINY HIDERS	GREY, ORANGE PEEL	CONTRACTOR PROVIDED/CONTRACTOR INSTALLED	INSTALL PER MANUFACTURER'S RECOMMENDATIONS
10.07	BABY CHANGING STATION	BOBRICK / KOALA	HORIZONTAL RECESS MOUNTED #KB110-SSRE	STAINLESS STEEL	CONTRACTOR PROVIDED/CONTRACTOR INSTALLED	INSTALL PER MANUFACTURER'S RECOMMENDATIONS
10.08	TOILET SEAT COVER DISPENSER	BOBRICK	B-221 - SURFACE MOUNTED	SATIN STAINLESS STEEL	OWNER PROVIDED/OWNER INSTALLED	INSTALL PER MANUFACTURER'S RECOMMENDATIONS
10.09	18" GRAB BAR	BOBRICK	B-5806	SATIN STAINLESS STEEL	CONTRACTOR PROVIDED/CONTRACTOR INSTALLED	INSTALL PER MANUFACTURER'S RECOMMENDATIONS
10.10	36" GRAB BAR	BOBRICK	B-5806	SATIN STAINLESS STEEL	CONTRACTOR PROVIDED/CONTRACTOR INSTALLED	INSTALL PER MANUFACTURER'S RECOMMENDATIONS
10.11	42" GRAB BAR	BOBRICK	B-5806	SATIN STAINLESS STEEL	CONTRACTOR PROVIDED/CONTRACTOR INSTALLED	INSTALL PER MANUFACTURER'S RECOMMENDATIONS
10.12	SANITARY NAPKIN DISPENSER	BOBRICK	B37063C / TRIMLINE SERIES RECESSED	STAINLESS STEEL	CONTRACTOR PROVIDED/CONTRACTOR INSTALLED	INSTALL PER MANUFACTURER'S RECOMMENDATIONS
10.13	SANITARY NAPKIN DISPOSAL	BOBRICK	B-35139 SURFACE-MOUNTED	STAINLESS STEEL	CONTRACTOR PROVIDED/CONTRACTOR INSTALLED	INSTALL PER MANUFACTURER'S RECOMMENDATIONS
10.15	TOILET TISSUE DISPENSER	BOBRICK	B-274	SATIN STAINLESS STEEL	OWNER PROVIDED/OWNER INSTALLED	INSTALL PER MANUFACTURER'S RECOMMENDATIONS
10.16	BULLETIN BOARD DISPLAY	FORBO	BULLITEN BOARD 90"X48"	POTATOE SKIN 2182	CONTRACTOR PROVIDED/CONTRACTOR INSTALLED	INSTALL PER MANUFACTURER'S RECOMMENDATIONS
10.17	COAT HOOK	RICHELIEU	4" SINGLE METAL COAT HOOK / RH1163011195	BRUSHED NICKLE	OWNER PROVIDED/OWNER INSTALLED	INSTALL PER MANUFACTURER'S RECOMMENDATIONS
10.18	WHEEL DISPLAY HOOK	PRESTIGE WHEEL	MWDH-100	BLACK	CONTRACTOR PROVIDED/CONTRACTOR INSTALLED	INSTALL PER MANUFACTURER'S RECOMMENDATIONS
10.19	SPEED BRACE	FASTCAP	SPEED BRACE	WHITE 8X12	CONTRACTOR PROVIDED/CONTRACTOR INSTALLED	INSTALL PER MANUFACTURER'S RECOMMENDATIONS
10.22	MOP/BROOM HOOK	BOBRICK	239-34	STAINLESS STEEL	OWNER PROVIDED/OWNER INSTALLED	INSTALL PER MANUFACTURER'S RECOMMENDATIONS
11.06	TELEVISION MONITOR	-	-	72" SCREEN	OWNER PROVIDED/OWNER INSTALLED	INSTALL PER MANUFACTURER'S RECOMMENDATIONS

TRANSITION SCHEDULE

CODE	LOCATION	MANUFACTURER	PRODUCT NAME/NUMBER	COLOR/FINISH	SPECIFICATION
TS-01	CARPET TO CONCRETE	JOHNSONITE	SLIM LINE TRANSITION	63 BURNT UMBER B	HEIGHT TO MATCH MATERIAL THICKNESS. INSTALL PER MANUFACTURERS INSTRUCTIONS | SUB-CONTRACTOR TO CONFIRM SIZE. SEE DETAIL A1/AE572.
TS-02	TILE TO CARPET	SCHLUTER	RENO-U	SATIN ANODIZED ALUMINUM	HEIGHT TO MATCH MATERIAL THICKNESS. INSTALL PER MANUFACTURERS INSTRUCTIONS | SUB-CONTRACTOR TO CONFIRM SIZE. SEE DETAIL A2/AE572.
TS-03	TILE EDGE, TILE CORNER	SCHLUTER	JOLLY	SATIN ANODIZED ALUMINUM	HEIGHT TO MATCH MATERIAL THICKNESS. INSTALL PER MANUFACTURERS INSTRUCTIONS | SUB-CONTRACTOR TO CONFIRM SIZE. SEE DETAILS A4/AE572, A6/AE572, & B1/AE572.
TS-04	COVE BASE	SCHLUTER	DILEX-HKS	SATIN ANODIZED ALUMINUM	HEIGHT TO MATCH MATERIAL THICKNESS. INSTALL PER MANUFACTURERS INSTRUCTIONS | SUB-CONTRACTOR TO CONFIRM SIZE. SEE DETAIL A3/AE572.

APPLIANCE SCHEDULE

CODE	PRODUCT	SIZE	PROVIDED BY/INSTALLED BY	COMMENTS
11.07	REFRIGERATOR	36WX72HX30D	OWNER PROVIDED/OWNER INSTALLED	@ BREAKROOMS, SEE INTERIOR ELEVATIONS FOR LOCATIONS.
11.10	MICROWAVE	24WX14HX19D	OWNER PROVIDED/OWNER INSTALLED	@ BREAKROOMS, SEE INTIERIOR ELEVATIONS FOR LOCATIONS.

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STATE OF IDAHO — KELLY BOYD MORGAN — AR-985149 — LICENSED ARCHITECT
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3	Addendum #3	11/13/2020

title:

Finish, Accessory, Appliance, & Transition Schedule

sheet:

AF601

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FURNITURE SCHEDULE - LEVEL 1 AREA A

Room #	Room Name	Type Mark	Asset Name	Count	Existing	New	Future	CFCI	OFCI	OFOI	Special Requirements
138	AUTOMOTIVE SHOP	A-1	2' x 5' Work Bench	26						•	
138B	AUTO TOOL ROOM	A-1	2' x 5' Work Bench	3						•	
138B	AUTO TOOL ROOM	AT-7	Task Chair	6						•	
143	ENGINES LAB	EL-1	2' x 5' Work Bench	19						•	Storage Below
143	ENGINES LAB	EL-6	Teaching Station w/ Computer	1		•				•	Integrated Computer, Monitor & A/V control.
143	ENGINES LAB	EL-8	White Board	4		•		•			See schedules on sheet AF601
143	ENGINES LAB	EL-9	Shop Stool	28						•	

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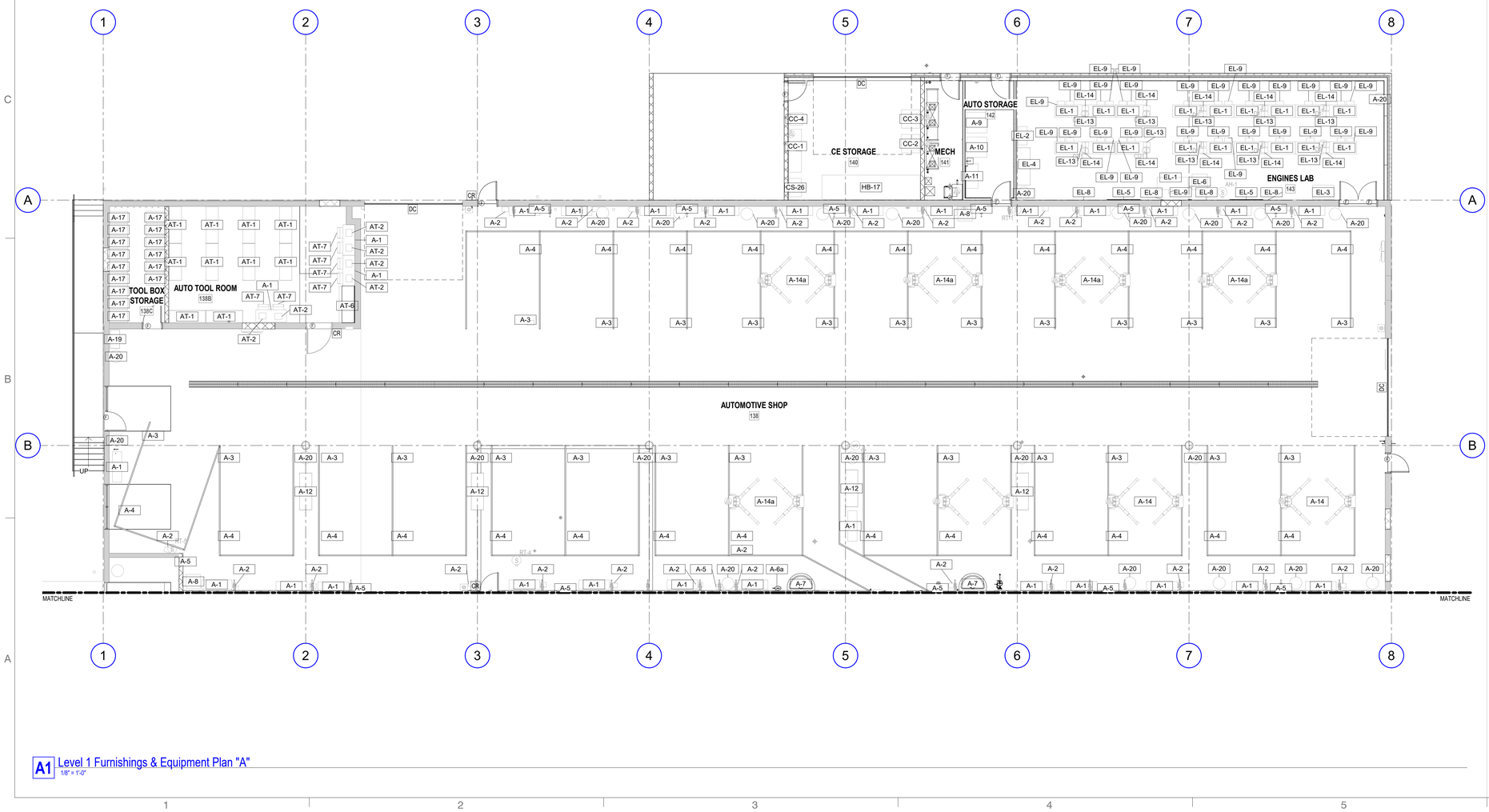
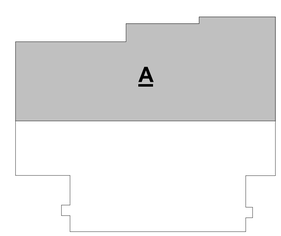
EQUIPMENT SCHEDULE - LEVEL 1 AREA A

Room #	Room Name	Type Mark	Asset Name	Manufacturer	Model	Count	Dimensions H	Dimensions L	Dimensions W	Existing	New	CFCI	OFCI	OFOI	Special Requirements
138	AUTOMOTIVE SHOP	A-2	100' Hose Reel			26		1' - 1 1/4"			•	•			
138	AUTOMOTIVE SHOP	A-3	Exhaust Ventilation Hose Reel			26		1' - 1 1/4"			•	•			
138	AUTOMOTIVE SHOP	A-4	Drop Light w/ Electrical Outlet			26		1' - 1 1/4"			•	•			
138	AUTOMOTIVE SHOP	A-5	Water Hose Reel			13		1' - 1 1/4"			•	•			
138	AUTOMOTIVE SHOP	A-8	Telescoping Transmission Jack	Strongway	46203	2		2' - 4"			•		•		
138	AUTOMOTIVE SHOP	A-12	Heavy Duty Tool Shelving			4					•			•	
138	AUTOMOTIVE SHOP	A-14	Two Post Automotive Lift	Rotary	SP012UTT5	3					•	•			208-230V, 1PH, 20A, These two (2) lifts are to be part of the construction scope. All necessary connections and services for all eight (8) lift locations to be installed during this project. The exact stall location for the two lifts to be determined by the owner.
138	AUTOMOTIVE SHOP	A-14a	Two Post Automotive Lift (Optional)	Rotary	SP012UTT5	4					•	•			208-230V, 1PH, 20A, These six (6) lifts are optional for the owner. Provide electrical connections, necessary structural bases, and other related services for all eight lift locations. So that if or when the owner purchases additional lifts, they can install the lifts in the planned stalls.
138	AUTOMOTIVE SHOP	A-19	Heavy Duty Delivery Shelf			1					•			•	
138	AUTOMOTIVE SHOP	A-20	Waste Bin			22	3' - 0"	3' - 0"	3' - 0"		•			•	
138B	AUTO TOOL ROOM	AT-1	Heavy Duty Shelving			10					•			•	
138B	AUTO TOOL ROOM	AT-2	Desktop Computer			6		1' - 2"			•			•	
138B	AUTO TOOL ROOM	AT-6	Pharos Printing Station	Lulzbot	MINI	1		2' - 6"			•			•	
138C	TOOL BOX STORAGE	A-17	Student Tool Box			15		3' - 0"		•				•	Student Provided
140	CE STORAGE	CC-1	Curing Tank			1		7' - 0"		•				•	This is in addition to the curing room. This would serve as a submerged curing chamber while the room would be humidity controled. A floor drain in the curing room will be necessary.
140	CE STORAGE	CC-2	Cooling Cabinet			1	3' - 0"	3' - 0"	3' - 0"	•				•	
140	CE STORAGE	CC-3	Coating Machine			1	3' - 0"	3' - 0"	3' - 0"	•				•	
140	CE STORAGE	CC-4	Meter			1	2' - 0"	2' - 0"	2' - 0"	•				•	
140	CE STORAGE	CS-26	Chest Freezer			1		3' - 0"		•				•	
140	CE STORAGE	HB-17	Molding Rack			1		16' - 0"			•	•			
142	AUTO STORAGE	A-9	Used Oil Tank	New Pig	PAK248	1		3' - 4"		•			•		
142	AUTO STORAGE	A-10	Used Coolant Tank	New Pig	PAK248	1		3' - 4"		•			•		440V, 1PH, 20-30A
142	AUTO STORAGE	A-11	Sm Parts Washer Cuda	Cuda		1		4' - 0"		•			•		Cold Water Supply Needed
143	ENGINES LAB	A-20	Waste Bin			2	3' - 0"	3' - 0"	3' - 0"		•			•	
143	ENGINES LAB	EL-2	Wheeled Tool Storage Cart			1		3' - 0"		•				•	
143	ENGINES LAB	EL-3	Folding Engine Stand	JEGS	80039	1		3' - 6"			•			•	
143	ENGINES LAB	EL-4	Tool Storage Cabinet	Matco	4S Triple Bay 25"	1		2' - 1"			•		•		
143	ENGINES LAB	EL-5	Monitor			2					•	•			
143	ENGINES LAB	EL-13	Drop Down Electrical Cord			10		1' - 1 1/4"			•	•			
143	ENGINES LAB	EL-14	Compressed Air Hose Reel			10		1' - 1 1/4"			•	•			

3



A1 Level 1 Furnishings & Equipment Plan "A"
1/8" = 1'-0"



KEY PLAN

method studio

360 west aspen avenue
salt lake city, utah 84101
801 532 4422

STATE OF IDAHO · SCOTT BOYD MORGAN · 10496 · LICENSED ARCHITECT

10-27-2020

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project#: 20.0220
byuidaho project#: 12005
date: october 27, 2020

revisions :

3	Addendum #3	11/13/2020

title:

Interior Furnishings & Equipment

sheet:

A1101a

100% construction documents

EQUIPMENT SCHEDULE - LEVEL 1 AREA B

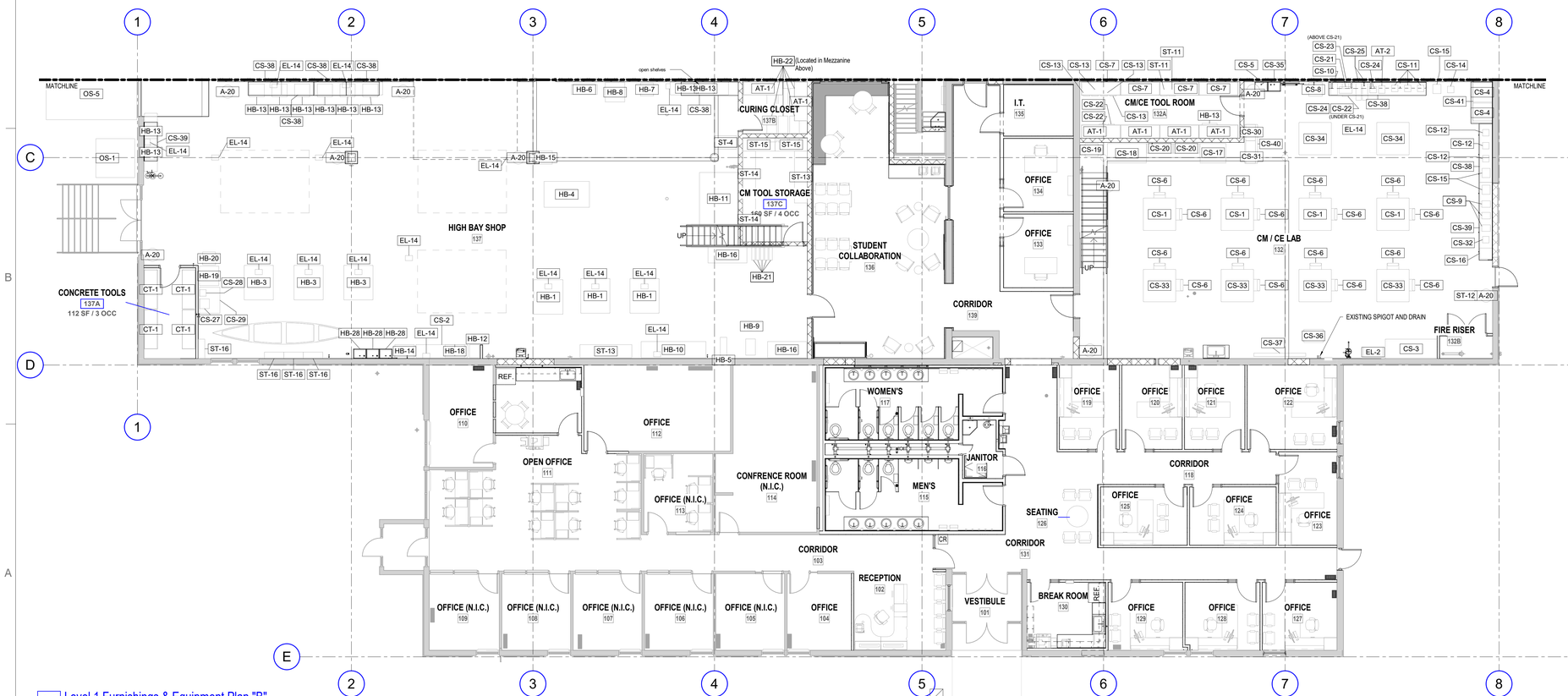
Room #	Room Name	Type Mark	Asset Name	Manufacturer	Model	Count	Dimensions H	Dimensions L	Dimensions W	Existing	New	CFCI	OFCI	OFOI	Mounting Requirements	Special Requirements
132	CM / CE LAB	A-20	Waste Bin			4	3' - 0"	3' - 0"	3' - 0"		•			•		
132	CM / CE LAB	AT-2	Desktop Computer			1		1' - 2"			•			•		
132	CM / CE LAB	CS-4	Soils/Asphalt Oven			2		3' - 0"		•				•		Exhaust for Ovens, Capping Molds, Melting Pots provided by Mechanical Contractor. See Mechanical Dwgs.
132	CM / CE LAB	CS-5	New Stainless Steel Sink			1					•	•				
132	CM / CE LAB	CS-8	Specific Gravity Scale			1		2' - 1"		•				•		Locate near floor drain
132	CM / CE LAB	CS-9	Small Sleeve Shaker			3		1' - 0"		•				•	Bolted to counter top.	
132	CM / CE LAB	CS-10	Sleeve Cleaner			1		1' - 1"		•				•	Sits on counter top	(2) 110V Outlets Needed. Needs to be next to a sink for water and drainage. Provide Tempered Water.
132	CM / CE LAB	CS-11	Small Balance			3		1' - 0"		•				•		
132	CM / CE LAB	CS-12	Medium Balance			3		1' - 0"		•				•		
132	CM / CE LAB	CS-14	Small Soil Mixer			1		1' - 0"		•				•		
132	CM / CE LAB	CS-15	Large Soil Mixer			3		1' - 3"		•				•		
132	CM / CE LAB	CS-16	Microwave Oven			1		2' - 0"		•				•		
132	CM / CE LAB	CS-17	Asphalt Gyratory Compactor			1		4' - 0"		•				•		
132	CM / CE LAB	CS-18	Instron Testing Machine			1		6' - 0"		•				•		
132	CM / CE LAB	CS-19	Instron Computer & Cart			1		2' - 0"			•			•		Locate next to Instron Testing Machine
132	CM / CE LAB	CS-20	Soils Direct Shear Testing Device	Humboldt		2		4' - 0"		•				•		Must be located near other soils testing equipment that have this note.
132	CM / CE LAB	CS-21	Soils Flex Panel	Humboldt		1		2' - 0"		•				•	Mounted to counter top	Must be located near other soils testing equipment that have this note. Compressed air required.
132	CM / CE LAB	CS-22	Vacuum Pump			1		1' - 0"		•				•		
132	CM / CE LAB	CS-23	De-aired Water Tank	Humboldt		1		1' - 0"		•				•	Attaches to the flex panel.	One must be located near other soils testing equipment that have this note. The other two must be located near location for Jar Tests.
132	CM / CE LAB	CS-24	Pro-Loader and Triaxial Cell	Humboldt		1		1' - 0"			•			•	Needs to be mounted to a small shelf 3' to 6' above top of flex panel for gravity feed of water into panel. Need some way to connect to wall to prevent tipping and falling.	Must be located near other soils testing equipment that have this note. Air, water, vacuum provided through flex panel.
132	CM / CE LAB	CS-25	Consolidometer	Humboldt		2		2' - 10"			•			•	Must be bolted to a solid counter top to support applied weights. Narrow dimention is toward the front of the counter and overhangs counter by 7" (3.5"	Must be located near other soils testing equipment that have this note. Air, water, vacuum provided through flex panel.
132	CM / CE LAB	CS-30	Jar Test Apparatus (4 Jars)			1		1' - 6"		•				•		Must have space to remain set up throughout semester
132	CM / CE LAB	CS-31	Jar Test Apparatus (6 Jars)			1		1' - 6"		•				•		Must have space to remain set up throughout semester
132	CM / CE LAB	CS-32	Analytical Balance			1		1' - 0"		•				•		Must have space to remain set up throughout semester
132	CM / CE LAB	CS-35	Existing Stainless Steel Sink			1				•		•				
132	CM / CE LAB	CS-37	Short Throw Projector			1		8' - 0"		•			•			Connects with Short Throw Projector
132	CM / CE LAB	EL-14	Compressed Air Hose Reel			1		1' - 1 1/4"			•	•				
132	CM / CE LAB	ST-12	Turbidity Meter			1		1' - 0"		•				•		Stored in cabinet when not in use. One new, one existing.
132A	CM/CE TOOL ROOM	AT-1	Heavy Duty Shelving			4					•			•		Moisture Resistant with Grided Shelf for drainage
132A	CM/CE TOOL ROOM	CS-7	Heavy Duty Shelving			4				•				•		
132A	CM/CE TOOL ROOM	CS-13	Large Balance			4		1' - 0"		•				•		
132A	CM/CE TOOL ROOM	CS-22	Vacuum Pump			2		1' - 0"		•				•		

FURNITURE SCHEDULE - LEVEL 1 AREA B

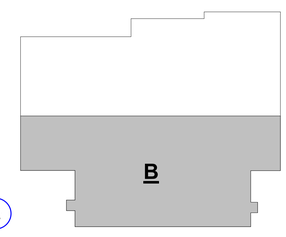
Room #	Room Name	Type Mark	Asset Name	Count	Existing	New	CFCI	OFCI	OFOI	Special Requirements
132	CM / CE LAB	CS-1	5' x 5' Wood Top Project Table	4		•			•	New Table, Power Drop Above Each Table.
132	CM / CE LAB	CS-3	3' x 8' Stainless Steel Teaching Work Bench	1		•			•	Table with Casters
132	CM / CE LAB	CS-6	CM/CE Classroom Chair	16		•			•	
132	CM / CE LAB	CS-33	5' x 5' Wood Top Project Table	4	•				•	Existing Table With Lockers. Power Drop Above Each Table
132	CM / CE LAB	CS-34	5' x 5' Stainless Steel Project Table	2		•			•	New Table, Power Drop Above Each Table.
132	CM / CE LAB	CS-36	Teaching Station w/ Computer	1		•			•	Connects with Short Throw Projector
132	CM / CE LAB	CS-38	Existing Open Storage Cabinets	2	•		•			Existing Casework to be relocated
132	CM / CE LAB	CS-39	Existing Open Storage Metal Cabinets	1	•		•			Existing Casework to be relocated
132	CM / CE LAB	CS-40	2' x 5' Stainless Steel Top Work Table	1		•			•	
132	CM / CE LAB	CS-41	3' x 6' Stainless Steel Work Table	1	•				•	Table with Casters
137	HIGH BAY SHOP	CS-2	2' x 8' Stainless Steel Top Work Table	1		•			•	
137	HIGH BAY SHOP	CS-38	Existing Open Storage Cabinets	5	•		•			Existing Casework to be relocated
137	HIGH BAY SHOP	CS-39	Existing Open Storage Metal Cabinets	1	•		•			Existing Casework to be relocated
137	HIGH BAY SHOP	HB-1	Wood Top Work Table	3	•				•	Existing Table With Lockers. Power Drop Above Each Table
137	HIGH BAY SHOP	HB-3	2' x 8' Stainless Steel Top Work Table	3		•			•	Installed on Casters. Power Drop Above Each Table

EQUIPMENT SCHEDULE - LEVEL 1 AREA B

Room #	Room Name	Type Mark	Asset Name	Manufacturer	Model	Count	Dimensions H	Dimensions L	Dimensions W	Existing	New	CFCI	OFCI	OFOI	Mounting Requirements	Special Requirements
132A	CM/CE TOOL ROOM	HB-13	Compound Miter Saw			1		2' - 4"			•			•		
132A	CM/CE TOOL ROOM	ST-11	UV Transmitter Meter			2		1' - 0"		•				•		Stored in cabinet when not in use. One new, one existing.
137	HIGH BAY SHOP	A-20	Waste Bin			6	3' - 0"	3' - 0"	3' - 0"		•			•		
137	HIGH BAY SHOP	CS-27	Sulfer Capping Compound Melting Pot			1		1' - 6"		•				•		Cabinet storage space for sulfur compound chips. Fume Hood Required.
137	HIGH BAY SHOP	CS-28	Vertical Capper Mold			1		1' - 0"		•				•		Install below Fume Hood.
137	HIGH BAY SHOP	CS-29	Fume Hood	Labconco	XStream	1		4' - 0"			•	•				
137	HIGH BAY SHOP	EL-14	Compressed Air Hose Reel			6		1' - 1 1/4"			•	•				
137	HIGH BAY SHOP	HB-4	Table Saw	Delta	36-L352	1		4' - 0"		•				•		
137	HIGH BAY SHOP	HB-5	Bandsaw	Jet	JWBS-16B	1		3' - 0"		•				•		
137	HIGH BAY SHOP	HB-6	Jointer	Delta	865W480	1		4' - 0"		•				•		
137	HIGH BAY SHOP	HB-7	Belt Sander	Powermatic	DS-20-3	1		2' - 0"		•				•		
137	HIGH BAY SHOP	HB-8	Combo Sander	Delta	865W480	1		3' - 0"		•				•		
137	HIGH BAY SHOP	HB-9	Drill Press			1		2' - 6"		•				•		
137	HIGH BAY SHOP	HB-10	Panel Saw	Delta	865W480	1		10' - 0"		•				•		
137	HIGH BAY SHOP	HB-11	Brake Press 70 Tons			1		8' - 1"		•				•		
137	HIGH BAY SHOP	HB-12	Metal Abrasive Chop Saw			1		1' - 6"		•				•		
137	HIGH BAY SHOP	HB-13	Compound Miter Saw			10		2' - 4"		•				•		
137	HIGH BAY SHOP	HB-14	Tile Saw			1		3' - 0"		•				•		
137	HIGH BAY SHOP	HB-15	Table Saw Dust Collector			1		2' - 0"		•				•		
137	HIGH BAY SHOP	HB-16	Scaffolding			2		6' - 0"		•				•		
137	HIGH BAY SHOP	HB-18	Masonry Saw			1	3' - 0"	3' - 0"	2' - 0"	•				•		
137	HIGH BAY SHOP	HB-19	Concrete Compression Tester			1		3' - 0"		•				•		
137	HIGH BAY SHOP	HB-20	Concrete Rupture Tester			1		2' - 0"		•				•		
137	HIGH BAY SHOP	HB-21	Ladder			5	10' - 0"	2' - 0"	6"	•				•		
137	HIGH BAY SHOP	HB-28	Stainless Steel Sink			3					•	•				
137	HIGH BAY SHOP	ST-4	Concrete Mixer			1		3' - 4"		•				•	Bolted to counter top.	Will be stored and moved to mixing locations when used. Mixing location should be close to water and washout.
137	HIGH BAY SHOP	ST-13	Heavy Duty Shelving			1		8' - 0"			•			•		
137	HIGH BAY SHOP	ST-16	Material Storage Rack			4		3' - 0"			•			•		
137A	CONCRETE TOOLS	CT-1	Heavy Duty Shelving			4					•			•		Moisture Resistant with Grided Shelf for drainage
137B	CURING CLOSET	AT-1	Heavy Duty Shelving			2					•			•		
137B	CURING CLOSET	HB-22	Saw Horse			6	3' - 0"	4' - 0"	1' - 6"	•				•		
137C	CM TOOL STORAGE	ST-13	Heavy Duty Shelving			1		8' - 0"			•			•		
137C	CM TOOL STORAGE	ST-14	Heavy Duty Shelving			2		7' - 0"			•			•		
137C	CM TOOL STORAGE	ST-15	Heavy Duty Shelving			2		5' - 0"			•			•		
137D	HB SHOP OUTSIDE	OS-1	Concrete Wash Out			1		6' - 0"		•				•		Located Outside
137D	HB SHOP OUTSIDE	OS-5	Dumpster			1		14' - 0"		•				•		Located Outside



A1 Level 1 Furnishings & Equipment Plan "B"
1/8" = 1'-0"



KEY PLAN

method studio
360 west aspen avenue
salt lake city, utah 84101
801 532 4422

10-27-2020

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project#: 20.0220
byuidaho project#: 12005
date: october 27, 2020

revisions :

3	Addendum #3	11/13/2020

title:

Interior Furnishings & Equipment

sheet:

AI101b

100% construction documents

TBSE inc
STRUCTURAL ENGINEERS
233 North 1250 West #201 P. 801.298.8795
Centerville, Utah 84014 F. 801.298.1132

November 13, 2020

BYUI Engineering Technology Center (ETC) Addendum #3

SE-101

1. Modified recess floor area to match Architect.

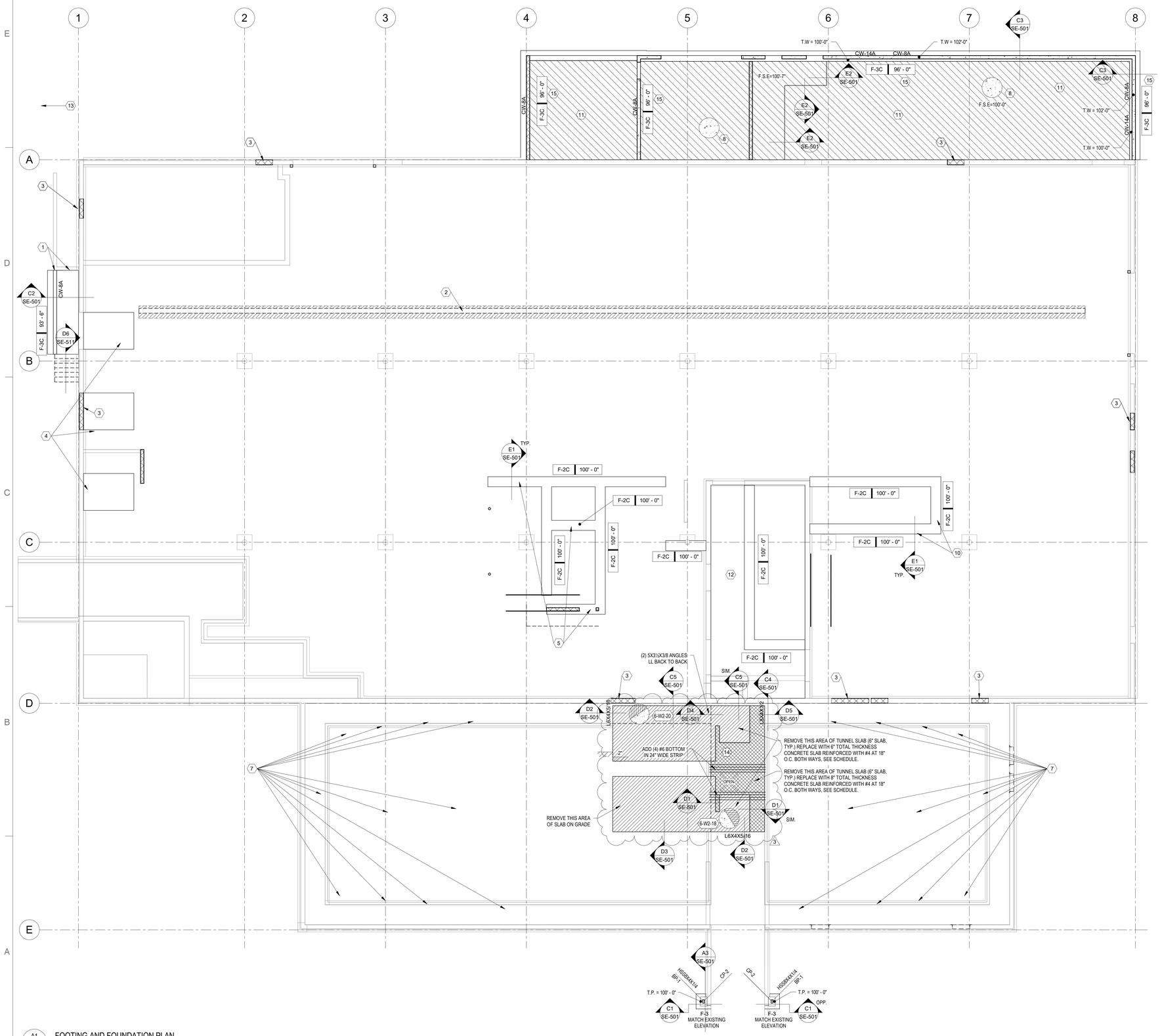
SE-501

1. Detail 5/SE-501: Modified depth of concrete on metal deck to 8". Changed angle to L8x4x12/4. This was to make adjustments for recess slab for bath rooms.

Thanks,

Donald Lee Barfuss

Donald Lee Barfuss



A1 SE-101 FOOTING AND FOUNDATION PLAN

1/8" = 1'-0"

KEYED SHEET NOTES

- INDICATES NOTES ARE KEYED ON PLAN.
1. DRILL AND EPOXY TO EXISTING. 5" MINIMUM EMBEDMENT.
2. DEMOLISH SLAB TO INSTALL NEW FRENCH DRAIN, SEE SHEET M301 FOR PIPE RUNNING PARALLEL TO FRENCH DRAIN. REPAIR AS REQ'D.
3. INFILL MASONRY WALL, SEE DETAIL A1/SE-511
4. INFILL DOCK LEVELER WITH 6" REINFORCED CONCRETE WALLS AND SLAB WITH #4 AT 18"O.C. EACH WAY. FILL WITH GRAVEL.
5. DEMOLISH SLAB TO INSTALL NEW FOUNDATION FOR MEZANINE. REPLACE AS REQ'D.
6. NOT USED.
7. MODIFY FLOOR VENTS, COORDINATE WITH MECHANICAL FILL EXISTNIG VENT OPENINGS WITH 1/4" PLATE THAT EXTENDS 3" PAST OPENING AND SCREW INTO CONCRETE WITH 1/4"Ø SIMPSON CONCRETE SCREWS AT 4" O.C. CUT NEW OPENINGS WITH DRILLED HOLES AT CORNERS AND CUTTING BETWEEN HOLES. DO NOT OVERCUT CORNERS.
8. PROVIDE NEW 6" CONCRETE SLAB ON 4" FREE DRAINING GRAVEL. REINFORCE WITH #4 AT 18"O.C. EACH WAY, CENTER OF SLAB
10. NEW MW-8A REINFORCED MASONRY WALL ON 12"X2' FOOTING.
11. LOWER SLAB TO BE SAME ELEVATION AS MAIN BUILDING. NEW 6" SLAB ON GRADE.
12. FREEZER SLAB: REMOVE EXISTING TOP SLAB AND FOAM. FILL WITH GRAVEL AS REQUIRED. PROVIDE 5" SLAB ON GRADE REINFORCED WITH #4 AT 24"O.C. EACH WAY IN CENTER OF SLAB.
13. FOR NEW GUARDRAIL AT RETAINING WALL, SEE DETAIL D4/SE-521.
14. ALL STEEL ANGLES AND PLATES ETC. IN THE TUNNEL AREA SHALL BE GALV. AFTER FABRICATION.
15. TOP OF FOUNDATION CALLOUTS ARE APPROX. MATCH EXISTING FOUNDATION TO AVOID ROCK BLASTING.

GENERAL SHEET NOTES

- INDICATES NOTES ARE KEYED ON PLAN.
1. SEE ARCHITECTURAL DRAWINGS FOR SLOPES AND RECESSES IN FLOOR SLABS
2. FOR CONCRETE WALL REINFORCING, SEE CONCRETE WALL SCHEDULE ON SHEET SE-002.
3. FOR CONCRETE PIER/COLUMN REINFORCING, SEE CONCRETE PIER SCHEDULE ON SHEET SE-002.
4. FOR CORNER, INTERSECTION, AND END BARS IN CONCRETE WALLS SEE DETAILS A1 AND A2/SE-501.
5. FOR CONTROL JOINTS IN SLABS ON GRADE SEE DETAIL B4/SE-501.

LEGEND

- INDICATES CONCRETE SLAB ON GRADE, SEE PLAN NOTES.
- F-?? ??'-??" — INDICATES CONCRETE FOOTING TYPE AND TOP OF FOOTING ELEVATION.
- INDICATES CONCRETE FOOTING & FOUNDATION WALL, SEE SCHEDULES FOR SIZE AND REINFORCING.
- CW-?? — INDICATES CONCRETE WALL, SEE SCHEDULE.
- CW-?? — INDICATES RECESS IN CONCRETE FOUNDATION WALL
- INDICATES RECESSED SLAB, SEE ARCH.
- INDICATES DIFFERENT SLAB THICKNESS
- INDICATES ISOLATION JOINT IN SLAB ON GRADE. SEE DETAIL
- 7" — INDICATES CHANGE IN SLAB ELEVATION AND DEPTH FROM F.S.E.
- S — S — INDICATES STEP IN WALL
- CP-? — INDICATES CONCRETE PIER (CP), SEE SCHEDULES
- MW-?? — INDICATES MASONRY WALL, SEE SCHEDULE.
- MW-?? — INDICATES NON-BEARING MASONRY WALL.
- MB-?? — INDICATES MASONRY BEAM, SEE SCHEDULE.
- M?-? — INDICATESMASONRY PIER (MP) OR COLUMN (MC), SEE SCHEDULES
- HSS?X?X? BP-? — W??X?? BP-? — INDICATES STEEL HSS (HSS) OR STEEL WIDE FLANGE (W). COLUMN AND BASE PLATE, SEE SCHEDULES
- HSS?X?X? CF — INDICATES CONCRETE FILLED STEEL COLUMN, FILL WITH 4000psi SELF CONSOLIDATING CONCRETE.
- INDICATES CONCRETE ON METAL DECK

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233 North 1250 West #201 | P. 801.298.8795
Centerville, Utah 84014 | F. 801.298.1132

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project #:
byu idaho project # : 12006
date: Oct. 27, 2020

revisions :

1	Addendum 1	11/5/2020
2	Addendum 2	11/10/2020
3	Addendum 3	11/14/2020

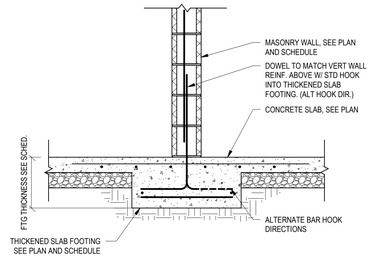
title:

FOUNDATION PLAN

sheet:

SE-101

100% Construction Documents



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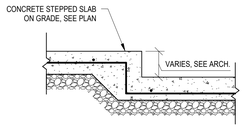

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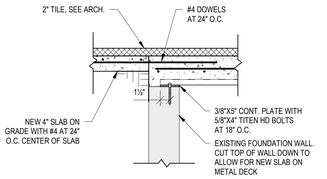

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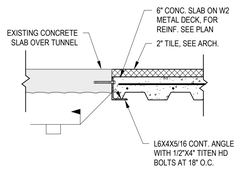

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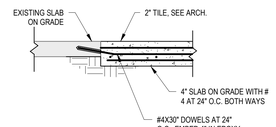

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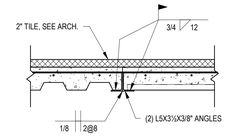

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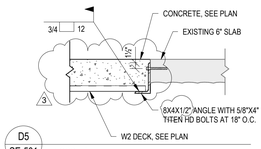

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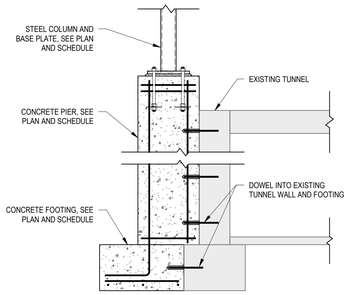
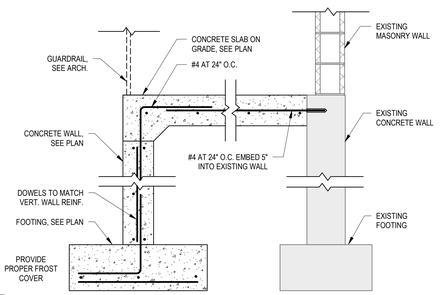


C1 SE-501 NO SCALE



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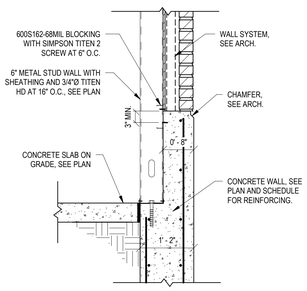

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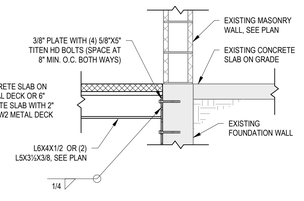

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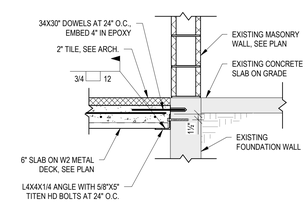

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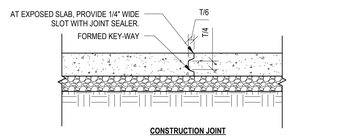

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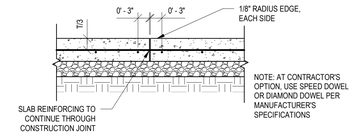

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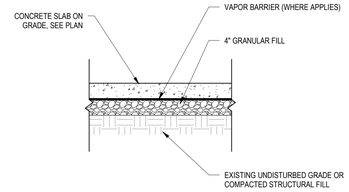

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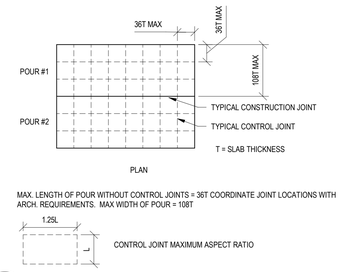

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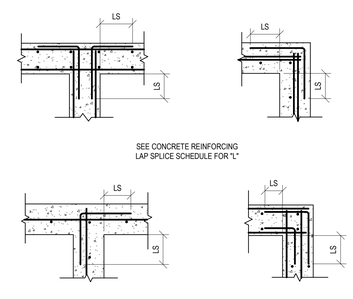

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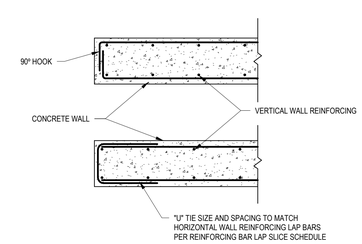

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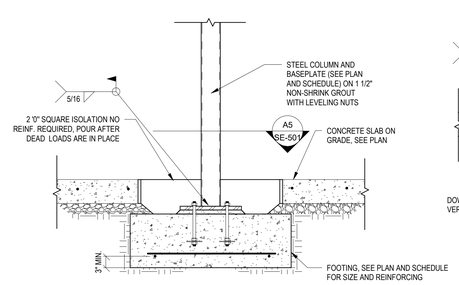

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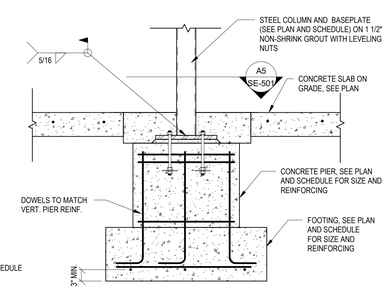

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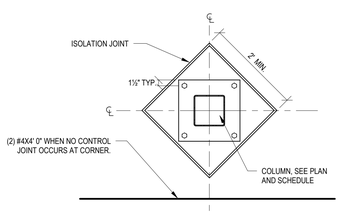

A5 SE-501 NO SCALE

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360 west aspen avenue
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233 North 1250 West #201 | P. 801.298.8795
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PROFESSIONAL ENGINEER LICENSED 15762 11/13/2020 STATE OF UTAH DONALD L. BARTUS

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project #: byu idaho project # : 12006

date: Oct. 27, 2020

revisions :

1	Addendum 1	11/5/2020
3	Addendum 3	11/14/2020

title:

FOUNDATION DETAILS

sheet:

SE-501

100% Construction Documents

MECHANICAL ADDENDUM NO.3

November 13, 2020

Project Name: BYU-I ENGINEERING TECH CENTER

This addendum consists of 1 pages and 29 pg. attachment for a total of 30 pages.

Specifications:

Item S1- Replace Spec. 23 0953 Building Automation System with new specifications attached.

Drawings

Item D1- Sheet P301 See revised detail D, attached.

Item D2- Sheet M301 See revised detail O, attached.

Item D3- Sheet M302 See revised detail D, G & H.

Item D4- Sheet P201 Add new detail 6, attached.

Item D5 Sheet M101 See revised detail attached

Item D6 Sheet P100 See revised detail, attached

Item D7 Sheet P101 See revised detail attached

Item D8 Sheet M302 see revised detail attached

Prior Approvals

Dampers & Louvers	Pottoroff-OK
Fan Curbs	Twin City Fans- OK
Carbon Monoxide Exhaust Systems	Car-Mon- OK
Unit Heaters	Zehnder Rittling- OK
Gauges & Thermostats	Miljoco- OK
Emergency Shower	Acorn- OK
Faucets	Symmons & Chicago- OK
Trench Drain	Jay R Smith & Dura Trench- OK
Flush Valve	Delany-OK

Engineered Systems Associates Mechanical Engineers

SECTION 23 0953 – BUILDING AUTOMATION SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, General provisions of contract, including General and Supplementary Conditions and Section 23 0501 apply to this section.

1.2 SCOPE OF WORK

A. The Facility Management and Control System (FMCS) Contractor shall furnish and install a fully integrated building automation system, incorporating direct digital control (DDC) for energy management, equipment monitoring and control as herein specified. System shall be JCI series 10 to match existing BYUI controls in this building.

B. The system shall only employ BACnet communications in an open architecture with the capabilities to support a multi-vendor environment. The system shall be capable of integrating third party systems and utilizing the following standard protocols.
   1. BACnet communication according to ASHRAE standard ANSI/ASHRAE 135-2004.
   2. OPC server communications according to OPC Data Access 2.0 and Alarms and Events 1.0.

C. The FMCS shall be web based and shall provide total integration of the facility infrastructure systems with user access to all system data either locally over a secure Intranet within the building or by remote access by a standard Web Browser over the Internet.

D. All materials and equipment used shall be standard components, regularly manufactured with standard part numbers and owner’s manuals for this system.

1.3 QUALITY ASSURANCE

A. The system shall be furnished, engineered, and installed by the manufacturers' locally authorized representative. The controls contractor shall have factory-trained technicians to provide instruction, routine maintenance, and emergency service within 24 hours upon receipt of request.

B. At the time of bid, all FMCS Application Specific Controllers and Programmable Equipment Controllers shall be listed as follows:
   1. Underwriters Laboratory, UL 916
   2. FCC Regulation, Part 15, Class B

1.4 SUBMITTALS

A. Submit 6 complete sets of documentation in the following phased delivery schedule:

1. SNE and controller schedules
2. Equipment data cut sheets
3. System schematics, including:
   a. sequence of operations
   b. point names
   c. point addresses
   d. point to point wiring
   e. interface wiring diagrams
   f. panel layouts
   g. system riser diagrams
4. AutoCAD compatible as-built drawings.

B. Upon project completion, submit operation and maintenance manuals, consisting of the following:
   1. Index sheet, listing contents in alphabetical order
   2. Manufacturer's equipment parts list of all functional components of the system, disk of system schematics, including wiring diagrams
   3. Description of sequence of operations
   4. As-Built interconnection wiring diagrams
   5. Trunk cable schematic showing remote electronic panel locations, and all trunk data
   6. List of connected data points, including panels to which they are connected and input device (ionization detector, sensors, etc.)
   7. Copy of the warranty/guarantee
   8. Operating and maintenance instructions

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Johnson Controls Metasys by Johnson Controls Salt Lake City Branch

   1. Contact: Bradley Scott 801-974-4502, Bradley.Lee.Scott@jci.com

2.2 The Facility Management Control System (FMCS) shall be comprised of a network of interoperable, stand-alone digital controllers. The FMCS shall incorporate BACnet MSTP485 or Ethernet in all unitary, terminal and other device controllers. The system shall include:

A. Series Network Engines (SNE) for distributed system applications, databases and networking functions.
   1. Series Network Engine Large, Dual Trunk
      a. The SNE shall support a minimum of:
         i. One Hundred (100) BACnet Standard MS/TP controllers per trunk (200 total).
         ii. Two Hundred Fifty Five (255) LonWorks FTT10 Free Topology control devices.
         iii. One Hundred (100) N2 control devices per trunk (200 total).
      b. The SNE shall include troubleshooting LED indicators to identify the following conditions:

i. Power – On/Off.
ii. Ethernet Traffic – Ethernet Traffic/No Ethernet Traffic.
iii. Ethernet Connection Speed – 10 Mbps/100 Mbps/1000 Mbps.
iv. FC Bus A – Normal Communications/No Field Communications.
v. FC Bus B – Normal Communications/No Field Communications.
vi. Peer Communication – Data Traffic between NAE Devices.
vii. Run – SNE Running/NAE in Startup/SNE Shutting Down/Software Not Running.
viii. Bat Fault – Battery Defective, Data Protection Battery Not Installed.
ix. 24 VAC – 24 VAC Present/Loss of 24 VAC.
x. Fault – General Fault.

c. Communications Ports – The SNE shall provide the following ports for operation of operator I/O devices, such as industry-standard computers, modems, and portable operator's terminals.
i. Two (2) USB port.
ii. Two (2) RS-232 serial data communication port.
iii. Two (2) RS-485 port.
iv. One (1) Ethernet port.

2. Provide Johnson Controls SNE.

B. Programmable Equipment Controllers (PEC's) for control of primary mechanical systems and distributed system applications. Controllers shall be fully programmable to create custom control solutions. System shall use the latest controller.
1. The PEC's shall communicate via BACnet communication according to ASHRAE standard ANSI/ASHRAE 135-2004.
a. The PEC software database must be able to execute all of the specified mechanical system controls functions. The programming software shall be able to bundle software logic to simplify control sequencing. All values, which make up the PID output value, shall be readable and modifiable at a workstation or portable service tool. Each input, output, or calculation result shall be capable of being shared/bound with any controller or interface device on the network.
b. Provide programming, engineering, and configuration tools used for the project duly licensed to the owner for owner's use.
c. PEC's shall be able to execute custom, job-specific processes defined by the user, to automatically perform calculations and special control routines.
d. A single process shall be able to incorporate measured or calculated data from any and all other PEC's on the network. In addition, a single process shall be able to issue commands to points in any and all other PEC's on the network.
e. Each PEC shall support firmware upgrades without the need to replace hardware.
f. Each PEC shall continuously perform self-diagnostics, which include communication diagnosis and diagnosis of all components.
g. In the event of the loss of normal power, there shall be an orderly shutdown of all PEC's to prevent the loss of database or operating system software. Non-volatile memory shall be incorporated for all critical controller

configuration data and battery backup shall be provided to support the real-time clock and all volatile memory for a minimum of 72 hours.

h. Upon restoration of normal power, the PEC shall automatically resume full operation without manual intervention.
i. All PEC's control programming and databases must be stored in Flash memory, therefore eliminating data loss, and downtime and re-load time.
j. Provide a separate PEC for each AHU or other HVAC system such that the inputs, calculations, and outputs shall reside on a single controller.

2. Provide Johnson Controls M4 series,M4-CGM, and MS-IOMXXXX. FEC's shall not be allowed.

2.3 MODERN USER INTERFACE

A. The Integrated Automation System shall include a Mobile User Interface which is an integral part of the IAS server software.

B. The Mobile User Interface shall meet the following requirements, at a minimum:
1. The IAS Mobile User Interface shall be served from the IAS server to any standard browser and shall be HTML5-compliant, so as to operate on a wide variety of user interface devices, including PC's, Apple iMac, IOS and Android tablets and Smart Phones.
2. The Mobile User Interface shall not require any third-party applications or software on the Client device for any aspect of functionality
3. Organization of all space, equipment and point information in a familiar way (using owner-designated equipment names and location descriptions), reducing the need for extensive training prior to use.
4. The IAS UI shall use and support HTTPS with TLS 1.2, and use self-signed certificates.

C. The Mobile User Interface shall allow complete operability of the IAS and any Controllers, devices, or systems integrated with the IAS directly from an HTML5 browser, including such functionality as, but not limited to:
1. Alarm management, including viewing, acknowledging, and clearing alarms, as per the individual Operators assigned permissions and privileges.
2. Viewing and overriding Schedules, and creating temporary Schedules, as per the individual Operators assigned permissions and privileges.
3. Viewing and overriding system points, including defined variables, controls setpoints, output values, using text-based and/or graphical screens, as per the individual Operators assigned permissions and privileges.
4. Historical trend viewing and report generation, as per the individual Operators assigned permissions and privileges.

D. The Mobile User Interface shall offer application of the same navigationmechanisms across any client device (e.g. Smart phone, tablet, personal computer) for consistency and ease of use. The same user interface elements shall be accessible from any type of PC or mobile device running any type of operating system supported (e.g. iOS, Android, Windows®). The Mobile User Interface shall automatically adapt and optimize the display for the screen size and touch screen navigation.

E. The scope of an individual Operator's view and control over the IAS shall be described and limited by their account and access level. The IAS contractor will include and allocate 40 hours in the contract to work with the owner's personnel to define, test, and establish unified, documented, standard point naming conventions, equipment modeling and sequence of operations, alarm sequences, scheduling, and UI graphics layout and navigation for all systems and devices connected to the site IAS.

F. The Mobile User Interface shall have a Search field accessible on every page
   1. The scope of the Search shall be dependent on the account and access level of the Operator
   2. Searching shall include point and device names, addresses, IP addresses, and descriptions, at a minimum
   3. Searching shall include not just equipment, but locations, including but not limited to room names, numbers, and descriptions
   4. The search field shall automatically list the most relevant results when as little as 3 successive characters have been entered
   5. The search field shall allow wildcards as placeholders for individual characters as well as for substrings.
   6. Search results, as with every other page in the Mobile User Interface, shall have the capability to be bookmarked, for easy future access

G. The Mobile User Interface shall offer logical, intuitive, relational navigation of both the physical spaces that the IAS serves and the equipment that the IAS controls
   1. When viewing any location or device, relevant information about the space served as well as the most important information from the relevant equipment shall be displayed
   2. All graphics shall offer direct navigation to both the relevant equipment graphics (AHU, VAVs, etc) as well as the relevant location graphics (Wing, floor, etc)
   3. Navigation shall be hierarchical in nature, for both equipment and location navigation
      A. The highest level graphics and navigation trees shall display the largest location grouping (Campus, Building, etc) as well as a summary overview of that location
      B. From there, the Operator can logically navigate to the most granular level of locations (Campus->Building->Floor->Wing->Room, as an example)
      C. Equipment navigation shall be similarly hierarchical
      D. Navigation shall also be accomplished via hierarchical tree structures
      E. Hierarchical tree structures shall simplify and accelerate the navigation in order to support text or tabular navigation on Operator interface devices with small or limited screen sizes, such as a smart phone

H. In addition to the equipment and location navigation trees, the Mobile User Interface shall also offer an OT Network navigation tree and functionality
   1. It shall be possible for qualified users to view a navigation tree of devices connected to the IAS network in order to enable troubleshooting of equipment and communications. Clicking or tapping on the Network Icon at the top of the Navigation Tree will access this alternate view. Users without the necessary access rights shall not see the Network Icon.

2. A click or tap on a device in the network tree shall display a dashboard for that device including information regarding related equipment and access to a separate focus view of commandable points associated with the piece of hardware.
3. A click or tap on such a point shall display a control dialogue box allowing the user to modify or command that point as indicated. The dialog box shall contain an annotation box for describing why the action was taken or special circumstances that apply. A user shall also be able to see the current command priority in the IAS within the point dialog box as well, making it easier to determine what command priority us currently active on a point object.
4. It shall be possible to hide the Network Tree and return to the Spaces Tree at any time by clicking on the Spaces Icon above the tree.
5. Specific hardware and software types in the Network tree shall also include access to one or more the following views in their dashboard depending on hardware type or network element (e.g. MS/TP trunk):
   a. Summary View
   b. Diagnostic View
   c. Network View
   d. Trend View
6. Navigation shall be accomplished logically based on how IAS devices are networked together on the OT network

I. Cyber Health Dashboard
1. The Mobile User Interface shall provide a dedicated dashboard display that informs and educates system administrators of relevant and critical user account and system information related to the cybersecurity health of the IAS. The Cyber Health Dashboard will use screen scalable reporting “widget” areas: a User Activity widget, a Security Analysis widget, and a System Status widget.
2. The User Activity widget will contain a graphical bar chart that will show successful log-in (blue bar), unsuccessful log-in (light blue bar) and locked out accounts (red bar) along with date and time of log-in event. The color-coded bar graphic will provide an easy way to view anomalies and high volume of successful or unsuccessful log-in attempts. User will be able to select from a historical database to see past data on successful, unsuccessful log-in attempts and locked out accounts.
3. The Security Analysis widget will show critical issues related to IAS accounts, including:
   A. User accounts that are set to never keep password history (ability to re-use last 11 passwords)
   B. User accounts that have passwords that never expire
   C. User accounts are set to never lock out
   D. User accounts with inactive session set to never terminate
4. The Security Analysis widget will show potential risks related to IAS accounts, including:
   A. User accounts that are set to never check for user account dormancy
   B. User accounts with inactive sessions greater than 30 minutes
   C. Dormant user accounts
   D. Temporary user accounts
   E. User account with an Account Lockout policy set to greater than 3 attempts over a period of greater than 15 minutes (either of these two)

5. The Security Analysis widget will show informational data related to IAS accounts, including:
   A. Total number of existing IAS user accounts
   B. Total number of active IAS user accounts
   C. Total number of accounts with standard access, total number of accounts with administrator role, total number of accounts with basic access
   D. Total number of disabled user accounts
6. A link to best practice policy recommendations will be available beside each user account analysis mentioned in I. sections 1 to 5 mentioned above.
7. The System Status widget will show an account overview and a supervisory engine overview.
   A. The Account overview will show total IAS user accounts with a count of active, disabled and admin user accounts.
   B. The Engine overview will show number of supervisory devices and how many are online and offline
   C. An Engine detail tab will show supervisory controller name, IP address, certificate expiration, software version and status

J. Dashboard Displays
1. The Mobile User Interface shall provide the ability to view equipment visualizations, floor plans, and/or other graphics on mobile or desktop client devices in a browser environment, without the need for additional plugins or software. Graphics shall be accessible via a space (for floorplans, campus maps, etc.) or equipment dashboard.
2. Standard dashboards shall be configured for each defined space including one of the following predefined or custom elements:
   A. Equipment Serving Space
   B. Potential Problem Areas
   C. Equipment Summary
   D. Graphic Display (if specified)
   E. Schedule
3. Standard dashboards shall be configured for each system or device (typ. mechanical or electrical equipment) including the following predefined or custom elements:
   A. Trend
   B. Equipment Activity Summary
   C. Equipment Relationships Summary
   D. Equipment Data
   E. Graphic Display (if specified)
   F. Schedule
4. Users with appropriate permissions shall have access to a Dashboards Manager that can change the display order of Summaries and Data elements, add or remove elements and apply custom dashboards layouts to equipment and space by type.
5. Dashboard Manager shall apply dashboards to spaces or equipment based on the viewing platform (Desktop/Tablet or Phone) in order to tailor the user experience to the needs of the specific user base.
6. Default dashboard displays by space and equipment type shall be created per the guidelines in this specification or by mutual agreement with the owner's representative.

K. The Mobile User Interface shall include automatically populated dedicated, interactive summaries which provide detailed information on specific IAS data, including:

1. Potential problem areas, based on communication faults, overrides, deviations from setpoints, and/or alarm conditions
    a. The Mobile User Interface shall provide a summary of all points in the system related to the space that are not operating correctly (e.g. alarm, off normal or not communicating correctly) in order to provide the operator with a quick update on current conditions.
    b. The information shall include:
    c. Point status (via color.)
    d. Point name.
    e. Value of the point when the summary was taken.
    f. Equipment that contains the offending point.
    g. Space that is served by that equipment.
    h. Data points in the summary may be filtered by one or more types of off-normal condition (e.g. above setpoint, offline and overridden).
    i. The summary may be exported in .csv format for inclusion in spreadsheets or other documents.
2. IAS Historical Trend Data
    a. IAS historical trend data and graphical representations with the most relevant points displayed initially and the ability for the Operator to select and deselect points to add and remove from the trend
    b. The Mobile User Interface shall provide the capability to view historical trend data from multiple pieces of equipment in both bar and line formats.
    c. The user shall have the ability to navigate to a selection list of frequently viewed trends.
    d. Trend graphs shall have to ability to be smartly auto-generated based on equipment and space relationships.
    e. Each graph shall include a dedicated selection icon to export a copy of the graphic and data in .pdf format or the data only as a .csv file.
3. Equipment Activity Summary
    a. The Mobile User Interface shall provide a filterable, single display, of all activity related to a specific piece of equipment including user changes, discarded user changes, pending alarms, discarded alarms, and acknowledged alarms for at least one year of historical data.
    b. Items shall be listed in timed order with the latest activity at the top of the list. Page 8
    c. Filters shall allow only specific activities for specific data points occurring within a specific time and date window to be displayed.
    d. It shall be possible to export a .csv copy of the currently displayed summary by clicking or tapping on the export icon.
    e. It shall be possible to create a custom trend graph containing the data shown in the currently displayed summary by tapping or clicking on the trend icon in the header bar and selecting the specific points to trend in the resulting selection panel.
    f. Clicking on the information icon in front of any displayed activity listed in the summary shall expand the display to include the name of the user, server time, value prior to the activity, the ability to annotate the activity and a user selectable icon for displaying a trend graph of the point.

4. Equipment Relationship Summary
    a. The Mobile User Interface shall provide a summary of all equipment and spaces related to the operation of the system or device currently selected for viewing
    b. Include the capability to navigate to the home page of any related piece of equipment or space with a single click or tap on the desired element.
5. Equipment Data Summary
    a. The Mobile User Interface shall provide a summary of all data pertaining to a particular piece of mechanical or electrical equipment in a tabular format.
    b. Clicking or tapping on any value in the summary shall display a related command panel allowing the user to command, override, or change service condition of the point selected and to annotate such actions for future reference.
    c. It shall be possible to export a .pdf copy of the report with a single click on the associated export icon.
6. Equipment Serving Space Summary
    a. The Mobile User Interface shall provide a summary of all mechanical and electrical equipment as defined in the points list that serves a selected space from the navigation tree.
    b. The summary shall be capable of including a subset of the viewable points for each system representing the key elements of interest to operators without subjecting them to long lists of points irrelevant to basic operation.
    c. Clicking or tapping on any item in the summary shall navigate to the item’s assigned home page in the user interface.
    d. It shall be possible to view a custom trend of information contained in the summary with a single click of the trend icon residing in the title header.
    e. It shall be possible to display specific systems and points by filtering equipment types desired.
7. Graphical Displays
    a. The Mobile User Interface shall display an equipment visualization or graphic within the context of its associated space (building, floor, room, etc.) or equipment dashboard.
    b. Graphics shall include the ability to define individual information layers for operator selection in order to clarify systems status and simplify operation on mobile devices. Where desired a master layer may be defined to include important information about the facility on all graphic screens.
    c. Graphics shall support the use of photo-realistic symbols as well as color change and animation to match the status of the related system control point.
    d. It shall be possible to export a time stamped .pdf file of the graphic being viewed in order to communicate the current conditions in the space or the equipment being viewed and to provide a historic record.
8. Scheduling
    a. The Mobile User Interface shall provide the capability to display, in a singular view, all of the effective schedules in the context of the space (building/floor/room, etc.) or equipment that the schedule effects. The software should have the ability to display an effective schedule, for the present, or a future date.

b. The Mobile User Interface shall provide a report of all schedules affecting a space or equipment. The report shall provide the user details of events that comprise the weekly schedule and exception schedule(s). The report shall provide a means of viewing individual breakout scheduling elements for Weekly Schedule, Exceptions and Default Commands.
c. The Mobile User Interface shall provide the capability to efficiently change or modify schedules in mass quantities. This includes the capability to add, in bulk, exceptions to schedules, in addition to assigning, in bulk, weekly schedules.

L. Graphics development and management tool
1. An integral graphic manager shall be provided including the following features and capabilities:
2. Creation and modification of graphics from any HTML5 capable browser without the need for additional plug-ins or software packages.
3. Access to a full suite of pre-defined templates for air and water sourced HVAC applications as well as the ability to add custom templates as created for other use. Pre-aliased graphic templates may be defined and saved for repetitive representations of common mechanical and electrical equipment.
4. A full suite of pre-defined 3D-like symbols for mechanical and electrical systems as well as all line, text and shape tools required for integration into a graphic with zoom and pan capabilities on multiple platforms and in multiple browsers.
5. The ability to search and replace items in multiple graphics with a single command.
6. The ability to import and insert photos and images into the graphic.
7. The ability of the graphics manager to create and edit graphics including the ability to bind graphic elements to the values and conditions of system points in both an on-line and off-line mode.

M. Alarm Management
1. The user interface shall provide a single display of all potential issues in a facility including items currently in alarm, warning, override, out-of-service and offline.
2. The user interface shall provide notification of new alarms, visually and audibly.
3. The user interface shall provide the ability to view a summary of alarms, including a chart of the number of alarms in each of the defined alarm priority ranges. The priority ranges should be filterable.
4. The user interface shall provide the capability to view multiple occurrences of the same alarm, ultimately providing the ability to acknowledge or discard all occurrences of the alarm in a single action.
5. The user interface shall provide the capability to view, and filter on, all alarms present in a well-defined mechanical system using the equipment serving equipment relationships.
6. The user interface shall provide the capability to acknowledge and discard all occurrences of at least 1000 alarms in one operation.
7. The user interface shall provide the user with the understanding of what physical space is being affected when an alarm occurs. The user interface

shall provide the ability to filter alarms by physical space affected when the alarm occurred.

8. The user interface shall provide the capability to monitor alarms 24/7 without requiring an active login to the system, accessible via segregated web page. The user interface shall provide the capability to enabled or disable the 24/7 alarm monitor mode if desired.

N. Alarm Escalation
1. The Mobile User Interface will provide a configurable alarm escalation path for specific alarm occurrences related to equipment or space providing a way to reduce the risk of a user missing critical alarms. If an alarm has not been acknowledged or discarded by recipients within a specified period of time, an additional set of recipients can be notified. Additional notification will be available through email, printer, SNMP or Syslog. Text messaging can be achieved by entering recipients 10 digit cellular phone number formatted as a standard email address (10digit phone number @ cellular carrier's gateway domain)
2. For email notification, the alarm notification can be configured to send the alarm condition out to user defined email address(es). If the alarm has not been acknowledged/discarded after a user defined length of time (in hours/minutes), additional escalation of the alarm will be sent out to additional user defined email address(es)
3. User can filter for alarms tied to specific pieces of equipment / spaces to enable alarm escalation notifications related to overall systems and space.
4. A test email feature will also allow the system to send out a test email to confirm that the remote notifications are configured properly and that recipients are able to receive them, preventing missed notifications due to misconfiguration.

O. Operator Access Configuration
1. The user interface shall provide the ability to segment access to building data based on the space(s) or location(s) the user is physically located in and/or manages. The user interface shall provide the capability to assign "inherited" space permissions and the ability to assign user's space based access in bulk.
2. The user interface shall provide the ability to segment access to building data based on the space(s) or location(s) the user is physically located in and/or manages. The user interface shall provide the capability to assign "inherited" space permissions and the ability to assign user's space based access in bulk.

P. User Interface Security/Passwords
1. Based on owner-configurable access and permissions, the user interface should provide the ability to perform the actions described below via Internet browser from any authorized device connected to the Stadium OT infrastructure to which the network controllers are also connected.
2. Multiple-level passwords access protection shall be provided via roles and permissions defined by the Stadium management. This feature will allow access to the system based a user's job title or role and allow the user/manager the ability to control, display, and database manipulation capabilities based on an assigned password.

3. Roles may be copied and altered to meet specific roles and permissions based on the particular policies.
4. Each user shall have the following: a user account name (with a maximum of 30 characters), a complex password or passphrase (with a min of 8 characters and a max of 50 characters), other user account policies (such as session timeout), timesheet access based on day of the week and time of day, and specific user view.
5. The system shall allow each user to change his or her password at will.
6. When entering or editing passwords, the system shall not echo the actual characters for display on the monitor.
7. A maximum of 150 categories may be used to determine or assign areas of responsibilities to each user account. A maximum of 13 (of the 150) named categories which are specifics such as “No Access, View, Advanced Review, Operate, Intervene, Diagnostic, Manage Item Events, Manage Every, and Configure Items”.
8. A minimum of 100 unique passwords shall be supported.
9. Operators shall be able to perform only those commands available for their respective passwords. Display of menu selections shall be limited to only those items defined for the access level of the password used to log-on.
10. Operators shall be further limited to only access, command, and modify those buildings, systems, and subsystems for which they have responsibility. Provide a minimum of 100 categories of systems to which individual operators may be assigned.
11. The system shall automatically generate a report of log-on/log-off and system activity for each user. Any action that results in a change in the operation or configuration of the control system shall be recorded, including: modification of point values, schedules or history collection parameters, and all changes to the alarm management system, including the acknowledgment and deletion of alarms.
12. The system shall have the ability to provide a Department of Defense (DoD) specific warning banner for applicable sites that warns the user they are accessing a restricted site.
13. After successful login to the Site Management Portal (SMP) the last time and date that user name was previously logged in is shown on the screen.
14. Each login attempt is recorded in the system Audit Log with the option to record the IP address of the PC that made the login.

PART 3 - EXECUTION

3.1 PROJECT MANAGEMENT

A. Provide a project manager who shall, as a part of his duties, be responsible for the following activities:
1. Coordination between the Controls Contractor and all other trades, Owner, local authorities and the design team.
2. Scheduling of manpower, material delivery, equipment installation and checkout.
3. Maintenance of construction records such as project scheduling and manpower planning and AutoCAD or Visio for project co-ordination and as-built drawings.
4. Coordination/Single point of contact

3.2 INSTALLATION METHODS

A. Prior to work beginning the Controls Contractor shall provide the Owner with a pre-installation Performance Verification of the existing system.
   1. Performance Verification (PV)
      a. The PV shall include:
         1) A complete and current Building Automation System site inventory including the following information at a minimum: a listing of all field and supervisory controllers with the following key attribute data; corresponding model numbers, firmware versions, available security updates, CPU and memory performance data, battery conditions, integrations, controlled equipment, and device and point counts.
         2) A complete, written evaluation of system configuration and performance in the following categories: Security, Energy Performance and Savings, Reliability, Comfort and Health, and Standards.
         3) The Security evaluation shall include information about controllers that require security updates and conformance of user accounts to latest security rules and best practices
         4) The Energy Performance and Savings evaluation shall identify opportunities through schedule and nightly setbacks, economizers, eliminating simultaneous heating and cooling, and adding variable speed drives to equipment.
         5) The Comfort and Health evaluation shall identify temperature, pressure, and carbon dioxide values that deviate from desired set points that could lead to occupant discomfort.
         6) The Reliability evaluation shall identify overridden control points, control points creating excessive alarms, and opportunities to adding control points and trends to further enable system functionality.
         7) The Standards evaluation shall identify conformance to published standards for point count, network performance and protocol standards
B. Install systems and materials in accordance with manufacturer's instructions, rough-in drawings and equipment details. Install electrical components and use electrical products complying with requirements of applicable Division-16 sections of these specifications.
C. The term "control wiring" is defined to include providing of wire, conduit, and miscellaneous materials as required for mounting and connecting electric or electronic control devices.
D. To run BACnet on the Ethernet network, the installer is required to run, at minimum, plenum rated CAT 5e cabling for all runs associated with this network.
E. All exposed wiring, low and line voltage subject to mechanical damage, shall be run in conduit. Line and low voltage wiring shall be run in separate conduits. Concealed but accessible wiring, except in mechanical rooms and areas where other conduit and piping are exposed shall run in UL plenum rated cable as approved by local codes unless expressly restricted by requirements in Division 16 specification.
F. All Controllers, required for stand-alone control shall be housed in a NEMA 1 enclosure with a lockable door.

3.3 INSTALLATION

A. The Vendor shall program all systems at the time of installation with logical relations to spaces, locations, and related equipment

B. The Vendor shall program these relations, names, tags, and descriptions from inception, such that the MUI navigation and search shall be automatically generated and populated

1. Create a point sampling trend to archive the real-time value or status of a point or object. View the trended value or status of a point or object over a time interval; create an automated report to email a configured data trend to a specific email address at a specific time/day.

3.4 FIELD QUALITY CONTROL

C. Verification

Verify that all MUI elements, including but not limited to, graphics, links, references, addresses, and configurations are installed prior to project completion

Verify that all Operator controllable MUI elements are clearly identified as such, and are suitably responsive

Verify that all data is displayed with correct units

Verify all navigability

3.5 SYSTEM ACCEPTANCE

A. General: The system installation shall be complete and tested for proper operation prior to acceptance testing for the Owner's authorized representative. A letter shall be submitted to the Architect requesting system acceptance. This letter shall certify all controls are installed and the software programs have been completely exercised for proper equipment operation. Acceptance testing will commence at a mutually agreeable time within ten (10) calendar days of request. When the field test procedures have been demonstrated to the Owner's representative, the system will be accepted. The warranty period will start at this time.

B. Field Equipment Test Procedures: DDC control panels shall be demonstrated via a functional end to end test. Such that:

1. All output channels shall be commanded (on/off, stop/start, adjust, etc.) and their operation verified.
2. All analog input channels shall be verified for proper operation.
3. All digital input channels shall be verified by changing the state of the field device and observing the appropriate change of displayed value.
4. If a point should fail testing, perform necessary repair action and retest failed point and all interlocked points.
5. Automatic control operation shall be verified by introducing an error into the system and observing the proper corrective system response.
6. Selected time and setpoint schedules shall be verified by changing the schedule and observing the correct response on the controlled outputs.

C. As-Built Documentation: After a successful acceptance demonstration, the Contractor shall submit as-built drawings of the completed project for final approval. After receiving final approval, supply "6" complete as-built drawing sets, together with AutoCAD or Visio diskettes to the owner.

D. Operation and Maintenance Manuals: Submit four copies of operation and maintenance manuals. Include the following
   1. Manufacturer's catalog data and specifications on sensors, transmitters, controllers, control valves, damper actuators, gauges, indicators, terminals, and any miscellaneous components used in the system.
   2. An operator's manual that will include detailed instructions for all operations of the system.
   3. An operator's reference table listing the addresses of all connected input points and output points. Settings shall be shown where applicable.
   4. A copy of the warranty/guarantee.
   5. Operating and maintenance cautions and instructions.

E. Prior to training, the Controls Contractor shall provide the Owner with a post-installation Performance Verification of the existing system. The pre- and post-installation Performance Verifications shall be reviewed during the training.
   1. Performance Verification (PV)
      A.The PV shall include:
      1) A complete and current Building Automation System site inventory including the following information at a minimum: a listing of all field and supervisory controllers with the following key attribute data; corresponding model numbers, firmware versions, available security updates, CPU and memory performance data, battery conditions, integrations, controlled equipment, and device and point counts.
      2) A complete, written evaluation of system configuration and performance in the following categories: Security, Energy Performance and Savings, Reliability, Comfort and Health, and Standards.
      3) The Security evaluation shall include information about controllers that require security updates and conformance of user accounts to latest security rules and best practices
      4) The Energy Performance and Savings evaluation shall identify opportunities through schedule and nightly setbacks, economizers, eliminating simultaneous heating and cooling, and adding variable speed drives to equipment.
      5) The Comfort and Health evaluation shall identify temperature, pressure, and carbon dioxide values that deviate from desired set points that could lead to occupant discomfort.
      6) The Reliability evaluation shall identify overridden control points, control points creating excessive alarms, and opportunities to adding control points and trends to further enable system functionality.
      7) The Standards evaluation shall identify conformance to published standards for point count, network performance and protocol standards.

3.6 TRAINING

A. Contractor shall provide to the engineer a training class outline prior to any scheduled training.

B. Factory trained control engineers and technicians shall provide training sessions for the Owner's personnel.
C. The control contractor shall conduct one (1) four-hour training for the designated owner's personnel in the maintenance and operation of the control system.
D. The training shall include instruction on specific systems and instructions for operating the installed system to include as a minimum:
    1. HVAC system overview
    2. Review of the PV report
    3. Operation of Control System
    4. Function of each Component
    5. System Operating Procedures
    6. Programming Procedures
    7. Maintenance Procedures

3.7 WARRANTY/GUARANTEE

A. The control system shall be warranted/guaranteed to be free from defects in both material and workmanship for a period of one (1) year of normal use and service. This warranty/guarantee shall become effective the date the owner accepts or receives beneficial use of the system.

B. After completion this contractor shall make adjustments and modification as necessary for the one year warranty period. During this period the contractor as directed by the engineer shall make modifications and adjustments to the building systems at no additional cost or compensation.

3.8 PERFORMANCE VERIFICATION TOOL:

A. Upon project completion, Performance Verification Tool will be used to used to generate required reports.

3.9 RELATIONSHIP GENERATION:

A. Use this section for upgrading existing Metasys sites only. Relationship Generation selections should only be used when adding MUI to an existing site, or adding a server to an existing SNE-Only site.
B. With new construction sites, adding selections here will add additional hours that are not required. The operations teams will utilize the RAC Schedule for site creation which includes MUI configuration.
C.. If estimating for an existing site, adjust the Complexity and Experience Level selectors to ensure the appropriate labor is included.

PART 4-SEQUENCE OF OPERATION

4.1 SERIES NETWORK ENGINES (SNE)

A. PERFORMANCE VERIFICATION TOOL:
    1. Upon project completion, Performance Verification Tool will be used to used to generate required reports.

B. RELATIONSHIP GENERATION:
1. Use this section for upgrading existing Metasys sites only. Relationship Generation selections should only be used when adding MUI to an existing site, or adding a server to an existing SNE-Only site.

4.2 HOT WATER HX SYSTEM SNOWMELT

A. HOT WATER PUMP CONTROL:
1 The system is all enabled from a relay connected to the Power Logic Breaker. The HX has a Steam side and a Hot Water Glycol side both valves will be opened. The pump (BPx-C) will be started. If the pump status (BPx-S) does not match the command (BPx-C), an alarm will be generated.

B. ADDITIONAL POINTS MONITORED BY THE FMS:
1. Flow Meter (FLOn-A)
2. HWP (HWPn-A)
3. CVG Control Valves Glycol
4. CVS Steam Valve

4.3 STEAM UNIT HEATERS 10 EXISTING AND 3 NEW

A. OCCUPIED MODE**:**
1. Occupancy mode will be controlled via a network input (OCC-SCHEDULE). During occupied mode, the constant speed supply fan (SF-C) will be started and will run continuously. The Steam heating valve (SHTG-O) will modulate to maintain the zone temperature setpoint (ZN-SP).

B. UNOCCUPIED MODE:
1. The unit will cycle on to maintain unoccupied zone setpoints (CLGUNOCC-SP & HTGUNOCC-SP) during unoccupied periods.
    1. Unit Heater Status (UH-S)
    2. Unit Heater Enable (UH-Enable)
    3. Zone Temp. (Zone-T)
    4. Control Valve (CV)

4.4 FAN COIL UNIT WITH DX COOLING 10 EXISTING 1 NEW

A. OCCUPIED MODE:

1. Occupancy mode will be controlled via a network input (OCC-SCHEDULE). During occupied mode, the constant speed supply fan (SF-C) will be started and will run continuously. The cooling coil (CLGx-C) will be staged and the heating coil (HTG-O) will be modulated in sequence to maintain the zone temperature setpoint (ZN-SP).
2. There is one OAD that will be opened for all Fan Coil Units

B. UNOCCUPIED MODE:

1. The unit will cycle on to maintain unoccupied zone setpoints (CLGUNOCC-SP & HTGUNOCC-SP) during unoccupied periods.
   A. Fan Coil Unit Status (FCUH-S)
   B. Fan Coil Enable (UH-Enable)
   C. Zone Temp. (Zone-T)
   D. Control Valve (SCV)
   E. DX Enable
   F. Actuator OAD

4.5 CHECKOUT EXISTING ROOTOP AIR UNIT 8 EXISTING 1 NEW:

1. Install new Room Temp Sensors verify all points are working
2. The cooling system will automatically start when the system enable (SYSTEM-EN) is "ON". When the system enable is "OFF", the cooling system will be disabled.
3.. Install new Room Temp Sensors verify all points are working

A. TEMPERATURE CONTROL:

1. The unit will control to maintain a constant zone air temperature (ZA-T).

B. OCCUPIED MODE:

1. The occupancy mode will be controlled via a network input (OCC-SCHEDULE). The occupancy mode can also be overridden by a network input (OCC-OVERRIDE).

C. UNOCCUPIED MODE:

1. The unit will remain off during unoccupied periods.

E. UNIT PROTECTION:

1. Low Temperature Alarm (LT-A) - When in "Alarm", the control sequence will stop running, the valve(s) will open and the fan(s) will be disabled via a hard wired shut down circuit.

4.6 EXISTING FAN COIL AND NEW HANDLER CONTROLS

A. Upon a start command the isolation damper(s) will open. When open status is achieved, the variable speed supply fan (SF-C) will be started based on occupancy. After the start command is sent (SF-C), the outside air damper will open, and the unit will start when the damper end switch has proven open status. When the supply fan status (SF-S) indicates the fan started, the control sequence will be enabled. The supply fan (SF-O) will modulate to maintain the discharge static pressure (DA1-P) at setpoint (DAP-SP). Upon a loss of airflow (SF-C), the supply fan will attempt to automatically restart until positive status is received.
B. The unit will control to maintain a constant discharge air temperature (DA-T).

C. The occupancy mode will be controlled via a network input (OCC-SCHEDULE). The occupancy mode can also be overridden by a network input (OCC-OVERRIDE).
D. The unit will remain off during unoccupied periods.

4.7 PREHEAT COIL

A. The preheat steam coil (PH-O) will enable steam to maintain the discharge air temperature setpoint (DAT-SP). When the unit is shutdown, The OA shutoff damper shall be closed and the preheat coil will be commanded to a preset position should the outdoor air temperature (OA-T) fall below the low outdoor air temperature setpoint (OALT-SP). Upon a loss of airflow (SF-S), the preheat coil will be commanded to a preset position should the outdoor air temperature (OA-T) fall below the low outdoor air temperature setpoint (OALT-SP).
1. Low Temperature Alarm (LT-A) - When in "Alarm", the control sequence will stop running, the valve(s) will open and the fan(s) will be disabled via a hard wired shut down circuit.

4.8 EXHAUST FANS

A. OCCUPIED MODE:

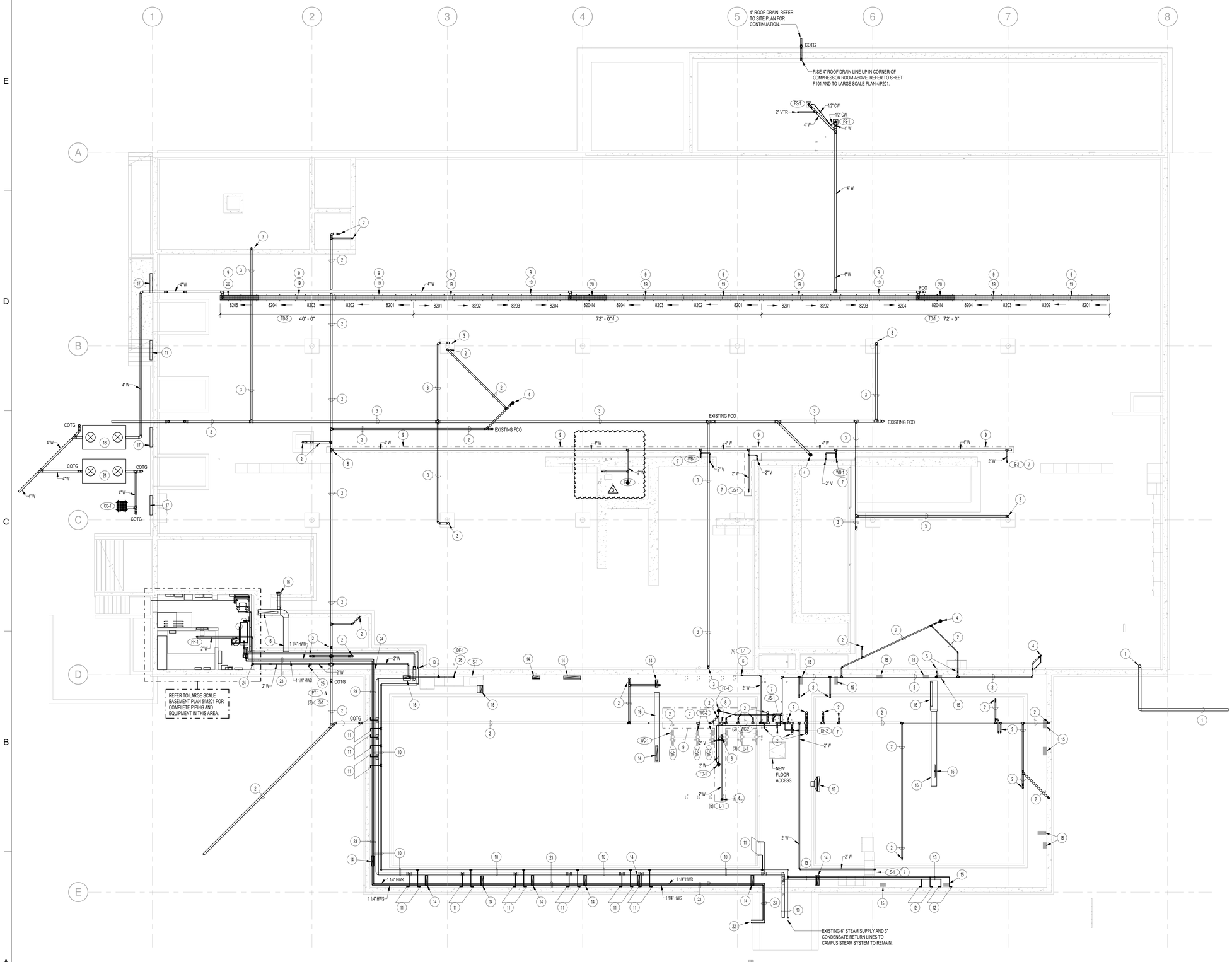
1. Occupancy mode will be controlled via a network input (OCC-SCHEDULE). During occupied mode, the constant speed supply fan (SF-C) will be started and will run continuously.

B. UNOCCUPIED MODE:

1. The unit will cycle off

A. Exhaust Fan Enable (EF-E)
B. EF Status (EF-S)

END OF SECTION 23 0953



1 P100 **MECH & PLBG FOUNDATION PLAN**
1/16" = 1'-0"

PLAN NOTES:

1. EXISTING COLD WATER SERIVE LINE TO BUILDING TO REMAIN. PROTECT PIPING DURING CONSTRUCTION AND MAINTAIN CONNECTION TO EXISTING FIRE RISER AND DOMESTIC WATER.
2. EXISTING WASTE PIPING IN TUNNELS AND BELOW FLOOR TO REMAIN. DISCONNECT AND REMOVE EXISTING PLUMBING FIXTURE ABOVE AS CALLED OUT ON SHEET PD100. CAP ALL WASTE, WATER AND VENT PIPING IN BELOW FLOOR AS REQUIRED. CONTRACTOR TO FIELD VERIFY EXACT LOCATIONS AND SIZES OF EXISTING PIPING AND PROVIDE FITTING AS REQUIRED TO CAP.
3. EXISTING ROOF DRAIN PIPING BELOW FLOOR TO REMAIN. PROTECT PIPING DURING CONSTRUCTION. MAINTAIN CONNECTION TO ALL EXISTING VERTICAL RISERS. REFER TO SHEET P101 FOR ROOF DRAIN PIPING ABOVE FLOOR. CONTRACTOR TO FIELD VERIFY EXACT LOCTIONS AND DEPTH OF EXISTING PIPING AND COORDINATE WITH NEW WASTE PIPING AND TRENCH DRAIN SYSTEM.
4. EXISTING FLOOR DRAIN OR FLOOR SINK TO REMAIN. COVER EXISTING DRAIN TO KEEP CLEAN. PROTECT DRAIN AND VENT PIPING DURING CONSTRUCTION. MAINTAIN ANY EXISTING COLD WATER PIPING TO TRAP PRIMER AND/OR ANY FLOOR CLEAN OUT ASSOCIATED WITH DRAIN OR FLOOR SINK.
5. EXISTING PLUMBING FIXTURE ABOVE TO REMAIN. (REFER TO SHEET PD100.) PROTECT DURING CONSTRUCTION AND MAINTAIN PIPING CONNECTION TO EXISTING FIXTURE.
6. RISE 2" WASTE LINE UP THRU FLOOR. PIPING TO BE RUN THRU NEW WALLS FOR NEW LAVATORIES ABOVE. REFER TO LARGE SCALE TOILET ROOM PLAN ON SHEET P201 FOR CONTINUATION.
7. PROVIDE AND INSTALL NEW PLUMBING FIXTURE AS SPECIFIED. DROP WASTE PIPING DOWN THRU FLOOR AND CONNECT TO EXISTING WASTE PIPING OF EQUAL OR LARGE SIZE. CONTRACTOR TO FIELD VERIFY EXACT SIZES AND LOCATIONS OF EXISTING PIPING. PROVIDE NEW FITTINGS AS REQUIRED FOR CONNECTIONS.
8. CONNECT NEW 4" WASTE LINE FROM NEW PLUMBING FIXTURES ABOVE TO EXISTING WASTE LINE. CONTRACTOR TO FIELD VERIFY EXACT SIZE, LOCATION AND ELEVATION OF EXISTING PIPING AND MATCH NEW CONNECTION TO EXISTING.
9. REFER TO ARCHITECTURAL DRAWINGS FOR CUTTING AND PATCHING OF EXISTING CONCRETE FLOORS FOR NEW WASTE PIPING. COORDINATE NEW PIPING WITH EXISTING PIPING AND WITH EXISTING FOOTINGS AND FOUNDATION WALLS.
10. EXISTING STEAM AND CONDENSATE RETURN LINES RISING UP THRU FLOOR AND IN PIPE TUNNELS TO REMAIN. PROTECT DURING CONSTRUCTION.
11. EXISTING FINTUBE HEATERS ABOVE TO REMAIN. MAINTAIN PIPING CONNECTION TO UNIT. EXISTING ZONE VALVE TO REMAIN SHUT-OFF.
12. DISCONNECT AND REMOVE EXISTING FINTUBE HEATER ABOVE FLOOR. (SEE SHEET MD100.) REMOVE EXISTING PIPING THRU FLOOR AND IN PIPE TUNNEL.
13. DISCONNECT AND REMOVE EXISTING STEAM AND CONDENSATE RETURN PIPING IN PIPE TUNNEL. CAP EXISTING BRANCH LINE(S) NEAR MAIN PIPE AS SHOWN. CONTRACTOR TO FIELD VERIFY EXACT SIZES AND LOCATIONS OF EXISTING PIPING.
14. EXISTING FLOOR GRILLE AND BOOT TO REMAIN. PROTECT DURING CONSTRUCTION. KEEP GRILLE AND BOOT CLEAN OF ANY DEBRIS. COORDINATE NEW WORK WITH EXISTING GRILLES AND BOOTS.
15. EXISTING FLOOR GRILLE AND BOOT TO BE REMOVED. PROVIDE AND INSTALL NEW FLOOR GRILLES AS CALLED OUT ON SHEET M101. COORDINATE PATCHING OF EXISTING CONCRETE FLOOR WITH GENERAL CONTRACTOR. (REFER TO ARCHITECTURAL SHEETS.) SEAL ALL UNDERFLOOR DUCTS AIR TIGHT.
16. EXISTING RETURN DUCT BELOW FLOOR TO REMAIN UNLESS NOTED OTHERWISE. DISCONNECT AND REMOVE EXISTING GRILLES AS CALLED OUT ON SHEET MD100 AND SEAL DUCT AIR TIGHT. PROVIDE NEW RETURN AIR BOOTS UP TO NEW GRILLES AS SHOWN ON SHEET M101. ABANDON ANY UNSED DUCTWORK BELOW FLOOR.
17. EXISTING SNOW MELT SYSTEM IN CONCRETE TO BE ABANDONED. DISCONNECT AND REMOVE EXISTING PIPING MANIFOLDS AND METAL COVERS BELOW GRADE. REFER TO ARCHITECTURAL DRAWINGS FOR PATCHING OF EXISTING CONCRETE PAD. REFER TO SHEET MD100 FOR REMOVAL OF EXISTING PIPING INSIDE BUILDING.
18. PROVIDE AND INSTALL 1000 GALLON SAND AND GREASE INTERCEPTOR AS SPECIFIED. PLACE INTERCEPTOR BELOW GRADE WITH (2) 24" DIAMETER MANHOLE ACCESS POINTS. REFER TO DETAIL N/P301 FOR TYPICAL INSTALLATION. CONNECT TO NEW TRENCH DRAIN SYSTEM IN AUTOMOTIVE SHOP.
19. PROVIDE 12" WIDE, SLOPING PRE-FAB TRENCH DRAIN SECTION AS SPECIFIED WITH END LINE CONNECTION. PROVIDE SLOPING SECTIONS AS INDICATED BY PART NUMBERS. REFER TO DETAIL O/P301 FOR TYPICAL INSTALLATION AND PART NUMBER DIMENSIONS.
20. PROVIDE 12" WIDE, NON-SLOPING PRE-FAB TRENCH DRAIN SECTION AS SPECIFIED WITH BOTTOM OUTLET CONNECTION. REFER TO DETAIL O/P3.1 FOR TYPICAL INSTALLATION AND PART NUMBER DIMENSIONS.
21. PROVIDE AND INSTALL 1000 GALLON SOLIDS INTERCEPTOR AS SPECIFIED. PLACE INTERCEPTOR BELOW GRADE WITH (2) 24" DIAMETER MANHOLE ACCESS POINTS. CONNECT INTERCEPTOR TO NEW CONCRETE WASH-OUT DRAIN LOCATED IN CONCRETE AREA ABOVE. REFER TO DETAIL N/P301 FOR SIMILAR INTERCEPTOR INSTALLATION.
22. PROVIDE 24"x24"x24" CONCRETE VAULT BOX IN GROUND FOR SNOWMELT MANIFOLDS AND/OR ZONE VALVES. REFER TO DETAILS ON SHEET M302 FOR TYPICAL MANIFOLD PIPING AND VALVE BOX INSTALLTION.
23. RUN NEW 1-1/4" SNOW MELT SUPPLY AND RETURN LINES THRU EXISTING PIPING TUNNEL AS SHOWN. COORDINATE NEW PIPING LOCATIONS WITH EXISTING STEAM PIPING, DUCTWORK AND BUILDING STRUCTURE. SUPPORT NEW PIPING ON UNISTRUT SUPPORTS FROM TOP OF TUNNEL. FIELD VERIFY EXISTING CONDITIONS.
24. CORE DRILL EXISTING CONCRETE FOUNDATION WALL AS REQUIRED TO INSTALL NEW SNOWMELT PIPING. SEAL WATER TIGHT AROUND NEW PIPING. FIELD VERIFY EXISTING CONDITIONS.
25. CONNECT NEW 2" WASTE LINE FROM PT-1 ABOVE TO EXISTING 2" (OR LARGER) WASTE LINE IN PIPE TUNNEL. FIELD VERIFY EXACT SIZES AND LOCATIONS OF ALL EXISTING PIPING. PROVIDE FITTINGS AS REQUIRED FOR CONNECTION.
26. DROP 1-1/2" WASTE LINE THRU FLOOR FROM DF-1 AND S-1 FIXTURES ABOVE. RUN 2" WASTE LINE IN PIPE TUNNEL AS SHOWN AND CONNECT TO EXISTING WASTE PIPING OF SAME OR LARGER SIZE. FIELD VERIFY EXACT SIZES AND LOCATIONS OF ALL EXISTING PIPING. PROVIDE FITTINGS AS REQUIRED FOR CONNECTION.

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ESA JOB NUMBER 20048

project:

BYUI Engineering Technology Center (ETC)

project#: 20.0220
byuidaho project#: 12005
date: oct. 27,2020

revisions :

3	Addendum #3	11-13/20

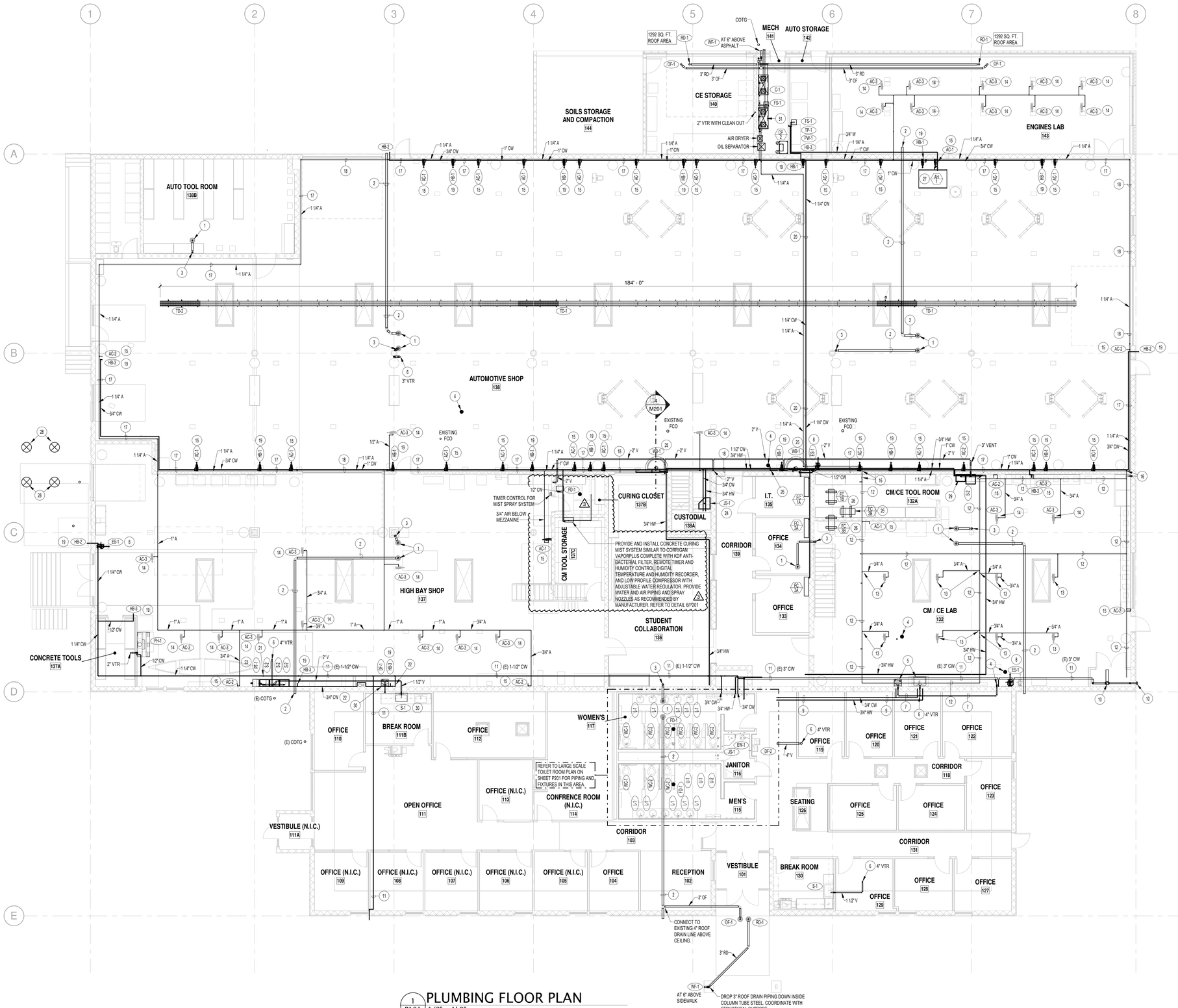
title:

FOUNDATION MECHANICAL AND PLUMBING PLAN

sheet:

P100

100% construction documents



1 PLUMBING FLOOR PLAN
P101 1/8" = 1'-0"

PLAN NOTES:

1. EXISTING ROOF DRAIN AND OVERFLOW DRAIN TO REMAIN. PROTECT DURING CONSTRUCTION.
2. EXISTING ROOF DRAIN OR OVERFLOW DRAIN PIPING NEAR ROOF TO REMAIN. PROTECT EXISTING PIPING DURING CONSTRUCTION AND MAINTAIN CONNECT TO EXISTING DRAINS IN ROOF AND WALL FLANGE IN EXTERIOR WALL.
3. EXISTING ROOF DRAIN PIPING DOWN NEAR COLUMN OR WALL TO REMAIN. PIPING TO BE PROTECTED DURING CONSTRUCTION. REFER TO ARCHITECTURAL DRAWINGS FOR ANY CHASE WALLS AROUND PIPING. PROVIDE CLEANOUT EXTENSION AS REQUIRED FOR ANY NEW WALLS AROUND EXISTING PIPING.
4. EXISTING FLOOR DRAIN OR FLOOR SINK TO REMAIN. COVER EXISTING DRAIN TO KEEP CLEAN. PROTECT DRAIN AND VENT PIPING DURING CONSTRUCTION. MAINTAIN ANY EXISTING COLD WATER PIPING TO TRAP PRIMER AND/OR ANY FLOOR CLEAN OUT ASSOCIATED WITH DRAIN OR FLOOR SINK.
5. EXISTING PLUMBING FIXTURE TO REMAIN. DISCONNECT AND REMOVE AS REQUIRED FOR NEW WALL AND/OR FLOOR FINISHES AND REINSTALL AFTER FINISH WORK IS COMPLETE. PROVIDE NEW P-TRAP AND STOPS FOR EXISTING FIXTURE.
6. EXISTING VENT THRU ROOF TO REMAIN. DISCONNECT ALL EXISTING VENT PIPING BELOW ROOF TO EXISTING FIXTURES. REFER TO NEW VENT PIPING TO BE CONNECTED TO EXISTING VENT THRU ROOF. FIELD VERIFY EXACT SIZE AND LOCATION OF EXISTING VTR.
7. EXISTING VENT PIPING ABOVE CEILINGS TO REMAIN. FIELD VERIFY EXACT LOCATIONS AND PROTECT DURING CONSTRUCTION.
8. PROVIDE AND INSTALL NEW EMERGENCY SHOWER AND EYE WASH AS SPECIFIED. RISE 1-1/4" COLD AND 3/4" HOT WATER LINES UP AND CONNECT TO EXISTING WATER PIPING NEAR ROOF. PROVIDE TEMPERING VALVE AT TOP OF SHOWER. FIELD VERIFY EXACT SIZES AND LOCATIONS OF EXISTING PIPING. SHOWER DRAIN TO RUN ON FLOOR TO NEARBY FLOOR DRAIN. REFER TO DETAIL C/P301 FOR TYPICAL INSTALLATION.
9. RUN NEW HOT AND COLD WATER LINES ABOVE CEILINGS TO EXISTING FIXTURES. FIELD VERIFY EXACT LOCATIONS AND SIZES OF EXISTING PIPING IN WALL AND PROVIDE NEW FITTINGS AS REQUIRED FOR CONNECTION.
10. EXISTING FIRE RISER ASSEMBLY AND ALARM VALVE TO REMAIN. PROTECT PIPING, DRAIN LINE, AND FIRE DEPARTMENT CONNECTION DURING CONSTRUCTION. ENTIRE BUILDING IS FIRE SPRINKLED. FIRE PROTECTION CONTRACTOR IS RESPONSIBLE TO ENSURE PROPER WATER PRESSURE TO BUILDING FOR NEW AND EXISTING HEADS AS PER CODE REQUIREMENTS.
11. EXISTING COLD WATER LINE TO REMAIN. PROTECT PIPING DURING CONSTRUCTION AND MAINTAIN CONNECTION TO EXISTING PRESSURE REGULATOR LOCATED IN MEZZANINE MECHANICAL ROOM. REFER TO SHEET P101 FOR NEW FIXTURES TO BE CONNECTED TO EXISTING COLD WATER PIPING. EXISTING HOT WATER PIPING TO BE REMOVED.
12. EXISTING COMPRESSED AIR PIPING NEAR ROOF TO REMAIN. PROTECT EXISTING PIPING DURING CONSTRUCTION. CONNECT NEW HOSE REELS AND WALL OUTLETS TO EXISTING PIPING AS SHOWN.
13. MOUNT EXISTING (RELOCATED) HOSE REEL TO ROOF STRUCTURE ABOVE NEW WORK STATION. CONNECT RELOCATED REEL TO EXISTING PIPING WITH NEW 3/4" LINE. REFER TO DETAIL F/P301 FOR TYPICAL PIPING CONNECTIONS.
14. PROVIDE NEW HOSE REEL AS SPECIFIED. MOUNT TO ROOF STRUCTURE ABOVE NEW WORK STATION. CONNECT TO EXISTING PIPING WITH NEW 3/4" LINE. REFER TO DETAIL F/P301 FOR TYPICAL PIPING CONNECTIONS.
15. PROVIDE NEW WALL MOUNTED HOSE REEL FOR COMPRESSED AIR. MOUNT ON WALL AT 48" ABOVE FLOOR. RISE 1/2" AIR LINE UP AND CONNECT TO NEW OR EXISTING PIPING NEAR ROOF. REFER TO DETAIL B/P301 FOR TYPICAL INSTALLATION AND PIPING CONNECTIONS.
16. EXTEND EXISTING 1" COMPRESSED AIR LINE INTO AUTOMOTIVE SHOP AND CONNECT TO NEW AIR PIPING. PROVIDE SHUT-OFF VALVE IN LINE INSIDE CM/CE CLASSROOM. FIELD VERIFY EXACT SIZE AND LOCATION OF EXISTING AIR PIPING IN CLASSROOM AND PROVIDE FITTINGS AS REQUIRED FOR CONNECTION.
17. RUN NEW COMPRESSED AIR AND COLD WATER PIPING AT 8'-0" ABOVE FLOOR. COORDINATE PIPING WITH OTHER PIPING, ELECTRICAL CONDUITS AND BUILDING STRUCTURE.
18. RISE PIPING UP ABOVE OVERHEAD DOORS AS REQUIRED.
19. DROP 3/4" COLD WATER LINE DOWN WALL AND CONNECT TO HOSE BIBB. INTERIOR HOSE BIBBS TO BE AT 36" ABOVE FLOOR AND EXTERIOR HOSE BIBBS TO BE 24" ABOVE FINISHED GRADE. REFER TO DETAIL D/P301 FOR TYPICAL INSTALLATION.
20. RUN NEW 1-1/4" COLD WATER MAIN LINE ACROSS AUTOMOTIVE SHOP THRU ROOF JOISTS. COORDINATE NEW PIPING WITH EXISTING DUCTWORK. OTHER PIPING, ELECTRICAL CONDUITS AND BUILDING STRUCTURE. LINE TO BE PROTECTED WITH BACK-FLOW PREVENTION DEVICE. (REFER TO MEZZANINE PLAN ON SHEET M102.)
21. CONNECT NEW 1-1/4" COLD WATER LINE TO EXISTING 1-1/2" LINE NEAR ROOF. EXTEND NEW PIPING TO FIXTURES AS SHOWN. MATCH EXISTING ELEVATION OF EXISTING PIPING.
22. CONNECT NEW 3/4" COLD WATER LINE TO EXISTING 1-1/2" LINE NEAR ROOF. DROP PIPING DOWN WALL TO BELOW NEW FIXTURES AND RUN EXPOSED ON WALL. CONNECT TO NEW FIXTURES AS SHOWN.
23. PROVIDE AND INSTALL NEW PLASTER TRAP ON FLOOR. CONNECT TO WASTE LINES FROM (3) SINKS. DROP DISCHARGE WASTE LINE DOWN THRU FLOOR INTO PIPING TUNNEL AND CONNECT TO EXISTING 4" WASTE LINE IN TUNNEL. REFER TO FOUNDATION PLAN ON SHEET P1.0 FOR CONTINUATION OF WASTE PIPING.
24. PROVIDE NEW CUSTODIAL SINK AS SPECIFIED. SINK TO BE INSTALLED BELOW EXISTING STAIRS. RISE WATER AND VENT PIPING UP AND OFFSET AS REQUIRED FOR STAIRS. CONNECT HOT AND COLD WATER LINES TO EXISTING WATER PIPING IN MEZZANINE MECHANICAL ROOM. (SEE SHEET M102.) RISE 2" VENT UP THRU ROOF TO 3" VTR. DROP 2" WASTE PIPING DOWN THRU FLOOR. REFER TO FOUNDATION PLAN FOR CONTINUATION.
25. PROVIDE NEW WASH BASIN FIXTURES AS SPECIFIED. RISE WATER PIPING UP EXPOSED ON WALL AND CONNECT TO EXISTING WATER PIPING IN MEZZANINE MECHANICAL ROOM. (SEE SHEET M102.) RISE 2" VENT UP AND CONNECT TO NEW 3" VTR AS SHOWN. DROP 2" WASTE PIPING DOWN THRU FLOOR. REFER TO FOUNDATION PLAN FOR CONTINUATION.
26. MINI SPLIT FAN COIL SYSTEM SUPPLIED AND INSTALLED BY MECHANICAL CONTRACTOR. PLUMBING CONTRACTOR TO ROUGH-IN AND CONNECT 3/4" CONDENSATE DRAIN LINE TO INDOOR UNIT AND RUN TO NEAREST FLOOR DRAIN. COORDINATE DRAIN PIPING WITH OTHER PIPING AND SECURE TO EXISTING WALL. PIPING NOT TO INTERFER WITH MEZZANINE ACCESS DOORS.
27. INDOOR AIR HANDLER SUPPLIED AND INSTALLED BY MECHANICAL CONTRACTOR. PLUMBING CONTRACTOR TO ROUGH-IN AND CONNECT 1" DRAIN LINE TO DX COOLING COIL AND DRAIN PAN BELOW UNIT. RUN 1" DRAIN LINE THRU EXTERIOR WALL AND TERMINATE WITH 45 DEGREE ELBOW. DRAIN LINE TO BE LOCATED ABOVE LOWER ROOF AND BE AT LEAST 4" AWAY FROM WALL.
28. MANHOLE ACCESS POINTS FOR UNDER GROUND INTERCEPTORS. REFER TO SHEET P100 FOR INTERCEPTOR LOCATIONS AND PIPING CONNECTIONS. REFER TO DETAIL N/P301 FOR TYPICAL INSTALLATION.
29. RELOCATE EXISTING PLUMBING FIXTURE TO THIS LOCATION. COORDINATE WITH NEW FIXTURES AND CONNECT TO NEW WASTE, WATER, AND VENT PIPING AS SHOWN.
30. DROP 1-1/2" WASTE LINE FROM NEW S-1 SINK IN BREAK ROOM AND NEW DF-1 IN HIGH BAY ROOM DOWN THRU FLOOR. REFER TO SHEET P100 FOR CONTINUATION OF PIPING IN PIPE TUNNEL BELOW.
31. RELOCATE EXISTING AIR COMPRESSOR TO THIS LOCATION. PROVIDE NEW EXHAUST PIPING TO EXTERIOR OF BUILDING COMPLETE WITH MUFFLER. CONNECT NEW 1-1/4" COMPRESSED AIR LINE TO EXISTING COMPRESSOR AND RUN TO CE/CM LAB AS SHOWN ON PLANS. REFER TO DETAIL E/P301 FOR TYPICAL PIPING CONNECTIONS TO COMPRESSOR.

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Engineered Systems Associates
ESA JOB NUMBER 20048

project:

BYUI Engineering Technology Center (ETC)

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3	Addendum #3	11-13/20

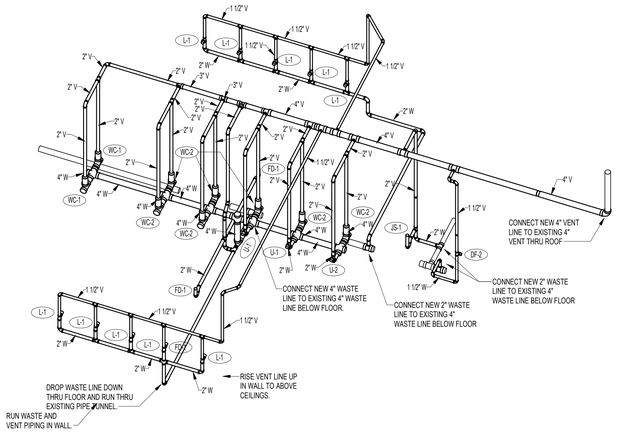
title:

PLUMBING FLOOR PLAN

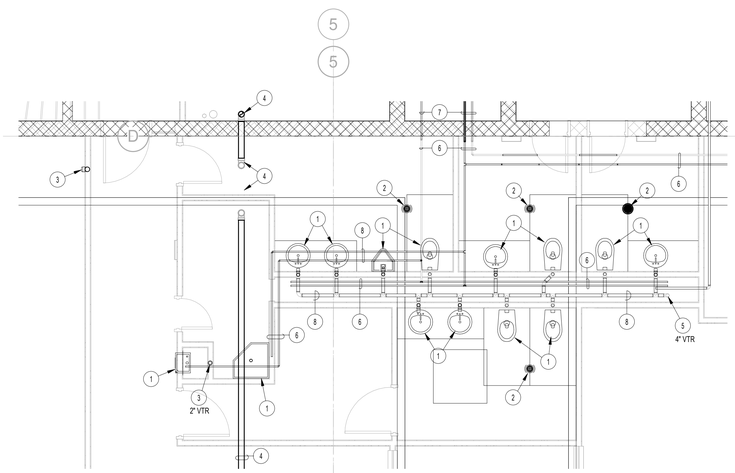
sheet:

P101

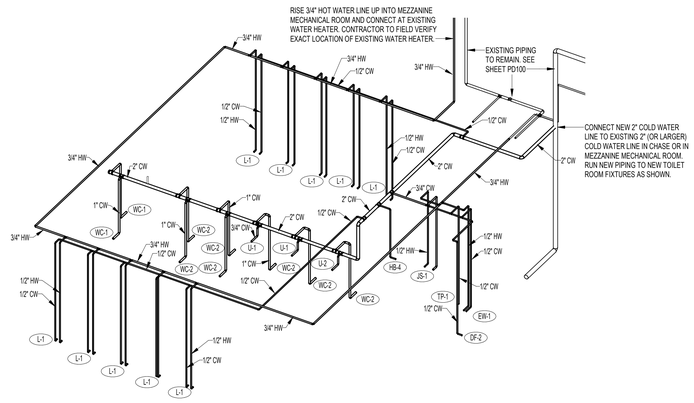
100% construction documents



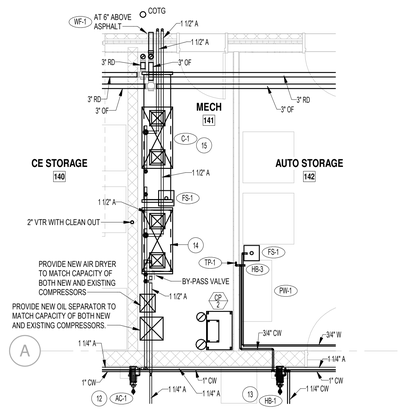
3 P201 WASTE AND VENT RISER DIAGRAM



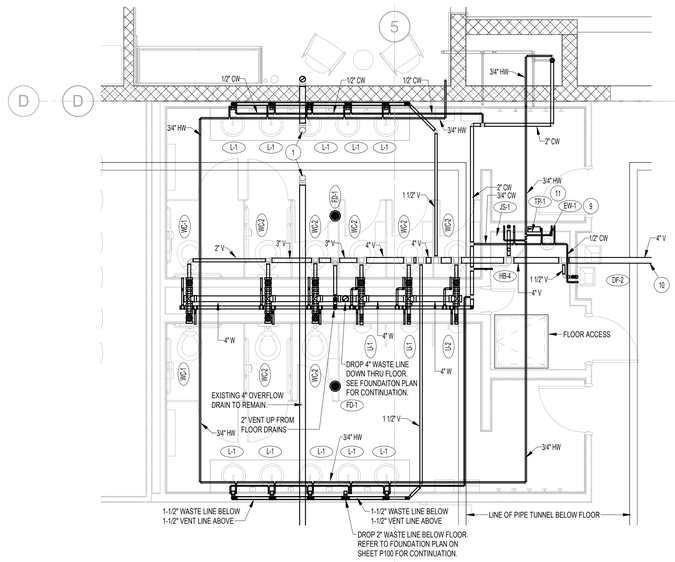
1 P201 LARGE SCALE TOILET ROOM DEMO PLAN
1/4" = 1'-0"



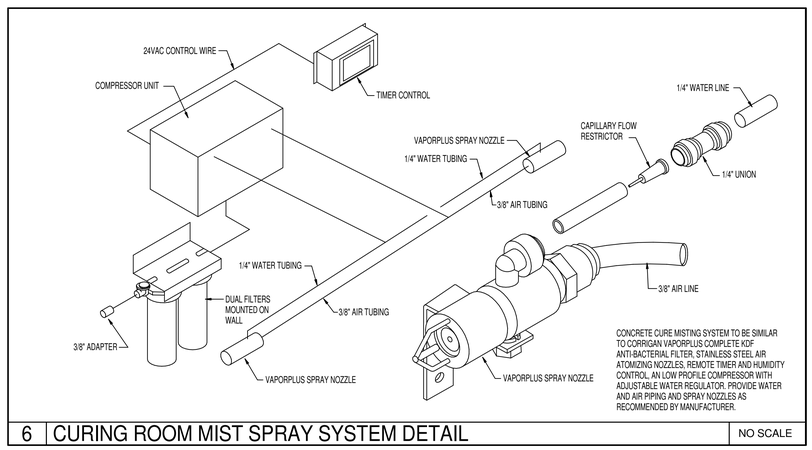
5 P201 WATER ISOMETRIC



4 P201 COMPRESSOR ROOM
1/4" = 1'-0"



2 P201 LARGE SCALE TOILET ROOMS
1/4" = 1'-0"



6 CURING ROOM MIST SPRAY SYSTEM DETAIL — NO SCALE

PLAN NOTES:

1. DISCONNECT AND REMOVE EXISTING PLUMBING FIXTURE. REMOVE ALL WASTE, WATER AND VENT PIPING IN WALL, THRU FLOOR AND/OR THRU CEILING AS REQUIRED. CAP ALL EXISTING PIPING BELOW FLOOR OR ABOVE CEILING. CONTRACTOR TO FIELD VERIFY EXACT LOCATIONS AND SIZES OF EXISTING PIPING AND PROVIDE FITTING AS REQUIRED TO CAP.
2. DISCONNECT AND REMOVE EXISTING FLOOR DRAIN OR FLOOR SINK. CAP EXISTING WASTE LINE IN TUNNEL BELOW FLOOR. ABANDON ALL WASTE AND/OR VENT PIPING WHERE NOT ACCESSIBLE. REFER TO ARCHITECTURAL DRAWINGS FOR PATCHING OF EXISTING CONCRETE FLOORS.
3. REMOVE EXISTING VENT PIPING UP THRU ROOF AND/OR UP IN EXISTING WALL. CAP EXISTING PIPING BELOW FLOOR. REFER TO ARCHITECTURAL DRAWINGS FOR PATCHING OF EXISTING ROOF.
4. EXISTING ROOF DRAIN AND OVERFLOW DRAIN. AND ALL ASSOCIATED PIPING TO REMAIN. PROTECT DURING CONSTRUCTION. PIPING DOWN NEAR WALL TO REMAIN. PIPING TO BE PROTECTED DURING CONSTRUCTION. REFER TO ARCHITECTURAL DRAWINGS FOR ANY CHASE WALLS AROUND PIPING. PROVIDE CLEANOUT EXTENSION AS REQUIRED FOR ANY NEW WALLS AROUND EXISTING PIPING.
5. EXISTING 4" VENT THRU ROOF TO REMAIN. DISCONNECT ALL EXISTING VENT PIPING BELOW ROOF TO EXISTING FIXTURES. REFER TO NEW VENT PIPING TO BE CONNECTED TO EXISTING VENT THRU ROOF. FIELD VERIFY EXACT SIZE AND LOCATION OF EXISTING VTR.
6. DISCONNECT AND REMOVE ALL EXISTING WATER PIPING ABOVE CEILINGS WHERE EXPOSED UNLESS NOTED OTHERWISE. CAP AND ABANDON ANY PIPING WHERE CEILINGS ARE NOT BEING REMOVED. REFER TO SHEET P101 FOR NEW WATER LINES TO BE RUN TO NEW PLUMBING FIXTURES.
7. EXISTING COLD WATER LINE TO REMAIN. PROTECT PIPING DURING CONSTRUCTION AND MAINTAIN CONNECT TO EXISTING PRESSURE REGULATOR LOCATED IN MEZZANINE MECHANICAL ROOM. REFER TO SHEET P101 FOR NEW FIXTURES TO BE CONNECTED TO EXISTING COLD WATER PIPING. EXISTING HOT WATER PIPING TO BE REMOVED.
8. DISCONNECT AND REMOVE ALL VENT PIPING IN CEILING SPACE AS SHOWN. REFER TO LARGE SCALE TOILET ROOM PLAN (THIS SHEET) FOR NEW FIXTURES AND VENT PIPING.
9. MOUNT EMERGENCY EYEWASH ON WALL. CONNECT 1/2" HOT AND COLD WATER LINES WITH TEMPERING VALVE TO EYEWASH. RUN DRAIN LINE TO ADJACENT SERVICE SINK. REFER TO DETAIL G/P301 FOR TYPICAL INSTALLATION.
10. EXTEND NEW 4" VENT PIPING TO EXISTING 4" VTR AND CONNECT. SEE PLUMBING FLOOR PLAN - SHEET P101 FOR CONTINUATION.
11. PROVIDE AND INSTAL MULTI-DRAIN TRAP PRIMER NEAR FLOOR. DROP 1/2" COLD WATER LINE TO EACH FLOOR DRAIN. REFER TO FOUNDATION PLAN - SHEET P100 FOR COLD WATER LINES TO FLOOR DRAIN. REFER TO DETAIL M/P301 FOR TYPICAL TRAP PRIMER INSTALLATION AND PIPING CONNECTIONS.
12. PROVIDE NEW WALL MOUNTED HOSE REEL FOR COMPRESSED AIR. MOUNT ON WALL AT 48" ABOVE FLOOR. RISE 1/2" AIR LINE UP AND CONNECT TO NEW OR EXISTING PIPING NEAR ROOF. REFER TO DETAIL B/P301 FOR TYPICAL INSTALLATION AND PIPING CONNECTIONS.
13. DROP 3/4" COLD WATER LINE DOWN WALL AND CONNECT TO HOSE BIBB. INTERIOR HOSE BIBBS TO BE AT 36" ABOVE FLOOR AND EXTERIOR HOSE BIBBS TO BE 24" ABOVE FINISHED GRADE. REFER TO DETAIL D/P301 FOR TYPICAL INSTALLATION.
14. RELOCATE EXISTING AIR COMPRESSOR TO THIS LOCATION. PROVIDE NEW EXHAUST PIPING TO EXTERIOR OF BUILDING COMPLETE WITH MUFFLER. CONNECT NEW 1-1/4" COMPRESSED AIR LINE TO EXISTING COMPRESSOR AND RUN TO CE/CM LAB AS SHOWN ON PLANS. PROVIDE BY-PASS PIPE AND VALVE IN SYSTEM AND CONNECT TO NEW COMPRESSOR PIPING TO AUTO SHOP. REFER TO DETAIL E/P301 FOR TYPICAL PIPING CONNECTIONS TO COMPRESSOR.
15. PROVIDE AND INSTALL NEW AIR COMPRESSOR AS SPECIFIED. PROVIDE EXHAUST PIPING TO EXTERIOR OF BUILDING COMPLETE WITH MUFFLER. CONNECT 1-1/4" COMPRESSED AIR LINE TO COMPRESSOR AND RUN TO AUTOMOTIVE SHOP AS SHOWN ON PLANS. REFER TO DETAIL E/P301 FOR TYPICAL PIPING CONNECTIONS TO COMPRESSOR. PROVIDE BY-PAS PIPE AND VALVE IN SYSTEM AND CONNECT TO EXISTING COMPRESSOR PIPING TO EM/EC LAB.

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Engineered Systems Associates
ESA JOB NUMBER 20048

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BYUI Engineering Technology Center (ETC)

project#: 20.0220
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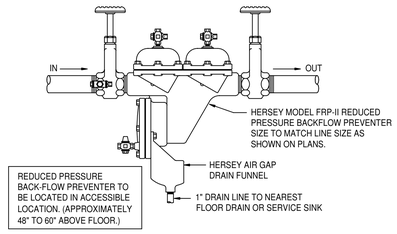
LARGE SCALE PUMBING PLANS

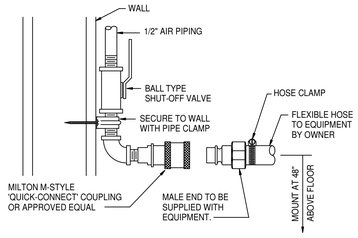
sheet:

P201

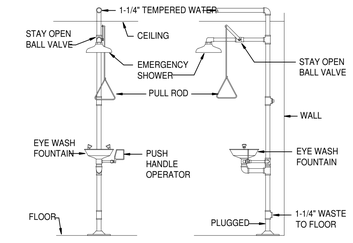
100% construction documents



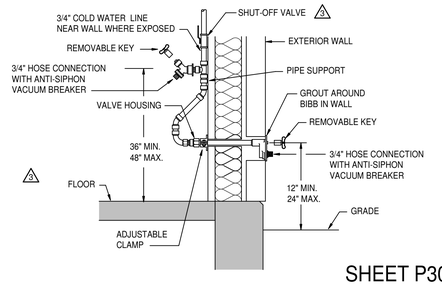
A | BACK-FLOW PREVENTER DETAIL | NO SCALE



B | COMPRESSED AIR OUTLET DETAIL | NO SCALE

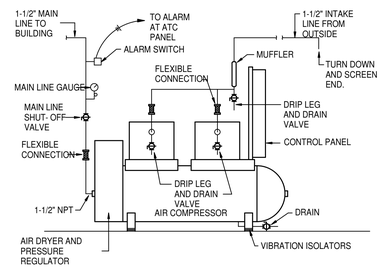


C | EMERGENCY SHOWER DETAIL | NO SCALE

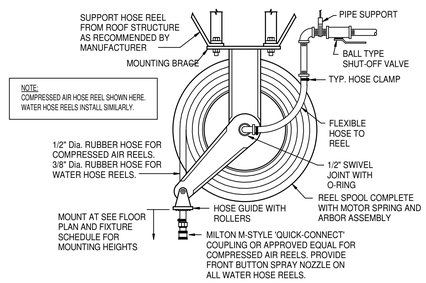


D | HOSE BIBB INSTALLATION DETAIL | NO SCALE

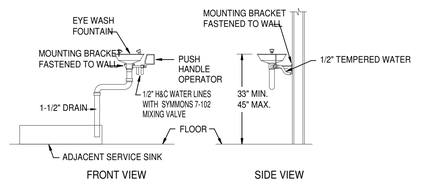
SHEET P301



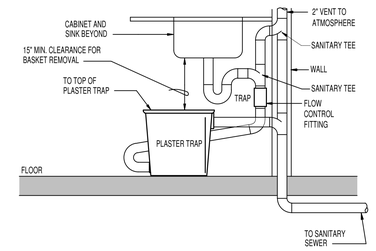
E | AIR COMPRESSOR PIPING DIAGRAM | NO SCALE



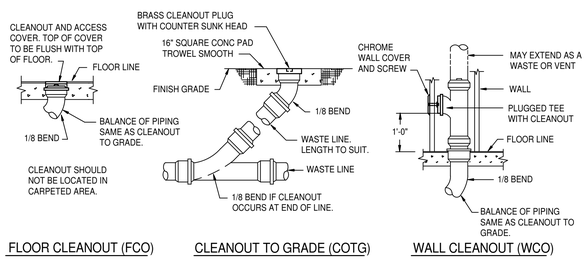
F | COMPRESSED AIR HOSE REEL DETAIL | NO SCALE



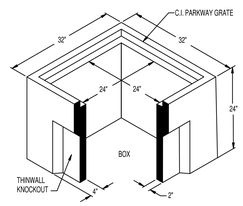
G | EMERGENCY EYEWASH DETAIL | NO SCALE



H | PLASTER TRAP DETAIL | NO SCALE

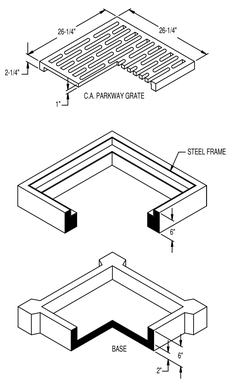


J | CLEAN OUT DETAIL | NO SCALE

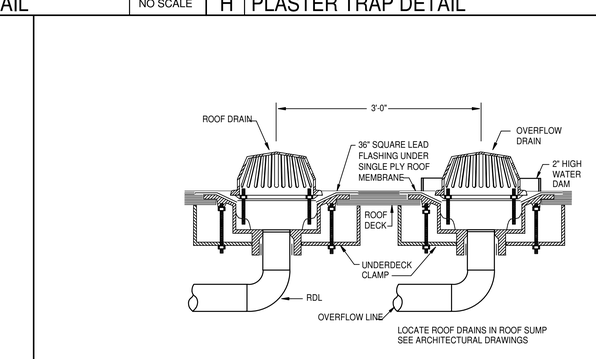


J & R CB2424 SERIES
24" x 24" CATCH BASIN

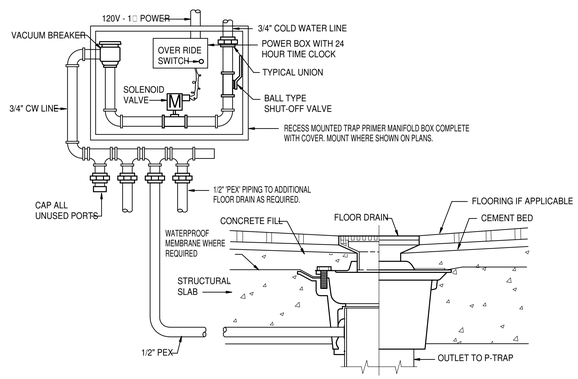
"CATCH BASIN HEIGHT	"KNOCKOUT SIZE
12" HIGH	14"W x 7"H
18 HIGH	14"W x 11"H
24" HIGH	14"W x 17"H
28 " HIGH	14"W x 22"H



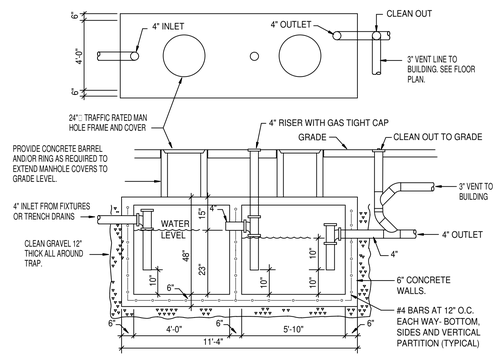
K | CATCH BASIN CONSTRUCTION DETAIL | NO SCALE



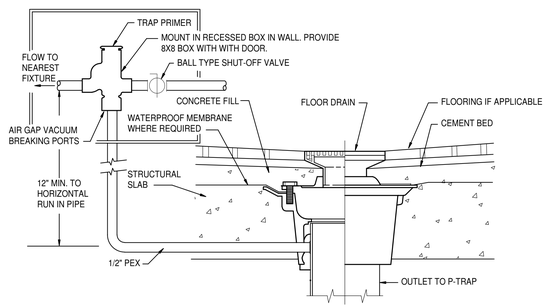
L | ROOF DRAIN DETAIL | NO SCALE



M | MULTI-DRAIN TRAP PRIMER PIPING DIAGRAM | NO SCALE



N | SOLIDS OR GREASE INTERCEPTOR INSTALLATION DETAIL | NO SCALE



O | SINGLE TRAP PRIMER DETAIL | NO SCALE

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Dwayne C. Sadowski 5762 10/27/20 REGISTERED PROFESSIONAL ENGINEER STATE OF UTAH

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ESA JOB NUMBER 20048

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byu idaho project#: 12005
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revisions :

3	Addendum #3	11-13/20

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PLUMBING DETAILS

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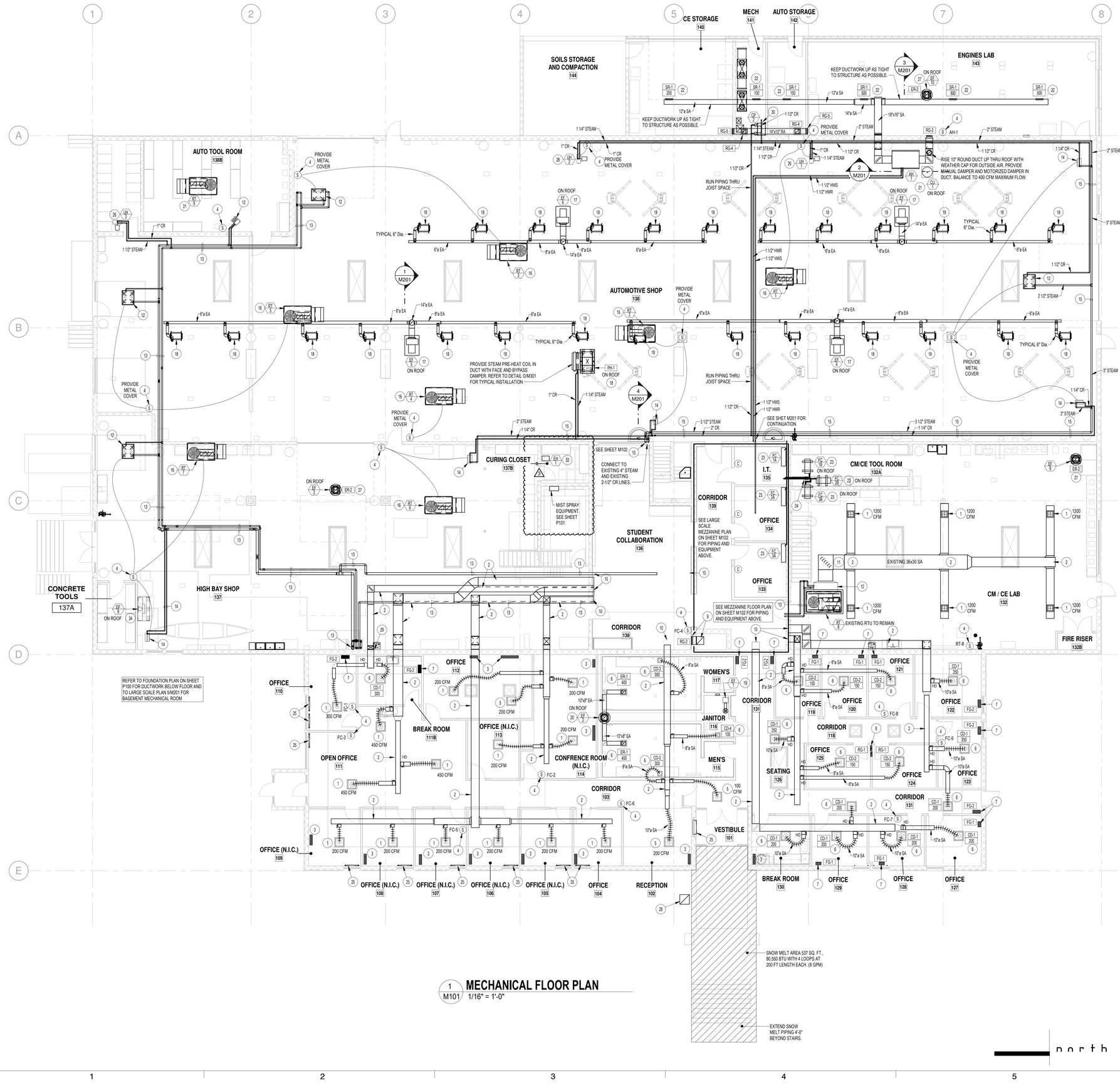
P301

100% construction documents



1 M101 **MECHANICAL FLOOR PLAN**
1/16" = 1'-0"

PLAN NOTES:

1. EXISTING DIFFUSER OR RETURN GRILLE AND ASSOCIATED BRANCH DUCT TO REMAIN. PROTECT DURING CONSTRUCTION AND MAINTAIN CONNECT TO EXISTING DUCTWORK AND EXISTING FAN COIL UNIT LOCATED IN MEZZANINE MECHANICAL ROOM. RE-BALANCE EXISTING DIFFUSER TO MAXIMUM CFM WHERE INDICATED.
2. EXISTING MAIN SUPPLY AIR TRUNK DUCTWORK IN CEILING SPACE TO REMAIN UNLESS NOTED OTHERWISE. CONTRACTOR TO FIELD VERIFY EXACT SIZES AND LOCATION OF EXISTING DUCTWORK. CONNECT NEW DUCTWORK TO EXISTING WHERE INDICATED. PROVIDE TRANSITION AS REQUIRED FOR NEW CONNECTIONS.
3. EXISTING FLOOR GRILLE AND BOOT TO REMAIN. PROTECT DURING CONSTRUCTION. KEEP GRILLE AND BOOT CLEAN OF ANY DEBRIS.
4. PROVIDE AND INSTALL NEW WALL MOUNTED ROOM SENSOR AS SPECIFIED. SENSOR TO BE COMPATIBLE WITH JCI METASYS, VERSION 10. CONNECT NEW SENSOR TO EXISTING CORRESPONDING FAN COIL IN MEZZANINE MECHANICAL ROOM OR ROOF MOUNTED EQUIPMENT AS INDICATED, AND TO BUILDING (CAMPUS) CONTROL SYSTEM.
5. RELOCATE EXISTING CEILING DIFFUSER TO NEW CIELING GRID AS REQUIRED. PROVIDE NEW BRANCH DUCT AS REQUIRED TO CONNECT TO EXISTING MAIN TRUNK DUCT. BALANCE EXISTING DIFFUSER TO CFM AS INDICATED.
6. PROVIDE AND INSTALL NEW CEILING DIFFUSER OR EXHAUST GRILLE AS SPECIFIED. PROVIDE NEW BRANCH DUCT AS REQUIRED TO CONNECT TO EXISTING MAIN TRUNK DUCT AS SHOWN. FIELD VERIFY EXACT LOCATIONS OF EXISTING DUCTWORK.
7. PROVIDE AND INSTALL NEW FLOOR GRILLE AS SPECIFIED. COORDIANTE CUTTING AND PATCHING OF EXISTING CONCRETE FLOOR WITH GENERAL CONTRACTOR. (REFER TO ARCHITECTURAL SHEETS.) LOCATE NEW FLOOR GRILLES OVER EXISTING AIR TUNNEL BELOW FLOOR. SEE DETAIL G/M301 FOR TYPCL INSTALLATION. (SEE FOUNDATION PLAN ON SHEET P100.)
8. PROVIDE AND INSTALL WALL MOUNTED RETURN GRILLE AT 6" ABOVE FLOOR. DROP 12x3 RETURN DUCT DOWN IN WALL TO BELOW FLOOR AND CONNECT TO EXISTING ROUND RETURN DUCT. REFER TO PLUMBING FOUNDATION PLAN ON SHEET P0100 FOR EXISTING DUCT LOCATION AND TO DETAIL H/M301 FOR DUCT CONNECTION.
9. INSTALL RETURN GRILLE AT 12" ABOVE FLOOR AND EXTEND DUCTWORK THRU CHASE WALL AS SHOWN AND TURN UP WITH 90 DEGREE ELBOW.
10. REFER TO MEZZANINE PLAN ON SHEET M102 FOR CONTINUATION OF DUCTWORK AND PIPING.
11. PROVIDE NEW SECTION(S) OF DUCTWORK AS REQUIRED WHERE HUMIDIFIER COILS WERE REMOVED. (SEE SHEET MD100 AND PD100). NEW DUCTWORK TO MATCH EXISTING SIZE, SHAPE AND ELEVATION. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS.
12. EXISTING STEAM UNIT HEATER OR STEAM DUCT COIL TO REMAIN. ALL ASSOCIATED STEAM AND CONDENSATE RETURN PIPING TO REMAIN. CONNECT EXISTING UNIT HEATER OR DUCT COIL TO NEW WALL MOUNTED CONTROL AS SHOWN.
13. EXISTING STEAM AND CONDENSATE RETURN PIPING RISING UP FROM BELOW FLOOR AND PIPING NEAR ROOF TO REMAIN. FIELD VERIFY EXACT SIZES AND LOCATIONS OF PIPING AND PROTECT DURING CONSTRUCTION. PROVIDE NEW FITTINGS AS REQUIRED IN EXISTING PIPING FOR RELOCATED UNIT HEATERS.
14. EXISTING UNIT HEATER TO BE RELOCATED. (REFER TO SHEET MD100 FOR ORIGINAL LOCATIONS OF EXISTING UNIT HEATERS.) CONNECT NEW STEAM AND CONDENSATE LINES TO EXISTING UNIT AS SHOWN AND CONNECT TO EXISTING AND/OR NEW MAIN STEAM AND CONDENSATE RETURN LINES. PROVIDE NEW SHUT-OFF VALVE ON STEAM LINE AND NEW F&T TRAP ON CONDENSATE RETURN LINES. KEEP ALL PIPING AS HIGH AS POSSIBLE. VALVE AND TRAP TO MATCH SIZE OF EXISTING EQUIPMENT PIPE CONNECTIONS. (FIELD VERIFY)
15. CONNECT NEW STEAM SUPPLY AND CONDENSATE RETURN PIPING TO EXISTING MAIN LINES. EXTEND NEW PIPING THRU NEW AUTOMOTIVE SHOP AS SHOWN AND CONNECT TO RELOCATED UNIT HEATERS. KEEP ALL PIPING AS HIGH AS POSSIBLE AND SUPPORT FROM ROOF STRUCTURE.
16. EXISTING ROOF TOP COOLING UNIT AND ROOF CURB TO REMAIN. EXISTING DUCT THRU ROOF AND CONCENTRIC DIFFUSER TO REMAIN. PROTECT EQUIPMENT AND DUCTWORK DURING PROJECT.
17. PROVIDE AND INSTALL NEW ROOF MOUNTED (VENT SET) EXHAUST FAN AS SPECIFIED. MOUNT FAN ON ROOF CURB AND DROP 14" ROUND DUCT DOWN THRU ROOF. CONNECT (2) 8" ROUND DUCTS FROM CAR EXHAUST SYSTEM TO 14" ROUND DUCT. PROVIDE VFD ON EXHAUST FAN MOTOR AND CONTROL WITH MANUAL OVER-RIDE SWITCH ON WALL AND WITH AIR FLOW SENSOR IN DUCT. SEE SECTION 1/M201
18. PROVIDE AND INSTALL SPRING LOADED VEHICLE EXHAUST HOSE REEL WITH 25'-0" x 4" DIA HOSE COMPLETE WITH EXHAUST ADAPTER, HOSE STOP, AND PULL KIT WITH CLAMP. REFER TO DETAIL L/M301.
19. PROVIDE AND INSTALL NEW CEILING MOUNTED EXHAUST FAN AS SPECIFIED. RISE 6" ROUND DUCT UP THRU EXISTING ROOF WITH ROOF CAP. REFER TO DETAIL A/M301 FOR TYPICAL FAN INSTALLATION.
20. PROVIDE AND INSTALL NEW ROOF MOUNTED EXHAUST FAN AS SPECIFIED. MOUNT FAN ON ROOF CURB AND DROP 14x14 DUCT DOWN THRU ROOF AND CONNECT TO (2) 10x8 DUCTS AS SHOWN. REFER TO DETAIL B/M301 FOR TYPICAL FAN INSTALLATION.
21. PROVIDE AND INSTALL NEW HVAC UNIT WITH HOT WATER COIL AS SPECIFIED. SUPPORT NEW UNIT FROM ROOF STRUCTURE. DROP 18x18 SUPPLY AND RETURN DUCTS DOWN AND EXTEND THRU WALL BELOW LOWER ROOF LEVEL.
22. PROVIDE AND INSTALL NEW ROOF MOUNTED HVAC UNIT AS SPECIFIED. EXTEND 18" ROUND SUPPLY DUCT AS SHOWN WITH SUPPLY GRILLES MOUNTED IN SIDE OF DUCT AT 45 DEGREED DOWN FROM HORIZONTAL. REFER TO DETAIL F/M301 FOR TYPICAL GRILLE INSTALLTION.
23. PROVIDE AND INSTALL NEW MINI-SPLIT SYSTEM AS SPECIFIED. MOUNT INDOOR UNIT ON WALL AS HIGH AS POSSIBLE. LOCATE CONTROLLER ON WALL NEAR DOORWAY. EXTEND REFRIGERANT PIPING THRU EXISTING WALL AND RISE UP IN CE/CM TOOL ROOM TO ROOF LEVEL. MOUNT OUTDOOR UNIT ON ROOF WITH PYRAMID TYPE SUPPORTS. KEEP UNIT AT LEAST 6" ABOVE ROOF LEVEL. CONNECT REFRIGERANT LINES TO OUTDOORS UNIT. REFER TO PIPING DIAGRAM K/M301 FOR TYPICAL CONNECTIONS.
24. RISE REFRIGERANT PIPING UP THRU ROOF WITH 4" DIAMETER GOOSENECK PIPE. CONNECT REFRIGERANT LINES TO OUTDOOR UNIT OF MINI-SPLIT SYSTEM. REFER TO DETAIL N/M301 FOR TYPICAL REFRIGERANT PIPE PENETRATION THRU ROOF. RUN 3/4" DRAIN LINE THRU WALL AND DROP DOWN TO EXISTING FLOOR DRAIN.
25. EXISTING FINTUBE HEATERS TO REMAIN. LEAVE ZONE PIPING SHUT-OFF. NO WORK REQUIRED.
26. PROVIDE AND INSTALL NEW STEAM FIRED UNIT HEATER. MOUNT AS HIGH AS POSSIBLE AND CONNECT TO NEW STEAM SYSTEM PIPING. REFER TO DETAIL D/M301 FOR TYPICAL STEAM AND CONDENSATE PIPING CONNECTIONS.
27. DROP 14x14 EXHAUST AIR DUCT THRU ROOF AND TRANSITION AS REQUIRED TO CONNECT TO 18x18 GRILLE. MOUNT GRILLE AT 6" BELOW ROOF DECK.
28. PROVIDE 24" x 24" x 24" CONCRETE VAULT IN GROUND FOR SNOWMELT MANIFOLDS AND/OR ZONE VALVES. REFER TO DETAILS ON SHEET M102 FOR TYPICAL MANIFOLD PIPING AND VALVES.
29. EXTEND EXISTING 12x6 SUPPLY AIR DUCT THRU WALL AS HIGH AS POSSIBLE. CONNECT TO EXISTING DIFFUSERS AS SHOWN. REFER TO ARCHITECTURAL PLANS FOR CUTTING AND PATCHING EXISTING WALLS.
30. PROVIDE AND INSTALL NEW CONDENSATE RETURN PUMP AS SPECIFIED. RISE DISCHARGE LINE UP INTO JOIST SPACE OF AUTO SHOP AND RUN BACK TO MEZZANINE MECHANICAL ROOM AS SHOWN. REFER TO DETAIL G/M302 FOR TYPICAL CONDENSATE PUMP PIPING.
31. PROVIDE AND INSTALL NEW ROOF MOUNTED COOLING UNIT. MOUNT ON NEW ROOF CURB. UNIT TO BE COMPLETE WITH ECONOMIZER INLET HOOD AND STEP-DOWN CONCENTRIC DIFFUSER BELOW CEILING. CONNECT DIFFUSER WITH 18" DIAMETER SUPPLY AND RETURN DUCTS AS RECOMMENDED BY MANUFACTURER.
32. PROVIDE AND INSTALL 36"x60"x30-1/2" PENTHOUSE ON ROOF. MOUNT ON NEW ROOF CURB. PROVIDE MOTORIZED DAMPER IN DUCT AT BOTTOM OF ROOF AND INTERLOCK WITH EF-4, EF-5, EF-6, AND EF-7 TO OPEN WHEN ANY FAN IS IN OPERATION.
33. PROVIDE AND INSTALL NEW WATERPROOF WASHDOWN ELECTRIC HEATER AS SPECIFIED. SUPPORT FROM STRUCTURE ABOVE.
34. FUME HOOD PROVIDED AND INSTALLED BY PLUMBING CONTRACTOR. MECHANICAL CONTRACTOR CONNECT 10" ROUND DUCT TO HOOD AND RISE UP TO CONNECT TO ROOF MOUNTED EXHAUST FAN.

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Engineered Systems Associates
ESA JOB NUMBER 20048

project:

BYUI Engineering Technology Center (ETC)

project #: 20.0220
byuidaho project #: 12005
date: oct. 27,2020

revisions :

3	Addendum #3	11-13/20

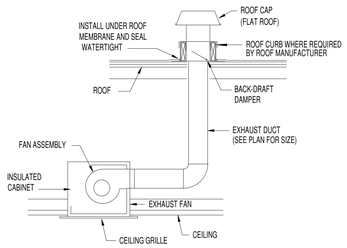
title:

MECHANICAL FLOOR PLAN

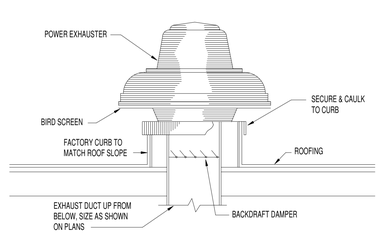
sheet:

M101

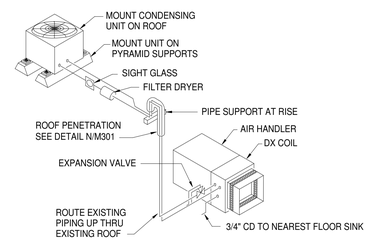
100% construction documents



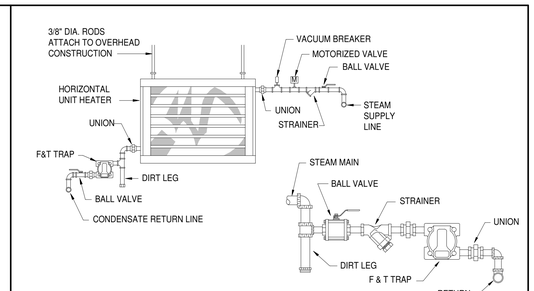
A | CEILING EXHAUST FAN DETAIL | NO SCALE



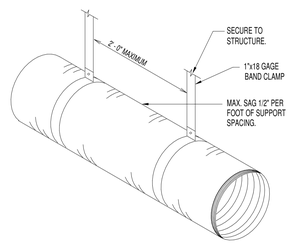
B | ROOF MOUNTED EXHAUST FAN DETAIL | NO SCALE



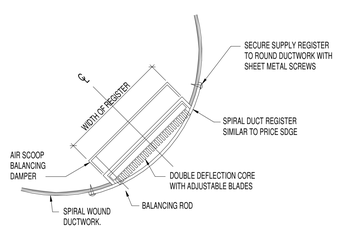
C | REFRIGERANT PIPING DIAGRAM | NO SCALE



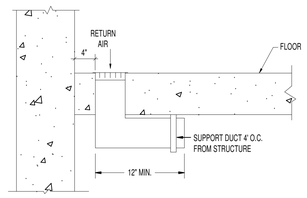
D | STEAM UNIT HEATER AND TRAP DETAIL | NO SCALE



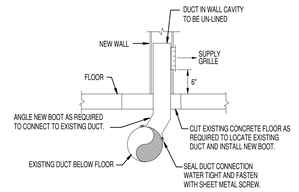
E | FLEXIBLE DUCT SUPPORT DETAIL | NO SCALE



F | IN-DUCT REGISTER DETAIL | NO SCALE



G | FLOOR GRILLE INSTALLATION DETAIL | NO SCALE



H | WALL MOUNTED RETURN AIR GIRLLE | NO SCALE

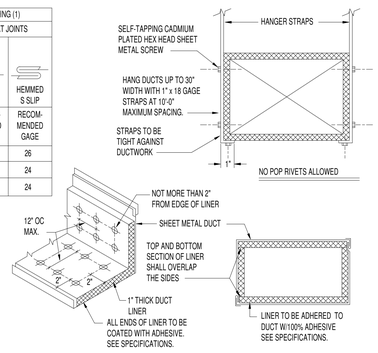
DIMENSION OF LONGEST SIDE INCHES	SHEET METAL GAGE (ALL FOUR SIDES)	TRANSVERSE REINFORCING (1) MINIMUM REINFORCING ANGLE SIZE AND MAXIMUM LONGITUDINAL SPACING BETWEEN TRANSVERSE JOINTS &/OR INTERMEDIATE REINFORCING	AT JOINTS DRIVE SLIP RECOM-MENDED GAGE	AT JOINTS HEMMED S SLIP RECOM-MENDED GAGE
UP THRU 12	26	NONE REQUIRED	26	26
13 - 18	24	NONE REQUIRED	24	24
19 - 30	24	1"x1"x1/8" @ 60 IN	-	24

(1) TRANSVERSE REINFORCING SIZE IS DETERMINED BY DIMENSION OF SIDE TO WHICH ANGLE IS APPLIED.

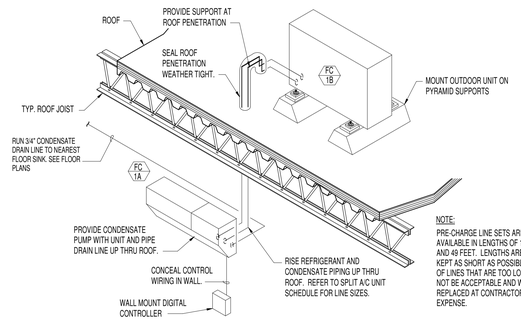
METAL FASTENERS - OMARK INSULPINS, DURO DYNE FASTENERS OR GRIPNAILS.

GRIP NAILS SHALL BE INSTALLED BY GRIPNAIL AIR HAMMER OR BY AUTOMATIC FASTENER EQUIP.

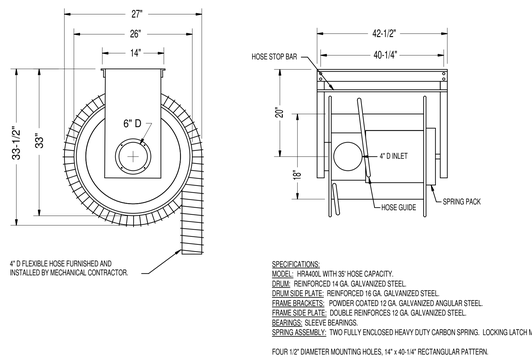
ENDS OF LINER SHALL BE BUTTED FIRMLY TOGETHER



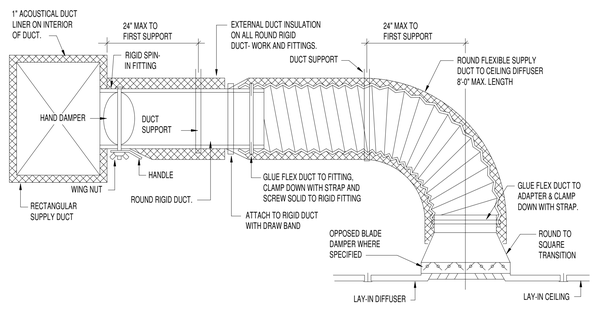
J | DUCT CONSTRUCTION AND HANGER DETAILS | NO SCALE



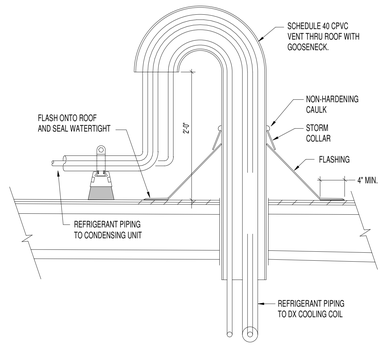
K | REFRIGERANT PIPING DIAGRAM | NO SCALE



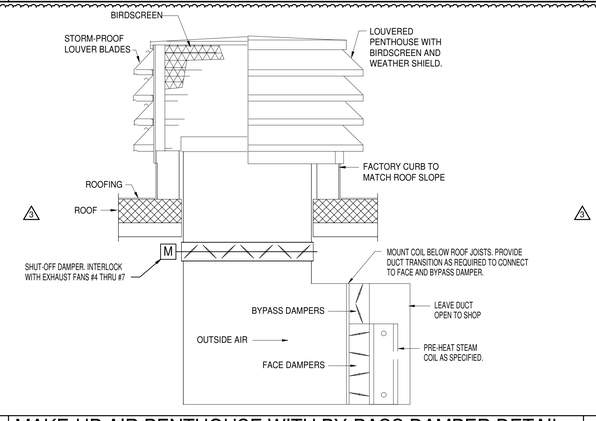
L | CAR EXHAUST HOSE REEL DETAIL | NO SCALE



M | CEILING DIFFUSER INSTALLATION DETAIL | NO SCALE



N | REGRIGERANT PIPING THRU CEILING DETAIL | NO SCALE



O | MAKE-UP AIR PENTHOUSE WITH BY-PASS DAMPER DETAIL | NO SCALE

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MECHANICAL DETAILS

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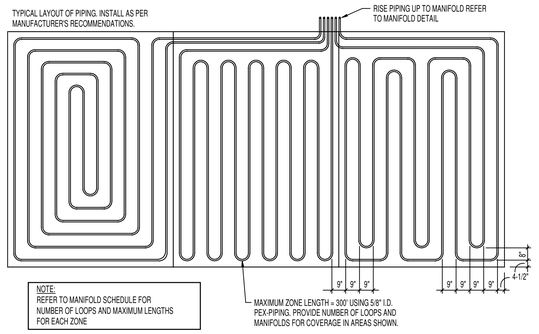
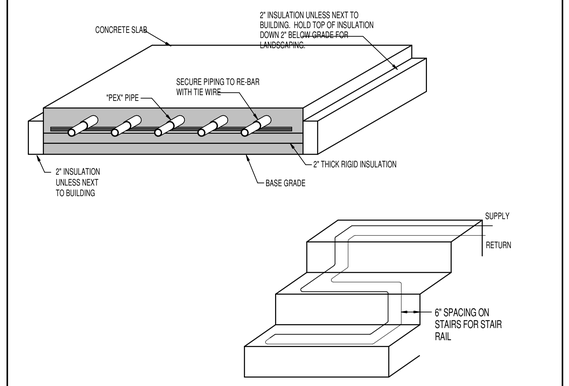
M301

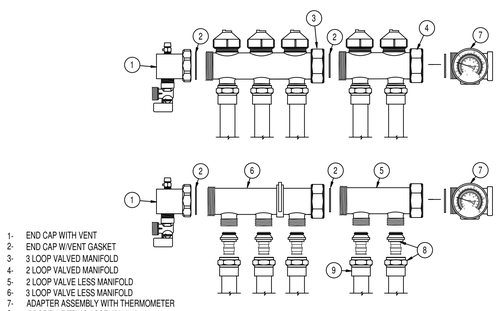
100% construction documents



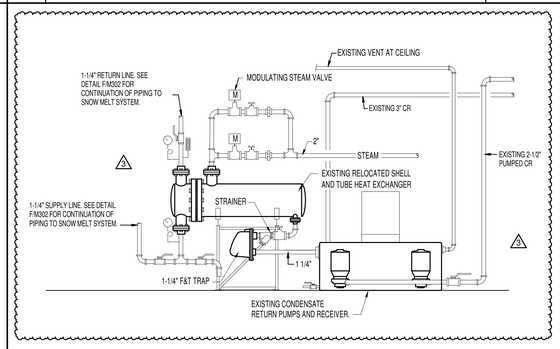
A TYPICAL SNOW MELT PIPING LAY-OUT — NO SCALE



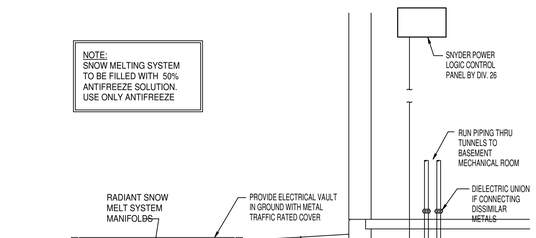
B SNOW MELT PIPING DETAILS — NO SCALE



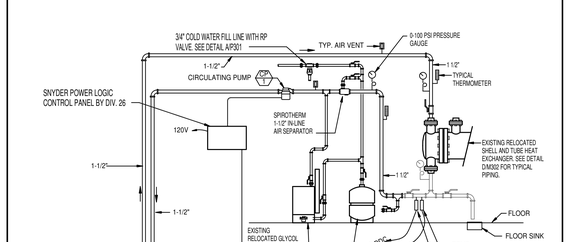
C SNOW MELT MANIFOLD DETAIL — NO SCALE



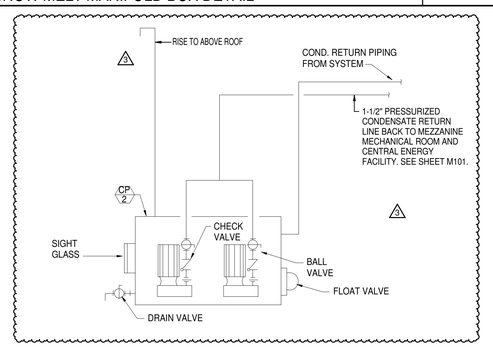
D SNOW MELT HEAT EXCHANGER & CONDENSATE PUMP — NO SCALE



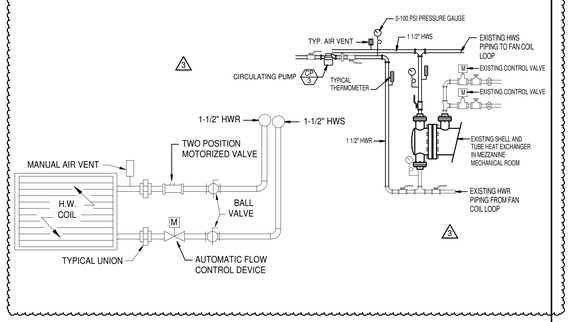
E SNOW MELT MANIFOLD BOX DETAIL — NO SCALE



F SNOW MELT SYSTEM PIPING DIAGRAM — NO SCALE



G CONDENSATE RETURN PUMP PIPING DIAGRAM — NO SCALE



H HOT WATER COIL PIPING CONNECTIONS — NO SCALE

ROOF TOP HEATING & AIR CONDITIONING UNIT SCHEDULE

SYM.	CFM	SP_{ri}	BLOWER H.P.	CHAR	MCA	WEIGHT	GAS CONN	HEATING BTU IN	HEATING BTU OUT	HEATING EAT	HEATING LAT	COOLING MBH	COOLING EAT	COOLING LAT	REMARKS
RT 1	1940	---	---	EXISTING	28.0	800#	---	---	---	---	---	60	75°F	55°F	EXISTING COOLING ONLY ROOF TOP UNIT TO REMAIN.
RT 2	1940	---	---	EXISTING	28.0	800#	---	---	---	---	---	60	75°F	55°F	EXISTING COOLING ONLY ROOF TOP UNIT TO REMAIN.
RT 3	1940	---	---	EXISTING	28.0	800#	---	---	---	---	---	60	75°F	55°F	EXISTING COOLING ONLY ROOF TOP UNIT TO REMAIN.
RT 4	1940	---	---	EXISTING	28.0	800#	---	---	---	---	---	60	75°F	55°F	EXISTING COOLING ONLY ROOF TOP UNIT TO REMAIN.
RT 5	1940	---	---	EXISTING	28.0	800#	---	---	---	---	---	60	75°F	55°F	EXISTING COOLING ONLY ROOF TOP UNIT TO REMAIN.
RT 6	1940	---	---	EXISTING	28.0	800#	---	---	---	---	---	60	75°F	55°F	EXISTING COOLING ONLY ROOF TOP UNIT TO REMAIN.
RT 7	1200	---	---	EXISTING	20.0	500#	---	---	---	---	---	36	75°F	55°F	EXISTING COOLING ONLY ROOF TOP UNIT TO REMAIN.
RT 8	7200	---	---	EXISTING	99.0	2200#	---	---	---	---	---	210	75°F	55°F	EXISTING COOLING ONLY ROOF TOP UNIT TO REMAIN.
RT 9	1200	.40"	1/2	208/60/3	23.0 MCA 30 MCOP	500#	---	---	---	---	---	36	75°F	55°F	CARRIER MODEL 48FC-A04. MOUNT ON ROOF CURB. NO HEAT REQUIRED. (14.0 SEER)

EXHAUST FAN SCHEDULE

SYM.	TYPE	C.F.M.	S.P.E.	WATTS	CHAR.	R.P.M.	CONTROL	REMARKS
EF 1	CEILING MOUNTED	100	.25"	87	120/60/1	640	WALL SWITCH	TWIN CITY MODEL T100 WITH BACK-DRAFT DAMPER AND 6" ROUND DUCT TO ROOF CAP
EF 2	ROOF MOUNTED	800	.25"	1/4 HP	120/60/1	900	TIME CLOCK	TWIN CITY MODEL 100C BCRD WITH BACK-DRAFT DAMPER. MOUNT ON ROOF CURB
EF 3	ROOF MOUNTED	800	.25"	1/4 HP	120/60/1	900	WALL SWITCH	TWIN CITY MODEL 100C BCRD WITH BACK-DRAFT DAMPER. MOUNT ON ROOF CURB
EF 4	VENT SET	2100	4.0"	3 HP	208/60/3	1725	WALL SWITCH	MONOXIVENT 135-BI WITH BACK-DRAFT DAMPER. PROVIDE FAN WITH VFD. MOUNT ON ROOF CURB. INTERLOCK WITH PH-1.
EF 5	VENT SET	2100	4.0"	3 HP	208/60/3	1725	WALL SWITCH	MONOXIVENT 135-BI WITH BACK-DRAFT DAMPER. PROVIDE FAN WITH VFD. MOUNT ON ROOF CURB. INTERLOCK WITH PH-1.
EF 6	VENT SET	1800	4.0"	2 HP	208/60/3	3450	WALL SWITCH	MONOXIVENT 120-BI WITH BACK-DRAFT DAMPER. PROVIDE FAN WITH VFD. MOUNT ON ROOF CURB. INTERLOCK WITH PH-1.
EF 7	VENT SET	1800	4.0"	2 HP	208/60/3	3450	WALL SWITCH	MONOXIVENT 120-BI WITH BACK-DRAFT DAMPER. PROVIDE FAN WITH VFD. MOUNT ON ROOF CURB. INTERLOCK WITH PH-1.
EF 8	ROOF MOUNTED UP-BLAST	1000	.50"	1/4 HP	120/60/1	1375	SWITCH ON HOOD	TWIN CITY MODEL 110-BCRU WITH BACK-DRAFT DAMPER. MOUNT ON ROOF CURB
EF 9	ROOF MOUNTED	800	.25"	1/4 HP	120/60/1	900	WALL SWITCH	TWIN CITY MODEL 100C BCRD WITH BACK-DRAFT DAMPER. MOUNT ON ROOF CURB
EF 10	ROOF MOUNTED	800	.25"	1/4 HP	120/60/1	900	WALL SWITCH	TWIN CITY MODEL 100C BCRD WITH BACK-DRAFT DAMPER. MOUNT ON ROOF CURB

GRILLE AND REGISTER SCHEDULE

SYM.	SIZE	THROW	CFM	CONSTR.	FINISH	BRANCH DUCT	F.D.	O.B.	REMARKS
CD-1	12 x 12		200-400	STEEL	WHITE	10" Dia.	NO	NO	PRICE MODEL SMD IN 24x24 LAY-IN MODULE
CD-2	9 x 9		50-199	STEEL	WHITE	8" Dia.	NO	NO	PRICE MODEL SMD IN 24x24 LAY-IN MODULE
CD-3	12 x 12		200-400	STEEL	WHITE	10" Dia.	NO	NO	PRICE MODEL SMD IN 24x24 LAY-IN MODULE
CD-4	9 x 9		50-199	STEEL	WHITE	8" Dia.	NO	NO	PRICE MODEL SMD WITH BEVELED FRAME
SR-1	12 x 10		200-300	STEEL	WHITE	IN 18" Dia. DUCT	NO	NO	PRICE MODEL SDGE IN 10" ROUND DUCT WITH EXTRACTION DAMPER
SR-2	10 x 8		200-300	STEEL	WHITE	IN 10" Dia. DUCT	NO	NO	PRICE MODEL SDGE IN 10" ROUND DUCT WITH EXTRACTION DAMPER
RG-1	12 x 6	---	50-150	STEEL	WHITE	12 x 3	NO	NO	PRICE MODEL 535L - MOUNT AT 6" ABOVE FLOOR
RG-2	18 x 20	---	800	STEEL	WHITE	18 x 20	NO	NO	PRICE MODEL 535S - MOUNT AT 12" ABOVE FLOOR
RG-3	18 x 16	---	1200-1800	STEEL	WHITE	18 x 16	NO	NO	PRICE MODEL 535S - MOUNT AT 11'-0" ABOVE FLOOR
RG-4	14 x 8	---	100-200	STEEL	WHITE	14 x 8	NO	NO	PRICE MODEL 535L
FG-1	12 x 6	---	50-200	ALUM	ANODIZED	12 x 6 BOOT	NO	NO	PRICE MODEL LBPH25C WITH 750 FLANGED BORDER
FG-2	18 x 6	---	201-300	ALUM	ANODIZED	18 x 6 BOOT	NO	NO	PRICE MODEL LBPH25C WITH 750 FLANGED BORDER
ER-1	12 x 12	---	50-400	STEEL	WHITE	12 x 8	NO	NO	PRICE MODEL 535
ER-2	18 x 18	---	400-800	STEEL	WHITE	14 x 14	NO	NO	PRICE MODEL LG100-A-STL-B12
PH-1	36W-60L-30 1/2H	---	5000-7800	ALUM	ANODIZED	36 x 60	NO	NO	PENNBARRY MODEL PH WITH MOTORIZED DAMPER. INTERLOCK WITH EF-4, EF-5, EF-6 AND EF-7.

UNIT HEATER SCHEDULE

SYM.	TYPE	CFM	H.P.	CHAR.	BTU	EAT	STEAM PRESS	SUP.	RET.	VALVE	TRAP	WEIGHT	REMARKS
UH 1	PROPELLER	1400	1/20	120/60/1	96,000	65°F	15 psi	1-1/2"	1"	AUTO 2 POSITION	1" F&T	100#	TRANE UHSB096 HORIZONTAL UNIT
UH 2	PROPELLER	1400	1/20	120/60/1	96,000	65°F	15 psi	1-1/2"	1"	AUTO 2 POSITION	1" F&T	100#	TRANE UHSB096 HORIZONTAL UNIT
UH 3	PROPELLER	480	1/20	120/60/1	36,000	65°F	15 psi	1-1/4"	3/4"	AUTO 2 POSITION	3/4" F&T	100#	TRANE UHSB036 HORIZONTAL UNIT

CIRCULATING PUMP SCHEDULE

SYM.	TYPE	G.P.M.	HEAD	H.P.	CHAR	RPM	REMARKS	MANUFACTURER & MODEL NO.
CP 1	IN-LINE	8	15'	1/4	120/60/1	1750	SNOW MELT SYSTEM	GRUNDFOS MAGNA3 32-60 F
CP 2	COND. RETURN PUMP	18	20'	(2) 1/2	120/60/1	3500	CONDENSATE RETURN PUMP	SHIPCO 150 LPD-30 WITH 21 GALLON RECEIVING TANK AND DUPLEX CONTROL PANEL.
CP 3	IN-LINE	4	15'	1/4	120/60/1	1750	AIR HANDLER HOT WATER COIL	GRUNDFOS MAGNA3 32-60 F

SPLIT SYSTEM A/C UNIT SCHEDULE

INDOOR UNIT SYM.	CFM	BTU	CHAR	MCA	MANUFACTURER	OUTDOOR UNIT SYM.	BTU	MCA	SEER	CHAR	MANUFACTURER	REFRIG. LINES LIQUID	REFRIG. LINES SUCTION
FC 1A	600-700	30,000	208/60/1	1	MITSUBISHI MODEL PKA-A30KA WITH WALL MOUNTED CONTROLLER AND COND. PUMP	FC 1B	30,000	25	16	208/60/1	MITSUBISHI MODEL PUY-A30NHA3 WITH LOW AMBIENT 'HARD-START' KIT	3/8"	5/8"
FC 2A	600-700	30,000	208/60/1	1	MITSUBISHI MODEL PKA-A30KA WITH WALL MOUNTED CONTROLLER AND COND. PUMP	FC 2B	30,000	25	16	208/60/1	MITSUBISHI MODEL PUY-A30NHA3 WITH LOW AMBIENT 'HARD-START' KIT	3/8"	5/8"
FC 3A	600-700	30,000	208/60/1	1	MITSUBISHI MODEL PKA-A30KA WITH WALL MOUNTED CONTROLLER AND COND. PUMP	FC 3B	30,000	25	16	208/60/1	MITSUBISHI MODEL PUY-A30NHA3 WITH LOW AMBIENT 'HARD-START' KIT	3/8"	5/8"

AIR HANDLING UNIT SCHEDULE

SYM.	CFM	RPM	SP.E	H.P.	CHAR	HEATING MBH	HEATING EWT	HEATING TD	HEATING GPM	HEATING EAT	HEATING LAT	COOLING MBH	COOLING EAT	COOLING LAT	COOLING LIQ.	COOLING SUC	REMARKS
AH 1	1950	2180	1.0"	1-1/2	208/60/3	65	180°F	20°F	4	65°F	110°F	36	75°F	55°F	3/8"	7/8"	TRANE MODEL UCCAG060 WITH HOT WATER HEATING COIL, DX COOLING COIL, AND MIXING BOX WITH ANGLE FILTERS. PROVIDE VFD WITH UNIT.

CONDENSING UNIT SCHEDULE

SYM.	BTU	EAT	CHAR.	MCA	MCOP	SEER	WEIGHT	REFRIGERANT PIPING LIQUID	REFRIGERANT PIPING SUCTION	REMARKS
CU 1	56,000	95°F	208/60/1	31.0	50	14.0	250#	3/8"	7/8"	TRANE 4TTR4060A1 WITH LOW AMBIENT 'HARD-START' KIT. MOUNT ON ROOF WITH PYRAMID TYPE SUPPORTS.

⚠3 ELECTRIC HEATER SCHEDULE

SYM.	TYPE	BTU	KW	CHAR	CONTROL	REMARKS
EH 1	WATERPROOF WASHDOWN FAN	11,200	3.3	208/60/1	INTEGRAL	INTERTEK MODEL 07130402 COMPLETE WITH WALL MOUNTED RAIN-TIGHT THERMOSTAT.

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project:
BYUI Engineering Technology Center (ETC)

project #: 20.0220
byui daho project #: 12005
date: oct. 27,2020

revisions :
3 Addendum #3 11-13/20

title:
MECHANICAL SCHEDULES

sheet:
M302

100% construction documents

PAYNE Engineering Inc.
Consulting Engineers

ELECTRICAL ADDENDUM #3

November 14, 2020

Method Studio
160 W. 2nd Street, Suite 201
Rexburg, ID 83440

RE: BYU-I Engineering Technology Center

General Clarifications:

1. Low voltage cabling and raceway installation shall meet current BYU-I cabling standards, refer to Section 7 of the standards.

2. Basket tray installed in the Automotive Shop, Highbay Shop and CM/CE Lab shall be mounted high in structural ceiling space; field verify routing and location with other trades and structure.

3. Sheet EE101b
    a. Key Note 11: Electrical contractor shall route conduit and conductors for snow melt manifold through tunnel with Mech. Piping, coordinate with Mechanical Contractor (M.C.)
    b. Key Note 5: Electrical contractor is responsible for field routing the new fiber to new IT room, the existing tunnel may be use as necessary. At some location the fiber will have to exit the tunnel to be routed overhead to the IT room.

Sheets ED101/ED102

1. Additional clarification was added to the existing electrical plans regarding demo, refer to updated sheets.

Sheets ED131/ED132

1. Additional clarification was added to the existing lighting plans regarding the exterior lighting, refer to updated sheets.

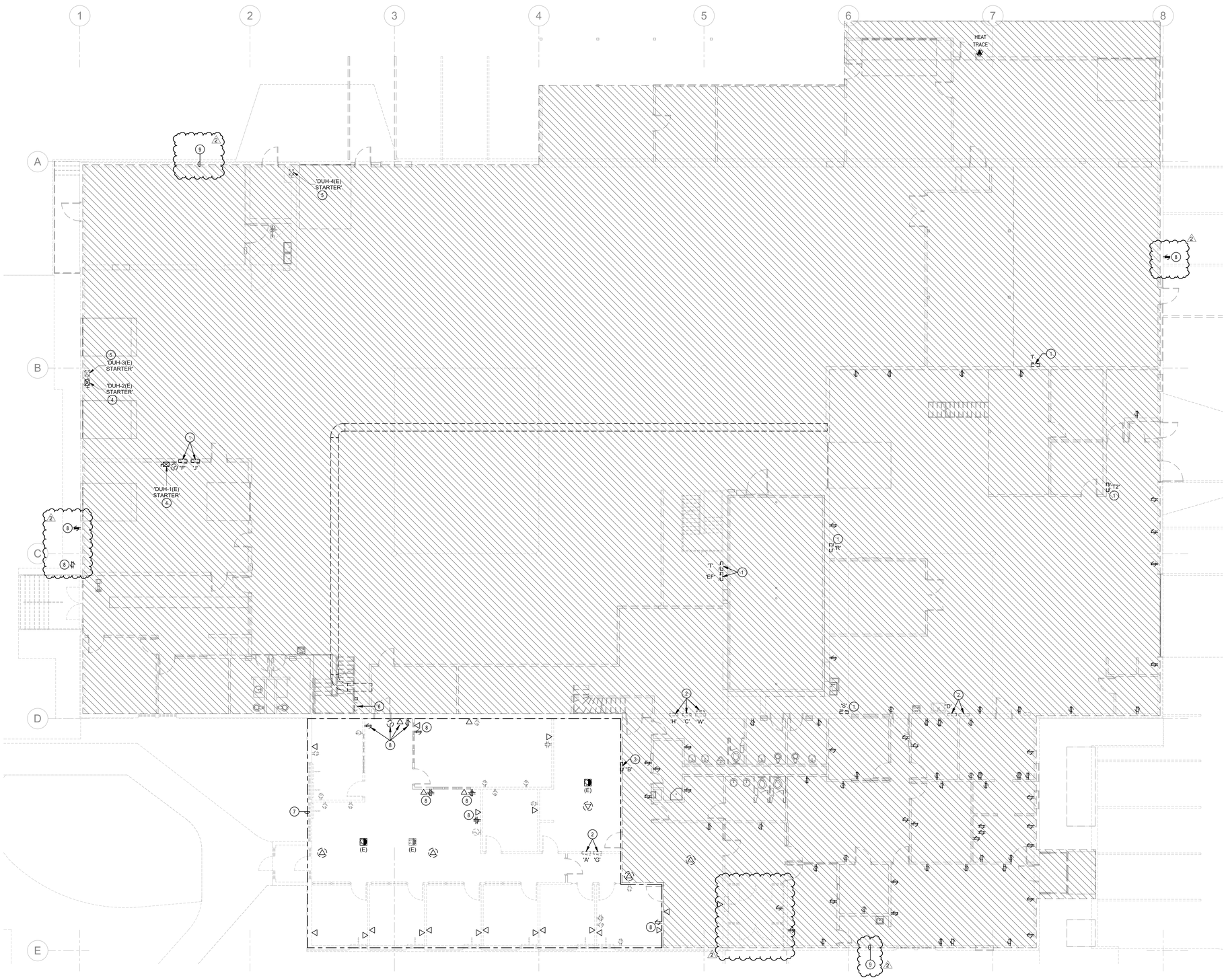
Sheets EE101b and EE102

1. Modifications and additional basket tray were added for low voltage cabling, refer to revised sheets.
2. Card reader at Purchasing door relocated.
3. Receptacle changes in Purchasing Reception area.

Sheets EE131

1. Additional Exit signs were added, refer to revised sheet.

END OF ELECTRICAL ADDENDUM



1 Level 1 - Existing Electrical Plan
SCALE: 1/8" = 1'-0"

0" 8" 16" NORTH

GENERAL NOTES:

A. IN GENERAL, UNLESS SPECIFICALLY INDICATED OTHERWISE, ALL EXISTING ELECTRICAL EQUIPMENT SHOWN SHALL BE REMOVED. WHEN EXISTING SWITCH AND OR OUTLET BOXES FALL WITHIN OR NEAR NEW OUTLETS/SWITCHES SHOWN IN NEW DESIGN, THE E.C. MAY UTILIZE THE EXISTING ROUGH-IN, ETC. IN LIEU OF INSTALLING NEW. CONTRACTOR MUST HOWEVER MAINTAIN ELECTRICAL CONTINUITY TO DOWNSTREAM EQUIPMENT TO REMAIN. ELECTRICAL CONTRACTOR MAY UTILIZE ANY EXISTING RACEWAYS WHERE THEY ARE COMPATIBLE WITH NEW DESIGN/SYSTEMS. PROVIDE ALL NEW DEVICES AND COVERS.
B. ALL EXISTING ELECTRICAL MAY NOT APPEAR ON THESE PLANS, HOWEVER THE ABOVE INFORMATION APPLIES.
C. PROVIDE AND INSTALL BLANK COVERS ON ALL UNUSED SWITCH/OUTLET/J-BOXES WHERE REQUIRED.
D. ALL WALL DEVICES THAT ARE EXISTING TO REMAIN, SHALL BE ADAPTED TO NEW WALL COVERINGS, REFER TO ARCHITECTURAL DRAWINGS FOR EXACT WALL LOCATIONS, THICKNESS, ETC.
E. PRIOR TO THE START OF ANY DEMOLITION WORK, DISCONNECTING ANY POWER AND OR TELE/DATA SYSTEMS, THE CONTRACTOR SHALL COORDINATE DOWN-TIME WITH THE OWNER.
F. REFER TO ARCHITECTURAL PLANS FOR EXTENT OF DEMOLITION, DETAILS, ETC.
G. REMOVE OR RELOCATE ELECTRICAL AS NECESSARY FOR NEW WORK.
H. WHERE EXISTING CIRCUITS ARE TO BE RE-USED, EXTEND AS NECESSARY. MAINTAIN ELECTRICAL CONTINUITY TO DOWNSTREAM EQUIPMENT TO REMAIN.
I. EXISTING SHOWN TO REMAIN, MAY NEED TO BE REMOVED AND RE-INSTALLED ONLY AS NECESSARY FOR EXTENDING OR MODIFICATION OF EXISTING CIRCUITS OR WIRING.
J. REFER TO MECHANICAL PLANS FOR EXTENT OF MECHANICAL EQUIPMENT TO BE REMOVED OR RELOCATED.
K. REMOVE ALL UNUSED EQUIPMENT WIRING, CONDUIT AND BOXES IN ALL AREAS. ABANDON ONLY IN CONCEALED AREAS.
L. CONTRACTOR TO PROVIDE MINIMUM WORKING CLEARANCES AS PER NEC BEFORE INSTALLING ANY ELECTRICAL PANELS OR CABINETS.
M. CONTRACTOR MY UTILIZE ANY EXISTING CONDUIT WHERE COMPATIBLE WITH NEW DESIGN, AND IF IN GOOD CONDITION AND COMPLIES WITH SPECIFICATIONS.
N. WHEN ANY MODIFICATIONS ARE MADE TO ANY EXISTING ELECTRICAL PANEL TO REMAIN, CONTRACTOR TO PROVIDE NEW TYPE WRITTEN INDEX TO REFLECT ALL NEW AND EXISTING LOADS.
O. REMOVE ALL EQUIPMENT, RACEWAYS, CABLES,ETC. NOT USED IN FINISHED AREAS.

KEY NOTES: (#)

1 EXISTING ELECTRICAL PANEL TO BE DISCONNECT AND REMOVED; REMOVE ALL ASSOCIATED CONDUIT AND CONDUCTORS BACK TO SOURCE. FIELD VERIFY IF ANY BRANCH CIRCUITS ARE TO REMAIN, IF SO CIRCUIT SHALL BE RE-ROUTED TO NEAREST ELECTRICAL PANEL.
2 EXISTING ELECTRICAL PANEL TO REMAIN ACTIVE; LOCATE AND PROTECT DURING CONSTRUCTION. PANEL SHALL BE RE-USED FOR NEW CIRCUITING AS INDICATED, PROVIDE NEW BREAKERS AS INDICATED IN SCHEDULE.
3 EXISTING PANEL 'B' TO BE REMOVED AND REPLACES WITH J-BOX; DISCONNECT AND MAINTAIN EXISTING FEEDER. PROVIDE AND INSTALL NEW FLUSH MOUNTED J-BOX WITH FLUSH MOUNTED COVER TO SPLICE AND EXTEND EXISTING FEEDER TO NEW PANEL 'B' LOCATION. J-BOX SHALL BE INSTALLED IN EXISTING WALL FACING INTO EXISTING CONF. ROOM. EXTEND NEW FEEDER TO NEW PANEL AS INDICATED.
4 EXISTING STARTER FOR EXISTING UNIT HEATER TO BE RELOCATED; REFER TO NEW DRAWINGS FOR NEW LOCATION AND NEW CIRCUIT INFORMATION.
5 EXISTING STARTERS FOR EXISTING UNIT HEATERS TO REMAIN; LOCATE AND PROTECT DURING CONSTRUCTION. PROVIDE NEW CIRCUITING AS INDICATED ON DRAWINGS.
6 EXISTING PULLBOX AND ASSOCIATED FEEDER FOR EXISTING PANEL TO REMAIN ACTIVE. FIELD LOCATE AND PROTECT DURING CONSTRUCTION. CONTRACTOR SHALL DISCONNECTED EXISTING MOUNTING AND SUPPORT FOR REMOVAL OF STAIRCASE AND RESUPPORT FROM NEW WING WALL.
7 E.C. SHALL REMOVE ALL EXISTING DATA CABLING IN THIS AREA AND PROVIDE NEW AS INDICATED ON NEW DRAWINGS PER LATEST BYU-I CABLING STANDARDS. EXISTING RACEWAY AND BOXES MAYBE RE-USED IF POSSIBLE.
8 DISCONNECT AND REMOVE EXISTING ELECTRICAL DEVICE; REMOVE ASSOCIATED CONDUIT AND CONDUCTORS BACK TO SOURCE. MAINTAIN/RE-ESTABLISH CONTINUITY TO ALL DOWNSTREAM DEVICES THAT ARE TO REMAIN.
9 ALL EXISTING ELECTRICAL EQUIPMENT, DEVICES (RECEPTACLES, SWITCHES, FIRE ALARM, DATA, J-BOXES), CABLE TRAY AND ETC. WITHIN THIS AREA SHALL BE DISCONNECTED AND REMOVED, UNLESS SPECIFICALLY INDICATED OTHERWISE. REMOVE ALL ASSOCIATED CONDUIT AND CONDUCTORS BACK TO SOURCE. E.C. SHALL MAINTAIN/RE-ESTABLISH CONTINUITY TO ANY DOWNSTREAM EQUIPMENT/DEVICES THAT ARE TO REMAIN.

SPECIAL DEMOLITION NOTES:

1. ALL CIRCUIT BREAKERS FROM DEMOLITIONED PANELS SHALL BE BOXED UP AND DELIVERED TO THE OWNER, TO AN ON CAMPUS LOCATION AS DIRECTED BY OWNER.
2. ALL CONDUCTORS BEING REMOVED THAT ARE RATED 100 AMPS AND ABOVE SHALL BE DELIVERED TO THE CAMPUS RECYCLING CENTER.
3. ALL TRANSFORMERS BEING REMOVED SHALL BE DELIVERED TO THE OWNER, TO AN ON CAMPUS LOCATION AS DIRECTED BY OWNER.
4. UNLESS INDICATED ABOVE, ALL OTHER MATERIAL SHALL BE DISPOSED OF LEGALLY BY THE CONTRACTOR.

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PROFESSIONAL ENGINEER REGISTERED 13053 10/27/20 STATE OF IDAHO SHAWN A. MEADOR

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project #: 20.0220
byu idaho project #: 12006
date: oct. 27, 2020

revisions :
2 Addendum #3 11/14/20

title:

Level 1 - Existing Electrical Plan

sheet:

ED101

100% construction documents

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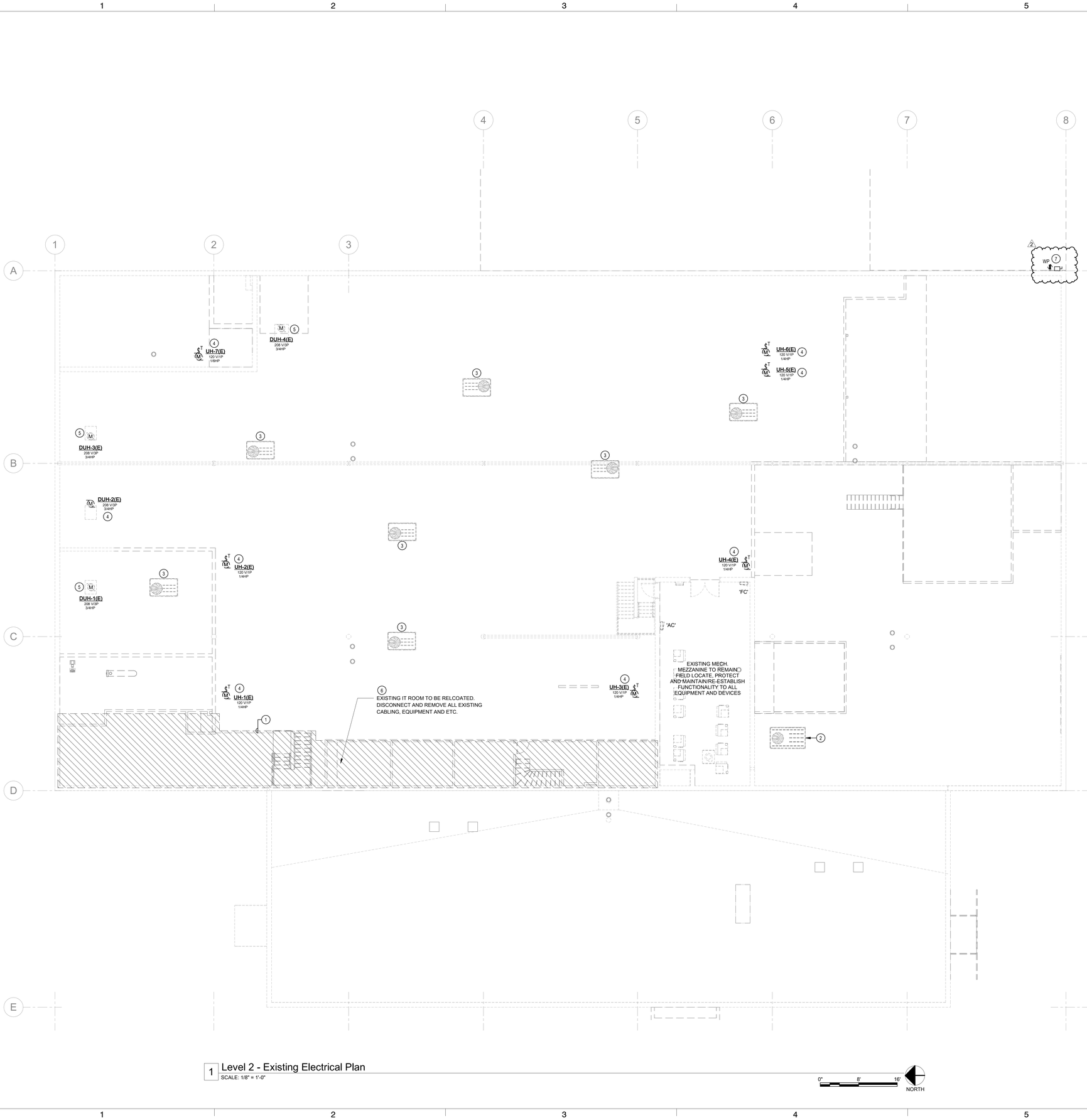

1 Level 2 - Existing Electrical Plan
SCALE: 1/8" = 1'-0"

0" 8' 16' NORTH

GENERAL NOTES:

A. IN GENERAL, UNLESS SPECIFICALLY INDICATED OTHERWISE, ALL EXISTING ELECTRICAL EQUIPMENT SHOWN SHALL BE REMOVED. WHEN EXISTING SWITCH AND OR OUTLET BOXES FALL WITHIN OR NEAR NEW OUTLETS/SWITCHES SHOWN IN NEW DESIGN, THE E.C. MAY UTILIZE THE EXISTING ROUGH-IN, ETC. IN LIEU OF INSTALLING NEW. CONTRACTOR MUST HOWEVER MAINTAIN ELECTRICAL CONTINUITY TO DOWNSTREAM EQUIPMENT TO REMAIN. ELECTRICAL CONTRACTOR MAY UTILIZE ANY EXISTING RACEWAYS WHERE THEY ARE COMPATIBLE WITH NEW DESIGN/SYSTEMS. PROVIDE ALL NEW DEVICES AND COVERS.
B. ALL EXISTING ELECTRICAL MAY NOT APPEAR ON THESE PLANS, HOWEVER THE ABOVE INFORMATION APPLIES.
C. PROVIDE AND INSTALL BLANK COVERS ON ALL UNUSED SWITCH/OUTLET/J-BOXES WHERE REQUIRED.
D. ALL WALL DEVICES THAT ARE EXISTING TO REMAIN, SHALL BE ADAPTED TO NEW WALL COVERINGS, REFER TO ARCHITECTURAL DRAWINGS FOR EXACT WALL LOCATIONS, THICKNESS, ETC.
E. PRIOR TO THE START OF ANY DEMOLITION WORK, DISCONNECTING ANY POWER AND OR TELE/DATA SYSTEMS, THE CONTRACTOR SHALL COORDINATE DOWN-TIME WITH THE OWNER.
F. REFER TO ARCHITECTURAL PLANS FOR EXTENT OF DEMOLITION, DETAILS, ETC.
G. REMOVE OR RELOCATE ELECTRICAL AS NECESSARY FOR NEW WORK.
H. WHERE EXISTING CIRCUITS ARE TO BE RE-USED, EXTEND AS NECESSARY. MAINTAIN ELECTRICAL CONTINUITY TO DOWNSTREAM EQUIPMENT TO REMAIN.
I. EXISTING SHOWN TO REMAIN, MAY NEED TO BE REMOVED AND RE-INSTALLED ONLY AS NECESSARY FOR EXTENDING OR MODIFICATION OF EXISTING CIRCUITS OR WIRING.
J. REFER TO MECHANICAL PLANS FOR EXTENT OF MECHANICAL EQUIPMENT TO BE REMOVED OR RELOCATED.
K. REMOVE ALL UNUSED EQUIPMENT WIRING, CONDUIT AND BOXES IN ALL AREAS. ABANDON ONLY IN CONCEALED AREAS.
L. CONTRACTOR TO PROVIDE MINIMUM WORKING CLEARANCES AS PER NEC BEFORE INSTALLING ANY ELECTRICAL PANELS OR CABINETS.
M. CONTRACTOR MY UTILIZE ANY EXISTING CONDUIT WHERE COMPATIBLE WITH NEW DESIGN, AND IF IN GOOD CONDITION AND COMPLIES WITH SPECIFICATIONS.
N. WHEN ANY MODIFICATIONS ARE MADE TO ANY EXISTING ELECTRICAL PANEL TO REMAIN, CONTRACTOR TO PROVIDE NEW TYPE WRITTEN INDEX TO REFLECT ALL NEW AND EXISTING LOADS.
O. REMOVE ALL EQUIPMENT, RACEWAYS, CABLES,ETC. NOT USED IN FINISHED AREAS.

KEY NOTES: (#)

1 ALL EXISTING ELECTRICAL EQUIPMENT, DEVICES (RECEPTACLES, SWITCHES, FIRE ALARM, DATA, J-BOXES), CABLE TRAY AND ETC. WITHIN THIS AREA SHALL BE DISCONNECTED AND REMOVED, UNLESS SPECIFICALLY INDICATED OTHERWISE. REMOVE ALL ASSOCIATED CONDUIT AND CONDUCTORS BACK TO SOURCE. E.C. SHALL MAINTAIN/RE-ESTABLISH CONTINUITY TO ANY DOWNSTREAM EQUIPMENT/DEVICES THAT ARE TO REMAIN.

2 EXISTING ROOFTOP UNIT TO BE RECIRCUITED AS INDICATED ON NEW DRAWINGS; FIELD COORDINATE ROUTING OF NEW CIRCUIT WITH NEW CONSTRUCTION.

3 EXISTING ROOFTOP UNIT TO REMAIN ACTIVE; LOCATE AND PROTECT EXISTING CIRCUITING AS REQUIRED TO MAINTAIN FUNCTIONALITY.

4 EXISTING UNIT HEATER TO BE RELOCATED BY M.C. E.C. SHALL ELECTRICALLY DISCONNECT AND REMOVE ALL ASSOCIATED CONDUIT AND CONDUCTORS; PROVIDE NEW CIRCUITING AT NEW LOCATION INDICATED ON NEW DRAWINGS.

5 EXISTING UNIT HEATER TO REMAIN; E.C. SHALL PROVIDE NEW CIRCUITING AS INDICATED ON NEW DRAWINGS. ROUTE CIRCUIT THROUGH EXISTING STARTERS.

6 EXISTING IT CLOSET TO BE DEMOLISHED, E.C. SHALL DISCONNECT AND REMOVE ALL EXISTING DATA CABLING, EQUIPMENT AND ETC. LOCATED IN ROOM. ALL EXISTING DATA CABLING IN BUILDING TO BE REMOVED AND REPLACE WITH NEW CABLING TO NEW IT ROOM AS INDICATED ON NEW DRAWINGS. E.C. SHALL PULL BACK EXISTING SINGLE MODE FIBER OPTIC CABLE TO ELEC. ROOM AT LEVEL 0, FIBER OPTIC CABLE SHALL BE SPLICED IN ELECTRICAL ROOM AND EXTENDED TO NEW IT ROOM AS REQUIRED. ALL EXISTING MULTI-MODE FIBER AND COPPER BACKBONE CABLING SHALL BE REMOVED FROM BUILDING OUT TO EXISTING VAULT BY E.C.

7 DISCONNECT AND REMOVE EXISTING ELECTRICAL DEVICE; REMOVE ASSOCIATED CONDUIT AND CONDUCTORS BACK TO SOURCE. MAINTAIN/RE-ESTABLISH CONTINUITY TO ALL DOWNSTREAM DEVICES THAT ARE TO REMAIN.

SPECIAL DEMOLITION NOTES:

1. ALL CIRCUIT BREAKERS FROM DEMOLITIONED PANELS SHALL BE BOXED UP AND DELIVERED TO THE OWNER, TO AN ON CAMPUS LOCATION AS DIRECTED BY OWNER.
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3. ALL TRANSFORMERS BEING REMOVED SHALL BE DELIVERED TO THE OWNER, TO AN ON CAMPUS LOCATION AS DIRECTED BY OWNER.
4. UNLESS INDICATED ABOVE, ALL OTHER MATERIAL SHALL BE DISPOSED OF LEGALLY BY THE CONTRACTOR.

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PROFESSIONAL ENGINEER REGISTERED 13053 10/27/20 STATE OF IDAHO SHAWN A. MEADOR

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project#: 20.0220
byu idaho project #: 12006
date: oct. 27, 2020

revisions :
2 Addendum #3 11/14/20

title:

Level 2 & Roof - Existing Electrical Plan

sheet:

ED102

100% construction documents

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1 Level 1 - Existing Lighting Plan
SCALE: 1/8" = 1'-0"

0" 8' 16'
NORTH

GENERAL NOTES:

A. IN GENERAL, UNLESS SPECIFICALLY INDICATED OTHERWISE, ALL EXISTING ELECTRICAL EQUIPMENT SHOWN SHALL BE REMOVED. WHEN EXISTING SWITCH AND OR OUTLET BOXES FALL WITHIN OR NEAR NEW OUTLETS/SWITCHES SHOWN IN NEW DESIGN, THE E.C. MAY UTILIZE THE EXISTING ROUGH-IN, ETC. IN LIEU OF INSTALLING NEW. CONTRACTOR MUST HOWEVER MAINTAIN ELECTRICAL CONTINUITY TO DOWNSTREAM EQUIPMENT TO REMAIN. ELECTRICAL CONTRACTOR MAY UTILIZE ANY EXISTING RACEWAYS WHERE THEY ARE COMPATIBLE WITH NEW DESIGN/SYSTEMS. PROVIDE ALL NEW DEVICES AND COVERS.
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N. WHEN ANY MODIFICATIONS ARE MADE TO ANY EXISTING ELECTRICAL PANEL TO REMAIN, CONTRACTOR TO PROVIDE NEW TYPE WRITTEN INDEX TO REFLECT ALL NEW AND EXISTING LOADS.
O. REMOVE ALL EQUIPMENT, RACEWAYS, CABLES,ETC. NOT USED IN FINISHED AREAS.

KEY NOTES: (#)

1 ALL EXISTING LIGHTING AND CONTROLS WITHIN THIS AREA SHALL BE DISCONNECTED AND REMOVED, UNLESS SPECIFICALLY INDICATED OTHERWISE. REMOVE ALL ASSOCIATED CONDUIT AND CONDUCTORS BACK TO SOURCE UNLESS THEY CAN BE UTILIZED FOR NEW INSTALLATION. E.C. SHALL MAINTAIN/RE-ESTABLISH CONTINUITY TO ALL DOWNSTREAM EQUIPMENT/DEVICES THAT ARE TO REMAIN.

2 EXISTING LIGHTING TO REMAIN ACTIVE, LOCATE AND PROTECT DURING CONSTRUCTION.

3 DISCONNECT AND REMOVE EXISTING ELECTRICAL DEVICE; REMOVE ASSOCIATED CONDUIT AND CONDUCTORS BACK TO SOURCE. MAINTAIN/RE-ESTABLISH CONTINUITY TO ALL DOWNSTREAM DEVICES THAT ARE TO REMAIN.

4 EXISTING EXTERIOR LIGHT FIXTURE TO BE REMOVED AND REPLACED WITH NEW EXTERIOR LIGHTING AS INDICATED ON NEW LIGHTING PLAN(S). FIELD LOCATE EXISTING EXTERIOR LIGHTING CIRCUIT AND EXTEND TO NEW LIGHTING.

SPECIAL DEMOLITION NOTES:

1. ALL CIRCUIT BREAKERS FROM DEMOLITIONED PANELS SHALL BE BOXED UP AND DELIVERED TO THE OWNER, TO AN ON CAMPUS LOCATION AS DIRECTED BY OWNER.
2. ALL CONDUCTORS BEING REMOVED THAT ARE RATED 100 AMPS AND ABOVE SHALL BE DELIVERED TO THE CAMPUS RECYCLING CENTER.
3. ALL TRANSFORMERS BEING REMOVED SHALL BE DELIVERED TO THE OWNER, TO AN ON CAMPUS LOCATION AS DIRECTED BY OWNER.
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salt lake city, utah 84101
801 532 4422

PROFESSIONAL ENGINEER
REGISTERED
13053
10/27/20
STATE OF IDAHO
SHAWN A. MEADOR

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project #: 20.0220
byu idaho project # : 12006
date: oct, 27, 2020

revisions :

2	Addendum #3	11/14/20

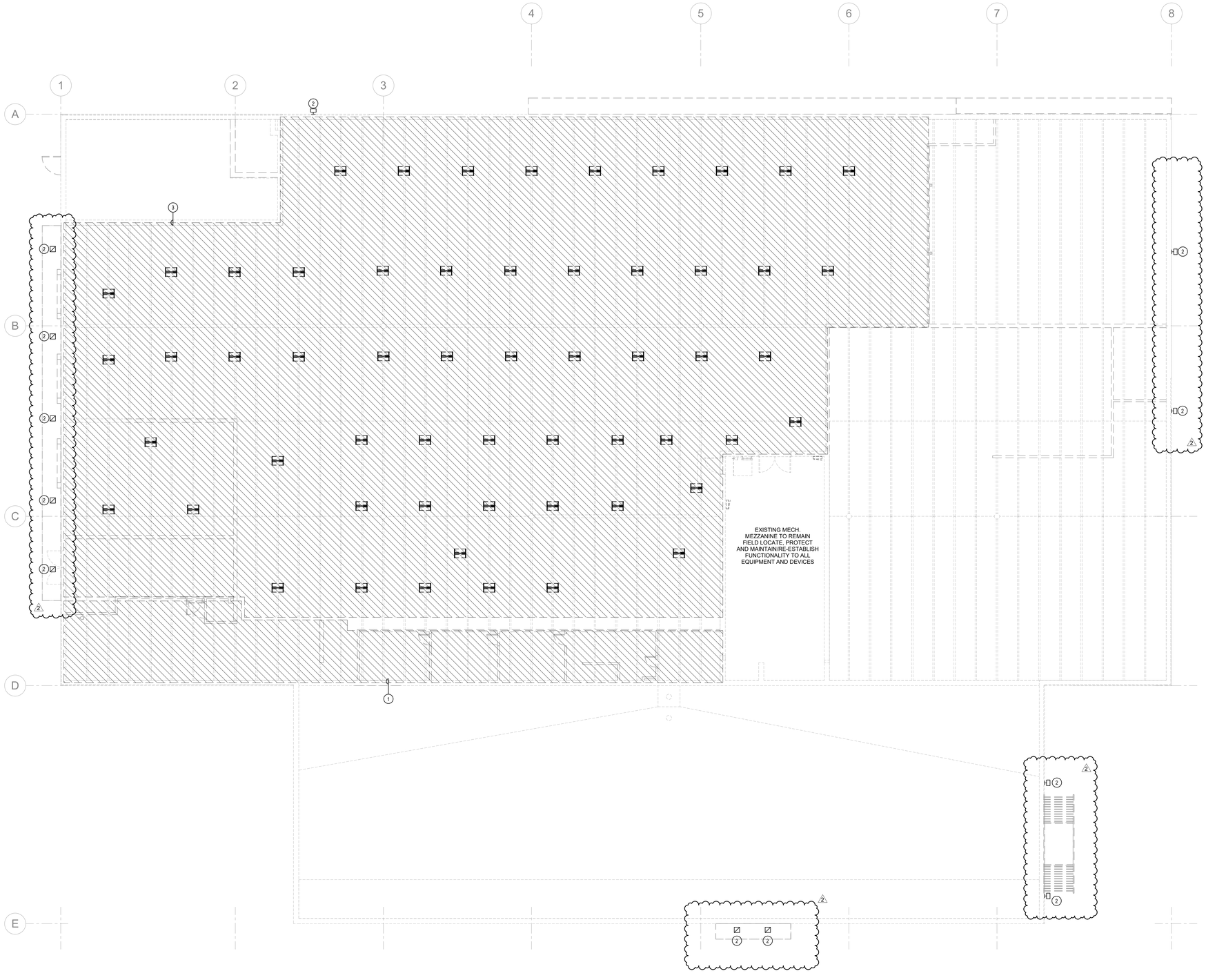
title:

Level 1 - Existing Lighting Plan

sheet:

ED131

100% construction documents



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O. REMOVE ALL EQUIPMENT, RACEWAYS, CABLES,ETC. NOT USED IN FINISHED AREAS.

KEY NOTES: (#)

1 ALL EXISTING LIGHTING AND CONTROLS WITHIN THIS AREA SHALL BE DISCONNECTED AND REMOVED, UNLESS SPECIFICALLY INDICATED OTHERWISE. REMOVE ALL ASSOCIATED CONDUIT AND CONDUCTORS BACK TO SOURCE UNLESS THEY CAN BE UTILIZED FOR NEW INSTALLATION. E.C. SHALL MAINTAIN/RE-ESTABLISH CONTINUITY TO ALL DOWNSTREAM EQUIPMENT/DEVICES THAT ARE TO REMAIN.

2 EXISTING EXTERIOR LIGHT FIXTURE TO BE REMOVED AND REPLACED WITH NEW EXTERIOR LIGHTING AS INDICATED ON NEW LIGHTING PLAN(S). FIELD LOCATE EXISTING EXTERIOR LIGHTING CIRCUIT AND EXTEND TO NEW LIGHTING.

3 EXISTING HIGH BAY LED FIXTURES IN THIS AREA SHALL BE DISCONNECTED, REMOVED AND STORED FOR RE-USE IN NEW CONSTRUCTION AREAS AS INDICATED ON NEW LIGHTING PLANS. E.C. IS RESPONSIBLE FOR STORING FIXTURES. ANY DAMAGED FIXTURES SHALL BE REPLACED BY THE E.C. ANY EXTRA FIXTURES THAT ARE NOT RE-USED SHALL BE TURNED OVER TO BYU-I ELECTRICAL SHOP. ALL OTHER LIGHTING, CONTROLS AND ETC. IN THIS AREA ARE TO BE REMOVED.

SPECIAL DEMOLITION NOTES:

1. ALL CIRCUIT BREAKERS FROM DEMOLITIONED PANELS SHALL BE BOXED UP AND DELIVERED TO THE OWNER, TO AN ON CAMPUS LOCATION AS DIRECTED BY OWNER.
2. ALL CONDUCTORS BEING REMOVED THAT ARE RATED 100 AMPS AND ABOVE SHALL BE DELIVERED TO THE CAMPUS RECYCLING CENTER.
3. ALL TRANSFORMERS BEING REMOVED SHALL BE DELIVERED TO THE OWNER, TO AN ON CAMPUS LOCATION AS DIRECTED BY OWNER.
4. UNLESS INDICATED ABOVE, ALL OTHER MATERIAL SHALL BE DISPOSED OF LEGALLY BY THE CONTRACTOR.

1 Level 2 - Existing Lighting Plan
SCALE: 1/8" = 1'-0"

0" 8' 16'
NORTH

method studio
360 west aspen avenue
salt lake city, utah 84101
801 532 4422

PROFESSIONAL ENGINEER REGISTERED 13053 10/27/20 STATE OF IDAHO SHAWN A. MEADOR

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project #: 20.0220
byu idaho project # : 12006
date: oct. 27, 2020

revisions :

2	Addendum #3	11/14/20

title:

Level 2 - Existing Lighting Plan

sheet:

ED132

100% construction documents

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SHOP EQUIPMENT SCHEDULE

ID	DESCRIPTION	VOLTS	PH.	HP	AMPS	PANEL	CIRCUIT	FEEDER	CONNECTION TYPE	MTG HEIGHT	NOTES
A-8	TRANMISSION JACK	120 V	1	N/A	12 A			3/4"C.,2#12+1#12G	RECPT. NEMA 5-20R (GFCI)	42" AFF	1,2
A-11	PARTS WASHER	208 V	3	N/A	40 A	AB	79,81,83	1"C.,3#6+1#6G	DISC. - 60A/3P	VERIFY	1,2,4
A-14	2-POST HOIST	208 V	1	2	12 A			3/4"C.,2#12+1#12G	DIRECT	VERIFY	1,2
A-A1	AIR COMPRESSOR #1	208 V	3	7.5	23 A	AB	68,70,72	1"C.,3#6+1#6G	DISC. - 60A/3P	VERIFY	1,2,4
A-A2	AIR COMPRESSOR #2	208 V	3	10	32 A	AB	74,76,78	1"C.,3#6+1#6G	DISC. - 60A/3P	VERIFY	1,2,4
AT-6	PHAROS PRINTING STATION	120 V	1	N/A	5 A	AA	17	3/4"C.,2#12+1#12G	(2) RECPT. NEMA 5-20R	42" AFF	1,2
CC-1	CURING TANK	120 V	1	N/A	5 A	AA	31	3/4"C.,2#12+1#12G	RECPT. NEMA 5-20R (GFCI)	VERIFY	1,2
CS-4	SOIL ASPHALT OVENS	120 V	1	N/A	10 A	D		3/4"C.,2#12+1#12G	RECPT. NEMA 5-20R (GFCI)	42" AFF	1,2
CS-10	SLEEVE CLEANER	120 V	1	N/A	10 A	D	15	3/4"C.,2#12+1#12G	RECPT. NEMA 5-20R (GFCI)	AC	1,2
CS-14	SMALL SOIL MIXER	120 V	1	N/A	10 A	D	21	3/4"C.,2#12+1#12G	RECPT. NEMA 5-20R (GFCI)	42" AFF	1,2
CS-15	LARGE SOIL MIXER	120 V	1	N/A	10 A	D		3/4"C.,2#12+1#12G	RECPT. NEMA 5-20R (GFCI)	42" AFF	1,2
CS-17	ASPHALT GYRATORY COMPACTOR	208 V	1	N/A	12 A	D	39,41	3/4"C.,2#12+1#12G	RECPT. NEMA L6-20R	42" AFF	1,2
CS-18	INSTRON TESTING MACHINE	120 V	1	N/A	12 A	D	35	3/4"C.,2#10+1#10G	RECPT. NEMA L6-20R	42" AFF	1,2
CS-22	VACUUM PUMP	120 V	1	N/A	10 A	D	18	3/4"C.,2#12+1#12G	RECPT. NEMA 5-20R (GFCI)	18" AFF	1,2
CS-24	PRO-LOADER AND TRIAXIAL CELL	120 V	1	N/A	10 A	D	17	3/4"C.,2#12+1#12G	RECPT. NEMA 5-20R (GFCI)	AC	1,2
CS-27	SULFER CAPPING COMPOUND MELTING POT	120 V	1	N/A	10 A	H	18	3/4"C.,2#12+1#12G	RECPT. NEMA 5-20R (GFCI)	AC	1,2
HB-4	TABLE SAW	208 V	1	N/A	20 A	H	36,38	3/4"C.,2#10+1#10G	30A/250V RECEPTACLE	42" AFF	1,2
HB-5	BAND SAW	120 V	1	N/A	14 A	H	12	3/4"C.,2#12+1#12G	RECPT. NEMA 5-20R (GFCI)	42" AFF	1,2
HB-6	JOINTER	208 V	1	N/A	8 A	H	32,34	3/4"C.,2#12+1#12G	20A/250V RECEPTACLE	42" AFF	1,2
HB-7	HORIZONTAL BELT SANDER	208 V	3	N/A	12 A	H	31,33,35	3/4"C.,3#12+1#12G	RECPT. NEMA L6-20R	42" AFF	1,2
HB-8	DISC/VERTICAL BELT SANDER	208 V	3	N/A	12 A	H	37,39,41	3/4"C.,3#12+1#12G	RECPT. NEMA L6-20R	42" AFF	1,2
HB-9	DRILL PRESS	120 V	1	N/A	8 A	H	10	3/4"C.,2#12+1#12G	RECPT. NEMA 5-20R (GFCI)	42" AFF	1,2
HB-10	PANEL SAW	120 V	1	N/A	10 A	H	8	3/4"C.,2#12+1#12G	RECPT. NEMA 5-20R (GFCI)	42" AFF	1,2
HB-12	METAL ABRASIVE CHOP SAW	120 V	1	N/A	12 A	H	22	3/4"C.,2#12+1#12G	RECPT. NEMA 5-20R (GFCI)	42" AFF	1,2
HB-14	TILE SAW	120 V	1	N/A	10 A	H	20	3/4"C.,2#12+1#12G	RECPT. NEMA 5-20R (GFCI)	42" AFF	1,2
HB-15	TABLE SAW DUST COLLECTOR	120 V	1	N/A	12 A	H	16	3/4"C.,2#12+1#12G	DIRECT	VERIFY	1,2
HB-18	MASONRY SAW	208 V	1	N/A	12 A	H	40,42	3/4"C.,2#12+1#12G	RECPT. NEMA L6-20R	42" AFF	1,2
HB-19	CONCRETE COMPRESSION TESTER	120 V	1	N/A	10 A	H	24	3/4"C.,2#12+1#12G	RECPT. NEMA 5-20R (GFCI)	42" AFF	1,2
ST-4	CONCRETE MIXER	120 V	1	N/A	10 A	H	14	3/4"C.,2#12+1#12G	RECPT. NEMA 5-20R (GFCI)	42" AFF	1,2

EQUIPMENT SCHEDULE NOTES:

1. COORDINATE CONNECTION REQUIREMENTS WITH EQUIPMENT PRIOR TO ROUGH-IN.
2. FIELD VERIFY CONNECTION AND ROUGH-IN LOCATION WITH OWNER/EQUIPMENT SUPPLIER.
3. MOUNT RECEPTACLE AT 42"AFF.
4. E.C. SHALL PROVIDE LOCAL DISCONNECT SWITCH FOR EQUIPMENT; SIZE AND TYPE AS INDICATED. IF FUSED DISCONNECT IS SPECIFIED FOR EQUIPMENT, FUSE PER EQUIPMENT NAMEPLATE RATING.

CORD-DROP SCHEDULE

ID	DESCRIPTION	NOTES
CD1	CORD DROP WITH (2) GFCI DUPLEX RECEPTACLES	REFER TO CORD DROP DETAIL ON DETAIL SHEET

CORD-REEL SCHEDULE

ID	DESCRIPTION	MFG.	PART #	NOTES
CR1	20A, 120V 45FT RETRACTABLE CORD-REEL W/(2) 20A RECPT. & GFCI MODULE	HUBBELL-WIRING	HBL45123GF220M1	PROVIDE REQUIRED MTG HARDWARE
CR2	45FT RETRACTABLE DROP-LIGHT WITH RECEPTACLE	HUBBELL-WIRING	HBLC40163FL	PROVIDE REQUIRED MTG HARDWARE
CR3	50A, 240V HEAVY-DUTY CORD REEL W/WELDER RECEPT.	K-H INDUSTRIES	RTMH4L-WW-K6K	E.C. TO PROVIDE AND INSTALL 50A RECPT. FOR WELDER

MECHANICAL - EXHAUST FAN SCHEDULE

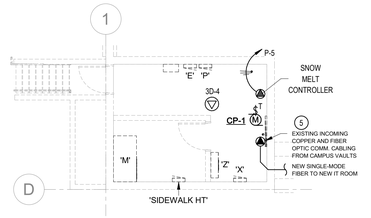
ID	#	VOLTS	PH.	HP	WATTS	PANEL	CIRCUIT	FEEDER	CONTROL	DISCONNECT TYPE	DISCONNECT SIZE	NOTES
EF	1	120 V	1		87 W	B	15	3/4"C.,2#12+1#12G	WALL TIMER SWITCH	N/A	0 A	
EF	2	120 V	1	1/4		W	18	3/4"C.,2#12+1#12G	POWER-LINK TIME-CLOCK	3R	30 A	3
EF	3	120 V	1	1/4		C	20	3/4"C.,2#12+1#12G	WALL SWITCH	3R	30 A	3
EF	4	208 V	3	3		AB	53,55,57	3/4"C.,3#12+1#12G	VFD/SWITCH	FUSED/3R	30 A	2,6
EF	5	208 V	3	3		AA	62,64,66	3/4"C.,3#12+1#12G	VFD/SWITCH	FUSED/3R	30 A	2,6
EF	6	208 V	3	2		AA	68,70,72	3/4"C.,3#12+1#12G	VFD/SWITCH	FUSED/3R	30 A	2,6
EF	7	208 V	3	2		AB	54,56,58	3/4"C.,3#12+1#12G	VFD/SWITCH	FUSED/3R	30 A	2,6
EF	8	120 V	1	1/4		C	22	3/4"C.,2#12+1#12G	SWITCH ON HOOD	3R	30 A	3
EF	9	120 V	1	1/4		D	28	3/4"C.,2#12+1#12G	WALL SWITCH	3R	30 A	3
EF	10	120 V	1	1/4		AB	36	3/4"C.,2#12+1#12G	WALL SWITCH	3R	30 A	3

MECHANICAL - HUMIDIFIER SCHEDULE

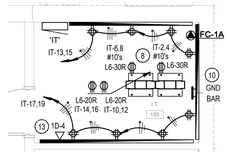
ID	#	VOLTS	PH.	KW	PANEL	CIRCUIT	FEEDER	DISCONNECT SIZE	DISCONNECT TYPE	NOTES
H	1	208 V	3	10 kW	C	32,34,36	1"C.,2#8+1#8G	30 A	FUSED/3R	2

MECHANICAL SCHEDULE NOTES:

1. CIRCUIT FAN WITH ROOM LTG CIRCUIT AND CONTROL WITH ROOM LIGHTING.
2. E.C. SHALL PROVIDE LOCAL DISCONNECT SWITCH FOR EQUIPMENT; SIZE AND TYPE AS INDICATED IN SCHEDULE. IF FUSED DISCONNECT IS SPECIFIED FOR EQUIPMENT, FUSE PER EQUIPMENT NAMEPLATE RATING.
3. E.C. SHALL PROVIDE LOCAL DISCONNECT RATED, THERMAL-OVERLOAD SWITCH FOR EQUIPMENT; SWITCH RATING SHALL NOT BE LESS THEN CIRCUIT BREAKER SUPPLYING EQUIPMENT.
4. EQUIPMENT IS FACTORY SUPPLYED WITH DISCONNECT AND CONVIENENCE OUTLET; E.C. SHALL PROVIDE ALL NECESSARY CONNECTIONS.
5. INDOOR UNIT IS POWERED FROM OUTDOOR UNIT; COORDINATE EXACT NUMBER OF CONDUCTORS BETWEEN UNITS WITH M.C. PRIOR TO ROUGH-IN.
6. EQUIPMENT PROVIDED WITH VFD; VFD BY M.C. AND CONNECTED AND INSTALLED BY E.C. COORDINATE WITH M.C PRIOR TO ROUGH-IN.
7. E.C. SHALL PROVIDE COMBINATION STARTER/DISCONNECT SWITCH FOR EQUIPMENT; SIZE AND TYPE AS INDICATED IN SCHEDULE. PROVIDE WITH CONTROL XFMR (2) SETS OF NO/NC CONTACTS, CONTROLS WITH M.C. PRIOR TO ROUGH-IN. FUSE DISCONNECT PER EQUIPMENT NAMEPLATE RATING.
8. PROVIDE AND INSTALL NEW 30A/2P BREAKER IN EXISTING SQ. D NQ PANELBOARD.



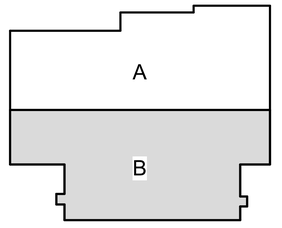
2 Level 0 - Power/Data Plan
SCALE: 1/8" = 1'-0"



3 Enlarged Plan - IT Room
SCALE: 1/4" = 1'-0"

1 Level 1 - Power/Data Plan - Area 'B'
SCALE: 1/8" = 1'-0"

FLOOR KEY PLAN



GENERAL NOTES:

A. REFER TO SYMBOL SCHEDULE SHEET FOR PROJECT GENERAL NOTES AND GENERAL NOTES ASSOCIATED WITH THE INSTALLATION OF EACH SYSTEM, INCLUDINB BUT NOT LIMITED TO; LIGHTING, POWER, FIRE ALARM, SPECIAL SYSTEMS, ETC.

KEY NOTES:

1. EXISTING PANEL 'B' TO BE REMOVED AND REPLACES WITH J-BOX; DISCONNECT AND MAINTAIN EXISTING FEEDER. PROVIDE AND INSTALL NEW FLUSH MOUNTED J-BOX WITH FLUSH MOUNTED COVER TO SPLICE AND EXTEND EXISTING FEEDER TO NEW PANEL 'B' LOCATION. J-BOX SHALL BE INSTALLED IN EXISTING WALL FACING INTO EXISTING CONF. ROOM. EXTEND NEW FEEDER TO NEW PANEL AS INDICATED.
2. PROVIDE AND INSTALL 10FT OF PLUG MOLD ABOVE FIRST SHELF. (2) HUBBELL #PT205115 MOUNTED END TO END. PROVIDE ALL COMPONENTS FOR A COMPLETE INSTALLATION. SPACE RECEPTACLES 6" ON CENTER.
3. E.C. SHALL PROVIDE AND INSTALL NEW POWER AND DATA IN PURCHASING AREA AT LOCATIONS SHOWN; PROVIDE ALL REQUIRED CUTTING AND PATCHING OF EXISTING WALLS AND ROUTING ABOVE EXISTING ACCESSIBLE CEILING SPACE OR TUNNEL SPACES AS NEEDED. FIELD VERIFY ROUTING OF ALL NEW DATA CABLING AND POWER.
4. CONNECTION TO OVERHEAD DOOR MOTOR, COORDINATE CONNECTION WITH EQUIPMENT PRIOR TO ROUGH-IN. PROVIDE CONDUIT AND CONDUCTORS TO PUSH-BUTTON STATION PER MANUFACTURERS REQUIREMENTS.
5. E.C. SHALL SPLICE AND EXTEND EXISTING 48-STRAND SINGLE-MODE FIBER OPTIC CABLE AND EXTEND TO NEW IT ROOM AND TERMINATE IN RACK PER BYU-I STANDARDS. FIBER OPTIC CABLE SHALL BE INSTALLED IN INNER-DUCT AND ROUTED TO NEW IT ROOM AS REQUIRED. CABLE SHALL BE INSTALLED IN CONDUIT IF ROUTED THROUGH EXPOSED AREAS. FIELD VERIFY ROUTING. DEMO ALL EXISTING MULTI-MODE FIBER AND COPPER BACKBONE WITHIN BUILDING BACK TO CLOSEST COMMUNICATIONS VAULT.
6. CONNECTION TO AUTOMATIC ADA DOORS; FIELD VERIFY CONNECTION LOCATION AND REQUIREMENTS WITH EQUIPMENT INSTALLERS. PROVIDE ALL REQUIRED ROUGH-IN AND CONNECTIONS TO PUSH-BUTTONS.
7. PROVIDE AND INSTALL NEW WIRE CABLE TRAY SYSTEM; PROVIDE AND INSTALL ALL REQUIRED MOUNTING HARDWARE AND ACCESSORIES FOR A COMPLETE INSTALLATION. REFER TO DETAILS FOR ADDITIONAL INFORMATION.
8. PROVIDE AND INSTALL (4) 30A/240V TWIST-LOCK RECEPT. AS INDICATED; FIELD VERIFY MOUNTING LOCATION WITH BYU-I IT DEPT. PRIOR TO ROUGH-IN.
9. EXISTING PULLBOX AND ASSOCIATED FEEDER FOR EXISTING PANEL TO REMAIN ACTIVE. FIELD LOCATE AND PROTECT DURING CONSTRUCTION. CONTRACTOR SHALL DISCONNECTED EXISTING MOUNTING AND SUPPORT FOR REMOVAL OF STAIRCASE AND RESUPPORT FROM NEW WING WALL.
10. PROVIDE AND INSTALL GROUND BAR(S) AS PER BYU-I CABLE STANDARD. PROVIDE AND INSTALL (1) 1"C WITH 1#6 GND TO BLDG GROUND SYSTEM LOCATED NEXT TO PANEL 'M', FIELD VERIFY LOCATION.
11. E.C. SHALL PROVIDE AND INSTALL 1"C FROM SNOWMELT MANIFOLD BOX TO SNOW MELT CONTROL PANEL LOCATED IN LEVEL 0 ELEC. ROOM. ROUTE CONDUIT THRU EXISTING TUNNEL WITH PIPING; COORDINATE WITH M.C. PROVIDE CONDUCTORS AS DIRECTED BY M.C. SEE MECH. DRAWINGS M302.
12. PROVIDE 120V POWER TO TRAP-PRIMER FROM NEAREST RECEPTACLE CIRCUIT; COORDINATE EXACT LOCATION WITH M.C. PRIOR TO ROUGH-IN; SEE P301 FOR DETAIL.
13. PROVIDE DATA CONNECTION FOR ACCESS CONTROL PANEL; FIELD VERIFY MTG LOCATION WITH OWNER PRIOR TO ROUGH-IN.
14. PROVIDE AND INSTALL (2) 4" CONDUITS TO CONNECT CABLE BASKET TRAY SYSTEMS THROUGHT "MECH RM 201". TERMINATE WITH INSULATED THROAT BUSHINGS, FIELD LOCATE TO AVOID CONFLICT WITH OTHER TRADES AND UTILITIES.

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PROFESSIONAL ENGINEER REGISTERED 13053 10/27/20 STATE OF IDAHO SHAWN A. MEADOR

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project#: 20.0220
byu idaho project #: 12006
date: oct. 27, 2020

revisions :

1	Addendum #1	11/06/20
2	Addendum #3	11/14/20

title:

Level 1 - Power/Data Plan - Area 'B'

sheet:

EE101b

100% construction documents

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MECHANICAL - ROOFTOP UNIT SCHEDULE

ID	#	VOLTS	PH.	MCA	MOCP	PANEL	CIRCUIT	FEEDER	DISCONNECT SIZE	DISCONNECT TYPE	NOTES
RT	8(E)	208 V	3	99 A	125 A	Z	2,4,6	1 1/2"C.,3#1+1#6G	200 A	EXISTING	
RT	9	208 V	3	23 A	30 A	AA	74,76,78	3/4"C.,3#10+1#10G	30 A	3R	2

MECHANICAL - CIRCULATING PUMP SCHEDULE

ID	#	VOLTS	PH.	HP	FLA	PANEL	CIRCUIT	FEEDER	NOTES
CP	1	120 V	1	1/4	6 A	P	3	3/4"C.,2#12+1#12G	3
CP	2	120 V	1	(2) 1/2	16 A	AB	51	1"C.,2#8+1#8G	
CP	3	120 V	1	1/4	6 A	AC	1	3/4"C.,2#12+1#12G	3

MECHANICAL - AIR HANDLER SCHEDULE

ID	#	VOLTS	PH.	MCA	MOCP	PANEL	CIRCUIT	FEEDER	DISCONNECT SIZE	DISCONNECT TYPE	NOTES
AH	1	208 V	3	8 A	15 A	AB	38,40,42	3/4"C.,3#12+1#12G	30 A	FUSED/3R	2,6

MECHANICAL - CONDENSING UNIT SCHEDULE

ID	#	VOLTS	PH.	MCA	MOCP	PANEL	CIRCUIT	FEEDER	DISCONNECT SIZE	DISCONNECT TYPE	NOTES
CU	1	208 V	1	31 A	50 A	AB	44,46	1"C.,2#6+1#6G	60 A	3R	2

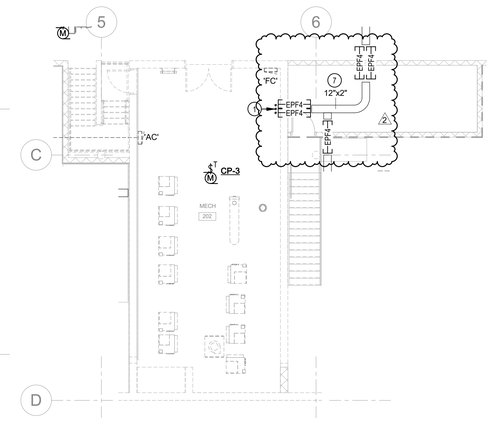
MECHANICAL - SPLIT A/C UNIT SCHEDULE

ID	#	VOLTS	PH.	MCA	PANEL	CIRCUIT	FEEDER	DISCONNECT TYPE	DISCONNECT SIZE	NOTES
INDOOR UNIT										
FC	1A	208 V	1	1 A			PER MANUFACTURER	N/A	0 A	5
FC	2A	208 V	1	1 A			PER MANUFACTURER	N/A	0 A	5
FC	3A	208 V	1	1 A			PER MANUFACTURER	N/A	0 A	5
OUTDOOR UNIT										
FC	1B	208 V	1	25 A	IT	22,24	3/4"C.2#10+1#10G	3R	30 A	2,5
FC	2B	208 V	1	25 A	AC	31,33	3/4"C.2#10+1#10G	3R	30 A	2,5,8
FC	3B	208 V	1	25 A	AC	35,37	3/4"C.2#10+1#10G	3R	30 A	2,5,8

MECHANICAL SCHEDULE NOTES:

1. CIRCUIT FAN WITH ROOM LTG CIRCUIT AND CONTROL WITH ROOM LIGHTING.
2. E.C. SHALL PROVIDE LOCAL DISCONNECT SWITCH FOR EQUIPMENT; SIZE AND TYPE AS INDICATED IN SCHEDULE. IF FUSED DISCONNECT IS SPECIFIED FOR EQUIPMENT, FUSE PER EQUIPMENT NAMEPLATE RATING.
3. E.C. SHALL PROVIDE LOCAL DISCONNECT RATED, THERMAL-OVERLOAD SWITCH FOR EQUIPMENT; SWITCH RATING SHALL NOT BE LESS THEN CIRCUIT BREAKER SUPPLYING EQUIPMENT.
4. EQUIPMENT IS FACTORY SUPPLYED WITH DISCONNECT AND CONVIENENCE OUTLET; E.C. SHALL PROVIDE ALL NECESSARY CONNECTIONS.
5. INDOOR UNIT IS POWERED FROM OUTDOOR UNIT; COORDINATE EXACT NUMBER OF CONDUCTORS BETWEEN UNITS WITH M.C. PRIOR TO ROUGH-IN.
6. EQUIPMENT PROVIDED WITH VFD; VFD BY M.C. AND CONNECTED AND INSTALLED BY E.C. COORDINATE WITH M.C PRIOR TO ROUGH-IN.
7. E.C. SHALL PROVIDE COMBINATION STARTER/DISCONNECT SWITCH FOR EQUIPMENT; SIZE AND TYPE AS INDICATED IN SCHEDULE. PROVIDE WITH CONTROL XFMR (2) SETS OF NO/NC CONTACTS, CONTROLS WITH M.C. PRIOR TO ROUGH-IN. FUSE DISCONNECT PER EQUIPMENT NAMEPLATE RATING.
8. PROVIDE AND INSTALL NEW 30A/2P BREAKER IN EXISTING SQ. D NQ PANELBOARD.

1 Electrical Roof Plan
SCALE: 1/8" = 1'-0"



2 Level 2 - Power/Data Plan
SCALE: 1/8" = 1'-0"

0" 8' 16' NORTH

GENERAL NOTES:

A. REFER TO SYMBOL SCHEDULE SHEET FOR PROJECT GENERAL NOTES AND GENERAL NOTES ASSOCIATED WITH THE INSTALLATION OF EACH SYSTEM, INCLUDINB BUT NOT LIMITED TO; LIGHTING, POWER, FIRE ALARM, SPECIAL SYSTEMS, ETC.

KEY NOTES: (#)

1 PROVIDE AND INSTALL (3) 4" CONDUIT SLEEVES FROM "MECH RM 201" TO "IT RM 135" FOR ROUTING LOW VOLTAGE CABLING. TERMINATE WITH INSULATED THROAT BUSHINGS, FIELD LOCATE TO AVOID CONFLICT WITH OTHER TRADES AND UTILITIES.

2 RECEPTACLE MOUNTED TO HVAC UNIT, COORDINATE MOUNTING WITH M.C. PRIOR TO ROUGH-IN.

3 EXISTING ROOFTOP UNIT TO BE RECIRCUITED AS INDICATED ON NEW DRAWINGS; FIELD COORDINATE ROUTING OF NEW CIRCUIT WITH NEW CONSTRUCTION.

4 EXISTING ROOFTOP UNIT TO REMAIN ACTIVE; LOCATE AND PROTECT EXISTING CIRCUITING AS REQUIRED TO MAINTAIN FUNCTIONALITY.

5 CIRCUIT TO EXISTING POWER-LINK PANEL INDICATED, PROVIDE AND INSTALL NEW 20A/1P POWER-LINK CIRCUIT BREAKER IN PANEL. COORDINATE PROGRAMMING WITH BYU-I ELECTRICAL SHOP.

6 PROVIDE HEAT TRACING OF ROOF AND OVERFLOW DRAINS. COIL HEAT TAPE AROUND ROOF AND OVERFLOW DRAINS AND EXTEND INTO DRAIN. WHERE DRAIN PIPES EXTEND INTO UNCONDITIONED SPACE, HEAT TRACE SHALL EXTEND DOWN PIPE AND OUT END OF DOWNSPOUT APPROX. 6". EXACT TAPE LENGTH TO BE DETERMINED IN FIELD. UTILIZE RAYCHEM 120V, GM-1XT CABLE. PROVIDE ALL COMPONENTS FOR A COMPETE INSTALLATION INCLUDING BUT NOT LIMITED TO: POWER CONNECTOR, JUNCTION BOX, CABLE END SEALS, CABLE SUPPORT CLIPS, ETC. COORDINATE ALL ROOF PENETRATIONS WITH ROOF CONTRACTOR TO PROVIDE PROPER FLASHING AND SEALING OF PENETRATIONS. UTILIZE GFEPD TYPE CIRCUIT BREAKERS FOR ALL HEAT TRACE CIRCUITS.

7 PROVIDE AND INSTALL NEW WIRE CABLE TRAY SYSTEM; PROVIDE AND INSTALL ALL REQUIRED MOUNTING HARDWARE AND ACCESSORIES FOR A COMPLETE INSTALLATION. REFER TO DETAILS FOR ADDITIONAL INFORMATION.

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PROFESSIONAL ENGINEER REGISTERED 13053 10/27/20 STATE OF IDAHO SHAWN A. MEADOR

project:

BYUI Engineering Technology Center (ETC)

525 South Center Street
Rexburg, ID 83440

project #: 20.0220
byu idaho project #: 12006
date: oct. 27, 2020

revisions :

2	Addendum #3	11/14/20

title:

Level 2 & Roof - Electrical Plan

sheet:

EE102

100% construction documents

P.E. JOB #2060
PAYNE Engineering Inc.
1823 E. Center
Pocatello, Idaho 83201
tel (208) 232-4439
www.payneengineeringinc.com

GENERAL NOTES:

A. REFER TO SYMBOL SCHEDULE SHEET FOR PROJECT GENERAL NOTES AND GENERAL NOTES ASSOCIATED WITH THE INSTALLATION OF EACH SYSTEM, INCLUDINB BUT NOT LIMITED TO; LIGHTING, POWER, FIRE ALARM, SPECIAL SYSTEMS, ETC.

KEY NOTES: (#)

1 E.C. SHALL PROVIDE AND INSTALL A CONTINUOUS RUN OF UNISTRUT CHANNEL SUSPENDED FROM STRUCTURE WITH ALL-THREAD 8FT AFF FOR MOUNTING OF STRIP LIGHTS ABOVE BENCH AREA; FIELD COORDINATE MOUNTING WITH OWNER AND OTHER TRADES.

2 EXISTING LIGHTING TO REMAIN ACTIVE, LOCATE AND PROTECT DURING CONSTRUCTION.

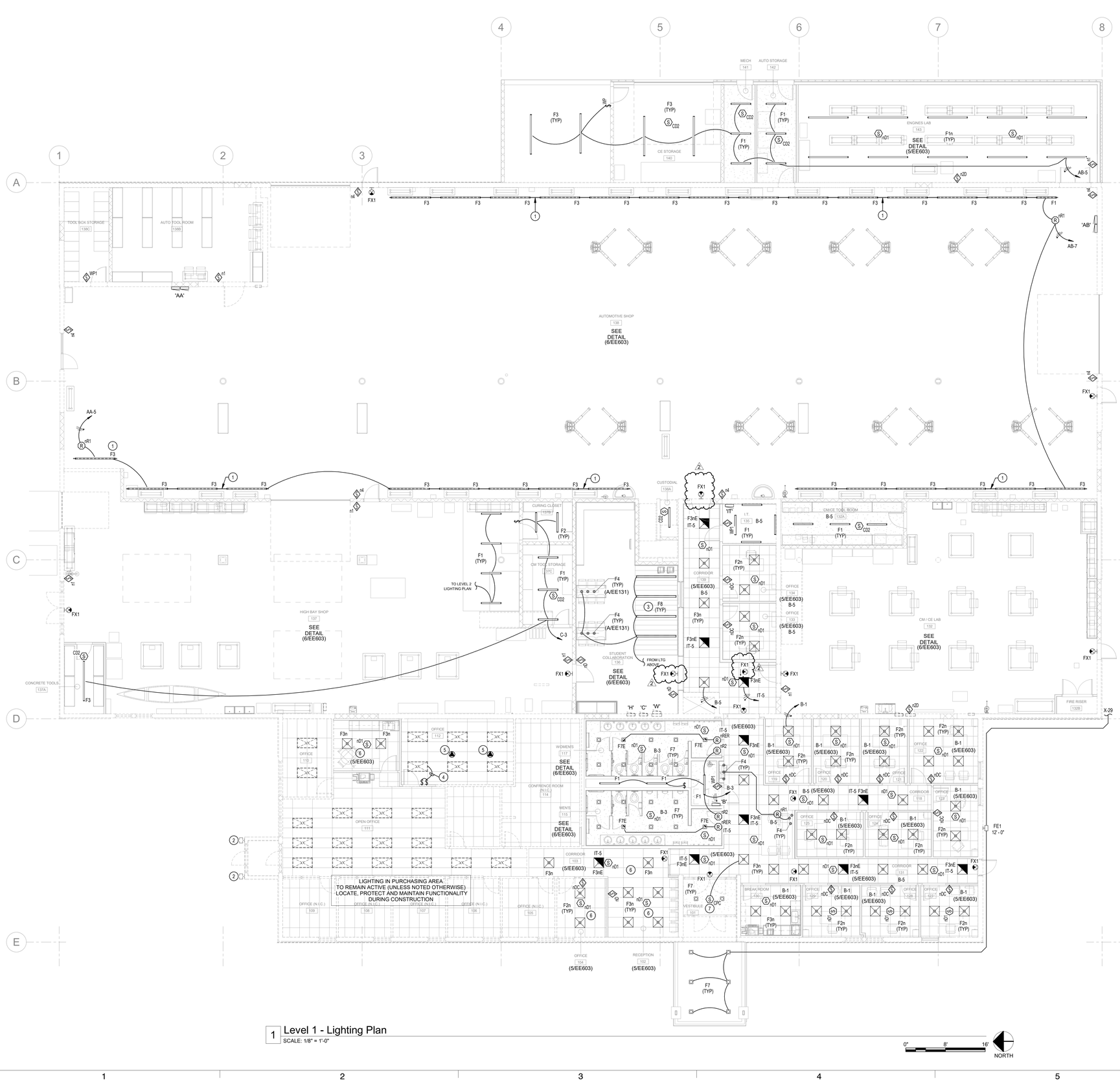
3 E.C. SHALL SUSPEND LIGHT FIXTURES FROM STRUCTURE IN BETWEEN SLAT CEILING SYSTEM; BOTTOM OF FIXTURE SHALL BE EVEN WITH CEILING SYSTEM. FIELD COORDINATE SUSPENSION LENGTH WITH CEILING SYSTEM.

4 RECONNECT SWITCHES TO EXISTING LIGHTING/CONTROLS TO MAINTAIN ORIGINAL FUNCTIONALITY.

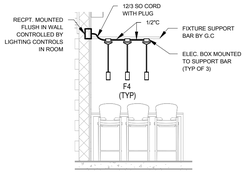
5 PROVIDE CONNECTION TO SKY-LIGHT ACTUATOR; COORDINATE CONNECTION WITH EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN. UTILIZE NEARES 120V UNSWITCHED CIRCUIT.

6 UTILIZED EXISTING LIGHTING CIRCUIT IN AREA FOR NEW LIGHTING AND CONTROLS; FIELD VERIFY HOMERUN LOCATION.

7 LIGHTING IN VESTIBULE SHALL BE CONTROLLED VIA DAYLIGHTING PHOTO SENSOR; PROVIDE UNSWITCH POWER TO SENSOR AND REQUIRED CONTROLS TO FIXTURE(S).



1 Level 1 - Lighting Plan
SCALE: 1/8" = 1'-0"



A Student Table Ltg Detail
SCALE: 1/4" = 1'-0"

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revisions :

2	Addendum #3	11/14/20

title:

Level 1 - Lighting Plan

sheet:

EE131

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