State of Utah

GARY R. HERBERT
Governor

Department of Administrative Services
KIMBERLY K. HOOD
Executive Director

Division of Facilities Construction and Management
DAVID G. BUXTON
Director

ADDENDUM NO. 8

Date: January 6, 2011

To: Short-Listed Contractors

Company	Contact	Fax
Big-D Construction	Kelly Hyvonen	801-415-6903
Jacobsen Construction	Blake Court	801-973-7496
Layton Construction	Bruce McDonough	801-563-4811
Okland Construction	Russell Butler	801-486-7570

From: Matthias Mueller

Reference: Holland Centennial Commons
Dixie State College – St. George, Utah
DFCM Project No. 06297640

Subject: **Addendum No. 8**

Pages			
	Addendum Cover Sheet	1	page
	Architect's Addendum No.	38	pages
	Total	39	pages

ONLY THIS SHEET IS BEING FAXED. THE ENTIRE ADDENDUM IS POSTED ON THE DFCM WEBSITE.

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.

8.1 **SCHEDULE CHANGES:** There are no Project Schedule changes.

8.2 **GENERAL ITEMS:** See attached Architect's Addendum No.8 dated January 6, 2011.

Holland Centennial Commons Building
Dixie State College of Utah

ADDENDUM #8

PROJECT:	**Dixie State College of Utah** **Holland Centennial Commons**	**ARCHITECT'S PROJECT NO:**	09625
		No. Pages:	38 pages
OWNER:	Dixie State College	**DATE:**	January 6, 2011
ARCHITECT:	VCBO Architecture	**GENERAL CONTRACTOR:**	
SUBMITTAL DATE:	January 19, 2011	**SUBMITTAL TIME:**	12:00pm

This Addendum shall be considered part of the Contract Documents and Project Manual for the above mentioned project as though it had been issued at the same time and shall be incorporated integrally therewith. Where provisions of the following supplementary date differ from those of the original Contract Documents and Project Manual, the Addendum shall govern and take precedence.

ARCHITECTURAL

GENERAL

8.1 General Contractors shall only be allowed to submit bids from first tier (any Subcontractor holding a direct contract with the General Contractor) Subcontractors who are bondable. This means that each of the General Contractor's first tier Subcontractors must furnish a bonding letter to the General Contractor from the Subcontractor's surety company (not its bonding agent) including the following: its single and aggregate bonding limits. This Subcontractor's surety company shall have an AM Best (www.ambest.com) rating of "A" or higher and be listed on the Treasury List (http://fms.treas.gov/c570/c570.html#certified).

8.2 Provide a Bid Alternate for use of Brick Veneer, Specification Section 04 2113, in lieu of the base bid Stone Veneer, Specification Section 04 4200. For the alternate bid all exterior building faces, planters, site walls where stone veneer is noted I in the construction documents, replace with brick veneer. The revised Bid Form is attached.

8.3 The list of DFCM pre-qualified steel fabricators is found on their website: http://dfcm.utah.gov/downloads/bldg_official/approved_fabricator_list_10.pdf

8.4 Revise the first line of the SUBCONTRACTOR BONDING/INSURANCE ALLOWANCE issued in Addendum #4, General Item 4.1, omit the text "not-to-exceed" and revise to read "All short-listed Contractors shall provide within their Cost Proposals a $200,000 (two hundred thousand dollars) subcontractor bond/default insurance allowance."

8.5 Clarification: The specification for Gate Hardware is found in Section 05 5000 Metal Fabrications, Paragraph 2.23.

8.6 Revise the finish notes at the drinking fountain near the Toilet Rooms at Gridlines 2 and E. The floor finish is to be F23 in lieu of F10. The wall behind the drinking fountains is to be W11. This revision applies to all floors.

8.7 Clarification regarding Roller Shades, and Shade Pockets. Roller Shades are to be located as per Specification Section 1.2.A.3, see revisions to this section below. All window shades in rooms with an Acoustical Grid Ceiling System that extends to the wall is to be pocketed in an integral grid pocket system as per

Specification Section 09 5100, Part 2.G.2. These areas are noted with Keynote 925 and detailed in D3/A540. In rooms where the ceiling is the Acoustical Grid Ceiling System that does not extend to the wall (an acoustical tile cloud condition), is any other ceiling type, or there is no ceiling, an aluminum extruded shade pocket is to be included as per Specification Section 12 2400. These areas are noted with Keynote 1200. Where multiple Roller Shades are stacked on large windows or curtain walls the shades that are below ceiling height, where the rollers are exposed to view are to be concealed with an aluminum fascia as per Specification Section 12 2400 Part 2.2.E .

8.8 Refer to the attached Memo (from Bob Anderson to Sherry Ruesch) regarding Lead Based Paint Assessment for the Whitehead Building and Career Center Building. All material containing lead based paint can not be recycled will not be counted toward the LEED MR Credit. This means that the hazardous waste does not need to be included in the overall waste calculations.

DRAWINGS

Sheet A131.1

1. The shaded rows of shelving on the compact shelving units are stationary shelving units and are meant to hold books that are accessible from inside the shelf unit.

Sheet A313

1. Drawing A3/A313 – Revise the ceiling material of the Balcony at Level 4 (along Grids J and H and Grids 1 through 4) to be Pre-Finished Metal Soffit Panel, in lieu of keynote 716. Refer to the Reflected Ceiling Plan A141.4.

Sheet A324

1. Section B1/A324 has been relabeled to be C1/A324. This section has been modified to show the footing for the planter box. The footing steps from the top of planter wall and is labeled to match the height of the adjacent stair landing. Drainage gravel has also been shown. A detail callout to refer to detail D4/AS501 has been added to this section. There is a note that coordination of the footing and the stair is required at the base of the stair where there is a conflict. See attached.
2. Section C5/A324 has been modified to show the footing for the planter box. The drainage gravel has also been shown. See attached.

Sheet A513

3. Details A1, B5 and C5:
   Add a note and leader that points to the steel angles shown at the window support: "Window support angles as designed by GFRC manufacturer/designer in coordination with the aluminum window supplier. The caulking of this joint in the construction is a part of the shop fabricated GFRC panel system."

Sheet A514

1. Details B4
   Add a weep tube at the bottom of the GFRC system similar to that shown in detail B4/A514.

PROJECT MANUAL

Specification Section 03 4910 GLASS FIBER REINFORCED CONCRETE (GFRC)

1. Cold-formed steel framing within GFRC panels may be G60 zinc coating - paragraph 2.10.A.1, eliminate reference to G90 zinc coating. However, back pan

shall remain G90 as called for in paragraph 2.6.K.2.

2. Part 2.2 – Add F. to read:
   "F. **Unlimited Designs Inc.**, 780 North Warm Springs Road (700 West), Salt Lake City, UT 84116-2316, (801) 355.3221 www.unlimiteddesigns.com"

Specification Section 04 4200 STONE VENEER ASSEMBLIES

1. Part 1.5.A Add the following: "The basis of design for the anchor system is by Hohmann & Barnard, Inc., www.h-b.com"

Specification Section 07 5400 THERMOPLASTIC MEMBRANE ROOFING

1. Change paragraph 1.4.E.1 to read "Solar Reflectance Index (SRI) should be equal to or greater than 110" in lieu of "0.78".
2. Change paragraph 1.4.E.2 to read "Minimum emissivity of 0.95" in lieu of "0.09".
3. Paragraph 2.3.C.1 – Add subparagraph g: "g. Johns Manville, ENRGY 3"

Specification Section 9 – Finish Schedule

1. Add material MARK: F23
   F23 to read: "FLOOR MATERIALS: floor tile, MANUFACTURER: Daltile, DESCRIPTION: 6X12 Fabrique Gris P690 linen P687 light polish, Brick pattern to match wall".

2. Revise material MARK: W11
   W11 to read: "WALL MATERIAL: tile, MANUFACTURER: Daltile, DESCRIPTION: 6X12 Fabrique Gris P690 linen P687 light polish, Brick pattern, see elevation". In lieu of 12X12.

Specification Section 12 2400 ROLLER SHADES

1. Revise 1.2.A.3. to read:
   "Provide window shades at all exterior windows EXCEPT the following windows: Window Types C102 between Grids 6 and 7, C103, C202 Level 2 and 2M, C203, C204, C205, C206 Level 2 and 2M, C207 Level 2 and 2M, and C214. Include Level 2 interior locations as noted:"
2. Revise 1.2.A.4.a. to read: "Shades shall completely cover window openings and overlap with mullion by a minimum of ¼" and overlap equally both sides of the shade. Where shades are mounted set back between mullions, no more than an 1/8" is to be exposed at the edges."
3. Add Paragraph 2.1.A.6: "6. Blynco Manufacturing and Distributing, Inc.; www.blynco.com"

Specification Section 31 6600 AGGREGATE PIER GROUND IMPROVEMENT

1. Jones Shoring (Jones Excavating Co.) is an approved installer as per specification part 1.4.
   5633 W. Axel Park Road, West Jordan, UT 84088 Phone: 801.280.2908

2. Subsurface Constructors is an approved installer as per specification part 1.4. 101 Angelica Street, Saint Louis, MO 63147 Phone: 314.421.2479
3. Hayward Baker is an approved installer as per specification part 1.4.
   11575 Wadsworth Blvd., Broomfield, Colorado 80020 Phone: 303.469.1136

MECHANICAL

See attached for Mechanical Addendum. (9 pages)

ELECTRICAL

See attached for Electrical Addendum. (18 pages)

END OF ADDENDUM

COST PROPOSAL FORM

NAME OF
PROPOSER_____DATE_____

To the Division of Faciliteis 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 **HOLLAND CENTENNIAL COMMONS – DIXIE STATE COLLEGE OF UTAH – ST. GEORGE, UTAH – DFCM PROJECT NO. 06297640** and having examined the Contract Documents and the site of the propsed Work and being familiar with all of the conditions surrounding the construction of the porposed Project, in cluding 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 perfprming the Work required under the Contract Documents of which this bid is a part:

I/We acknowledge receipt of the following Addenda
_____

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.)

For the work as described in **BID ALTERNATE #1**, I/We agree to perform for the sum of:

_____ DOLLARS
($_____)
additive/deductive (circle one) (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 **$3,000.00** 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 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 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 100% 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

ADDRESS:

_____

_____

_____
Authorized Signature

MEMORANDUM

TO: **SHERRI RUESCH, EXECUTIVE DIRECTOR**
CAMPUS SERVICES
DIXIE STATE COLLEGE

FM: **BOB ANDERSON, HAZ-MAT MANAGER**
STATE OF UTAH
DIVISION OF FACILITIES CONSTRUCTION & MANAGEMENT

SUBJECT: **LEAD BASE PAINT ASSESSMENT**
PRE-DEMOLITION INSPECTION AND TESTING

REF: **CAREER CENTER, BUILDING #15**
WHITEHEAD STUDENT SERVICES CENTER, BUILDING #16

DATE: **JANUARY 5TH, 2011**

The presence of lead in demolition debris from non-residential buildings has the potential to impose limitations on where and how the debris may be disposed. The Resource Conservation and Recovery Act (RCRA), Subtitles C and D, requires the generator to determine if the wastes are hazardous under Subtitle C of RCRA. This can be determined either through generator knowledge or by testing. It is DFCM's experience that modern framed, concrete, or masonry building structures do not contain enough lead paint or other sources of lead to be characteristic hazardous wastes and, as such, DFCM does not believe waste characterization sampling is necessary in this instance. However, DFCM evaluates this on a case-by-case basis, after taking into account the amount of coverage, condition, and concentration of lead throughout the structure.

Demolition debris from structures that contain slag or sources of lead other than paint may be considered hazardous waste and should be tested by collecting a representative number of samples that are analyzed for lead using the Toxicity Characteristic Leaching Procedure (TCLP). The results of this test will determine whether materials must be handled and disposed of as hazardous waste. Furthermore, individual components of a structure (i.e., door jambs, window frames, wallboard etc.) which have been painted with lead paint should be sampled prior to disposal to determine if they are hazardous.

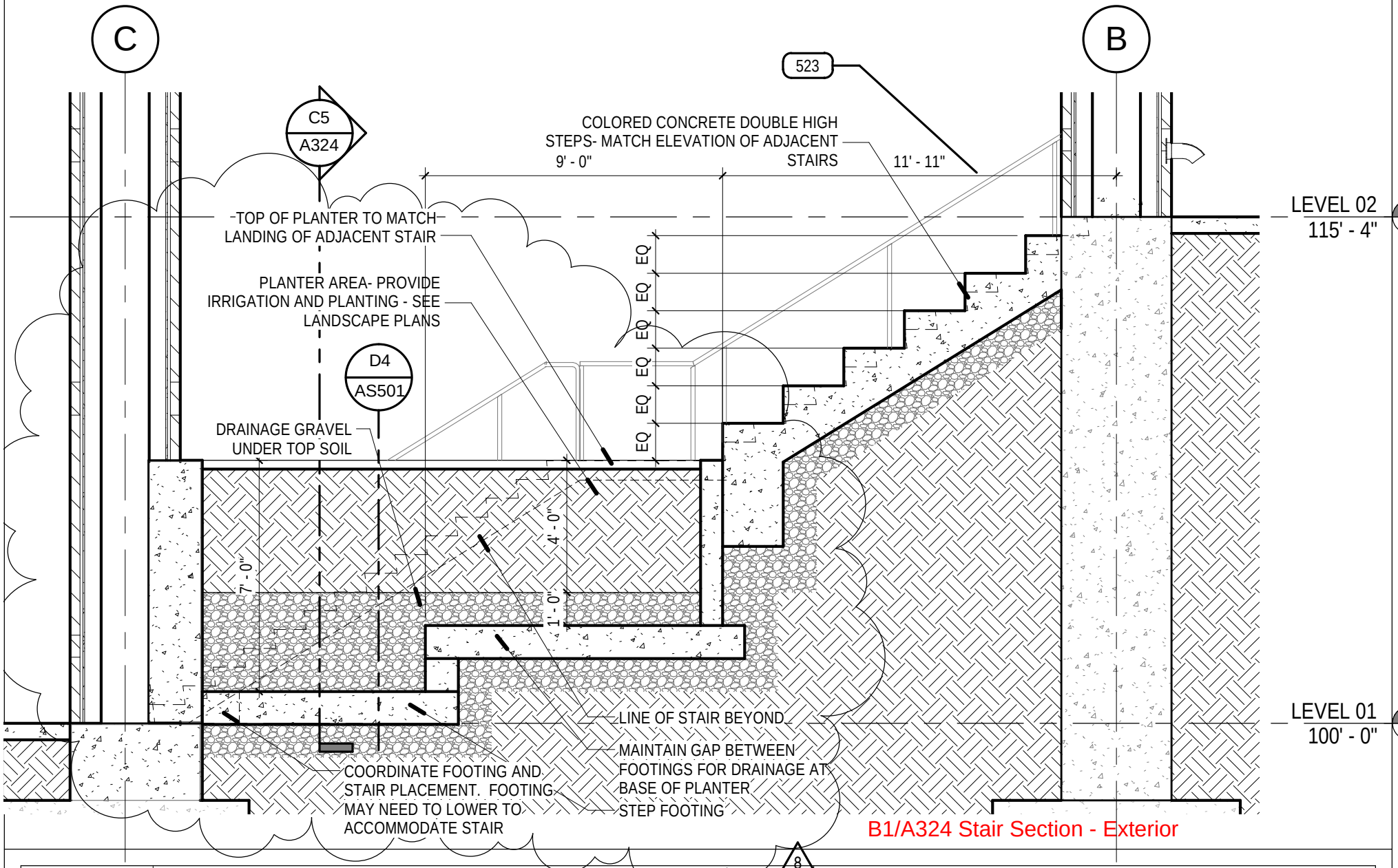
It is DFCM's policy that TCLP samples will be taken of any building or structure to determine waste stream flow prior to demolition. If testing results render certain building components as hazardous waste, it will be the responsibility of the building owner through DFCM to remove prior to demolition.

In closing, prior to demolition, building owners wishing to dispose of demolition waste in the Washington County Solid Waste Landfill must contact Neil Schwendiman (District Manager at (435) 673-2813 to schedule a pre-demo inspection. According to Mr.

Schwendiman, Washington County does not require any lead testing prior to disposal of demolished building materials.

If you have any questions or require additional information, please contact Bob Anderson at the numbers listed below:

Cellular 801-652-6754
Fax 801-538-3267
E-mail bobanderson@utah.gov



B1/A324 Stair Section - Exterior

VCBO

HOLLAND CENTENNIAL COMMONS

DIXIE STATE COLLEGE OF UTAH

Addendum #8
Sheet A324

Project number	09625	
Date	Issue Date	
Drawn by	Author	
Checked by	Checker	Scale

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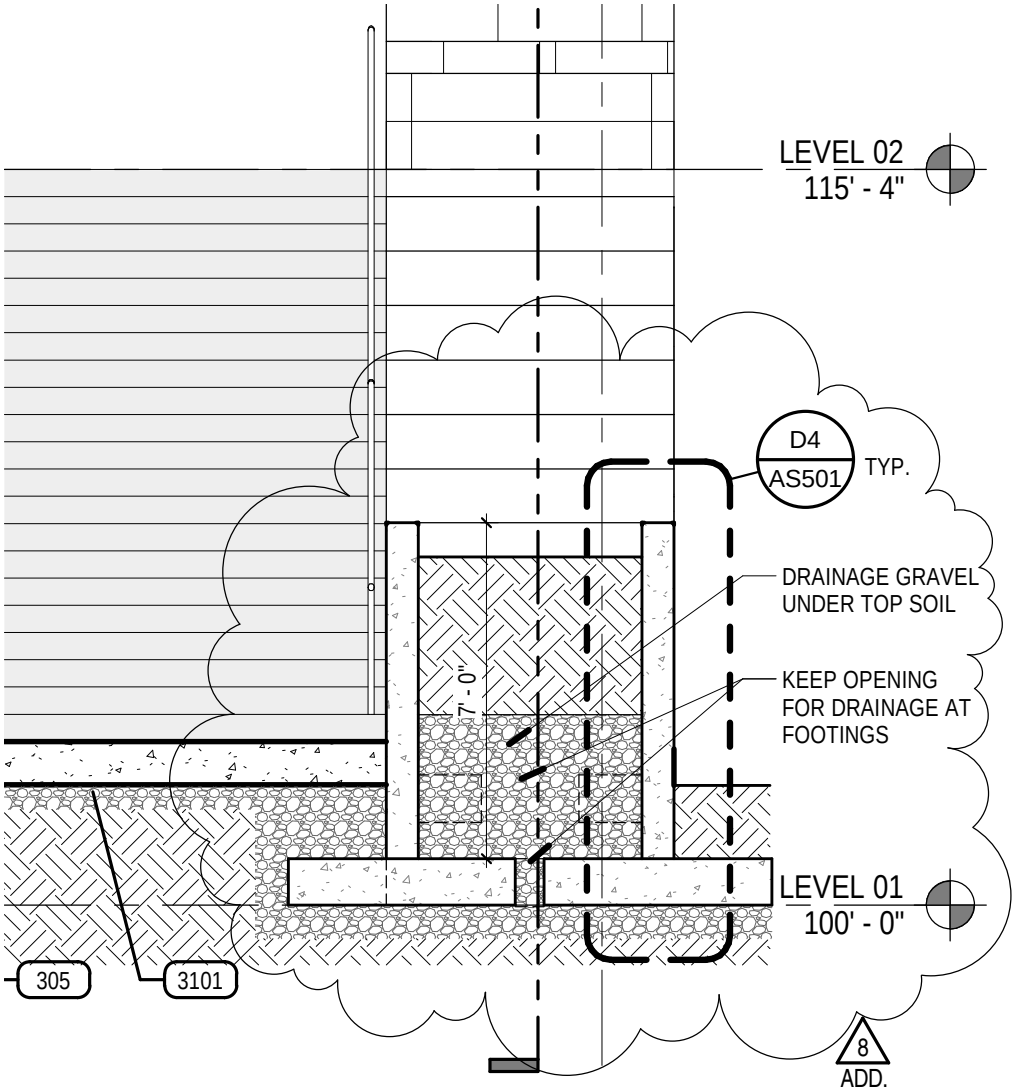

C5/A324 Grand Stair North Section

VCBO	HOLLAND CENTENNIAL COMMONS DIXIE STATE COLLEGE OF UTAH	.	Addendum #8 Sheet A324
		Project number 09625	
		Date Issue Date	.
		Drawn by Author	
		Checked by Checker	Scale

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Colvin Engineering Associates, Inc.
HIGH PERFORMANCE DESIGN

MECHANICAL ADDENDUM NO. 8

Dixie State College Holland Centennial Commons

CEA PROJECT NO. 2010-004.00

January 6, 2011

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

Item No.	Add, Delete or Clarify	Specification Section or Drawing No.	Reference / Description:
8.1	Add	231123	Add Natural Gas Systems specification. Refer to attached specification.
8.2	Clarify	MH601	Change length of AH-2 to 408”.
8.3	Clarify	230593 1.3 F	Add Bonneville Test and Balance & Tempco Services to list of approved contractors.
8.4	Add	230529 2.4 C	Ball valves shall be full port. The model numbers listed in part 2 have errors. Ball valves should be Nibco T-590-Y-66, or equal. Butterfly Valve has been updated. Refer to attached specification
8.5	Clarify	PL601	Clarify that flush valve on WC-1 and 2 is a manual dual flush valve. Sloan WES-111, or equal.
8.6	Clarify	230900 2.14 A	Specification requires airflow monitoring at each fan. This is not required for this project. Airflow monitoring is only required at locations shown on the drawings.
8.7	Clarify	230900 2.18 A & B	Each piece of HVAC equipment with a motor shall have power monitoring shown on the graphics page. This is intended to be done with a current transducer and the nominal voltage. It is not required to monitor and display actual voltage, phase angle, and power factor. The equipment power calculation is intended as an estimate of the actual power consumption only. For three phase equipment, only one leg needs to be monitored.

PRODUCT SUBSTITUTIONS / PRIOR APPROVALS

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

Item No.	Specification Section	Product Type	Alternate Manufacturers
8.8	230529 2.4	Butterfly Valves	Milwaukee, Hammond, Centerline, DeZurik, Fisher, Victaulic, Keystone, Posi-Seal, TEC, Nibco, IFC
8.9	224440 2.2, 2.3, 2.5, 2.6	Floor Drains, Floor Sinks, Roof Drains, Overflow Drains	Watts
8.10	224440 2.1	Carriers, Stops, Supplies, Traps	Watts
8.11	224440 2.3	Thermostatic Mixing Valves	Watts, Powers

The above named alternate equipment manufacturers stand approved in name only. Approval here in no way relieves the supplier from complying with all other engineering, weight spatial, and quality requirements of equipment indicated in the contract documents. Contractors using products from the above named alternate manufacturers shall refer to Specification Section 230500 for detailed contractor responsibilities related to the use of alternate brands not used as the Basis of Design.

END OF ADDENDUM NO. 3

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

SECTION 23 1123

NATURAL GAS SYSTEM

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Pipe and Fittings.

B. Gas Meter.

C. Gas Pressure Regulator.

1.2 RELATED REQUIREMENTS

A. The General Conditions, Supplementary Conditions and Division 1, General Requirements apply to this Section, and Contractor shall review and adhere to all requirements of these documents.

B. Section 230500 - Basic Mechanical Requirements.

1.3 RELATED SECTIONS

A. Section 230529- Basic Mechanical Materials and Methods: Valves, pipe hangers, supports and accessories.

B. Section 230548 - Mechanical Seismic Control.

C. Section 224450 - Plumbing Equipment: Gas supply and runout with gas cock or valve to water heater connection points.

1.4 REFERENCES

A. NFPA 54 (ANSI Z223.1) - National Fuel Gas Code.

B. ANSI Z223.1a - Supplement to National Fuel Gas Code.

1.5 DEFINITIONS

A. The following are references with definition acronyms used in this section:

1. U.L. - Underwriters Laboratory Listed for Fire Protection Systems.
2. F.M. - Factory Mutual Engineering Division.
3. IRI - Industrial Risk Insurors AKA: F.I.A. Factory Insurance Association.
4. Jurisdictional Agencies:

    a. Building Department.
    b. Fire Department or Fire Prevention Bureau or Marshal.
    c. Insurance Agency, Carrier, and/or Underwriter.

d. Engineer refers to the consulting Mechanical Engineer of record.

1.6 SYSTEM DESCRIPTION

A. Provide gas supply from street main to building meter and from gas meter outlet to all gas consuming equipment complete with piping, meters, valves, unions, dirt legs, hangers, supports, anchors, expansion compensators and regulators.

1.7 QUALITY ASSURANCE

A. Welding: Welders shall be certified in accordance with requirements in Section 230529.

1.8 REGULATORY REQUIREMENTS

A. Conform to Regulatory Requirements listed in Section 230500.

B. Provide special inspections required in IBC Chapter 17.

1.9 SUBMITTALS

A. Submit Product Data for the following items under provisions of the General Conditions of the Contract:

1. Regulators.

B. Submit printed Operating Instructions and Maintenance Data for the following items under provisions of Operating and Maintenance Data paragraph in Section 230500:

1. Regulators.

C. Submit certified test reports, dated and signed by authorized person showing compliance of tests of the fuel gas systems, in accordance with the Contract Documents.

1.10 SEQUENCING/SCHEDULING

A. Coordinate all work with all other trades and utility companies for elimination of interference, utilization of combined hanger support systems, timely routing and installation of systems, verifications of existing connector utilities, locations, depths, connection regulation, proper valving and junction structures or fittings. Location of meters, and remote readers as applicable and appropriate.

1.11 WARRANTIES

A. Provide original copies of all warranties for specific equipment where specified and in accordance with Section 230500.

B. Provide 20 year full warranty on all cathodic protection and pipe wrapping against corrosion of piping due to electrolytic or active soil conditions.

1.12 GAS SERVICE

A. Arrange with Utility Company to provide gas service to indicated location with shut-off at terminus. Consult with Utility as to extent of its work, costs, fees and permits involved. 231123 Contractor shall pay such costs and fees; obtain permits.

PART 2 - PRODUCTS

2.1 PIPE AND FITTINGS

A. Buried Exterior (meter and building service):

1. Pipe: Schedule 40 Black Steel ASTM A-53 pipe for butt welding or plastic piping as defined below when acceptable jurisdictional authorities.
2. Fittings: Butt weld steel, ASTM-234.
3. Wrapping: Scotchwrap 10 mil PVC tape or Standard of serving Utility Company.
4. Contractor's Options, when acceptable to jurisdictional authorities:

   a. Natural Gas:

      1) High Density Polyethylene pipe and fittings; ASTM D-3350:335434C, PPI:PE 3408/3406, Type III, Grade P34 Category 5 per ASTM D 1248, SDR 11 pipe.

      2) Polyvinylchloride natural gas pipe and fittings:

         Size 1/2" thru 1-1/2": Sch. 40 Type 1 PVC 1120, IAPMO: 15-10-71, ASTM D 1785.

         Size 2" thru 6": Class 315 Type 1 PVC 1120, IAPMO: 15-10-71, ASTM D 2513.

B. Interior Exposed or Accessible:

1. Size 1/2" thru 1-1/2":

   Pipe: Schedule 40, ASTM A 53
   Fittings: Threaded malleable iron
   Joint Seal: Teflon
   Unions: Black malleable iron ground joint, bronze to iron seat, 150 lb. class, ANSI B2.1 and ASTM A 197.

2. Size 2" and over:

   Pipe: Schedule 40, ASTM A53, Type S Grade B
   Fittings: Butt weld ASTM A 234
   Unions: 150 lb. forged steel weld neck flange, ANSI B16.5 and ASTM A105.

C. Interior, concealed, non-accessible spaces and return air plenums:

Use no unions, tubing fittings, right or left couplings, bushing, shut-off valves, compression coupling, or swing joints made by combinations of fittings.

2.2 GAS METER

A. As provided by utility company.

2.3 GAS PRESSURE REGULATOR

A. General: Provide single stage, steel jacketed, corrosion-resistant gas pressure regulators with atmospheric vent, elevation compensator; with threaded ends for 2" and smaller, flanged ends for 2-1/2" and larger; for inlet and outlet gas pressures, specific gravity, and volume flow required.

B. Provide vent-limited or vented gas pressure regulators as required by appliance served. Vented regulators shall be piped to vent to outdoors per jurisdictional requirements.

PART 3 - EXECUTION

3.1 GENERAL

A. Welding, wiring, sleeves, plates and closures, foundations and pads, excavation and backfill, cutting and patching and installation of piping, valves, pipe hangers, supports, expansion compensators and identification shall be in accordance with Section 230529 - Basic Mechanical Materials and Methods.

B. Provide all fuel gas piping from source to each connection point of all gas fired equipment items listed in "Related Work" paragraph in Part 1. Provide drip leg and gas cock or valve for each equipment item. Make final connections in compliance with equipment manufacturer's instructions. Flexible connections will not be allowed except where explicitly specified.

3.2 PIPING

A. General:

1. Install fuel gas distribution piping in accordance with jurisdiction codes and local Utility Company requirements and in conformity with standards listed in "References" paragraph in Part 1.
2. Install "Tee" fitting with bottom outlet fitted with full size 6" long nipple and capped, at bottom of pipe risers or drops.
3. Use dielectric unions where dissimilar metals are joined together.
4. Use Teflon joint seal on metal gas piping threads, make up with 3 threads showing.
5. Remove cutting and threading burrs before assembling piping.
6. Do not install defective piping or fittings. Do not use pipe with threads which are chipped, stripped or damaged.
7. Plug each gas outlet, including valves, with threaded plug or cap immediately after installation and retain until continuing piping, or equipment connections are completed.

8. Connections to all gas-fired equipment shall include a union downstream of the manual gas shut-off valve.

9. For piping buried in building substrate, or below floor slabs, install in welded conduit, ventilated to outdoors on both ends, and tested to same requirements as gas piping.

10. For buried piping outside of building walls, piping shall rise out of ground 12” before penetrating building wall.

11. Provide exterior gas piping and fittings with primed and painted surface. Coordinate color with Owner, Architect, and authority having jurisdiction.

B. Buried Piping: Welded and wrapped with joints left exposed until testing has been accepted. Bury 24" below grade minimum.

C. Wrapping:

1. Provide factory applied pipe wrap in accordance with standard of serving utility company. Hand wrap or machine wrap buried exterior gas piping with Scotchwrap 10 mil PVC tape using 50% overlap wrap minimum. Double wrap fittings and joints. Extend fitting wrapping not less than 6 inches past the end of the fitting onto the pipe section. Test pipe and fittings prior to wrapping fittings. Coat steel and iron pipe with Scotchwrap pipe primer before wrapping.

2. Pipe wrapping shall conform to the following schedule:

Pipe Size	Tape Width	Scotchwrap No.	
		Standard	Cold
¼ - ¾ inch	1 inch	50	40
1 - 1-1/2 inch	2 or 4 inch	50	40
2 inch and larger	4 inch	50	40
Color Backing		Black	Green

3. During application of wrap, if the ambient temperature is 40 deg.F or less, use only Scotchwrap No. 40 tape. If ambient temperature is 41 deg.F or more, use only Scotchwrap No. 50.

D. Buried Pipe Identification: Install bright colored continuously printed plastic ribbon tape of not less than 6 inches width and 4 mil thickness 6 to 8 inches below finished grade directly over buried pipe. Provide metalized tape over non-metallic pipe.

E. Interior Concealed Piping: All pipe and fittings shall be welded. Do not install valves of any type in air plenums or concealed spaces.

3.3 HANGERS AND SUPPORT SYSTEMS (Interior)

A. Provide pipe hangers, supports and accessories in accordance with Section 230529 - Basic Mechanical Materials and Methods.

3.4 VALVES

A. Provide valves in accordance with Section 230529 - Basic Mechanical Materials and Methods.

3.5 GAS COCKS AND GAS VALVES

A. Provide at supply runout connection for each gas-fired equipment item; and on risers and branches where indicated.

B. Locate gas cocks and valves where easily accessible, and where they will be protected from possible damage.

3.6 GAS SERVICE

A. Complete arrangements with Utility Company to provide gas service to indicated location with shut-off at terminus.

B. Extend service pipe from Utility's terminus to inside building wall, under Utility's direction.

C. Provide shut-off outside building where indicated, in adjustable gas service valve box, with cover set flush to finished grade.

D. Provide shut-off in gas service pipe at entry in building, extend pipe to gas meter location indicated; provide parts and accessories required by Utility to connect meter.

3.7 GAS METER

A. Be responsible to verify with utility company the size and thickness, reinforcing and location of all concrete pads, chain link enclosures, gate requirements, bar-hasp-padlock requirements, and size and type of traffic bollards-guards required.

B. Provide concrete pad in accordance with Section 230529 - Basic Mechanical Materials and Methods.

C. Provide enclosures, bumper protection or other accessories which may be required.

D. Install gas meter in accordance with local Utility Company's installation instructions, and comply with requirements of jurisdictional codes.

3.8 GAS PRESSURE REGULATOR

A. Install as indicated; comply with Utility requirements. Pipe atmospheric vent to outdoors (unless a vent-limited regulator is used), full size of outlet. Install gas shut-off valve upstream of each pressure regulating valve.

3.9 TESTS

A. General: Test fuel supply lines with air under pressure before being covered. Use a calibrated, certified static gauge graduated to one pound per square inch.

B. Testing shall be of the complete piping system, before covering, or of individually separable larger portions of the system. Only the last connection to the appliance may be tested under operating conditions. This connection will be tested with soap and brush under line pressures. This connection must remain exposed.

C. Test Procedures: Use either of the following methods at the Contractor's option:

1. 30 psig air pressure for a period of 24 hours with no drop in gauge pressure, indicating the line to be airtight.
2. 100 psig air pressure, with joints tested with standard soap and brush inspection and maintain for 3 hours without drop in pressure.

D. Retesting: Retest piping failing initial tests following correction of defective work. Requirements of initial tests shall apply.

E. Test Records: Record pressure and ambient temperature at start and end of test. Submit written results of test to the Architect/Engineer.

END OF SECTION 23 1123

ELECTRICAL ADDENDEUM

DSC Holland Centennial Commons January 6, 2011
Addendum #8

ELECTRICAL – DIV 26

SPECIFICATIONS

Approved Electrical Gear Manufacturers:

1. Remove General Electric (GE) from the list of approved manufactures in the following specifications sections:
    a. 262200 Transformers
    b. 262413 Switchboards
    c. 262416 Panelboards
    d. 262419 Motor Control Centers
    e. 262816 Enclosed Switches and Circuit Breakers
    f. 262913 Enclosed Controllers

Section 262200 Low-Voltage Transformers :

1. Add Synergy Energy to list of acceptable manufacturers in paragraph 2.1(A).

Section 263213 Engine Genrators :

1. Delete paragraph 2.4(B).
2. Change fuel capacity in paragraph 2.4(C)(2) from 24 hours to 18 hours.
3. Delete paragraph 2.8(B).

Section 263353 UPS :

1. Delete Internal option from paragraph 1.2(A)(1).
2. Increase warranty from 2 years to 3 years in paragraph 1.7(B).
3. Delete internal cabinet option from paragraph 2.9(D).
4. Delete paragraph 3.7, Performance Testing, and all sub-paragraphs.

Section 263600 Transfer Switches:

1. Add paragraph 2.3(I):
    I. Automatic Closed-Transition Transfer Switches: Include the following functions and characteristics:
    1. Fully automatic make-before-break operation.
    2. Load transfer without interruption, through momentary interconnection of both power sources not exceeding 100 ms.
    3. Initiation of No-Interruption Transfer: Controlled by in-phase monitor and sensors confirming both sources are present and acceptable.
        a. Initiation occurs without active control of generator.
        b. Controls ensure that closed-transition load transfer closure occurs only when the 2 sources are within plus or minus 5 electrical degrees maximum, and plus or minus 5 percent maximum voltage difference.
    4. Failure of power source serving load initiates automatic break-before-make transfer.

Section 264113 Lightning Protection:

1. Delete options Class II and aluminum from paragraph 2.1(B).
2. Add Robbins Lightning as an acceptable manufacturer in paragraph 2.1(B)(1).

DRAWINGS

Sheets EPD151 :

1. Add key note #12: "Remove existing control panels and install new control panels for existing cooling towers. Coordinate with mechanical installer." Refer to attached revised full size drawing EPD151.

Sheet ES103:

1. Numbered lines on exterior of building (i.e. D1, D2 and D3) should be ignored. They refer to drain lines shown on civil drawings and the layers were inadvertently left on.

Sheet ES104:

1. Add equipment tags SP-1 and SP-2 to sump pumps at south end of tunnel referred to by keynote #2.

Sheets EP101, EP102, EP102M, EP103, EP104, EP105 :

1. Add general sheet note #4: Provide connection to system furniture provided in future bid package where indicated by furniture feed floor boxes or junction boxes.
2. Add general sheet note #5: Coordinate all floorbox and poke-thru locations with architect prior to rough-in.

Sheet EP102:

1. Add receptacles and voice/data outlets to Copy Center 248 as shown on attached revised drawing EP102-RV2-1.
2. Add second PT4 poke-thru device to Library Curriculum 234 as shown on attached revised drawing EP102-RV2-1.

Sheet EP102M:

1. Add receptacle for copier near gridlines C.3 and 5.8 as shown on attached revised drawing EP102M-RV2-1.

Sheet EP103:

1. Delete plywood covering walls from Server Room 352.
2. Revise receptacle layout and add voice data outlets in Server Room 352 as shown on attached revised drawing EP103-RV2-1.
3. Add second PT4 poke-thru device to Classroom 325 as shown on attached revised drawing EP103-RV2-1.
4. Add receptacle and voice/data outlet for copier near gridlines B and 4. Relocate other receptacles as shown on attached revised drawing EP103-RV2-1.

Sheet EP105:

1. Add third PT4 poke-thru device to Zion Room 537 as shown on attached revised drawing EP105-RV2-1.

Sheet EP401:

1. Add annunciator for ATS-5Q to wall adjacent to future UPS-2B in electrical room 513.

Sheet EP402:

1. Delete future panel and make panel 5LA2 two sections in electrical room 506.

ELECTRICAL ADDENDEUM

DSC Holland Centennial Commons January 6, 2011
Addendum #8

Sheet EP403:

1. Delete lighting relay panel 1RA shown in electrical room 106. Relay panel 1RA is located in electrical room 117 as shown on sheet EP404.
2. Revise the layout of electrical room 113 as shown on the attached revised drawing EP403-RV2-1.

Sheet EP404:

1. Revise panel locations as shown on attached revised drawing EP404-RV2-1.

Sheet EP405:

1. Add junction box, circuit and switch above serving window on of concession stand 126. Refer to attached revised drawing EP405-RV2-1.

Sheet EP501:

1. Add transformer pad detail. See attached revised full size sheet EP501.

Sheet EP601:

1. Add General Sheet Note #1: "Installers of medium voltage systems and equipment shall be approved by St. George City Energy Services."
2. Change keynote on existing #2/0 cable between (EX) VFI #1 and (EX) CSS #9 from keynote #2 to keynote #6.

Sheet EP602:

1. Delete sheet keynote text on this sheet.
2. Refer to the fault current table; update the following fault current values:
    a. Delete panel 1LDPA0
    b. 1QLDPA: 20,000 SCA
    c. Add panel PG: 22,000 SCA
    d. Add panel 1LDPB: 14,000 SCA
    e. Add panel 1LA2: 10,000 SCA
    f. Add panel 2MLB1: 11,000 SCA
    g. Add panel 4QLB: 5,000 SCA
    h. Add panel 5LB2: 9,000 SCA
3. Delete the requirement for 65KAIC rating on main distribution panel MS. Minimum AIC ratings are shown in the fault current table.
4. Add Panel 5LB2, fed from distribution panel 1LDPB as shown on the attached revised full size drawing EP602.
5. Add 2nd section to panel 5LA2 as shown on the attached revised full size drawing EP602.

ELECTRICAL ADDENDEUM

DSC Holland Centennial Commons January 6, 2011
Addendum #8

Sheet EP603:

1. Provide an isolated compartment in distribution panel GDP for the 400/3 circuit breaker feeding ATS-E.
2. ATS-E is a non-bypass switch with in phase monitor open transition.
3. ATS-1Q is a non-bypass switch with in phase monitor open transition.
4. ATS-5Q is a closed transition, bypass isolation switch.
5. Delete the requirement for 65KAIC rating on distribution panels GDP and 1QHDPA. Minimum AIC ratings are shown in the fault current table on sheet EP602.
6. Lower the AIC requirement for the input breaker on typical PDU one-line detail, E5, from 100KAIC to 65KAIC.
7. Increase kVA rating of transformer 1TQA from 150kVA to 300kVA. Increase the upstream circuit breaker and feeder to 400/3 and #35. Increase downstream feeder to #48. Refer to attached full sized drawing EP603.
8. Increase the main circuit breaker in distribution panel 1QLDPA from 600/3 to 1000/3.

Sheet EP604:

1. Change grounding connection from 5th floor computer room ground bus to equipment racks from G4 to G1.

Sheet EP606:

1. Add sump pumps SP-1 and SP-2 to mechanical equipment schedule. Each pump is 1/2HP, 208V, 1Ø, and will be circuited to 15A/2P CB in Panel 2QLA with 2 #12, #12 GND in ¾" Conduit. Provide 2 pole, size 1 fused combo FVNR starter/disconnect with 10A fuses adjacent to each pump.

Sheet EP608:

1. Add panel schedule for panel 2LK1. See attached schedule.

Sheet EP609:

1. Change circuit breakers for sump pumps in panel 2QLA (circuits 81 & 82) from 20A/2P to 15A/2P.

Sheet EP610:

1. Add panel schedule for panel PG in the Gymnasium Building. See attached schedule.

Sheet EP611:

1. Change dimmer DMA from branch circuit style to feeder style.
2. Add 2nd section to panel 5LA2. See attached revised panel schedule for panel 5LA2.

END OF ELECTRICAL ADDENDUM

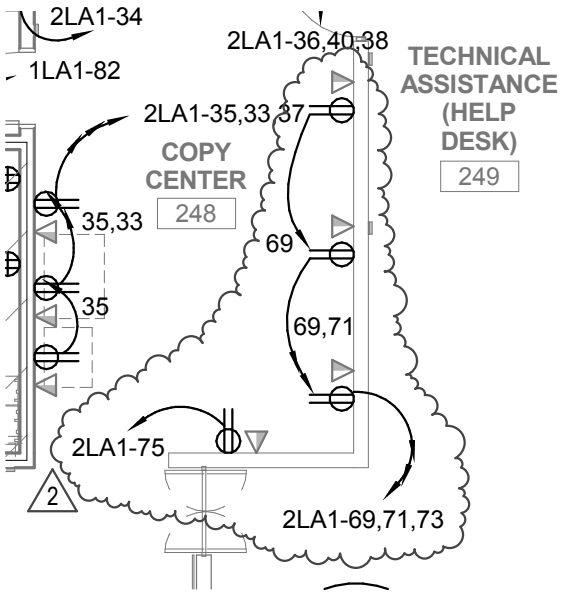
ATTACHMENTS:

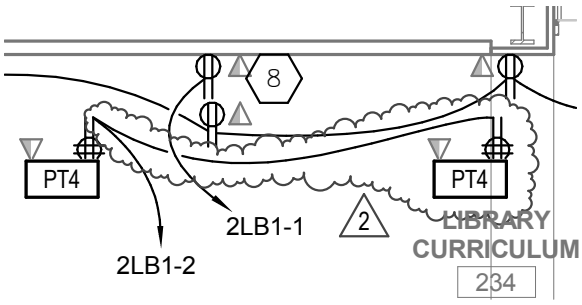
8 ½" X 11" sketches:	**Panel Schedules:**	**Full size sheets:**
EP102-RV2-1	2KL1	EPD151
EP102M-RV2-1	5LA2	EP501
EP103-RV2-1	PG	EP602
EP105-RV2-1		EP603
EP403-RV2-1		
EP404-RV2-1		
EP405-RV2-1		

GENERAL SHEET NOTES

4 PROVIDE CONNECTION TO SYSTEM FURNITURE PROVIDED IN FUTURE BID PACKAGE WHERE INDICATED BY FURNITURE FEED FLOOR BOXES OR JUNCTION.

2 5 COORDINATE ALL FLOORBOX AND POKE-THRU LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN.





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PROJ NO:	20100008
DRAWN BY:	WRT
CHECKED BY:	RBK

PROJECT: HOLLAND CENTENNIAL COMMONS

SHEET TITLE: LEVEL 2 POWER PLAN

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

EP102-RV2-1

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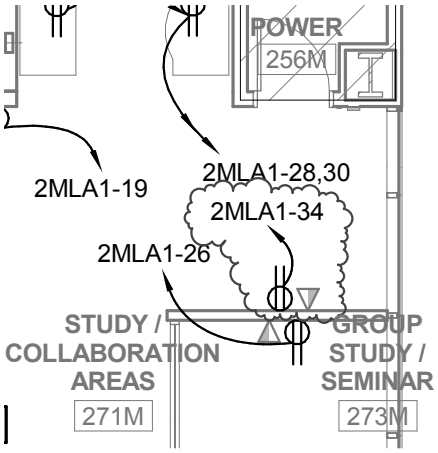
GENERAL SHEET NOTES

4 PROVIDE CONNECTION TO SYSTEM FURNITURE PROVIDED IN FUTURE BID PACKAGE WHERE INDICATED BY FURNITURE FEED FLOOR BOXES OR JUNCTION.

2 5 COORDINATE ALL FLOORBOX AND POKE-THRU LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN.



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PROJECT: HOLLAND CENTENNIAL COMMONS

SHEET TITLE: LEVEL 2 MEZZANINE POWER PLAN

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

EP102M-RV2-1

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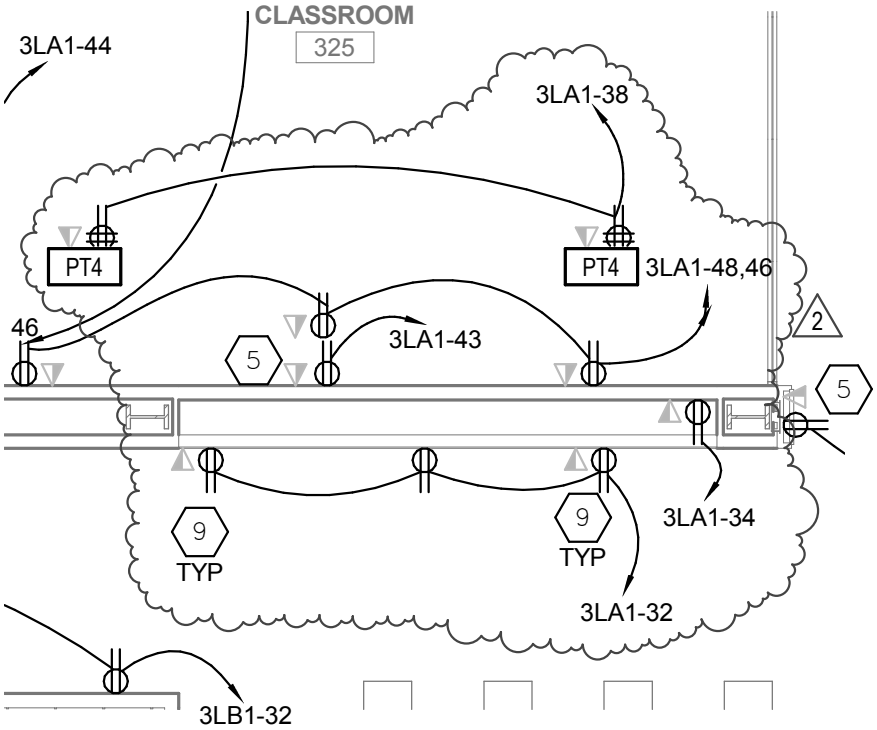
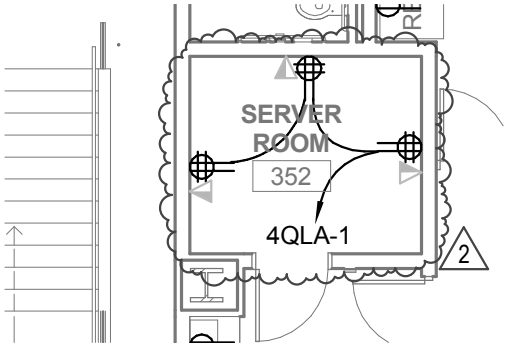
GENERAL SHEET NOTES

4 PROVIDE CONNECTION TO SYSTEM FURNITURE PROVIDED IN FUTURE BID PACKAGE WHERE INDICATED BY FURNITURE FEED FLOOR BOXES OR JUNCTION.

2 5 COORDINATE ALL FLOORBOX AND POKE-THRU LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN.





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SHEET TITLE: LEVEL 3 POWER PLAN

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

EP103-RV2-1

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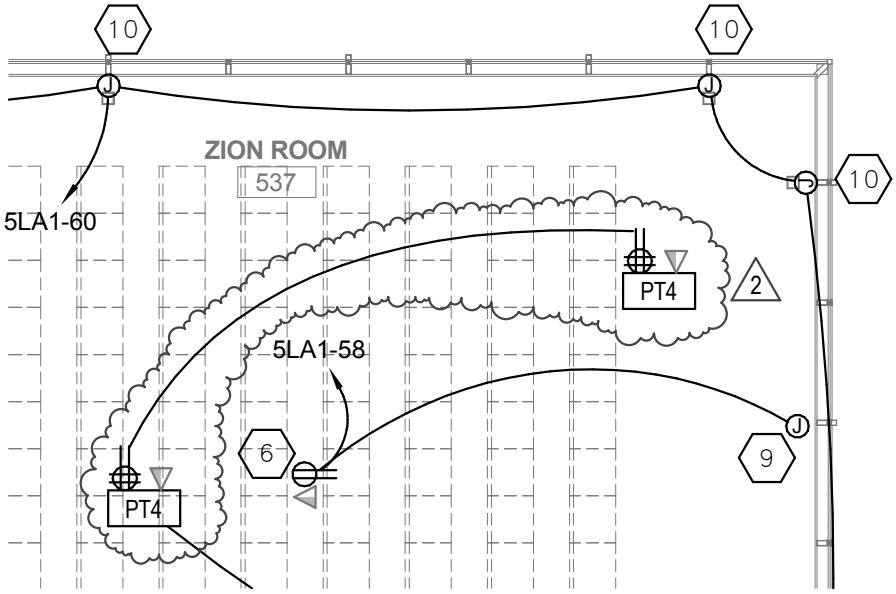
GENERAL SHEET NOTES

4 PROVIDE CONNECTION TO SYSTEM FURNITURE PROVIDED IN FUTURE BID PACKAGE WHERE INDICATED BY FURNITURE FEED FLOOR BOXES OR JUNCTION.

2 5 COORDINATE ALL FLOORBOX AND POKE-THRU LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN.



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SHEET TITLE: LEVEL 5 POWER PLAN

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

EP105-RV2-1

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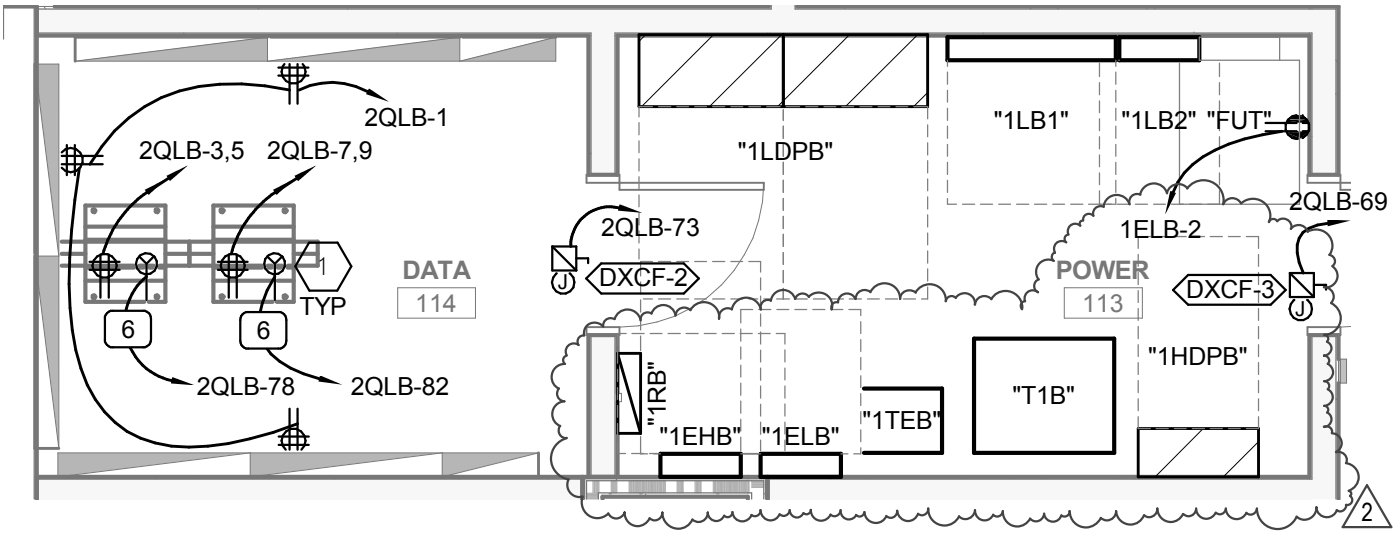

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PROJECT: HOLLAND CENTENNIAL COMMONS

SHEET TITLE: ENLARGED POWER PLANS

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

EP403-RV2-1

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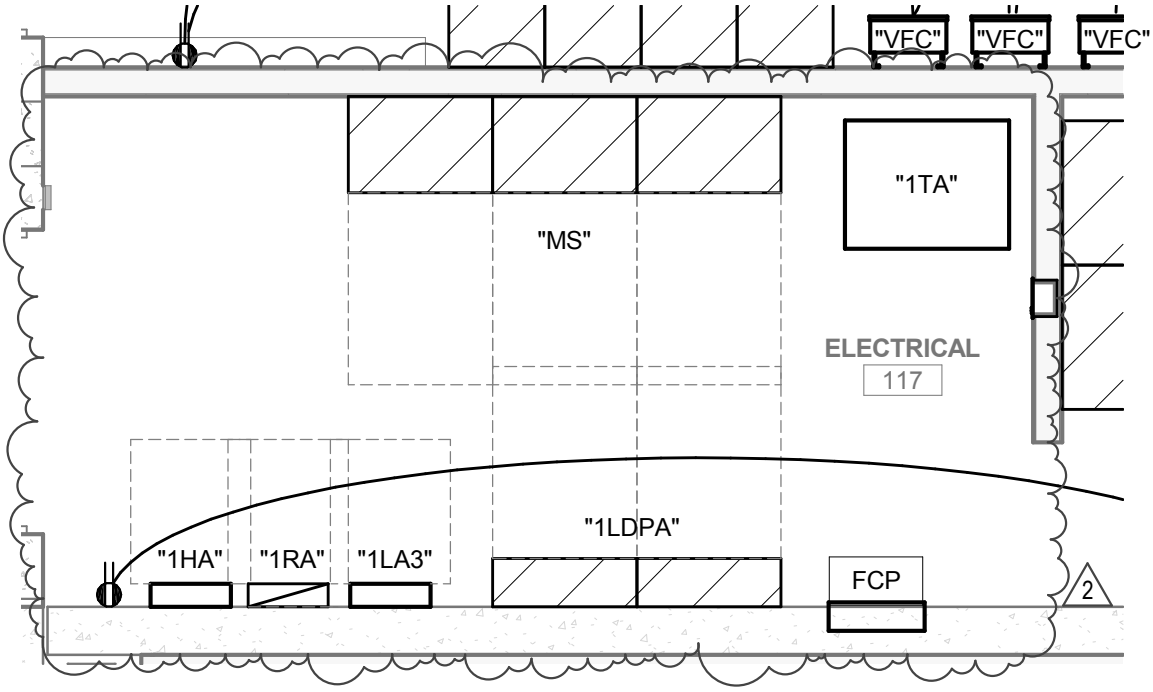

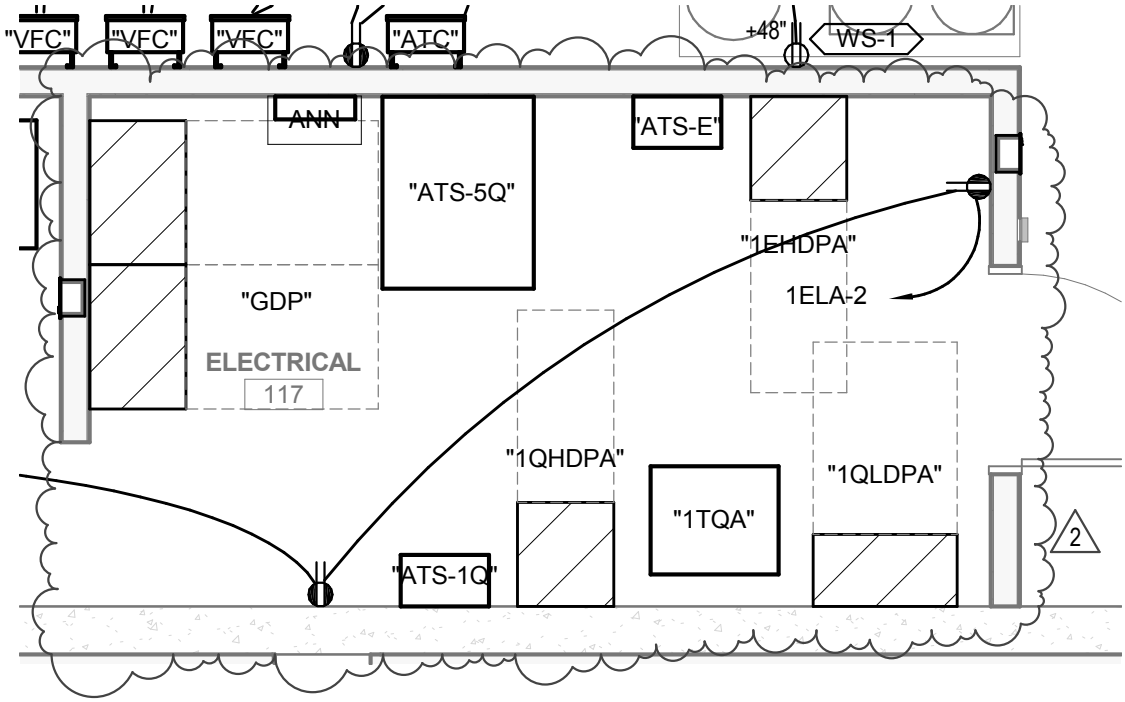

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SCALE: 1/4" = 1'-0"

EP404-RV2-1

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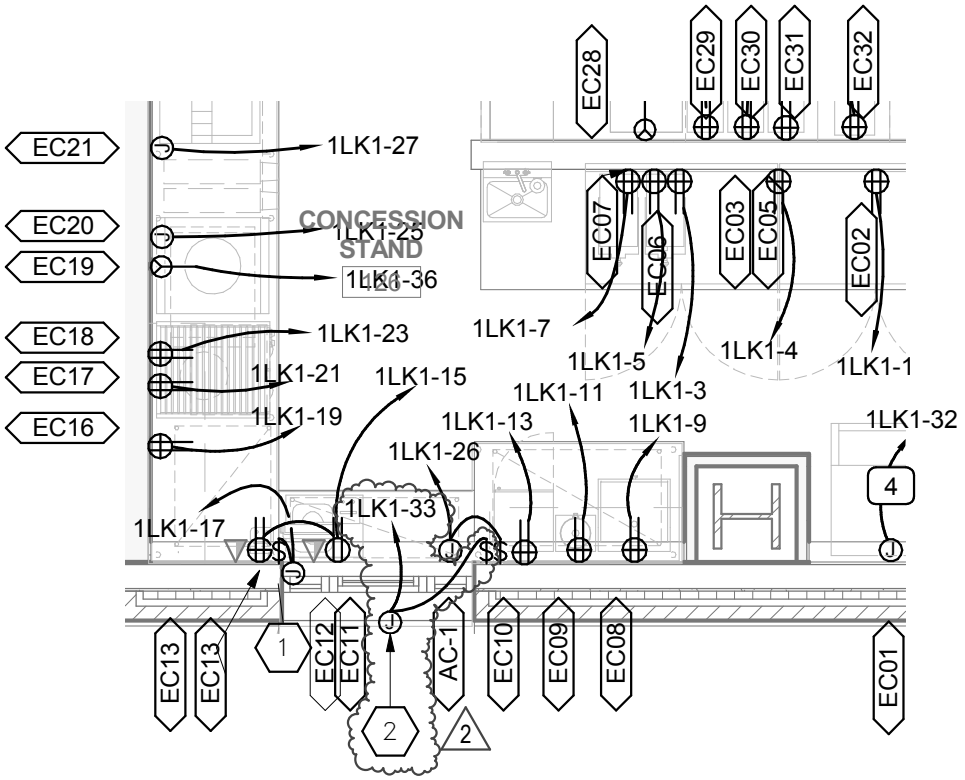
SHEET KEYNOTES

1 PROVIDE CONNECTION TO POWERED WINDOW OPERATOR WITH ALL POWER AND CONTROL WIRING PER MANUFACTURER'S WRITTEN INSTRUCTIONS.

2 JUNCTION BOX ON EXTERIOR OF BUILDING ABOVE SERVING WINDOW FOR SIGN/LIGHT. COORDINATE LOCATION WITH ARCHITECT.



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

EP405-RV2-1

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PANEL "2LK1"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	225 AMPERE MAIN LUGS		FLUSH	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SUBFEED LUGS

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	20	1			1.2	SODA RACK	1.2	4.7			3.5	REFRIGERATED CASE			3.5	40	1	2
3	20	1			1.0	REFRIGERATOR	1.0		4.5		3.5	REFRIGERATED CASE			3.5	40	1	4
5	20	1			1.3	FREEZER	1.3			1.8	0.5	CASH REGISTER			0.5	20	1	6
7	20	1			1.2	SLICER	1.2	1.7			0.5	CASH REGISTER			0.5	20	1	8
9	20	1			1.5	MICROWAVE	1.5		3.3		1.8	OASIS MIACHINE			1.8	20	1	10
11	20	1		0.2		COUNTER OUTLET	0.2			0.7	0.5	REFRIGERATOR			0.5	20	1	12
13	30	1			2.2	TOASTER	2.2	2.7			0.5	REFRIGERATOR			0.5	20	1	14
15	20	1			1.1	REFRIGERATOR	1.1		2.9		1.8	OASIS MIACHINE			1.8	20	1	16
17	20	1			0.5	PRINTER	0.5			1.0	0.5	PRINTER			0.5	20	1	18
19	20	1			0.8	HOT DOG GRILL	0.8	1.3			0.5	REMOTE ORDER			0.5	20	1	20
21	20	1			0.5	BUN WARMER	0.5		0.5		0.0	SPARE				20	1	22
23	20	1			1.3	ICE MAKER	1.3			1.3	0.0	SPARE				20	1	24
25	20	1			0.5	PRINTER	0.5	0.5			0.0	SPARE				20	1	26
27	20	1			1.2	SODA DISPENSER	1.2		1.2		0.0	SPARE				20	1	28
29	20	1			1.0	REFRIGERATOR	1.0			1.0	0.0	SPARE				20	1	30
31	20	2			1.4	GRILL	1.4	3.4			2.0	ICE MAKER			2.0	30	2	32
33	-	-			1.4	-	1.4		3.4		2.0	-			2.0	-	-	34
35	20	2			1.4	SOUP WARMER	1.4			5.0	3.6	OVEN			3.6	50	2	36
37	-	-			1.4	-	1.4	5.0			3.6	-			3.6	-	-	38
39	30	2			2.1	COFFEE MAKER	2.1		3.1		1.0	FOOD WARMER			1.0	20	2	40
41	-	-			2.1	-	2.1			3.1	1.0	-			1.0	-	-	42
43	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	44
45	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	46
47	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	48
49	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	50
51	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	52
53	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	54
55	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	56
57	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	58
59	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	60

TOTALS:						
CONNECTED kVA PER PHASE	**19**	**19**	**14**	CONNECTED TOTAL kVA	**52**
CONNECTED AMPS PER PHASE	**161**	**158**	**116**	CONNECTED AVERAGE AMPS PER PHASE	**145**

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	**0** kVA	ALL OTHER LOADS @100% =	**52** kVA	DIVERSIFIED TOTAL kVA =	**52**
RECEPTACLES 0kVA @100% =	**0** kVA	25% OF LARGEST MOTOR =	**0** kVA	AVERAGE AMPS PER PHASE =	**145**
REMAINDER 0kVA @ 50% =	**0** kVA				

PANEL "5LA2"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/208 V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	225 AMPERE MAIN LUGS			

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SUBFEED LUGS

CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD			LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	C	kVA		LTG	CO	PWR	AMP	POLE	NO
1	20	1			1.6	RM 539 WARMING CAB	1.6	1.9			0.3	LAB 541 MONITOR			0.3	20	1	2
3	20	1		0.2		RM 539 COUNTER CO	0.2		0.8		0.6	RECEPT 551 CO'S		0.6		20	1	4
5	20	1			1.7	RM 539 BEVERAGE DISP	1.7			2.3	0.6	RECEPT 551 CO'S		0.6		20	1	6
7	20	1			1.7	RM 539 BEVERAGE DISP	1.7	1.7			0.0	SPARE				20	1	8
9	20	1			1.0	RM 539 EF-9	1.0		1.0		0.0	SPARE				20	1	10
11	20	1			1.2	RM 539 REFRIGERATOR	1.2			1.2	0.0	SPARE				20	1	12
13	20	1				RM 539 FREEZER	0.0	0.0			0.0	SPARE				20	1	14
15	20	1		0.2		RM 539 CO	0.2		0.2		0.0	SPARE				20	1	16
17	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	18
19	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	20
21	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	22
23	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	24
25	20	1				SPARE	0.0	0.0			0.0	ZION LTG DMB-1				20	1	26
27	20	1				SPARE	0.0		0.0		0.0	ZION LTG DMB-2				20	1	28
29	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	30
31	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	32
33	20	1				SPARE	0.0		4.0		5.0	ZION RM LTG DMA	4.0			60	3	34
35	20	1				SPARE	0.0			4.0	5.0	-	4.0			-	-	36
37	20	1				SPARE	0.0	4.0			5.0	-	4.0			-	-	38
39	30	2			2.1	RM 539 COFFE MACHINE	2.1		4.1		2.0	RM 539 ICE MAKER			2.0	30	2	40
41	-	-			2.1	-	2.1			4.1	2.0	-			2.0	-	-	42
43	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	44
45	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	46
47	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	48
49	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	50
51	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	52
53	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	54
55	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	56
57	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	58
59	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	60
61	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	62
63	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	64
65	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	66
67	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	68
69	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	70
71	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	72
73	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	74
75	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	76
77	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	78
79	20	1				SPARE	0.0	0.0			0.0	SPARE				20	1	80
81	20	1				SPARE	0.0		0.0		0.0	SPARE				20	1	82
83	20	1				SPARE	0.0			0.0	0.0	SPARE				20	1	84

TOTALS:					
CONNECTED kVA PER PHASE	8	10	12	CONNECTED TOTAL kVA	29
CONNECTED AMPS PER PHASE	63	84	97	CONNECTED AVERAGE AMPS PER PHASE	81

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 12kVA @125% =	**15** kVA	ALL OTHER LOADS @100% =	**16** kVA	DIVERSIFIED TOTAL kVA =	**32**
RECEPTACLES 2kVA @100% =	**2** kVA	25% OF LARGEST MOTOR =	**0** kVA	AVERAGE AMPS PER PHASE =	**90**
REMAINDER 0kVA @ 50% =	**0** kVA				

PANEL "PG"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE & TYPE:	LOCATION:	CABINET:	NOTES:
120/240 V, 1 PH 3 WIRE	22" W x 6" D, BOLT-ON	100 AMPERE MAIN LUGS	GYMNASIUM BLDG	SURFACE	22KAIC

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SUBFEED LUGS

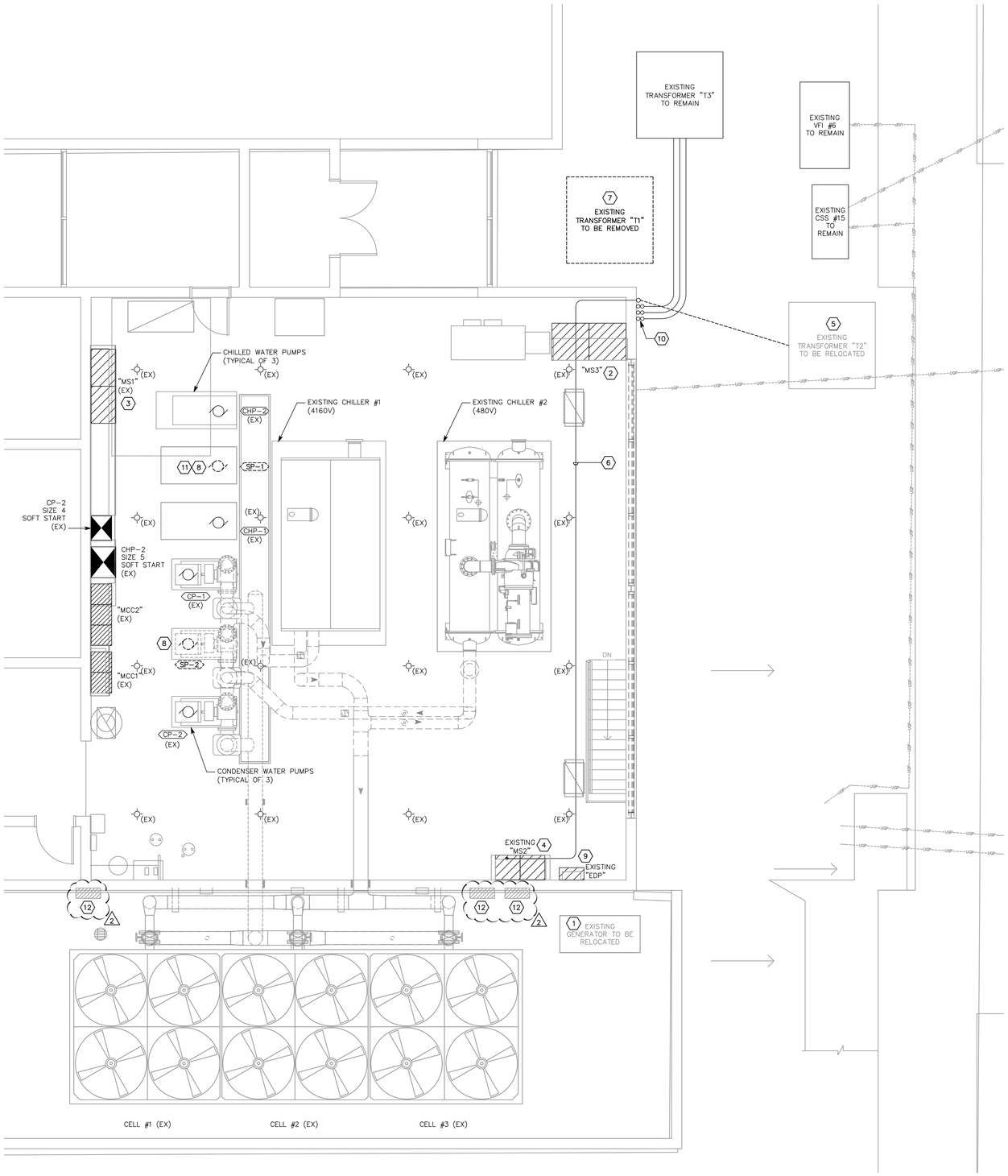
CKT	OCP		LOAD (kVA)			DESCRIPTION	LCL	PHASE LOAD		LCL	DESCRIPTION	LOAD (kVA)			OCP		CKT
NO	AMP	POLE	LTG	CO	PWR		kVA	A	B	kVA		LTG	CO	PWR	AMP	POLE	NO
1	20	1				SPACE	0.0	0.0		0.0	SPACE				20	1	2
3	20	1				SPACE	0.0		0.0	0.0	SPACE				20	1	4
5	20	1				SPACE	0.0	0.0		0.0	SPACE				20	1	6
7	20	1				SPACE	0.0		0.0	0.0	SPACE				20	1	8
9	20	1				SPACE	0.0	0.0		0.0	SPACE				20	1	10
11	20	1				SPACE	0.0		0.0	0.0	SPACE				20	1	12
13	20	1				SPACE	0.0	0.0		0.0	SPACE				20	1	14
15	20	1				SPACE	0.0		0.0	0.0	SPACE				20	1	16
17	20	1				SPACE	0.0	0.0		0.0	SPACE				20	1	18
19	30	2				(EX) LIGHTING CIRCUIT	0.0		0.0	0.0	SPARE CB				20	1	20
21	-	-				-	0.0	0.0		0.0	SPARE CB				20	1	22
23	30	2				(EX) LIGHTING CIRCUIT	0.0		0.0	0.0	SPARE CB				20	1	24
25	-	-				-	0.0	0.0		0.0	SPARE CB				20	1	26
27	40	2				(EX) IRRIGATION CONTROL	0.0		0.0	0.0	SPARE CB				20	1	28
29	-	-				-	0.0	0.0		0.0	SPARE CB				20	1	30

TOTALS:				
kVA PER PHASE	0	0	CONNECTED TOTAL kVA	0.0
AMPS PER PHASE	0	0	CONNECTED AVERAGE AMPS PER PHASE	0

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING 0kVA @125% =	0 kVA	ALL OTHER LOADS @100% =	0 kVA	DIVERSIFIED TOTAL kVA =	0
RECEPTACLES 0kVA @100% =	0 kVA	25% OF LARGEST MOTOR =	0 kVA	AVERAGE AMPS PER PHASE =	0
REMAINDER 0kVA @ 50% =	0 kVA				

2



A1 ELECTRICAL DEMOLITION PLAN – CENTRAL PLANT

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

SHEET KEYNOTES

1. REMOVE AND RELOCATE EXISTING GENERATOR (SERVES BROWNING RESOURCE CENTER, LIBRARY AND SCIENCE BUILDINGS).
2. EXISTING 480V MAIN SWITCHBOARD SERVING CHILLER #2 TO REMAIN.
3. EXISTING 480V MAIN SWITCHBOARD SERVING CENTRAL PLANT TO REMAIN AND BE RE-FED FROM NEW TRANSFORMER.
4. EXISTING 4160V MAIN SWITCHBOARD SERVING CHILLER #1 TO REMAIN. SWITCHBOARD IS REQUIRED TO BE RE-FED DUE TO TRANSFORMER RELOCATION.
5. EXISTING 750 KVA/4160V TRANSFORMER TO BE RELOCATED. DISCONNECT AND REMOVE PRIMARY AND SECONDARY CONDUCTORS. RELOCATE TRANSFORMER AS INDICATED ON NEW ELECTRICAL PLAN. PROVIDE NEW PRIMARY AND SECONDARY FEEDERS.
6. EXISTING 4" CONDUIT WITH 15 KV CONDUCTORS SERVING 4160V CHILLER #1. REMOVE CONDUCTORS AND PROVIDE NEW. ASSUME 3 #2/0 CU 15 KV EPR WITH 1 #2/0 THWN CU GR. EXISTING CONDUIT MAY BE REUSED AND EXTENDED TO NEW TRANSFORMER LOCATION.
7. REMOVE EXISTING TRANSFORMER "T1" WITH ASSOCIATED PRIMARY AND SECONDARY CONDUCTORS AND CONDUIT. ITS LOAD WILL BE SERVED FROM NEW TRANSFORMER "T4".
8. DISCONNECT AND REMOVE CONDUIT AND WIRING FEEDING PUMP TO BE REMOVED.
9. EXISTING EMERGENCY PANEL "EDP" TO REMAIN AND BE SERVED FROM RELOCATED GENERATOR. CONNECTED LOADS WILL REMAIN. NEW FEEDER IS REQUIRED.
10. EXISTING EXTERIOR EXPOSED CONDUITS AND WIRING RISING FROM BELOW GRADE UP OUTSIDE WALL AND INTO THE CENTRAL PLANT. THESE CONDUITS ARE TO REMAIN AND SHALL BE PROTECTED DURING DEMOLITION AND CONSTRUCTION. COORDINATE WITH OTHER TRADES.
11. THIS PUMP IS BEING REPLACED WITH NEW PUMP OF SAME SIZE. EXISTING SOURCE AND FEEDER MAY BE REUSED. SPLICE AND EXTEND CONDUIT AND CONDUCTORS AS NECESSARY.
12. REMOVE EXISTING CONTROL PANELS AND INSTALL NEW CONTROL PANELS FOR EXISTING COOLING TOWERS. COORDINATE WITH MECHANICAL INSTALLER.

2

VCBO ARCHITECTURE
VALENTINER CRANE BRUNJES ONYON
SASAKI
LICENSED PROFESSIONAL ENGINEER No. 181563 DAVID E. WESEMANN STATE OF UTAH
SPECTRUM ENGINEERS

HOLLAND CENTENNIAL COMMONS

DIXIE STATE COLLEGE OF UTAH

DFCM #06297640

DIXIE COLLEGE, ST. GEORGE, UT

CONFORMED CONSTRUCTION DOCUMENTS BID SET

No.	Description	Date
1	ADDENDUM #5	12.21.10
2	ADDENDUM #8	01.06.11

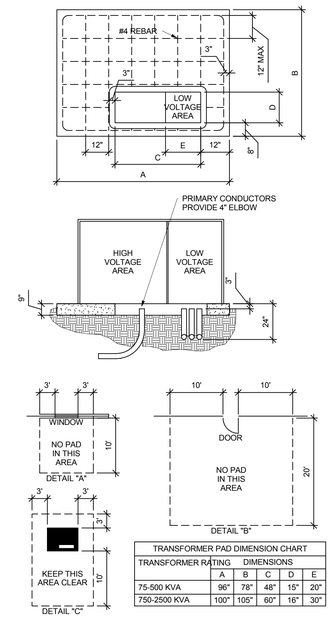
Job # 09625
CAD File
Drawn DLM Checked DEW
Date 12/03/2010
Owner #
Ins. #

ELECTRICAL DEMOLITION PLAN - CENTRAL PLANT

EPD151

Sheet Number

File Name: P:\2010\20100008\1Drawings\3Sheet\08CP EPD151.dwg Last Plotted: 2011/01/06 @ 11:49 AM By: wrt



TRANSFORMER PAD DIMENSION CHART					
TRANSFORMER RATING	DIMENSIONS				
	A	B	C	D	E
75-500 KVA	96"	78"	48"	15"	20"
750-2500 KVA	100"	105"	60"	15"	30"

CONTRACTOR GENERAL NOTES:

1. SITE PREPARATION. ALL SOIL BENEATH THE PAD SITE MUST BE COMPACTED AND LEVEL PRIOR TO SETTING OR POURING THE PAD TO PREVENT SETTLING.

2. CONCRETE. STEEL REINFORCEMENT SHALL BE #4 BARS, PLACED ACCORDING TO THE DRAWING. THE PAD MUST BE POURED AT LEAST SEVEN FULL DAYS PRIOR TO SETTING THE TRANSFORMER. THE FINISHED SURFACE MUST BE COMPLETELY FLAT AND LEVEL. SEE STANDARD 73 036 FOR CONCRETE SPECIFICATIONS.

3. PREFABRICATION. THE PAD MAY EITHER BE CONSTRUCTED ON THE SITE OR PREFABRICATED ACCORDING TO SPECIFICATIONS.

4. CONDUIT WINDOW LAYOUT. LOW VOLTAGE CONDUITS SHALL BE FORMED AS TIGHTLY AS POSSIBLE AGAINST THE RIGHT SIDE OF THE OPENING AND SHALL IN NO CASE EXTEND FURTHER THAN 20" FROM THE RIGHT SIDE OF THE CONDUIT WINDOW ON THE SMALL PAD OR 30" ON THE LARGE PAD. NO MORE THAN 8 CONDUITS WILL BE USED ON THE LOW VOLTAGE SIDE (NOT INCLUDING THE METER CONDUIT). DO NOT PUT ANY CONCRETE IN OR UNDER THE CONDUIT WINDOW. USE SOIL TO SEPARATE CONDUITS. BELL ENDS ARE REQUIRED FOR ALL METAL CONDUIT, BUT NOT FOR PLASTIC CONDUIT.

5. CLEARANCES. THE FRONT OF THE PAD SHOULD ALWAYS FACE AWAY FROM ADJACENT STRUCTURES AND BE FREE OF OBSTRUCTIONS. AT LEAST 3 FEET MUST SEPARATE THE EDGES OF THE PAD FROM ANY ADJACENT STRUCTURE. THE EDGES OF THE PAD MUST BE AT LEAST 10 FEET FROM ANY COMBUSTIBLE STRUCTURE. IF AN ADJACENT STRUCTURE HAS ANY OVERHANG OR EAVE WITHIN 27 VERTICAL FEET OF THE TOP OF THE PAD, CLEARANCES MUST BE MEASURED FROM THE OUTSIDE OF THE OVERHANG. THE PAD MUST NOT BE PLACED IN AN AREA 10 FEET IN LINE WITH OR 3 FEET TO EITHER SIDE OF ANY WINDOW IN AN ADJACENT STRUCTURE (SEE DETAIL "A"). CLEARANCE FOR A DOOR MUST BE 20 FEET IN LINE WITH IT AND 10 FEET ON THE SIDES (SEE DETAIL "B"). PADS MUST NOT BE PLACED WITHIN 15 FEET OF ANY VALVE OR WITHIN 20 FEET OF ANY PLUMBING OR STORAGE FACILITY CONTAINING FLAMMABLE MATERIAL. NO WALLS, FENCES, OR ANY OTHER OBSTRUCTIONS WILL BE PLACED WITHIN 3 FEET OF THE SIDES OR BACK OF THE PAD, OR WITHIN 10 FEET OF THE FRONT OF THE PAD (SEE DETAIL "C"). THE AREA IN FRONT OF THE PAD MUST HAVE 10 FEET OF CLEAR, LEVEL WORKING AREA FOR MAINTENANCE OF THE TRANSFORMER. THE PAD MAY NOT BE PLACED IN LINE WITH AN AIR INTAKE WITHIN 32 VERTICAL FEET OF THE SURFACE PAD. ALSO VERTICALLY, IT MUST NOT BE PLACED WITHIN 12 FEET OF A DOOR OR WINDOW.

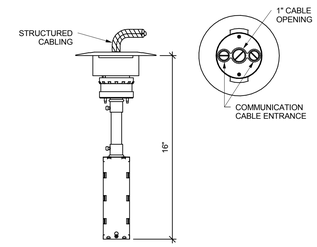
6. BARRIERS. IF THE TRANSFORMER PAD IS TO BE LOCATED IN AREAS SUBJECT TO VEHICULAR TRAFFIC, (PARKING LOTS, DRIVEWAYS, ETC) CONTACT UTAH POWER & LIGHT FOR PROTECTIVE BARRIER REQUIREMENTS.

7. IF THE TRANSFORMER WILL NOT COVER THE CABLE OPENINGS ON THESE STANDARD PADS, SEAL THE SIDES OF THE CABLE OPENING TO FIT THE TRANSFORMER USING SAKRETE OR COMPARABLE.

NOTE TO ENGINEER: THIS DETAIL IS NO LONGER THE ROCKY MOUNTAIN POWER (PACIFICORP) STANDARD. USE "PADVAULT.DWG" INSTEAD. USE THIS DETAIL ONLY IF IT APPLIES TO A DIFFERENT POWER COMPANY FOR A PROJECT.

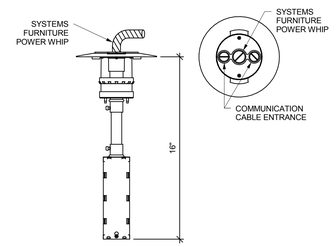
C5 TRANSFORMER PAD DETAIL

SCALE: NOT TO SCALE



B5 FIRE RATED POKE-THRU #3

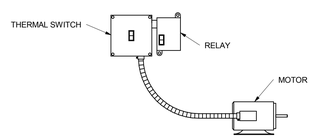
SCALE: NOT TO SCALE



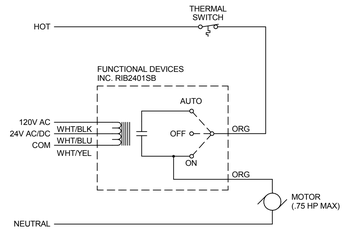
B6 FIRE RATED POKE-THRU #2

SCALE: NOT TO SCALE

NOTE: THERMAL SWITCH AND RELAY MUST BE MOUNTED WITHIN SIGHT OF MOTOR BEING CONTROLLED.



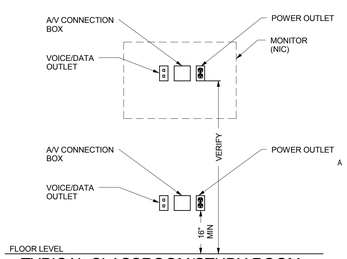
LAYOUT DIAGRAM



SCHEMATIC DIAGRAM

A4 120V FRACTIONAL MOTOR CONTROL

SCALE: NOT TO SCALE



A6 TYPICAL CLASSROOM/STUDY ROOM MONITOR LOCATION

SCALE: NOT TO SCALE

VCBO ARCHITECTURE
VALENTINER CRANE BRUNJES ONYON

SASAKI

LICENSED PROFESSIONAL ENGINEER No. 179621 RALPH B. KOEBER STATE OF UTAH

SPECTRUM ENGINEERS

HOLLAND CENTENNIAL COMMONS

DIXIE STATE COLLEGE OF UTAH
DFCM #06297640
DIXIE COLLEGE, ST. GEORGE, UT
CONFORMED CONSTRUCTION DOCUMENTS BID SET

No.	Description	Date
2	ADDENDUM #8	01-06-11

Job # 20100008
CAD File
Drawn BXW Checked RBK
Date 12/03/2010
Owner #
Ins. #

DETAILS

EP501

Sheet Number

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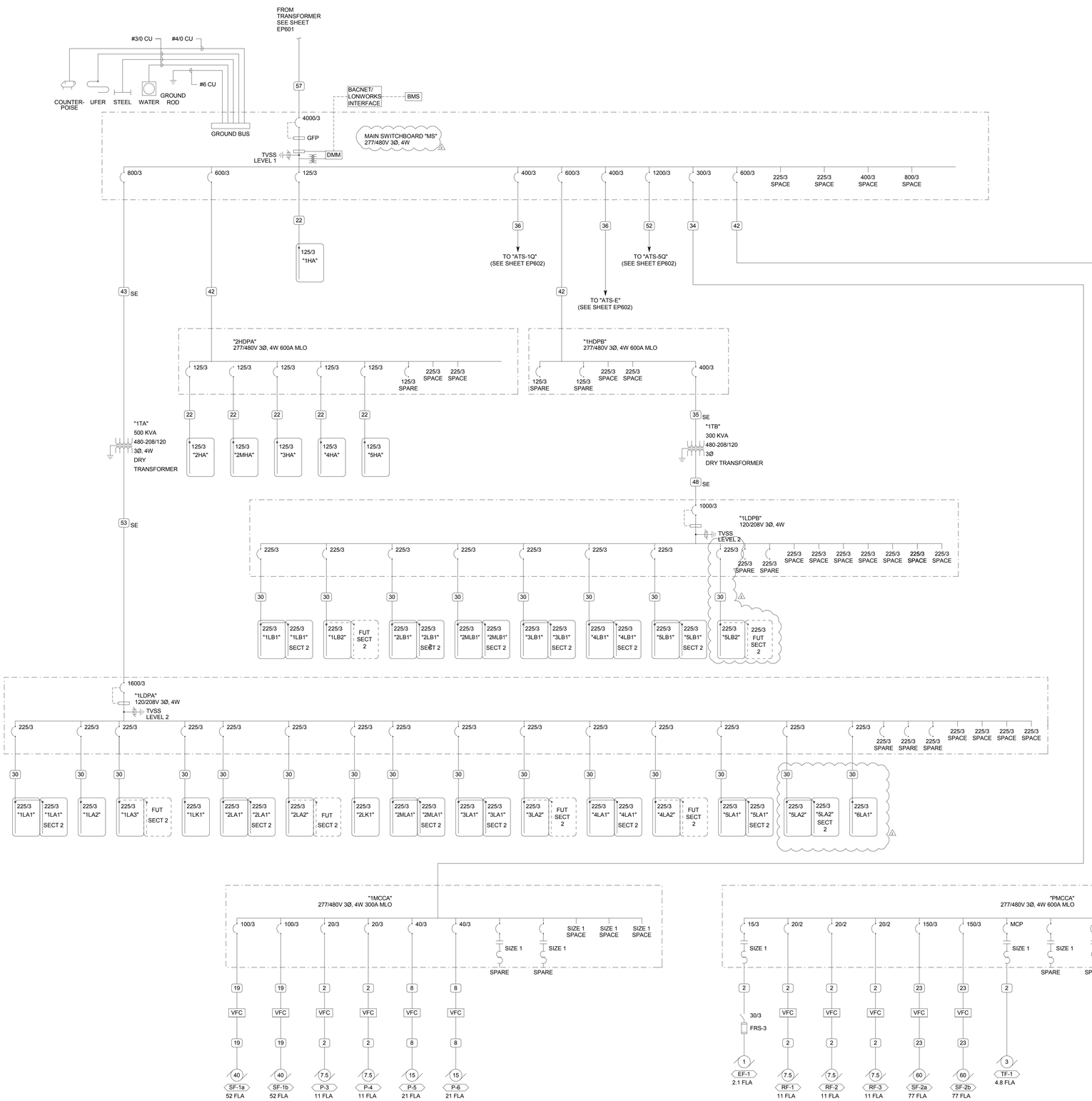

A1 POWER ONE-LINE DIAGRAM

NO SCALE

FAULT CURRENT TABLE

BUS	FAULT CURRENT
1EHA	20,000 SCA
1EHB	22,000 SCA
1ELA	2,000 SCA
1ELB	2,000 SCA
1EHDPA	36,000 SCA
1HA	46,000 SCA
1HDPB	39,000 SCA
1LA1	10,000 SCA
1LA2	10,000 SCA
1LA3	21,000 SCA
1LB1	13,000 SCA
1LB2	13,000 SCA
1LDPA	23,000 SCA
1LDPB	14,000 SCA
1LK1	7,000 SCA
1MCCA	52,000 SCA
1QHDPA	42,000 SCA
1QLDPA	20,000 SCA
2HA	32,000 SCA
2HDPA	34,000 SCA
2LA1	9,000 SCA
2LA2	9,000 SCA
2LB1	12,000 SCA
2LB2	11,000 SCA
2LK1	12,000 SCA
2MHA	26,000 SCA
2MLA1	8,000 SCA
2MLB1	11,000 SCA
2QLA	6,000 SCA
2QLB	6,000 SCA
3HA	22,000 SCA
3LA1	8,000 SCA
3LA2	8,000 SCA
3LB1	10,000 SCA
4HA	19,000 SCA
4LA1	7,000 SCA
4LA2	7,000 SCA
4LB1	10,000 SCA
4QLA	5,000 SCA
4QLB	5,000 SCA
5HA	17,000 SCA
5LA1	7,000 SCA
5LA2	7,000 SCA
5LB1	9,000 SCA
5LB2	9,000 SCA
5QHDPA	48,000 SCA
6LA1	7,000 SCA
ATS-1Q	44,000 SCA
ATS-5Q	51,000 SCA
ATS-E	44,000 SCA
HCDPA	46,000 SCA
HCDPB	46,000 SCA
MS	54,000 SCA
PG	22,000 SCA
PMCCA	52,000 SCA
PQMCCA	36,000 SCA

PROVIDE FULLY RATED CIRCUIT BREAKERS IN PANELBOARDS FOR THE FAULT CURRENT SHOWN. SERIES RATINGS WITH NEXT LEVEL UPSTREAM OVERCURRENT PROTECTIVE DEVICES ARE PERMITTED SUBJECT TO FACTORY UL DOCUMENTATION OF SERIES RATING SUBMITTED TO ENGINEER. IF DEVICE OR EQUIPMENT FAULT CURRENT RATING IS NOT SHOWN, ASSUME 100,000 AIC.

TVSS LEVELS	
LEVEL 1	240 KA
LEVEL 2	160 KA
LEVEL 3	120 KA

GENERAL SHEET NOTES

1. PROVIDE NEMA 3R ENCLOSURES FOR EQUIPMENT LOCATED OUTDOORS. REFER TO PLANS FOR EQUIPMENT LOCATIONS.
2. REFER TO PLANS FOR CONSTRAINTS ON PHYSICAL DIMENSIONS AND CLEARANCE REQUIREMENTS OF EQUIPMENT. PROVIDE EQUIPMENT DIMENSIONS THAT FALL WITHIN THE CONSTRAINTS OF EACH SPECIFIC LOCATION.
3. ALL EQUIPMENT SHALL BE CONSTRUCTED AND BRACED FOR THE SEISMIC CONDITIONS OF THE PROJECT. REFER TO SPECIFICATIONS SECTION 16071 FOR REQUIREMENTS.

CONDUCTOR AND CONDUIT SCHEDULE

SCHEDULE NUMBER
SUBSCRIPT (NOTE 5)
(E.G.) 5 IG

SYM	AMP	CONDUIT SIZE	CONDUCTOR(NOTE 1) QTY	SIZE	G	IG	SE	NOTES
1	20	.75	2	12	12	12	8	2
2	20	.75	3	12	12	12	8	2,3
3	20	.75	4	12	12	12	8	2,3
4	30	.75	2	10	10	10	8	2
5	30	.75	3	10	10	10	8	2
6	30	.75	4	10	10	10	8	2
7	40	1	2	8	10	8	6	2
8	40	1	3	8	10	8	6	2
9	40	1	4	8	10	8	6	2
10	55	1	2	6	10	8	4	2
11	55	1	3	6	10	8	4	2
12	55	1.25	4	6	10	8	4	2
13	70	1	2	4	8	4	2	2
14	70	1.25	3	4	8	4	2	2
15	70	1.25	4	4	8	4	2	2
16	85	1.25	2	3	8	3	2	2
17	85	1.25	3	3	8	3	2	2
18	85	1.25	4	3	8	3	2	2
19	95	1.25	3	2	8	2	2	2
20	95	1.50	4	2	8	2	2	2
21	130	1.50	3	1	6	2	2	2
22	130	1.50	4	1	6	2	2	2
23	150	2	3	1/0	6	2	1/0	2
24	150	2	4	1/0	6	2	1/0	2
25	175	2	3	2/0	6	2	2/0	2
26	175	2	4	2/0	6	2	2/0	2
27	200	2	3	3/0	6	2	2/0	2
28	200	2.50	4	3/0	6	2	2/0	2
29	230	2.50	3	4/0	4	2	2/0	2
30	230	2.50	4	4/0	4	2	2/0	2
31	255	2.50	3	250	4	1	2/0	2
32	255	2.50	4	250	4	1	2/0	2
33	310	3	3	350	3	1/0	3/0	2
34	310	3	4	350	3	1/0	3/0	2
35	380	3.50	3	500	3	3/0	3/0	2
36	380	4	4	500	3	3/0	3/0	2
37	400	2 EA 2	3	3/0	3	3/0	3/0	2
38	400	2 EA 2.50	4	3/0	3	3/0	3/0	2
39	510	2 EA 2.50	3	250	1	4/0	3/0	2
40	510	2 EA 3	4	250	1	4/0	3/0	2
41	620	2 EA 3	3	350	1/0	4/0	3/0	2,4
42	620	2 EA 3	4	350	1/0	4/0	3/0	2,4
43	760	2 EA 3.50	3	500	1/0	4/0	3/0	2,4
44	760	2 EA 4	4	500	1/0	4/0	3/0	2,4
45	855	3 EA 3	3	300	2/0	4/0	3/0	2,4
46	855	3 EA 3	4	300	2/0	4/0	3/0	2,4
47	1000	3 EA 3.50	3	400	2/0	4/0	3/0	4
48	1000	3 EA 3.50	4	400	2/0	4/0	3/0	4
49	1140	3 EA 4	3	500	3/0	4/0	3/0	4
50	1140	3 EA 4	4	500	3/0	4/0	3/0	4
51	1240	4 EA 3	3	350	3/0	4/0	3/0	4
52	1240	4 EA 3	4	350	3/0	4/0	3/0	4
53	1675	5 EA 3.50	4	400	4/0	4/0	4/0	4
54	2010	6 EA 3.50	4	400	250	250	250	4
55	2660	7 EA 4	4	500	350	350	350	4
56	3040	8 EA 4	4	500	500	500	500	4
57	4180	11 EA 4	4	500	500	500	500	4
58		5 EA 4						6
59		5						6
60		10 EA 4						6

CONDUCTOR AND CONDUIT SCHEDULE NOTES

1. CONDUCTORS SHOWN ARE SHOWN FOR EACH CONDUIT WITH MODIFICATIONS AS NOTED IN NOTE 5. ALL CONDUCTORS SHOWN ARE THWN UNLESS OTHERWISE NOTED.
2. PROVIDE EQUIPMENT GROUND CONDUCTORS PER TABLE 250-122 WHEN CIRCUIT BREAKERS ARE SIZED GREATER THAN AMPERE RATING SHOWN IN TABLE.
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   "2N": INCLUDE TWO NEUTRAL CONDUCTORS, SIZED AS SCHEDULED FOR PHASE AND NEUTRAL CONDUCTORS.
6. RACEWAY ONLY. CONDUCTORS PROVIDED BY UTILITY.

VCBO ARCHITECTURE
VALENTINER CRANE BRUNJES ONYON
SASAKI
LICENSED PROFESSIONAL ENGINEER No. 179621 RALPH B. KOEBER STATE OF UTAH
SPECTRUM ENGINEERS

HOLLAND CENTENNIAL COMMONS

DIXIE STATE COLLEGE OF UTAH
DFCM #06297640
DIXIE COLLEGE, ST. GEORGE, UT
CONFORMED CONSTRUCTION DOCUMENTS BID SET

No.	Description	Date
1	ADDENDUM #5	12-21-10
2	ADDENDUM #8	01-06-11

Job # 20100008
CAD File
Drawn BXW Checked RBK
Date 12/03/2010
Owner #
Ins. #

ONE-LINE DIAGRAM

EP602

Sheet Number

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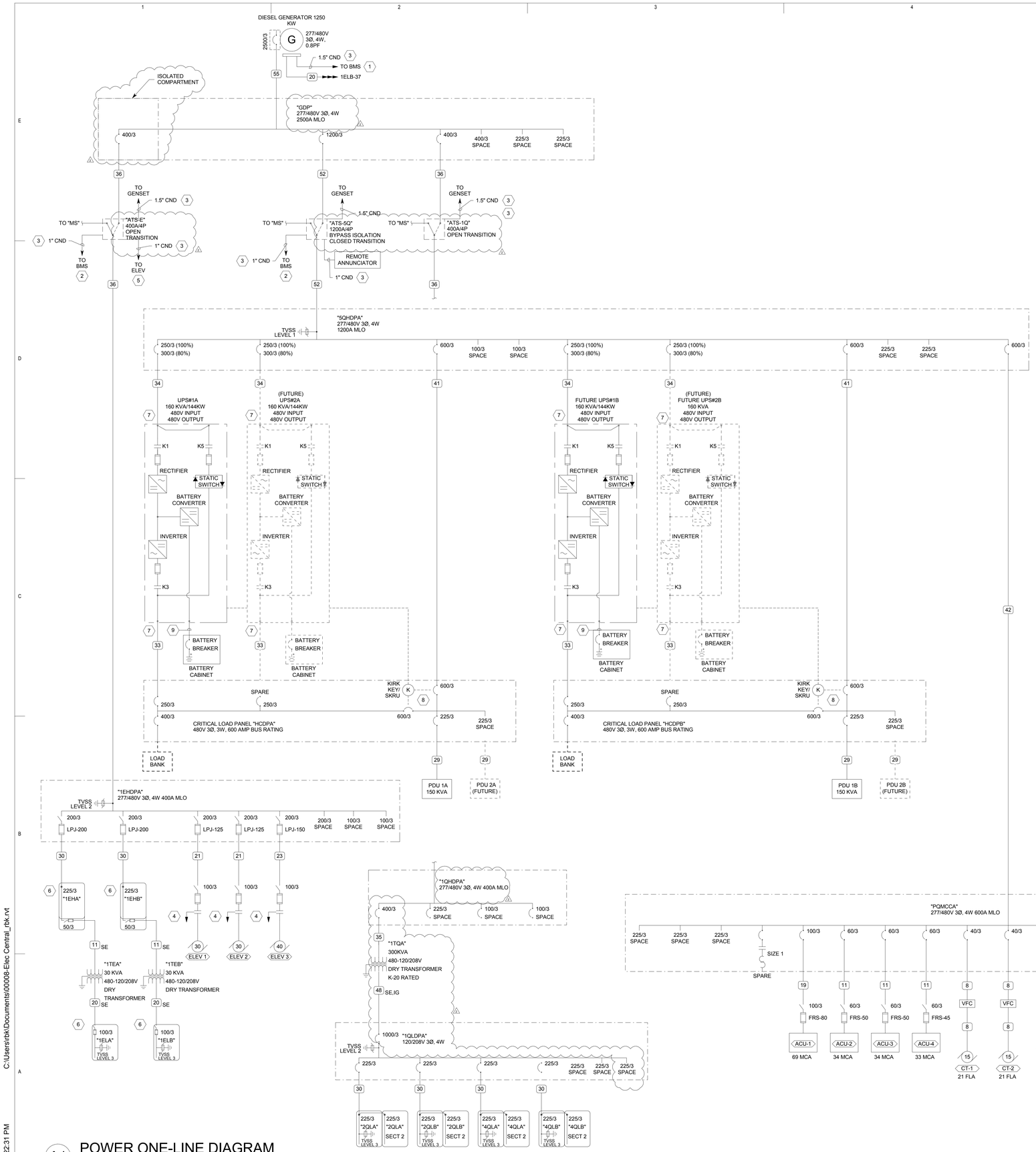
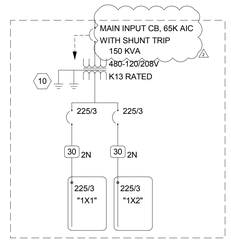


A1 POWER ONE-LINE DIAGRAM

NO SCALE

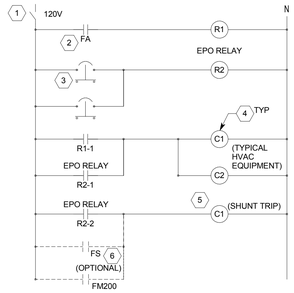


E5 TYPICAL PDU ONE-LINE DIAGRAM

NTS

DETAIL KEYNOTES

1. PROVIDE DEDICATED 20A CIRCUIT FROM "PDU" FOR CONTROL. LABEL BREAKER "EMERGENCY POWER OFF CONTROL".
2. FIRE ALARM CONTACTS FROM CONTROL MODULE OF SUPPRESSION FIRE ALARM SYSTEM. NORMALLY OPEN-CLOSE ON ALARM. COORDINATE WITH DIVISION 23 FIRE PROTECTION INSTALLER.
3. TYPICAL EMERGENCY POWER OFF (EPO) SWITCHES. PROVIDE PUSH-IN MAINTAINED CONTACT TYPE WITH LARGE RED MUSHROOM HANDLE. PROVIDE PROTECTIVE COVER AND LABEL "EMERGENCY POWER OFF SWITCH".
4. WIRE TO SHUNT TRIP COIL OF HVAC EQUIPMENT.
5. WIRE RELAY TO MAIN SHUNT TRIP CB IN PDU.
6. FIRE SUPPRESSION CONTACTS: CLOSE UPON RELEASE OF WATER AND FM200 INTO ROOM. COORDINATE WITH DIVISION 23 FIRE PROTECTION INSTALLER. DO NOT KILL POWER WITH ANY OTHER ALARM. TROUBLE OR TEST SWITCH. VERIFY WITH OWNER AND SPRINKLER/SUPPRESSION SYSTEM INSTALLERS CORRECT TIE-IN POINT PRIOR TO CONNECTION.



C5 SHUNT TRIP (EPO) DETAIL

NTS

TVSS LEVELS	
LEVEL 1	240 KA
LEVEL 2	160 KA
LEVEL 3	120 KA

SHEET KEYNOTES

1. MONITOR THE FOLLOWING POINTS THROUGH THE BMS:
- GENERATOR "RUN" STATUS.
- HIGH FUEL LEVEL ALARM.
- LOW FUEL LEVEL ALARM.
- LEAK DETECTION ALARM.
- SUMMARY ALARM.

2. MONITOR THE FOLLOWING POINTS THROUGH THE BMS:
- TRANSFER SWITCH POSITION (NORMAL/EMERGENCY).
- NORMAL POWER AVAILABLE.
- EMERGENCY POWER AVAILABLE.
- SUMMARY ALARM.

3. FILL WITH CONTROL WIRING PER MANUFACTURER'S WRITTEN INSTRUCTIONS OR AS COORDINATED WITH OTHER TRADES.
4. SHUNT TRIP FUSIBLE ELEVATOR DISCONNECT SWITCH. SEE SPECIFICATIONS. COORDINATE FUSE SIZE AND TYPE WITH ELEVATOR MANUFACTURER. INTERLOCK DISCONNECT WITH ELEVATOR CONTROLLER AND FIRE ALARM SYSTEM.
5. WIRE TO ELEVATOR CONTROLLERS FOR "SIGNAL BEFORE TRANSFER" AND "CONNECTED TO EMERGENCY POWER" SIGNALS.
6. PROVIDE FUSIBLE CIRCUIT BREAKER PANELBOARD FROM BUSSMAN OR APPROVED EQUAL.
7. TOTAL LENGTH OF INPUT AND OUTPUT FEEDERS SHALL BE EQUAL FOR ALL UPS SYSTEMS. INCLUDE FUTURE FEEDERS FOR UPS #2A & UPS #2B IN CALCULATIONS TO ENSURE THAT ALL FEEDERS WILL BE EQUAL LENGTHS. MARK FEEDER LENGTHS ON RECORD DRAWINGS.
8. PROVIDE SOLENOID-RELEASE KIRK KEY INTERLOCKS AND TIE TO UPS SYSTEM PER MANUFACTURER'S WRITTEN INSTRUCTIONS. PROVIDE AUXILIARY CONTACTS ON BYPASS BREAKER TO FORCE UPS MODULES TO BYPASS IF BYPASS BREAKER IS CLOSED.
9. PROVIDE CONDUIT AND CABLING FROM BATTERY CABINET TO UPS PER MANUFACTURER'S WRITTEN INSTRUCTION.
10. BOND EACH PDU TO RAISED FLOOR GRID AND BUILDING STEEL WITH #2 CU.

CONDUCTOR AND CONDUIT SCHEDULE

SCHEDULE NUMBER
SUBSCRIPT (NOTE 5)
(E.G.) 5 IG

SYM	AMP	CONDUIT SIZE	CONDUCTOR(NOTE 1) QTY	SIZE	G	IG	SE	NOTES
1	20	.75	2	12	12	12	8	2
2	20	.75	3	12	12	12	8	2,3
3	20	.75	4	12	12	12	8	2,3
4	30	.75	2	10	10	10	8	2
5	30	.75	3	10	10	10	8	2
6	30	.75	4	10	10	10	8	2
7	40	1	2	8	10	8	6	2
8	40	1	3	8	10	8	6	2
9	40	1	4	8	10	8	6	2
10	55	1	2	6	10	8	4	2
11	55	1	3	6	10	8	4	2
12	55	1.25	4	6	10	8	4	2
13	70	1	2	4	8	4	2	2
14	70	1.25	3	4	8	4	2	2
15	70	1.25	4	4	8	4	2	2
16	85	1.25	2	3	8	3	2	2
17	85	1.25	3	3	8	3	2	2
18	85	1.25	4	3	8	3	2	2
19	95	1.25	3	2	8	2	2	2
20	95	1.50	4	2	8	2	2	2
21	130	1.50	3	1	6	2	2	2
22	130	1.50	4	1	6	2	2	2
23	150	2	3	1/0	6	2	1/0	2
24	150	2	4	1/0	6	2	1/0	2
25	175	2	3	2/0	6	2	2/0	2
26	175	2	4	2/0	6	2	2/0	2
27	200	2	3	3/0	6	2	2/0	2
28	200	2.50	4	3/0	6	2	2/0	2
29	230	2.50	3	4/0	4	2	2/0	2
30	230	2.50	4	4/0	4	2	2/0	2
31	255	2.50	3	250	4	1	2/0	2
32	255	2.50	4	250	4	1	2/0	2
33	310	3	3	350	3	1/0	3/0	2
34	310	3	4	350	3	1/0	3/0	2
35	380	3.50	3	500	3	3/0	3/0	2
36	380	4	4	500	3	3/0	3/0	2
37	400	2 EA 2	3	3/0	3	3/0	3/0	2
38	400	2 EA 2.50	4	3/0	3	3/0	3/0	2
39	510	2 EA 2.50	3	250	1	4/0	3/0	2
40	510	2 EA 3	4	250	1	4/0	3/0	2
41	620	2 EA 3	3	350	1/0	4/0	3/0	2,4
42	620	2 EA 3	4	350	1/0	4/0	3/0	2,4
43	760	2 EA 3.50	3	500	1/0	4/0	3/0	2,4
44	760	2 EA 4	4	500	1/0	4/0	3/0	2,4
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VCBO ARCHITECTURE
VALENTINER CRANE BRUNJES ONYON

SASAKI

LICENSED PROFESSIONAL ENGINEER
No. 179621
RALPH B. KOEBER
STATE OF UTAH

SPECTRUM ENGINEERS

HOLLAND CENTENNIAL COMMONS

DIXIE STATE COLLEGE OF UTAH
DFCM #06297640
DIXIE COLLEGE, ST. GEORGE, UT
CONFORMED CONSTRUCTION DOCUMENTS BID SET

No.	Description	Date
1	ADDENDUM #5	12-21-10
2	ADDENDUM #8	01-06-11

Job # 20100008
CAD File
Drawn BXW Checked RBK
Date 12/03/2010
Owner #
Ins. #

ONE-LINE DIAGRAM

EP603

Sheet Number

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State of Utah

GARY R. HERBERT
Governor

Department of Administrative Services
KIMBERLY K. HOOD
Executive Director

Division of Facilities Construction and Management
DAVID G. BUXTON
Director

ADDENDUM NO. 9

Date: January 10, 2011

To: Short-Listed Contractors

Company	Contact	Fax
Big-D Construction	Kelly Hyvonen	801-415-6903
Jacobsen Construction	Blake Court	801-973-7496
Layton Construction	Bruce McDonough	801-563-4811
Okland Construction	Russell Butler	801-486-7570

From: Matthias Mueller

Reference: Holland Centennial Commons
Dixie State College – St. George, Utah
DFCM Project No. 06297640

Subject: **Addendum No. 9**

Pages			
	Addendum Cover Sheet	1	page
	Architect's Addendum No. 009	89	pages
	Total	90	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.

9.1 **SCHEDULE CHANGES:** There are no Project Schedule changes.

9.2 **GENERAL ITEMS:** See attached Architect's Addendum No. 009 dated January 10, 2011.

Holland Centennial Commons Building
Dixie State College of Utah

ADDENDUM #9

PROJECT:	**Dixie State College of Utah** **Holland Centennial Commons**	**ARCHITECT'S PROJECT NO:**	09625
		No. Pages:	89 pages
OWNER:	Dixie State College	**DATE:**	January 10, 2011
ARCHITECT:	VCBO Architecture	**GENERAL CONTRACTOR:**	
SUBMITTAL DATE:	January 19, 2011	**SUBMITTAL TIME:**	12:00pm

This Addendum shall be considered part of the Contract Documents and Project Manual for the above mentioned project as though it had been issued at the same time and shall be incorporated integrally therewith. Where provisions of the following supplementary date differ from those of the original Contract Documents and Project Manual, the Addendum shall govern and take precedence.

LANDSCAPE

See attached for Landscaping Addendum. (2 pages)

CIVIL

See attached for Civil Addendum. (1 page)

ARCHITECTURAL

GENERAL

9.1 Please note, all substitution requests and bidding requests have been reviewed if submitted by the deadline of 01.05.11. If your company/product has not been specifically approved by Addendum1, 2, 3, 4, 5, 6, 7, 8, or 9 you are not approved to bid the project.

9.2 Revise Footer in Addendum #8 to read: "R:09625\CA\Addendum 8"

9.3 To clarify, the room Data Center 598A indicates "Future". This means that the College will expand into this space at a later date, all materials and finishes indicated in the construction documents are to be included in the project.

9.4 The Planter at the East Elevation, seen on sheets C1/A201, A5/A324, D4/AS501 is to be architectural grade finished, colored concrete, to match the colored concrete sidewalk.

9.5 Revise interior elevations where the integrated functional gypsum board reveal rail, keynoted as 935 in the interior elevation sheets, and specified in Section 09 2900 Paragraph 2.5, B.4., is noted. It is only to occur above and below the vinyl white board/projection screen, keynoted as 1032. The horizontal gypsum board reveals that continue either side of the vinyl white board/projection screen and all vertical reveals are to be ½" Gyp. Board reveal as keynoted by 927. See the attached revised elevation to be

typical. All similar elevations are to match. See attached detail of the intersection of the two reveal rails.

9.6 Refer to Sheet AS100 for extent of site colored concrete. Colored concrete to match Davis Colors, sample color Kahlua 677.

9.7 To clarify, Sign Type S is a vinyl graphic applied to glazing. The axon depicted in A2/A660 is an example application of this sign type. Sign Type Q is a vinyl graphic sign applied to a gypsum board wall. Refer to Specification Section 10 1400 SIGNS. The architect is to provide a digital file of text for vinyl graphic signs. Characters and font size was provided in Addendum #7.

9.8 Revise floor finish to the Grand Stair to be integral colored concrete, sealed and brushed, in lieu of retro-plate.

DRAWINGS

Sheet ASD101

1. Detail call-outs A3/ASD101, A4/ASD101 and A5/ASD101 to be revised to read A3/ASD103, A4/ASD103 and A5/ASD103.

Sheet AP111

1. Drawing A2 Reflected Ceiling Plan, refer to EPL151 for lighting layout and fixture types.

Sheet AS400

1. To Clarify: Detail A6/AS400 Site Stair NW indicates both a section of stainless steel handrail and a section of painted steel handrail. This is accurate as the painted steel handrail portion is intended to be temporary until future site improvements occur.

Sheet A111.3

1. Revise floor finish in Mechanical Room 116 to read “F16” in lieu of “F12”.
2. Revise the floor finish call out at approximately Grid 2 and E.5 to read “F2” in lieu of “F12”.

Sheet A121.3

1. The triple flooring symbol at approximately Grids A.5 and 5.5 are to read “F8, F9 and F10”.

Sheet A122.4

1. See attached for revised panel joints at the entry canopy between Grids 4 and 6 at the north face of the building.

Sheet A131.4

1. Add sprinkler as per the attached revised reflected ceiling plan.

Sheet A141.1

1. See attached for revised annotated floor plan layout to area between Grids B and C, and between Grids 6 and 8.

Sheet A141.2

1. See attached for revised dimensioned plan to area between Grids B and C, and between Grids 6 and 8.

Sheet A141.3

1. See attached for revised finish plan to area between Grids B and C, and between Grids 6 and 8.

Sheet A141.4

1. See attached for revised reflected ceiling plan layout to area between Grids B and C, and between Grids 6 and 8.

Sheet A151.2

1. Add a painted steel handrail to stair into Room 598A. See attached.
2. The wall around the chase in Data Center 598 (east wall) is to be type 9A6 and is to be on top of the access flooring.
3. See attached for detail reference call out to A2/A525.

Sheet A320

1. See attached for revised C4/A320.

Sheet A430

1. See attached for revised E2/A430.

Sheet A432

1. Add millwork to elevation C2/A432 as per attached revised elevation.

Sheet A452

1. Room 571, Finish call-out QTZ2 is to point to the writing counter, not the countertop. Refer to the millwork detail sections if notation call-outs are in conflict.

Sheet A510

1. See attached revised detail C2/A510.

Sheet A513

1. Detail C5 HEAD AT GFRC WINDOW. To clarify the double angles are only required at attachment and do not run continuously. Flashing is to be cut around double angles then sealed.

Sheet A520

1. Details B1 and C1 note location “where occurs”. Refer to Specification Section 09 2900 Paragraph 2.5, B.4 for locations.

Sheet A525

1. See attached for revised sheet to add detail A2/A525.

Sheet A553

1. See attached for revised Detail D3, dimensioning the curved glass.

Sheet A610

1. Revise Door 599 to Hardware Group 15, in lieu of 06. Door to be 90 min. rated.
2. Add doors 465A and 465B to schedule. Doors to be:
   Width: 36”, Height: 84”, Thick: 1 ¾”, Elev. Type: E, Material: SCWD, Frame Elev.Type: 1, Material: HM, Hardware Group: 13

Sheet A652

1. Add signs 4.97 and 4.98 to schedule.
   4.97 to be Type L, and 4.98 to be Type A, text to read TUTORING.

PROJECT MANUAL

Specification Section 03 3000 CAST IN PLACE CONCRETE

1. Replace Section 03 3000 Cast-in-Place Concrete with new section 03 3000, which eliminates references to stained concrete and substitutes integrally colored concrete, with sealer. See attached.

Specification Section 03 4910 GLASS FIBER REINFORCED CONCRETE (GFRC)

1. Section 2.12.C. – Change "seal units with aluminum sheet" to read "Seal units with galvanizd steel sheet."

Specification Section 04 4200 STONE VENEER

1. Part 2.7.C.1 Add the following:
   Variation in thickness tolerance within ½" allowed as a result of guillotine cut with grain leaving a natural cleft finish with no out of plane curvature.
2. Change paragraph 2.3.A.3: In lieu of "stone supplier", substitute "masonry subcontractor".

Specification Section 06 4023 ARCHITECTURAL CABINETS AND CASEWORK

1. Part 2.6 – Quartz Countertops – Delete B. and replace with the following:
   "B. Flat Sheet Thickness: ¾" (20mm), minimum."
2. Add the following Approved Mills to Paragraph 2.1 A.
   - Fetzer Architectural Woodwork, www.fetzersinc.com
   - Boswell Wasatch Mill, LLC, www.boswellwasatch.com

Specification Section 07 1353 UNDER SLAB WATERPROOFING – SELF ADHERED

1. Add Specification Section 07 1353, see attached. Please note Paragraph 1.2.B. Special Considerations:
   "Special Considerations:
   1. **Installation of products of this type will differ from details shown on Drawings.** Contractors providing products of this section shall include in their bids any costs associated with additional measures required to allow products to function properly and in accordance with the warranty requirements. Possible alternative methods of installation include but are not limited to:
   a. **Installation of a 2 inch mud slab** below the grade slab to adhere the waterproofing. The interstice between the mud slab and the grade slab would be used for underground piping and conduit.
   b. **Placing the waterproofing membrane directly beneath the grade slab**, around footings and directly on the foundation walls. Direct placement of the membrane will require sealing all slab and foundation penetrations as part of the membrane installation and warranty.
   2. **Product must be suitable for "severe" sulfate exposure** (see Section 00 3132 "Geotechnical Data" for information on soil conditions).
   3. **Products must be capable of installation below the water table** without voiding or modifying the warranty requirements."

Specification Section 07 2727 FLUID APPLIED AIR AND MOISTURE BARRIER

1. Add paragraph 1.3.A.2: "2. It is the intent of this specification that air and moisture barrier products shall be **non-breathable**. Provide only non-breathable products".

Specification Section 07 4213 METAL WALL PANELS

1. Paragraph 1.2.A.3: "Eliminate reference to louvers. Louvers shall be provided by Mechanical."
   Add Paragraph 1.5.C.4: Metal panel contractor shall coordinate placement and flashing of louvers in metal panel walls.

Specification Section 09 2900 GYPSUM BOARD

1. Delete Part 3.4 – F. Foil-Backed Panels

Specification Section 09 9000 PAINTING

1. Paragraph 3.8.J add "integrally colored interior concrete" to list of spaces to receive sealer.

Specification Section 10 1400 SIGNS

1. Eliminate paragraph 2.3.B. Substitute: "B. Refer to Drawings for design and composition of panel signs."

Specification Section 10 5626 MOBILE STORAGE SHELVING UNITS

1. The mobile shelving at the Special Collections Area (Level 3) shall be changed to be power operated in lieu of manually operated.
2. Section 1.2.A.b – Change “General Collections area” to read “General Collections and Special Collections areas.”
3. Section 2.4.1 – Add the following:
   “Shelving is to be 84” high, utilizing 9” plain shelving on each side of the carriage (overall carriage depth to be 20” typical). Furnish and install narrow height backstop at all shelving. Furnish and install hanging wire dividers (1 per shelf).
   One (1) stationary carriage at the end of the row in both the General Collections and Special collections shall accommodate oversized shelving (12” deep) in a 14” carriage.

Specification Section 31 2000 EARTHWORK

1. The intent of the over-excavation of the project is to excavate down to 8” below the level of the majority of the footings (95’-6” reference elevation) as shown on sheet A111.0. This level is the working level for the top of the rammed aggregate pier work. This is the level where the geogrid fabric will be placed. Gravel will be placed over this geogrid fabric in order to form a stable platform for the rammed aggregate pier work. At the level of the majority of the footings (95’-10”) the water-proofing membrane will be placed and readied for footing placement. The water-proof membrane specified does not require a protection layer as long as ¾”- engineered fill is placed over the top of the membrane. The engineered fill (3/4”-) will be placed over the water-proof membrane up to the level of the gravel sublayer with the concrete slab on grade on top. This assembly requires more than the recommended minimum of 3’-0” of over-excavation recommended by the geotechnical report for the project.
2. Add the following:
   Paragraph 2.2.D:
   “D. Geogrid: Biazial product manufactured from punched polyethylene sheet.
   1. Basis of Design: Tensar BX 1200.”
   Paragraph 3.8.E:
   “E. At areas of aggregate pier placement, to provide a stable working platform for pier installation equipment, install geogrid fabric and cover with a gravel wear course of sufficient depth to support equipment and pier placement operation.”

Specification Section 31 6600 AGGREGATE PIER GROUND IMPROVEMENT

1. Add the following:
   Paragraph 1.3.C:
   "Division 31 "Earthwork" for geotextile grid and gravel platform to support excavating equipment."

STRUCTURAL

GENERAL

9.1 Regarding locations where the footing sizes change: The elevations shown are the top of footing. So for the footings along grid A, the top of the spots are at 97'-10 and they are 2' thick, for a bottom of footing elevation of 95'-10. The top of the continuous footings are at 96'-10 and they are 1' thick, for a bottom of footing elevation of 95'-10. This was discussed during the design phase to try to limit the amount of elevation changes required during excavation and preparation for the footings. But, there are a few cases where the bottom of footing will step, but I've attempted to limit their occurrence. Also, note 6 in the footing schedule of B1/S601 states that the continuous bars in the FCs should run continuous through the intersected FSs. There is also a detail D4/S501 that shows a typical footing step.

Sheet S001

1. Revise note 1. under MASONRY AND STONE VENEER to read "stainless steel" in lieu of "galvanized". Refer to Specification Section 04 4200 for material type.

MECHANICAL

See attached for Mechanical Addendum. (9 pages)

ELECTRICAL

See attached for Electrical Addendum. (26 pages)

END OF ADDENDUM

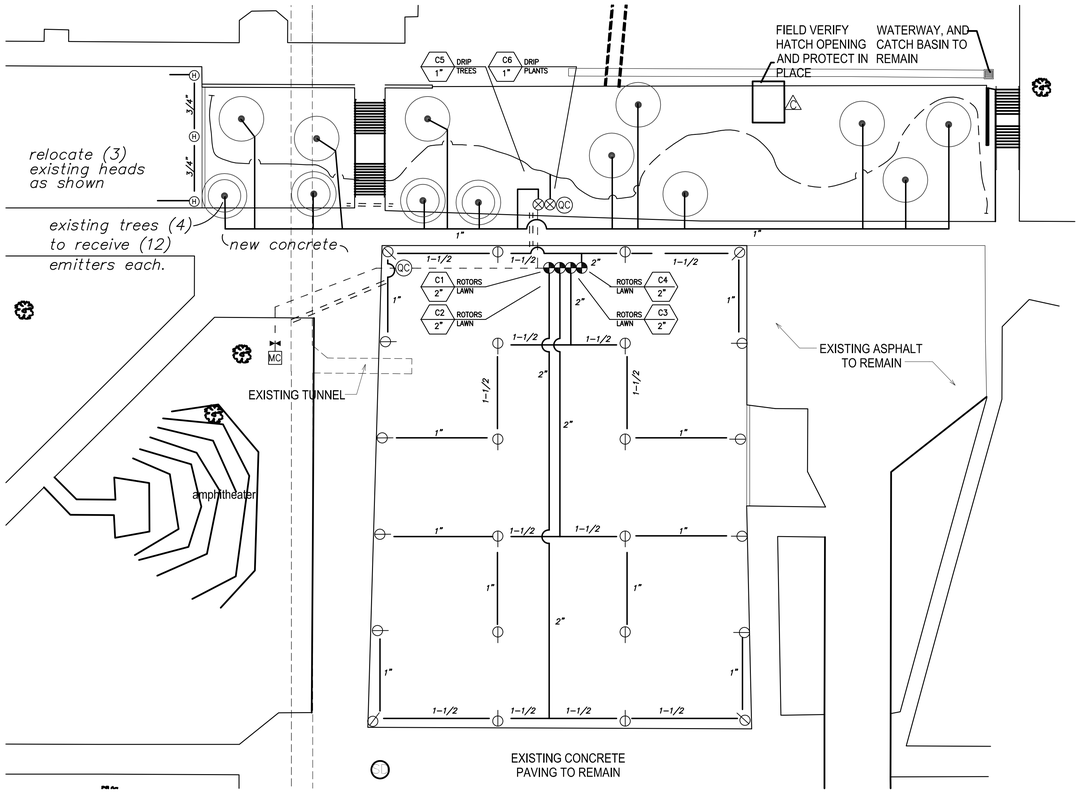
COSTANZA PS ASSOCIATES **Landscape Architecture**

John J. Costanza Telephone (435) 862-8317
P. O. Box 3122
St. George, Utah 84771 PS Associates

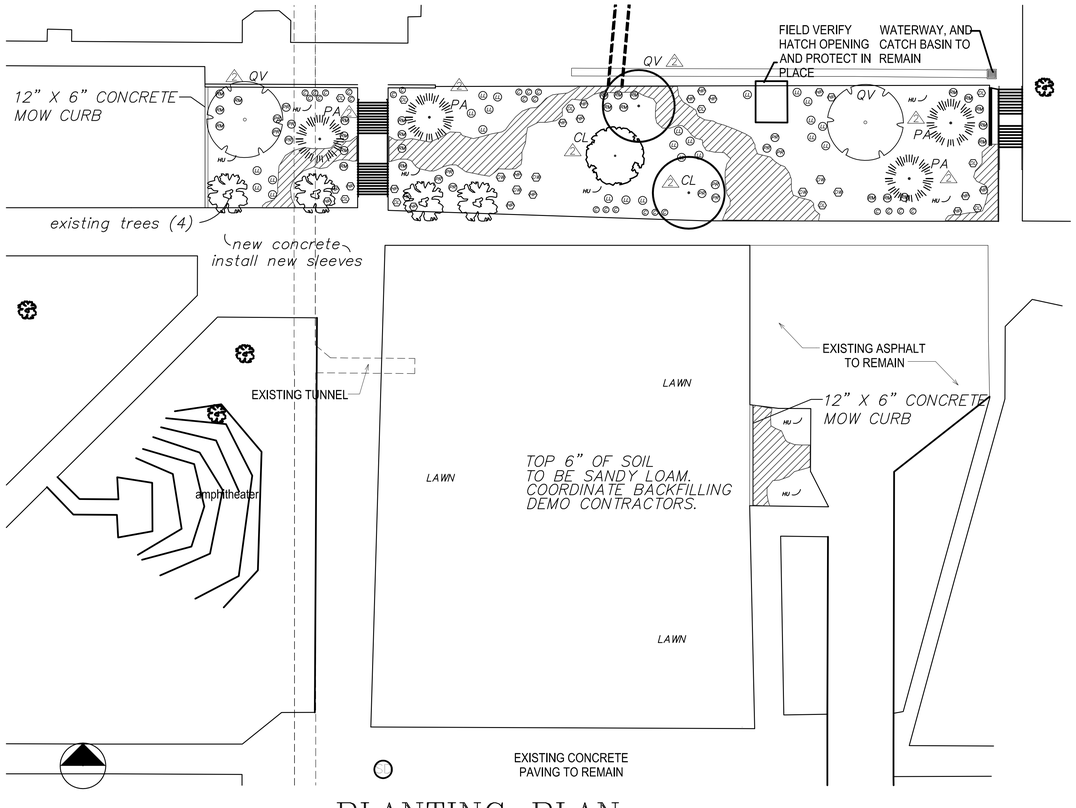
Alex Booth VCBO Architecture
Holland Centennial Commons- Landscape Plans Delta 1
January 6, 2011

Landscape Delta 2- Affecting sheet L104

Sheet L104 WHITEHEAD SITE IRRIGATION PLAN / PLANTING PLAN
1. Change plant symbol PI for Aleppo Pine to PA for Aleppo Pine, add missing tree call outs to this sheet.



IRRIGATION PLAN



PLANTING PLAN

GRAPHIC SCALE
1" = 20'
0 20 40 80

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Add Landscape and irrigation to demolished Whitehead Bldg. site.

IRRIGATION LEGEND

1	RAINBIRD	XCZ-PRB-100-COM	SERIES ELECTRIC CONTROL VALVE (1") DRIP ASSEMBLY – SEE DETAIL I FOR ADDITIONAL INFORMATION.
1	RAINBIRD	PESB-PRS-D	SERIES ELECTRIC CONTROL VALVE WITH PRESSURE REGULATOR (SIZE AS NOTED AT VALVE) REFER TO DETAIL SHEET FOR ADDITIONAL INFORMATION.
	NIBCO	T-113	BRASS GATE VALVE WITH BRASS CROSS HANDLE (LINE SIZE) WITH 4" PVC STAND PIPE AND 10" RD GREEN VALVE BOX
	RAINBIRD	3RC	3/4" BRASS QUICK COUPLING VALVE
	TORO	BLUE STRIPE (PLANTS)	3/4" DRIP TUBING – USE 3/4" BARBED FITTINGS WITH STAINLESS STEEL CRIMP RINGS
	TORO	WHITE STRIPE (TREES)	1" SCH. 40 PVC WITH 3/4" DRIP TUBING – USE 3/4" BARBED FITTINGS WITH STAINLESS STEEL CRIMP RINGS. SEE TREE IRRIGATION DETAIL.

PRESSURE MAIN LINE PIPING – PVC SCH. 40 (SIZE AS NOTED) ALL MAINLINE FITTINGS TO BE SCH. 80.

NON-PRESSURE LATERAL LINE PIPING – PVC SCH. 40 (SIZE AS NOTED)

CONTROL WIRE SLEEVE UNDER PAVING – PVC SCH. 40 (1 – 4", 1 –2 ")

	A	CONTROLLER – RAINBIRD ESP-4M WALL MOUNTED AT BUILDING DRIP CLOCK RUN TWO SPARE WIRES IN EACH DIRECTION, LOOP INTO EACH VALVE BOX AND TERMINATE IN LAST VALVE BOX EACH DIRECTION.
1	B	CONTROLLER – RAINBIRD ESPLX-24 WALL MOUNTED TURF CLOCK RUN TWO SPARE WIRES TO FIRST VALVE TERMINATE IN VALVE BOX.
1	C	CONTROLLER – RAINBIRD ESPLX-8 (WHITEHEAD BLDG. AREA) PEDESTAL MOUNTED WHITEHEAD CLOCK RUN TWO SPARE WIRES IN EACH DIRECTION, LOOP INTO EACH VALVE BOX AND TERMINATE IN LAST VALVE BOX EACH DIRECTION. METAL PEDESTAL RAINBIRD LXMMPED, METAL CABINET RAINBIRD LXMM
1	MA	IRRIGATION POINT OF CONNECTION – POTABLE WATER FOR DRIP SYSTEM. TIE INTO EXISTING 1-1/2" STUB, CONTINUE TO BACKFLOW LOCATION
1	BF	BACK FLOW DEVICE – WILKINS 975XLSE 1-1/2" SEE DETAIL ENCLOSE WITH HOT BOX LB1 FIBERGLASS ENCLOSURE – SEE DETAIL
	MB	IRRIGATION POINT OF CONNECTION – IRRIGATION WATER, INSTALL (2) 2" SADDLES TO EXISTING 4" IRRIGATION MAINLINE TO SERVICE TURF LANDSCAPE. REFER TO SHEET C201 FOR FURTHER INFORMATION. COORDINATE WITH RELOCATION OF EXISTING IRRIGATION LINE. INSTALL GATES VALVE IMMEDIATELY DOWN STREAM OF P.O.C.
1	MC	IRRIGATION POINT OF CONNECTION – IRRIGATION WATER, INSTALL 2" SADDLE TO EXISTING 4" IRRIGATION MAINLINE TO SERVICE LANDSCAPE. INSTALL GATE VALVE IMMEDIATELY DOWN STREAM OF P.O.C.

DRIP A23 — INDICATES CONTROLLER LETTER DESIGNATION STATION NUMBER
1" — INDICATES ELECTRIC CONTROL VALVE SIZE

SYMBOL	MANUFACTURER	MODEL NO.	DESCRIPTION	NOZZLE	RADIUS	FLOW	PSI	PATTERN	SPACING
▼	RAINBIRD	1800-SAM-PRS	POP-UP SPRAY HEAD	15 SERIES MPR	15 FT.	3.70 GPM	30	FULL	15 FT.
▽	RAINBIRD	1800-SAM-PRS	POP-UP SPRAY HEAD	15 SERIES MPR	15 FT.	2.78 GPM	30	THREE QTR	15 FT.
▼	RAINBIRD	1800-SAM-PRS	POP-UP SPRAY HEAD	15 SERIES MPR	15 FT.	1.85 GPM	30	HALF	15 FT.
▽	RAINBIRD	1800-SAM-PRS	POP-UP SPRAY HEAD	15 SERIES MPR	15 FT.	0.92 GPM	30	QUARTER	15 FT.
◐	RAINBIRD	7005-SS-08	ROTOR SPRAY HEAD	08 GREEN	49 FT.	6.60 GPM	50	ADJ	44 FT.
(H) EXISTING RAINBIRD ROTOR									

PLANT LEGEND

TREES

SYMBOL	NAME	SIZE	EMITTERS
CL	*CHILOPSIS linearis 'Art's Seedless'* *Seedless Desert Willow – multi trunked*	24" box	(5) – 2 GPH
AS	*FRAXINUS velutina 'Fan Tex'* *Fan Tex Ash*	24" box	(5) – 2 GPH
PI	*PISTACIA chinensis ' Red Push'* *Red Push Pistache*	24" box	(5) – 2 GPH
PG	*PROSOPIS glandulosa 'Maverick'* *Maverick Honey Mesquite*	24" box	(5) – 2 GPH
QV	*QUERCUS virginiana* *Live Oak – Low branching*	36" box	(5) – 2 GPH
CC	*CERCIS canadensis* *Eastern Redbud – low branching*	24" box	(5) – 2 GPH
LA	*LAGERSTROEMIA indica* *Crape Myrtle – Red, multi trunk*	36" box	(5) – 2 GPH
2 1 PA	*PINUS halepensis* *Aleppo Pine*	24" box	(5) – 2 GPH

SHRUBS

NO	*NERIUM oleander Dwarf Red* *Hardy Dwarf Red Oleander*	5 gal	(1) – 2 GPH
LL	*LEUCOPHYLLUM langmaniae 'Rio Bravo'* *Texas Ranger*	5 gal	(1) – 2 GPH
PVA	*PEROVSKIA atriplicifolia* *Russian Sage*	5 gal	(1) – 2 GPH
RIA	*RHAPHIOLEPIS indica 'Ballerina'* *Ballerina Indian Hawthorn*	5 gal	(2) – 2 GPH
CCA	*COTINUS cogygria 'Purpureus'* *Purple Smokebush*	5 gal	(2) – 2 GPH
RM	*ROSMARINUS officinalis 'Prostratus'* *Creeping Rosemary*	5 gal	(1) – 2 GPH
RCA	*ROSA x noare* *Red Carpet Rose*	2 gal	(2) – 2 GPH
C	*CHRYSACTINIA mexicana* *Damianita*	5 gal	(1) – 2 GPH
MFG	*MYRTUS communis 'Compacta'* *Red Carpet Rose*	5 gal	(2) – 2 GPH
VAR	*VAQUELINIA californica* *California Rosewood*	5 gal	(1) – 2 GPH

ACCENTS

DL	*DASYLIRION longissimum* *Grass Tree*	15 gal	(1) – 2 GPH
HP	*HESPERALOE parviflora* *Red Yucca*	5 gal	(1) – 2 GPH
DW	*DASYLIRION wheeleri* *Desert Spoon*	15 gal	(1) – 2 GPH
D	*MUHLENBERGIA capillaris 'Regal Mist'* *Regal Mist Deer Grass*	5 gal	(1) – 2 GPH
M	*MISCANTHUS gracillimus 'Yaku Jima'* *Maiden Grass*	5 gal	(2) – 2 GPH
TY	*TRICHOCEREUS imperialis* *Argentine Saguaro– minimum 3 bulbs*	15 gal	(2) – 1 GPH
EC	*ECHINOCACTUS grusonii* *Golden Barrel Cactus*	5 gal	(1) – 1 GPH
FT	*FEROCACTUS wislizenii* *Fishhook Barrel Cactus*	5 gal	(1) – 1 GPH
YL	*YUCCA rostrata* *Beaked Yucca– 3 ft. 2 head*	20 gal	(2) – 1 GPH

BOULDERS – TAN SANDSTONE QUARRIED BOULDERS
3 TO 4' DIAMETER VARIED SHAPES
MINIMUM 90 TONS, MINIMUM 125 BOULDERS

FLAGSTONES– BUCKSKIN COLOR MINIMUM 4' X 3'
SPACE MIMIMUM 4" FROM CONCRETE EDGE
AND ONE ANOTHER. HUALAPI RED CHAT IN AND
AROUND FLAGSTONES OVER FABRIC.

HU *DECORATIVE GRAVEL – 3/4" HUALAPI GOLD or EQUAL, 3" DEPTH – AVAILABLE*
FROM ROWLAND STONE (435) 673-2349

ACCENT GRAVEL – 4" APACHE GOLD or EQUAL, 4" DEPTH– AVAILABLE
FROM ROWLAND STONE (435) 673-2349
ALL PLANTER AREAS TO BE COVERED WITH
DEWITT PRO5 LANDSCAPE FABRIC, SEE DETAIL O.

LAWN *SOD – Tri-blend Fescue Sod, feather into existing lawn*

COSTANZA PS ASSOCIATES
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P.O. Box 3122
St. George, Utah 84771

VCBO ARCHITECTURE
VALENTINER CRANE BRUNJES ONTON
SASAKI
LICENSED LANDSCAPE ARCHITECT JOHN J. COSTANZA Expires 5/31/11 Signature Date 97-328108-5301 STATE OF UTAH
VCBO ARCHITECTURE
524 SOUTH 600 EAST
SALT LAKE CITY, UTAH 84102
Phone: (801) 575-8800
Fax: (801) 531-9850
WWW: www.vcbo.com

HOLLAND CENTENNIAL COMMONS

DIXIE STATE COLLEGE OF UTAH
DFCM #06297640
DIXIE COLLEGE, ST. GEORGE, UT
CONFORMED CONSTRUCTION DOCUMENTS BID SET

No.	Description	Date
1	Add sheet to set. Add landscape to site	12/23/10
2	change tree symbol, add tree symbols at Whitehead area	01/06/11

Job # 09625
CAD File
Drawn JJC Checked JJC
Date 12/03/2010
Owner #
Ins. #

WHITEHEAD SITE
IRRIGATION PLAN
PLANTING PLAN

L104
Sheet Number

Dixie State College of Utah
Holland Centennial Commons
Addendum #9
Civil Drawings and Specifications

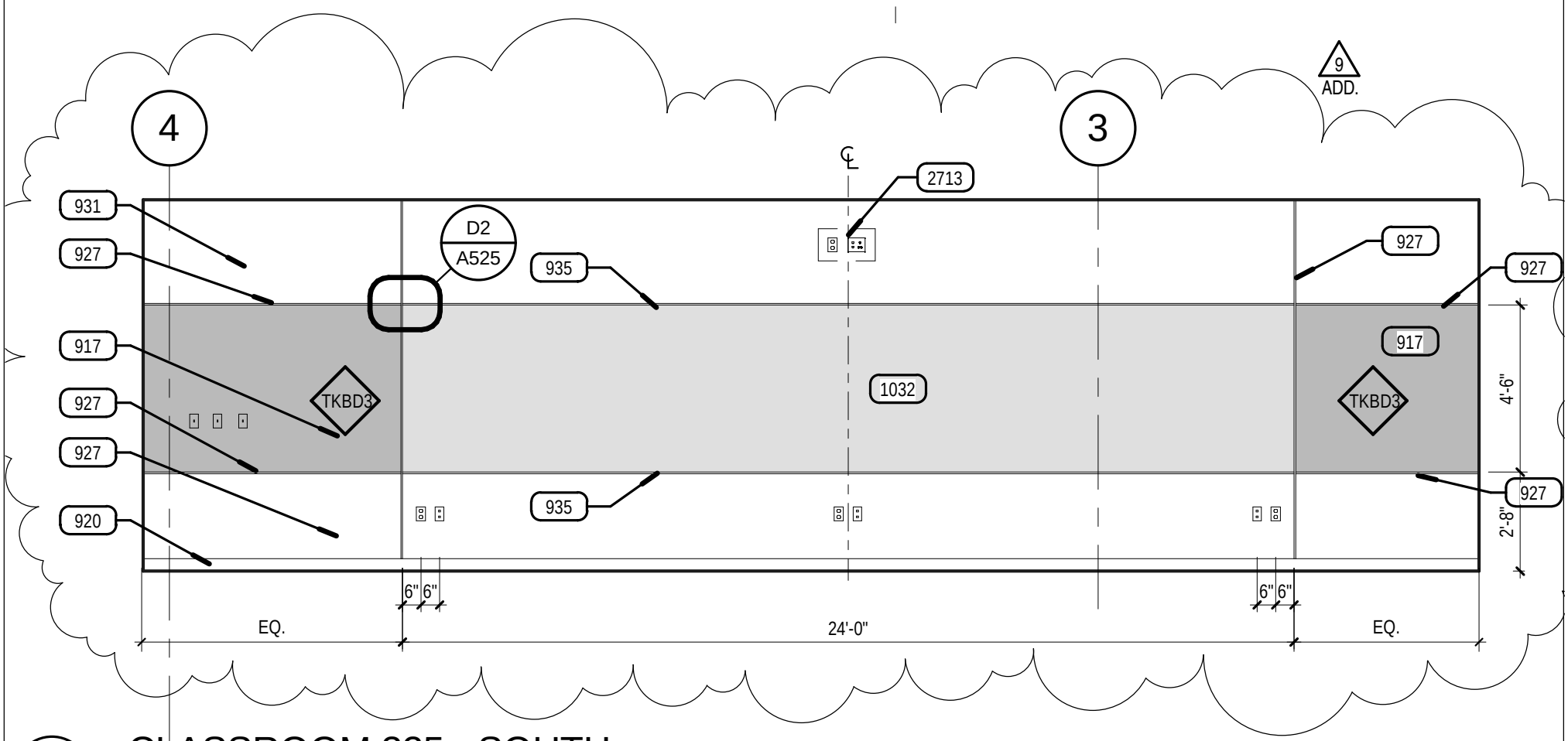
January 10, 2011

The following addendum items shall be incorporated into the contract documents and specifications:

General Clarifications

1. Section 6 of the geotechnical report indicates that geo-grid will likely be required if track mounted equipment is not used. It is clarified that the Contractor should expect saturated soft soils and will be required to stabilize the sub-grade with geo-grid as necessary during construction. The geo-grid may be penetrated for the installation of the geo-piers.

End of Civil Addendum #9



E1 CLASSROOM 325 - SOUTH

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

VCBO	HOLLAND CENTENNIAL COMMONS DIXIE STATE COLLEGE OF UTAH	. Addendum #9 E1 Sheet A430	
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		Date 01.10.11 Issue Date	.
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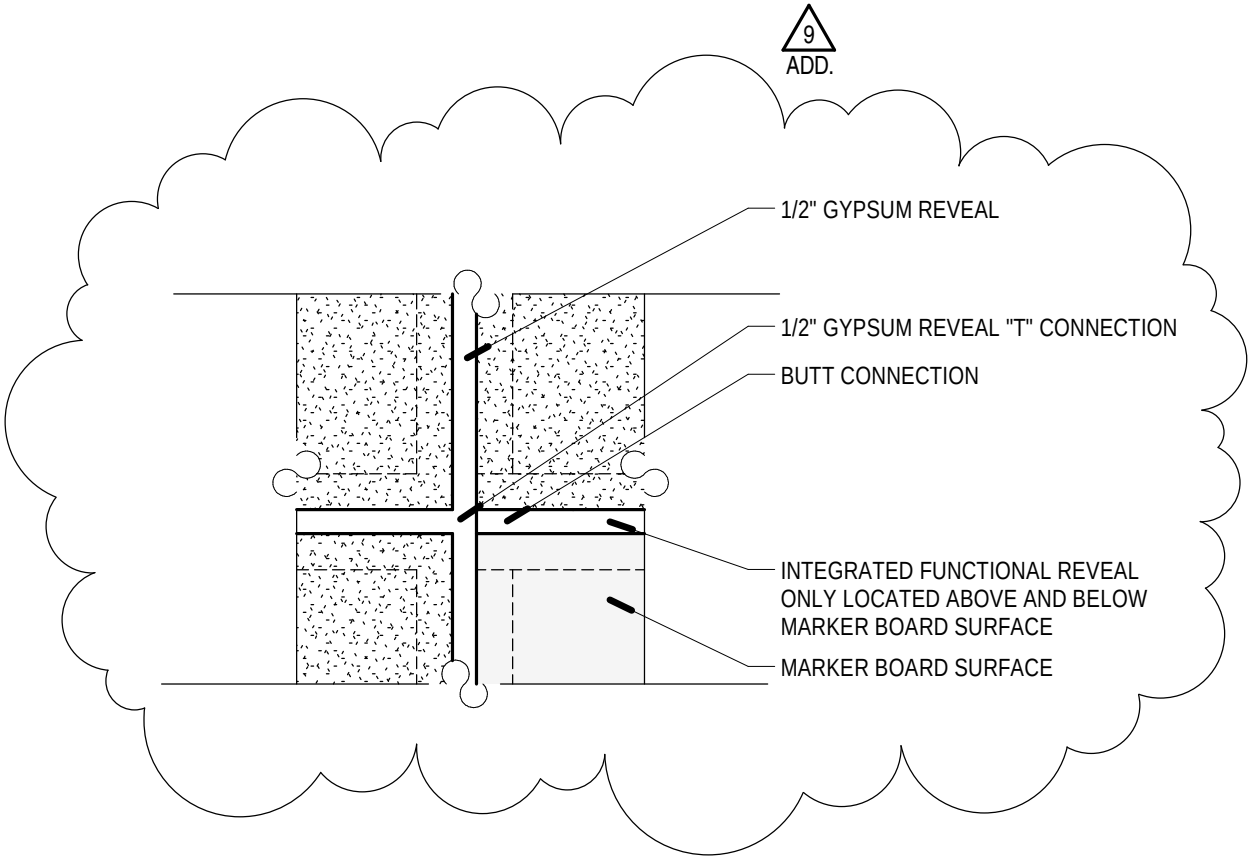

D2 INTEGRATED REVEAL TO 1/2" REVEAL TRANSITION

SCALE: 3" = 1'-0"

VCBO

HOLLAND CENTENNIAL COMMONS

DIXIE STATE COLLEGE OF UTAH

Addendum #9
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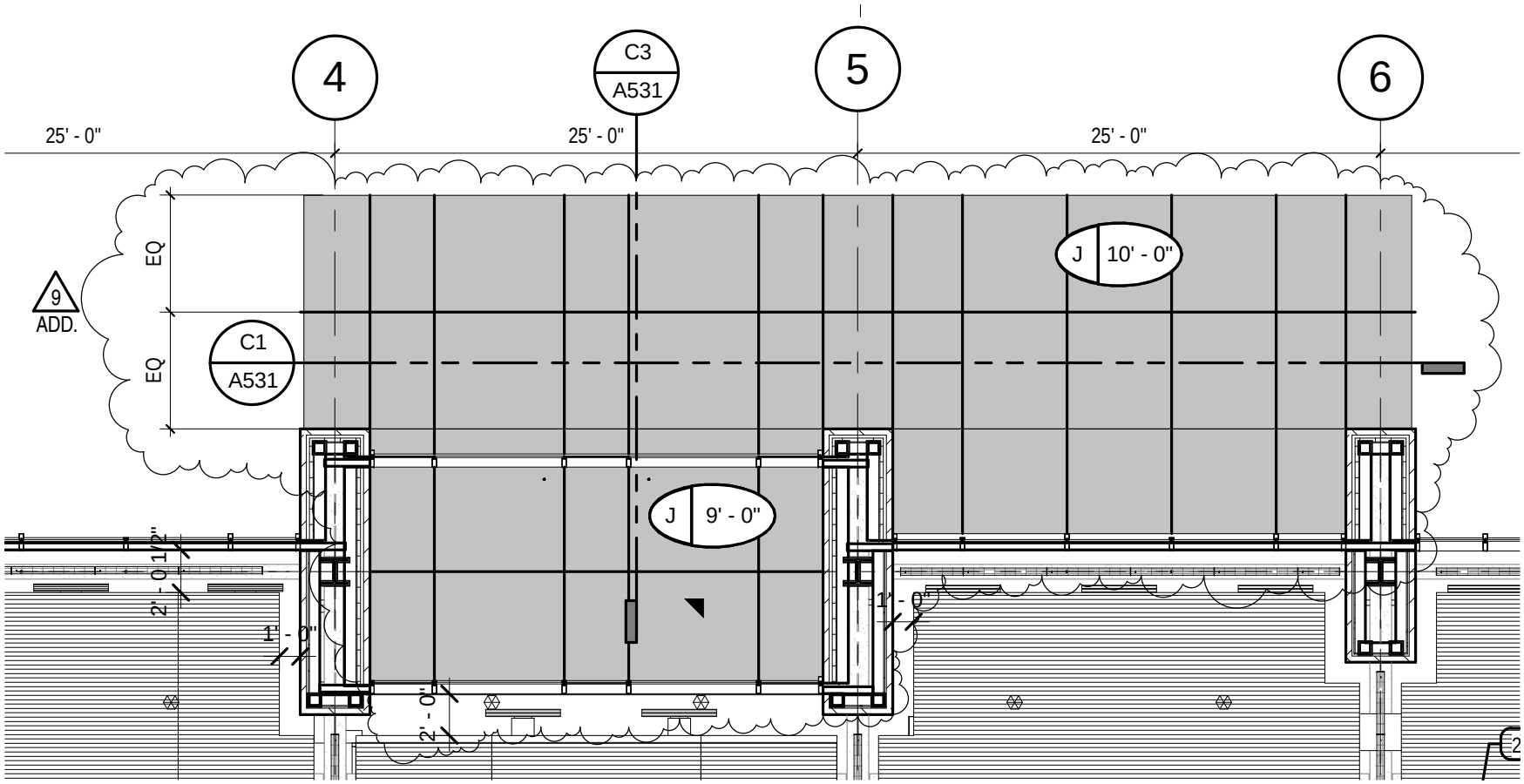

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HOLLAND CENTENNIAL COMMONS

DIXIE STATE COLLEGE OF UTAH

Addendum #9
Sheet A122.4

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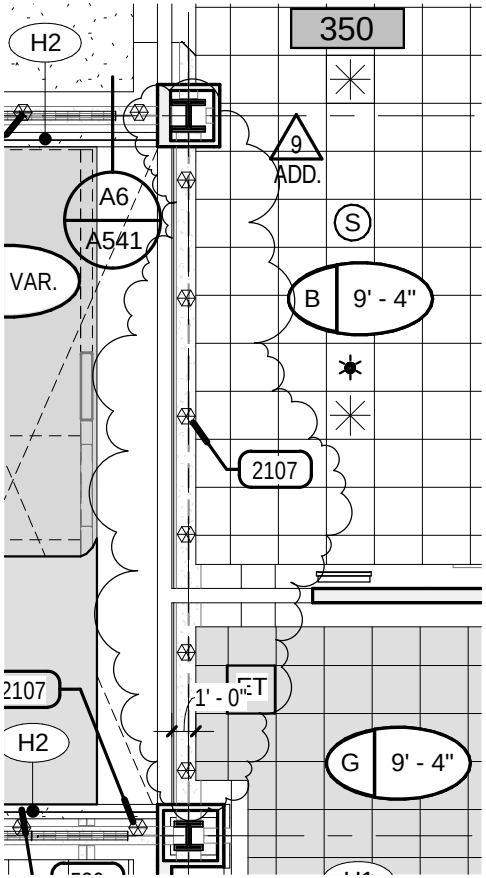

HOLLAND CENTENNIAL COMMONS

DIXIE STATE COLLEGE OF UTAH

Addendum #9
E2 Sheet A131.4

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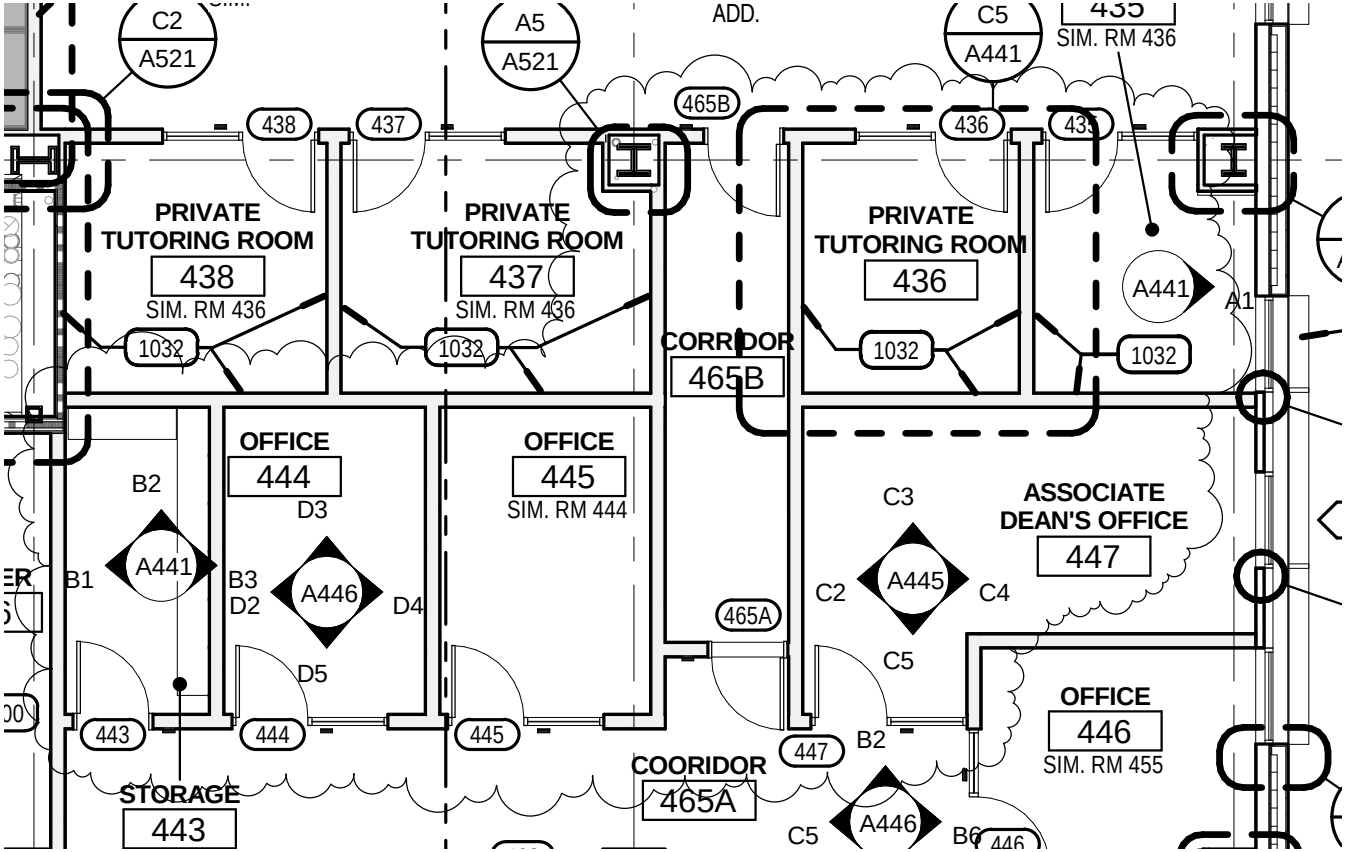

HOLLAND CENTENNIAL COMMONS

DIXIE STATE COLLEGE OF UTAH

Addendum #9
Sheet A141.1

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Date 01.10.11	Issue Date	
Drawn by	Author	
Checked by	Checker	Scale

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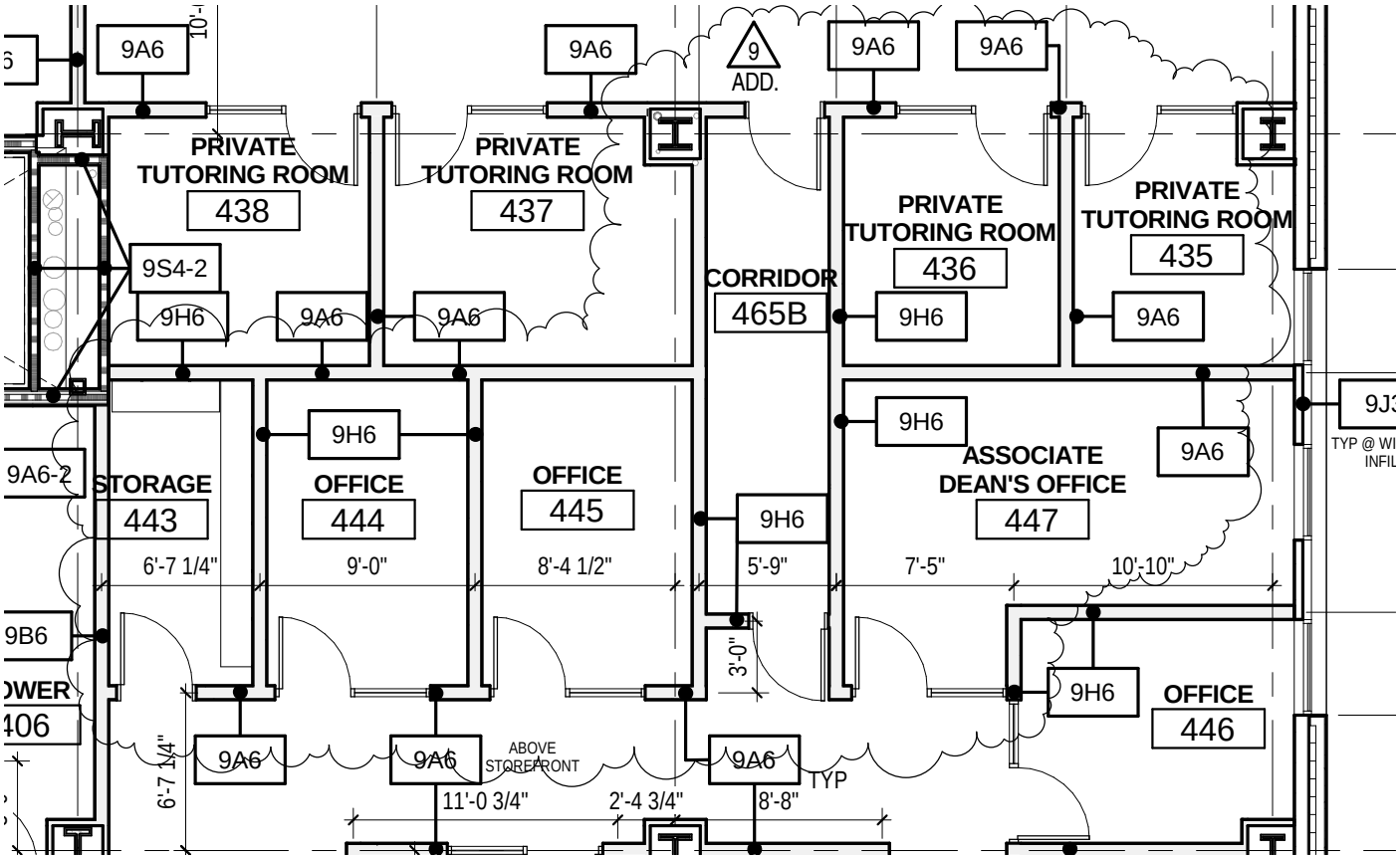

HOLLAND CENTENNIAL COMMONS

DIXIE STATE COLLEGE OF UTAH

Addendum #9
Sheet A141.2

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Date 01.10.11	Issue Date	
Drawn by	Author	
Checked by	Checker	Scale

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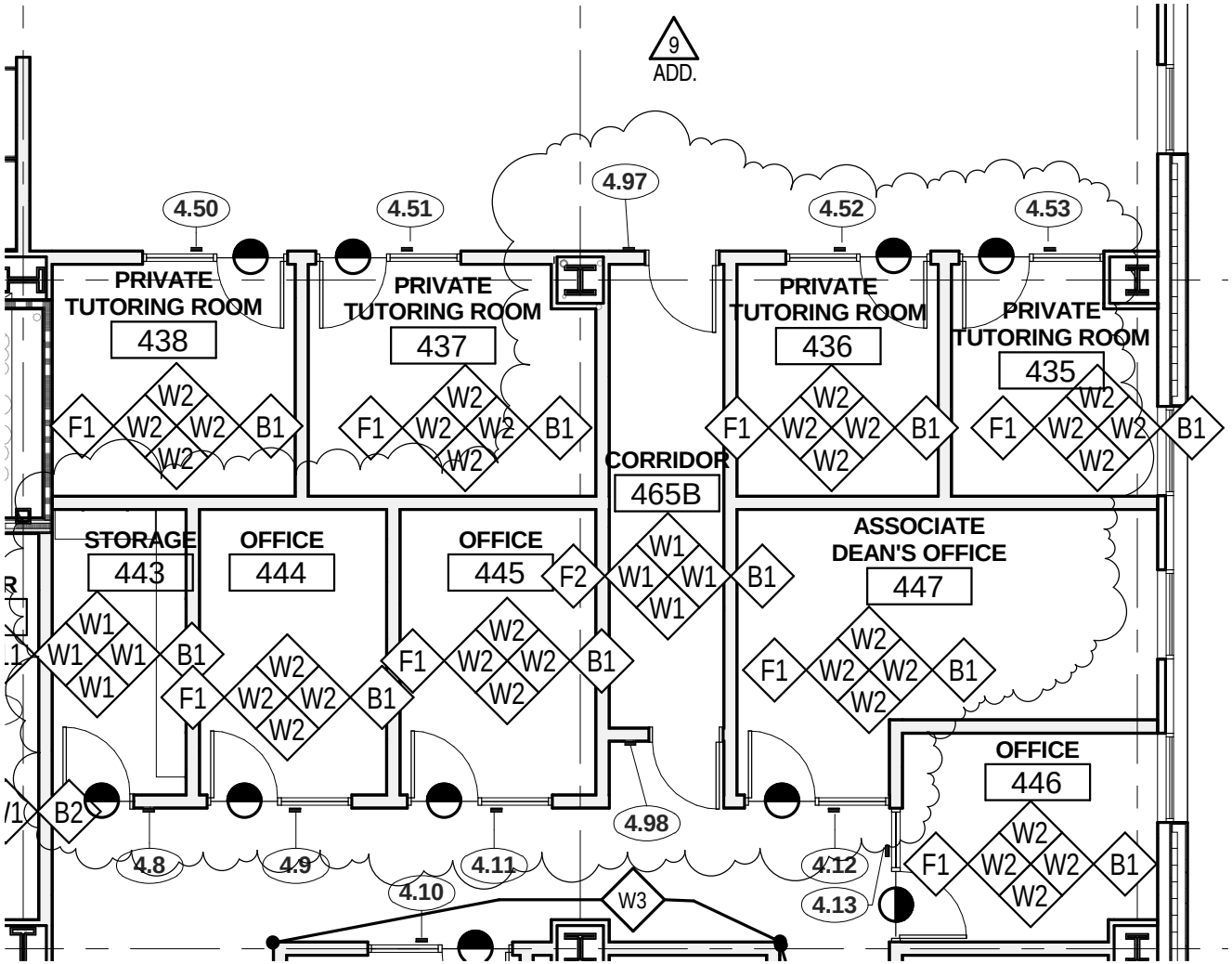

HOLLAND CENTENNIAL COMMONS

DIXIE STATE COLLEGE OF UTAH

Addendum #9
Sheet A141.3

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Date 01.10.11	Issue Date	
Drawn by	Author	
Checked by	Checker	Scale

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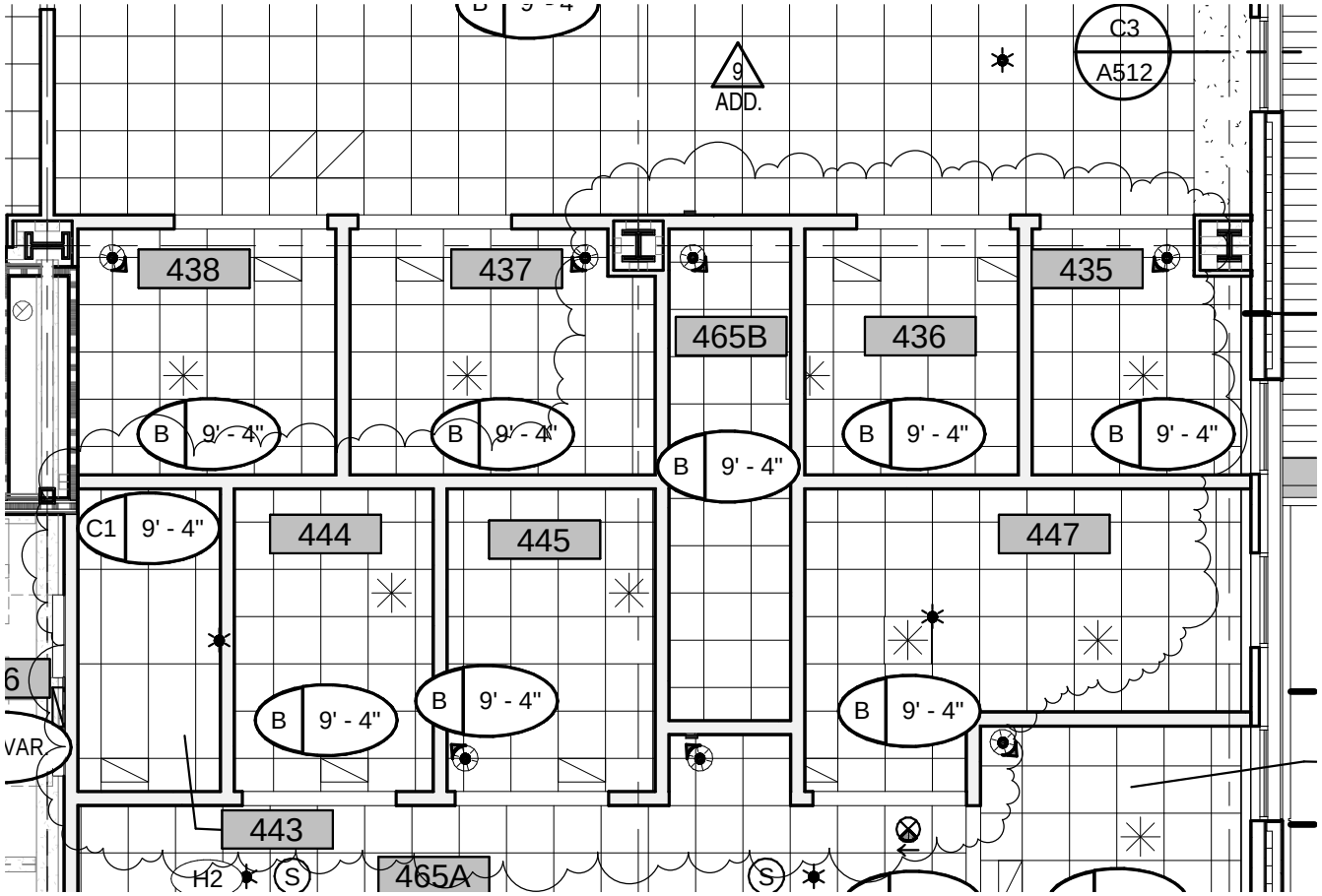

HOLLAND CENTENNIAL COMMONS

DIXIE STATE COLLEGE OF UTAH

Addendum #9
Sheet A141.4

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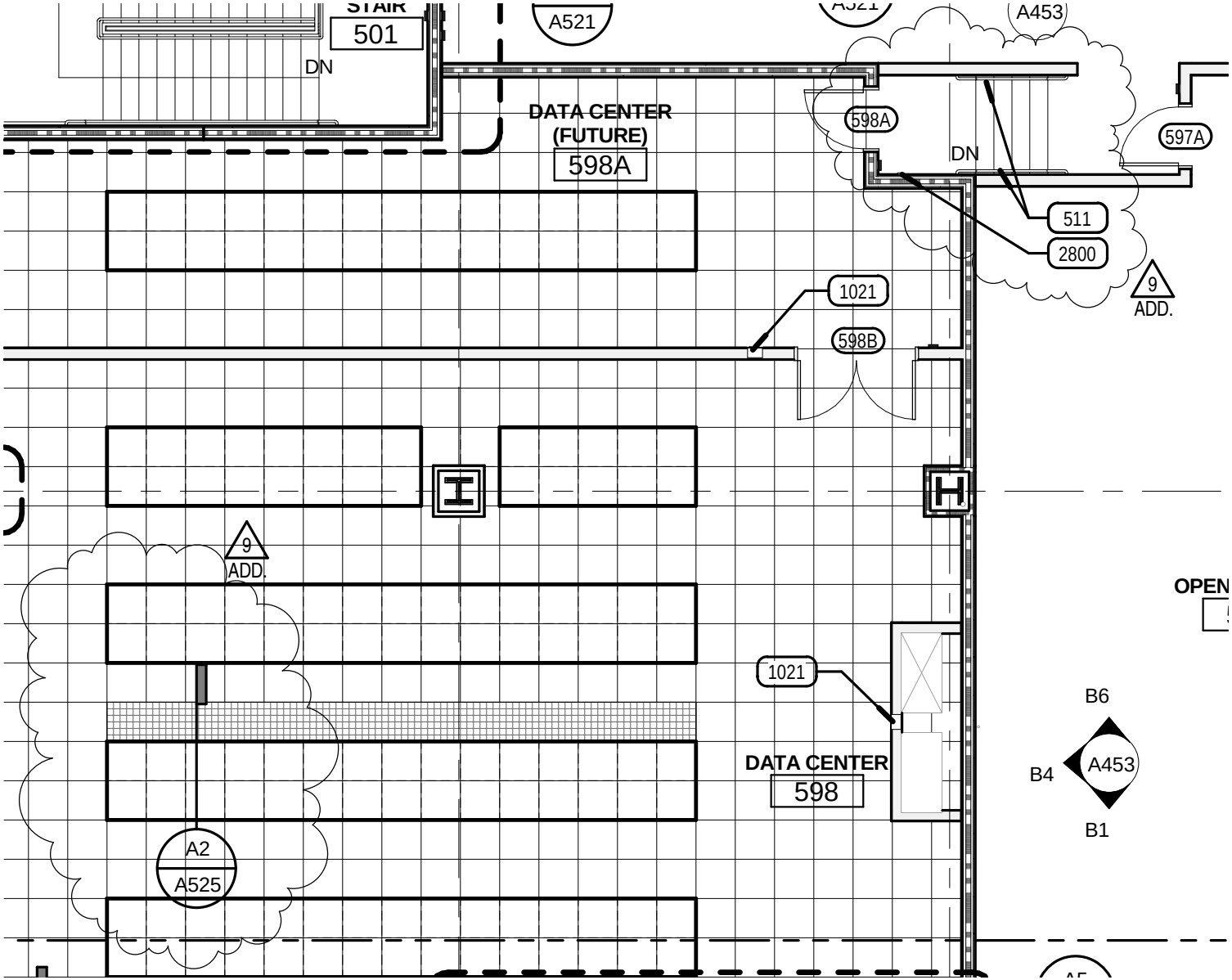

HOLLAND CENTENNIAL COMMONS

DIXIE STATE COLLEGE OF UTAH

Addendum #9
Sheet A151.1

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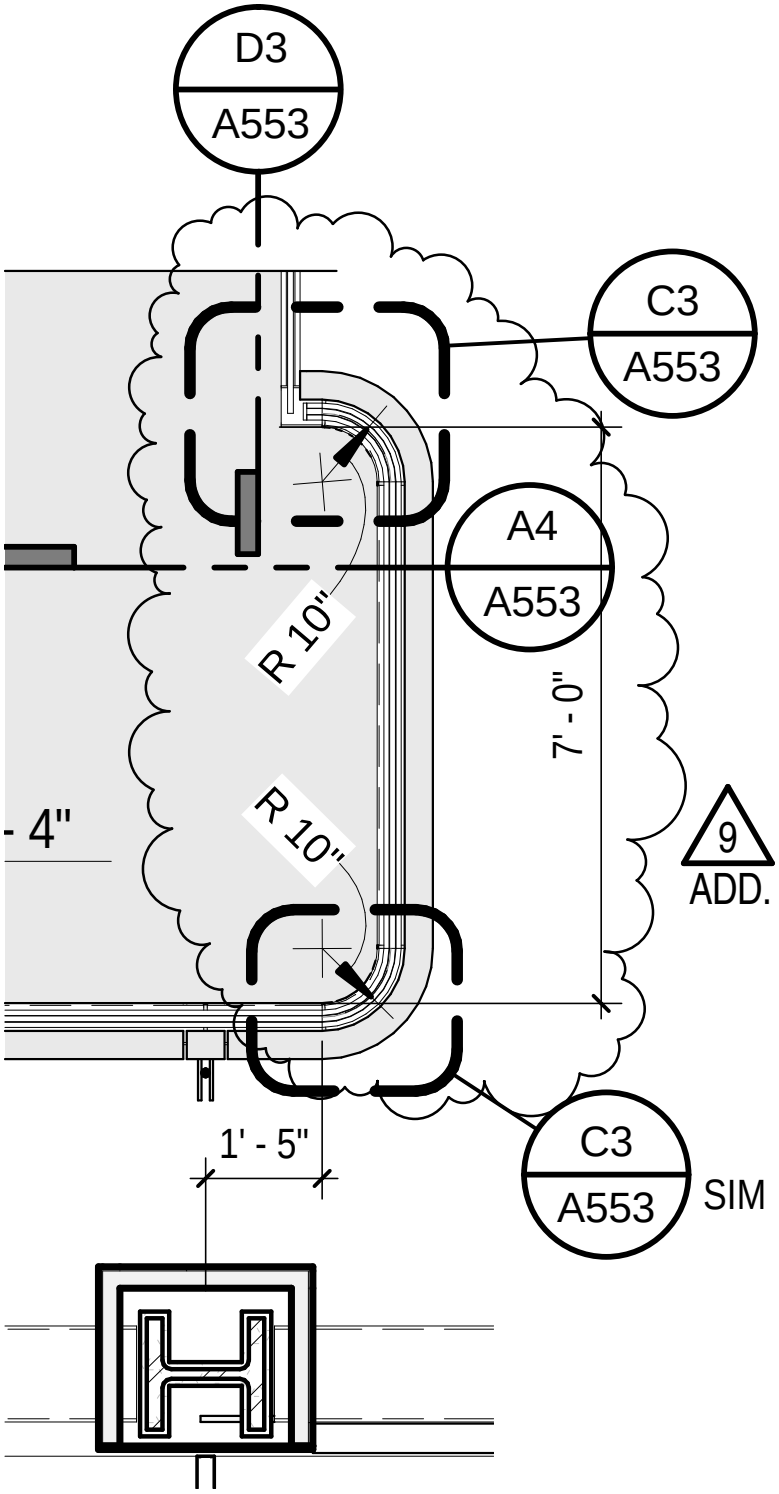

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		Date Issue Date
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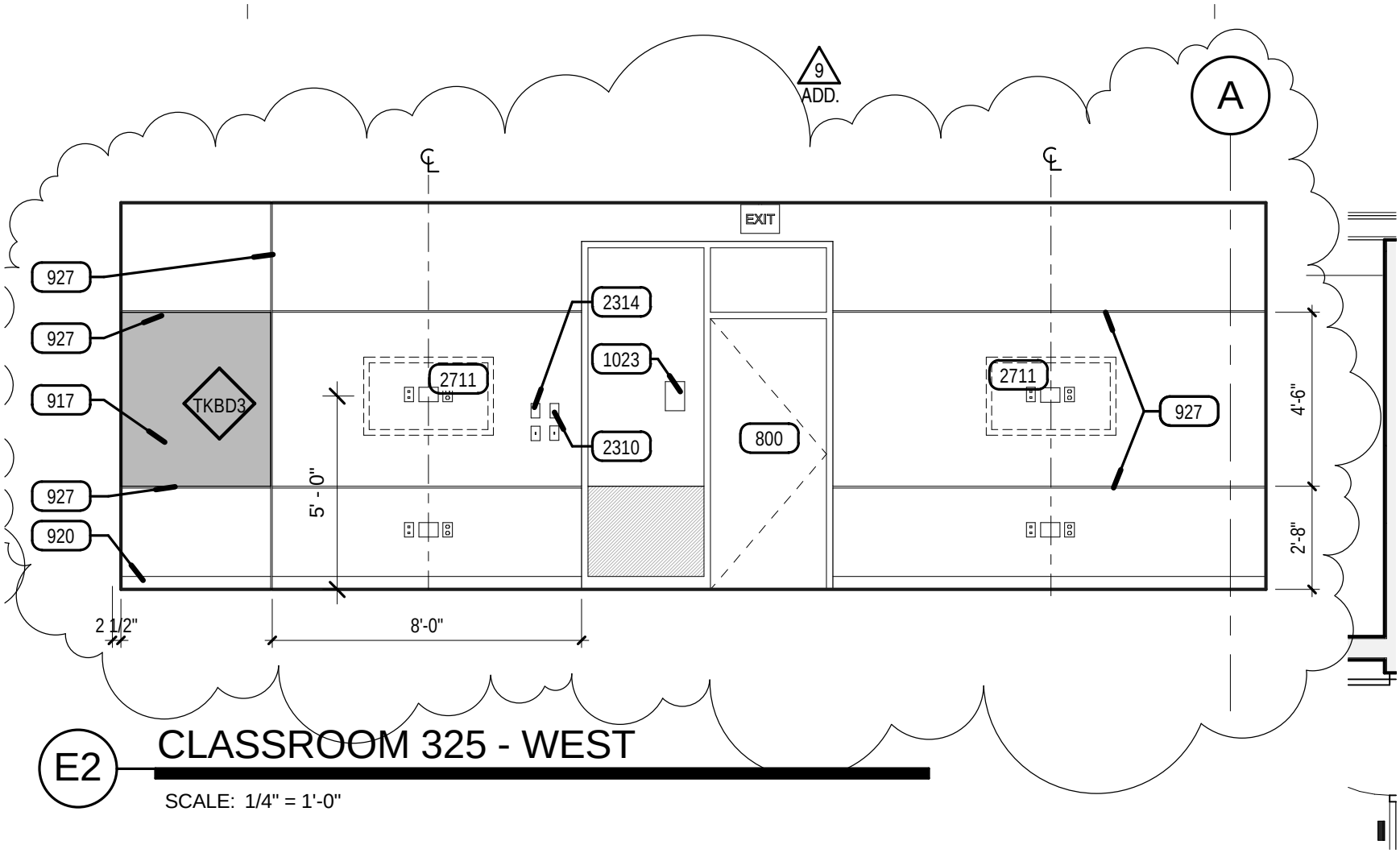

E2 CLASSROOM 325 - WEST

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

VCBO

HOLLAND CENTENNIAL COMMONS

DIXIE STATE COLLEGE OF UTAH

Addendum #9
E2 Sheet A430

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Date 01.10.11	Issue Date	
Drawn by	Author	
Checked by	Checker	Scale

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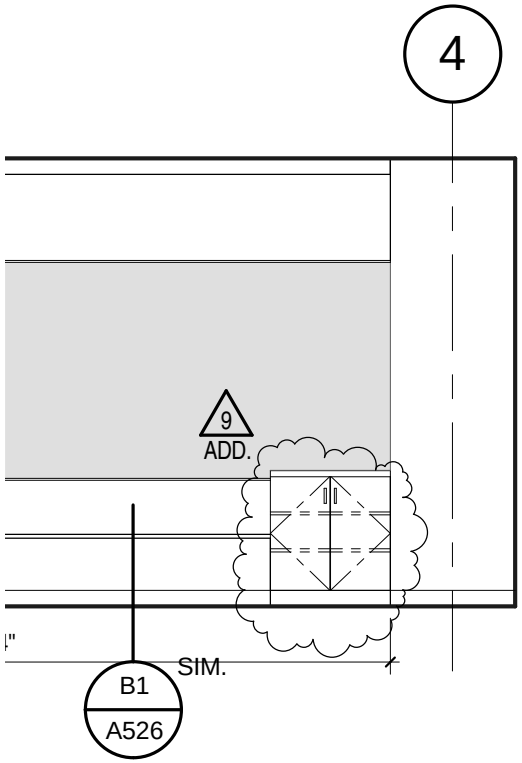

HOLLAND CENTENNIAL COMMONS

DIXIE STATE COLLEGE OF UTAH

Addendum #9
Sheet A432

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Date 01.10.11	Issue Date	
Drawn by	Author	
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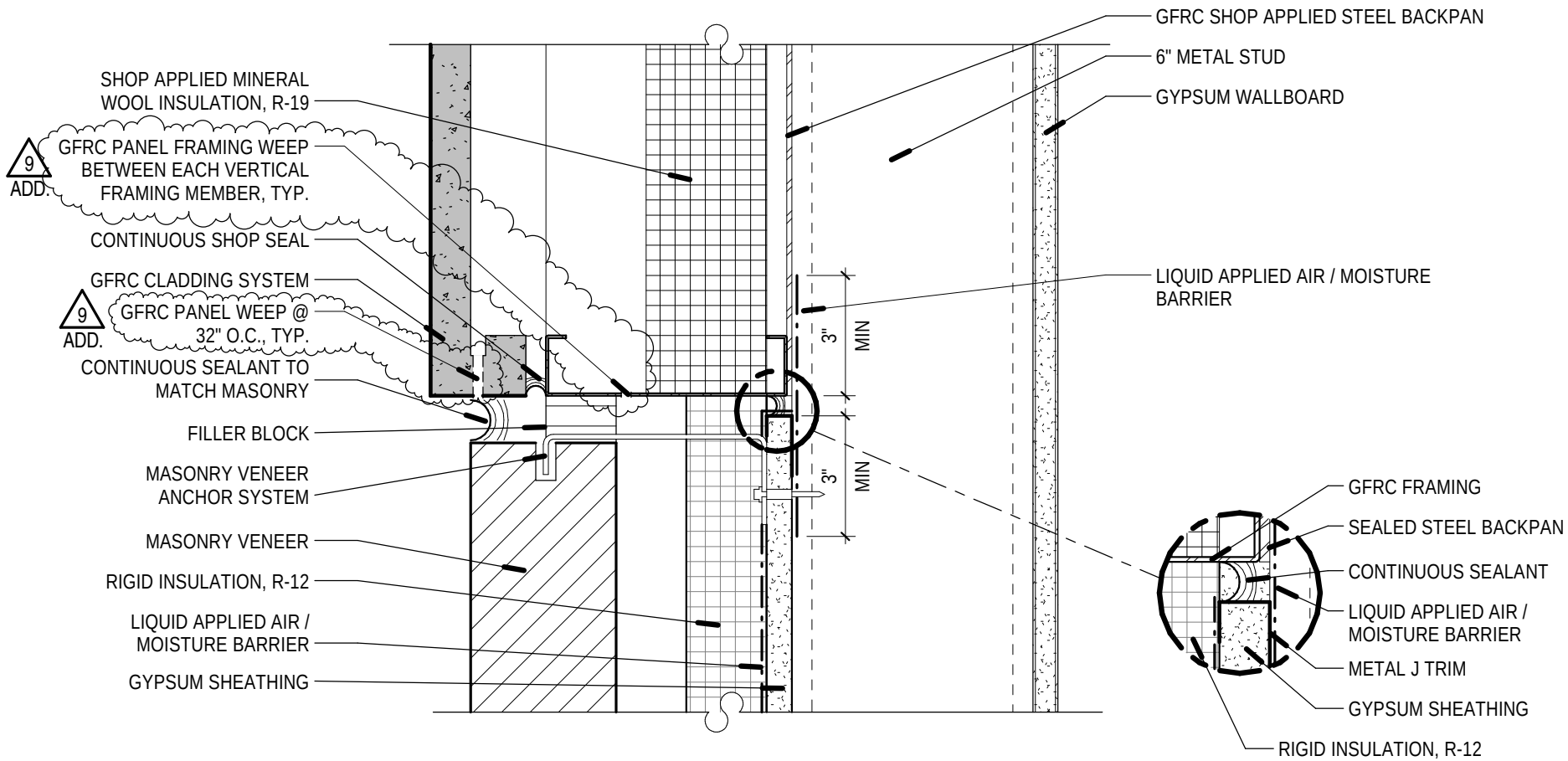

C2 MASONRY / GFRC TRANSITION

SCALE: 3" = 1'-0"

VCBO

HOLLAND CENTENNIAL COMMONS

DIXIE STATE COLLEGE OF UTAH

Addendum #9
C2 Sheet A510

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Date 01.10.11	Issue Date	
Drawn by	Author	
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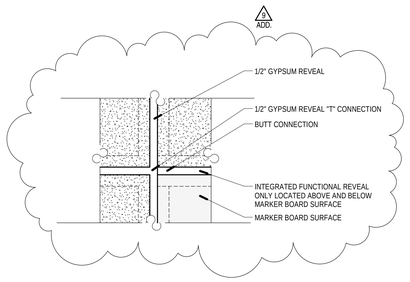
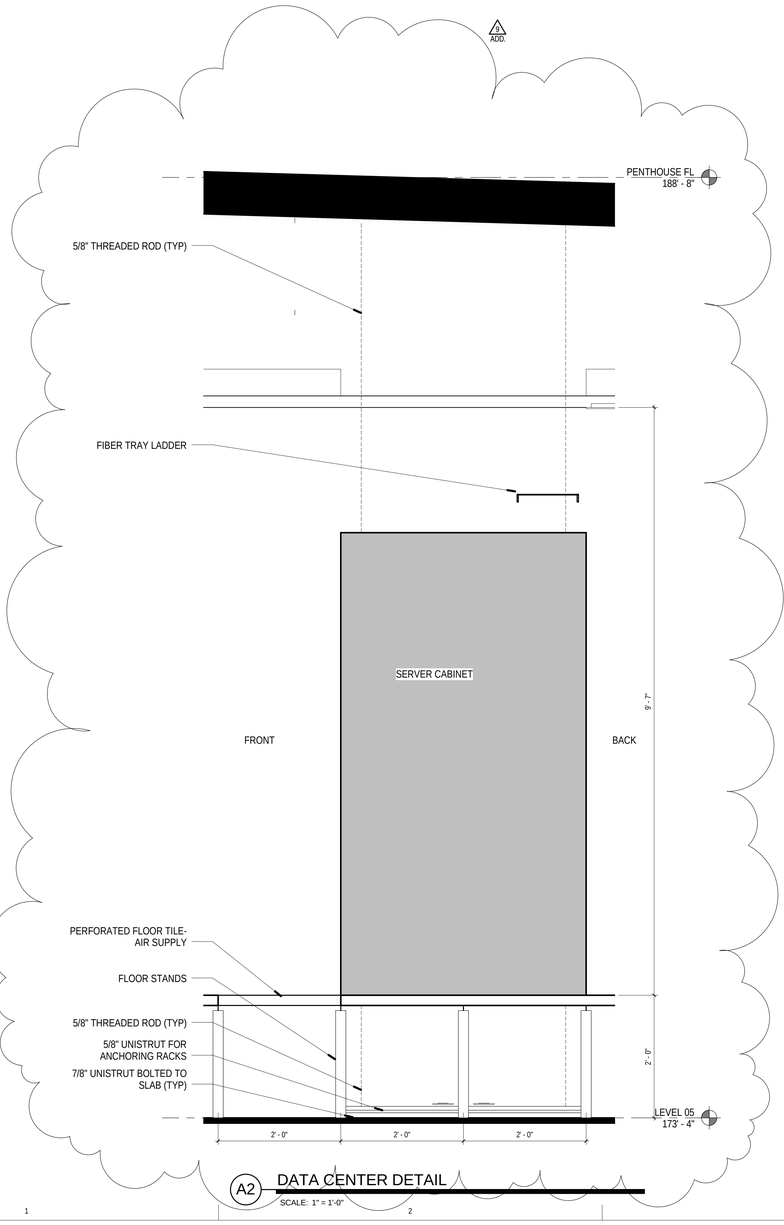


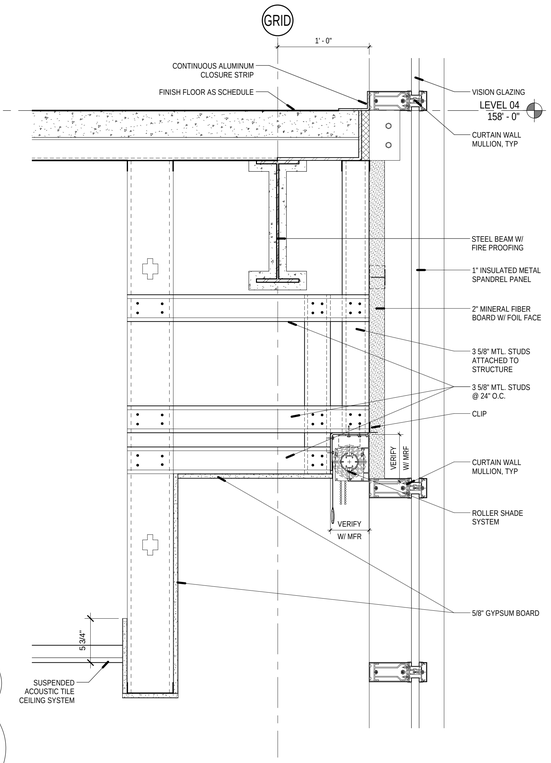
D2 INTEGRATED REVEAL TO 1/2" REVEAL TRANSITION

SCALE: 3" = 1'-0"



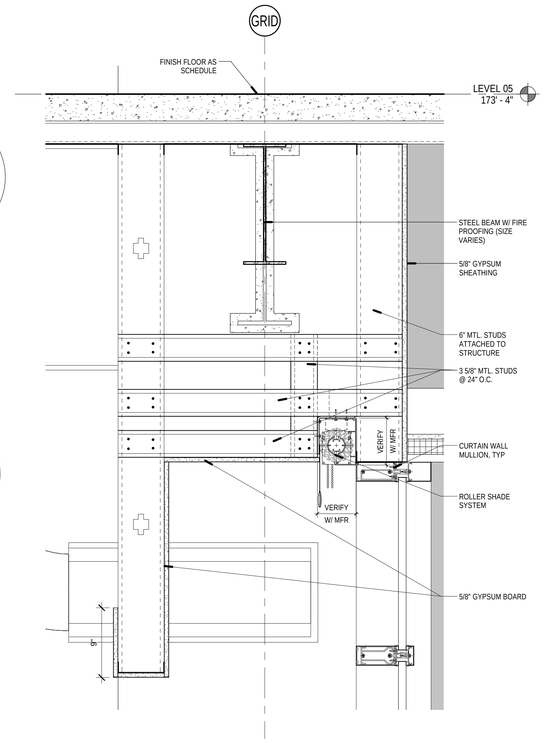
A2 DATA CENTER DETAIL

SCALE: 1" = 1'-0"



C3 TYP. WINDOW POCKET DETAIL @ CURTAINWALL

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



A3 WINDOW POCKET @ SOFFIT

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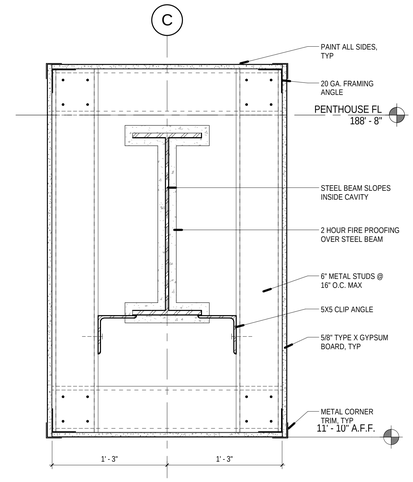
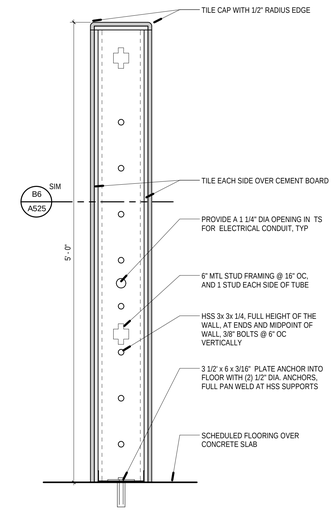


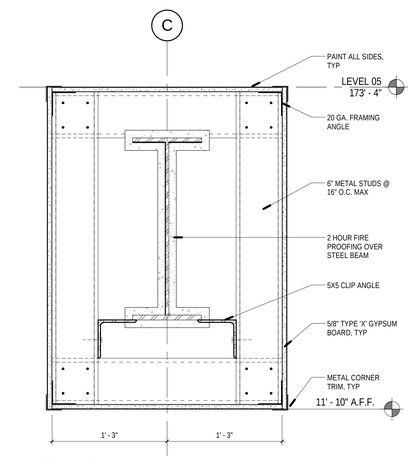
D5 BEAM WRAP @ SKYLIGHT

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



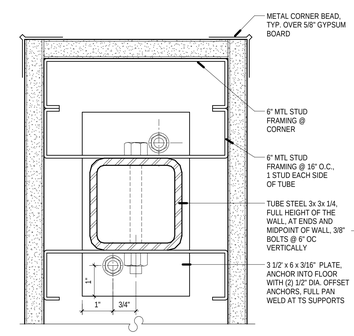
D6 LOW WALL- CONCESSIONS

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



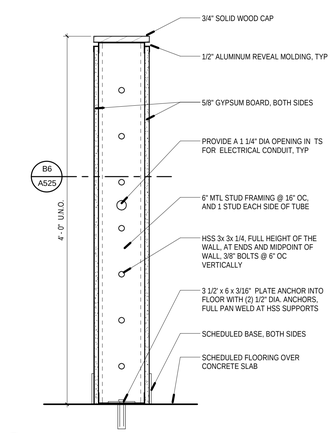
B5 BEAM WRAP @ SHAFT

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



B6 LOW WALL REINFORCEMENT

SCALE: 6" = 1'-0"



A6 LOW WALL

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

VCBO
ARCHITECTURE
VALENTINER CRANE BRUNJES ONYON
SASAKI

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HOLLAND CENTENNIAL COMMONS

DIXIE STATE COLLEGE OF UTAH

DFCM #06297640

DIXIE COLLEGE, ST. GEORGE, UT

CONFORMED CONSTRUCTION DOCUMENTS BID SET

No.	Description	Date
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Job # 09625
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INTERIOR DETAILS

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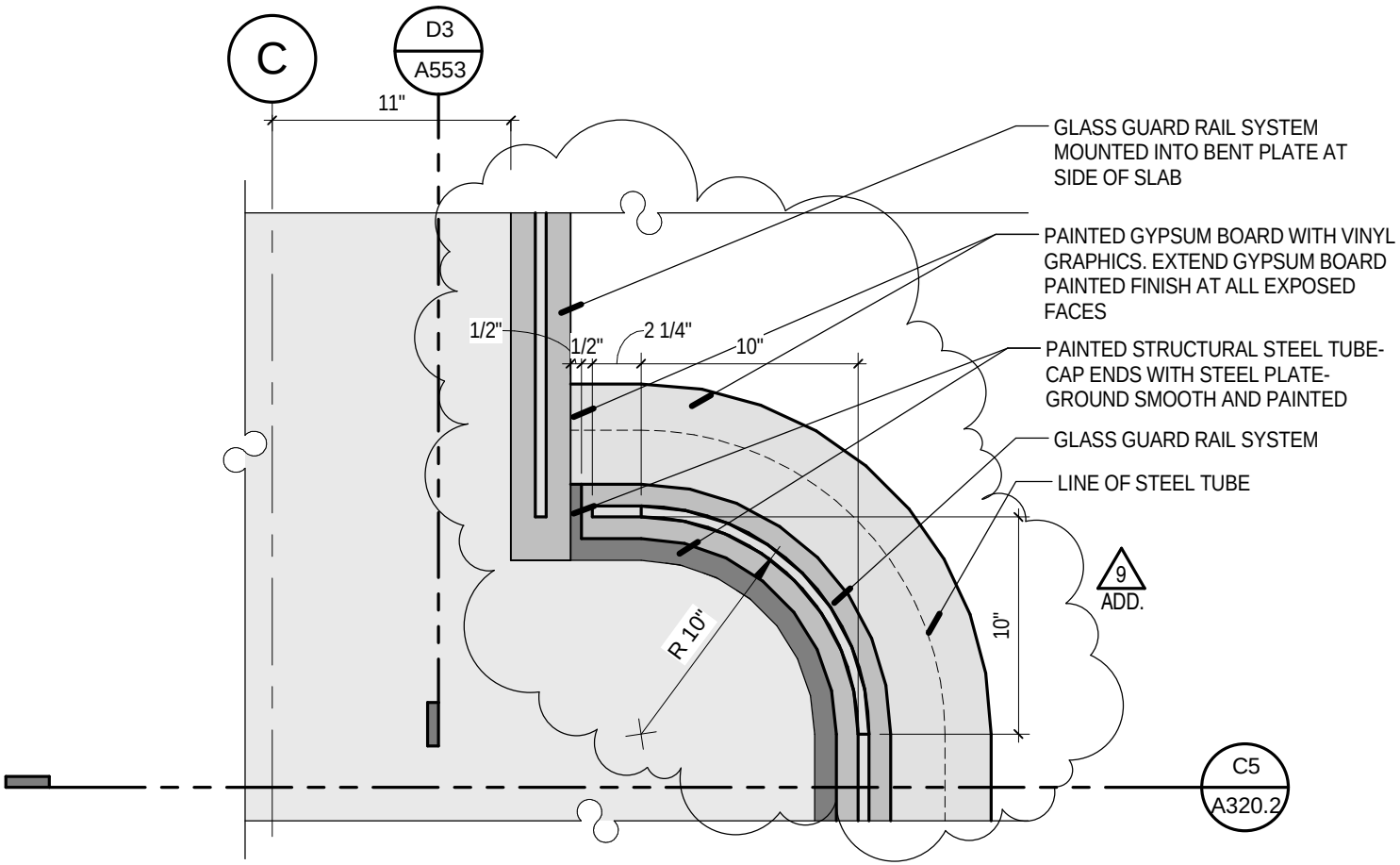

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DIXIE STATE COLLEGE OF UTAH

Addendum #9
D3 Sheet A553

Project number	09625	
Date 01.10.11	Issue Date	
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SECTION 03 3000

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

B. **Section includes** cast-in-place concrete, formwork, reinforcement, and accessories.
1. **Cast-in-place** concrete used structurally including, but not limited to:
   a. Slabs on grade.
   b. Walls.
   c. Retaining walls both inside the building and site retaining walls.
   d. Suspended slabs.
   e. Exterior stairs and steps.
2. **Concrete fill** in stair treads.
3. **Formwork,** including form liners and related accessories.
4. **Reinforcement**.
   a. **Reinforcing** Bars.
   b. **Steel** Wire.
   c. **Welded Wire** Fabric.
5. **Integrally colored** concrete.
6. **Accessories**:
   a. Install **Water Stops provided by Division 7.**

C. Refer to **Part 3.3.C** of this Section for specified concrete finishes. **No grout cleaned or plastered finishes shall be permitted or accepted.**

D. **Related Sections** include the following:
1. **Division 1** Section "**Execution Requirements**" for requirements related to certification of under-slab construction prior to placing first level concrete slab.
2. **Division 1** Section "**Mock-Up Requirements**" for construction of freestanding building envelope mock-up.
3. **Division 7** Section "**Under Slab Waterproofing**".
4. **Division 9** Section "**Painting**" for sealer for interior integrally colored concrete.
5. **Division 11** Section "**Mobile Storage Shelving Units**" for recesses in floors to accommodate rail system.
6. **Division 14** Section **"Electric Traction Elevators"** for elevator pit(s). **Do not** form or place concrete for elevator pit(s) prior to the receipt of reviewed elevator submittals.
7. **Division 31** Section "**Aggregate Pier Ground Improvement**".
8. **Division 32** Section "**Cement Concrete Pavement**" for site concrete flatwork.

1.2 SUBMITTALS

A. **Product Data**: Submit data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, waterstops, joint systems, curing compounds, dry-shake finish materials, and others as requested by Architect.

B. **LEED Submittals**
1. **LEED Credits MR 4.1 and 4.2** - **Recycled Content**
   a. Indicate recycled content; indicate percentage of pre-consumer and

post-consumer recycled content per unit of product.

b. Indicate relative dollar value of recycled content product to total dollar value of product included in project.

c. If recycled content product is part of an assembly, indicate the percentage of recycled content product in the assembly by weight.

d. If recycled content product is part of an assembly, indicate relative dollar value of recycled content product to total dollar value of assembly.

2. **LEED Credits MR 5.1 and 5.2 - Local/Regional Materials**

a. Sourcing location(s): Indicate location of extraction, harvesting, and recovery; indicate distance between extraction, harvesting, and recovery and the project site.

b. Manufacturing location(s): Indicate location of manufacturing facility; indicate distance between manufacturing facility and the project site.

c. Product Value: Indicate dollar value of product containing local/regional materials; include materials cost only.

d. Product Component(s) Value: Where product components are sourced or manufactured in separate locations, provide location information for each component. Indicate the percentage by weight of each component per unit of product.

C. **Shop Drawings; Reinforcement**: Submit original shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, stirrup spacing, diagrams of bent bars, arrangement of concrete reinforcement. Include special reinforcement required for openings through concrete structures.

D. **Architect's review** is for general architectural applications and features only. Design of formwork for structural stability and efficiency is Contractor's responsibility.

E. **Samples**: Submit samples of materials as requested by Architect, including names, sources, and descriptions.

F. **Laboratory Test Reports**: Submit laboratory test reports for concrete materials and mix design test.

G. **Materials Certificates**: Provide materials certificates in lieu of materials laboratory test reports when permitted by Architect. Materials certificates shall be signed by manufacturer and Contractor, certifying that each material item complies with, or exceeds, specified requirements. Provide certification from admixture manufacturers that chloride content complies with specification requirements.

1.3 QUALITY ASSURANCE

A. **Codes and Standards**: Comply with provisions of following codes, specifications, and standards, except where more stringent requirements are shown or specified:

1. ACI 301 "Specifications for Structural Concrete for Buildings".
2. ACI 318 "Building Code Requirements for Reinforced Concrete", **Sections 4.3 and 4.5 for "severe" sulfate** exposure.
3. Concrete Reinforcing Steel Institute (CRSI), "Manual of Standard Practice".
4. ACI 347-04 "Guide to Formwork for Concrete". **Exposed-to-view concrete shall conform to Class A, 1/8 inch max. irregularities.**

B. **Testing Agency**: Owner will employ and pay a qualified independent testing agency to perform field quality-control testing services specified in Part 3 of this section. Retesting of materials failing to meet specified requirements shall be done at Contractor's expense.

C. **Curled Slabs**: Contractor to protect interior concrete floor (especially in summer conditions) to prevent curling. Curing time shall be accounted for in the Contractor's CPM scheduling.

1.4 MOCK-UP - EXPOSED FINISH CONCRETE:

A. **At location selected by the Architect**, prepare vertical mockup 4 by 4 feet (1.2 by 1.2 m) for review and approval.

B. **Construct mockup** using processes and techniques intended for use on permanent work, including curing procedures. Include samples of control, construction, and expansion joints in mockup panels. Demonstrate patching and repair procedures for spalled concrete, repair of corners, and voids caused by honeycombing or bugholes. Incorporate any formwork accessories and minimum of one vertical and one horizontal form liner joint.

C. **Place concrete** using comparably skilled and experienced workers to those who will actually be performing the work for the Project.

D. **Obtain written approval** of the mockup from Architect before start of work.

E. **Retain approved mockup** through completion of the work for use as a quality standard for finished work.

F. **Approved mockup shall be retained as a model for exposed architectural concrete.** Properly dispose of mock-up when concrete work is completed.

1.5 MOCK-UP - BUILDING ENVELOPE

A. **Footings, foundation wall, concrete slab and composite floor slab systems** shall be included in free-standing building envelope mock-up as shown on Drawings.

B. All concrete work in envelope mock-up shall be performed by comparably skilled and experienced workers to those who will actually be performing the work for the Project

C. Place concrete in accordance with specifications, including all standard accessories and materials. Work shall be complete with sub-base and waterproofing membrane, approved concrete mix, integral reinforcement, and expansion joint material at edge. Concrete thickness and dimensions as noted on Drawings. Surface finish on slabs: troweled; other surfaces shall be as-cast.

D. Concrete components shall be removed and replaced with new if visual observation or testing demonstrates failure to conform to testing requirements or design intent.

E. Approved mockup shall be retained intact and without damage throughout the construction process. Remove and dispose of properly off Owner's property and in accordance with the Waste Management Plan at Substantial Completion or when so directed by Architect.

1.6 MOCK-UP - INTEGRALLY COLORED CONCRETE:

A. **At location selected by the Architect**, prepare horizontal mockup 4 by 4 feet (1.2 by 1.2 m) (or other size, such as stair tread, when directed by Architect) for review and approval.

B. **Construct mockup** using processes and techniques intended for use on permanent work, including colors, curing procedures and surface textures. Include samples of control,

construction, and expansion joints in mockup panels.

C. **Mockup shall be placed** and sealed by the individual workers who will actually be performing the work for the Project.

D. **Obtain written approval** of the mockup from Architect before start of work.

E. **Retain approved mockup** through completion of the work for use as a quality standard for finished work.

F. **Approved mockup may become part of the completed Work** if undisturbed at time of Substantial Completion.

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

H. **Delivery, Storage and Handling:**
   1. **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.
   2. **Store materials** to comply with manufacturer's written instructions to prevent deterioration from moisture or other detrimental effects.
   3. **Dispense** special concrete finish material from factory numbered and sealed containers. Maintain record of container numbers

1.7 PRE-INSTALLATION CONFERENCE

A. Conduct conference at project site to comply with requirements in Division 1 Section "Project Management and Coordination".

1.8 PROJECT CONDITIONS

A. **Protection of Concrete Against Freezing**: Cover completed work with sufficient temporary or permanent cover as required to protect fresh concrete against possibility of freezing; maintain cover for time period as necessary.

B. **Surface Protection**: Protect adjacent finish materials against spatter during concrete placement.

1.9 PROJECT CONDITIONS FOR SPECIAL CONCRETE FLOOR FINISHES

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

B. **Protection**: **NO SATISFACTORY CHEMICAL OR CLEANING PROCEDURE IS AVAILABLE** to remove petroleum stains from the concrete surface. **PREVENTION IS THEREFORE ESSENTIAL.**
   1. **All hydraulic powered equipment must be diapered** to avoid staining of the concrete.
   2. **No trade will park vehicles on areas of integrally colored concrete**. If necessary to complete their scope of work, drop cloths will be placed under vehicles at all times.
   3. **No pipe cutting machine** will be used on the inside floor slab.

4. **Steel will not be placed on interior slab** to avoid rust staining.
5. **Vehicle tires shall be covered** to prevent rubber marks or other blemishes to permanent, exposed concrete surfaces.

C. **Application of hardening/sealing agent** shall take place 10 days prior to installation of equipment and substantial completion, thus providing a complete, uninhibited concrete slab for application.

D. **Concrete must be cured a minimum of 45 days** or as directed by the manufacturer before application of hardening/sealing agent can begin.
1. **Application of hardening/sealing agent** shall take place 10 days prior to installation of equipment and substantial completion, thus providing a complete, uninhibited concrete slab for application.

1.10 WARRANTY ON SPECIAL CONCRETE FLOOR FINISHES

A. **Sealer/Hardener**: Manufacturer's and Certified Applicator's Joint Agreement for **Twenty (20) year material warranty** and **Five (5)** year **labor warranty**.

1.11 ALLOWANCES

A. Contractor shall include a unit cost of $2,400.00 per ton for the purchase, detailing, fabrication, and erection of (3) three tons of concrete reinforcing steel, beyond that which is required by the contract documents. Cost to include general contractor's mark up.

B. Contractor shall include a unit cost of $250.00 per cubic yard in place for 20 cubic yards of concrete beyond that which is required by the contract documents. Cost to include all associated formwork as required. Cost to include general contractor's mark up.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. **Available Products**: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

B. **Air Entraining Admixture -** ASTM C 260, certified by manufacturer to be compatible with other required admixtures:
1. "**MB-VR** or **MB-AE**"; Master Builders.
2. "**Darex AEA**" or "**Daravair**"; W.R. Grace.

C. **Water Reducing Admixture -** ASTM C 494, Type A, and containing not more than 0.1 percent chloride ions:
1. "**WRDA Hycol**"; W.R. Grace.
2. "**Eucon WR-75**"; Euclid Chemical Co.
3. "**Pozzolith Normal**"; Master Builders.
4. "**Plastocrete 160**"; Sika Chemical Corp.

D. **Super Plasticizer -** ASTM C 494, Type F or Type G and containing not more than 0.1 percent chloride ions:
1. "**WRDA 19**" or "**Daracem**"; W.R. Grace.
2. "**Sikament**"; Sika Chemical Corp.
3. "**Eucon 37**"; Euclid Chemical Co.

4. "**Rheobuild**"; Master Builders.

E. **Water Reducing Non Chloride Accelerator -** ASTM C 494, Type E, and containing not more than 0.1 percent chloride ions:
1. "**Accelguard 80**"; Euclid Chemical Co.
2. "**Pozzolith High Early**"; Master Builders.

F. **Water Reducing Non Chloride Retarder -** ASTM C 494, Type D, and containing not more than 0.1 percent chloride ions:
1. "**Edoco 20006**"; Edoco Technical Products.
2. "**Pozzolith Retarder**"; Master Builders.
3. "**Eucon Retarder 75**"; Euclid Chemical Co.
4. "**Daratard**"; W.R. Grace.

G. **Waterstops**
1. To be provided by under slab waterproofing contractor and installed by this section.

H. **Non-Metallic Grout**:
1. "**Set Grout**"; Master Builders.
2. "**Duragrout**"; L & M Const. Chemical Co.
3. "**Five Star Grout**"; U.S. Grout Corp.
4. "**Non Shrink GP Grout**" US Spec.

I. **Liquid Curing Compound**:
1. **Interior**:
   a. **"L & M Cure R**" or "**L & M Cure DR**"; L & M Construction Chemicals, Inc.
   b. "**Kurez VOX**" or "**Kurez DR**"; The Euclid Chemical Co.
   c. "**1100 Clear**" or "**3100 Clear**"; W. R. Meadows.
   d. "**Maxcure Resin**" clear, US Spec.
2. **Exterior**:
   a. "**L & M Cure R-2**"; L & M Construction Chemicals, Inc.
   b. "**1200 White**"; W. R. Meadows.
   c. "**Maxicure Resin**" white, US Spec.

J. **Bonding Compound**:
1. **Polyvinyl Acetate** (Interior Only):
   a. "**Euco Weld**"; Euclid Chemical Co.
   b. "**Weldcrete**"; Larsen Products Corp.
   c. "**Everweld**"; L & M Construction Chemicals, Inc.
   d. "**Bondcoat**", US Spec.
2. **Acrylic or Styrene Butadiene**:
   a. "**Everbond**"; L & M Construction Chemicals.
   b. **"Acryl Set**"; Master Builders.
   c. "**Acryl 60**"; Thoro.
   d. "**Daraweld C**"; W.R. Grace Construction Products Division.
   e. "**Acrylcoat**" or "Multicoat", US Spec.

K. **Epoxy Adhesive**:
1. "**Thiopoxy**"; W.R. Grace.
2. "**Epoxtite**"; A.C. Horn, Inc.
3. "**Sikadur Hi-Mod**"; Sika Chemical Corp.
4. **"Euco Epoxy 452 or 620"**; Euclid Chemical Co.
5. "**Patch and Bond Epoxy**"; The Burke Co.
6. "**Maxibond 2500**", US Spec.
7. Hilti **Hit RE 500**.

8. Simpson **Set-XP**.

L. **Evaporation Control**:
1. "**E-Con**"; L & M Construction Chemicals, Inc.
2. "**Monofilm ER**", US Spec.

M. **Leveling and Topping Compound**:
1. **'Ardex SD-T'** self-drying, self-leveling concrete topping
   a. **Primer**: **'Ardex EP 2000** subsatrate preparation epoxy.
   b. **Color**: The color will be white or gray depending on how white or gray reacts with the concrete stain material. The color will be selected by the Architect.
   c. **Design Mix**: As recommended by the manufacturer's written instrauctions.
2. '**Flow-top HD**' ,US Spec
   a. **Primer**: 'Maxi-bond 2500'

2.2 INTEGRALLY COLORED CONCRETE

A. **Color Pigment**: **ASTM C 979**, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black non-fading, and resistant to lime and other alkalis.

B. **Available Manufacturers**: Subject to compliance with requirements, manufacturers include, but are not limited to, the following:
1. **Bayferrox** by **Lanxess** a division of Bayer Corporation.
2. **Davis** Colors.
3. **Scofield**, L. M. Company.
4. **Solomon** liquid coloring system.

C. **Color** as selected by Architect from manufacturer's full range and mixing ratios.

2.3 MATERIALS

A. **Forms**:
1. **Forms for Exposed Finish Concrete**: Plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings. Design of formwork for structural stability and sufficiency.
2. **Form Liners:** Smooth face plastic (thermoformed rigid polymer alloy or urethane elastomer)
   a. Basis of Design Product: Greenstreak No. 340; www.greenstreak.com
3. **Forms for Unexposed Finish Concrete**: Plywood, lumber, metal, or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.
4. **Form Coatings**: Provide commercial formulation form-coating compounds that will not bond with, stain, nor adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces. Coatings shall be as recommended by the form manufacturer.
5. **Form Ties**: Factory-fabricated, adjustable-length, removable or snapoff metal form ties, designed to prevent form deflection and to prevent spalling concrete upon removal. Provide units which will leave no metal closer than 1-1/2" to surface.
   a. **Provide ties** which, when removed, will leave holes **not larger than 1" diameter** in concrete surface.

B. **Reinforcing Materials**:

1. **Recycled Content**: Minimum 10 percent post-consumer recycled content, or minimum 40 percent pre-consumer recycled content at Contractor's option
2. **Reinforcing Bars:** See General Structural Notes on Drawings.
3. **Supports for Reinforcement**: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI specifications.
   a. **For slabs-on-grade**, use supports with sand plates or horizontal runners where base material will not support chair legs.
   b. **For exposed-to-view** concrete surfaces, where legs of supports are in contact with forms, provide supports with legs which are plastic protected (CRSI, Class 1) or stainless steel protected (CRSI, Class 2).
4. **Weldable Reinforcing Bars**: ASTM A 706

C. **Concrete**:

1. **Portland Cement:** See General Structural Notes on Drawings.
   a. **Use one brand of cement** throughout project,unless otherwise acceptable to Architect.
   b. **Fly Ash:** See General Structural Notes on Drawings.
      1) **Recycled Content**: **Maximum 25 percent** pre-consumer recycled content at Contractor's option.
   c. **Aggregate**: Recycled porcelain, concrete, stone, or other recycled content material conforming to requirements of mix design.
      1) **Recycled Content**: Minimum 5 percent post-consumer recycled content, or minimum 20 percent pre-consumer recycled content at Contractor's option.
   d. **Normal Weight Aggregates**: ASTM C 33, and as herein specified. Provide aggregates from a single source for exposed concrete.
      1) **For exterior exposed** surfaces, do not use fine or coarse aggregates containing spalling-causing deleterious substances.
      2) **Fine Aggregates** shall comply with the following gradations:

Sieve	Percent passing
3/8"	100
No. 4	95 to 100
No. 16	50 to 85
No. 50	10 to 30
No. 100	2 to 10

      3) **Course Aggregates** shall comply with the following gradations:

Sieve	Percent passing
1-1/2"	100
3/4"	90 to 100
3/8"	25 to 55
No. 4	0 to 10
No. 8	0 to 5
No. 200	Not to exceed 1.75 percent by weight in the combined course and fine aggregate.

      4) **Gradation limits**: Maximum aggregate size shall not exceed the following requirements.
         (a) 1/5 narrowest dimension between forms.
         (b) 1/3 of depth of slabs.
         (c) 3/4 of minimum clear spacing between reinforcing bars.
   e. **Water**: Drinkable.

D. **Admixtures**:

1. **Prohibited Admixtures**: Calcium chloride thyocyanates or admixtures containing more than 0.1 percent chloride ions are not permitted.

E. **Accessories**:

1. **Reglets**: Where resilient or elastomeric sheet flashing or bituminous membranes are terminated in reglets, provide reglets of not less than 26 gage galvanized sheet steel. Fill reglet or cover face opening to prevent intrusion of concrete or debris.
2. **Joint Filler:** Nonextruding, resilient asphalt impregnated fiberboard or felt, complying with ASTM D 1751, 1/2 inch (13 mm) thick and 4 inches (200 mm) deep.
   a. Acceptable Products: Fibre Expansion Joint manufactured by W. R. Meadows or equal.
   b. Verify sizes with Drawings.
3. **Non-Shrink Grout**: Grout shall be prepackaged, non-metallic, non-gaseous. It shall conform to ASTM C 1107 Grade B or C at a fluid, flow cone, consistency. Fluid grout shall attain 6500 psi compressive strength in 28 days.
4. **Absorptive Cover**: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. per sq. yd., complying with AASHTO M 182, Class 2.
5. **Moisture-Retaining Cover**: One of the following, complying with ASTM C 171.
   a. **Waterproof** paper.
   b. **Polyethylene** film.
   c. **Polyethylene-coated** burlap.
6. **Liquid Membrane-Forming Curing Compound**: Liquid type membrane-forming curing compound complying with ASTM C 309, Type 1 or 1D Class B for interior and ASTM C 309 Type 2 Class A for exterior.
7. **Bonding Compound**: Polyvinyl Acetate (interior only) shall conform to ASTM C 1059 Type 1. Acrylic or styrene butadiene shall conform to ASTM C 1059 Type II.
8. **Epoxy Adhesive**: ASTM C 881, two component material suitable for use on dry or damp surfaces. Provide material "Type", "Grade", and "Class" to suit project requirements.
9. **Evaporation Control:** Monomolecular film designed to reduce rapid moisture loss during placement, float and finish operation.
10. **Stair Nosings (Exterior Stairs):** Equal to **Model #3311** as manufactured by American Safety Tread Company; www.americansafetytread.com.
    a. **Base:** Heat treated extruded aluminum alloy 6063-T6.
    b. **Abrasive Filler:** Mixture of aluminum oxide and silicon carbide granules in an epoxy matrix locked into the extruded channels of the base; abrasive ribs shall project a minimum of 1/16 inch above the extruded channels.
    c. Nosings shall terminate not more than 3" from ends of steps.
    d. **Color:** As selected by Architect.
11.

2.4 MIXES

A. **Proportioning and Design of Mixes**:

1. **Prepare design mixes for each type** and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. If trial batch method used, use an independent testing facility acceptable to Architect for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing.
2. **Submit written reports to Architect and Structural Engineer** of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed by Architect.

B. Design mixes to provide normal weight concrete with a W/C ratio as indicated on the Structural Drawings.

C. **Concrete in Contact with Earth:** Mixes shall be adjusted per ACI 318 Sections 4.3 and 4.5 for "severe" sulfate exposure.

D. **Suspended Slabs**: Proportion structural concrete mixture as follows:
   1. **Minimum Compressive Strength**: As indicated at 28 days.
   2. **Calculated Equilibrium Unit Weight**: As indicated, plus or minus 3 lb/cu. ft. (48.1 kg/cu. m) as determined by ASTM C 567.
   3. **Slump Limit**: As indicated on **Structural Drawings**.
   4. **Air Content**: Do **not** allow air content of troweled finished floors to **exceed 3 percent** or as indicated on **Structural Drawings.**

E. **Adjustment to Concrete Mixes**: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; at no additional cost to Owner and as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect before using in work.

F. **Admixtures**:
   1. **Use water-reducing admixture** or high range water-reducing admixture (super plasticizer) in concrete as required for placement and workability.
   2. **Use non-chloride accelerating admixture** in concrete slabs placed at ambient temperatures below 50 deg F (10 deg C).
   3. **Use high-range water-reducing admixture** in pumped concrete, concrete for industrial slabs, architectural concrete, parking structure slabs, concrete required to be watertight, and concrete with water/cement ratios below 0.50.
   4. **Use air-entraining admixture** in exterior exposed concrete, unless otherwise indicated. Add air-entraining admixture at **manufacturer's prescribed rate** to result in concrete at point of placement having total air content **as indicated on the structural drawings.**
      a. **Other Concrete** (not exposed to freezing, thawing, or hydraulic pressure): **2 percent to 4 percent** air.
   5. **Use admixtures for water-reducing and set-control** in strict compliance with manufacturer's directions.
   6. **Integral Color:** Add in proportion necessary to provide color as selected by Architect. Mix in accordance with pigment manufacturer's written instructions.
   7. **Water-Cement Ratio:** See General Structural Notes on Drawings.
   8. **Slump Limits:** See General Structural Notes on Drawings.

G. **Concrete Mixing**:
   1. **Job-Site Mixing**: Mix materials for concrete in appropriate drum type batch machine mixer. For mixers of one cu. yd., or smaller capacity, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released. For mixers of capacity larger than one cu. yd., increase minimum 1-1/2 minutes of mixing time by 15 seconds for each additional cu. yd., or fraction thereof.
      a. **Provide batch ticket for each batch** discharged and used in work, indicating project identification name and number, date, mix type, mix time, quantity, and amount of water introduced.
   2. **Ready-Mix Concrete**: Comply with requirements of ASTM C 94, and as herein specified.
   3. **During hot weather**, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C 94 may be required.

PART 3 - EXECUTION

3.1 GENERAL

A. **Coordinate** the installation of **joint materials** and **under slab waterproofing membrane** with

placement of forms and reinforcing steel. Protect the waterproofing membrane, **do not cover the waterproofing** until permited by the Archictect and Building Inspector.

B. **Preparation**:
1. Before placing grade level concrete slab, verify that all under-slab systems and components are in place and that "Certification of Completion of Under-Slab Construction" has been executed.
2. Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast-in. Notify other crafts to permit installation of their work; cooperate with other trades in setting such work. Moisten wood forms immediately before placing concrete where form coatings are not used.

C. **Installation Tolerances**:
1. **Slabs**: Minimum Flatness **FF of 30** and Minimum Levelness **FL of 25**.
2. **Slabs to Receive Special Finish**: Minimum Flatness **FF of 50** and Minimum Levelness **FL of 35**.
3. **Coordinate levelness** of slabs at recessed rails for mobile storage system with mobile storage manufacturer. Slabs shall be poured to exacting tolerances, as required.
4. **Walls**: Comply with ACI requirements for horizontal, vertical, and story-to-story tolerances.

3.2 ERECTION

A. **Forms**: Design, erect, support, brace, and maintain formwork to support vertical and lateral, static, and dynamic loads that might be applied until such loads can be supported by concrete structure. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork construction tolerances complying with **ACI 347**.
1. **Design formwork** to be readily removable without impact, shock, or damage to cast-in-place concrete surfaces and adjacent materials.
2. Use plastic form liners, or comparable smooth surface form for all exposed vertical concrete surfaces. **Surface of as-cast concrete shall be the permanent, final finish.**
3. **Construct forms** to sizes, shapes, lines, and dimensions shown, and to obtain accurate alignment, location, grades, level and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, blocking, screeds, bulkheads, anchorages and inserts, and other features required in work. Use selected materials to obtain required finishes. Solidly butt joints and provide back-up at joints to prevent leakage of cement paste.
4. **Fabricate forms for easy removal** without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, to prevent swelling and for easy removal.
5. **Provide temporary openings** where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Securely brace temporary openings and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings on forms at inconspicuous locations.
6. **Tightly form vertical corners** to produce uniform, sharp, 90 degree corners (**no chamfering**) with smooth, straight lines.
7. **Neatly and evenly** c**hamfer exposed horizontal** edges as indicated, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints. Verify locations on Drawings.
8. **Provisions for Other Trades**: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings,

recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.

9. **Cleaning and Tightening**: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before concrete is placed. Retightening forms and bracing after concrete placement is required to eliminate mortar leaks and maintain proper alignment.
10. **Preparation of Form Surfaces**:
    a. **Thoroughly clean re-used forms** of concrete matrix residue, repair and patch as required to return forms to acceptable surface condition. Forms and form liners shall not be reused if not in "like-new" condition (free of concrete residue, markings, scratches, divots, or other flaws that will telegraph into formed concrete or otherwise negatively impact the aesthetics of the concrete finish).
    b. **Coat contact surfaces** of forms with a form-coating compound before reinforcement is placed.
    c. **Thin form-coating compounds** only with thinning agent of type, amount, and under conditions of form-coating compound manufacturer's directions. Do not allow excess form-coating material to accumulate in forms or to come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.

3.3 INSTALLATION

A. **Reinforcement**: Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars", for details and methods of reinforcement placement and supports, and as herein specified.

1. **Avoiding cutting or puncturing vapor barrier** during reinforcement placement and concreting operations. Engage original under-slab waterproofing contractor to make any repairs. Concrete contractor is responsible for all costs of repair.
2. **Clean reinforcement** of loose rust and mill scale, earth, ice, and other materials which reduce or destroy bond with concrete.
3. **Accurately position**, support, and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.
4. **Place reinforcement** to obtain at least minimum coverages for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.
5. **Install welded wire fabric** in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps in either direction.
6. Where new slabs adjoin existing, **install dowels** by drilling and epoxy anchoring #5 x 24 inch long bars at 12 inches on center into existing. Bars shall project 12 inches from existing slab. Grease or otherwise treat projecting dowel to prevent bonding with new concrete.

B. **Concrete Placement**:

1. **Apply temporary protective covering** to lower 2' of finished walls adjacent to poured floor slabs and similar conditions, and guard against spattering during placement.
2. **General**: Comply with ACI 304 "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete", and as herein specified.
3. **Exterior Stairs:** Form and pour with neat, clean edges.
4. **Deposit concrete continuously** or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete as nearly as practicable to

its final location to avoid segregation.

5. **Placing Concrete in Forms**: Deposit concrete in forms in horizontal layers not deeper than 24" and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
6. **Consolidate placed concrete** by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI 309.
   a. **Do not use vibrators** to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate placed layer and at least 6" into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.
   b. **Do not vibrate** forms or reinforcing steel.
   c. Use only skilled, experienced mechanics to place and consolidate concrete.
7. **Placing Concrete Slabs**: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed.
   a. **Consolidate concrete** during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.
   b. **Bring slab surfaces to correct level** with straightedge and strikeoff. Use bull floats or darbies to smooth surface, free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.
   c. **Maintain reinforcing in proper position** during concrete placement operations.
   d. Where indicated on Drawings, **provide recesses to accommodate rail system for mobile storage shelving system**. Coordinate depth and width of recesses with system manufacturer.
8. **Cold Weather Placing**: Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with ACI 306.1 and as herein specified.
   a. **When air temperature has fallen** to or is expected to fall below 40 deg F (4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperture of not less than 50 deg F (10 deg C), and not more than 80 deg F (27 deg C) at point of placement.
   b. **Do not use frozen materials** or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
   c. **Do not use calcium chloride**, salt, and other materials containing antifreeze agents or chemical accelerators, unless otherwise accepted in mix designs.
9. **Hot Weather Placing**: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.
   a. **Cool ingredients** before mixing to maintain concrete temperature at time of placement below 90 deg F (32 deg C). Mixing water may be chilled, or chopped ice may be used to control temperature provided water equivalent of ice is calculated to total amount of mixing water. Use of liquid nitrogen to cool concrete is Contractor's option.
   b. **Cover reinforcing steel** with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.
   c. **Fog spray forms**, reinforcing steel, and subgrade just before concrete is placed.

d. **Use water-reducing retarding admixture** (Type D) when required by high temperatures, low humidity, or other adverse placing conditions.

C. **Finish**:

1. **Rough Form Finish**: Formed concrete surfaces not exposed-to-view in the finish work or by other construction, unless otherwise indicated. This is the concrete surface having texture imparted by form facing material used, with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4" in height rubbed down or chipped off.
2. **Smooth-Formed Finish**: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams.
   a. **Final surface shall be as-cast** - no additional covering or rubbing shall be allowed. **Do not apply rubbed finish to smooth-formed finish.**
   b. Apply to concrete surfaces exposed to public view.
   c. Removal of fins and other projections, and repair and patch of tie holes and defective areas shall be in accordance with standard established by mock-up. Do not attempt repair work unless clearly in conformance with mock-up and approved by Architect.
3. **Related Unformed Surfaces**: At tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces, strike-off smooth and finish_ with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

D. **Slab Finishes**:

1. **Scratch Finish**: Apply scratch finish to monolithic slab surfaces that are to receive concrete floor topping or mortar setting beds for tile, portland cement terrazzo, and other bonded applied cementitious finish flooring material, and as otherwise indicated.
   a. **After placing slabs**, plane surface to tolerances for floor flatness (F) of 15 and floor levelness (F) of 13. Slope surfaces uniformly to drains where required. After leveling, roughen surface before final set, with stiff brushes, brooms, or rakes.
2. **Float Finish**: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as hereinafter specified, and slab surfaces which are to be covered with membrane or elastic waterproofing, membrane or elastic roofing, or sand-bed terrazzo, and as otherwise indicated.
   a. **After screeding, consolidating, and leveling concrete slabs**, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both, Consolidate surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units. Check and level surface plane to tolerances of F 18 - F 15. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.
3. **Trowel Finish**: Apply trowel finish to monolithic slab surfaces to be exposed-to-view, and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or other thin film finish coating system.
   a. **After floating**, begin first trowel finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and with surface leveled to tolerances of F 20 - F 17. Grind smooth surface defects which would telegraph through applied floor covering system.
4. **Trowel and Fine Broom Finish**: Where ceramic or quarry tile is to be installed with thin-set mortar or at exposed interior concrete treads, apply trowel finish as specified, then immediately follow with slightly scarifying surface by fine brooming.

5. **Non-Slip Broom Finish**: Apply non-slip broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
   a. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

E. **Joints**:
1. **Construction Joints**: Locate and install construction joints as indicated or, if not indicated, locate so as not to impair strength and appearance of the structure, as acceptable to Architect.
2. **Provide keyway**s at least 1-1/2" deep in construction joints in walls, slabs, and between walls and footings; accepted bulkheads designed for this purpose may be used for slabs.
3. **Place construction joints perpendicular to main reinforcement**. Continue reinforcement across construction joints, except as otherwise indicated.
4. **Waterstops**: Provide waterstops in construction joints as indicated. Install waterstops to form continuous diaphragm in each joint. Make provisions to support and protect exposed waterstops during progress of work. Fabricate field joints in waterstops in accordance with manufacturer's printed instructions.
5. **Isolation Joints in Slabs-on-Ground**: Construct isolation joints in slabs-on-ground at points of contact between slabs-on-ground and vertical surfaces, such as column pedestals, foundation walls, grade beams, and elsewhere as indicated.
6. **Contraction (Control) Joints in Slabs-on-Ground**: Construct contraction joints in slabs-on-ground to form panels of patterns as shown. Use saw cuts 1/8" x 1/4 slab depth or inserts 1/4" wide x 1/4 of slab depth, unless otherwise indicated. **Cut construction joints** in concrete **as soon as possible** after concrete can take the weight of cutting machine, in order to allow cracks to occur at the contraction joint.
   a. **Form contraction joints** by inserting premolded plastic, hardboard or fiberboard strip into fresh concrete until top surface of strip is flush with slab surface. Tool slab edges round on each side of insert. After concrete has cured, remove inserts and clean groove of loose debris.
   b. **Contraction joints in unexposed floor slabs** may be formed by saw cuts as soon as possible after slab finishing as may be safely done without dislodging aggregate.
7. **If joint pattern not shown**, provide joints not exceeding 15 feet in either direction and located to conform to bay spacing wherever possible (at column centerlines, half bays, third-bays).
8. **Embedded Items**:
   a. **Set and build into work anchorage devices** and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached thereto.
   b. **Install reglets** to receive top edge of foundation sheet waterproofing, and to receive thru-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, relieving angles, and other conditions.
   c. **Edge Forms and Screed Strips for Slabs**: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surface. Provide and secure units sufficiently strong to support types of screed strips by use of strike-off templates or accepted compacting type screeds.
9. **Stair Nosings:**
   a. Fully embed in concrete to provide total support for the stair nosing.
   b. Do not leave voids between the underside of the metal stair nosing and the substrate. Tamp down the stair nosing to totally seat it into the substrate and fully rest upon any riser return such as in pan-filled steps.
   c. Coordinate size of aggregate and other qualities of concrete (slump, etc.) to

assure proper seating of nosings.

10. **Grand Stair Treads:**
    a. Saw cut grooves in tread as shown on Drawings. Cuts shall be straight, neat, and sharp-edged, without chips or distortions.
    b. Fill grooves with epoxy matrix product comparable to epoxy terrazzo, blended with abrasive aggregate. Abrasive strips shall project no more than 1/16 inch above tread surface.
        1) Treat grooves with 100 percent solids primer as approved by epoxy resin manufacturer.
        2) Epoxy Resin:
            (a) Hardness (ASTM D2240): 60-85 per Shore D Durometer.
            (b) Tensile Strength (ASTM D638): 3,000 psi, min.
            (c) Compressive Strength (ASTM D695): 10,000 psi, min.
            (d) Chemical Resistance (D1308): No deleterious effects.
            (e) Bond Strength: (ACI No. 403 Bulletin No. 59-43): 100 percent failure min. with 300 psi min. tensile strength.
        3) Slip-Resistant Abrasive Aggregate: Aluminum oxide abrasive in crystalline form, chemically bonded and vitrified, uniformly graded, and light in color.
        4) Epoxy color: As selected by Architect.

F. **Miscellaneous Concrete**:
1. **Filling-In**: Fill-in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place, and cure concrete as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.
2. **Curbs**: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
3. **Equipment Bases and Foundations**: Provide machine and equipment bases and foundations, as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with certified diagrams or templates of manufacturer furnishing machines and equipment.
4. **Steel Pan Stairs**: Provide concrete fill for steel pan stair treads and landings and associated items. Cast-in safety inserts and accessories as shown on drawings. Screed, tamp, and finish concrete surfaces as scheduled.

3.4 INSTALLATION OF SEALED CONCRETE

A. **Examination**:
1. **Examine substrates**, with certified applicator (installer) present, for conditions affecting performance of SealerConcrete Finish. Correct conditions detrimental to timely and proper work. Do not proceed until unsatisfactory conditions are corrected.
2. **Do not begin installation** until substrates have been properly prepared and the floor surfaces are free of construction latents and foreign contaminants that will inhibit penetration of Sealer/Hardener and performance.
3. **If substrate preparation is the responsibility of another installer**, notify Owner's Representative of unsatisfactory preparation before proceeding.

B. **Surface Preparation**:
1. **General**:
    a. **Remove curing, sealing and coating agents**, oil, breaking compound residue, wax and grease by scraping off heavy deposits mechanically or chemically to assure penetration of product into surface. Remove mildew by scrubbing with solution of trisodium phosphate and bleach. Rinse with clean

water.

b. **Remove dust and loose material** by brushing, sweeping, vacuuming, and blowing with high pressure air.

c. **Remove paint residue** with solvent/stripper provided the stripper does not have an acidic pH.

d. **Remove tire marks** or any residue with compatible non-acidic degreaser or stripper as recommended by manufacturer. Mix proper dilution so that the chemical does not etch and open the pores of the concrete. Follow manufacturer's detailed instructions prior to mixing and removal.

e. **Power rinse entire floor surface** to thoroughly rinse and remove all soap residue or contaminants. Squeegee dry.

2. **Grind protrusions flush with surface**. Patch voids, holes and cracks with recommended Cementitious patching material compatible with Sealer Concrete Floor Finish.
3. **Ensure surfaces are clean**, dry, and free of oil, grease, dirt, dust, and all other contaminants.
4. **Protect surrounding and adjacent surfaces** in manner recommended by Sealer/Hardener Concrete Finish Manufacturer.

C. **Application of Concrete Sealer**:

1. **General**: Apply SealerConcrete Finish in strict accordance with Manufacturer's latest printed instructions. Utilize manufacturer's recommended equipment for installation. Use low pressure drum pump with high volume sprayer or pour from drums or pails to flood surface during first coat application. Pump up sprayer may be used for applying spiff coat following manufacturer's recommended procedures.
2. **Application**: Apply Sealer at a rate recommended by the manufacturer.
3. **Only Manufacturer's Certified Applicator** may apply Sealer Concrete Finish. Applicable procedures must be followed as recommended by the Manufacturer.
4. **Manufacturer's Certified Applicator** to install specified Sealer Concrete Finish in strict accordance with manufacturer's recommended procedures for each application as specified herein.
5. **Comply** with recommendations of product manufacturer for drying time between succeeding coats.
6. **Recoat sealed floors** where there is evidence of suction spots or unsealed areas in first coat, to ensure a finish coat free of other defects due to insufficient sealing or sheen. Apply additional Formula if required by Sealer Concrete Finish Manufacturer or Owner's Representative.
7. **Remove defective floor areas** visible and unacceptable to Sealer Manufacturer or Owner's Representative in accordance with SealerConcrete Finish as specified herein.
8. **Make edges of Sealer Finish** adjoining other materials clean and sharp.
9. **Achieve water repellent surface**, hardening, dustproofing, and abrasion resistance of concrete surfaces without changing the natural appearance of the concrete, except for the sheen.

D. **Field Quality Control**:

1. **Manufacturer's Field Services**: Manufacturer's representative must be available to provide technical assistance and guidance for surface preparation and application of Sealer Concrete Finish.
2. **Sealer Concrete Finish** shall be inspected and acceptable to the Architect or the Manufacturer of Sealer Concrete Finish. Any area that is found unacceptable shall be repaired by the Certified Applicator as deemed necessary.

E. **Workmanship and Cleaning**:

1. **The premises shall be kept clean** and free of debris at all times.
2. **Touch-up** and restore finish where damaged.

3. **Remove spilled,** splashed or splattered finish material from all surfaces, as required.
4. **Do not mar surface finish or item being cleaned**. Make necessary repairs to damaged surfaces caused by cleaning operation or installation of Sealer Concrete Finish.
5. **Remove debris from Jobsite**. Dispose of materials in separate, closed, sealed containers in accordance with local regulations.

F. **Protection**:
1. **Protect and Prohibit traffic** on Sealer Concrete Finished Work according to manufacturer's instructions and recommendations.
2. **Refer to Manufacturer** for materials used to cover and protect the flooring surfaces. Do not apply any tape to the floor as it will etch concrete surfaces.

3.5 CURING AND PROTECTION

A. **General**: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
1. **Start initial curing** as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 7 days.
2. **Begin final curing** procedures immediately following initial curing and before concrete has dried. Continue final curing for at least 7 days in accordance with ACI 301 procedures. Avoid rapid drying at end of final curing period.

B. **Curing Methods**: Perform curing of concrete by curing and sealing compound, by moist curing, by moisture-retaining cover curing, and by combinations thereof, as herein specified.
1. **Provide moisture curing** by following methods.
   a. **Keep concrete surface continuously wet** by covering with water.
   b. **Continuous water-fog** spray.
   c. **Covering concrete surface with specified absorptive cover,** thoroughly saturating cover with water and keeping continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4" lap over adjacent absorptive covers.
2. **Provide moisture-cover curing** as follows:
   a. **Cover concrete surfaces** with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3" and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
3. **Provide curing and sealing compound** to exposed interior slabs and to exterior slabs, walks, and curbs, as follows:
   a. **Apply specified curing and sealing compound** to concrete slabs as soon as final finishing operations are complete (within 2 hours). Apply uniformly in continuous operation by power-spray or roller in accordance with manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.
   b. **Do not use membrane curing compounds** on surfaces which are to be **covered with coating material** applied directly to concrete, liquid floor hardener, waterproofing, dampproofing, membrane roofing, flooring (such as ceramic or quarry tile, glue-down carpet), painting, and other coatings and finish materials, unless otherwise acceptable to Architect.
4. **Curing Formed Surfaces**: Cure formed concrete surfaces, including undersides of beams, supported slabs, and other similar surfaces by moist curing with forms in place for full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.
5. **Curing Unformed Surfaces**: Cure unformed surfaces, such as slabs, floor topping,

and other flat surfaces by application of appropriate curing method.

6. **Final cure** concrete surfaces to receive liquid floor hardener or finish flooring by use of moisture-retaining cover, unless otherwise directed.
7. **Sealer and Dustproofer**: Apply a second coat of specified curing and sealing compound only to surfaces given a first coat.

3.6 REMOVAL OF FORMS

A. **Formwork not supporting weight of concrete**, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operations, and provided curing and protection operations are maintained.

B. **Formwork supporting weight of concrete**, such as beam soffits, joists, slabs, and other structural elements, may not be removed in less than 14 days and until concrete has attained design minimum compressive strength at 28 days. Determine potential compressive strength of in-place concrete by testing field-cured specimens representative of concrete location or members.

C. **Form facing material** may be removed 4 days after placement, only if shores and other vertical supports have been arranged to permit removal of form facing material without loosening or disturbing shores and supports.

D. **Re-Use of Forms**:
1. **Clean and repair surfaces of forms** to be re-used in work. Split, frayed, delaminated, or otherwise damaged form facing material will not be acceptable for exposed surfaces. Apply new form coating compound as specified for new formwork.
2. **When forms are extended for successive concrete placement**, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use "patched" forms for exposed concrete surfaces, except as acceptable to Architect.

3.7 CONCRETE SURFACE REPAIRS

A. **Exposed concrete shall not be repaired without the express consent of the Architect.** Any repairs agreed to by the Architect must conform to established standards as determined by the mock up. Any repair failing to meet the standards of the mock up shall be removed and the damaged section of concrete completely replaced.

B. **Patching Defective Areas**: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to Architect.
1. **Cut out honeycomb**, rock pockets, voids over 1/4" in any dimension, and holes left by tie rods and bolts, down to solid concrete but, in no case to a depth of less than 1". Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with specified bonding agent. Place patching mortar after bonding compound has dried.
2. **For exposed-to-view surfaces**, blend white portland cement and standard portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.
3. **Repair of Formed Surfaces**: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb,

rock pockets; fins and other projections on surface; and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes, fill with dry pack mortar, or precast cement cone plugs secured in place with bonding agent.

4. **Repair concealed formed surfaces**, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.
5. **Repair of Unformed Surfaces**: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface plane to tolerances specified for each surface and finish. Correct low and high areas as herein specified. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness using a template having required slope.
6. **Repair finished unformed surfaces that contain defects** which affect durability of concrete. Surface defects, as such, include crazing, cracks in excess of 0.01" wide or which penetrate to reinforcement or completely through non-reinforced sections regardless of width, spalling, pop-outs, honeycomb, rock pockets, and other objectionable conditions.
7. **Correct high areas in unformed surfaces by grinding**, after concrete has cured at least 14 days.
8. **Correct low areas in unformed surfaces** during or immediately after completion of surface finishing operations by cutting out low areas and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. Proprietary patching compounds may be used when acceptable to Architect.

C. **Repair defective areas**, except random cracks and single holes not exceeding 1" diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least 3/4" clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding compound. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

1. **Repair isolated random cracks** and single holes not over 1" in diameter by dry-pack method. Groove top of cracks and cut-out holes to sound concrete and clean of dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Mix dry-pack, consisting of one part portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing. Place dry pack after bonding compound has dried. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for not less than 72 hours.

D. **Perform structural repairs** with prior approval of Architect or Structural Engineer for method and procedure, using specified epoxy adhesive and mortar.

3.8 FIELD QUALITY CONTROL

A. **Sampling and testing** for quality control during placement of concrete may include the following, as directed by Architect.

1. **Sampling Fresh Concrete**: ASTM C 172, except modified for slump to comply with ASTM C 94.
   a. **Slump**: As indicated on the Structural Drawings.
   b. **Air Content**: As indicated on the Structural Drawings.
   c. **Concrete Temperature**: Test hourly when air temperature is 40 deg F (4 deg C) and below, and when 80 deg F (27 deg C) and above; and each time a set of compression test specimens made.
2. **Compression Test Specimen**: ASTM C 31; one set of 5 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.

3. **Compressive Strength Tests**: ASTM C 39; one set for each day's pour exceeding 5 cu. yds. plus additional sets for each 50 cu. yds. over and above the first 25 cu. yds. of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days, and two specimens retained in reserve for later testing if required.
   a. **When frequency of testing** will provide less than 5 strength tests for a given class of concrete, conduct testing from at least 5 randomly selected batches or from each batch if fewer than 5 are used.
   b. **When total quantity** of a given class of concrete is less than 50 cu. yds., strength test may be waived by Architect if, in his judgement, adequate evidence of satisfactory strength is provided.
   c. **When strength of field-cured cylinders** is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
   d. **Strength level of concrete** will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength, and no individual strength test result falls below specified compressive strength by more than 500 psi.

B. **Test results will be reported in writing to Architect**, Structural Engineer and Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength and type of break for both 7-day tests and 28-day tests.

C. **Nondestructive Testing**: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.

D. **Additional Tests**: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Architect. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed. Contractor shall pay for such tests when unacceptable concrete is verified.

END OF SECTION

SECTION 07 1353

UNDER SLAB WATERPROOFING - SELF ADHERED

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. Waterproofing system including a **blindside installation** under the **building slab** and **utility tunnel** with the membrane **wrapping to the walls and cap of the tunnel**. Install a protection board prior to backfilling. The waterproofing system is to be provided from a single source manufacturer and installer. **Waterstop is to be provided by this section and installed by Division 3**.
2. **Related Sections** include the following:
   a. **Division 0**: Subsurface and Geotechnical Investigations
   b. **Division 3** Section "**Cast-in-Place Concrete**" for waterstop installation.
   c. **Division 7** Section "Joint Sealants" for joint-sealant materials and installation.
   d. **Division 22**: Pipe Penetrations
   e. **Division 26**: Conduit and other Electrical Penetrations
   f. **Division 31**: Earthwork, Excavation and Fill, Shoring
   g. **Division 33**: Foundation Drainage

B. **Special Considerations:**

1. **Installation of products of this type will differ from details shown on Drawings.** Contractors providing products of this section shall include in their bids any costs associated with additional measures required to allow products to function properly and in accordance with the warranty requirements. Possible alternative methods of installation include but are not limited to:
   a. **Installation of a 2 inch mud slab** below the grade slab to adhere the waterproofing. The interstice between the mud slab and the grade slab would be used for underground piping and conduit.
   b. **Placing the waterproofing membrane directly beneath the grade slab**, around footings and directly on the foundation walls. Direct placement of the membrane will require sealing all slab and foundation penetrations as part of the membrane installation and warranty.
2. **Product must be suitable for "severe" sulfate exposure** (see Section 00 3132 "Geotechnical Data" for information on soil conditions).
3. **Products must be capable of installation below the water table** without voiding or modifying the warranty requirements.

1.3 SUBMITTALS

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

B. **Shop Drawings:** Show locations and extent of waterproofing. Include details for substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with

adjoining waterproofing, and other termination conditions.

1. Details shall reflect the modifications to the Construction Document drawings required to accommodate the product and provide the warranty.

C. **Product Test Reports:** Based on evaluation of comprehensive tests performed by a qualified testing agency, for waterproofing.

D. **Material Certificates:** Submit certificate(s) signed by manufacturer certifying materials comply with specified performance characteristics and physical requirements. Submit certification that waterproofing system and components, drainage and protection materials are supplied by a single-source manufacturer.

E. **Contractor Certificate:** At time of bid, submit written certification that installer has current Approved Applicator status with waterproofing material manufacturer.

F. **Waterproofing Material and Labor Warranty:** At time of bid, submit a sample copy of the Manufacturer's Waterproofing warranty complete with all coverages, limitations, and conditions.

1.4 QUALITY ASSURANCE

A. **Installer Qualifications**: Installing Company must have at least three (3) years experience in work of the type required by this section, who can comply with manufacturer's warranty requirements, and who is an Approved Applicator as determined by waterproofing/drainage system manufacturer.

B. **Manufacturer Qualifications**: Waterproofing membranes and all accessory products shall be provided by a single manufacturer with a minimum of 25 years experience in the direct production and sales of waterproofing systems. Manufacturer shall be capable of providing field service representation during construction, approving an acceptable installer, and recommending appropriate installation methods.

C. **Pre-Installation Conference**: A pre-installation conference shall be held at least two weeks prior to commencement of field installation to establish procedures to maintain required working conditions and to coordinate this work with related and adjacent work. Verify that final waterproofing and waterstop details comply with waterproofing manufacturer's current installation requirements and recommendations. Review forecasted weather conditions, testing and inspection procedures, and protection and repairs. Meeting attendees should include representatives for the Owner, Architect, Inspection Firm, General Contractor, Waterproofing Contractor, Concrete Contractor, Excavating/backfill Contractor, and Mechanical and Electrical Contractors if work penetrates the waterproofing.

D. **Materials**: Obtain waterproofing membrane with accessory products and prefabricated drainage materials from a single manufacturer to assure material compatibility.

E. **Independent Inspection**: Owner shall make all arrangements and payments for an independent inspection service to monitor waterproofing material installation compliance with the project contract documents and manufacturer's published literature and site specific details. Independent Inspection Firm shall be an approved company participating with the waterproofing manufacturer's Certified Inspection Program. Inspection service shall produce reports and digital photographs documenting each inspection. Reports shall be made available in a timely manner to the Contractor, waterproofing installer, waterproofing material manufacturer, and Architect. Inspections should include substrate examination, beginning of waterproofing installation, periodic intervals, and final inspection prior to concrete or backfill

placement against the waterproofing.

1.5 DELIVERY, STORAGE, AND HANDLING

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

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

C. Remove and replace liquid materials that cannot be applied within their stated shelf life. Remove from site and replace with new any damaged material; dispose of in accordance with applicable regulations.

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

E. Protect stored materials from direct sunlight.

1.6 PROJECT CONDITIONS

A. Substrate Condition: Proceed with work only when substrate construction and preparation work is complete and in condition to receive waterproofing system. All plumbing, electrical, mechanical and structural items to be under or passing through the waterproofing shall be positively secured in their proper positions prior to waterproofing system installation. Substrate preparation shall be per waterproofing manufacturer’s guidelines.

1. Weather Conditions: Perform work only when existing and forecasted weather conditions are within the guidelines established by the manufacturer of the waterproofing materials. Do not apply waterproofing materials in areas of standing or active water; or over ice and snow. The General Contractor shall maintain site conditions to remove standing water from precipitation or ground water seepage in a timely manner.

1.7 WARRANTY

A. **Waterproofing Material and Labor Warranty**: Upon installation completion and manufacturer acceptance of the work required by this section, the waterproofing materials manufacturer will provide to the project Owner, a written **ten (10) year** non-prorated warranty, covering both materials and labor. Issuance of Manufacturer's Waterproofing Warranty requires the following:

1. Waterproofing System products provided by a single manufacturer;
2. Installation of waterproofing products by Manufacturer's Approved Applicator in full accordance with manufacturer’s quality assurance program requirements;
3. Installation inspected by an approved and trained Independent Inspection Firm participating with the waterproofing manufacturer’s Certified Inspection Program;
4. In Division 3 work, waterstop must be installed in all applicable concrete cold pour construction joints, including around applicable penetrations.
   a. Manufacturer's warranty shall be independent from any other warranties made by the Contractor under requirements of the Contract Documents and may run concurrent with the other warranties.
5. **System shall be fully warranted both for applications against concrete foundations and for placement below engineered fill.**

PART 2 - PRODUCTS

2.1 ADHESIVE-COATED SHEET WATERPROOFING

A. **Available Products:** Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
   1. **Grace**, W. R. & Co.; **Preprufe 300R**.
   2. **Carlisle** Coatings & Waterproofing Inc; **CCW-MiraPLY – H**
   3. **Polyguard Products**; **Underseal Underslab** Membrane

B. **Adhesive-Coated Sheet for Horizontal Applications:** 55-mil- thick, uniform, flexible sheets consisting of 30-mil- (0.76-mm-) thick, sheet coated with a pressure-sensitive rubber adhesive, a protective adhesive coating, a detackifying surface treatment, an uncoated self-adhering side lap strip, and a release liner with the following physical properties:
   1. Tensile Strength, Film: 1600 psi minimum; ASTM D 412.
   2. Low-Temperature Flexibility: Pass at minus 10 deg F (minus 23 deg C); ASTM D 1970.
   3. Peel Adhesion to Concrete: 5 lbf/in. (875 N/m); ASTM D 903, modified.
   4. Lap Adhesion: 2.5 lbf/in. (440 N/m); ASTM D 1876, modified.
   5. Hydrostatic-Head Resistance: 231 feet (70 m); ASTM D 5385, modified.
   6. Vapor Permeance: 0.01 perms (0.6 ng/Pa x s x sq. m); ASTM E 96, Water Method.
   7. Water Absorption: 0.5 percent; ASTM D 570.

OR

2.2 APC WATERPROOF MEMBRANE

A. **Available Products:** Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
   1. Colloid Environmental Technologies Company (**CETCO**), **Ultraseal SP** Membrane.
   2. **Carlisle** CCW, **Miraclay.**
   3. APC Waterproofing Membranes for Horizontal Applications: 200-mil (4.7 mm) thick composite membrane consisting of an active-polymer core (APC) encapsulated by a geomembrane liner and a geotextile with the following physical properties:
      a. Grab Tensile Strength: 300 lbs., ASTM D 4632
      b. Low Temperature Flexibility: Unaffected at -25°F (-32°C), ASTM D 1970
      c. Peel Adhesion to Concrete: 10 lbs. /in., ASTM D 903 mod
      d. Hydrostatic -Head Resistance: 231 feet (70 m); ASTM D 5385, modified.
      e. Permeability: <1 x 10-11 cm/sec, ASTM D 5084

2.3 AUXILIARY MATERIALS

A. **General**: Furnish auxiliary materials recommended by waterproofing manufacturer for intended use and compatible with sheet waterproofing.
   1. Furnish liquid-type auxiliary materials that comply with VOC limits of authorities having jurisdiction.
   2. **Primer:** Liquid primer recommended for substrate by manufacturer of sheet waterproofing material.
   3. **Surface Conditioner:** Liquid, waterborne surface conditioner recommended for substrate by manufacturer of sheet waterproofing material.
   4. **Liquid Membrane:** Elastomeric, two-component liquid, cold fluid applied, trowel grade or low viscosity.

5. **Substrate Patching Membrane:** Low-viscosity, two-component, asphalt-modified coating.
6. **Sheet Strips:** Self-adhering, rubberized-asphalt sheet strips of same material and thickness as sheet waterproofing.
7. **Mastic, Adhesives, and Tape:** Liquid mastic and adhesives, and adhesive tapes recommended by waterproofing manufacturer.
   a. Detail Tape: Two-sided, pressure-sensitive, self-adhering reinforced tape, 4-1/2 inches (114 mm) wide, with a tack-free protective adhesive coating on one side and release film on self-adhering side.
8. **Metal Termination Bars:** Aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm) thick, predrilled at 9-inch (229-mm) centers.
9. **Drainage Course** (3-dimensional dimpled core and geotextile fabric):
   a. Equal to **Carlisle CCW-MiraDrain 9800**
   b. **Product:** Suitable for both vertical and horizontal application.
   c. **Characteristics:**
      1) Compressive Strength: 18,000 psf
      2) Core Thickness: 0.40 in
      3) Maximum Flow Rate: 17.5 gpm/ft
      4) Geotextile Fabric: non-woven
      5) Performance Index: 31,325
   d. Install complete with **connection to building perimeter drainage system**.
10. **Protection Course:** ASTM D 6506, semirigid sheets of fiberglass or mineral-reinforced-asphaltic core, pressure laminated between two asphalt-saturated fibrous liners and as follows:
    a. Thickness: 1/8 inch (3 mm), nominal, for vertical applications; 1/4 inch (6 mm), nominal, elsewhere.
    b. Adhesive: Rubber-based solvent type recommended by waterproofing manufacturer for type of protection course.
11. **Waterstop**
    a. **Basis of Design Product: RX 101T** by CETCO; sodium bentonite/butyl rubber 1-1/4 inch x 1/2 inch trapazoidal waterstop with reinforcing plastic scrim in the top surface.
    b. **Hydraulic Head Resistance:** 231 ft., min.
    c. Secure to concrete with manufacturer's recommended adhesive.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer and Owner's Independent Inspector present, for compliance with requirements and other conditions affecting performance. General substrate conditions acceptable for the waterproofing installation are listed below. For conditions not covered in this Section, contact the waterproofing manufacturer for guidance.

B. **COMPACTED SOIL OR GRAVEL SUB-GRADE:** Sub-grade shall be compacted to a minimum Modified Proctor compaction of 85% or greater as specified by civil/geotechnical engineer. The finished sub-grade surface shall be well-leveled, uniform, free of debris and standing water or ice. Aggregate sub-grades shall consist of ¾" (19 mm) stone or smaller and rolled flat, free from any protruding sharp edges. If substrate consists of large aggregate, place a high-strength geotextile layer over the aggregate and then provide several inches of compacted soil or sand for uniform support and containment of waterproofing sheets. Specific sub-grade preparation shall be approved by the project's civil or geotechnical engineer.

C. **MECHANICAL OR OTHER PENETRATIONS:** Mechanical, structural, or architectural materials that will pass through the plane of the waterproofing membrane shall be properly

installed and secured in their final position prior to installation of the waterproofing system.

D. Lay one of the two specified membranes as listed below.

E. **POURED IN PLACE CONCRETE WALLS AND ROOF:**
1. Verify that concrete has cured and aged for minimum time period recommended by waterproofing manufacturer.
2. Verify that concrete is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
3. Verify that compacted subgrade is dry, smooth, and sound; and ready to receive adhesive-coated E sheet.
4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

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

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

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

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

E. Prepare, fill, prime, and treat joints and cracks in substrates. Remove dust and dirt from joints and cracks according to ASTM D 4258.
1. Install sheet strips and center over treated construction and contraction joints and cracks exceeding a width of 1/16 inch (1.6 mm).

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

G. Corners: Prepare, prime, and treat inside and outside corners according to ASTM D 6135.
1. Install membrane strips centered over vertical inside corners. Install 3/4-inch (19-mm) fillets of liquid membrane on horizontal inside corners and as follows:
   a. At footing-to-wall intersections, extend liquid membrane each direction from corner or install membrane strip centered over corner.
   b. At plaza deck-to-wall intersections, extend liquid membrane or sheet strips onto deck waterproofing and to finished height of sheet flashing.

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

3.3 GENERAL INSTALLATION GUIDELINES

A. Lay out work to minimize traffic over installed areas. Membrane is slippery when wet or covered with frost, snow or ice. Take proper precautions and heed all manufacturers' warnings in regard to product use.

B. Where applicable, daily production schedules shall be limited to only that which can be made watertight at the end of the day or prior to inclement weather, including all flashing and night seals.

C. **Inside and Outside Corners**: Install applicable universal corner piece welded per approved manufacturer's detail for specific project condition(s).

D. **Penetrations**: For all pipe, rebar, structural and other penetrations install waterproofing system per approved manufacturer's detail for specific project condition(s).
   1. **Contractor's Option**: Provide 2 inch thick mud slab to create an interstitial space so that waterproofing system is below the grade slab.

E. Where applicable, continue waterproofing and tie into below-grade foundation wall waterproofing utilizing approved manufacturer's details. For all standard conditions not covered herein, refer to applicable manufacturer's detail. For all unique job specific conditions, contact manufacturer for applicable detail. Any deviation from pre-approved details requires written authorization from manufacturer prior to application to avoid any warranty disqualification.

F. Inspect finished installation and repair any damaged material prior to subsequent topping material(s) placement per project specifications and design.

G. **Waterstop provided by this specification and installed under Division 3**: Volclay Waterstop-RX shall be installed in all slab joints, around applicable slab penetrations and structural members. Refer to Waterstop-RX Product Manual for further installation procedures and guidelines.

3.4 ADHESIVE-COATED SHEET WATERPROOFING APPLICATION

A. Install adhesive-coated sheets according to manufacturer's written instructions.

B. Horizontal Applications: Install adhesive-coated sheet as directed by manufacturer. Accurately align sheets and maintain uniform minimum lap widths and end laps as directed by manufacturer. Overlap and seal seams. Overlap, stagger, and seal end laps with detail tape to ensure watertight installation.

C. When slab is poured in sections, extend the sheet a minimum of 12 inches beyond the slab edge to enable proper overlapping.

D. Corners: Seal lapped terminations and cut edges of sheet waterproofing at inside and outside corners with detail tape.

E. Seal penetrations through sheet waterproofing to provide watertight seal with detail tape patches or wraps and a liquid-membrane troweling.

F. Install sheet waterproofing and auxiliary materials to produce a continuous watertight tie into adjacent waterproofing.

G. Repair tears, voids, and lapped seams in waterproofing not complying with requirements. Tape perimeter of damaged or nonconforming area extending 6 inches (150 mm) beyond repaired areas in all directions. Apply a patch of sheet waterproofing and firmly secure with detail tape.

H. Inspect finished installation and correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings prior to concrete slab placement.

3.5 APC WATERPROOF MEMBRANE APPLICATION

A. Install APC waterproof membrane according to manufacturer's written instructions.

B. Horizontal Applications: Place waterproof membrane directly on properly prepared substrate (poly side down) with adjoining edges overlapped a minimum of 4” (100 mm). Stagger sheet end seams a minimum of 24” (60 cm). Mechanically fasten or staple 12” (300 mm) on center to prevent movement from construction operations or concrete placement.
   1. When slab is poured in sections, extend the sheet a minimum of 12 inches beyond the slab edge to enable proper overlapping.
   2. Inspect finished installation and correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings prior to concrete slab placement.

3.6 MONITOR BACKFILL INSTALLATION

A. Coordinate with Division 31 backfill operation work to avoid damage to the drainage and waterproofing system. Division 31 backfill Work should follow generally accepted practices for backfilling and compaction. Control moisture in backfill material to avoid excessive expansion or depletion of the APC layer of the membrane. The initial 6” (150 mm) of backfilled soils should be compacted to a minimum 85% Modified Proctor density. **No large stones shall be allowed against the waterproofing system.** The balance of the backfill placed per project civil engineering requirements.

B. Promptly notify all applicable parties in writing concerned of any items that might adversely affect the long-term performance of the waterproofing.

3.7 FIELD QUALITY CONTROL

A. Engage a full-time site representative qualified by waterproofing membrane manufacturer to inspect substrate conditions; surface preparation; membrane application, flashings, protection, and drainage components; and to furnish daily reports to Architect.

B. Flood Testing: Flood test each roof area for leaks, according to recommendations in ASTM D 5957, after completing waterproofing but before overlying construction is placed. Install temporary containment assemblies, plug or dam drains, and flood with potable water.
   1. Flood to an average depth of 2-1/2 inches (64 mm) with a minimum depth of 1 inch (25 mm) and not exceeding a depth of 4 inches (100 mm). Maintain 2 inches (51 mm) of clearance from top of sheet flashings.
   2. Flood each area for 48 hours.
   3. After flood testing, repair leaks, repeat flood tests, and make further repairs until waterproofing installation is watertight.

C. Owner will engage an independent testing agency to observe flood testing and examine underside of decks and terminations for evidence of leaks during flood testing.

3.8 PROTECTION AND CLEANING

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

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

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

END OF SECTION

Colvin Engineering Associates, Inc.
HIGH PERFORMANCE DESIGN

MECHANICAL ADDENDUM NO. 9

Dixie State College Holland Centennial Commons

CEA PROJECT NO. 2010-004.00

January 10, 2011

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

Item No.	Add, Delete or Clarify	Specification Section or Drawing No.	Reference / Description:
9.1	Clarify	230529 2.4 C	Butterfly Valve has been updated. Refer to attached specification. (This specification was omitted from mechanical addendum 8 - item 8.4)
9.2	Clarify	230529 3.19	Clarify that ASME authorized inspector is only required for testing the high temperature hot water piping. See attached specification.
9.3	Clarify	224440 3.3 K	Clarify installation requirements of emergency showers. See attached specification.
9.4	Clarify	PL601	Change T-1 Faucet to a wall mounted faucet with vacuum breaker, ¾" hose thread outlet, ½" cold and hot water supply (Chicago 540-LD897SWXFCP, or equal).
9.5	Clarify	MH104	Revise diffuser layout. See ADD9.01.
9.6	Add	PL402	Provide hot water to T-1 faucet. See ADD 9.02.
9.7	Clarify	MH602	Clarify air device schedule. See ADD 9.03.

PRODUCT SUBSTITUTIONS / PRIOR APPROVALS

Item No.	Specification Section	Product Type	Alternate Manufacturers
9.8	224440 2.1	Emergency Showers	Haws – Western - Speakman - Water Saver Co. - Chicago Faucet - Encon - Bradley - Guardian
9.9	224440 2.1	Faucets	American Standard
9.10	224440 2.1	Toilet Seats	American Standard
9.11	224440 2.1	Drinking Fountain, Remote water chiller	Acorn
9.12	2224450 2.2	Water Heater	Riverside Hydronics

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

9.13	232113 2.15	Expansion Tanks	Elbi

The above named alternate equipment manufacturers stand approved in name only. Approval here in no way relieves the supplier from complying with all other engineering, weight spatial, and quality requirements of equipment indicated in the contract documents. Contractors using products from the above named alternate manufacturers shall refer to Specification Section 230500 for detailed contractor responsibilities related to the use of alternate brands not used as the Basis of Design.

END OF ADDENDUM NO. 9

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

4. Iron Body Globe Valves (MSS SP-85):

a. 200 WOG.
b. Construction: Iron Body, Flanged.
c. Sizes 2-1/2 through 12 inches.
d. Disc: Number 6 replaceable composition, suitable for service at 200°F.
e. Schedule:

Plan Code:	GL.V.	C.V.
Make:	Nibco	Nibco
Model:	F-718-B	T-359
Straight Flanged:	F-718B	F-918Y
Angle Threaded:	T-818B	
Angle Threaded:	F-818B	----

5. Butterfly Valves:

a. *Schedule; standard 150 psi with 150 psi ANSI companion flanges for use where system pressures cannot exceed 200 psig shut off (static) pressure.*

Plan Code:	*BFV*
Style:	*Semi-lug wafer body*
Pressure Rating ANSI Class:	*150 minimum*
Body:	*Cast Iron*
Disc:	*Aluminum Bronze*
Stem:	*316 Stainless 18-8 Stainless 17-4 PH Stainless*
Seat:	*EPDM (-40 deg.F to 250 deg.F)*
Actuator:	*2" thru 5" Infinite position lever with memory stop. 6" thru 24" Self-locking worm gear with adjustable limit stops, and position indicator. Provide chain wheel and chain where indicated by contract documents.*
Make:	*Keystone*
Size:	*2"-12" 14"-20" 24-36*
Model:	*228 122 AR1*

b. Schedule: High performance 300 psi with 300 psi ANSI companion flanges for use where system pressures are more than 200 psig but cannot exceed 700 psig shut-off (static) pressure.

Plan Code:	*BFV*
Style:	*Lug*

Pressure Rating ANSI Class:	*300 minimum*
Body:	*Carbon steel ASTM A-216*
Disc:	*316 stainless steel ASTM A-216*
Stem:	*Stainless steel ASTM A564 Type 630 (17-4PH)*
Seat:	*Virgin TFE*
Actuator:	*3" and 4": Rachet handle with lock. 6 and over: Worm gear with lock.*
Make:	*Flowseal (Mark Controls Corp.)*
Size:	*3" and 4" 6" and over*
Model:	*XX-3L-121TTH-L XX-3L-121TTH-2*

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6. Iron Body Swing Check Valves (MSS SP-71 Type 1):

   a. Service: 200 WOG.
   b. Construction: Iron body flanged, bronze trim.
   c. Sizes 2-1/2 through 12 inches.
   d. Schedule:

Plan Code:	C.V.	
Valve Type:	Swing	
Make:	Nibco	Crane
Model:	F-918-B	373

7. Standard Iron Body Valves - 250 SWP/500 CWP.

   a. Gate, globe and check.
   b. Sizes 2 through 12 inches.
   c. Schedule:

Plan Code:	G.V.	OS&Y	GL.V.	C.V.	N.S.C.V.
Valve Type:	Gate	Gate	Globe	Swing	Non Slam
Make:	Nibco	Nibco	Nibco	Nibco	Crane
Straight Threaded:	T-669	T-667-0	--	--	--
Straight Flanged:	F-669	F-667-0	F-768B	F-968B	223
Angle Threaded:	--	--	--	--	--
Angle Flanged:	--	--	F-868B	--	--

8. UL and FM Approved Valves.

D. Welding:

1. Electric metallic arc process shall be used on all welding. End preparations shall conform to ANSI and ASTM Standards.
2. Use only one Welder for each joint.
3. Weld slip-on flanges on both front and back sides.
4. Thermometer wells and test wells shall be back welded.

E. Piping Tests:

1. Prior notification of at least 10 days will be required for an intent to perform hydrostatic testing. The Contractor's notice shall be reviewed and approved by the Project Manager prior to commencement of the required testing.
2. Piping tests shall be performed in accordance with the ANSI Code for Pressure Piping.
3. Piping tests shall be completed prior to painting, insulating, or covering the pipe.
4. The Contractor shall provide an allowance in his bid for the Owner to retain the services of an ASME Authorized Inspector *(for high temperature hot water piping only)*. The Inspectors duties will include on-site verification of all piping tests from commencement to test completion. The Inspector will provide written certification of completed tests. Three copies of the certification report for each test will be submitted to the Project Manager for approval.
5. At option of the contract, welds not hydrostatically tested may be x-ray tested. Each test shall comply with the requirements of industry standards, prior notification, and bid allowance Inspector as specified above.

H. Water service piping connections to existing mains and branch mains shall include saddle taps and service valves. Service valves are to be located at the connection and fully accessible via curb boxes. The service valve shall be submitted for approval before installation.

END OF SECTION 23 0529

G. Fixture Supplies and Stops:

1. Provide fixture supplies and stops on every individual fixture or appliance.
2. Stops shall be chrome-plated ¼ turn ball valves with stainless steel braided flex tube.
3. All components, stops, risers, drain pipes, inlet pipe and escutcheon shall be chrome plated brass.
4. Supplies and stops shall be anchored rigidly behind walls, eliminating push or pull movement.

H. Escutcheon Plates:

1. Provide cast brass chrome plated single piece escutcheons for all penetrations of piping thru walls, floors, or ceilings in finished and unfinished areas.

I. Faucets and Flushometers:

1. Faucets and flushometers shall be anchored rigidly behind walls, eliminating any push or pull movement.

J. Caulking:

1. All wall and floor mounted fixtures shall be caulked with a non-hardening white or fixture color match for colored fixtures adhesive elastomeric sealant compound providing a watertight seal at the joint with the walls or floor.

K. *Safety Equipment:*

1. *Emergency Showers*

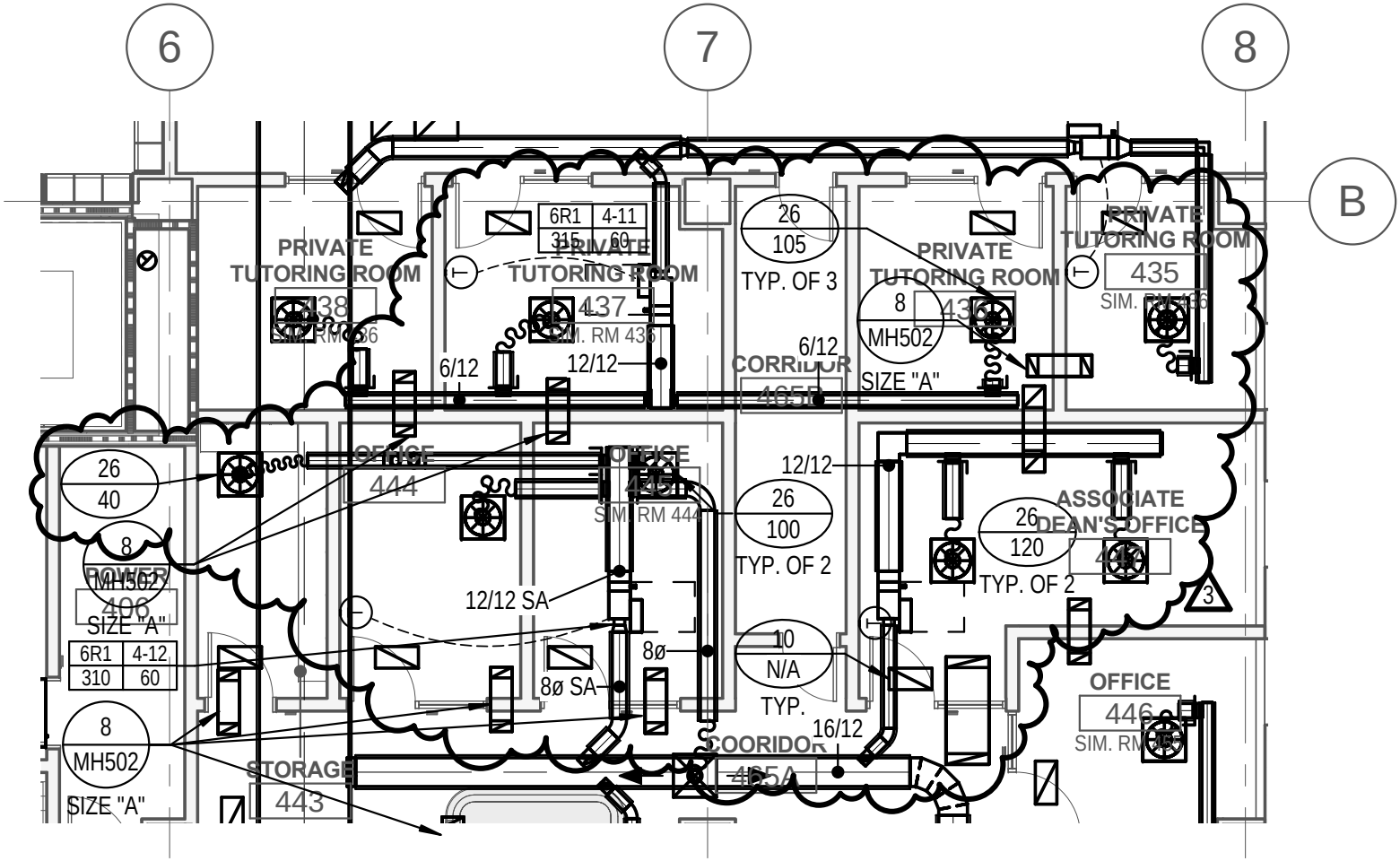
a. *All exposed piping in laboratory areas shall be chrome plated pipes without scarring.*
b. *Furnish 14" x 3-1/2" aluminum identification sign designed for wall mounting for each shower. Signs shall read: EMERGENCY SHOWER.*
c. *Handle pull shall activate the shower and air alarm horn, alerting fellow workers to accident.*
d. *Install emergency showers in accordance with manufacturers installation instructions.*
e. *Furnish one emergency shower test bag with handle for Owner's use and Engineer's use.*

3.4 ELECTRICAL COORDINATION

A. Coordination of electrical service for all electric water coolers, garbage disposal units and whirlpool tubs will be the responsibility of the Division 15 contractor in accordance with Section 15050.

3.5 FIXTURE CONNECTIONS

A. Provide supply and waste connections for fixtures in accordance with the following table of minimum sizes or larger as required by jurisdictional codes, or drawings.



PROJECT:
HOLLAND CENTENNIAL COMMONS

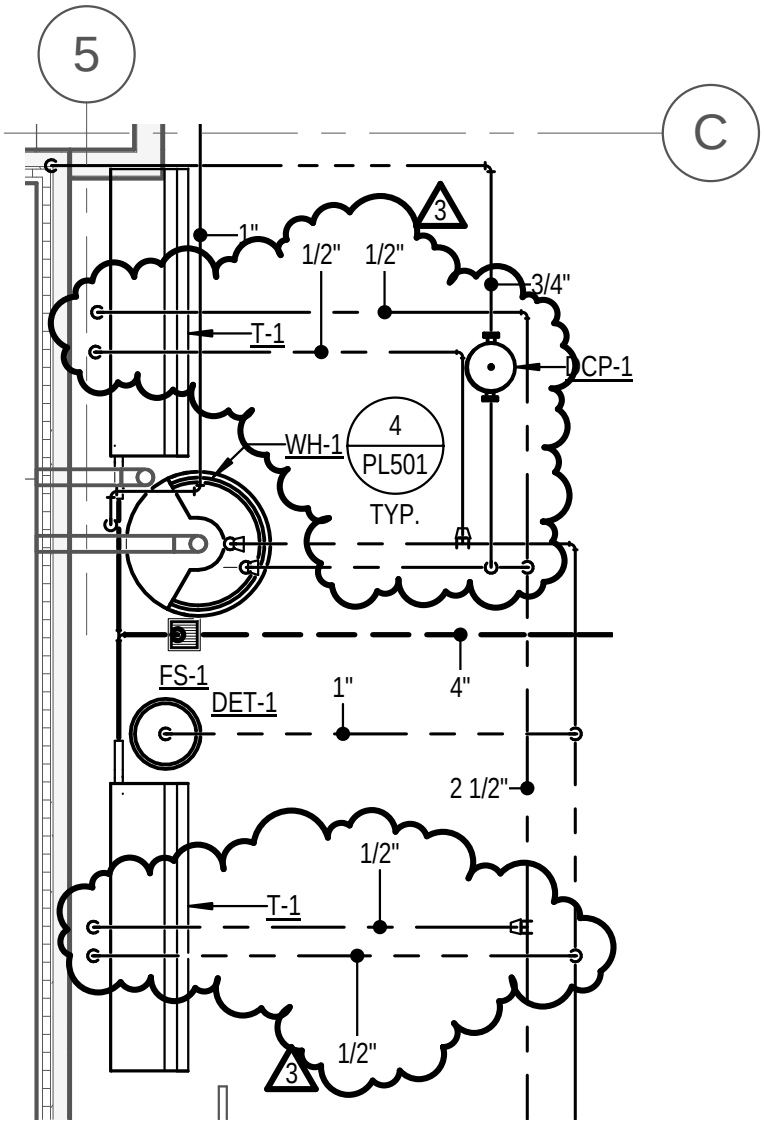
ORIGINAL SHEET NO:
MH104

Sheet Title:
MECHANICAL ADDENDUM #9
MECHANICAL CLARIFICATION

Colvin Engineering Associates, Inc.
244 West, 300 North, Suite 200 / Salt Lake City, Utah 84103-1108
(801) 322-2400 / Fax (801) 322-2416

DATE: 01/07/11
BY: Author
SCALE: 1/8" = 1'-0"
JOB NO: 2010-004.00
ARCH REF:

ADD 9.01



PROJECT: HOLLAND CENTENNIAL COMMONS	Sheet Title: MECHANICAL ADDENDUM #9 PLUMBING CLARIFICATION	DATE: 01/10/11	ARCH REF:
		BY: Author	
ORIGINAL SHEET NO: PL402	Colvin Engineering Associates, Inc. 244 West, 300 North, Suite 200 / Salt Lake City, Utah 84103-1108 (801) 322-2400 / Fax (801) 322-2416	SCALE: 1/4" = 1'-0"	ADD 9.02
		JOB NO: 2010-004.00	

AIR DEVICE SCHEDULE

PLAN CODE	TYPE & DUTY	FACE SIZE	NECK SIZE	CEILING TYPE (2)	MAX. CFM	MAX. T.P. (IN. W.C.)	N.C. LEVEL MAX	MIN. THROW (FT) (T50)	4-WA' MIN. THF (T50)
52	DRUM LOUVER	-	18" X 6"	SURFACE	405	.13 (3)	21	30	-
54	LINEAR-SUPPLY	60"L	8"ø (3)	DUCT	240	0.12	22	22	-

SCHEDULE

PLAN CODE — GRILLE CFM

MIN. THROW (FT) (T50)	4-WAY MIN. THROW (T50)	2-WAY MIN. THROW (T50)	MANUFACTURER & MODEL NO.	REMARKS
30	-	-	TITUS US-DL	-
22	-	-	TITUS FL-15	1 @ 1.5" SLOT, PROVIDE WITH 60" INSULATED PLENUM , HIGH THROW

Project: HOLLAND CENTENNIAL COMMONS

Original Sheet No: MH602

Sheet Title: MECHANICAL ADDENDUM #9 SCHEDULE CLARIFICATION

Colvin Engineering Associates, Inc.
244 West, 300 North, Suite 200 / Salt Lake City, Utah 84103-1108
(801) 322-2400 / Fax (801) 322-2416

Date: 01/10/11

By: A. WOZNIAK

Scale: NONE

Job No: 2010-004.00

ARCH REF:

ADD 9.03

ELECTRICAL ADDENDEUM

DSC Holland Centennial Commons January 10, 2011
Addendum #9

ELECTRICAL – DIV 26

GENERAL

Clarifications:

1. Voice/data cabling is provided by Utah State Department of Technology Services. Division 26 contractor is responsible for voice/data rough-in.
2. Audio/visual systems cabling and equipment will be provided and installed as part of this project under a future bid package. Division 26 contractor is responsible for audio/visual rough-in.
3. Aluminum conductors are not approved on this project as noted in the specifications.
4. Type MC Cable is not approved for fire alarm system low voltage wiring as noted in the specifications.
5. As noted in Addendum #5, ladder racks in Data Center 598 are provided and installed by the Division 26 contractor. Ladder racks in Data Rooms 104, 114, 204, 214, 254M, 264M, 304, 372, 404, 414, 504 and 514 are provided and installed by Utah State Department of Technology Services.
6. Emergency lighting is powered by the emergency generator. The only light fixtures that will receive emergency battery pack, type E, are the fixtures in the tunnel; type EV-1 (quantity 5).
7. The contact for Honeywell fire alarm systems for this project is Darryl Wiggins (435)817-5090 Darryl.wiggins@honeywell.com.

Unit Price Bid Form

1. The Electrical Unit Price Bid Form is attached to this addendum and shall be completed by the apparent low bidder prior to being awarded the contract. The unit prices given shall be guaranteed for the duration of the project, and is the same for adds or deducts.

Allowances

1. Allowances: Include the following allowances in the bid. Allowances prices shall include all materials and labor for complete installation and operation, and shall be valid for the duration of the project:

    a. Exit Signs (E9-1): 20 each, including 100' of typical branch conduit and wiring.
    b. Smoke Detectors: 20 each, including 50' of typical fire alarm conduit and wiring.
    c. Evacuation Speaker/Strobe Lights: 20 each, including 50' of typical fire alarm conduit and wiring.
    d. Connections to Miscellaneous 120V/20A Equipment: 20 each, including 100' of typical branch conduit and wiring.

SPECIFICATIONS

Section 275117 Overhead Paging

1. Delete this section from the specifications.

DRAWINGS

Sheet EP 104:

1. Refer to attached full size sheet EP104 for changes described below.

2. Rooms 435, 436, 437, 438, 443, 444, 445 and 447 have been reconfigured for the new corridor.
3. Add a second PT4 poke-thru in Student Lab 470.
4. Add a second PT4 poke-thru in Children's Literature Classroom 471.
5. Add a second PT4 poke-thru in Classrooms 475, 476 and 477.
6. The copier receptacle and circuit added in addendum #5 has been relocated to the north wall of Collaborative Study 492.

Sheet EP106

1. Add (2) voice data outlets, one near the "ATC" near grids D and 7, and the other near the "ATC" on AH-2 near grids C.8 and 6.

Sheet EP604:

1. Add general sheet note #4: "Equipment racks referred to on this sheet include telecommunications and audio visual system racks. Refer to EJ and ET series sheets for rack locations."

Sheet EL101:

1. Refer to attached full size sheet EL101 for changes described below.
2. Relay override wall station identifier text for WS-1A, WS-1B, WS-1C and WS-1D has been turned on.
3. Text identifiers for photo-responsive occupancy sensors have been turned on. All enclosed spaces with an exterior window shall have photo-responsive occupancy sensors.
4. Add one OJ-1 type fixture near exterior door exiting Stair 108.
5. Fixtures in Conference 162 are type G-14d.
6. Add 3-way switch Work Room 163 and change the other switch in that room to 3-way.
7. Add 3-way switch identifier to switch at east door of Electrical 117.
8. Add 4-way switch identifier to switch in Mechanical 116 at door to Electrical 117.
9. Add sheet keynote #6 text: "Fixtures mounted between wood ceiling slats. Provide support from structure above.
10. Add sheet keynote #6 at LED-1 fixtures between grids C and F and grids 5 and 6.

Sheet EL102

1. Refer to attached full size sheet EL102 for changes described below.
2. Relay override wall station identifier text for WS-2A near grids B-5 and E.5-2 has been turned on.
3. Text identifiers for photo-responsive occupancy sensors have been turned on. All enclosed spaces with an exterior window shall have photo-responsive occupancy sensors.
4. Add sheet keynote #4 text: "Fixtures mounted between wood ceiling slats. Provide support from structure above.
5. Add sheet keynote #4 at LED-1 fixtures between grids A.7 and B.5 and grids 4 and 5.
6. Fixtures in Storage 247A are type GS-3.
7. The unidentified fixture in Storage 248A is type UC-10.
8. The lighting layout and fixture types in Café 247 have been updated.
9. Occupancy sensors in offices 225 and 226 are not the photo-responsive type.

Sheet EL102M:

1. Refer to attached full size sheet EL102M for changes described below.
2. Relay override wall stations WS-2MA have been added near grids B-5 and E.5-2.
3. Text identifiers for photo-responsive occupancy sensors have been turned on. All enclosed spaces with an exterior window shall have photo-responsive occupancy sensors.
4. Fixture type identifier text has been turned on for fixtures between grids B and H and grids 1.5 and 6.5.
5. Add an occupancy sensor in Custodian 259M.
6. Add an E9-1 exit sign near grids B.6 and 1.5.

Sheet EL103:

1. Refer to attached full size sheet EL103 for changes described below.
2. Text identifiers for photo-responsive occupancy sensors have been turned on. All enclosed spaces with an exterior window shall have photo-responsive occupancy sensors.
3. Add a switch to Open Work Area 331.
4. Add separate daylight normal and emergency power relay circuits and photocell for fixtures between grids A and A.5 and Grids 4 and 5.
5. Circuit fixtures in Office 375 with fixtures in Work Study 373.
6. Add an E9-1 exit sign near grids C-3.
7. Add an E9-2 exit sign near grids C-5.
8. Add an E9-2 exit sign near grids E-5.
9. Add an E9-2 exit sign near grids F-5.
10. Add an E9-2 exit sign near grids F-2.
11. Change circuiting to G-14 fixtures between grids C and D near grid 7 to circuit to 3RA-6 (normal fixtures) and 3RA-21 (emergency fixtures).
12. Fixture type identifier text has been turned on for fixtures between in rooms 331, 341 and 352.
13. Fixtures in Conference Room 357 are G-14d.
14. Add sheet keynote #4 text: "Suspend Cx-2 fixtures 12" below ceiling in this room.
15. Add sheet keynotes to linear fixtures in Compact Storage 335 and change linear fixtures in this room from type CX-4 to type CX-2.

Sheet EL104:

1. Refer to attached full size sheet EL104 for changes described below.
2. Relay override wall station identifier text for WS-4A, WS-4B and WS-4C has been turned on.
3. Text identifiers for photo-responsive occupancy sensors have been turned on. All enclosed spaces with an exterior window shall have photo-responsive occupancy sensors.
4. Rooms 435, 436, 437, 438, 443, 444, 445 and 447 have been reconfigured for the new corridor. Fixtures have been added in the new corridor 465B.
5. Add separate daylight normal and emergency power relay circuits and photocell for fixtures between grids F and J and Grids 1 and 7.
6. Add a 3-way switch at the south door of Open Office 457A.
7. Change fixtures in Toilet 458 to type DF-33.
8. Text identifying switching groups and 3and 4-way switches has been turned on in rooms 470, 471, 475, 476, 477.
9. Add a switch in Tutoring 434.
10. Fixtures in Corridor 426 are type G-14.
11. Change fixture in Storage 409 from S-3 to SA-1.
12. Change fixtures in Conference 469 from G-12 to G-12d.

Sheet EL105:

1. Refer to attached full size sheet EL105 for changes described below.
2. Relay override wall station identifier text for WS-5A and WS-5B has been turned on.
3. Dimming entry station and preset station identifier text for ES and PRS has been turned on.
4. Text identifiers for photo-responsive occupancy sensors have been turned on. All enclosed spaces with an exterior window shall have photo-responsive occupancy sensors.
5. Fixtures in Conference 543 are type G-14D.
6. Change fixtures in Control Room 541A from GS-3 to G-12.
7. Add racks for dimmers DMA and DMB in electrical room 506.
8. Add a 3-way switch near grids C-6.
9. Add (2) E9-1 exit signs in Conference 550.

10. Change fixtures in Conference 550 from G-14 to G-14D.
11. Add a 3-way switch at the east end of Corridor 551A.
12. Add (2) 3-way and (1) 4-way switches to Open Office 557.
13. Add (2) 3-way switches to Corridor 557A.
14. Add a 4-way switch in Reception 551.
15. Change fixtures in Conference 570 from G-14 to G-14D.
16. Add a switch at the north end of Corridor 586.
17. Add (2) 3-way switches to Reception 571.
18. Fixtures in Offices 592, 593, 594 and 595 are type G-14.
19. The switch in open office near grids D-4 is a 4-way.
20. Add (2) occupancy sensor in Zion Room 537.
21. Re-circuit the east 2 rows of fixtures in Zion Room 537.

Sheet EL106:

1. Add an exterior photocell on the north side of the penthouse, circuited to relay panel 5RA.
2. Add (3) occupancy sensors in Penthouse 601.

Sheet EL501:

1. Refer to attached full size sheet EL501 for changes described below.
2. Add walkway pole base detail.
3. Add BMS gateway to lighting relay control schematic.
4. Add details for entry station ES, preset station PRS, dimmer station DMA and dimmer station DMB.
5. Add oneline diagrams for dimming systems DMA and DMB.

Sheet EL601:

1. Add new fixture types CX-7 and G-12d:

CX-7	SUSPENDED HOUSING ADJECENT TO CEILING PANELS, FLANGE 2 SIDES BLACK PAINTED HOUSING, WHITE LENS	1 F28T5 RE841	34W	UNV	AXIS	BMD-S-FL-4-T5-1-0-C-UNV-E-1-SAX-CUSTOM
					LIGHTCONTROL	MOD44PD/F-1F28T5-UNV-SGL-BK
					LINEAR	IB24 D 1 ET5 XXX SBL CXX CC-BLACK
					PMC	S44-D-AC-FL-1T5-XX'-WOA/FA-BLK-UNV
					GAMMALUX	GB44D-128T5-UNV-ERS-LENGTH-C2-ASL-BKSG-
G-12d	2X4, 2 LAMP. HIGH EFFICIENCY OPTICS. DUAL LEVEL BALLAST.	2-F32T8 RE835	44W	UNV	LEDALITE	9824DXSTT232-1-2-SPEC.61 STEP DIM
					AXIS	DAYF-2X4-S-T8-2-W-UNV-E-1-X-STEP DIM
					MARK	WHS 24 2/T8 GEUSXL XXX SW SW STEP DIM
					DAYBRITE	2STG232-D-UNV-1/2EBL10R STEP DIM
					LIGHTOLIER	SKS2GPK232-UNV-P2 STEP DIM

2. Fixture substitutions: The following lighting fixtures have been reviewed and have been found to be acceptable for use on this project, subject to compliance with the requirements of the contract documents:

CX-1	LINEAR	IB24 D ET5HO XXX SBL CXX CC-BLACK XX
CX-2	LINEAR	IB24 D 1 ET5 XXX SBL CXX CC-BLACK XX
CX-3	LINEAR	IB24 D 1 ET5HO XXX SBL CXX CC-BLACK DAMP XX
CX-4	LINEAR	IB24 D 2 ET5/MR16 SBL CXX CC-BLACK SC ED XX
CX-5	LINEAR	IB24 D 1/ET5HO XXX SBL CXX BW XX
CX-6	LINEAR	RC68 D 1 ET5 XXX AL G BW XX
DX-2	GOTHAM	ALED 41/18 6AR 277 TRW3
ET	SIDELITE	PSM
G-12	MARK	WHS 24 2/T8 GEUSXL XXX SW SW
G-13	MARK	WHS 24 3/T8 GEUSXL XXX SW SW 1/3
G-14	MARK	WHS 22 2/40BX EBPR XXX SW SW
G-14D	MARK	WHS 22 W/40BX EBPR XXX SW SW DC
G-15	MARK	WHS 22 2/40BX ADZT XXX SW SW
LED1	WINONA	WSL 202 XX 30 30K XX F SCBA XX X STD
LED2	WINONA	WSL 202 XX 30 40K XX F SCBA XX X STD
LED3	MARK	OLW14 EC
OJ-1	REBELLE	1645 113WCF 120 LV EM REMOTE CBA
WB-3	TERON	RN48-232E-WAL-MVOLT
	SURELITES	STL2-2T8-U
ZA-3	LITHONIA	MRP 100M SR3 TB SCWA CBA L/LP

Sheet EL 602:

1. Relay schedule for panels 1RA, 2RA, 2MRA, 3RA and 4RA have been updated and are attached.
2. Dimmer schedules for DMA and DMB have been added and are attached.

Sheet ET101:

1. Add one additional voice data outlet in each of the following spaces: 117 (at the fire alarm panel), 192, 194, 198, 175, 188, 189, 169, 165, 166, 134 and the east wall of 145.

Sheet ET103:

1. Add (2) voice data outlets in Office 356, one on the north and one on the south walls.

Sheet ET105:

1. Add one additional voice data outlet in each of the following spaces: 545, 546, 547, 559, 560, 561, 591, 592, 593, 594, 595 and 596.

Sheet ET601:

1. Change keynote #7 to say: "Stub conduits from Data Room 514 to ladder rack in Data Center 598. Ladder rack in Data Center 598 provided and installed by Division 26 contractor. Ladder rack in Data Room 514 and all other satellite data rooms provided and installed by State IT Services."
2. Delete keynote #7, raised floor and (4) 4" conduits from 5TPA.
3. Add keynote 7 at (3) 4" conduits from 5TPB to data center ladder rack.

Sheet EJ 102:

1. Change all references to FBAV to PTAV.
2. Add second PTAV in Curriculum 234.

Sheet EJ 103:

1. Change all references to FBAV to PTAV.
2. Add second PTAV in Classroom 325.

Sheet EJ 104:

1. Change all references to FBAV to PTAV.
2. Add second PTAV in Conference 469, Workspace 470, Classroom 471, Classroom 475, Classroom 476, and Classroom 477.

Sheet EJ 105:

1. Change all references to FBAV to PTAV.
2. Add third PTAV in Zion 537.

Sheet EY101:

1. Move card access and CCTV control panels to south wall in rooms 104 and 114.
2. Add 120V Circuit 2QLA-45 for card reader in room 162.
3. Add 120V Circuit 2QLB-26 for card readers in rooms 125A, 155.

Sheet EY102:

1. Move card access and CCTV control panels to south wall in rooms 204 and 214.
2. Add 120V Circuit 2QLA-43 for card reader in room 218.

Sheet EY102:

1. Move card access and CCTV control panels to south wall in rooms 254M and 264M.

Sheet EY103:

1. Move card access and CCTV control panels to south wall in room 304.
2. Add 120V Circuit 4QLA-45 for card reader in rooms 325, 330 (2 places) and 335.
3. Add 120V Circuit 4QLA-43 for card reader in rooms 350, 352 and 341.
4. Add 120V Circuit 4QLB-47 for card readers in rooms 320, 373 (2 places) and 373A.

Sheet EY104:

1. Move card access and CCTV control panels to south wall in room 404.
2. Add 120V Circuit 4QLA-41 for card reader in rooms 426, 421, 431 and 405.

Sheet EY105:

1. Move card access and CCTV control panels to south wall in room 504.
2. Add 120V Circuit 4QLA-39 for card reader in rooms 551 and 540.
3. Add 120V Circuit 4QLB-43 for card reader in rooms 532A, 598A and 597.

4. Add 120V Circuit 4QLB-45 for card readers in rooms 571, 590 (2 places) and 598.

Sheet EY601:

1. Refer to card access type door schedule, types 9 and 10. Swap unprotected side elevation for types 9 and 10.

Sheet FA101:

1. Add smoke detector at Level 1 Lobby 125 near grids E.5 and 5.p.
2. Add 2nd 30cd speaker strobe at northwest corner of Conference 162.
3. Add smoke detectors in Electrical 106, 113 and 117 and Data 104 and 114.
4. Add pull station in Mechanical 116 adjacent to exterior door.

Sheet FA102:

1. Add smoke detectors in Electrical 206 and 213 and Data 204 and 214.
2. Add smoke detector in Entry 220.
3. Change FPS in Vestibule 218 to annunciator FSA.

Sheet FA 102M:

1. Add smoke detectors in Electrical 256M and 263M and Data 254M and 264M.
2. Add smoke detector near grids C.1 and 4.5.
3. Add ceiling mounted speakers (no strobe) in the center of each grid bay from grid C to H and 2 to 5.
4. The strobe in 4 person 285M is 15cd.
5. The speaker/strobe in 6-8 person 293M is 15cd.

Sheet FA103:

1. Add smoke detectors in Electrical 306 and 371 and in Data 304 and 372.
2. Add wall mounted 75cd speaker strobe to the south wall of Lounge 341 near the door. Change the other speaker strobe in this room to 15cd.
3. Delete the ceiling speaker/strobe near grids D.5 and 6.7.
4. Add smoke detectors near grids C.5 and 6.5 and near grids E.8 and 6.8 (above stair landing).
5. Shift smoke detectors in the following grid bays to center of each bay: C to D and 3 to 5; D to E and 2 to 5; E to F and 2 to 5.
6. Change speaker/strobes in the following rooms to be 75cd: 357, 340, 325 and 360 at grids D.2 and 2.
7. Change speaker/strobes in the following rooms to be 30cd: 373A, 330 and 360 near grids A.5 and 4.5.
8. Change the speaker strobe in Compact Storage 335 to 110cd.

Sheet FA104:

1. Add smoke detectors in Electrical 406 and413 and in Data 404 and 414.
2. Add smoke detector and 15cd ceiling mount speaker/strobe in Corridor 465B (new corridor).
3. Add smoke detector in corridor outside Vending 405.
4. Change wall mounted speaker/strobe in corridor near Office 446 to ceiling mount type.
5. Shift smoke detectors in corridor 465A near grids D and E north 3 ceiling tiles.
6. Add smoke detector near grids J and 6.7 (at top stair landing).
7. Add smoke detector near grids E.7 and 4.5.
8. Shift smoke detectors between grids F to H and 1 to 4 south approximately 4'.
9. Shift smoke detector near grids D and 2.1 north approximately 6'.

Sheet FA105:

1. Add smoke detectors in Electrical 506 and 513 and in Data 514 and 514.
2. Move the (4) control modules from electrical 513 to Elevator Closet 599.
3. Add smoke detector in corridor 586 near door to Reception 571.
4. Add smoke detector in corridor near grids E.5 and 3.8.
5. Add 30cd wall mount speaker strobe on column in conference 558.
6. Add (2) smoke detectors in corridor 551A.
7. Change speaker/strobe in conference 550 to 75cd.
8. Add smoke detector in Library 532A.
9. Add (2) smoke detectors in Future Data Center 598A.
10. Add (4) smoke detectors in Data Center 598.

Sheet FA106:

1. Add 75cd wall mounted speaker/strobe to north wall of Penthouse 601 near grids B and 7.

END OF ELECTRICAL ADDENDUM

ATTACHMENTS:

Other	**Schedules:**	**Full size sheets:**
Division 26 Unit Price Bid Form	1RA	EP104
	2RA	EL101
	2MRA	EL102
	3RA	EL102M
	4RA	EL103
	DMA	EL104
	DMB	EL105
		EL501

DSC HOLLAND CENTENNIAL COMMONS
DIVISION 26 UNIT PRICE BID FORM

DIVISION 26 - ELECTRICAL UNIT PRICE BID FORM

UNIT PRICES

1. **Lighting fixtures**

   a. **Lighting fixtures:** Guarantee unit prices for each item listed. Change order (add or deduct) amounts for lighting fixtures (excluding lamps, sales tax, and installation) shall be the prices listed below multiplied by the quantities added or deducted.

Type	Manufacturer	Unit Price
AS-1		
CX-1		
CX-2		
CX-3		
CX-4		
CX-5		
CX-6		
CX-7		
DF-33		
DF-37		
DX-1		
DX-2		
E		
E9-1		
E9-2		
ET		
FD-10		
G-12		
G-12D		
G-13		
G-14		
G-14D		
G-15		
GS-2		
GS-3		
GS-4		
LED-1		
LED-2		
LED-3		
OC-32		
OJ-1		
P3-3		
P3-13		
S-1		
S-3		
SA-1		
SA-2		
UC-10		

DSC HOLLAND CENTENNIAL COMMONS
DIVISION 26 UNIT PRICE BID FORM

Type	Manufacturer	Unit Price
V-1		
WB-3		
ZA-3		

b. **Lighting fixture installation:** Guarantee unit prices for each item listed. Change order (add or deduct) amounts for installation of lighting fixtures (excluding fixtures, lamps, and sales tax) and including 30' of typical branch wiring shall be the prices listed below multiplied by the quantities added or deducted.

Type	Manufacturer	Unit Price
AS-1		
CX-1		
CX-2		
CX-3		
CX-4		
CX-5		
CX-6		
CX-7		
DF-33		
DF-37		
DX-1		
DX-2		
E		
E9-1		
E9-2		
ET		
FD-10		
G-12		
G-12D		
G-13		
G-14		
G-14D		
G-15		
GS-2		
GS-3		
GS-4		
LED-1		
LED-2		
LED-3		
OC-32		
OJ-1		
P3-3		
P3-13		
S-1		
S-3		
SA-1		
SA-2		

DSC HOLLAND CENTENNIAL COMMONS
DIVISION 26 UNIT PRICE BID FORM

Type	Manufacturer	Unit Price
UC-10		
V-1		
WB-3		
ZA-3		

2. **Devices:** Guarantee unit prices for each item listed. Change order (add or deduct) amounts for complete installation shall be the prices listed below multiplied by the quantities added or deducted. Unit price shall include material and labor for complete installation of wiring devices.

   Include 50' of branch wiring and conduit or cabling (as applicable) with the following:

Wiring Device	Unit Price
Convenience Outlet	
Switch	
Three-way switch	
Four-way switch	
Dual Service Poke-Thru (PT-1)	
GFCI outlet	
Weatherproof outlet	
Intercom Ceiling Speaker Box	
Voice/Data outlet rough-in	
A/V rough-in box	
Smoke Detector	
Duct Detector	
Horn/Strobe	
Control Module	
Monitor Module	
Smoke Damper Connection	

DSC HOLLAND CENTENNIAL COMMONS
DIVISION 26 UNIT PRICE BID FORM

3. Provide unit prices for the following:

3/4" CND, with 4 #14THWN	_____	Lf
3/4" CND, with 4 #12THWN	_____	Lf
3/4" CND, with 4 #10THWN	_____	Lf
1" CND, with 4 #8 THWN	_____	Lf
1.25" CND, with 4 #6 THWN	_____	Lf
3/4" CND	_____	Lf

4. Electrician billing rates per hour:

Superintendent	_____
Journeyman	_____
3rd year apprentice	_____
2nd year apprentice	_____
1st year apprentice	_____

LIGHTING RELAY PANEL "1RA" SCHEDULE PROJECT NAME: DIXIE COLLEGE CENTENNIAL COMMONS

RELAY NUMBER	DESCRIPTION	CIRCUIT NUMBER	LOAD (WATTS)	CONTROL GROUP			
				WS	TC	IPC	OPC
RL 1	SOUTH AREA CORRIDOR LIGHTS	1HA-2	850	WS-1A	X		
RL 2	CENTER OPEN OFFICE LIGHTS	1HA-6		WS-1B	X		
RL 3	NORTH AREA CORRIDOR LIGHTS	1HA-8		WS-1C	X		
RL 4	NORTH EAST CORRIDOR LIGHTS	1HA-10		WS-1D	X		
RL 5	EAST LOBBY FLUORESCENT LIGHTS	1HA-12		WS-1D	X		
RL 6	EAST LOBBY LED LIGHTS	1HA-14		WS-1D	X		
RL 7	EXTERIOR POLE LIGHTS	1HA-11			X		X
RL 8	SPARE RELAY						
RL 9	SPARE RELAY						
RL 10	SPARE RELAY						
RL 11	SPARE RELAY						
RL 12	SPARE RELAY						
RL 13	SPARE RELAY						
RL 14	SPARE RELAY						
RL 15	SPARE RELAY						
RL 16	SPARE RELAY						
	EMERGENCY - NORMAL POWER BARRIER						
RL 17	NORTH, EAST EM LIGHTS	1EHA-7		NOTE 3	X		
RL 18	EXTERIOR EM LIGHTS	1EHA-9			X		X
RL 19	SPARE RELAY						
RL 20	SPARE RELAY						
RL 21	SPARE RELAY						
RL 22	SPARE RELAY						
RL 23	SPARE RELAY						
RL 24	SPARE RELAY						

NOTES:

1. TIME CLOCK SCHEDULES ARE INDEPENDENT FOR EACH RELAY.
2. EMERGENCY RELAYS TURN LIGHTS ON WHEN POWER IS LOST
3. TURNS ON WITH ANY WS-1X ORVERRIDE SWITCH.

LEGEND:
WS - WALL SWITCH OVERRIDE
TC - TIME CLOCK
IPC - INDOOR PHOTOCELL
OPC - OUTDOOR PHOTOCELL

LIGHTING RELAY PANEL "2RA" SCHEDULE PROJECT NAME: DIXIE COLLEGE CENTENNIAL COMMONS

RELAY NUMBER	DESCRIPTION	CIRCUIT NUMBER	LOAD (WATTS)	CONTROL GROUP			
				WS	TC	IPC	OPC
RL 1	LED LIGHTS	2HA-3		WS-2A	X		
RL 2	NORTH COMMON AREA LIGHTS	2HA-5		WS-2A	X		
RL 3	NORTH RECESSED STRIP LIGHTS	2HA-9		WS-2A	X		
RL 4	NORTH LOBBY LED LIGHTS	2HA-11		WS-2A	X		
RL 5	STACK LIGHTS	2HA-15		WS-2A	X		
RL 6	STACK LIGHTS	2HA-17		WS-2A	X		
RL 7	SPARE RELAY						
RL 8	SPARE RELAY						
RL 9	SPARE RELAY						
RL 10	SPARE RELAY						
RL 11	SPARE RELAY						
RL 12	SPARE RELAY						
RL 13	SPARE RELAY						
RL 14	SPARE RELAY						
RL 15	SPARE RELAY						
RL 16	SPARE RELAY						
	EMERGENCY - NORMAL POWER BARRIER						
RL 17	2ND FLOOR EM LIGHTS	1EHA-11		NOTE 3	X		
RL 18	SPARE RELAY						
RL 19	SPARE RELAY						
RL 20	SPARE RELAY						
RL 21	SPARE RELAY						
RL 22	SPARE RELAY						
RL 23	SPARE RELAY						
RL 24	SPARE RELAY						

NOTES:

1. TIME CLOCK SCHEDULES ARE INDEPENDENT FOR EACH RELAY.
2. EMERGENCY RELAYS TURN LIGHTS ON WHEN POWER IS LOST
3. TURNS ON WITH ANY WS-2X ORVERRIDE SWITCH.

LEGEND:
WS - WALL SWITCH OVERRIDE
TC - TIME CLOCK
IPC - INDOOR PHOTOCELL
OPC - OUTDOOR PHOTOCELL

LIGHTING RELAY PANEL "2MRA" SCHEDULE PROJECT NAME: DIXIE COLLEGE CENTENNIAL COMMONS

RELAY NUMBER	DESCRIPTION	CIRCUIT NUMBER	LOAD (WATTS)	CONTROL GROUP WS	TC	IPC	OPC
RL 1	CURICULUM 234 DAYLIGHTS	2MHA-1		WS-2B	X	X	
RL 2	CURICULUM 234 DAYLIGHTS	2MHA-1		WS-2B	X	X	
RL 3	CURICULUM 234 LIGHTS	2MHA-1		WS-2B	X		
RL 4	SOUTH DAYLIGHTS	2MHA-3		WS-2A	X	X	
RL 5	CENTER AREA LIGHTING	2MHA-5		WS-2A	X		
RL 6	WEST MEZZ LIGHTS	2MHA-7		WS-2MA	X		
RL 7	CENTER AREA LIGHTING	2MHA-9		WS-2A	X		
RL 8	EAST MEZZ DAYLIGHTS	2MHA-11		WS-2MA	X	X	
RL 9	EAST MEZZ LIGHTS	2MHA-13		WS-2MA	X		
RL 10	NORTH MEZZ LIGHTS	2MHA-15		WS-2MA	X		
RL 11	NORTH LOBBY ACCENT LIGHTS	2MHA-6		WS-2C	X		
RL 12	NORTH LOBBY LIGHTS	2MHA-8		WS-2C	X		
RL 13	NORTH LOBBY DAYLIGHTS	2MHA-10		WS-2C	X	X	
RL 14	EAST LOBBY DAYLIGHTS	2MHA-12		WS-1D	X	X	
RL 15	EAST LOBBY LIGHTS	2MHA-14		WS-1D	X		
RL 16	EAST EXTERIOR LIGHTS	2MHA-16			X		X
RL 17	EAST EXTERIOR LIGHTS	2MHA-18			X		X
RL 18	SOUTH EXTERIOR LIGHTS	2MHA-20			X		X
RL 19	SPARE RELAY						
RL 20	SPARE RELAY						
RL 21	SPARE RELAY						
RL 22	SPARE RELAY						
	EMERGENCY - NORMAL POWER BARRIER						
RL 23	SOUTH DAYLIGHTS EM	1EHA-6		NOTE 4	X	X	
RL 24	SOUTH DAYLIGHTS EM	1EHA-6		NOTE 4	X	X	
RL 25	CENTER AREA EM LIGHTS	1EHA-8		NOTE 4	X		
RL 26	EAST AREA EM LIGHTS	1EHA-10		NOTE 3	X		
RL 27	NORTH LOBBY EM LIGHTS	1EHA-12		NOTE 4	X		
RL 28	NORTH LOBBY EM DAYLIGHTS	1EHA-12		NOTE 3	X	X	
RL 29	EAST LOBBY EM DAYLIGHTS	1EHA-14		NOTE 5	X	X	
RL 30	EAST LOBBY EM LIGHTS	1EHA-14		NOTE 5	X		
RL 31	SOUTH/EAST EM EXTERIOR LIGHTS	1EHA-16			X		
RL 32	NORTH WEST EXTERIOR EM ONLY LIGHTS	1EHA-16		NOTE 6			
RL 33	SPARE RELAY						
RL 34	SPARE RELAY						
RL 35	SPARE RELAY						
RL 36	SPARE RELAY						

NOTES:
1. TIME CLOCK SCHEDULES ARE INDEPENDENT FOR EACH RELAY.
2. EMERGENCY RELAYS TURN LIGHTS ON WHEN POWER IS LOST
3. TURNS ON WITH ANY WS-2MX ORVERRIDE SWITCH.
4. TURNS ON WITH ANY WS-2X OVERRIDE SWITCH.
5. TURNS ON WITH ANY WS-1X OVERRIDE SWITCH.
6. RELAY TURNS ON ONLY WHEN NORMAL POWER IS LOST.

LEGEND:
WS - WALL SWITCH OVERRIDE
TC - TIME CLOCK
IPC - INDOOR PHOTOCELL
OPC - OUTDOOR PHOTOCELL

LIGHTING RELAY PANEL "3RA" SCHEDULE PROJECT NAME: DIXIE COLLEGE CENTENNIAL COMMONS

RELAY NUMBER	DESCRIPTION	CIRCUIT NUMBER	LOAD (WATTS)	CONTROL GROUP			
				WS	TC	IPC	OPC
RL 1	SOUTH DAYLIGHTS	3HA-1		WS-3B	X	X	
RL 2	SOUTH OPEN AREA LIGHTS	3HA-3		WS-3B	X		
RL 3	SOUTH OPEN AREA LIGHTS	3HA-5		WS-3B	X		
RL 4	CENTER OPEN AREA LIGHTS	3HA-7		WS-3A	X		
RL 5	CENTER OPEN AREA LIGHTS	3HA-9		WS-3A	X		
RL 6	CENTER OPEN AREA LIGHTS	3HA-11		WS-3A	X		
RL 7	NORTH OPEN AREA LIGHTS	3HA-13		WS-3A	X		
RL 8	NORTH OPEN AREA DAYLIGHTS	3HA-13		WS-3A	X	X	
RL 9	SPARE RELAY						
RL 10	SPARE RELAY						
RL 11	SPARE RELAY						
RL 12	SPARE RELAY						
RL 13	SPARE RELAY						
RL 14	SPARE RELAY						
RL 15	SPARE RELAY						
RL 16	SPARE RELAY						
	EMERGENCY - NORMAL POWER BARRIER						
RL 17	SOUTH EM DAYLIGHTS	1EHA-18		NOTE 3	X	X	
RL 18	SOUTH EXTERIOR LIGHTS	1EHA-20		NOTE 4	X		X
RL 19	SE STAIR LIGHTS	1EHA-22		NOTE 3	X		
RL 20	EAST EM LIGHTS	1EHA-24		NOTE 3	X		
RL 21	NORTH EM LIGHTS	1EHA-26		NOTE 3	X		
RL 22	NORTHWEST EXTERIOR EM LIGHTS	1EHA-20		NOTE 4	X		X
RL 23	NORTH OPEN AREA DAYLIGHTS	1EHA-26		NOTE 3	X	X	
RL 24	SPARE RELAY						

NOTES:

1. TIME CLOCK SCHEDULES ARE INDEPENDENT FOR EACH RELAY.
2. EMERGENCY RELAYS TURN LIGHTS ON WHEN POWER IS LOST
3. TURNS ON WITH ANY WS-3X ORVERRIDE SWITCH.
4. RELAY TURNS ON ONLY WHEN NORMAL POWER IS LOST.

LEGEND:
WS - WALL SWITCH OVERRIDE
TC - TIME CLOCK
IPC - INDOOR PHOTOCELL
OPC - OUTDOOR PHOTOCELL

LIGHTING RELAY PANEL "4RA" SCHEDULE PROJECT NAME: DIXIE COLLEGE CENTENNIAL COMMONS

RELAY NUMBER	DESCRIPTION	CIRCUIT NUMBER	LOAD (WATTS)	CONTROL GROUP			
				WS	TC	IPC	OPC
RL 1	EXTERIOR LIGHTING	4HA-1			X		X
RL 2	SOUTHWEST OPEN AREA LIGHTS	4HA-3		WS-4C	X		
RL 3	SOUTH OPEN AREA LIGHTS	4HA-5		WS-4B	X		
RL 4	SOUTHEAST OPEN AREA LIGHTS	4HA-7		WS-4B	X		
RL 5	WEST CORRIDOR LIGHTS	4HA-9		WS-4C	X		
RL 6	NORTH/CENTER CORRIDOR LIGHTS	4HA-11		WS-4A	X		
RL 7	SOUTH AREA DAYLIGHTS	4HA-13		WS-4B	X	X	
RL 8	SPARE RELAY						
RL 9	SPARE RELAY						
RL 10	SPARE RELAY						
RL 11	SPARE RELAY						
RL 12	SPARE RELAY						
RL 13	SPARE RELAY						
RL 14	SPARE RELAY						
RL 15	SPARE RELAY						
RL 16	SPARE RELAY						
	EMERGENCY - NORMAL POWER BARRIER						
RL 17	STAIR EM LIGHTS	1EHA-17		NOTE 3	X		
RL 18	EAST EM LIGHTS	1EHA-19		NOTE 3	X		
RL 19	CENTER EM LIGHTS	1EHA-21		NOTE 3	X		
RL 20	SOUTH AREA EM DAYLIGHTS	1EHA-23		NOTE 3	X	X	
RL 21	SPARE RELAY						
RL 22	SPARE RELAY						
RL 23	SPARE RELAY						
RL 24	SPARE RELAY						

NOTES:

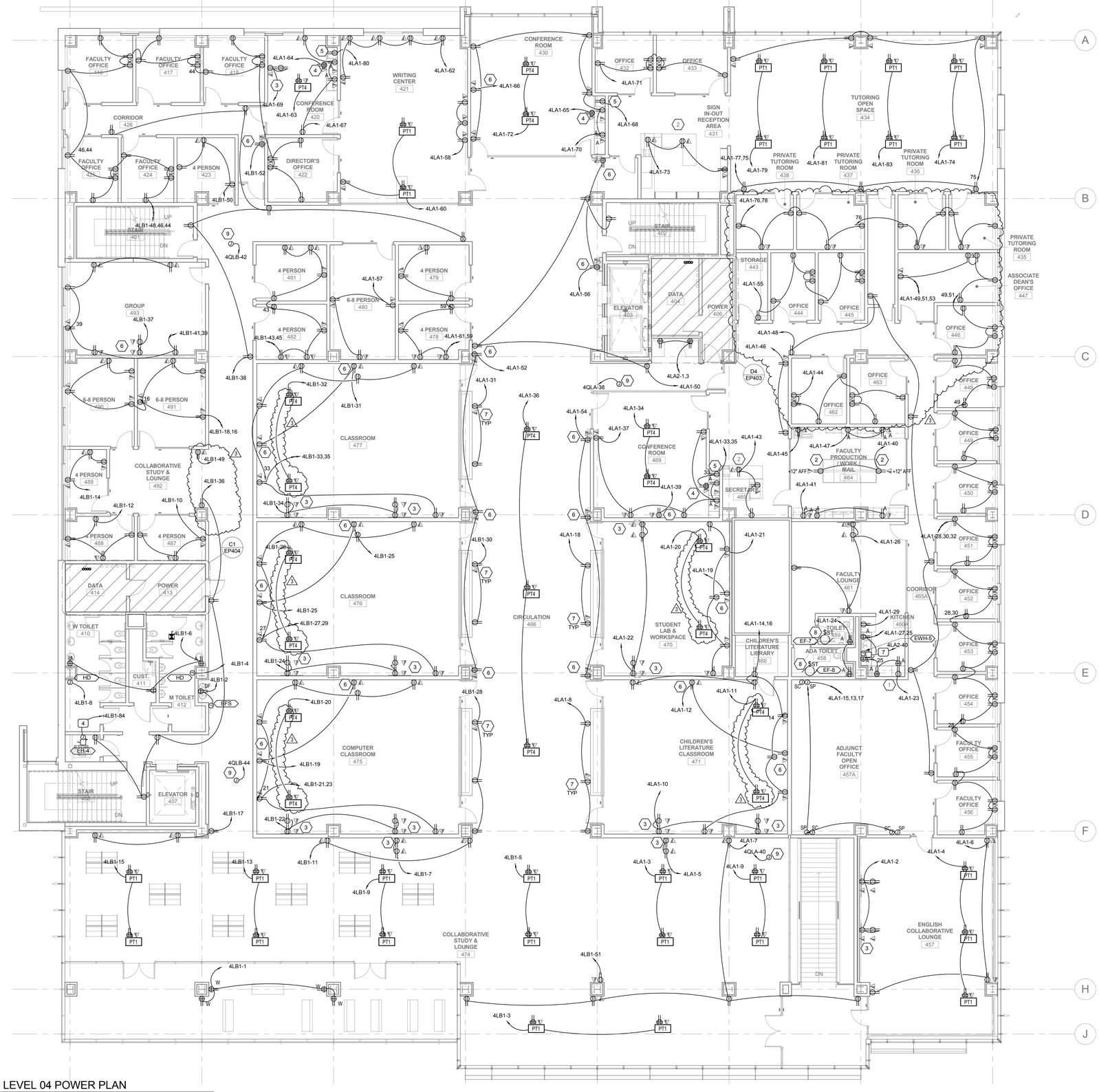
1. TIME CLOCK SCHEDULES ARE INDEPENDENT FOR EACH RELAY.
2. EMERGENCY RELAYS TURN LIGHTS ON WHEN POWER IS LOST
3. TURNS ON WITH ANY WS-4X ORVERRIDE SWITCH.

LEGEND:
WS - WALL SWITCH OVERRIDE
TC - TIME CLOCK
IPC - INDOOR PHOTOCELL
OPC - OUTDOOR PHOTOCELL

DIMMING LOAD SCHEDULE						ZION ROOM 537
DIMMING DEVICE	POWER CIRCUIT	LIGHTING ID	LOAD (WATTS)	DIMMER CIRCUIT	CONTROL CHANNEL	COMMENTS
DMA	5LA2-34	T5 FLU EAST DAYLIGHT	1298	DMA-1	1A	120V 2KW FLUORESCENT DIMMER
	(60A, 3Ø FEEDER)	T5 FLU NORTH CENTER DAYLIGHT	740	DMA-2	2A	120V 2KW FLUORESCENT DIMMER
		T5 FLU NORTHWEST DAYLIGHT	936	DMA-3	3A	120V 2KW FLUORESCENT DIMMER
		MR16 EAST DAYLIGHT	440	DMA-4	4A	120V 2KW INCANDESCENT DIMMER
		MR16 NORTH DAYLIGHT	330	DMA-5	5A	120V 2KW INCANDESCENT DIMMER
		MR16 NORTHWEST DAYLIGHT	330	DMA-6	6A	120V 2KW INCANDESCENT DIMMER
		T5 FLU CENTER	1316	DMA-7	2A	120V 2KW FLUORESCENT DIMMER
		T5 WEST	1752	DMA-8	3A	120V 2KW FLUORESCENT DIMMER
		MR16 CENTER	495	DMA-9	5A	120V 2KW INCANDESCENT DIMMER
		MR16 WEST	550	DMA-10	6A	120V 2KW INCANDESCENT DIMMER
		T8 ENTRY	150	DMA-11	7A	120V NON-DIM ON/OFF 20A

DIMMING LOAD SCHEDULE						OVERFLOW 536
DIMMING DEVICE	POWER CIRCUIT	LIGHTING ID	LOAD (WATTS)	DIMMER CIRCUIT	CONTROL CHANNEL	COMMENTS
DMB	5LA2-26	LED DOWNLIGHTS DAYLIGHT	400	DMB-1	1B	120V 2KW LED DIMMER
	5LA2-28	2X2 TROFFERS DAYLIGHT	468	DMB-2	2B	120V 2KW FLUORESCENT DIMMER

NOTES: DMA AND DMB OPERATE INDEPENDENTLY WHEN THE FOLDING DOOR SEPARATING ROOMS 536 AND 537 IS CLOSED. WHEN THE DOOR IS OPEN DMB-1 MIMICS DMA-10 AND DMB-1 MIMICS DMA-8. MANUFACTURERS MAY USE A CONSOLIDATED SYSTEM PROVIDED DMA AND DMB CONTROL STATIONS BECOME THE MAIN CONTROL STATIONS FOR THE RESPECTIVE ROOMS WHEN THE DOOR IS CLOSED. DOOR OPEN/CLOSED STATUS IS PROVIDED THROUGH THE A/V SYSTEM INTERFACE.



A1 LEVEL 04 POWER PLAN

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

GENERAL SHEET NOTES

1. REFER TO SPECIFICATIONS FOR CONDUCTOR SIZES TO LIMIT VOLTAGE DROP FOR CIRCUITS GREATER THAN 70 FEET IN LENGTH.
2. INSTALL FIRE RATED PUTTY PADS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS ON ALL BOXES LOCATED IN RATED WALLS.
3. WALL MOUNTED ELECTRICAL DEVICES, SUCH AS, BUT NOT LIMITED TO: POWER, DATA, AV OUTLETS, HORNSTROBES, AND SWITCHES, ARE TO BE INSTALLED AS LOCATED ON THE ARCHITECTURAL ELEVATIONS. ELECTRICAL CONTRACTORS ARE TO COORDINATE WITH STUD FRAMING PRIOR TO ROUGH-IN TO ENSURE PRECISE LOCATIONS. FOR LOCATIONS NOT SHOWN ON ELEVATIONS REVER TO TYPICAL MOUNTING DETAILS ON BOTH ELECTRICAL AND ARCHITECTURAL DRAWINGS.
4. PROVIDE CONNECTION TO SYSTEM FURNITURE PROVIDED IN FUTURE BID PACKAGE WHERE INDICATED BY FURNITURE FEED FLOOR BOXES OR JUNCTION BOXES.
5. COORDINATE ALL FLOORBOX AND POKE-THRU LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN.

SHEET KEYNOTES

1. RECEPTACLE FOR ABOVE COUNTER WALL MOUNTED MICROWAVE OVEN. COORDINATE LOCATION WITH ARCHITECTURAL DETAILS AND MILLWORK INSTALLER.
2. OUTLET(S) MOUNTED IN MILLWORK. COORDINATE MOUNTING AND LOCATION INCLUDING CONDUIT ROUTING WITH ARCHITECTURAL DETAILS AND MILLWORK INSTALLER.
3. POWER AND VOICE DATA OUTLETS FOR CLASS ROOM MONITOR. REFER TO DETAIL A6/EP501.
4. POWER AND VOICE DATA OUTLETS FOR A/V EQUIPMENT RACK. COORDINATE LOCATION WITH ARCHITECTURAL DETAILS AND A/V INSTALLER.
5. RECEPTACLE FOR UNDER COUNTER REFRIGERATOR. COORDINATE LOCATION WITH ARCHITECTURAL DETAILS AND MILLWORK INSTALLER.
6. POWER AND VOICE DATA OUTLETS FOR WALL MOUNTED A/V MONITOR OR PROJECTOR. COORDINATE LOCATION WITH ARCHITECTURAL ELEVATIONS AND A/V INSTALLER.
7. POWER AND VOICE/DATA OUTLETS AT 10" AFF TO CENTER, MOUNTED HORIZONTALLY IN FACE OF BENCH.
8. CIRCUIT EXHAUST FAN WITH RESTROOM LIGHTS. CONNECT SUCH THAT FAN RUNS WHEN LIGHTS ARE ON.
9. CIRCUIT FOR BMS CONTROLS. COORDINATE AND LOCATE CIRCUIT WITH BMS CONTRACTOR.

VCBO ARCHITECTURE
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SPECTRUM ENGINEERS

HOLLAND CENTENNIAL COMMONS

DIXIE STATE COLLEGE OF UTAH
DFCM #06297640
DIXIE COLLEGE, ST. GEORGE, UT
CONFORMED CONSTRUCTION DOCUMENTS BID SET

No.	Description	Date
1	ADDENDUM #5	12-21-10
2	ADDENDUM #8	01-06-11
3	ADDENDUM #9	01-10-11

Job # 09625
CAD File
Drawn BXW Checked RBK
Date 12/03/2010
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LEVEL 4 POWER PLAN

EP104
Sheet Number

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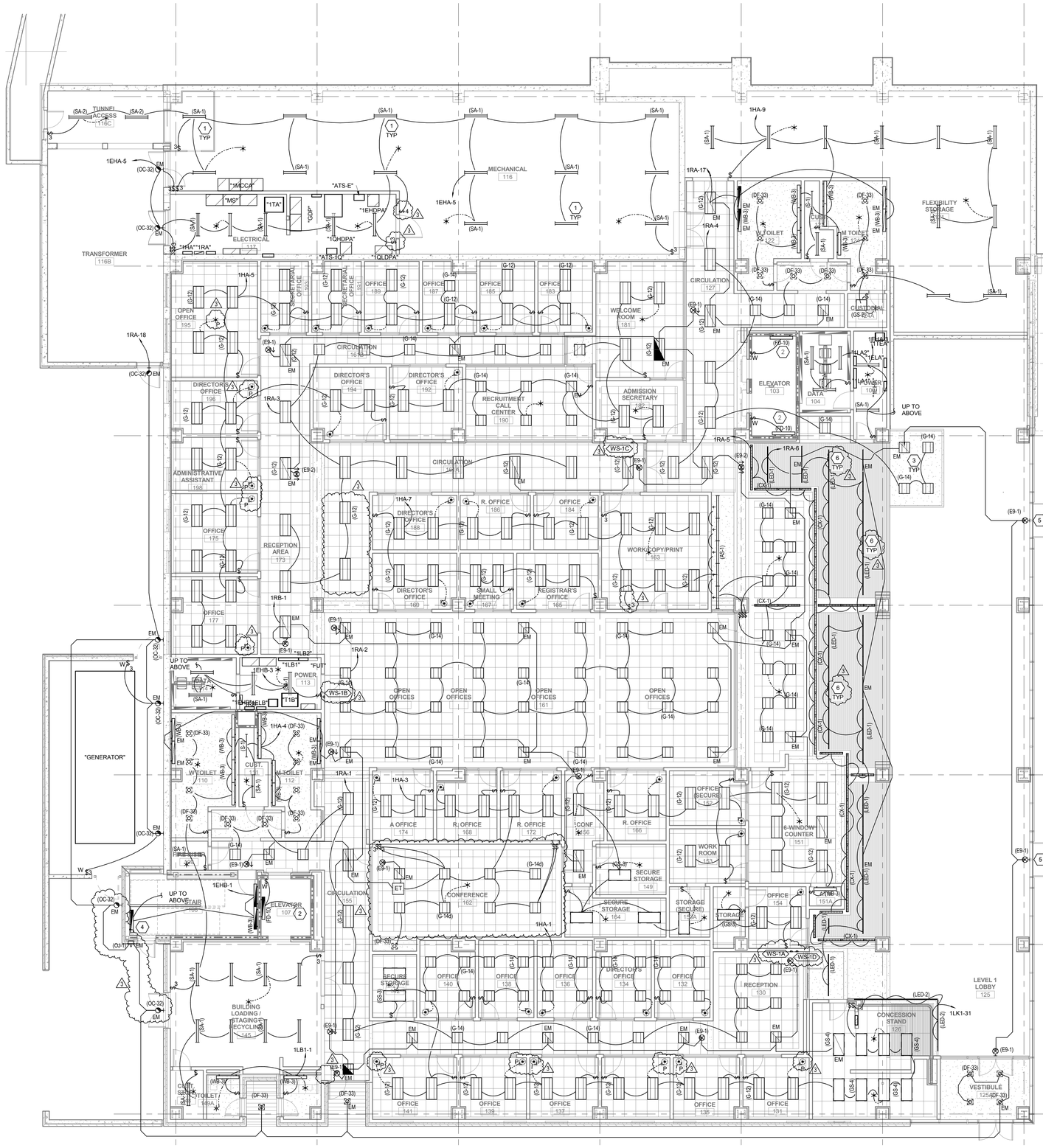

A1 LEVEL 1 LIGHTING PLAN

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

GENERAL SHEET NOTES

1. FOR CLARITY, DRIVERS ARE NOT SHOWN FOR LED FIXTURE TYPES. PROVIDE QUANTITY REQUIRED FOR LENGTH OF FIXTURE SHOWN PER MANUFACTURER'S RECOMMENDATIONS. LOCATE DRIVERS ABOVE ACCESSIBLE CEILING WITHIN MANUFACTURER'S DISTANCE LIMITATIONS.
2. CONNECT EXIT SIGNS TO UNSWITCHED CONDUCTOR OF CIRCUIT SHOWN.
3. INSTALL FIRE RATED PUTTY PADS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS ON ALL BOXES LOCATED IN RATED WALLS.
4. WALL MOUNTED ELECTRICAL DEVICES, SUCH AS, BUT NOT LIMITED TO: POWER, DATA, AV OUTLETS, HORNSTROBES, AND SWITCHES, ARE TO BE INSTALLED AS LOCATED ON THE ARCHITECTURAL ELEVATIONS. ELECTRICAL CONTRACTORS ARE TO COORDINATE WITH STUD FRAMING PRIOR TO ROUGH-IN TO ENSURE PRECISE LOCATIONS. FOR LOCATIONS NOT SHOWN ON ELEVATIONS REVER TO TYPICAL MOUNTING DETAILS ON BOTH ELECTRICAL AND ARCHITECTURAL DRAWINGS.

SHEET KEYNOTES

1. COORDINATE FINAL LOCATION OF FIXTURES WITH DUCTS, PIPING AND OTHER EQUIPMENT. SUSPEND FIXTURES BELOW DUCTS, PIPING AND OTHER OBSTACLES.
2. CIRCUIT ELEVATOR PIT LIGHT WITH PIT RECEPTACLE.
3. PROVIDE FLANGE KITS FOR GRID FIXTURES IN GYP BOARD CEILINGS. TYPICAL.
4. PROVIDE ONE 4' FIXTURE AT BOTTOM OF STAIR NEAR EXTERIOR DOOR. PROVIDE TWO 4' FIXTURES AT LANDING BETWEEN 1ST AND 2ND FLOORS.
5. MOUNT EXIT SIGN TO WINDGIRT AT APROXIMATELY 13' AFF.
6. FIXTURES SUSPENDED BETWEEN WOOD CEILING SLATS. PROVIDE SUPPORT FROM STRUCTURE ABOVE.

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DIXIE STATE COLLEGE OF UTAH
DFCM #06297640
DIXIE COLLEGE, ST. GEORGE, UT
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No.	Description	Date
3	ADDENDUM #9	01-10-11

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Date 12/03/2010
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LEVEL 1 LIGHTING PLAN

EL101
Sheet Number

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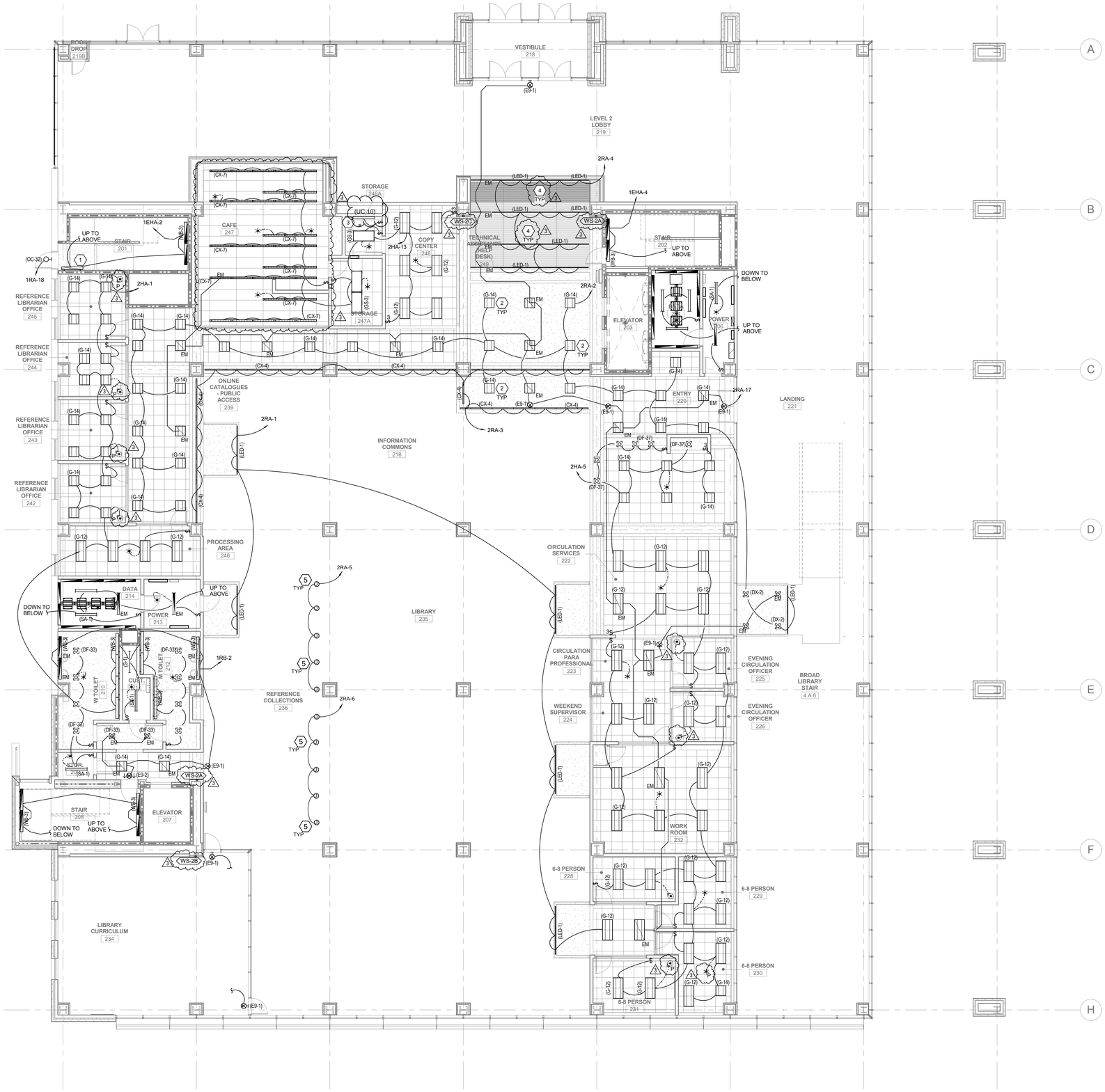

A1 LEVEL 02 LIGHTING PLAN

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

GENERAL SHEET NOTES

1. FOR CLARITY, DRIVERS ARE NOT SHOWN FOR LED FIXTURE TYPES. PROVIDE QUANTITY REQUIRED FOR LENGTH OF FIXTURE SHOWN PER MANUFACTURER'S RECOMMENDATIONS. LOCATE DRIVERS ABOVE ACCESSIBLE CEILING WITHIN MANUFACTURER'S DISTANCE LIMITATIONS.
2. CONNECT EXIT SIGNS TO UNSWITCHED CONDUCTOR OF CIRCUIT SHOWN.
3. INSTALL FIRE RATED PUTTY PADS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS ON ALL BOXES LOCATED IN RATED WALLS.
4. WALL MOUNTED ELECTRICAL DEVICES, SUCH AS, BUT NOT LIMITED TO: POWER, DATA, AV OUTLETS, HORNSTROBES, AND SWITCHES, ARE TO BE INSTALLED AS LOCATED ON THE ARCHITECTURAL ELEVATIONS. ELECTRICAL CONTRACTORS ARE TO COORDINATE WITH STUD FRAMING PRIOR TO ROUGH-IN TO ENSURE PRECISE LOCATIONS. FOR LOCATIONS NOT SHOWN ON ELEVATIONS REVER TO TYPICAL MOUNTING DETAILS ON BOTH ELECTRICAL AND ARCHITECTURAL DRAWINGS.

SHEET KEYNOTES

1. PROVIDE ONE 4' FIXTURE AT BOTTOM OF STAIR NEAR EXTERIOR DOOR. PROVIDE TWO 4' FIXTURES AT LANDING BETWEEN 2ND AND 2M FLOORS.
2. PROVIDE FLANGE KITS FOR GRID FIXTURES IN GYP BOARD CEILINGS. TYPICAL.
3. CIRCUIT UNDER CABINET LIGHTS WITH COUNTER TOP OUTLETS.
4. FIXTURES SUSPENDED BETWEEN WOOD CEILING SLATS. PROVIDE SUPPORT FROM STRUCTURE ABOVE.
5. PROVIDE CONDUIT STUB IN FLOOR WITH RELAY CONTROLLED LIGHTING CIRCUIT FOR STACK MOUNTED LIGHT FIXTURES. VERIFY LOCATION, QUANTITY AND VOLTAGE WITH ARCHITECT AND STACK SUPPLIER.

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HOLLAND CENTENNIAL COMMONS

DIXIE STATE COLLEGE OF UTAH
DFCM #06297640
DIXIE COLLEGE, ST. GEORGE, UT
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3	ADDENDUM #9	01-10-11

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LEVEL 2 LIGHTING PLAN

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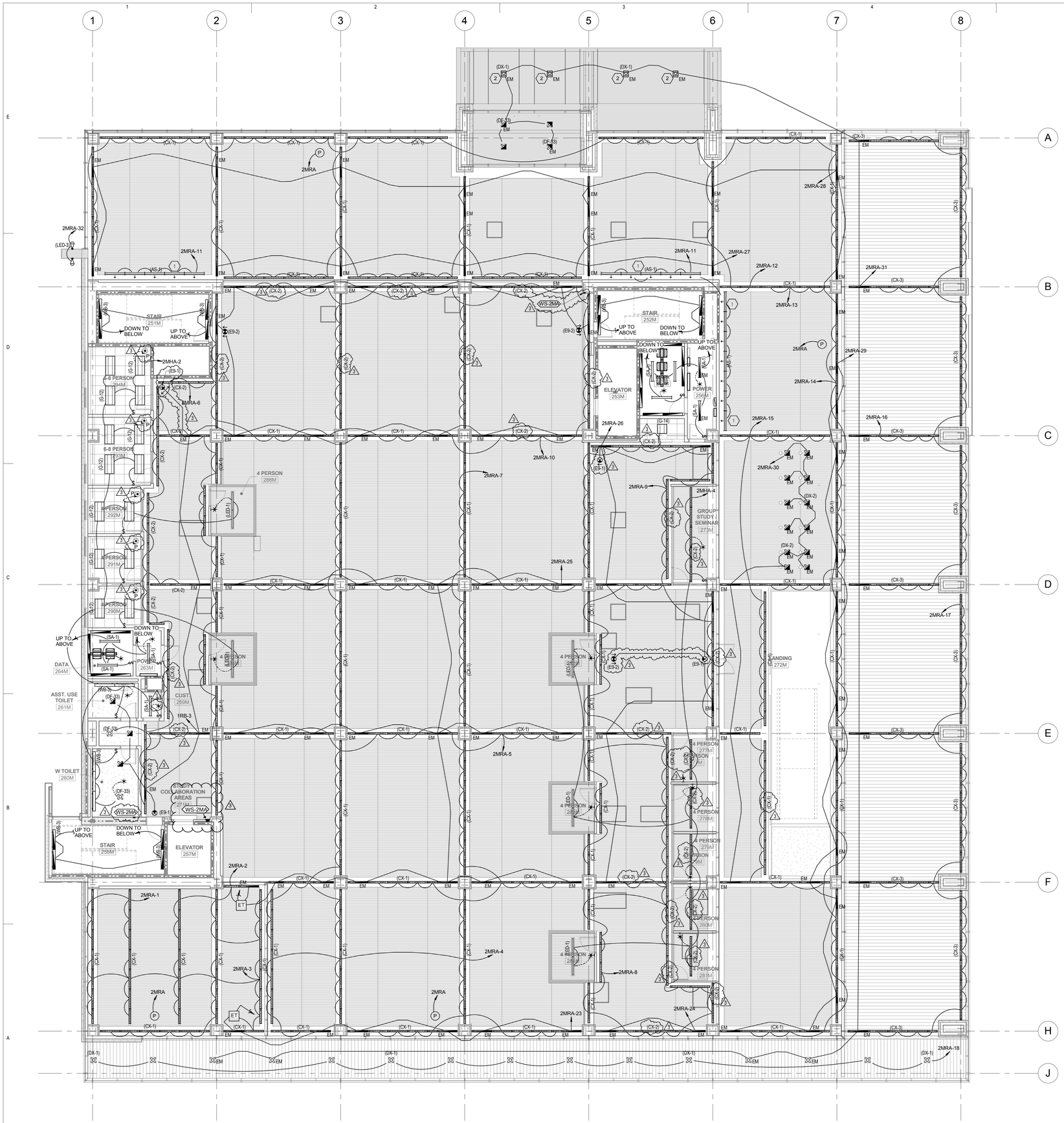

A1 LEVEL 02M LIGHTING PLAN

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

GENERAL SHEET NOTES

1 FOR CLARITY, DRIVERS ARE NOT SHOWN FOR LED FIXTURE TYPES. PROVIDE QUANTITY REQUIRED FOR LENGTH OF FIXTURE SHOWN PER MANUFACTURER'S RECOMMENDATIONS. LOCATE DRIVERS ABOVE ACCESSIBLE CEILING WITHIN MANUFACTURER'S DISTANCE LIMITATIONS.

2 CONNECT EXIT SIGNS TO UNSWITCHED CONDUCTOR OF CIRCUIT SHOWN.

3 INSTALL FIRE RATED PUTTY PADS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS ON ALL BOXES LOCATED IN RATED WALLS.

4 WALL MOUNTED ELECTRICAL DEVICES, SUCH AS, BUT NOT LIMITED TO: POWER, DATA, AV OUTLETS, HORNSTROBES, AND SWITCHES, ARE TO BE INSTALLED AS LOCATED ON THE ARCHITECTURAL ELEVATIONS. ELECTRICAL CONTRACTORS ARE TO COORDINATE WITH STUD FRAMING PRIOR TO ROUGH-IN TO ENSURE PRECISE LOCATIONS. FOR LOCATIONS NOT SHOWN ON ELEVATIONS REVER TO TYPICAL MOUNTING DETAILS ON BOTH ELECTRICAL AND ARCHITECTURAL DRAWINGS.

SHEET KEYNOTES

1 LOCATED ABOVE CEILING. DIRECT LIGHT TO WALL BELOW.

2 PROVIDE SLOPED CEILING ADAPTERS FOR CANOPY FIXTURES.

VCBO ARCHITECTURE
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HOLLAND CENTENNIAL COMMONS

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DFCM #06297640
DIXIE COLLEGE, ST. GEORGE, UT
CONFORMED CONSTRUCTION DOCUMENTS BID SET

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LEVEL 2 MEZZANINE LIGHTING PLAN

EL102M

Sheet Number

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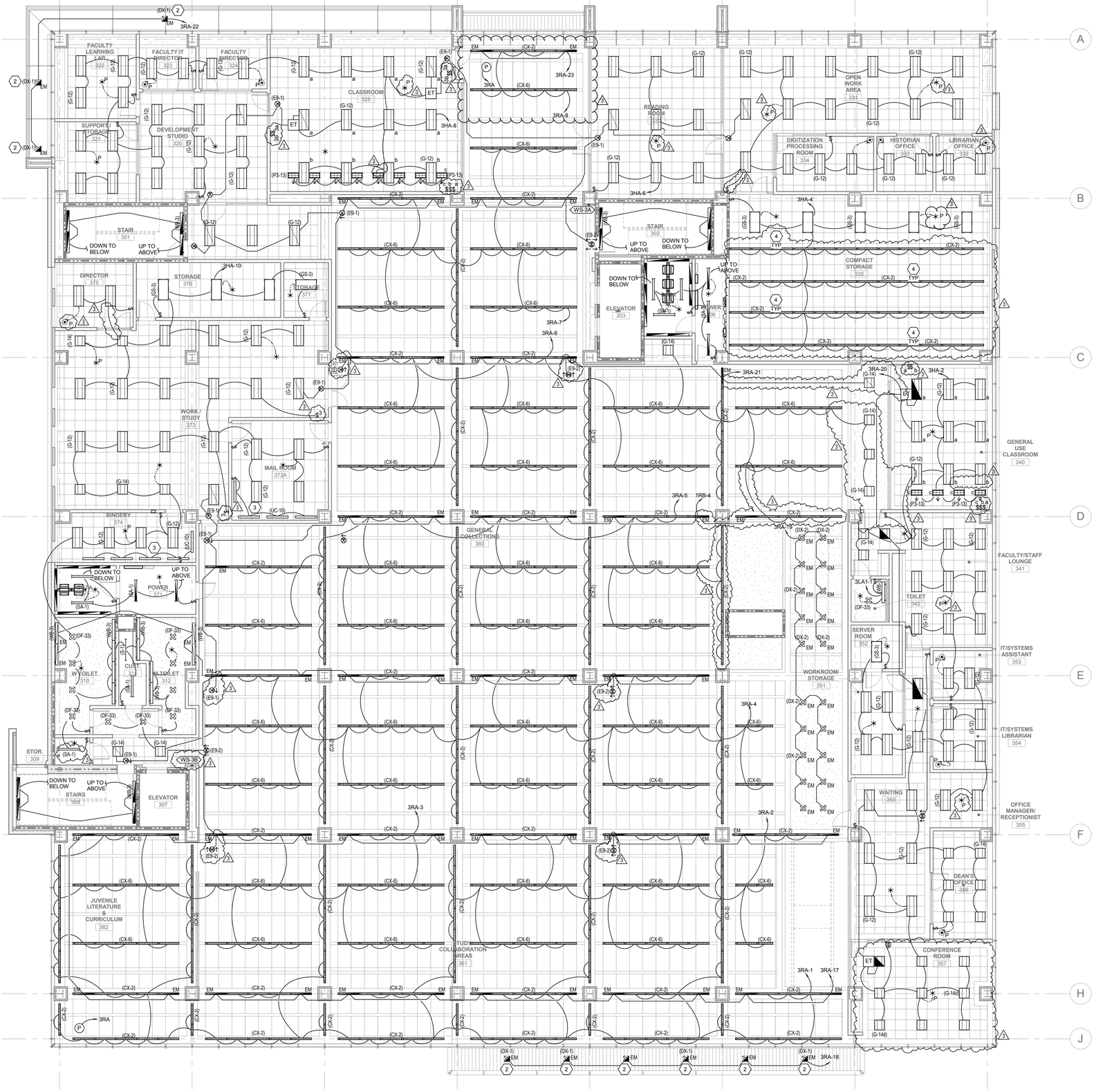

A1 LEVEL 03 LIGHTING PLAN

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

GENERAL SHEET NOTES

1. FOR CLARITY, DRIVERS ARE NOT SHOWN FOR LED FIXTURE TYPES. PROVIDE QUANTITY REQUIRED FOR LENGTH OF FIXTURE SHOWN PER MANUFACTURER'S RECOMMENDATIONS. LOCATE DRIVERS ABOVE ACCESSIBLE CEILING WITHIN MANUFACTURER'S DISTANCE LIMITATIONS.
2. CONNECT EXIT SIGNS TO UNSWITCHED CONDUCTOR OF CIRCUIT SHOWN.
3. INSTALL FIRE RATED PUTTY PADS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS ON ALL BOXES LOCATED IN RATED WALLS.
4. WALL MOUNTED ELECTRICAL DEVICES, SUCH AS, BUT NOT LIMITED TO: POWER, DATA, AV OUTLETS, HORNSTROBES, AND SWITCHES, ARE TO BE INSTALLED AS LOCATED ON THE ARCHITECTURAL ELEVATIONS. ELECTRICAL CONTRACTORS ARE TO COORDINATE WITH STUD FRAMING PRIOR TO ROUGH-IN TO ENSURE PRECISE LOCATIONS. FOR LOCATIONS NOT SHOWN ON ELEVATIONS REVER TO TYPICAL MOUNTING DETAILS ON BOTH ELECTRICAL AND ARCHITECTURAL DRAWINGS.

SHEET KEYNOTES

1. RESERVED FOR FUTURE USE.
2. EMERGENCY POWER ONLY.
3. CIRCUIT UNDER CABINET LIGHTS WITH COUNTER TOP OUTLETS.
4. SUSPEND CX-2 FIXTURES 12" BELOW CEILING IN THIS ROOM.

VCBO ARCHITECTURE
VALENTINER CRANE BRUNJES ONYON

SASAKI

LICENSED PROFESSIONAL ENGINEER
No. 179621
RALPH B. KOEBER
STATE OF UTAH

SPECTRUM ENGINEERS

HOLLAND CENTENNIAL COMMONS

DIXIE STATE COLLEGE OF UTAH
DFCM #062976 40
DIXIE COLLEGE, ST. GEORGE, UT
CONFORMED CONSTRUCTION DOCUMENTS BID SET

No.	Description	Date
3	ADDENDUM #9	01-10-11

Job # 09625
CAD File
Drawn BXW Checked RBK
Date 12/03/2010
Owner #
Ins. #

LEVEL 3 LIGHTING PLAN

EL103
Sheet Number

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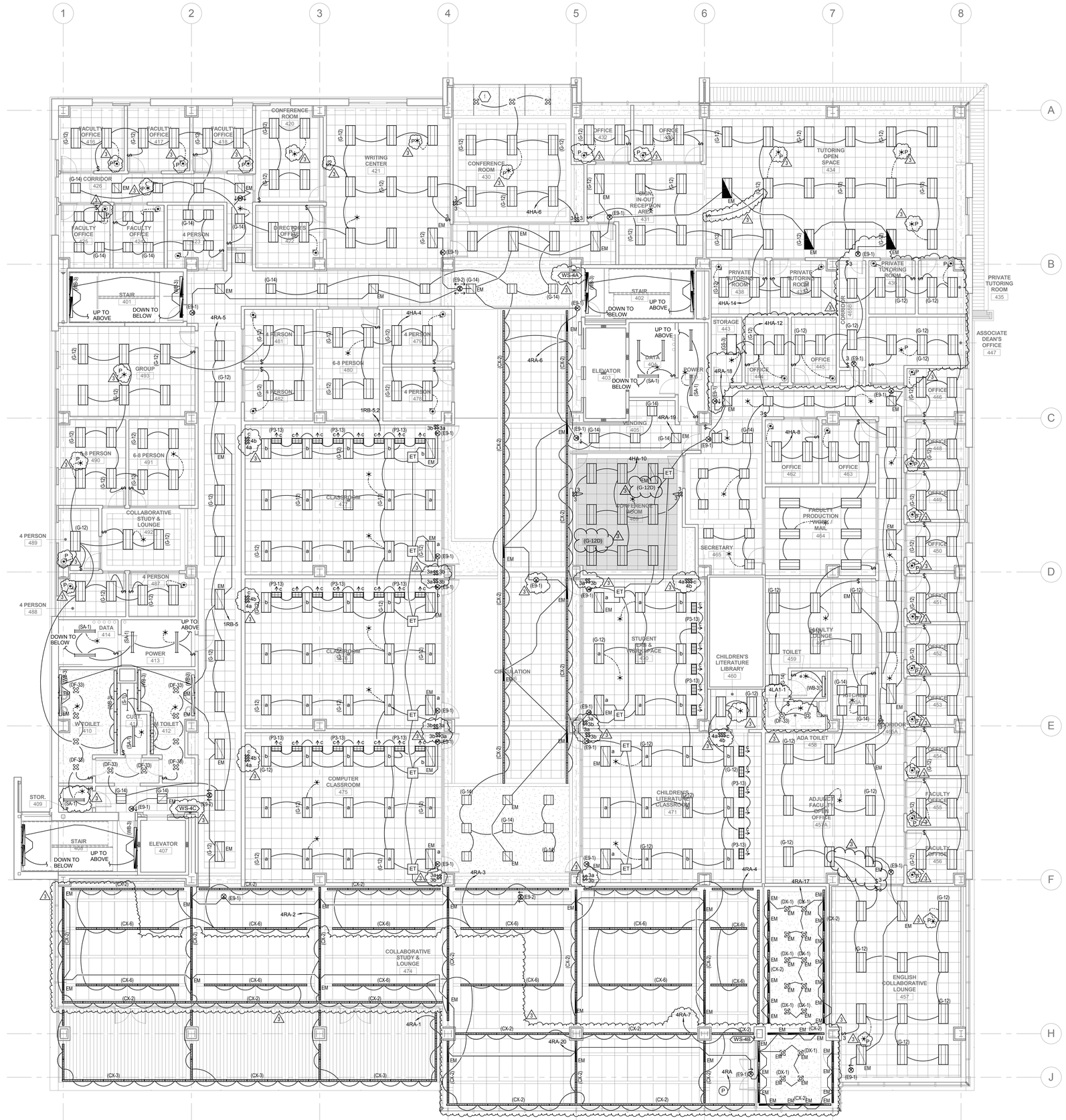

A1 LEVEL 04 LIGHTING PLAN

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

GENERAL SHEET NOTES

1 FOR CLARITY, DRIVERS ARE NOT SHOWN FOR LED FIXTURE TYPES. PROVIDE QUANTITY REQUIRED FOR LENGTH OF FIXTURE SHOWN PER MANUFACTURER'S RECOMMENDATIONS. LOCATE DRIVERS ABOVE ACCESSIBLE CEILING WITHIN MANUFACTURER'S DISTANCE LIMITATIONS.

2 CONNECT EXIT SIGNS TO UNSWITCHED CONDUCTOR OF CIRCUIT SHOWN.

3 INSTALL FIRE RATED PUTTY PADS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS ON ALL BOXES LOCATED IN RATED WALLS.

4 WALL MOUNTED ELECTRICAL DEVICES, SUCH AS, BUT NOT LIMITED TO: POWER, DATA, AV OUTLETS, HORNSTROBES, AND SWITCHES, ARE TO BE INSTALLED AS LOCATED ON THE ARCHITECTURAL ELEVATIONS. ELECTRICAL CONTRACTORS ARE TO COORDINATE WITH STUD FRAMING PRIOR TO ROUGH-IN TO ENSURE PRECISE LOCATIONS. FOR LOCATIONS NOT SHOWN ON ELEVATIONS REVER TO TYPICAL MOUNTING DETAILS ON BOTH ELECTRICAL AND ARCHITECTURAL DRAWINGS.

SHEET KEYNOTES

1 COORDINATE FINAL LOCATION OF FIXTURES WITH DUCTS, PIPING AND OTHER EQUIPMENT. SUSPEND FIXTURES BELOW DUCTS, PIPING AND OTHER OBSTACLES.

VCBO ARCHITECTURE
VALENTINER CRANE BRUNJES ONYON

SASAKI

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SPECTRUM ENGINEERS

HOLLAND CENTENNIAL COMMONS

DIXIE STATE COLLEGE OF UTAH

DFCM #06297640

DIXIE COLLEGE, ST. GEORGE, UT

CONFORMED CONSTRUCTION DOCUMENTS BID SET

No.	Description	Date
3	ADDENDUM #9	01-10-11

Job # 09625
CAD File
Drawn BXW Checked RBK
Date 12/03/2010
Owner #
Ins. #

LEVEL 4 LIGHTING PLAN

EL104

Sheet Number

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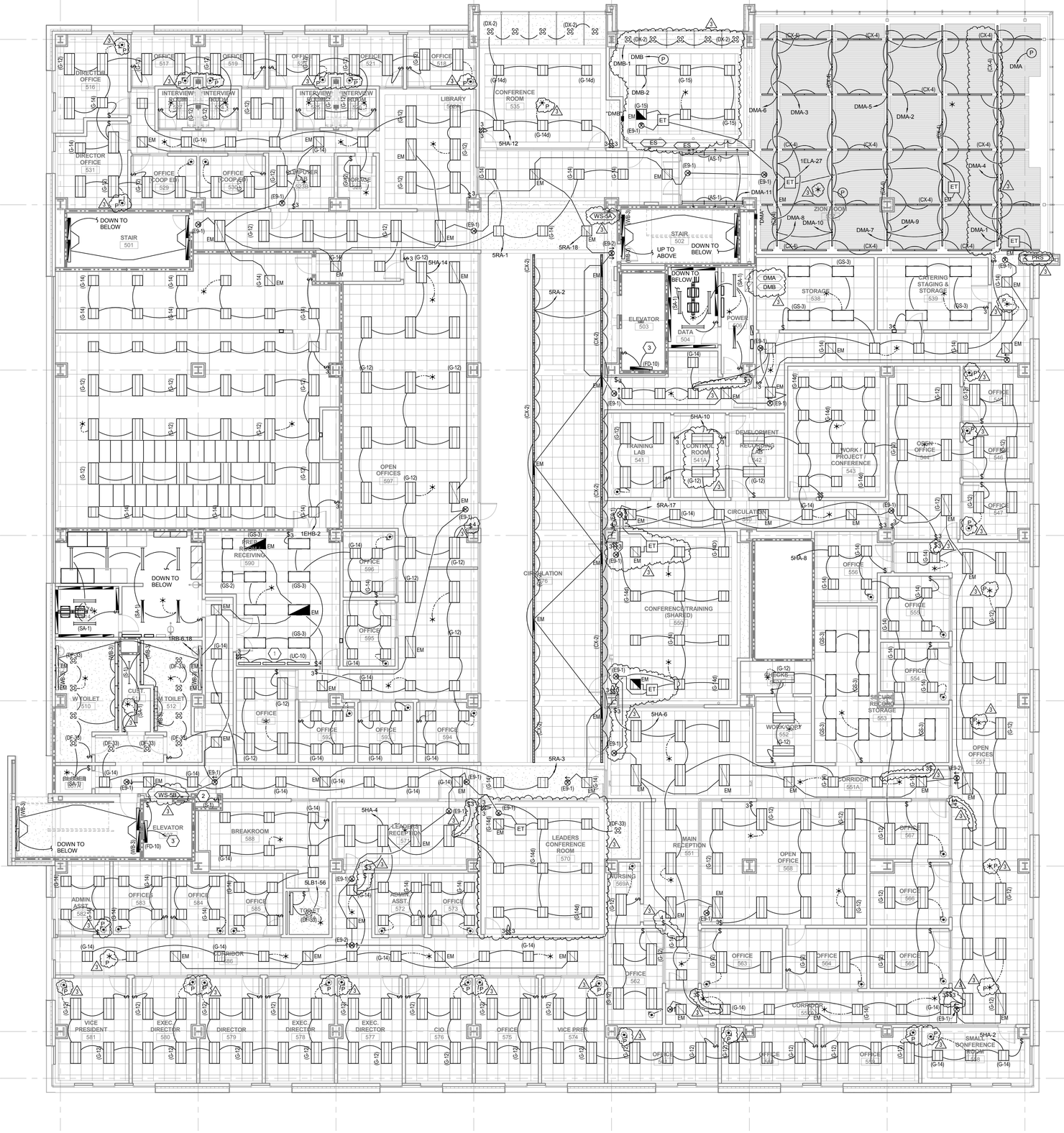

A1 LEVEL 05 LIGHTING PLAN

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

GENERAL SHEET NOTES

1. FOR CLARITY, DRIVERS ARE NOT SHOWN FOR LED FIXTURE TYPES. PROVIDE QUANTITY REQUIRED FOR LENGTH OF FIXTURE SHOWN PER MANUFACTURER'S RECOMMENDATIONS. LOCATE DRIVERS ABOVE ACCESSIBLE CEILING WITHIN MANUFACTURER'S DISTANCE LIMITATIONS.
2. CONNECT EXIT SIGNS TO UNSWITCHED CONDUCTOR OF CIRCUIT SHOWN.
3. INSTALL FIRE RATED PUTTY PADS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS ON ALL BOXES LOCATED IN RATED WALLS.
4. WALL MOUNTED ELECTRICAL DEVICES, SUCH AS, BUT NOT LIMITED TO: POWER, DATA, AV OUTLETS, HORNSTROBES, AND SWITCHES, ARE TO BE INSTALLED AS LOCATED ON THE ARCHITECTURAL ELEVATIONS. ELECTRICAL CONTRACTORS ARE TO COORDINATE WITH STUD FRAMING PRIOR TO ROUGH-IN TO ENSURE PRECISE LOCATIONS. FOR LOCATIONS NOT SHOWN ON ELEVATIONS REVER TO TYPICAL MOUNTING DETAILS ON BOTH ELECTRICAL AND ARCHITECTURAL DRAWINGS.

SHEET KEYNOTES

1. CIRCUIT UNDER CABINET LIGHTS WITH COUNTER TOP OUTLETS.
2. CIRCUIT ELEVATOR LIGHT FIXTURE IN ELEVATOR CONTROL CLOSET WITH RECEPTACLE IN SAME SPACE.
3. CIRCUIT TOP OF SHAFT LIGHT WITH TOP OF SHAFT RECEPTACLE.

VCBO ARCHITECTURE
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SASAKI

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CONFORMED CONSTRUCTION DOCUMENTS BID SET

No.	Description	Date
3	ADDENDUM #9	01-10-11

Job # 09625
CAD File
Drawn BXW Checked RBK
Date 12/03/2010
Owner #
Ins. #

LEVEL 5 LIGHTING PLAN

EL105
Sheet Number

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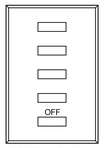
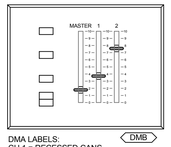


4 PRE-SETS AND OFF.

PRS

12 PRESET STATION

SCALE: NOT TO SCALE

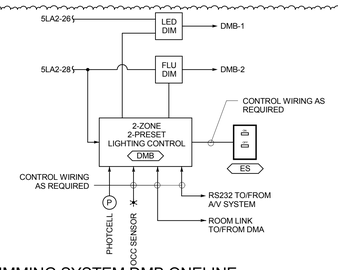


DMA LABELS:
CH 1 = RECESSED CANS
CH 2 = MAIN ROOM LIGHTS

RAISE/LOWER BUTTONS ARE ACCEPTIBLE IN LIEU OF SLIDERS. SILKSCREEN INFORMATION WILL BE PROVIDED WITH SUBMITTAL RETURN. ALLOW 3 LABELS.

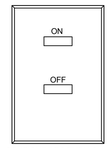
14 DIMMER STATION - DMB

SCALE: NOT TO SCALE



16 DIMMING SYSTEM DMB ONELINE DIAGRAM

SCALE: NOT TO SCALE

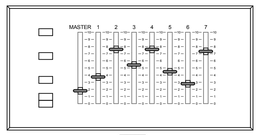


CONFIGURE TO TURN ON SELECTED CIRCUITS ONLY.

ES

11 ENTRY STATION

SCALE: NOT TO SCALE

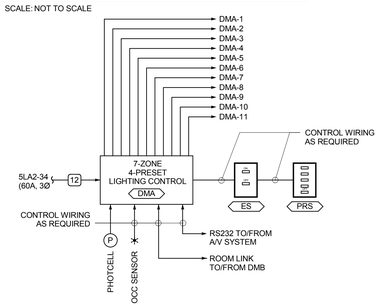


DMA LABELS:
CH 1 = EAST LINEAR
CH 2 = CENTER LINEAR
CH 3 = WEST LINEAR
CH 4 = EAST SPOT LIGHTS
CH 5 = CENTER SPOT LIGHTS
CH 6 = WEST SPOT LIGHTS
CH 7 = ENTRY LIGHTS

RAISE/LOWER BUTTONS ARE ACCEPTIBLE IN LIEU OF SLIDERS. SILKSCREEN INFORMATION WILL BE PROVIDED WITH SUBMITTAL RETURN. ALLOW 3 LABELS.

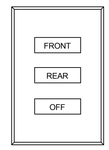
13 DIMMER STATION - DMA

SCALE: NOT TO SCALE



15 DIMMING SYSTEM DMA ONELINE DIAGRAM

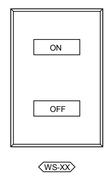
SCALE: NOT TO SCALE



CURRICULUM 234 WALL STATION ON/OFF OVERRIDE.

9 WALL STATION - WS-2B

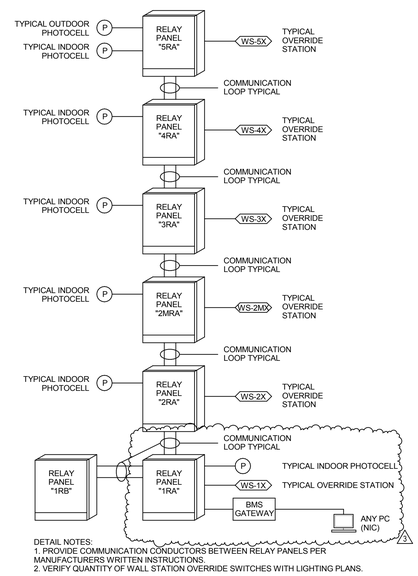
SCALE: NOT TO SCALE



TYPICAL WALL STATION ON/OFF OVERRIDE.

6 TYPICAL WALL STATION

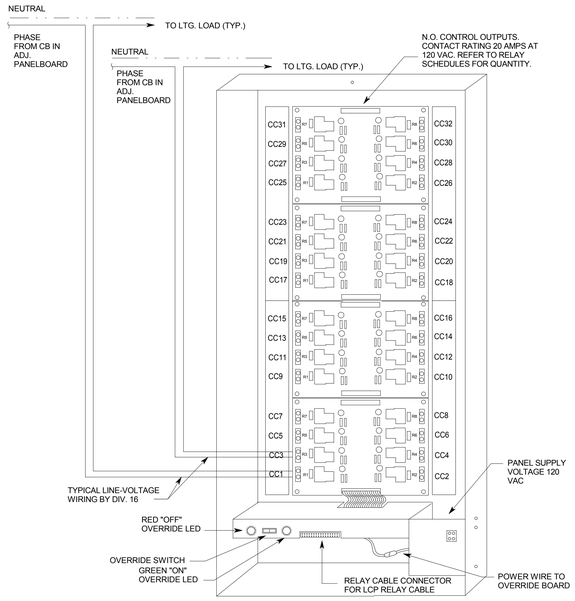
SCALE: NOT TO SCALE



DETAIL NOTES:
1. PROVIDE COMMUNICATION CONDUCTORS BETWEEN RELAY PANELS PER MANUFACTURERS WRITTEN INSTRUCTIONS.
2. VERIFY QUANTITY OF WALL STATION OVERRIDE SWITCHES WITH LIGHTING PLANS.

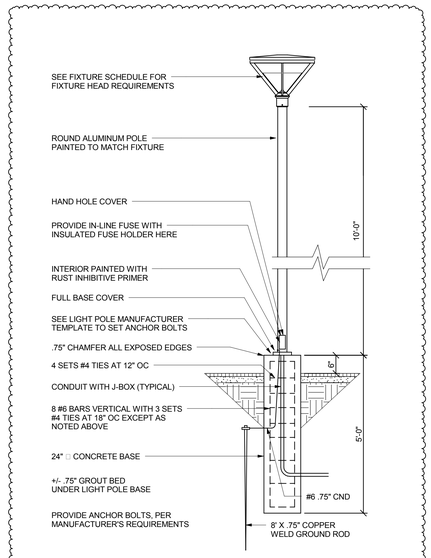
7 LIGHTING RELAY CONTROL SCHEMATIC

SCALE: NOT TO SCALE



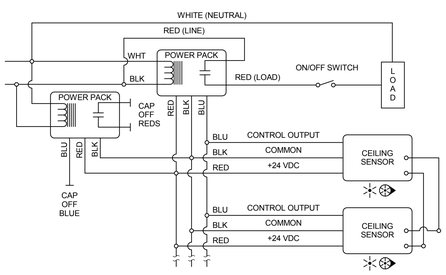
8 TYPICAL PANEL WIRING DETAIL

SCALE: NOT TO SCALE



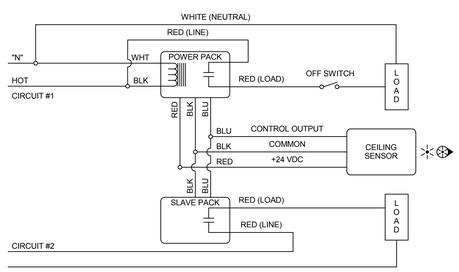
10 WALKWAY LIGHT POLE BASE DETAIL

SCALE: NOT TO SCALE



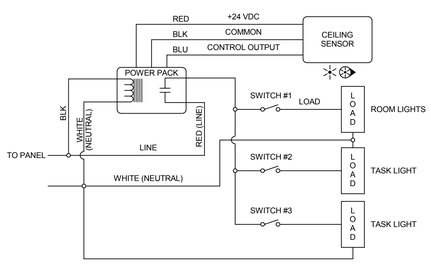
1 TYPICAL ROOM WITH MULTIPLE CEILING SENSORS

SCALE: NOT TO SCALE



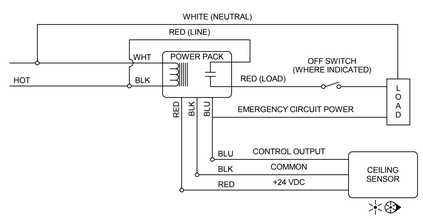
2 TYPICAL ROOM WITH ONE CEILING SENSOR, CONTROLLING TWO CIRCUITS

SCALE: NOT TO SCALE



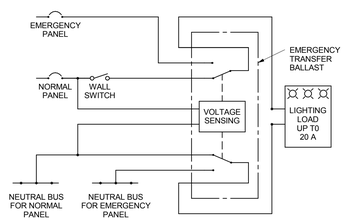
3 TYPICAL ROOM WITH ONE CEILING SENSOR, ONE CIRCUIT AND MULTIPLE SWITCHED LOADS

SCALE: NOT TO SCALE



4 TYPICAL ROOM WITH ONE CEILING SENSOR, WITH OR WITHOUT WALL SWITCH

SCALE: NOT TO SCALE



NORMAL OPERATION
LIGHTING LOAD CONTROLLED BY LOCAL SWITCHING MEANS.

EMERGENCY OPERATION
LIGHTING LOAD IS INDEPENDENT OF LOCAL SWITCHING MEANS.

5 EMERGENCY LIGHTING TRANSFER DEVICE DETAIL

SCALE: NOT TO SCALE

VCBO ARCHITECTURE
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DETAILS

EL501

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