State of Utah

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Department of Administrative Services
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Executive Director

Division of Facilities Construction and Management
DAVID G. BUXTON
Director

ADDENDUM NO. 4

Date: January 26, 2010

To: Contractors

From: Matthias Mueller – Project Manager

Reference: Gibson Science Center Addition
Southern Utah University – Cedar City, Utah
DFCM Project No. 07297730

Subject: **Addendum No. 4**

Pages			
	Addendum Cover Sheet	1	page
	Revised Cost Proposal Form	2	pages
	Architect's Addendum No. 4	168	pages
	Total	171	pages

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

While we contend that SB220 should only be potentially applicable to a contract issued after the effective date of said bill, this is to clarify that for purposes of this contract, regardless of the execution or effective dates of this contract, the status of Utah Law and remedies available to the State of Utah and DFCM, as it relates to any matter referred to or affected by said SB220, shall be the Utah law in effect at the time of the issuance of this Addendum.

4.1 SCHEDULE CHANGES: No Project Schedule changes.

4.2 GENERAL ITEMS:

4.2.1 See attached Cost Proposal Form – five additive alternates included.

3.2.2 See attached Architect's Addendum No. 4 dated January 26, 2010.

COST PROPOSAL FORM – REVISED
PER ADDENDUM NO. 4 DATED JANUARY 26, 2010

NAME OF PROPOSER _____ DATE _____

To the Division of Facilities Construction and Management
4110 State Office Building
Salt Lake City, Utah 84114

The undersigned, responsive to the "Notice to Contractors" and in accordance with the "Request for Proposals" for the **GIBSON SCIENCE CENTER ADDITION - SOUTHERN UTAH UNIVERSITY - CEDAR CITY, UTAH - DFCM PROJECT NO. 07297730** and having examined the Contract Documents and the site of the proposed Work and being familiar with all of the conditions surrounding the construction of the proposed Project, including the availability of labor, hereby proposes to furnish all labor, materials and supplies as required for the Work in accordance with the Contract Documents as specified and within the time set forth and at the price stated below. This price is to cover all expenses incurred in performing the Work required under the Contract Documents of which this bid is a part:

I/We acknowledge receipt of the following Addenda: _____

BASE COST PROPOSAL: For all work shown on the Drawings and described in the Specifications and Contract Documents, I/we agree to perform for the sum of:

_____DOLLARS ($_____)
(In case of discrepancy, written amount shall govern)

ADDITIVE ALTERNATE NO. 1: For all work shown on the Drawings and described in the Specifications and Contract Documents to provide and install a new chiller, I/we agree to perform for the sum of:

_____DOLLARS ($_____)
(In case of discrepancy, written amount shall govern)

ADDITIVE ALTERNATE NO. 2: For all work shown on the Drawings and described in the Specifications and Contract Documents for generator improvements, I/we agree to perform for the sum of:

_____DOLLARS ($_____)
(In case of discrepancy, written amount shall govern)

ADDITIVE ALTERNATE NO. 3: For all work shown on the Drawings and described in the Specifications and Contract Documents for utilities tunnel extension, I/we agree to perform for the sum of:

_____DOLLARS ($_____)
(In case of discrepancy, written amount shall govern)

ADDITIVE ALTERNATE NO. 4: For all work shown on the Drawings and described in the Specifications and Contract Documents to provide and install vegetated roof assembly above museum in lieu of gravel ballast, I/we agree to perform for the sum of:

_____DOLLARS ($_____)
(In case of discrepancy, written amount shall govern)

ADDITIVE ALTERNATE NO. 5: For all work shown on the Drawings and described in the Specifications and Contract Documents to provide and install lightning protection, I/we agree to perform for the sum of:

_____DOLLARS ($_____)
(In case of discrepancy, written amount shall govern)

I/We guarantee that the Work will be Substantially Complete by _____ ***(specific date to be provided by contractor),*** should I/we be the successful proposer, and agree to pay liquidated damages in the amount of $**2,000.00** per day for each day after expiration of the Contract Time as stated in Article 3 of the Contractor's Agreement.

This bid shall be good for 45 days after bid opening.

Enclosed is a 5% bid bond, as required, in the sum of _____

The undersigned Contractor's License Number for Utah is _____.

Upon receipt of notice of award of this bid, the undersigned agrees to execute the contract within ten (10) days, unless a shorter time is specified in the Contract Documents, and deliver acceptable Performance and Payment bonds in the prescribed form in the amount of 100% of the Contract Sum for faithful performance of the contract. The Bid Bond attached, in the amount not less than five percent (5%) of the above bid sum, shall become the property of the Division of Facilities Construction and Management as liquidated damages for delay and additional expense caused thereby in the event that the contract is not executed and/or acceptable l00% Performance and Payment bonds are not delivered within the time set forth.

Type of Organization: _____ (Corporation, Partnership, Individual, etc.)

Any request and information related to Utah Preference Laws: _____

Respectfully submitted,

_____
Name of Proposer

_____
Authorized Signature

ADDRESS:

_____

_____

MHTN
ARCHITECTS

Addendum No. 4 (DFCM) Issued: 01/26/10

Addendum No. Four (DFCM)
for the
Southern Utah University
Gibson Science Center Addition
DFCM Project No. 07297730

All Contractors submitting proposals on the above captioned project shall be governed by the following addendum, changes and explanations to the bidding documents dated 07 January 2010, and shall submit their bids in accordance therewith:

General Items: (response to bidder questions)

1.C2/AE512: Please provide additional details / specification for the planter box identified in this detail.
Response: *See addendum 4.*
2.Are there any special requirements for the "Temporary Exit From Existing Building" shown by keynote 36 on CE101? Does this door exist, are temporary walkways required, temporary lighting etc.
Response: *See addendum 4.*
3.Sheet CE102 does not appear to show the gas line identified by keynotes 6, 20, and 21. Please advise.
Response: *The gas meter is shown on AD04-C2 to be located near the northeast corner of the building.*
4.Will specifications be provided for Helical Pier system?
Response: *Refer to specification section 316330.*
5.Will specifications be provided for the precast concrete elements, i.e., areaways, parapet caps, etc.?
Response: *Yes, see attached this addendum.*
6.Will specifications be provided for the bike racks shown on AS101
Response: *Racks provided by SUU, installation shall conform to SUU standards, refer to their web site: http://www.suu.edu/ad/facilities/designstandards/documents/ARCH-19.pdf*
7.Will specifications be provided for the benches shown on AS101?
Response: *See addendum 4.*
8.Please provide the concrete seat wall detail identified by keynote 11 on AS101.
Response: *Refer to the 100% CD set.*
9.Will specifications be provided for the segmental retaining walls?
Response: *See addendum 4.*
10. Will specifications be provided for the turf block pavers shown on AS101?
Response: *See addendum 4.*
11. QL103 references QL442 for enlargement, sheet is missing.
Response: *Reference on QL103 should be QL445, not QL442. This will be corrected in Addendum 4.*
12. QL443, some casework is shown darkened, no legend sheet to indicate type of casework.
Response: *Hatch pattern on QL443 denotes ADA Accessible Workstations. See Symbols list on QL001.*
13. D1/AE441, Room 115 identify squares on west wall casework, equipment, etc.
Response: *No squares exist on the west wall of room 115.*
14. QL sheets, no legend for type of casework (i.e. B36J, BA30G, etc.)
Response: *Casework types are listed on sheet QL002. The number indicates casework width (ex. B36J is 36 inches wide).*

15. QL102/QL443/PL402 Plumbing to sinks is not designated in room 214 & 217 west walls.

Response: *Sink fittings are noted on sheet QL443. See PL series drawings for plumbing.*

16. QL103/QL445/PL103 Plumbing shows no designation for sink in room 311.

Response: *Sink designation will be issued in Addendum 4.*

17. PL102 refers to 2/PL402, this detail does not exist.

Response: *The lower window on PL402 should be labeled as 2.*

18. PL402 description says enlarged mechanical room plumbing (rooms are teaching labs)

Response: *The Enlarged Chemistry Teaching Lab Plumbing Floor Plans shall be referred to as drawing 2.*

19. QL103/QL445, no designation for squares in greenhouse, look like tables. Are these CF/CI?

Response: *Greenhouse tables provided by others. Squares shown in Greenhouse QL103/QL445 are floor pattern and not part of laboratory casework specification. The Greenhouse Classroom 308 has student benches that are detailed on QL604. Section callout on QL445 references Detail 4/QL604.*

20. PL1B1 sinks in rooms B28 & B29 are back to back, wall is 3 5/8" thick, will this be ok?

Response: *Yes. The sinks are counter mounted and have casework below them. The wall thickness should be okay.*

21. GI011 shows 1 hour rating, AE101 indicate type 4 on AE601. This shows wall is 2 hour.

Response: *Wall type 4 for shaft is correct – all shafts are 2-hour construction.*

22. AE610, door B33 shows 90 min rating, should be 45 min.

Response: *The 90 minute rating is correct for elevator equipment room doors.*

23. AE610, door 109B shows no rating, should be 45 min.

Response: *Correct, provide a 45 minute rated door and frame assembly.*

24. EP101, room 142 on the west wall should have GFI outlet.

Response: *EP101, room 142, the (2) receptacles along the east wall shall be GFI, see addendum #04.*

25. AF6B1, Room B33 is missing from the finish legend.

Response: *Room B33 shall receive floor finish: F1, wall base: B1, wall finish: P1 and ceiling finish: C3.*

26. AF603, Room 319 is missing from the finish legend.

Response: *Room 319 shall receive floor finish: F1, wall base: B1, wall finish: P1 and ceiling finish: C3.*

27. AC1B1, Room B26 shows lay in ceiling, legend (AF600B) indicates epoxy wall system.

Response: *B26 should be ceiling finish C1.*

28. AC102, Room 201 should have C2 and C3 in the legend

Response: *C2 & C3 is correct for 201. Typically OTS conditions shall receive paint finishes.*

29. AC102, Room 221 shows OTS, Legend indicates lay in and OTS.

Response: *Printing error; see attached revision to the referenced drawing in this addendum.*

30. AC102, Room 222 has no ceiling indication, legend indicates lay in.

Response: *Printing error; see attached revision to the referenced drawing in this addendum*.

31. AF600B, Stairwells S201 and S202 should show type C3 on legend. Currently shows lay in.

Response: *C3 is correct for all underside surfaces of landing and stairs.*

32. AF600B, Stairwells S301 and S302 should show type C2 on legend. Currently shows lay in.

Response: *C2 is correct; provide painted gypsum board ceilings at the top of the stair shaft.*

33. SF101 does not show a recessed slab for hospital shower room 111.

Response: *Thin set on slab only. Depress slab near drain only.*

34. AE1B1, Custodial Room B02 shows no floor sink, is one needed?

Response: *Floor sinks are not required. However a mop sink will be added to room B02 via this addendum.*

35. AE103, Custodial closets (rooms 303 & 319) have no floor sink, is one needed?

Response: *These rooms are not custodial closets and do not require mop sinks.*

36. Basement, L2 & L3 do not show and elevation for all casework.

Response: *Refer to "QL" drawings, particularly QL002 "Casework and Fume Hood Elevations" Sheet QL002 provides casework elevation schedules as well as mounting heights for wall mounted items. QL series drawings provide elevations for special casework.*

37. Window type 8 calls out 90 minute rating for the south window in stairway #2. There is no reference to the curtain wall framing, the aluminum curtain wall is not rated for 90 minute rating. Will there be specifications regarding the steel fire rated curtain walls?

Response: *Provide fire rated curtain wall framing. Paint finish to match the aluminum system.*

38. Sheet EL1B1 @ grids H & 3 there are (3) fixtures labeled “EM & type J”. What fixture type are these supposed to be?

Response: *As indicated on plans.*

39. Sheet EL101 @ grids A & 3 there (10) fixtures. What type of fixture are these?

Response: *EL101, gridline A-3, fixtures shall be type DW, see addendum #04.*

40. Sheet EL103 between grids F & G and about grid 5 in the Chem Fert. Room there is (1) fixture that is possibly mis-labeled. What fixture type is this?

Response: *As indicated on plans.*

41. We find the walk in box specification found in section 114000 to be inaccurate. The size and description of the box (room B29), the refrigeration and the shelving do not match the box as it is shown on the plans. Please clarify the correct box layout.

Response: *Reference the correct project manual. Sections “114000” has been eliminated in the 100% CD set. Refer to section 130821 “Controlled Environment Rooms”*

42. Alternate #4 indicates a vegetated roof assembly in lieu of gravel ballast. In reviewing the drawing there is no plans which shows the planted layout, irrigation, and if there is any walkway areas. Please provide more information.

Response: *No walkways desired. Provide a complete vegetated roof system for the alternate.*

43. The specification indicates there are four alternates. The electrical sheets (EG100) indicate they have five alternates. Please clarify the correct number of alternates.

Response: *5 alternates total.*

44. At the single level museum display we have grade beams and suspended concrete slab on helical piers. The architectural drawings indicate this area is a slab on 4” of gravel. I wanted to verify with the design that this area is intended to be backfill and the grade beams and structural slab can be built on the backfill. Or is it intended to have the grade beams and structural slab be suspended and constructed on shoring sitting on the helical piers?

Response: *Refer to the soils report for soil preparation at the museum wing. The grade beams and concrete slab shall be constructed on grade with 4” gravel. Due to collapsible soil concerns the structure is designed to be supported by the helical piers without support from the grade below. Fill should be compacted to at least 90 percent compaction AASHTO T-180 (ASTM D-1557)*

45. Alternate #3 indicates that we have an extended utility tunnel. Please provide drawings and details of the proposed tunnel extensions.

Response: *Refer to note 43 on CS102.*

46. the foundation of the screen wall shown on SF101 calls for both a CGB-4 and an FC4.5, neither of which appear to be identified in the structural concrete schedule on SB601. Please indicate which foundation type and size to use for the screen wall.

Response: *Foundation shall be CGB-4. GCB-4 has been added to schedule and mark on plan has been revised*

47. Room 221 is calling for a BioSafety Cabinet @ the south wall. There is no specification for this unit. Please clarify.

Response: *BSC in Room 221 is OFOI.*

48. There are differences on the retaining walls from civil to architectural. Concrete or segmented? Please advise.

Response: *Both are wall systems are used refer to AS101 for wall type identification.*

49. Re: DWG #400 – The 98”x19” R.A. duct for AHU-1 does not have a continuation shown anywhere. It stops where the supply ducts end in the same area.

Response: *The return air duct continues below the supply ducts into the shaft*

50. Re: DWG #MS401 – Chilled Water Lines as shown on Alternate #1, are these lines installed above ground or below ground?

Response: *Above ground.*

51. Re: Dwgs #MP1B1, MH400, MP201 and MP202 – The Chw/Hw & the Hr line pipe sizing do not coincide with the floor plan, the mechanical room plan nor the schematics. Please clarify as to which drawing or drawings we need to follow for correct pipe sizes.

Response: *Refer to addendum 4.*

52. On the drawings there shows a(n) under slab-vapor barrier however I do not see a spec in the spec book. Is there going to be an under slab-vapor barrier? What thickness" What manufacturers are approved?

Response: *Provide 15 mill under-slab vapor barrier. Refer to addendum 4.*

53. On the drawings it shows liquid applied waterproofing for Concrete Foundation Wall and Protection Board. In the spec book it calls for a self-adhering sheet waterproofing and drainage board. The spec book shows cold applied two component waterproofing for the deck. There are single component waterproofing products that are liquid applied for foundation walls. What is acceptable for foundation walls?

Response: *Provide waterproofing as specified.*

54. Refer to paragraph 1.11 of specification section 105626. Bid documents require a 5 year warranty from Contractor on mobile storage shelving units. Sureties typically require that project duration for purposes of calculating Contractor's Performance and Payment Bond premiums be based on project duration plus warranties above one year; requiring a five year Contractor warranty (as opposed to a manufacturer's warranty) will result in DFCM bearing additional bond costs. We therefore request that the requirement for a Contractor warranty in section 105626 be eliminated.

Response: *Provide the warranty as specified.*

55. General conditions article 4.4 requires that Contractor include sales tax in its bid amount, however an exemption certificate TC-721G is included in Volume 1 of the 100% specifications. The exemption certificate indicates it is valid if "tangible personal property or services purchased are to be paid directly with funds from the entity noted on this form and will be used in the exercise of that entity's essential functions. For construction materials, if the purchaser is a Utah state or local government, these construction materials will be installed or converted into real property by employees of this government entity." Southern Utah University is the "entity"; are any materials to be paid for directly by SUU and, if not, are there any materials to which a sales tax exemption would apply? Please clarify Owner intent.

Response: *Tax exempt.*

56. Specification section 012300 identifies four Alternates, however there are no spaces to provide a quote for these Alternates on the Cost Proposal Form. Please clarify Owner intent.

Response: *See addendum 4.*

57. Paragraph 3.5.B of specification section 262923 calls for bidders to provide an alternate for a two year warranty/service contract, however there is no space on the Bid Form to quote this alternate. Please clarify Owner intent.

Response: *Intent is to provide a published price for an extended 2-year warranty which could be purchases later if desired by the Owner.*

58. Refer to specification section 102800, paragraph 1.6.A. Specifications mention a special warranty, however details of the special warranty required are not included. Please clarify Owner or design intent.

Response: *Special warranty will not be required for 102800.*

59. Refer to paragraph 1.4.A of specification section 017419. Please identify required recycle percentage.

Response: *75 percent.*

60. Refer to specification section 048200. Several passages in this section make reference to mock-ups (as an example, paragraph 3.6.B), however it does not appear mock-ups are required for Dimension Stone Cladding. Please clarify Owner or design intent.

Response: *Dimensional stone is used for landscape walls and shall require a mockup / first installation approval.*

61. Will the Fire Sprinkler Contractor be responsible for the System Development Fees and the Tap Fees as indicated in specification section 211000-2 .1.5 item A and Item B?

Response: *Yes*

62. Is the Plumbing Contractor responsible for the System Development Fees and the Tap Fees as indicated in specification section 230500-1-1.3 item C, D and Item E?

Response: *Yes*

63. Drawing MH-400 there is no Heat piping shown to AH-1 or AH-2. Please clarify.

Response: *Refer to this addendum.*

64. Drawing MP-201 shows piping to AH-1 & AH-2 but no pipe size given. Please provide pipe sizing.

Response: *Refer to this addendum.*

65. Drawing MP-201 chilled water pipe sizing to AH-1-2-3 do not match that of MH-400. Please clarify.

Response: *Refer to this addendum.*

66. Drawing MH-400 piping for the HRR piping does not match that of MP-203. Please clarify.

Response: *Refer to this addendum.*

67. Please provide specifications on the intended product for the concrete sealer indicated in the finish schedule AF600B 'F1'.

Response: *See addendum 4.*

68. What type of primer is required for the structural steel on this project? The architectural drawings reference a tenemec paint, but the specification is unclear. Please advise.

Response: *Please reference the 100% CD set.*

69. There is no reference to details A1,A2,B1,B2,B3/SF507, A2,A3/SF512. Please advise.

Response: *Please reference the 100% CD set.*

70. Plan sheet SF102 does not indicate thru-deck studs on the beams. They do show on SF101 and SF103 (# of studs are noted in parentheses on each of the beams). Please verify.

Response: *Beams at this level were designed for a higher vibration criteria and thus work as non-composite beam thus not requiring headed studs. Drawing is accurate.*

71. Sheet AE611, Storefront door type '3', calls out an 8" bottom rail. ADA requires a 10" bottom rail. Please advise.

Response: *10 inch bottom rails for door types 3 and 7. See this addendum.*

72. The curtain wall frames show an 8" bottom horizontal at the first floor. If the bottom door rail is raised to 10" do we need to raise the bottom horizontal on the curtain walls to 10"?

Response: *No change to curtain wall systems.*

73. The interior frames 33-39 are called out as curtain wall frames with 1" low-e glazing. Please verify this is the intent.

Response: *Correct, except 38 and 39 shall be ¼ inch tempered clear glass. See this addendum.*

74. Sheet EG100 provides an alternate schedule which differs slightly from the list of alternates given in spec section 012300. Please clarify which shall govern.

Response: *See prior comments regarding this issue.*

75. Detail Sheet AE511 (D1, D2, D5, C4) shows the stainless steel guardrail. What is the intended connection to the precast cap?

Response: *A concealed base plate anchored to the pre-cast cap.*

76. Per detail A1, A2, A3, A4/SF502 the grating at the air intake is 2” aluminum and the embedded steel and ledger for that grating are stainless steel. Is galvanized carbon steel acceptable for all of these elements?

Response: *Provide as specified. Galvanized carbon steel is not what is specified for this contract. Project should provided elements as specified.*

77. Spec section 017419 list requirements for recycling/waste management. After local market research, we find that Cedar City does not have an extensive recycling program, suggesting that these LEED credit points may not be attainable. Please advise.

Response: *Please explore the possibility of recycling / waste management through near-by municipalities. This service could possibly come from St. George or Las Vegas*

78. Tree staking detail (E1/LP501) calls out 2”x2”x8’ Fir Stakes. Landscape Planting Specification 329301, Section 3.7-B calls out two steel “T” stakes. Please clarify.

Response: *Provide as shown on the detail (SUU’s standard).*

79. Specification 329301, Section 3.10-J Calls for polymer injection on lawn areas after establishment. No reference to polymer type, product or application process or rate is addressed. Please clarify.

Response: *Polymer injection will not be applicable for this project.*

80. Referring to sheet AC1B1 at room B31 indicates Acoustical Tile Ceilings. The Finish Schedule on Sheet AF600B for B31 indicates exposed ceilings. Please clarify the design intent.

Response: *2x2 acoustical panel ceiling.*

81. Referring to sheet AC102 for rooms 202, 221, 222 indicates exposed ceilings. The finish schedule on sheet AF600B indicates Acoustical Ceiling Tile. Please clarify the design intent.

Response: *See addendum 4.*

82. Referring to sheet AC103 at stair 301,302 exposed ceilings are indicated. Finish Schedule on sheet AF600B for these rooms indicate Acoustical Ceiling Tile. Please clarify the design intent.

Response: *Painted gypsum board ceilings at the top of the stair shaft. Exposed at the underside of the stair assemblies.*

83. The VAV reheat boxes, the Re-Heat coils and the Heat Recovery coils, do we hook up these coils per detail 2/MH501 or 12/MH501?

Response: *Coils are typically piped according to 2/MH501 unless they are to provided with a 3-way valve.*

84. Please depict which coils in the above inquiry requires a 2-way control valve hook-up or a 3-way control valve as shown on the details.

Response: *Refer to piping schematics for large valves, on reheat coils, assume a two way valve unless 12/MH501 is referred to for a specific valve. Refer to Addendum 4.*

85. The same holds true for the AHU coils.

Response: *See prior response.*

86. There are two (2) condensing units shown on Architectural drawing QL441 between column lines E & F and near column line 5. We need to know what the purposes of these condensers are, and we need to know if we (HVAC sub-contractor) will be involved.

Response: *These condensing units are part of the Controlled Environment Room Specification and will be provided by the CER manufacturer as part of the CER package.*

87. Will tie-backs be allowed for the shoring wall? Specifically having tie backs go underneath 300 west.

Response: *300 west is a State highway. Contractor shall coordinate shoring with UDOT requirements.*

88. The Service Fixture Schedule on QL001 lists a PR-18 CTPR1411. Water Saver says this is not a valid part number.

Response: *PR-18 should be CTPR4411BH.*

89. The fume hood specification is supposed to be Concept based but 2.3 E. 5. calls for an adjustable baffle - the Concept baffle is not adjustable. Will the Concept without an adjustable baffle be acceptable?

Response: *Concept hood without adjustable baffle is acceptable.*

90. Access Doors - 1.2A - indicated an allowance for rated and non rated access doors. What is the allowance amount?

Response: *Provide a budget for 20 rated doors, and 20 non rated doors. Refer to this addendum.*

91. Referring to Section 230900.4.4 "Alternate: Additional VFD Points", additional alternate pricing is indicated to be provided. No areas have been provided for alternate prices on the bid form for these areas. Is Alternate Pricing required for this at the submission of the bid? If so please clarify the process for submission of these items in the bid form.

Response: Not applicable for this project. See addendum 4.

92. Please provide the location for the Condenser units for these Controlled Environmental Rooms (CER 1 and CER 2). Per the specifications section 130821 these are to be mounted remotely. Please provide this location, or should these be mounted on the top of the rooms, currently it looks as if there are drywall soffits surrounding these rooms.

Response: *Condenser units are located at grid line E5 in the lower level. See sheet QL441.*

93. Per the room schedule on QL001 – It shows the electrical requirements for these rooms to be 20A/208v for the condensers and 20A/115V for the control panels. These are conflicting with the panel schedules, OS2 & 2S2, which seem to show 30amp/2-pole breakers for the condensers. Please confirm the design intent.

Response: *20A power for condensers is per basis of design model. 30A power is provided in case actual unit purchased required higher amperage.*

94. Please confirm that only 2 outlets are required inside the rooms as denoted on the elevations on drawing QL502.

Response: *Confirmed.*

95. Please advise whether or not a hazardous materials survey has been conducted on the existing Science Building and, if so, advise as to responsibility of Contractor for removing such materials and the extent to which they must be removed for work associated with tie-ins for this project.

Response: *The construction of the existing science building was in the 1990's. We suspect no asbestos materials will be encountered.*

96. Refer to sheet CE105 and section A-A on CE109. May the Contractor use a portable, temporary washout basin in lieu of the detailed permanent one as indicated in the plans?

Response: *Provide as specified.*

97. Referring to sheet CE101, is protection and maintenance of the existing trees indicated on this sheet to remain required of the bidding General Contractors? If so, what will be required in providing protection and maintenance of these trees?

Response: *The protection of the trees as noted on CE101 is for the entire length of the project and applies to all trades. Coordination with SUU is req'd during all phases of the construction.*

98. The plans indicate use of a protection board over fluid applied waterproofing on the basement wall sections on sheets AE305-308. The specification section 071326.1.2.A provides information for a drainage panel and protection board. Is the drainage panel to be used in place of the indicated protection board on the plans or will a drainage panel and protection board be required for this drainage application at the basement? If protection board is required please provide information on the approved manufactures and installation requirements.

Response: *Provide as specified. Clarification given in this addenda.*

99. Detail 2 of sheet AE313 indicates a cap flashing detail with a call out of E2 / AE511. Should this detail reference E3/AE511 instead?

Response: R*efer to detail E4/AE511.*

100. There appear to be two specification sections 084113; Aluminum Entrances and Storefronts, and Glazed Aluminum Curtain Walls. Section 088000 – Glass and Glazing also relates. Please clarify which of these three glass specifications are to be followed for this project.

Response: *Aluminum Entrances and Storefronts for entry doors, Glazed Aluminum Curtain Walls for window / curtain-wall systems, and Glass and Glazing for the glass panels.*

101. Sheet MP1B1 –Does not Indicate the pipe sizes for the HWS/R at column lines A & 3. CHS/R are indicated to be 4" at the "A" & "3" Column lines. Beyond the "A" column the HWS/R pipe sizes are shown to be ¾". Sheet MB1B1S – Indicates that the HWS/R is 4" and the CHS/R is 5" Please verify the correct pipe sizes for these areas. Also, sheet MH502 Detail 3 indicates that these are 4" and 5" sized pipes. Please clarify design intent of the CHS/R & HWS/R piping through these areas.

Response: *Refer to addendum 4.*

102. Re: QL602/2 Is the adjustable wall shelving to be chem. Surf laminate or phenolic resin.

Response: *Adjustable wall shelving detail is for both plastic laminate and phenolic resin adjustable shelves. See floor plans for shelf material.*

103. Re: AE502/E2 and SF522/A1 Please provide specifications for SS mesh required at the canopy at the Southeast corner

Response: *See additional detail this addendum.*

104. Is there an updated piering report.

Response: *Soils report and helical pier specs are in the 100%CD project manual – see prior response.*

105. Re: Spec 078100, Specification states that the testing agency is to be engaged by the contractor. This contradicts the schedule of special inspections.

Response: *Provide as specified.*

106. Will we be allowed to tieback under 300 West and beyond the disturbance limit on the West side to support the shoring?

Response: *Contractor shall coordinate the shoring limitations with UDOT for tie-backs at 300 West, (this is a State highway).*

107. Re: SB101 We are unable to find referenced detail SB502/C3.

Response: *Detail cut should reference C4/SB502 rather than C3/SB502.*

108. Re: SF103 We are unable to find referenced detail SF501/A2.

Response: *Detail cut should reference B3/SF503 rather than A2/SF501.*

109. Re: AE305 We are unable to find referenced detail AE511/C5

Response: *This condition would be similar to A5/AE511 with the weather barrier flashed at the wall and counter-flashed with a riglet. The metal panel system would be applied over the weather barrier as done elsewhere on the project.*

110. Are fire suppression systems required at the greenhouses?

Response: *Yes. This building will be completely sprinkled as specified.*

111. Tax exemption Certificate is provided. Please verify that the project is tax exempt.

Response: *Tax exempt.*

112. The elevator hoistway for the 4500 lb car is not wide enough. Sheet AE411 shows and 8' wide x 9'-8" clear hoistway. We require it to be 4" wider, 8'-4" x 9'-8". There are no elevator cabs by any manufacturer that will fit in an 8' wide hoistway. Only the 2100 lb size car can fit.

Response: *Final configuration of the hoist-way shafts will be issued as an ASI once the contract has been awarded and the elevator manufacturer has been confirmed.*

113. The 2100 lb car only comes with an 8' tall cab, the specs call for 9'-7" tall cabs for both elevators. We can provide the tall cab on the 4500 lb car, but not the 2100 lb.

Response: *We were seeking a finished ceiling of 8 feet for the elevator cabs.*

114. Are there wage rates (or is it in a union area) for this project?

Response: *Coordinate this issue with the General Contractor.*

115. Re: Specification 133420-2.11 notes roof vents: is this for single run or double run of vents? I cannot find reference on the drawings. Also, in the corridor are we to have single or double run for air intake?

Response: *As required by greenhouse supplier.*

116. 2.12 notes side vents: the only place you could have a side vent is on the 24’ wall of compartment 318. Is this the only vent?

Response: *See addendum 4.*

117. 2.18 notes glazing: Cyro does not offer polycarbonate anymore. Is polycarbonate allowed on this project? Also you list different varieties of the acrylic panels, we will bid the least expensive unless there is a required type panel.

Response: *Provide panels per specification.*

118. 2.20 notes exhaust fans: Are there any predetermined sizes or a CFM requirement to meet? It also calls for fan housing to be painted, this is an expensive option are they sure this is wanted?

Response: *As determined by greenhouse supplier.*

119. 2.21 notes unit heaters: is there a predetermined size or is there a required inside temperature to hold?

Response: *As determined by greenhouse supplier.*

120. 2.24 Lighting: Is there a layout somewhere in the drawings or any requirements to lumens required or even type of crop to be grown? Spec notes HPS and MH lights, are different compartments to have HPS or MH lights or which type goes where?

Response: *As determined by greenhouse supplier.*

121. Is corridor 314 to be by the greenhouse supplier as a a continuation of the greenhouse compartments? What is the sidewall height of the greenhouses? The evaporative cooling pads in the corridor. Are these pad walls to have shutters or some type of vent to seal or are they to be left open/exposed? Partitions in the greenhouse: it appears that compartments 315 and 317 are 21’x24’ (nominal) and compartments 316 & 318 are 42’x24’ (nominal). Is this correct?

Response: *Yes, corridor 314 shall be considered greenhouse. Unless noted otherwise, everything south of the masonry wall of corridor 314 shall be provided by the greenhouse supplier. The sidewall height of the greenhouses shall be approximately 8 feet 8 inches. The typical greenhouse bay, side-to-side, is 20 feet 8 inches. The depth of the greenhouse compartment is 24 feet 4 inches + 5 feet 4 inches for corridor 314.*

122. If I am correct on the compartment sizes, then can equipment such as the shade systems be operated as one unit?

Response: *Yes, shades shall work as a single unit for each greenhouse compartment.*

123. AHU Airflow measuring stations. Note 1 on sheet MH601 calls for outside air flow measuring stations. Are the air flow measuring stations provided with the units?

Response: *Yes.*

124. Section 230900-14 2.4 A calls for air flow measurement at the inlet of the AHU fan (in addition to the outside air flow station). AHU-2 and AHU-3 are 100% outside air. Because they are 100% outside air is it required to have an air flow measuring station at the inlet of the fan AND the outside air inlet?

Response: *No, measuring the outside air on AHU-2 & 3 is sufficient.*

125. Section 233300-14 3.16 A indicates that this section will provide air flow measuring devices. Is this section to provide the outside air flow and fan inlet flow stations detailed in 230900-16?

Response: *230900 will provide the airflow measuring stations, not 233300. Refer to addendum 4.*

126. Mechanical Drawing (MP202) indicates BacNet interface to the chiller. Specification 236400-7 3.2 does not specify the chillers are to be provided with a interface. The Electronic Controls specification 230900 does not clarify the chiller interface. Suggest the chiller specification be modified for the manufacture to include a LON interface card for integration to the control system.

Response: *236400 2.1 S. requires a BacNet interface or prior approved interface.*

127. Is the chiller to be provided with flow switches or is the controls contractor to provide them?

Response: *The controls contractor provides them.*

128. Section 230900-19 2.18 references a domestic water meter. We can not locate the installation location of this meter on the mechanical drawings. Who is to supply the domestic hot water meter? And, where is it to be located?

Response: *The domestic water meter is to be provided by the 230900 contractor and located on the water service into the building. There is not a domestic hot water meter.*

129. Section 230900-20 G.3 and 230900-25 K.3 both reference an owner provided Ethernet connection at the BTU meter locations. What BTU meter is this referring to and who(m) is providing the BTU meters referenced?

Response: *Refer to Section 230900 2.29. The 230900 contractor is to provide BTU meters on the heating and chilled water piping systems. Refer to MP201 and MP202.*

130. The specification indicated that all control system wiring is 100% conduit, 3/4” minimum, including all plenum locations including VAV box and venture control wiring. Ist it acceptable to install 1/2” conduit for runs that contain a single control cable with 3/4” conduit for all other control system wiring?

Response: *Install ¾” conduit minimum.*

131. Reference section 230900-21 2.25 Is the controls contractor to provide pressure gauges and thermometers?

Response: *No, these will be provided by mechanical contractor.*

132. Reference section 230900-22. What data point from the venture supply/exhaust/fume hood controls are to be displayed and available on the control system graphic pages? What graphic pages and data are required for the science and lab rooms? i.e. CFM values, lab temperatures, hood operation etc.

Response: *Refer to 3/MH202 for required data points.*

133. What systems require BTU metering? The drawings indicate chilled water BTU, we can not locate hot water BTU metering on the drawings. Specification 230900-23 2.29 D indicates BTU chilled and hot water systems.

Response: Heating water and chilled water. Refer to addendum 4.

134. Specification section 233600, Air Terminal Units, does not specifically identify the VAV boxes are to be supplied with NEMA 1 enclosures. Are the VAV boxes to include, from the factory, NEMA 1 enclosures for the DDC controllers?

Response: *233600 2.1 F requires a NEMA 1 enclosure be provided with the VAV box.*

135. Specification 233300 1.2 indicates dampers to be installed by that section, supplied by 230900. Are the dampers associated with the AHU units (return air, outside air) being supplied with the air handling units?

Response: *Yes.*

136. VAV box control and Venturing control power. The electrical drawings indicate for the electrical contractor to provide 120V AC for VAV box control power. Will the electrical also provide 120V AC for the venture lab valve controls? This does not seem to be indicated in the electrical drawings. It may be good

to clarify and identify that the electrical contractor coordinate locations of 120V AC drops for each VAV box controls and the Venturi air valve controls prior to rough in.

Response: *J-boxes indicated for VAV box power can also be used for Venturi valve power.*

137. Section 230900-2.2 2.26 indicates laboratory ventilation and temperature control system for each room indicated on the drawings, complete with supply, general exhaust, fume hood and auxiliary flow control devices. Is section 230900 to supply the Venturi Valves as indicated on the drawings and on the schedule shown on MH602?

Response: *Yes.*

138. The laboratory ventilation and temperature control system includes reheat coils on the areas indicated. Who is to supply the reheat coils?

Response: *Section 235700. Refer to addendum 4.*

139. Reference 230900-29 4.2 B. Indicates the BAS to monitor the status of the electrical distribution system, the UPS system and the building power and display on the graphic screens. What metering or status indication is required and who is to provide the meters for the electrical distribution system? Building power?

Response: *This monitoring is only to check status of equipment and display equipment faults via dry contacts provided on the electrical equipment.*

140. Detail B1/AE511 - shows a tube sized approximately 6"x2" that does not show at the clerestory roof framing per SF102. Is this a structural tube and is it required?

Response: *There shall be material of 3/16" thickness, or greater, for the curtain wall system anchorage. This shall be securely attached to the roof structure.*

141. Lav Counters- Men B05, Women B06, sheet AE431 No callouts for Section at typical 24" deep Lav Counters. Please confirm Section, Detailing and materials to be used at typical lav counters on all levels.

Response: *Refer to typical detail E4/AE541 for lav counters.*

142. Museum wing grade beams - Is structural fill/compacted soil required under and around the concrete grade beams south of grid line 1, and between gridlines E 7 J on sheet SB101? Reference Detail A3/SB503.

Response: *Refer to prior response on this subject.*

143. Excavation/Soils Report – Soils report section 5.1, paragraph 2 reads "The proposed lowest below-grade level of the primary portion of the structure is to extend 16 feet below existing grade. This excavation will essentially penetrate through most of the surface and near-surface collapsible soils. In a few areas, borings indicate that the collapse soils extend three to four feet deeper. It is our recommendation that all of the moisture sensitivity/collapsible soils extending out a minimum of three feet from the perimeter of the proposed building, which will be underlain by the full-depth basement, be removed and replaced with compacted granular structural fill." .The vague sentence suggesting a possible 3 to 4 feet over-ex will be interpreted and priced many different ways. Please advise further on the extents of the excavation.

Response: *Mass excavate to 16 feet should be priced with unit price add on for site defined additional excavation and filling*

144. Footing @ Gridline J & 5.5 – This footing/grade beam (sheet SF101) designated as 'FC4.5' does not appear in the concrete footing or grade beam schedule. Please advise.

Response: *The footing mark at this location shall be CGB-4 and CGB-4 has been added to the concrete grade beam schedule.*

145. Monolithic curb on roof under the greenhouse – can this curb be poured non-monolithically? Reference details E1-E4/AE512.

Response: *Structurally, curb can be placed non-monolithic as long as vertical reinforcing dowels extend from slab and interface is roughened to ¼" amplitude.*

146. Architectural Columns – Are the architectural columns designated by note 9 on sheet AE101 colored?

Response: *Natural concrete color, gray, is desired. However, consistency is most important.*

147. Honed CMU – On level 3 is the CMU between the greenhouse and corridor walls honed on both sides or only the corridor side?

Response: *All exposed CMU surfaces shall be honed. See clarification this addendum.*

148. Vapor Barrier – Is vapor barrier required under slab? If so please indicate product.
Response: *15 mil vapor barrier. See clarification this addendum.*

Changes to the Project Manual:

A1.01 SECTION 012100 – ALLOWANCES Revise the Allowance amount to Zero dollars. Contractor shall be responsible for obtaining and completing all paperwork etc. as required for impact and connection fees from the appropriate municipality(s) and or utility company(s) to be paid by the Owner. No mark-up will be allowed for forwarding paperwork to the Owner.

A1.02 SECTION 012300 – ALTERNATES Add Paragraph 3.1.E, Alternate No 5 as follows:
"E. Alternate No. 5: Provide Lightning Protection system as specified in Section 264100

A1.03 SECTION 13300 - SUBMITTAL PROCEDURES, Paragraph 1.4.C.1 revise to read as follows:
"1. 30 days for shoring and excavation, deep foundations, Greenhouse Structure and Greenhouse Mechanical Electrical and Plumbing systems

A1.04 SECTION 015000 – TEMPORARY FACILITIES AND CONTROLS revise as follows:

a. Add Sub-Paragraph 1.2.D.4 as follows:
"4. Mobile collaboration device system to be surrendered to Owner upon completion of the work.

b. Add Paragraph 2.2.F as follows
"F. Mobile Collaboration System Provide complete system for remote review and collaboration with Owner consisting of FieldView Device, Internet connectivity over the entire site, Video Communication Server Expressway Unit to communicate with the Owner's VCS Control and Management suite software at a remote location. A fully functioning system to permit remote review , interaction and response when communicating with Owner's personnel is required.

1. System: Tandberg FieldView Rugged Model on-site device with VCS unit
2. <u>The complete system will be turned over to the Owner upon completion of the project.</u>
3. Manufacturer" Tandberg www.tandberg.com 1212 Avenue of the Americas NY, NY 212-692-6500

A1.05 SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
Paragraph 1.4.A, end-of-Project rates for salvage/recycling shall be 75 percent by weight

A1.06 SECTION 033000 - CAST-IN-PLACE CONCRETE
a, Paragraph 1.2.A, revise to read as follows:

"A. This Section specifies cast-in place concrete, including formwork, reinforcement, <u>underslab vapor retarders,</u> concrete materials, mixture design, placement procedures, and finishes, for the following:

b. Paragraph 2.5.A.1, revise to read as follows:

"1. Portland Cement: ASTM C 150, <u>Type V.</u> Supplement with the following:"…

c. Add the following Paragraph:

" 2.15 VAPOR RETARDERS

Plastic Vapor Retarder: ASTM E 1745, Class A with a nominal perm rating not exceeding.03. Include manufacturer's recommended adhesive or pressure-sensitive tape.

Available Products:

Fortifiber Corporation; Moistop Ultra A.
Raven Industries Inc.; Vapor Block 15.
Reef Industries, Inc.; Griffolyn Type-105.
Stego Wrap Class A Vapor Retarder
WR Meadows Perminator 10

d. Article 3.7 Revise Paragraph A to read as follows:

"A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed. Place, protect, and repair Underslab vapor retarders according to ASTM E 1643 and manufacturer's written instructions.

1. Lap joints 6 inches (150 mm) and seal with manufacturer's recommended tape.

A1.07 SECTION 033600 – SPECIAL CONCRETE FLOOR FINISHES, is incorporated into the Project Manual as an attachment to this Addendum.

A1.08 SECTION 034500 – PRECAST ARCHITECTURAL CONCRETE is incorporated into the Project Manual as an attachment to this Addendum.

A1.09 SECTION 042000 – UNIT MASONRY Article 2.2 CONCRETE MASONRY UNITS,

Subparagraph 2.2.B.1, revise to read as follows:

"1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2800 psi. Provide minimum 2000 psi when f'm is determined using the prism test method Section 2105.2.2.2 in IBC."

A1.10 SECTION 048200 – DIMENSION STONE CLADDING Add Paragraph 1.5.I as follows:

"I. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockup of typical wall as shown on Drawings or as directed by Architect.

a. Show typical components, attachments to building structure, and methods of installation.
b. Include mounting methods

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless such deviations are specifically approved by Architect in writing.

A1.11 SECTION 064023 – INTERIOR ARCHITECTURAL WOODWORK revise as follows:
a, Paragraph 1.2.A.5 Revise to read: Solid Surface countertops and windowsills"

b. Paragraph 2.7.C revise species to White Oak rift- sawn

c. SubParagraph 2.10.C.1 Revise to read as follows:

"1. Thickness of solid surfacing Countertops and Windowsills: Provide thickness indicated, but not less than the following:…"

d. Article 3.3 Revise Title to "INSTALLING COUNTERTOPS AND WINDOWSILLS

e. Article 3.3 add the following:

"D. Align adjacent solid-surfacing-material pieces for sills and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop. Carefully dress joints smooth, remove surface scratches, and clean entire surface.

1. Install sills with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.
2. Calk space between windowsill and wall or frame with sealant specified in Division 7 Section "Joint Sealants."

A1.12 SECTION 072714 – SHEET AIR BARRIERS Paragraph 2.1.A.2, ,revise as follows:
a. Paragraph 2.1.A.2 add the following: "c. Henry Blueskin VP 160"
b. Paragraph 2.1.A.3.c, revise Vapor permeance to 29 perms minimum

A1.13 SECTION 072726 - FLUID APPLIED AIR BARRIERS is incorporated into the Project Manual as an attachment to this Addendum

A1.14 SECTION 078100 – APPLIED FIREPROOFING, Paragraph 3.5.A revise to show that Owner will engage testing agency

A1.15 SECTION 083113 – ACCESS DOORS Paragraph 1.2.A.1 add the following:
" Rated doors 15, Non-rated doors 20."

A1.16 SECTION 083483 - SMOKE CONTAINMENT SYSTEM (FOR FIRE RATED ELEVATOR HOISTWAY DOORS) is deleted in its entirety.

A1.17 SECTION 084413 - GLAZED ALUMINUM CURTAINWALL SYSTEM,
a. Paragraph 2.1.B add the following: "8. Kawneer."
b. Paragraph 2.2.J, add the following:
"3. Profile equal to YKK Wedged outrigger wityh 2 ¼ circular louver and Winged Fascia.

A1.18 SECTION 087100S - FINISH HARDWARE SCHEDULE: Group 19 shall include doors B31 and B31A. This supersedes the hardware scheduled on AE610. Remove door B31 from hardware group 24.

A1.19 SECTION 088810 - FIRE RATED FRAMING AND GLAZING is incorporated into the Project Manual as an attachment to this Addendum

A1.20 SECTION 099120 – PAINTING paragraph 3.8.C , revise to read as follows:
"C. Concrete Masonry Units – Anti-Graffiti coating for honed CMU surfaces Low VOC Clear Coat – that does not alter appearance of CMU when in place.
1. Two Finish Coats -
a. Evonik – ProtectoSil antigraffiti
b. Prosoco – Blok-Guard AntiGraffiti II

A1.21 SECTION 102123 – PRIVACY CURTAINS Paragraph 2.3.A, revise to read as follows:

"A. Curtain Fabric: Polyester of Premium Line - Fabric as scheduled and as follows:

A1.22 SECTION 102800 – TOILET AND BATH ACCESSORIES Paragraph 1.6.A, revise to read as follows:

"A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.

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

A1.23 SECTION 129300 – SITE FURNISHINGS is incorporated into the Project Manual as an attachment to this Addendum

A1.24 SECTION 142100 – ELECTRIC TRACTION ELEVATORS

a. Add Paragraph 1.2.B.4 as follows:
"4. Shaft Sizes are indicated on the drawings based upon generic information or dimensional requirements for one of the manufacturers specified. It is the manufacturers responsibility to provide a complete and functioning vertical circulation system within the parameters shown to avoid conflict with the structure or other systems. Pit sizes will be modified where possible to meet selected manufacturers requirements, if requirements are provided on a timely basis.

b. Paragraph 1.02 SYSTEM DESCRIPTION, All Cars Revise as follows:
M. Cab Height 8'-0
N. Clear Ceiling Height 7'-6 minimum

c. add Paragraph 1.04.D as follows:

"D. Regulatory Requirements: Comply with ASME A17.1 **and elevator design requirements for earthquake loads in ASCE 7**.

1. Provide earthquake equipment including seismic switches required by ASME A17.1.."

Laboratory

Q1.1 Section 115100 Laboratory Equipment. Paragraph 1.1 C: Delete text "and the California Administrative Code, Title 24 Seismic Restraint requirements".

Q1.2 Section 115100 Laboratory Equipment. Paragraph 1.3 E: Delete text "California-licensed Structural Engineer in compliance with the 2007 California Building Code" and replace with "Utah-licensed Structural Engineer".

Q1.3 Section 115100 Laboratory Equipment. Paragraph 1.4 A: Replace "Section 01630" with "Division 1".

Q1.4 Section 115100 Laboratory Equipment. Paragraph 1.7 A: Replace second sentence with "Contractor shall ensure that The Owner is to receive no adverse treatment regarding parts if The Owner chooses not to purchase the maintenance agreement from Vendor."

Q1.5 Section 115100 Laboratory Equipment. Paragraph 2.3 E-01 B.3: Piping and fittings by Division 22.

Q1.6 Section 115100 Laboratory Equipment. Paragraph 2.3 E-01 B.4: Plumbing and electrical

connections by Divisions 22 and 23.

Q1.7 Section 115100 Laboratory Equipment. Paragraph 3.2 E: Coordinate connections with work of Divisions 22 and 23.

Q1.8 Section 115313 Laboratory Fume Hoods. Paragraph 2.1 A: To the list of approved manufacturers add Advanced Laboratory Concepts, 116 East Old Settlers Blvd., Round rock, TX 78664 (512) 246-8800 www.alc-collegedale.com.

Q1.9 Section 123553 Laboratory Casework and Furnishings. Replace "Wood Laboratory Casework and Furnishings" with "Laboratory Casework and Furnishings".

Q1.10 Section 123553 Laboratory Casework and Furnishings. Paragraph 1.3 L.9: Replace "Divisions 15 and 16" with "Divisions 22 and 23".

Q1.11 Section 123553 Laboratory Casework and Furnishings. Paragraph 1.3 M: Delete text "including, but not limited to, the following:".

Q1.12 Section 123553 Laboratory Casework and Furnishings. Paragraph 2.1 B: Delete "Troughs".

Q1.13 Section 123553 Laboratory Casework and Furnishings. Paragraph 2.1 C: "Phenolic-Composite Shelves:" should read "Phenolic-Composite Shelves and Casework:".

Q1.14 Section 123553 Laboratory Casework and Furnishings. Paragraph 2.2 J: This should include "1. Plywood: Hardwood plywood of same species as exposed plywood. Grade A faces, Grade J cross-bands.

Q1.15 Section 123553 Laboratory Casework and Furnishings. Paragraph 2.2 K: This is a formatting error. This should be:

K. Concealed Materials:

1. Solid Wood: Any hardwood or softwood species, with no defects affecting strength or utility.
2. Plywood: Hardwood plywood. Grade 1, Concealed backs of plywood with exposed or semi-exposed faces shall be same species as faces.

Q1.16 Section 123553 Laboratory Casework and Furnishings. Paragraph 2.3 B.3.a: Replace existing text with " Countertop Configuration: Flat, 1 inch (25mm) thick, with beveled top, front edge and all corners, with drip groove. Ends shall be square."

Q1.17 Section 123553 Laboratory Casework and Furnishings. Paragraph 2.3 C: Delete "10. Troughs:...".

Q1.18 Section 123553 Laboratory Casework and Furnishings. Paragraph 2.4: Add the following:

1. Exterior adjustable shelves, those not in cabinets, shall be equipped with a ¼ inch (6 mm) diameter, 2 inch (50 mm) high anodized aluminum rail at the front of the shelf. Rail lengths exceeding 36" (914mm) in nominal length shall be supported in the middle by a machined turret. Rails shall be fastened to the upturned shelf brackets on lower shelves. On top shelves, rail shall be supported at ends and middle by machined turrets.

2. Steel shelf brackets shall be "L" type. "Z" type brackets are not acceptable. Shelf shall be notched around standard or slotted stud to eliminate gap between shelf and wall or two back-to-back shelves.

Q1.19 Section 123553 Laboratory Casework and Furnishings. Paragraph 2.7ACID STORAGE CABINET: Replace existing text with the following:

Cabinet to be constructed with a corrosion resistant ¼ inch (6mm) thick, polyethylene, polypropylene, epoxy, or phenolic-composite lining material on all interior surfaces.

Casing: Bottom, top, back, door and sides of cabinet shall be at least 18 gage (1.2mm) sheet steel, double walled, with 1-1/2 inch (36mm) air space. Joints shall be riveted, welded or made tight by equally effective means.

Provide a 2 inch (50mm) diameter polyolefin or polyethylene vent hose connecting at the outside rear of the base cabinet with two inlets, one high and one low. Secure vent pipe inlets to the removable

gasket sealed back panel of cabinet with polypropylene locking nuts. Extend vent pipe to the top plenum of the hood chamber above the baffle plate and seal. No holes are to be made through the work surface. When cabinet is used without a fume hood, vent hose is to extend to the appropriate laboratory exhaust system.

No bi-fold doors.

Provide one adjustable lined shelf, of similar material and thickness as interior liner, supported with epoxy coated "locking" clips to avoid inadvertent removal. Shelf to be capable of supporting 150lbs. (68.04kg) without deflection.

One (1) 1 inch (25 mm) deep liquid tight drip pan to cover the entire floor area of the lined cabinet compartment. Pan to be fabricated of ¼" (6 mm) thick white polypropylene with seams heat welded.

Fasteners to be stainless steel or plastic and shelf supports to be plastic or epoxy coated metal.

Door: Provide with continuous piano hinge, three point locking mechanism integrated into lever handle with doorsill raised at least 2 inches (50mm) above the bottom of the cabinet to retain spilled liquid within the cabinet. When more than one door is used, there shall be an over-lap of not less than one inch (25mm). Doors shall be self-closing.

Apply silkscreen signage, color: red, to cabinet door indicating "CORROSIVE CHEMICALS".

Q1.20 Section 123553 Laboratory Casework and Furnishings. Paragraph 2.13: Delete "C. Exterior adjustable shelves…".

Q1.21 Section 123553 Laboratory Casework and Furnishings. Paragraph 2.17 D: Traps are furnished under Division 22, not Division 15.

Q1.22 Section 123553 Laboratory Casework and Furnishings. Paragraph 2.19 E.1 and E.2: Provide Hospital grade receptacles.

Q1.23 Section 123553 Laboratory Casework and Furnishings. Paragraph 2.21 B: Replace "Division 15" with "Division 22".

Fire Protection

F1.1 Section 211000 1.8: Add Certified Fire Protection and Shilo Fire Protection to list of approved Subcontractors.

Mechanical

M1.1 Section 235700: part 2.4 shall read: HEATING RECOVERY & REHEAT WATER COILS IN DUCTWORK. This specification applies to both heat recovery coils and reheat coils shipped loose from a VAV box.

M1.2 Section 233000: Delete 2.16. Air flow measuring devices shall be provided by 230900.

M1.3 Section 233000 3.8: Stainless steel duct shall be used for all ductwork between a venturi valve and the lab exhaust fans. Ductwork from fume hoods and canopy hoods to venturi valves shall also be stainless steel.

M1.4 Section 230593 1.3: Add Independent Test & Balance and Tempco Services to approved subcontractor list.

M1.5 Section 232123 part 2.1: Add Patterson Pumps to approved manufacturers.

M1.6 Section 232113 part 2.17: Add IFC to approved strainers.

M1.7 Section 235700 part 2.1: Add Cemline to approved heat exchangers.

M1.8 Section 235700 part 2.2: Add Sondex to approved heat exchangers.

M1.9 Section 237410 part 2.1: Add Unitech to approved air handlers.

Plumbing

P1.1 Section 224440 2.1: Add Chicago faucet to acceptable sensor faucets.

P1.2 Section 221410 2.3: Add Orion to acceptable acid waste manufacturers.

P1.3 Section 224460 2.1: Add Orion to approved acid dilution systems.

P1.4 Section 224460 2.1 F: Add: "Alarm condition shall also start a chemical injection pump to

mix a caustic substance (in the event of low pH) or an acidic substance (in the event of high pH) into the mixing tank."

Electrical

E1.1 SECTION 26 12 19: Change section 2.2 to be FR3 (or equivalent) fluid filled transformers.

E1.2 SECTION 28 10 00: Change section 1.2 bullet point #7 to read: "*Provide proximity credential readers and connect to the TAC ACS door controllers. Provide 100 ea. key fob style proximity credentials and 1000 new dual technology printable proximity cards for the University. Coordinate card and key fob numbering sequence with SUU lock shop prior to ordering. Printable dual sided proximity cards with magstrip shall be included and encoded to keep the existing configuration for each individual user. In addition, the card holders shall be added to the TACSS system. The contractor shall provide labor and materials for issuance of the new dual technology cards. New dual technology cards shall include SUU preprinted information on the reverse side and meet the specified badging requirements found in this specification."*

E1.3 SECTION 28 10 00: Change section 3.3 item #4 to read: "*Proximity Card Readers: SUU requires the TACSS to provide proximity readers and dual technology proximity and magstrip cards to permit utilization of existing magstip encoding as detailed in 1.1. Proximity readers for the Gibson Science Center shall be HID or Motorola Indala Proximity card readers. The requirements detailed in 1.1 shall be met. This product line offers a variety of readers to match SUU needs. Each reader shall offer a low profile, rugged, weatherized polycarbonate sealed enclosure with multi-color LEDs and a sounder for access granted and denied indications. Each shall be mountable indoor or outdoor."*

E1.4 SECTION 28 10 00: Change section 3.3 item #4 to read: "*The TACSS shall utilize card products designed specifically for security applications. Dual technology printable proximity / magstrip cards with SUU preprinted backside information and proximity key fob credentials shall be provided as detailed in 281000 1.1."*

Changes to the Drawings:

Civil

C1.1 The sanitary sewer that goes into the existing manhole in 200 South needs to be installed using a directional boring machine. On the demolition plan CE101 there will be no removal of asphalt, concrete curb and sidewalk. See attachment AD04-C3. See Sheet CE103 for sewer design.

C1.2 The 6" water service to the building is required to be bored in to the roadway. The ductile iron water line will be installed in a 12" steel or HDPE casing with enclosed end stops and pipe supports, See Sheet CE102 and attachment AD04-C2. On the demolition plan CE101 the area of removal and replace the asphalt paving has been reduced down to the area where the valve is to be installed only.

C1.3 A secondary access sidewalk is to be installed on the north side of the existing science building east exit doors. There is an existing door and landing there. The contractor will be required to install a concrete sidewalk from the landing to the existing sidewalk to the north. See sheet CE102 and 104 as well as attachment AD04-C1 and C6.

C1.4 The storm drain lines on the south side of the building were modified to take runoff from the south side to the west storm drain line. See attachments AD04-C4 through C8 and Sheet CE 104.

C1.5 The location of the gas meter and gas tie-in have been added to the northeast side of the building located on the west side of the wall. See attachment AD04-C2 and sheet CE 102.

C1.6 A 3" gate valve w/sleeve is to be installed on the culinary service line where it ties into the 6" water line. See attachment AD04-C2 and sheet CE 102.

Structural

S1.1 Re: SB101: Revised detail cut near grid H and between grid 1 and grid 2. Drawing AD04-SS11 attached

S1.2 Re: C5/SB504: Detail altered to show truncated text. Drawing AD04-SS01 attached

S1.3 Re: SB601: FC4.5 and FC5.5 added to CONCRETE FOOTING SCHEDULE. Drawing AD04-SS02 attached.

S1.4 Re: SB601: .CGB-1 revised and CGB-4 added to CONCRETE GRADE BEAM SCHEDULE. Drawing AD04-SS03 attached.
S1.5 Re: SF101: Add detail cut A4/SF506 Typ./Sim. Drawing AD04-SS09 attached
S1.6 Re: SF101: Revised footing mark to CGB-4 for footing below screenwall located near grid J and above grid 5. Drawings AD04-SS12 attached.
S1.7 Re: SF102: Add detail cut A4/SF506 Typ. Drawing AD04-SS08 attached
S1.8 Re: SF103: Beam size changed for beam on grid 5 and between grids G and H. Drawing AD04-SS04 attached.
S1.9 Re: SF103: Beam size changed for beam near grid B.3 and between grids 1 and 3. Drawing AD04-SS05 attached.
S1.10 Re: SF103: Add detail cut A4/SF506 Typ./Sim. Drawing AD04-SS05 attached
S1.11 Re: SF103: Revised detail cut references for two detail cuts near grid 4 and between grid D and Grid F. Drawings AD04-SS13 attached.
S1.12 Re: A4/SF506: .Add detail as shown. Drawing AD04-SS10 attached.
S1.13 Re: B5/SF601: Revised detail to reflect all masonry wall configurations. Drawings AD04-SS06 attached.
S1.14 Re: SF602: Revised steel column for SC-8. Drawings AD04-SS07 attached.

Landscape

L1.01 Re: AS101; revise key note 6: "Provide double width reinforced brick masonry in lieu of CMU indicated."
L1.02 Re: D5/AS501: Refer to civil drawing CE108 for site retaining wall reinforcing.
L1.03 Re: C3/AS501: Not applicable.
L1.04 Re: C4/AS501: Height of the brick masonry shall be 8'-0" in lieu of the 3'-1-1/8" indicated.
Width of the brick masonry shall be 1'-0"
Concrete cap shall be 1'-2" in lieu of the 10-7/8" indicated.

Architectural

A1.01 Re: GI011: Note area modifications for Classroom 127. Drawing attached AD04-AS01
A1.02 Re: AC1B1: The ceiling assembly of room B08 shall be 1 hour rated construction.
A1.03 Re: AC1B1, AC101, AC102, and AC103: Key-note 6 shall read "NOT USED". Smoke guard curtain systems, at the elevators doors, will not be required for this project. Said removed systems would include all electrical service, raceway, and controls for the smoke guard curtain.
A1.04 Re: AC1B1, AC101, AC102, and AC103: Key-note 10 shall read: "HATCH INDICATES SPRAY APPLIED FIRE PROOFING TO STEEL STRUCTURE (2-HR RATING)".
A1.05 Re: AC101: Note corridor light fixture change to match lighting plan. Drawing attached AD04-AS02.
A1.06 Re: AC101: Note new detail A4/AE512 referenced at the Museum window visor. Drawing attached A04-AS03.
A1.07 Re: AC102: Note ceiling systems for classrooms and corridor as indicated. Drawing attached AD04-AS04.
A1.08 Re: AE201: Add louver to each exhaust shaft (3) total. Said louver shall receive a paint finish to match the curtain wall system. Drawing attached AD04-AS05.
A1.09 Re: C4/AE301: Correct mock-up window head detail E2/AE522 in lieu of E4/AE522. Mock-up will be used for envelope testing.
A1.10 Re: AE305 through AE314: Note referencing fluid applied waterproofing shall be changed to: "FOUNDATION WATERPROOFING SYSTEM"
A1.11 Re: 2/AE313: Change parapet cap detail to E4/AE511.
A1.12 Re: AE314: Note typical air barrier details, (9) total. Drawings attached AD04-AS06 through AD04-AS14.
A1.13 Re: E1/AE401: Note 12 inch handrail extension at stair #1 third floor and new detail C1/AE551. Drawings attached A04-AS15.
A1.14 Re: AE512: Add new detail A4. Drawing attached AD04-AS16.
A1.15 Re: AE551: Add new detail C1. Drawing attached AD04-AS17.

A1.16 Re: AE 610: Door 109B shall be 45 minute rated door and frame assembly. The hardware group may remain unchanged for this door.
A1.17 Re: AE611 Door type 3 and 7 shall have a 10 inch bottom rail in lieu of the 8 inch indicated.
A1.18 Re: AE611, AE612, and AE 613. To clarify, all exterior glass shall be type 2 unless noted otherwise.
A1.19 Re: AE611, AE612, and AE 613. To clarify, assemblies requiring sun-shade louvers are as identified on the schedule and exterior elevations.
A1.20 Re: AE 613. Provide "" tempered clear glass for frames 38 and 39.
A1.21 Re: AF 600A: Wall finish W4: CMU
FINISH: HONNED & SEALED
COLOR: CMU-1 SEE SPECIFICATION
A1.22 Re: AF 600A: Add general note 10. "ALL EXPOSED CMU SURFACES SHALL BE W4"
A1.23 Re: AF 600B: Room B33 shall receive floor finish: F1, wall base: B1, wall finish: P1 and ceiling finish: C3.
A1.24 Re: AF 600B: Room 319 shall receive floor finish: F1, wall base: B1, wall finish: P1 and ceiling finish: C3.

Laboratory

Q1.01 Re: QL001: Added SK-8 to Sink Schedule. Revised PR-11 and PR-18 on Service Fixture Schedule. Drawing attached
Q1.02 Re: QL002: Added Note 6 to Casework General Notes. Added Casework Nomenclature. Drawing Attached.
Q1.03 Re: QL002: Typical height of Tall Storage Cabinets shall be 7'-6" U.O.N. Drawing attached.
Q1.04 Re: QL103: Enlarge plan callout correct to read QL445. Drawing attached.
Q1.05 Re: QL443: One fume hood has an air compressor cabinet below (B24VP) with piping to LA-8 fitting on two fume hoods in Chemistry Open Lab 214. Drawing Attached.
Q1.06 Re: QL445: Wall mounted sink in Potting Area 311 shall be type SK-8. Drawing attached.

Mechanical

M1.10 Re: MH1B1: Modified ductwork in exhaust shaft, keyed note 10. Showed return air duct between mechanical room and shaft. See AD04-M01&2.
M1.11 Re: MH101: Modified ductwork in exhaust shaft, added louvers in exhaust shaft, clarified location of UH-2. See AD04-M03.
M1.12 Re: MH102: Modified ductwork into exhaust shaft, duct routing. See AD04-M04.
M1.13 Re: MH103: Added equipment layout and notes in greenhouse. See AD04-M05&6.
M1.14 Re: MH301: Added subducts inside exhaust duct riser, deleted fire-smoke dampers, deleted bypass air through access door, added louvers in exhaust shaft. See AD04-M07 & 8.
M1.15 Re: MH400: Clarified pipe sizes and routing. See AD04-M09 & 10.
M1.16 Re: MH502: Clarified replacement of steam PRVs. See AD04-M11.
M1.17 Re: MH503: Added details for Steam Safety Valve and Vertical Inline Pump. See AD04-M12 & 13..
M1.18 Re: MH602: Added schedule for Steam Safety Valve. See AD04-M14.
M1.19 Re: MP1B1: Clarified pipe sizes. See AD04-M15.
M1.20 Re: MP201: Clarified pipe sizes. See AD04-M16 - 18.
M1.21 Re: MP202: Clarified pipe sizes, sequence of operations. See AD04-M19 - 21.
M1.22 Re: MP203: Clarified pipe sizes. See AD04-M22.
M1.23 Re: MH601: Added control dampers. See AD04-M23.
M1.24 Re: MH602: Added control valve schedule. See AD04-M24.

Plumbing

P1.5 Re: PL1B1: Added a floor drain, deleted condensate piping. See AD04-P01 & 2.
P1.6 Re: PL101: Added keyed note 10. See AD04-P03.
P1.7 Re: PL102: Added keyed note 3. See AD04-P04.

P1.8 Re: PL103: Added piping layout to greenhouse. See AD04-P05 & 6.
P1.9 Re: PL402: Added floor drains. See AD04-P07 & 8.
P1.10 Re: PL402: Added caustic injection pump to Acid Dilution System. See AD04-P09.

Electrical

E1.01 Re: EG100: Swap the alternates #4 and #5, making lightning protection alternate #5.
E1.02 Re: ES101: Add (8) Type W poured in concrete fixtures in the curved part of the retaining wall outside vestibule 118 mounted at 1'-6" AFF and spaced evenly along the curve (roughly 4.5' apart) and tied into relay control circuit 0LCP2-h.
E1.03 Re: ES101: Clarify: keyed notes 1, 9, and 11 to read "MAGNETIC TAPE" not "magnetic tap".
E1.04 Re: ES101: Clarify: keyed note 22 to read, "OLD LIGHT FIXTURE LOCATION. DEMOLISH ASSOCIATED WIRING AND ABANDON CONDUIT."
E1.05 Re: ES101: Add: keyed note 24 stating, "FEED EXISTING LIGHT POLE, AND SUBSEQUENT LIGHT POLES FROM NEW LIGHTING CIRCUIT."
E1.06 Re: ES101: Add: keyed note 25 stating,"REUSE EXISTING WIRING TO CONTINUE SIGHT LIGHTING CONTROL FROM THE NEW BUILDING. DISCONNECT EXISTING LIGHTING CONTROL PRIOR TO TYING IN NEW POWER. SEE DEMOLITION PACKAGE SHEET EL100 FOR EXISTING DISCONNECT/CONTROL LOCATIONS."
E1.07 Re: ES101: Make the changes shown in attached sheet A04-E01.
E1.08 Re: ES101: Make the changes shown on attached sheet A04-E02.
E1.09 Re: ES500: Keyed note #7 should read "STRUCTURAL" not STANDARD.
E1.10 Re: EL1B1: Add a switch in each of the elevator shafts to control the pit lighting.
E1.11 Re: EL1B1: Delete the two switches in room B10 that are NOT on the strike side of the door.
E1.12 Re: EL1B1: Clarify keyed note 5 to read "LOW VOLTAGE MANUAL OVERRIDE SWITCH……."
E1.13 Re: EL101: Clarify keyed note 6 to read "LOW VOLTAGE MANUAL OVERRIDE SWITCH……."
E1.14 Re: EL101: Change the fixture call out for the lights under the bridge outside of vestibule 101 to be type DW instead of Type U.
E1.15 Re: EL101: Change the note next to the display area to read "CONTINUED ON SHEET EL500" not EL301.
E1.16 Re: EL101: Add a call out in Vestibule 118 to go to the enlarged view as seen on attached sheet A04 -E03.
E1.17 Re: EL102: Clarify keyed note 4 to read "LOW VOLTAGE MANUAL OVERRIDE SWITCH……."
E1.18 Re: EL102: Change the slave pack SP to be a power pack PP in room 218.
E1.19 Re: EL103: Clarify keyed note 5 to read "LOW VOLTAGE MANUAL OVERRIDE SWITCH……."
E1.20 Re: EL103: Change the fixture type in room 310 from S2 to type G.
E1.21 Re: EL500: Clarification: In detail 2, contractor may reduce the number of low voltage transformers to the track lighting as long as the transformer provided can support all track heads on that zone, and with at least 20% spare capacity.
E1.22 Re: EL500: Add: the enlarged vestibule detail shown on sheet A04-E03 and make the changes shown.
E1.23 Re: EL500: Clarification: In vestibule 123, and 101, change all down lights type DW to be controlled off of lighting control panel OLCP1-u.
E1.24 Re: EL500: Change: the control on the cove lights in vestibule 101 to be controlled off of lighting control panel 0LCP2-f. Update the relay schedules.
E1.25 Re: EL500: Clarification: The long skinny fixture shown in the enlarged view of vestibule 101 is type C.
E1.26 Re: EL500: Clarification: all the track lighting along the west wall should be part of Dimmer zone 3.
E1.27 Change type W fixture to be a Kim KLV807 DB 5W LED fixture 3500K, FC Lighting FCSL170 120V LED E SS F, cast in place step light.
E1.28 Re: E L601: Add: a fuse to type DW.
E1.29 Re: EL601: Clarification: Contractor to field verify the length of pendant needed to hang Track ZT on/around the suspended clouds in the display area prior to ordering.
E1.30 Re: EL601: Add an acrylic lens on the uplight portion of fixture type H4 and H8 to shield the bare lamp from view in the stairwells.
E1.31 Re: EL601: Change: the mounting height of fixture types H4 and H8 in the stairwells to be 9'-0" AFF. The fixtures in the rest rooms to remain at 8'.

E1.32 Re: EL602: Change: Connect the Signal interface from 0LCP3 to 0LCP1 instead of 0LCP2.

E1.33 Re: EL602: Clarification: The astronomical time clock is only needed in the master controller 0LCP1.

E1.34 Re: EL602: Add: a low voltage signal connection for the display area control to the signal interface for time sweep off function instead of through relay #5. Label relay 5 as a spare. Lighting control panels 0LCP1 and 0LCP2 are to have the ability to run (8) different user defined time on: time off schedules each.0LCP3 to be able to run at least (6) different schedules.

E1.35 Re: EL602: Change: In detail 3, run a 120V 20A circuit to power the dimming controller instead of the 277V

E1.36 Re: EP1B1:ADD: Provide duplex receptacle in tunnel along north wall (approximate gridlines B-3), circuit to 0P1-3.

E1.37 Re: EP1B1: REVISE: Keyed notes tied to elevator pit receptacles to be keyed note #19.

E1.38 Re: EP1B1: REVISE: Room B20, change circuit number from 0S1-9 to "OS2-9"

E1.39 Re: EP1B1: REMOVE: the thermal switch, motor connection, and circuiting for the elevator smoke curtain. Re-label circuit 0P2-4 as spare. Keyed note 2 is no longer in use.

E1.40 Re: EP1B1: ADD: a junction-box with circuit call out 0S2-18 and keyed note 22 in elevator shaft #1 for the elevator seismic switch.

E1.41 Re: EP1B1: ADD: a junction-box with circuit call out 0S2-20 and keyed note 22 in elevator shaft #2 for the elevator seismic switch.

E1.42 Re: EP1B1: ADD: keyed note 22 stating, "PROVIDE POWER FOR SEISMIC SWITCH. COORDINATE EXACT LOCATION OF JUNCTION-BOX WITH ELEVATOR MANUFACTURER RECOMMENDATIONS."

E1.43 Re: EP101: ADD: Stair S101, provide mechanical unit label "EC-1" next to mechanical unit.

E1.44 Re: EP101: REVISE: Vestibule 101, Vestibule 118, Vestibule 123, Men 106, Women 108, and WC 120, change keyed note #21 to keyed note #23 next to each ADA push pad.

E1.45 Re: EP101: ADD: Practice Lab 113, add keyed notes #21 and #22 next to power pedestals located in center lab benches.

E1.46 Re: EP101: ADD: Practice Lab 113, added keyed note #15 to floorbox.

E1.47 Re: EP101: CLARIFY: Display 122, Provide four-plex floorboxes where indicated by 4-plex symbol with box around it.

E1.48 Re: EP101: REVISE: Keyed note #5 should read "EF101" not EY101.

E1.49 Re: EP101: REMOVE: the thermal switch, motor connection, and circuiting for the elevator smoke curtain. Re-label circuit 0P1-11 as spare. Keyed note 14 is no longer in use.

E1.50 Re: EP101: REVISE: In room 142, the (2) receptacles along the east wall shall be GFI.

E1.51 Re: EP101: ADD: Thermal switch and 120 volt power for Fan Coil FC-4 at gridlines B.4/3 (refer to MH101 for exact location). Circuit fan coil FC-4 to OP2-19.

E1.52 Re: EP101: ADD: Thermal switch and 120 volt power for Fan Coil FC-5 at gridlines G.3/3.5 (refer to MH101 for exact location). Circuit fan coil FC-5 to OP2-21.

E1.53 Re: EP101: ADD: Room 110, add thermal switch and 120 volt power for unit heater UH-1, refer to MH101 for location, tie to circuit 1P1-21 feeding UH-1 in room 109.

E1.54 Re: EP101: ADD: Room 110, add junction-box and 120 volt power for Deionized water generator DI-1, refer to MH101 for location, circuit to 1P1-23.

E1.55 Re: EP102: REVISE: Keyed note #3 should read "EF101" not EY101.

E1.56 Re: EP102: REMOVE: the thermal switch, motor connection, and circuiting for the elevator smoke curtain. Re-label circuit 2P1-3 as spare. Keyed note 4 is no longer in use.

E1.57 Re: EP103: REVISE: Keyed note #4 should read "EF101" not EY101.

E1.58 Re: EP103: REMOVE: the thermal switch, motor connection, and circuiting for the elevator smoke curtain. Re-label circuit 3P1-13 as spare. Keyed note 5 is no longer in use.

E1.59 Re: EP103: REVISE: Room 311, the (2) four-plex receptacles along the east wall shall be GFI.

E1.60 Re: EP103: ADD: In Corridor 314, provide (3) duplex, GFI, weatherproof receptacles along the North wall; locate a receptacle near each panelboard. Circuit receptacles to 3P3-1.

E1.61 Re: EP104: REVISE: Locations of EF-4, EF-6, and EF-7 to match mechanical drawing MH104, field coordinate exact locations prior to installation.

E1.62 Re: EP2B1: REVISE: Continuation of the (1) 4" conduit to the existing science building should read "EP1B1S", not ES101.

E1.63 Re: EP500: ADD: General note stating: "DIVISION 26 SHALL BE REPONSIBLE TO FIELD COORDINATE LOCATION OF ALL ELECTRICAL EQUIPMENT IN COMPLIANCE WITH NEC 110.26."

E1.64 Re: EP500: ADD: Detail 1, provide ¾" conduit with required wiring from ATS-E to lighting control panel (LCP) for signal from generator to LCP.

E1.65 Re: EP500: ADD: Detail 2, add keyed note #14 to each air handler j-box for power to lighting in AH's.

E1.66 Re: EP500: REVISE: Detail 7, add (4) 4" conduits up to second floor in south-east corner of room 112.

E1.67 Re: EP500: MOVE: Detail 2, move the VFD for AH-1 to the west side of AH-1, refer to mechanical drawing MH400. Contractor shall be responsible to locate VFD where there is no piping or mechanical ductwork above it in compliance with NEC 110.26(F)(1).

E1.68 Re: EP500: REVISE: Detail 2, change circuiting on DCP-1 to OM2-1 and DCP-2 to OM2-3.

E1.69 Re: EP501: CLARIFY: lab feeder 30-B shall be ¾" conduit with (3) #10 and (1) #10 ground.

E1.70 Re: EP501: ADD: Chemistry Prep 217, circuit coiling door to 2P3-25.

E1.71 Re: EP501: CLARIFY: Chemistry Teaching Lab, all wire molds along south wall should be circuited together and fed from circuits shown 2P4-16,18,20,22.

E1.72 Re: EP501: CLARIFY: Histology Lab 222, center wire mold on south wall shall be feeder 20-C.

E1.73 Re: EP501: CLARIFY: Molecular Genetics Lab 220, all wire mold along the central portion of the south wall should be circuited together and fed from circuits shown 2P7-13,15,17,19.

E1.74 Re: EP601 & EP602: ADD: Keyed note #11 shall be added to panels 3P3, 3P4, and 3S2.

E1.75 Re: EP601 & EP602: REVISE: ¾" conduit and required wiring shall be run from ATS-E to the lighting control panel for generator contact closure to lighting control panel.

E1.76 Re: EP601 & EP602: CLARIFY: ITRON radio read AMR meter shall be installed within a NEMA 3R enclosure.

E1.77 Re: EP601 & EP 602: CLARIFY: Delete keyed notes #2 next to generator ground rods, keyed notes #4 apply.

E1.78 Re: EP603: CLARIFY: Detail 2, Contractor shall provide all required bussing, hardware, etc. as required to install the new breakers within the existing switchboard MSB.

E1.79 Re: EP604 & EP605: REVISE: Revise the panel schedules as indicated in the attached panel schedules.

E1.80 Re: EP606: REVISE: In mechanical schedule, change EF-7 to ¼ HP and 5.8 FLA.

E1.81 Re: EP606: REVISE: In mechanical schedule, change DCP-1 and DCP-2 both to 120 volt, single phase, 16 FLA, 30 amp disconnect, 25 amp fuse, combo starter, 30A feeder.

E1.82 Re: EP606: REVISE: In mechanical schedule, change VP-1 to 7 HP, 11 FLA, and 20 A fuse.

E1.83 Re: EP606: ADD: FC-4, FC-5, and DI-1 to the mechanical equipment list, parameters shown below:

ID	Description:	V	PH	HP	FLA	Disconnect	Starter	Feeder
FC-4	Fan Coil	120	1	.1	3	Thermal Switch		20A
FC-5	Fan Coil	120	1	.1	3	Thermal Switch		20A
DI-1	DI Water Gen.	120	1	-	-	NA, j-box hard wired		20A

E1.84 Re: EP606: CLARIFY: Lab equipment E-20 will utilize a NEMA 5-20R receptacle.

E1.85 Re: EF1B1: Add: (2) duct detectors in the supply air of AH-1 and AH-2.

E1.86 Re: EF1B1: Change: the strobe in the northern part of hallway B07 to be a horn/strobe with the same candela rating as shown.

E1.87 Re: EF1B1: Remove the control module for the elevator smoke guards. The smoke guards are no longer in the project.

E1.88 Re: EF1B1: Keyed notes 2 and 3 are no longer in use.

E1.89 Re: EF101: Remove the control module for the elevator smoke guards. The smoke guards are no longer in the project.

E1.90 Re: EF101: Keyed note 5 is no longer in use.

E1.91 Re: EF102: Remove the control module for the elevator smoke guards. The smoke guards are no longer in the project.

E1.92 Re: EF102: Keyed note 3 is no longer in use.

E1.93 Re: EF103: Remove the control module for the elevator smoke guards. The smoke guards are no longer in the project.

E1.94 Re: EF103: Keyed note 8 is no longer in use.

Lighting

The following manufacturers are prior approved to bid the project. All manufacturers must bid an equal to that specified, as determined by the Engineer. Products approved, but later proving not to be equal, may be disqualified at a later date, and the contractor shall then supply the original specified products. Products not listed did not meet the prior approval deadline, or are not considered equal to those specified.

Type	Manufacturer
B1	Day-bright
B2	Day-bright
C	Lightwild, Modalite
D	Omega
D2	Omega
DM	Omega
DS	Omega
DW	Spectrum Lighting, WAC lighting, Nora, Halo
F	Nulite, LA lighting, day-bright
G	Day-bright
H	Finelite
I	Finelite
J	Day-bright
L	Finelite
N	Finelite
P3	Lumec
P5	Lumec
S1	Day-bright
S2	Day-bright
T2	Day-bright
T3	Day-bright
U	Gardco
W	
X1	Isolite, Mcphilben
X2	Isolite, Mcphilben
XW	Isolite, Mcphilben
Y	Contractor allowance $430 each
Lighting Controls	Leviton

Attachments:

Approved Substitutions

Specification Sections

Section 033600 – Special Concrete Floor Finishes

Section 034500 – Architectural Precast Concrete

Section 074726 – Fluid Applied Air Barrier

Section 088810 – Fire Rated Framing and Glazing

Section 129300 – Site Furnishings

Civil

AD04-C1: Secondary sidewalk access and modifications to the storm drain lines on the south side of the building.
AD04-C2: Water and gas utility updates on east side of the building.
AD04-C3: Sanitary sewer line in 200 South to be constructed with directional boring machine and HDPE pipe.
AD04-C4: Revised storm drain manhole table
AD04-C5: Revised storm drain pipe table
AD04-C6: Revisions to grading and storm drain (west and south)
AD04-C7: Revisions to grading and storm drain (south)
AD04-C8: Revisions to grading and storm drain (East)

Structural

AD04-SS01: Revised detail C5/SB504.
AD04-SS02: Revisions to CONCRETE FOOTING SCHEDULE.
AD04-SS03: Revised CONCRETE GRADE BEAM SCHEDULE.
AD04-SS04: Revisions to plan sheet SF103.
AD04-SS05: Revisions to plan sheet SF103.
AD04-SS06: Revised detail B5/SF601.
AD04-SS07: Revisions to STEEL COLUMN SCHEDULE.
AD04-SS08: Revisions to plan sheet SF102.
AD04-SS09: Revisions to plan sheet SF101.
AD04-SS10: Added detail A4/SF506.
AD04-SS11: Revisions to plan sheet SB101.
AD04-SS12: Revisions to plan sheet SF101.
AD04-SS13: Revisions to plan sheet SF103.

Landscape

AD04-LS01: Revisions to AS101
AD04-LS02: Revisions to AS101
AD04-LS03: Revisions to AS101
AD04-LS04: New drawing B5/AS502
AD04-LS05: New drawing C5/AS502
AD04-LS06: New drawing C4/AS502
AD04-LS07: New drawing B3/AS502
AD04-LS08: New drawing A2/AS502 (part A)
AD04-LS09: New drawing A2/AS502(part B)

Architectural

AD04-AS01: Revisions to GI101
AD04-AS02: Revisions to AC101
AD04-AS03: Revisions to AC101
AD04-AS04: Revisions to AC102
AD04-AS05: Revisions to D1/AE201
AD04-AS06: New detail E1/AE314
AD04-AS07: New detail D1/AE314
AD04-AS08: New detail C1/AE314
AD04-AS09: New detail E2/AE314
AD04-AS10: New detail D2/AE314
AD04-AS11: New detail C2/AE314
AD04-AS12: New detail E3/AE314
AD04-AS13: New detail D3/AE314
AD04-AS14: New detail C3/AE314
AD04-AS15: Revision to E1/AE401
AD04-AS16: New detail A4/AE512

AD04-AS17: New detail C1/AE551

Laboratory

A04-QL01: Updates to Sink Schedule and Service Fixture Schedule.
A04-QL02: Revision to Casework General Notes and Casework Nomenclature.
A04-QL03: Correction to Tall Storage Cabinet Dimension.
A04-QL04: Correction to enlarged plan callout number on Sheet QL103.
A04-QL05: Added sink designation on Sheet QL445.
A04-QL06: Revised cabinet and service piping for CFH6 Fume Hoods in Chemistry Open Lab 214.

Mechanical

AD04-M01:
AD04-M02:
AD04-M03:
AD04-M04:
AD04-M05:
AD04-M06:
AD04-M07:
AD04-M08:
AD04-M09:
AD04-M10:
AD04-M11:
AD04-M12:
AD04-M13:
AD04-M14:
AD04-M15:
AD04-M16:
AD04-M17:
AD04-M18:
AD04-M19:
AD04-M20:
AD04-M21:
AD04-M22:
AD04-M23:
AD04-M24:

Plumbing

A04-PL01:
A04-PL02:
A04-PL03:
A04-PL04:
A04-PL05:
A04-PL06:
A04-PL07:
A04-PL08:
A04-PL09:

Electrical

A04-ES01: Revised Panel Schedules
A04-ES02: Revised Panel Schedules
A04-ES03: Revised Panel Schedules
A04-ES04: Revised Panel Schedules
A04-ES05: Revisions to ES101
A04-ES06: Revisions to ES101
A04-ES07: Revisions to EL500

End of Addendum No. 4

MHTN
ARCHITECTS

SUBSTITUTION REQUEST
(During the Bidding Phase)

Project:	S.U.U. Gibson Science Center Utah State D.F.C.M. #07297730	Substitution Request Number:	T.B.D.
		From:	MHTN Architects
To:	JOSHUA R. VEL ASSOCIATE PRINCIPAL	Date:	01/25/2010
		A/E Project Number:	2009536
Re:	Proposed Substitution	Contract For:	

Specification Title: 079500 EXPANSION CONTROL Description: MNL SYSTEMS
Section: 2.3 JOINT SYSTEMS Page: 4 Article/Paragraph: 2.3-B

Proposed Substitution:
Manufacturer: CONSTRUCTION SPECIALTIES Address: MUNCY, PA Phone: 800-541-6253
Trade Name: SF, SJDF-R, FWF, FWFL, FCF, FCFL, BRJ, SC Model No.:

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:
- ☒ Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- ☒ Same warranty will be furnished for proposed substitution as for specified product.
- ☒ Same maintenance service and source of replacement parts, as applicable, is available.
- ☒ Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule..
- ☒ Proposed substitution does not affect dimensions and functional clearances.
- ☒ Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: DANIEL CHAPMAN
Signed by: Daniel
Firm: CONSTRUCTION SPECIALTIES
Address: 6696 ROUTE 405 HIGHWAY
MUNCY, PA 17756
Telephone: 800-541-6253

A/E's REVIEW AND ACTION
- ☒ Substitution approved - Make submittals in accordance with Specification Section 013300.
- ☐ Substitution approved as noted - Make submittals in accordance with Specification Section 013300.
- ☐ Substitution rejected - Use specified materials.
- ☐ Substitution Request received too late - Use specified materials.

Signed by: JRoet Date: 01.25.2010

Supporting Data Attached: ☒ Drawings ☒ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

MHTN
ARCHITECTS

SUBSTITUTION
REQUEST
(During the Bidding Phase)

Project: S.U.U. Gibson Science Center
Utah State D.F.C.M. #07297730

To: Josh Vel
josh.vel@mhtn.com

Re: Proposed Substitution

Substitution Request Number: T.B.D.
From: MHTN Architects
Date: Jan 13, 2010
A/E Project Number: 2009536
Contract For:

Specification Title: Thermoplastic Membrane Roofing
Description: Roofing Membrane
Section: 75423 Page: 5
Article/Paragraph: 2.2 A

Proposed Substitution: Johns Manville TPO 80 mil
Manufacturer: Johns Manville Address: 717 17th Street, Denver Phone: 800-922-5922
Trade Name: JM TPO - 80 Model No.:

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:
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- ☑ Proposed substitution does not affect dimensions and functional clearances.
- ☑ Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: PAUL LAEMMLEN
Signed by: Paul Laemmlen
Firm: Johns Manville - RSG/SLC
Address: 2114 S. 400 W.
S. SLC, UT 84115
Telephone: 801-467-4900 F 801-467-4916

A/E's REVIEW AND ACTION
- ☒ Substitution approved - Make submittals in accordance with Specification Section 013300.
- ☐ Substitution approved as noted - Make submittals in accordance with Specification Section 013300.
- ☐ Substitution rejected - Use specified materials.
- ☐ Substitution Request received too late - Use specified materials.

Signed by: JKC for Date: 01.25.2010

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

Advancement of Construction Technology

SUBSTITUTION REQUEST
(During the Bidding Phase)

Project: SUU GIBSON SCIENCE CENTER
Cedar City, Utah

To: Josh Vel
MHTN Architectst

Re: STANDARD STEEL DOORS & FRAMES

Substitution Request Number: 1
From: Brad Steele & Associates/ Larry Faut
Date: 01/19/2010
A/E Project Number:
Contract For:

Specification Title: STEEL DOORS & FRAMES
Section: 801113 Page: 1- 6

Description: STEEL DOORS & FRAMES
Article/Paragraph:

Proposed Substitution: WINDSOR REPUBLIC DOOR
Manufacturer: WINDSOR REPUBLIC Address: 155 Republic Dr. McKenzie, TN 38201 Phone: 1-800-723-6677
Trade Name: WINDSOR REPUBLIC DOORS Model No.:

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

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The Undersigned certifies:

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- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Larry Faut
Signed by:
Firm: Brad Steele & Associates
Address: 2650 W. 2nd Ave Unit 13
Denver Colorado,80219
Telephone: 303-922-3692 fax 303-922-8873

A/E's REVIEW AND ACTION

- [x] Substitution approved - Make submittals in accordance with Specification Section 01330.
- [ ] Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
- [ ] Substitution rejected - Use specified materials.
- [ ] Substitution Request received too late - Use specified materials.

RECEIVED
JAN 2 1 2010
MHTN Architects, Inc.

Signed by:
Date: 2010.01.22

Supporting Data Attached: ☐ Drawings ☒ Product Data ☐ Samples ☐ Tests ☐ Reports ☐

Advancement of Construction Technology

SUBSTITUTION REQUEST
(During the Bidding Phase)

Project: SUU GIBSON SCIENCE CENTER
Cedar City, Utah

Substitution Request Number: 1
From: Brad Steele & Associates/ Larry Faut

To: Josh Vel
Moody Nolan Inc

Date: 01/19/2010
A/E Project Number:

Re: CENDREX ACCESS DOORS

Contract For:

Specification Title: ACCESS DOORS
Section: 083113 Page: 1-4

Description: ACCESS DOORS
Article/Paragraph:

Proposed Substitution: CENDREX
Manufacturer: CENDREX Address: 11 303 26TH Ave Montreal Quebec Phone: 1-800-479-1489
Trade Name: CENDREX Model No.:

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

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- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Larry Faut
Signed by:
Firm: Brad Steele & Associates
Address: 2650 W. 2nd Ave Unit 13
Denver Colorad6,80219
Telephone: 303-922-3692 fax 303-922-8873

A/E's REVIEW AND ACTION

RECEIVED
JAN 21 2010
MHTN Architects, Inc.

☒ Substitution approved - Make submittals in accordance with Specification Section 01330.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by:

Date: 2010.01.22

Supporting Data Attached: ☐ Drawings ☒ Product Data ☐ Samples ☐ Tests ☐ Reports ☐

MHTN
ARCHITECTS

SUBSTITUTION REQUEST
(During the Bidding Phase)

Project: S.U.U. Gibson Science Center
Utah State D.F.C.M. #07297730
To:
Re: Proposed Substitution

Substitution Request Number: T.B.D.
From: MHTN Architects
Date:
A/E Project Number: 2009536
Contract For: STOREFRONTS & CURTAIN WALLS

Specification Title: ALUMINUM ENTRANCES AND STOREFRONTS
Section: 084113 Page: 1-8
Description: ALUMINUM ENTRANCES AND STOREFRONTS
Article/Paragraph:

Proposed Substitution: TG451- 2" X 4 1/2" CG THERMALLY BROKEN SYSTEM
Manufacturer: ARCADIA, INC Address: 1850 E. MAULE AVE, LV, NV Phone: 702-951-2505
Trade Name: ARCADIA, INC Model No.: TG451

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:
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- [x] Proposed substitution does not affect dimensions and functional clearances.
- [x] Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: DIRK SAYRE
Signed by: Dirk Sayre
Firm: ARCADIA, INC-LAS VEGAS DIVISION
Address: 1850 E. MAULE AVE
LAS VEGAS, NEVADA 89119
Telephone: 702-951-2505

A/E's REVIEW AND ACTION
- [x] Substitution approved - Make submittals in accordance with Specification Section 013300.
- [ ] Substitution approved as noted - Make submittals in accordance with Specification Section 013300.
- [ ] Substitution rejected - Use specified materials.
- [ ] Substitution Request received too late - Use specified materials.

Signed by: Date: 01.25.2010

Supporting Data Attached: [x] Drawings [x] Product Data [x] Samples [x] Tests [x] Reports [ ] ____

MHTN
ARCHITECTS

SUBSTITUTION REQUEST
(During the Bidding Phase)

Project: S.U.U. Gibson Science Center
Utah State D.F.C.M. #07297730
To:
Re: Proposed Substitution

Substitution Request Number: T.B.D.
From: MHTN Architects
Date:
A/E Project Number: 2009536
Contract For: STOREFRONTS & CURTAIN WALLS

Specification Title: GLAZED ALUMINUM CURTAIN WALLS
Section: 084413 Page: 1-10
Description: GLAZED ALUMINUM CURTAIN WALLS
Article/Paragraph:

Proposed Substitution: T500-OPG1900- 2 1/4" X 7" CURTAINWALL SYSTEM
Manufacturer: ARCADIA, INC Address: 1850 E. MAULE AVE, LV, NV Phone: 702-951-2505
Trade Name: ARCADIA, INC Model No.: OPG1900

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:
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- [x] Proposed substitution does not affect dimensions and functional clearances.
- [x] Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: DIRK SAYRE
Signed by: Dirk Sayre
Firm: ARCADIA, INC- LAS VEGAS DIVISION
Address: 1850 E. MAULE AVE
LAS VEGAS, NEVADA 89119
Telephone: 702-951-2505

A/E's REVIEW AND ACTION
- [x] Substitution approved - Make submittals in accordance with Specification Section 013300.
- [ ] Substitution approved as noted - Make submittals in accordance with Specification Section 013300.
- [ ] Substitution rejected - Use specified materials.
- [ ] Substitution Request received too late - Use specified materials.

Signed by: JPC Date: 01.25.2010

Supporting Data Attached: [x] Drawings [x] Product Data [x] Samples [x] Tests [x] Reports [ ] _____

MHTN
ARCHITECTS

SUBSTITUTION REQUEST
(During the Bidding Phase)

Project: S.U.U. Gibson Science Center
Utah State D.F.C.M. #07297730
To:
Re: Proposed Substitution

Substitution Request Number: T.B.D.
From: MHTN Architects
Date:
A/E Project Number: 2009536
Contract For: STOREFRONTS & CURTAIN WALLS

Specification Title: GLAZED ALUMINUM WINDOWS
Section: 085113 Page: 1-10

Description: GLAZED ALUMINUM WINDOWS
Article/Paragraph:

Proposed Substitution: T200 THERMALLY BROKEN AWNING WINDOWS- 2" SIGHTLINE
Manufacturer: ARCADIA, INC Address: 1850 E. MAULE AVE, LV, NV Phone: 702-951-2505
Trade Name: ARCADIA, INC Model No.: OPG1900

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:
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- [x] Proposed substitution does not affect dimensions and functional clearances.
- [x] Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: DIRK SAYRE
Signed by: Dirk Sayre
Firm: ARCADIA, INC- LAS VEGAS DIVISION
Address: 1850 E. MAULE AVE
LAS VEGAS, NEVADA 89119
Telephone: 702-951-2505

A/E's REVIEW AND ACTION
- [x] Substitution approved - Make submittals in accordance with Specification Section 013300.
- [ ] Substitution approved as noted - Make submittals in accordance with Specification Section 013300.
- [ ] Substitution rejected - Use specified materials.
- [ ] Substitution Request received too late - Use specified materials.

Signed by: JRP Date: 01.25.2010

Supporting Data Attached: [x] Drawings [x] Product Data [x] Samples [x] Tests [x] Reports [ ] ____

MHTN
ARCHITECTS

SUBSTITUTION REQUEST
(During the Bidding Phase)

Project: S.U.U. Gibson Science Center
Utah State D.F.C.M. #07297730
To: Josh Veal
MHTN Architects, Salt Lake City, Utah
Re: Proposed Substitution - SN54

Substitution Request Number: T.B.D.
From: MHTN Architects
Date: 1-18-2010
A/E Project Number: 2009536
Contract For:

Specification Title: Glass and Glazing
Section: 08800 Page: 85
Description: Insulating Glass Schedule
Article/Paragraph: 3.6

Proposed Substitution: SunGuard Super Neutral 54 on clear glass
Manufacturer: Guardian Industries Address: 14600 Romine Rd Carleton, MI Phone: 734 654-4273
Trade Name: SunGuard Model No.: SN 54

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:
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- [X] Proposed substitution does not affect dimensions and functional clearances.
- [X] Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Adelheid Anderson
Signed by: Adelheid Anderson
Firm: Guardian Industries Corp.
Address: 14600 Romine Road
Carleton MI 48117
Telephone: 734-654-4273

A/E's REVIEW AND ACTION
- [ ] Substitution approved - Make submittals in accordance with Specification Section 013300.
- [X] Substitution approved as noted - Make submittals in accordance with Specification Section 013300.
- [ ] Substitution rejected - Use specified materials.
- [ ] Substitution Request received too late - Use specified materials.

Signed by: JF Joe Date: 01.25.2010

Note: Color of glass must closely match the specified product.

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

MHTN
ARCHITECTS

SUBSTITUTION REQUEST
(During the Bidding Phase)

Project:	S.U.U. Gibson Science Center Utah State D.F.C.M. #07297730	Substitution Request Number:	T.B.D.
To:		From:	MHTN Architects
		Date:	January 18, 2010
		A/E Project Number:	2009536
Re:	Proposed Substitution	Contract For:	

Specification Title:	High Performance Coatings	Description:	
Section:	099600 Page: 706-710	Article/Paragraph:	2.2,A,1

Proposed Substitution: SaniFiber High Build Fiber Reinforced Wall & Ceiling System
Manufacturer: General Polymers Address: Cincinnati, OH Phone: 800-543-7694
Trade Name: Model No.:

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified

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- [x] Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution

Submitted by: Finn-Wall Specialties, Jacob R. Bell
Signed by:
Firm: Finn-Wall Specialties
Address: 6915 S. 700 W. Midvale, UT 84047
Telephone: 801-664-3955

A/E's REVIEW AND ACTION
- [x] Substitution approved - Make submittals in accordance with Specification Section 013300
- [ ] Substitution approved as noted - Make submittals in accordance with Specification Section 013300.
- [ ] Substitution rejected - Use specified materials
- [ ] Substitution Request received too late - Use specified materials

Signed by: JRC BL Date: 01.25.2010

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

MHTN
ARCHITECTS

SUBSTITUTION
REQUEST
(During the Bidding Phase)

Project:	S.U.U. Gibson Science Center Utah State D.F.C.M. #07297730	Substitution Request Number:	T.B.D.
		From:	MHTN Architects
To:		Date:	01/25/2010
		A/E Project Number:	2009536
Re:	Proposed Substitution	Contract For:	

Specification Title:	High Performance Coating			Description:	Coatings
Section:	099600	Page:	4	Article/Paragraph:	2.2.A.1.

Proposed Substitution: 273 Stranlock ML System

Manufacturer: Tnemec Address: 7767 Allen St. Midvale, UT 84047 Phone: 801-282-2327

Trade Name: Tnemec Model No.: Series 273

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

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- ☒ Proposed substitution does not affect dimensions and functional clearances.
- ☒ Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by:	Michelle Call
Signed by:	Michelle Call
Firm:	Protective Coatings Intermountain, Inc., Independent Rep. of Tnemec Co. Inc,
Address:	7767 Allen Street Midvale, UT 84047
Telephone:	801-282-2327

A/E's REVIEW AND ACTION

- ☒ Substitution approved - Make submittals in accordance with Specification Section 013300.
- ☐ Substitution approved as noted - Make submittals in accordance with Specification Section 013300.
- ☐ Substitution rejected - Use specified materials.
- ☐ Substitution Request received too late - Use specified materials.

Signed by: JPC Date: 01.26.2010

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

MHTN
ARCHITECTS

SUBSTITUTION REQUEST
(During the Bidding Phase)

Project: S.U.U. Gibson Science Center
Utah State D.F.C.M. #07297730
To:
Re: Proposed Substitution

Substitution Request Number: T.B.D.
From: MHTN Architects
Date:
A/E Project Number: 2009536
Contract For:

Specification Title: Visual Display Surfaces
Section: 101100 Page:
Description:
Article/Paragraph: see attach

Proposed Substitution: ADP Lemco
Manufacturer: ADP Lemco Address: 5970 W Dannon Way Phone: 801 280 4000
Trade Name: ADP Lemco Model No.: see attached

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

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- ☐ Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Kevin Frith
Signed by: Kevin Frith
Firm: ADP Lemco
Address: 5970 W Dannon Way
West Jordan UT 84081
Telephone: 801 280 4000

A/E's REVIEW AND ACTION
- ☒ Substitution approved - Make submittals in accordance with Specification Section 013300.
- ☐ Substitution approved as noted - Make submittals in accordance with Specification Section 013300.
- ☐ Substitution rejected - Use specified materials.
- ☐ Substitution Request received too late - Use specified materials.

Signed by: Date: 01.25.2010

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

MHTN
ARCHITECTS

SUBSTITUTION REQUEST
(During the Bidding Phase)

Project: S.U.U. Gibson Science Center
Utah State D.F.C.M. #07297730
To: JOSH VEL
Re: Proposed Substitution

Substitution Request Number: T.B.D.
From: MHTN Architects
Date: 1/21/10
A/E Project Number: 2009536
Contract For:

Specification Title: MOBILE STORAGE SHELVING UNITS
Section: 105126 Page:
Description:
Article/Paragraph:

Proposed Substitution: BORROUGHS AISLE SAVER
Manufacturer: BORROUGHS Corp Address: Phone: 800 · 748 · 0227
Trade Name: Model No.:

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

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- [x] Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: TRENT SANDERS
Signed by:
Firm: NATIONWIDE SHELVING
Address: 2180 S. CONSTITUTION BLVD.
SLC, UT 84119
Telephone: 801·328·8788

A/E's REVIEW AND ACTION
- [x] Substitution approved - Make submittals in accordance with Specification Section 013300.
- [ ] Substitution approved as noted - Make submittals in accordance with Specification Section 013300.
- [ ] Substitution rejected - Use specified materials.
- [ ] Substitution Request received too late - Use specified materials.

Signed by: Date: 01.25.2010

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

Advancement of Construction Technology

SUBSTITUTION REQUEST
(During the Bidding Phase)

Project: SUU GIBSON SCIENCE CENTER
Cedar City, Utah

Substitution Request Number: 1
From: Brad Steele & Associates/ Larry Faut

To: Josh Vel
MHTN Architects

Date: 01/19/2010
A/E Project Number:

Re: GLOBAL POLYMER TOILET PARTITIONS

Contract For:

Specification Title: TOILET COMPARTMENTS
Section: 102113 Page: 1 - 4

Description: POLYMER TOILET PARTITIONS
Article/Paragraph:

Proposed Substitution: Global Toilet Partitions
Manufacturer: Global Partitions Address:95 Marcus Blve,Deer Park, NY 11729 Phone: 631-586-3330
Trade Name: Globa Toilet Partitions Model No.:

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Larry Faut
Signed by:
Firm: Brad Steele & Associates
Address: 2650 W. 2nd Ave Unit 13
Denver Colorado,80219
Telephone: 303-922-3692 fax 303-922-8873

A/E's REVIEW AND ACTION

RECEIVED
JAN 21 2010
MHTN Architects, Inc.

☒ Substitution approved - Make submittals in accordance with Specification Section 01330.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by:
Date: 2010.01.22

Supporting Data Attached: ☐ Drawings ☒ Product Data ☐ Samples ☐ Tests ☐ Reports ☐

MHTN
ARCHITECTS

SUBSTITUTION
REQUEST
(During the Bidding Phase)

Project:	S.U.U. Gibson Science Center Utah State D.F.C.M. #07297730	Substitution Request Number:	T.B.D.
		From:	MHTN Architects
To:		Date:	1/20/2010
		A/E Project Number:	2009536
Re:	Proposed Substitution	Contract For:	

Specification Title: E-02 Dissection Table Description: Dissection Table
Section: 2.3 Page: 11 5100 - 6 Article/Paragraph: 11 5100 - 6

Proposed Substitution: TBJ model 32-86 DD-AT
Manufacturer: TBJ INC. Address: 1671 orchard Dr. Phone: 717-261-9200
Trade Name: Equipment Mfg. Model No.: 32-86 DD-AT

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:
- [X] Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- [X] Same warranty will be furnished for proposed substitution as for specified product.
- [X] Same maintenance service and source of replacement parts, as applicable, is available.
- [X] Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule..
- [X] Proposed substitution does not affect dimensions and functional clearances.
- [X] Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Jereme Oldt
Signed by: Jereme Oldt
Firm: TBJ Incorporated
Address: 1671 orchard Dr.
Chambersburg, PA 17201
Telephone: 717-261-9200

A/E's REVIEW AND ACTION
- ☐ Substitution approved - Make submittals in accordance with Specification Section 013300.
- [X] Substitution approved as noted - Make submittals in accordance with Specification Section 013300. MUST BE SIDE VENTED
- ☐ Substitution rejected - Use specified materials.
- ☐ Substitution Request received too late - Use specified materials.

Signed by: JRC Date: 01.25.2010

Supporting Data Attached: ☐ Drawings [X] Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

MHTN
ARCHITECTS

SUBSTITUTION REQUEST
(During the Bidding Phase)

Project: S.U.U. Gibson Science Center
Utah State D.F.C.M. #07297730
To: Josh Vell
Re: Proposed Substitution

Substitution Request Number: T.B.D.
From: MHTN Architects
Date: 1-13-10
A/E Project Number: 2009536
Contract For:

Specification Title: Pre-engineered greenhouse structure and equipment
Description:
Section: 133420 Page: 2 Article/Paragraph: 2.01 A

Proposed Substitution: Nexus | National Greenhouse
Manufacturer: Address: Phone: 303-450-8536
Trade Name: Model No.: Series E Aluminum Greenhouse

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:
- [x] Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- [x] Same warranty will be furnished for proposed substitution as for specified product.
- [x] Same maintenance service and source of replacement parts, as applicable, is available.
- [x] Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule..
- [x] Proposed substitution does not affect dimensions and functional clearances.
- [x] Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Amy Bentz
Signed by: Amy E Bentz
Firm: Nexus / National Greenhouse
Address: 10983 Leroy Dr.
Northglenn, CO 80233
Telephone: 303-450-8536

A/E's REVIEW AND ACTION
- [x] Substitution approved - Make submittals in accordance with Specification Section 013300.
- [ ] Substitution approved as noted - Make submittals in accordance with Specification Section 013300.
- [ ] Substitution rejected - Use specified materials.
- [ ] Substitution Request received too late - Use specified materials.

Signed by: Date: 01.25.2010

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

MHTN
ARCHITECTS

SUBSTITUTION REQUEST
(During the Bidding Phase)

Project:	S.U.U. Gibson Science Center Utah State D.F.C.M. #07297730	Substitution Request Number:	T.B.D.
To:		From:	MHTN Architects
		Date:	January 14, 2010
		A/E Project Number:	2009536
Re:	Proposed Substitution	Contract For:	

Specification Title:	Preengineered Greeenhouse Structure & Equipment	Description:	Greenhouse
Section:	133420	Page: 2	Article/Paragraph: 2.01.A

Proposed Substitution: "Sun-Mate"

Manufacturer: Winandy Greenhouse Co., Inc. Address: 2211 Peacock Rd Richmond, IN 47374 Phone: (765) 935-2111

Trade Name: 'Sun-Mate" Model No.:

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:
- ☒ Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- ☒ Same warranty will be furnished for proposed substitution as for specified product.
- ☒ Same maintenance service and source of replacement parts, as applicable, is available.
- ☒ Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule..
- ☒ Proposed substitution does not affect dimensions and functional clearances.
- ☒ Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Michael J. Doherty
Signed by:
Firm: Winandy Greenhouse Co., Inc.
Address: 2211 Peacock Road
Richmond, IN 47374
Telephone: (765) 935-2111

A/E's REVIEW AND ACTION
- ☒ Substitution approved - Make submittals in accordance with Specification Section 013300.
- ☐ Substitution approved as noted - Make submittals in accordance with Specification Section 013300.
- ☐ Substitution rejected - Use specified materials.
- ☐ Substitution Request received too late - Use specified materials.

Signed by: Date: 01.25.2010

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

SECTION 033600 – SPECIAL CONCRETE FLOOR FINISHES

PART 1 GENERAL

1. 01 SUMMARY

A. This section includes the following:

1. Applying sealer and hardener to concrete slab and heat set polishing concrete to a sealed gloss finish level in Lab areas.

1.02 REFERENCES

A. American Society for Testing and Materials:

1. ASTM-C779, Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces.
2. ASTM C805, Impact Strength.
3. ASTM G23-81, Ultraviolet Light & Water Spray.
4. ASTM 1028, Co-Efficient of Friction.

1.03 SUBMITTALS

A. Comply with pertinent provisions of Division 1 Section 016000- Product Requirements.

B. Product data:
1. Submit special concrete finishes manufacturer's specifications, test data and other data required for each type of manufactured material and product indicated.
2. Submit special concrete finishes describing products to be provided, giving manufacturer’s name, product name, and product line number for the specified material proposed to be provided under this section.
3. Submit manufacturer's recommended installation procedures; which when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the work.
4. Submit technical data sheet giving descriptive data, curing time, and application requirements.
   a. Provide material analysis and generic type.
5. Submit special concrete finishes manufacturer’s Material Safety Data Sheet (MSDS) and other safety requirements.
6. Follow all special concrete finishes published manufacturer’s installation instructions.

C. Test Reports:
1. Provide certified test reports, prepared by an independent testing laboratory, confirming compliance with specified performance criteria.

1.04 QUALITY ASSURANCE

A. Installer Qualifications:
1. Use an experienced installer and adequate number of skilled workmen who are thoroughly trained and experienced in the necessary craft.
2. The special concrete finish manufacturer for each specified material and process shall certify applicator.

3. Applicator shall be familiar with the specified requirements and the methods needed for proper performance of work of this section.

B. Manufacturer's Certification:
1. Provide letter of certification from concrete finish manufacturer or specialized applicator stating that installer is certified applicator of special concrete finishes, and is familiar with proper procedures and installation requirements required by the manufacturer.

C. Mock-ups:
1. Apply mock-ups of each type finish, to demonstrate typical joints, surface finish and standard of workmanship.
   a. Build mock-ups approximately 50 square feet in the location indicated or if not indicated, as directed by the Architect or Owner Representative within the field of work affected by work of this Section.
   b. Notify Architect and Owner Representative seven days in advance of dates and times when mock-ups will be constructed.
   c. Obtain from the Architect or Owner Representative approval of mock-ups before starting construction.
   d. Maintain mock-ups during construction in an undisturbed condition as a standard for judging the completed work. Standards will include level of sheen and uniformity of concrete finish that receives surface finish.
   e. Approved mock-ups may become part of the completed work if undisturbed at time of substantial completion.

D. Protection
1. Prevention of exposure to fluids is essential to prevent petroleum stains from the concrete surface.
   a. All hydraulic powered equipment must be diapered to avoid staining of the concrete.
   b. No pipe cutting machine will be used on the inside floor slab.
   c. Steel will not be placed on interior slab to avoid rust staining.

E. Pre-Installation Conference:
1. Conduct conference at project site to comply with requirements in Division 1 Section "Project Management and Coordination"

F. Manufacturer's Representative is required on-site prior to start of work to survey conditions, recommended processes to be utilized and to monitor start-up of the finishing process to confirm compliance with manufacturers requirements.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original packages and containers, with seal's unbroken, bearing manufacturer labels indicating brand name and directions for storage, mixing with other components, and application.

B. Store materials to comply with manufacturer's written instructions to prevent deterioration from moisture or other detrimental effects.

C. Dispense special concrete finish material from factory numbered and sealed containers. Maintain record of container numbers.

1.06 PROJECT CONDITIONS

A. Environmental limitations:
1. Comply with manufacturers written instructions for substrate temperature and moisture content, ambient temperature and humidity, ventilation, and other conditions affecting topping performance.

a. Application of the hardener, densifier and finish shall take place a minimum of 10 days prior to installation of items bearing on slab, providing a complete, uninhibited concrete slab for application.

B. Close areas to traffic during floor application and after application, for time period recommended in writing by manufacturer.

PART 2 – PRODUCTS

2.01 MATERIALS AND MANUFACTURER

A. Hardening/Sealing Agent. Manufacturers include, but are not limited to, the following:

1. Convergent Concrete Technologies, Pentra-Sil.
2. Prosoco, Inc., Consolideck, LS.
3. Retro-Plate, Advanced Floor Products, Inc.

2.04 RELATED MATERIALS

A. Neutralizing Agent: Tri-sodium Phosphate or as required by manufacturer.

B. Water: Potable.

C. Heat Set Polymer sealer: 2 coats required.

D. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, aromatic polyurea with a Type A shore durometer hardness range of 90 to 95 per ASTM D 2240.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS:

A. Examine substrate, with installer present, for conditions affecting performance of finish. Correct conditions detrimental to timely and proper work. Do not proceed until unsatisfactory conditions are corrected.

B. Prior to application, verify that floor surfaces are free of construction latents.

3.02 APPLICATION

A. Start any of the floor finish applications in presence of manufacturer’s technical representative.

B. Apply concrete floor finish in accordance with manufacturer’s instructions.
1. Only a certified applicator shall apply hardener/sealer. Applicable procedures must be followed as recommended by the product manufacturer and as required to match approved test sample.

2. Apply hardener densifier at rates recommended by manufacturer for each coat.
3. Follow manufacturer's recommendations for drying time between successive coats.
4. No flushing of excess densifier material is permitted without full retention of run-off in compliance with environmental regulations.

C. Floor Surface Polishing and Treatment:

1. Provide polished concrete floor treatment in entirety of slab indicated by drawings. Provide consistent finish in all contiguous areas.
2. Finish edges of floor finish adjoining other materials in a clean and sharp manner.
3. Diamond polish concrete floor surfaces with power disc machine recommended by floor finish manufacturer. Sequence with coarse to fine grit using dry method. Stepped sequence grinding is required as an integral part of the finishing process.
4. Comply with manufacturer's recommended polishing grits for each sequence to achieve desired finish level. Level of sheen shall match that of approved mock-up.
5. Expose aggregate in concrete surface only as determined by approved mock-up.
6. All concrete surfaces shall be as uniform in appearance as possible.

C. Application is to take place a minimum of 10 days prior to seating and other installation, thus providing a complete, uninhibited concrete slab for application

1. Apply special concrete sealer finish in accordance with sealer manufacturer's instructions.

E. Finish Appearance:

1. Required finish polish will be equivalent to an 800 grit, high gloss finish.

3.03 WORKMANSHIP AND CLEANING:

A. The premises shall be kept clean and free of debris at all times.

B. Remove spatter from adjoining surfaces, as necessary.

C. Repair damages to surface caused by cleaning operations.

D. Remove debris from jobsite
1. Dispose of materials in separate, closed containers in accordance with local regulations.

E. Manufacturer to provide complete maintenance guide and required cleaning agents DESIGNED AND TESTED specifically for the application in place.

3.04 PROTECTION:

A. Protect finished work until fully cured in accordance with manufacturer's recommendations.

END OF SECTION

SECTION 034500 - PLANT-PRECAST ARCHITECTURAL CONCRETE

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 the following:

1. Precast architectural concrete units as shown for areaways.

B. Related Sections include the following:
1. Division 7 Section "Joint Sealants" for elastomeric joint sealants and sealant backings.

1.3 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide precast architectural concrete units and connections capable of withstanding design loads within limits and under conditions indicated.

1.4 SUBMITTALS

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

B. Design Mixes: For each concrete mix.

C. LEED Submittals:

1. Product Data for Credit MR 4.1/4.2: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content.

a. Include statement indicating costs for each product having recycled content.

2. Product Data for Credit MR 5.1/5.2: Indicate manufacture and extraction or harvested or recovered distances from the site

D. Shop Drawings: Detail fabrication and installation of precast architectural concrete units. Indicate member locations, plans, elevations, dimensions, shapes, cross sections, limits of each finish, and types of reinforcement, including special reinforcement.

1. Indicate separate face and backup mix locations and thicknesses.
2. Indicate welded connections by AWS standard symbols. Detail loose and cast-in hardware, inserts, connections, and joints, including accessories.

3. Indicate locations and details of anchorage devices to be embedded in other construction.
4. Indicate locations and details of thin brick units and joint treatment.
5. Indicate locations and details of stone facings, anchors, and treatment of joints.
6. Comprehensive engineering analysis **signed and sealed** by the qualified professional engineer responsible for its preparation.

E. Samples: For each type of finish indicated on exposed surfaces of precast architectural concrete units, in sets of 3, illustrating full range of finish, color, and texture variations expected; approximately 12 by 12 by 2 inches (300 by 300 by 50 mm).

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

G. Qualification Data: For firms and persons specified in "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.

H. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:

1. Concrete materials.
2. Reinforcing materials and prestressing tendons.
3. Admixtures.
4. Bearing pads.
5. Water-absorption test reports.
6. Thin brick units and accessories.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed precast architectural concrete work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Fabricator Qualifications: A firm that complies with the following requirements and is experienced in manufacturing precast architectural concrete units similar to those indicated for this Project and with a record of successful in-service performance.

1. Assumes responsibility for engineering precast architectural concrete units to comply with performance requirements. This responsibility includes preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.
2. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of precast architectural concrete that are similar to those indicated for this Project in material, design, and extent.
3. Participates in PCI's Plant Certification program and is designated a PCI-certified plant for Group A, Category A1--Architectural Cladding and Load Bearing Units.
4. Has sufficient production capacity to produce required units without delaying the Work.

C. Testing Agency Qualifications: An independent testing agency**, acceptable to authorities having jurisdiction,** qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.

D. Design Standards: Comply with ACI 318 (ACI 318M) and the design recommendations of PCI MNL 120, "PCI Design Handbook--Precast and Prestressed Concrete."

E. Quality-Control Standard: For manufacturing procedures and testing requirements, quality-control recommendations, and dimensional tolerances for types of units required, comply with PCI MNL 117, "Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products."

F. Product Options: Drawings indicate size, profiles, and dimensional requirements of precast concrete units and are based on the specific types of units indicated.

G. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel"; and AWS D1.4, "Structural Welding Code--Reinforcing Steel."

H. Sample Panels: Before fabricating precast architectural concrete units, produce sample panels to establish the approved range of selections made under sample Submittals.. Produce a minimum of 3 sets of full-scale sample panels, approximately 48 inches (1200 mm) long by 48 inches (1200 mm) high, to demonstrate the expected range of finish, color, and texture variations.

1. Locate panels where indicated or, if not indicated, as directed by Architect.
2. In presence of Architect, damage part of an exposed-face surface for each finish, color, and texture, and demonstrate materials and techniques proposed for repair of surface blemishes to match adjacent undamaged surfaces.
3. Maintain sample panels during construction in an undisturbed condition as a standard for judging the completed Work.
4. Demolish and remove sample panels when directed.

I. Preinstallation Conference: Conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver precast architectural concrete units to Project site in such quantities and at such times to ensure continuity of installation. Store units at Project site to prevent cracking, distorting, warping, staining, or other physical damage, and so markings are visible.

B. Lift and support units only at designated lifting and supporting points as shown on Shop Drawings.

1.7 SEQUENCING

A. Furnish anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, templates, instructions, and directions, as required, for installation.

PART 2 - PRODUCTS

2.1 MOLD MATERIALS

A. Molds: Provide molds and, where required, form-facing materials of metal, plastic, wood, or another material that is nonreactive with concrete and dimensionally stable to produce continuous and true precast concrete surfaces within fabrication tolerances and suitable for required finishes

2.2 REINFORCING MATERIALS

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.

B. Low-Alloy-Steel Reinforcing Bars: ASTM A 706/A 706M, deformed.

C. Plain-Steel Wire: ASTM A 82, **as drawn**.

D. Plain-Steel Welded Wire Fabric: ASTM A 185, fabricated from **as-drawn** steel wire into flat sheets.

E. Supports: Manufacturer's bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place according to CRSI's "Manual of Standard Practice," PCI MNL 117, and as follows:

1. For uncoated reinforcement, use **all-plastic** bar supports.

2.3 PRESTRESSING TENDONS

A. Prestressing Strand: ASTM A 416/A 416M, Grade 250 or 270 (Grade 1725 or 1860), uncoated, 7-wire, low-relaxation strand.

2.4 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I or Type III, **white**, of same type, brand, and source.

B. Normal-Weight Aggregates: Except as modified by PCI MNL 117, ASTM C 33, with coarse aggregates complying with Class 5S.

1. Face-Mix Coarse Aggregates: Selected, hard, and durable; free of material that reacts with cement or causes staining.

a. Gradation: **Uniformly graded.**

2. Face-Mix Fine Aggregates: Selected, natural or manufactured sand of the same material as coarse aggregate, unless otherwise approved by Architect.

C. Coloring Admixture: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures, temperature stable, nonfading, and alkali resistant.

D. Water: Potable; free from deleterious material that may affect color stability, setting, or strength of concrete and complying with chemical limits of PCI MNL 117.

E. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other required admixtures.

F. Water-Reducing Admixture: ASTM C 494, Type A.

G. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.

H. Plasticizing Admixture: ASTM C 1017.

2.5 STEEL CONNECTION MATERIALS

A. Carbon-Steel Shapes and Plates: ASTM A 36/A 36M.

B. Carbon-Steel Headed Studs: ASTM A 108, AISI 1018 through AISI 1020, cold finished; AWS D1.1, Type A or B, with arc shields.

C. Carbon-Steel Castings: ASTM A 27/A 27M, Grade 60-30 (Grade 415-205).

D. Carbon-Steel Structural Tubing: ASTM A 500, Grade B.

E. Deformed-Steel Wire or Bar Anchors: ASTM A 496 or ASTM A 706/A 706M.

F. Anchor Bolts: ASTM F 1554 GR 55 headed or ASTM F1554 GR 105 headed bolts All anchor bolts use ASTM A563 heavy hex nuts and hardened washers, grade A, unless otherwise indicated.

G. Shop-Primed Finish: Prepare surfaces of nongalvanized steel items, except those surfaces to be embedded in concrete, according to requirements in SSPC-SP 3 and shop-apply **lead- and chromate-free, rust-inhibitive primer, complying with performance requirements in FS TT-P-664**

H. Welding Electrodes: Comply with AWS standards.

I. Accessories: Provide clips, hangers, plastic shims, and other accessories required to install precast architectural concrete units.

2.6 BEARING PADS

A. Provide bearing pads for precast architectural concrete units as follows:

1. Elastomeric Pads: AASHTO M 251, plain, vulcanized, 100 percent polychloroprene (neoprene) elastomer, molded to size or cut from a molded sheet, 50 to 70 Shore A durometer, minimum tensile strength 2250 psi (15.5 MPa) per ASTM D 412.
2. Frictionless Pads: Tetrafluoroethylene, glass-fiber reinforced, bonded to mild-steel plate, of type required for in-service stress.
3. High-Density Plastic: Multimonomer, nonleaching, plastic strip.

2.7 GROUT MATERIALS

A. Sand-Cement Grout: Portland cement, ASTM C 150, Type I, and clean, natural sand, ASTM C 144. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.

B. Nonmetallic, Nonshrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage-compensating agents, plasticizing and water-reducing agents, complying with ASTM C 1107, of consistency suitable for application.

2.8 CONCRETE MIXES

A. Prepare design mixes for each type of concrete required.

1. Limit use of fly ash to not exceed, in aggregate, 25 percent of portland cement by weight.

B. Design mixes may be prepared by a qualified independent testing agency or by qualified precast plant personnel at precast architectural concrete fabricator's option.

C. Limit water-soluble chloride ions to the maximum percentage by weight of cement permitted by ACI 318 (ACI 318M).

D. Normal-Weight Concrete Face and Backup Mixes: Proportion mixes by either laboratory trial batch or field test data methods according to ACI 211.1, with materials to be used on Project, to provide normal-weight concrete with the following properties:

1. Compressive Strength (28 Days): 5000 psi (34.5 MPa).
2. Maximum Water-Cementitious Materials Ratio: 0.45.

E. Water Absorption: 12 to 14 percent by volume, tested according to PCI MNL 117.

F. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content complying with PCI MNL 117.

G. When included in design mixes, add other admixtures to concrete mixes according to manufacturer's written instructions.

2.9 FABRICATION

A. Cast-in Anchors, Inserts, Plates, Angles, and Other Anchorage Hardware: Fabricate anchorage hardware with sufficient anchorage and embedment to comply with design requirements. Accurately position for attachment of loose hardware, and secure in place during precasting operations. Locate anchorage hardware where it does not affect position of main reinforcement or concrete placement.

B. Furnish loose steel plates, clip angles, seat angles, anchors, dowels, cramps, hangers, and other hardware shapes for securing precast architectural concrete units to supporting and adjacent construction.

C. Cast-in openings larger than 10 inches (250 mm) in any dimension.

D. Reinforcement: Comply with recommendations in CRSI's "Manual of Standard Practice" and PCI MNL 117 for fabricating, placing, and supporting reinforcement.

1. Clean reinforcement of loose rust and mill scale, earth, and other materials that reduce or destroy the bond with concrete.
2. Accurately position, support, and secure reinforcement against displacement during concrete-placement and consolidation operations. Completely conceal support devices to prevent exposure on finished surfaces.
3. Place reinforcement to maintain at least 3/4-inch (19-mm) minimum coverage. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position while placing concrete. Direct wire tie ends away from finished, exposed concrete surfaces.
4. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

E. Reinforce precast architectural concrete units to resist handling, transportation, and erection stresses.

F. Prestress tendons for precast architectural concrete units by either pretensioning or posttensioning methods. Comply with PCI MNL 117.

1. Delay detensioning or posttensioning of precast, prestressed architectural concrete units until concrete has reached its indicated minimum design release compressive strength as established by test cylinders cured under the same conditions as concrete.

G. Mix concrete according to PCI MNL 117 and requirements in this Section. After concrete batching, no additional water may be added.

H. Place face mix to a minimum thickness after consolidation of the greater of 1 inch (25 mm) or 1.5 times the maximum aggregate size, but not less than the minimum reinforcing cover.

I. Place concrete in a continuous operation to prevent seams or planes of weakness from forming in precast concrete units. Comply with requirements in PCI MNL 117 for measuring, mixing, transporting, and placing concrete.

J. Thoroughly consolidate placed concrete by internal and external vibration without dislocating or damaging reinforcement and built-in items. Use equipment and procedures complying with PCI MNL 117.

K. Comply with ACI 306.1 procedures for cold-weather concrete placement.

L. Comply with ACI 305R recommendations for hot-weather concrete placement.

M. Identify pickup points of precast architectural concrete units and orientation in structure with permanent markings, complying with markings indicated on Shop Drawings. Imprint or permanently mark casting date on each precast architectural concrete unit on a surface that will not show in finished structure.

N. Cure concrete, according to requirements in PCI MNL 117, by moisture retention without heat or by accelerated heat curing using low-pressure live steam or radiant heat and moisture.

O. Discard precast architectural concrete units that are warped, cracked, broken, spalled, stained, or otherwise defective unless repairs are approved by Architect.

2.10 MOLD FABRICATION

A. Molds: Accurately construct molds, mortar tight, of sufficient strength to withstand pressures due to concrete-placement operations and temperature changes and for prestressing operations.

B. Maintain molds to provide completed precast architectural concrete units of shapes, lines, and dimensions indicated, within fabrication tolerances specified.

1. Edge and Corner Treatment: Uniformly **chamfered** unless otherwise shown.

2.11 FABRICATION TOLERANCES

A. Fabricate precast architectural concrete units straight and true to size and shape with exposed edges and corners precise and true so each finished panel complies with PCI MNL 117 product tolerances as well as position tolerances for cast-in items.

B. Fabricate precast architectural concrete units straight and true to size and shape with exposed edges and corners precise and true so each finished panel complies with the following product tolerances:

1. Overall Height and Width of Units, Measured at the Face Exposed to View: As follows:

   a. plus or minus 1/8 inch (3 mm).

2. Overall Height and Width of Units, Measured at the Face Not Exposed to View: As follows:

   a. plus or minus 1/4 inch (6 mm).

3. Total Thickness or Flange Thickness: Plus 1/4 inch (6 mm), minus 1/8 inch (3 mm).
4. Variation from Square or Designated Skew (Difference in Length of the Two Diagonal Measurements): Plus or minus 1/8 inch per 72 inches (3 mm per 2 m) not greater tha 3/8 inch total
5. Length and Width of Block-outs and Openings within One Unit: Plus or minus 1/4 inch (6 mm).
6. Dimensions of Haunches: Plus or minus 1/4 inch (6 mm).
7. Haunch Bearing Surface Deviation from Specified Plane: Plus or minus 1/8 inch (3 mm).
8. Difference in Relative Position of Adjacent Haunch Bearing Surfaces from Specified Relative Position: Plus or minus 1/4 inch (6 mm).
9. Bowing: Plus or minus L/360, maximum 3/4 inch .
10. Local Smoothness: 1/4 inch per 10 feet (6 mm per 3 m).
11. Warping: 1/16 inch per 12 inches (1.5 mm per 300 mm) of distance from the nearest adjacent corner.
12. Tipping and Flushness of Plates: Plus or minus 1/4 inch (6 mm).
13. Dimensions of Architectural Features and Rustications: Plus or minus 1/8 inch (3 mm).

C. Position Tolerances: For cast-in items measured from datum line location, as indicated on Shop Drawings.

1. Weld Plates: Plus or minus 1 inch (25 mm).
2. Inserts: Plus or minus 1/2 inch (13 mm).
3. Handling Devices: Plus or minus 3 inches (75 mm).

4. Reinforcing Steel and Welded Wire Fabric: Plus or minus 1/4 inch (6 mm) where position has structural implications or affects concrete cover; otherwise, plus or minus 1/2 inch (13 mm).
5. Tendons: Plus or minus 1/4 inch (6 mm), vertical; plus or minus 1 inch (25 mm), horizontal.
6. Location of Rustication Joints: Plus or minus 1/8 inch (3 mm).
7. Location of Opening within Panel: Plus or minus 1/4 inch (6 mm).
8. Haunches: Plus or minus 1/4 inch (6 mm).
9. Allowable Rotation of Plate, Channel Inserts, Electrical Boxes: 2-degree rotation or 1/4 inch (6 mm) maximum over the full dimension of the unit.

2.12 FINISHES

A. Finish exposed-face surfaces of precast architectural concrete units to match approved **design reference sample** as follows:
   1. PCI and APA's "Architectural Precast Concrete--Color and Texture Selection Guide," of plate numbers indicated.
   2. Smooth-Surface Finish: Provide surfaces free of pockets, sand streaks, and honeycombs, with uniform color and texture.

B. Finish exposed surfaces of precast architectural concrete units by smooth, steel-trowel finish with Light acid wash or abrasive blast to expose small sized aggregate

C. Finish unexposed surfaces of precast architectural concrete units by float finish.

2.13 SOURCE QUALITY CONTROL

A. Owner will employ an independent testing agency to evaluate precast architectural concrete fabricator's quality-control and testing methods.

   1. Allow Owner's testing agency access to material storage areas, concrete production equipment, concrete placement, and curing facilities. Cooperate with Owner's testing agency and provide samples of materials and concrete mixes as may be requested for additional testing and evaluation.

B. Quality-Control Testing: Test and inspect precast concrete according to PCI MNL 117 requirements.

C. Strength of precast concrete units will be considered deficient if units fail to comply with ACI 318 (ACI 318M) requirements.

D. Patching: If core test results are satisfactory and precast concrete units comply with requirements, clean and dampen core holes and solidly fill with precast concrete mix that has no coarse aggregate, and finish to match adjacent precast concrete surfaces.

E. Defective Work: Precast architectural concrete units that do not comply with requirements, including strength, manufacturing tolerances, and finishes, are unacceptable. Replace with precast concrete units that comply with requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation tolerances, true and level bearing surfaces, and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Do not install precast concrete units until supporting concrete has attained minimum design compressive strength.

3.2 INSTALLATION

A. Install clips, hangers, and other accessories required for connecting precast architectural concrete units to supporting members and backup materials.

B. Install precast architectural concrete. Provide temporary supports and bracing as required to maintain position, stability, and alignment as units are being permanently connected.

1. Install bearing pads as precast concrete units are being erected.
2. Maintain horizontal and vertical joint alignment and uniform joint width as erection progresses.
3. Remove projecting hoisting devices and use sand-cement grout to fill voids within recessed hoisting devices flush with surface of concrete.

C. Anchor precast architectural concrete units in position by bolting, welding, grouting, or as otherwise indicated. Remove temporary shims, wedges, and spacers as soon as possible after anchoring and grouting are completed.

D. Welding: Perform welding in compliance with AWS D1.1 and AWS D1.4, with qualified welders.

1. Protect precast architectural concrete units and bearing pads from damage by field welding or cutting operations and provide noncombustible shields as required.
2. Repair damaged steel surfaces by cleaning and repriming damaged painted surfaces.

E. At bolted connections, use lock washers or other acceptable means to prevent loosening of nuts.

F. Grouting Connections: Grout connections where required or indicated. Retain grout in place until hard enough to support itself. Pack spaces with stiff grout material, tamping until voids are completely filled. Place grout to finish smooth, level, and plumb with adjacent concrete surfaces. Keep grouted joints damp for not less than 24 hours after initial set. Promptly remove grout material from exposed surfaces before it affects finishes or hardens.

3.3 ERECTION TOLERANCES

A. Install precast architectural concrete units level, plumb, square, true, and in alignment without exceeding the noncumulative erection tolerances of PCI MNL 117, Appendix I.

B. Install precast architectural concrete units level, plumb, square, and true, without exceeding the following noncumulative erection tolerances.

1. Plan Location from Building Grid Datum: Plus or minus 1/2 inch (13 mm).
2. Plan Location from Centerline of Steel: Plus or minus 1/2 inch (13 mm).
3. Top Elevation from Nominal Top Elevation: As follows:

    a. Exposed Individual Panel: Plus or minus 1/4 inch (6 mm).
    b. Nonexposed Individual Panel: Plus or minus 1/2 inch (13 mm).
    c. Exposed Panel Relative to Adjacent Panel: 1/4 inch (6 mm).
    d. Nonexposed Panel Relative to Adjacent Panel: 1/2 inch (13 mm).

4. Support Elevation from Nominal Support Elevation: As follows:

    a. Maximum Low: 1/2 inch (13 mm).
    b. Maximum High: 1/4 inch (6 mm).

5. Maximum Plumb Variation over the Lesser of Height of Structure or 100 Feet (30 m): 1 inch (25 mm).
6. Plumb in Any 10 Feet (3 m) of Element Height: 1/4 inch (6 mm).
7. Maximum Jog in Alignment of Matching Edges: 1/8 inch (3 mm).
8. Joint Width (Governs over Joint Taper): Plus or minus 1/8 inch (3 mm).
9. Maximum Joint Taper: 3/8 inch (10 mm).
10. Joint Taper in 10 Feet (3 m): 1/4 inch (6 mm).
11. Maximum Jog in Alignment of Matching Faces: 1/8 inch (3 mm).
12. Differential Bowing or Camber, as Erected, between Adjacent Members of Same Design: 1/4 inch (6 mm).

3.4 FIELD QUALITY CONTROL

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

B. Field welds and connections using high-strength bolts will be subject to tests and inspections.

C. Testing agency will report test results promptly and in writing to Contractor and Architect.

D. Remove and replace work that does not comply with specified requirements.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

3.5 REPAIRS

A. Repair exposed exterior surfaces of precast architectural concrete units to match color, texture, and uniformity of surrounding precast architectural concrete if permitted by Architect.

B. Remove and replace damaged precast architectural concrete units if repairs do not comply with requirements.

3.6 CLEANING

A. Clean exposed surfaces of precast concrete units after erection to remove weld marks, other markings, dirt, and stains.

1. Wash and rinse according to precast concrete fabricator's written recommendations. Protect other work from staining or damage due to cleaning operations.
2. Do not use cleaning materials or processes that could change the appearance of exposed concrete finishes.

END OF SECTION 034500

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. This Section includes the following:
   1. Fluid-applied membrane air barrier, vapor permeable. As an option to sheet air barrier system indicated on drawings

B. Related Sections include the following:
   1. Division 04 Section "Unit Masonry" for embedded flashings.
   2. Division 06 Section "Sheathing" for wall sheathings, wall sheathing joint-and-penetration treatments, building paper, and building wraps.
   3. Division 07 Section "Thermal Insulation" for foam-plastic board insulation.
   4. Division 07 Section "Sheet Metal Flashing and Trim" for sheet metal flashings.
   5. Division 07 Section "Joint Sealants" for joint-sealant materials and installation.

1.3 DEFINITIONS

A. ABAA: Air Barrier Association of America.

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

1.4 PERFORMANCE REQUIREMENTS

A. General: Air barrier shall be capable of performing as a continuous vapor-[**retarding**] [**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, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.

B. Air Barrier Assembly Air Leakage: Not to exceed **0.004 cfm x sq. ft. of surface area at 1.57 lbf/sq. ft.**

1.5 PRECONSTRUCTION TESTING

A. Mockup Testing: Air barrier assemblies shall comply with performance requirements indicated, as evidenced by reports based on mockup testing by a qualified testing agency.

1. Owner will engage a qualified testing agency.
2. Qualitative Testing: Mockups will be tested for evidence of air leakage according to **ASTM E 1186, smoke pencil with pressurization or depressurization ASTM E 1186, chamber pressurization or depressurization with smoke tracers**.
3. Quantitative Air Leakage Testing: Testing of the mockup for air leakage will be conducted not to exceed the test pressure differential, positive and negative, indicated in "Performance Requirements" Article for air barrier assembly air leakage when tested according to **ASTM E 283 or ASTM E 783**.
4. Notify Architect **seven** days in advance of the dates and times when mockup testing will take place.

1.6 SUBMITTALS

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

B. LEED Submittal:

1. Product Data for Credit MR 4.1: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content.

    a. Include statement indicating costs for each product having recycled content.

C. Shop Drawings: Show locations and extent of air barrier. Include details for substrate joints and cracks, counterflashing strip, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.

1. Include details of interfaces with other materials that form part of air barrier.
2. Include details of mockups.

D. Product Certificates: For air barriers, certifying compatibility of air barrier and accessory materials with Project materials that connect to or that come in contact with the barrier; signed by product manufacturer.

E. Qualification Data: For Applicator.

F. Qualification Data for Manufacturer: showing proof of manufacturer of air barrier a minimum of five years.

G. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for air barriers.

1.7 QUALITY ASSURANCE

A. Applicator Qualifications: A firm experienced in applying air barrier materials similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance [**and that is an ABAA-licensed contractor, employs certified and registered installers, and complies with ABAA's Quality Assurance Program**] <**Insert requirements**>.

B. Mockups: Before beginning installation of air barrier, build mockups of exterior wall assembly **shown on Drawings or if not shown a, 150 sq. ft area**, incorporating backup wall

construction, external cladding, window, door frame and sill, insulation, and flashing to demonstrate surface preparation, crack and joint treatment, and sealing of gaps, terminations, and penetrations of air barrier membrane.

1. Coordinate construction of mockup to permit inspection by Owner's testing agency of air barrier before external insulation and cladding is installed.
2. Include junction with roofing membrane**, building corner condition, and foundation wall intersection**.
3. If Architect determines mockups do not comply with requirements, reconstruct mockups and apply air barrier until mockups are approved.
4. Mock ups will be constructed with all wall systems intended for use on the project including block and steel stud walls with respective exterior cladding.

C. Preinstallation Conference: Conduct conference at Project site.

1. Include installers of other construction connecting to air barrier, including roofing, waterproofing, precast concrete, masonry, sealants, windows, glazed curtain walls, and door frames.
2. Review air barrier requirements including surface preparation, substrate condition and pretreatment, minimum substrate curing period, forecasted weather conditions, special details and sheet flashings, mockups, installation procedures, sequence of installation, testing and inspecting procedures, and protection and repairs.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store liquid materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by air barrier manufacturer.

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

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

D. Protect stored materials from direct sunlight.

1.9 PROJECT CONDITIONS

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

1.10 WARRANTY

A. Special Warranty: Standard form in which manufacturer agrees to repair or replace air barrier that fail in materials or workmanship within specified warranty period.

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

a. Manufacturing defects.
b. Loss of performance properties as stated in manufacturers published product data.

2. Material Warranty Period: **2** years from date of Substantial Completion,

B. Special Project Warranty: Installer's Warranty, signed by Installer, covering the Work of this Section, in which Installer agrees to repair or replace components of air barrier installation that fail to achieve air and water tight seals and loss of cohesion or adhesion including interfaces with adjoining systems within specified warranty period.

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

PART 2 - PRODUCTS

2.1 FLUID-APPLIED MEMBRANE AIR BARRIER

A. Fluid-Applied, Vapor-Permeable Membrane Air Barrier: **Elastomeric, modified bituminous or synthetic polymer** membrane.

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

a. Synthetic Polymer Membrane:

1) Henry Company; Air-Bloc **33**.
2) WR Meadows, AirShield **LMP**

2. Physical and Performance Properties:

a. Membrane Air Permeance: Not to exceed **0.004 cfm/ sq. ft. of surface area at 1.57-lbf/sq. ft. (0.02 L/s x sq. m of surface area at 75-Pa)**pressure difference; ASTM E 2178.
b. Membrane Vapor Permeance: Not less than **11 perms** ASTM E 96.

2.2 AUXILIARY MATERIALS

A. General: Auxiliary materials recommended by air barrier manufacturer for intended use and compatible with air barrier membrane. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.

B. Primer: Liquid **waterborne** primer recommended for substrate by manufacturer of air barrier material.

C. Counterflashing Strip: Modified bituminous, 40-mil- (1.0-mm-) thick, self-adhering sheet consisting of 32 mils (0.8 mm) of rubberized asphalt laminated to an 8-mil- (0.2-mm-) thick, crosslaminated polyethylene film with release liner backing.

D. Butyl Strip: Vapor-retarding, 30- to 40-mil- (0.76- to 1.0-mm-) thick, self-adhering; polyethylene-film-reinforced top surface laminated to layer of butyl adhesive with release liner backing.

E. Modified Bituminous Strip: Vapor-retarding, 40-mil- (1.0-mm-) thick, smooth-surfaced, self-adhering; consisting of 36 mils (0.9 mm) of rubberized asphalt laminated to a 4-mil- (0.1-mm-) thick polyethylene film with release liner backing.

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

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

H. Adhesive and Tape: Air barrier manufacturer's standard adhesive and pressure-sensitive adhesive tape.

I. Sprayed Polyurethane Foam Sealant: 1- or 2-component, foamed-in-place, polyurethane foam sealant, 1.5 to 2.0 lb/cu. ft (24 to 32 kg/cu. m) density; flame spread index of 25 or less according to ASTM E 162; with primer and noncorrosive substrate cleaner recommended by foam sealant manufacturer.

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

PART 3 - EXECUTION

3.1 EXAMINATION

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

1. Verify that 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.
5. 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 JOINT TREATMENT

A. 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 preparation coat strip extending a minimum of 3 inches (75 mm) along each side of joints and cracks. Apply a double thickness of air barrier membrane and embed a joint reinforcing strip in preparation coat.

B. Gypsum Sheathing: Fill joints greater than 1/4 inch (6 mm) with sealant according to ASTM C 1193 and with air barrier manufacturer's written instructions. Apply first layer of fluid air barrier membrane at joints. Tape joints with joint reinforcing strip after first layer is dry. Apply a second layer of fluid air barrier membrane over joint reinforcing strip.

3.4 TRANSITION STRIP INSTALLATION

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

1. Coordinate the installation of air barrier with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.
2. Install **butyl** strip on roofing membrane or base flashing so that a minimum of 3 inches (75 mm) of coverage is achieved over both substrates.

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

1. Prime glass-fiber-surfaced gypsum 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 membrane 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 **as required**.

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 **transition strip or sheet** so that a minimum of 3 inches (75 mm) of coverage is achieved over both substrates. Maintain 3 inches (75 mm) of full contact over firm bearing to perimeter frames with not less than 1 inch (25 mm) of full contact.

1. **Adhesive** Transition Strip: Roll firmly to enhance adhesion.
2. Elastomeric Flashing Sheet: Apply adhesive to wall, frame, and flashing sheet. Install flashing sheet and termination bars, fastened at 6 inches (150 mm) o.c. Apply lap sealant over exposed edges and on cavity side of flashing sheet.

G. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, and doors, and miscellaneous penetrations of air barrier membrane 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- (150-mm-) 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 (150 mm) beyond repaired areas in all directions.

3.5 AIR BARRIER MEMBRANE INSTALLATION

A. Apply air barrier membrane to form a seal with strips and transition strips and to achieve a continuous air barrier according to air barrier manufacturer's written instructions.

B. Apply air barrier membrane within manufacturer's recommended application temperature ranges.

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

1. Prime glass-fiber-surfaced gypsum sheathing with number of prime coats needed to achieve required bond, with adequate drying time between coats.

D. Apply a continuous unbroken air barrier to substrates according to the following minimum thickness. Apply membrane in full contact around protrusions such as masonry ties.
1. Vapor-Permeable Membrane Air Barrier: 90**-mil wet film thickness**

E. Apply **strip and transition strip over cured air membrane overlapping 3 inches (75 mm) onto each surface** according to air barrier manufacturer's written instructions.

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

G. 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 and prepare test reports.

B. Inspections: Air barrier materials 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 (membrane and sealants) have complied with requirements for cleanliness, preparation and priming of surfaces, structural support, integrity, and continuity of seal.
13. All penetrations have been sealed.

C. Tests: Testing to be performed will be determined by Owner's testing agency from among the following tests:

1. Qualitative Testing: Air barrier assemblies will be tested for evidence of air leakage according to **ASTM E 1186, smoke pencil with pressurization or depressurization** or **chamber pressurization or depressurization with smoke tracers**.
2. Quantitative Air Leakage Testing: Testing not to exceed the test pressure differential, positive and negative, indicated in "Performance Requirements" Article for air barrier assembly air leakage according to**ASTM E 783**.

D. Remove and replace deficient air barrier components and retest as specified above.

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. Remove and replace air barrier exposed for more than **60 d**ays.
2. Protect air barrier from contact with creosote, uncured coal-tar products, TPO, flexible PVC membranes, 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 08 8810: FIRE RATED GLASS & FRAMING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes: Fire rated framing system.
   1. fire resistive, temperature rise rated, framing system with decorative cladding for 90 minute exterior application at South wall Stair 2.
   2. Applications of fire rated framing includes:
      a. Vision lites in curtainwall assembly with fire rating requirement as specified.

B. Related Sections:
   1. Section 08 1110: Steel Doors & Frames.
   2. Section 084113 Aluminum entrances and Storefront
   3. Section 084413 Glazed Aluminum Storefront
   4. Section 088800 Glazing

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM E119 Methods for Fire Tests of Building Construction and Materials.
   2. ASTM E152 Methods of Fire Tests of Door Assemblies.
   3. ASTM E163 Methods for Fire Tests of Window Assemblies.
   4. ASTM E2074: Standard Test Method for Fire Tests of Door Assemblies, including Positive Pressure Testing of Side-hinged and Pivoted Swinging Door Assemblies.
   5. ASTM E2110-1: Standard Test for Positive Pressure of Fire Tests of Window Assemblies.

B. National Fire Protection Association (NFPA):
   1. NFPA 80: Fire Doors and Windows.
   2. NFPA 251: Fire Tests of Building Construction and Materials.
   3. NFPA 252: Fire Tests of Door Assemblies.
   4. NFPA 257: Fire Tests of Window Assemblies.

C. Underwriters Laboratories, Inc. (UL):
   1. UL 9: Standard for Safety of Fire Tests of Window Assemblies.
   2. UL 10B: Standard for Safety of Fire Tests of Door Assemblies.
   3. UL 10C: Standard for Safety of Positive Pressure Fire Tests of Door Assemblies.
   4. UL 263: Fire Tests of Building Construction and Materials.

D. Consumer Product Safety Commission (CPSC):
   1. CPSC 16 CFR 1201: Safety Standard for Architectural Glazing Materials.

E. Glass Association of North America (GANA)
   1. GANA – Glazing Manual.
   2. FGMA – Sealant Manual.

1.03 SYSTEM DESCRIPTION

A. Performance Requirements:

1. Fire Rating: 90 minutes as specified.
2. Fire Resistive Wall Assembly Certifications: 90 minute fire resistive wall assemblies tested in accordance with ASTM E119, NFPA 251, UL 263 and ULC-S101.
3. Testing Laboratory: Fire test shall be conducted by a nationally recognized independent testing laboratory.

B. Listings and Labels:

1. Fire rated framing system shall be under current follow-up service by a nationally recognized independent laboratory approved by OSHA and maintain a current listing or certification. Assemblies shall be labeled in accordance with limits of listings.

C. Appearance:

1. Fire rated assembly shall have a neat finished appearance with minimum joints at decorative cover intersections.

1.04 SUBMITTALS

A. Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedure Section.

1. Shop Drawings: Submit shop drawings showing layout, profiles and product components.
2. Samples: Submit samples for finishes, colors and textures.
3. Technical Information: Submit latest edition of manufacturer’s product data providing product descriptions, technical data and installation instructions.

1.05 DELIVERY, STORAGE AND HANDLING

A. General: Comply with Division1 Product Requirements Sections.

B. Ordering: Comply with manufacturer’s ordering instructions and lead-time requirements to avoid construction delays.

C. Delivery: Deliver materials to specified destinations in manufacturer’s or distributor’s packaging undamaged, complete with installation instructions.

D. Storage and Protection: Store off ground, under cover, protected from weather and construction activities and at temperature conditions recommended by manufacturer.

1.06 FABRICATION DIMENSIONS

A. Field Measurements: Verify actual measurements for openings by field measurements before fabrication. Show recorded measurements on shop drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

1.07 WARRANTY

A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.

B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document. Manufacturer's warranty is not intended to limit other rights that the Owner may have under the Contract Documents.
   1. Warranty Period: 5 years from date of shipping.

PART 2 PRODUCTS

2.01 MANUFACTURERS – FIRE RATED WALL ASSEMBLY

A. Manufacturer of Framing System subject to compliance with requirements, manufacturers include the following:

   1. SAFTI*fire*™ GPX Framing , SAFTI *FIRST*™ Fire Rated Glazing Solutions.

   2. Fire Frames Curtainwall, Technical Glass Products

B. Manufacturer of Glazing Material – Verify products meet all requirements for 90 minute rated curtiainwall

   1. SuperLite™ II-XL IGU, SAFTI *FIRST*™ Fire Rated Glazing Solutions. div SCHOTT Technical Glass Solutions
   2. Fire Lite IGU Premium 90 minute, Technical Glass Products

2.02 MATERIALS – FRAMING

A. Fire resistive, temperature rise framing system rated for 90 minutes.

Properties:
1. Frame thickness: 3" to 5"
2. Internal framing: Internal tube steel framing shall conform to ASTM A501. Formed steel retainers shall be galvanized conforming to ASTM A527.
3. Insulation: The framing system shall insulate against the effects of fire, smoke and heat transfer from either side. The perimeter of the framing system to the rough opening shall be firmly packed with mineral wool fire stop insulation or appropriately rated intumescent sealant.
4. Fasteners: Type recommended by manufacturer.
5. Framing covers: Powder coated extruded aluminum alloy 6063-T5 (standard) or aluminum alloy 5052 when anodized.
6. Glazing accessories: The glazing material perimeter shall be separated from the perimeter framing system with approved flame retardant glazing tape. The SuperLite™ glazing panel shall be caulked continuously around the edge to the tube steel frame utilizing neutral cure silicone.

2.03 MATERIALS – GLASS

A. Assemblies shall be glazed with rated glazing products required to meet code requirements.

B. Properties:
   1. Individual Lites shall be permanently identified with a listing mark.
   2. Glazing material installed in "Hazardous Locations" (subject to human impact) shall be certified to meet the applicable requirements for fire rated assemblies referenced in ANSI Z97.1 Standard for Safety Glazing Materials Used In Buildings and/or CPSC 16 CFR 1201 Safety Standard for Architectural Glazing Materials.
   3. Temperature rise on the unexposed side of glazing material shall be limited to 250 degrees Fahrenheit when required.
   4. Visible daylight transmission: to match standard glazing in other locations..

C. Logo: Each piece of fire rated glazing shall be labeled with a permanent logo.

2.03 FABRICATION

A. Assemblies shall be furnished knocked down for field assembly and will be glazed in the field unless specified otherwise.

B. Door assemblies shall be factory prepared for field mounting of hardware.
C. Fabrication Dimensions: Fabricate to approved dimensions. The general contractor shall guarantee dimensions within required tolerance. Obtain approved shop drawings prior to fabrication.

2.04 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designing finishes.

B. Covers shall be chemically cleaned and pretreated; then, finished with (choose one):
1. KYNAR 500® coatings equal to Valspar or PPG to match Kawneer Light Sequin color

C. Protect finishes on exposed surfaces from damage by applying strippable, temporary protective covering before shipping.

D. Variations in appearance of abutting or adjacent pieces are acceptable. Noticeable variations in the same piece are not acceptable.

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

A. Compliance: Comply with manufacturer's product data including product technical bulletins and installation instructions.

3.02 EXAMINATION

A. Site Verification of Conditions: Verify substrate conditions, have been previously installed under other sections, and are acceptable for product installation in accordance with manufacturer's instructions. Openings shall be plumb, square and within allowable tolerances. The Architect/Engineer shall be notified of any conditions that jeopardize the integrity of the proposed fire wall/door framing system. Do not proceed until such conditions are corrected.

3.03 INSTALLATION

A. Fire wall/door installation shall be by a licensed contractor and in strict accordance with the approved shop drawings.

3.04 CLEANING AND PROTECTION

A. Protect glass from contact with contaminating substances resulting from construction operations. Remove such substances by method approved by manufacturer.

B. Wash glass on both faces not more than four days prior to date schedule for inspections intended to establish date of Substantial Completion. Wash glass by method recommended by glass manufacturer.

C. Remove temporary coverings and protection of adjacent work areas.

D. Remove construction debris from project site and legally dispose of debris.

END OF SECTION

SECTION 129300 - SITE FURNISHINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:
   1. Benches

B. Related Sections include the following:

   1. Division 03 Section "Cast-in-Place Concrete" for **installation of anchor bolts cast** in concrete footings.
   2. Division 31 Section "Earth Moving" for excavation for installation of concrete footings.

1.3 SUBMITTALS

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

B. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.

   1. Size: Not less than 6-inch- (152-mm-) long linear components and 4-inch- (102-mm-) square sheet components.

C. Maintenance Data: For site furnishings to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain **each type of** site furnishing(s) through one source from a single manufacturer.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aluminum: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated; free of surface blemishes and complying with the following:

   1. Rolled or Cold-Finished Bars, Rods, and Wire: ASTM B 211 (ASTM B 211M).
   2. Extruded Bars, Rods, Wire, Profiles, and Tubes: ASTM B 221 (ASTM B 221M).

3. Structural Pipe and Tube: ASTM B 429.
4. Sheet and Plate: ASTM B 209 (ASTM B 209M).
5. Castings: ASTM B 26/B 26M.

B. Steel and Iron: Free of surface blemishes and complying with the following:

1. Plates, Shapes, and Bars: ASTM A 36/A 36M.
2. Steel Pipe: Standard-weight steel pipe complying with ASTM A 53, or electric-resistance-welded pipe complying with ASTM A 135.
3. Tubing: Cold-formed steel tubing complying with ASTM A 500.
4. Mechanical Tubing: Cold-rolled, electric-resistance-welded carbon or alloy steel tubing complying with ASTM A 513, or steel tubing fabricated from steel complying with ASTM A 1011/A 1011M and complying with dimensional tolerances in ASTM A 500; zinc coated internally and externally.
5. Sheet: Commercial steel sheet complying with ASTM A 1011/A 1011M.
6. Perforated Metal: From steel sheet not less than [**0.0747-inch (1.9-mm)**] [**0.0897-inch (2.3-mm)**] [**0.1196-inch (3.0-mm)**] <**Insert dimension**> nominal thickness; manufacturer's standard perforation pattern.
7. Expanded Metal: Carbon-steel sheets, deburred after expansion, and complying with ASTM F 1267.
8. Malleable-Iron Castings: ASTM A 47/A 47M, grade as recommended by fabricator for type of use intended.
9. Gray-Iron Castings: ASTM A 48/A 48M, Class 200.

C. Anchors, Fasteners, Fittings, and Hardware: **Manufacturer's standard, corrosion-resistant-coated or noncorrodible materials**; commercial quality**,**

D. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107; recommended in writing by manufacturer, for exterior applications.

E. Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound; resistant to erosion from water exposure without needing protection by a sealer or waterproof coating; recommended in writing by manufacturer, for exterior applications.

2.3 BENCHES,

A. Bench: Provide the following as indicated on drawings:

Metal Bench
Product: tubular steel frame with welded wire panels
Plastisol coated
Furnish all mounting hardware.
Model: 3 SEAT Backless benches - Plexus
Color: As Selected by Architect:
Mounting Type: Permanent extended leg mounting system.
Manufacturer: Landscape Forms or equal.

2.2 FABRICATION

A. Metal Components: Form to required shapes and sizes with true, consistent curves, lines, and angles. Separate metals from dissimilar materials to prevent electrolytic action.

B. Pipes and Tubes: Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of handrail and railing components.

C. Exposed Surfaces: Polished, sanded, or otherwise finished; all surfaces smooth, free of burrs, barbs, splinters, and sharpness; all edges and ends rolled, rounded, or capped.

2.3 FINISHES, GENERAL

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: 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 the 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.

2.4 STEEL AND GALVANIZED STEEL FINISHES

A. PVC Finish: Manufacturer's standard, UV-light stabilized, mold-resistant, slip-resistant, matte-textured, dipped or sprayed-on, PVC-plastisol finish, with flame retardant added; complying with coating manufacturer's written instructions for pretreatment, application, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance.

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

3.2 INSTALLATION, GENERAL

A. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.

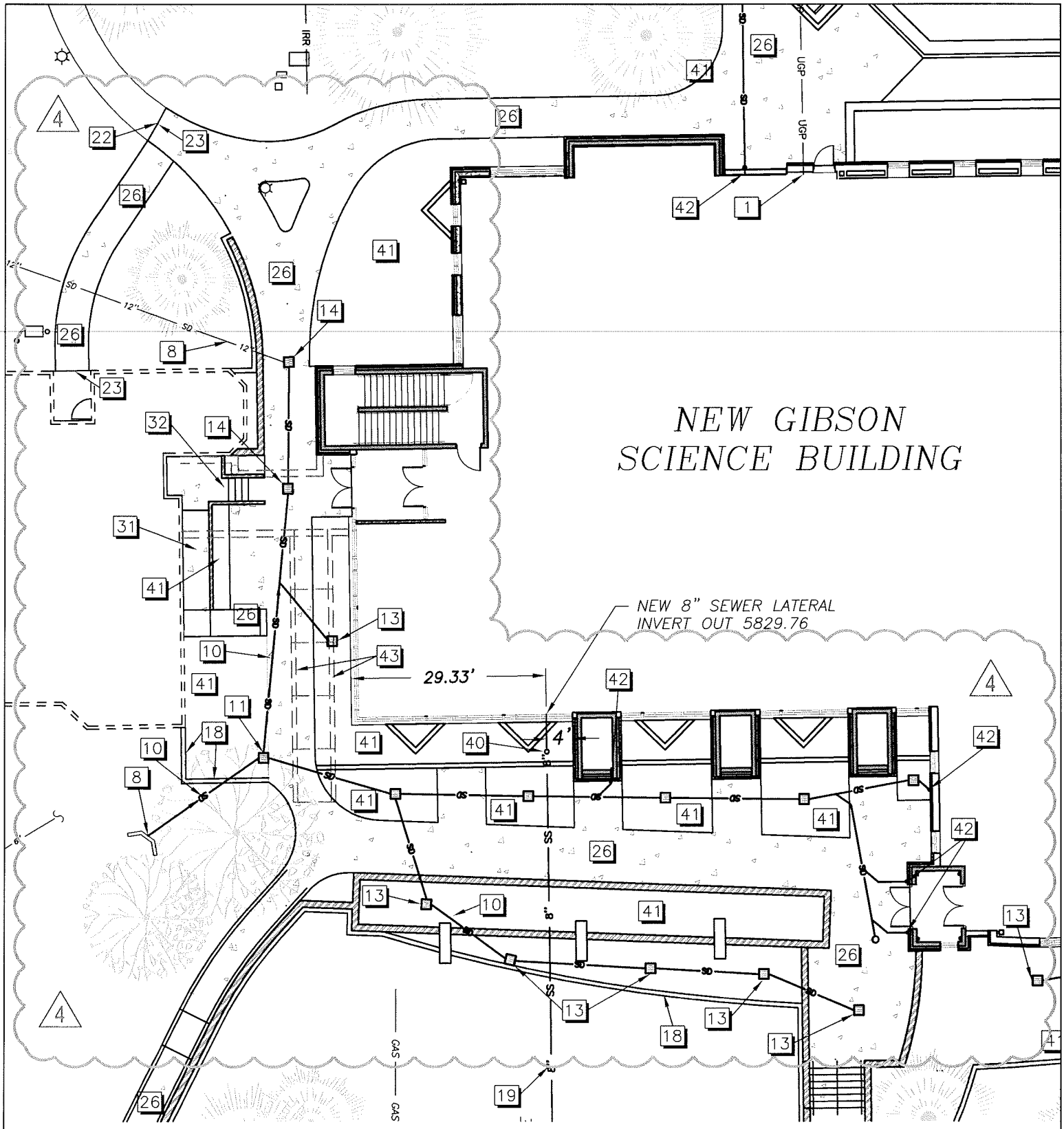
B. Unless otherwise indicated, install site furnishings after landscaping and paving have been completed.

C. Install site furnishings level, plumb, true, and **securely anchored** at locations indicated on Drawings.

3.3 CLEANING

A. After completing site furnishing installation, inspect components. Remove spots, dirt, and debris. Repair damaged finishes to match original finish or replace component.

END OF SECTION 129300



C1 SECONDARY ACCESS & SD REV

SCALE: 1" = 20'

CE102

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GIBSON SCIECE CENTER ADDITION

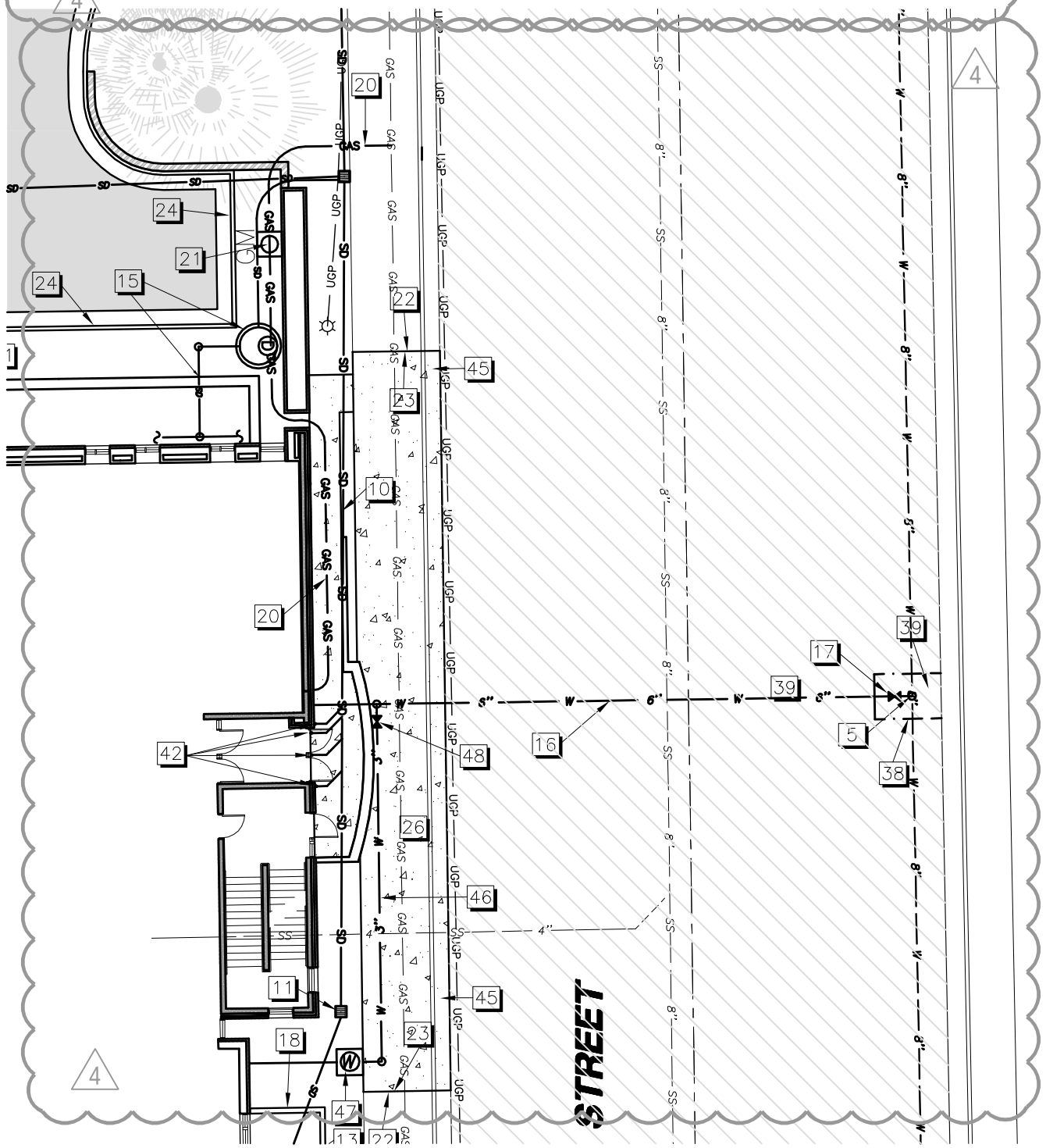
Project No: DFCM: 07297730

Date: 01-26-10

Sheet No.
AD04-C1

Sheet Reference
CE102

48 NEW 3" GATE VALVE W/ CAST IRON VALVE BOX PER DETAIL W1 SHEET CE107



UTILITIES UPDATE

C2

SCALE: 1" = 20'

CE102

UTILITY PLAN NOTES

1. EXISTING UNDER GROUND POWER – SEE ELECTRICAL PLANS
2. NOT USED
3. NOT USED
4. CONNECT TO EXISTING 5'ø SEWER MH PER DTL S2
5. CONNECT TO EXISTING 8"ø WATER MAIN W/ 6" HOT TAP PER CEDAR CITY DETAIL W10 SHEET CE107
6. CONNECT TO EXISTING GAS LINE
7. CONNECT TO EXISTING IRRIGATION LINE
8. CONNECT TO EXISTING STORM DRAIN
9. NEW CUSTOM LARGE CURB OUTLET PER DETAIL SHEET CE106
10. NEW STORM DRAIN LINE
11. NEW STORM DRAIN BOX PER DETAIL SHEET CE108
12. EXISTING STORM DRAIN INLET
13. NEW STORM DRAIN BOX SEE GRADING PLAN FOR MORE INFORMATION
14. NEW DRAIN FLUSH W/ CONCRETE PER DETAIL CE108
15. NEW FOUNDATION DRAIN & SUMP PER DETAILS SHEET CE108
16. NEW 6"ø DUCTILE IRON WATER SERVICE INSTALLED IN 12"ø STEEL OR HDPE CASING W/ END FILL W/ PHOENIX CASING SPACER OR APPROVED EQUAL MAX. SPACING 6' O.C., & MIN. (2) PER PIPE LENGTH (MAINTAIN 3' COVER MIN. OVER WATERLINE)

   4
17. NEW 6"ø GATE VALVE PER DETAIL W1 & W10 SHEET CE107
18. MOW STRIP – SEE ARCHITECTURAL LANDSCAPE PLAN
19. NEW PVC SDR-35 8"ø SEWER LATERAL @ 0.50% MIN. SEE SHEET CE103
20. NEW GAS LINE
21. NEW GAS METER
22. SAWCUT EXISTING CONCRETE
23. MATCH EXISTING SIDEWALK
24. NEW 30" CATCH CURB PER DTL SHEET CE108
25. NEW 6" CURB PER DETAIL SHEET CE108

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Sheet No.
AD04-C2
Sheet Reference
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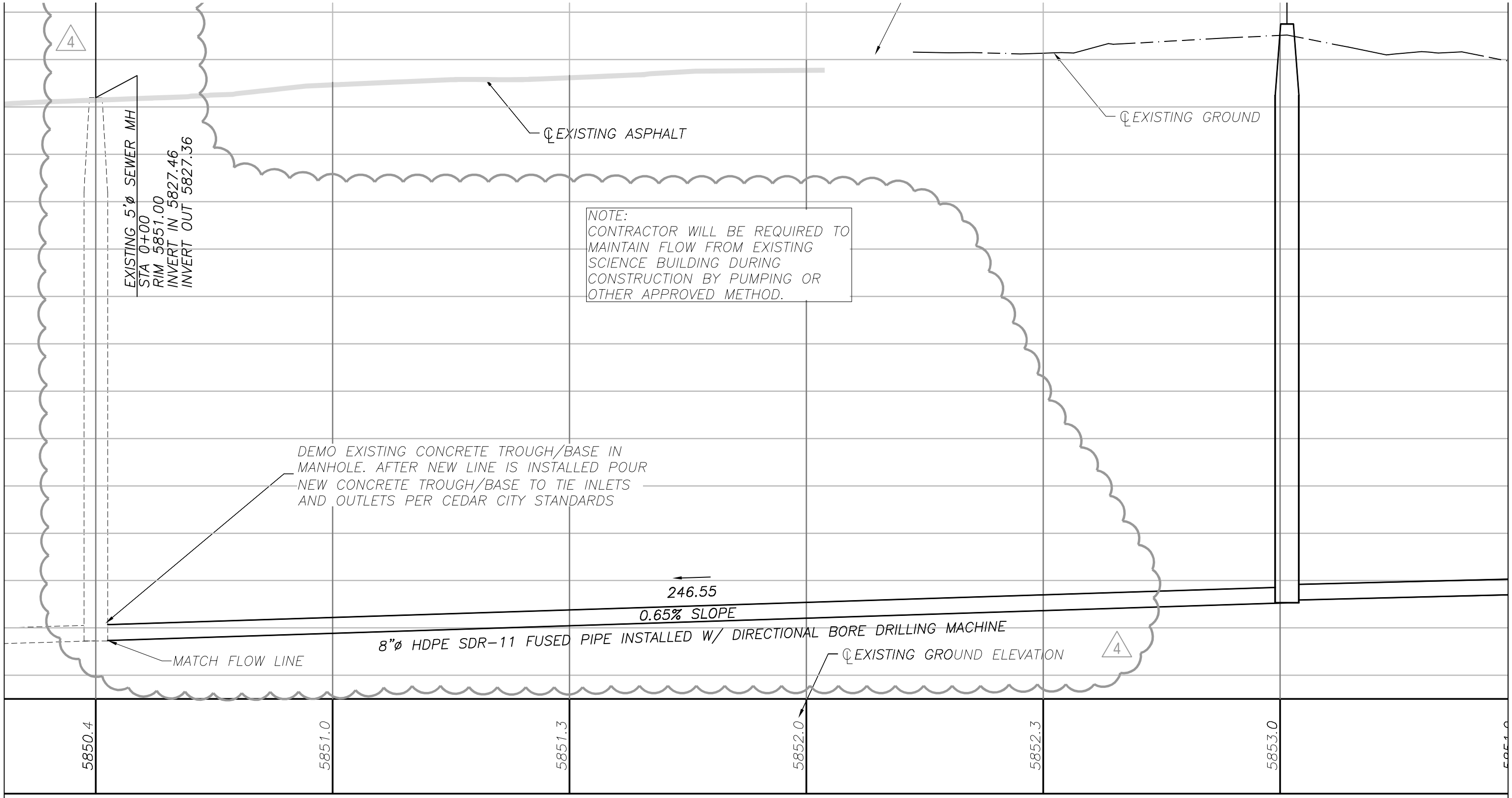

C3

UTILITIES UPDATE

SCALE: 1" = 20'

CE103

PROFILE NEW SEWER MAIN

HORIZONTAL SCALE: 1"=20' VERTICAL SCALE 1"=4'

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AD04-C3
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CE103

STORM DRAIN MANHOLE TABLE

#	TYPE	RIM	INV	I.D. SIZE	LOCATION
1	CURB OUTLET	B.W. 5844.82	5843.75	20"X16"	N 106279.8505 E 113664.3418
2	INLET BOX	RIM 5850.00	5845.31	18"X18"	N 106090.6934 E 113664.3124
3	INLET BOX	RIM 5849.62	5845.42	18"X18"	N 106069.4818 E 113656.9544
4	INLET BOX	RIM 5850.28	5845.50	18"X18"	N 106050.607 E 113657.2251
5	INLET BOX	RIM 5852.32	5845.73	18"X18"	N 106042.5256 E 113611.969
6	INLET BOX	RIM 5847.78	5845.69	18"X18"	N 106038.0269 E 113585.0526
7	INLET BOX	RIM 58549.58	5845.59	18"X18"	N 106043.508 E 113570.6661
8	INLET BOX	RIM 58549.58	5845.47	18"X18"	N 106044.3823 E 113553.7917
9	INLET BOX	RIM 58549.58	5845.35	18"X18"	N 106045.6827 E 113532.6242
10	INLET BOX	RIM 5848.38	5845.22	18"X18"	N 106054.015 E 113519.924
11	INLET BOX	RIM 5847.20	5845.70	18"X18"	N 106072.5671 E 113593.4012
12	INLET BOX	RIM 5847.20	5845.57	18"X18"	N 106069.7648 E 113576.7291
13	INLET BOX	RIM 5847.20	5845.41	18"X18"	N 106070.0044 E 113556.0334
14	INLET BOX	RIM 5847.20	5845.25	18"X18"	N 106070.244 E 113535.3319
15	INLET BOX	RIM 5847.20	5845.10	18"X18"	N 106070.6111 E 113515.2962
16	EX-FLARED INLET	———	5845.05	———	N 106064.3365 E 113478.1612
17	INLET BOX	RIM 5847.16	5844.95	18"X18"	N 106076.0389 E 113496.3385
18	INLET BOX	RIM 5847.20	5845.20	18"X18"	N 106093.5956 E 113505.8916
19	INLET BOX	RIM 5847.79	5844.67	18"X18"	N 106116.493 E 113499.2345
20	INLET BOX	RIM 5848.12	5844.55	18"X18"	N 106135.5339 E 113499.3668

C4

STORM DRAIN REV

SCALE: 1" = 10'

CE104

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Sheet No.
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CE104

1	5845.51	5844.14	12"ø	1.25%	109.87 LF	SMOOTH LINED CPP
2	5847.12	5845.51	8"ø	7.65%	21.04 LF	SMOOTH LINED CPP
3	5847.75	5847.12	8"ø	3.67%	17.38 LF	SMOOTH LINED CPP
4	5849.82	5847.75	8"ø	4.65%	44.50 LF	SMOOTH LINED CPP
5	5845.69	5845.59	8"ø	0.75%	14.00 LF	SMOOTH LINED CPP
6	5845.59	5845.47	8"ø	0.75%	15.40 LF	SMOOTH LINED CPP
7	5845.47	5845.32	8"ø	0.75%	19.72 LF	SMOOTH LINED CPP
8	5845.32	5845.22	8"ø	0.75%	13.86 LF	SMOOTH LINED CPP
9	5845.70	5845.57	8"ø	0.83%	15.43 LF	SMOOTH LINED CPP
10	5845.57	5845.41	8"ø	0.83%	19.20 LF	SMOOTH LINED CPP
11	5845.41	5845.25	8"ø	0.83%	19.20 LF	SMOOTH LINED CPP
12	5845.25	5845.10	8"ø	0.83%	18.54 LF	SMOOTH LINED CPP
13	5845.10	5844.95	8"ø	0.83%	19.00 LF	SMOOTH LINED CPP
14	5845.05	5844.95	12"ø	0.50%	20.36 LF	SMOOTH LINED CPP
15	5844.95	5844.67	12"ø	0.71%	39.14 LF	SMOOTH LINED CPP

24	SEE MECH.	5845.12	6"ø	1.00%	5.00 LF	R.D. PVC PIPE
25	SEE MECH.	5845.13	6"ø	1.00%	5.00 LF	R.D. PVC PIPE
26	SEE MECH.	5845.15	3"ø	2.00%	5.00 LF	R.D. PVC PIPE
27	SEE MECH.	———	3"ø	2.00%	6.00 LF	R.D. PVC PIPE
28	SEE MECH.	———	3"ø	2.00%	6.00 LF	R.D. PVC PIPE
29	SEE MECH.	5845.60	6"ø	1.00%	20.00 LF	R.D. PVC PIPE
30	5845.22	5845.10	8"ø	0.75%	15.80 LF	SMOOTH LINED CPP
31	SEE MECH.	5845.33	4"ø	2.00%	4.00 LF	R.D.

C5 STORM DRAIN REV

SCALE: 1" = 10'

CE104

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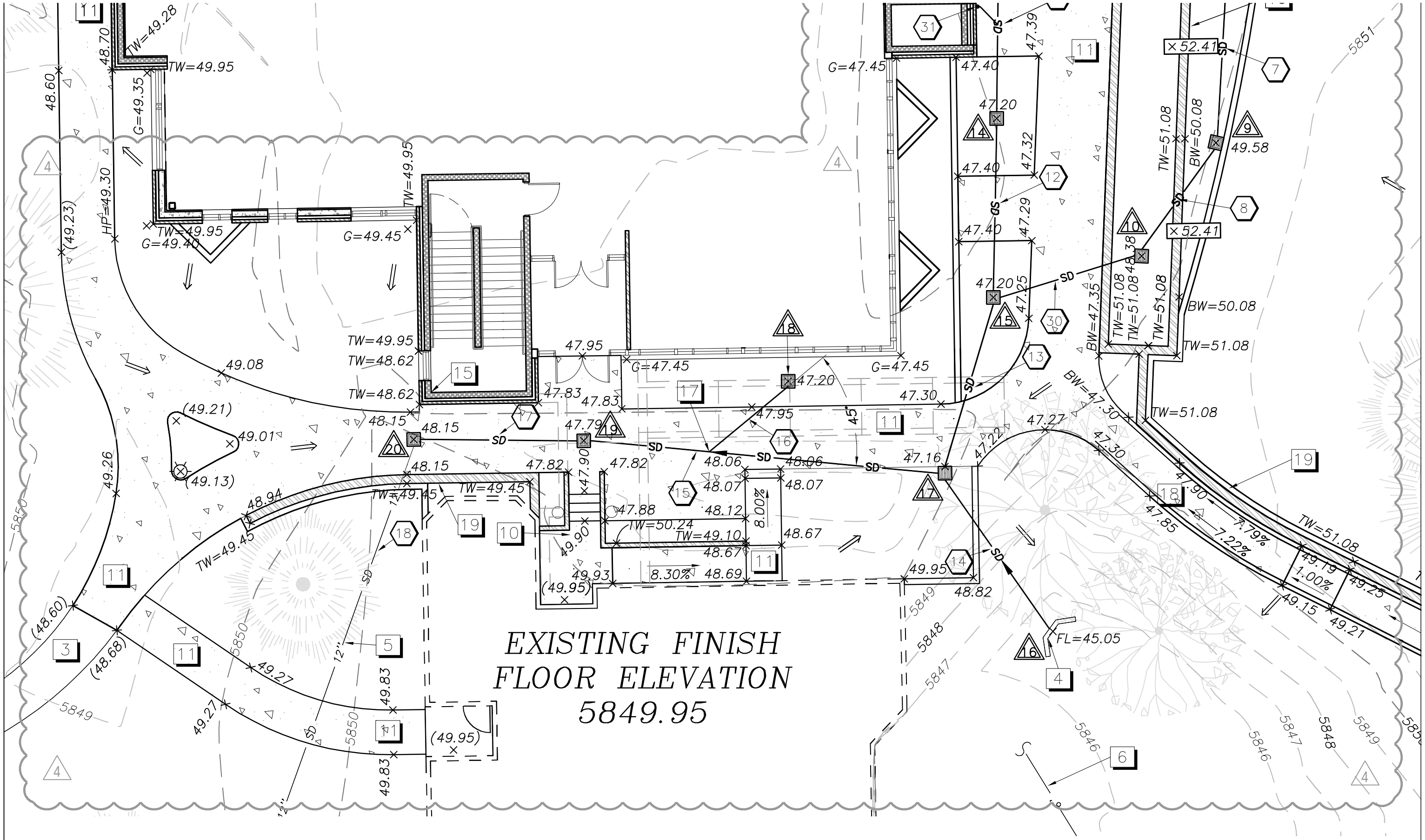
Sheet No.
AD04-C5
Sheet Reference
CE104



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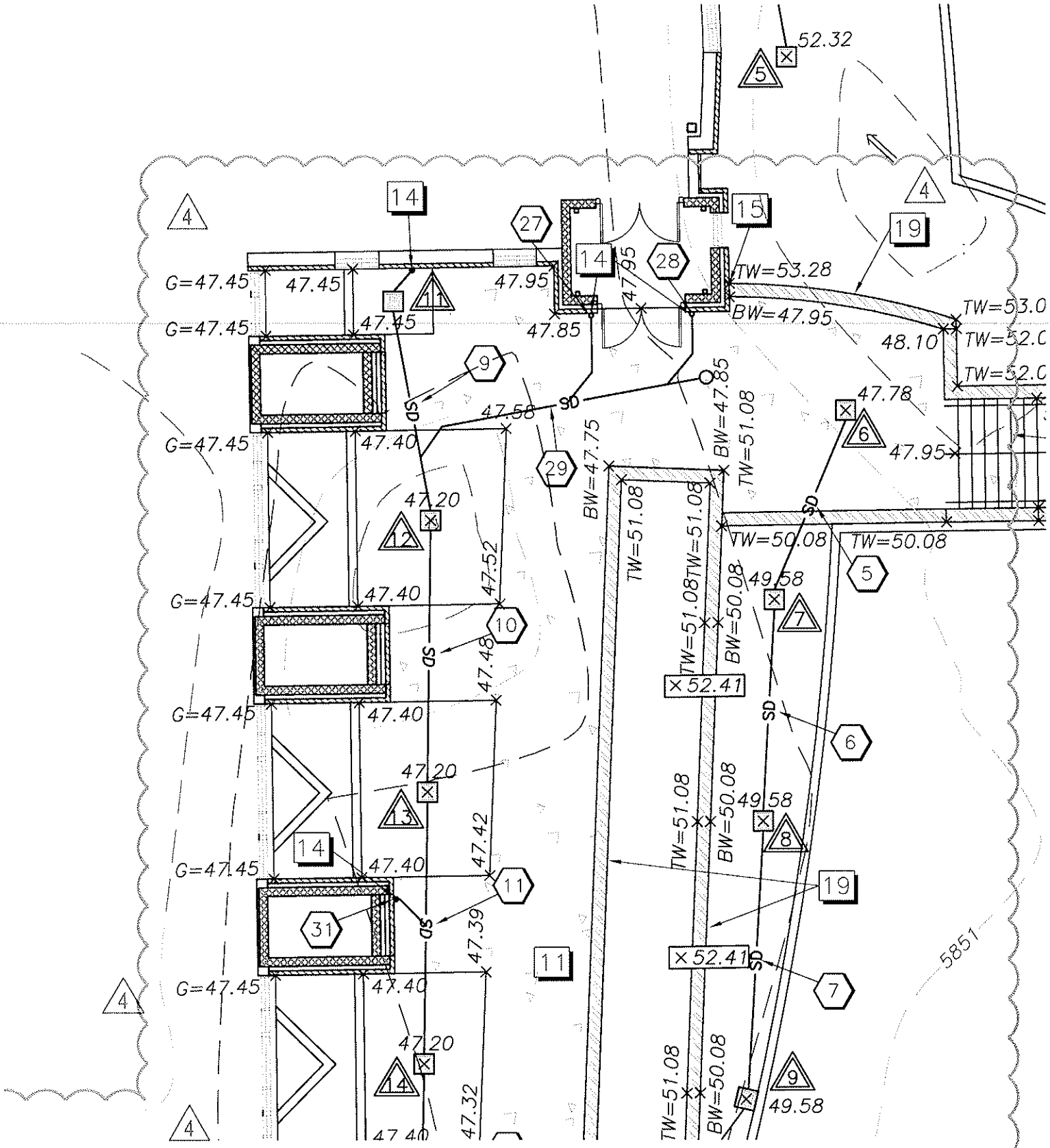
Sheet No.
AD04-C6
Sheet Reference
CE104

C6

SD & GRADING REVISIONS

SCALE: 1" = 10'

CE104



C7 SD & GRADING REVISIONS

SCALE: 1" = 20'

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AD04-C7

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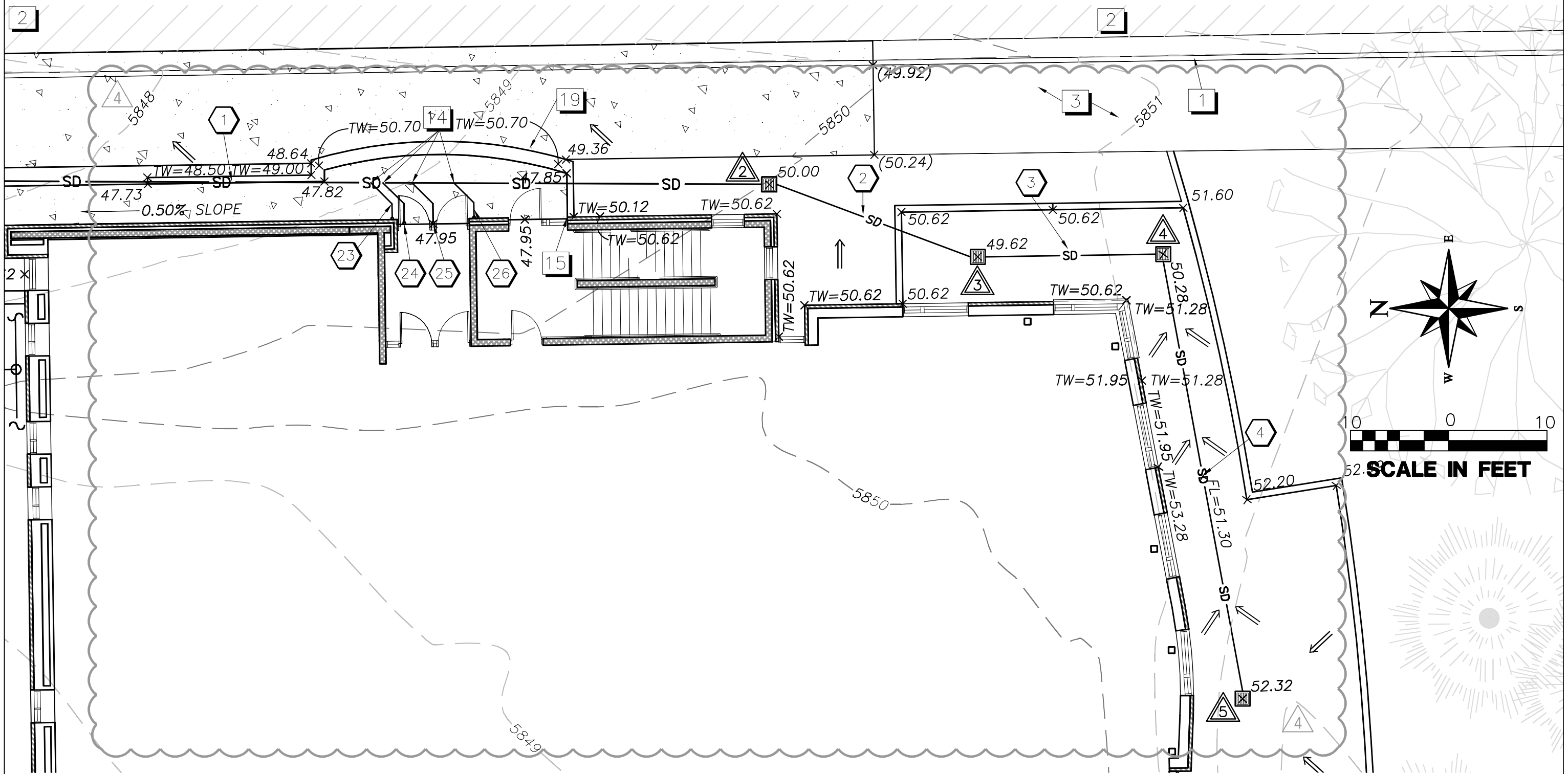
CE104



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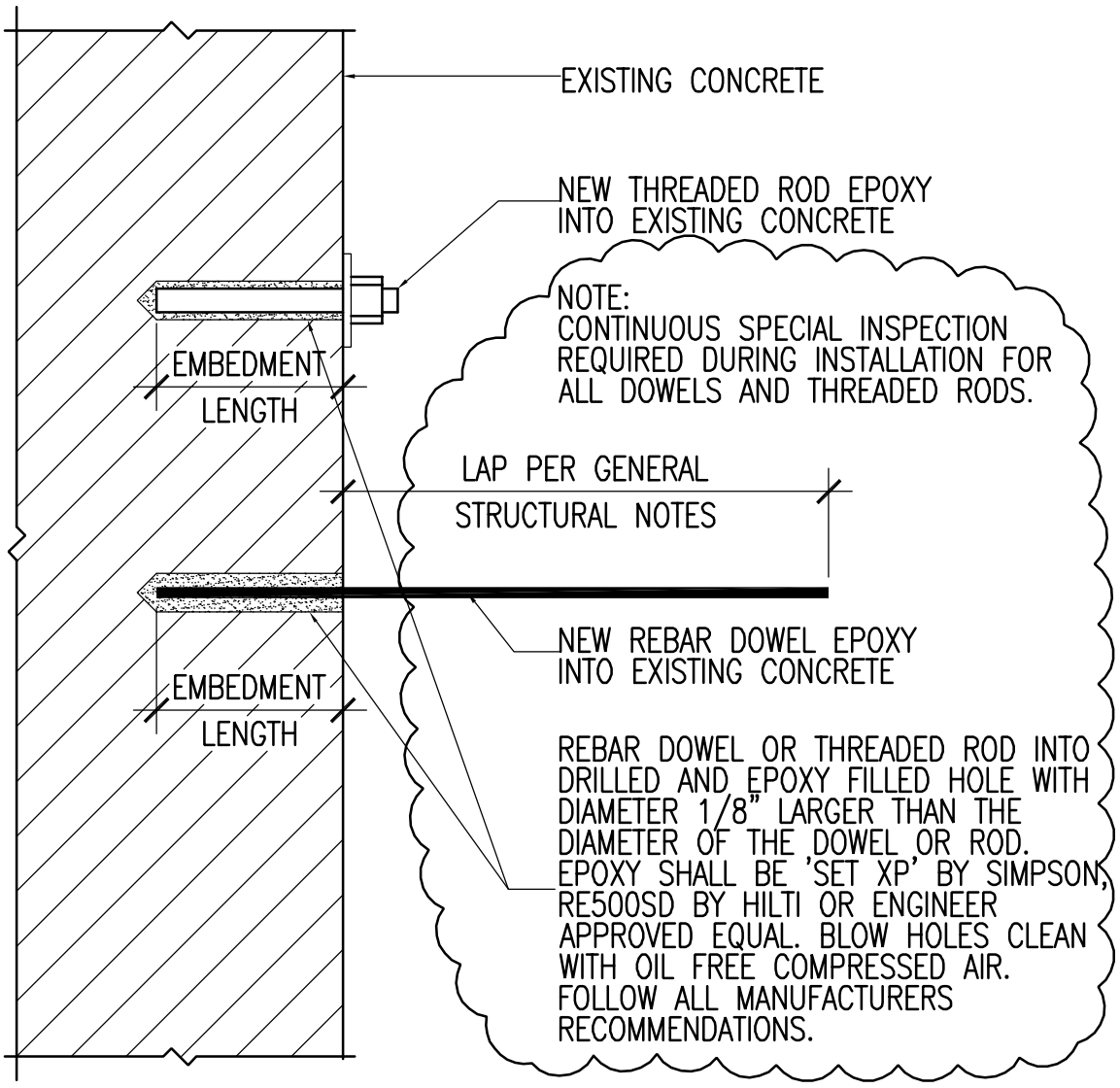
Sheet No.
AD04-C8
Sheet Reference
CE104

C8 SD & GRADING REVISIONS

SCALE: 1" = 10'

CE104



C5 / SB504 EPOXY ANCHORING DETAIL

NO SCALE

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Sheet No.
AD04-SS01
Sheet Reference
SB504

CONCRETE FOOTING SCHEDULE

CF–3000

MARK	WIDTH	LENGTH	THICK	CROSSWISE REINFORCING				LENGTHWISE REINFORCING				REMARKS
				NO.	SIZE	LENGTH	SPACE	NO.	SIZE	LENGTH	SPACE	
FTS2.0	2'–0"	CONT.	12"	--	NONE	REQ'D	--	3	#4	CONT.	9"	
FC1.5	1'–6"	CONT.	12"	--	NONE	REQ'D	--	3	#4	CONT.	6"	
FC2.0	2'–0"	CONT.	12"	--	NONE	REQ'D	--	3	#4	CONT.	9"	
FC2.5	2'–6"	CONT.	12"	--	#5	2'–0"	14"	3	#5	CONT.	12"	
FC3.0	3'–0"	CONT.	12"	--	#5	2'–6"	14"	3	#5	CONT.	15"	
FC3.5	3'–6"	CONT.	12"	--	#5	3'–0"	14"	3	#5	CONT.	18"	
FC4.0	4'–0"	CONT.	12"	--	#5	3'–6"	14"	4	#5	CONT.	14"	
FC4.5	4'–6"	CONT.	12"	--	#5	4'–0"	14"	4	#5	CONT.	16"	
FC5.5	5'–6"	CONT.	15"	--	#5	5'–0"	10"	7	#5	CONT.	10"	
FC6.0	6'–0"	CONT.	15"	--	#5	5'–6"	9.5"	8	#5	CONT.	9.5"	
FC7.0	7'–0"	CONT.	18"	--	#6	6'–6"	13"	7	#6	CONT.	13"	

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GIBSON SCIENCE CENTER ADDITION
Project No: DFCM: 07297730
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Sheet No.
AD04-SS02
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SB601

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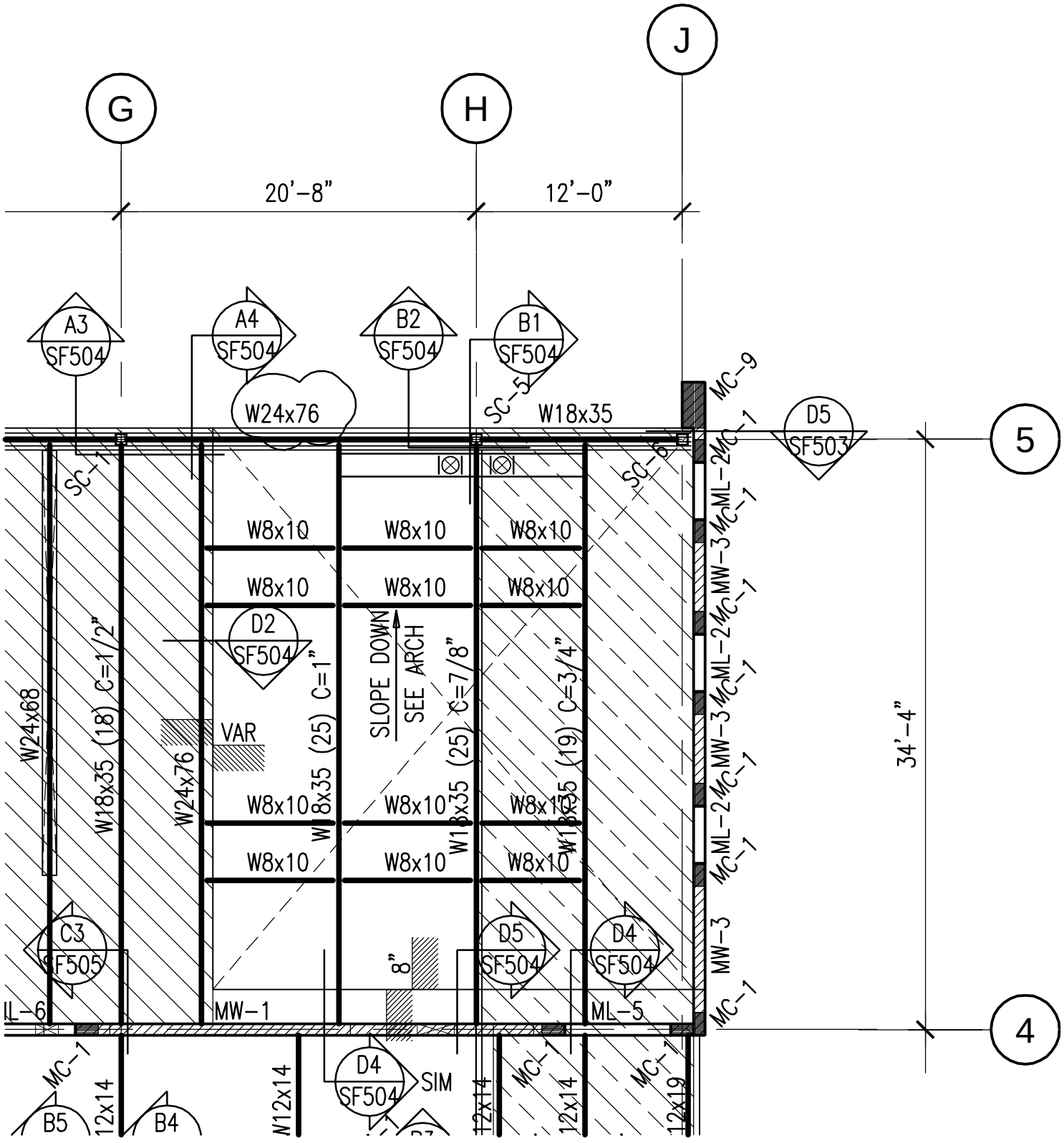
SB601

CGB-1

CONCRETE GRADE BEAM SCHEDULE

MARK	WIDTH	DEPTH	REINFORCING		REMARKS
			HORIZONTAL	STIRRUPS	
CGB-1	16"	30"	4-#5 TOP 4-#6 BOT	#4 @ 12" O.C.	
CGB-2	24"	24"	6-#5 TOP 6-#6 BOT	#4 @ 10" O.C.	
CGB-3	32"	30"	5-#5 TOP 5-#7 BOT	#4 @ 12" O.C.	
CGB-4	54"	36"	6-#5 TOP 6-#8 BOT	#4 @ 12" O.C.	



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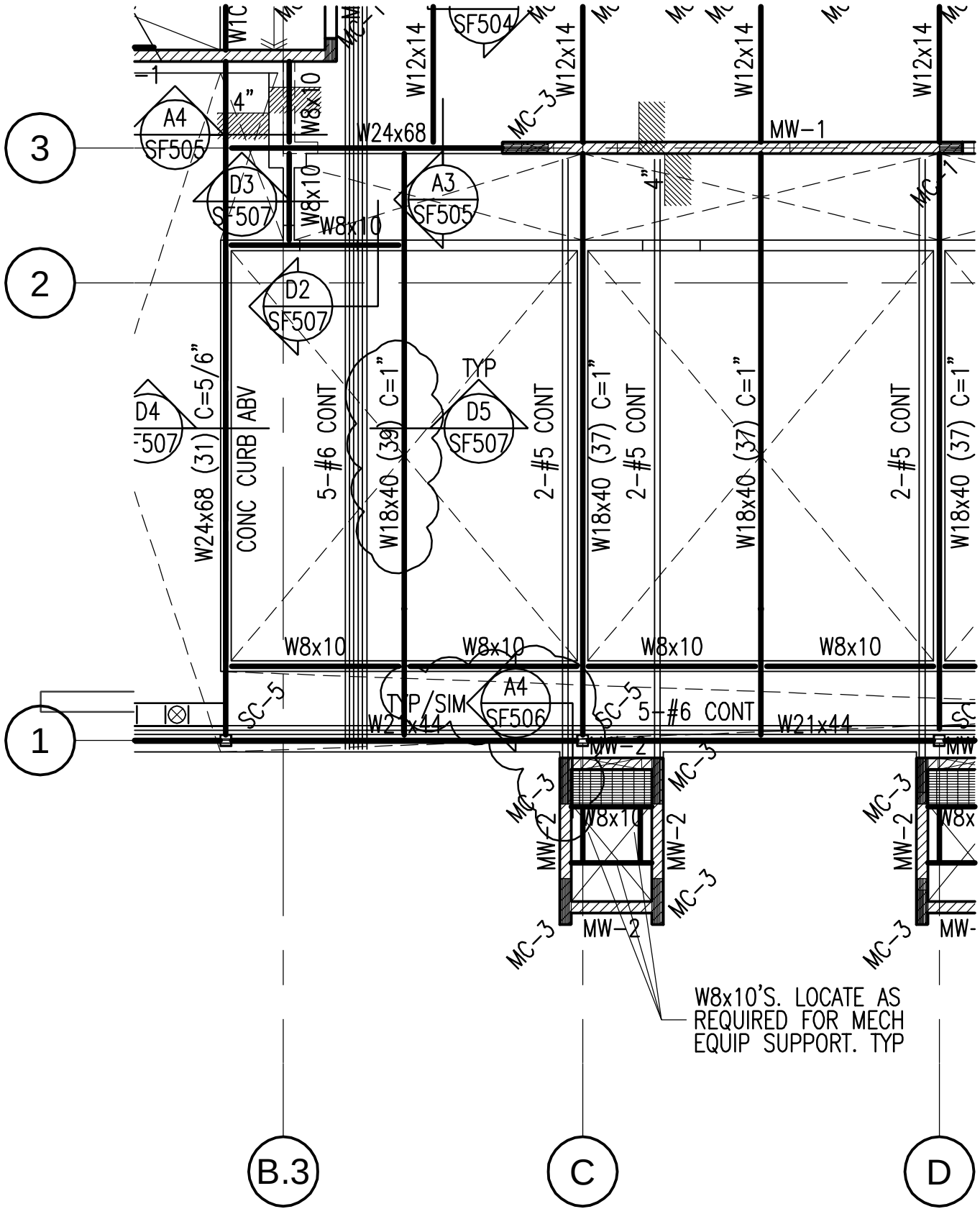
AD04-SS04
Sheet Reference
SF103



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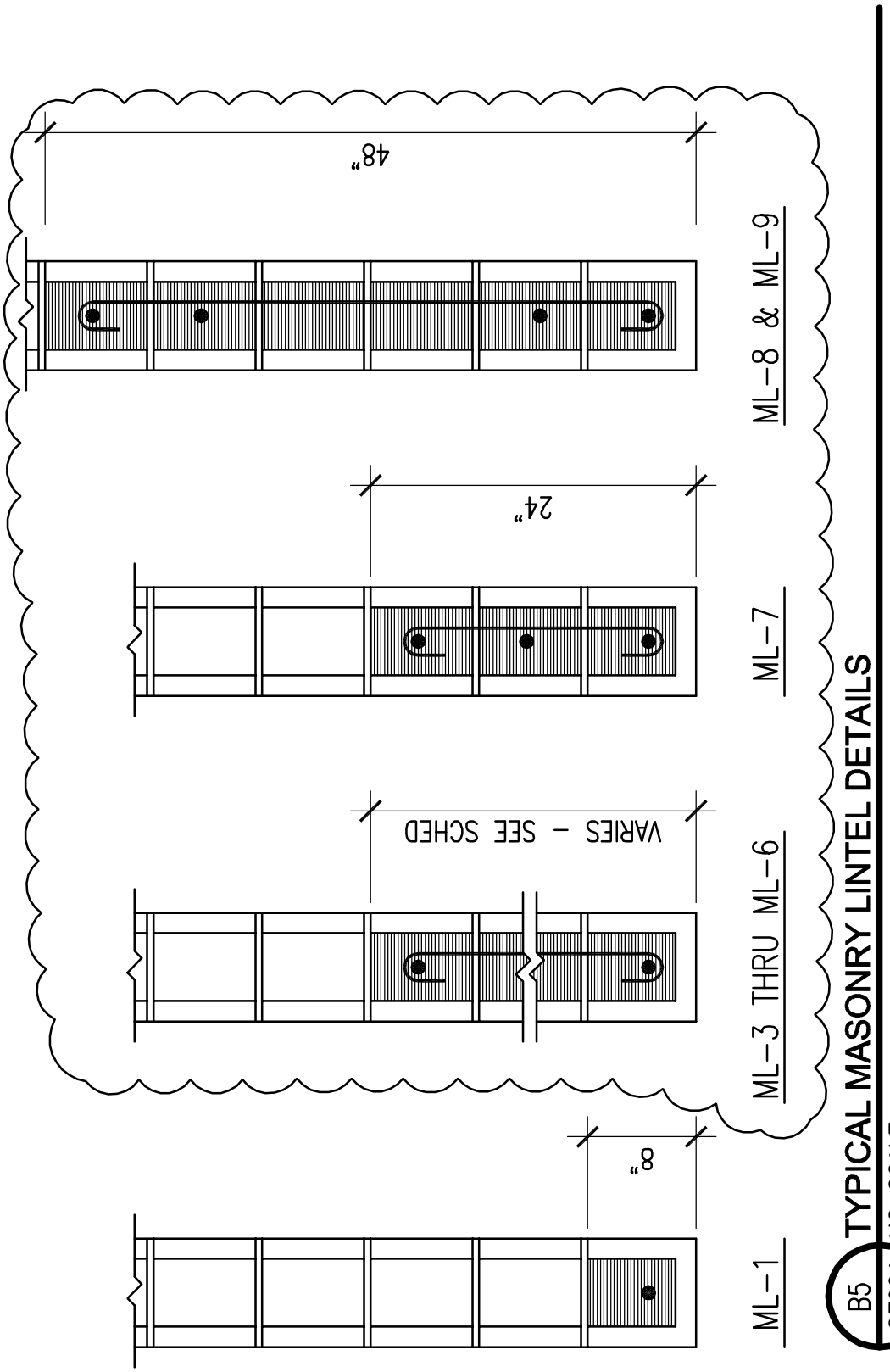
AD04-SS05
Sheet Reference
SF103



B5 / SF601 ML-DET

TYPICAL MASONRY LINTEL DETAILS

NO SCALE

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Sheet Reference
SF601

SC-4

STEEL COLUMN SCHEDULE

	MARK	SC-1	SC-2	SC-3	SC-4	SC-5	SC-6	SC-7	SC-8
	LOCATION BY GRID								
LEVEL 3	ROOF EL.=VARIES								
LEVEL 2	LEVEL 3 EL.=132'-0"				HSS4x4x3/16				
LEVEL 1	LEVEL 2 EL.=116'-0"	HSS8x8x1/2	HSS8x8x3/8	HSS6x6x5/16		HSS8x8x5/16	HSS6x6x1/4	HSS6x6x5/16	HSS5x5x1/4
BASEMENT	LEVEL 1 EL.=100'-0"								
BASE	TOP OF FOOTING EL.=83'-4" BASE PLATES & ANCHOR BOLTS	1.1/4" SBP-2	1.1/4" SBP-2	7/8" SBP-2	3/4" SBP-2	1.1/4" SBP-2	3/4" SBP-2	7/8" SBP-2	3/4" SBP-2

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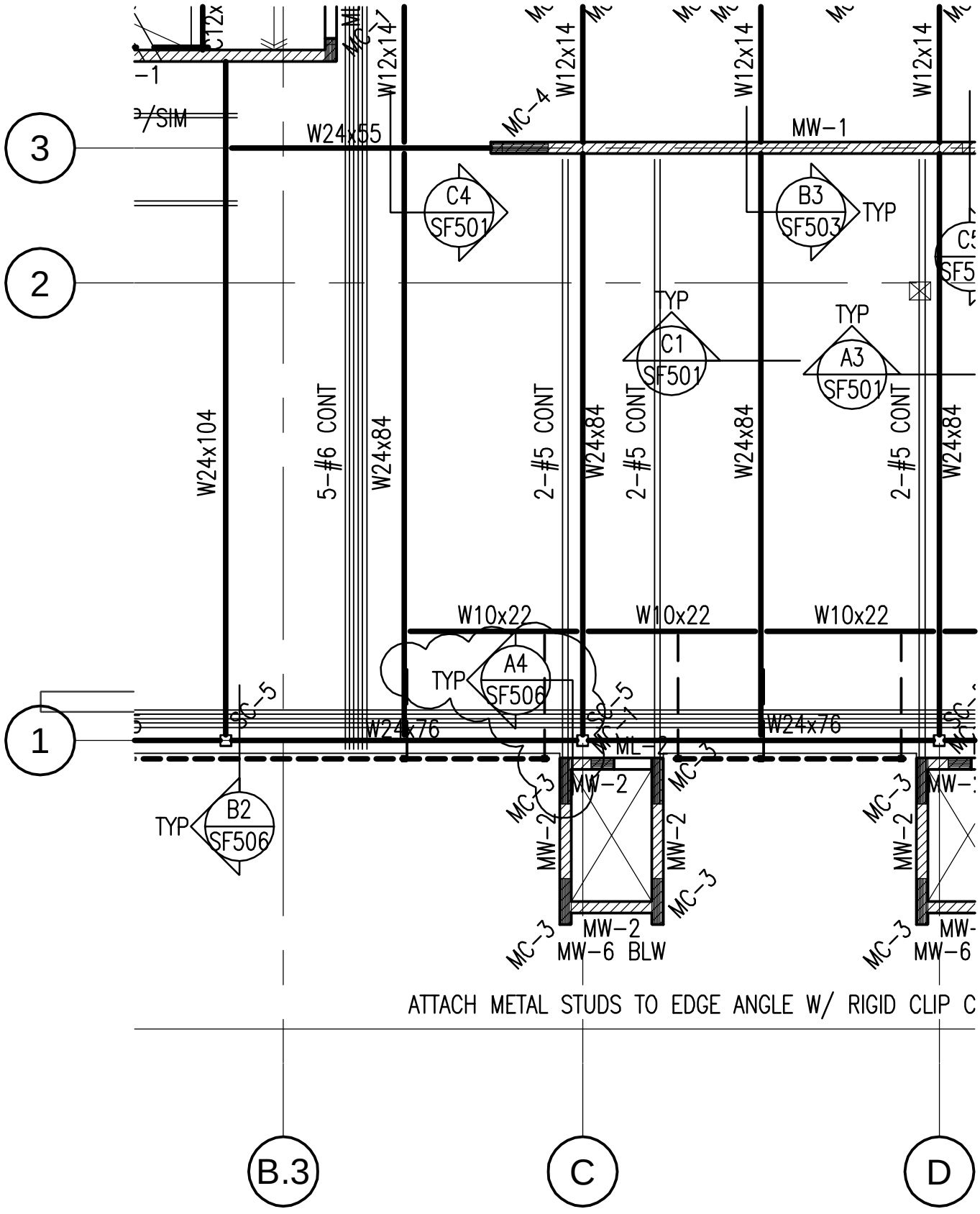
Sheet No.
AD04-SS07
Sheet Reference
SF602



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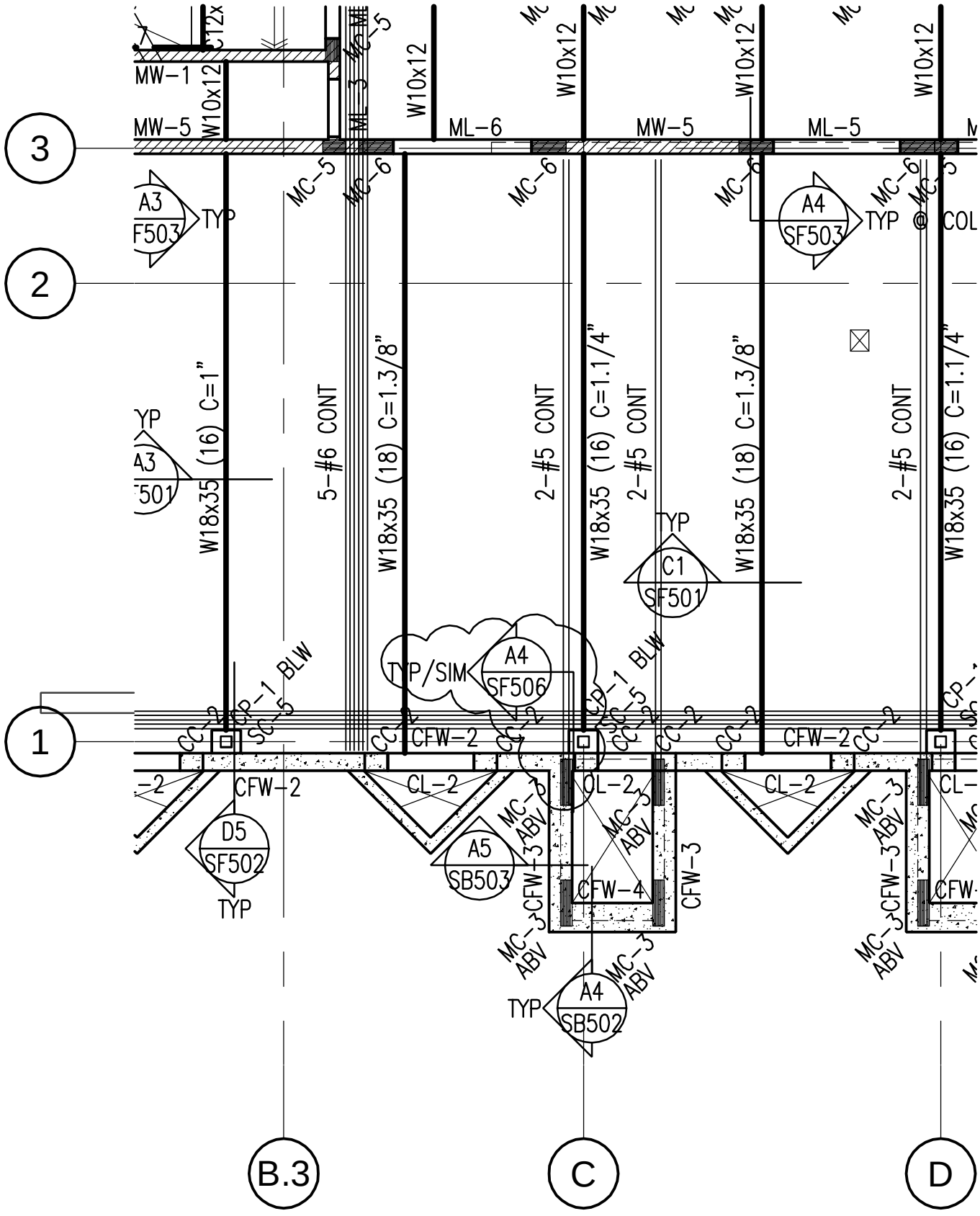
Sheet No.
AD04-SS08
Sheet Reference
SF102



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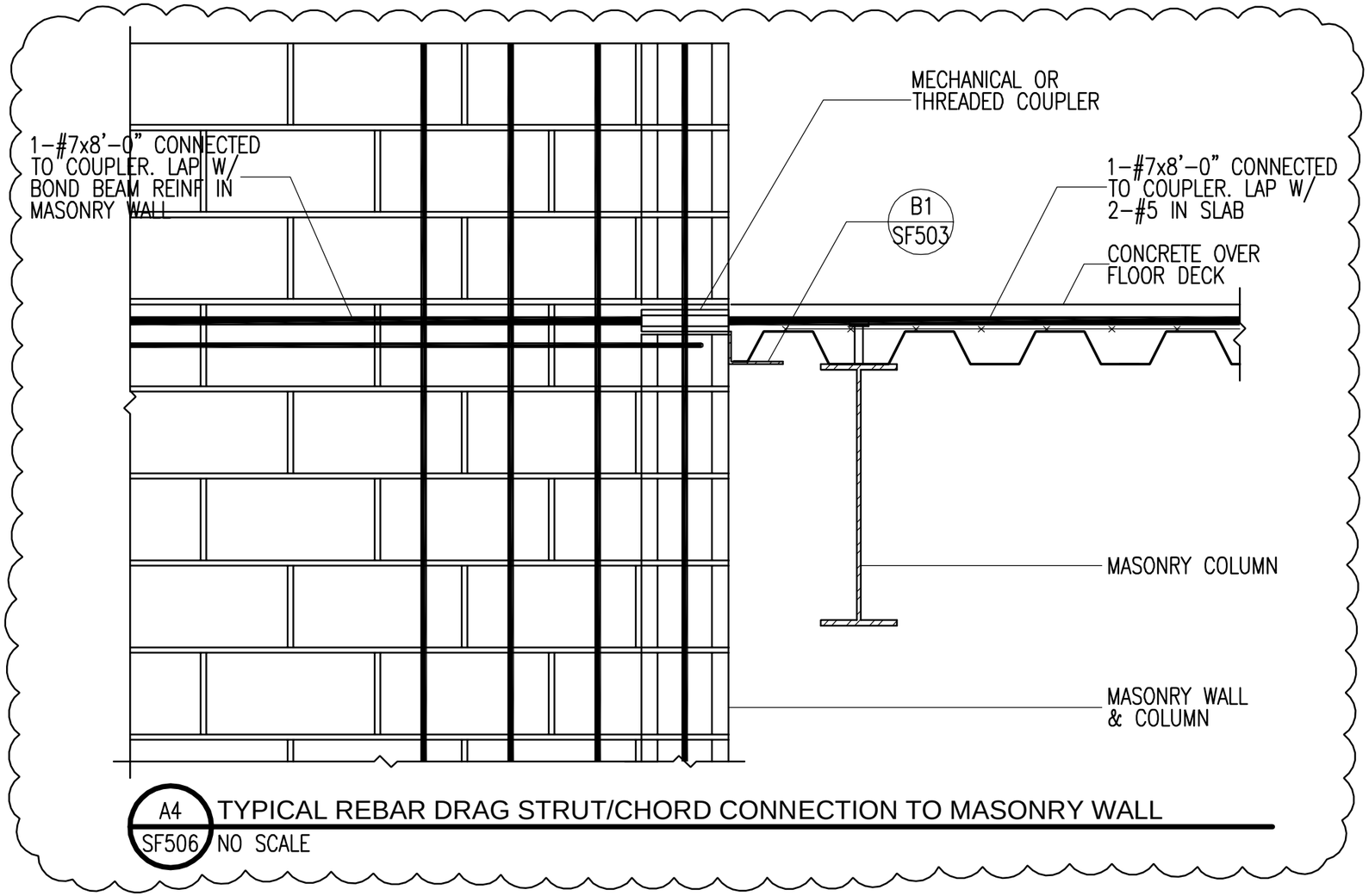
Sheet No.
AD04-SS09
Sheet Reference
SF101



A4 / SF506 TYPICAL REBAR DRAG STRUT/CHORD CONNECTION TO MASONRY WALL

NO SCALE

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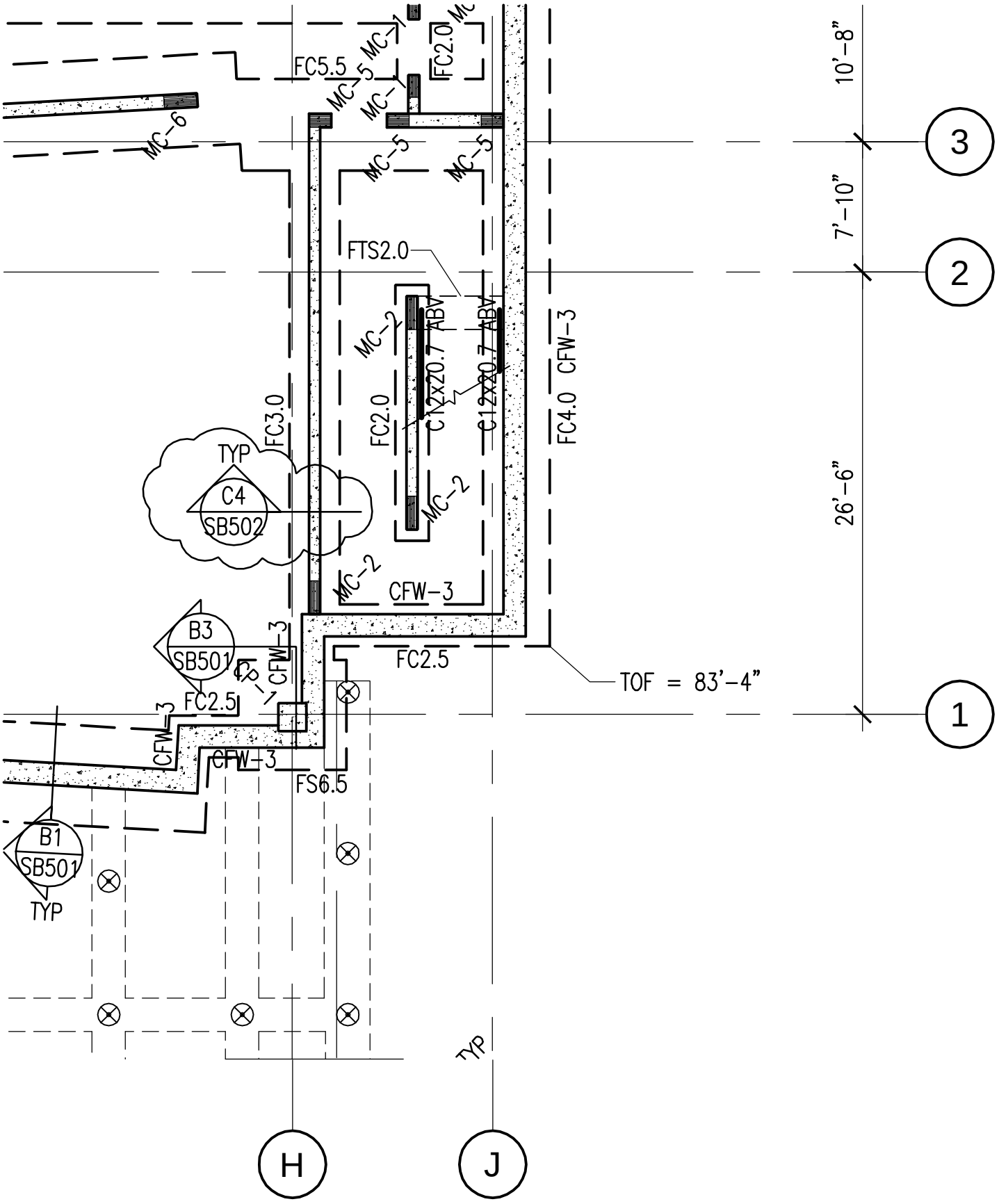
Sheet No.
AD04-SS10
Sheet Reference
SF506



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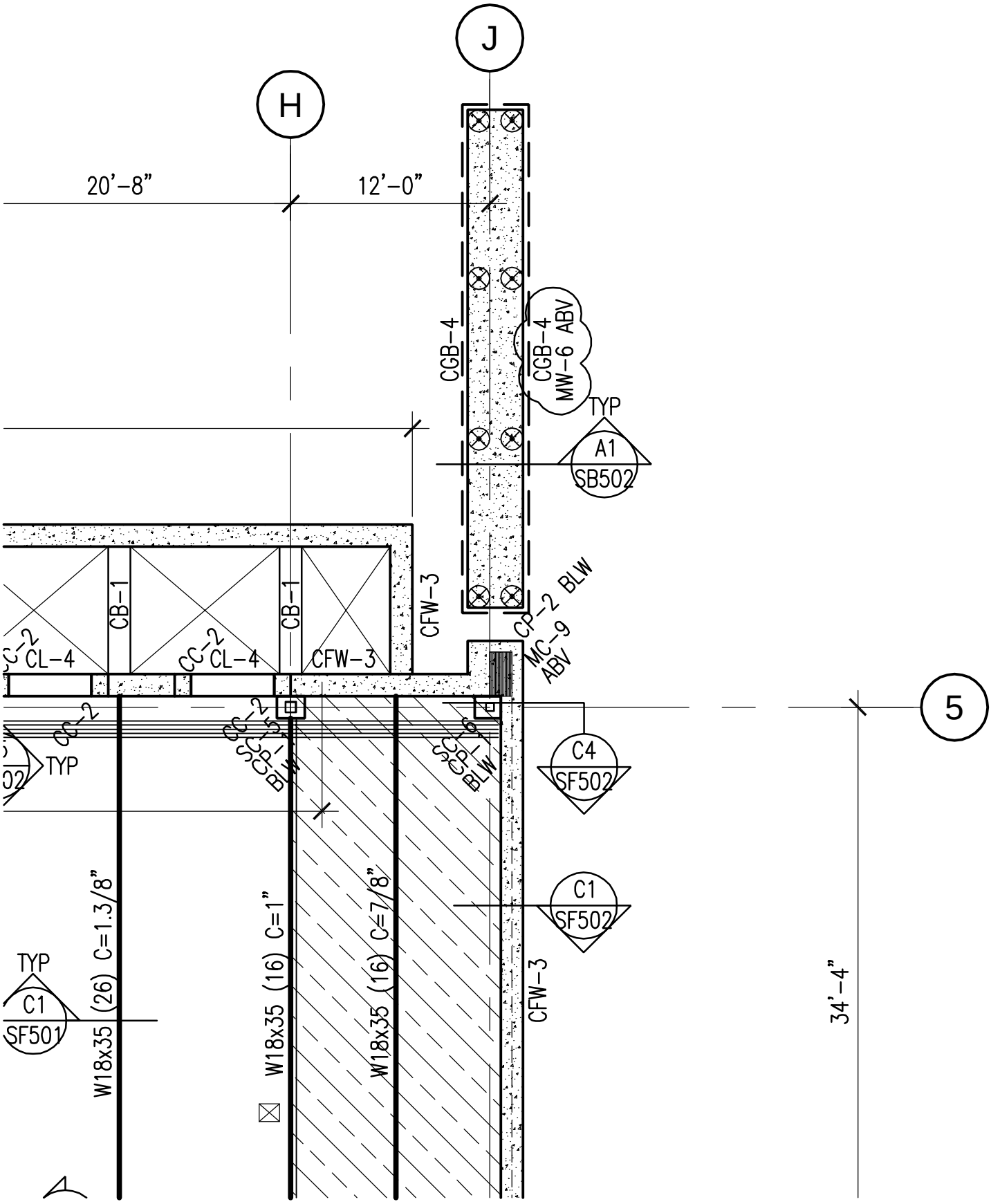
Sheet No.
AD04-SS11
Sheet Reference
SB101



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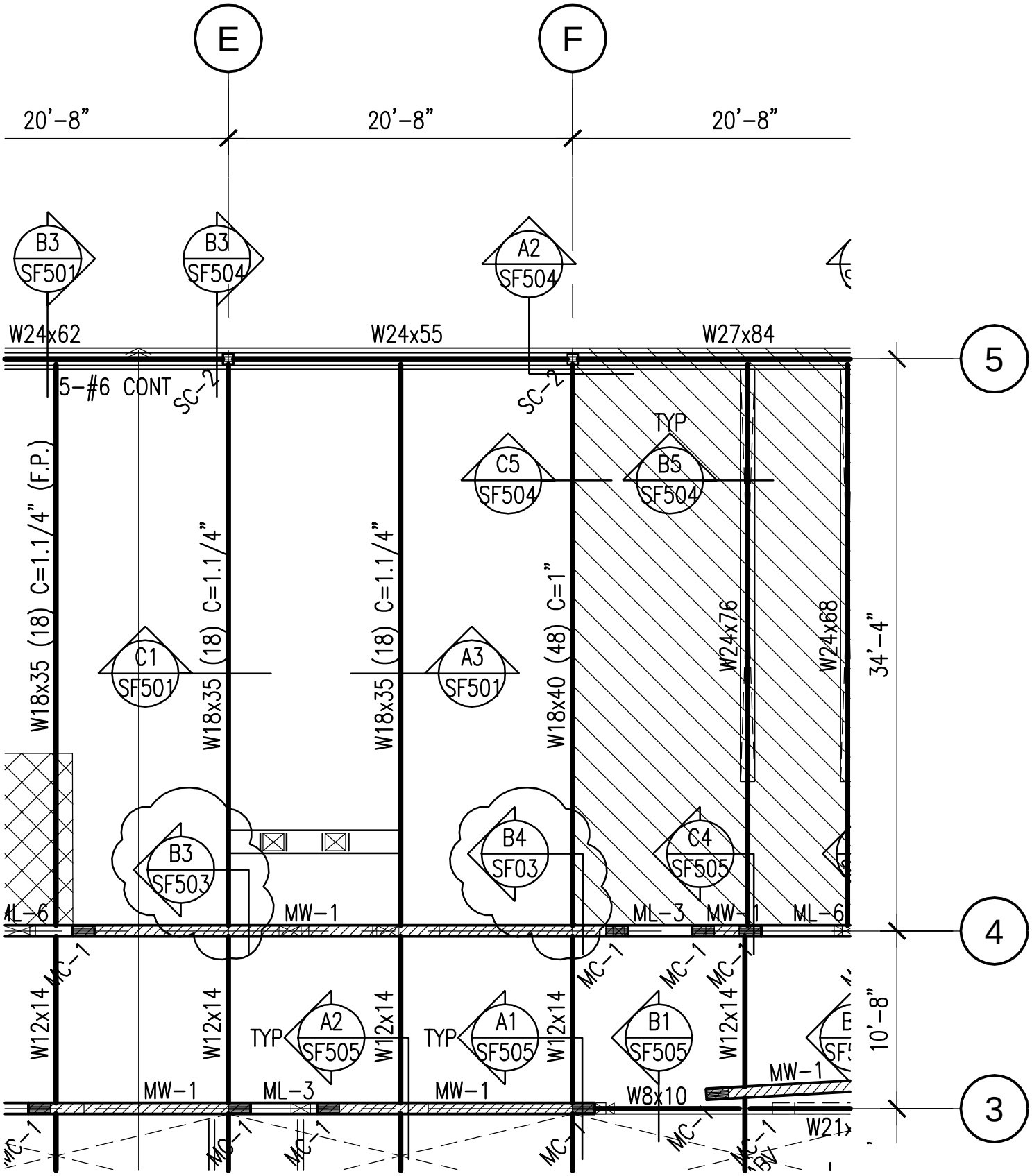
Sheet No.
AD04-SS12
Sheet Reference
SF101



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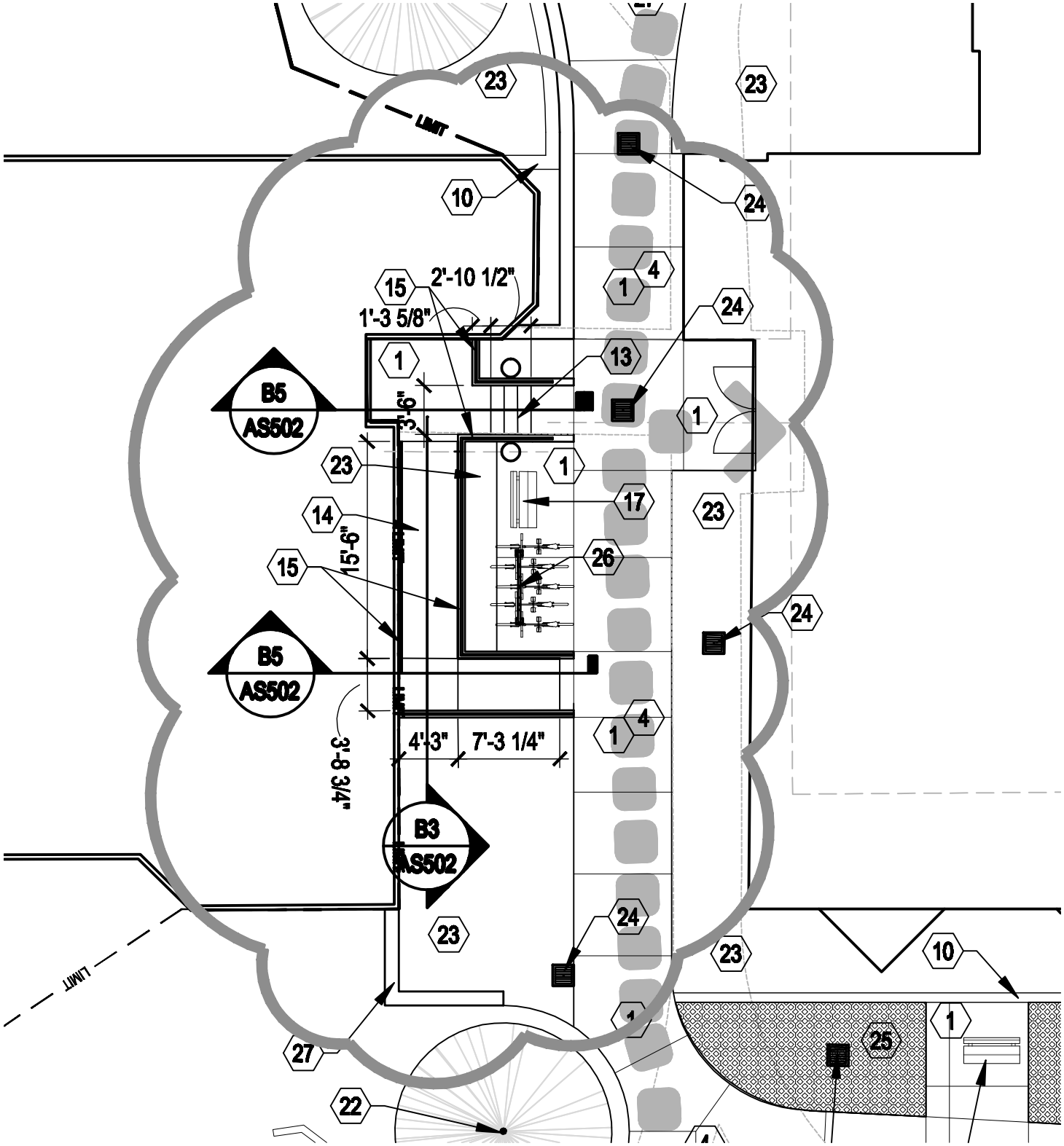
Sheet No.
AD04-SS13
Sheet Reference
SF103



A1 SITE PLAN

1" = 10'-0"

N

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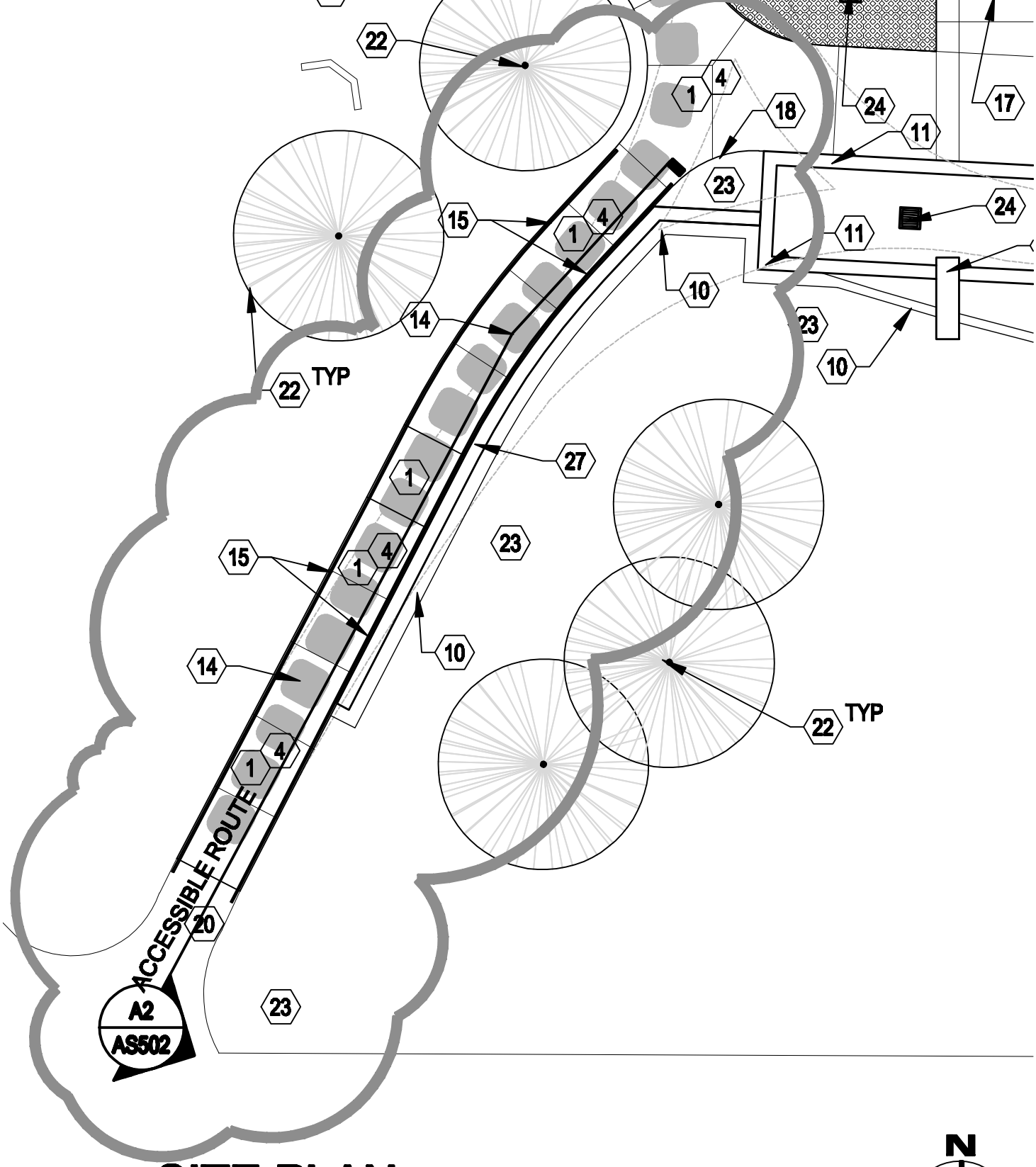
Sheet No.
AD04-LS01

Sheet Reference
AS101



A1 SITE PLAN

1" = 10'-0"

N

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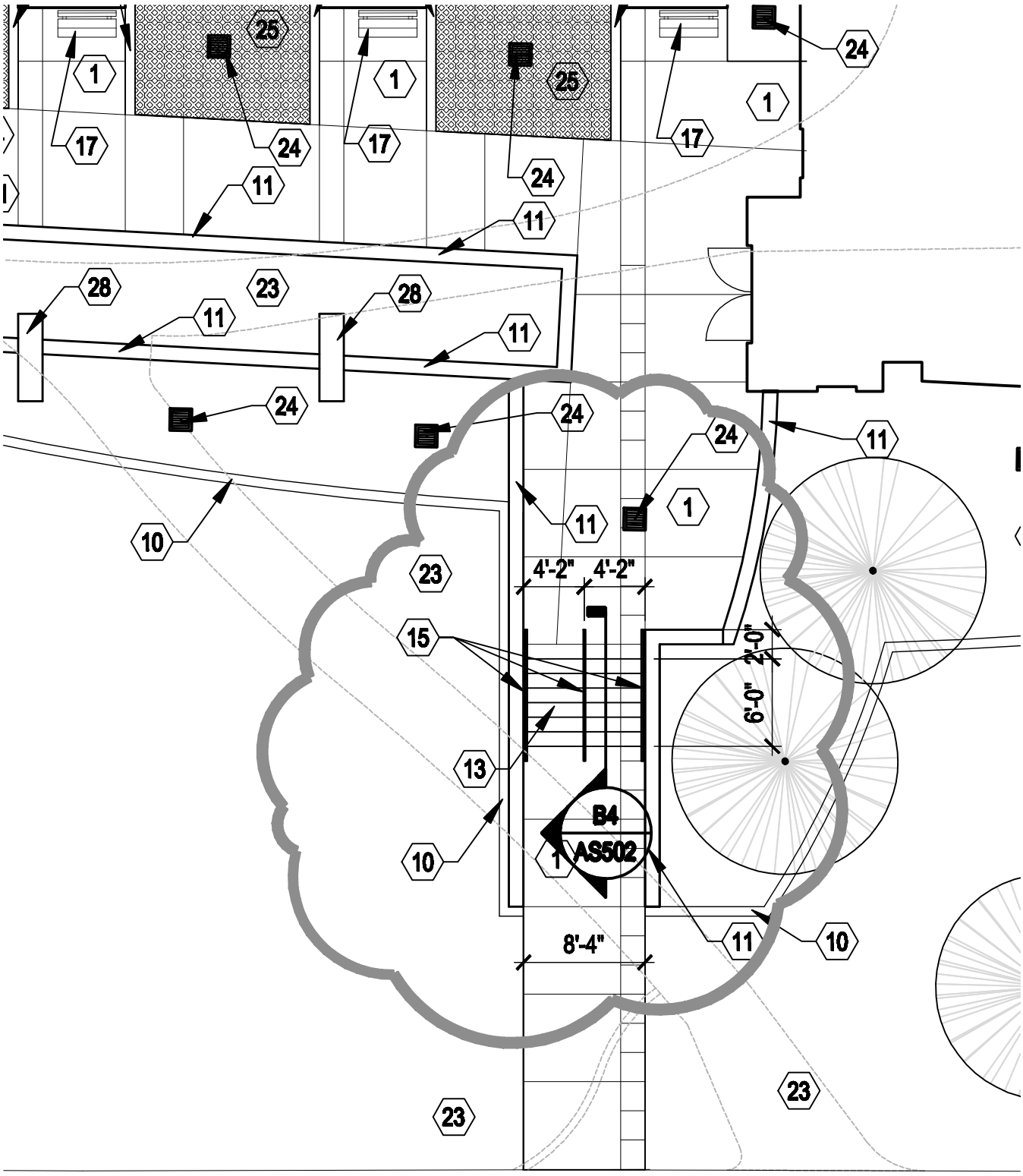
Sheet No.
AD04-LS02

Sheet Reference
AS101



A1 SITE PLAN

1" = 10'-0"

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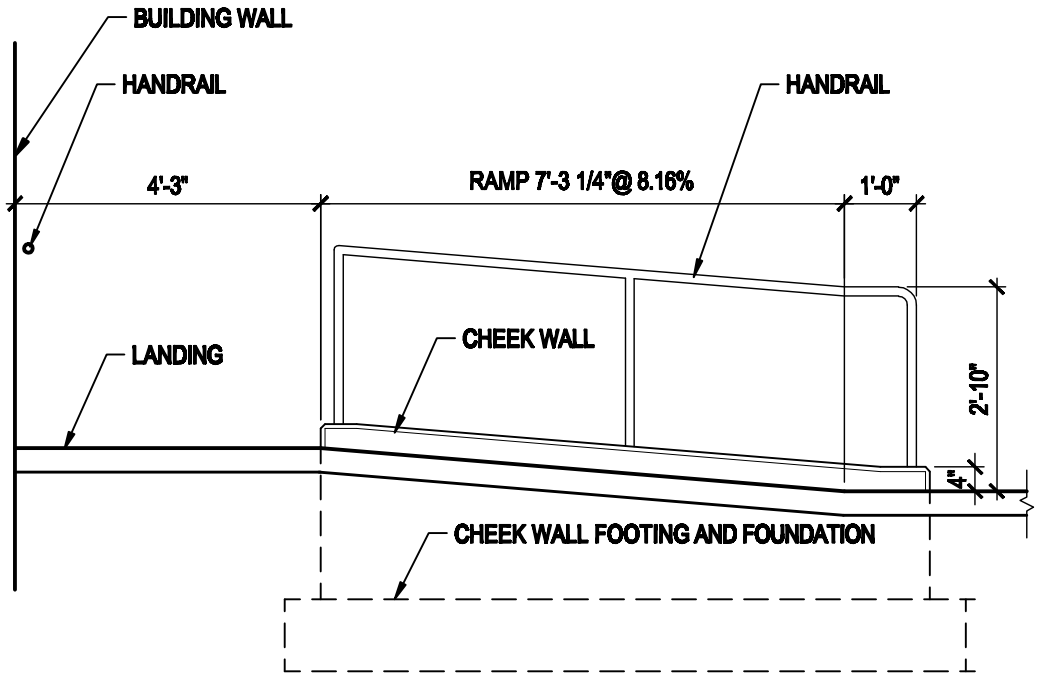
Sheet No.
AD04-LS03

Sheet Reference
AS101



B5 ACCESSIBLE RAMP AND HANDRAIL ELEVATION

3/8" = 1'–0"

DETAIL–FILE

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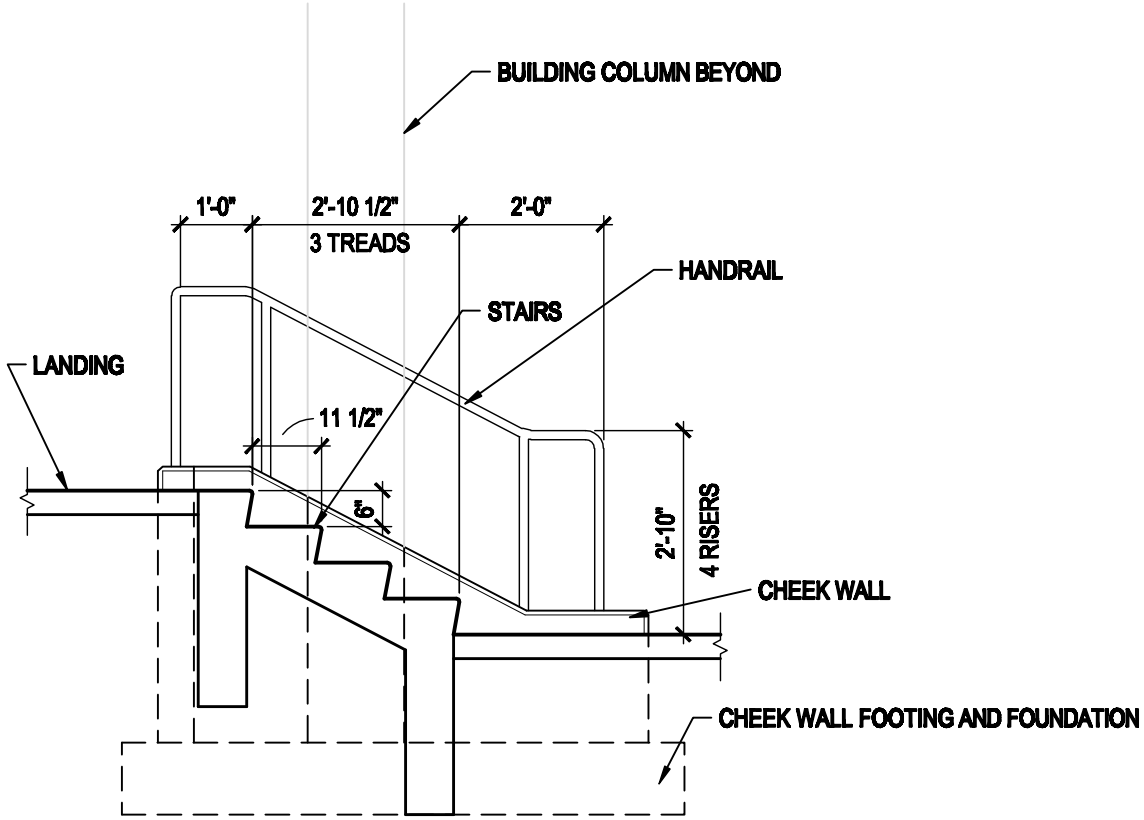
Sheet No.
AD04-LS04

Sheet Reference
AS502



C5 STAIR SECTION/ HANDRAIL ELEVATION

3/8" = 1'–0"

DETAIL–FILE

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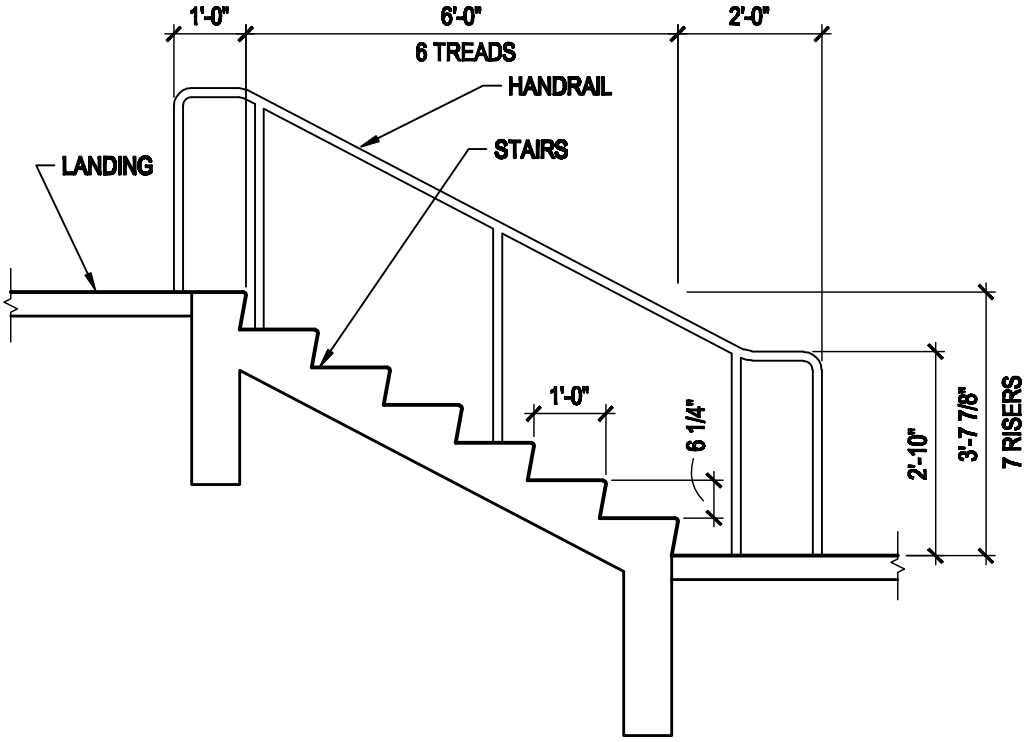
Sheet No.
AD04-LS05

Sheet Reference
AS502



C4 STAIR SECTION/ HANDRAIL ELEVATION

3/8" = 1'-0"

DETAIL–FILE

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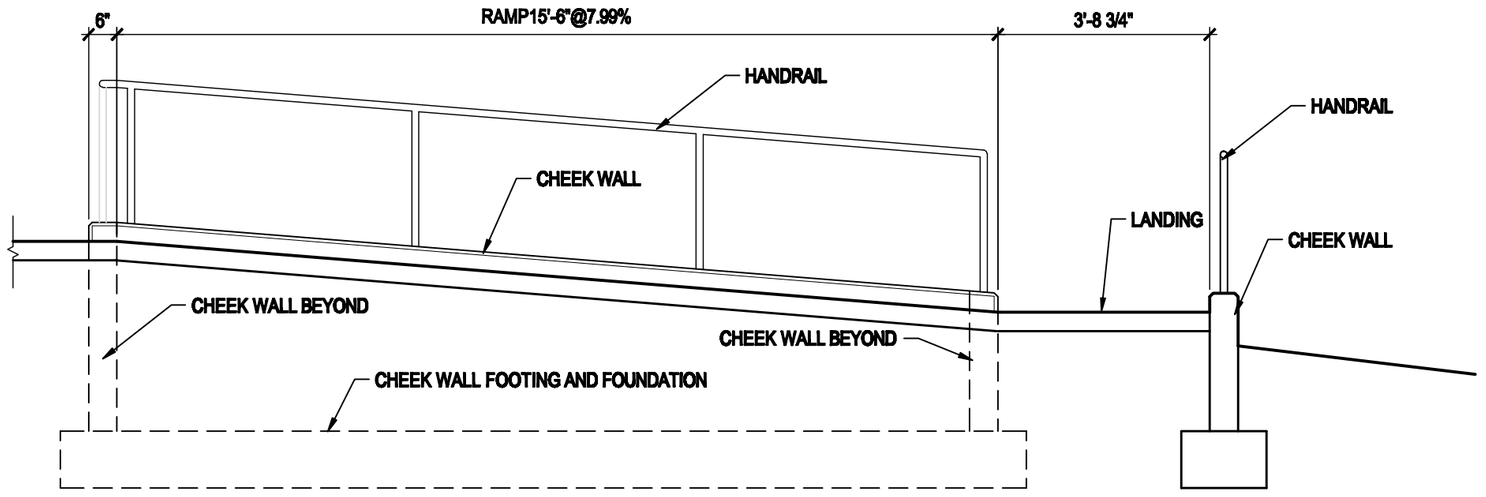
Sheet No.
AD04-LS06

Sheet Reference
AS502



B3 ACCESSIBLE RAMP AND HANDRAIL ELEVATION

3/8" = 1'–0"

DETAIL–FILE

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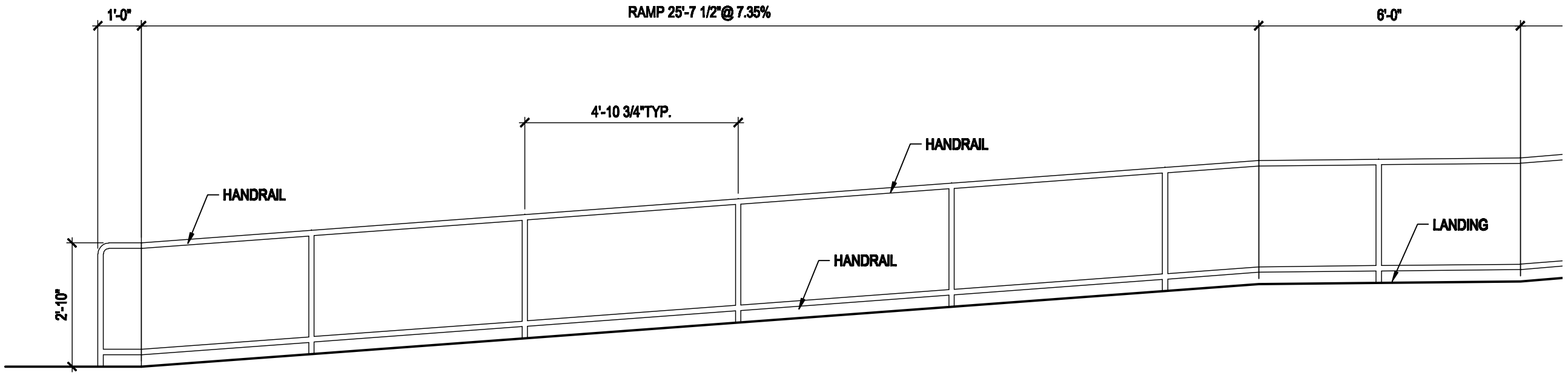
AD04-LS07
Sheet Reference
AS502



A2 ACCESSIBLE RAMP AND HANDRAIL ELEVATION

3/8" = 1'-0"

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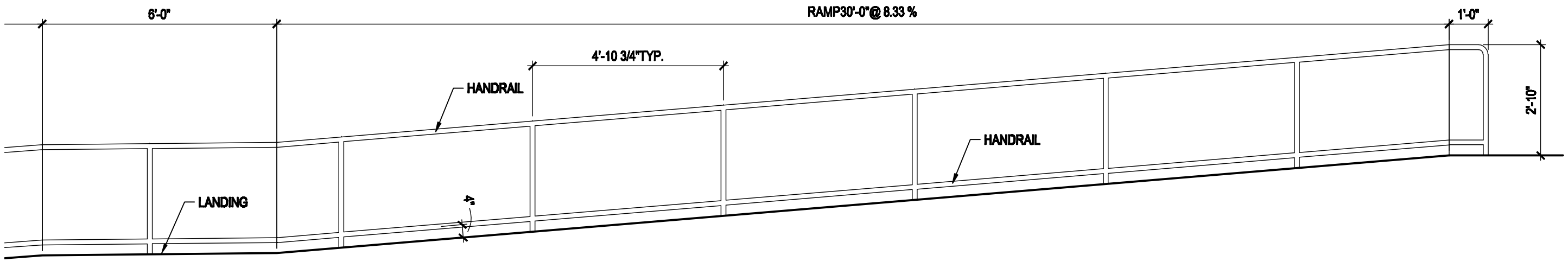
Sheet No.
AD04-LS08
Sheet Reference
AS502



A2 ACCESSIBLE RAMP AND HANDRAIL ELEVATION

3/8" = 1'-0"

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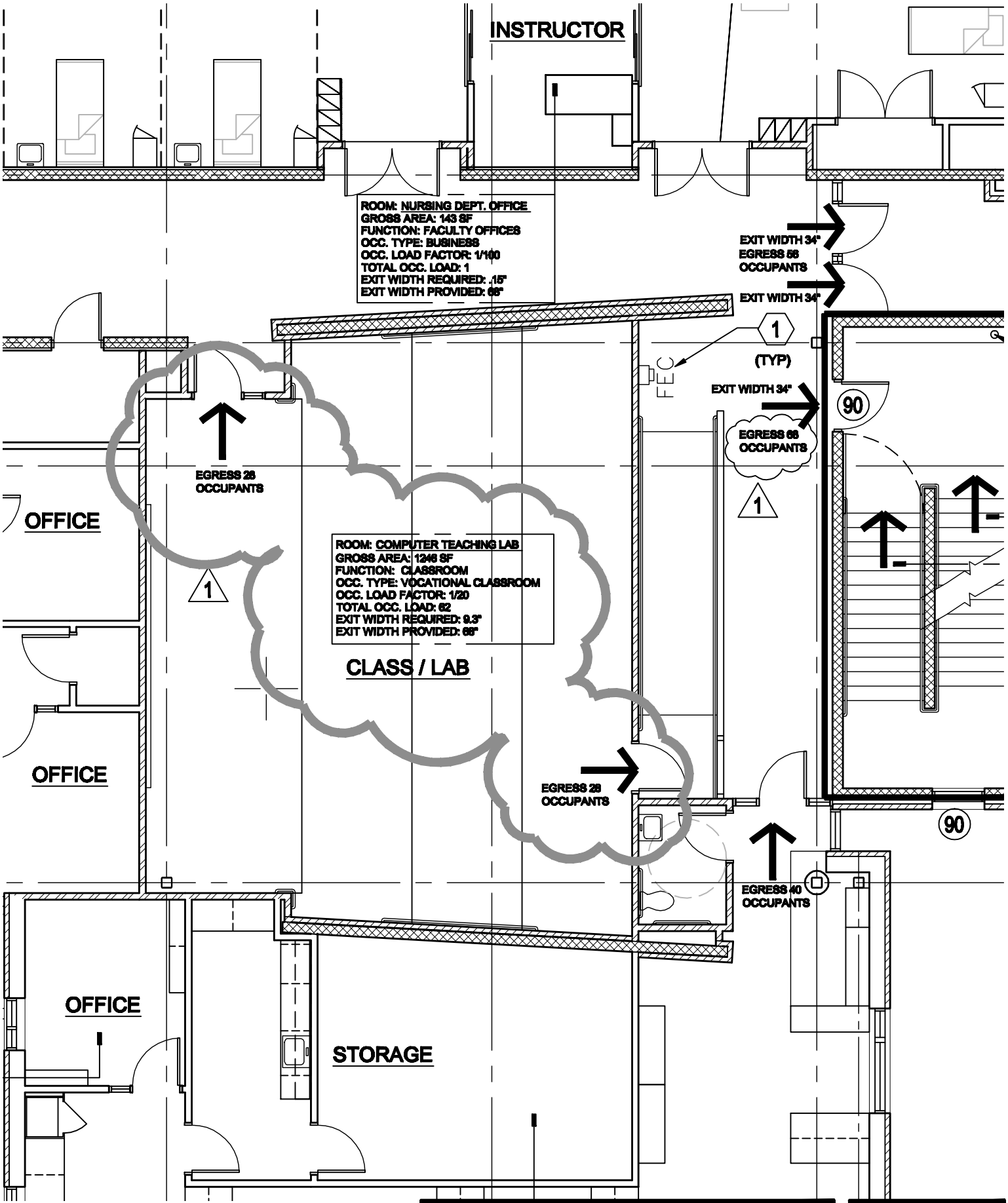
AD04-LS09
Sheet Reference
AS502



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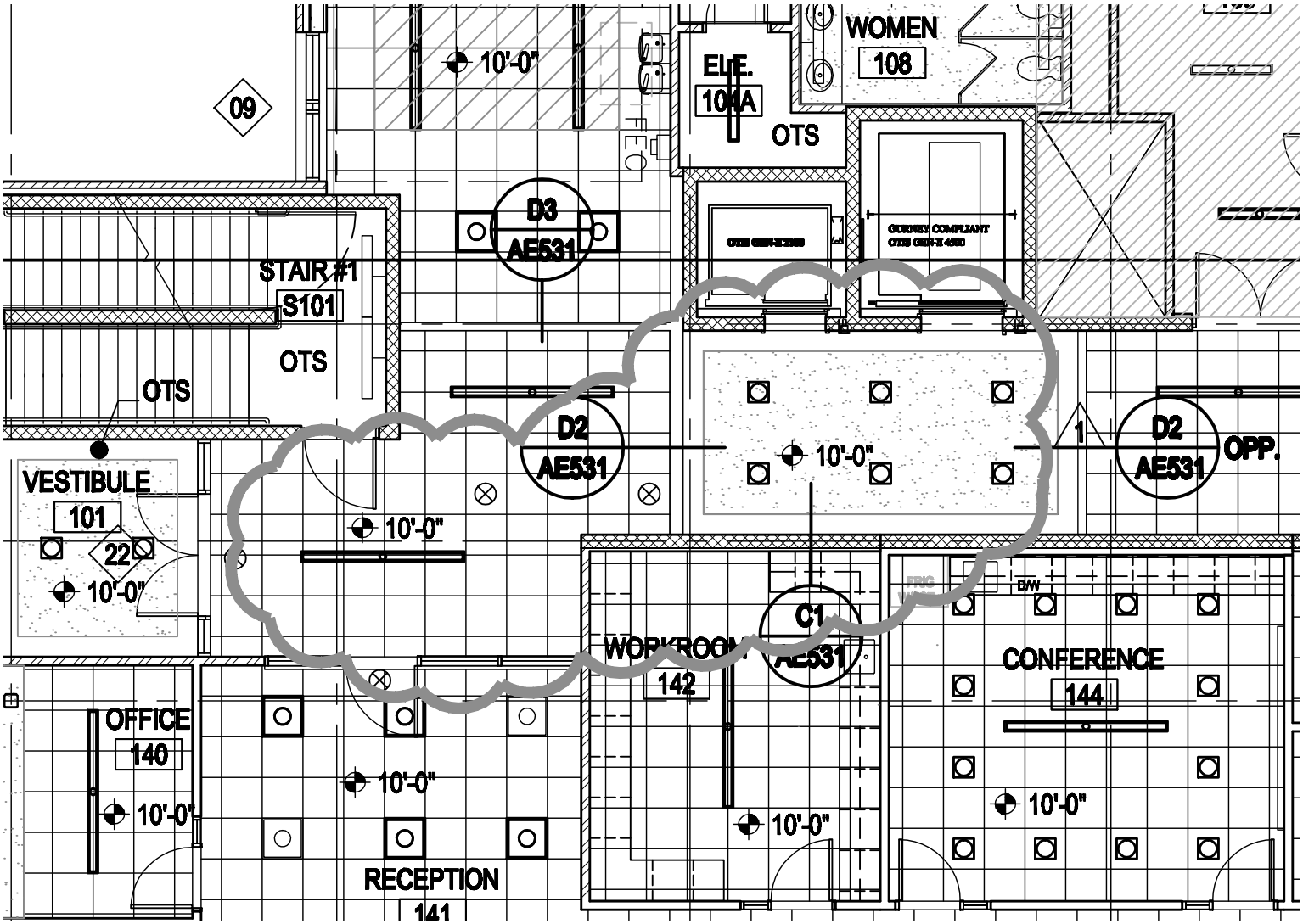
Sheet No.
AD04-AS01

Sheet Reference
GI011



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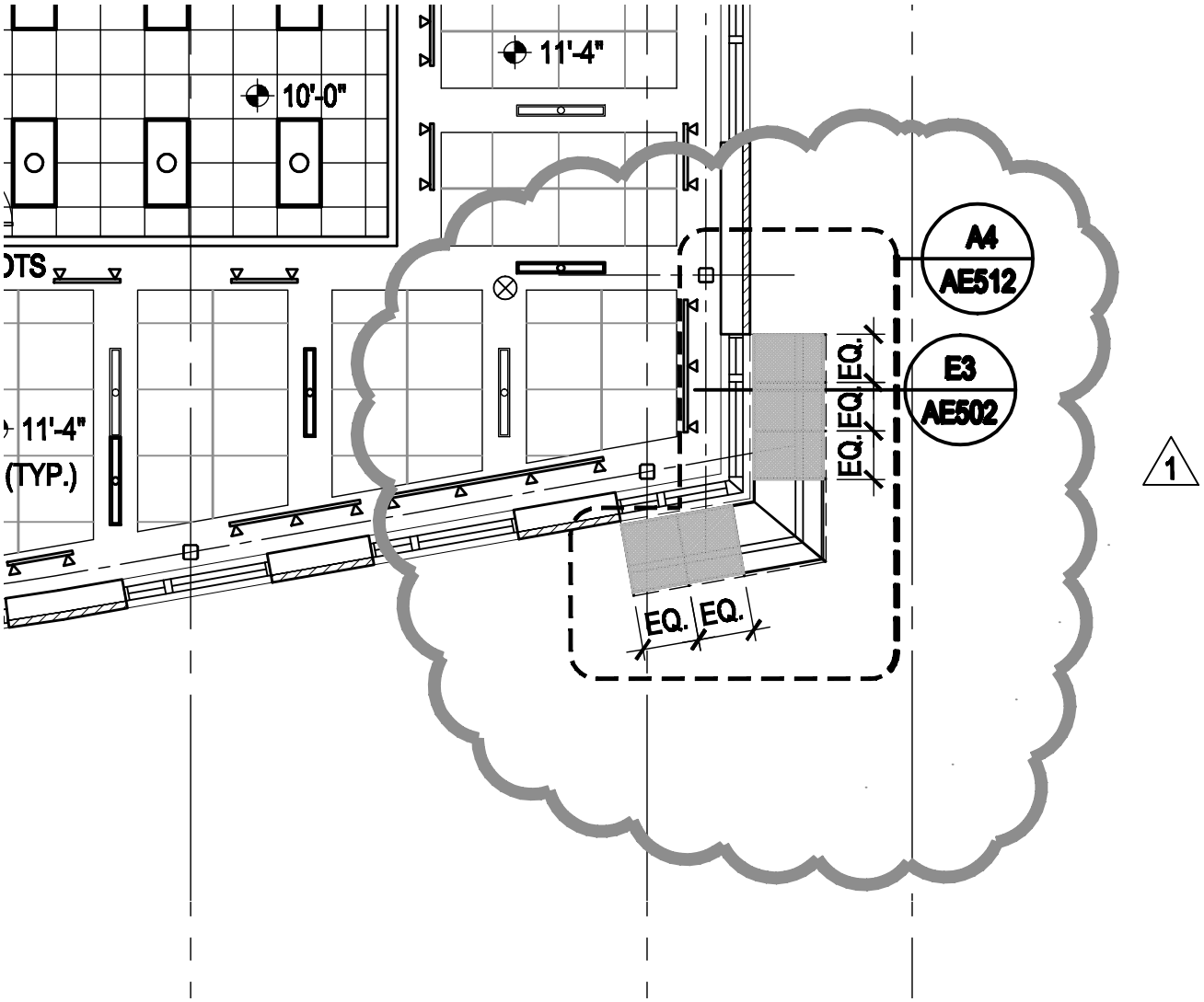
Sheet No.
AD04-AS02

Sheet Reference
AC101



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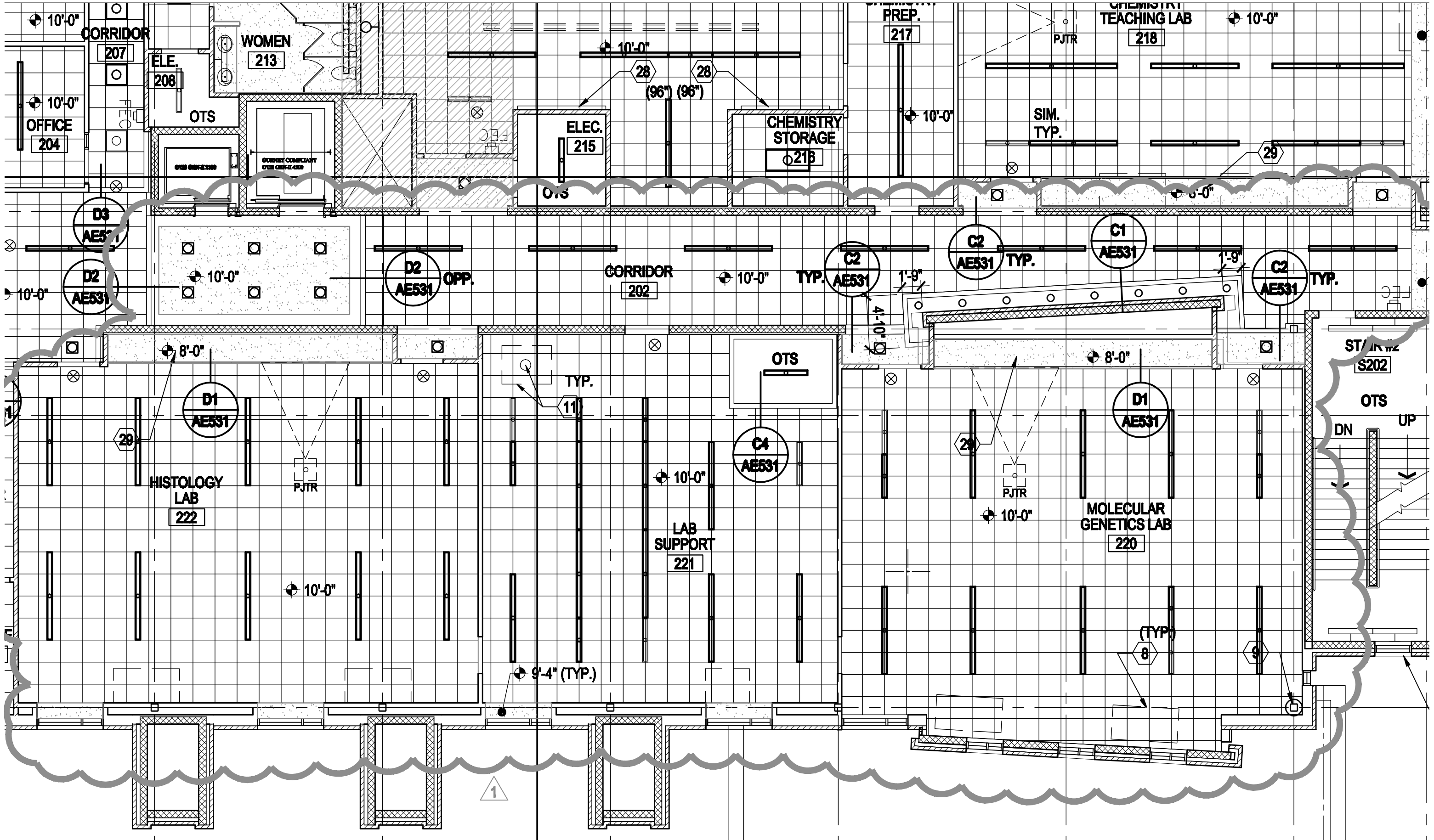
AD04-AS03

Sheet Reference
AC101



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Sheet No.
AD04-AS04

Sheet Reference
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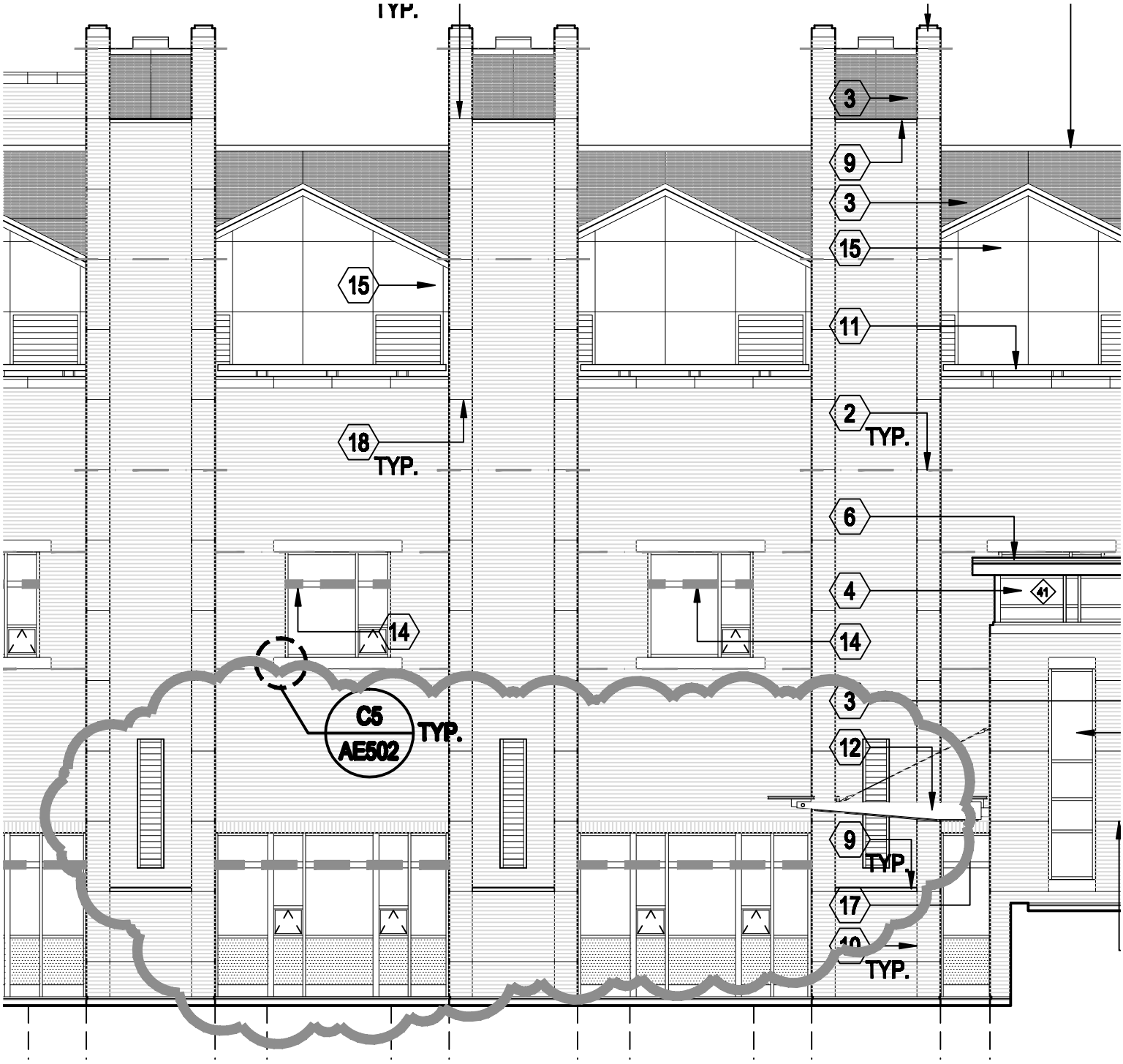

D1 SOUTH ELEVATION

0 4' 8' 16'

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

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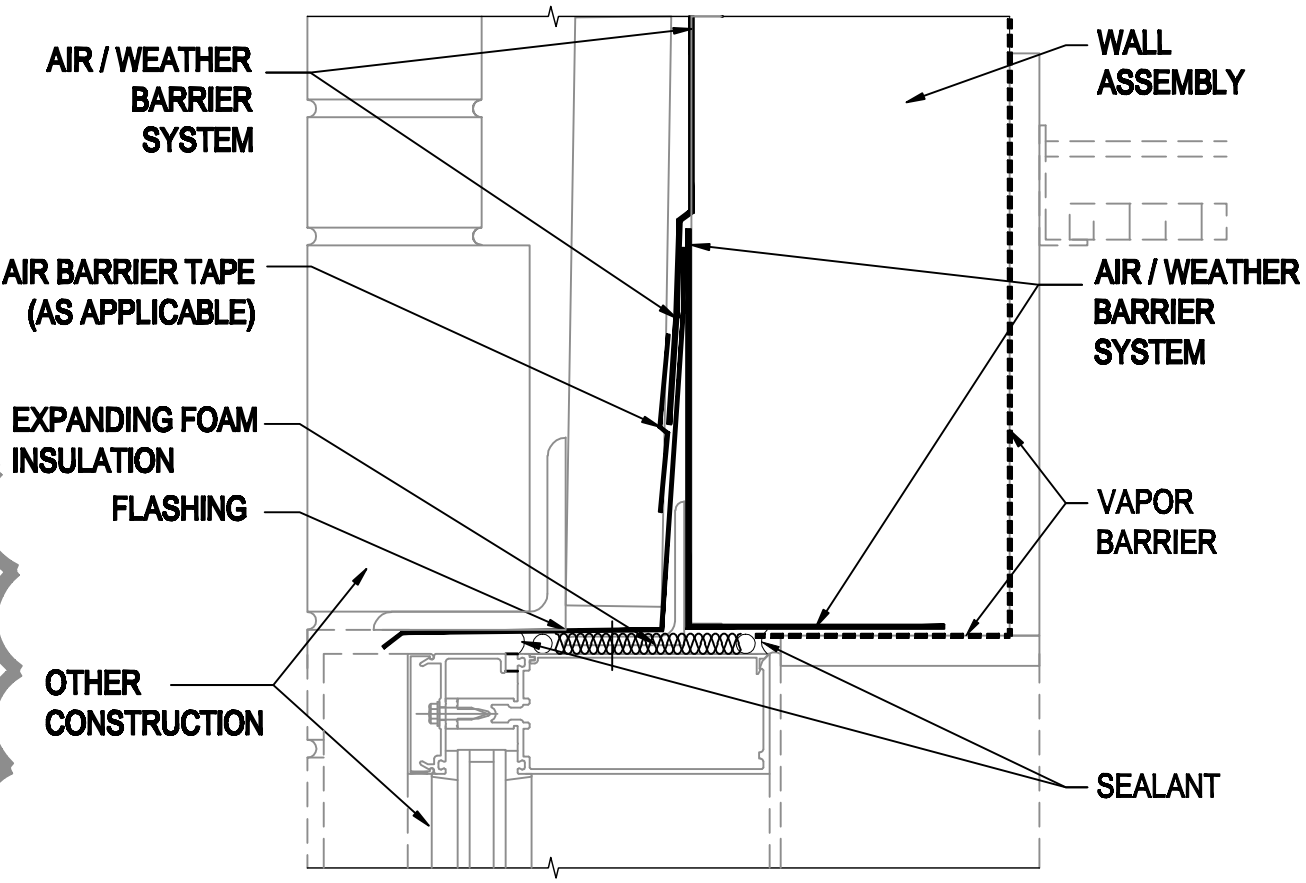
Sheet No.
AD04-AS05

Sheet Reference
AE201



E1 TYP. AIR BARRIER @ HEAD

SCALE: 3" = 1'-0"

AE314
A-DTAB04

1

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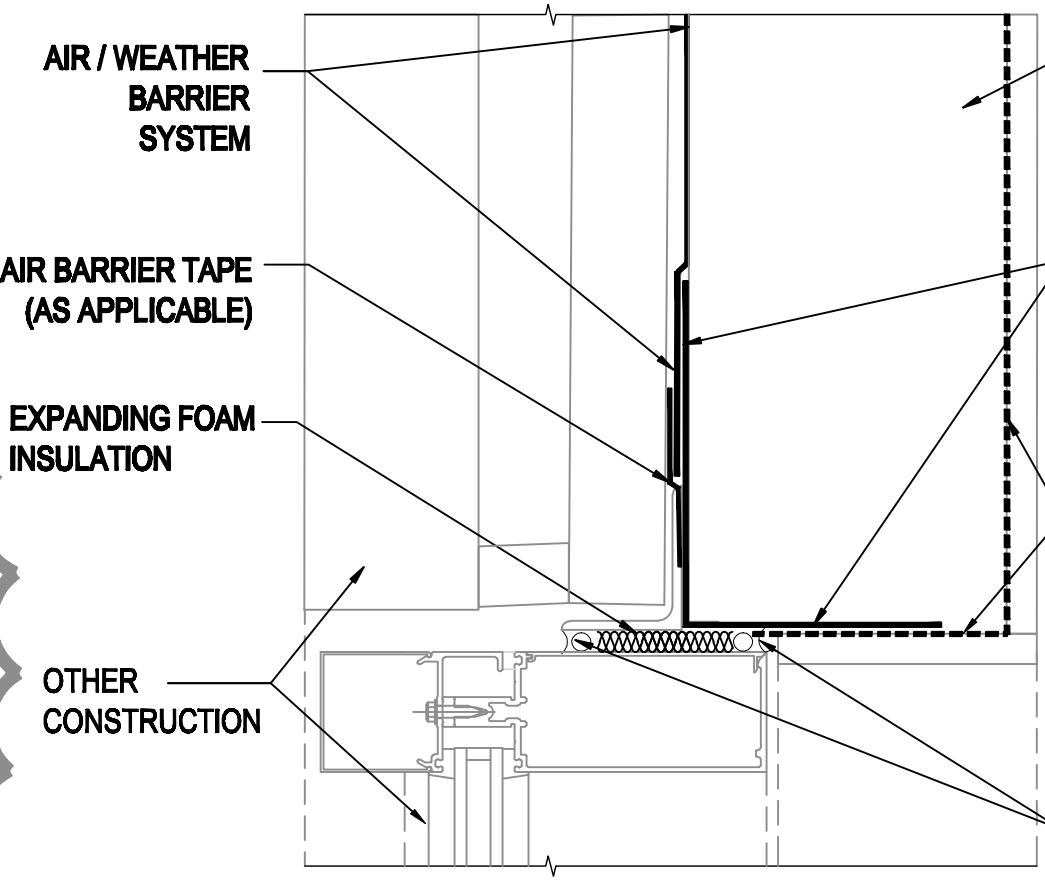
Sheet No.
AD04-AS06
Sheet Reference
AE314



D1 TYP. AIR BARRIER @ JAMB

SCALE: 3" = 1'-0"

AE314
A-DTAB05

1

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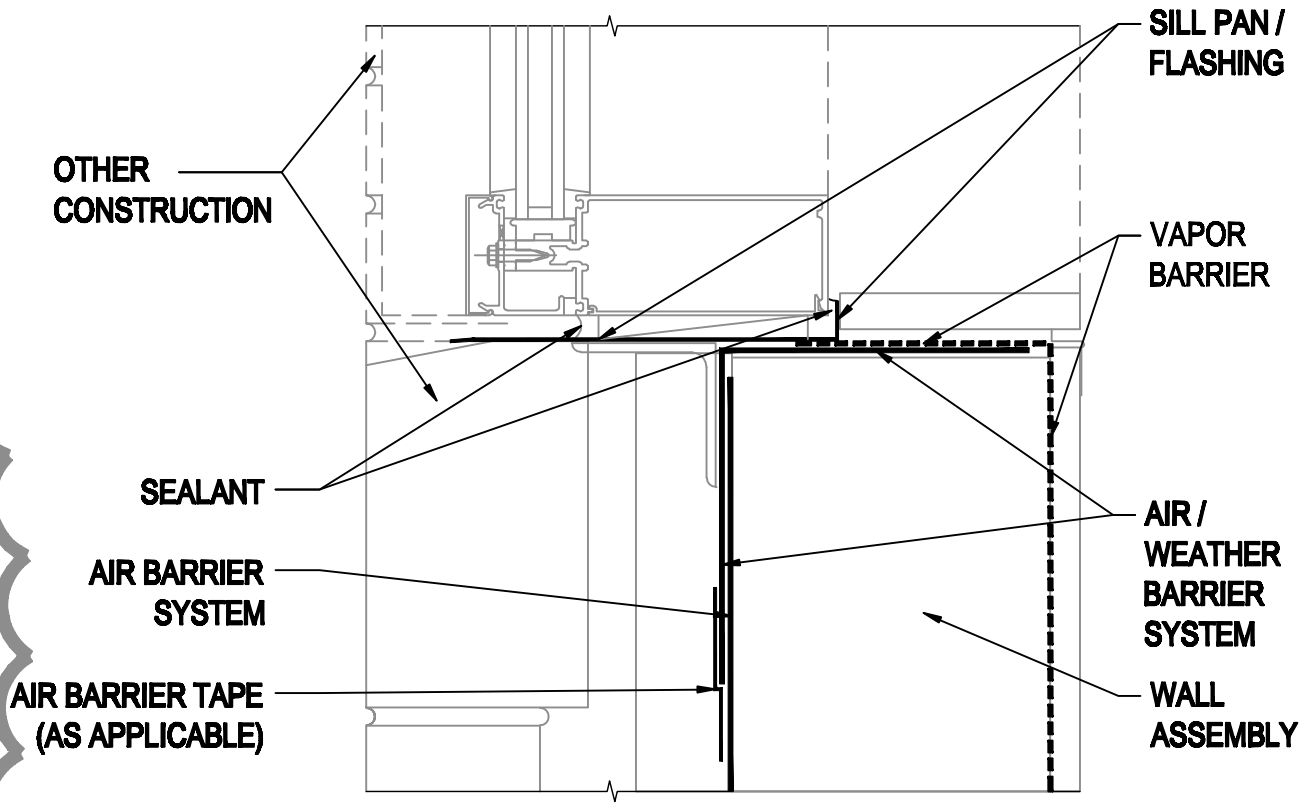
Sheet Reference
AE314



C1 TYP. AIR BARRIER @ SILL

SCALE: 3" = 1'-0"

AE314

A-DTAB05

1

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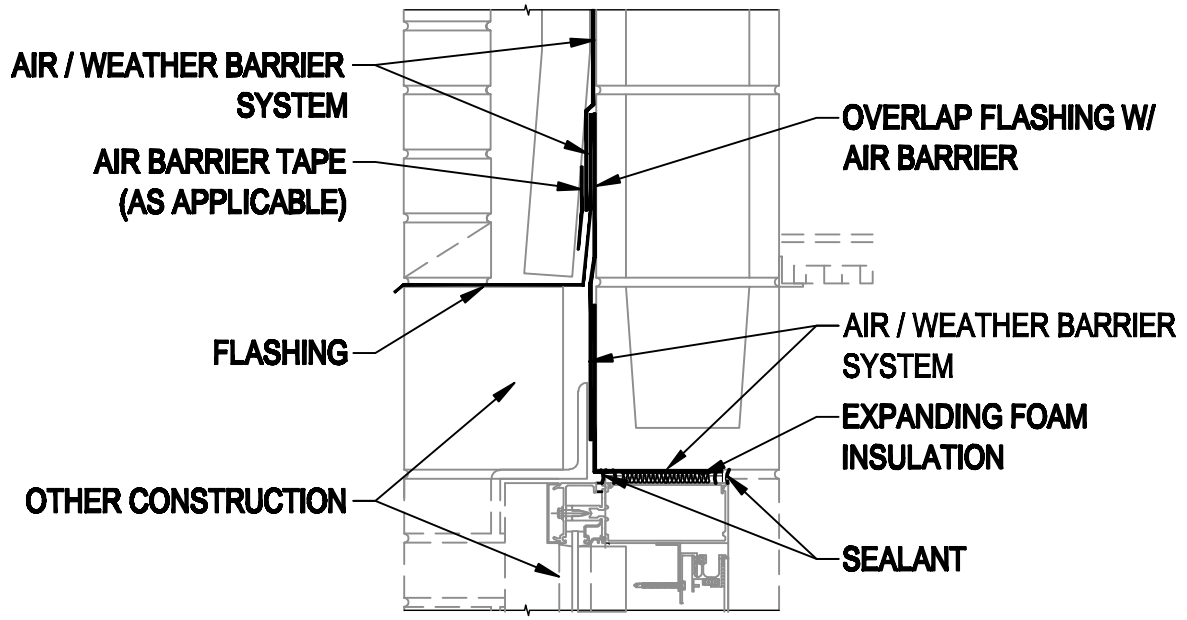
Project No: DFCM: 07297730

Date: 01-26-10

Sheet No.
AD04-AS08

Sheet Reference
AE314



E2 TYP. AIR BARRIER @ HEAD

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

AE314

A-DTAB01

1

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AD04-AS09

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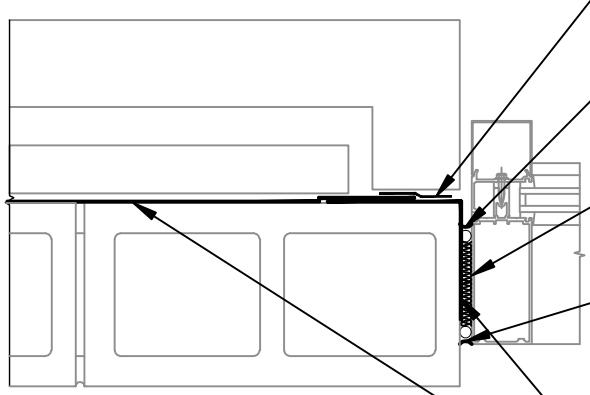
AE314

BRICK VENEER EXTERIOR



EXPOSED CMU INTERIOR

D2 TYP. AIR BARRIER @ JAMB

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

AE314
A-DTAB02

1

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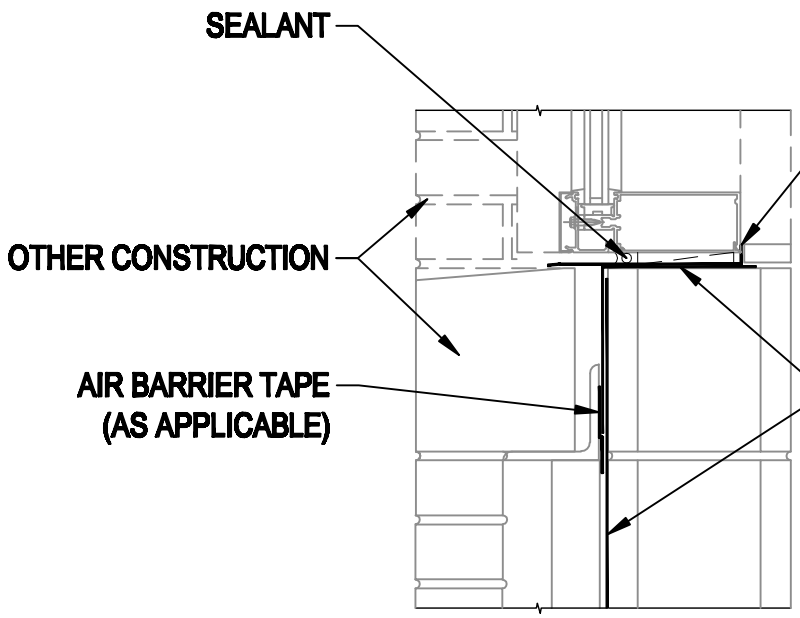
AD04-AS10
Sheet Reference
AE314



BRICK VENEER EXTERIOR

EXPOSED CMU INTERIOR

C2 TYP. AIR BARRIER @ SILL

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

AE314

A-DTAB03

1

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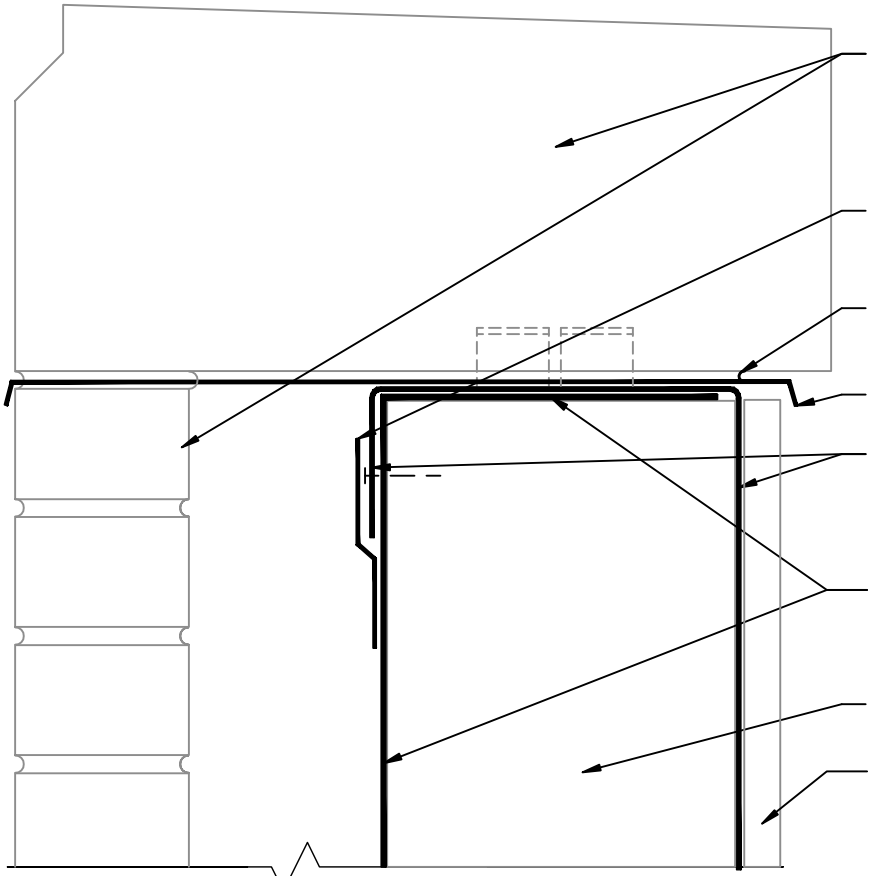
Sheet No.
AD04-AS11

Sheet Reference
AE314



E3 TYP. AIR BARRIER @ PARAPET

SCALE: 3"=1'-0"

AE314

A-DTAB08

1

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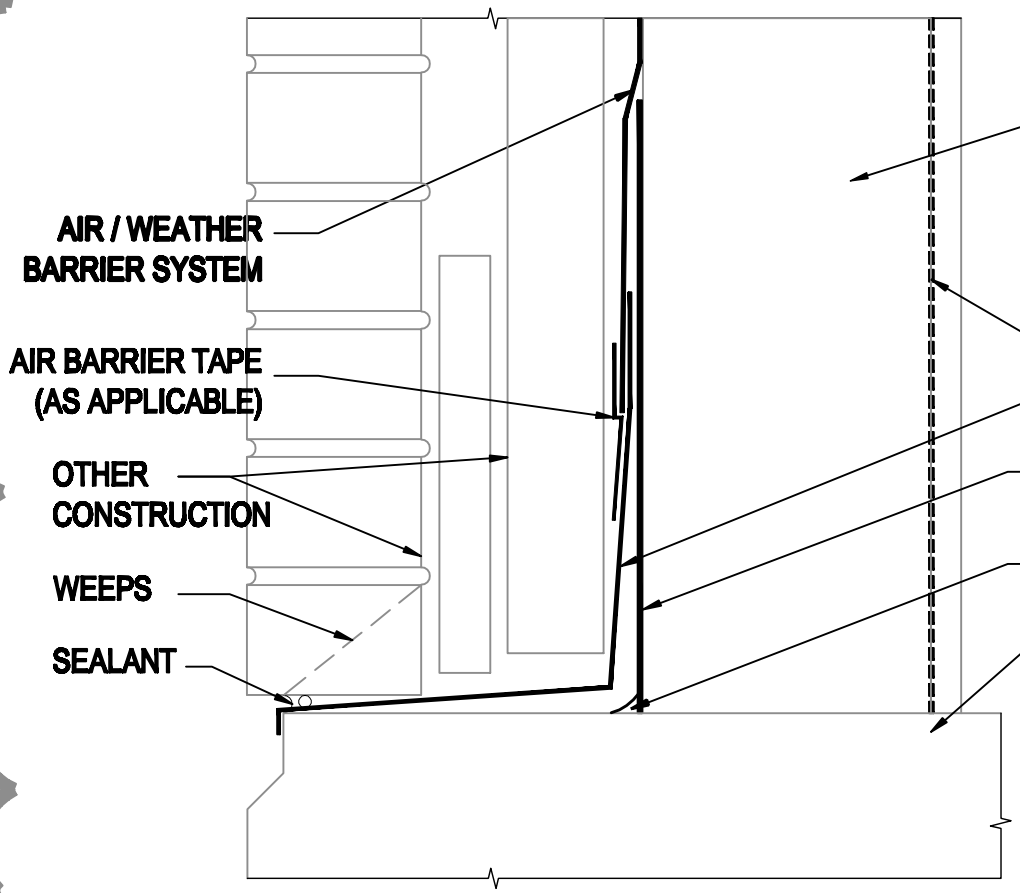
Sheet No.
AD04-AS12

Sheet Reference
AE314



C3 TYP. AIR BARRIER @ FOUNDATION

SCALE: 3"=1'-0"

AE314

A-DTAB08

1

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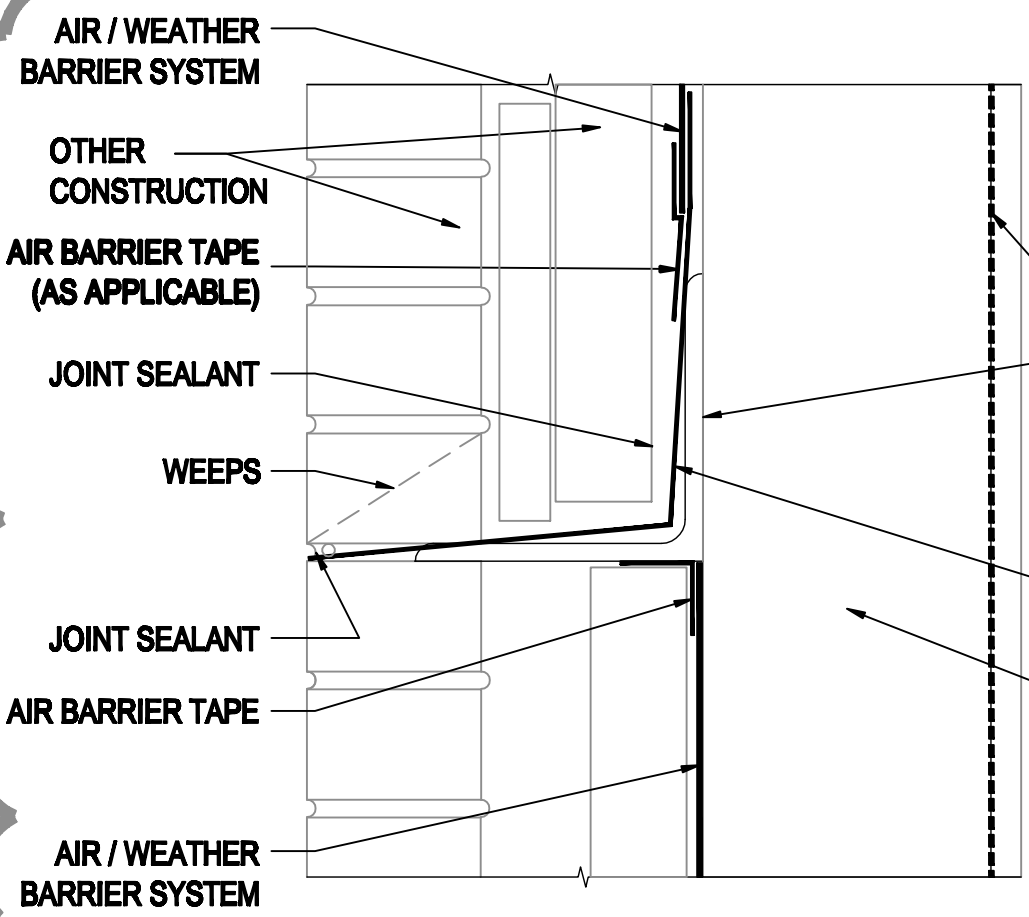
Sheet No.
AD04-AD13

Sheet Reference
AE314



D3 TYP. AIR BARRIER @ LINTEL ANGLE

SCALE: 3"=1'-0"

AE314

A-DTAB07

1

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Sheet No.
AD04-AS14

Sheet Reference
AE314

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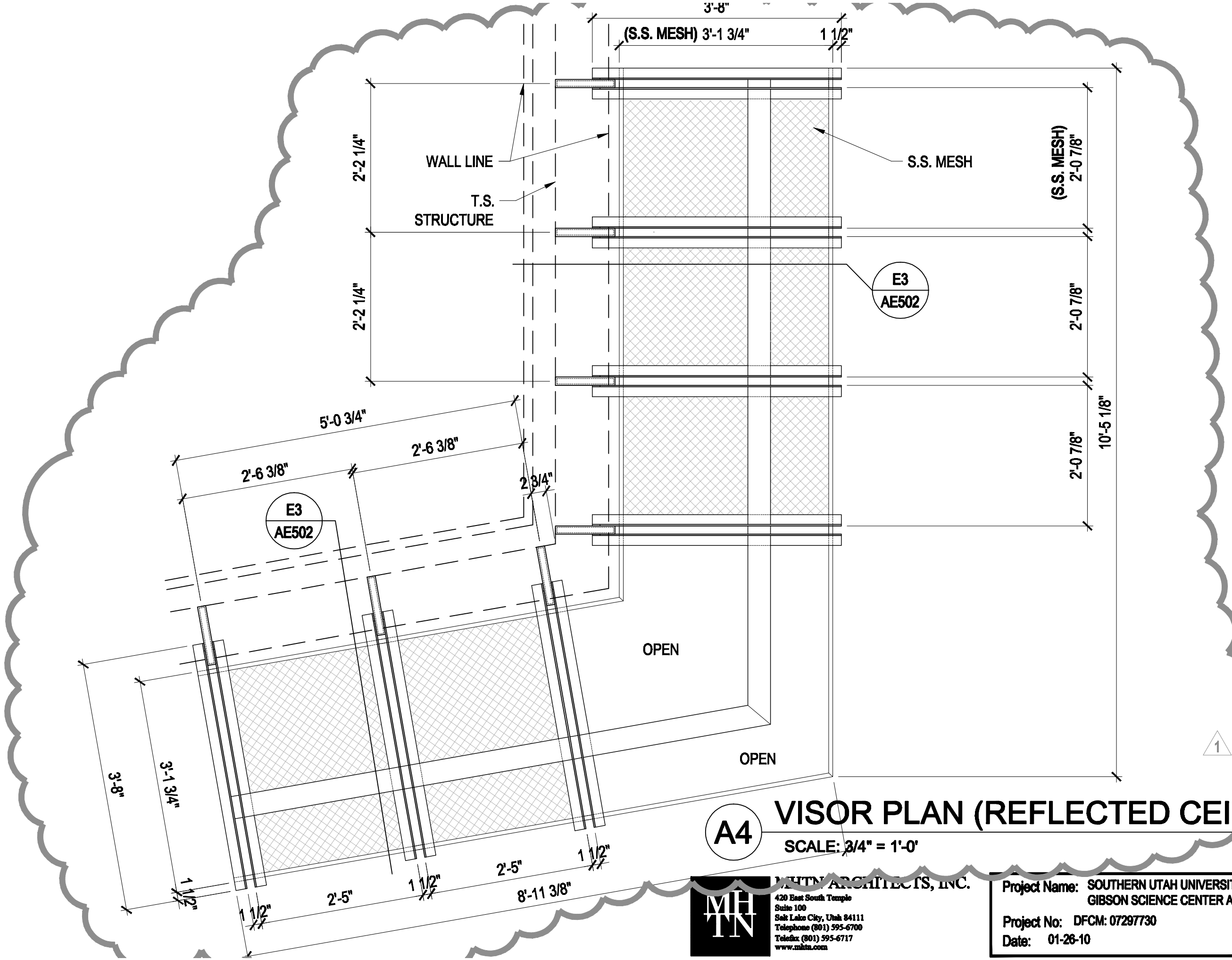
Date: 01-26-10

Sheet No.
AD04-AS15
Sheet Reference
AE401

E1 STAIR #1 THIRD FLOOR PLAN

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

AE401



A4 VISOR PLAN (REFLECTED CEILING)

SCALE: 3/4" = 1'-0"

A-DTEX29

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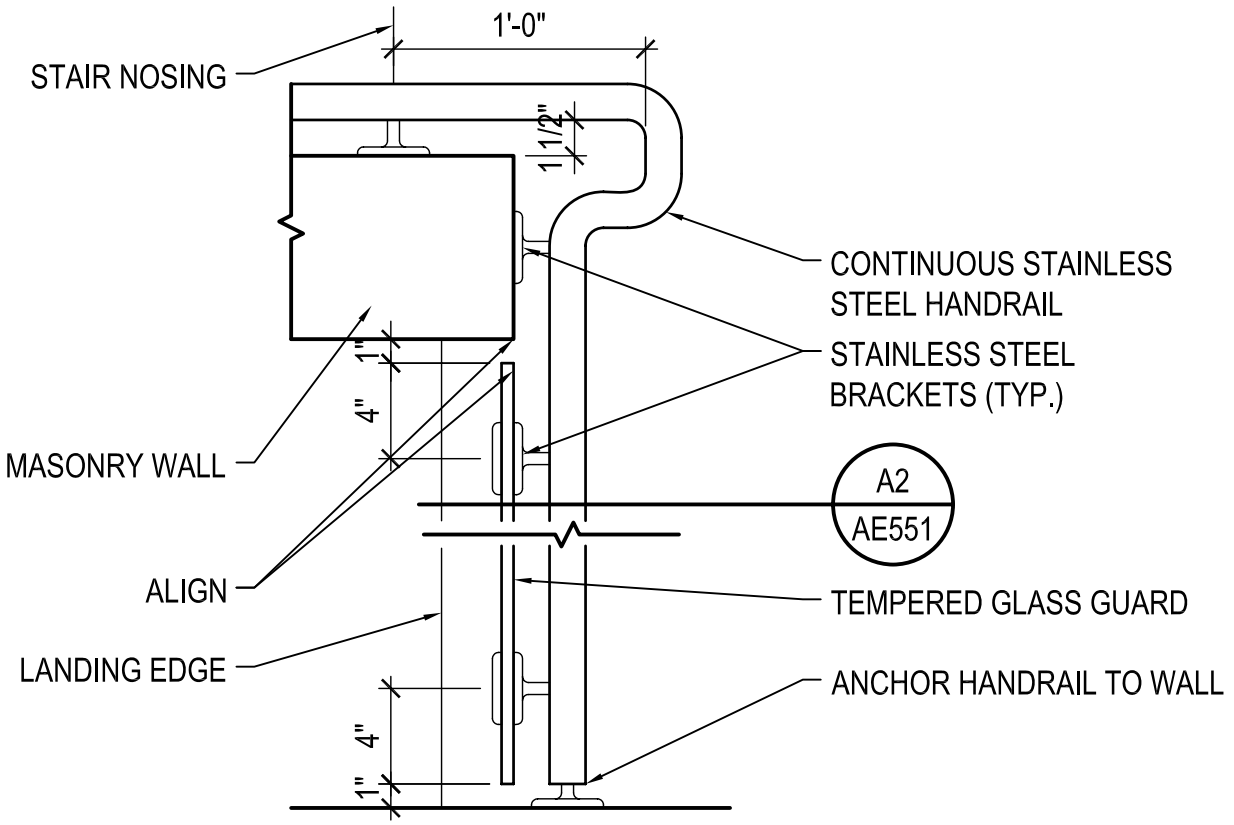
Sheet No.
AD04-AS16

Sheet Reference
AE512



C1 DETAIL

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

AE551

A-DTVC10

Updated: 01/25/10

1

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Sheet No.
AD04-AS17

Sheet Reference
AE551

SINK SCHEDULE

SINK	MATERIAL	DIMENSIONS WIDTH x LENGTH x DEPTH	MOUNTED	REMARK
SK1	EPOXY RESIN	21" X 17" X 10"	DROP-IN	-
SK2	EPOXY RESIN	18" X 15" X 5"	DROP-IN	ACCESSIBLE
SK3	EPOXY RESIN	28" X 15" X 12"	DROP-IN	-
SK4	STAINLESS STEEL	12" X 12" X 5"	INTEGRAL	ACCESSIBLE
SK5	STAINLESS STEEL	35" X 19" X 12"	INTEGRAL	GREENHOUSE SINK
SK6	STAINLESS STEEL	21" X 18" X 12"	INTEGRAL	SURGICAL SCRUB SINK
[illegible]	[illegible]	[illegible]	DROP-IN	-
SK8	STAINLESS STEEL	13.5" X 16" X 14"	WALL MOUNT	ACCESSIBLE - ELKAY MODEL #WCLWO1923OSD1

1

SERVICE FIXTURE SCHEDULE

SERVICES[1]	MOUNTED	MODEL NUMBER[2]	REMARK
CHW-1, CHW-1A	DECK	CTA414-10VB55, CTA424-10VB	CHW-1A IS ACCESSIBLE MODEL WITH WRISTBLADES
CW-2, CW-2A	DECK	CT611-10VB55, CTA424-10VB	CW-2A IS ACCESSIBLE MODEL WITH WRISTBLADES
DI-3	DECK	CT7833SC-10	
PR-4	DECK	CTPR411	
EW-5, EW-5A	DECK	EW805, EW805LH	EW-5 IS RIGHT HAND MOUNTED, EW-5A IS LEFT HAND MOUNTED
G-6, VAC-6	DECK	CT4200-331WSA	
G-7, VAC-7	DECK	CT4200-232SWSA	
G-8, VAC-8	FUME HOOD	L4285-L050WSA	
CW-9	FUME HOOD	L4285-L050WSA	
CHW-10	PANEL	[illegible]	10" GOOSENECK
PR-11	PANEL	CTPR1711BH-110WSA	
DI-12	WALL	CT64200-6158WSA	
CHW-13	DECK	CTA4554-8VB55BH-303	
E-14	DECK	CTE400WS	NOT USED
E-15	DECK	CTE600WS	NOT USED
02-16	WALL	CT4200-258WSA	
E-17	DECK	[illegible]	NOT USED
PR-18	DECK	CTPR4411BH	
EW-19	PANEL	[illegible]	

1

1. SERVICE FIXTURES MAY OCCUR IN INDIVIDUAL LOCATIONS AND NOT IN GROUPS LISTED ON SCHEDULE.
2. SERVICE FIXTURES SHALL BE WATERSAVER BRAND UNLESS NOTED OTHERWISE.
3. PANEL/WALL SERVICE FIXTURES ARE MOUNTED AT +48" A.F.F. UNLESS NOTED OTHERWISE ON PLANS OR ELEVATIONS.

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Sheet No.
AD04-QL01
Sheet Reference
QL001

CASEWORK GENERAL NOTES

1. BENCHTOPS ARE 30" DEEP UNLESS OTHERWISE NOTED
2. CABINETS 24" WIDE OR LESS SHALL BE SINGLE DOOR/DRAWER CONFIGURATION
3. "KS" DENOTES KNEE SPACE, 30" W. CLEAR (TYP) UON – SEE PLANS
4. SUFFIX "L" DENOTES LOCKABLE DOOR/DRAWER CONFIGURATION
5. "*" DENOTES CABINETS CONSTRUCTED USING PHENOLIC RESIN
6. ALL CASEWORK UNDER FUME HOODS SHALL BE PAINTED STEEL, COLOR TO MATCH FUME HOOD

1

CASEWORK NOMENCLATURE

XX XX XX X

- DENOTES OPTIONS
- DENOTES CABINET STYLE (SEE CASEWORK SCHEDULE)
- DENOTES CASEWORK WIDTH IN INCHES (SEE PLANS)
- DENOTES CASEWORK TYPE

1

CASEWORK TYPES:

B:	BASE CABINET
BA:	ADA HEIGHT BASE CABINET
MB:	MOVABLE BASE CABINET
W:	WALL CABINET
T:	TALL CABINET
MT:	MOVABLE TABLE
KS:	KNEE SPACE

CASEWORK OPTIONS:

L:	LEFT HINGE CONFIGURATION
R:	RIGHT HINGE CONFIGURATION
X:	LOCKABLE

1

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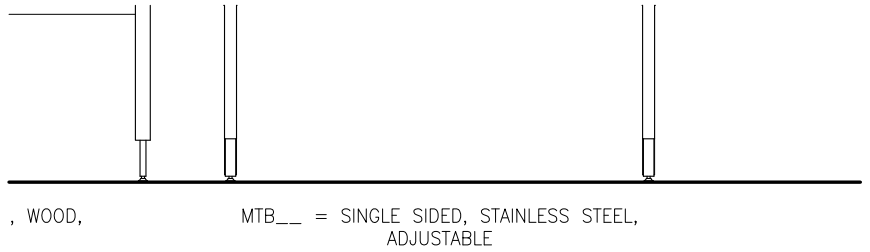
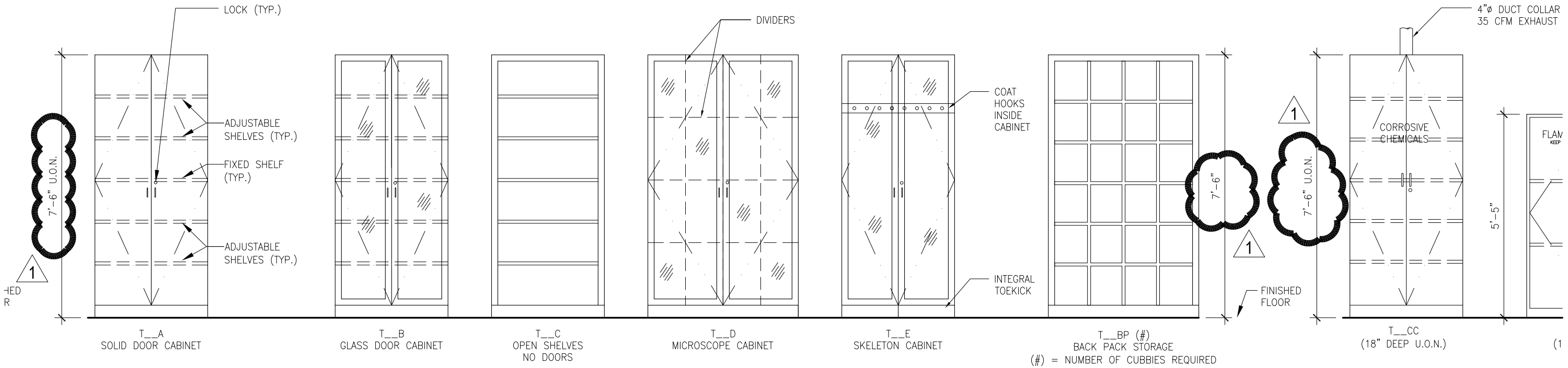
Sheet No.
AD04-QL02
Sheet Reference
QL002



, WOOD,

MTB__ = SINGLE SIDED, STAINLESS STEEL, ADJUSTABLE

;



TALL STORAGE CABINETS (WOOD)

NOTE: TALL CABINETS TO BE 22" DEEP UNO.

TALL STORAGE CAB

NOTE: TALL CABINETS TO BE 22" DEEP UNC

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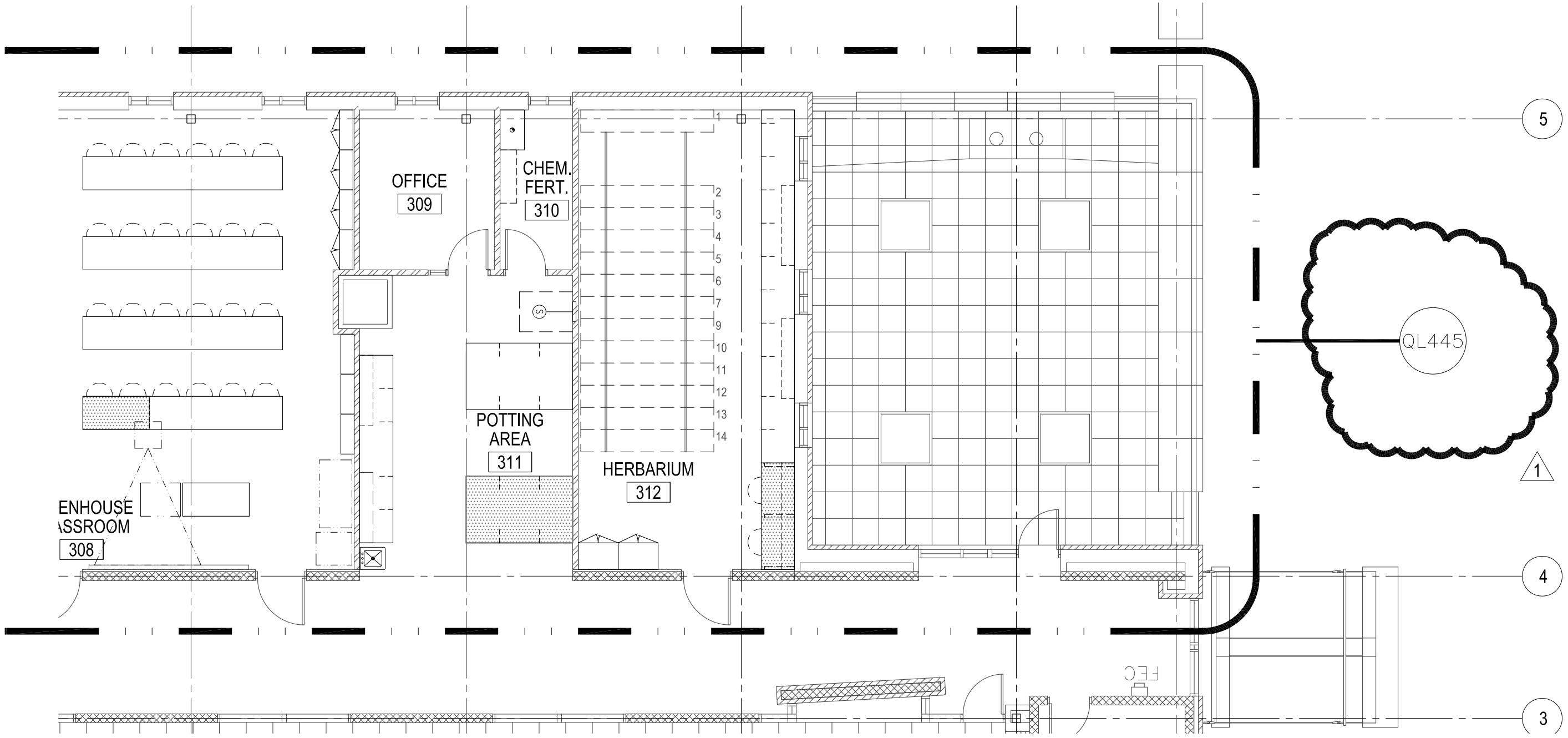
Sheet No.
AD04-QL03
Sheet Reference
QL002



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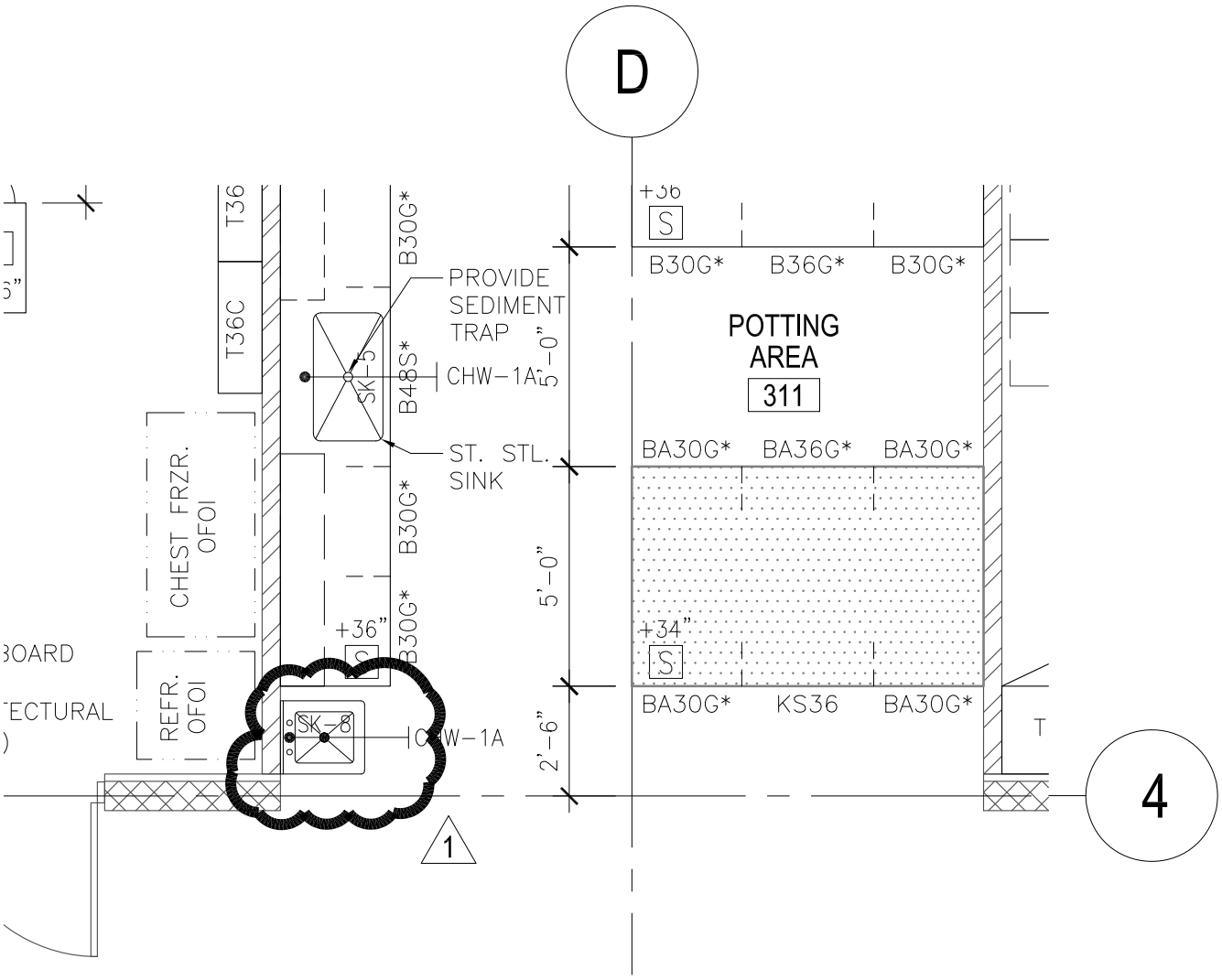
Sheet No.
AD04-QL04
Sheet Reference
QL103



1 THIRD FLOOR PLAN

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

QL445

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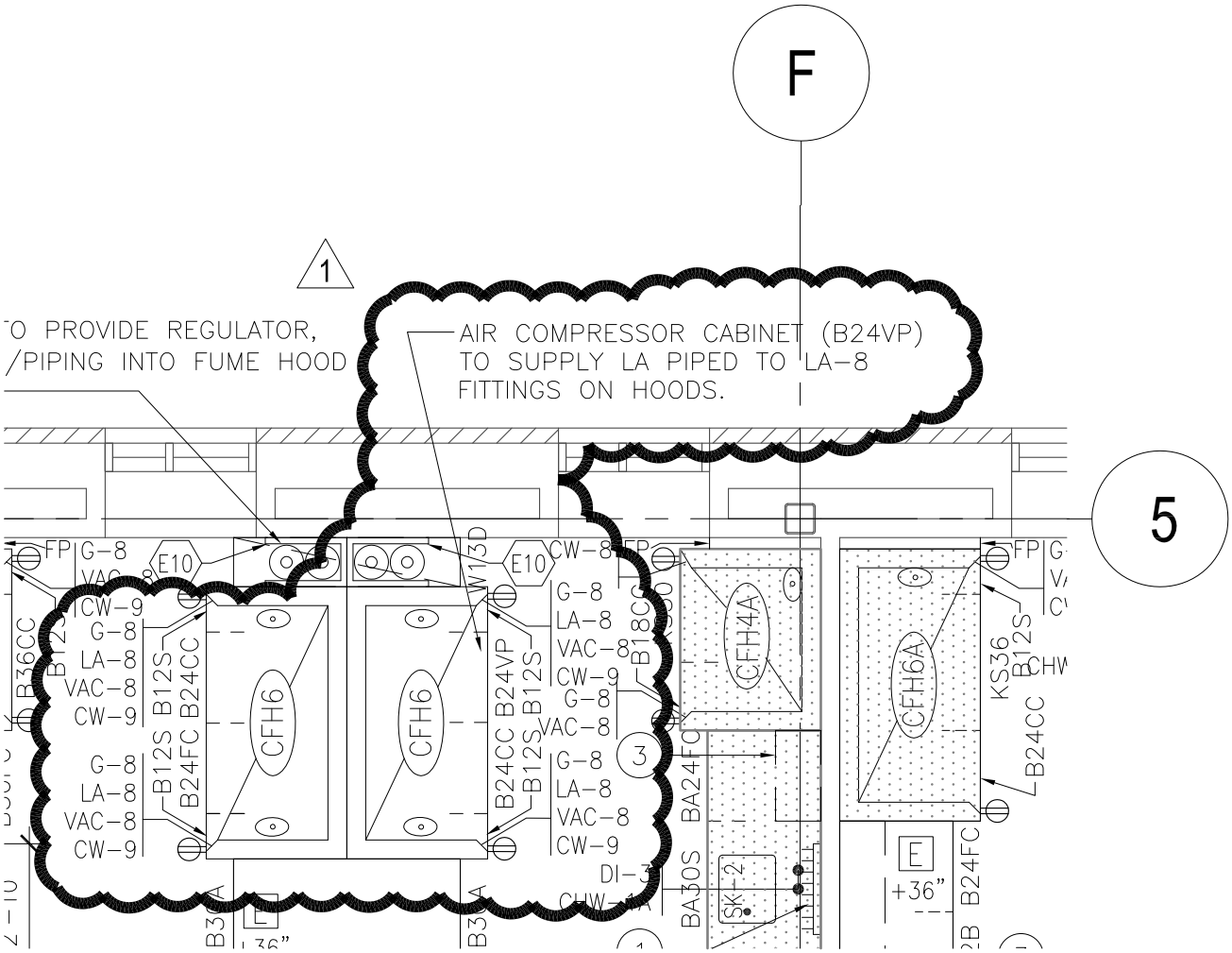
Sheet No.
AD04-QL05
Sheet Reference
QL445



1 SECOND FLOOR PLAN

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

QL443

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Sheet No.
AD04-QL06
Sheet Reference
QL443

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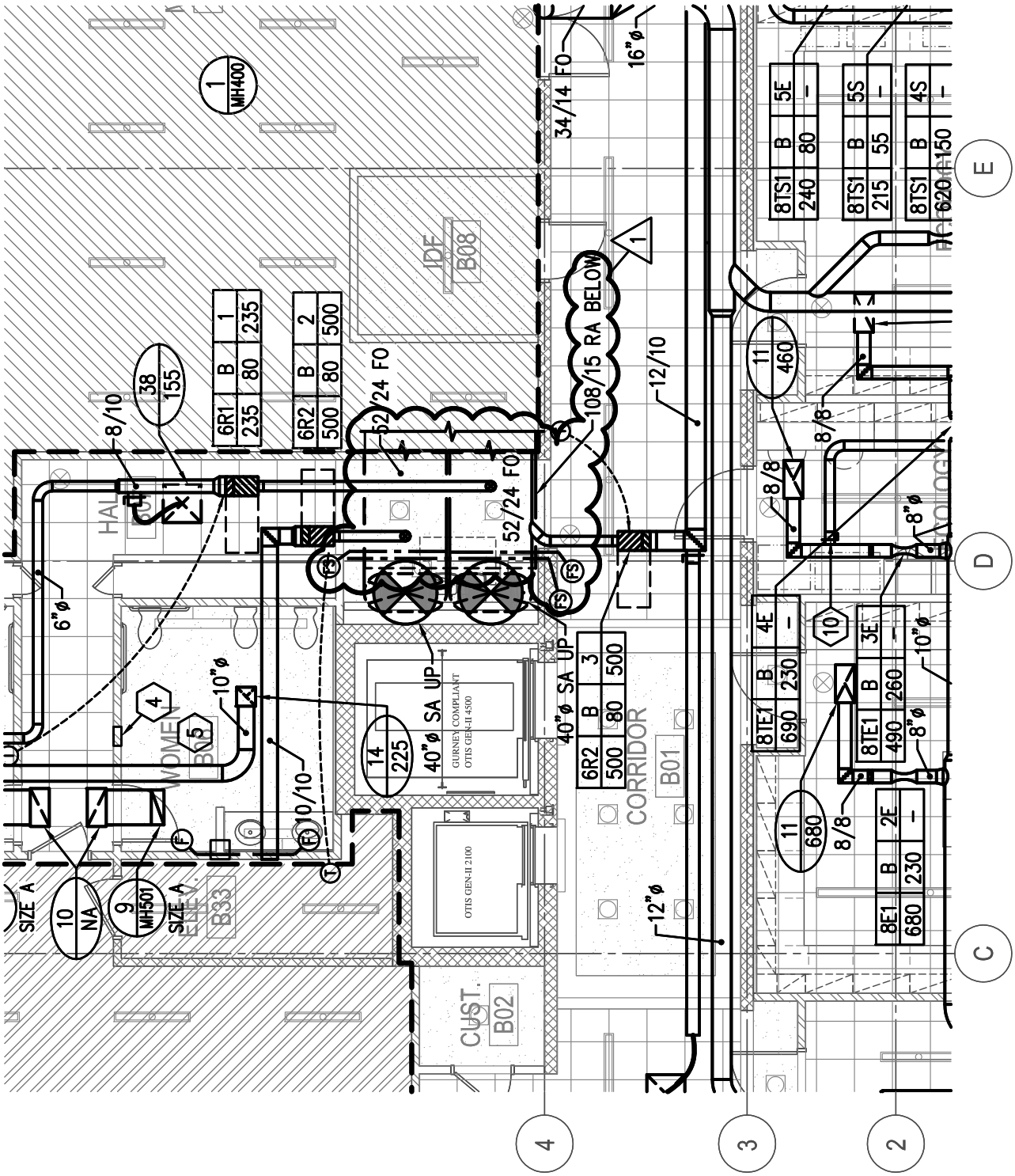
Sheet No.
AD04-M01

Sheet Reference
MH1B1

KEYED NOTES

10 BALANCE DAMPER TO 30 CFM. 1



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Sheet No.
AD04-M02
Sheet Reference
MH1B1

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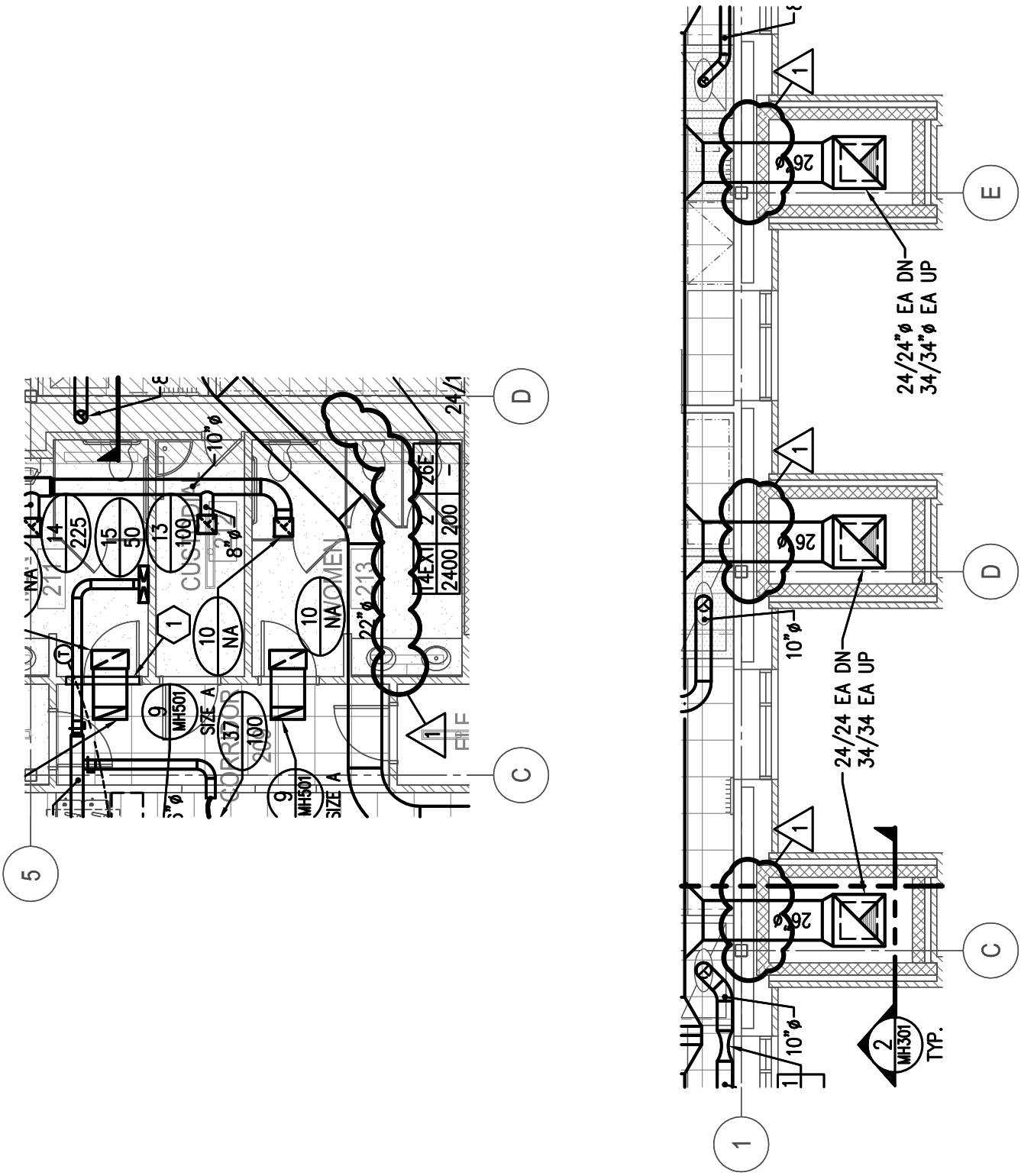
Sheet No.
AD04-M03
Sheet Reference
MH101



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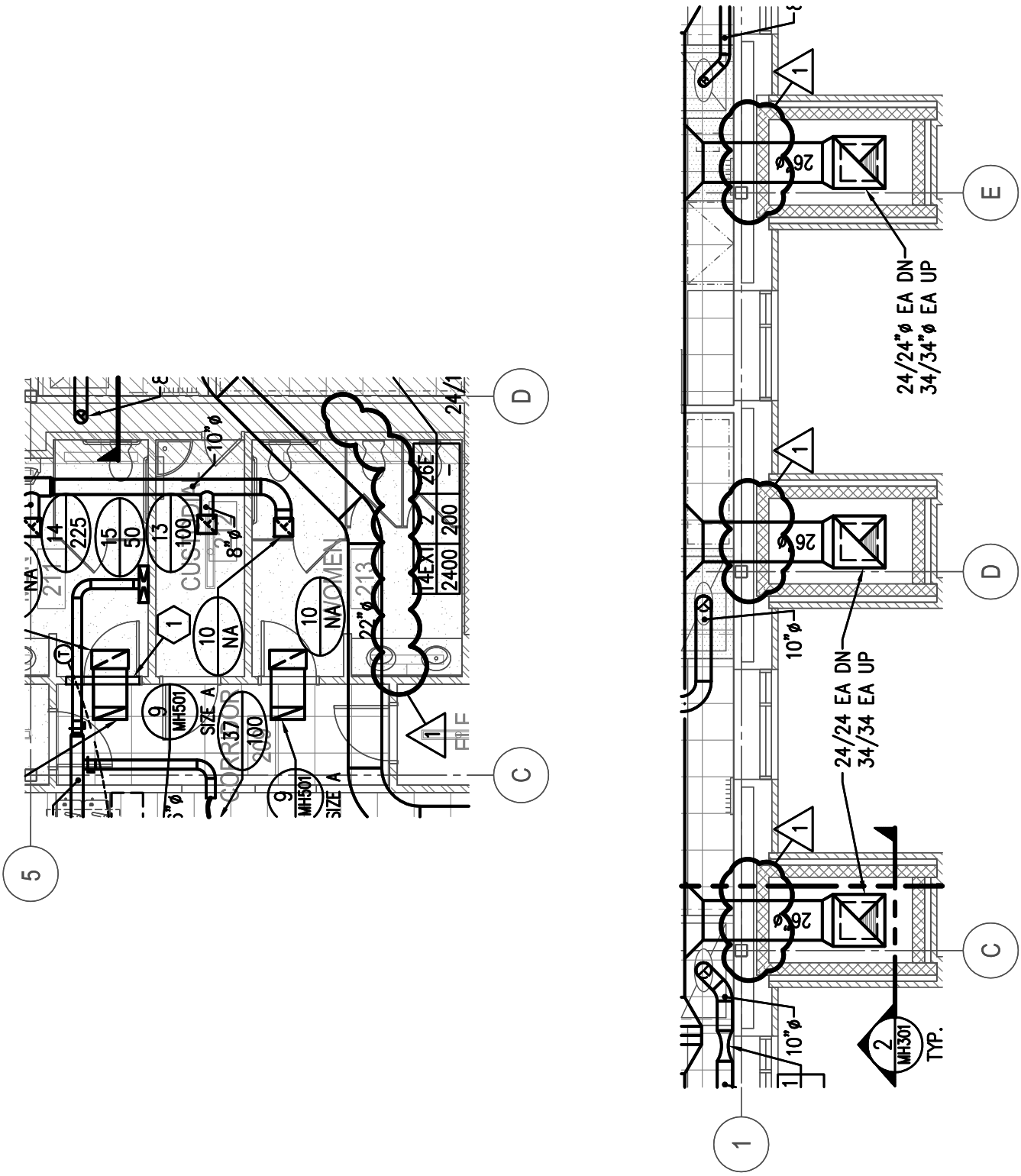
Sheet No.
AD04-M04
Sheet Reference
MH102



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MH102

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AD04-M05
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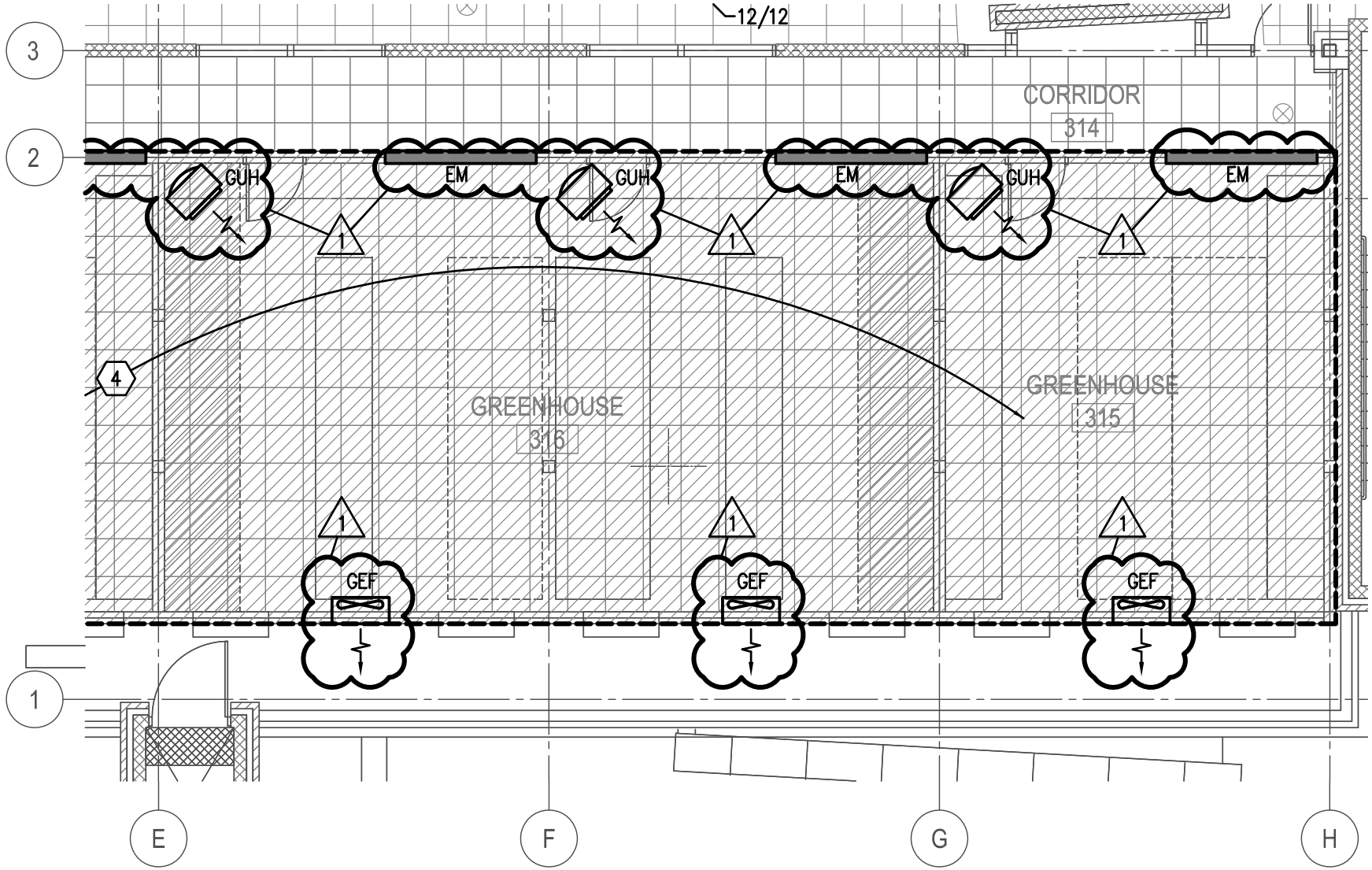
MH103

GREENHOUSE EQUIPMENT NOTES (1)

GUH=60,000 BTU/H GAS FIRED UNIT HEATER (80% EFFICIENT).
EM=8'X3'X4" 90% EFFECTIVE EVAPORATIVE COOLING MEDIA.
PROVIDE WITH SUMP PUMP AND WATER DISTRIBUTION PIPING.
GEF=2,000 CFM WALL MOUNTED EXHAUST FAN.

(1) ALL EQUIPMENT IS PROVIDED BY GREENHOUSE SUPPLIER.
SIZING INDICATED ON DRAWINGS IS APPROXIMATE.



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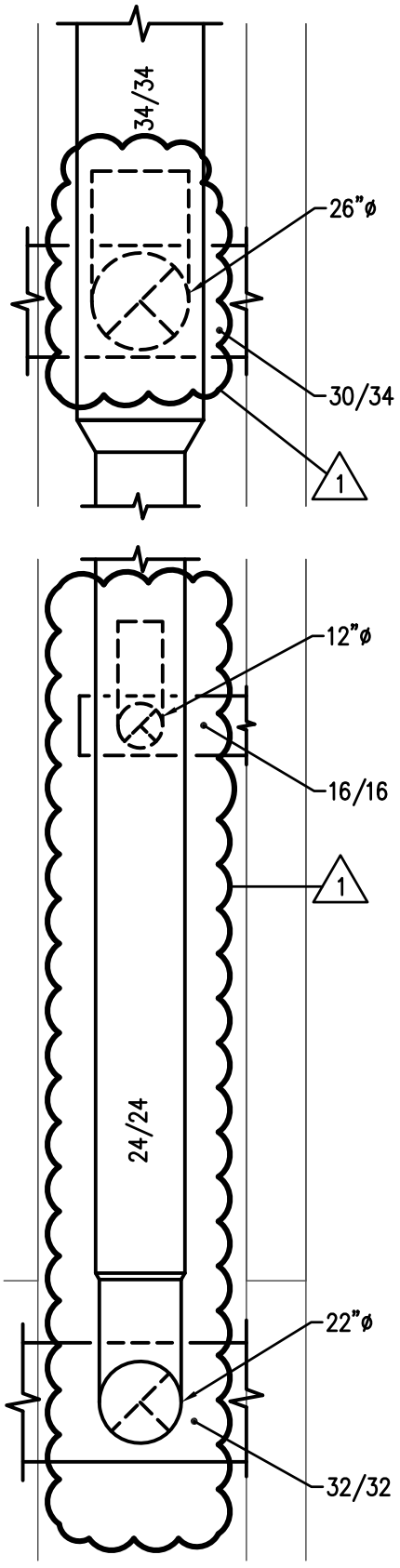
Sheet No.
AD04-M06

Sheet Reference
MH103



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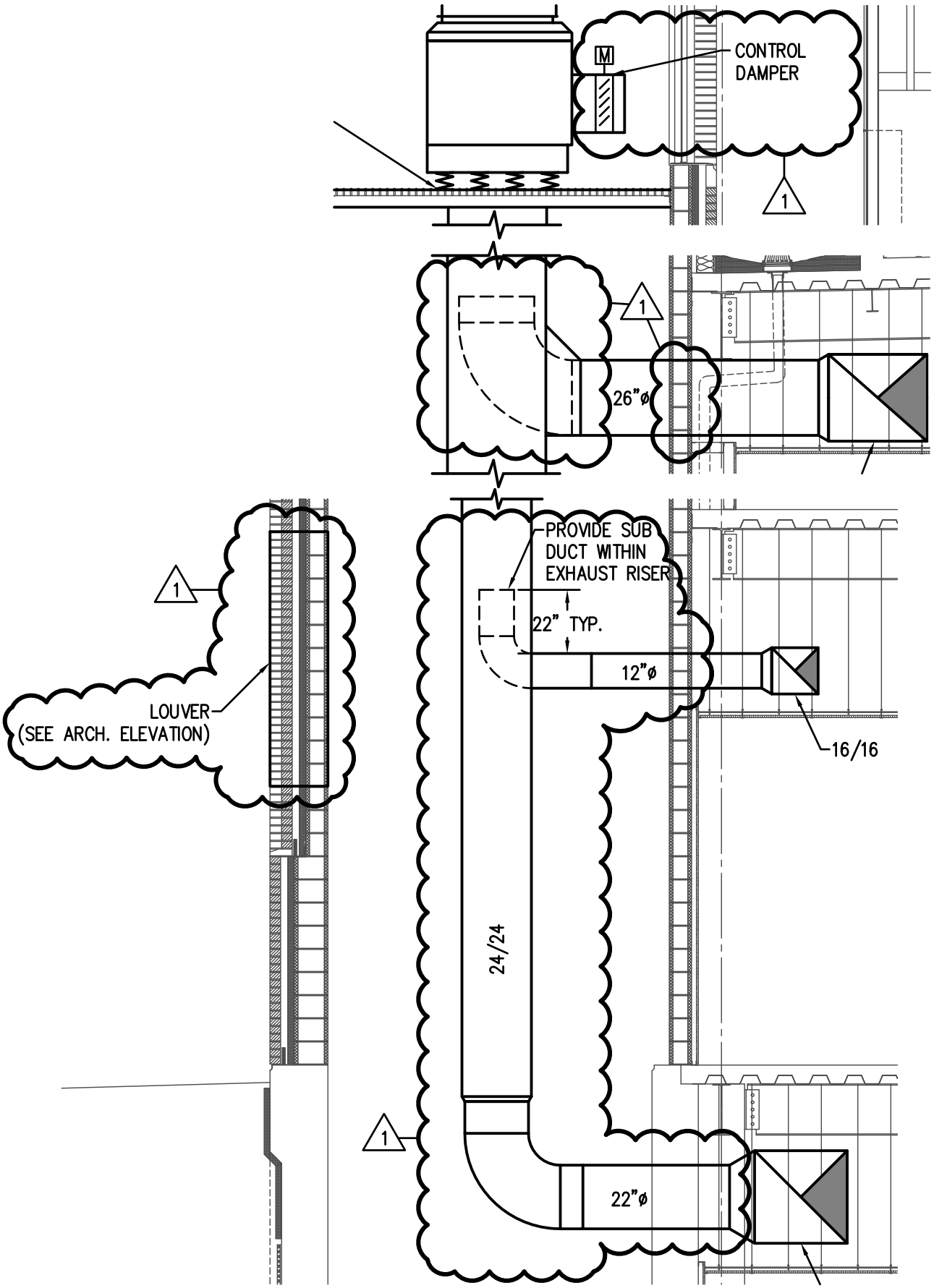
Sheet No.
AD04-M07
Sheet Reference
MH301



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MH301

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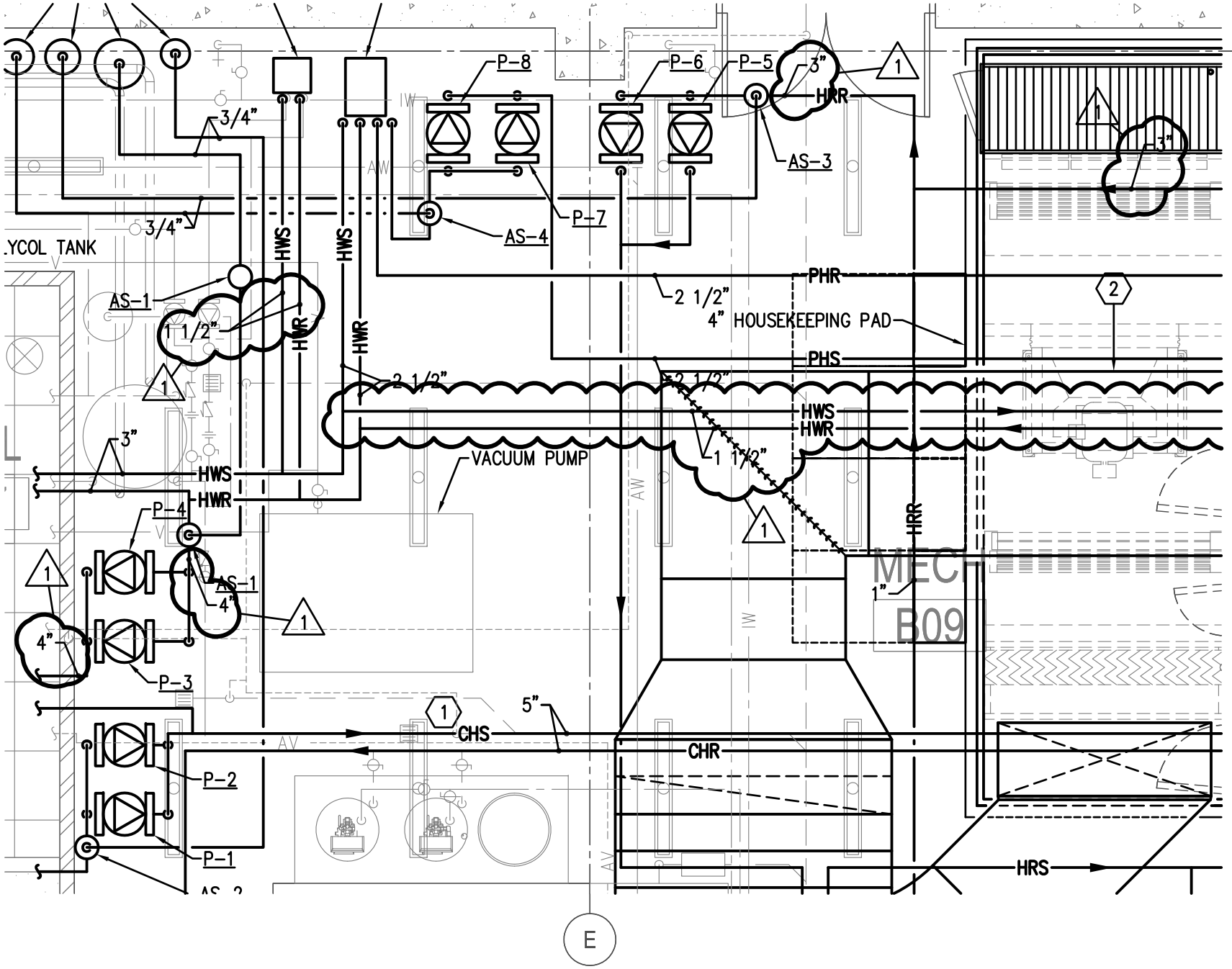
Sheet No.
AD04-M09

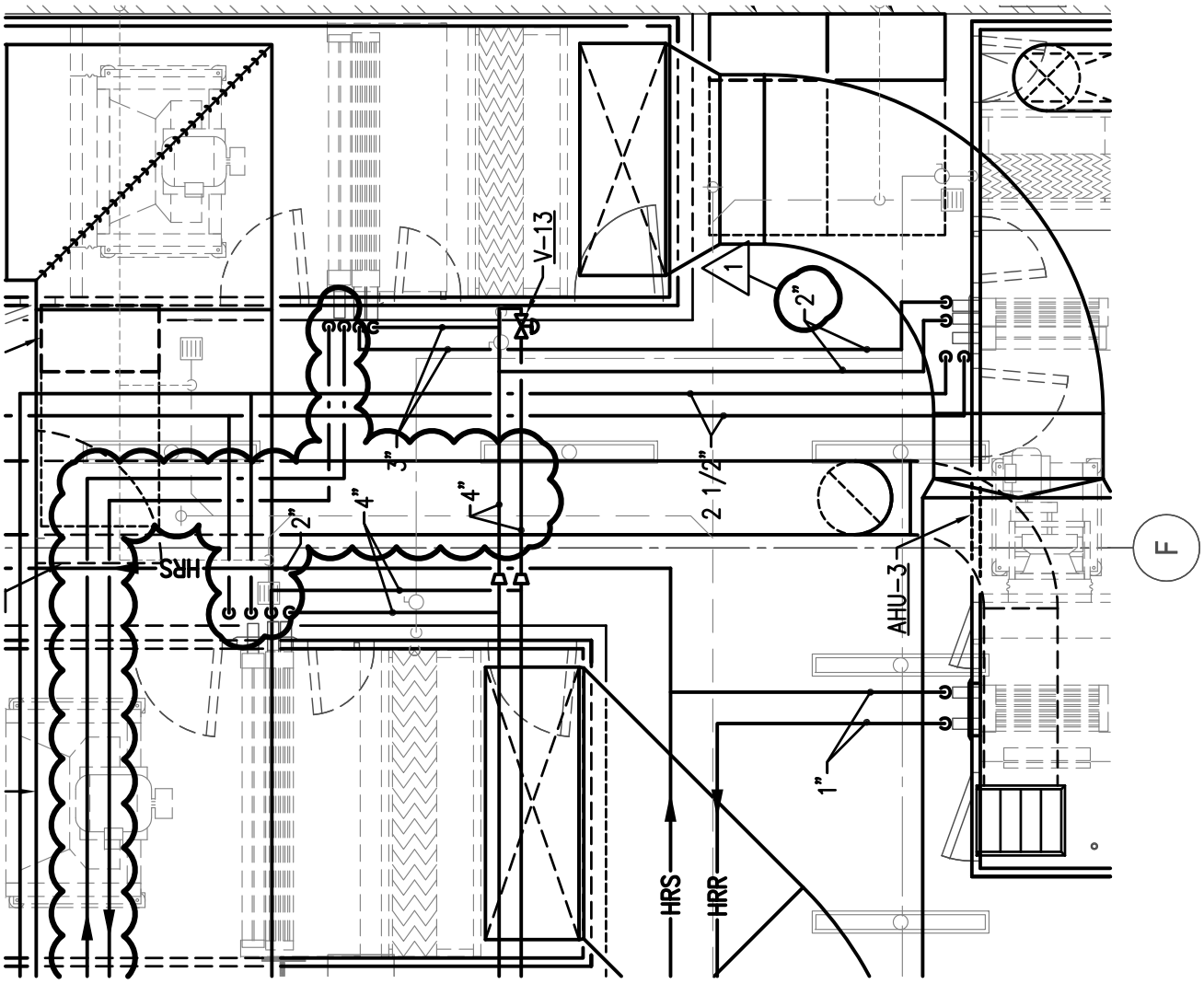
Sheet Reference
MH400



2 ENLARGED MECHANICAL ROOM PIPING PLAN

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

3' 0 2' 4' 6' 8'



2 ENLARGED MECHANICAL ROOM PIPING PLAN

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

3' 0 2' 4' 6' 8'

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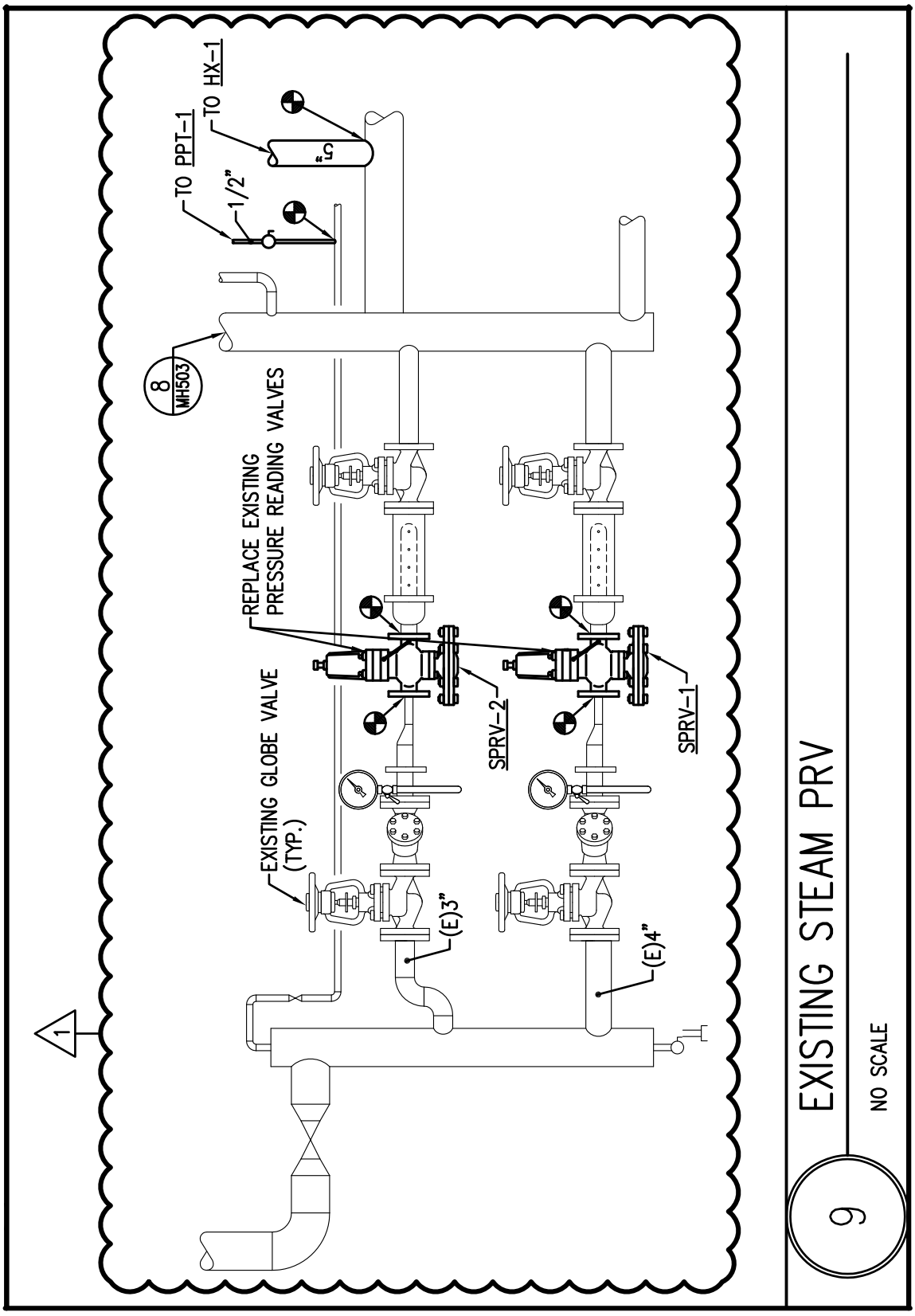
Sheet No.
AD04-M10
Sheet Reference
MH400



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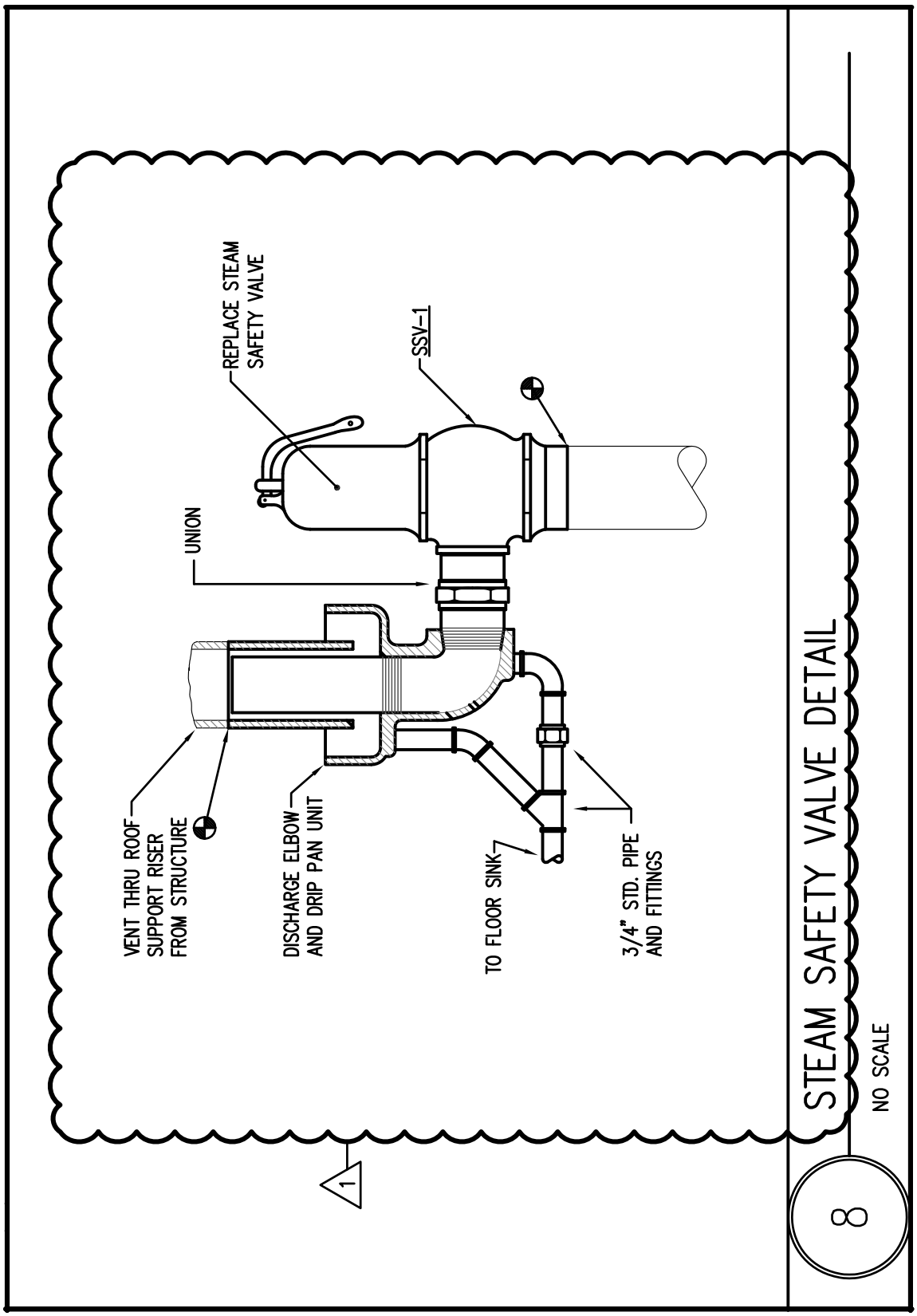
Sheet No.
AD04-M11
Sheet Reference
MH502



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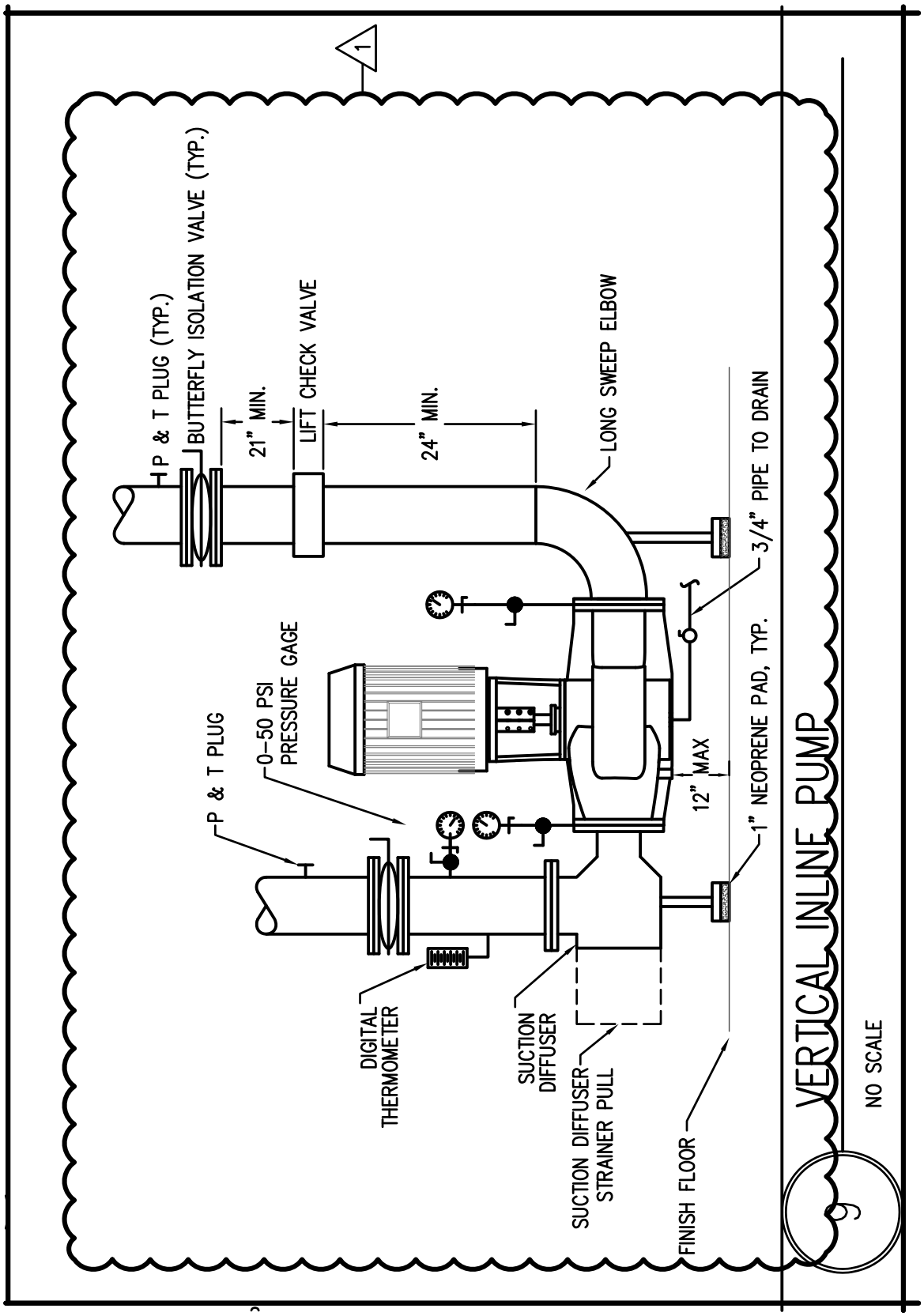
Sheet No.
AD04-M12
Sheet Reference
MH503



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Sheet No.
AD04-M13
Sheet Reference
MH503

1

STEAM SAFETY VALVE SCHEDULE (SSV)

PLAN CODE	MAXIMUM FLOW RATE	RELIEF PRESSURE SETTING (PSI)	REMARKS
SVV-1	12,000	25	PROVIDE WITH DRIP PAN ELBOW

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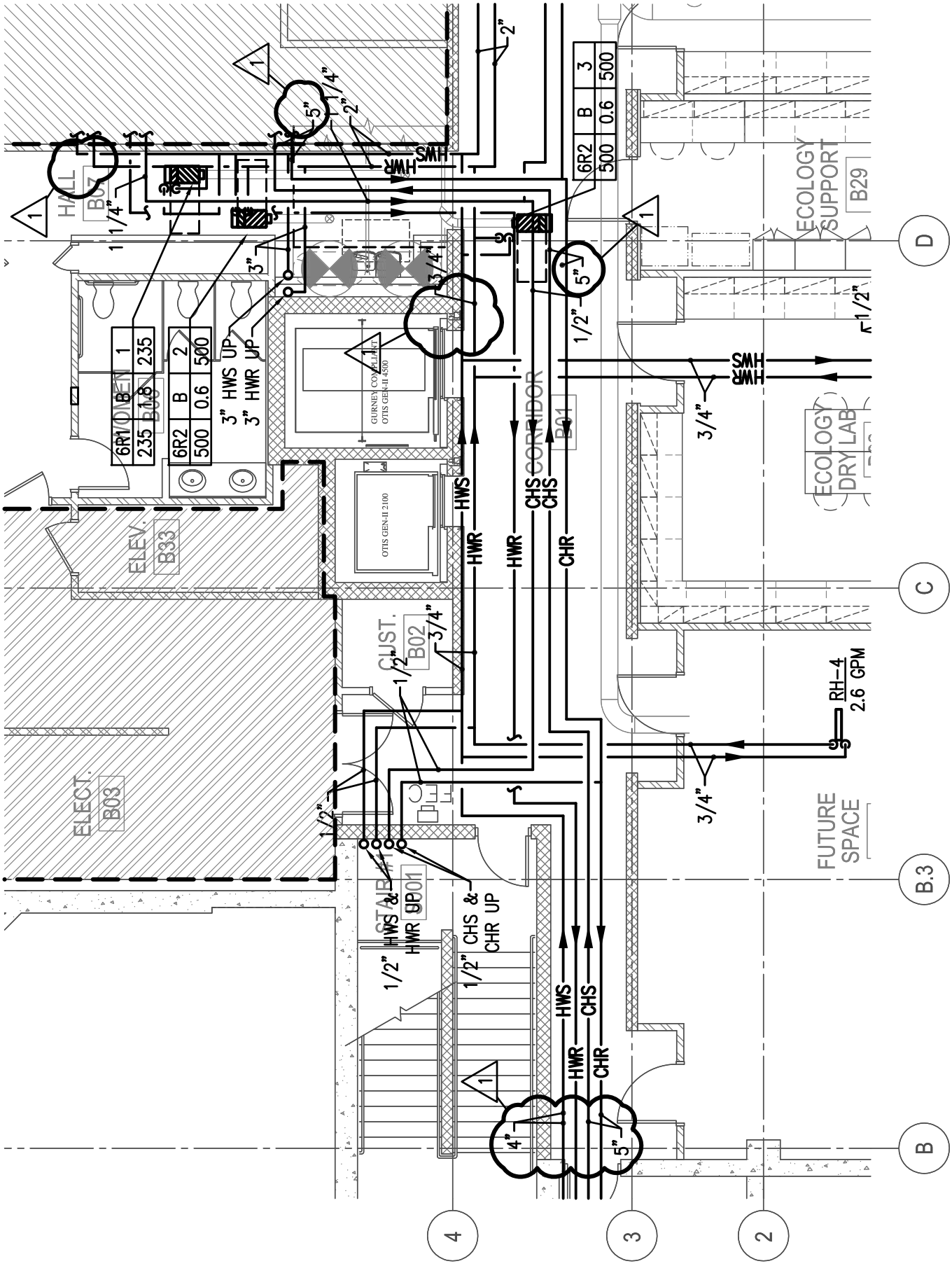
Sheet No.
AD04-M14
Sheet Reference
MH602



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Sheet No.
AD04-M15
Sheet Reference
MP1B1

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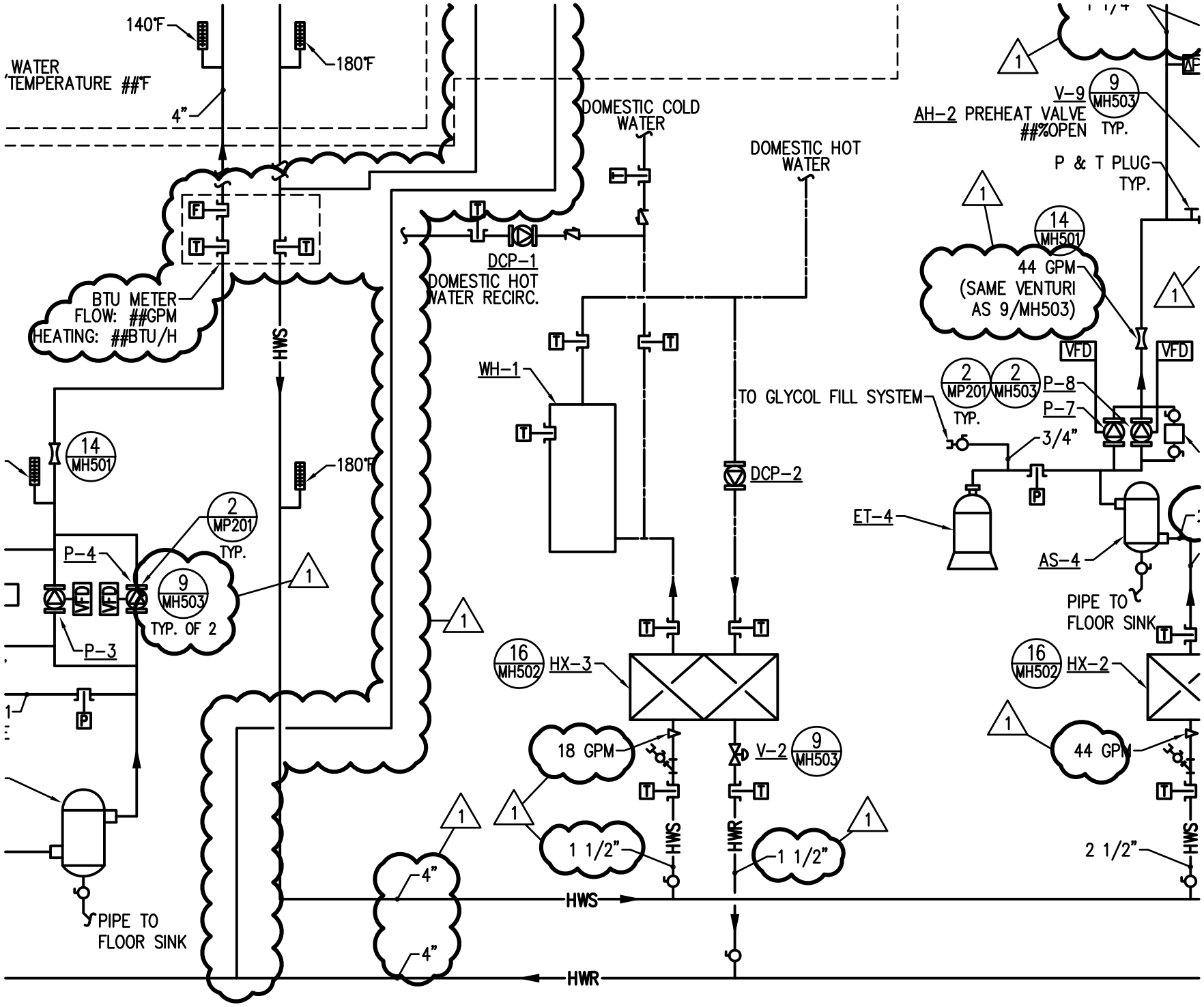
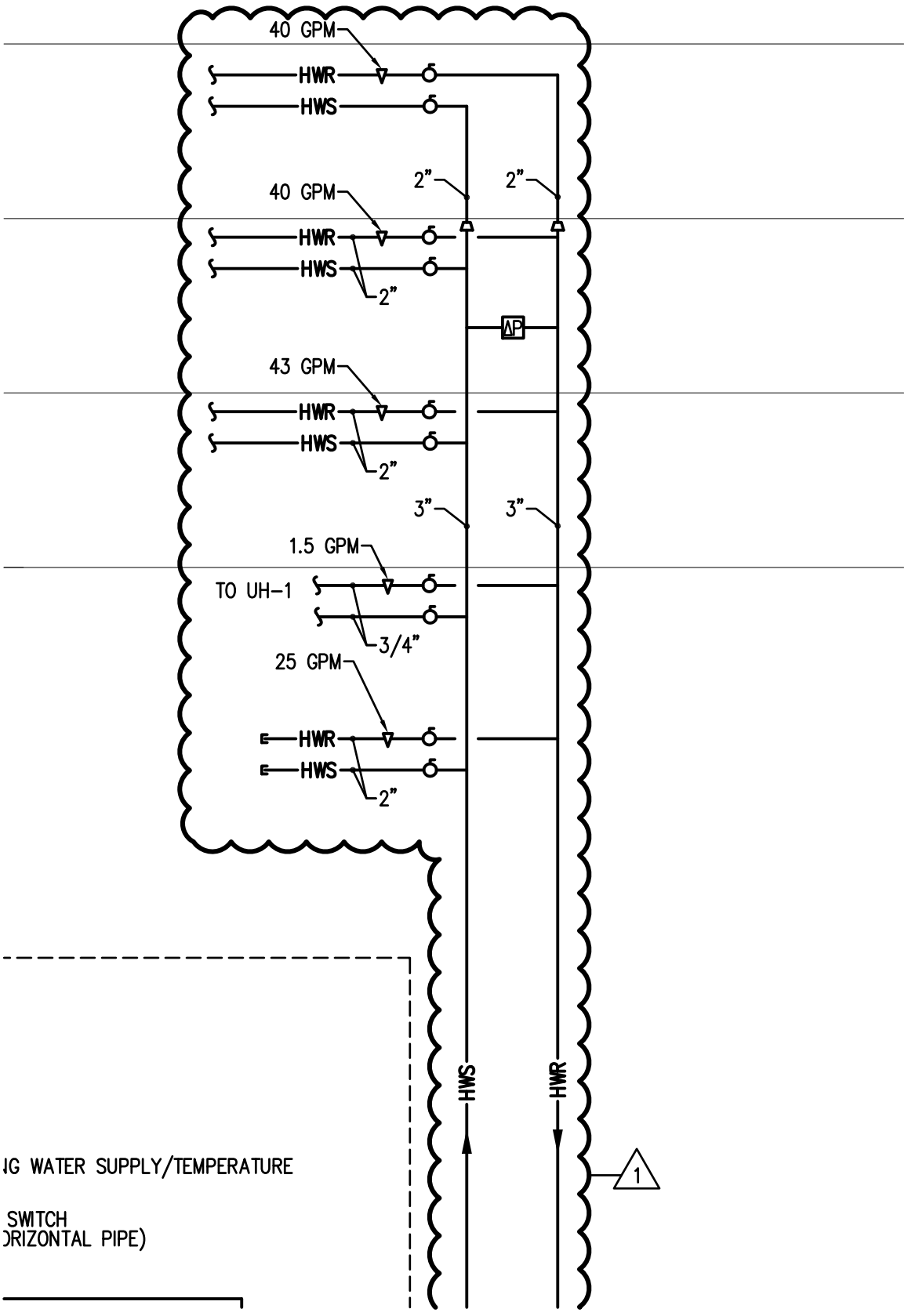
Sheet No.
AD04-M16

Sheet Reference
MP201





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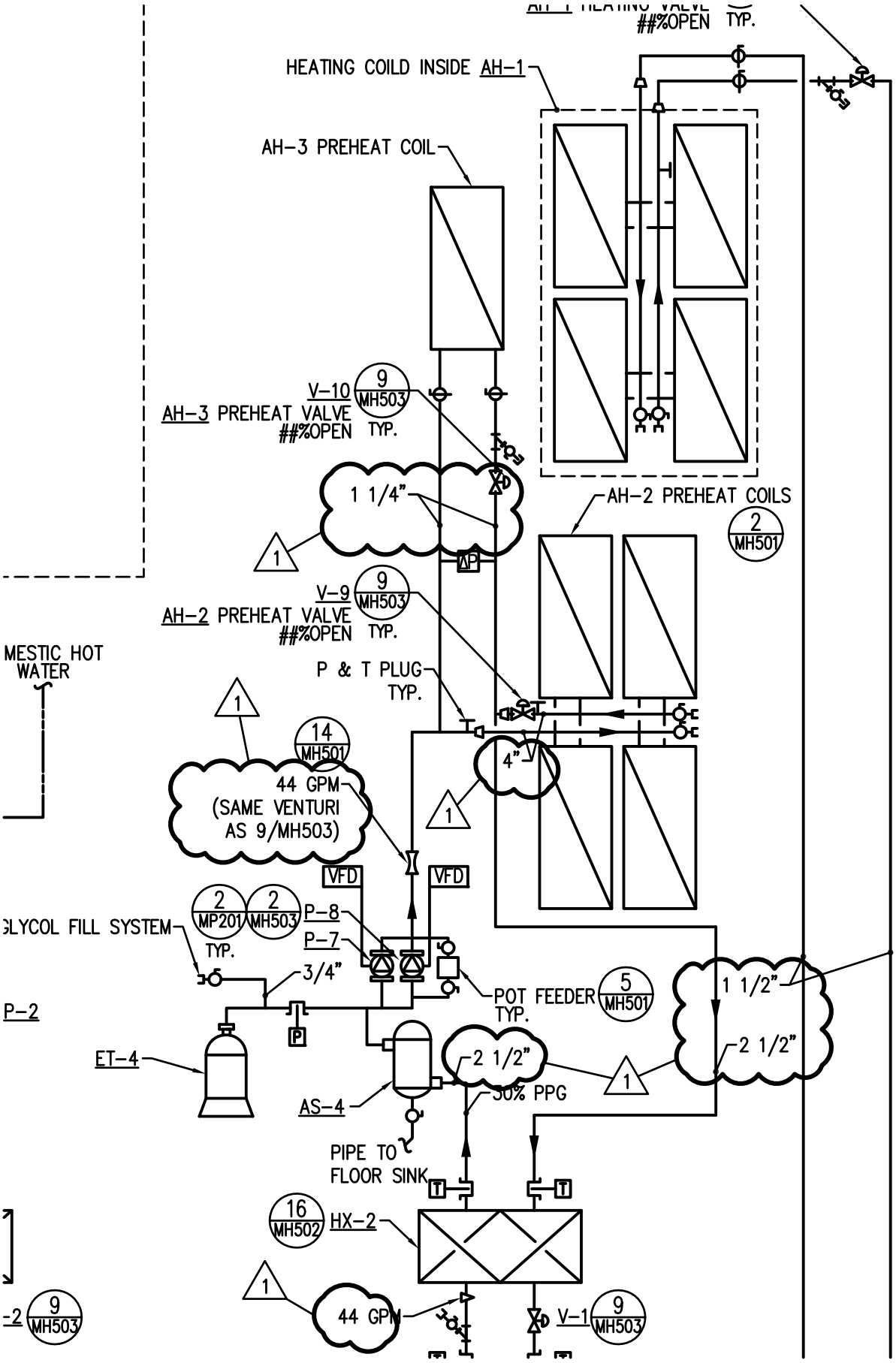
Sheet No.
AD04-M17
Sheet Reference
MP201



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Sheet No.
AD04-M18
Sheet Reference
MP201

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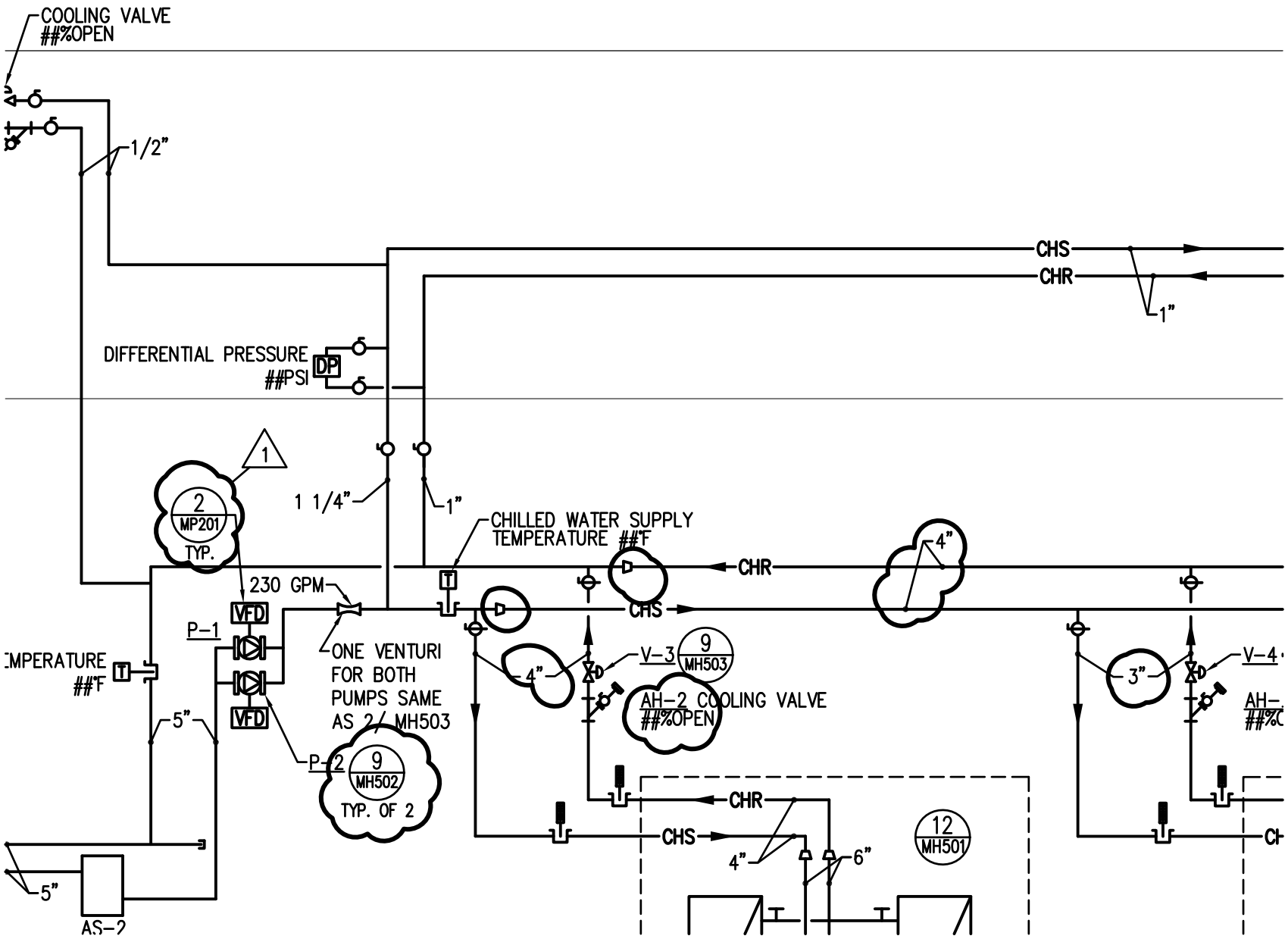
Sheet No.
AD04-M19

Sheet Reference
MP202



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Sheet No.
AD04-M20
Sheet Reference
MP202

CHILLED WATER SYSTEM

SEQUENCE OF OPERATIONS – BASE BID

1. ALTERNATE P-1 & P-2 LEAD/LAG STATUS EACH MONTH. IF LEAD PUMP FAILS, START LAG PUMP AND GENERATE AN ALARM. OPERATE P-1/P-2 WHEN THERE IS A CALL FOR COOLING.
2. MODULATE P-1/P-2 SPEED TO MEET DIFFERENTIAL PRESSURE SETPOINT. RESET DIFFERENTIAL PRESSURE SETPOINT TO KEEP THE HIGHEST COOLING VALVE COMMAND NO GREATER THAN 95% OR TO MEET THE MINIMUM FLOW RATE OF THE CHILLER, WHICHEVER RESULTS IN A LARGER FLOW.
3. MODULATE V-13 TO PROVIDE CHILLER MINIMUM FLOW AS NEEDED.
4. START CHILLER C-1 WHEN SUFFICIENT FLOW IS PROVEN BY THE FLOW SWITCH. CHILLER FACTORY CONTROLS WILL MODULATE CHILLER OUTPUT TO MAINTAIN CHILLED WATER RETURN TEMPERATURE AT 56°F (ADJUSTABLE). MONITOR CHILLER OPERATION VIA BACNET INTERFACE. MAP ALARMS, TEMPERATURES, PRESSURES, AND EQUIPMENT STATUS TO CHILLER GRAPHICS PAGE.

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Sheet No.
AD04-M21
Sheet Reference
MP202

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Sheet No.
AD04-M22
Sheet Reference
MP203

HVAC EQUIPMENT/ CONTROL DAMPERS

PLAN CODE	SERVICE	BLADE ACTION	FLOW (CFM)	DIMENSIONS H X W (IN)	REMARKS
CD-1	RU-1 RELIEF AIR	PARALLEL	14,000	54 X 72	-
CD-2	EF-1 BYPASS	OPPOSED	7,000	22 X 22	-
CD-3	EF-2 BYPASS	OPPOSED	7,000	22 X 22	-
CD-4	EF-3 BYPASS	OPPOSED	7,000	22 X 22	-

1

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Sheet No.
AD04-M23
Sheet Reference
MH601

CONTROL VALVE (V)

1

PLAN CODE	DUTY	FLOW (GPM)	TYPE	PRESSURE DROP (PSI)	REMARKS
V-1	HX-2	44	TWO - WAY MODULATING	3-5	- -
V-2	HX-3	18	TWO-WAY MODULATING	3-5	- -
V-3	AH-2 COOLING	115	THREE - WAY MIXING VALVE	3-5	- -
V-4	AH-1 COOLING	75	THREE - WAY MIXING VALVE	3-5	- -
V-5	AH-3 COOLING	20	THREE - WAY MIXING VALVE	3-5	- -
V-6	C-1 ISOLATION	220	TWO - WAY TWO POSITION	< 1	- -
V-7	C-2 ISOLATION	220	TWO - WAY TWO POSITION	< 1	- -
V-8	AH-1 HEATING	12	TWO - WAY MODULATING	3-5	- -
V-9	AH-2 PREHEAT	38	TWO - WAY MODULATING	3-5	- -
V-10	AH-3 PREHEAT	6	TWO - WAY MODULATING	3-5	- -
V-11	AH-2 HEAT RECOVERY	52.1	TWO - WAY MODULATING	3-5	- -
V-12	AH-3 HEAT RECOVERY	7.8	TWO - WAY MODULATING	3-5	- -
V-13	CHILLED WATER BYPASS	220	TWO - WAY MODULATING	5-7	- -

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Sheet No.
AD04-M24
Sheet Reference
MH602

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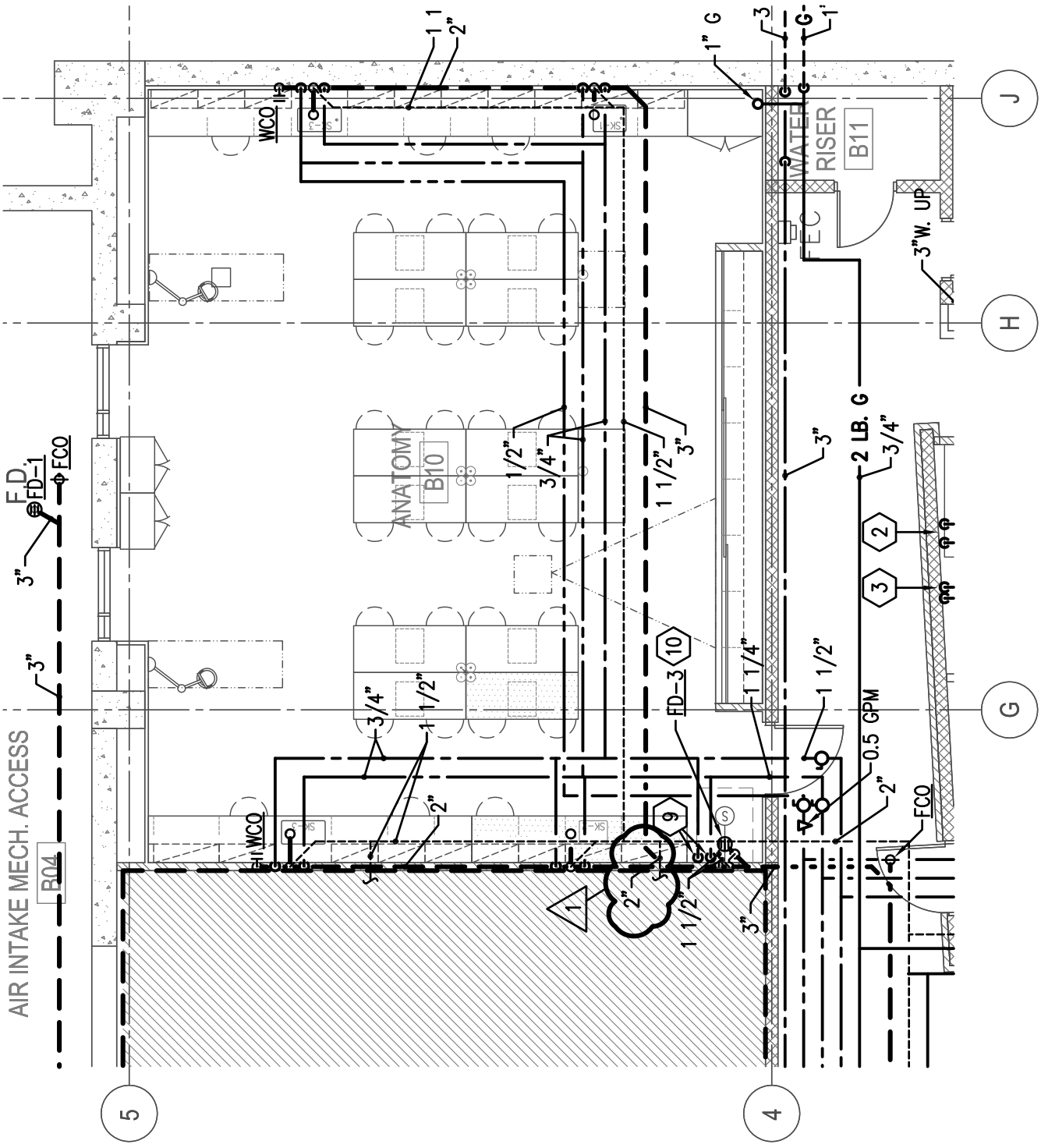
Sheet No.
AD04-PL01
Sheet Reference
PL1B1



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Sheet No.
AD04-PL02
Sheet Reference
PL1B1

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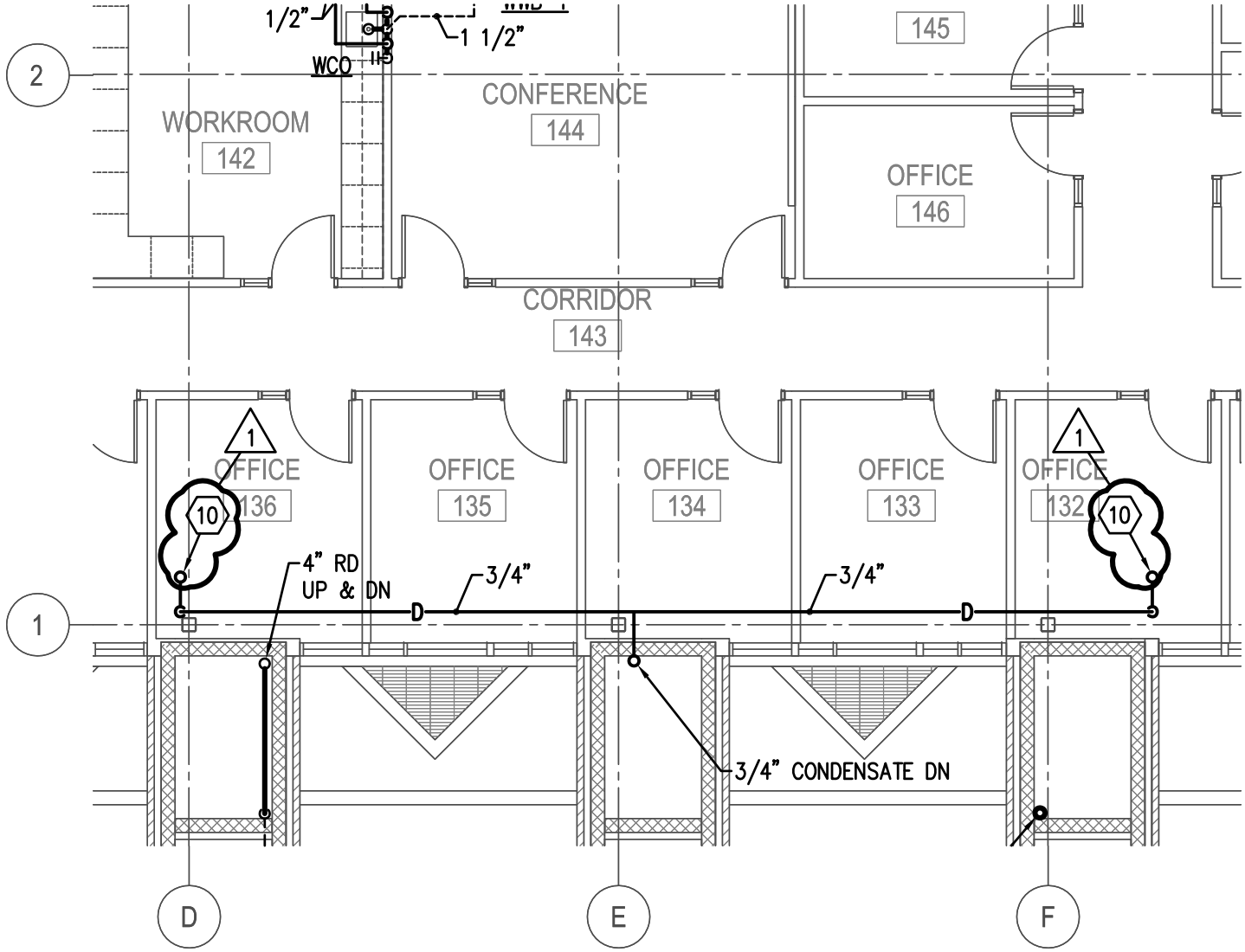
Sheet No.
AD04-PL03

Sheet Reference
PL101



KEYED NOTES

1 — 10 CONDENSATE DRAIN FROM HEAT RECOVERY COIL.

KEYED NOTES

1 3 CONDENSATE DRAIN FROM HEAT RECOVERY COIL.

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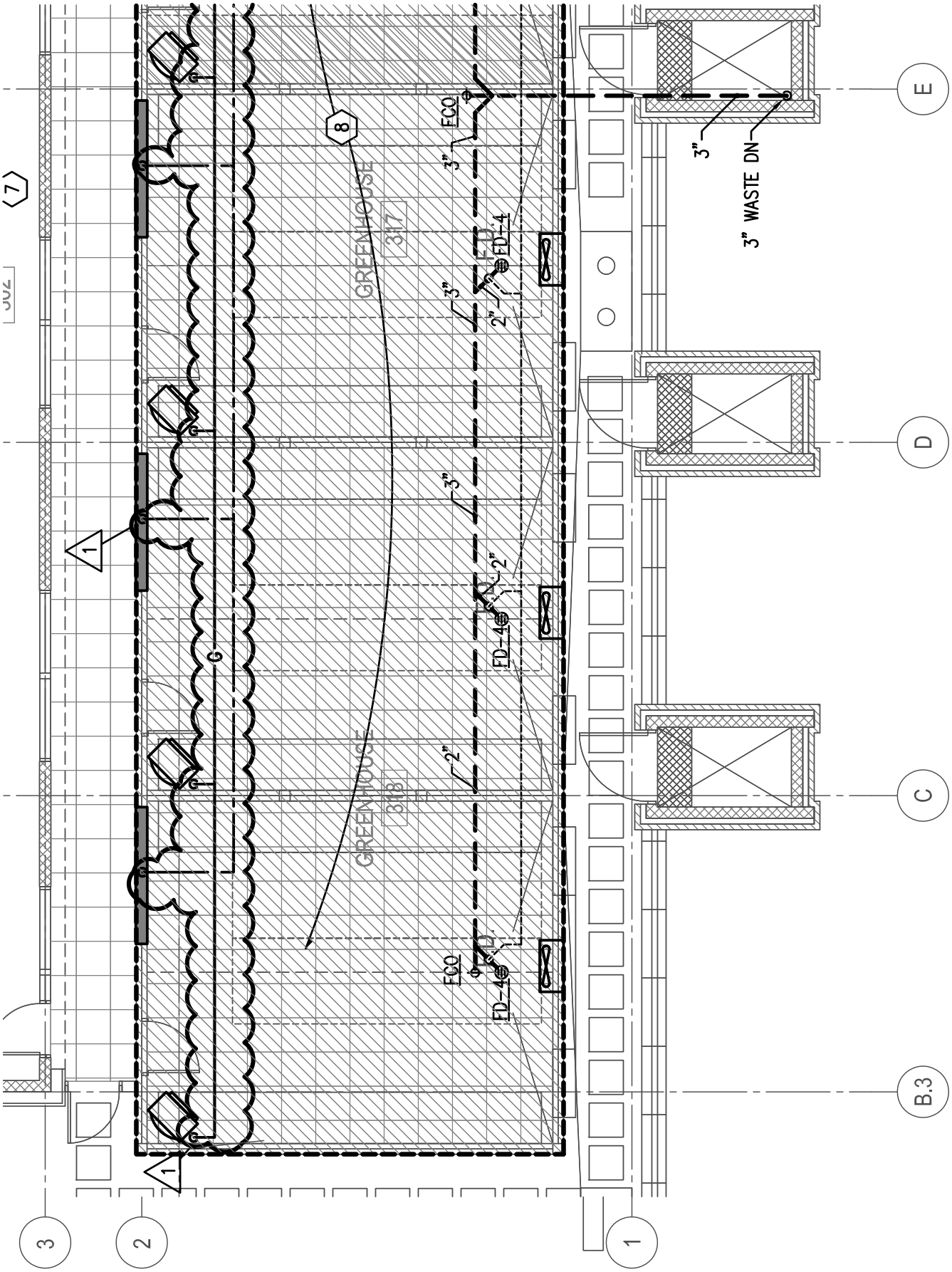
Sheet No.
AD04-PL04
Sheet Reference
PL102



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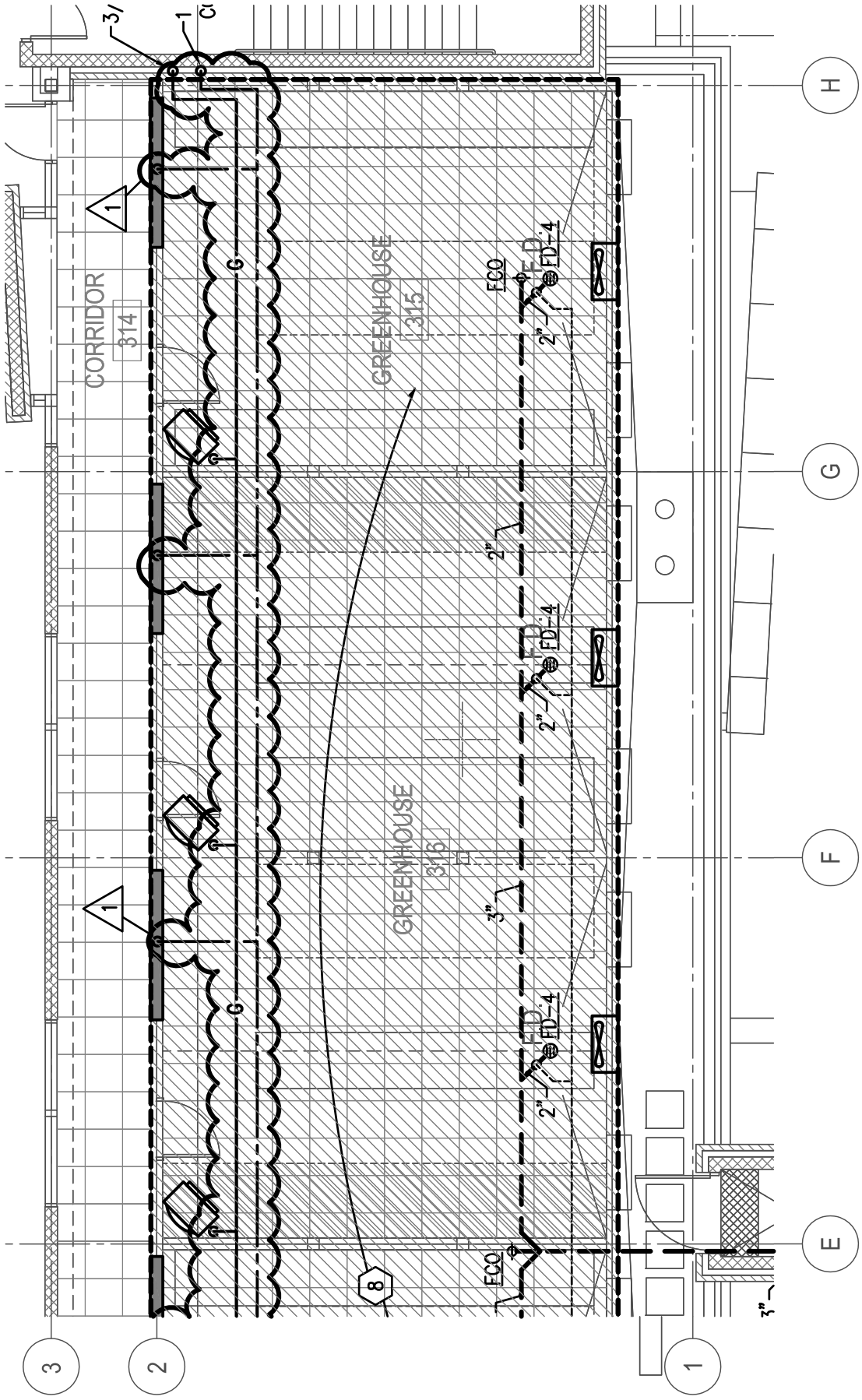
Sheet No.
AD04-PL05
Sheet Reference
PL103



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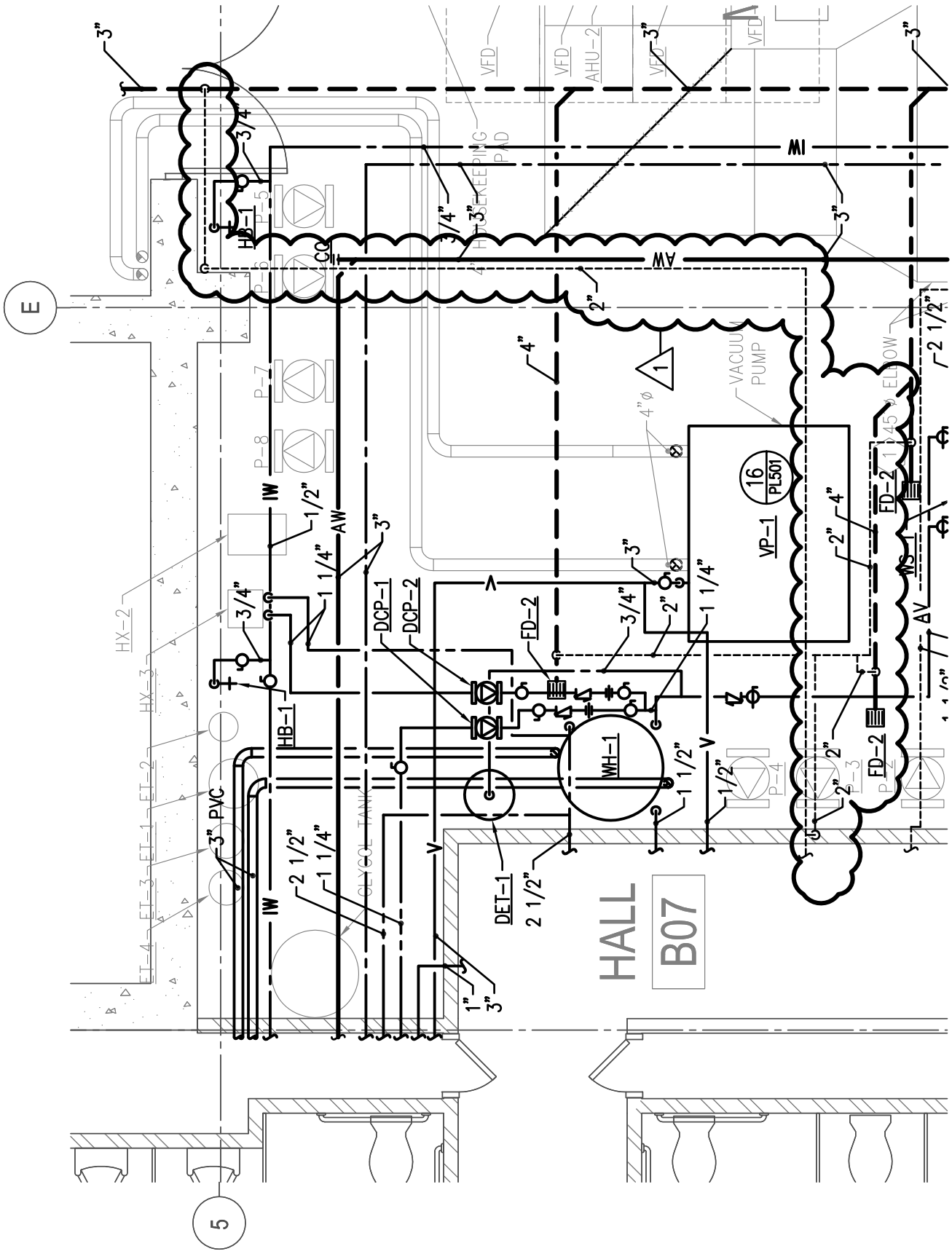
Sheet No.
AD04-PL06
Sheet Reference
PL103



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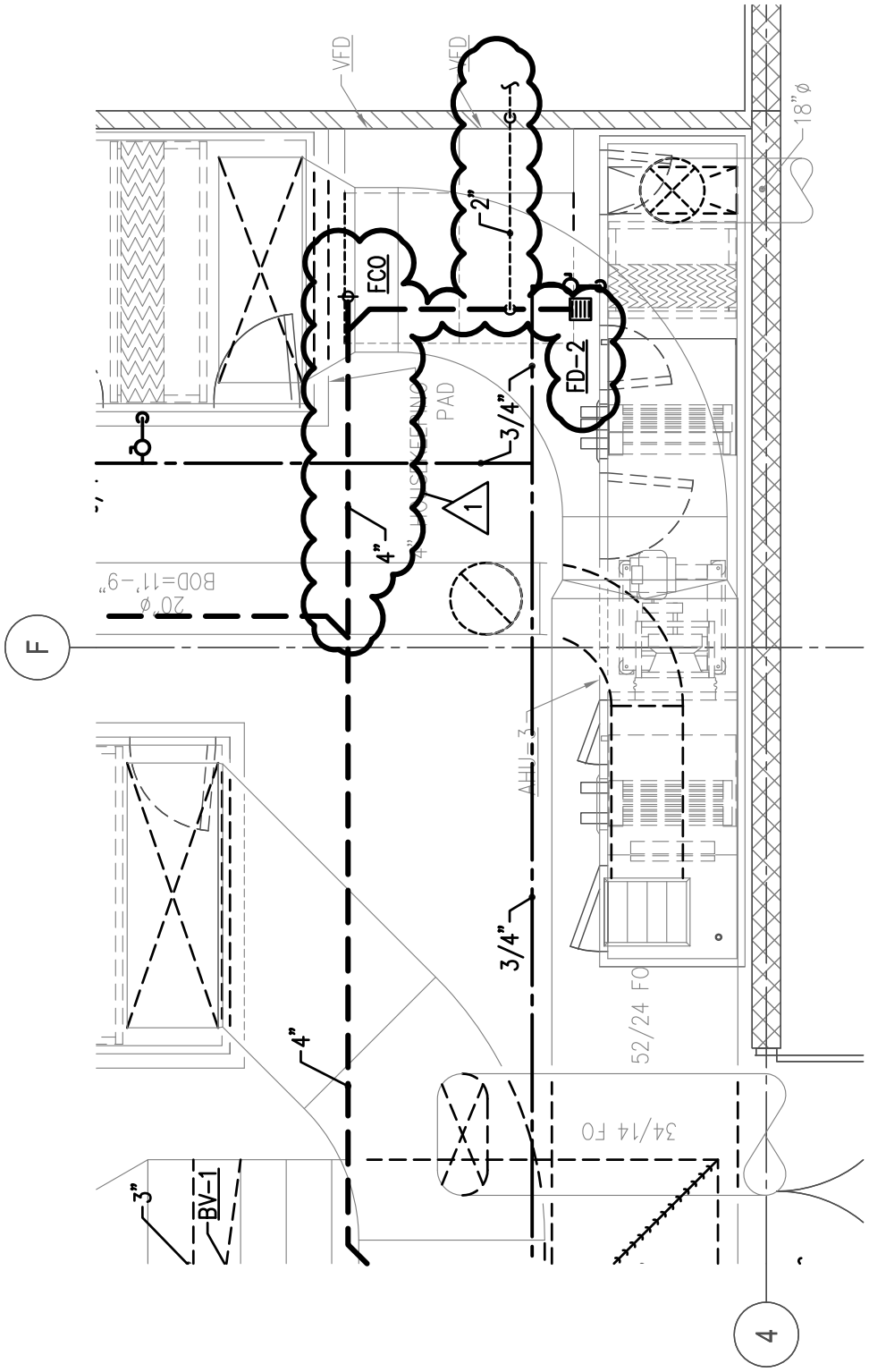
Sheet No.
AD04-PL07
Sheet Reference
PL402



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Sheet No.
AD04-PL08
Sheet Reference
PL402

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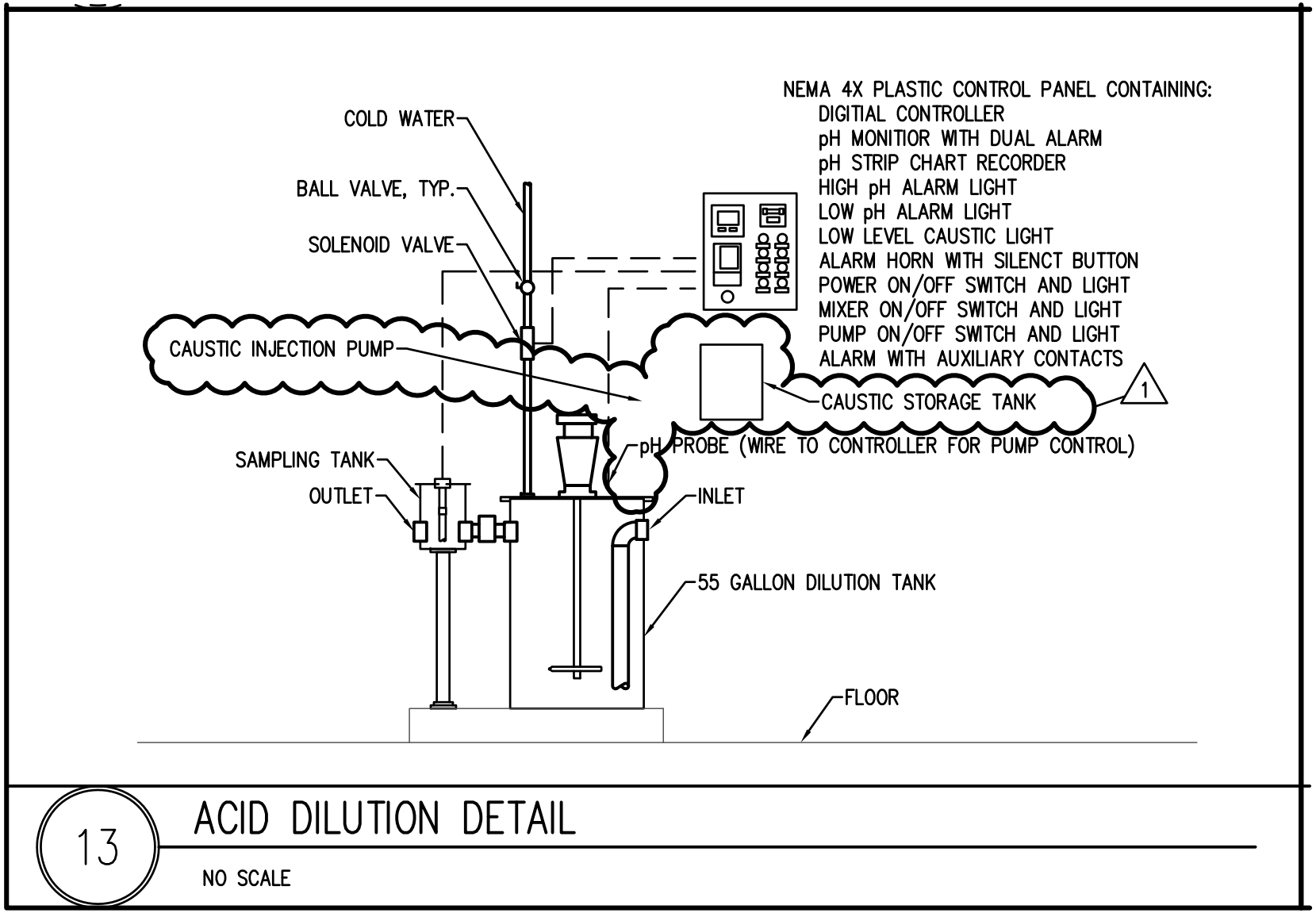

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ACID DILUTION DETAIL

NO SCALE

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Sheet No.
AD04-PL09

Sheet Reference
PL501

PANEL: 0L1		277	480	3	PH	4	W	100	A	BUS		35K	AIC
DESCRIPTION		LOAD	BKR	P				BKR	P		LOAD		DESCRIPTION
RM B31, B30, B29 LIGHTING	L	2267	20	1	1	A	2	20	1				SPARE
RM B11, ANATOMY	L	975	20	1	3	B	4	20	1	L	152		CUST,IDF,PIPE CHASE LTG
HALL B01, B21, B07 LTG	L	866	20	1	5	C	6	20	1				SPARE
LTG TUNNEL	L	384	20	1	7	A	8	20	1	L	153		VESTIBULE 101 LIGHTING
HALLWAY LTG LEV 2	L	870	20	1	9	B	10	20	1	L	506		HALLWAY LTG LEV 3
HALLWAY LTG LEV 1	L	1160	20	1	11	C	12	20	1	L	36		VESTIBULE 123 LIGHTING
SPARE			20	1	13	A	14	20	1				SPARE
SPARE			20	1	15	B	16	20	1				SPARE
SPARE			20	1	17	C	18	20	1				SPARE
SPARE			20	1	19	A	20	20	1				SPARE
SPARE			20	1	21	B	22	20	1				SPARE
SPARE			20	1	23	C	24	20	1				SPARE
NOT REQUIRED					25	A	26						NOT REQUIRED
NOT REQUIRED					27	B	28						NOT REQUIRED
NOT REQUIRED					29	C	30						NOT REQUIRED
NOT REQUIRED					31	A	32						NOT REQUIRED
NOT REQUIRED					33	B	34						NOT REQUIRED
NOT REQUIRED					35	C	36						NOT REQUIRED
NOT REQUIRED					37	A	38						NOT REQUIRED
NOT REQUIRED					39	B	40						NOT REQUIRED
NOT REQUIRED					41	C	42						NOT REQUIRED
CONNECTED LOAD		7.4	KVA		9	AMPS							
NEC DEMAND LOAD		9.2	KVA		11	AMPS							

PANEL: 0S2		120	208	3	PH	4	W	225	A	BUS		10K	AIC
DESCRIPTION		LOAD	BKR	P				BKR	P		LOAD		DESCRIPTION
DOOR POWER SUPPLY RM B29	E	600	20	1	1	A	2	20	3	E	696		ENVIRONMENTAL ROOM COND. 1
DOOR POWER SUPPLY RM B23	E	600	20	1	3	B	4	–	–	E	696		–
J-BOX AH-3 LTG/CONTROLS	M	600	20	1	5	C	6	–	–	E	696		–
RM B27 OPERATING TABLE	E	972	20	1	7	A	8	20	1	E	1500		RELAY FOR AH SHUTDOWN
REC RM B15-B20	R	1080	20	1	9	B	10	20	1	E	1500		RELAY FOR AH SHUTDOWN
J-BOX MECH VAV'S	M	600	20	1	11	C	12	20	1	E	1500		RELAY FOR AH SHUTDOWN
J-BOX MECH VAV'S	M	600	20	1	13	A	14	20	1	E	1200		NAC PANEL
NOVEC FIRE SUPPRESSION PNL	E	600	20	1	15	B	16	20	1	E	1500		FIRE SMOKE DAMPER
REC RM B03/104A	R	540	20	1	17	C	18	20	1				SPARE
SECURITY PANEL RM B03	E	600	20	1	19	A	20	20	1				SPARE
REC RM B13	R	360	20	1	21	B	22	20	1				SPARE
J-BOX BAS PANEL RM B09	M	1000	20	1	23	C	24	20	1				SPARE
ELEVATOR CAB LTG	E	600	20	1	25	A	26	20	1				SPARE
REC MECH RM	R	1080	20	1	27	B	28	20	1				SPARE
REC MECH RM	R	720	20	1	29	C	30	20	1				SPARE
ENVIRONMENTAL ROOM COND. 2	E	696	20	3	31	A	32	20	1				SPACE ONLY
–	E	696	–	–	33	B	34	20	1				SPACE ONLY
–	E	696	–	–	35	C	36	20	1				SPACE ONLY
J-BOX BAS PANEL RM B09	M	1000	20	1	37	A	38	40	3	E			SURGE PROTECTIVE DEVICE 5
SPARE			20	1	39	B	40	–	–	E			–
SPARE			20	1	41	C	42	–	–	E			–
CONNECTED LOAD		22.9	KVA		64	AMPS							
NEC DEMAND LOAD		22.9	KVA		64	AMPS							

PANEL: 0M1		277	480	3	PH	4	W	225	A	BUS		35K	AIC
DESCRIPTION		LOAD	BKR	P				BKR	P		LOAD		DESCRIPTION
SF-1	M	7480	60	3	1	A	2	20	3	M	1660		VP-1
–	M	7480	–	–	3	B	4	–	–	M	1660		–
–	M	7480	–	–	5	C	6	–	–	M	1660		–
SF-2	M	11080	80	3	7	A	8	30	3	E	3878		BOTTLE WASHER RM B13
–	M	11080	–	–	9	B	10	–	–	E	3878		–
–	M	11080	–	–	11	C	12	–	–	E	3878		–
P-1	M	3047	20	3	13	A	14	20	3	M	831		P-5
–	M	3047	–	–	15	B	16	–	–	M	831		–
–	M	3047	–	–	17	C	18	–	–	M	831		–
P-2	M	3047	20	3	19	A	20	20	3	M	831		P-6
–	M	3047	–	–	21	B	22	–	–	M	831		–
–	M	3047	–	–	23	C	24	–	–	M	831		–
P-4	M	2105	20	3	25	A	26	20	3	M	1330		P-8
–	M	2105	–	–	27	B	28	–	–	M	1330		–
–	M	1330	–	–	29	C	30	–	–	M	1330		–
DCP-2	M	582	20	3	31	A	32	20	1				SPARE
–	M	582	–	–	33	B	34	20	1				SPARE
–	M	582	–	–	35	C	36	20	1				SPARE
DCP-1	M	582	20	3	37	A	38	20	1				SPACE ONLY
–	M	582	–	–	39	B	40	20	1				SPACE ONLY
–	M	582	–	–	41	C	42	20	1				SPACE ONLY
CONNECTED LOAD		108.6	KVA		131	AMPS							
NEC DEMAND LOAD		108.6	KVA		131	AMPS							

PANEL: 0P1		120	208	3	PH	4	W	225	A	BUS		22K	AIC
DESCRIPTION		LOAD	BKR	P				BKR	P		LOAD		DESCRIPTION
REC MEN & WOMEN RESTROOMS	R	1080	20	1	1	A	2	20	1	M	600		VAV BOXES
REC HALL & CORRIDOR	R	540	20	1	3	B	4	20	1	M	600		VAV BOXES
REC HALL AND STAIRWAY	R	720	20	1	5	C	6	20	1	M	1200		RM B20 FUME HOOD
REC RM B26/B27	R	900	20	1	7	A	8	20	1	R	720		REC RM B13
REC RM B23/B25	R	720	20	1	9	B	10	20	1	R	720		REC RM B13
REC RM B21/B22	R	720	20	1	11	C	12	125	3	E	9984		STERILIZER RM B13
REC RM B15/B16	R	1080	20	1	13	A	14	–	–	E	9984		–
REC RM B17/B18	R	1080	20	1	15	B	16	–	–	E	9984		–
REC RM B19/B20	R	720	20	1	17	C	18	20	1	L	657		PATHWAY LIGHTING NORTH
WIREMOLD RM B20	R	360	20	1	19	A	20	20	1	L	1068		PATHWAY LIGHTING SOUTH
WIREMOLD RM B20	R	360	20	1	21	B	22	20	1	L	528		SITE GEN/AUDITORIUM BLDG
WIREMOLD RM B20	R	360	20	1	23	C	24	20	1				SPARE
SPARE			20	1	25	A	26	20	1				SPARE
SPARE			20	1	27	B	28	20	1				SPARE
SPARE			20	1	29	C	30	20	1				SPARE
SPARE			20	1	31	A	32	20	1				SPARE
SPARE			20	1	33	B	34	20	2				SPARE
SPARE			20	1	35	C	36	–	–				–
SPACE ONLY					37	A	38						SPACE ONLY
SPACE ONLY					39	B	40						SPACE ONLY
SPACE ONLY					41	C	42						SPACE ONLY
CONNECTED LOAD		44.7	KVA		124	AMPS							
NEC DEMAND LOAD		45.2	KVA		125	AMPS							

PANEL: 0E1		277	480	3	PH	4	W	100	A	BUS		22K	AIC
DESCRIPTION		LOAD	BKR	P				BKR	P		LOAD		DESCRIPTION
ELECT/MECH/BATH LTG LEV B	L	1536	20	1	1	A	2	20	1	L	437		HALLWAY LTG LEV B
EXIT SIGNS LEV B	L	130	20	1	3	B	4	20	1	L	653		EM CLASS/LAB LTG LEV B
STAIRWAY 1 & 2 LIGHTING	L	1440	20	1	5	C	6	20	1	L	733		HALLWAY LTG LEV 1
CLASS/LAB/RESTROOM LEV 1	L	749	20	1	7	A	8	20	1	L	343		EXTERIOR LIGHTING
EXTERIOR BUILDING LIGHTS	L	187	20	1	9	B	10	20	1	L	410		HALLWAY LTG LEV 2
VIVARIUM LIGHTING	L	1152	20	1	11	C	12	20	1	L	300		HALLWAY LTG LEV 3
ANIMAL HANDLING ROOM B19	L	248	20	1	13	A	14	20	1	L	248		ANIMAL HANDLING ROOM B18
ANIMAL HANDLING ROOM B17	L	248	20	1	15	B	16	20	1	L	248		ANIMAL HANDLING ROOM B16
ANIMAL HANDLING ROOM B15	L	248	20	1	17	C	18	20	1	L	81		VESTIBULE 101,123 EM LTG
DISPLAY EM LIGHTING LEV 1	L	344	20	1	19	A	20	20	1				SPARE
SPARE			20	1	21	B	22	20	1				SPARE
SPARE			20	1	23	C	24	20	1				SPARE
PANEL 2E1	X	1022.08	30	3	25	A	26	40	3	E			SURGE PROTECTIVE DEVICE 3
–	X	1022.08	–	–	27	B	28	–	–	E			–
–	X	1022.08	–	–	29	C	30	–	–	E			–
NOT REQUIRED					31	A	32						NOT REQUIRED
NOT REQUIRED					33	B	34						NOT REQUIRED
NOT REQUIRED					35	C	36						NOT REQUIRED
NOT REQUIRED					37	A	38						NOT REQUIRED
NOT REQUIRED					39	B	40						NOT REQUIRED
NOT REQUIRED					41	C	42						NOT REQUIRED
CONNECTED LOAD		12.8	KVA		15	AMPS							
NEC DEMAND LOAD		15.2	KVA		18	AMPS							

PANEL: 0P2		120	208	3	PH	4	W	225	A	BUS		22K	AIC
DESCRIPTION		LOAD	BKR	P				BKR	P		LOAD		DESCRIPTION
REC RM B31	R	720	20	1	1	A	2	20	1	R	360		REC WIREMOLD RM B30, N
SMOKE GUARD SYTSEM	E	600	20	1	3	B	4	20	1	R	360		REC WIREMOLD RM B30, N
REC DRINKING FOUNTAIN	R	1200	20	1	5	C	6	20	1	R	360		REC WIREMOLD RM B30, W
REC RM B29 INCUBATOR	E	480	20	1	7	A	8	20	1	R	360		REC WIREMOLD RM B30, W
REC RM B29 CHEST FREEZER	E	720	20	1	9	B	10	20	1	R	360		REC WIREMOLD RM B30, W
DOOR POWER SUPPLY	E	1200	20	1	11	C	12	20	1	R	360		REC WIREMOLD RM B30, W
DOOR POWER SUPPLY	E	1200	20	1	13	A	14	20	1	R	360		REC WIREMOLD RM B30, S
J-BOX AH-1 LTG/CONTROLS	M	600	20	1	15	B	16	20	1	R	360		REC WIREMOLD RM B30, S
J-BOX AH-2 LTG/CONTROLS	M	600	20	1	17	C	18	20	1	R	360		REC WIREMOLD RM B30, S
SPARE			20	1	19	A	20	20	1	R	360		REC WIREMOLD RM B30, E
SPARE			20	1	21	B	22	20	1	R	360		REC WIREMOLD RM B30, E
SPARE			20	1	23	C	24	20	1	R	360		REC FLOORBOX RM B30, E
SPARE			20	1	25	A	26	20	1	R	360		REC FLOORBOX RM B30, E
SPARE			20	1	27	B	28	20	1				SPARE
SPARE			20	1	29	C	30	20	1				SPARE
SPARE			20	1	31	A	32	20	1				SPARE
SPARE			20	1	33	B	34	20	1				SPARE
SPARE			20	1	35	C	36	20	1				SPARE
SPACE ONLY			20	1	37	A	38	20	1				SPARE
SPACE ONLY			20	1	39	B	40	20	1				SPARE
SPACE ONLY			20	1	41	C	42	20	1				SPARE
CONNECTED LOAD		12.0	KVA		33	AMPS							
NEC DEMAND LOAD		12.0	KVA		33	AMPS							

PANEL: 0S1		277	480	3	PH	4	W	400	A	BUS		35K	AIC
DESCRIPTION		LOAD	BKR	P				BKR	P		LOAD		DESCRIPTION
ELEVATOR-1	E	12758	150	3	1	A	2	175	3	X	29603		OSDPL
–	E	12758	–	–	3	B	4	–	–	X	29603		–
–	E	12758	–	–	5	C	6	–	–	X	29603		–
SF-3	M	2105	20	3	7	A	8	30	3				SPARE
–	M	2105	–	–	9	B	10	–	–				–
–	M	2105	–	–	11	C	12	–	–				–
EF-1	M	7480	60	3	13	A	14	60	3				SPARE
–	M	7480	–	–	15	B	16	–	–				–
	M	7480	–	–	17	C	18	–	–				–
P-3	M	2105	20	3	19	A	20	20	1				SPARE
–	M	2105	–	–	21	B	22	20	1				SPARE
–	M	2105	–	–	23	C	24	20	1				SPARE
P-7	M	1330	20	3	25	A	26	20	1				SPARE
–	M	1330	–	–	27	B	28	20	1				SPARE
–	M	1330	–	–	29	C	30	20	1				SPARE
SPARE			20	3	31	A	32	60	3				SPACE ONLY
–			–	–	33	B	34	–	–				–
–			–	–	35	C	36	–	–				–
SPACE ONLY			20	1	37	A	38	40	3	E			SURGE PROTECTIVE DEVICE 4
SPACE ONLY			20	1	39	B	40	–	–	E			–
SPACE ONLY			20	1	41	C	42	–	–	E			–
CONNECTED LOAD		166.1	KVA		200	AMPS							
NEC DEMAND LOAD		166.1	KVA		200	AMPS							

PANEL: 0P3		120	208	3	PH	4	W	225	A	BUS		22K	AIC
DESCRIPTION		LOAD	BKR	P				BKR	P		LOAD		DESCRIPTION
REC WIREMOLD RM B28	R	360	20	1	1	A	2	20	1	R	360		REC WIREMOLD RM B28
REC WIREMOLD RM B28	R	360	20	1	3	B	4	20	1	R	360		REC WIREMOLD RM B28
REC WIREMOLD RM B28	R	360	20	1	5	C	6	20	1	R	360		REC WIREMOLD RM B28
REC WIREMOLD RM B28	R	360	20	1	7	A	8	20	1	L	48		HALLWAY TRACK LTG LEV B
REC WIREMOLD RM B28	R	360	20	1	9	B	10	20	1	L	60		HALLWAY TRACK LTG LEV 1
REC WIREMOLD RM B28	R	360	20	1	11	C	12	20	1	L	48		HALLWAY TRACK LTG LEV 2
REC WIREMOLD RM B28	R	360	20	1	13	A	14	20	1	L	24		HALLWAY TRACK LTG LEV 3
REC WIREMOLD RM B28	R	360	20	1	15	B	16	20	1	L	360		DISPLAY TRACK LTG
REC WIREMOLD RM B28	R	360	20	1	17	C	18	20	1				SPARE
REC WIREMOLD RM B28	R	360	20	1	19	A	20	20	1				SPARE
REC FLOORBOX RM B28	R	360	20	1	21	B	22	20	1				SPARE
REC FLOORBOX RM B28	R	360	20	1	23	C	24	20	1				SPARE
* NEMA REC RM B28					25	A	26	20	1				SPARE
–					27	B	28	20	1				SPARE
–					29	C	30	20	1				SPARE
* NEMA REC RM B28					31	A	32	20	1				SPARE
–					33	B	34	20	1				SPARE
–					35	C	36	20	1				SPARE
* NEMA REC RM B28					37	A	38	20	1				SPACE ONLY
–					39	B	40	20	1				SPACE ONLY
–					41	C	42	20	1				SPACE ONLY
CONNECTED LOAD		5.9	KVA		16	AMPS							*FIELD COORDINATE SIZE
NEC DEMAND LOAD		6.1	KVA		17	AMPS							

1 REVISED PANEL SCHEDULES

Ken Garner Engineering, Inc.
ELECTRICAL CONSULTING ENGINEERS

Project Name: SOUTHERN UTAH UNIVERSITY
GIBSON SCIENCE CENTER ADDITION

Project No: 59026.00

Date: 01-25-10

Sheet No.
A04-ES01

Sheet Reference
EP604

PANEL: 0P4		120	208	3	PH	4	W	225 A BUS			22K AIC
DESCRIPTION		LOAD	BKR	P				BKR	P	LOAD	DESCRIPTION
REC WIREMOLD RM B10	R	360	20	1	1	A	2	20	1 R	360	REC 4-PLEX RM B10
REC WIREMOLD RM B10	R	360	20	1	3	B	4	20	1 R	360	REC 4-PLEX RM B10
REC WIREMOLD RM B10	R	360	20	1	5	C	6	20	1 R	360	REC 4-PLEX RM B10
REC WIREMOLD RM B10	R	360	20	1	7	A	8	20	1 R	360	REC 4-PLEX RM B10
REC RM B10	R	540	20	1	9	B	10	20	1 R	360	REC 4-PLEX RM B10
REC WIREMOLD RM B10	R	360	20	1	11	C	12	20	1 R	360	REC 4-PLEX RM B10
REC WIREMOLD RM B10	R	360	20	1	13	A	14	20	1 E	300	EXAM LIGHTS RM B10
REC WIREMOLD RM B10	R	360	20	1	15	B	16	20	1 R	360	REC 4-PLEX FLOORBOX RM B10
REC WIREMOLD RM B10	R	360	20	1	17	C	18	20	1 R	360	REC 4-PLEX FLOORBOX RM B10
REC-FLOORBOX RM B10	R	360	20	1	19	A	20	20	1 E	1200	IRRIGATION CONTROLLER
REC-FLOORBOX RM B10	R	360	20	1	21	B	22	20	1		SPARE
REC-FLOORBOX RM B10	R	360	20	1	23	C	24	20	1		SPARE
SPARE			20	1	25	A	26	20	1		SPARE
SPARE			20	1	27	B	28	20	1		SPARE
SPARE			20	1	29	C	30	20	1		SPARE
SPARE			20	1	31	A	32	20	1		SPARE
SPARE			20	1	33	B	34	20	1		SPARE
SPARE			20	1	35	C	36	20	1		SPARE
SPACE ONLY			20	1	37	A	38	20	1		SPACE ONLY
SPACE ONLY			20	1	39	B	40	20	1		SPACE ONLY
SPACE ONLY			20	1	41	C	42	20	1		SPACE ONLY
CONNECTED LOAD		8.9 KVA			25	AMPS					
NEC DEMAND LOAD		8.9 KVA			25	AMPS					

PANEL: 1P2		120	208	3	PH	4	W	225 A BUS			22K AIC
DESCRIPTION		LOAD	BKR	P				BKR	P	LOAD	DESCRIPTION
WORKROOM 141	R	540	20	1	1	A	2	20	1 E	1200	DOOR POWER SUPPLY
WORKROOM 141	R	540	20	1	3	B	4	20	1 E	1200	DOOR POWER SUPPLY
OFFICE 140 & CHAIR 139	R	900	20	1	5	C	6	20	1 E	1200	DOOR POWER SUPPLY
OFFICES 138 & 137	R	1080	20	1	7	A	8	20	1 M	528	FC-1
OFFICES 136 & 135	R	1080	20	1	9	B	10	20	1 L	108	VESTIBULE 101 COVE LTG
OFFICES 134 & 133	R	1080	20	1	11	C	12	20	1 L	92	VESTIBULE 123 COVE LTG
OFFICES 132 & 131	R	1080	20	1	13	A	14	20	1		SPARE
CORRIDOR & CL 130	R	720	20	1	15	B	16	20	1		SPARE
OFFICE 129	R	720	20	1	17	C	18	20	1		SPARE
OFFICES 145 & 146	R	1080	20	1	19	A	20	20	1		SPARE
CONFERENCE 144	R	1260	20	1	21	B	22	20	1		SPARE
REC FRIDGE RM 144	E	1200	20	1	23	C	24	20	1		SPARE
WORKROOM 142	R	540	20	1	25	A	26	20	1		SPARE
WORKROOM 142	R	540	20	1	27	B	28	20	1		SPARE
WORKRM 142 - COPY MACHINE	E	1200	20	1	29	C	30	20	1		SPARE
SPARE			20	1	31	A	32	20	1		SPARE
SPARE			20	1	33	B	34	20	2		SPARE
SPARE			20	1	35	C	36	-	-		-
SPACE ONLY					37	A	38				SPACE ONLY
SPACE ONLY					39	B	40				SPACE ONLY
SPACE ONLY					41	C	42				SPACE ONLY
CONNECTED LOAD		17.9 KVA			50	AMPS					
NEC DEMAND LOAD		17.4 KVA			48	AMPS					

PANEL: 0M2		120	208	3	PH	4	W	225 A BUS			22K AIC
DESCRIPTION		LOAD	BKR	P				BKR	P	LOAD	DESCRIPTION
DCP-1	M	150	20	1	1	A	2	20	1 M	1500	WH-1
DCP-2	M	120	20	1	3	B	4	20	1 M	1500	WS-1
SPARE			20	1	5	C	6	20	1 M	864	ADS-1
SPARE			20	1	7	A	8	20	3		SPARE
SPARE			20	1	9	B	10	-	-		-
SPARE			20	1	11	C	12	-	-		-
GENERATOR BLOCK	E	1500	20	3	13	A	14	30	3		SPARE
GENERATOR BATTERY WARMER	E	1500	20	-	15	B	16	-	-		-
GENERATOR BATTERY CHARGER	E	1500	20	-	17	C	18	-	-		-
SUMP PUMP IN NE WELL	E	1100	20	1	19	A	20	60	3		SPARE
REC UTILITY YARD	R	720	20	1	21	B	22	-	-		-
ELEVATOR 2 CAB LTG	E	600	20	1	23	C	24	-	-		-
SPARE			20	2	25	A	26	20	1		SPARE
-			-	-	27	B	28	30	2		SPARE
SPARE			20	1	29	C	30	-	-		-
SPARE			20	3	31	A	32	20	1		SPARE
-			-	-	33	B	34	20	1		SPARE
-			-	-	35	C	36	20	1		SPARE
SPACE ONLY			20	1	37	A	38	20	1		SPACE ONLY
SPACE ONLY			20	1	39	B	40	20	1		SPACE ONLY
SPACE ONLY			20	1	41	C	42	20	1		SPACE ONLY
CONNECTED LOAD		11.1 KVA			31	AMPS					
NEC DEMAND LOAD		11.1 KVA			31	AMPS					

PANEL: 1P3		120	208	3	PH	4	W	225 A BUS			22K AIC
DESCRIPTION		LOAD	BKR	P				BKR	P	LOAD	DESCRIPTION
REC 4-PLEX FLOORBOX RM 127	R	360	20	1	1	A	2	20	1 R	900	REC RM 120/122
REC 4-PLEX FLOORBOX RM 127	R	360	20	1	3	B	4	20	1 R	1260	REC RM 122
REC 4-PLEX FLOORBOX RM 127	R	360	20	1	5	C	6	20	1 R	1080	REC RM 122
REC 4-PLEX FLOORBOX RM 127	R	360	20	1	7	A	8	20	1 R	900	REC RM 122
REC 4-PLEX FLOORBOX RM 127	R	360	20	1	9	B	10	20	1 R	720	REC RM 122
REC 4-PLEX FLOORBOX RM 127	R	360	20	1	11	C	12	20	1 R	1080	REC RM 122
REC 4-PLEX FLOORBOX RM 127	R	360	20	1	13	A	14	20	1 R	1260	REC RM 122
REC 4-PLEX FLOORBOX RM 127	R	360	20	1	15	B	16	20	1 R	720	REC RM 121
REC 4-PLEX FLOORBOX RM 127	R	360	20	1	17	C	18	20	1 R	1260	REC RM 125/126
REC 4-PLEX FLOORBOX RM 127	R	360	20	1	19	A	20	20	1 R	720	REC RM 122
REC 4-PLEX FLOORBOX RM 127	R	360	20	1	21	B	22	20	1		SPARE
REC RM 127	R	1080	20	1	23	C	24	20	1		SPARE
SPARE			20	1	25	A	26	20	1		SPARE
SPARE			20	1	27	B	28	20	1		SPARE
SPARE			20	1	29	C	30	20	1		SPARE
SPARE			20	1	31	A	32	20	1		SPARE
SPARE			20	1	33	B	34	20	1		SPARE
SPARE			20	1	35	C	36	20	1		SPARE
SPACE ONLY			20	1	37	A	38	20	1		SPACE ONLY
SPACE ONLY			20	1	39	B	40	20	1		SPACE ONLY
SPACE ONLY			20	1	41	C	42	20	1		SPACE ONLY
CONNECTED LOAD		14.9 KVA			41	AMPS					
NEC DEMAND LOAD		12.5 KVA			35	AMPS					

PANEL: 1L1		277	480	3	PH	4	W	100 A BUS			22K AIC
DESCRIPTION		LOAD	BKR	P				BKR	P	LOAD	DESCRIPTION
SOUTH OFFICE LTG LEV 1	L	1533	20	1	1	A	2	20	1 L	1126	NORTH OFFICE/CONF LTG LEV1
VALIDATION/PRACTICE LAB	L	2190	20	1	3	B	4	20	1 L	1010	RM 121,125,126,127 LTG
DISPLAY GENERAL LIGHTING	L	612	20	1	5	C	6	20	1		SPARE
SPARE			20	1	7	A	8	20	1		SPARE
SPARE			20	1	9	B	10	20	1		SPARE
SPARE			20	1	11	C	12	20	1		SPARE
SPARE			20	1	13	A	14	20	1		SPARE
SPARE			20	1	15	B	16	20	1		SPARE
SPARE			20	1	17	C	18	20	1		SPARE
SPARE			20	1	19	A	20	20	1		SPARE
SPARE			20	1	21	B	22	20	1		SPARE
SPARE			20	1	23	C	24	20	1		SPARE
NOT REQUIRED					25	A	26				NOT REQUIRED
NOT REQUIRED					27	B	28				NOT REQUIRED
NOT REQUIRED					29	C	30				NOT REQUIRED
NOT REQUIRED					31	A	32				NOT REQUIRED
NOT REQUIRED					33	B	34				NOT REQUIRED
NOT REQUIRED					35	C	36				NOT REQUIRED
NOT REQUIRED					37	A	38				NOT REQUIRED
NOT REQUIRED					39	B	40				NOT REQUIRED
NOT REQUIRED					41	C	42				NOT REQUIRED
CONNECTED LOAD		6.5 KVA			8	AMPS					
NEC DEMAND LOAD		8.1 KVA			10	AMPS					

PANEL: 1P4		120	208	3	PH	4	W	225 A BUS			22K AIC
DESCRIPTION		LOAD	BKR	P				BKR	P	LOAD	DESCRIPTION
REC & HEADWALL RM 113	R	900	20	1	1	A	2	20	1 R	900	REC & HEADWALL RM 116
REC & HEADWALL RM 113	R	900	20	1	3	B	4	20	1 R	900	REC & HEADWALL RM 116
REC & HEADWALL RM 113	R	900	20	1	5	C	6	20	1 R	900	REC & HEADWALL RM 116
REC & HEADWALL RM 113	R	900	20	1	7	A	8	20	1 R	900	REC RM 115/116
REC & HEADWALL RM 113	R	900	20	1	9	B	10	20	1 R	540	REC FLOORBOX RM 116
REC & HEADWALL RM 113	R	900	20	1	11	C	12	20	1 R	900	REC RM 114
REC PEDESTAL RM 113	R	360	20	1	13	A	14	20	1 R	900	REC RM 114
REC PEDESTAL RM 113	R	360	20	1	15	B	16	20	1 R	1080	REC RM 116
REC PEDESTAL RM 113	R	360	20	1	17	C	18	20	1 E	1500	WASHER
REC PEDESTAL RM 113	R	360	20	1	19	A	20	30	2 E	2880	DRYER
REC FLOORBOX RM 113	R	360	20	1	21	B	22	-	- E	2880	-
REC RM 111/113	R	540	20	1	23	C	24	20	1 R	360	REC CTR MILLWORK RM 116
REC RM 113	R	720	20	1	25	A	26	20	1		SPARE
REC RM 113	R	800	20	1	27	B	28	20	1		SPARE
REC CTR MILLWORK RM 116	R	360	20	1	29	C	30	20	1		SPARE
SPARE			20	1	31	A	32	20	1		SPARE
SPARE			20	1	33	B	34	20	1 M	360	FC-2
SPARE			20	1	35	C	36	20	1 M	50	EF-5
SPACE ONLY			20	1	37	A	38	20	1		SPACE ONLY
SPACE ONLY			20	1	39	B	40	20	1		SPACE ONLY
SPACE ONLY			20	1	41	C	42	20	1		SPACE ONLY
CONNECTED LOAD		24.7 KVA			68	AMPS					
NEC DEMAND LOAD		21.2 KVA			59	AMPS					

PANEL: 1P1		120	208	3	PH	4	W	225 A BUS			22K AIC
DESCRIPTION		LOAD	BKR	P				BKR	P	LOAD	DESCRIPTION
REC MEN & WOMEN RESTROOMS	R	900	20	1	1	A	2	20	1 M	1000	VAV BOXES
REC RM 103	R	720	20	1	3	B	4	20	1 M	1000	VAV BOXES
REC DRINKING FOUNTAIN	R	1200	20	1	5	C	6	20	1 M	1000	VAV BOXES
REC RM 103	R	540	20	1	7	A	8	20	1 M	1000	VAV BOXES
REC RM 103/W STAIR/VEST	R	900	20	1	9	B	10	20	1 M	1000	VAV BOXES
SMOKE GUARD SYSTEM	E	1200	20	1	11	C	12	20	1 M	1000	VAV BOXES
REC HALL/E STAIR/E EXT	R	1200	20	1	13	A	14	20	1 M	1000	VAV BOXES
REC RM 109	R	900	20	1	15	B	16	20	1 E	600	MAG HOLD OPEN POWER SUPPLY
GARAGE DOOR	R	1200	20	1	17	C	18	20	1 E	600	MAG HOLD OPEN POWER SUPPLY
REC RM 110/N EXT	R	540	20	1	19	A	20	20	1		SPARE
UH-1	M	240	20	1	21	B	22	20	1		SPARE
SPARE			20	1	23	C	24	20	1		SPARE
SPARE			20	1	25	A	26	20	1		SPARE
SPARE			20	1	27	B	28	20	1		SPARE
SPARE			20	1	29	C	30	20	1		SPARE
SPARE			20	1	31	A	32	20	1		SPARE
SPARE			20	1	33	B	34	20	2		SPARE
SPARE			20	1	35	C	36	-	-		-
SPACE ONLY					37	A	38				SPACE ONLY
SPACE ONLY					39	B	40				SPACE ONLY
SPACE ONLY					41	C	42				SPACE ONLY
CONNECTED LOAD		17.7 KVA			49	AMPS					
NEC DEMAND LOAD		17.7 KVA			49	AMPS					

PANEL: 1S2		120	208	3	PH	4	W	100 A BUS			10K AIC
DESCRIPTION		LOAD	BKR	P				BKR	P	LOAD	DESCRIPTION
ADA DOOR MENS RR	E	1200	20	1	1	A	2	20	1 R	720	REC RM 112
ADA DOOR WOMENS RR	E	1200	20	1	3	B	4	20	1 R	720	REC RM 112
DOOR POWER SUPPLY RM 101	E	600	20	1	5	C	6	20	1 R	720	REC RM 112
DOOR POWER SUPPLY RM 118	E	600	20	1	7	A	8	20	1 E	1200	WEST ADA DOOR OPERATOR
DOOR POWER SUPPLY RM 110	E	600	20	1	9	B	10	20	1 E	1200	FIRE SMOKE DAMPER FLOOR 1
SPARE			20	1	11	C	12	20	1 E	1200	EAST ADA DOOR OPERATOR
SPARE			20	1	13	A	14	20	1 E	1200	RESTROOM 120 ADA OPERATOR
SPARE			20	1	15	B	16	20	1 E	1200	FACP RM 112
SPARE			20	1	17	C	18	20	1 E	1200	NAC PANEL ROOM 112
SPARE			20	1	19	A	20	20	1 E	1200	ACCESS CONTROL PANL RM 112
SPARE			20	1	21	B	22	20	1 R	720	REC RM 112
SPARE			20	1	23	C	24	20	1 R	720	REC RM 112
SPARE			20	1	25	A	26	20	1		SPARE
SPARE			20	1	27	B	28	20	2		SPARE
SPARE			20	1	29	C	30	-	-		SPARE
SPARE			30	3	31	A	32	60	3		SPARE
-			-	-	33	B	34	-	-		-
-			-	-	35	C	36	-	-		-
SPACE ONLY					37	A	38				SPACE ONLY
SPACE ONLY					39	B	40				SPACE ONLY
SPACE ONLY					41	C	42				SPACE ONLY
CONNECTED LOAD		16.2 KVA			45	AMPS					
NEC DEMAND LOAD		16.2 KVA			45	AMPS					

1 REVISED PANEL SCHEDULES

Ken Garner Engineering, Inc.
ELECTRICAL CONSULTING ENGINEERS

Project Name: SOUTHERN UTAH UNIVERSITY
GIBSON SCIENCE CENTER ADDITION

Project No: 59026.00

Date: 01-25-10

Sheet No.
A04-ES02

Sheet Reference
EP604

PANEL: 2L1		277	480	3	PH	4	W	100 A BUS			18K AIC	
DESCRIPTION		LOAD	BKR	P				BKR	P		LOAD	DESCRIPTION
CLASS LIGHTING LEV 3	L	1254	20	1	1	A	2	20	1	L	1022	OFFICE,CUSTODIAL LTG LEV 2
HISTOLOGY/MOL/GEN LABS	L	2993	20	1	3	B	4	20	1	L	2316	CHEM LAB LTG
EXHAUST FAN SHAFT LIGHTING	L	84	20	1	5	C	6	20	1	L	140	EXTERIOR LIGHTING LEVEL 3
			20	1	7	A	8	20	1			SPARE
SPARE			20	1	9	B	10	20	1			SPARE
SPARE			20	1	11	C	12	20	1			SPARE
SPARE			20	1	13	A	14	20	1			SPARE
SPARE			20	1	15	B	16	20	1			SPARE
SPARE			20	1	17	C	18	20	1			SPARE
SPARE			20	1	19	A	20	20	1			SPARE
SPARE			20	1	21	B	22	20	1			SPARE
SPARE			20	1	23	C	24	20	1			SPARE
NOT REQUIRED					25	A	26					NOT REQUIRED
NOT REQUIRED					27	B	28					NOT REQUIRED
NOT REQUIRED					29	C	30					NOT REQUIRED
NOT REQUIRED					31	A	32					NOT REQUIRED
NOT REQUIRED					33	B	34					NOT REQUIRED
NOT REQUIRED					35	C	36					NOT REQUIRED
NOT REQUIRED					37	A	38					NOT REQUIRED
NOT REQUIRED					39	B	40					NOT REQUIRED
NOT REQUIRED					41	C	42					NOT REQUIRED
CONNECTED LOAD		7.8 KVA			9	AMPS						
NEC DEMAND LOAD		9.8 KVA			12	AMPS						

PANEL: 2P4		120	208	3	PH	4	W	225 A BUS			22K AIC	
DESCRIPTION		LOAD	BKR	P				BKR	P		LOAD	DESCRIPTION
REC WIREMOLD RM 218	R	360	20	1	1	A	2	20	1	E	720	FUME HOOD RM 218
REC WIREMOLD RM 218	R	360	20	1	3	B	4	20	1	R	360	REC WIREMOLD RM 218
FUME HOOD RM 218	E	720	20	1	5	C	6	20	1	R	360	REC WIREMOLD RM 218
REC WIREMOLD RM 218	R	360	20	1	7	A	8	20	1	E	720	FUME HOOD RM 218
REC WIREMOLD RM 218	R	360	20	1	9	B	10	20	1	R	360	REC WIREMOLD RM 218
FUME HOOD RM 218	E	720	20	1	11	C	12	20	1	R	360	REC WIREMOLD RM 218
REC WIREMOLD RM 218	R	360	20	1	13	A	14	20	1	R	360	REC WIREMOLD RM 218
REC WIREMOLD RM 218	R	360	20	1	15	B	16	20	1	R	360	REC WIREMOLD RM 218
FUME HOOD RM 218	E	720	20	1	17	C	18	20	1	R	360	REC WIREMOLD RM 218
REC WIREMOLD RM 218	R	360	20	1	19	A	20	20	1	R	360	REC WIREMOLD RM 218
REC WIREMOLD RM 218	R	360	20	1	21	B	22	20	1	R	360	REC WIREMOLD RM 218
REC WIREMOLD RM 218	R	360	20	1	23	C	24	20	1	R	720	REC FLOORBOX RM 218
REC TOMBSTONE RM 218	R	720	20	1	25	A	26	20	1	R	360	REC FLOORBOX RM 218
REC TOMBSTONE RM 218	R	720	20	1	27	B	28	20	1	R	720	REC TOMBSTONE RM 218
REC TOMBSTONE RM 218	R	720	20	1	29	C	30	20	1	R	720	REC TOMBSTONE RM 218
REC TOMBSTONE RM 218	R	720	20	1	31	A	32	20	1	R	720	REC TOMBSTONE RM 218
FUME HOOD RM 218	R	720	20	1	33	B	34	20	1	R	720	REC TOMBSTONE RM 218
FUME HOOD RM 218	R	720	20	1	35	C	36	20	1			SPARE
SPACE ONLY			20	1	37	A	38	20	1			SPACE ONLY
SPACE ONLY			20	1	39	B	40	20	1			SPACE ONLY
SPACE ONLY			20	1	41	C	42	20	1			SPACE ONLY
CONNECTED LOAD		18.4 KVA			51	AMPS						
NEC DEMAND LOAD		16.0 KVA			44	AMPS						

PANEL: 2P1		120	208	3	PH	4	W	225 A BUS			22K AIC	
DESCRIPTION		LOAD	BKR	P				BKR	P		LOAD	DESCRIPTION
MEN & WOMEN RETROOMS	R	900	20	1	1	A	2	20	1	M	1000	VAV BOXES
SMOKE GUARD SYSTEM	E	1200	20	1	3	B	4	20	1	M	1000	VAV BOXES
REC DRINKING FOUNTAIN	E	1200	20	1	5	C	6	20	1	M	1000	VAV BOXES
REC OFFICE	R	720	20	1	7	A	8	20	1	M	1000	VAV BOXES
REC OFFICE	R	720	20	1	9	B	10	20	1	E	600	RELAY FOR FSD
REC OFFICE	R	720	20	1	11	C	12	20	1	R	360	REC RM 215
REC CORRIDOR	R	900	20	1	13	A	14	20	1	E	1200	DOOR POWER SUPPLY
REC OFFICE	R	720	20	1	15	B	16	20	1	E	1200	DOOR POWER SUPPLY
REC OFFICE	R	720	20	1	17	C	18	20	1	E	1200	DOOR POWER SUPPLY
REC OFFICE	R	720	20	1	19	A	20	20	1	M	360	FC-3
REC OFFICE	R	720	20	1	21	B	22	20	1			SPARE
SPARE			20	1	23	C	24	20	1			SPARE
SPARE			20	1	25	A	26	20	1			SPARE
SPARE			20	1	27	B	28	20	1			SPARE
SPARE			20	1	29	C	30	20	1			SPARE
SPARE			20	1	31	A	32	20	1			SPARE
SPARE			20	1	33	B	34	20	1			SPARE
SPARE			20	1	35	C	36	20	1			SPARE
SPACE ONLY			20	1	37	A	38	20	1			SPACE ONLY
SPACE ONLY			20	1	39	B	40	20	1			SPACE ONLY
SPACE ONLY			20	1	41	C	42	20	1			SPACE ONLY
CONNECTED LOAD		18.2 KVA			50	AMPS						
NEC DEMAND LOAD		18.2 KVA			50	AMPS						

PANEL: 2P5		120	208	3	PH	4	W	225 A BUS			22K AIC	
DESCRIPTION		LOAD	BKR	P				BKR	P		LOAD	DESCRIPTION
REC WIREMOLD RM 222	R	360	20	1	1	A	2	20	1	R	360	REC WIREMOLD RM 222
REC WIREMOLD RM 222	R	360	20	1	3	B	4	20	1	R	360	REC WIREMOLD RM 222
REC WIREMOLD RM 222	R	360	20	1	5	C	6	20	1	R	360	REC WIREMOLD RM 222
REC WIREMOLD RM 222	R	360	20	1	7	A	8	20	1	R	360	REC WIREMOLD RM 222
REC WIREMOLD RM 222	R	360	20	1	9	B	10	20	1	R	360	REC WIREMOLD RM 222
REC WIREMOLD RM 222	R	360	20	1	11	C	12	20	1	R	360	REC WIREMOLD RM 222
REC WIREMOLD RM 222	R	360	20	1	13	A	14	20	1	R	720	REC TOMBSTONE RM 222
REC WIREMOLD RM 222	R	360	20	1	15	B	16	20	1	R	720	REC TOMBSTONE RM 222
REC WIREMOLD RM 222	R	360	20	1	17	C	18	20	1	R	720	REC TOMBSTONE RM 222
REC WIREMOLD RM 222	R	360	20	1	19	A	20	20	1	R	720	REC TOMBSTONE RM 222
REC WIREMOLD RM 222	R	360	20	1	21	B	22	20	1	R	720	REC TOMBSTONE RM 222
REC WIREMOLD RM 222	R	360	20	1	23	C	24	20	1	R	720	REC TOMBSTONE RM 222
FUME HOOD RM 222	E	720	20	1	25	A	26	20	1	R	360	REC FLOORBOX RM 222
FUME HOOD RM 222	E	720	20	1	27	B	28	20	1	R	540	REC RM 222
GLASSWARE WASHER RM 221	E	2400	30	3	29	C	30	20	1	R	360	REC TEACHER LOC RM 222
–	–	2400	–	–	31	A	32	20	1			SPARE
–	–	2400	–	–	33	B	34	20	1			SPARE
SPARE			20	1	35	C	36	20	1			SPARE
SPACE ONLY			20	1	37	A	38	20	1			SPACE ONLY
SPACE ONLY			20	1	39	B	40	20	1			SPACE ONLY
SPACE ONLY			20	1	41	C	42	20	1			SPACE ONLY
CONNECTED LOAD		20.7 KVA			57	AMPS						
NEC DEMAND LOAD		14.9 KVA			41	AMPS						

PANEL: 2P2		120	208	3	PH	4	W	225 A BUS			22K AIC	
DESCRIPTION		LOAD	BKR	P				BKR	P		LOAD	DESCRIPTION
FUME HOOD RM 214	E	720	20	1	1	A	2	20	1	E	720	FUME HOOD RM 214
REC WIREMOLD RM 214	R	360	20	1	3	B	4	20	1	E	720	FUME HOOD RM 214
REC WIREMOLD RM 214	R	360	20	1	5	C	6	20	1	E	720	FUME HOOD RM 214
REC WIREMOLD RM 214	R	360	20	1	7	A	8	20	1	E	720	FUME HOOD RM 214
REC WIREMOLD RM 214	R	360	20	1	9	B	10	20	1	E	720	FUME HOOD RM 214
REC WIREMOLD RM 214	R	360	20	1	11	C	12	20	1	E	720	FUME HOOD RM 214
REC WIREMOLD RM 214	R	360	20	1	13	A	14	20	1	E	720	FUME HOOD RM 214
REC WIREMOLD RM 214	R	360	20	1	15	B	16	20	1	E	720	FUME HOOD RM 214
REC WIREMOLD RM 214	R	360	20	1	17	C	18	20	1	R	360	REC RM 214
REC WIREMOLD RM 214	R	360	20	1	19	A	20	20	1	R	360	REC RM 214
REC WIREMOLD RM 214	R	360	20	1	21	B	22	20	1	R	360	REC FLOORBOX RM 214
REC WIREMOLD RM 214	R	360	20	1	23	C	24	20	1			SPARE
30A NEMA RECEPTACLE	E	2880	30	2	25	A	26	20	1			SPARE
–	E	2880	–	–	27	B	28	20	1			SPARE
30A NEMA RECEPTACLE	E	2880	30	2	29	C	30	20	1			SPARE
–	E	2880	–	–	31	A	32	20	1			SPARE
SPARE			20	1	33	B	34	20	1			SPARE
SPARE			20	1	35	C	36	20	1			SPARE
SPACE ONLY			20	1	37	A	38	20	1			SPACE ONLY
SPACE ONLY			20	1	39	B	40	20	1			SPACE ONLY
SPACE ONLY			20	1	41	C	42	20	1			SPACE ONLY
CONNECTED LOAD		23.0 KVA			64	AMPS						
NEC DEMAND LOAD		23.0 KVA			64	AMPS						

PANEL: 2P6		120	208	3	PH	4	W	225 A BUS			22K AIC	
DESCRIPTION		LOAD	BKR	P				BKR	P		LOAD	DESCRIPTION
STERILIZER RM 221	E	9984	125	3	1	A	2	20	1	R	360	REC WIREMOLD RM 221
–	E	9984	–	–	3	B	4	20	1	R	360	REC WIREMOLD RM 221
–	E	9984	–	–	5	C	6	20	1	R	360	REC WIREMOLD RM 221
GLASSWARE WASHER RM 221	E	2400	30	3	7	A	8	20	1	R	360	REC WIREMOLD RM 221
–	E	2400	–	–	9	B	10	20	1	R	360	REC WIREMOLD RM 221
–	E	2400	–	–	11	C	12	20	1	R	360	REC WIREMOLD RM 221
STERILIZER CONTROLS RM 221	E	1200	20	1	13	A	14	20	1	R	360	REC WIREMOLD RM 221
REC WIREMOLD RM 221	R	360	20	1	15	B	16	20	1	R	360	REC WIREMOLD RM 221
REC WIREMOLD RM 221	R	360	20	1	17	C	18	20	1	R	360	REC WIREMOLD RM 221
REC WIREMOLD RM 221	R	360	20	1	19	A	20	20	1	R	360	REC WIREMOLD RM 221
REC WIREMOLD RM 221	R	360	20	1	21	B	22	20	1	E	720	FUME HOOD RM 221
SPARE			20	1	23	C	24	20	1	R	720	REC TOMBSTONE RM 221
REC RM 221	R	720	20	1	25	A	26	20	1	R	720	REC TOMBSTONE RM 221
REC WIREMOLD RM 221	R	360	20	1	27	B	28	20	1	R	720	REC TOMBSTONE RM 221
REC WIREMOLD RM 221	R	360	20	1	29	C	30	20	1	E	1200	REC ICE MACHINE RM 221
REC WIREMOLD RM 221	R	360	20	1	31	A	32	20	2	E	1200	GENETIC ANALIZER RM 221
REC WIREMOLD RM 221	R	360	20	1	33	B	34	–	–	E	1200	–
SPARE			20	1	35	C	36	20	1			SPARE
SPACE ONLY			20	1	37	A	38					* NEMA REC, RM 221
SPACE ONLY			20	1	39	B	40					–
SPACE ONLY			20	1	41	C	42					–
CONNECTED LOAD		52.0 KVA			144	AMPS						*FIELD COORDINATE SIZE
NEC DEMAND LOAD		52.0 KVA			144	AMPS						

PANEL: 2P3		120	208	3	PH	4	W	225 A BUS			22K AIC	
DESCRIPTION		LOAD	BKR	P				BKR	P		LOAD	DESCRIPTION
REC WIREMOLD RM 214	R	360	20	1	1	A	2	20	1	E	720	FUME HOOD RM 217
REC WIREMOLD RM 214	R	360	20	1	3	B	4	20	1	R	360	REC WIREMOLD RM 217
REC WIREMOLD RM 214	R	360	20	1	5	C	6	20	1	R	360	REC WIREMOLD RM 217
REC WIREMOLD RM 214	R	360	20	1	7	A	8	20	1	R	360	REC WIREMOLD RM 217
REC WIREMOLD RM 214	R	360	20	1	9	B	10	20	1	R	360	REC WIREMOLD RM 217
REC WIREMOLD RM 214	R	360	20	1	11	C	12	20	1	E	1200	REC WIREMOLD RM 217
REC RM 214	R	540	20	1	13	A	14	20	1	R	360	REC WIREMOLD RM 217
REC RM 216/217	R	720	20	1	15	B	16	20	1	R	360	REC WIREMOLD RM 217
REC WIREMOLD RM 214	R	360	20	1	17	C	18	20	1	R	360	REC WIREMOLD RM 217
REC WIREMOLD RM 214	R	360	20	1	19	A	20	20	1	R	360	REC WIREMOLD RM 217
REC WIREMOLD RM 214	R	360	20	1	21	B	22	30	3	E	2400	GLASSWARE WASHER RM 217
REC RM 217/218	R	540	20	1	23	C	24	–	–	E	2400	–
SPARE			20	1	25	A	26	–	–	E	2400	–
SPARE			20	1	27	B	28	20	1			SPARE
SPARE			20	1	29	C	30	20	1			SPARE
SPARE			20	1	31	A	32	20	1			SPARE
SPARE			20	1	33	B	34	20	1			SPARE
SPARE			20	1	35	C	36	20	1			SPARE
SPACE ONLY			20	1	37	A	38	20	1			SPACE ONLY
SPACE ONLY			20	1	39	B	40	20	1			SPACE ONLY
SPACE ONLY			20	1	41	C	42	20	1			SPACE ONLY
CONNECTED LOAD		17.0 KVA			47	AMPS						
NEC DEMAND LOAD		17.0 KVA			47	AMPS						

PANEL: 2P7		120	208	3	PH	4	W	225 A BUS			22K AIC	
DESCRIPTION		LOAD	BKR	P				BKR	P		LOAD	DESCRIPTION
REC RM 220	R	360	20	1	1	A	2	20	1	R	360	REC WIREMOLD RM 220
FUME HOOD RM 220	E	720	20	1	3	B	4	20	1	R	360	REC WIREMOLD RM 220
REC WIREMOLD RM 220	R	360	20	1	5	C	6	20	1	R	360	REC WIREMOLD RM 220
REC WIREMOLD RM 220	R	360	20	1	7	A	8	20	1	R	360	REC WIREMOLD RM 220
REC WIREMOLD RM 220	R	360	20	1	9	B	10	20	1	R	360	REC WIREMOLD RM 220
REC WIREMOLD RM 220	R	360	20	1	11	C	12	20	1	R	360	REC WIREMOLD RM 220
REC WIREMOLD RM 220	R	360	20	1	13	A	14	20	1	R	360	REC WIREMOLD RM 220
REC WIREMOLD RM 220	R	360	20	1	15	B	16	20	1	R	360	REC WIREMOLD RM 220
REC WIREMOLD RM 220	R	360	20	1	17	C	18	20	1	E	720	FUME HOOD RM 220
REC WIREMOLD RM 220	R	360	20	1	19	A	20	20	1	R	540	REC RM 220
REC WIREMOLD RM 220	R	360	20	1	21	B	22	20	1	R	360	REC FLOORBOX RM 220
REC WIREMOLD RM 220	R	360	20	1	23	C	24	20	1	R	720	REC TEACHER LOC RM 220
REC TOMBSTONE RM 220	R	720	20	1	25	A	26	20	1	R	720	REC TOMBSTONE RM 220
REC TOMBSTONE RM 220	R	720	20	1	27	B	28	20	1	.	720	REC TOMBSTONE RM 220
REC TOMBSTONE RM 220	R	720	20	1	29	C	30	20	1	R	720	REC TOMBSTONE RM 220
SPARE			20	1	31	A	32	20	1			SPARE
SPARE			20	1	33	B	34	20	1			SPARE
SPARE			20	1	35	C	36	20	1			SPARE
SPACE ONLY			20	1	37	A	38	20	1			SPACE ONLY
SPACE ONLY			20	1	39	B	40	20	1			SPACE ONLY
SPACE ONLY			20	1	41	C	42	20	1			SPACE ONLY
CONNECTED LOAD		14.2 KVA			39	AMPS						
NEC DEMAND LOAD		12.5 KVA			35	AMPS						

1 REVISED PANEL SCHEDULES

Ken Garner Engineering, Inc.
ELECTRICAL CONSULTING ENGINEERS

Project Name: SOUTHERN UTAH UNIVERSITY
GIBSON SCIENCE CENTER ADDITION

Project No: 59026.00

Date: 01-25-10

Sheet No.
A04-ES03

Sheet Reference
EP605

PANEL: 2E1		277	480	3	PH	4	W	30 A MAIN BKR		18K AIC
DESCRIPTION		LOAD	BKR	P				BKR	P	LOAD	DESCRIPTION
EXIT SIGNS LEV 2	L	110	20	1	1	A	2	20	1	L 847	CLASS.LAB RESTROOM LEV 3
EXIT SIGNS LEV 3	L	40	20	1	3	B	4	20	1		SPARE
CLASS/LAB/RESTROOM LEV 2	L	1456	20	1	5	C	6	20	1		SPARE
SPARE			20	1	7	A	8	20	1		SPARE
SPARE			20	1	9	B	10	20	1		SPARE
SPARE			20	1	11	C	12	20	1		SPARE
SPARE			20	1	13	A	14	20	1		SPARE
SPARE			20	1	15	B	16	20	1		SPARE
SPARE			20	1	17	C	18	20	1		SPARE
SPARE			20	1	19	A	20	20	1		SPARE
SPARE			20	1	21	B	22	20	1		SPARE
SPARE			20	1	23	C	24	20	1		SPARE
NOT REQUIRED					25	A	26				NOT REQUIRED
NOT REQUIRED					27	B	28				NOT REQUIRED
NOT REQUIRED					29	C	30				NOT REQUIRED
NOT REQUIRED					31	A	32				NOT REQUIRED
NOT REQUIRED					33	B	34				NOT REQUIRED
NOT REQUIRED					35	C	36				NOT REQUIRED
NOT REQUIRED					37	A	38				NOT REQUIRED
NOT REQUIRED					39	B	40				NOT REQUIRED
NOT REQUIRED					41	C	42				NOT REQUIRED
CONNECTED LOAD		2.5 KVA			3	AMPS					
NEC DEMAND LOAD		3.1 KVA			4	AMPS					

PANEL: 3P2		120	208	3	PH	4	W	225 A BUS		22K AIC
DESCRIPTION		LOAD	BKR	P				BKR	P	LOAD	DESCRIPTION
REC WIREMOLD RM 308	R	360	20	1	1	A	2	20	1 R	540	REC RM 308
REC WIREMOLD RM 308	R	360	20	1	3	B	4	20	1 R	720	REC TOMBSTONE RM 308
REC WIREMOLD RM 308	R	360	20	1	5	C	6	20	1 R	720	REC TOMBSTONE RM 308
REC WIREMOLD RM 308	R	360	20	1	7	A	8	20	1 R	720	REC TOMBSTONE RM 308
REC RM 308	R	720	20	1	9	B	10	20	1 R	720	REC TOMBSTONE RM 308
REC FRIDGE RM 308	E	720	20	1	11	C	12	20	1 R	720	REC TOMBSTONE RM 308
REC CHEST FREEZER RM 308	E	720	20	1	13	A	14	20	1 R	720	REC TOMBSTONE RM 308
REC FLOORBOX RM 308	R	360	20	1	15	B	16	20	1 E	1200	ELEVATOR 2 CAB LTG
REC FLOORBOX RM 308	R	360	20	1	17	C	18	20	1		SPARE
SPARE			20	1	19	A	20	20	1		SPARE
SPARE			20	1	21	B	22	20	1		SPARE
SPARE			20	1	23	C	24	20	1		SPARE
SPARE			20	1	25	A	26	20	1		SPARE
SPARE			20	1	27	B	28	20	1		SPARE
SPARE			20	1	29	C	30	20	1		SPARE
SPARE			20	1	31	A	32	20	1		SPARE
SPARE			20	1	33	B	34	20	1		SPARE
SPARE			20	1	35	C	36	20	1		SPARE
SPACE ONLY			20	1	37	A	38	20	1		SPACE ONLY
SPACE ONLY			20	1	39	B	40	20	1		SPACE ONLY
SPACE ONLY			20	1	41	C	42	20	1		SPACE ONLY
CONNECTED LOAD		10.4 KVA			29	AMPS					
NEC DEMAND LOAD		10.4 KVA			29	AMPS					

PANEL: 2S2		120	208	3	PH	4	W	100 A BUS		10K AIC
DESCRIPTION		LOAD	BKR	P				BKR	P	LOAD	DESCRIPTION
FIRE SMOKE DAMPER FLOOR 2	E	1200	20	1	1	A	2	25	1 E	1920	MINUS 80 FREEZER RM 221
FIRE SMOKE DAMPER FLOOR 3	E	1200	20	1	3	B	4	25	1 E	1920	MINUS 80 FREEZER RM 221
ELEVATOR 1 CAB LTG	E	1200	20	1	5	C	6	20	1 E	1200	MINUS 20 FREEZER RM 221
NOVEC FIRE SUPPRESSION PNL	E	600	20	1	7	A	8	20	1 E	720	FRIDGERATOR RM 221
REC RM 208/215/304	R	540	20	1	9	B	10	20	1 E	480	INCUBATOR RM 221
NAC PANEL	E	1200	20	1	11	C	12	20	1 E	1500	WALK IN FRIDGERATOR RM 221
NAC PANEL	E	1200	20	1	13	A	14	20	1		SPARE
PERCHLORIC HOOD	E	1200	20	1	15	B	16	20	1		SPARE
PERCHLORIC HOOD CTRL PNL	E	600	20	1	17	C	18	20	1		SPARE
DOOR POWER SUPPLY RM 201	E	600	20	1	19	A	20	20	1		SPARE
DOOR POWER SUPPLY RM 221	E	600	20	1	21	B	22	20	1		SPARE
DOOR POWER SUPPLY RM 217	E	600	20	1	23	C	24	20	1		SPARE
SPARE			20	1	25	A	26	20	1		SPARE
SPARE			20	1	27	B	28	20	1		SPARE
SPARE			20	1	29	C	30	20	1		SPARE
SPARE			20	1	31	A	32	20	1		SPARE
SPARE			20	1	33	B	34	20	1		SPARE
SPARE			20	1	35	C	36	20	1		SPARE
SPACE ONLY			20	1	37	A	38	20	1		SPACE ONLY
SPACE ONLY			20	1	39	B	40	20	1		SPACE ONLY
SPACE ONLY			20	1	41	C	42	20	1		SPACE ONLY
CONNECTED LOAD		18.5 KVA			51	AMPS					
NEC DEMAND LOAD		18.5 KVA			51	AMPS					

PANEL: 3P3		120	208	3	PH	4	W	225 A BUS		22K AIC
DESCRIPTION		LOAD	BKR	P				BKR	P	LOAD	DESCRIPTION
SPARE			20	1	1	A	2	20	1		SPARE
SPARE			20	1	3	B	4	20	1		SPARE
SPARE			20	1	5	C	6	20	1		SPARE
SPARE			20	1	7	A	8	20	1		SPARE
SPARE			20	1	9	B	10	20	1		SPARE
SPARE			20	1	11	C	12	20	1		SPARE
SPARE			20	1	13	A	14	20	1		SPARE
SPARE			20	1	15	B	16	20	1		SPARE
SPARE			20	1	17	C	18	20	1		SPARE
SPARE			20	1	19	A	20	30	1		SPARE
SPARE			20	1	21	B	22	20	2		SPARE
SPARE			20	1	23	C	24	–	–		–
SPARE			20	3	25	A	26	20	2		SPARE
–			–	–	27	B	28	–	–		–
–			–	–	29	C	30	30	2		SPARE
SPARE			30	3	31	A	32	–	–		–
–			–	–	33	B	34	30	2		SPARE
–			–	–	35	C	36	–	–		–
SPACE ONLY			20	1	37	A	38	20	1		SPACE ONLY
SPACE ONLY			20	1	39	B	40	20	1		SPACE ONLY
SPACE ONLY			20	1	41	C	42	20	1		SPACE ONLY
CONNECTED LOAD			KVA			AMPS					
NEC DEMAND LOAD			KVA			AMPS					PROVIDE NEMA 3R ENCLOSURE

PANEL: 3M1		277	480	3	PH	4	W	225 A BUS		22K AIC
DESCRIPTION		LOAD	BKR	P				BKR	P	LOAD	DESCRIPTION
SPARE			60	3	1	A	2	60	3 M	7480	EF-3
–			–	–	3	B	4	–	– M	7480	–
–			–	–	5	C	6	–	– M	7480	–
EF-2	M	7480	60	3	7	A	8	15	3 M	582	EF-6
–	M	7480	–	–	9	B	10	–	– M	582	–
–	M	7480	–	–	11	C	12	–	– M	582	–
SPARE			20	1	13	A	14	20	1		SPARE
SPARE			20	1	15	B	16	20	1		SPARE
SPARE			20	1	17	C	18	20	1		SPARE
SPARE			20	1	19	A	20	20	1		SPARE
SPARE			20	1	21	B	22	20	1		SPARE
SPARE			20	1	23	C	24	20	1		SPARE
SPACE ONLY			20	1	25	A	26	20	1		SPACE ONLY
SPACE ONLY			20	1	27	B	28	20	1		SPACE ONLY
SPACE ONLY			20	1	29	C	30	20	1		SPACE ONLY
NOT REQUIRED											NOT REQUIRED
NOT REQUIRED											NOT REQUIRED
NOT REQUIRED											NOT REQUIRED
NOT REQUIRED											NOT REQUIRED
NOT REQUIRED											NOT REQUIRED
NOT REQUIRED											NOT REQUIRED
CONNECTED LOAD		46.6 KVA			56	AMPS					
NEC DEMAND LOAD		46.6 KVA			56	AMPS					

PANEL: 3P4		120	208	3	PH	4	W	225 A BUS		22K AIC
DESCRIPTION		LOAD	BKR	P				BKR	P	LOAD	DESCRIPTION
SPARE			20	1	1	A	2	20	1		SPARE
SPARE			20	1	3	B	4	20	1		SPARE
SPARE			20	1	5	C	6	20	1		SPARE
SPARE			20	1	7	A	8	20	1		SPARE
SPARE			20	1	9	B	10	20	1		SPARE
SPARE			20	1	11	C	12	20	1		SPARE
SPARE			20	1	13	A	14	20	1		SPARE
SPARE			20	1	15	B	16	20	1		SPARE
SPARE			20	1	17	C	18	20	1		SPARE
SPARE			20	1	19	A	20	30	1		SPARE
SPARE			20	1	21	B	22	20	2		SPARE
SPARE			20	1	23	C	24	–	–		–
SPARE			20	3	25	A	26	20	2		SPARE
–			–	–	27	B	28	–	–		–
–			–	–	29	C	30	30	2		SPARE
SPARE			30	3	31	A	32	–	–		–
–			–	–	33	B	34	30	2		SPARE
–			–	–	35	C	36	–	–		–
SPACE ONLY			20	1	37	A	38	20	1		SPACE ONLY
SPACE ONLY			20	1	39	B	40	20	1		SPACE ONLY
SPACE ONLY			20	1	41	C	42	20	1		SPACE ONLY
CONNECTED LOAD			KVA			AMPS					
NEC DEMAND LOAD			KVA			AMPS					PROVIDE NEMA 3R ENCLOSURE

PANEL: 3P1		120	208	3	PH	4	W	225 A BUS		22K AIC
DESCRIPTION		LOAD	BKR	P				BKR	P	LOAD	DESCRIPTION
REC MEN & WOMEN RESTROOMS	R	720	20	1	1	A	2	20	1 R	360	REC WIREMOLD RM 311
REC NW ROOF/W STAIR	R	900	20	1	3	B	4	20	1 R	360	REC WIREMOLD RM 311
REC EWC	E	1200	20	1	5	C	6	20	1 R	900	REC RM 311
REC CORRIDOR 302	R	720	20	1	7	A	8	20	1 R	720	REC RM 309/310
REC NE ROOF/E STAIR	R	720	20	1	9	B	10	20	1 E	1500	MOBILE SHELVING RM 312
REC S ROOF	R	720	20	1	11	C	12	20	1 R	360	REC RM 312
SMOKE GUARD SYSTEM	E	1200	20	1	13	A	14	20	1 R	360	REC WIREMOLD RM 312
J-BOX FOR MECH VAV'S	M	1000	20	1	15	B	16	20	1 R	360	REC WIREMOLD RM 312
J-BOX FOR MECH VAV'S	M	1000	20	1	17	C	18	20	1 R	360	REC WIREMOLD RM 312
EF-4	M	864	20	1	19	A	20	20	1 R	360	REC WIREMOLD RM 312
REC HIGH ROOF	R	180	20	1	21	B	22	20	1 R	360	REC WIREMOLD RM 312
DOOR POWER SUPPLY	E	1200	20	1	23	C	24	20	1 R	600	REC, HT TRC, RM 305 SHAFT
EF-7	M	1176	20	1	25	A	26	20	1		SPARE
SPARE			20	1	27	B	28	20	1		SPARE
SPARE			20	1	29	C	30	20	1		SPARE
SPARE			20	1	31	A	32	20	1		SPARE
SPARE			20	1	33	B	34	20	1		SPARE
SPARE			20	1	35	C	36	20	1		SPARE
SPACE ONLY					37	A	38				SPACE ONLY
SPACE ONLY					39	B	40				SPACE ONLY
SPACE ONLY					41	C	42				SPACE ONLY
CONNECTED LOAD		18.2 KVA			51	AMPS					
NEC DEMAND LOAD		18.2 KVA			51	AMPS					

PANEL: 3S2		120	208	3	PH	4	W	100 A BUS		22K AIC
DESCRIPTION		LOAD	BKR	P				BKR	P	LOAD	DESCRIPTION
NAC PANEL	E	1200	20	1	1	A	2	20	2	1144	ACU-1
DOOR POWER SUPPLY RM 312	E	600	20	1	3	B	4	–	–	1144	–
DOOR POWER SUPPLY RM 314	E	600	20	1	5	C	6	20	1		SPARE
SPARE			20	1	7	A	8	20	1		SPARE
SPARE			20	1	9	B	10	20	1		SPARE
SPARE			20	1	11	C	12	20	1		SPARE
SPARE			20	1	13	A	14	20	1		SPARE
SPARE			20	1	15	B	16	20	1		SPARE
SPARE			20	1	17	C	18	20	1		SPARE
SPARE			20	1	19	A	20	20	1		SPARE
SPARE			20	1	21	B	22	20	1		SPARE
SPARE			20	1	23	C	24	20	1		SPARE
SPARE			20	2	25	A	26	20	2		SPARE
–			–	–	27	B	28	–	–		–
SPARE			20	2	29	C	30	20	2		SPARE
–			–	–	31	A	32	–	–		–
SPARE			20	2	33	B	34	20	2		SPARE
–			–	–	35	C	36	–	–		–
SPACE ONLY					37	A	38				SPACE ONLY
SPACE ONLY					39	B	40				SPACE ONLY
SPACE ONLY					41	C	42				SPACE ONLY
CONNECTED LOAD		4.7 KVA			13	AMPS					
NEC DEMAND LOAD		2.4 KVA			7	AMPS					PROVIDE NEMA 3R ENCLOSURE

1 REVISED PANEL SCHEDULES

Ken Garner Engineering, Inc.
ELECTRICAL CONSULTING ENGINEERS

Project Name: SOUTHERN UTAH UNIVERSITY
GIBSON SCIENCE CENTER ADDITION

Project No: 59026.00

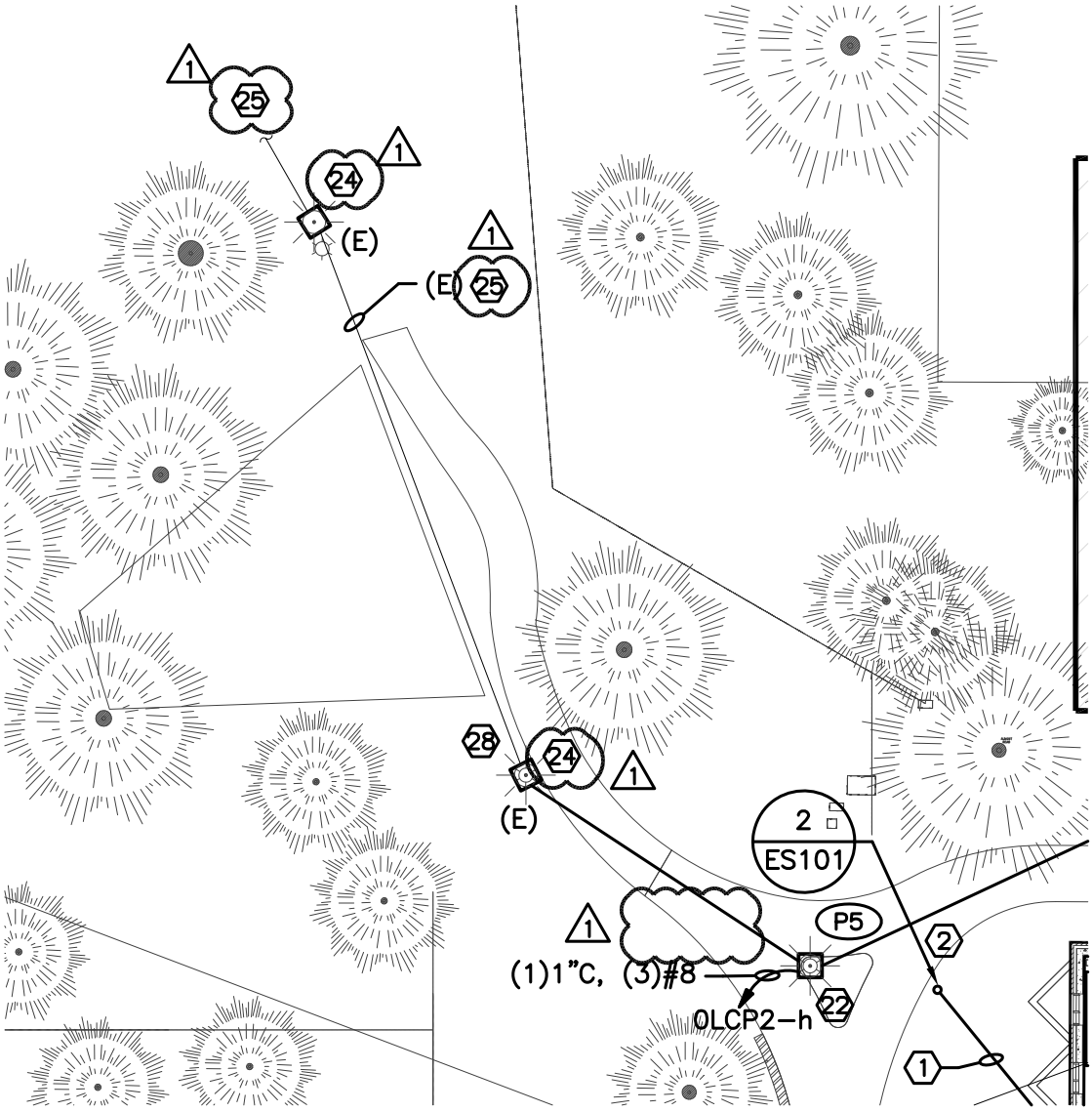
Date: 01-25-10

Sheet No.
A04-ES04

Sheet Reference
EP605

KEYED NOTES - SHEET ES101

22. OLD LIGHT FIXTURE LOCATION. DEMOLISH ASSOCIATED WIRING AND ABANDON CONDUIT.
24. FEED EXISTING LIGHT POLE, AND SUBSEQUENT LIGHT POLES FROM NEW LIGHTING CIRCUIT.
25. REUSE EXISTING WIRING TO CONTINUE SITE LIGHTING CONTROL FROM THE NEW BUILDING. DISCONNECT EXISTING LIGHTING CONTROL PRIOR TO TYING IN NEW POWER. SEE DEMOLITION PACKAGE SHEET EL100 FOR EXISTING DISCONNECT/CONTROL LOCATIONS.



1 ELECTRICAL SITE PLAN

0 10' 20' 40'

N

Ken Garner Engineering, Inc.
ELECTRICAL CONSULTING ENGINEERS

Project Name: SOUTHERN UTAH UNIVERSITY
GIBSON SCIENCE CENTER ADDITION
Project No: 59026.00
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Sheet No.
A04-ES05
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ES101

KEYED NOTES - SHEET ES101

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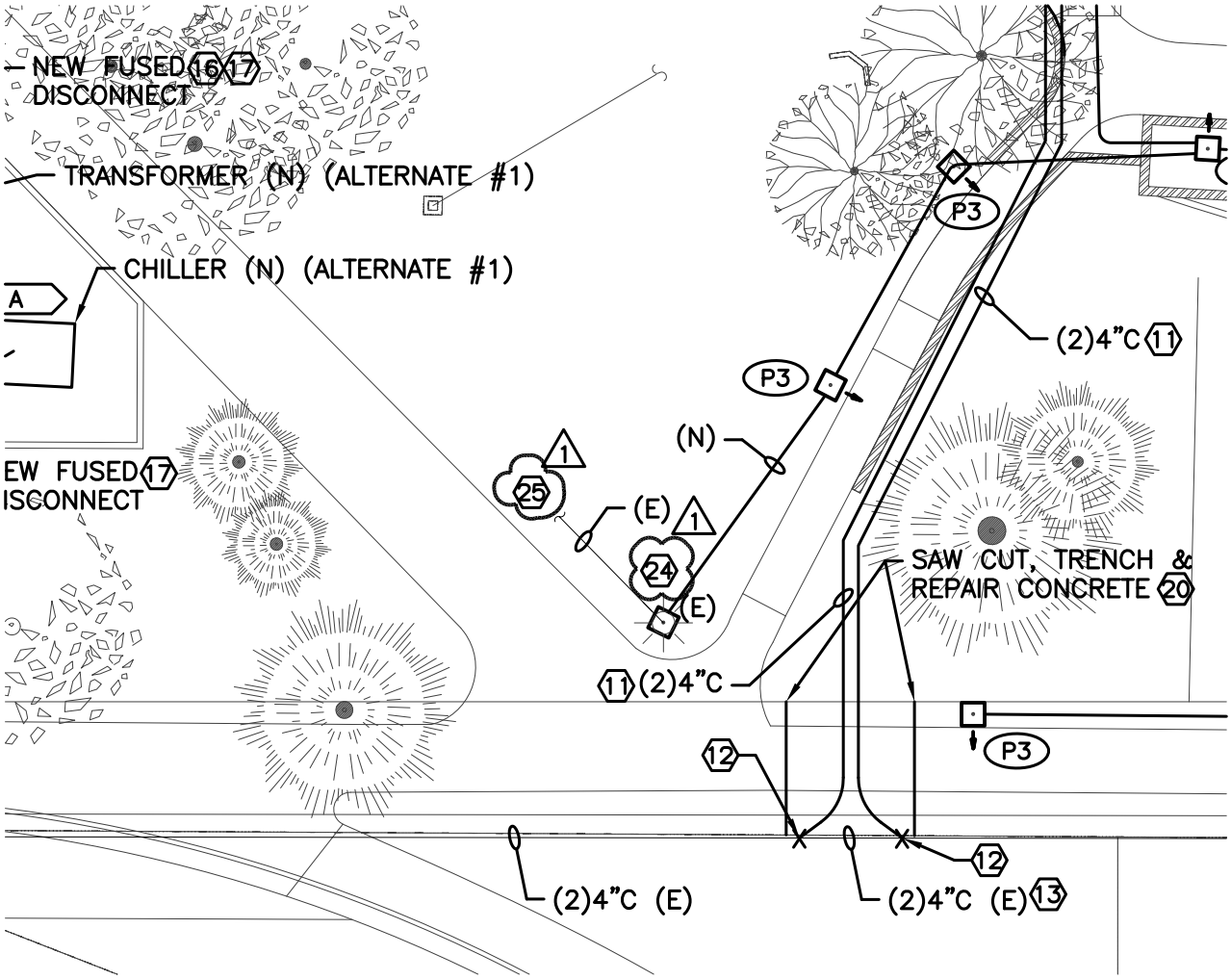

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0 10' 20' 40'

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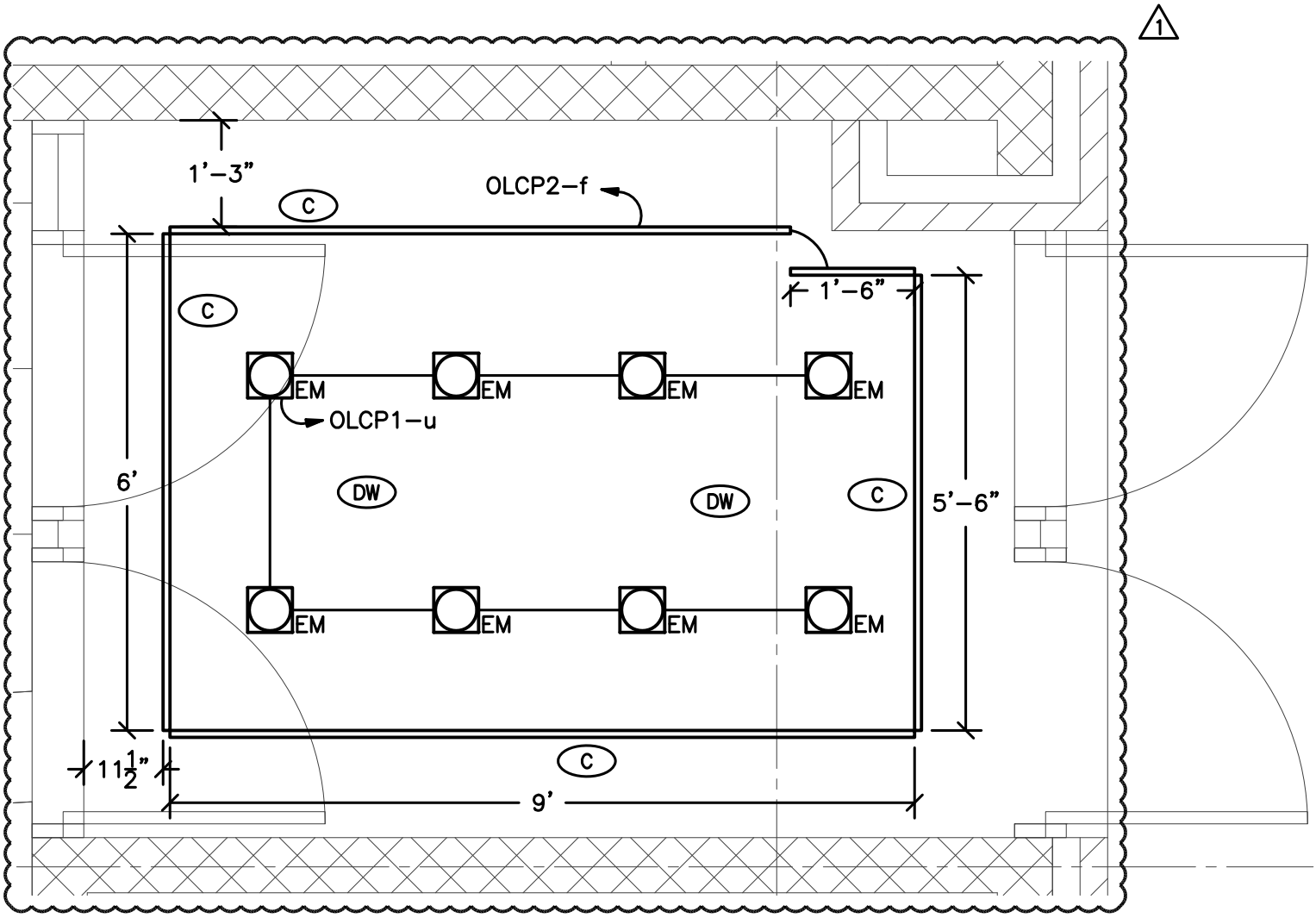

6 VESTIBULE 118

0 1' 2' 4'

N

Ken Garner Engineering, Inc.
ELECTRICAL CONSULTING ENGINEERS

Project Name: SOUTHERN UTAH UNIVERSITY
GIBSON SCIENCE CENTER ADDITION

Project No: 59026.00

Date: 01-25-10

Sheet No.
A04-ES07

Sheet Reference
EL500