State of Utah

GARY R. HERBERT
Governor

GREGORY S. BELL
Lt. Governor

Department of Administrative Services
KIMBERLY K. HOOD
Executive Director

Division of Facilities Construction and Management
DAVID G. BUXTON
Director

ADDENDUM NO. 3

Date: September 27, 2012

To: Contractors

From: Jim Russell – Project Manager

Reference: Building Consolidation – Utah State Hospital
Department of Human Services – Provo, Utah
DFCM Project No. 11065420

Subject: **Addendum No. 3**

Pages	Addendum Cover Sheet	1	page
	Revised Cost Proposal Form	3	pages
	Architect's Addendum No. 2	183	pages
	Total	187	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.

3.1 SCHEDULE CHANGES: There are no Project Schedule changes.

3.2 GENERAL ITEMS:

3.2.1 See attached Revised Cost Proposal Form.

3.2.2 See Architect's Addendum No. 3 dated September 27, 2012

COST PROPOSAL FORM – REVISED PER ADDENDUM NO. 3 DATED SEPTEMBER 27, 2012

NAME OF PROPOSER _____ DATE _____

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

The undersigned, responsive to the "Notice to Contractors" and in accordance with the "Request for Proposals" for the **BUILDING CONSOLIDATION - UTAH STATE HOSPITAL – DEPARTMENT OF HUMAN SERVICES DFCM PROJECT NO. 11065420** and having examined the Contract Documents and the site of the proposed Work and being familiar with all of the conditions surrounding the construction of the proposed Project, including the availability of labor, hereby proposes to furnish all labor, materials and supplies as required for the Work in accordance with the Contract Documents as specified and within the time set forth and at the price stated below. This price is to cover all expenses incurred in performing the Work required under the Contract Documents of which this bid is a part:

I/We acknowledge receipt of the following Addenda: _____

BASE BID: For all work shown on the Drawings and described in the Specifications and Contract Documents to construct the Pediatric and Mark I Payne Buildings as indicated (excluding the southwest wing; provide sample panels and material mock-ups only as indicated in specifications; Medical Services building is to remain; landscaping work is not included), I/we agree to perform for the sum of:

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

ADDITIVE ALTERNATE NO. 1: For all work shown on the Drawings and described in the Specifications and Contract Documents to construct the southwest wing of the Pediatric Building, I/we agree to perform for the sum of:

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

ADDITIVE ALTERNATE NO. 2: For all work shown on the Drawings and described in the Specifications and Contract Documents to include full stand-alone building envelope mock-ups for each building, I/we agree to perform for the sum of:

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

ADDITIVE ALTERNATE NO. 3: For all work shown on the Drawings and described in the Specifications and Contract Documents to completely demolish Medical Services Building, I/we agree to perform for the sum of:

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

ADDITIVE ALTERNATE NO. 4: For all work shown on the Drawings and described in the Specifications and Contract Documents to perform landscape work, I/we agree to perform for the sum of:

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

I/We guarantee that the Work will be Substantially Complete by _____ ***(specific date to be provided by contractor),*** should I/we be the successful proposer, and agree to pay liquidated damages in the amount of **$500.00** per day for each day after expiration of the Contract Time as stated in Article 3 of the Contractor's Agreement.

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

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

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

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

Type of Organization:

_____
(Corporation, Partnership, Individual, etc.)

Any request and information related to Utah Preference Laws:

_____

Respectfully submitted,

_____
Name of Proposer

ADDRESS:

_____

_____

_____
Authorized Signature

FFKR ARCHITECTS

bogue building **730 pacific avenue** salt lake city, utah 84104 **o** 801-521-6186 **f** 801-539-1916 **ffkr.com**

BID PACKAGE #1 ADDENDUM 2
(DFCM ADDENDUM #3)

Project: Utah State Hospital Consolidation
1300 East Center Street
Provo, Utah

Addendum Number: 02

Date: 9/27/2012

DFCM Proj #: 11065420 (Addendum #3)
FFKR Proj #: 11111 (Addendum #2)
Contractor: TBD

The Addendum is for all persons preparing Bids for the above named project; and, as such, shall be made a part of the Documents. Changes, corrections, and deletions enumerated herein shall be included in the Contractor's Bid. Bidders should acknowledge receipt of the Addendum in the space provided in the Contractor's Bid Form. Failure to do so may subject the Bidder to disqualification. In case of any conflict between the drawings, specifications, and this addendum, this addendum shall govern.

Summary: This Addendum describes changes to the Drawings and Project Manual for Bid Package #2.

Make changes to Bid documents as follows

General:

Site

- Replace 4 Street Median Signs with new. Fabrication to match existing. Sign Verbiage to be supplied by owner and coordinated by contractor.
- Add 6 New Drive Entry Signs with Building Identification. Fabrication to match existing. Sign Verbiage to be supplied by owner and coordinated by contractor.

Pediatric Facility

- Renumber door 241.1 to be door 214.1 throughout the documents.
- Renumber door 249 to be door 255 throughout the documents.

Specification Section - Description of change:

TABLE OF CONTENTS

DIVISION 26 - Electrical
delete Section
26 0936 - Modular Dimming Controls

VOLUME 1

01 2300 - Alternates
Section revised and replaced in its entirety. See attached.

06 4166 2.1.A
add line
8. Artistic Mill

06 4600 2.1.A
add line
9. Artistic Mill

07 5426 - Polyvinyl-Chloride (PVC) Roofing
Section revised and replaced in its entirety. See attached

08 4113 2.2.A
add line

5. Arcadia, Inc.

08 7100 3.9

HW Set: AL-05 Payne Building
delete line:
~~1 EA ACTUATOR, WALL MOUNT 8310 853 LCN~~

revise line:
2 PROX READER BY DIVISION 28

delete line:
~~**1 REMOTE RELEASE BY DIVISION 26**~~

revise operation to read:
ENTRANCE BY PROX READER ONLY. BOTH DOORS AUTO OPERATED. DOOR POSITIONS ARE MONITORED BY SECURITY SYSTEM. OPERATOR TO FUNCTION SEQUENTIALLY WITH INTERIOR OPERATOR. COORDINATE LOCATION OF ~~ACTUATORS,~~ POWER SUPPLIES AND PROX READER WITH ARCHITECT. TIMING OF OPERATORS TO BE DETERMINED BY OWNER.

~~REMOTE RELEASE SWITCH LOCATED IN ROOM 127 MAY RELEASE MAG LOCKS. COORDINATE LOCATION WITH ARCHITECT.~~

08 7100 3.9

HW Set: AL-06 Payne Building
delete line:
~~2 EA ACTUATOR, WALL MOUNT 8310 853 LCN~~

revise operation to read:
~~ADA OPERATOR TO FUNCTION SIMULATANEOUSLY WITH EXTERIOR OPERATOR. COORDINATE LOCATION OF ACTUATORS WITH ARCHITECT~~.

08 8000 2.7.B.1

add line
d. SAFTIFIRST; PYRAN Plantinum

VOLUME 2

09 2216 2.2.B

Revise Section. See attached.

09 2900 2.1.A

add line:

1. Fire Rated Wall Identification: See attached.

093000 2.4.E.1
revise line: remove 'PTB-01'.

09 5426 - Wood Ceilings, Soffits and Wall Panels
Section revised and replaced in its entirety. See attached.

09 9123 1.1.B
add line:
4. Section 09 2900 "Gypsum Board" for locations, colors, and dimensions of required painted identification for fire-rated walls.

11 1319 - Stationary Loading Dock Equipment
Section revised and replaced in its entirety. See attached.

11 6623 2.3.A
Add line:
7. Arizona Courtlines, Inc. (ACI)

11 6653 2.2.A
Add line:
7. Arizona Courtlines, Inc. (ACI)

VOLUME 3

26 0923 - Lighting Control Devices
Section Revised. See attached.

26 0943 - Network Lighting Controls
Section Revised. See attached.

26 3213 - Engine Generators
Section Revised. See attached.

26 3600 - Transfer Switches
Section Revised. See attached.

32 3113 2.3.A.1
add line:
d. Titan Industrial Steel Fence

Sheet / Detail - Description of change:

Payne Building

Sheet Cover

Deferred Submittals

Add Spec Section 211000 Fire Suppression
with an Estimated Date of Submittal of November 2013

Add Spec Section 220548 Seismic and Vibration Control
with an Estimated Date of Submittal of March 2013

Add Spec Section 230548 Seismic and Vibration Control
with an Estimated Date of Submittal of March 2013

Add Spec Section 260548 Seismic and Vibration Control
with an Estimated Date of Submittal of April 2013

Sheet L-L501 - Landscape Details

Landscape Supplemental Drawing: L-01. See attached.

Sheet A101 - Level 1 Floor Plan

Room 103A - Volunteer Storage

add 3 static shelving units provided by mobile storage manufacturer -
(1'-0" x 3'-0" x 7'-4") south wall.

Room 151A - Active Records Storage

Keynote 10.66 added: Relocated Existing Unit, Owner-Furnished Contractor-Installed

Room 153 - Inactive Records Storage

add 5 static shelving units provided by mobile storage manufacturer -
(1'-6" x 3'-6" x 7'-4") west wall.

Rooms 114 and 116 - Dental Operatory

Keynote 11.15 added: Dental Exam Chair, Owner-Furnished Contractor-Installed

Room 102B - Changing Room

Keynote 06.27 added: Custom Solid Maple Wood Bench
Keynote 10.05 added: Mirror

Room C03 - Corridor

Keynote 10.31 TYP added: Corner Guard - Stainless Steel
See attached ASD-014

Change All wall call-out tags from 'P3d' to 'P3'

Change All wall call-out tags from 'P6d to 'P6

Add 2 corner guards at Corridor C-04 Alcove to Room 145 - Electrical Room.

Add 2 corner guards at Corridor C-04 Alcove to Room 143 - Comm.

Sheet A102 - Roof Plan
General Notes:
Add Note #A:
" ALL ROOFTOP EQUIPMENT AND DUCT WORK SHALL BE ALUMINUM, STAINLESS STEEL, OR PAINTED AS REQUIRED "

Sheet A201 - Exterior Elevations
Revise Detail A1. See attached ASD-015

Add Keynote 10.06 - SIGN - SEE DETAIL D1/AF502
Add Keynote 10.15 - SIGN - SEE DETAIL C1/AF502

Sheet A302 - Wall Sections
Detail B2, and B3
Add note referencing the 7/8" furring channel for attachment of metal panel

Sheet A303 - Wall Sections
Revise Detail B2. See attached ASD-016

Revise Detail B3 and B4. See attached ASD-017

Sheet A504 - Ceiling Details
Revise Detail A1. See attached ASD-000

Revise Detail A3. See attached ASD-000

Added Reference Notes. See attached ASD-000

Sheet A610 - Partition Types
Detail A1
Wall Types P3, P6, P8, P12, C3, AND C6:
Remove Note " Brace wall as required RE: Structural note 5.10.B.1 / S002 and C1/- "

Omit Detail C1 in its entirety.

General Notes:

Revise Note #6 to read:
" ALL RATED PARTITIONS ARE TO BE LABELED PER THE SPECIFICATIONS "

Revise Note #7 to read:
" SEE STRUCTURAL DRAWINGS FOR EXTERIOR AND STRUCTURAL STEEL STUD SCHEDULES AND TYPICAL DETAILS INCLUDING HEADER CONDITIONS AND WALL BRACING "

Add Note #8:
" SEE DETAIL C2/A610 FOR INTERIOR NON-BEARING PARTITION WALL TYPICAL OPENING DETAILS "

Add Note #9:
" ALL P3 AND P6 PARTITIONS SHALL BE CONSTRUCTED TO DECK, U.N.O. "

Add Note #10:
" ALL PARTITIONS SHALL BE TYPE P3, U.N.O. "

Sheet A620 - HM Frame and Door/Window Schedule

Detail A1 - Type 21 Revision. See attached ASD-000

Detail C1 - Type S36 Revision. See attached ASD-000

Sheet A703 - Interior Elevations

Detail B4:

Add note: " Extend Scheduled wall tile to floor and provide an impervious epoxy bead at floor/wall joint. This room typical."

Sheet A801 - Millwork Schedule and Details

Revise Detail B2. See attached ASD-000

Revise Detail B3. See attached ASD-000

Sheet AF101 - Level 1 Finish Floor Plan

Sheet Re-Issued. See attached.

Added Signage Locations
Added Reference Notes

Sheet AF501 - Signage Details
Delete Detail C2 in its entirety.

Sheet AF601 - Room/Door Signage Schedule
Revisions/Additions to Schedule. See attached.

Sheet EL601 - Lighting Schedules and Diagrams
Sheet Re-Issued. See attached

Sheet EP101 - Level 1 Power Plan
Sheet Re-Issued. See attached.

Modifications to Re-Issued Sheet:
Delete both HC Actuators from Vestibule V-03.

Add HC Actuator at south wall interior of Vestibule V-01.

Move HC Actuator from canopy post to South Exterior wall adjacent to Doors V01.1.

Sheet EP601 - One Line Diagram
Sheet Re-Issued. See attached

Sheet EP603 - Panel Schedules
Sheet Re-Issued. See attached

Sheet EJ101 - Audio Visual Plan
Sheet Re-Issued. See attached.

Sheet EJ601 - Audio Visual Diagrams and Schedules
Sheet Re-Issued. See attached

Sheet EY101 - Level 1 Auxiliary Plan
Delete Remote Control from Room 127A - Trans Workstation.

Add CR Card Reader to north wall Corridor C-03 just inside Doors V02.2.

Sheet / Detail - Description of change:

Pediatric Facility

Sheet L-L101 - Landscape Plan
Landscape Supplemental Drawings: L-01. See attached.

Sheet L-L103 - Landscape Plan
Landscape Supplemental Drawings: L-02. See attached.

Sheet L-L104 - Landscape Plan
Landscape Supplemental Drawings: L-03. See attached.

Sheet L-L501 - Landscape Details
Landscape Supplemental Drawings: L-04. See attached.

Sheet AS101 -
Removed non-existent portion of tunnel. See attached ASD-030

Sheet AS102 -
Keynote 32.34 STONE WALL, RE: A2/AS204 added to area of demolished building. See attached ASD-031 and ASD-032

Sheet AS202 - Site Plan
Basketball court relocated and keynoted. See attached ASD-029

Sheet AS204 -
Sheet Re-Issued. See attached.

Modified Detail C3 'Site Bench', added keynotes, adjusted scale to 1"=1'0"

Modified Detail A2 'Stone Site Wall', added keynotes, and adjusted scale to 1"=1'-0"

Deleted Details A1 and A3

Dimensioned Detail A4

Removed C5 'Pediatric Building Median'

Added Detail C1 ' Typ Chain Link Fence @ Gate'.

Sheet AS205 - Site Details
Sheet added. See attached.

Sheet AS501 - Typical Site Details

Revised Details A3, A4, B4, and B5. See attached ASD-034 and ASD-035

Modified Detail B4 Keynote '4x8x16 CMU' to '8x8x16 CMU'. See attached ASD-034

Added Detail C2 'Median Work'. See attached ASD-033

Sheet A101C - Floor Plan

Rooms 432 and 448 Modified from 'Patient Toilet' to 'Patient ADA Toilet'; these changes are reflected on Sheets A411 and A412.

Sheet A101D - Floor Plan

Rooms 332 and 348 Modified from 'Patient Toilet' to 'Patient ADA Toilet'; these changes are reflected on Sheets A411 and A412.

Sheet A101E - Floor Plan

Remove two-hour wall rating; revised wall type from M8B to M8d.
See attached ASD-023

Sheet A102 - Level 2 Floor Plan

Sealed metal flashing is to occur at all duct penetrations in the floor of the penthouse level; For typical conditions See attached ASD-024 and ASD-025

Keynote 08.14 Louver added to note Louvers. See attached ASD-024 and ASD-025

Sheet A401 - Enlarged Lobby Plan and Elevations

Sheet Re-Issued. See attached.
Detail D2: Added.

Detail A3: reveals revised; Detail call-outs added.

Detail B3: reveals revised; Detail call-outs added.

Keynote 09.15 removed.

Sheet A411 - Enlarged Plans and Elevations

Modified title and plan from A2 'Typ Suite Patient Toilet' to 'Typ Suite ADA Patient Toilet'. See attached ASD-036

Sheet A412 - Enlarged Plans and Elevations

Modified E1-E6 title and elevations to Patient ADA Toilet. See attached ASD-037 and ASD-038

Sheet A501 - Plan Details
Detail E5: Added. See attached ASD-026

Added Detail B3. See attached ASD-027

Revised Details A1 and A2. See attached ASD-028

Sheet A521 - Ceiling Details
Sheet Re-Issued. See attached.
Added Detail D1 'EW Edge @ Vestibule Cloud'.

Added Detail D2 'Recessed Motorized Roller Shade'.

Added graphic scales to titleblocks

Sheet A531 - Roof Details
Sheet Re-Issued. See attached.
Detail B1 added.

Sheet A601 - Partition Types
Omit Detail D1 in its entirety.

Detail A1: Delete brace and note from all stud wall types

Modified General Note 9 'See structural drawings for exterior and structural steel stud schedules and typical details including header conditions and wall bracing.'

Added General Notes 10, 11, 12
10. 'See detail A1/A632 for interior non-bearing partition wall typical opening details.'
11. 'All non-load bearing interior steel studs carrying stone veneer are to be 16 Gauge, UNO.'
12. 'All P3 and P6 partitions shall be constructed to deck, UNO.'

Sheet A610 - Door Schedule
Exterior Gate Schedule
Add to Notes:
G-01, G-06 'Decorative Metal Gate',
G-02, G-03, G-05, G-07, G-08, G-09 'Chain Link Gate',
G-04 'Horizontal Sliding Chain Link Gate'

Sheet A703 - Interior Elevations
Modify Detail B1- Added Millwork type A at sink. See attached ASD-039

Sheet AF001 - Finish Schedule

Sheet AF002 - Finish Legend
Add SVB-01

Change CB-04 to Shaw-Mixed Metal and change CB-03 to Shaw-Serene Sky

Sheet AF002 - Finish Legend
Added paint to exposed ducts in Vestibule and Conference Room. See PNT-12, PNT-13, PNT-14 and PNT-15.

Sheet AF101A - Level 1 Finish Plan Area A
Modified Seclusion Toilet Room 366B Tag 'W=3'. This item also revised on Sheet AF001 - Finish Schedule.

Modified Finish Tag Legend Wall Type 5= 'Safety Padding'. This item also revised on Sheet AF001 - Finish Schedule.

Sheet AF101D - Level 1 Finish Plan Area D
Modified Ante Room 124 Tag 'W=5'. This item also revised on Sheet AF001 - Finish Schedule.

Modified Seclusion Toilet Room 124B Tag 'W=3'. This item also revised on Sheet AF001 - Finish Schedule.

Sheet AF501 - Signage Details
Delete Detail C2 in its entirety

Sheet ES102A - Site Electrical Plan Phase 1 Area A
Sheet Re-Issued. See attached

Sheet EP101B - Level 1 Power Plan Area B (Center)
Sheet Re-Issued. See attached

Sheet EP101C - Level 1 Power Plan Area C (West)
Sheet Re-Issued. See attached

Sheet EP101D - Level 1 Power Plan Area D (South)
Sheet Re-Issued. See attached

Sheet EP101E - Level 1 Power Plan Area e (East)
Sheet Re-Issued. See attached

Sheet EP602 - One Line Diagram (Standby Power)
Sheet Re-Issued. See attached

Sheet EL601 - Fixture Schedule
Sheet Re-Issued. See attached

Sheet ET101A - Level 1 Telecom Plan Area A (North)
Sheet Re-Issued. See attached

Sheet ET101B - Level 1 Telecom Plan Area B (Center)
Sheet Re-Issued. See attached

Sheet ET101C - Level 1 Telecom Plan Area C (West)
Sheet Re-Issued. See attached

Sheet ET101E - Level 1 Telecom Plan Area E (East)
Sheet Re-Issued. See attached

Supporting Documents:

Mechanical Addendum #2 - Payne Building

Mechanical Addendum #2 - Pediatric Facility

Structural Addendum #2 - Pediatric Facility

Specifications

01 2300 alternates
07 5419 polyvinyl-chloride _pvc_ roofing
09 2216 2.2.B non-structural metal framing
09 2900 2.1.A gypsum board (section 2.1.A)
09 5426 wood ceilings, soffits and wall panels
11 1319 stationary loading dock equipment
26 0923 Lighting Control Devices
26 0943 Network Lighting Controls
26 3213 Engine Generators
26 3600 Transfer Switches

Architectural Supporting Drawings:

Payne Building

AF101 - LEVEL 1 FINISH FLOOR PLAN

ASD-014 through ASD-022

L-01

Pediatric Facility

AS204 - SITE DETAILS
AS205 - SITE DETAILS
A401 - ENLARGED LOBBY PLAN & ELEVATIONS
A531 - ROOF DETAILS

ASD-023 through ASD-039

L-01 through L-04

SECTION 01 2300 - ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.2 DEFINITIONS

A. Alternate: An amount proposed by bidders for certain work that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.3 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

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

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A schedule of alternates is included at the end of this Section.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. 1: Add Southwest Wing to Pediatric Building.

1. Base Bid: Construct Pediatric Building as indicated, without including Southwest ~~Wing~~ **Unit**.
   - **a. The scope of the base bid is clarified in the Pediatric Facility drawings on Sheet G170 - Bidding Alternate Number One and demonstrates which unit is the Southwest Unit.**
   - **b. All mechanical, electrical and fire sprinkler systems and components located within the base bid building (ie: the remainder of the building that is not the Southwest Unit as identified on Sheet G170) are to remain as shown on the drawings for expansion in the future. This includes, but is not limited to, the quantities and sizes of electrical panels, air handlers, pumps, mechanical units, etc.**
   - **c. All piping that would be serving the Southwest Unit should be capped and valved 2'-0" from the exterior wall for connection in the future. Likewise, all ducts, conduit, cable tray, etc. that would be serving the Southwest unit are also to be capped 2'-0" from the exterior wall for connection in the future.**
   - d. **The scope of the site work included in the base bid would affect only the area directly under the footprint of the southwest unit and is to remain as an undeveloped pad. No further landscape improvements would be included in the base bid under the footprint of the Southwest Unit. All other work associated with the site work would remain as described in the drawings.**

2. Alternate: Construct Pediatric Building including Southwest ~~wing~~ **Unit** as indicated in Drawings

B. Alternate No. 2: Construct stand-alone building envelope mock-ups.

1. Base Bid: Sample panels and material mock-ups only, as indicated in specifications.
2. Alternate: Include full stand-alone building envelope mock-ups for each building as indicated in drawings.
   - **a. Stand-alone building envelope mock-ups for each building are to be built on-site with the exact locations of these installations to be coordinated between the contractor, owner and architect**

C. Alternate No. 3: Demolish Medical Services Building.

1. Base Bid: Medical Services building to remain.

2. Alternate: Completely demolish Medical Services Building.
   a. Completely remove all construction and demolition debris and rough grade and level affected area as a building pad.
   b. No further landscaping improvements in the area under the footprint of the MS Building are to be included in the scope of work.
   c. **Rework adjacent roads, including curb and gutter, as shown on the drawings.**

D. Alternate No. 4: Landscaping.

1. Base Bid: Do not include Landscape Work in bid.
   a. The scope of work included in the base bid is to be as shown on the drawings with the following exceptions. This scope is not to include the work described in Specification Sections 32 8000 Landscape Irrigation System, 32 9300 Landscape Planting, 32 9310 Lawn Seeding, and 32 9310 Native Seeding. This scope of work will also not include the 6" of topsoil associated with lawn seeding and native seeding.
   b. **The scope of work included in the base bid is to include all constructed elements and protection for existing landscape elements.**

2. Alternate: Perform **all** landscape Work as indicated.

E. Alternate No. 5: Payne Building Exterior
   1. Base Bid: Exterior concrete to be exposed and finished as specified.
   2. Alternate: Exterior concrete to be finished smooth with additive integral pigment.

END OF SECTION 01 2300

SECTION 07 5419 - POLYVINYL-CHLORIDE (PVC) ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Fully adhered PVC membrane roofing system over insulation.
2. Roof insulation of thicknesses required to achieve R-30 rating unless otherwise noted.
3. Walkway pads to all roof mounted equipment from roof access points.
4. 30 **20** year NDL warranty.

B. ~~Roof work shall be constructed to be~~ **Construct roof** free of non-draining areas, with positive slope to drain, under all conditions. Acceptance by the manufacturer of such standing water areas, low spots, wrinkles or other conditions that retain water under their existing guidelines shall have no bearing on the Architect or Owner's requirements to accept conditions that are deemed not to be acceptable. Such defects that create areas not suited to free drainage shall be cause for rejection of the installation until corrected.

1. Factory fabricated components may require modification to achieve positive drainage, to comply with specific project requirements for dimensional limitations and slopes to drain.

C. Related Sections include the following:

1. Section 06 1053 "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.
2. Section 07 2100 "Thermal Insulation" for insulation beneath the roof deck.
3. Section 07 6200 "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, and counterflashings and rain drainage as work of this Section**.**
4. Section 07 9200 "Joint Sealants."

1.2 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

B. Design Uplift Pressure: The uplift pressure, calculated according to procedures in SPRI's "Wind Load Design Guide for Fully Adhered and Mechanically Fastened Roofing Systems," before multiplication by a safety factor.

1.3 ACTION SUBMITTALS

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

B. LEED Submittals:

1. Product Data for Credit SS 7.2: For roof materials, documentation indicating that roof materials comply with Solar Reflectance Index requirement.
2. Product Data for Credit IEQ 4.1: For adhesives and sealants used inside the weatherproofing system, documentation including printed statement of VOC content.

C. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other Work.

1. Base flashings and membrane terminations.
2. Tapered insulation, including slopes.
3. Insulation fastening patterns.
4. Roof sump detail showing coordination with roof drains.

D. Samples for Verification: For the following products:

1. 12-by-12-inch square of sheet roofing, of color specified, including T-shaped side and end lap seam.

1.4 INFORMATIONAL SUBMITTALS

A. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing system.

1. Submit pre-installation notice from manufacture prior to start of Work. Include the following:

a. Confirmation that membrane and accessories comply with specifications.
b. Confirmation that scope of Work is in accordance with published technical data as per manufacture.
c. Confirmation that warranty has been requested and will be issued on DFCM manufacture warranty form at completion of roofing.

B. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.

1. Submit evidence of meeting performance requirements.

C. Qualification Data: For Installer and manufacturer.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of roofing system.

E. Research/Evaluation Reports: For components of membrane roofing system.

F. Inspection Report: Copy of roofing system manufacturer's inspection report of completed roofing installation.

1.5 CLOSEOUT SUBMITTALS

A. Warranties: Special warranties specified in this Section.

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

C. DFCM Required Roofing Closeout Documents: Require Installer to submit the following documents **(available from DFCM)** to project manager at completion of roofing Work. Project manager shall submit these documents to the roofing program manager. Keep copy of these documents in project file and delivered to agency.

1. DFCM Manufacture Roofing Warranty
2. DFCM 5-year Contractor Warranty – Required on all roofing projects.
3. DFCM Roofing History Record.
4. Roof Warranty Sign – See Roofing Design Requirements for details.

1.6 QUALITY ASSURANCE

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

1. A minimum of 15 years experience is required on similar sized projects.

B. ~~Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.~~ **Manufacturer Qualifications: A qualified firm listed in NRCA's low slope roofing materials guide, with a 10-year successful history as a roofing manufacture, that is approved by DFCM and that can show documented proof of how they intend to meet warranty obligations. Must be provided in contractor's submittal package.**

1. Manufacture must agree to and be willing to sign indicated State of Utah (DFCM) manufactures warranty for the roof system. The DFCM warranty, not the manufactures standard warranty, will be required at project completion.
2. Manufacture must have a certified installer/contractor program. This program must include continuing education for the contractor.
3. Manufacture must have a history of meeting Warranty obligations.
4. Manufacture is required to release all inspection reports concerning warranted roof system to contractor to submit to architect.

C. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.

D. Source Limitations: Obtain components for membrane roofing system from or approved by roofing membrane manufacturer.

E. Observation and Documentation: Roofing application is to be observed, a minimum of 2 visits per month, by the roof membrane manufacturer or consultant trained and approved by the

membrane manufacturer. Observations are to include documentation of correct installation of the roof assembly.

1. An employee of the roof installer will not qualify to conduct project monitoring.
2. Monitoring expenses are to be included in the roof installation cost.
3. **Require manufacture to provide, at no additional cost to owner, start up meeting, progress inspections, and a final warranty inspection at project completion by a full time technical representative.**

F. Exterior Fire-Test Exposure: ASTM E 108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.

G. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site. Review methods and procedures related to roof deck construction and roofing system including, but not limited to, the following:

1. Meet with Owner, DFCM Roofing Program Manager, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review conditions of sloped deck and tapered insulation to confirm that no flat spots exist in the installation.
6. Review structural loading limitations of roof deck during and after roofing.
7. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
8. Review requirements of existing membrane to maintain warranty in effect at time of work.
9. Review governing regulations and requirements for insurance and certificates if applicable.
10. Review temporary protection requirements for roofing system during and after installation.
11. Review roof observation and repair procedures after roofing installation.

H. Preinstallation Conference: Conduct conference at Project site. Comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to roofing system including, but not limited to, the following:

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing including installers of roof accessories and roof-mounted equipment.

2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.7 DELIVERY, STORAGE, AND HANDLING

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

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

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

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. **Store elevated off ground or roof deck**. **Do not use factory wrap as protective cover material.** Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

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

1.8 PROJECT CONDITIONS

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

1.9 WARRANTY

1. Special Warranty: DFCM standard Single Ply Warranty form, (attached to the end of this section) without NDL monetary limitation, in which manufacturer agrees to repair or

replace components of membrane roofing system that fail in materials or workmanship within specified warranty period.

1. Warranty Period: ~~15~~ **20** years from date of Substantial Completion.
2. **Special warranty includes roofing membrane, base flashings, roofing membrane accessories, roof insulation, fasteners, walkway products, and other components of membrane roofing system. Warranty shall specify minimum 90 mile per hour wind speed coverage.**

B. **Special Project Warranty: DFCM's standard Roofing Contractor's Warranty form, obtained from DFCM and signed by Installer, covering the Work of this Section, including all components of membrane roofing system, for the following warranty period:**

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

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.

1. **Where manufacturer's standards show one or more possible approaches for compliance with standards, provide the most stringent approach.**
2. **If discrepancies exist between or within the contract documents, the more stringent requirement will be enforced.**
3. **Comply with ASTM D 4434 for minimum standard linear dimensional change and for heat aging.**
4. **Comply with ASTM D 5635 minimum standard for dynamic impact resistance.**
5. **Comply with ASTM D 2136 minimum standard for low temperature flexibility.**

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.

C. Fire-Test-Response Characteristics: Provide membrane roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL, FMG, or another testing and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.

1. All products to comply with UL P717 or other 1 hr UL roof assembly pre-approved prior to bid.
2. Exterior Fire-Test Exposure: Class A; ASTM E 108, for application and roof slopes indicated.
3. Fire-Resistance Ratings: ASTM E 119, for fire-resistance-rated roof assemblies of which roofing system is a part.

4. Do not use materials that contain asbestos.

D. FMG Listing: Provide roofing membrane, base flashings, and component materials that comply with requirements in FMG 4450 and FMG 4470 as part of a membrane roofing system and that are listed in FMG's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FMG markings.

1. Fire/Windstorm Classification: Class 1A-90.
2. Design roofing for 90 m.p.h. minimum wind speed.

E. Solar Reflectance Index: Not less than 78 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.

F. Energy Star Listing: Provide roofing system that is listed on the DOE's ENERGY STAR "Roof Products Qualified Product List" for low-slope roof products.

2.2 MANUFACTURES AND INSTALLERS

~~A. Consult current DFCM list of approved Manufacturers and Installers.~~

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Carlisle SynTec, Incorporated
2. GAF Materials Corporation
3. Johns Manville
4. Sarnafil Inc.
5. Seaman Corporation; FiberTite-SM

2.3 ROOFING MEMBRANE

A. PVC Sheet: ASTM D 4434, Type III, ~~liquid coated, acrylic coated~~, fabric reinforced, **sheets with stable or low-migrating plasticizers and minimum of 10 year successful performance on projects similar in scope**. **Minor formulation changes are acceptable as long as the membrane has a successful history**. ~~Membrane must be manufactured by the company supplying the warranty (no private labeling) with a minimum 20 yr successful track record in the same geographical area~~.

1. Use membrane with low-wicking scrim.
2. Provide balanced membrane with scrim near center of membrane and with no less than 27 mils polymer above scrim.

B. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work. Only manufacturers that can comply with ALL of the following material performance descriptions will be considered. Manufacturers must be able to prove conformance to the performance criteria on each item or they will be rejected.

1. Thickness: ~~80~~ **60 mils,** nominal, **but not less than 57 mils actual thickness**. ~~with a minimum of 46 mils above reinforcing layer and a 30 year membrane warranty~~
2. Exposed Face Color: White.

2.4 AUXILIARY MATERIALS

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

1. Liquid-type auxiliary materials shall meet VOC limits of authorities having jurisdiction.
2. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the following limits for VOC content:

   a. Plastic Foam Adhesives: 50 g/L.
   b. Gypsum Board and Panel Adhesives: 50 g/L.
   c. Multipurpose Construction Adhesives: 70 g/L.
   d. Single-Ply Roof Membrane Adhesives: 250 g/L.
   e. PVC Welding Compounds: 510 g/L.
   f. Adhesive Primer for Plastic: 650 g/L
   g. Single-Ply Roof Membrane Sealants: 450 g/L.
   h. Nonmembrane Roof Sealants: 300 g/L.
   i. Sealant Primers for Nonporous Substrates: 250 g/L.
   j. Sealant Primers for Porous Substrates: 775 g/L.
   k. Other Adhesives and Sealants: 250 g/L.

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

1. Thickness may only be modified as required to turn 90 degree corners with membrane without crazing or cracking the face of the membrane

C. Bonding Adhesive: Manufacturer's standard bonding adhesive for membrane, and solvent-based bonding adhesive for base flashings.

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

E. Metal Battens: Manufacturer's standard aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch wide by 0.05 inch thick, prepunched.

F. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.

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

2.5 ROOF INSULATION

A. General: Provide preformed roof insulation boards that comply with requirements and referenced standards**, that are covered under the DFCM manufacture warranty, and** selected from manufacturer's standard sizes and of thicknesses indicated.

1. Provide insulation approved and documented as UL rated assembly that meets code requirements of building roofing system.
2. Provide insulation with Long Term Thermal Resistance (LTTR) that meets current code and requirements of the building.

B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, felt or glass-fiber mat facer on both major surfaces.

1. Available Manufacturers include the following:

a. Atlas Roofing Corporation.
b. Carlisle SynTec Incorporated.
c. Firestone Building Products Company.
d. Hunter Panels, LLC.
e. Johns Manville International, Inc.

C. Tapered Insulation: Provide factory-tapered insulation boards fabricated to a minimum slope of 3/8 inch per 12 inches. ~~EPS is NOT permitted in sloped applications~~ **Do not use EPS.**

D. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes at double the slope of main field of roof, where indicated for sloping to drain. Fabricate to slopes indicated.

2.6 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatible with membrane roofing.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.

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

D. Protection Mat: Woven or nonwoven polypropylene, polyolefin, or polyester fabric, water permeable and resistant to UV degradation, type and weight as recommended by roofing system manufacturer for application.

E. Slip Sheet: Manufacturer's recommended slip sheet, of type required for application to separate membrane from insulating substrate.

F. Cover Board: One of the following:

1. ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 5/8 inch thick, factory primed.

a. Products: Subject to compliance with requirements, provide one of the following:

1) CertainTeed Corporation; GlasRoc Sheathing.
2) Georgia-Pacific Corporation; Dens Deck.
3) National Gypsum Company; Gold Bond eXP Extended Exposure Sheathing.
4) USG Corporation; Securock Glass Mat Roof Board.

2. ASTM C 1278/C 1278M, cellulosic-fiber-reinforced, water-resistant gypsum substrate, 1/2 inch thick.

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

1) **USG Corporation; Securock Gypsum-Fiber Roof Board**

2.7 WALKWAYS

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, open-grid, surface-textured, flexible PVC walkway mat, approximately 9/16 inch thick, and acceptable to membrane roofing system manufacturer. To be installed from roof access points to all roof mounted equipment, surrounding each roof mounted component and routed between all pieces of roof mounted equipment.

1. Color: Gray.
2. Size: 24 x 24 squares or 3 foot wide by 33 feet long rolls.
3. Design Standard: Design Standards are used to establish a level of quality for the work. Premium products equal in quality of acceptable manufacturers may be used. The use of a Design Standard is not to be construed as a limit of competition or a constraint of trade.

a. Sarnafil Crossgrip Walkway Mat.
b. Carlisle ECO NOVA

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:

1. Verify that roof openings and penetrations are in place and set and braced and that roof drains are securely clamped in place.
2. Verify that pressure treated wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
3. Verify that surface plane flatness and fastening of steel roof deck comply with requirements in Division 5 Section "Steel Deck."
4. Verify that membrane shows no signs of abrasion, discoloration, or defects.
5. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

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

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

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

D. Employ roofer for repairing existing roof membrane as approved by the manufacturer, where warranties are still in effect for the existing assembly.

E. <u>If specified requirements do not meet manufacture's requirements, install per manufacture requirements at no additional cost to Owner. Where any portion of the specifications exceeds manufacture minimum requirements, install according to specifications rather than manufacture minimum requirements.</u>

~~3.3 VAPOR RETARDER INSTALLATION~~

~~A. Self Adhering Sheet: Place self adhering sheet in a single layer over area to receive vapor retarder, side lapping each sheet a minimum of 3 inches.~~

~~1. Continuously seal side and end laps by rolling with roller to ensure adhesion to substrate~~

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

3.4 INSULATION INSTALLATION

A. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

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

C. Install tapered insulation under area of roofing to conform to slopes indicated.

D. Install multiple layers of insulation, joints staggered **in both directions**, under area of roofing to achieve required thickness.

E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

F. Field trim factory formed units where required to provide slopes in crickets and drains.

G. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.

H. Mechanically Fastened Insulation: Install each layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type. Offset joints between layers.

1. Fasten first layer of insulation to resist uplift pressure at corners, perimeter, and field of roof.
2. Set each subsequent layer of insulation in a solid mopping of hot roofing asphalt, applied within plus or minus 25 deg F of equiviscous temperature.
3. Set each subsequent layer of insulation in adhesive, firmly pressing and maintaining insulation in place.

I. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction. Loosely butt cover boards together and fasten to roof deck.

1. Fasten cover boards according to requirements in FM Global's "RoofNav" for specified Windstorm Resistance Classification.
2. Fasten cover boards to resist uplift pressure at corners, perimeter, and field of roof.

3.5 ADHERED MEMBRANE ROOFING INSTALLATION

A. Adhere membrane roofing over area to receive roofing and install according to membrane roofing system manufacturer's written instructions.

1. Install sheet according to ASTM D 5036.

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

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

D. Bonding Adhesive: Apply to substrate and underside of membrane roofing at rate required by manufacturer and allow to partially dry before installing membrane roofing. Do not apply to splice area of membrane roofing.

E. In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, and perimeter of roofing.

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

G. Seams: Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet membrane.
2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
3. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.

H. Roof Drains: Completely prime the lead drain flashing and allow to dry prior to installation. Set 36-by-36-inch 4# lead flashing in bed of asphalt roofing cement or approved adhesive. Cover metal flashing with a second ply of roofing membrane and extend a minimum of 6 inches beyond edge of metal flashing onto field of single ply roofing membrane. Terminate the second ply to extend beneath the clamping ring of the drain. Clamp roofing membrane, metal flashing, and second ply into roof-drain clamping ring.

1. Install stripping according to roofing system manufacturer's written instructions.

3.6 BASE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply bonding adhesive to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with sheet flashing.

D. Clean seam areas and overlap and firmly roll sheet flashings into the adhesive. Weld side and end laps to ensure a watertight seam installation.

E. Extend sheet flashings up and over parapet caps and secure to continuous nailer. Provide transitions at horizontal to vertical to support membrane and avoid any line that could craze or crack under foot traffic at the parapet

F. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.7 WALKWAY MAT INSTALLATION

A. Flexible Walkway Mats: Install walkway mat products in locations indicated, from hatches to roof-top mounted equipment. Secure to roofing membrane according to roofing system and walkway mat manufacturers' written instructions.

3.8 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform roof tests and inspections and to prepare test reports.

B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Architect.

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

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

D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.9 PROTECTING AND CLEANING

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

B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates, and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

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

END OF SECTION 07 5419

2.2 FRAMING SYSTEMS

A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.

1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.
2. Protective Coating: ASTM A 653/A 653M, G40, hot-dip galvanized unless otherwise indicated.

B. **Steel** Studs and Runners: ASTM C 645. Use either steel studs and runners or dimpled steel studs and runners **of equivalent minimum base-metal thickness**.

~~1. Steel Studs and Runners:~~

~~a. Minimum Base-Metal Thickness: 0.033 inch.~~
~~b. Depth: As indicated on Drawings.~~

~~2. Dimpled Steel Studs and Runners:~~

~~a. Minimum Base-Metal Thickness: 0.025 inch.~~
~~b. Depth: As indicated on Drawings.~~

1. Minimum Base-Metal Thickness: 20GA.

2. Minimum Base-Metal Thickness at Door Jambs: 18 GA.

3. Depth: As indicated on Drawings.

C. Stud Spacer Bars: 7/8 inch by 7/8 inch by 50 inches long, right angle shaped bar, pre-notched.

1. Products: Subject to compliance with requirements, provide the following:

a. TRADEREADY SPAZZER™ 9200 SpacerBars; Dietrich Industries, Inc.
b. Equivalent, approved by Architect in writing prior to bid.

2. Minimum Base-Metal Thickness: 0.033 inch.

D. Slip-Type Head Joints: Where indicated, provide one of the following:

1. Single Long-Leg Runner System: ASTM C 645 top runner with 2-inch- deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top runner and with continuous bridging located within 12 inches of the top of studs to provide lateral bracing.
2. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.

a. Products: Subject to compliance with requirements, provide one of the following:

1) Dietrich Metal Framing; SLP-TRK Slotted Deflection Track.
2) MBA Building Supplies; Slotted Deflecto Track.

a. Each level of gypsum board finish indicated for use in exposed locations.

2. Apply or install final decoration indicated, including painting and wallcoverings, on exposed surfaces for review of mockups.
3. Simulate finished lighting conditions for review of mockups.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.4 DELIVERY, STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.5 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

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

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

1. Fire Rated Wall Identification:

a. Effectively and permanently identify all rated fire walls, fire barriers, fire partitions, smoke barriers, smoke partitions, and other walls required to have protected openings or penetrations with signs or stenciling indicating the associated fire and/or smoke rating.

1) Identification Location: One foot above ceilings; in chases, mechanical, electrical, or equipment rooms; pipe corridors and shafts; elevator

shafts and stairwells; and other areas where identifying markers do not present an objectionable presence.

2) Mark labeling 10 feet from every corner or change of direction, and repeat at intervals not exceeding twenty five feet thereafter. Locate identification on each side of interior walls.

3) Place labels on each side of outside corner where walls change direction.

b. Provide 2-inch high red lettering describing rated assembly, 1-inch high black lettering stating "Protect all openings and penetrations".

c. Provide labeling that contrasts with background.

d. Apply to substrates that have been properly cleaned and or have been painted to accept labels.

e. Provide labeling that complies with code requirements.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

A. Recycled Content of Gypsum Panel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

B. Regional Materials: Gypsum panel products shall be manufactured within 500 miles of Project site from materials that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles of Project site.

C. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

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

1. American Gypsum.
2. CertainTeed Corp.
3. Georgia-Pacific Gypsum LLC.
4. Lafarge North America Inc.
5. National Gypsum Company.
6. PABCO Gypsum.
7. Temple-Inland.
8. USG Corporation.

B. Gypsum Board, Type X: ASTM C 1396/C 1396M.

1. Thickness: 5/8 inch.
2. Long Edges: Tapered.

SECTION 09 5426 – WOOD CEILINGS, SOFFITS AND WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior tongue and groove closed board soffits.
2. Interior linear tongue and groove closed wood ceiling systems.
3. Flush wood panel suspended ceilings.
4. Flush wood paneling (wood-veneer wall surfacing).
5. Wood furring, blocking, shims, and hanging strips for installing flush wood paneling unless concealed within other construction before paneling installation.
6. Shop finishing of flush wood paneling.

B. Related Requirements:

1. Section 06 1053 "Miscellaneous Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing paneling and that are concealed within other construction before paneling installation.

C. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product, including panel products and finishing materials and processes.

B. LEED Submittals:

1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
2. Product Certificates for Credit MR 5: For products and materials required to comply with requirements for regional materials, certificates indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating distance to Project, cost for each regional material, and fraction by weight that is considered regional.

3. Certificates for Credit MR 7: Chain-of-custody certificates indicating that products specified to be made from certified wood comply with forest certification requirements. Include documentation that manufacturer is certified for chain of custody by an FSC-accredited certification body. Include statement indicating cost for each certified wood product.
4. Product Data for Credit IEQ 4.1: For installation adhesives, documentation including printed statement of VOC content.
5. Product Data for Credit IEQ 4.4: For composite wood products and fabrication adhesives, documentation indicating that products contain no urea formaldehyde.

C. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

1. Show locations and sizes of furring and blocking, including concealed blocking specified in other Sections.
2. For paneling produced from premanufactured sets, show finished panel sizes, set numbers, sequence numbers within sets, and method of cutting panels to produce indicated sizes.
3. For paneling veneered in fabrication shop, show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.

D. Samples for Initial Selection:

1. Shop-applied transparent finishes.

E. Samples for Verification:

1. Veneer leaves representative of and selected from flitches to be used for transparent-finished paneling.
2. Veneer-faced panel products for transparent finish, 8 by 10 inches, for each species and cut. Include at least one face-veneer seam and finish as specified.
3. 9-inch wide by 12-inch long wood ceiling sample. Make sample of wood species selected, with selected finish applied, and installed on clip rails.

1.4 INFORMATIONAL SUBMITTALS

A. Compliance Certificates:

1. For lumber that is not marked with grade stamp.

B. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Linear pattern.
2. Joint pattern.
3. Ceiling suspension members and locations of cliprails.
4. Method of attaching hangers to building structure.

5. Ceiling-mounted items.
6. Items penetrating finished ceiling including the following:

    a. Lighting fixtures.
    b. Air outlets and inlets.
    c. Speakers.
    d. Sprinklers.
    e. Access panels.

7. Ceiling perimeter.
8. Show locations and sizes of blocking and nailers, including concealed blocking and reinforcement specified in other Sections.

C. Qualification Data: For Installer.

D. Product Certificates: For each type of product.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For finishes to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Wood Panel: Set of 12-inch- square Samples of each type including approved species and finishes.
2. Suspension-System Components: Quantity of each exposed component equal to 2 percent of quantity installed.

1.7 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to NVLAP for testing indicated.

B. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

C. Installer Qualifications: Firm, approved by manufacturer, with a minimum of two years successful experience in installation of suspended wood ceilings of similar requirements to this project.

D. Forest Certification: Provide exterior architectural woodwork produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."

E. Paneling Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of flush wood paneling (wood-veneer wall surfacing) indicated for construction, finishes, installation, and other requirements.

1. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with those selections and requirements in addition to the quality standard.

F. Mockups: Build mockups to verify selections made under sample Submittals and to demonstrate aesthetic effects and qualities of materials and execution.

1. Build mockups of typical paneling as directed by Architect.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Protect materials against weather and contact with damp or wet surfaces. Stack lumber, plywood, and other panels flat with spacers between each bundle to provide air circulation. Provide for air circulation within and around stacks and under temporary coverings.

B. Store materials flat and level in a fully enclosed space.

1. Store linear wood strips in room in which they will be installed for a minimum of seventy-two hours immediately prior to ceiling installation.
2. Store linear wood strips off the floor

C. Schedule delivery of wood strips to avoid extended on-site storage and to avoid delaying the Work

1.9 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecast weather conditions permit work to be performed and at least one coat of specified finish can be applied without exposure to rain, snow, or dampness.

B. Deliver to site when temperature and humidity closely approximate interior conditions that will exist when building is occupied. The heating and cooling systems shall be operating before, during and after installation, with the humidity of the interior spaces maintained between 25 and 55 percent.

C. Do not install wood plank materials that are wet, moisture damaged, or mold damaged.

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

1.10 COORDINATION

A. Coordinate layout and installation of suspended wood ceilings and soffits and its suspension system with other work penetrating through the ceiling. This includes light fixtures, HVAC equipment, and fire suppression system components.

B. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that paneling can be installed as indicated.

1.11 WARRANTY

A. Special Warranty: Manufacturer's standard form in which flush wood panel surfacing manufacturer agrees to repair or replace components of flush wood veneer wall and ceiling (interior and exterior) surfacing panels that fail in materials or workmanship, within specified warranty period.

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

a. Structural failures.
b. Delamination of wood veneers from subsurface.
c. Deterioration of materials beyond normal weathering.

2. Warranty Period for defects in Prodema wall panels: 10 years from date of Substantial Completion.
3. Warranty Period for defects in Prodema ceiling (interior and exterior) panels: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Wood ceilings designed and installed to withstand the effects of earthquake motions according to the following:

1. Standard for Ceiling Suspension Systems Requiring Seismic Restraint: Comply with ASTM E 580.
2. CISCA's Guidelines for Systems Requiring Seismic Restraint: Comply with CISCA's "Guidelines for Seismic Restraint of Direct-Hung Suspended Ceiling Assemblies--Seismic Zones 3 & 4."

B. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: Comply with ASTM E 1264 for Class A materials.
2. Smoke-Developed Index: 50 or less.

2.2 MATERIALS, GENERAL

A. Certified Wood: The following wood products shall be produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship".

B. Materials, General: Provide materials that comply with requirements of referenced quality standard for each quality grade specified unless otherwise indicated.

C. Wood Moisture Content: 5 to 10 percent.

D. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each quality grade specified unless otherwise indicated.

1. Recycled Content of Medium-Density Fiberboard and Particleboard: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 20 percent.
2. Medium-Density Fiberboard: ANSI A208.2, Grade 130, made with binder containing no urea formaldehyde.

E. Z-Shaped Clips: Manufacturer’s standard clips.

F. C-Hangers: manufacturer’s standard C-hangers screw-attached to ceiling –panels and attached to suspension grid system.

G. Adhesives: Do not use adhesives that contain urea formaldehyde.

H. Source Limitations:

1. Wood Paneling: Obtain each type through one source from a single manufacturer.
2. Suspension System: Obtain each type through one source from a single manufacturer.

~~2.3 CLOSED LINEAR CEILING WOOD STRIPS~~

~~A. Basis-of-Design Product: Provide Closed Linear Wood Shiplap Style Strip System as provided by Rulon Company, or an equivalent system complying with requirements and approved by Architect prior to bid, by one of the following:~~

~~1. Architectural Components Group, Inc.~~
~~2. Architectural Surfaces, Inc. (Linwood I system)~~

~~B. General: Comply with DOC PS 20, "American Softwood Lumber Standard," and with applicable grading rules of inspection agencies certified by ALSC's Board of Review.~~

~~1. Provide materials that comply with requirements of AWI's quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.~~

~~C. Wood Strips: Linear, Closed Shiplap Style, 4-inch module with all-natural wood of species and finish indicated,~~

~~1. Size: 3/4 inch thick by 4 1/4 inch wide wood strips manufactured in nominal fixed lengths indicated on drawings. Dimension tolerances are ± 1/8 inches.~~

~~D. Wood Species and Cut for Transparent Finish: Maple, plain sawn or sliced.~~

~~E. Grade Stamps: Factory mark with grade stamp of inspection agency on surfaces that will not be exposed to view.~~

~~F. Linear Wood Strips: Prime grade, all-natural wood with clear, water resistant, class A fire retardant finish. Manufacture strips in random lengths with tongue-and-groove ends.~~

2.4 METAL SUSPENSION SYSTEMS, GENERAL

A. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

B. Suspension-System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635/C 635M.

C. Wood Ceiling Manufacturer Suspension Systems: Provide manufacturer’s cliprails, wire hangers, and other components as recommended by manufacturer. I Install as per approved Shop drawings and manufacturer recommendations.

D. Attachment Devices: Size for five times the design load indicated in ASTM C 635/C 635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.

1. Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing according to ASTM E 488 or ASTM E 1512 as applicable, conducted by a qualified testing and inspecting agency.

a. Type: Cast-in-place or postinstalled expansion anchors.
b. Corrosion Protection: Carbon-steel components zinc plated to comply with ASTM B 633, Class Fe/Zn 5 (0.005 mm) for Class SC 1 service condition.

E. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:

1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
2. Size: Select wire diameter so its stress at three times hanger design load (ASTM C 635/C 635M, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.135-inch- diameter wire.

F. Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.

G. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed with 0.04-inch- thick, galvanized-steel sheet complying with ASTM A 653/A 653M, G90 coating designation; with bolted connections and 5/16-inch- diameter bolts.

H. Stabilizer Channels, Tees, and Bars: Manufacturer's standard components for stabilizing main carriers; spaced as standard with manufacturer for use indicated; and factory finished with matte-black baked finish.

I. Seismic Struts: Manufacturer's standard compression struts designed to accommodate seismic forces.

J. Seismic Clips: Manufacturer's standard seismic clips designed and spaced to secure wood panels in place.

K. Hold-Down Clips: Where indicated, provide manufacturer's standard hold-down clips spaced 24 inches o.c. on all cross tees.

L. Carriers: Factory finished.

1. Main Carriers: Manufacturer’s standard cliprails installed on #12-gauge wire hangers.

M. Carrier Splices: Same metal, profile, and finish as indicated for carriers.

2.5 METAL SUSPENSION SYSTEM FOR WOOD PANEL CEILINGS

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

1. Armstrong World Industries, Inc.
2. CertainTeed Corp.
3. Chicago Metallic Corporation.
4. USG Interiors, Inc.; Subsidiary of USG Corporation.

B. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized according to ASTM A 653/A 653M, not less than G30 coating designation; with prefinished 15/16-inch- wide metal caps on flanges.

1. Structural Classification: Heavy-duty system.
2. End Condition of Cross Runners: Override (stepped) type.
3. Cap Material: Steel cold-rolled sheet.

2.6 EDGES, BORDERS AND PERIMETER TRIMS

A. Edges, borders, and perimeter trims shall be designated by Architect in accordance with standard design details available. All wood ceiling products specified shall be supplied by the ceiling manufacturer.

2.7 METAL EDGE MOLDINGS AND TRIM FOR WOOD PANEL CEILINGS

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

1. Armstrong World Industries, Inc.
2. CertainTeed Corp.
3. Chicago Metallic Corporation.
4. Fry Reglet Corporation.
5. Gordon, Inc.
6. USG Interiors, Inc.; Subsidiary of USG Corporation.

B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.

1. Provide manufacturer's standard edge moldings that fit wood panel edge details and suspension systems indicated and that match width and configuration of exposed runners unless otherwise indicated.
2. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

2.8 FLUSH WOOD PANELING (WOOD-VENEER WALL AND CEILING SURFACING)

A. Basis of Design Product: Subject to compliance with requirements, provide **Flat Veneer Panels by Prodema,** or an equivalent wood panel wall and ceiling system **by one of the following, or** by another manufacturer approved by architect prior to bid.

1. Norton Industries, Inc.;
2. Trespa;
3. Woodriver;
4. **Flynn;**
5. **9Wood;**

B. Wood Species and Cut: Maple, plain sliced.

C. Matching of Adjacent Veneer Leaves: Book match.

D. Matching within Panel Face: Center-balance match.

E. Matching of Adjacent Veneer Leaves and within Panel Face: Slip, center, book match.

F. Panel-Matching Method: Premanufactured panel sets used full width within each separate area.

G. Vertical Panel-Matching Method: Continuous end match; veneer leaves of upper panels are continuations of veneer leaves of lower panels.

~~H. Panel Core Construction: Fire-retardant particleboard or fire-retardant, medium-density fiberboard.~~

1. ~~Thickness: 3/4 inch~~.

I. Fire-Retardant-Treated Paneling: Panels shall consist of wood-veneer and fire-retardant particleboard or fire-retardant, medium-density fiberboard. Panels shall have a flame-spread index of 25 or less and a smoke-developed index of 450 or less per ASTM E 84 and be listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction.

J. Assemble panels by gluing and concealed fastening.

K. Panel Applications:

1. Veneer Panels for Interior walls and ceilings.

a. Panel Core Construction: Fire-retardant particleboard or fire-retardant, medium-density fiberboard.

1) Thickness: As specified by manufacturer to provide an installed flat, smooth surface with regard to panel size.

2. Veneer Panels for Exterior soffits.

a. Panel Core Construction: Fire-retardant resin.

1) Thickness: As specified by manufacturer to provide an installed flat, smooth surface with regard to panel size.

2.9 INSTALLATION MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Fire-retardant-treated softwood lumber, kiln dried to less than 15 percent moisture content.

B. Nails: stainless steel.

C. Screws: stainless steel.

1. Provide self-drilling screws for metal framing supports, as recommended by metal-framing manufacturer.

D. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts, unless otherwise indicated. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

E. VOC Limits for Installation Adhesives: Use products that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Wood Glues: 30 g/L.

2. Multipurpose Construction Adhesives: 70 g/L.
3. Contact Adhesive: 80 g/L.
4. Special-Purpose Contact Adhesive (contact adhesive that is used to bond melamine covered board, metal, unsupported vinyl, rubber, or wood veneer 1/16 inch or less in thickness to any surface): 250 g/L.

2.10 FABRICATION

A. Wood Moisture Content: 15 percent maximum.

B. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.

C. Fabricate wood ceilings to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:

1. Edges of Solid-Wood (Lumber) Members 5/8 Inch Thick: 1/16 inch.

D. Arrange paneling in shop or other suitable space in proposed sequence for examination by Architect. Mark units with temporary sequence numbers to indicate position in proposed layout.

1. Lay out one elevation at a time if approved by Architect.
2. Notify Architect seven days in advance of the date and time when layout will be available for viewing.
3. Provide lighting of similar type and level as that of final installation for viewing layout unless otherwise approved by Architect.
4. Rearrange paneling as directed by Architect until layout is approved.
5. Do not trim end units and other nonmodular-size units to less than modular size until after Architect's approval of layout.
6. Obtain Architect's approval of layout before start of assembly. Mark units and Shop Drawings with assembly sequence numbers based on approved layout.

E. Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

1. Notify Architect seven days in advance of the dates and times paneling fabrication will be complete.

F. Shop cut openings, to maximum extent possible, to receive hardware, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Smooth edges of cutouts and seal with a water-resistant coating suitable for exterior applications.

2.11 FINISHES

A. General: Finish paneling at fabrication shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.

B. Shop Priming: Shop apply the prime coat including backpriming, if any, for transparent-finished paneling specified to be field finished.

C. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing paneling, as applicable to each unit of work.

D. Grade: Provide finishes of same grade wood strips

E. Transparent Finish: Comply with requirements indicated below for grade, finish system, and sheen with sheen measured on 60-degree gloss meter per ASTM D 523:

1. Grade: Premium.
2. Factory-finish wood strips with clear varnish as recommended by linear wood ceiling manufacturer that meets Class A fire protection requirements per ASTM E-84.

a. Class A Rated Varnish: Durable, water resistant, clear, class fire retardant varnish that protects against moisture, chemicals, UV rays and physical abuse, while maintaining the class A fire protection. When exposed to flame or high heat, the coating puffs up to form a thick insulating cellular foam. This foam layer retards the penetration of heat, thereby reducing the flame spread and smoke development of combustible materials. Product is to maintain the natural wood appearance.

1) Color: Clear.
2) Staining: Match approved sample for color.
3) Open Finish for Open-Grain Woods: Do not apply filler to open-grain woods.
4) Sheen: Satin, 31-45 gloss units measured on 60-degree gloss meter per ASTM D 523.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition wood paneling and strips to average prevailing humidity conditions in installation areas. Heating and cooling systems are to be operating before, during, and after installation, with the humidity of the interior spaces maintained between 25 and 55 percent.

B. Verify that plenums are properly ventilated. Do not permit excessive build up of heat in the ceiling areas or above soffits.

C. Prior to the start of interior installations, verify that all exterior windows and doors are in place, glazed, and weather-stripped, roof is watertight, and wet trades' work is complete and thoroughly dry.

D. Verify that mechanical, electrical, and other utility service installations above the ceiling plane have been completed. No materials are to rest against or wrap around the ceiling suspension components or connecting hangers.

E. Measure each ceiling area and establish layout of ceiling panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

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

3.2 EXAMINATION

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

B. Before installing wood ceilings and soffits, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.3 INSTALLATION, GENERAL

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

1. Do not use manufactured units with defective surfaces, sizes, or patterns.

3.4 LINEAR WOOD STRIP CEILING AND SOFFIT INSTALLATION

A. General: Install wood ceilings and soffits to comply with manufacturer's written instructions and in compliance with applicable regulations and industry standards including seismic requirement indicated, per CISCA's "Ceiling Systems Handbook."

B. Scribe and cut woodwork to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.

C. Install wood strips level, plumb, true, and straight. Install level and plumb to a tolerance of 1/8 inch in 96 inches.

D. Perimeters: Using a leveling device, the contractor shall lay out and install perimeter trim, as specified.

E. HVAC and Light Fixture Suspensions: Electrical and mechanical installations must be supported independently of the linear wood ceiling.

F. Locate cliprails perpendicular to wood direction, 4 inches from one wall for the first cliprail, continuing 24 inches maximum, on center, ending within 4 inches of the opposite wall.

1. Do not support ceilings or soffits from or attach hangers to permanent metal forms, steel deck tabs, steel roof decks, ducts, pipes, or conduit.
2. Install suspension system carriers so they are aligned. Remove and replace dented, bent, or kinked members.

G. Suspend Wire Hangers.

1. Install hangers and clip rails plumb and free from contact with insulation or other objects within plenum that are not part of supporting structure or of ceiling suspension system.
2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
3. Where width of ducts and other construction within plenum produces hanger spacings that interfere with location of hangers or cliprails at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
4. Secure wire hangers to ceiling suspension members and to cliprails above with a minimum of three tight turns. Connect hangers directly to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
5. Space hangers not more than 48 inches o.c. along each cliprail member supported directly from hangers, unless otherwise indicated; and provide hangers not more than 8 inches from ends of each member.

H. Wood Strip Ceilings: Install wood strips onto clip rails as per manufacturer's instructions. Insert projections on each clip attached to the cliprail into grooves on back side of manufacturer's wood strips.

1. Adjust tools as required to assure that the clips achieve a deep seat within the wood grooves.
2. Proceed with installation, in sequence, from one wall to the opposite side.
3. Fit adjoining units to form flush, tight joints. Cut linear wood strips for accurate fit at borders and at interruptions and penetrations by other work through ceilings.
4. Stiffen edges of cut units as required to eliminate evidence of buckling or variations in flatness.
5. Install linear wood strips in coordination with suspension system and exposed moldings and trim.
6. Align joints in adjacent courses to form uniform, straight joints parallel to room axis in both directions.

I. Wood Strip Soffits: Install boards with edges over framing or blocking. Leave 3/16-inch gap at perimeter, openings, and horizontal panel joints unless otherwise recommended by panel manufacturer

1. Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than 36 inches long, except where shorter single-length pieces are necessary. Scarf running joints and stagger in adjacent and related members.
2. Install planks with no more variation from a straight line than 1/8 inch in 96 inches.
3. Handle, cut, and fasten wood as per manufacturer's recommendations.
4. Install soffit strips to comply with manufacturer's written instructions.
5. Seal butt joints at inside and outside corners and at trim locations.
6. Conceal fasteners to greatest practical extent by placing in grooves of siding pattern or by concealing with applied trim or battens as detailed.
7. Finish: Apply finish within two weeks of installation.

3.5 WOOD PANEL CEILING AND WALL INSTALLATION

A. Grade: Install paneling to comply with same grade as paneling to be installed.

B. Suspend ceiling hangers from building's structural members and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
8. Do not attach hangers to steel deck tabs.
9. Do not attach hangers to steel roof deck. Attach hangers to structural members.
10. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.

C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.

D. Install edge trim of type indicated at perimeter of wood ceiling area and where necessary to conceal edges of wood panels.

1. Screw attach edge trim to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
2. Do not use exposed fasteners, including pop rivets, on moldings and trim.

E. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

F. Install paneling level, plumb, true, and straight with no distortions. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches. Install with no more than 1/16 inch in 96-inch vertical cup or bow and 1/8 inch in 96-inch horizontal variation from a true plane.

1. For flush paneling with revealed joints, install with variations in reveal width, alignment of top and bottom edges, and flushness between adjacent panels not exceeding 1/32 inch.

G. Anchor paneling to supporting substrate with concealed panel-hanger clips, angles, and z-clips. Do not use face fastening unless otherwise indicated.

H. Complete finishing work specified in this Section to extent not completed at shop or before installation of paneling. Fill nail holes with matching filler where exposed.

1. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats are applied in shop.

I. General: Install wood panel ceilings to comply with ASTM C 636/C 636M and seismic design requirements indicated, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

3.6 FIELD QUALITY CONTROL FOR CEILINGS

A. Special Inspections: Engage a qualified special inspector to perform the following special inspections:

1. Compliance of seismic design.

B. Testing Agency: For ceiling panels, engage a qualified testing agency to perform tests and inspections and prepare test reports.

C. Perform the following tests and inspections of completed installations of wood panel ceiling hangers and anchors and fasteners in successive stages. Do not proceed with installations of wood panel ceiling hangers for the next area until test results for previously completed installations show compliance with requirements.

1. Extent of Each Test Area: When installation of ceiling suspension systems on each floor has reached 20 percent completion but no panels have been installed.

a. Within each test area, testing agency will select one of every 10 power-actuated fasteners and postinstalled anchors used to attach hangers to concrete and will test them for 200 lbf of tension; it will also select one of every two postinstalled anchors used to attach bracing wires to concrete and will test them for 440 lbf of tension.
b. When testing discovers fasteners and anchors that do not comply with requirements, testing agency will test those anchors not previously tested until 20 pass consecutively and then will resume initial testing frequency.

D. Wood panel ceiling hangers and anchors and fasteners will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports.

3.7 ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; replace woodwork where not possible to repair. Adjust joinery for uniform appearance.

B. Clean woodwork on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

A. Wipe wood strips with furniture polish to enhance surface finish. Touch up shop-applied finishes to restore damaged or soiled areas.

3.8 PROTECTION

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

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

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

END OF SECTION 09 5426

SECTION 11 1319 - STATIONARY LOADING DOCK EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. ~~Edge of~~ **Recessed** dock levelers.

B. Related Requirements:

1. Section 05 5000 "Metal Fabrications" for curb angles at edges of recessed pits and loading dock platform edge channels.
2. Section 11 1313 "Loading Dock Bumpers" for loading dock bumpers.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Inspect and discuss electrical roughing-in, equipment bases, and other preparatory work specified elsewhere.
2. Review sequence of operation for each type of loading dock equipment.
3. Review coordination of interlocked equipment specified in this Section and elsewhere.
4. Review required testing, inspecting, and certifying procedures.

1.3 DEFINITIONS

A. Operating Range: Maximum amount of travel above and below the loading dock level.

B. Working Range: Recommended amount of travel above and below the loading dock level for which loading and unloading operations can take place.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for stationary loading dock equipment.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings: For stationary loading dock equipment.

1. Include plans, elevations, sections, details, and attachments to other work.
2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of anchors and field connection.
3. Include diagrams for power, signal, and control wiring.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Welding certificates.

C. Product Test Reports: For each dock leveler, for tests performed by manufacturer and witnessed by a qualified testing agency.

1. Indicate compliance of dock levelers with requirements in MH 30.1 for determining rated capacity, which is based on comprehensive testing within last two years of current products.
2. Submittal Form: According to MH 30.1.

D. Sample Warranty: For manufacturer's special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For stationary loading dock equipment to include in operation and maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

1. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to Project site.

B. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3, "Structural Welding Code - Sheet Steel."

1.8 FIELD CONDITIONS

A. Field Measurements: Verify actual dimensions of construction contiguous with stationary loading dock equipment, including recessed pit dimensions, slopes of driveways, and heights of loading docks, by field measurements before fabrication.

1.9 WARRANTY

A. Manufacturer's Special Warranty: Manufacturer agrees to repair or replace dock levelers that fail in materials or workmanship within specified warranty period.

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

a. Structural failures including cracked or broken structural support members, load-bearing welds, and front and rear hinges.
b. Faulty operation of operators, control system, or hardware.
c. Deck plate failures including cracked plate or permanent deformation in excess of 1/4 inch between deck supports.
d. Hydraulic system failures including failure of hydraulic seals and cylinders.

2. Warranty Period for Structural Assembly: 10 years from date of Substantial Completion.
3. Warranty Period for Hydraulic System: Five years from date of Substantial Completion.
4. Warranty shall be for unlimited usage of leveler for the specified rated capacity over the term of the warranty.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 ~~EDGE OF~~ **RECESSED** DOCK LEVELERS

A. General: **Recessed**, hinged-lip-type, ~~edge-of-dock~~ levelers designed for permanent installation **in concrete pits preformed in the edge of loading platform**; of type, function, operation, capacity, size, and construction indicated; and complete with controls, safety devices, and accessories required.

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

a. Beacon Industries, Inc.
b. Blue Giant Equipment Corporation.
c. Pentalift Equipment Corporatiion
d. Pioneer Dock Equipment
~~e. Power& a division of Systems, Inc.~~
f. ~~Serco: 4Front Engineering Solutions, Inc.~~
g. Chalfant Dock Equipment.
h. DLM, Inc.
i. Ellis Industries, Inc.
j. Flexon, Inc.

k. McGuire, W. B. Co., Inc.; Division of Overhead Door Corporation.
l. NOVA Technology International, L.L.C.
m. Rite-Hite Corporation.
n. Rol-Lift Corporation.
o. Rotary Products Inc.
p. SPX Dock Products - Kelley.
q. SPX Dock Products - Serco.

B. Standard: Comply with MH 30.1, except for structural testing to establish rated capacity.

C. Rated Capacity: Capable of supporting total gross load of 300,000 lbs. without permanent deflection or distortion.

D. Not less than 3/8-inch- thick, nonskid steel plate.

1. Platform Ramp Width: As indicated on Drawings.
2. Frame: Manufacturer's standard.
3. Toe Guards: Equip open sides of dock leveler over range indicated with metal toe guards.

a. Toe-Guard Range: Entire upper operating range.

E. Hinged Lip: Not less than ~~7/16-inch- thick,~~ **1/2-inch- thick,** nonskid steel tread plate.

1. Hinge: Full-width, piano-type hinge with heavy-wall hinge tube and grease fittings, with gussets on lip and ramp for support.
2. Safety Barrier Lip: Designed to protect material-handling equipment from an accidental fall from loading platform edge of the dock leveler when the leveler is not in use.

F. Function: Dock levelers shall compensate for differences in height between truck bed and loading platform.

1. Vertical Travel: Operating range above platform level of sufficient height to enable lip to extend and clear truck bed before contact with the following minimum working range:

a. Above Adjoining Platform: ~~6 inches.~~ **12 inches.**
b. Below Adjoining Platform: ~~5 inches.~~ **12 inches.**

2. Automatic Vertical Compensation: Floating travel of ramp with lip extended and resting on truck bed shall compensate automatically for upward or downward movement of truck bed during loading and unloading.
3. Automatic Lateral Compensation: Tilting of ramp with lip extended and resting on truck bed shall compensate automatically for canted truck beds of up to ~~3 inches~~ **4 inches** over width of ramp.
4. Lip Operation: Manufacturer's standard mechanism, which automatically extends and supports hinged lip on ramp edge with lip resting on truck bed over dock leveler's working range, allows lip to yield under impact of incoming truck and automatically retracts lip when truck departs.

a. Length of Lip Extension: ~~17 inches~~ **16 inches.**

~~5.~~ Automatic Ramp Return: Automatic return of unloaded ramp, from raised or lowered positions to stored position, level with platform, as truck departs. ~~Leveler shall be capable of retracting to stored position while truck is at loading dock.~~

~~G. Mechanical Operating System: Manual control; counterbalance and spring operation. Spring-operated raising and walk-down lowering of unloaded ramp. Equip leveler with a torsion-spring counterbalancing mechanism controlled by a hold-down device.~~

~~1. Lever Handle: Self-storing lever handle for raising unloaded ramp with minimal lifting force by pulling lever back to extend lip and pushing lever forward to lower ramp and lip.~~

H. Hydraulic Operating System: Electric control from a remote-control station; fully hydraulic operation. Electric-powered hydraulic raising and hydraulic lowering of ramp. Equip leveler with a packaged unit including a unitized, totally enclosed, nonventilated, **208V Single Phase** electric motor, pump, manifold reservoir, and valve assembly of proper size, type, and operation for capacity of leveler indicated. **Include means for lowering ramp below platform level with lip retracted behind dock bumpers.** Provide a hydraulic velocity fuse connected to main hydraulic cylinder to limit loaded ramp's free fall to not more than 3 inches.

1. Remote-Control Station **with Emergency Stop**: Weatherproof ~~single-button~~ **multibutton control** station **with an UP button** of the constant-pressure type **and an emergency STOP button of the momentary-contact type**, enclosed in NEMA ICS 6, ~~Type 12~~ box. ~~Ramp and lip raise to vertical position and extend to truck bed by depressing and holding button~~. **Ramp raises by depressing and holding UP button; ramp lowers at a controlled rate by releasing UP button. All ramp movement stops, regardless of position of ramp or lip, by depressing STOP button. Normal operation resumes by engaging a manual reset button or by pulling out STOP button.**

I. Construction: Fabricate dock-leveler frame, platform supports, and lip supports from structural- and formed-steel shapes. Weld platform and hinged lip to supports. Fabricate entire assembly to withstand deformation during both operating and stored phases of service. Chamfer lip edge to minimize obstructing wheels of material-handling vehicles.

1. Cross-Traffic Support: Manufacturer's standard method of supporting ramp at platform level in stored position with lip retracted. Provide a means to release supports to allow ramp to descend below platform level.
2. Maintenance Strut: Integral strut to positively support ramp in up position during maintenance of dock leveler.

J. Integral Laminated-Tread Dock Bumper: Fabricated from 6-inch- thick, multiple, uniformly thick plies cut from fabric-reinforced rubber tires. Laminate plies under pressure on not less than two 3/4-inch- diameter, steel supporting rods that are welded at one end to 1/4-inch- thick, structural-steel end angle and secured with a nut and angle at the other end. Fabricate angles with predrilled anchor holes and sized to provide not less than 1 inch of tread plies extending beyond the face of closure angles.

K. Materials:

1. Steel Plates, Shapes, and Bars: ASTM 36/A 36M.
2. Rolled-Steel Floor Plate: ASTM A 786/A 786M, rolled from steel plate complying with ASTM A 572/A 572M, Grade 55.
3. Steel Tubing: ASTM A 500/A 500M, cold formed.
4. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
5. **Wood: DOC PS 20 dimension lumber, select structural grade, kiln dried.**
6. **Pressure-Treated Wood: DOC PS 20 dimension lumber, select structural grade, kiln dried, and pressure treated with waterborne preservatives to comply with AWPA C2.**

L. Dock-Leveler Finish: Manufacturer's standard finish.

M. Accessories:

1. Self-Forming Pan: **Manufacturer's standard prefabricated, self-forming steel form system for poured-in-place construction of concrete pit.**
2. ~~Cast-in-place design.~~
3. ~~Run-off guards.~~
4. ~~Ramp approach plate~~.
5. **Curb Angles: 3-by-3-by-1/4-inch galvanized-steel curb angles for edge of recessed leveler pit, with 1/2-inch- diameter by 6-inch- long concrete anchors welded to angle at 6 inches o.c.**
6. **Night Locks: Manufacturer's standard means to prevent extending lip and lowering ramp when overhead doors are locked.**
7. **Side and rear weatherseals.**
8. **Foam insulation under dock-leveler platform.**
9. **Abrasive skid-resistant surface.**

2.3 FINISH REQUIREMENTS

A. Finish loading dock equipment after assembly and testing.

1. **Toe Guards: Paint yellow to comply with ANSI Z535.1.**

B. Galvanizing: Hot-dip galvanize components to comply with the following:

1. ASTM A 123/A 123M for iron and steel loading dock equipment.
2. ASTM A 153/A 153M or ASTM F 2329 for iron and steel hardware for loading dock equipment.

C. Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat in manufacturer's standard color.

PART 3 - EXECUTION

3.1 EXAMINATION

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

B. Examine roughing-in for electrical systems for loading dock equipment to verify actual locations of connections before equipment installation.

C. Examine walls and floors of pits for suitable conditions where recessed loading dock equipment is to be installed. Pits shall be plumb and square and properly sloped for drainage from back to front of loading dock.

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

3.2 PREPARATION

A. Coordinate size and location of loading dock equipment indicated to be attached to or recessed into concrete or masonry, and furnish anchoring devices with templates, diagrams, and instructions for their installation.

B. Set curb angles in concrete edges of dock-leveler recessed pits with tops flush with loading platform. Fit exposed connections together to form hairline joints.

C. Place self-forming pan system for **recessed** levelers in proper relation to loading platform before pouring concrete.

D. Clean recessed pits of debris.

3.3 INSTALLATION

A. General: Install loading dock equipment**, including motors, pumps, control stations, wiring, safety devices, light-communication systems, and accessories** as required for a complete installation.

1. Rough-in electrical connections **according to requirements specified in Division 26 Sections**.

B. ~~Edge-of-dock~~ **Recessed Dock** Levelers: Attach dock levelers to loading dock platform **flush with adjacent loading dock surfaces and square to recessed pit** ~~in a manner that complies with requirements indicated for arrangement and position relative to top of platform~~.

~~1. Weld anchor holes in contact with continuous embedded loading dock edge channel. Weld or bolt bumper blocks to face of loading dock.~~

3.4 ADJUSTING

A. Adjust loading dock equipment to function smoothly and safely, and lubricate as recommended by manufacturer.

B. Test dock levelers for vertical travel within operating range indicated.

C. After completing installation of exposed, factory-finished loading dock equipment, inspect exposed finishes and repair damaged finishes.

3.5 MAINTENANCE SERVICE

A. Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of loading dock equipment Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper loading dock equipment operation at rated speed and capacity. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain loading dock equipment.

END OF SECTION 11 1319

SECTION 260923 - LIGHTING CONTROL DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following lighting control devices:
   1. Time switches.
   2. Outdoor photoelectric switches.
   3. Indoor occupancy sensors.
   4. Outdoor motion sensors.
   5. Lighting contactors.
   6. Emergency shunt relays.

B. Related Sections include the following:
   1. Division 26 Section "Network Lighting Controls" for low-voltage, manual and programmable lighting control systems.
   2. Division 26 Section "Wiring Devices" for wall-box dimmers, wall-switch occupancy sensors, and manual light switches.

1.3 DEFINITIONS

A. LED: Light-emitting diode.

B. PIR: Passive infrared.

1.4 SUBMITTALS

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

B. Shop Drawings: Show installation details for occupancy and light-level sensors.
   1. Interconnection diagrams showing field-installed wiring.

C. Field quality-control test reports.

D. Operation and Maintenance Data: For each type of product to include in emergency, operation, and maintenance manuals.

1.5 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

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1.6 COORDINATION

A. Coordinate layout and installation of ceiling-mounted devices with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, smoke detectors, fire-suppression system, and partition assemblies.

PART 2 - PRODUCTS

2.1 TIME SWITCHES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Area Lighting Research, Inc.; Tyco Electronics.
2. Cooper Greengate.
3. Grasslin Controls Corporation; a GE Industrial Systems Company.
4. Intermatic, Inc.
5. Leviton Mfg. Company Inc.
6. Lightolier Controls; a Genlyte Company.
7. Lithonia Lighting; Acuity Lighting Group, Inc.
8. Paragon Electric Co.; Invensys Climate Controls.
9. Square D; Schneider Electric.
10. TORK.
11. Touch-Plate, Inc.
12. Watt Stopper (The).

B. Electronic Time Switches: Electronic, solid-state programmable units with alphanumeric display; complying with UL 917.
1. Contact Configuration: DPST.
2. Contact Rating: 20-A ballast load, 120/240-V ac.
3. Programs: Six channels; each channel shall be individually programmable with 40 on-off operations per week and an annual holiday schedule that overrides the weekly operation on holidays.
4. Circuitry: Allow connection of a photoelectric relay as substitute for on-off function of a program on selected channels.
5. Astronomic Time: Selected channels.
6. Battery Backup: For schedules and time clock.

2.2 OUTDOOR PHOTOELECTRIC SWITCHES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Area Lighting Research, Inc.; Tyco Electronics.
2. Cooper Greengate.
3. Grasslin Controls Corporation; a GE Industrial Systems Company.
4. Intermatic, Inc.
5. Lithonia Lighting; Acuity Lighting Group, Inc.
6. Novitas, Inc.
7. Paragon Electric Co.; Invensys Climate Controls.
8. Square D; Schneider Electric.
9. TORK.
10. Touch-Plate, Inc.
11. Watt Stopper (The).

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B. Description: Solid state, with SPST dry contacts rated for 1800-VA tungsten or 1000-VA inductive, to operate connected relay, contactor coils, or microprocessor input; complying with UL 773A.
   1. Light-Level Monitoring Range: 1.5 to 10 fc (16.14 to 108 lx), with an adjustment for turn-on and turn-off levels within that range, and a directional lens in front of photocell to prevent fixed light sources from causing turn-off.
   2. Time Delay: 15-second minimum, to prevent false operation.
   3. Surge Protection: Metal-oxide varistor, complying with IEEE C62.41.1, IEEE C62.41.2, and IEEE 62.45 for Category A1 locations.
   4. Mounting: Twist lock complying with IEEE C136.10, with base-and-stem mounting or stem-and-swivel mounting accessories as required to direct sensor to the north sky exposure.

2.3 INDOOR OCCUPANCY SENSORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Cooper Greengate.
   2. Hubbell Lighting.
   3. Leviton Mfg. Company Inc.
   4. Lithonia Lighting; Acuity Lighting Group, Inc.
   5. Novitas, Inc.
   6. RAB Lighting, Inc.
   7. Sensor Switch, Inc.
   8. TORK.
   9. Watt Stopper (The).

B. General Description: Ceiling-mounting, solid-state units with a separate relay unit.
   1. Operation: Unless otherwise indicated, turn lights on when covered area is occupied and off when unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.
   2. Sensor Output: Contacts rated to operate the connected relay, complying with UL 773A. Sensor shall be powered from the relay unit.
   3. Relay Unit: Dry contacts rated for 20-A ballast load at 120- and 277-V ac, for 13-A tungsten at 120-V ac, and for 1 hp at 120-V ac. Power supply to sensor shall be 24-V dc, 150-mA, Class 2 power source as defined by NFPA 70.
   4. Mounting:
      a. Sensor: Suitable for mounting in any position on a standard outlet box.
      b. Relay: Externally mounted through a 1/2-inch (13-mm) knockout in a standard electrical enclosure.
      c. Time-Delay and Sensitivity Adjustments: Recessed and concealed behind hinged door.
   5. Indicator: LED, to show when motion is being detected during testing and normal operation of the sensor.
   6. Bypass Switch: Override the on function in case of sensor failure.
   7. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc (21.5 to 2152 lx); keep lighting off when selected lighting level is present.

C. Dual-Technology Type: Ceiling mounting; detect occupancy by using a combination of PIR and ultrasonic detection methods in area of coverage. Particular technology or combination of technologies that controls on-off functions shall be selectable in the field by operating controls on unit.
   1. Sensitivity Adjustment: Separate for each sensing technology.

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2. Detector Sensitivity: Detect occurrences of 6-inch- (150-mm-) minimum movement of any portion of a human body that presents a target of not less than 36 sq. in. (232 sq. cm), and detect a person of average size and weight moving not less than 12 inches (305 mm) in either a horizontal or a vertical manner at an approximate speed of 12 inches/s (305 mm/s).
3. Detection Coverage (Standard Room): Detect occupancy anywhere within a circular area of 1000 sq. ft. (93 sq. m) when mounted on a 96-inch- (2440-mm-) high ceiling.

2.4 LIGHTING CONTACTORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Allen-Bradley/Rockwell Automation.
2. ASCO Power Technologies, LP; a division of Emerson Electric Co.
3. Cooper Greengate.
4. Eaton Electrical Inc.; Cutler-Hammer Products.
5. GE Industrial Systems; Total Lighting Control.
6. Grasslin Controls Corporation; a GE Industrial Systems Company.
7. Hubbell Lighting.
8. Lithonia Lighting; Acuity Lighting Group, Inc.
9. MicroLite Lighting Control Systems.
10. Square D; Schneider Electric.
11. TORK.
12. Touch-Plate, Inc.
13. Watt Stopper (The).

B. Description: Electrically operated and mechanically held, combination type with nonfused disconnect, complying with NEMA ICS 2 and UL 508.
1. Current Rating for Switching: Listing or rating consistent with type of load served, including tungsten filament, inductive, and high-inrush ballast (ballast with 15 percent or less total harmonic distortion of normal load current).
2. Fault Current Withstand Rating: Equal to or exceeding the available fault current at the point of installation.
3. Enclosure: Comply with NEMA 250.
4. Provide with control and pilot devices as indicated on drawings, matching the NEMA type specified for the enclosure.

2.5 EMERGENCY SHUNT RELAY

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Lighting Control and Design, Inc.

B. Description: Normally closed, electrically held relay, arranged for wiring in parallel with manual or automatic switching contacts; complying with UL 924.
1. Coil Rating: 277 V.

2.6 CONDUCTORS AND CABLES

A. Power Wiring to Supply Side of Remote-Control Power Sources: Not smaller than No. 12 AWG. Comply with requirements in Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

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B. Classes 2 and 3 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 18 AWG. Comply with requirements in Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

C. Class 1 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 14 AWG. Comply with requirements in Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

PART 3 - EXECUTION

3.1 SENSOR INSTALLATION

A. Install and aim sensors in locations to achieve not less than 90 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.

3.2 CONTACTOR INSTALLATION

A. Mount electrically held lighting contactors with elastomeric isolator pads, to eliminate structure-borne vibration, unless contactors are installed in an enclosure with factory-installed vibration isolators.

3.3 WIRING INSTALLATION

A. Wiring Method: Comply with Division 26 Section "Low-Voltage Electrical Power Conductors and Cables." Minimum conduit size shall be 1/2 inch (13 mm).

B. Wiring within Enclosures: Comply with NECA 1. Separate power-limited and nonpower-limited conductors according to conductor manufacturer's written instructions.

C. Size conductors according to lighting control device manufacturer's written instructions, unless otherwise indicated.

D. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

3.4 IDENTIFICATION

A. Identify components and power and control wiring according to Division 26 Section "Identification for Electrical Systems."
   1. Identify controlled circuits in lighting contactors.
   2. Identify circuits or luminaries controlled by photoelectric and occupancy sensors at each sensor.

B. Label time switches and contactors with a unique designation.

3.5 PROGRAMMING

A. Programming: Program system operations and time settings per the owner's direction. Record final program operations and time settings in operations and maintenance manuals.

3.6 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:

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1. After installing time switches and sensors, and after electrical circuitry has been energized, adjust and test for compliance with requirements.
2. Operational Test: Verify operation of each lighting control device, and adjust time delays.

B. Lighting control devices that fail tests and inspections are defective work.

3.7 ADJUSTING

A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting sensors to suit occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.

3.8 DEMONSTRATION

A. Coordinate demonstration of products specified in this Section with demonstration requirements for low-voltage, programmable lighting control system specified in Division 26 Section "Network Lighting Controls."

B. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain lighting control devices. Refer to Division 01 Section "Demonstration and Training."

END OF SECTION 260923

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SECTION 260943 - NETWORK LIGHTING CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes manually operated lighting controls with relays and control module.

B. Related Sections:
1. Division 26 Section "Lighting Control Devices" for time clocks, photoelectric sensors, occupancy sensors, and multipole contactors.

1.3 DEFINITIONS

A. LonWorks: A control network technology platform for designing and implementing interoperable control devices and networks.

B. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50 V or for remote-control, signaling and power-limited circuits.

C. RS-485: A serial network protocol, similar to RS-232, complying with TIA-485-A.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for control modules, manual switches and plates, and conductors and cables.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
2. Outline Drawings: Indicate dimensions, weights, arrangement of components, and clearance and access requirements.
3. Block Diagram: Show interconnections between components specified in this Section and devices furnished with power distribution system components. Indicate data communication paths and identify networks, data buses, data gateways, concentrators, and other devices to be used. Describe characteristics of network and other data communication lines.
4. Wiring Diagrams: For power, signal, and control wiring. Coordinate nomenclature and presentation with a block diagram.

C. Field quality-control reports.

D. Operation and Maintenance Data: For lighting controls to include in emergency, operation, and maintenance manuals.

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E. Warranty: Sample of special warranty.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain lighting control module and power distribution components through one source from a single manufacturer.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Comply with 47 CFR, Subparts A and B, for Class A digital devices.

D. Comply with protocol described in IEC 60929, Annex E, for DALI lighting control devices, wiring, and computer hardware and software.

E. Comply with NFPA 70.

1.6 COORDINATION

A. Coordinate lighting control components specified in this Section with components specified in Division 26 Section "Panelboards."

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of lighting controls that fail in materials or workmanship or from transient voltage surges within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Failure of software input/output to execute switching or dimming commands.
      b. Failure of modular relays to operate under manual or software commands.
      c. Damage of electronic components due to transient voltage surges.
   2. Warranty Period: Two years from date of Substantial Completion.
   3. Extended Warranty Period Failure Due to Transient Voltage Surges: Eight years.
   4. Extended Warranty Period for Electrically Held Relays: Ten years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Acuity Brands Lighting, Inc.; Lithonia Lighting brand.
   2. Cooper Greengate.
   3. Leviton Mfg. Company Inc.
   4. Lighting Control & Design, Inc.
   5. Lightolier Controls; a division of Genlyte Group, LLC.
   6. Lutron Electronics Co., Inc.
   7. NexLight; part of the Northport Engineering Group.
   8. Square D; a brand of Schneider Electric.
   9. Watt Stopper/Legrand.

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2.2 SYSTEM REQUIREMENTS

A. Expandability: System shall be capable of increasing the number of control functions in the future by 25 percent of current capacity; to include equipment ratings, housing capacities, spare relays, terminals, number of conductors in control cables, and control software.

B. Performance Requirements: Manual switch operation sends a signal to network-system control module that processes the signal according to its programming and routes an open or close command to one or more relays in the power-supply circuits to groups of lighting fixtures or other loads.

2.3 CONTROL MODULE

A. Control Module Description: Comply with UL 916 (CSA C22.2, No. 205); microprocessor-based, solid-state, 365-day timing and control unit. Output circuits shall be switched on or off by internally programmed time signals or by program-controlled analog or digital signals from external sources. Output circuits shall be pilot-duty relays compatible with power switching devices. An integral keypad shall provide local programming and control capability. A key-locked cover and a programmed security access code shall protect keypad use. An integral alphanumeric LCD or LED shall display menu-assisted programming and control.

2.4 POWER DISTRIBUTION COMPONENTS

A. Modular Relay Panel: Comply with UL 508 (CAN/CSA C22.2, No. 14) and UL 916 (CSA C22.2, No. 205); factory assembled with modular single-pole relays, power supplies, and accessory components required for specified performance.
   1. Cabinet: Steel with hinged, locking door.
      a. Barriers separate low-voltage and line-voltage components.
      b. Directory: Mounted on back of door. Identifies each relay as to load groups controlled and each programmed pilot device if any.
      c. Control Power Supply: Transformer and full-wave rectifier with filtered dc output.
   2. Single-Pole Relays: Mechanically held unless otherwise indicated; split-coil, momentary-pulsed type.
      a. Low-Voltage Leads: Plug connector to the connector strip in cabinet and pilot light power where indicated.
      b. Rated Capacity (Mounted in Relay Panel): 20 A, 125-V ac for tungsten filaments; 20 A, 277-V ac for ballasts.
      c. Endurance: 50,000 cycles at rated capacity.
      d. Mounting: Provision for easy removal and installation in relay cabinet.

B. Line-Voltage Surge Suppression: Factory installed as an integral part of 120- and 277-V ac, solid-state control panels.

2.5 MANUAL ANALOG SWITCHES AND PLATES

A. Push-Button Switches: Modular, momentary-contact, low-voltage type.
   1. Match color specified in Division 26 Section "Wiring Devices."
   2. Integral green LED pilot light to indicate when circuit is on.
   3. Internal white LED locator light to illuminate when circuit is off.

B. Manual, Maintained Contact, Full- or Low-Voltage Switch: Comply with Division 26 Section "Wiring Devices."

C. Wall-Box Dimmers: Comply with Division 26 Section "Wiring Devices."

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D. Wall Plates: Single and multigang plates as specified in Division 26 Section "Wiring Devices."

E. Legend: Engraved or permanently silk-screened on wall plate where indicated. Use designations indicated on Drawings.

2.6 CONDUCTORS AND CABLES

A. Power Wiring to Supply Side of Class 2 Power Source: Not smaller than No. 12 AWG, complying with Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

B. Classes 2 and 3 Control Cables: Stranded copper, complying with UL 83, multiconductor cable with copper conductors not smaller than No. 18 AWG, complying with Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

C. Class 1 Control Cables: Stranded copper, complying with UL 83, multiconductor cable with copper conductors not smaller than No. 14 AWG, complying with Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

D. Structured Network Digital and Multiplexed Signal Cables: UTP cable with copper conductors, complying with TIA/EIA-568-B.2, Category 5e for horizontal copper cable and with Division 27 Section "Communications Horizontal Cabling."

PART 3 - EXECUTION

3.1 WIRING INSTALLATION

A. Comply with NECA 1.

B. Wiring Method: Install wiring in raceways [except where installed in accessible ceilings] [except where installed in accessible ceilings and gypsum board partitions]. Minimum conduit size shall be 1/2 inch (13 mm).
   1. For power wiring comply with Division 26 Section "Low-Voltage Electrical Power Conductors and Cables"
   2. For digital data transmission and low-voltage (operating at less than 50 V) remote control and signaling cables, comply with Division 26 Section "Control-Voltage Electrical Power Cables"

C. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points. Separate power-limited and non-power-limited conductors according to conductor manufacturer's written instructions.

D. Install field-mounting transient voltage suppressors for lighting control devices in Category A locations that do not have integral line-voltage surge protection.

E. Size conductors according to lighting control device manufacturer's written instructions unless otherwise indicated.

F. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in terminal cabinets, equipment enclosures, and in junction, pull, and outlet boxes.

G. Identify components and power and control wiring according to Division 26 Section "Identification for Electrical Systems."

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3.2 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Tests and Inspections:
   1. Test for circuit continuity.
   2. Verify that the control module features are operational.
   3. Check operation of local override controls.
   4. Test system diagnostics by simulating improper operation of several components selected by Architect.

C. Lighting controls will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.

3.3 ADJUSTING

A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.

3.4 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain lighting controls. See Division 01 Section "Demonstration and Training."

END OF SECTION 260943

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SECTION 263213 - ENGINE GENERATORS

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 packaged engine-generator sets for emergency power supply with the following features:
   1. Diesel engine.
   2. Unit-mounted cooling system.
   3. Unit-mounted control and monitoring.
   4. Performance requirements for sensitive loads.
   5. Outdoor enclosure.

B. Related Sections include the following:
   1. Division 26 Section "Transfer Switches" for transfer switches including sensors and relays to initiate automatic-starting and -stopping signals for engine-generator sets.

1.3 DEFINITIONS

A. Operational Bandwidth: The total variation from the lowest to highest value of a parameter over the range of conditions indicated, expressed as a percentage of the nominal value of the parameter.

1.4 SUBMITTALS

A. Product Data: For each type of packaged engine generator indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories. In addition, include the following:
   1. Thermal damage curve for generator.
   2. Time-current characteristic curves for generator protective device.

B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
   1. Dimensioned outline plan and elevation drawings of engine-generator set and other components specified.
   2. Design Calculations: Signed and sealed by a qualified professional engineer. Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
   3. Vibration Isolation Base Details: Signed and sealed by a qualified professional engineer. Detail fabrication, including anchorages and attachments to structure and to supported equipment. Include base weights.
   4. Wiring Diagrams: Power, signal, and control wiring.

C. Manufacturer Seismic Qualification Certification: Submit certification that day tank, engine-generator set, batteries, battery racks, accessories, and components will withstand seismic

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forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems." Include the following:

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
   a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

D. Qualification Data: For testing agency.

E. Source quality-control test reports.
1. Certified summary of prototype-unit test report.
2. Certified Test Reports: For components and accessories that are equivalent, but not identical, to those tested on prototype unit.
3. Certified Summary of Performance Tests: Certify compliance with specified requirement to meet performance criteria for sensitive loads.
4. Report of factory test on units to be shipped for this Project, showing evidence of compliance with specified requirements.
5. Report of sound generation.
6. Report of exhaust emissions showing compliance with applicable regulations.
7. Certified Torsional Vibration Compatibility: Comply with NFPA 110.

F. Field quality-control test reports.

G. Operation and Maintenance Data: For packaged engine generators to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
1. List of tools and replacement items recommended to be stored at Project for ready access. Include part and drawing numbers, current unit prices, and source of supply.

H. Warranty: Special warranty specified in this Section.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer. Maintain, within 200 miles (321 km) of Project site, a service center capable of providing training, parts, and emergency maintenance repairs.

B. Source Limitations: Obtain packaged generator sets and auxiliary components through one source from a single manufacturer.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

D. Comply with ASME B15.1.

E. Comply with NFPA 37.

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F. Comply with NFPA 70.

G. Comply with NFPA 99.

H. Comply with NFPA 110 requirements for Level 1 emergency power supply system.

I. Comply with UL 2200.

J. Engine Exhaust Emissions: Comply with applicable state and local government requirements.

K. Noise Emission: Comply with applicable state and local government requirements for maximum noise level at adjacent property boundaries due to sound emitted by generator set including engine, engine exhaust, engine cooling-air intake and discharge, and other components of installation.

1.6 PROJECT CONDITIONS

A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service according to requirements indicated:
1. Notify Architect and Owner no fewer than ten days in advance of proposed interruption of electrical service.
2. Do not proceed with interruption of electrical service without Owner's written permission.

B. Environmental Conditions: Engine-generator system shall withstand the following environmental conditions without mechanical or electrical damage or degradation of performance capability:
1. Ambient Temperature: Minus 15 to plus 40 deg C.
2. Relative Humidity: 0 to 95 percent.
3. Altitude: Sea level to 6000 feet (1800 m).

1.7 COORDINATION

A. Coordinate size and location of concrete bases for package engine generators. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of packaged engine generators and associated auxiliary components that fail in materials or workmanship within specified warranty period.
1. Warranty Period: Five years for parts and labor from date of Substantial Completion.

1.9 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of manufacturer's designated service organization. Include quarterly exercising to check for proper starting, load transfer, and running under load. Include routine preventive maintenance as recommended by manufacturer and adjusting as required for proper operation. Provide parts and supplies same as those used in the manufacture and installation of original equipment.

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PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, including limitations on available space as allowed on the drawings, provide products by one of the following:
   1. Generac Power Systems, Inc.
   2. Kohler Power Systems, Inc.
   3. Onan/Cummins Power Generation; Industrial Business Group.
   4. Spectrum Detroit Diesel.

2.2 ENGINE-GENERATOR SET

A. Factory-assembled and -tested, engine-generator set, compliant with EPA Tier 3 standards.

B. Mounting Frame: Maintain alignment of mounted components without depending on concrete foundation; and have lifting attachments.
   1. Rigging Diagram: Inscribed on metal plate permanently attached to mounting frame to indicate location and lifting capacity of each lifting attachment and generator-set center of gravity.

C. Capacities and Characteristics:
   1. Power Output Ratings: Nominal ratings as indicated.
   2. Output Connections: Three-phase, four wire.
   3. Nameplates: For each major system component to identify manufacturer's name and address, and model and serial number of component.

D. Generator-Set Performance for Sensitive Loads:
   1. Oversizing generator compared with the rated power output of the engine is permissible to meet specified performance.
      a. Nameplate Data for Oversized Generator: Show ratings required by the Contract Documents rather than ratings that would normally be applied to generator size installed.
   2. Steady-State Voltage Operational Bandwidth: 1 percent of rated output voltage from no load to full load.
   3. Steady-State Frequency Operational Bandwidth: Plus or minus 0.25 percent of rated frequency from no load to full load.
   4. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variations outside the steady-state operational band and no hunting or surging of speed.
   5. Output Waveform: At no load, harmonic content measured line to neutral shall not exceed 2 percent total with no slot ripple. Telephone influence factor, determined according to NEMA MG 1, shall not exceed 50 percent.
   6. Sustained Short-Circuit Current: For a 3-phase, bolted short circuit at system output terminals, system shall supply a minimum of 300 percent of rated full-load current for not less than 10 seconds and then clear the fault automatically, without damage to winding insulation or other generator system components.
   7. Excitation System: Performance shall be unaffected by voltage distortion caused by nonlinear load.
      a. Provide permanent magnet excitation for power source to voltage regulator.
   8. Start Time: Comply with NFPA 110, Type 10, system requirements.

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2.3 ENGINE

A. Fuel: Fuel oil, Grade DF-2.

B. Rated Engine Speed: 1800 rpm.

C. Maximum Piston Speed for Four-Cycle Engines: 2250 fpm (11.4 m/s).

D. Lubrication System: The following items are mounted on engine or skid:
1. Filter and Strainer: Rated to remove 90 percent of particles 5 micrometers and smaller while passing full flow.
2. Thermostatic Control Valve: Control flow in system to maintain optimum oil temperature. Unit shall be capable of full flow and is designed to be fail-safe.
3. Crankcase Drain: Arranged for complete gravity drainage to an easily removable container with no disassembly and without use of pumps, siphons, special tools, or appliances.

E. Engine Fuel System:
1. Main Fuel Pump: Mounted on engine. Pump ensures adequate primary fuel flow under starting and load conditions.
2. Relief-Bypass Valve: Automatically regulates pressure in fuel line and returns excess fuel to source.

F. Coolant Jacket Heater: Electric-immersion type, factory installed in coolant jacket system. Comply with NFPA 110 requirements for Level 1 equipment for heater capacity.

G. Governor: Adjustable isochronous, with speed sensing.

H. Cooling System: Closed loop, liquid cooled, with radiator factory mounted on engine-generator-set mounting frame and integral engine-driven coolant pump.
1. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
2. Expansion Tank: Constructed of welded steel plate and rated to withstand maximum closed-loop coolant system pressure for engine used. Equip with gage glass and petcock.
3. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.
4. Coolant Hose: Flexible assembly with inside surface of nonporous rubber and outer covering of aging-, ultraviolet-, and abrasion-resistant fabric.
   a. Rating: 50-psig (345-kPa) maximum working pressure with coolant at 180 deg F (82 deg C), and noncollapsible under vacuum.
   b. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.

I. Muffler/Silencer: Sized as recommended by engine manufacturer and selected with exhaust piping system to not exceed engine manufacturer's engine backpressure requirements with silencer mounted within enclosure. Provide updraft hood.
1. Minimum sound attenuation of 25 dB at 500 Hz.
2. Sound level measured at a distance of 25 feet (7 m) from exhaust discharge after installation is complete shall be 75 dBA or less.

J. Air-Intake Filter: Heavy-duty, engine-mounted air cleaner with replaceable dry-filter element and "blocked filter" indicator.

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K. Starting System: 24-V electric, with negative ground.
   1. Components: Sized so they will not be damaged during a full engine-cranking cycle with ambient temperature at maximum specified in Part 1 "Project Conditions" Article.
   2. Cranking Motor: Heavy-duty unit that automatically engages and releases from engine flywheel without binding.
   3. Cranking Cycle: As required by NFPA 110 for system level specified.
   4. Battery: Adequate capacity within ambient temperature range specified in Part 1 "Project Conditions" Article to provide specified cranking cycle at least twice without recharging.
   5. Battery Cable: Size as recommended by engine manufacturer for cable length indicated. Include required interconnecting conductors and connection accessories.
   6. Battery Compartment: Factory fabricated of metal with acid-resistant finish and thermal insulation. Thermostatically controlled heater shall be arranged to maintain battery above 10 deg C regardless of external ambient temperature within range specified in Part 1 "Project Conditions" Article. Include accessories required to support and fasten batteries in place.
   7. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation and 35-A minimum continuous rating.
   8. Battery Charger: Current-limiting, automatic-equalizing and float-charging type. Unit shall comply with UL 1236 and include the following features:
      a. Operation: Equalizing-charging rate of 10 A shall be initiated automatically after battery has lost charge until an adjustable equalizing voltage is achieved at battery terminals. Unit shall then be automatically switched to a lower float-charging mode and shall continue to operate in that mode until battery is discharged again.
      b. Automatic Temperature Compensation: Adjust float and equalize voltages for variations in ambient temperature from minus 40 deg C to plus 60 deg C to prevent overcharging at high temperatures and undercharging at low temperatures.
      c. Automatic Voltage Regulation: Maintain constant output voltage regardless of input voltage variations up to plus or minus 10 percent.
      d. Ammeter and Voltmeter: Flush mounted in door. Meters shall indicate charging rates.
      e. Safety Functions: Sense abnormally low battery voltage and close contacts providing low battery voltage indication on control and monitoring panel. Sense high battery voltage and loss of ac input or dc output of battery charger. Either condition shall close contacts that provide a battery-charger malfunction indication at system control and monitoring panel.
      f. Enclosure and Mounting: NEMA 250, Type 1, wall-mounted cabinet.

2.4 FUEL OIL STORAGE

A. Comply with NFPA 30.

B. Base-Mounted Fuel Oil Tank: Factory installed and piped, complying with UL 142 fuel oil tank. Features include the following:
   1. Containment: Containment as required by the authority having jurisdiction in the location of installation.
   2. Tank Capacity: Sufficient to provide for operation of the supplied generator at full load under standby conditions for 72 hours.
   3. Low-Level Alarm Sensor: Liquid-level device operates alarm contacts at 25 percent of normal fuel level.
   4. High-Level Alarm Sensor: Liquid-level device operates alarm and redundant fuel shutoff contacts at midpoint between overflow level and 100 percent of normal fuel level.
   5. Piping Connections: Factory-installed fuel supply and return lines from tank to engine; local fuel fill, vent line, overflow line; and tank drain line with shutoff valve.

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2.5 CONTROL AND MONITORING

A. Automatic Starting System Sequence of Operation: When mode-selector switch on the control and monitoring panel is in the automatic position, remote-control contacts in one or more separate automatic transfer switches initiate starting and stopping of generator set. When mode-selector switch is switched to the on position, generator set starts. The off position of same switch initiates generator-set shutdown. When generator set is running, specified system or equipment failures or derangements automatically shut down generator set and initiate alarms. Operation of a remote emergency-stop switch also shuts down generator set.

B. Configuration: Operating and safety indications, protective devices, basic system controls, and engine gages shall be grouped in a common control and monitoring panel mounted on the generator set. Mounting method shall isolate the control panel from generator-set vibration.

C. Indicating and Protective Devices and Controls: As required by NFPA 110 for Level 1 system, and the following:
   1. AC voltmeter.
   2. AC ammeter.
   3. AC frequency meter.
   4. DC voltmeter (alternator battery charging).
   5. Engine-coolant temperature gage.
   6. Engine lubricating-oil pressure gage.
   7. Running-time meter.
   8. Ammeter-voltmeter, phase-selector switch(es).
   9. Generator-voltage adjusting rheostat.
   10. Fuel tank derangement alarm.
   11. Fuel tank high-level shutdown of fuel supply alarm.
   12. Generator overload.

D. Supporting Items: Include sensors, transducers, terminals, relays, and other devices and include wiring required to support specified items. Locate sensors and other supporting items on engine or generator, unless otherwise indicated.

E. Connection to Data Link: A separate terminal block, factory wired to Form C dry contacts, for each alarm and status indication is reserved for connections for data-link transmission of indications to remote data terminals. Data system connections to terminals are covered in Division 26 Section "Electrical Power Monitoring and Control."

F. Common Remote Audible Alarm: Comply with NFPA 110 requirements for Level 1 systems. Include necessary contacts and terminals in control and monitoring panel.
   1. Overcrank shutdown.
   2. Coolant low-temperature alarm.
   3. Control switch not in auto position.
   4. Battery-charger malfunction alarm.
   5. Battery low-voltage alarm.

G. Remote Alarm Annunciator: Comply with NFPA 99. An LED labeled with proper alarm conditions shall identify each alarm event and a common audible signal shall sound for each alarm condition. Silencing switch in face of panel shall silence signal without altering visual indication. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until silencing switch is reset. Cabinet and faceplate are surface- or flush-mounting type to suit mounting conditions indicated.

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H. Remote Emergency-Stop Switch: Flush; wall mounted, unless otherwise indicated; and labeled. Push button shall be protected from accidental operation.

2.6 GENERATOR OVERCURRENT AND FAULT PROTECTION

A. Generator Circuit Breaker: Molded-case, thermal-magnetic type; 100 percent rated; complying with NEMA AB 1 and UL 489.
   1. Tripping Characteristic: Designed specifically for generator protection.
   2. Trip Rating: Matched to generator rating.
   3. Shunt Trip: Connected to trip breaker when generator set is shut down by other protective devices.
   4. Mounting: Adjacent to or integrated with control and monitoring panel.

B. Generator Protector: Microprocessor-based unit shall continuously monitor current level in each phase of generator output, integrate generator heating effect over time, and predict when thermal damage of alternator will occur. When signaled by generator protector or other generator-set protective devices, a shunt-trip device in the generator disconnect switch shall open the switch to disconnect the generator from load circuits. Protector shall perform the following functions:
   1. Initiates a generator overload alarm when generator has operated at an overload equivalent to 110 percent of full-rated load for 60 seconds. Indication for this alarm is integrated with other generator-set malfunction alarms.
   2. Under single or three-phase fault conditions, regulates generator to 300 percent of rated full-load current for up to 10 seconds.
   3. As overcurrent heating effect on the generator approaches the thermal damage point of the unit, protector switches the excitation system off, opens the generator disconnect device, and shuts down the generator set.
   4. Senses clearing of a fault by other overcurrent devices and controls recovery of rated voltage to avoid overshoot.

C. Ground-Fault Indication: Comply with NFPA 70, "Emergency System" signals for ground-fault. Integrate ground-fault alarm indication with other generator-set alarm indications.

2.7 GENERATOR, EXCITER, AND VOLTAGE REGULATOR

A. Comply with NEMA MG 1.

B. Drive: Generator shaft shall be directly connected to engine shaft. Exciter shall be rotated integrally with generator rotor.

C. Electrical Insulation: Class H or Class F.

D. Stator-Winding Leads: Brought out to terminal box to permit future reconnection for other voltages if required.

E. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, overspeed up to 125 percent of rating, and heat during operation at 110 percent of rated capacity.

F. Enclosure: Dripproof.

G. Instrument Transformers: Mounted within generator enclosure.

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H. Voltage Regulator: Solid-state type, separate from exciter, providing performance as specified.
   1. Adjusting rheostat on control and monitoring panel shall provide plus or minus 5 percent adjustment of output-voltage operating band.

I. Windings: Two-thirds pitch stator winding and fully linked amortisseur winding.

J. Subtransient Reactance: 12 percent, maximum.

2.8 OUTDOOR GENERATOR-SET ENCLOSURE

A. Description: Vandal-resistant, weatherproof steel housing, wind resistant up to 100 mph (160 km/h), with factory supplied internal electrical element heaters capable of maintaining an ambient internal temperature of not less than 40 deg F (18 deg C) in compliance with the requirements of NFPA 110. Multiple panels shall be lockable and provide adequate access to components requiring maintenance. Panels shall be removable by one person without tools. Instruments and control shall be mounted within enclosure.

B. Engine Cooling Airflow through Enclosure: Maintain temperature rise of system components within required limits when unit operates at 110 percent of rated load for 2 hours with ambient temperature at top of range specified in system service conditions.
   1. Louvers: Fixed-engine, cooling-air inlet and discharge. Storm-proof and drainable louvers prevent entry of rain and snow.
   2. Automatic Dampers: At engine cooling-air inlet and discharge. Dampers shall be closed to reduce enclosure heat loss in cold weather when unit is not operating.

C. Convenience Outlets: Factory wired, GFCI. Arrange for external electrical connection.

2.9 VIBRATION ISOLATION DEVICES

A. Elastomeric Isolator Pads: Oil- and water-resistant elastomer or natural rubber, arranged in single or multiple layers, molded with a nonslip pattern and galvanized-steel baseplates of sufficient stiffness for uniform loading over pad area, and factory cut to sizes that match requirements of supported equipment.
   1. Material: Standard neoprene.
   2. Durometer Rating: 50.
   3. Number of Layers: Three.

B. Restrained Spring Isolators: Freestanding, steel, open-spring isolators with seismic restraint.
   1. Housing: Steel with resilient vertical-limit stops to prevent spring extension due to wind loads or if weight is removed; factory-drilled baseplate bonded to 1/4-inch- (6-mm-) thick, elastomeric isolator pad attached to baseplate underside; and adjustable equipment mounting and leveling bolt that acts as blocking during installation.
   2. Outside Spring Diameter: Not less than 80 percent of compressed height of the spring at rated load.
   3. Minimum Additional Travel: 50 percent of required deflection at rated load.
   4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
   5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.

2.10 FINISHES

A. Indoor and Outdoor Enclosures and Components: Manufacturer's standard finish over corrosion-resistant pretreatment and compatible primer.

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2.11 SOURCE QUALITY CONTROL

A. Prototype Testing: Factory test engine-generator set using same engine model, constructed of identical or equivalent components and equipped with identical or equivalent accessories.
   1. Tests: Comply with NFPA 110, Level 1 Energy Converters and with IEEE 115.

B. Project-Specific Equipment Tests: Before shipment, factory test engine-generator set and other system components and accessories manufactured specifically for this Project. Perform tests at rated load and power factor. Include the following tests:
   1. Test components and accessories furnished with installed unit that are not identical to those on tested prototype to demonstrate compatibility and reliability.
   2. Full load run.
   3. Maximum power.
   4. Voltage regulation.
   5. Transient and steady-state governing.
   6. Single-step load pickup.
   7. Safety shutdown.
   8. Provide 14 days' advance notice of tests and opportunity for observation of tests by Owner's representative.
   9. Report factory test results within 10 days of completion of test.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, equipment bases, and conditions, with Installer present, for compliance with requirements for installation and other conditions affecting packaged engine-generator performance.

B. Examine roughing-in of piping systems and electrical connections. Verify actual locations of connections before packaged engine-generator installation.

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

3.2 INSTALLATION

A. Comply with packaged engine-generator manufacturers' written installation and alignment instructions and with NFPA 110.

B. Install packaged engine generator to provide access, without removing connections or accessories, for periodic maintenance.

C. Install packaged engine generator with elastomeric isolator pads having a minimum deflection of 1 inch (25 mm) on 4-inch- (100-mm-) high concrete base. Secure sets to anchor bolts installed in concrete bases. Concrete base construction is specified in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."

D. Install Schedule 40, black steel piping with welded joints and connect to engine muffler. Install thimble at wall. Piping shall be same diameter as muffler outlet. Flexible connectors and steel piping materials and installation requirements are specified in Division 23 Section "Hydronic Piping."
   1. Install condensate drain piping to muffler drain outlet full size of drain connection with a shutoff valve, stainless-steel flexible connector, and Schedule 40, black steel pipe with

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welded joints. Flexible connectors and piping materials and installation requirements are specified in Division 23 Section "Hydronic Piping."

E. Electrical Wiring: Install electrical devices furnished by equipment manufacturers but not specified to be factory mounted.

3.3 CONNECTIONS

A. Piping installation requirements are specified in Division 23 Sections. Drawings indicate general arrangement of piping and specialties.

B. Connect fuel, cooling-system, and exhaust-system piping adjacent to packaged engine generator to allow service and maintenance.

C. Connect cooling-system water piping to engine-generator set and heat exchanger with flexible connectors.

D. Connect engine exhaust pipe to engine with flexible connector.

E. Connect fuel piping to engines with a gate valve and union and flexible connector.
1. Diesel storage tanks, tank accessories, piping, valves, and specialties for fuel systems are specified in Division 23 Section "Facility Fuel-Oil Piping."

F. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."

G. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.4 IDENTIFICATION

A. Identify system components according to Division 23 Section "Identification for HVAC Piping and Equipment" and Division 26 Section "Identification for Electrical Systems."

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections and prepare test reports.

B. Tests and Inspections:
1. Perform tests recommended by manufacturer and each electrical test and visual and mechanical inspection for "AC Generators and for Emergency Systems" specified in NETA Acceptance Testing Specification. Certify compliance with test parameters.
2. NFPA 110 Acceptance Tests: Perform tests required by NFPA 110 that are additional to those specified here including, but not limited to, single-step full-load pickup test.
3. Battery Tests: Equalize charging of battery cells according to manufacturer's written instructions. Record individual cell voltages.
   a. Measure charging voltage and voltages between available battery terminals for full-charging and float-charging conditions. Check electrolyte level and specific gravity under both conditions.
   b. Test for contact integrity of all connectors. Perform an integrity load test and a capacity load test for the battery.
   c. Verify acceptance of charge for each element of the battery after discharge.

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d. Verify that measurements are within manufacturer's specifications.

4. Battery-Charger Tests: Verify specified rates of charge for both equalizing and float-charging conditions.
5. System Integrity Tests: Methodically verify proper installation, connection, and integrity of each element of engine-generator system before and during system operation. Check for air, exhaust, and fluid leaks.
6. Voltage and Frequency Transient Stability Tests: Use recording oscilloscope to measure voltage and frequency transients for 50 and 100 percent step-load increases and decreases, and verify that performance is as specified.
7. Harmonic-Content Tests: Measure harmonic content of output voltage under 25 percent and at 100 percent of rated linear load. Verify that harmonic content is within specified limits.
8. Noise Level Tests: Measure A-weighted level of noise emanating from generator-set installation, including engine exhaust and cooling-air intake and discharge, at four locations on the property line, and compare measured levels with required values.

C. Coordinate tests with tests for transfer switches and run them concurrently.

D. Test instruments shall have been calibrated within the last 12 months, traceable to standards of NIST, and adequate for making positive observation of test results. Make calibration records available for examination on request.

E. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.

F. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.

G. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

H. Remove and replace malfunctioning units and retest as specified above.

I. Retest: Correct deficiencies identified by tests and observations and retest until specified requirements are met.

J. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation resistances, time delays, and other values and observations. Attach a label or tag to each tested component indicating satisfactory completion of tests.

K. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each power wiring termination and each bus connection. Remove all access panels so terminations and connections are accessible to portable scanner.
1. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan 11 months after date of Substantial Completion.
2. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
3. Record of Infrared Scanning: Prepare a certified report that identifies terminations and connections checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

L. Replace fuel used during testing prior to completion.

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3.6 DEMONSTRATION

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

END OF SECTION 263213

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SECTION 263600 - TRANSFER SWITCHES

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 transfer switches rated 600 V and less, including the following:
   1. Automatic transfer switches.
   2. Bypass/isolation switches.
   3. Remote annunciation systems.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include rated capacities, weights, operating characteristics, furnished specialties, and accessories.

B. Shop Drawings: Dimensioned plans, elevations, sections, and details showing minimum clearances, conductor entry provisions, gutter space, installed features and devices, and material lists for each switch specified.
   1. Single-Line Diagram: Show connections between transfer switch, bypass/isolation switch, power sources, and load; and show interlocking provisions for each combined transfer switch and bypass/isolation switch.

C. Manufacturer Seismic Qualification Certification: Submit certification that transfer switches accessories, and components will withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems." Include the following:
   1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
      a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
   2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
   3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

D. Qualification Data: For testing agency.

E. Field quality-control test reports.

F. Operation and Maintenance Data: For each type of product to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
   1. Features and operating sequences, both automatic and manual.
   2. List of all factory settings of relays; provide relay-setting and calibration instructions, including software, where applicable.

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1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Maintain a service center capable of providing training, parts, and emergency maintenance repairs within a response period of less than eight hours from time of notification.

B. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.
   1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.

C. Source Limitations: Obtain bypass/isolation switches and remote annunciators through one source from a single manufacturer.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

E. Comply with NEMA ICS 1.

F. Comply with NFPA 70.

G. Comply with NFPA 99.

H. Comply with NFPA 110.

I. Comply with UL 1008 unless requirements of these Specifications are stricter.

1.5 PROJECT CONDITIONS

A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service:
   1. Notify Architect and Owner no fewer than ten days in advance of proposed interruption of electrical service.
   2. Do not proceed with interruption of electrical service without Owner's written permission.

1.6 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Contactor Transfer Switches:
      a. Caterpillar; Engine Div.

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b. Emerson; ASCO Power Technologies, LP.
c. Generac Power Systems, Inc.
d. GE Zenith Controls.
e. Onan/Cummins Power Generation; Industrial Business Group.
f. Russelectric, Inc.
g. Spectrum Detroit Diesel.

2.2 GENERAL TRANSFER-SWITCH PRODUCT REQUIREMENTS

A. Indicated Current Ratings: Apply as defined in UL 1008 for continuous loading and total system transfer, including tungsten filament lamp loads not exceeding 30 percent of switch ampere rating, unless otherwise indicated.

B. Tested Fault-Current Closing and Withstand Ratings: Adequate for duty imposed by protective devices at installation locations in Project under the fault conditions indicated, based on testing according to UL 1008.
   1. Where transfer switch includes internal fault-current protection, rating of switch and trip unit combination shall exceed indicated fault-current value at installation location.

C. Solid-State Controls: Repetitive accuracy of all settings shall be plus or minus 2 percent or better over an operating temperature range of minus 20 to plus 70 deg C.

D. Resistance to Damage by Voltage Transients: Components shall meet or exceed voltage-surge withstand capability requirements when tested according to IEEE C62.41. Components shall meet or exceed voltage-impulse withstand test of NEMA ICS 1.

E. Electrical Operation: Accomplish by a nonfused, momentarily energized solenoid or electric-motor-operated mechanism, mechanically and electrically interlocked in both directions.

F. Switch Characteristics: Designed for continuous-duty repetitive transfer of full-rated current between active power sources.
   1. Limitation: Switches using molded-case switches or circuit breakers or insulated-case circuit-breaker components are not acceptable.
   2. Switch Action: Double throw; mechanically held in both directions.
   3. Contacts: Silver composition or silver alloy for load-current switching. Conventional automatic transfer-switch units, rated 225 A and higher, shall have separate arcing contacts.

G. Neutral Switching. Provide four pole switches for all locations (three phases plus switched neutral).

H. Neutral Pole: Fully rated, unless otherwise indicated.

I. Annunciation, Control, and Programming Interface Components: Devices at transfer switches for communicating with remote programming devices and annunciators shall have communication capability matched with remote device.

J. Factory Wiring: Train and bundle factory wiring and label, consistent with Shop Drawings, either by color-code or by numbered or lettered wire and cable tape markers at terminations. Color-coding and wire and cable tape markers are specified in Division 26 Section "Identification for Electrical Systems."
   1. Designated Terminals: Pressure type, suitable for types and sizes of field wiring indicated.

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2. Power-Terminal Arrangement and Field-Wiring Space: Suitable for top, side, or bottom entrance of feeder conductors as indicated.
3. Control Wiring: Equipped with lugs suitable for connection to terminal strips.

K. Enclosures: General-purpose NEMA 250, Type 1, complying with NEMA ICS 6 and UL 508, unless otherwise indicated.

2.3 AUTOMATIC TRANSFER SWITCHES

A. Comply with Level 1 equipment according to NFPA 110.

B. Switching Arrangement: Double-throw type, incapable of pauses or intermediate position stops during normal functioning, unless otherwise indicated.

C. Manual Switch Operation: Under load, with door closed and with either or both sources energized. Transfer time is same as for electrical operation. Control circuit automatically disconnects from electrical operator during manual operation.

D. Signal-Before-Transfer Contacts: A set of normally open/normally closed dry contacts operates in advance of retransfer to normal source. Interval is adjustable from 1 to 30 seconds.

E. Digital Communication Interface: Matched to capability of remote annunciator or annunciator and control panel.

F. Automatic Closed-Transition Transfer Switches (Critical and Life Safety 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.

G. Programmed Neutral Switch Position (Equipment Branch Switch): Switch operator has a programmed neutral position arranged to provide a midpoint between the two working switch positions, with an intentional, time-controlled pause at midpoint during transfer. Pause is adjustable from 0.5 to 30 seconds minimum and factory set for 0.5 second, unless otherwise indicated. Time delay occurs for both transfer directions. Pause is disabled unless both sources are live.

H. Automatic Transfer-Switch Features:
1. Undervoltage Sensing for Each Phase of Normal Source: Sense low phase-to-ground voltage on each phase. Pickup voltage shall be adjustable from 85 to 100 percent of nominal, and dropout voltage is adjustable from 75 to 98 percent of pickup value. Factory set for pickup at 90 percent and dropout at 85 percent.
2. Adjustable Time Delay: For override of normal-source voltage sensing to delay transfer and engine start signals. Adjustable from zero to six seconds, and factory set for one second.
3. Voltage/Frequency Lockout Relay: Prevent premature transfer to generator. Pickup voltage shall be adjustable from 85 to 100 percent of nominal. Factory set for pickup at 90 percent. Pickup frequency shall be adjustable from 90 to 100 percent of nominal. Factory set for pickup at 95 percent.
4. Time Delay for Retransfer to Normal Source: Adjustable from 0 to 30 minutes, and factory set for 10 minutes to automatically defeat delay on loss of voltage or sustained undervoltage of emergency source, provided normal supply has been restored.
5. Test Switch: Simulate normal-source failure.
6. Switch-Position Pilot Lights: Indicate source to which load is connected.

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7. Source-Available Indicating Lights: Supervise sources via transfer-switch normal- and emergency-source sensing circuits.
   a. Normal Power Supervision: Green light with nameplate engraved "Normal Source Available."
   b. Emergency Power Supervision: Red light with nameplate engraved "Emergency Source Available."
8. Unassigned Auxiliary Contacts: Two normally open, single-pole, double-throw contacts for each switch position, rated 10 A at 240-V ac.
9. Transfer Override Switch: Overrides automatic retransfer control so automatic transfer switch will remain connected to emergency power source regardless of condition of normal source. Pilot light indicates override status.
10. Engine Starting Contacts: One isolated and normally closed, and one isolated and normally open; rated 10 A at 32-V dc minimum.
11. Engine Shutdown Contacts: Time delay adjustable from zero to five minutes, and factory set for five minutes. Contacts shall initiate shutdown at remote engine-generator controls after retransfer of load to normal source.
12. Engine-Generator Exerciser: Solid-state, programmable-time switch starts engine generator and transfers load to it from normal source for a preset time, then retransfers and shuts down engine after a preset cool-down period. Initiates exercise cycle at preset intervals adjustable from 7 to 30 days. Running periods are adjustable from 10 to 30 minutes. Factory settings are for 7-day exercise cycle, 20-minute running period, and 5-minute cool-down period. Exerciser features include the following:
    a. Exerciser Transfer Selector Switch: Permits selection of exercise with and without load transfer.
    b. Push-button programming control with digital display of settings.
    c. Integral battery operation of time switch when normal control power is not available.

2.4 BYPASS/ISOLATION SWITCHES

A. Comply with requirements for Level 1 equipment according to NFPA 110.

B. Description: Manual type, arranged to select and connect either source of power directly to load, isolating transfer switch from load and from both power sources. Include the following features for each combined automatic transfer switch and bypass/isolation switch:
   1. Means to lock bypass/isolation switch in the position that isolates transfer switch with an arrangement that permits complete electrical testing of transfer switch while isolated. While isolated, interlocks prevent transfer-switch operation, except for testing or maintenance.
   2. Drawout Arrangement for Transfer Switch: Provide physical separation from live parts and accessibility for testing and maintenance operations.
   3. Bypass/Isolation Switch Current, Voltage, Closing, and Short-Circuit Withstand Ratings: Equal to or greater than those of associated automatic transfer switch, and with same phase arrangement and number of poles.
   4. Contact temperatures of bypass/isolation switches shall not exceed those of automatic transfer-switch contacts when they are carrying rated load.
   5. Operability: Constructed so load bypass and transfer-switch isolation can be performed by 1 person in no more than 2 operations in 15 seconds or less.
   6. Legend: Manufacturer's standard legend for control labels and instruction signs shall describe operating instructions.
   7. Maintainability: Fabricate to allow convenient removal of major components from front without removing other parts or main power conductors.

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C. Interconnection of Bypass/Isolation Switches with Automatic Transfer Switches: Factory-installed copper bus bars; plated at connection points and braced for the indicated available short-circuit current.

2.5 REMOTE ANNUNCIATOR SYSTEM

A. Functional Description: Remote annunciator panel shall annunciate conditions for indicated transfer switches. Annunciation shall include the following:
1. Sources available, as defined by actual pickup and dropout settings of transfer-switch controls.
2. Switch position.
3. Switch in test mode.
4. Failure of communication link.

B. Annunciator Panel: LED-lamp type with audible signal and silencing switch.
1. Indicating Lights: Grouped for each transfer switch monitored.
2. Label each group, indicating transfer switch it monitors, location of switch, and identity of load it serves.
3. Mounting: Flush, modular, steel cabinet, unless otherwise indicated.
4. Lamp Test: Push-to-test or lamp-test switch on front panel.

2.6 SOURCE QUALITY CONTROL

A. Factory test and inspect components, assembled switches, and associated equipment. Ensure proper operation. Check transfer time and voltage, frequency, and time-delay settings for compliance with specified requirements. Perform dielectric strength test complying with NEMA ICS 1.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Design each fastener and support to carry load indicated by seismic requirements and according to seismic-restraint details. See Division 26 Section "Vibration and Seismic Controls for Electrical Systems."

B. Floor-Mounting Switch: Anchor to floor by bolting.
1. Concrete Bases: 4 inches (100 mm) high, reinforced, with chamfered edges. Extend base no more than 4 inches (100 mm) in all directions beyond the maximum dimensions of switch, unless otherwise indicated or unless required for seismic support. Construct concrete bases according to Division 26 Section "Hangers and Supports for Electrical Systems."

C. Annunciator Panel Mounting: Flush in wall, unless otherwise indicated.

D. Identify components according to Division 26 Section "Identification for Electrical Systems."

E. Set field-adjustable intervals and delays, relays, and engine exerciser clock.

3.2 CONNECTIONS

A. Wiring to Remote Components: Match type and number of cables and conductors to control and communication requirements of transfer switches as recommended by manufacturer.

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Increase raceway sizes at no additional cost to Owner if necessary to accommodate required wiring.

B. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."

C. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified independent testing and inspecting agency to perform tests and inspections and prepare test reports.

B. Testing Agency's Tests and Inspections:
1. After installing equipment and after electrical circuitry has been energized, test for compliance with requirements.
2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
3. Measure insulation resistance phase-to-phase and phase-to-ground with insulation-resistance tester. Include external annunciation and control circuits. Use test voltages and procedure recommended by manufacturer. Comply with manufacturer's specified minimum resistance.
   a. Check for electrical continuity of circuits and for short circuits.
   b. Inspect for physical damage, proper installation and connection, and integrity of barriers, covers, and safety features.
   c. Verify that manual transfer warnings are properly placed.
   d. Perform manual transfer operation.
4. After energizing circuits, demonstrate interlocking sequence and operational function for each switch at least three times.
   a. Simulate power failures of normal source to automatic transfer switches and of emergency source with normal source available.
   b. Simulate loss of phase-to-ground voltage for each phase of normal source.
   c. Verify time-delay settings.
   d. Verify pickup and dropout voltages by data readout or inspection of control settings.
   e. Test bypass/isolation unit functional modes and related automatic transfer-switch operations.
   f. Perform contact-resistance test across main contacts and correct values exceeding 500 microhms and values for 1 pole deviating by more than 50 percent from other poles.
   g. Verify proper sequence and correct timing of automatic engine starting, transfer time delay, retransfer time delay on restoration of normal power, and engine cool-down and shutdown.
5. Ground-Fault Tests: Coordinate with testing of ground-fault protective devices for power delivery from both sources.
   a. Verify grounding connections and locations and ratings of sensors.

C. Coordinate tests with tests of generator and run them concurrently.

D. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation and contact resistances and time delays. Attach a label or tag to each tested component indicating satisfactory completion of tests.

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E. Remove and replace malfunctioning units and retest as specified above.

F. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each switch. Remove all access panels so joints and connections are accessible to portable scanner.
   1. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each switch 11 months after date of Substantial Completion.
   2. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
   3. Record of Infrared Scanning: Prepare a certified report that identifies switches checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.4 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain transfer switches and related equipment as specified below. Refer to Division 01 Section "Demonstration and Training."

B. Coordinate this training with that for generator equipment.

END OF SECTION 263600

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VAN BOERUM
& FRANK ASSOCIATES, INC.
CONSULTING ENGINEERS

ADDENDUM #2

DATE: September 27, 2012

PROJECT NO: 11542

PROJECT: Utah State Hospital - Payne

DIVISION – 22 & 23

DRAWINGS

SHEET - M101
1. Provide and install ceiling diffusers in Staff Lobby as shown on supplementary drawing. Re-route ductwork as shown also in supplementary drawing. Ceiling diffusers to by type CD-3, balance each to 325 CFM
2. Provide and install new ceiling exhaust grille, EG-1 in Soiled Holding 122A. Exhaust grille balanced to 100 CFM. Extend 6"x6" exhaust duct from new exhaust grille to 12/12 exhaust duct on exhaust fan EF-2. Exhaust fan to be balanced to 1,250 CFM.
3. Provide and install 6" ceiling diffuser in Soiled Holding 122A. Balance diffuser to 50 CFM. Extend 6" round branch duct from diffuser to 12/12 supply duct in Central Supply Storage 122. Provide high-efficiency take-off, balancing damper, and flex duct to diffuser.
4. Refer to Vestibule V-01. Coordinate exact routing of supply and return ductwork from FCU-1 with structural.
5. Coordinate exact locations of sidewall supply grilles in Main Lobby with structural and architect.

SHEET - M401
1. Refer to hot water schematic B2/M701 in addendum #02 for steam and condensate pipe sizes in Pump room 100.
2. Heat exchanger, HX-1, shall refer to detail C4/M503 in lieu of C6/M503.
3. Steam PRV station shall refer to detail D4/M503, in lieu of C6/M503. See attached PRV schedule.

SHEET - M503
1. Refer to C4/M503 - Steam to Water Heat Exchanger Detail. See attached supplementary drawing for detail revision.
2. Refer to D4/M503. Extend vent from PRV station up through roof.

SHEET - M601
1. See attached supplementary drawing for PRV station schedule, PRV-1,2.
2. Refer to Exhaust Fan Schedule. Exhaust Fan, EF-2, to be balanced to 1,250 CFM.

SHEET - M602
1. Refer to Steam-to-Hydronic Heat Exchanger Schedule. Note 1 to say, "Complete with steam side control, duplex 14-HC APT Pump-Trap,"

SHEET - M701
1. See revised drawing at end of addendum for the Hot Water Schematic revision, including steam and condensate pipe sizes.
2. Refer to detail C6/M503 for steam trap detail.

SHEET - P101
1. Change fixture call out in Clothing/Sort Laundry to L-7.

SHEET - P401
1. 6/P401: Relocate air and vacuum outlet locations as indicated on attached drawing.
2. Change plumbing fixture call outs on all drawings as indicated on the attached drawing.

SHEET - P402
1. Add keyed note call outs to the plans as noted on the attached drawing.

SHEET - P501
1. Refer to 4/P503 - Steam to Water Heat Exchanger Detail. See attached supplementary drawing for detail revision.

SHEET - P601
1. Replace plumbing fixture schedule with attached schedule.

SPECIFICATIONS

SECTION - 223500 Domestic Water Heat Exchangers
1. Change specification as follows:

SHEET - INSTANTANEOUS HEAT EXCHANGERS

1. Domestic-Water-in-Coil, Instantaneous Heat Exchangers:

   A. Manufacturers:

      1) Electric Heater Company (The); Hubbell Heaters Division.
      2) Graham Corporation.
      3) Leslie Controls, Inc.
      4) Armstrong International, Inc.

   B. Description: Tankless, packaged assembly of heat-exchanger coils, controls, and specialties for heating domestic water in coils with steam in shell.
   C. Construction: ASME code, with **steel** shell for steam.
      1) Steel Shell Pressure Rating: 150 psig (1035 kPa).
      2) Insulation: Complying with ASHRAE/IESNA 90.1, unless otherwise indicated, and suitable for operating temperature. Surround entire shell and nozzle except connections and controls.

   D. Double Wall Plate and Frame heat exchanger designed specifically to match the primary and secondary heat surface within 10% of each other thus producing an efficient and compact package. Plate and frame type shall have High Temperature Heat Seal Gasket Material or Equal and be ASME constructed and stamped to 150 psig.
   E. Control of the hot water heating skid will incorporate an ASCON Touch Panel Controller and equal percentage control valves incorporating class IV shut off tightness and CV rating of 7.4 or higher. Control valves must conform to ANSI standards. Valve body must include low noise trim as needed. Pneumatic actuator powered with 20 psig air supply and capable of shutting off against 175 psig steam and shall come with air filter regulator. Control valve to have SP500 smart positioner 4 –20 ma feedback with digital readout. Controller shall be loop powered valve positioning and controller must incorporate auto-tune, fuzzy logic, matched power loop output ,dual set points and dual output relays. All controls must come pre-wired and piped for connection to air supply and power source. Pressure gauges must be installed before control valve and compound pressure gauge must be used down-steam of control valve. Unit must not have vacuum breaker.
   F. Water side connections shall be 316 SS with ANSI 150# flanges with RTD and inlet and outlet bi metal thermometers with range of 0 –200F. Waterside pressure drop shall not exceed 5 psig.

G. Effective condensate removal for closed loop system is to be managed by an APT automatic pump trap arrangement

H. Pump/Trap shall be ductile iron and have inline connections and shall be repairable without disturbing the piping. Pump/Trap shall be capable of using steam as motive and have a 200 psig steam motive pressure rating. Pump/Trap shall have no greater NPSH requirement than 10" from floor.

I. Stand: Factory fabricated for floor mounting of heat exchangers and thermostatically controlled mixing valves.

SECTION - 22400

1. Replace Plumbing Fixture Schedule as follows:

SHEET - PLUMBING FIXTURE SCHEDULE

WC-1 Patient Water Closet (Floor Mounted, Concealed Flush Valve, ADA Compliant): Crane 31083 Sanwalton, vitreous china, 1.6 gallon flush. Elongated bowl design, 17-1/2" high, siphon jet flushing, 2-1/4" passageway, 4" back outlet; 1-1/2" back spud and bolt caps. Sloan concealed flush valve with lever actuator and front access.

WC-2 Patient Water Closet (Floor Mounted, Concealed Flush Valvent): Crane 3484 Sanwalton, vitreous china, 1.6 gallon flush. Elongated bowl design, 14" high, siphon jet flushing, 2-1/4" passageway, 4" back outlet; 1-1/2" back spud and bolt caps. Sloan concealed flush valve with lever actuator and front access.

WC-3 Water Closet (Wall Hung) (Sensor Flush Valve) (ADA): Kohler #K-4325-0 "Kingston" vitreous china, 1.6 gal flush, siphon jet, elongated bowl, 1-1/2" top spud, Kohler #K-4670-C open front seat, stainless steel hinge posts with check, Sloan 111-1.6-ES-S TMO hard wired sensor operated flush valve. Smith 0210 (left or right) horizontal of Smith 0230 vertical adjustable carrier with foot support. See architectural drawings for mounting height.

WC-4 Water Closet (Wall Hung) (Sensor Flush Valve): Kohler #K-4325-0 "Kingston" vitreous china, 1.6 gal flush, siphon jet, elongated bowl, 1-1/2" top spud, Kohler #K-4670-C open front seat, stainless steel hinge posts with check, Sloan 111-1.6-ES-S TMO hard wired sensor operated flush valve. Smith 0210 (left or right) horizontal of Smith 0230 vertical adjustable carrier with foot support. See architectural drawings for mounting height.

WC-5 Water Closet (Floor Mounted, Sensor Flush Valve, ADA Compliant): Kohler K-4368, Highcliff Toilet, vitreous china, 1.6 gallon flush. Elongated bowl design, 17-1/2" high, siphon jet flushing, 2-1/4" passageway, 1-1/2" top and 52048 bolt caps. Sloan 111-1.6-ES-S TMO hard wired sensor operated flush valve.

SF-1 Handicapped Security Fixture: Acorn 1435 ALAR series, ADA Compliant handicapped lavatory/toilet combination fixture shall be 14 ga., type 304 stainless steel complete with grab bars. Construction shall be seamless welded and exposed surfaces shall have a satin finish. Countertop shall have an air-circulating, self draining soap dish. Fixture shall have an air-control pneumatically operated metering, non-hold open push button valves. Valve shall require less than 5 lbs, push to activate, toilet shall be blowout jet type with an elongated bowl, a self-draining flushing rim, and an integral contoured seat. Toilet trap shall pass a 2-5/8" diameter ball and be fully enclosed, Cabinet interior is sound deadened with fire resistant material. Fixture shall be furnished with necessary fasteners for proper installation. Fixture to be mounted on floor with wall outlet (2). Provide concealed pushbutton flush valve with flush valve access and flush valve thru wall connector (FVT). Toilet angle orientation shall be left (AL) or right (AR) as shown on the architectural plans; (BPH) hemispherical bubbler; hot and cold water air-control valves (4), 1.6 gpf, cleanout with hook assembly (COH), wall sleeve (SW), paper holder on opposite side of water closet (PH), and grab bar closer plate (GBC). Provide and install Powers 480 tempering valve on hot water supply line, set valve to 95°F max, with strainers and check valves on hot and cold water inlets.

CS-1 Clinic Sink (Floor Mounted, Flush Valve, Mixing Faucet): Kohler K6676, Tyrrell service sink, vitreous china, with siphon jet flushing rim, 2-1/4" passageway, 1-1/2" top spud and 52048 bolt caps. Three K8935 11" stainless steel rim guards, K13864 loose brass strainer. Sloan Royal-XL-117 flush valve. Chicago 814 quaturn sink fitting with 6-inch wrist blade handles, integral stop arms, stationary spout with plain

outlet, pail hook and wall brace, 12½ inches from wall to center of outlet. Clinic sink shall be mounteded on a 10” concrete house keeping pad, coordinate with Architectural drawings.

U-1 Urinal: Kohler K-5016-ER-0 Dexter vitreous china, wall hung elongated urinal with ¾” rear spud; Sloan 195-0.5 ES-S SWB hard wired, sensor operated, flush valve with wall panel.

U-2 Urinal: Kohler K-5016-ET-0 Dexter vitreous china, wall hung elongated urinal with ¾” top spud; Sloan 1186-1.0 ES-S hard wired sensor operated flush valve. Provide transformers as noted on the drawing. Provide low voltage wiring between transformer and flush valves.

L-1 Not Used.

L-2 Not Used.

L-3 Not used.

L-4 Not Used.

L-5 Patient Lavatory (Wall Hung, Sensor Faucet): Kohler K-2030, Greenwich, 20"x18" “D” shaped bowl, vitreous china, wall hung lavatory with front overflow and 8" centers drilling. BSP model SF370 anti ligature sensor faucet and spouit Chicago 327A open grid drain and cast brass P-trap with clean-out plug. Smith 0700 concealed arm chair carrier with foot support. Provide ADA compliant under counter piping cover by Truebro, Lav Shield series in China white. See architectural interior elevations for mounting height.

L-6 Patient ADA Lavatory (Counter Mounted Sensor): Provided with countertop, rough-in and connect. Provide K-7715 open grid strainer; BSP model SF370 anti ligature sensor faucet and spouit. Symmons 5-120 ck thermixer ½" thermostatic mixing valve, Watts #7 dual check valve, in both hot and cold lines. Flexible stainless steel supplies with loose key angle stops. Chicago 327A open-grid drain and cast brass P-trap with clean-out plug EBC TA125-Z. Provide ADA compliant under counter piping cover by Truebro, Lav Shield series in China white. See architectural interior elevations for mounting height.

L-7 Lavatory (Wall Hung, Sensor Faucet): Kohler K-2030, Greenwich, 20"x18" “D” shaped bowl, vitreous china, wall hung lavatory with front overflow and 8" centers drilling. 116.101.21.1 sensor faucet, chrome finish. Chicago 327A open grid drain and cast brass P-trap with clean-out plug. Smith 0700 concealed arm chair carrier with foot support. Provide Provide ADA compliant under counter piping cover by Truebro, Lav Shield series in China white. See architectural interior elevations for mounting height.

L-8 ADA Lavatory (Counter Mounted Sensor): Provided with countertop, rough-in and connect. Provide K-7715 open grid strainer; Chicago 116.101.21.1 sensor faucet. Model #240.630.00.1 transformer, 240.627.21.1 4 inch cover plate. Symmons 5-120 ck thermixer ½" thermostatic mixing valve, Watts #7 dual check valve, in both hot and cold lines. Flexible stainless steel supplies with loose key angle stops. Chicago 327A open-grid drain and cast brass P-trap with clean-out plug EBC TA125-Z. Provide ADA compliant under counter piping cover by Truebro, Lav Shield series in China white. See architectural interior elevations for mounting height.

S-1 Sink (Counter Mounted, Single Compartment): Just SL 2222-A-GR 16” x 19” x 8” deep, 18-gauge, type 304 stainless steel, counter mounted sink with single hole drilling. Chicago 1100 CP faucet. Provide flexible braided stainless steel supplies and stops to foot pedal in cabinet base. Flexible stainless steel supplies with loose key angle stops. Just J-35 stainless steel cup strainer and cast brass P-trap with clean-out plug EBC TB150-Z.

S-2 Lab Sink (Counter Mounted, Wrist blades): Just SL 2222-A-GR 16” x 19” x 7 ½”” deep, 18-gauge, type 304 stainless steel, counter mounted sink with 8” center drilling. . Chicago 786-GN2FC faucet, No. 317 4” wrist blades, GN2 rigid/swing convertible goose neck with 1.6 gpm FC laminar flow control and plain end spout ring. Flexible stainless steel supplies with loose key angle stops. Just J-35 stainless steel cup strainer and cast brass P-trap with clean out plug.

S-3 Sink (Counter Mounted, Wrist blades): Just DLX-2233AGR 22 X 33 x 10 " deep, 18-gauge, type 304 stainless steel, two compartment counter mounted sink with 8" center drilling. . Chicago 786-GN2FC faucet, No. 317 4" wrist blades, GN2 rigid/swing convertible goose neck with 1.6 gpm FC laminar flow control and plain end spout ring. Flexible stainless steel supplies with loose key angle stops. Just J-35 stainless steel cup strainer and cast brass P-trap with clean out plug.

S-4 Sink (Counter Mounted, Single Compartment): Just SL CRAF-14525-A-GR 14" x 25" x 7 ½" deep, 18-gauge, type 304 stainless steel, counter mounted sink with single faucet hole and bubbler hole drilling. Chicago 50-LESSSPT317XKCP-GN2FC faucet, No. 317 4" wrist blades, GN2 rigid/swing convertible goose neck with 1.6 gpm FC laminar flow control and plain end spout ring. Provide flexible braided stainless steel supplies and stops to foot pedal in cabinet base. Flexible stainless steel supplies with loose key angle stops. Just J-35 stainless steel cup strainer and cast brass P-trap with clean-out plug EBC TB150-Z. Symmons 5-120 ck thermixer ½" thermostatic mixing valve, Watts #7 dual check valve, in both hot and cold lines. Elkay LK1141A push button bubbler.

S-5 ADA Kitchen Sink (Counter Mounted, Wrist blades): Just SL-ADA-1921-A-GR 19" x 21" x 5½" deep, 18-gauge, type 304 stainless steel, single compartment counter mounted sink with 8" center drilling. . Chicago 1100 CP faucet. Flexible stainless steel supplies with loose key angle stops. Just J-35 stainless steel cup strainer and cast brass P-trap with clean out plug.

S-6 Laundry Sink (Counter Mounted, Wrist blades): Just DL-2233AGR 22 X 33 x 8 " deep, 18-gauge, type 304 stainless steel, two compartment counter mounted sink with 8" center drilling. . Chicago 786-GN2FC faucet, No. 317 4" wrist blades, GN2 rigid/swing convertible goose neck with 1.6 gpm FC laminar flow control and plain end spout ring. Flexible stainless steel supplies with loose key angle stops. Just J-35 stainless steel cup strainer and cast brass P-trap with clean out plug.

SS-1 Service Sink (Floor Mounted, Corner): Kohler K6710, Whitby, 28 x 28-inch, enameled cast iron floor-mounted corner model, K9146-3" drain with strainer, No. K8940 removable vinyl-coated rim guard; Chicago 897 faucet with vacuum breaker, screwdriver stops in shanks, 5 foot rubber hose and 853 wall hook.

SH-1 ADA Shower Valve: Symmons Temptrol model 96-500-B340-L-V pressure actuated shower mixer for shower installation with concealed piping, ½" inlets, ½" top outlet, ½" plugged bottom outlet, bronze construction, stainless steel pressure balancing piston, adjustable safety stop with built-in shut off field set at 110°F, wall flange, angle check stops; fixed shower head, diverter valve and hand spray shower head, 30" chrome plated wall bar with adjustable mounting flange and adjustable height slide bracket, chrome plated brass swivel connector, 59" chrome hose, chrome plated supply elbow with flange and inline vacuum breaker. Flow rate: 2.5 GPM. All exposed parts chromium plated.

SH-3 Patient Shower: Symmons model 5700-1-X ligature resistant pressure balance shower valve with trim. Chicago 621CP fixed shower head; Symmons model 57-458 ligature resistant diverter valve; Symmons model H323-V-QD ligature resistant hand held shower head with vacuum breaker, quick disconnect and 24" slide bar.

SH-3 Patient Shower ADA: Armstrong Brainwave model DMV2 electronic shower control with temperature adjustment. Chicago 621CP fixed shower head; Symmons model H323-V-QD ligature resistant hand held shower head with vacuum breaker, quick disconnect and 24" slide bar.

BT-1 Tub and Shower (ADA Compliant): Kohler K785 / K786 Guardian Bath, 60" x 32" x 16-1/4", enameled cast iron with Safequard bottom and drillings for hand grip rails, outlet at left or right as shown on plans. Kohler K9620 polished chrome hand grip rails. Kohler K-7160-AF above the floor overflow and drain; Kohler K-922 laminar flow bath spout. Symmons model 5700-1-X ligature resistant pressure balance shower valve with trim. Chicago 621CP fixed shower head; Symmons model 57-458 ligature resistant diverter valve; Symmons model H323-V-QD ligature resistant hand held shower head with vacuum breaker, quick disconnect and 24" slide bar.

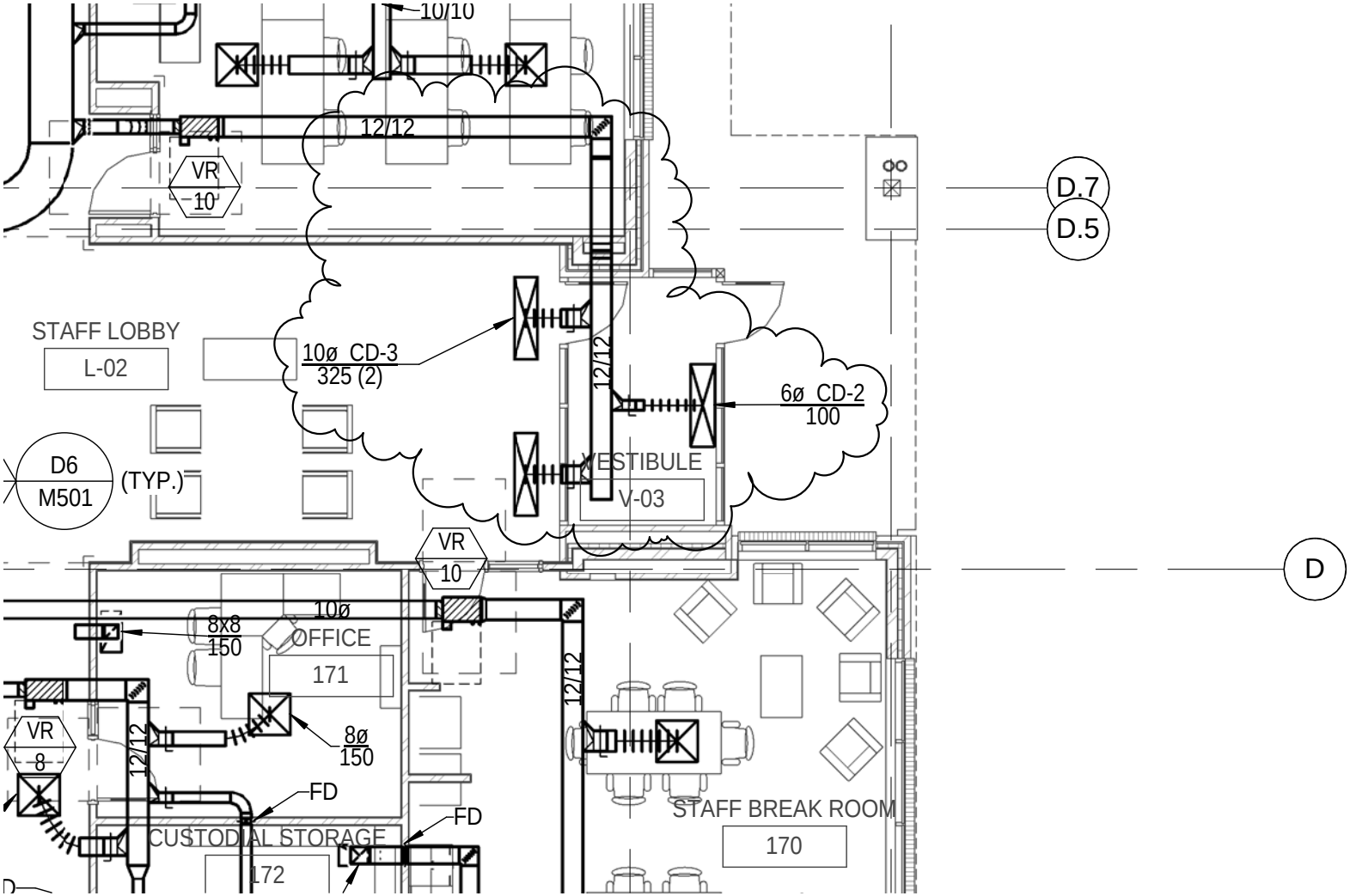
SECTION - 230990 Sequence of Operation

1. Provide CO_2 monitoring in spaces with occupancy greater than 25 people / 1000 ft^2. Monitor and provide alarm if acceptable CO_2 levels are exceeded. Mount CO_2 sensors near room temperature sensors and at same height as room sensors. Provide CO_2 monitoring for the following spaces.
   A. Quilting Room 101
   B. Multifunction Classroom 104A
   C. Multifunction Exercise 104C
   D. Multifunction Music / Group 107A
   E. Group Therapy 107B
   F. Clinic Waiting 110
   G. Kitchenette 128A
   H. Conference Room 141
   I. Small Conference Room 156
   J. Computer Training 157
   K. Classroom 168
   L. Classroom 169
   M. Staff Break Room 170

PRIOR APPROVALS

The following manufacturers, trade names and products are allowed to bid on a name brand only basis with the provision that they completely satisfy all and every requirement of the drawings, specifications and all addenda shall conform to the design, quality and standards specified, established and required for the complete and satisfactory installation and performance of the building and all its respective parts.

Item	Manufacturer	Comments
Flexible Connectors	Twin City	APPROVED
Dryer Booster Fans	Fan Tech	APPROVED
Custom Air Handling Units	Energy Labs	APPROVED
Split System AC Units	Panasonic	APPROVED
Fire Protection	Rapid Fire Protection	APPROVED



FFKR ARCHITECTS
bogue building
730 pacific avenue
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Utah 84104
801-521-6186
801-539-1916
ffkr.com

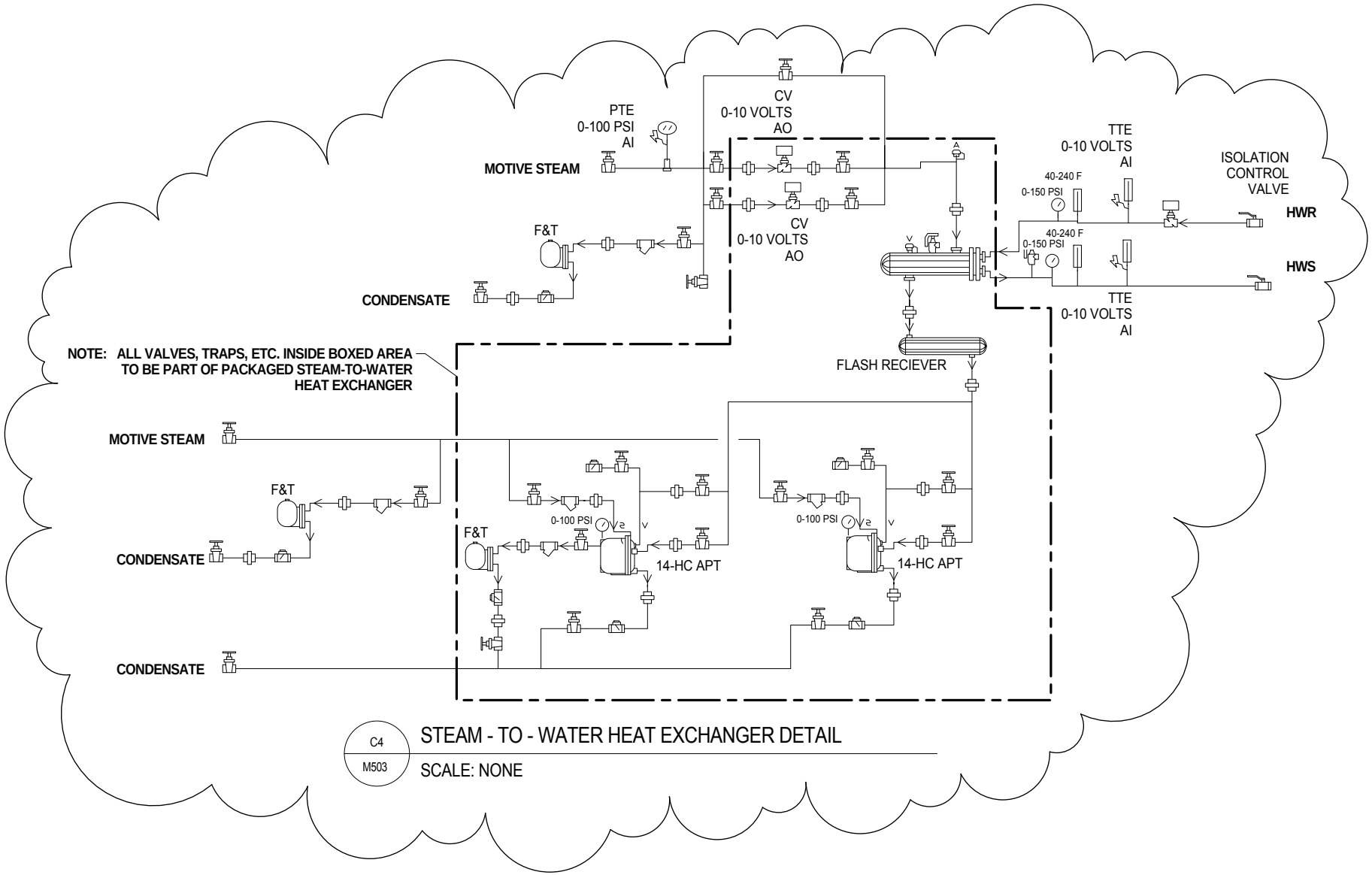
CONSTRUCTION DOCUMENTS

Utah State Hospital Consolidation
Mark I. Payne Building
1300 East Center St. Provo, Utah

ADDENDUM 2 SEPTEMBER 27, 2012

MSD-01

M101



C4
M503

STEAM - TO - WATER HEAT EXCHANGER DETAIL

SCALE: NONE

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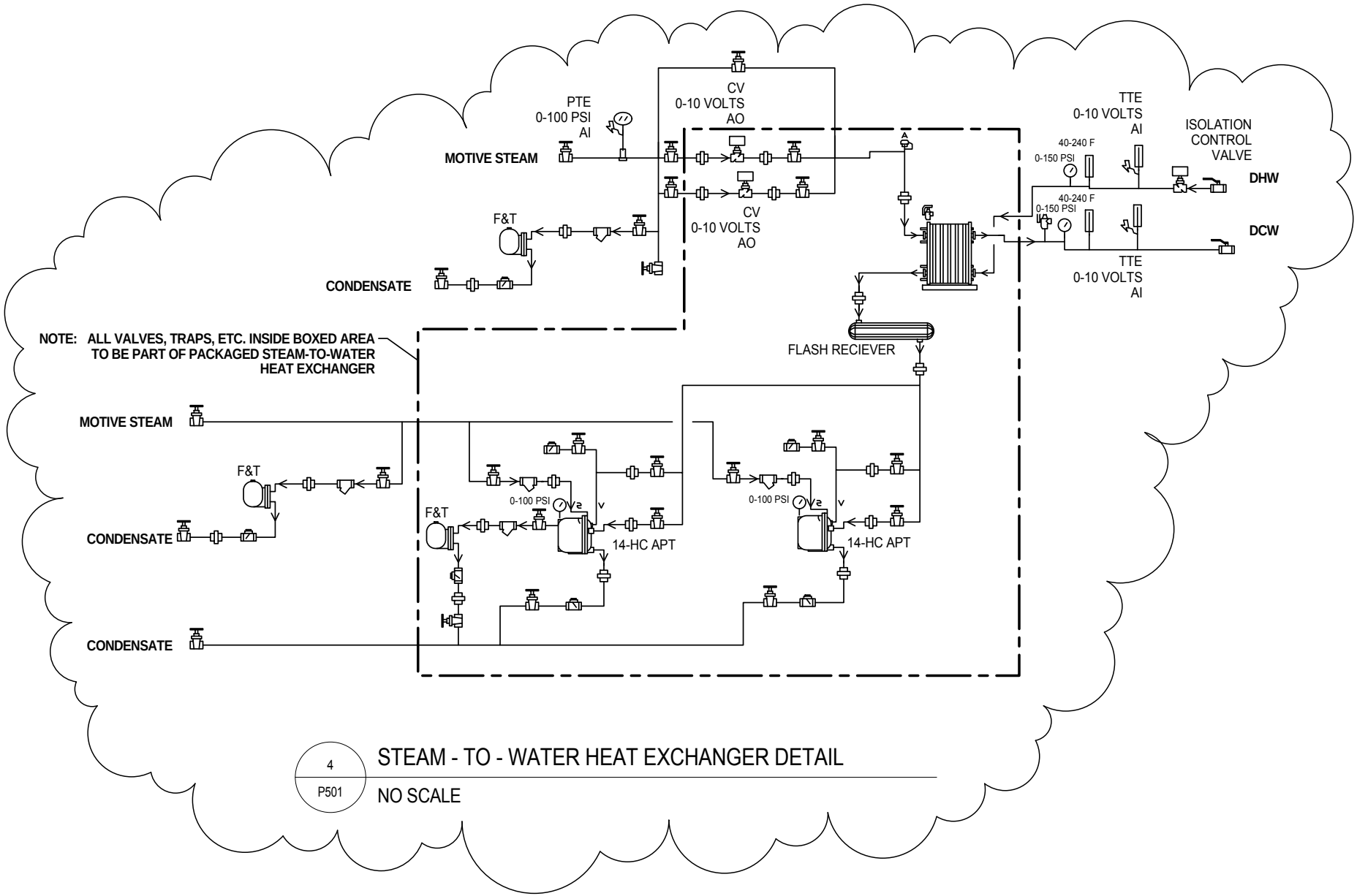
ADDENDUM 2 SEPTEMBER 27, 2012

MSD-02

M503

STEAM PRESSURE-REDUCING VALVE SCHEDULE

ID	MANUFACTURER AND MODEL NUMBER	LOCATION	TYPE	BODY CONSTRUCTION	STEAM		PHYSICAL	NOTES
					FLOW RATE (LB/H)	INLET/ OUTLET PRESSURE (PSIG)	CONNECT SIZE (IN)	
PRV-1	SPIRAX SARCO 25P 0.75"	MECH ROOM	PILOT-OPERATED	CAST IRON	708.6	80/20	0.75	
PRV-2	SPIRAX SARCO 25P 1.5"	MECH ROOM	PILOT-OPERATED	CAST IRON	1653.4	80/20	1.5	



4
P501

STEAM - TO - WATER HEAT EXCHANGER DETAIL

NO SCALE

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CONSTRUCTION DOCUMENTS

Utah State Hospital Consolidation
Mark I. Payne Building
1300 East Center St. Provo, Utah

ADDENDUM 2 SEPTEMBER 27, 2012

PSD-01

P501

PLUMBING FIXTURE SCHEDULE

ID	FIXTURE	CW (IN)	HW (IN)	W (IN)	V (IN)	NOTES
L-1	NOT USED					
L-2	NOT USED					
L-3	NOT USED					
L-4	NOT USED					
L-5	PATIENT LAVATORY	1/2	1/2	1 1/2	1 1/2	WALL HUNG, SENSOR FAUCET
L-6	PATIENT LAVATORY	1/2	1/2	1 1/2	1 1/2	COUNTER MOUNTED, SENSOR FAUCET
L-7	LAVATORY	1/2	1/2	1 1/2	1 1/2	WALL HUNG, SENSOR FAUCET, ADA
L-8	LAVATORY	1/2	1/2	1 1/2	1 1/2	COUNTER MOUNTED, SENSOR FAUCET
EWC-1	ELECTRIC WATER COOLER	1/2	-.-	1 1/2	1 1/2	SINGLE LEVEL
EWC-2	ELECTRIC WATER COOLER	1/2	-.-	1 1/2	1 1/2	DUAL LEVEL
FD-1	FLOOR DRAIN	-.-	-.-	2	2	
FD-2	FLOOR DRAIN	-.-	-.-	2	2	SECURITY GRATE
FD-3	FLOOR DRAIN	-.-	-.-	2	2	
FS-1	FLOOR SINK	-.-	-.-	3	2	
HB-1	HOSE BIB	3/4	-.-	-.-	-.-	-.-
NFH-1	NON FREEZE WALL HYDRANT	3/4	-.-	-.-	-.-	-.-
RD-1	ROOF DRAIN	-.-	-.-	-.-	-.-	SEE PLANS FOR SIZE
RDO-1	ROOF DRAIN OVERFLOW	-.-	-.-	-.-	-.-	SEE PLANS FOR SIZE
DSN-1	DOWN SPOUT NOZZLE	-.-	-.-	-.-	-.-	SEE PLANS FOR SIZE
S-1	SINK	1/2	1/2	2	1 1/2	COUNTER MOUNTED, SINGLE COMPARTMENT
S-2	SINK	1/2	1/2	2	1 1/2	COUNTER MOUNTED, SINGLE COMPARTMENT
S-3	SINK	1/2	1/2	2	1 1/2	COUNTER MOUNTED, DOUBLE COMPARTMENT
S-4	SINK	1/2	1/2	2	1 1/2	COUNTER MOUNTED, SINGLE COMPARTMENT
S-5	SINK	1/2	1/2	2	1 1/2	COUNTER MOUNTED, DOUBLE COMPARTMENT
S-6	LAUNDRY SINK	1/2	1/2	2	1 1/2	COUNTER MOUNTED, SINGLECOMPARTMENT
SH-1	STAFF SHOWER	1/2	1/2	2	2	ADA
SH-2	PATIENT SHOWER	1/2	1/2	2	2	ADA
SH-3	SECLUSION SHOWER	1/2	1/2	2	2	-.-
SS-1	SERVICE SINK	3/4	3/4	3	2	-.-
U-1	PATIENT URINAL	3/4	-.-	2	2	WALL HUNG, CONCEALED SENSOR FV, ADA
U-2	URINAL	3/4	-.-	2	2	WALL HUNG, SENSOR FLUSH VALVE
WB-1	WASHER BOX	3/4	3/4	2	2	-.-
WC-1	PATIENT WATER CLOSET	1	-.-	4	2	FLR MTD, CONCEALED SENSOR FV, ADA
WC-2	PATIENT WATER CLOSET	1	-.-	4	2	FLR MTD, CONCEALED SENSOR FV
WC-3	WTER CLOSET	1	-.-	4	-.-	WALL HUNG; SENSOR FLUSH VALVE
WC-4	WATER CLOSET	1	-.-	4	2	WALL HUNG; SENSOR FLUSH VALVE, ADA
WC-5	WATER CLOSET	1	-.-	4	2	FLOOR MTD; SENSOR FLUSH VALVE, ADA
SF-1	SECURITY FIXTURE	1	1/2	4	2	SS FLOOR MTD WITH INTEGRAL LAV
CS-1	CLINICAL SINK	1	1/2	4	2	FLOOR MOUNTED
BT-1	BATHTUB	1/2	1/2	2	2	

1. ALL UNDER GROUND WASTE AND VENT SHALL BE 2" OR GREATER PER DRAWINGS.

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CONSTRUCTION DOCUMENTS

Utah State Hospital Consolidation
Mark I. Payne Building
1300 East Center St. Provo, Utah

ADDENDUM 2 SEPTEMBER 27, 2012

PSD-02

P601

REAVELEY
ENGINEERS + ASSOCIATES
Consulting Structural Engineers

MEMORANDUM

Date	Thursday, September 27, 2012
To	Michael Dolan, FFKR Architects
From	Jeff Miller *jmiller@reaveley.com* Corey Price *cprice@reaveley.com*
Subject	Pediatric Facility- Utah State Hospital Addendum #2

Pediatric Facility- Utah State Hospital
Addendum #2
September 27, 2012

The following are revisions to the Contract Documents.

SHEET S102A

1. Extend and revise canopy framing per SSD2-1.

SHEET S603

1. Revise HSS8x8x1/2 columns marked A.2(-23'-6.1/2")-A.A(5'-0") and A.2(-23'-6.1/2")-A.B(-4'-8") to have 1-1/4" thick base plates.

P: 801.486.3883
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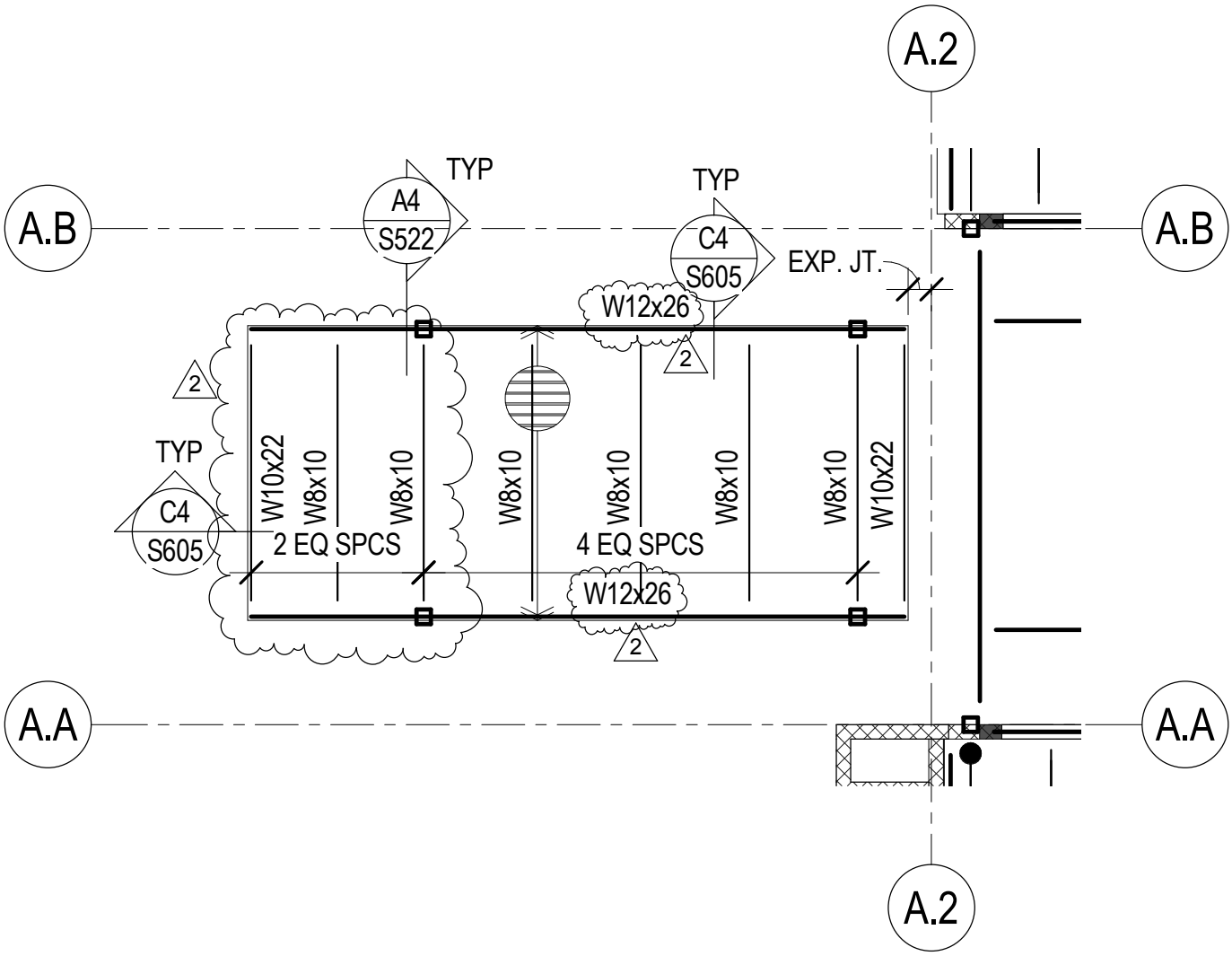
675 E. 500 S. Suite 400
Salt Lake City, Utah 84102
www.reaveley.com



1
SSD2-1

CANOPY FRAMING PLAN - AREA A (S102A PARTIAL)

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

REAVELEY ENGINEERS + ASSOCIATES Consulting Structural Engineers	PEDIATRIC FACILITY	SSD2-1
	CANOPY FRAMING PLAN (S102A PARTIAL)	
	09/27/2012	

VAN BOERUM
& FRANK ASSOCIATES, INC.
CONSULTING ENGINEERS

ADDENDUM #2

DATE: September 27, 2012

PROJECT NO: 11542

PROJECT: Utah State Hospital - Pediatrics

DIVISION – 22 & 23, 31-33

DRAWINGS

SHEET - M101A
1. Refer to Patient Toilet Boys 121. Transfer air grilles from Library 115 to Toilet 121 shall be 10x10 in lieu of 12x12. Balance each grille to 250 CFM in lieu of 400 CFM.
2. Refer to Patient Toilet Girls 120. Transfer air grilles from Library 115 to Toilet 120 shall be 10x10 in lieu of 12x12. Balance each grille to 250 CFM in lieu of 400 CFM.
3. Refer to Patient Toilet Boys 110. Transfer air grilles from Classroom 113 to Toilet 110 shall be 10x10 in lieu of 12x12. Balance each grille to 200 CFM in lieu of 400 CFM.
4. Refer to Patient Toilet Girls 109. Transfer air grilles from Classroom 113 to Toiler 109 shall be 10x10 in lieu of 12x12. Balance each grille to 200 CFM in lieu of 400 CFM.

SHEET - M101B
1. Fire Damper in 12" round supply duct at wall, along grid B.7 has been deleted.
2. Fire Damper in 42/22 return duct at wall, along grid B.7 has been deleted.
3. Fire Damper in 48/26 flat oval supply duct at wall, along grid B.7 has been deleted.
4. The 42/22 return duct running east-to-west (just south of grid B.7) should be shown on the second floor, connecting to the Air Handler AH-1, in lieu of shown on the first floor.
5. Fire Damper in 8" round supply duct at wall, along at B.E and B.4 has been deleted.
6. Fire Damper in 8"x8" return duct at wall, along at B.E and B.4 has been deleted.

SHEET - M401
1. VAV Box serving Multi-Purpose Activity 137 shall be tagged VR-20, in lieu of FCU-20.

SHEET - M402
1. Refer to hot water schematic B2/M701 in addendum #02 for steam and condensate pipe sizes in Mechanical Room 117.
2. Heat exchangers, HX-1,2, shall refer to detail A1/M503 in lieu of A2/M503.
3. Steam PRV station shall refer to detail B1/M503, in lieu of A2/M503. See attached PRV schedule.

SHEET - M503
1. Refer to A1/M503 - Steam to Water Heat Exchanger Detail. See attached supplementary drawing for detail revision.
2. Refer to B1/M503. Extend vent from PRV station up through roof.

SHEET - M602
1. Refer to Steam-to-Hydronic Heat Exchanger Schedule. Note 1 to say, "Complete with steam side control, duplex 14-HC APT Pump-Trap,..."
2. See attached supplementary drawing for PRV station schedule, PRV-1,2.
3. Refer to Air-Cooled Chiller Schedule. Chiller, CH-1, full load shall be 0.877 kW/ton, IPLV shall be 0.47 kW/ton.

SHEET - M701
1. See revised drawing at end of addendum for the Hot Water Schematic revision, including steam and condensate pipe sizes.
2. Refer to detail B3/M503 for steam trap detail.

SHEET - MP101A
1. The thermostat for VR-12, in Lounge 133, shall be located in Lounge 133 in lieu of in the corridor.

SHEET - MP101B
1. The thermostat shown in Staff Entry V-02, shall be relocated to Social Worker 144. Thermostat shall be on east wall adjacent to door.

SHEET - P101A
1. Relocate piping to lavatory in Medications 125.
2. Floor drain in Seclusion 124A is to be noted FD-2.
3. Change fixture call outs as indicated on attached drawing.
4. Add roof drains and heat trace at entry canopy at Entry V01 as indicated on attached drawing.

SHEET - P101C
1. Delete washer boxes and related piping in Soiled Linen 453 and 437.
2. Floor drains in Laundry 409 and 470 are to be noted FD-1.
3. Coordinate piping with sink location on Medications 414A.
4. Coordinate piping with lavatory location in Exam 403.

SHEET - P101D
1. Delete washer boxes and related piping in Soiled Linen 353 and 337.
2. Floor drains in Laundry 309 and 370 are to be noted FD-1.
3. Coordinate piping with sink location on Medications 314A.
4. Coordinate piping with lavatory location in Exam 303.

SHEET - P101E
1. Delete washer boxes and related piping in Soiled Linen 253 and 237.
2. Floor drains in Laundry 209 and 270 are to be noted FD-1.
3. Coordinate piping with sink location on Medications 214A.
4. Coordinate piping with lavatory location in Exam 203.

SHEET - P501
1. Refer to 4/P503 - Steam to Water Heat Exchanger Detail. See attached supplementary drawing for detail revision.

SHEET - P601
1. Replace Plumbing Fixture Schedule with attached Schedule.

SHEET - C100
1. Refer to revised drawing at end of addendum for steam and condensate piping, etc.

SHEET - C501
1. Refer to revised drawing at end of addendum for added details, steam and condensate piping, etc.

SHEET - C502
1. Refer to revised drawing at end of addendum for added details, steam and condensate piping, etc.

SHEET - C503
1. Detail 2/C503 shall be deleted.
2. Detail 3/C503 shall be deleted.

SPECIFICATIONS

SECTION - 223500 Domestic Water Heat Exchangers
1. Revise heat exchanger description as follows:

SHEET - INSTANTANEOUS HEAT EXCHANGERS

1. Domestic-Water-in-Coil, Instantaneous Heat Exchangers:

   A. Manufacturers:

      1) Electric Heater Company (The); Hubbell Heaters Division.
      2) Graham Corporation.
      3) Leslie Controls, Inc.
      4) Armstrong International, Inc.

   B. Description: Tankless, packaged assembly of heat-exchanger coils, controls, and specialties for heating domestic water in coils with steam in shell.
   C. Construction: ASME code, with **steel** shell for steam.
      1) Steel Shell Pressure Rating: 150 psig (1035 kPa).
      2) Insulation: Complying with ASHRAE/IESNA 90.1, unless otherwise indicated, and suitable for operating temperature. Surround entire shell and nozzle except connections and controls.

   D. Double Wall Plate and Frame heat exchanger designed specifically to match the primary and secondary heat surface within 10% of each other thus producing an efficient and compact package. Plate and frame type shall have High Temperature Heat Seal Gasket Material or Equal and be ASME constructed and stamped to 150 psig.
   E. Control of the hot water heating skid will incorporate an ASCON Touch Panel Controller and equal percentage control valves incorporating class IV shut off tightness and CV rating of 7.4 or higher. Control valves must conform to ANSI standards. Valve body must include low noise trim as needed. Pneumatic actuator powered with 20 psig air supply and capable of shutting off against 175 psig steam and shall come with air filter regulator. Control valve to have SP500 smart positioner 4 –20 ma feedback with digital readout. Controller shall be loop powered valve positioning and controller must incorporate auto-tune, fuzzy logic, matched power loop output ,dual set points and dual output relays. All controls must come pre-wired and piped for connection to air supply and power source. Pressure gauges must be installed before control valve and compound pressure gauge must be used down-steam of control valve. Unit must not have vacuum breaker.
   F. Water side connections shall be 316 SS with ANSI 150# flanges with RTD and inlet and outlet bi metal thermometers with range of 0 –200F. Waterside pressure drop shall not exceed 5 psig.
   G. Effective condensate removal for closed loop system is to be managed by an APT automatic pump trap arrangement
   H. Pump/Trap shall be ductile iron and have inline connections and shall be repairable without disturbing the piping. Pump/Trap shall be capable of using steam as motive and have a 200 psig steam motive pressure rating. Pump/Trap shall have no greater NPSH requirement than 10" from floor.
   I. Stand: Factory fabricated for floor mounting of heat exchangers and thermostatically controlled mixing valves.

SECTION - 22400 Plumbing Fixtures
1. Replace plumbing fixture schedule with the following:

SHEET - PLUMBING FIXTURE SCHEDULE

WC-1 Patient Water Closet (Floor Mounted, Concealed Flush Valve, ADA Compliant): Crane 31083 Sanwalton, vitreous china, 1.6 gallon flush. Elongated bowl design, 17-1/2" high, siphon jet flushing, 2-1/4" passageway, 4" back outlet; 1-1/2" back spud and bolt caps. Sloan concealed flush valve with lever actuator and front access.

WC-2 Patient Water Closet (Floor Mounted, Concealed Flush Valvent): Crane 3484 Sanwalton, vitreous china, 1.6 gallon flush. Elongated bowl design, 14" high, siphon jet flushing, 2-1/4" passageway, 4" back outlet; 1-1/2" back spud and bolt caps. Sloan concealed flush valve with lever actuator and front access.

WC-3 Water Closet (Wall Hung) (Sensor Flush Valve) (ADA): Kohler #K-4325-0 "Kingston" vitreous china, 1.6 gal flush, siphon jet, elongated bowl, 1-1/2" top spud, Kohler #K-4670-C open front seat, stainless steel hinge posts with check, Sloan 111-1.6-ES-S TMO hard wired sensor operated flush valve. Smith 0210 (left or right) horizontal of Smith 0230 vertical adjustable carrier with foot support. See architectural drawings for mounting height.

WC-4 Water Closet (Wall Hung) (Sensor Flush Valve): Kohler #K-4325-0 "Kingston" vitreous china, 1.6 gal flush, siphon jet, elongated bowl, 1-1/2" top spud, Kohler #K-4670-C open front seat, stainless steel hinge posts with check, Sloan 111-1.6-ES-S TMO hard wired sensor operated flush valve. Smith 0210 (left or right) horizontal of Smith 0230 vertical adjustable carrier with foot support. See architectural drawings for mounting height.

WC-5 Water Closet (Floor Mounted, Sensor Flush Valve, ADA Compliant): Kohler K-4368, Highcliff Toilet, vitreous china, 1.6 gallon flush. Elongated bowl design, 17-1/2" high, siphon jet flushing, 2-1/4" passageway, 1-1/2" top and 52048 bolt caps. Sloan 111-1.6-ES-S TMO hard wired sensor operated flush valve.

SF-1 Handicapped Security Fixture: Acorn 1435 ALAR series, ADA Compliant handicapped lavatory/toilet combination fixture shall be 14 ga., type 304 stainless steel complete with grab bars. Construction shall be seamless welded and exposed surfaces shall have a satin finish. Countertop shall have an air-circulating, self draining soap dish. Fixture shall have an air-control pneumatically operated metering, non-hold open push button valves. Valve shall require less than 5 lbs, push to activate, toilet shall be blowout jet type with an elongated bowl, a self-draining flushing rim, and an integral contoured seat. Toilet trap shall pass a 2-5/8" diameter ball and be fully enclosed, Cabinet interior is sound deadened with fire resistant material. Fixture shall be furnished with necessary fasteners for proper installation. Fixture to be mounted on floor with wall outlet (2). Provide concealed pushbutton flush valve with flush valve access and flush valve thru wall connector (FVT). Toilet angle orientation shall be left (AL) or right (AR) as shown on the architectural plans; (BPH) hemispherical bubbler; hot and cold water air-control valves (4), 1.6 gpf, cleanout with hook assembly (COH), wall sleeve (SW), paper holder on opposite side of water closet (PH), and grab bar closer plate (GBC). Provide and install Powers 480 tempering valve on hot water supply line, set valve to 95°F max, with strainers and check valves on hot and cold water inlets.

CS-1 Clinic Sink (Floor Mounted, Flush Valve, Mixing Faucet): Kohler K6676, Tyrrell service sink, vitreous china, with siphon jet flushing rim, 2-1/4" passageway, 1-1/2" top spud and 52048 bolt caps. Three K8935 11" stainless steel rim guards, K13864 loose brass strainer. Sloan Royal-XL-117 flush valve. Chicago 814 quaturn sink fitting with 6-inch wrist blade handles, integral stop arms, stationary spout with plain outlet, pail hook and wall brace, 12½ inches from wall to center of outlet. Clinic sink shall be mounteded on a 10" concrete house keeping pad, coordinate with Architectural drawings.

U-1 Urinal: Kohler K-5016-ER-0 Dexter vitreous china, wall hung elongated urinal with ¾" rear spud; Sloan 195-0.5 ES-S SWB hard wired, sensor operated, flush valve with wall panel.

U-2 Urinal: Kohler K-5016-ET-0 Dexter vitreous china, wall hung elongated urinal with ¾" top spud; Sloan 1186-1.0 ES-S hard wired sensor operated flush valve. Provide transformers as noted on the drawing. Provide low voltage wiring between transformer and flush valves.

L-1 Not Used.

L-2 Not Used.

L-3 Not used.

L-4 Not Used.

L-5 Patient Lavatory (Wall Hung, Sensor Faucet): Kohler K-2030, Greenwich, 20"x18" “D” shaped bowl, vitreous china, wall hung lavatory with front overflow and 8" centers drilling. BSP model SF370 anti ligature sensor faucet and spouit Chicago 327A open grid drain and cast brass P-trap with clean-out plug. Smith 0700 concealed arm chair carrier with foot support. Provide ADA compliant under counter piping cover by Truebro, Lav Shield series in China white. See architectural interior elevations for mounting height.

L-6 Patient ADA Lavatory (Counter Mounted Sensor): Provided with countertop, rough-in and connect. Provide K-7715 open grid strainer; BSP model SF370 anti ligature sensor faucet and spouit. Symmons 5-120 ck thermixer ½" thermostatic mixing valve, Watts #7 dual check valve, in both hot and cold lines. Flexible stainless steel supplies with loose key angle stops. Chicago 327A open-grid drain and cast brass P-trap with clean-out plug EBC TA125-Z. Provide ADA compliant under counter piping cover by Truebro, Lav Shield series in China white. See architectural interior elevations for mounting height.

L-7 Lavatory (Wall Hung, Sensor Faucet): Kohler K-2030, Greenwich, 20"x18" “D” shaped bowl, vitreous china, wall hung lavatory with front overflow and 8" centers drilling. 116.101.21.1 sensor faucet, chrome finish. Chicago 327A open grid drain and cast brass P-trap with clean-out plug. Smith 0700 concealed arm chair carrier with foot support. Provide Provide ADA compliant under counter piping cover by Truebro, Lav Shield series in China white. See architectural interior elevations for mounting height.

L-8 ADA Lavatory (Counter Mounted Sensor): Provided with countertop, rough-in and connect. Provide K-7715 open grid strainer; Chicago 116.101.21.1 sensor faucet. Model #240.630.00.1 transformer, 240.627.21.1 4 inch cover plate. Symmons 5-120 ck thermixer ½" thermostatic mixing valve, Watts #7 dual check valve, in both hot and cold lines. Flexible stainless steel supplies with loose key angle stops. Chicago 327A open-grid drain and cast brass P-trap with clean-out plug EBC TA125-Z. Provide ADA compliant under counter piping cover by Truebro, Lav Shield series in China white. See architectural interior elevations for mounting height.

S-1 Sink (Counter Mounted, Single Compartment): Just SL 2222-A-GR 16” x 19” x 8” deep, 18-gauge, type 304 stainless steel, counter mounted sink with single hole drilling. Chicago 1100 CP faucet. Provide flexible braided stainless steel supplies and stops to foot pedal in cabinet base. Flexible stainless steel supplies with loose key angle stops. Just J-35 stainless steel cup strainer and cast brass P-trap with clean-out plug EBC TB150-Z.

S-2 Lab Sink (Counter Mounted, Wrist blades): Just SL 2222-A-GR 16” x 19” x 7 ½”” deep, 18-gauge, type 304 stainless steel, counter mounted sink with 8” center drilling. . Chicago 786-GN2FC faucet, No. 317 4” wrist blades, GN2 rigid/swing convertible goose neck with 1.6 gpm FC laminar flow control and plain end spout ring. Flexible stainless steel supplies with loose key angle stops. Just J-35 stainless steel cup strainer and cast brass P-trap with clean out plug.

S-3 Sink (Counter Mounted, Wrist blades): Just DLX-2233AGR 22 X 33 x 10 “ deep, 18-gauge, type 304 stainless steel, two compartment counter mounted sink with 8” center drilling. . Chicago 786-GN2FC faucet, No. 317 4” wrist blades, GN2 rigid/swing convertible goose neck with 1.6 gpm FC laminar flow control and plain end spout ring. Flexible stainless steel supplies with loose key angle stops. Just J-35 stainless steel cup strainer and cast brass P-trap with clean out plug.

S-4 Sink (Counter Mounted, Single Compartment): Just SL CRAF-14525-A-GR 14” x 25” x 7 ½” deep, 18-gauge, type 304 stainless steel, counter mounted sink with single faucet hole and bubbler hole drilling. Chicago 50-LESSSPT317XKCP-GN2FC faucet, No. 317 4” wrist blades, GN2 rigid/swing convertible goose neck with 1.6 gpm FC laminar flow control and plain end spout ring. Provide flexible braided stainless steel supplies and stops to foot pedal in cabinet base. Flexible stainless steel supplies with loose key angle stops. Just J-35 stainless steel cup strainer and cast brass P-trap with clean-out plug

EBC TB150-Z. Symmons 5-120 ck thermixer ½" thermostatic mixing valve, Watts #7 dual check valve, in both hot and cold lines. Elkay LK1141A push button bubbler.

S-5 ADA Kitchen Sink (Counter Mounted, Wrist blades): Just SL-ADA-1921-A-GR 19” x 21” x 5½” deep, 18-gauge, type 304 stainless steel, single compartment counter mounted sink with 8” center drilling. . Chicago 1100 CP faucet. Flexible stainless steel supplies with loose key angle stops. Just J-35 stainless steel cup strainer and cast brass P-trap with clean out plug.

S-6 Laundry Sink (Counter Mounted, Wrist blades): Just DL-2233AGR 22 X 33 x 8 “ deep, 18-gauge, type 304 stainless steel, two compartment counter mounted sink with 8” center drilling. . Chicago 786-GN2FC faucet, No. 317 4” wrist blades, GN2 rigid/swing convertible goose neck with 1.6 gpm FC laminar flow control and plain end spout ring. Flexible stainless steel supplies with loose key angle stops. Just J-35 stainless steel cup strainer and cast brass P-trap with clean out plug.

SS-1 Service Sink (Floor Mounted, Corner): Kohler K6710, Whitby, 28 x 28-inch, enameled cast iron floor-mounted corner model, K9146-3" drain with strainer, No. K8940 removable vinyl-coated rim guard; Chicago 897 faucet with vacuum breaker, screwdriver stops in shanks, 5 foot rubber hose and 853 wall hook.

SH-1 ADA Shower Valve: Symmons Temptrol model 96-500-B340-L-V pressure actuated shower mixer for shower installation with concealed piping, ½” inlets, ½” top outlet, ½” plugged bottom outlet, bronze construction, stainless steel pressure balancing piston, adjustable safety stop with built-in shut off field set at 110°F, wall flange, angle check stops; fixed shower head, diverter valve and hand spray shower head, 30” chrome plated wall bar with adjustable mounting flange and adjustable height slide bracket, chrome plated brass swivel connector, 59” chrome hose, chrome plated supply elbow with flange and inline vacuum breaker. Flow rate: 2.5 GPM. All exposed parts chromium plated.

SH-3 Patient Shower: Symmons model 5700-1-X ligature resistant pressure balance shower valve with trim. Chicago 621CP fixed shower head; Symmons model 57-458 ligature resistant diverter valve; Symmons model H323-V-QD ligature resistant hand held shower head with vacuum breaker, quick disconnect and 24” slide bar.

SH-3 Patient Shower ADA: Armstrong Brainwave model DMV2 electronic shower control with temperature adjustment. Chicago 621CP fixed shower head; Symmons model H323-V-QD ligature resistant hand held shower head with vacuum breaker, quick disconnect and 24” slide bar.

BT-1 Tub and Shower (ADA Compliant): Kohler K785 / K786 Guardian Bath, 60" x 32" x 16-1/4", enameled cast iron with Safequard bottom and drillings for hand grip rails, outlet at left or right as shown on plans. Kohler K9620 polished chrome hand grip rails. Kohler K-7160-AF above the floor overflow and drain; Kohler K-922 laminar flow bath spout. Symmons model 5700-1-X ligature resistant pressure balance shower valve with trim. Chicago 621CP fixed shower head; Symmons model 57-458 ligature resistant diverter valve; Symmons model H323-V-QD ligature resistant hand held shower head with vacuum breaker, quick disconnect and 24” slide bar.

SECTION - 230900 Building Automation System

1. Provide stainless steel wall plate/sensor in lieu of thermostat as shown on drawings, for all Bedrooms (Patient Rooms), and Direct Observation Rooms. Provide Torx security tamper-proof pin screws.

SECTION - 230990 Sequence of Operation

1. Provide CO2 monitoring in spaces with occupancy greater than 25 people / 1000 ft^2. Monitor and provide alarm if acceptable CO2 levels are exceeded. Mount CO2 sensors near room temperature sensors and at same height as room sensors. Provide CO2 monitoring for the following spaces.

A.	Classroom 111	G.	Classroom 118
B.	Classroom 112	H.	Classroom 119
C.	Classroom 113	I.	Activity 106
D.	Classroom 114	J.	Conference 127
E.	Library 115	K.	Lounge 133
F.	Classroom 116	L.	Lobby L-01

M. Recreational Therapy 147
N. Multi-Purpose Activity 137
O. Conference 482
P. Visiting 406
Q. Group 410
R. Visiting 473
S. Group 469
T. Dining 441
U. Dining 439
V. Day 455
W. Day 425
X. Conference 382
Y. Visiting 306
Z. Group 310
AA. Visiting 373
BB. Group 369
CC. Dining 339
DD. Dining 341
EE. Day 325
FF. Day 355
GG. Conference 277
HH. Visiting 206
II. Group 210
JJ. Visiting 266
KK. Group 262
LL. Dining 238
MM. Dining 235
NN. Day 224
OO. Day 249

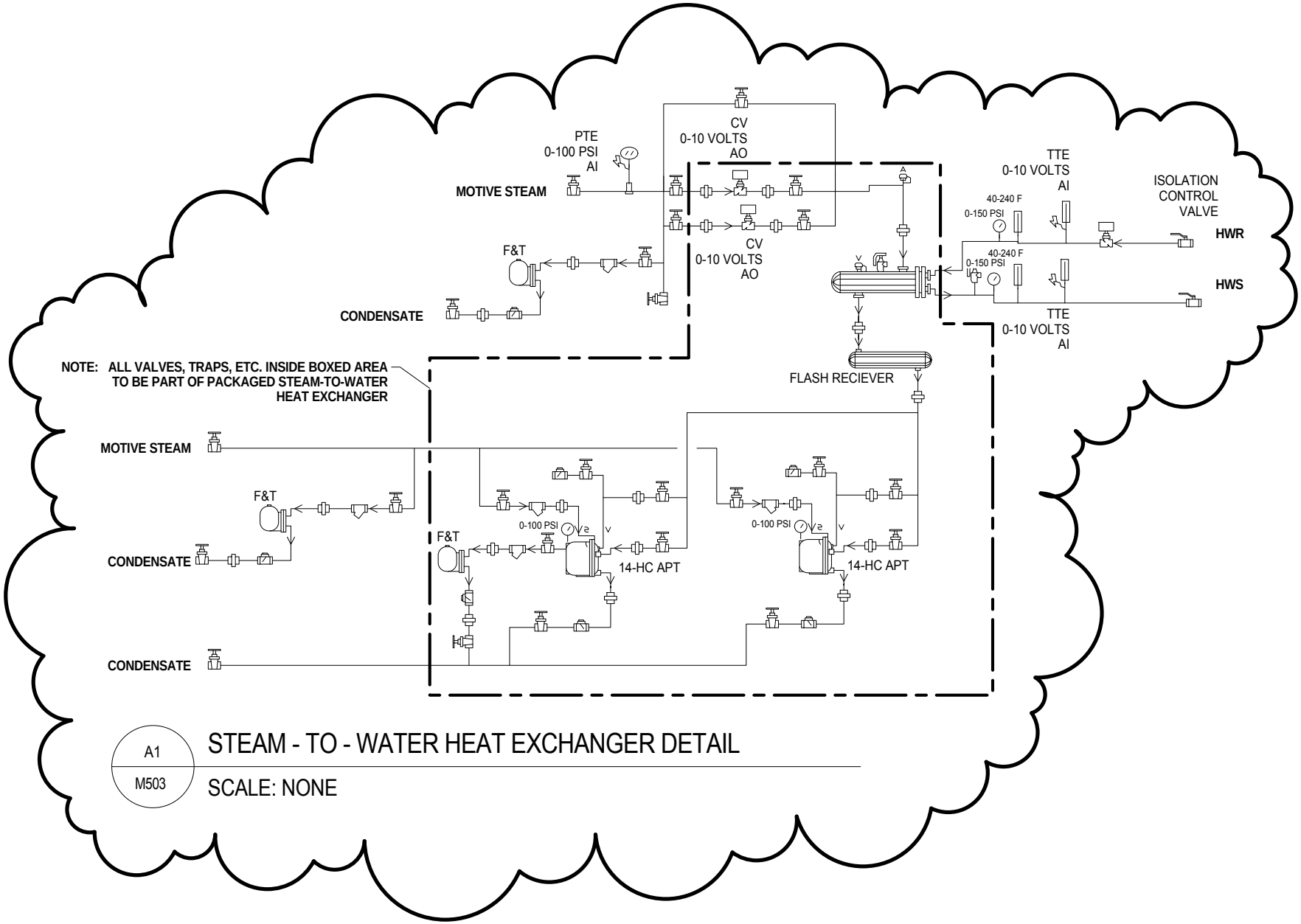
SECTION - 236423 Scroll Chillers

1. Provide and install as shown on the plans, a factory assembled air-cooled packaged chiller.
   A. Each chiller shall include one or more oil free magnetic bearing and variable-speed centrifugal or screw compressors. Integrated variable frequency drive shall operate with inlet guide vanes to optimize part load efficiency. Chillers shall operate with HCF-134a or R-410a refrigerant.
   B. The evaporator, condenser, and expansion valve shall be configured to operate as a single refrigerant circuit unless otherwise specified. The chiller unit compressors shall be designed for mechanical and electrical isolation to facilitate service and removal.
   C. Chiller shall also have dual power (2 electrical connections) sized for the emergency generator on site.

PRIOR APPROVALS

The following manufacturers, trade names and products are allowed to bid on a name brand only basis with the provision that they completely satisfy all and every requirement of the drawings, specifications and all addenda shall conform to the design, quality and standards specified, established and required for the complete and satisfactory installation and performance of the building and all its respective parts.

Item	Manufacturer	Comments
Flexible Connectors	Twin City	APPROVED
Dryer Booster Fans	Fan Tech	APPROVED
Custom Air Handling Units	Energy Labs	APPROVED
Split System AC Units	Panasonic	APPROVED
Fire Protection	Rapid Fire Protection	APPROVED



A1
M503

STEAM - TO - WATER HEAT EXCHANGER DETAIL

SCALE: NONE

FFKR ARCHITECTS
bogue building
730 pacific avenue
salt lake city
Utah 84104
801-521-6186
801-539-1916
ffkr.com

CONSTRUCTION DOCUMENTS

Utah State Hospital Consolidation
PEDIATRIC FACILITY
1300 East Center St. Provo, Utah

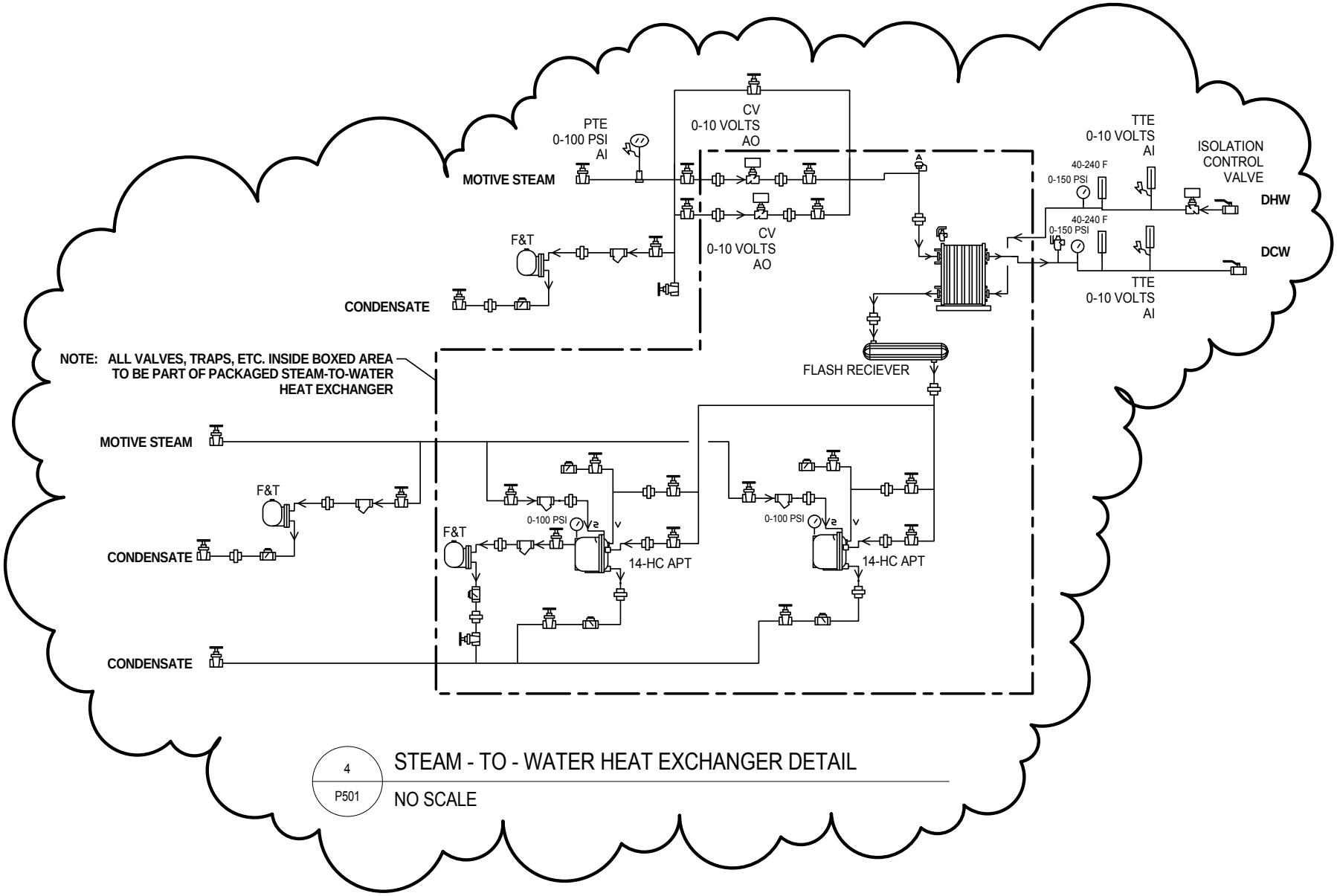
ADDENDUM 2 SEPTEMBER 27, 2012

MSD-01

M503

STEAM PRESSURE-REDUCING VALVE SCHEDULE

ID	MANUFACTURER AND MODEL NUMBER	LOCATION	TYPE	BODY CONSTRUCTION	STEAM		PHYSICAL	NOTES
					FLOW RATE (LB/H)	INLET/ OUTLET PRESSURE (PSIG)	CONNECT SIZE (IN)	
PRV-1	SPIRAX SARCO 25P 1.5"	MECH ROOM	PILOT-OPERATED	CAST IRON	1889	80/20	1.5	
PRV-2	SPIRAX SARCO 25P 2.5"	MECH ROOM	PILOT-OPERATED	CAST IRON	4407.7	80/20	2.5	



4
P501

STEAM - TO - WATER HEAT EXCHANGER DETAIL

NO SCALE

FFKR ARCHITECTS
bogue building
730 pacific avenue
salt lake city
Utah 84104
801-521-6186
801-539-1916
ffkr.com

CONSTRUCTION DOCUMENTS

Utah State Hospital Consolidation
PEDIATRIC FACILITY
1300 East Center St. Provo, Utah

ADDENDUM 2 SEPTEMBER 27, 2012

PSD-01

P501

PLUMBING FIXTURE SCHEDULE

ID	FIXTURE	CW (IN)	HW (IN)	W (IN)	V (IN)	NOTES
L-1	NOT USED					
L-2	NOT USED					
L-3	NOT USED					
L-4	NOT USED					
L-5	PATIENT LAVATORY	1/2	1/2	1 1/2	1 1/2	WALL HUNG, SENSOR FAUCET
L-6	PATIENT LAVATORY	1/2	1/2	1 1/2	1 1/2	COUNTER MOUNTED, SENSOR FAUCET
L-7	LAVATORY	1/2	1/2	1 1/2	1 1/2	WALL HUNG, SENSOR FAUCET, ADA
L-8	LAVATORY	1/2	1/2	1 1/2	1 1/2	COUNTER MOUNTED, SENSOR FAUCET
EWC-1	ELECTRIC WATER COOLER	1/2	-.-	1 1/2	1 1/2	SINGLE LEVEL
EWC-2	ELECTRIC WATER COOLER	1/2	-.-	1 1/2	1 1/2	DUAL LEVEL
FD-1	FLOOR DRAIN	-.-	-.-	2	2	
FD-2	FLOOR DRAIN	-.-	-.-	2	2	SECURITY GRATE
FD-3	FLOOR DRAIN	-.-	-.-	2	2	
FS-1	FLOOR SINK	-.-	-.-	3	2	
HB-1	HOSE BIB	3/4	-.-	-.-	-.-	-.-
NFH-1	NON FREEZE WALL HYDRANT	3/4	-.-	-.-	-.-	-.-
RD-1	ROOF DRAIN	-.-	-.-	-.-	-.-	SEE PLANS FOR SIZE
RDO-1	ROOF DRAIN OVERFLOW	-.-	-.-	-.-	-.-	SEE PLANS FOR SIZE
DSN-1	DOWN SPOUT NOZZLE	-.-	-.-	-.-	-.-	SEE PLANS FOR SIZE
S-1	SINK	1/2	1/2	2	1 1/2	COUNTER MOUNTED, SINGLE COMPARTMENT
S-2	SINK	1/2	1/2	2	1 1/2	COUNTER MOUNTED, SINGLE COMPARTMENT
S-3	SINK	1/2	1/2	2	1 1/2	COUNTER MOUNTED, DOUBLE COMPARTMENT
S-4	SINK	1/2	1/2	2	1 1/2	COUNTER MOUNTED, SINGLE COMPARTMENT
S-5	SINK	1/2	1/2	2	1 1/2	COUNTER MOUNTED, DOUBLE COMPARTMENT
S-6	LAUNDRY SINK	1/2	1/2	2	1 1/2	COUNTER MOUNTED, SINGLECOMPARTMENT
SH-1	STAFF SHOWER	1/2	1/2	2	2	ADA
SH-2	PATIENT SHOWER	1/2	1/2	2	2	ADA
SH-3	SECLUSION SHOWER	1/2	1/2	2	2	-.-
SS-1	SERVICE SINK	3/4	3/4	3	2	-.-
U-1	PATIENT URINAL	3/4	-.-	2	2	WALL HUNG, CONCEALED SENSOR FV, ADA
U-2	URINAL	3/4	-.-	2	2	WALL HUNG, SENSOR FLUSH VALVE
WB-1	WASHER BOX	3/4	3/4	2	2	-.-
WC-1	PATIENT WATER CLOSET	1	-.-	4	2	FLR MTD, CONCEALED SENSOR FV, ADA
WC-2	PATIENT WATER CLOSET	1	-.-	4	2	FLR MTD, CONCEALED SENSOR FV
WC-3	WTER CLOSET	1	-.-	4	-.-	WALL HUNG; SENSOR FLUSH VALVE
WC-4	WATER CLOSET	1	-.-	4	2	WALL HUNG; SENSOR FLUSH VALVE, ADA
WC-5	WATER CLOSET	1	-.-	4	2	FLOOR MTD; SENSOR FLUSH VALVE, ADA
SF-1	SECURITY FIXTURE	1	1/2	4	2	SS FLOOR MTD WITH INTEGRAL LAV
CS-1	CLINICAL SINK	1	1/2	4	2	FLOOR MOUNTED
BT-1	BATHTUB	1/2	1/2	2	2	

1. ALL UNDER GROUND WASTE AND VENT SHALL BE 2" OR GREATER PER DRAWINGS.

FFKR ARCHITECTS
bogue building
730 pacific avenue
salt lake city
Utah 84104
801-521-6186
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ffkr.com

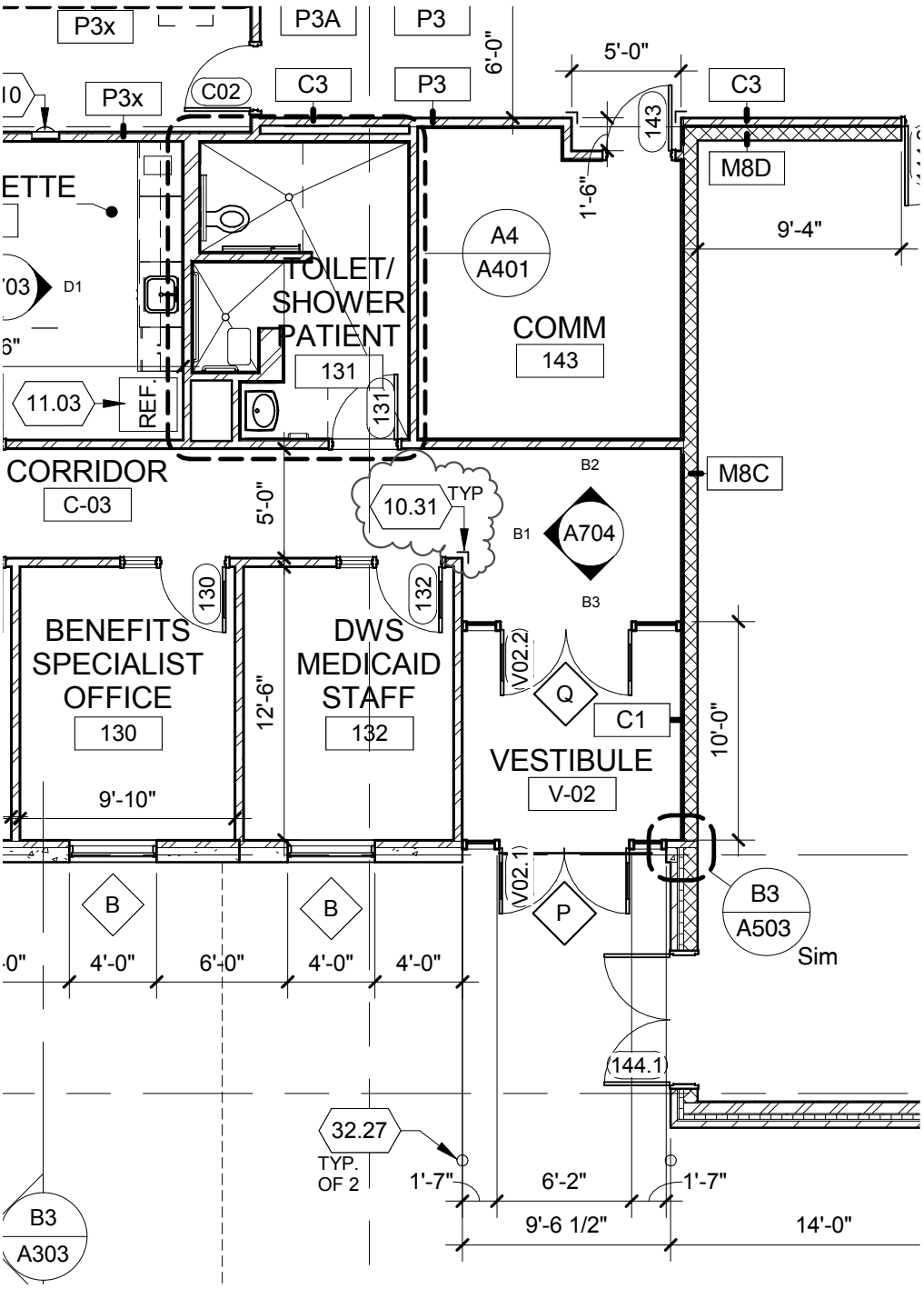
CONSTRUCTION DOCUMENTS

Utah State Hospital Consolidation
PEDIATRIC FACILITY
1300 East Center St. Provo, Utah

ADDENDUM 2 SEPTEMBER 27, 2012

PSD-02

P601



FFKR ARCHITECTS

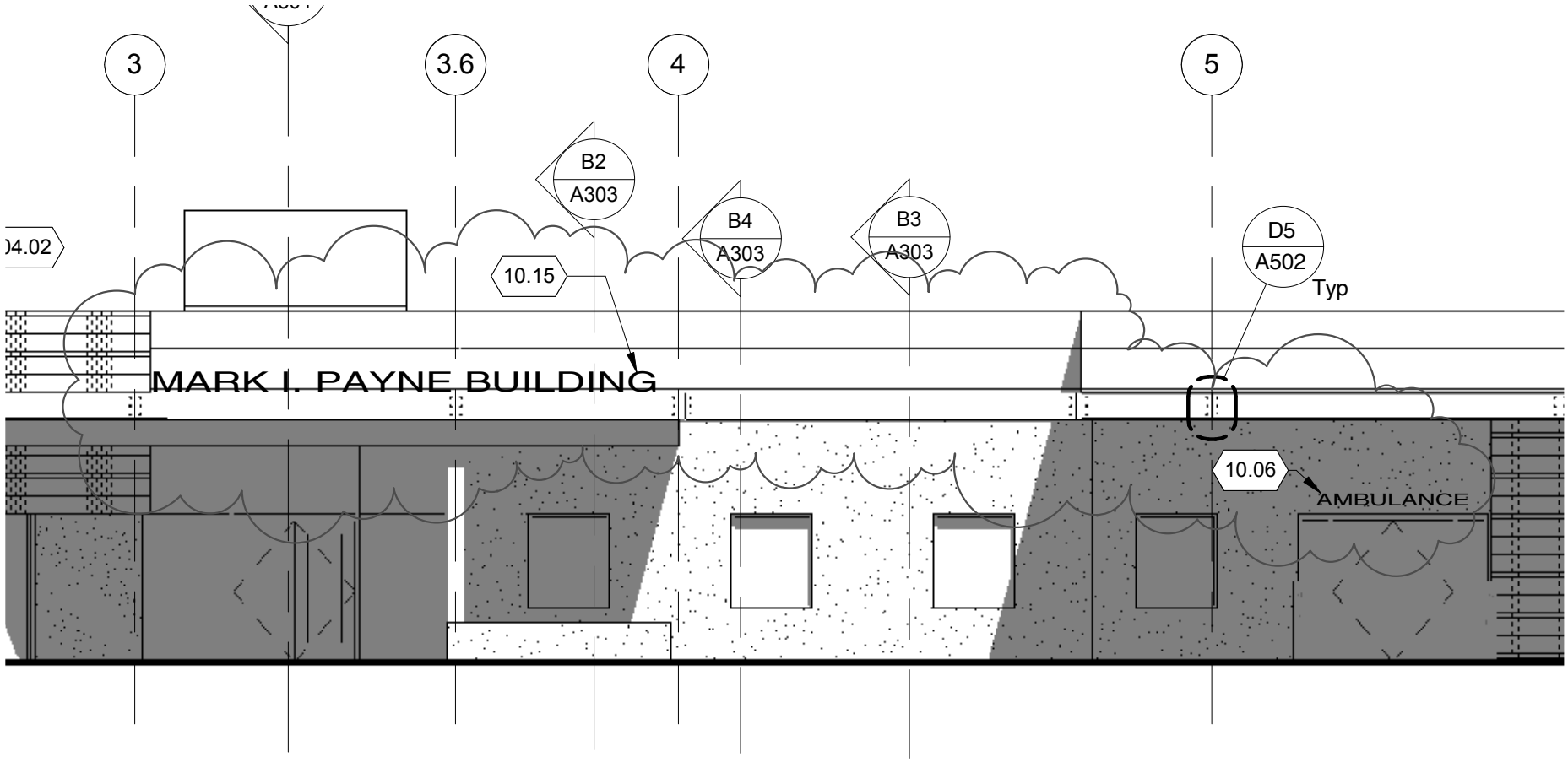
Mark I. Payne Building
1300 East Center St. Provo, Utah

9/27/2012

Addendum #2

ASD-014

A101



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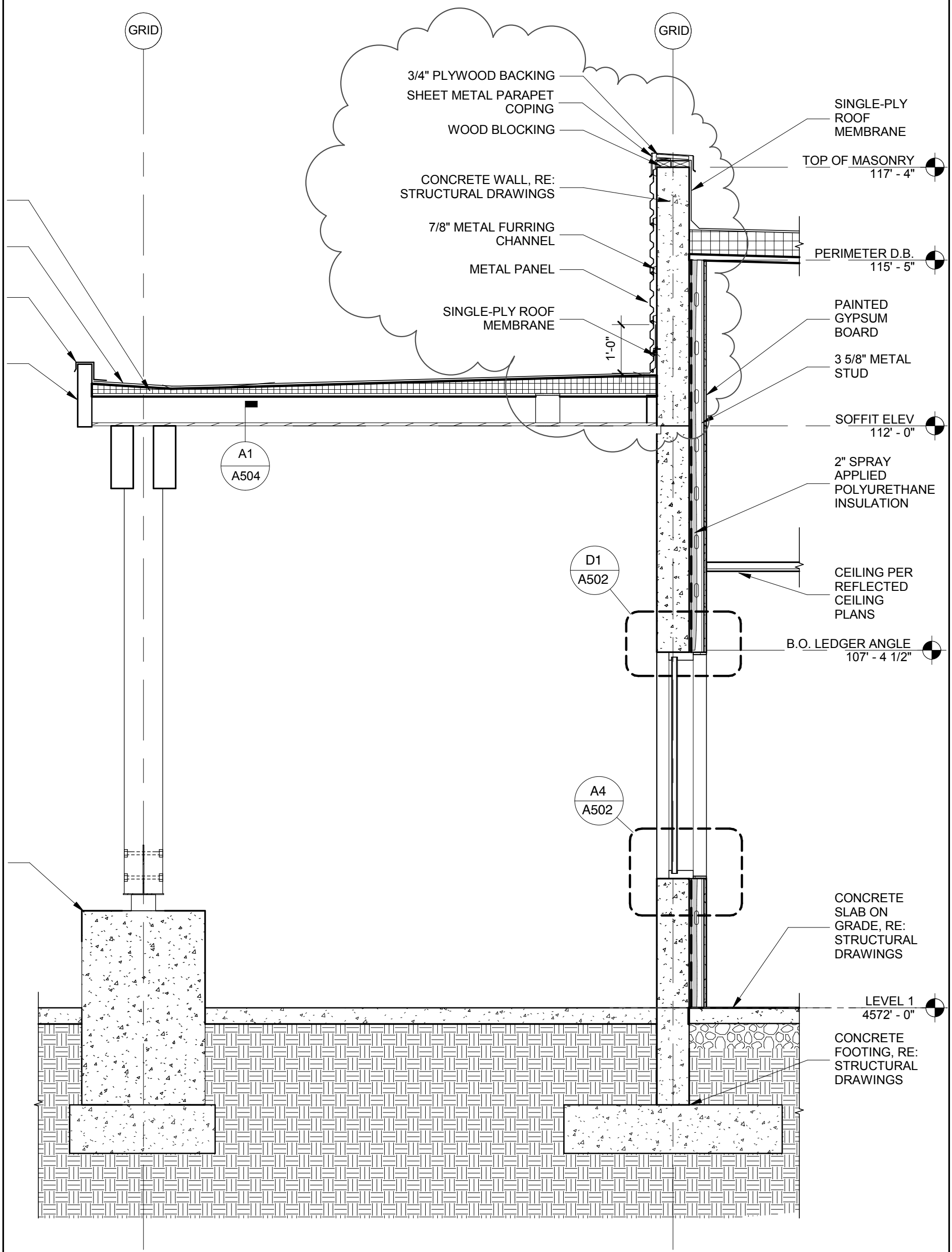
Mark I. Payne Building
1300 East Center St. Provo, Utah

9/27/2012

Addendum #2

ASD-015

A201



VALL SECTION

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

FFKR ARCHITECTS

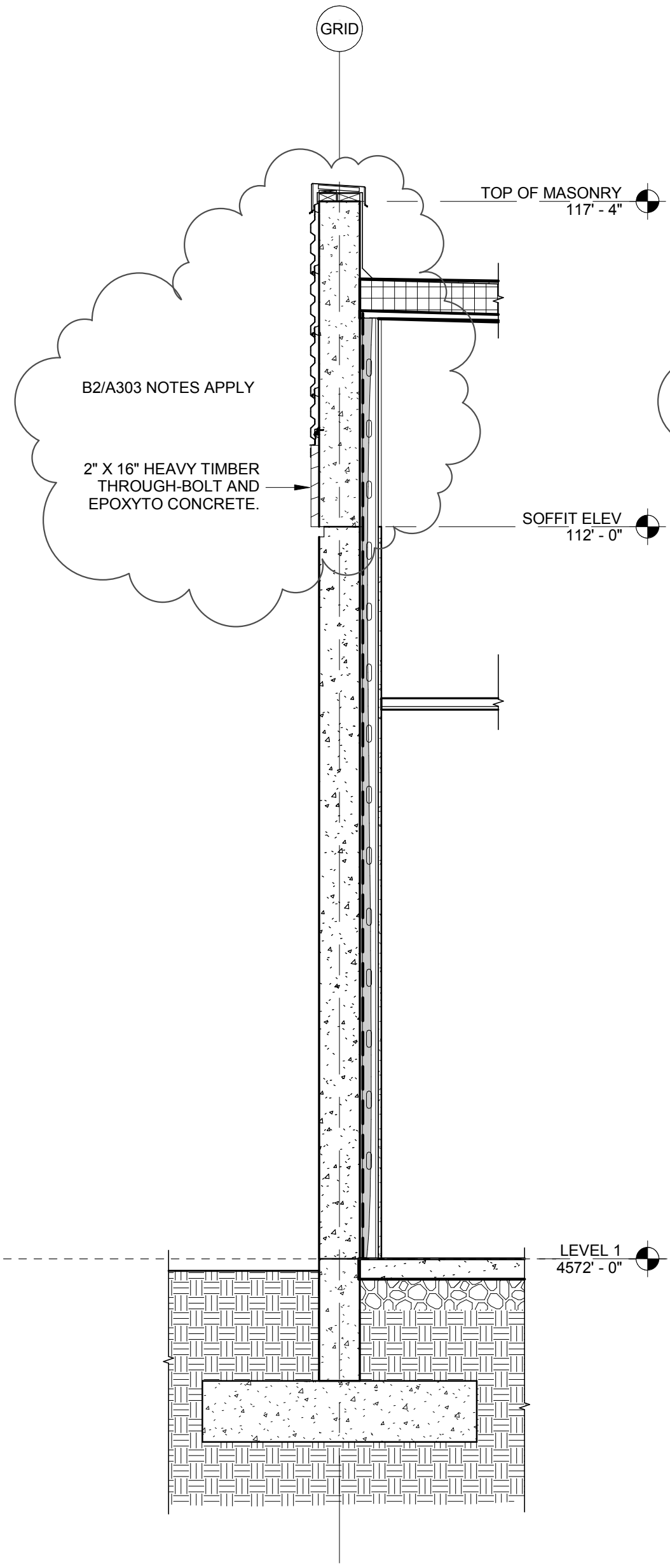
Mark I. Payne Building
1300 East Center St. Provo, Utah

9/27/2012

Addendum #2

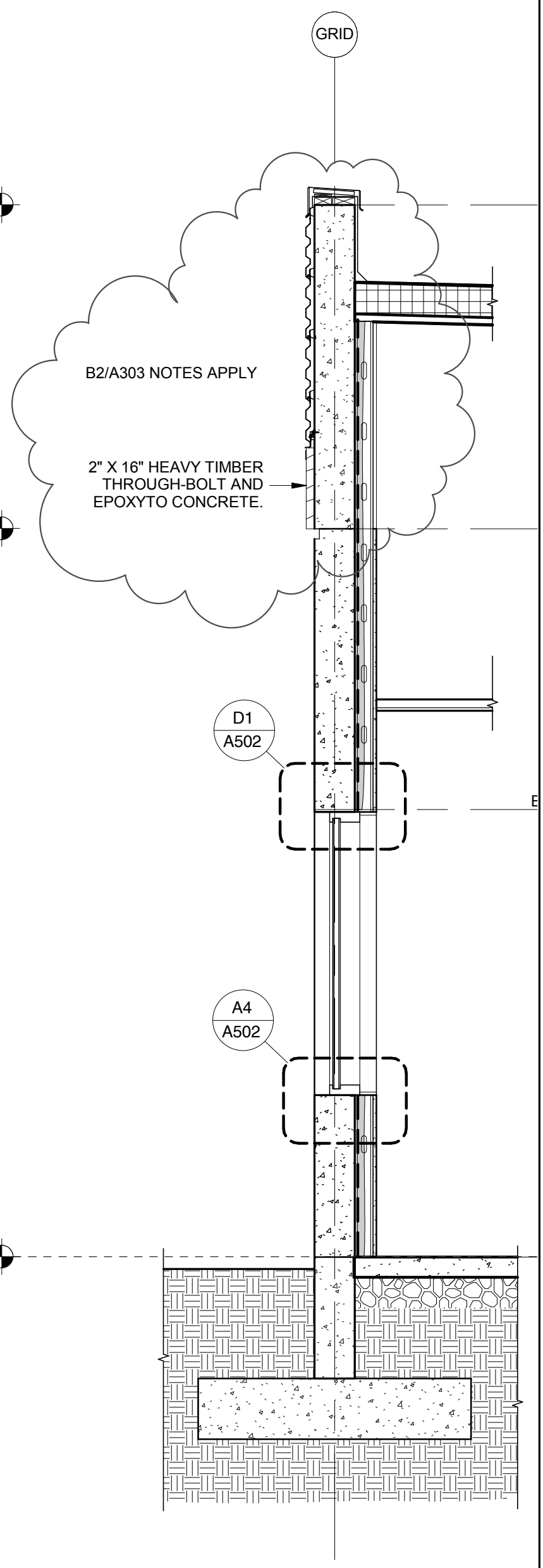
ASD-016

A303



B3 WALL SECTION

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



B4 WALL SECTIION

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

FFKR ARCHITECTS

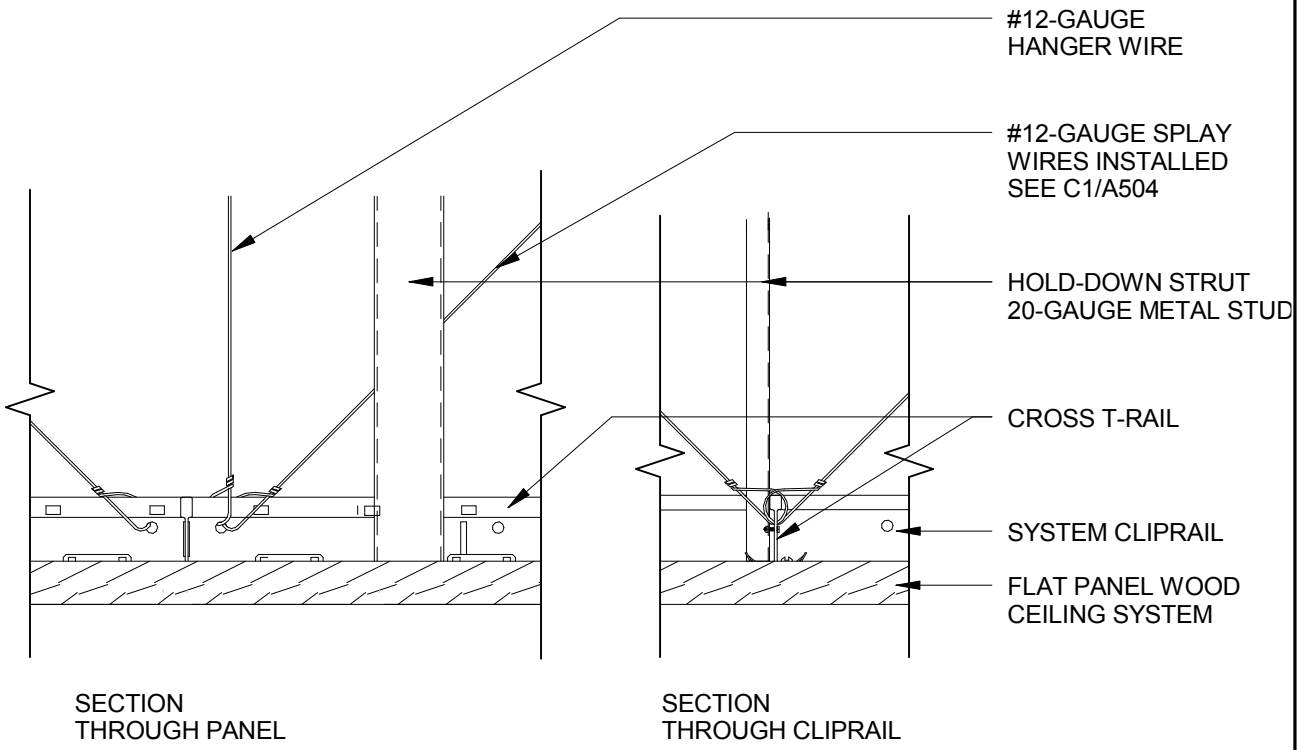
Mark I. Payne Building
1300 East Center St. Provo, Utah

9/27/2012

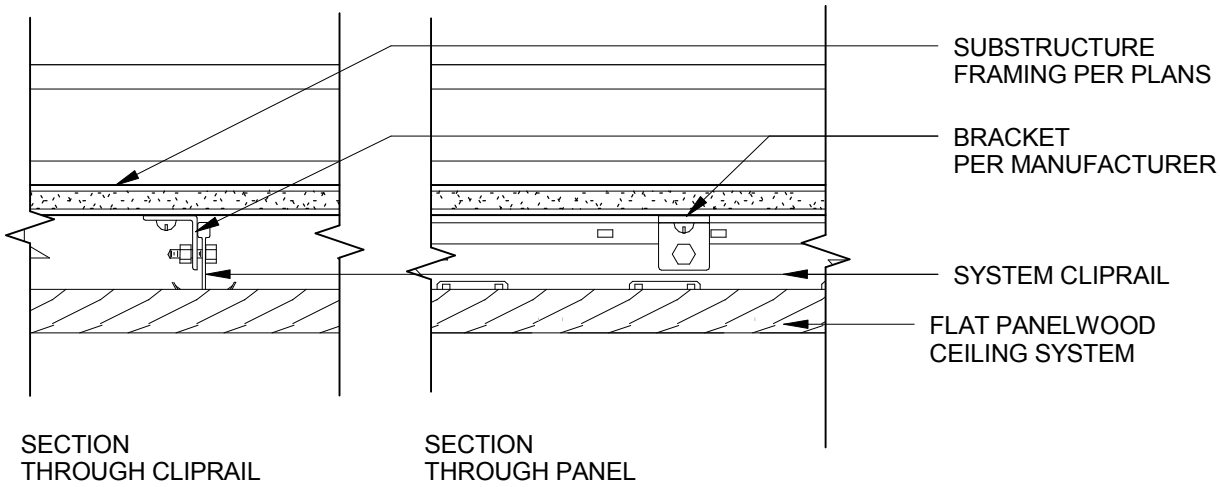
Addendum #2

ASD-017

A303



B. CEILING DETAIL

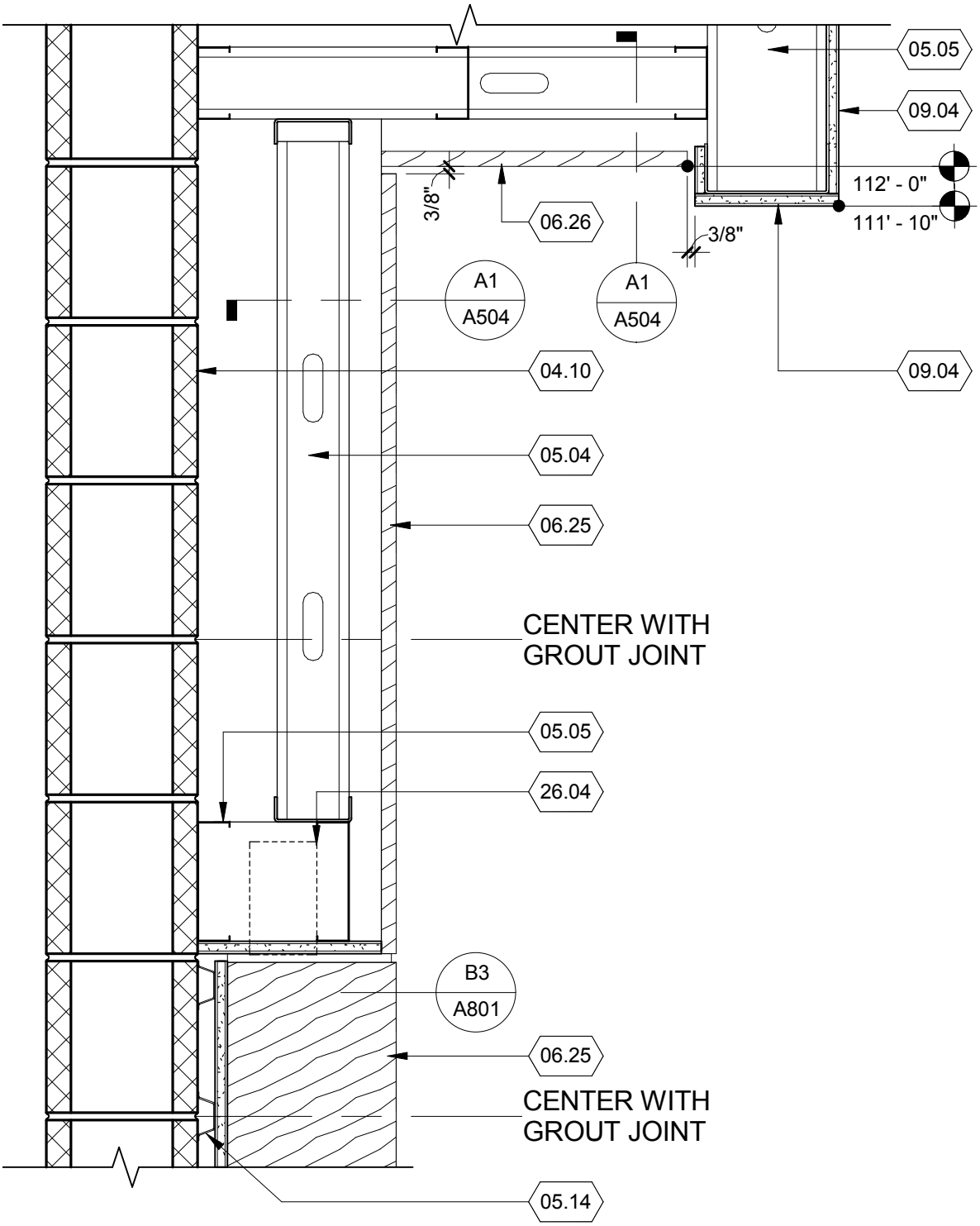


A. CEILING/WALL DETAIL

A1 FLAT PANEL WOOD CEILING / WALL

SCALE: 3" = 1'-0"

FFKR ARCHITECTS	[illegible]	Mark I. Payne Building 1300 East Center St. Provo, Utah	ASD-018
		9/27/2012 Addendum #2	A504



A3

DETAIL

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

FFKR ARCHITECTS

Mark I. Payne Building
1300 East Center St. Provo, Utah

9/27/2012

Addendum #2

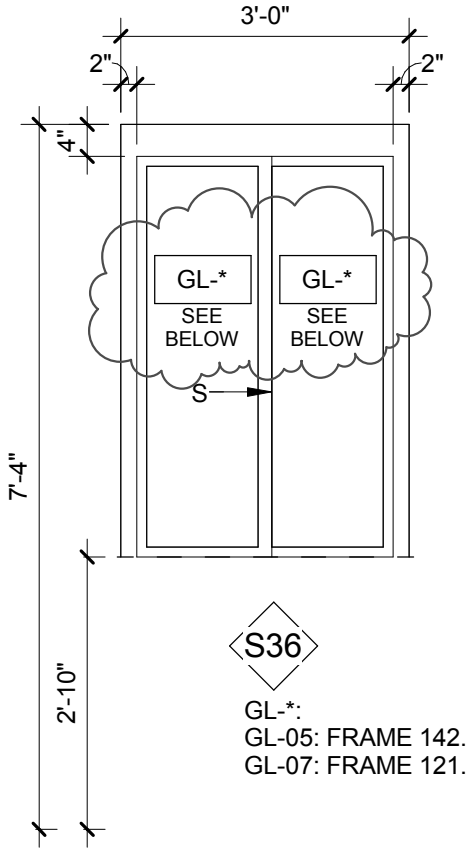
ASD-019

A504

801-
801-
ffk

REFERENCE NOTES

04.10	8"X8"X16" CMU
05.04	3 5/8" METAL STUD
05.05	6" METAL STUD
05.14	7/8" METAL FURRING CHANNEL
06.25	WOOD WALL SYSTEM PER SCHEDULE
06.26	WOOD CEILING SYSTEM PER SCHEDULE
09.04	PAINTED GYPSUM BOARD
26.04	RECESSED LIGHT FIXTURE, RE: ELECTRICAL DRAWINGS



FFKR ARCHITECTS

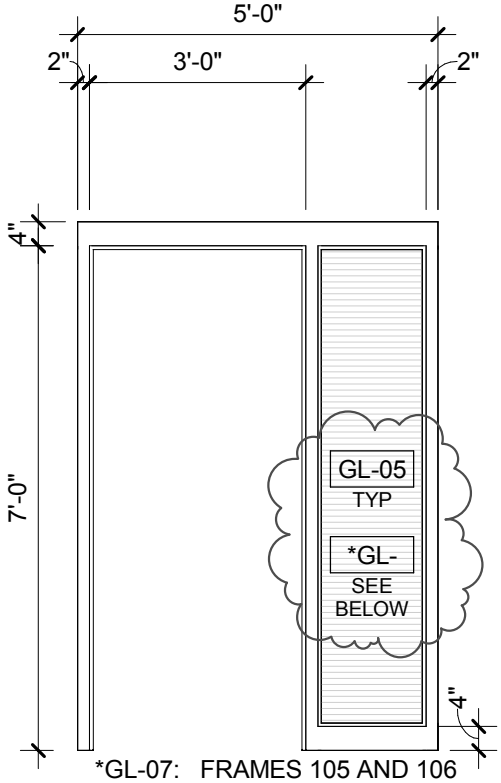
Mark I. Payne Building
1300 East Center St. Provo, Utah

9/27/2012

Addendum #2

ASD-021

A620

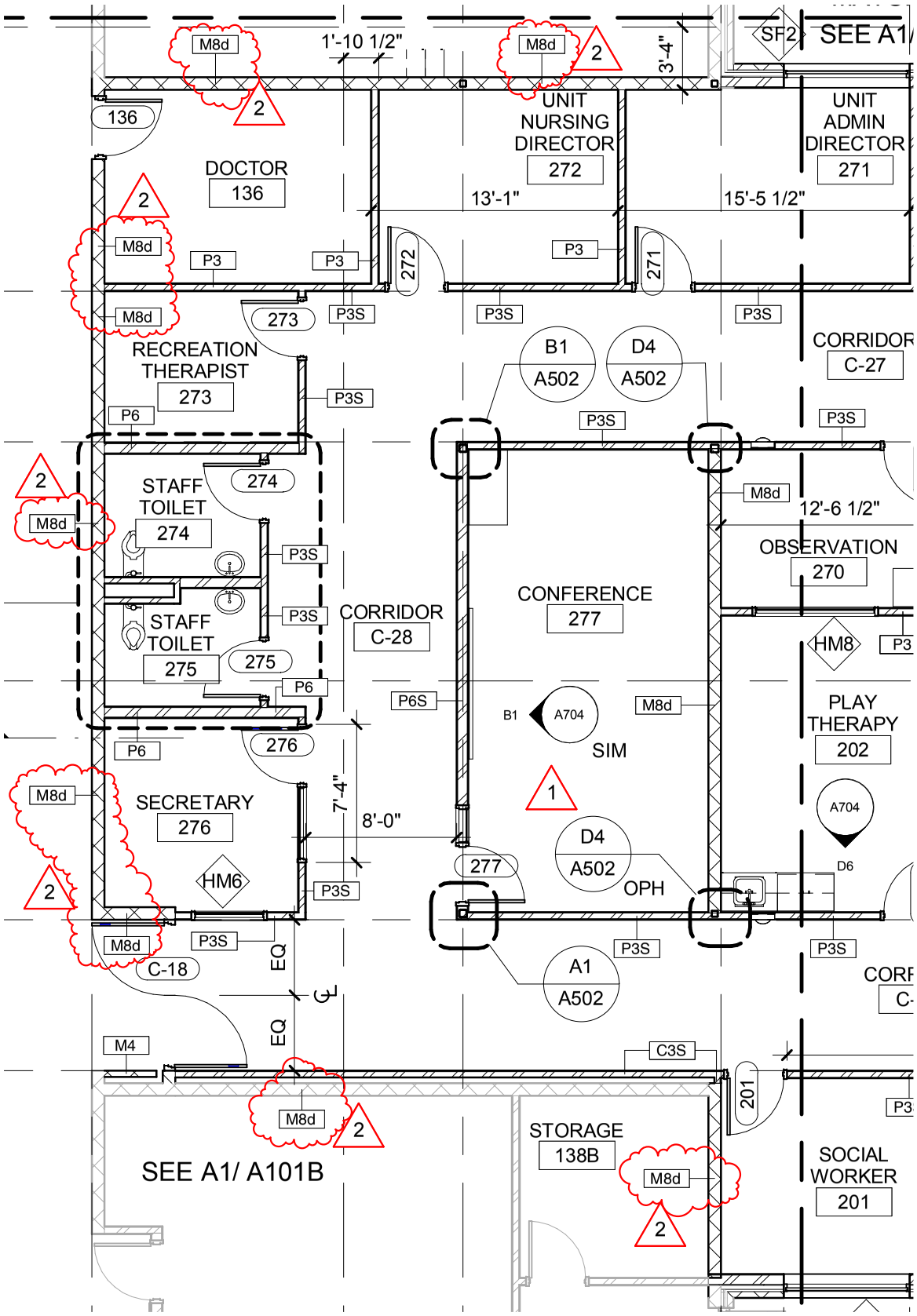


*GL-07: FRAMES 105 AND 106
*GL-07A: FRAMES 107A AND 107B

TYPE F21

HM FRAME W/
SINGLE SIDELITE

MINI-BLIND AT INTERIOR SIDELITE:
FRAME 105, 106, 129, 130, 132, 135, 136, 137, 161, 162, 163, 164, 167A, 171, 176, 177, AND 178



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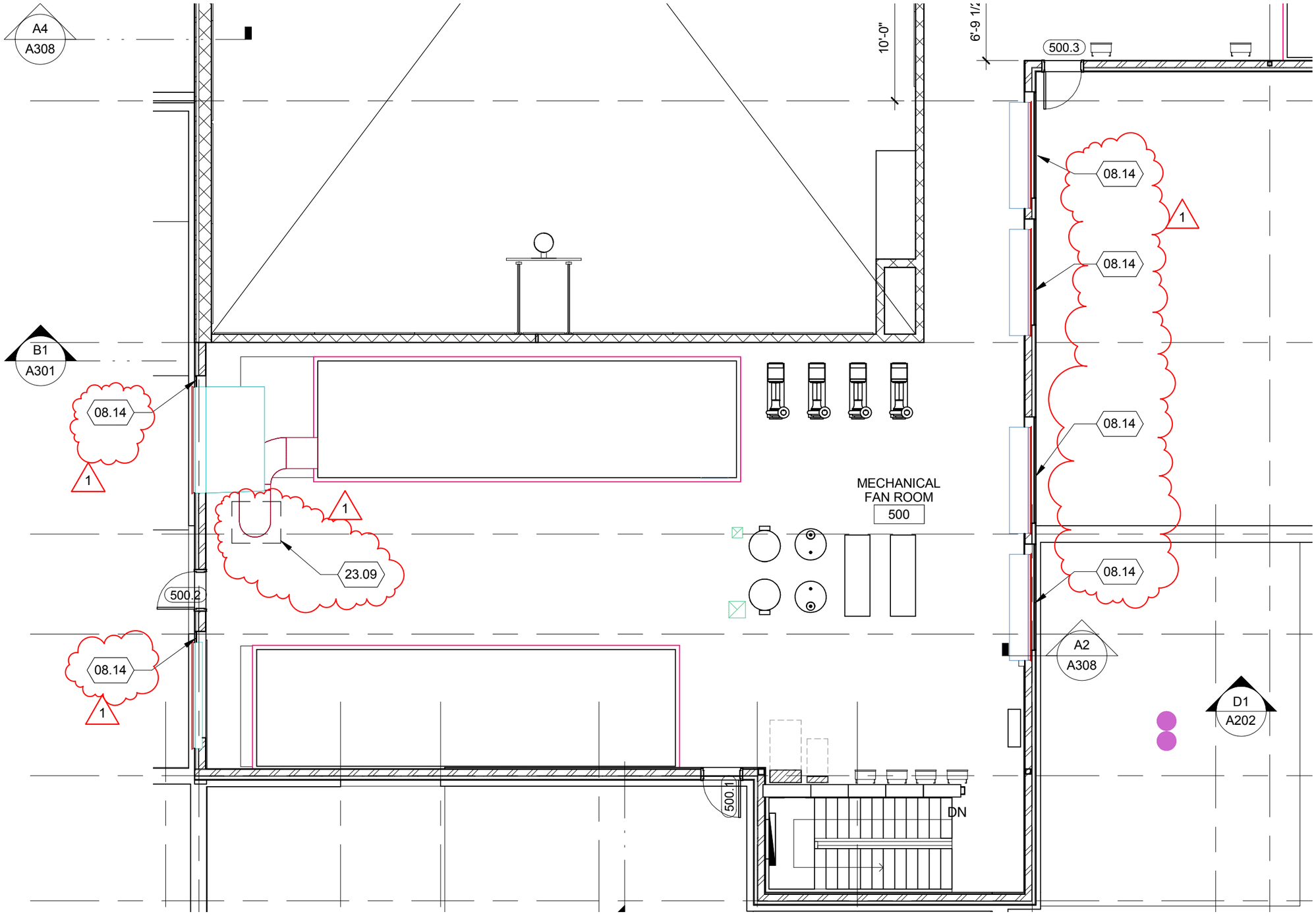
ADDENDUM #2

ASD-023

A101E



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ADDENDUM #2

ASD-024

A102

REFERENCE NOTES

	05.23	ROOF ACCESS LADDER WITH HATCH ABOVE
1	08.14	LOUVER
	23.09	SEALED METAL FLASHING AT ALL DUCT PENETRATIONS IN FLOOR, TYP.

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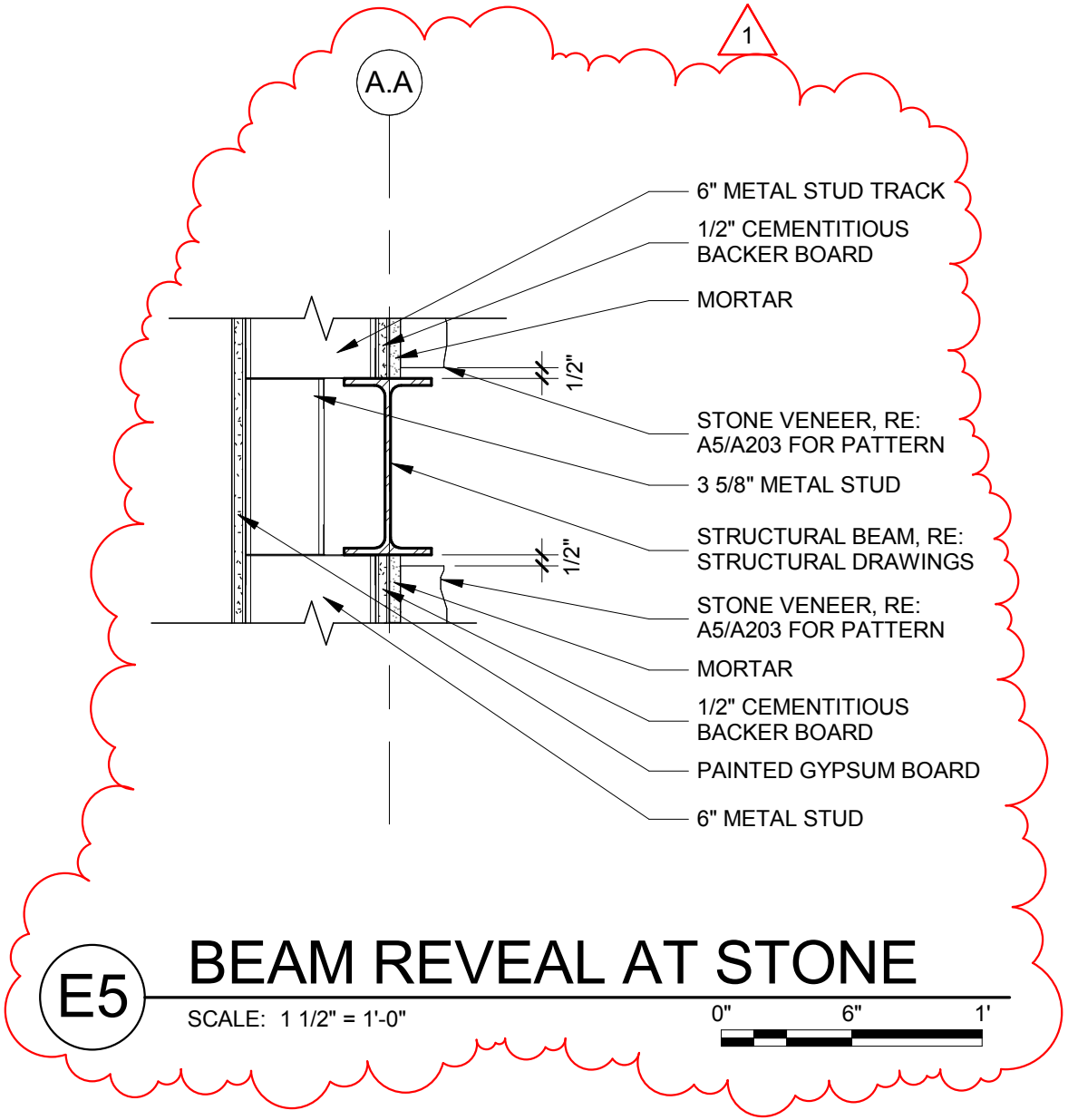
ADDENDUM #2

ASD-025

A102



E5

BEAM REVEAL AT STONE

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

0" 6" 1'

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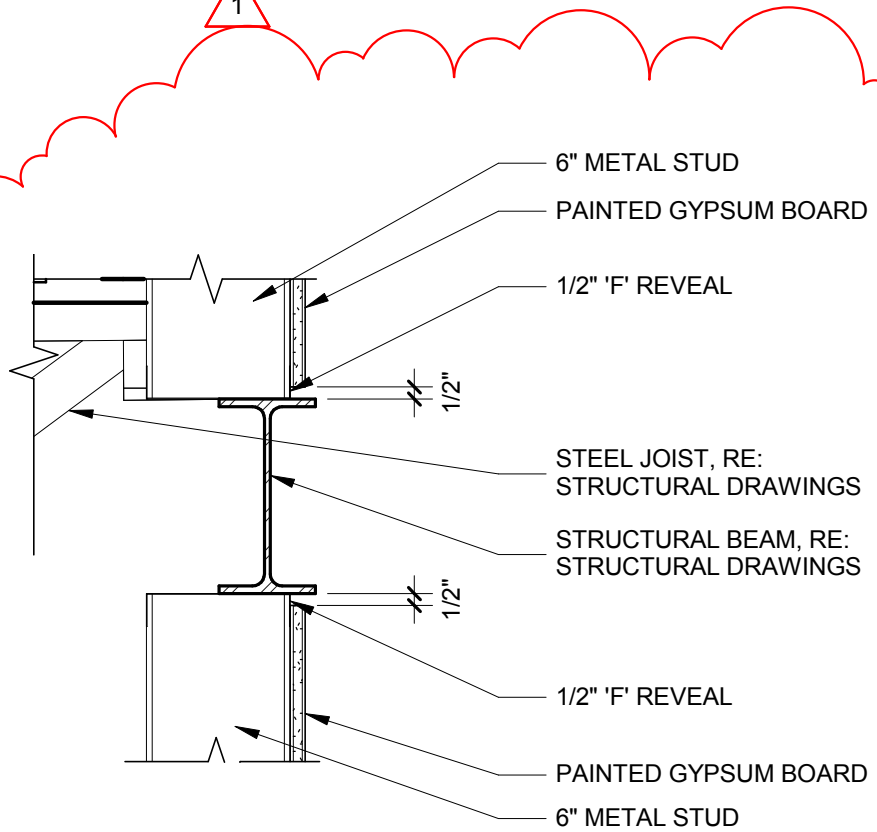
ADDENDUM #2

ASD-026

A501



B3 BEAM REVEAL DETAIL

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

0" 6" 1'

BRI

SPA
FILL W

POLYISOC

PAINTE

ST
C
ST

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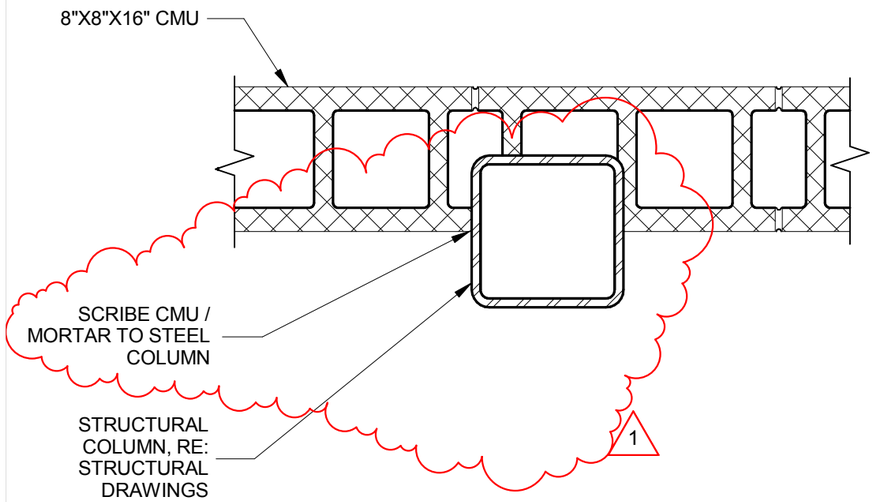
ADDENDUM #2

ASD-027

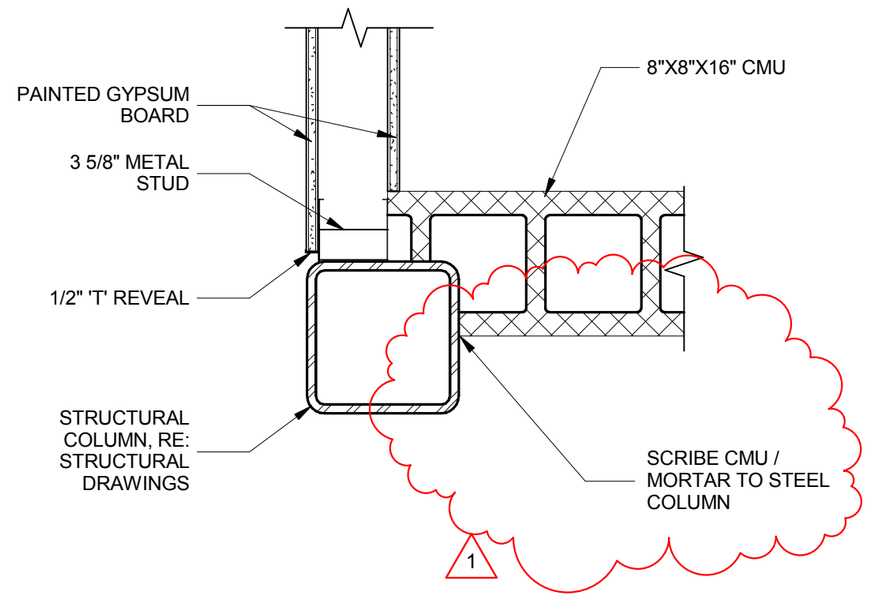
A501



A1 LOBBY COLUMN DETAIL 4

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

0" 6" 1'



A2 LOBBY COLUMN DETAIL 2

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

0" 6" 1'

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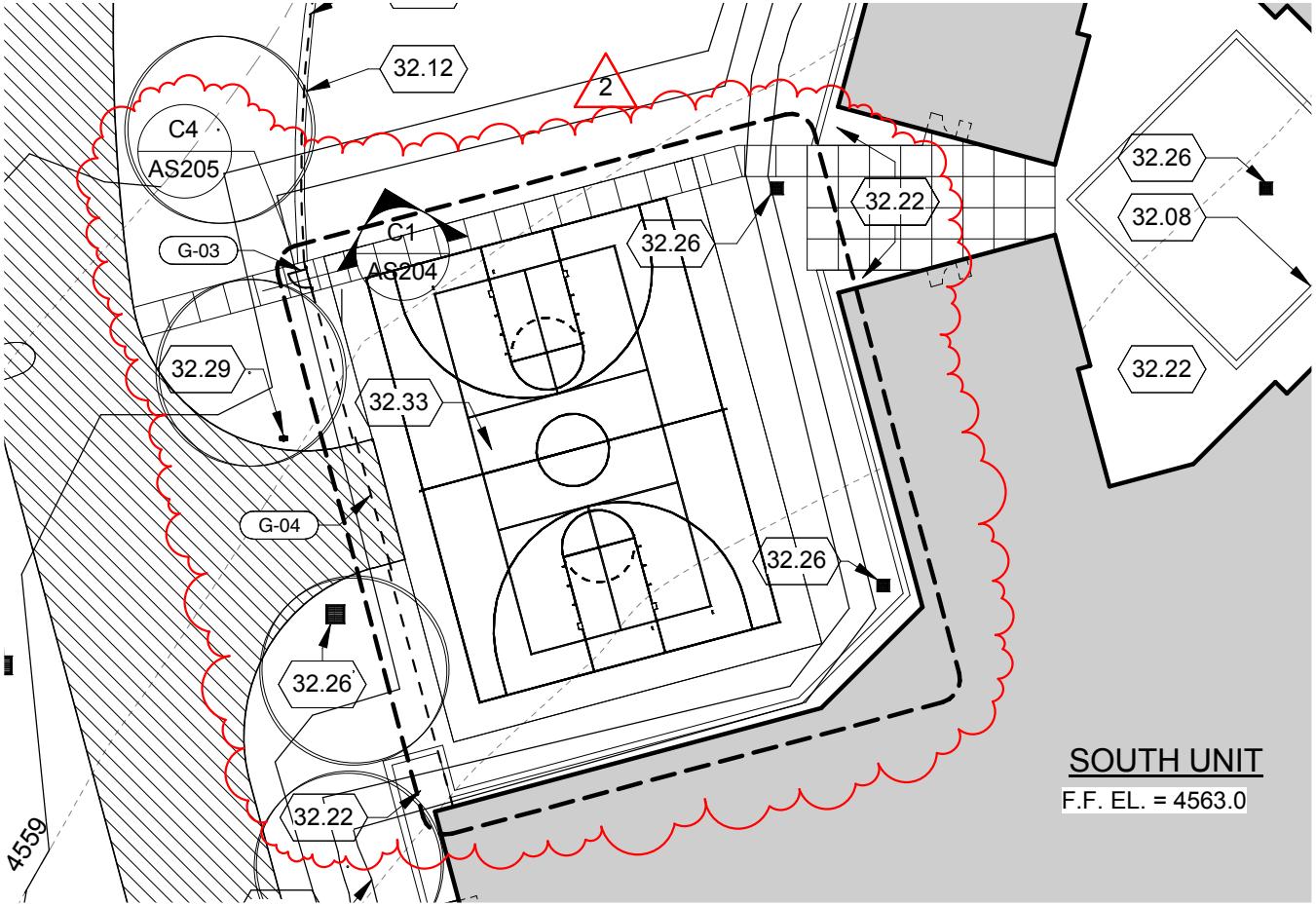
ADDENDUM #2

ASD-028

A501



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Addendum #2

ASD-029

AS202

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Addendum #2

ASD-030

AS101

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Addendum #2

ASD-031

AS102

REFERENCE NOTES

02.31 PHASE ONE CONSTRUCTION INSIDE THIS LINE, PHASE TWO CONSTRUCTION OUTSIDE THIS LINE

1 32.34 REMOVE ALL DEMOLITION AND CONSTRUCTION DEBRIS. ROUGH GRADE AND LEVEL AFFECTED AREA AS A BUILDING PAD. NO FURTHER LANDSCAPING IMPROVEMENTS IN THE AREA UNDER THE MS BUILDING AS PART OF THE CONTRACTOR'S SCOPE.

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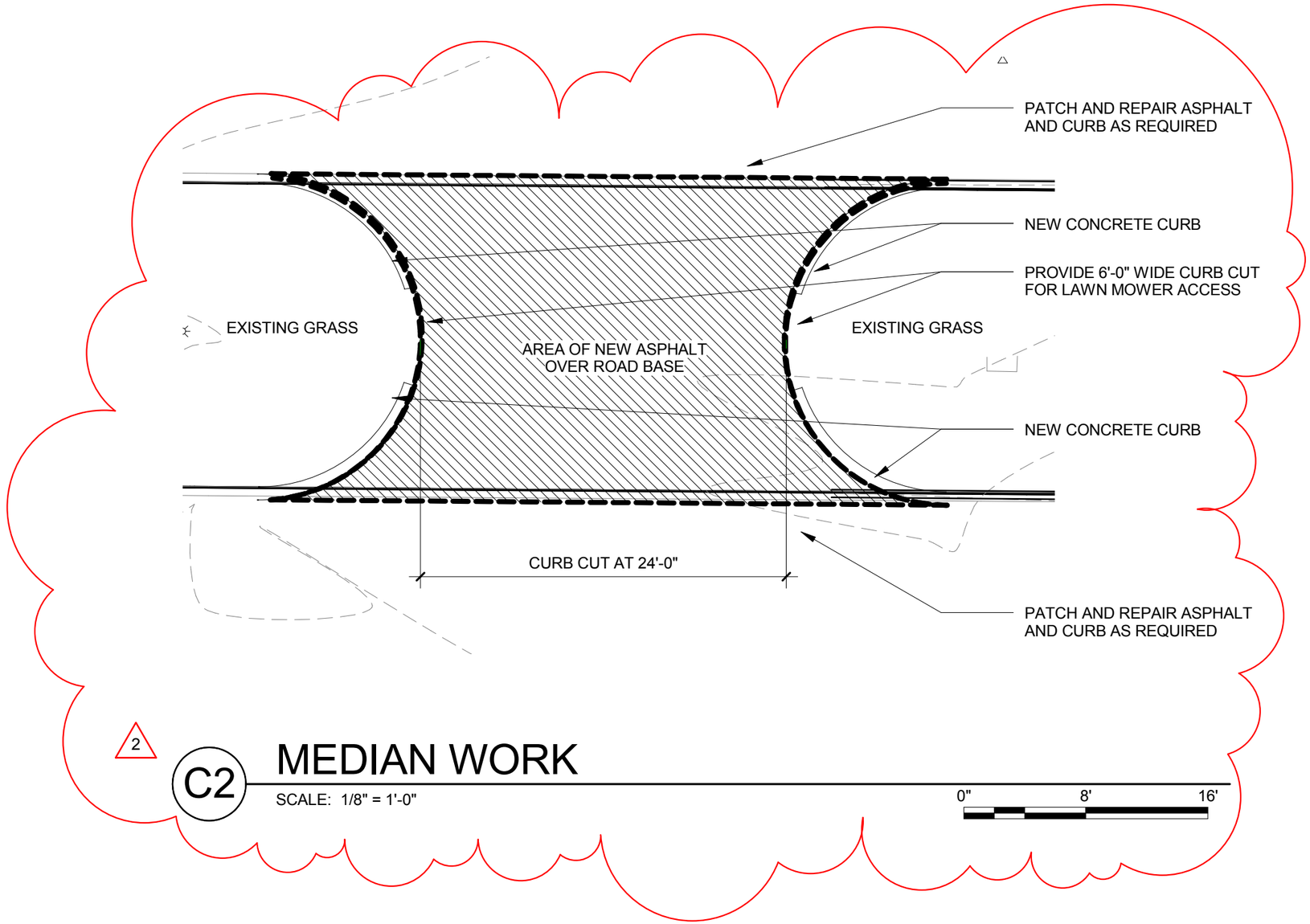
09/27/12 Addendum #2

ASD-032

AS102



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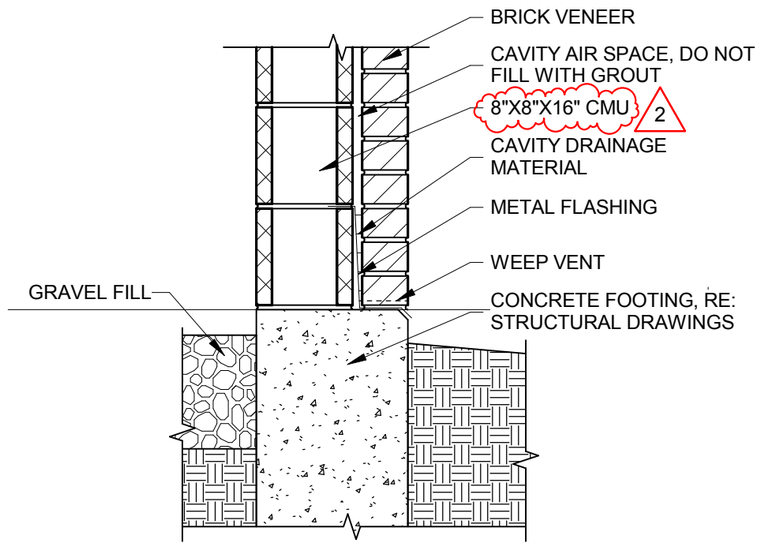
Addendum #2

ASD-033

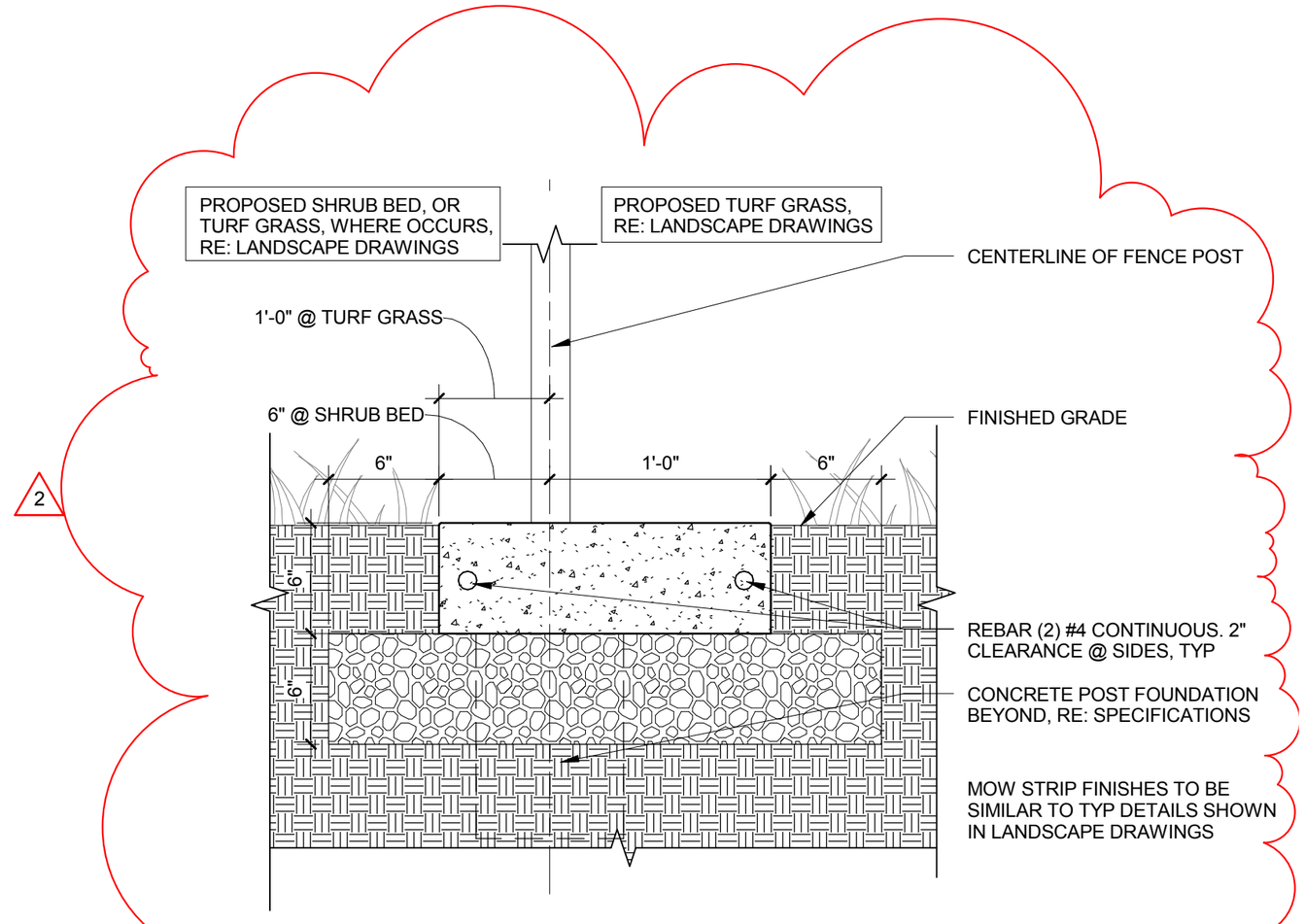
AS501



B4 EQUIPMENT ENCLOSURE BASE DETAIL

SCALE: 1" = 1'-0"

0" 1' 2'



B5 TYP MOW STRIP @ PEDIATRIC FENCE

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

0" 6" 1'

CONCRETE WALK

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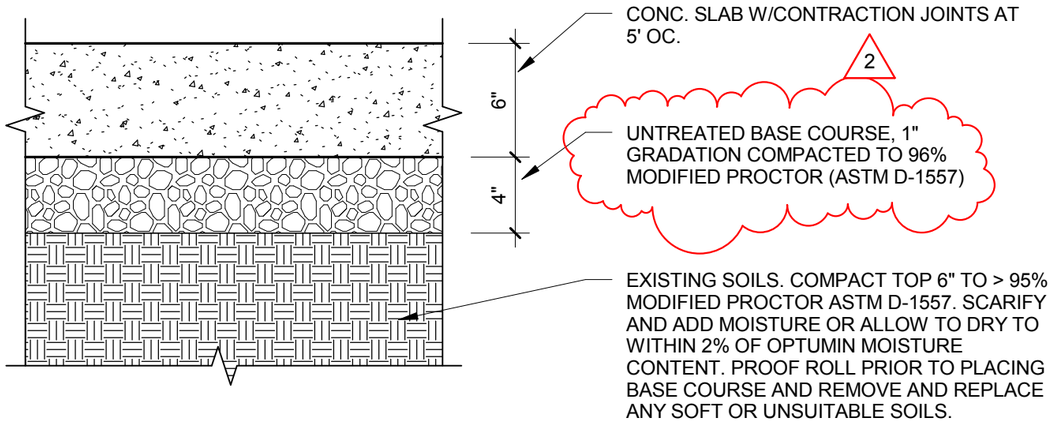
Addendum #2

ASD-034

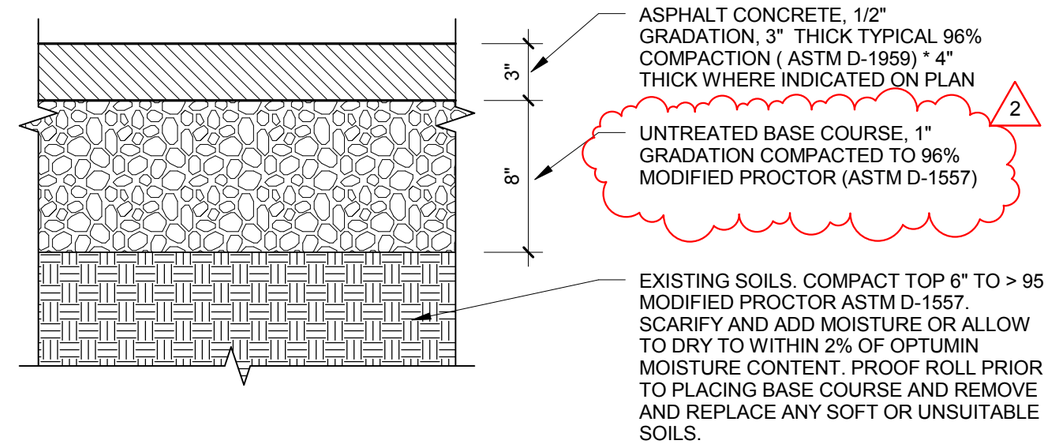
AS501



A3 CONCRETE PAVEMENT SECTION

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

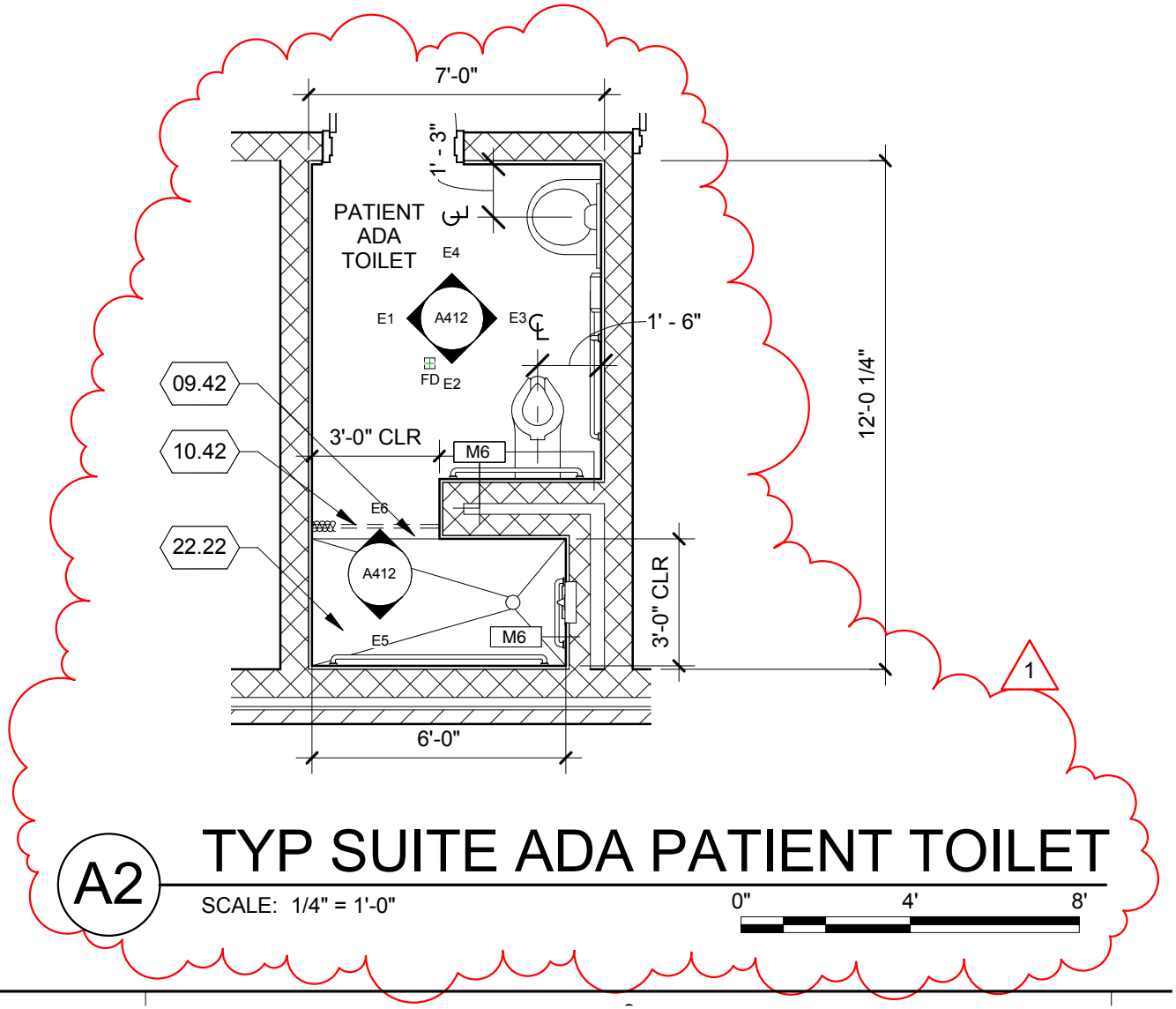
0" 6" 1'



A4 ASPHALT CONCRETE PAVEMENT SECTION

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

0" 6" 1'



A2

TYP SUITE ADA PATIENT TOILET

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

0" 4' 8'

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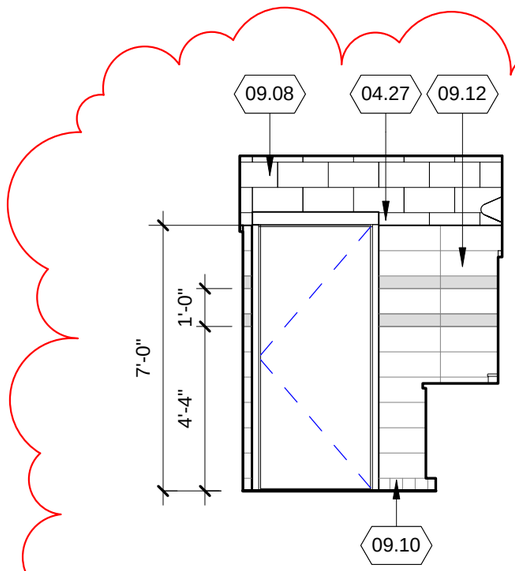
ADDENDUM #2

ASD-036

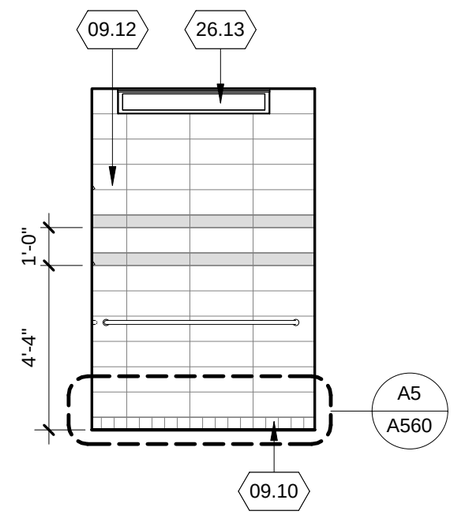
A411



E4 ADA PATIENT TOILET 3

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

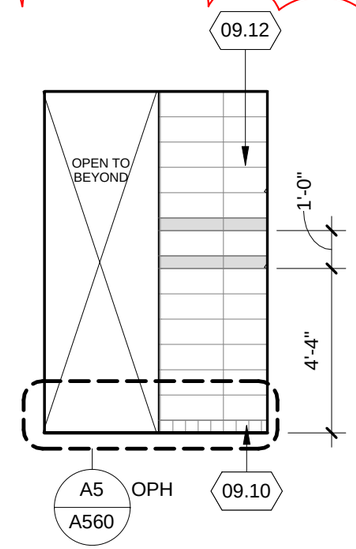
0" 4' 8'



E5 ADA PATIENT TOILET 2

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

0" 4' 8'



E6 ADA PATIENT TOILET 1

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

0" 4' 8'

2

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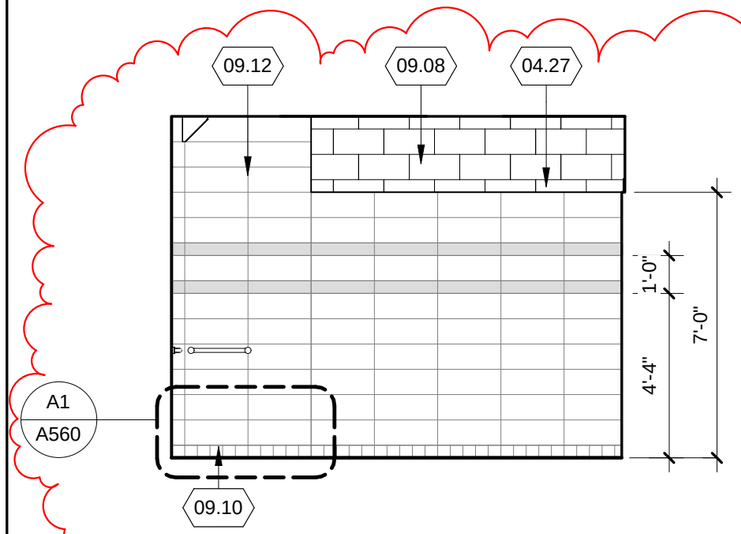
Addendum 2

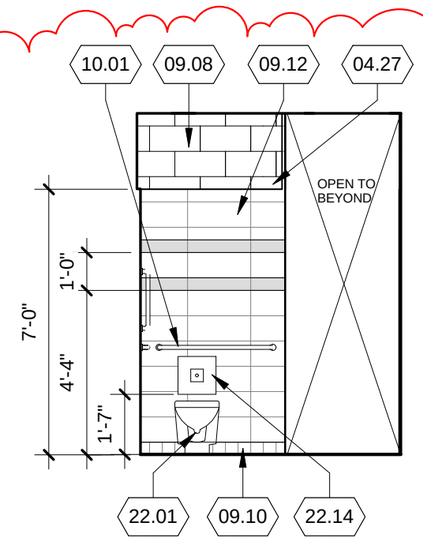
ASD-037

A412



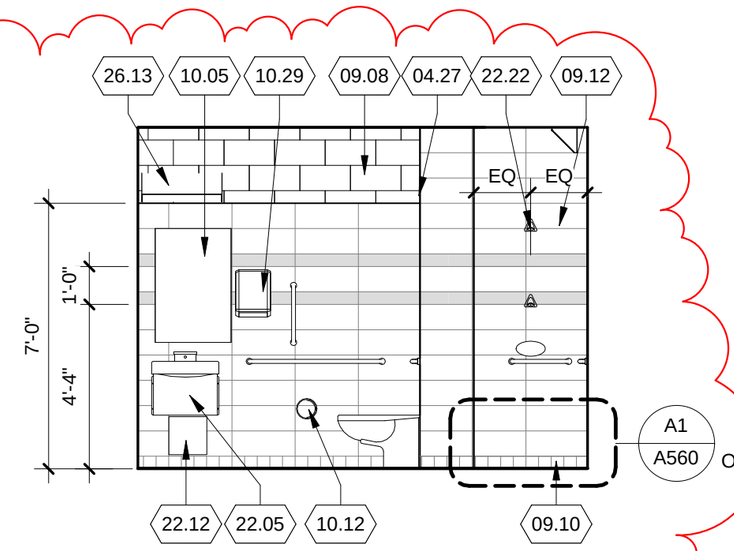
E1 ADA PATIENT TOILET 6

SCALE: 1/4" = 1'-0" 0" 4' 8'



E2 ADA PATIENT TOILET 5

SCALE: 1/4" = 1'-0" 0" 4' 8'



E3 ADA PATIENT TOILET 4

SCALE: 1/4" = 1'-0" 0" 4' 8'

2

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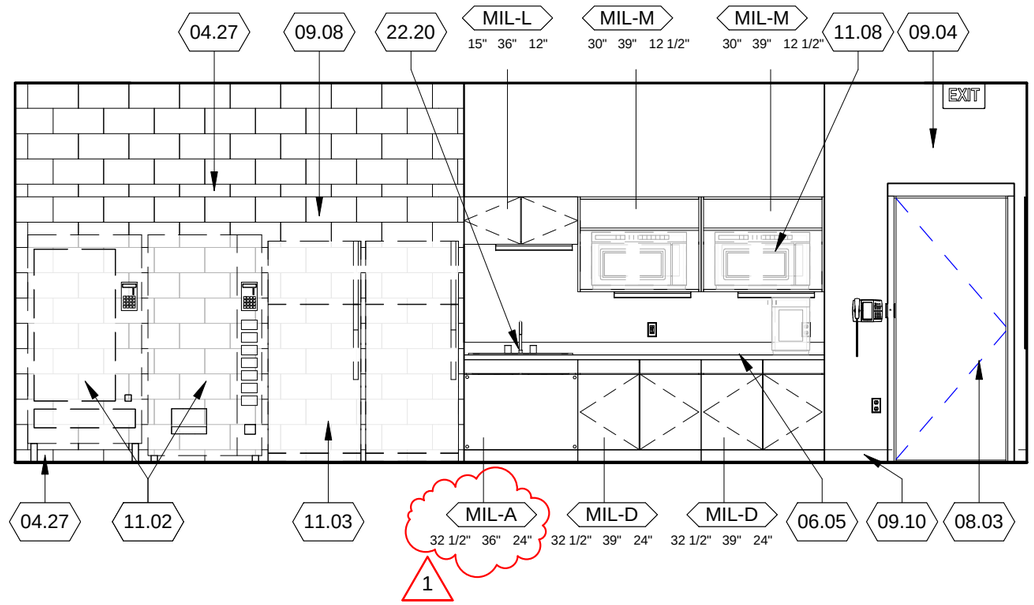
Addendum 2

ASD-038

A412



B1

LOUNGE W

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

0" 4' 8'

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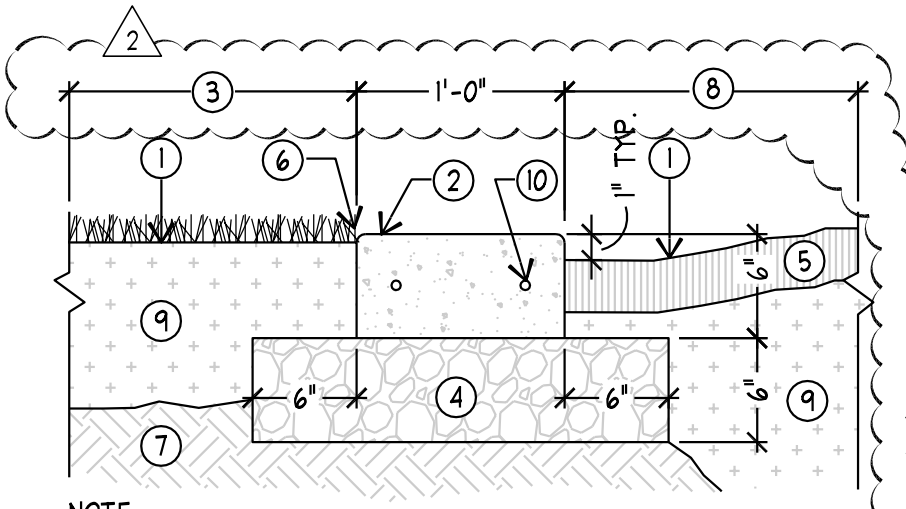
Addendum 2

ASD-039

A703



NOTE:

1. WHEN MOW CURB IS ADJACENT TO BUILDING OR WALL, USE EXPANSION JOINT AND SLOPE 2% AWAY FROM BUILDING.
2. EXPANSION JOINTS AT 20' O.C. AND A TOOLED JOINT AT 10' O.C.

1. FINISH GRADE
2. CONCRETE MOW CURB. FINISH W/ MED. BROOM PERPENDICULAR TO HEADER RUN.
3. TURF-GRASS AREA
4. COMPACTED ROAD BASE
5. MULCH (WHERE OCCURS), SEE SPECS.
6. 1/4" RADIUS, TYPICAL
7. COMPACTED SUBGRADE
8. SHRUB BED, SEED MIX AREA, OR MULCH SEE LANDSCAPE PLAN
9. AMENDED TOPSOIL
10. REBAR (2) #4 CONTINUOUS. 2" CLEARANCE @ SIDES, TYP.

H CONCRETE MOW CURB - 12" WIDE

SCALE: NTS

SECTION

ArcSitio Design, Inc
Landscape Architecture & Architectural Site Design
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office 801.487.4923 fax 801.466.3046

MARK I. PAYNE BUILDING
UTAH STATE HOSPITAL CONSOLIDATION

SUPPLEMENTAL DRAWING
ADDENDUM #2

DATE: 09/26/12
SHEET REF.: L-L501
SCALE: NTS
PROJECT NO.: 11068

2 ADD#2

SHEET: L-01

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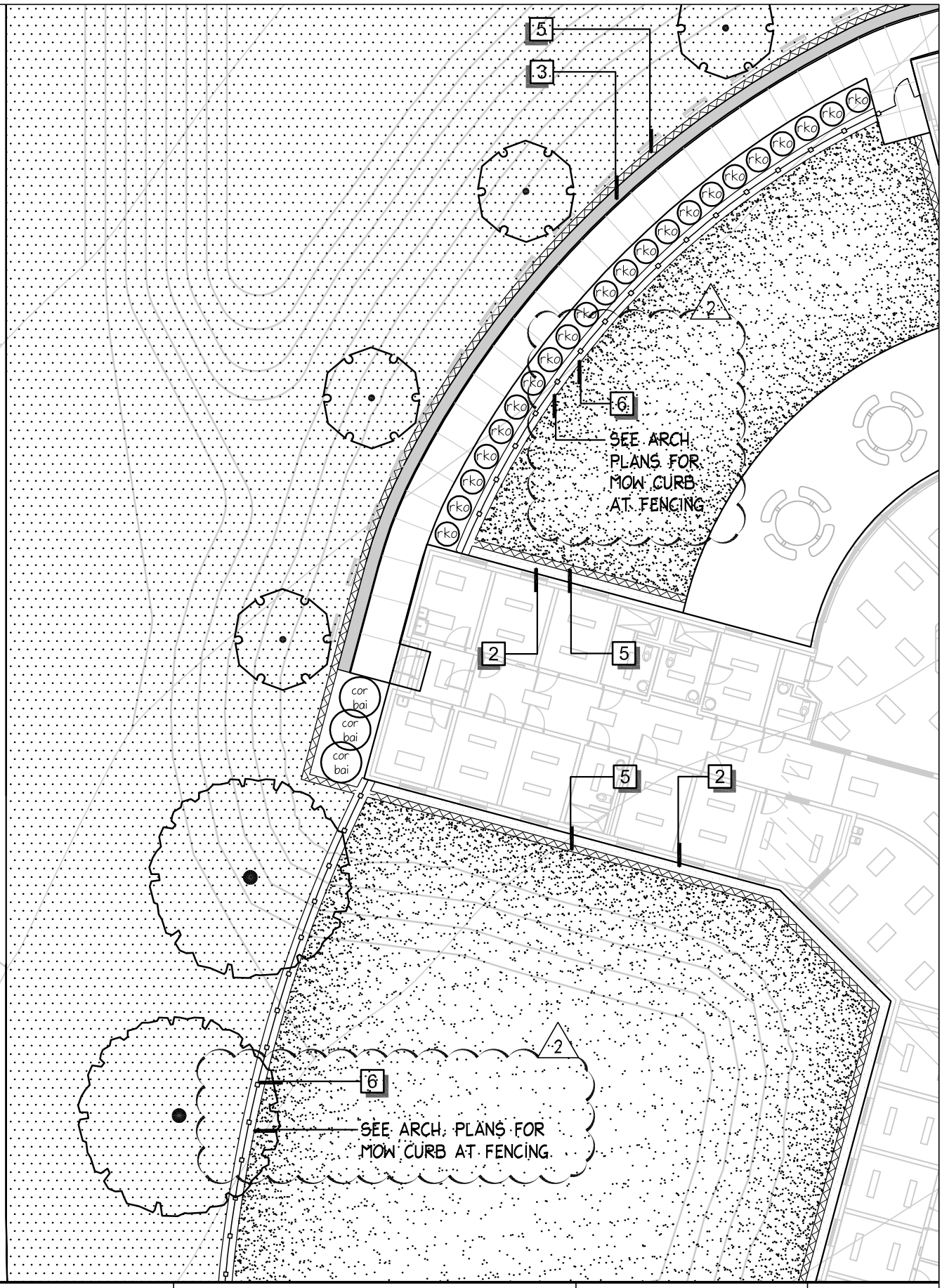

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PEDIATRIC FACILITY
UTAH STATE HOSPITAL CONSOLIDATION

SUPPLEMENTAL DRAWING
ADDENDUM #2

DATE: 09/26/12
SHEET REF.: L-L101
SCALE: NTS
PROJECT NO.: 11068

2 ADD#2

SHEET: L-01

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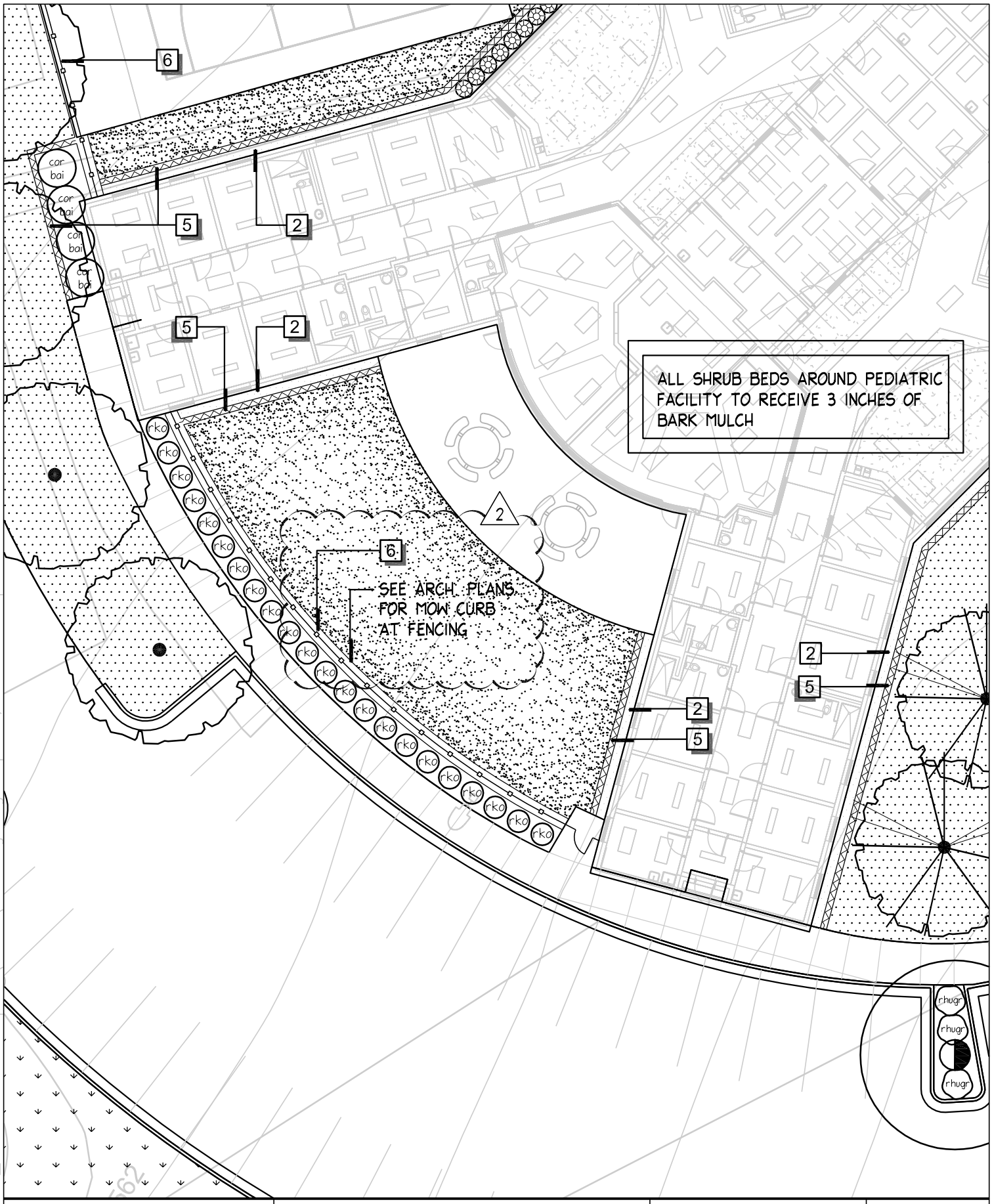

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SUPPLEMENTAL DRAWING
ADDENDUM #2

DATE:	09/26/12
SHEET REF.:	L-L103
SCALE:	NTS
PROJECT NO.:	11068

2 ADD#2

SHEET: L-02

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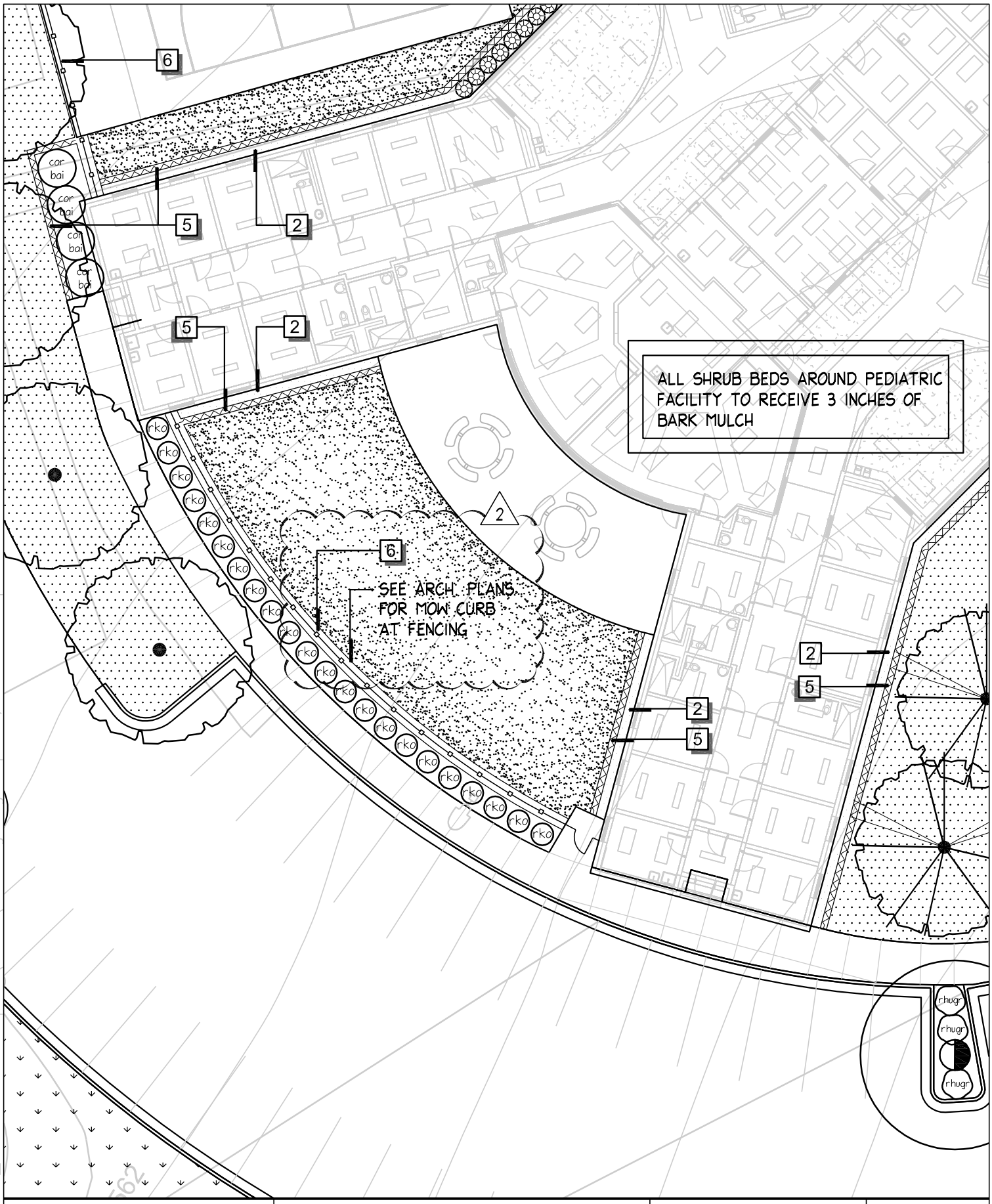

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SUPPLEMENTAL DRAWING
ADDENDUM #2

DATE: 09/26/12
SHEET REF.: L-L104
SCALE: NTS
PROJECT NO.: 11068

2 ADD#2

SHEET: L-03

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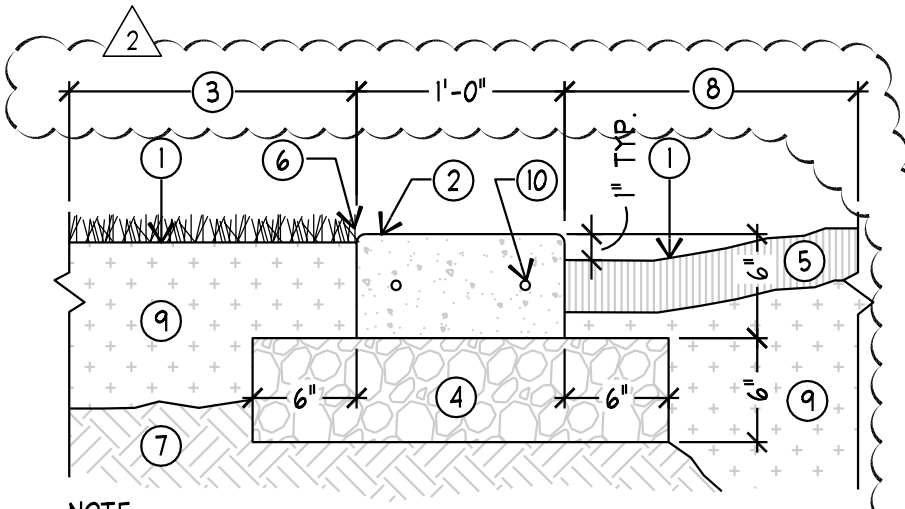

NOTE:

1. WHEN MOW CURB IS ADJACENT TO BUILDING OR WALL, USE EXPANSION JOINT AND SLOPE 2% AWAY FROM BUILDING.
2. EXPANSION JOINTS AT 20' O.C. AND A TOOLED JOINT AT 10' O.C.

1. FINISH GRADE
2. CONCRETE MOW CURB. FINISH W/ MED. BROOM PERPENDICULAR TO HEADER RUN.
3. TURF-GRASS AREA
4. COMPACTED ROAD BASE
5. MULCH (WHERE OCCURS), SEE SPECS.
6. 1/4" RADIUS, TYPICAL
7. COMPACTED SUBGRADE
8. SHRUB BED, SEED MIX AREA, OR MULCH SEE LANDSCAPE PLAN
9. AMENDED TOPSOIL
10. REBAR (2) #4 CONTINUOUS. 2" CLEARANCE @ SIDES, TYP.

H CONCRETE MOW CURB - 12" WIDE

SCALE: NTS

SECTION

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SUPPLEMENTAL DRAWING
ADDENDUM #2

DATE: 09/26/12
SHEET REF.: L-L501
SCALE: NTS
PROJECT NO.: 11068

2 ADD#2

SHEET: L-04

File : E:\11068_Utah State Hospital\Cadd\Detail\Plant\Ds-Mow curb-12 in.dwg Sep 25, 2012-3:46pm

GENERAL NOTES:

A. ALL HOLLOW METAL DOORS, FRAMES AND RAILINGS TO BE PNT-09, U.N.O.
B. EPOXY PAINT AT ALL WET AREAS, TYP.
C. INTERIOR WALL FINISH FOR PAINTED WALLS TO BE SATIN FINISH.
D. ALL FLOOR MATERIAL TRANSITIONS TO OCCUR AT CENTER OF DOOR, U.N.O.
E. ACCENT WALL LOCATIONS TO BE DEFINED IN FIELD.
F. SEE DRAWING AF-401 FOR TYPICAL WALL TILE PATTERN AT RESTROOMS 117, 119, 125, 126,131, 138, 147, AND 148.
G. AT ALL RESTROOMS ALL WALLS ARE TO RECEIVE FULL HEIGHT TILE, FROM FLOOR TO CEILING, U.N.O. IN ELEVATIONS.
H. FLOOR PATTERN TO BE DETERMINED IN FIELD.
I. ALL VCT FLOOR PATTERNS TO BE DETERMINED IN FIELD.
J. SEE DRAWING AF401 FOR RESTROOM FLOOR PATTERNS.

FINISH LEGEND

ROOM NAME
RM NO.
F | B | W
F = FLOOR FINISH W = WALL FINISH
B = BASE FINISH

		A3	CARPET BASE 3(CB-03)
		B	RUBBER
		C	QUARRY TILE
FLOOR FINISH		D	CERAMIC TILE
1a	CARPET 1(CPT-01)	E	NO BASE REQUIRED
1b	CARPET 2(CPT-02)	F	STONE TILE
1c	CARPET 3(CPT-03)	G	INTEGRAL COVE
2	VINYL COMPOSITION TILE (VCT)	H	WOOD BASE
3a	MOSAIC TILE (CT-04)	I	PORCELAIN TILE
3b	MOSAIC TILE (SEE AF401 FOR PATTERN)	WALL FINISH	
4	SEALED CONCRETE	1a	GYP. BOARD - PAINTED(PNT-07)
5	RESILIET SHEET	1b	GYP. BOARD - PAINTED(PNT-01)
6	ENTRY MAT	2	GYP. BOARD NOT PAINTED
7	STONE TILE (SEE AF401 FOR FLOOR PATTERN AND STONE TYPES)	3	CMU
		4	CMU PAINTED
		5	CERAMIC TILE (CT)
		6	MASONRY
		7	WOOD PANEL
BASE FINISH		8	VARIES, SEE INT. ELEVATIONS
A1	CARPET BASE 1(CB-01)	9	FIRE TREATED PLYWOOD
A2	CARPET BASE 2(CB-02)	10	WALL GUARD - CRASH RAIL WITH PAINTED GYP. BD. ABOVE.

REFERENCE NOTES

09.33	ACCENT PAINTED GYPSUM BOARD
09.34	VINYL WALL COVERING
10.06	SIGN - SEE DETAIL D1/AF502
10.15	SIGN - SEE DETAIL C1/AF502
10.19	SIGN - SEE DETAIL F1/AF502
10.27	SIGN - SEE DETAIL C2/AF502
10.40	SIGN - SEE DETAIL C5/AF502
10.41	SIGN - SEE DETAIL C4/AF502
10.43	SIGN - SEE DETAIL C4/AF502
10.44	SIGN - SEE DETAIL E4/AF502
10.45	SIGN - SEE DETAIL C3/AF502
10.65	SIGN - SEE DETAIL E1/AF502
10.67	SIGN - SEE DETAIL D1/AF501. ROOM NAME ON SIGN: DENTAL OPERATORY

FLOOR FINISH LEGEND

1, 1a, 1b, 1c, 2, 3a, 3b, 4, 5, 6, 7

DFCM APPROVAL STAMP

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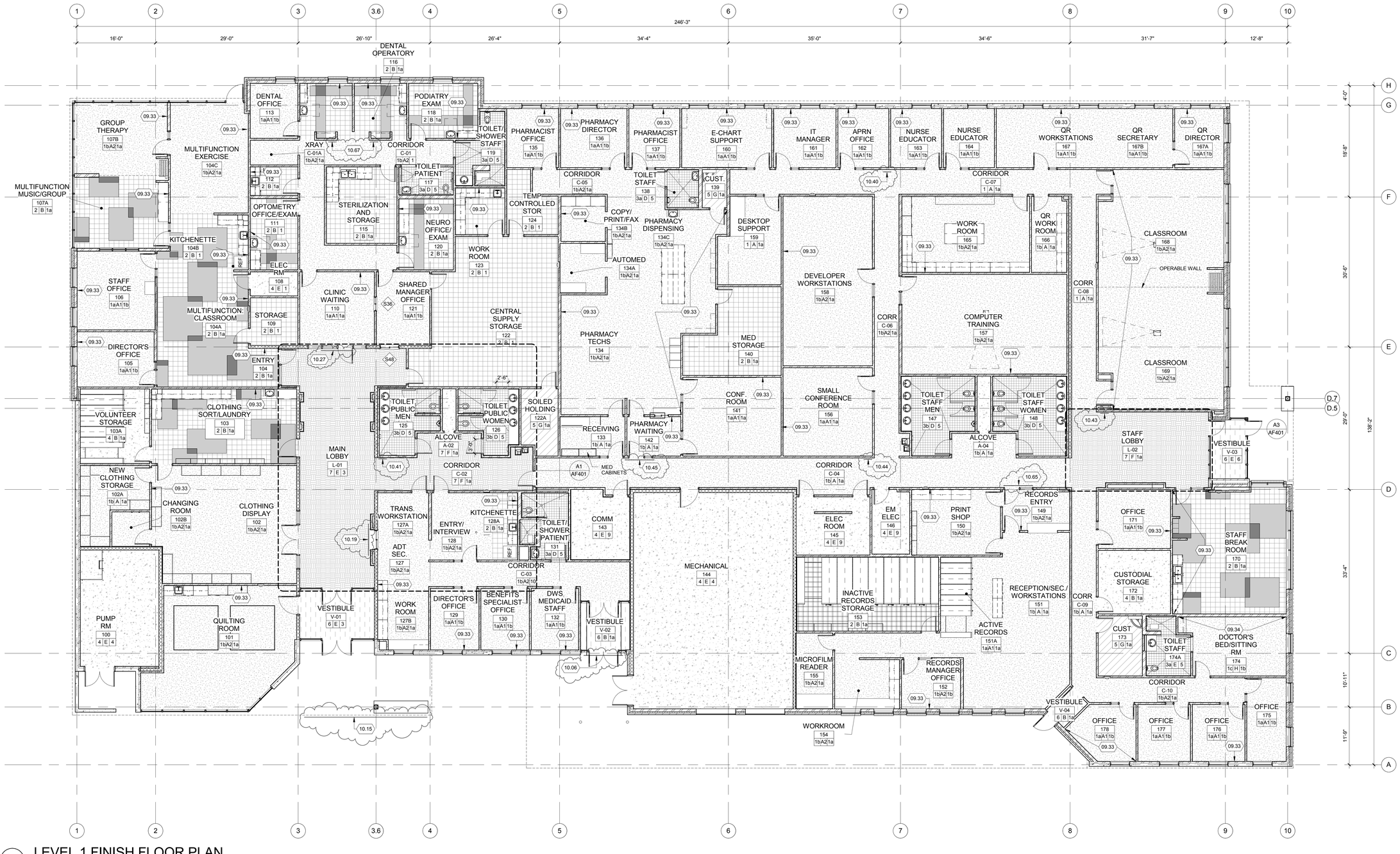

A1 LEVEL 1 FINISH FLOOR PLAN
SCALE: 1/8" = 1'-0"

Mark I. Payne Building
1300 East Center St. Provo, Utah
UTAH STATE HOSPITAL CONSOLIDATION
BID DOCUMENTS - 09/12/2012

SEAL

DATE	STATUS

	DATE	REVISION
A	2012 09 19	CODE REVIEW
1	2012 09 20	ADDENDUM #1
2	2012 09 26	ADDENDUM #2

PROJECT NUMBER	11111
FILE	11111 USH Payne
DRAWN BY	Author
CHECKED BY	FFKR
SCALE	As indicated

LEVEL 1 FINISH FLOOR PLAN

AF101

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LIGHTING FIXTURE SCHEDULE

REFER TO SPECIFICATIONS FOR IMPORTANT TECHNICAL REQUIREMENTS FOR LIGHTING FIXTURES, BALLASTS, AND LAMPS. THE CATALOG NUMBERS LISTED BELOW HAVE BEEN CAREFULLY PREPARED TO ASSIST BIDDERS IN SELECTING PRODUCTS TO ACHIEVE THE DESIGN CONCEPT, HOWEVER, PRIOR TO BIDDING, EACH MANUFACTURER SHALL COMPARE THE CATALOG NUMBERS SHOWN WITH THE DESCRIPTION AND REQUIREMENTS ON THE DRAWINGS, AND SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES. SPECIFICALLY INCLUDED IN THIS EVALUATION SHALL BE THE VERIFYING OF PROPER MOUNTING KITS OR ACCESSORIES TO FACILITATE INSTALLATION AS SHOWN AT EACH LOCATION ON THE DRAWINGS. NO ALLOWANCE OR REDRESS WILL BE ALLOWED FOR DISCREPANCIES THAT WERE NOT REPORTED TO THE ARCHITECT/ENGINEER IN TIME FOR CORRECTION OR CLARIFICATION BEFORE THE BID. THE REPORTING OF ANY AMBIGUITY IS THE RESPONSIBILITY OF THE BIDDER. PROVIDE UNIT PRICES AND FIXTURE BRAND SELECTED FOR ADD/DELETE CHANGES FOR EACH FIXTURE TYPES SHOWN WITHIN 48 BUSINESS HOURS OF THE BID DATE. FAILURE TO COMPLY WITH THIS REQUIREMENT MAY DISQUALIFY THE PRODUCTS AND EMPOWER THE ENGINEER TO DETERMINE FAIR VALUE FOR FIXTURE AND INSTALLATION CHANGES, WITHOUT FURTHER INPUT FROM THE CONTRACTOR OR INSTALLER. SUBMITTAL PACKAGE SHALL INCLUDE LAMP MANUFACTURER AND CATALOG NUMBER ON EACH FIXTURE SHEET. ON ALL PENDANT MOUNTED FIXTURES, PROVIDE A SECOND SET OF PENDANTS, OF A DIFFERENT LENGTH, AS DIRECTED BY THE ARCHITECT/ENGINEER, PROVIDED AND INSTALLED AT NO ADDITIONAL CHARGE. ALL FIXTURES SHALL BE APPROVED BY UL OR ANOTHER ACCEPTABLE TESTING LAB FOR THE PURPOSE INTENDED AND WITH THE LAMP AND BALLAST PROPOSED. CONTRACTOR ALLOWANCE PRICES ARE ACCURATE WHEN THIS JOB WAS SPECIFIED. CONTRACTOR AND ELECTRICAL DISTRIBUTOR SHALL VERIFY THIS ALLOWANCE AND REPORT ANY PROBLEMS TO THE ENGINEER BEFORE THE BID. ALLOWANCE PRICE MAY OR MAY NOT INCLUDE LAMP(S) OR FREIGHT AS NOTED, AND DO NOT INCLUDE ANY TAXES. UNIVERSAL VOLTAGE (120/277) BALLASTS REQUIRED UNLESS NOTED OTHERWISE. DIMENSION SEQUENCE = (LENGTH X WIDTH X DEPTH) IN INCHES.

SYMBOL	MARK	FIXTURE CHARACTERISTICS BODY / AIR / MOUNTING / DOOR LENS/LOUVER/REFLECTOR/OTHER	LAMP	WATTS	VOLTS	MANUFACTURER	CATALOG NUMBER	NOTES
	B	BOLLARD; ALUMINUM HOUSING						
	B-1	BOLLARD, CONCRETE FORM, CLEAR LENS	1-50MH	50W	120V	ARCH. AREA	CB18R-25-CUTOFF-FLAT-50MH-MSB-RAL7023-INT CONTRACTOR ALLOWANCE: $1,952.45 (OR APPROVED EQUAL PRIOR TO BID)	
	D	DOWNLIGHT; THERMALLY PROTECTED HOUSING; TO ACCOMMODATE MULTIPLE ALUMINUM TRIMS AND REFLECTOR ASSEMBLIES AS LISTED BELOW; MAX 8" DEEP, NON-IC HOUSINGS EXCEPT AS NOTED.						
	D-89	LED DOWNLIGHT, SELF-FLANGED TRIM, PHOSPHOR LENS, DIMMABLE WHERE INDICATED BY SWITCHING, 1500 LUMENS (6" APERTURE)	LED 3500K	30W 3500K	120V	LIGHTOLIER LITHONIA OMEGA PORTFOLIO	C6L1520DL-CCL-W / C6L15-N-2 OM6LED-27-277-R6LED-35K-WD-CS LD6-15-D010-EMR6-835-6LM1-LI-HB26	
	D-99	LED DOWNLIGHT, SELF-FLANGED TRIM, PHOSPHOR LENS, DIMMABLE WHERE INDICATED BY SWITCHING, 2000 LUMENS (7" APERTURE)	LED 3500K	35W 3500K	120V	LIGHTOLIER LITHONIA OMEGA PORTFOLIO	C7L1520DL-CCL-W (OR APPROVED EQUAL PRIOR TO BID)	
	E	EXIT SIGNS, LED						
	E10-1	SINGLE FACE:	LED	20W	120/277V	DUAL-LITE HUBBELL MCPHILBEN EELP ISOLITE LITHONIA SURELITES LIGHTOLIER	LECSGWA CVER-1-G-N-E 45VL-1-GC-XX EDG 1 GC W EM EDGL-S-S-G-BK (BLACK HOUSING) EDGR-W-1-GMR ELX6-1-00-00-WH-G-XX LGA1GMW	
	E10-2	DUAL FACE:	LED	20W	120/277V	DUAL-LITE HUBBELL MCPHILBEN EELP ISOLITE LITHONIA SURELITES LIGHTOLIER	LECDGWA CVER-2-G-N-E 45VL-2-GM-XX EDG 2 GC W EM EDGL-D-S-G-BK (BLACK HOUSING) EDGR-W-2-G ELX6-2-OO-OO-WH-G-XX LGA2GMW	
	E98-1	SINGLE FACE:	LED	20W	120/277V	LIGHTOLIER LITHONIA CHLORIDE	LR-A-1-G-W-TP-VRS LRE-S-W-1-G-120/277-TP-VR SC-A-1-G-W-FRW-TP	
	GF	TROFFERS: RECESSED FOR FLANGE MOUNTED CEILING; STATIC; HINGED AND LATCHED STEEL DOOR;. 125 ACRYLIC PRISMATIC LENS, MINIMUN 1/8"; PRORGAM START ELECTRONIC BALLASTS; T8 LAMPS; ONE BALLAST PER FIXTURE WHERE POSSIBLE, UNLESS TWO LEVEL SWITCHING IS SHOWN ON THE PLANS. MAX 5" DEEP. SPECIFICATION GRADE.						
	GF-1	1X4, 2 LAMP. (TER VALUE: ~75)	2-F32T8 RE835	65W	277/120V	LITHONIA LSI METALUX DAYBRITE COLUMBIA LIGHTOLIER	SPF 232 A12125 MVOLT TUBRHP 1TFA125 232 SD SSO10PS UE FP-232A125-UNV-EB81-PROGRAM START 1DF232-FS21-UNV-1/2EB-SPEC ST8114-232F-FSA12.125-EB8LHPRUNV XT1FVI232-U-SOP	
	GF-1A	1X4, 2 LAMP, WITH MAXIMUM SECURITY ENCLOSURE (MINIMUM 14 GAUGE STEEL DOOR AND FRAME WITH MINIMUM 1/4" EXTERIOR AND 1/8" INTERIOR LENS)	2-F32T8 RE835	65W	277/120V	KENALL KIRLIN MORLITE CD LIGHTING	RCA4-0/0-2-F32T8-RS-1-XXX-2/9-1 VRT-12028-58-47 SMAX-FDPH-14-2-T8-EB10IS-5-A-FS-PF-UNV DFA-14-F-2-32-UNV-EB-25CP/15PP-SHP-SFP (OR APPROVED EQUAL PRIOR TO BID)	
	GF-3	2X4, 2 LAMP (TER VALUE: ~75)	2-F32T8 RE835	95W	277/120V	LITHONIA METALUX DAYBRITE COLUMBIA LSI LIGHTOLIER	2SP8F 232 A12125 1/3 MVOLT 2FP-232A125-UNV-EB81-PROGRAM 2DPF232-FS21-UNV-1/3EB-SPEC ST824-232F-FSA12.125-3EB8LHPRUNV FLA125 232 SD SSO10PS UE XT2FVI232-U-03P	
	GF-3A	2X4, 2 LAMP, WITH MAXIMUM SECURITY ENCLOSURE (MINIMUM 16 GAUGE STEEL DOOR AND FRAME WITH MINIMUM 1/4" EXTERIOR AND 1/8" INTERIOR LENS) (PATIENT AREAS)	2-F32T8 RE835	65W	277/120V	KENALL KIRLIN MORLITE	RMCD4-FL/XX-4-232IS-0/0-XXX-2/9-1 MED-FDPH-24-2-T8-EB10RD-3-E-F1-PF-UNV (OR APPROVED EQUAL PRIOR TO BID)	
	GF-4	2X4, 3 LAMP (TER VALUE: ~75)	3-F32T8 RE835	95W	277/120V	LITHONIA METALUX DAYBRITE COLUMBIA LSI LIGHTOLIER	2SP8F 332 A12125 1/3 MVOLT 2FP-332A125-UNV-EB81-PROGRAM 2DPF332-FS21-UNV-1/3EB-SPEC ST824-332F-FSA12.125-3EB8LHPRUNV FLA125 332 SD SSO10PS UE XT2FVI332-U-03P	
	GS	TROFFERS: RECESSED FOR LAY-IN GRID; STATIC; HINGED AND LATCHED STEEL DOOR; .125 ACRYLIC PRISMATIC LENS, MINIMUN 1/8"; EARTHQUAKE CLIPS; MAX 5" DEEP; SPECIFICATION GRADE; PROGRAM START ELECTRONIC BALLASTS, T8 LAMPS; ONE BALLAST PER FIXTURE WHERE POSSIBLE, UNLESS TWO LEVEL SWITCHING IS SHOWN ON THE PLANS.						
	GS-3	2X4, 2 LAMP. (TER VALUE: ~75)	2-F32T8 RE835	65W	277/120V	LITHONIA METALUX DAYBRITE DAYBRITE COLUMBIA LIGHTOLIER LSI	2 SP8G 232 A12125 MVOLT TUBRHP 2GP-232A125-UNV-EB81-PROGRAM START 2DPG232-FS21-UNV-1/2EB-SPEC 2DPG232-FS21-UNV-1/3EB-SPEC (4-3/8" DEPTH) ST824-232G-FSA12.125-3EB8LHPRUNV (3-3/4" DEPTH) XT2GVI232-UNV-03P (3-5/8" DEPTH) LA125 232 SD SSO10PS UE (4" DEPTH)	
	GS-3A	2X4, 2 LAMP. WITH TAMPER RESISTANT ENCLOSURE AND ACCESS (SCREW ACCESS IN LIEU OF CLIP ACCESS) (TER VALUE: ~75)	2-F32T8 RE835	95W	277/120V	LITHONIA METALUX DAYBRITE LSI LIGHTOLIER COLUMBIA	2 SP8G 232 A12125 MVOLT TUBRHP 2GP-232A125-UNV-EB81-PROGRAM START 2DPG232-FS21-UNV-1/2EB-SPEC LA125 232 SD SSO10PS UE XT2GVI232-UNV-SOP ST824-232G-FSA12.125-EB8LHPRUNV	
	GS-4	2X4, 3 LAMP. (TER VALUE: ~75)	3-F32T8 RE835	95W	277/120V	LITHONIA METALUX DAYBRITE COLUMBIA LIGHTOLIER LSI	2 SP8G 332 A12125 1/3 MVOLT TUBRHP 2GP-332A125-UNV-EB81-PROGRAM START 2DPG332-FS21-UNV-1/3EB-SPEC ST824-332G-FSA12.125-3EB8LHPRUNV XT2GVI332-UNV-03P LA125 332 SD SSO10PS UE	
	GS-4A	2X4, 3 LAMP. WITH TAMPER RESISTANT ENCLOSURE AND ACCESS (SCREW ACCESS IN LIEU OF CLIP ACCESS) (TER VALUE: ~75)	3-F32T8 RE835	95W	277/120V	LITHONIA METALUX DAYBRITE COLUMBIA LIGHTOLIER LSI	2 SP8G 332 A12125 1/3 MVOLT TUBRHP 2GP-332A125-UNV-EB81-PROGRAM START 2DPG332-FS21-UNV-1/3EB-SPEC ST824-332G-FSA12.125-3EB8LHPRUNV XT2GVI332-UNV-03P LA125 332 SD SSO10PS UE	
	OC	WALL PACK: ADJUSTABLE CUT OFF; FULL PERIMETER GASKETING; WET LOCATION; STAINLESS STEEL HINGES AND LATCHES; PROJECTING LENS; LED; SEE ELEVATION FOR MOUNTING HEIGHT, COLOR AS SPECIFIED BY ARCHITECT.						
	OC-32	LED, RECESSED J BOX. MEDIUM THROW, SHAPED; DECORATIVE, PROVIDE INTEGRAL PHOTOCELL	LED	40W	277/120V	LITHONIA QUALITY MCGRAW GARDCO	CSXW LED-1-30B530/40K-SR3-MVOLT-PE-DBLXD QLW-16G1-700-NW-3L-UNV-SM--PCB-TBK ISW-B02-LED-E1-BLS-BK-P 102L-3-35LA-NW-UNV-BLP-PCB	
	TX	SPECIAL FIXTURES AS INDICATED. MEET ALL REQUIREMENTS OF SPECIFICATIONS AND FIXTURE SCHEDULE. VISUAL AND FINISH APPROVAL REQUIRED.						
	TX-1	NOT USED						
	TX-2	INCANDESCENT WALL SCONCE DOCTOR'S ROOM BED FIXTURE	1-60W	60W	120V	FORECAST	FB1844-36 / F1849 CONTRACTOR ALLOWANCE: $205.00 (OR APPROVED EQUAL PRIOR TO BID)	
	TX-3	SURFACE MOUNTED FLUORESCENT FIXTURE, HIGH ABUSE	2-F40BX RE835	80W	120V	KENALL FAILSAFE CD LIGHTING KIRLIN MORLITE	WCBU-2-3/3-1/1-40B-RS-1-120-2/9-1-IH4 MAX-WDPH94-2-1-1-BX-EB10RS-3-E-F1-BN-UNV (OR APPROVED EQUAL PRIOR TO BID)	
	TX-4	SURFACE MOUNTED CORNER FLUORESCENT FIXTURE, HIGH ABUSE	2-F32T8 RE835	65W	120V	KENALL FAILSAFE KIRLIN CD LIGHTING MORLITE	CD-4-3/3-2-32-RS-1-120-2/9-1-IH4 FCC-X-232-UNV-80/87-EB81-VRSD MAX-CDPH89-4-2-T8-EB1ORS-3-E-F1-UNV (OR APPROVED EQUAL PRIOR TO BID)	
	TX-5	INCANDESCENT WALL SCONCE DOCTOR'S ROOM BATH FIXTURE	1-60W CAND	60A	120V	FORECAST	FB1844-36 / F1857 CONTRACTOR ALLOWANCE: $205.00 (OR APPROVED EQUAL PRIOR TO BID)	
	TX-6	LED SURFACE MOUNTED STRIP FIXTURE DOCTOR'S ROOM BATH FIXTURE	LED	24W	120V	WALDMANN JESCO	MUAL-4-S-112-571-035 / 209-585-030 DL-RS-24-27 / DL-PS-20/24 (OR APPROVED EQUAL PRIOR TO BID)	
	TX-7	RECESSED LINEAR FLUORECENT; PROVIDE LENGTHS AS INDICATED ON PLANS	1-F32T8 RE835	35W	120V	MARK ARCH PMC LIGHTING NEORAY	MP-X-1-T8S-EBPR-120-EBB SPS-CD-FL-1-T8-XX-PBL-WHT-UNV R76PF-1-XX-T8-1-EB-SI-C-S79 (OR APPROVED EQUAL PRIOR TO BID)	
	TX-8	NOT USED						
	TX-9	RECESSED LINEAR LED FIXTURE, 2700 LUMENS, INTEGRAL DIMMING, 3500K	LED	45W	120V	NEORAY FINELITE	22DR HP4-R-4-LED-HO-3500K-120-SC-XX (OR APPROVED EQUAL PRIOR TO BID)	
	UC	UNDERCABINET LIGHT: LOW PROFILE X 5 1/4"DEEP X LENGTH AS NOTED; HIGH IMPACT RESISTANT ACRYLIC DIFFUSER.						
	UC-99	18" NOMINAL LENGTH WITH INTEGRAL ROCKER SWITCH; LED; PROVIDE POWER PACKS AS REQUIRED	LED 4100K	18W	120V	KENALL LIGHTOLIER DECO LTG. PHILIPS GM LIGHTING	MAUCLED-X-M-18-120-SW LLP20XBK DUS-LED-24-42-SP-MC 523-000027-52 UCLED-16-WH (OR APPROVED EQUAL PRIOR TO BID)	
	W	LOW PROFILE WRAPAROUND: SURFACE MOUNTED SUITABLE FOR MOUNTING ON LOW DENSITY CEILINGS WRAPAROUND ACRYLIC PRISMATIC DIFFUSER; WHITE ENAMEL ENDPLATES; MINIMUM CU OF 70 @ 80/50/20 AND RCR=1; PROGRAM START ELECTRONIC BALLASTS; T8 LAMPS; ONE BALLAST PER FIXTURE WHERE POSSIBLE, UNLESS TWO LEVEL SWITCHING IS SHOWN ON THE PLANS.						
	W-4	WIDE BODY WRAPAROUND; 2-LAMP, APPROX; 3" X 16" X 48".	2-F32T8 RE835	65W	277/120V	LITHONIA DAYBRITE METALUX LIGHTOLIER LSI COLUMBIA	2LB232-MVOLT-TUBPHP CAW232-UNV-1/2-EB-SPEC WSA-232A-UNV-PROGRAM START WB232-U-SOP PR 232 SSO10PRS W UE WCW4-232-EBPS120/277	
	WB	WALL MOUNTED FLUORESCENT LOCATED ABOVE WALL ELEMENT (MIRROR/WHITEBOARD, ETC.); AS INDICATED ON DRAWINGS; WITH ACRYLIC INJECTION MOLDED; PROGRAM START ELECTRONIC BALLASTS; T8 LAMPS; ONE BALLAST PER FIXTURE WHERE POSSIBLE, UNLESS TWO LEVEL SWITCHING IS SHOWN ON THE PLANS.						
	WB-3	2-LAMP, WALL MOUNT 48", STEEL ENCLOSURE, DOWNLIGHT ONLY; ACRYLIC INJECTION MOLDED PRISMATIC DIFFUSER.	2-F32T8 RE835	65W	277/120V	DAYBRITE LIGHTOLIER METALUX L.A.L. COLUMBIA LITHONIA LSI	CD232W-UNV-1/2-EB-SPEC CWB232-WB-U-SOP BI-232-UNV-PROGRAM START BSQ100-2-4R-INJ-WHT-T8EB-120/277-UPS WAL4-232-EBPS120/277 WP 232 DO MVOLT-TUBPHP WB 232 SSO10PRS UE	
	ZW	LIGHT POLES: TOTALLY ENCLOSED RAINTIGHT, DUST-TIGHT AND CORROSION RESISTANT; POLE AS SHOWN IN DETAIL WITH HANDHOLE, COVER, BOLT COVER, AND BASE; PAINTED (COLOR TO BE SELECTED BY ARCHITECT / ENGINEER WHICH MAY DIFFER FROM CATALOG NUMBER SHOWN). PROVIDE MULTI-TAP VOLTAGE FIXTURE.						
	ZW-1	LED SITE LIGHTING FIXTURE, DIRECTIONAL REMOVABLE LED SOCKET BOARDS, TYPE III DISTRIBUTION, HEAD CONFIGURATION AS SHOWN ON DRAWINGS	LED	140W	208V	KIM LIGHTING	XSA-WP9-L-E-3-L-5K-208-SG-DB-A-30 CONTRACTOR ALLOWANCE: $1,475.00 (EXCLUDING POLE)	

2

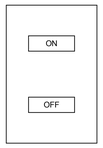
LIGHTING CONTROL GROUPS	
A	CORRIDOR AND COMMON AREAS
B	LOBBY AREA
C	CANOPY AREA
D	OUTDOOR AREAS

LIGHTING CONTROL METHODS	
1	ON/OFF WITH OCCUPIED/UNOCCUPIED MODE, WITH WALLSTATION OVERRIDE
2	ON/OFF WITH EXTERIOR PHOTOCELL
3	ON W/ EXTERIOR PHOTOCELL, OFF W/ TIMECLOCK

RELAY PANEL SCHEDULE

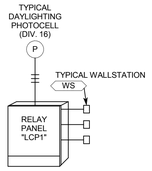
RELAY CABINET: "LCP1"

RELAY #	PANEL CIRCUIT #	CONTROL GROUP	CONTROL METHOD	LOAD DESCRIPTION
1	L1B-2,4	D	3	SITE LIGHTING
-	-	-	-	-
2	L1B-6,8	D	3	SITE LIGHTING
-	-	-	-	-
3	L1B-10	D	3	SITE LIGHTING - BOLLARDS
4	L1B-12	D	3	SITE LIGHTING - BOLLARDS
5	L1B-14	C	3	CANOPY LIGHTING
6	L1B-36	A	1	CORRIDOR LTG.
7	L1B-38	A	1	CORRIDOR LTG.
8	L1D-4	D	3	TREE LIGHTING RECEPT.
9	L1D-6	D	3	TREE LIGHTING RECEPT.
10	L1D-8	D	3	TREE LIGHTING RECEPT.
11	L1D-10	D	3	TREE LIGHTING RECEPT.
12	L1D-12	D	3	TREE LIGHTING RECEPT.
13	L1D-14	D	3	TREE LIGHTING RECEPT.
14	-	-	-	SPARE RELAY
15	-	-	-	SPARE RELAY
16	-	-	-	SPARE RELAY

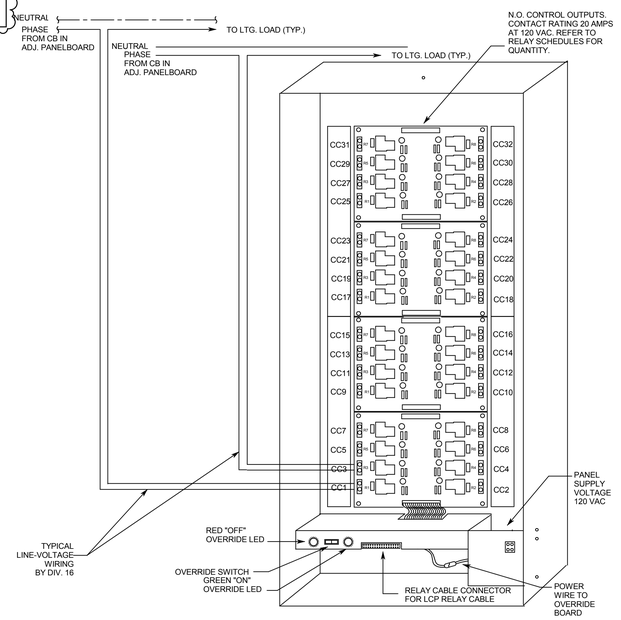


PUSH-BUTTON WALL STATION. STATION FOR ON/OFF OVERRIDE CONTROL.

D6 WALL STATION
SCALE: NTS



C6 LIGHTING CONTROL SCHEMATIC
SCALE: NTS



A5 TYPICAL RELAY PANEL WIRING DIAGRAM
SCALE: NTS

DFCM APPROVAL STAMP

GENERAL SHEET NOTES

1. CONTRACTOR SHALL PROGRAM LIGHTING CONTROL SYSTEM AND TIMECLOCK(S) PER SCHEDULE PROVIDED BY OWNER.

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Mark I. Payne Building
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Utah State Hospital Consolidation
BID DOCUMENTS - 09/12/2012

SEAL
LICENSED PROFESSIONAL ENGINEER
No. 7057918
CARLTON A. GETZ
STATE OF UTAH
09/12/2012

DATE	STATUS

	DATE	REVISION
1	9/20/12	ADD #1
2	9/27/12	ADD#2

PROJECT NUMBER 11111
FILE 11111 USH Payne
DRAWN BY WRT
CHECKED BY CAG
SCALE 1/8" = 1'-0"

LIGHTING SCHEDULES AND DIAGRAMS

EL601

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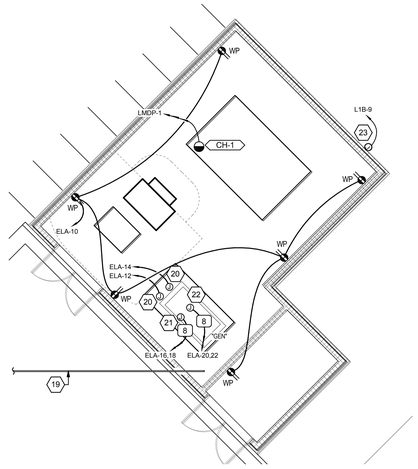
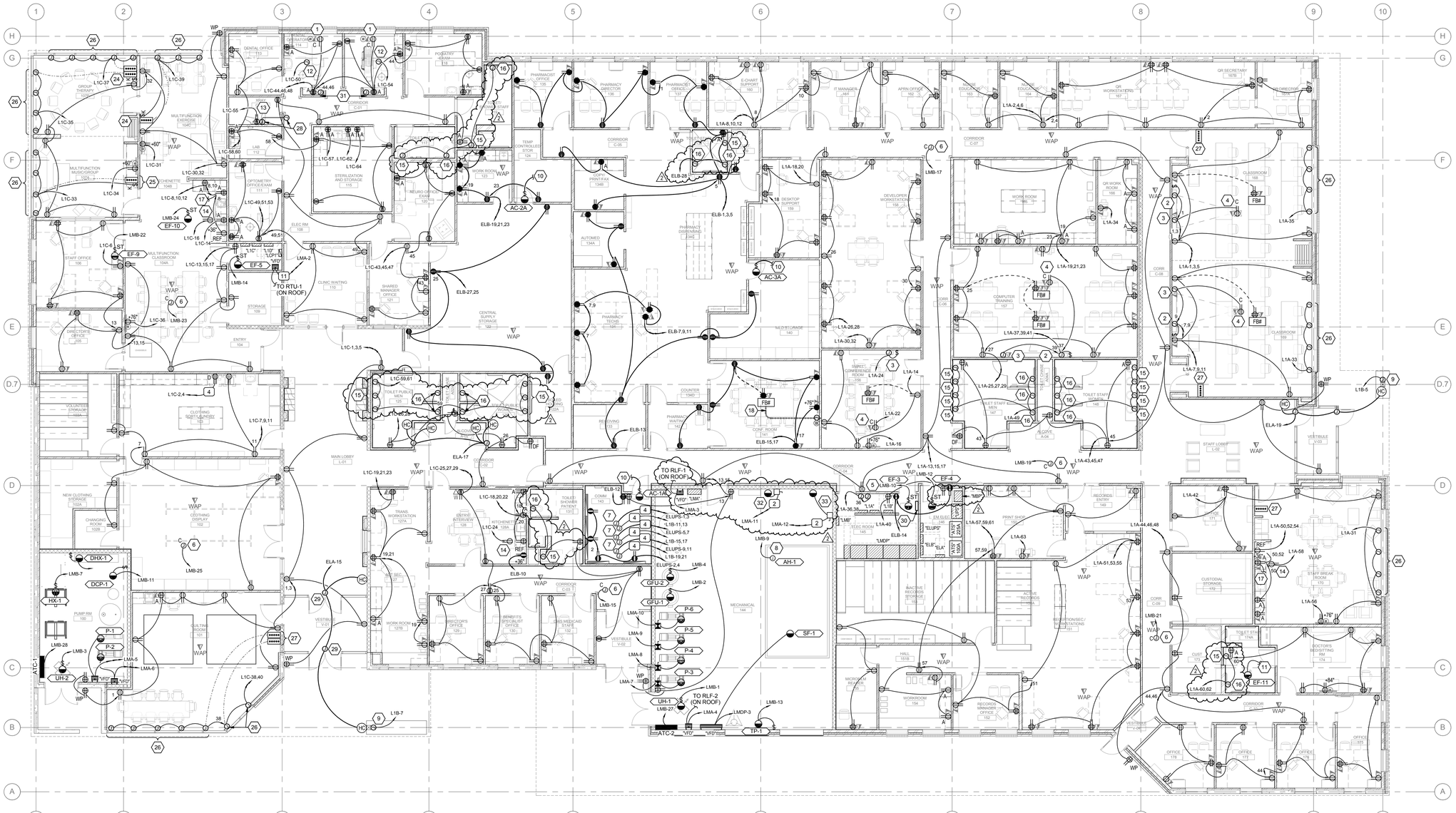


D4 ENLARGED UTILITY ENCLOSURE POWER PLAN

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



A1 LEVEL 01 POWER PLAN

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

GENERAL SHEET NOTES

1. LOCATIONS OF MECHANICAL EQUIPMENT SHOWN IS APPROXIMATE. COORDINATE EXACT LOCATIONS OF MECHANICAL EQUIPMENT WITH MECHANICAL INSTALLER PRIOR TO ROUGH-IN.
2. REFER TO EQUIPMENT SCHEDULE FOR CONDUCTOR, CONDUIT, AND DEVICE SIZES FOR MECHANICAL EQUIPMENT.

DFCM APPROVAL STAMP

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www.spectrum-engineers.com

SHEET KEYNOTES

1. CEILING MOUNTED RECEPTACLE AND TELE/DATA FOR CEILING MOUTED TELEVISION. COORDINATE EXACT LOCATION WITH ARCHITECTURAL PLANS PRIOR TO ROUGH-IN.
2. JUNCTION BOX FOR MOTORIZED SCREEN. COORDINATE EXACT LOCATION WITH EQUIPMENT PRIOR TO ROUGH-IN.
3. JUNCTION BOX FOR PROMETHEAN BOARD. COORDINATE EXACT LOCATION WITH EQUIPMENT PRIOR TO ROUGH-IN.
4. CEILING MOUNTED RECEPTACLE AND TELE/DATA FOR PROJECTOR.
5. JUNCTION BOX FOR MISC. MECHANICAL POWER (CONTROLS, ETC.).
6. JUNCTION BOX MOUNTED IN ACCESSIBLE LOCATION ABOVE CEILING FOR VAV CONTROL POWER.
7. PROVIDE POWER CONNECTION TO SERVER EQUIPMENT RACK. PROVIDE (2) #10 AWG CONDUCTORS WITH (1) #12 AWG GROUND IN 1"DIA. CONDUIT. COORDINATE AND VERIFY EXACT USER POWER REQUIREMENTS WITH OWNER PRIOR TO ROUGH-IN.
8. JUNCTION BOX FOR AIR HANDLER RECEPTACLE LIGHTING AND POWER CONNECTION. COORDINATE EXACT LOCATION WITH EQUIPMENT PRIOR TO ROUGH-IN.
9. JUNCTION BOX FOR POWER CONNECTION TO DRAIN HEAT TRACE. COORDINATE EXACT LOCATION WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.
10. CONNECT TO ASSOCIATED OUTDOOR CONDENSING UNIT LOCATED ON ROOF. PROVIDE CONDUIT AND CONTROL WIRING AS REQUIRED BY MANUFACTURER'S INSTALLATION INSTRUCTIONS.
11. CONNECT TO LIGHTING BRANCH CIRCUIT SWITCH LEG SERVING BATHROOM LIGHTING.
12. JUNCTION BOX FOR POWER CONNECTION TO DENTAL ACCESSORIES EQUIPMENT. COORDINATE EXACT LOCATION WITH EQUIPMENT AND REQUIREMENTS WITH MANUFACTURER'S WRITTEN SPECIFICATION PRIOR TO ROUGH-IN.
13. RECEPTACLE FOR POWER CONNECTION TO PANORAMIC XRAY MACHINE. COORDINATE EXACT LOCATION WITH OWNER PRIOR TO ROUGH-IN.
14. RECEPTACLE FOR MICROWAVE. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT WITH MILLWORK PRIOR TO ROUGH-IN.
15. JUNCTION BOX FOR CONNECTION TO SENSOR OPERATED SINKS. COORDINATE REQUIREMENTS WITH EQUIPMENT PRIOR TO ROUGH-IN.
16. JUNCTION BOX FOR CONNECTION TO SENSOR OPERATED TOILETS. COORDINATE REQUIREMENTS WITH EQUIPMENT PRIOR TO ROUGH-IN.
17. CIRCUIT TO UNDER CABINET LIGHT FIXTURES LOCATED DIRECTLY ABOVE.
18. PROVIDE (1) 2" EMPTY CONDUIT WITH PULL STRING FROM FLOORBOX TO FLUSH WALL MOUNTED JUNCTION BOX WITH SINGLE GANG OPENING. MOUNT JUNCTION BOX AT TYPICAL RECEPTACLE HEIGHT.
19. PROVIDE (1) 2" EMPTY CONDUIT WITH PULL STRING FROM PANEL "ELA" AND STUBBED UP AT GENERATOR ENCLOSURE.
20. POWER CONNECTION FOR GENERATOR CONTROLS AND DEVICES.
21. POWER CONNECTION FOR GENERATOR COOLANT HEATER. COORDINATE EXACT STUB-UP LOCATION WITH EQUIPMENT PRIOR TO ROUGH-IN.
22. POWER CONNECTION FOR GENERATOR BLOCK HEATER. COORDINATE EXACT STUB-UP LOCATION WITH EQUIPMENT PRIOR TO ROUGH-IN.
23. JUNCTION BOX FOR IRRIGATION CONTROLLER. COORDINATE EXACT LOCATION WITH EQUIPMENT PRIOR TO ROUGH-IN.
24. KEYED AND BUTTON CONTROL SWITCHES FOR CONTROLS TO MECHOSHADES IN THIS ROOM. MOUNT SWITCHES ADJACENT TO ROOM LIGHT SWITCHES.
25. CONTROL SWITCH FOR MECHOSHADES LOCATED IN LOCKABLE CABINET. COORDINATE EXACT LOCATION WITH MILLWORK PRIOR TO ROUGH-IN.
26. JUNCTION BOX FOR MOTORIZED MECHOSHADES. COORDINATE EXACT LOCATION WITH EQUIPMENT PRIOR TO ROUGH-IN.
27. CONTROL SWITCH FOR CONTROLS TO MECHOSHADES IN DAY ROOM. MOUNT SWITCH ADJACENT TO ROOM LIGHT SWITCHES.
28. PROVIDE (1) 1" CONDUIT FROM SINGLE GANG JUNCTION BOX LOCATED ADJACENT TO X-RAY EQUIPMENT TO FOUR GANG JUNCTION BOX FOR EQUIPMENT SWITCHES AND INDICATOR LIGHT. MOUNT EQUIPMENT JUNCTION BOX AT STANDARD RECEPTACLE HEIGHT. X-RAY EQUIPMENT, SWITCHES, INDICATOR LIGHTING, AND CABLING PROVIDED BY OWNER; COORDINATE WITH OWNER FOR INSTALLATION OF OWNER PROVIDED EQUIPMENT, CABLING, AND DEVICES."
29. JUNCTION BOX FOR POWER CONNECTION TO AUTOMATIC DOOR. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH AUTODOOR EQUIPMENT PRIOR TO ROUGH-IN.
30. GENERATOR ANNUNCIATOR PANEL.
31. PROVIDE (1) 2" CND FROM 4G JUNCTION BOX IN BASE CABINET TO PLENUM. COORDINATE WITH EXACT LOCATION WITH MILLWORKPRIOR TO ROUGH-IN.
32. POWER CONNECTION FOR DENTAL AIR COMPRESSOR (PROVIDED BY OWNER). COORDINATE EXACT POWER REQUIREMENTS WITH EQUIPMENT PROVIDED PRIOR TO ROUGH-IN.
33. POWER CONNECTION FOR DENTAL VACUUM PUMP SYSTEM. COORDINATE EXACT REQUIREMENTS WITH SYSTEM PRIOR TO ROUGH-IN.

Mark I. Payne Building
1300 East Center St. Provo, Utah
Utah State Hospital Consolidation
BID DOCUMENTS - 09/12/2012

SEAL: LICENSED PROFESSIONAL ENGINEER No. 7057918 CARLTON A. GETZ STATE OF UTAH 09/12/2012

DATE	STATUS

	DATE	REVISION
1	9/20/12	ADD #1
2	9/27/12	ADD#2

PROJECT NUMBER	11111
FILE	11111 USH Payne
DRAWN BY	WRT
CHECKED BY	CAG
SCALE	1/8" = 1'-0"

LEVEL 1 POWER PLAN

EP101

9/27/2012 10:49:31 AM

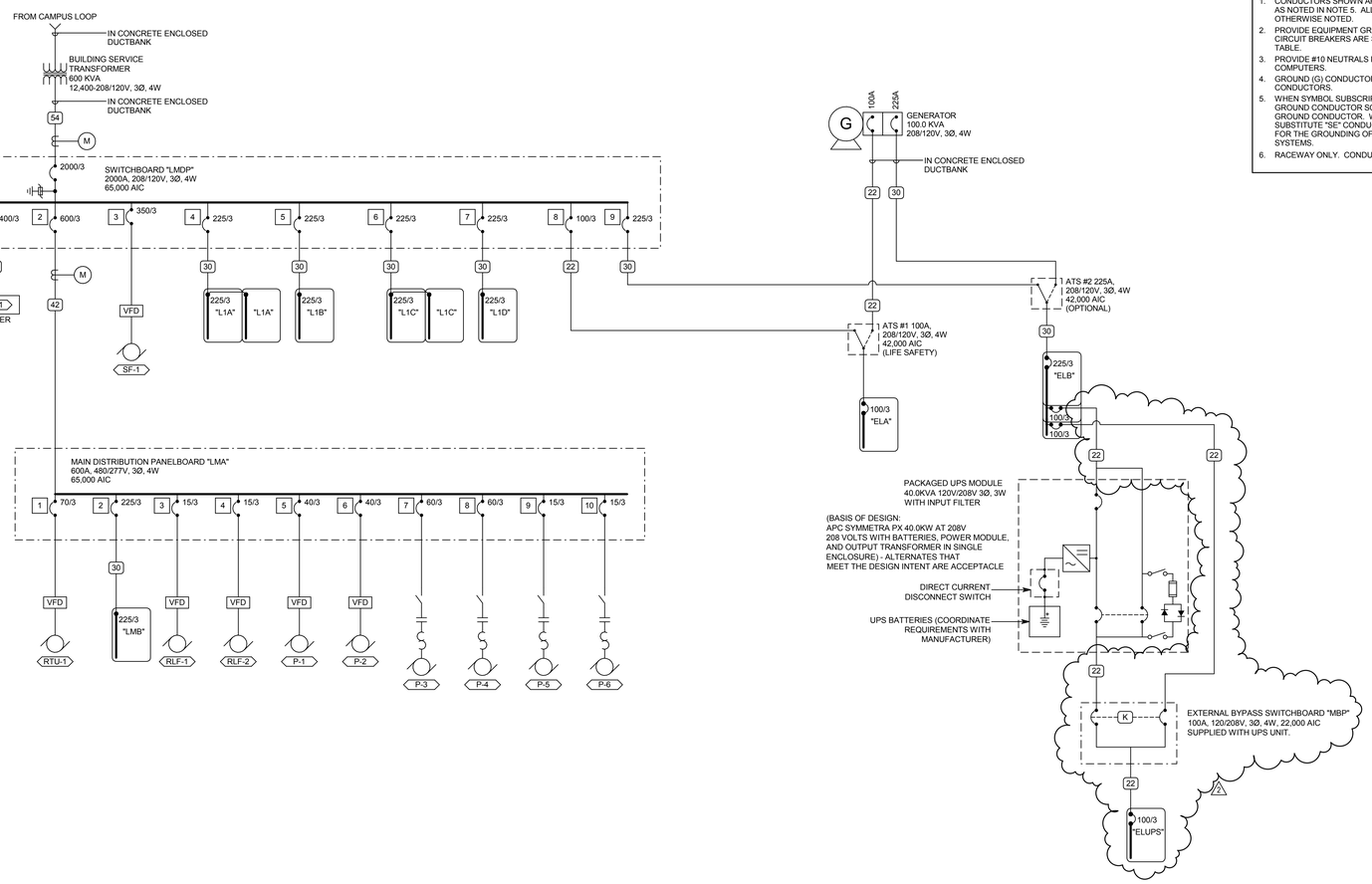
CONDUCTOR AND CONDUIT SCHEDULE

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	780	2 EA 3.50	3	500	1/0	4/0	3/0	2,4
44	780	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	2 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.
3. PROVIDE #10 NEUTRALS FOR MULTIWIRE BRANCH CIRCUITS SERVING COMPUTERS.
4. GROUND (G) CONDUCTOR MAY BE DELETED ON SERVICE ENTRANCE CONDUCTORS.
5. WHEN SYMBOL SUBSCRIPT INDICATES "IG", INCLUDE "IG" OR INSULATED GROUND CONDUCTOR SCHEDULED ALONG WITH GROUND OR EQUIPMENT GROUND CONDUCTOR. WHEN SYMBOL SUBSCRIPT INDICATES "SE", SUBSTITUTE "SE" CONDUCTOR FOR "G" CONDUCTOR SHOWN WHICH IS SIZED FOR THE GROUNDING OF THE SECONDARY OF THE SEPARATELY DERIVED SYSTEMS.
6. RACEWAY ONLY. CONDUCTORS PROVIDED BY UTILITY.



A2 ONE-LINE DIAGRAM
SCALE: NTS

DFCM APPROVAL STAMP

FFKR ARCHITECTS
bogue building
730 pacific avenue
salt lake city
Utah 84104
o 801-521-6186
f 801-539-1916
ffkr.com

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.

SHEET KEYNOTES

SPECTRUM ENGINEERS
324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
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Mark I. Payne Building
1300 East Center St. Provo, Utah
Utah State Hospital Consolidation
BID DOCUMENTS - 09/12/2012

SEAL
LICENSED PROFESSIONAL ENGINEER
No. 7057918
CARLTON A. GETZ
STATE OF UTAH
09/12/2012

DATE	STATUS

	DATE	REVISION
2	9/27/12	ADD#2

PROJECT NUMBER	11111
FILE	11111 USH Payne
DRAWN BY	WRT
CHECKED BY	CAG
SCALE	1/8" = 1'-0"

ONE-LINE DIAGRAM

EP601

9/27/2012 10:49:33 AM

DISTRIBUTION PANELBOARD "LMDP"

VOLTS/PHASE/WIRE:	MAIN SIZE & TYPE:	LOCATION:	NOTES:
120/208 V ,3 PH, 4 WIRE	2000 AMPERE MAIN CIRCUIT BREAKER		

ACCESSORIES: IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, SERVICE ENTRANCE, 65,000 A.I.C.

CKT NO	OCP AMP	OCP POLE	LTG	PWR	CO	PANEL / EQUIPMENT	PHASE LOAD A	PHASE LOAD B	PHASE LOAD C
1	400	3	0.0	124.5	0.0	CHILLER - (CH-1)	41.5	41.5	41.5
2	600	3	0.5	85.9	0.0	PANEL "LMA"	29.7	28.6	28.0
3	350	3	0.0	51.5	0.0	SUPPLY FAN - (SF-1)	17.2	17.2	17.2
4	225	3	0.0	28.9	41.8	PANEL "L1A"	22.5	25.0	24.5
5	225	3	19.0	13.5	1.8	PANEL "L1B"	13.4	10.7	10.2
6	225	3	2.0	34.9	27.7	PANEL "L1C"	24.6	22.0	19.2
7	225	3	9.1	3.9	0.0	PANEL "L1D"	4.7	5.1	3.2
8	100	3	6.1	17.1	1.2	PANEL "ELA" (VIA TRANSFER SWITCH)	6.8	10.3	7.5
9	225	3	3.8	27.3	10.4	PANEL "ELB" (VIA TRANSFER SWITCH)	14.1	15.7	11.6
10	--	--	--	--	--	SPACE	0.0		
11	--	--	--	--	--	SPACE	0.0		
12	--	--	--	--	--	SPACE	0.0		
13	--	--	--	--	--	SPACE	0.0		
14	--	--	--	--	--	SPACE	0.0		
15	--	--	--	--	--	SPACE	0.0		
16	--	--	--	--	--	SPACE	0.0		
TOTALS:						CONNECTED kVA PER PHASE	**174**	**176.1**	**162.8**
						CONNECTED AMPS PER PHASE	**1468**	**1482**	**1357**

CONNECTED TOTAL kVA= 513.3
CONNECTED AVERAGE AMPS PER PHASE= 1425

Load Classification	TOTAL LOAD	DEMAND FACTOR	EST. DEMAND	Panel Totals	
CO	82.9	56%	46.4	**TOTAL EST. DEMAND=**	**499.9**
POWER	253.7	100%	253.7	**TOTAL EST. DEMAND CURRENT=**	**1388**
LIGHTING	40.5	125%	50.7		
Motor	133.6	110%	146.5		

Notes:

DISTRIBUTION PANELBOARD "LMA"

VOLTS/PHASE/WIRE:	MAIN SIZE & TYPE:	LOCATION:	NOTES:
120/208 V ,3 PH, 4 WIRE	600 AMPERE MAIN LUGS	MECHANICAL 144	

ACCESSORIES: IDENTIFICATION, GROUNDING BAR, INSULATED GROUND BAR, 65,000 A.I.C.

CKT NO	OCP AMP	OCP POLE	LTG	PWR	CO	PANEL / EQUIPMENT	PHASE LOAD A	PHASE LOAD B	PHASE LOAD C
1	225	3	0.5	20.9	0.0	PANEL "LMB"	8.1	6.9	6.4
2	70	3	0.0	19.8	0.0	ROOF TOP UNIT (RTU-1)	6.6	6.6	6.6
3	15	3	0.0	2.7	0.0	RELIEF FAN - (RFL-1)	0.9	0.9	0.9
4	15	3	0.0	2.7	0.0	RELIEF FAN - (RLF-2)	0.9	0.9	0.9
5	40	3	0.0	6.0	0.0	PUMP - (P-1)	2.0	2.0	2.0
6	40	3	0.0	6.0	0.0	PUMP - (P-2)	2.0	2.0	2.0
7	60	3	0.0	7.9	0.0	PUMP - (P-3)	2.6	2.6	2.6
8	60	3	0.0	7.9	0.0	PUMP - (P-4)	2.6	2.6	2.6
9	15	3	0.0	2.7	0.0	PUMP - (P-5)	0.9	0.9	0.9
10	15	3	0.0	2.7	0.0	PUMP - (P-6)	0.9	0.9	0.9
11	15	3	0.0	1.8	0.0	DENTAL AIR COMPRESSOR	0.6	0.6	0.6
12	20	3	0.0	4.8	0.0	DENTAL VACCUM PUMP SYSTEM	1.6	1.6	1.6
13	--	--	--	--	--	SPACE	0.0		
14	--	--	--	--	--	SPACE	0.0		
15	--	--	--	--	--	SPACE	0.0		
16	--	--	--	--	--	SPACE	0.0		
TOTALS:						CONNECTED kVA PER PHASE	**30**	**28.6**	**28.0**
						CONNECTED AMPS PER PHASE	**249**	**239**	**233**

CONNECTED TOTAL kVA= 86.4
CONNECTED AVERAGE AMPS PER PHASE= 240

Load Classification	TOTAL LOAD	DEMAND FACTOR	EST. DEMAND	Panel Totals	
CO	0.0	0%	0.0	**TOTAL EST. DEMAND=**	**91.4**
POWER	14.3	100%	14.3	**TOTAL EST. DEMAND CURRENT=**	**254**
LIGHTING	0.5	125%	0.6		
Motor	71.5	107%	76.5		

Notes:

PANEL "LMB"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE AND TYPE:	LOCATION:	CABINET:	NOTES:
120/208V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	225 AMPERE MAIN LUGS	ELEC ROOM 145	SURFACE	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, 22,000 A.I.C.

CKT NO	AMP	POLE	LTG	PWR	CO	DESCRIPTION	A	B	C	DESCRIPTION	CO	PWR	LTG	POLE	AMP	CKT NO
1	15	1	0.0	0.3	0.0	UNIT HEATER - (UH-1)	0.3 0.9			GLYCOL PUMP - (GFU-1)	0.0	0.9	0.0	1	15	2
3	15	1	0.0	0.3	0.0	UNIT HEATER - (UH-2)		0.3 0.9		GLYCOL PUMP - (GFU-2)	0.0	0.9	0.0	1	15	4
5	20	1	0.0	1.2	0.0	DIRECT HEAT EXCHANGER (DHX-1)			1.2 0.9	EXHAUST FAN (EF-1)	0.0	0.9	0.0	1	15	6
7	20	1	0.0	1.2	0.0	HEAT EXCHANGER - (HX-1)	1.2 0.7			EXHAUST FAN (EF-2)	0.0	0.7	0.0	1	15	8
9	20	1	0.5	0.5	0.0	PWR/LTG: (AH-1)		1.0 0.5		EXHAUST FAN (EF-3)	0.0	0.5	0.0	1	15	10
11	15	1	0.0	0.5	0.0	INLINE PUMP - (DCP-1)			0.5 0.5	EXHAUST FAN (EF-4)	0.0	0.5	0.0	1	15	12
13	20	1	0.0	0.2	0.0	TRAP PRIMER (TP-1)	0.2 0.5			EXHAUST FAN (EF-5)	0.0	0.5	0.0	1	15	14
15	20	1	0.0	1.0	0.0	PWR: VAV CNTLS		1.0 0.7		EXHAUST FAN (EF-6)	0.0	0.7	0.0	1	15	16
17	20	1	0.0	1.0	0.0	PWR: VAV CNTLS			1.0 0.7	EXHAUST FAN (EF-7)	0.0	0.7	0.0	1	15	18
19	20	1	0.0	1.0	0.0	PWR: VAV CNTLS	1.0 0.7			EXHAUST FAN (EF-8)	0.0	0.7	0.0	1	15	20
21	20	1	0.0	1.0	0.0	PWR: VAV CNTLS		1.0 0.5		EXHAUST FAN (EF-9)	0.0	0.5	0.0	1	15	22
23	20	1	0.0	1.0	0.0	PWR: VAV CNTLS			1.0 0.5	EXHAUST FAN (EF-10)	0.0	0.5	0.0	1	15	24
25	20	1	0.0	1.0	0.0	PWR: VAV CNTLS	1.0 1.5			FAN COIL UNIT (FCU-1)	0.0	1.5	0.0	1	20	26
27	20	1	0.0	0.5	0.0	ATC POWER		0.5 0.5		ATC POWER	0.0	0.5	0.0	1	20	28
29	20	1	--	--	--	SPARE			0.0 0.0	SPARE	--	--	--	1	20	30
31	20	1	--	--	--	SPARE	0.0 0.0			SPARE	--	--	--	1	20	32
33	20	1	--	--	--	SPARE		0.0 0.0		SPARE	--	--	--	1	20	34
35	20	1	--	--	--	SPARE			0.0 0.0	SPARE	--	--	--	1	20	36
37	20	1	--	--	--	SPARE	0.0 0.0			SPARE	--	--	--	1	20	38
39	20	1	--	--	--	SPARE		0.0 0.0		SPARE	--	--	--	1	20	40
41	20	1	--	--	--	SPARE			0.0 0.0	SPARE	--	--	--	1	20	42
TOTALS:						CONNECTED kVA PER PHASE	**8**	**7**	**6**	CONNECTED TOTAL kVA					**21.4**	
						CONNECTED AMPS PER PHASE	**68**	**59**	**53**	CONNECTED AVERAGE AMPS PER PHASE					**59**	

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING **0.5kVA @ 125% = 0.6kVA** ALL OTHER LOADS @100%= **13 kVA** DIVERSIFIED TOTAL kVA = **22**
RECEPTACLES 25% OF LARGEST MOTOR= **9 kVA** AVERAGE AMPS PER PHASE = **61**

PANEL "ELA"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE AND TYPE:	LOCATION:	CABINET:	NOTES:
120/208V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	100 AMPERE MAIN C.B.	EM ELEC 146	SURFACE	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, 22,000 A.I.C.

CKT NO	AMP	POLE	LTG	PWR	CO	DESCRIPTION	A	B	C	DESCRIPTION	CO	PWR	LTG	POLE	AMP	CKT NO
1	20	1	0.2	0.0	0.0	LTG: UTILITY ENCLOSURE	0.2 0.5			FA PANEL - FACP	0.0	0.5	0.0	1	20	2
3	20	1	1.2	0.0	0.0	LTG: CORR/OFFICE/CLASS RM		1.2 0.5		SEC PANEL - ACS-1	0.0	0.5	0.0	1	20	4
5	20	1	0.7	0.0	0.0	LTG: MAIN LOBBY/ENTRY			0.7 0.6	SEC PANEL - VSS-1	0.0	0.5	0.0	1	20	6
7	20	1	0.8	0.0	0.0	LTG: CORR./VEST/COMM	0.8 0.5			FA PANEL "NAC"	0.0	0.5	0.0	1	20	8
9	20	1	1.6	0.0	0.0	LTG: CORR./WORKSTATIONS		1.6 1.2		CO: UTILITIES ENCLOSURE	1.2	0.0	0.0	1	20	10
11	20	1	0.9	0.0	0.0	LTG: CORR./WORKROOM			0.9 1.5	PWR: GENERATOR CNTLS	0.0	1.5	0.0	1	20	12
13	20	1	0.8	0.0	0.0	LTG: CORR./MECH/ELEC RMS	0.8 1.5			PWR: GENERATOR CNTLS	0.0	1.5	0.0	1	20	14
15	20	1	0.0	0.5	0.0	PWR: VEST. ADA ACCESS DOORS		0.5 3.3		PWR: GEN. COOLANT HTR	0.0	6.6	0.0	2	35	16
17	20	1	0.0	0.5	0.0	PWR: LAV ADA ACCESS DOORS			0.5 3.3	--	--	--	--	--	--	18
19	20	1	0.0	0.5	0.0	PWR: VEST. ADA ACCESS DOORS	0.5 2.0			PWR: GEN BLOCK HTR	0.0	4.0	0.0	2	30	20
21	20	1	--	--	--	SPARE		0.0 2.0		--	--	--	--	--	--	22
23	20	1	--	--	--	SPARE			0.0 0.0	SPARE	--	--	--	1	20	24
25	20	1	--	--	--	SPARE	0.0 0.0			SPARE	--	--	--	1	20	26
27	20	1	--	--	--	SPARE		0.0 0.0		SPARE	--	--	--	1	20	28
29	20	1	--	--	--	SPARE			0.0 0.0	SPARE	--	--	--	1	20	30
31	20	1	--	--	--	SPARE	0.0 0.0			SPARE	--	--	--	1	20	32
33	20	1	--	--	--	SPARE		0.0 0.0		SPARE	--	--	--	1	20	34
35	20	1	--	--	--	SPARE			0.0 0.0	SPARE	--	--	--	1	20	36
37	100	3	0.0	11.0	0.0	UPS (MAIN FEED)	4.0 0.0			UPS (BYPASS FEED)	--	--	--	3	100	38
39	--	--	--	--	--	--		4.0 0.0		--	--	--	--	--	--	40
41	--	--	--	--	--	--			3.0 0.0	--	--	--	--	--	--	42
43	20	1	--	--	--	SPARE	0.0 0.0			SPARE	--	--	--	1	20	44
45	20	1	--	--	--	SPARE		0.0 0.0		SPARE	--	--	--	1	20	46
47	20	1	--	--	--	SPARE			0.0 0.0	SPARE	--	--	--	1	20	48
49	20	1	--	--	--	SPARE	0.0 0.0			SPARE	--	--	--	1	20	50
51	20	1	--	--	--	SPARE		0.0 0.0		SPARE	--	--	--	1	20	52
53	20	1	--	--	--	SPARE			0.0 0.0	SPARE	--	--	--	1	20	54
55	20	1	--	--	--	SPARE	0.0 0.0			SPARE	--	--	--	1	20	56
57	20	1	--	--	--	SPARE		0.0 0.0		SPARE	--	--	--	1	20	58
59	20	1	--	--	--	SPARE			0.0 0.0	SPARE	--	--	--	1	20	60
61	20	1	--	--	--	SPARE	0.0 0.0			SPARE	--	--	--	1	20	62
63	20	1	--	--	--	SPARE		0.0 0.0		SPARE	--	--	--	1	20	64
65	20	1	--	--	--	SPARE			0.0 0.0	SPARE	--	--	--	1	20	66
67	20	1	--	--	--	SPARE	0.0 0.0			SPARE	--	--	--	1	20	68
69	20	1	--	--	--	SPARE		0.0 0.0		SPARE	--	--	--	1	20	70
71	--	--	--	--	--	SPACE			0.0 0.0	SPACE	--	--	--	--	--	72
73	--	--	--	--	--	SPACE	0.0 0.0			SPACE	--	--	--	--	--	74
75	--	--	--	--	--	SPACE		0.0 0.0		SPACE	--	--	--	--	--	76
77	--	--	--	--	--	SPACE			0.0 0.0	SPACE	--	--	--	--	--	78
79	--	--	--	--	--	SPACE	0.0 0.0			SPACE	--	--	--	--	--	80
81	--	--	--	--	--	SPACE		0.0 0.0		SPACE	--	--	--	--	--	82
83	--	--	--	--	--	SPACE			0.0 0.0	SPACE	--	--	--	--	--	84
TOTALS:						CONNECTED kVA PER PHASE	**14**	**16**	**12**	CONNECTED TOTAL kVA					**41.4**	
						CONNECTED AMPS PER PHASE	**120**	**134**	**97**	CONNECTED AVERAGE AMPS PER PHASE					**115**	

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING **3.8kVA @ 125% = 4.7kVA** ALL OTHER LOADS @100%= **17 kVA** DIVERSIFIED TOTAL kVA = **43**
RECEPTACLES **10.4kVA @ 98% = 10.2kVA** 25% OF LARGEST MOTOR= **12 kVA** AVERAGE AMPS PER PHASE = **120**

PANEL "ELB"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE AND TYPE:	LOCATION:	CABINET:	NOTES:
120/208V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	225 AMPERE MAIN C.B.	EM ELEC 146	SURFACE	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, 22,000 A.I.C.

CKT NO	AMP	POLE	LTG	PWR	CO	DESCRIPTION	A	B	C	DESCRIPTION	CO	PWR	LTG	POLE	AMP	CKT NO
1	20	1	0.0	0.0	1.6	CO: OFFICES	1.6 0.8			LTG: OFFICES	0.0	0.0	0.8	1	20	2
3	20	1	0.0	0.0	1.8	CO: OFFICES		1.8 1.0		LTG: COPY/ PRINT/FAX A255	0.0	0.0	1.0	1	20	4
5	20	1	0.0	1.5	0.0	PWR: COPY/ PRINT/FAX A255			1.5 1.7	LTG: SUPPLY/CONF RM/STOR.	0.0	0.0	1.7	1	20	6
7	20	1	0.0	1.0	0.0	PWR: AUTOMED AUTOMED A259	1.0 0.3			LTG: SUPPLY STORAGE 109	0.0	0.0	0.3	1	20	8
9	20	1	0.0	1.0	0.0	PWR: AUTOMED AUTOMED A259		1.0 1.5		PWR: REF ENTRY/INTERVIEW A311	0.0	1.5	0.0	1	20	10
11	20	1	0.0	0.0	1.2	CO: ROOM A260			1.2 0.2	CO COMM 1143	0.2	0.0	0.0	1	20	12
13	20	1	0.0	0.0	1.6	CO: PHARMACY/ AUTOMED	1.6 0.4			CO EM ELEC 1131	0.4	0.0	0.0	1	20	14
15	20	1	0.0	0.0	1.6	CO: CONF. ROOM A262		1.6 1.9		SPLIT SYSTEM (AC-1)	0.0	3.8	0.0	2	20	16
17	20	1	0.0	0.5	0.0	PWR: TV MONITOR			0.5 1.9	--	--	--	--	--	--	18
19	20	1	0.0	0.0	0.4	CO: WORK ROOM A287	0.4 2.0			SPLIT SYSTEM (AC-2)	0.0	4.0	0.0	2	20	20
21	20	1	0.0	0.0	0.4	CO: WORK ROOM A287		0.4 2.0		--	--	--	--	--	--	22
23	20	1	0.0	0.0	0.2	CO: TEMP CONT. STOR A286			0.2 1.4	SPLIT SYSTEM (AC-3)	0.0	2.8	0.0	2	15	24
25	20	1	0.0	0.0	0.6	CO: SUPPLY STORAGE 122	0.6 1.4			--	--	--	--	--	--	26
27	20	1	0.0	0.0	0.4	CO: SUPPLY STORAGE 122		0.4 0.2		PWR: SINK/TOILET SENSORS RM 138	0.0	0.2	0.0	1	20	28
29	0	1	--	--	--	SPARE			0.0 0.0	SPARE	--	--	--	1	20	30
31	0	1	--	--	--	SPARE	0.0 0.0			SPARE	--	--	--	1	20	32
33	20	1	--	--	--	SPARE		0.0 0.0		SPARE	--	--	--	1	20	34
35	20	1	--	--	--	SPARE			0.0 0.0	SPARE	--	--	--	1	20	36
37	100	3	0.0	11.0	0.0	UPS (MAIN FEED)	4.0 0.0			UPS (BYPASS FEED)	--	--	--	3	100	38
39	--	--	--	--	--	--		4.0 0.0		--	--	--	--	--	--	40
41	--	--	--	--	--	--			3.0 0.0	--	--	--	--	--	--	42
43	20	1	--	--	--	SPARE	0.0 0.0			SPARE	--	--	--	1	20	44
45	20	1	--	--	--	SPARE		0.0 0.0		SPARE	--	--	--	1	20	46
47	20	1	--	--	--	SPARE			0.0 0.0	SPARE	--	--	--	1	20	48
49	20	1	--	--	--	SPARE	0.0 0.0			SPARE	--	--	--	1	20	50
51	20	1	--	--	--	SPARE		0.0 0.0		SPARE	--	--	--	1	20	52
53	20	1	--	--	--	SPARE			0.0 0.0	SPARE	--	--	--	1	20	54
55	20	1	--	--	--	SPARE	0.0 0.0			SPARE	--	--	--	1	20	56
57	20	1	--	--	--	SPARE		0.0 0.0		SPARE	--	--	--	1	20	58
59	20	1	--	--	--	SPARE			0.0 0.0	SPARE	--	--	--	1	20	60
61	20	1	--	--	--	SPARE	0.0 0.0			SPARE	--	--	--	1	20	62
63	20	1	--	--	--	SPARE		0.0 0.0		SPARE	--	--	--	1	20	64
65	20	1	--	--	--	SPARE			0.0 0.0	SPARE	--	--	--	1	20	66
67	20	1	--	--	--	SPARE	0.0 0.0			SPARE	--	--	--	1	20	68
69	20	1	--	--	--	SPARE		0.0 0.0		SPARE	--	--	--	1	20	70
71	--	--	--	--	--	SPACE			0.0 0.0	SPACE	--	--	--	--	--	72
73	--	--	--	--	--	SPACE	0.0 0.0			SPACE	--	--	--	--	--	74
75	--	--	--	--	--	SPACE		0.0 0.0		SPACE	--	--	--	--	--	76
77	--	--	--	--	--	SPACE			0.0 0.0	SPACE	--	--	--	--	--	78
79	--	--	--	--	--	SPACE	0.0 0.0			SPACE	--	--	--	--	--	80
81	--	--	--	--	--	SPACE		0.0 0.0		SPACE	--	--	--	--	--	82
83	--	--	--	--	--	SPACE			0.0 0.0	SPACE	--	--	--	--	--	84
TOTALS:						CONNECTED kVA PER PHASE	**14**	**16**	**12**	CONNECTED TOTAL kVA					**41.4**	
						CONNECTED AMPS PER PHASE	**120**	**134**	**97**	CONNECTED AVERAGE AMPS PER PHASE					**115**	

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING **3.8kVA @ 125% = 4.7kVA** ALL OTHER LOADS @100%= **17 kVA** DIVERSIFIED TOTAL kVA = **43**
RECEPTACLES **10.4kVA @ 98% = 10.2kVA** 25% OF LARGEST MOTOR= **12 kVA** AVERAGE AMPS PER PHASE = **120**

PANEL "ELUPS"

VOLTS/PHASE/WIRE:	PANEL SIZE & TYPE:	MAIN SIZE AND TYPE:	LOCATION:	CABINET:	NOTES:
120/208V, 3 PH 4 WIRE	22" W x 6" D, BOLT-ON	100 AMPERE MAIN C.B.	EM ELEC 146	SURFACE	

ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, 22,000 A.I.C.

CKT NO	AMP	POLE	LTG	PWR	CO	DESCRIPTION	A	B	C	DESCRIPTION	CO	PWR	LTG	POLE	AMP	CKT NO
1	30	2	0.0	3.0	0.0	PWR: SERVER EQ COMM 1143	1.5 1.0			PWR: TTB COMM 1143	0.0	1.0	0.0	1	20	2
3	--	--	--	--	--	--		1.5 1.0		PWR: TTB COMM 1143	0.0	1.0	0.0	1	20	4
5	30	2	0.0	3.0	0.0	PWR: SERVER EQ COMM 1143			1.5 0.0	SPARE	--	--	--	1	20	6
7	--	--	--	--	--	--	1.5 0.0			SPARE	--	--	--	1	20	8
9	30	2	0.0	3.0	0.0	PWR: SERVER EQ COMM 1143		1.5 0.0		SPARE	--	--	--	1	20	10
11	--	--	--	--	--	--			1.5 0.0	SPARE	--	--	--	1	20	12
13	20	1	--	--	--	SPARE	0.0 0.0			SPARE	--	--	--	1	20	14
15	20	1	--	--	--	SPARE		0.0 0.0		SPARE	--	--	--	1	20	16
17	20	1	--	--	--	SPARE			0.0 0.0	SPARE	--	--	--	1	20	18
19	20	1	--	--	--	SPARE	0.0 0.0			SPARE	--	--	--	1	20	20
21	20	1	--	--	--	SPARE		0.0 0.0		SPARE	--	--	--	1	20	22
23	20	1	--	--	--	SPARE			0.0 0.0	SPARE	--	--	--	1	20	24
25	20	1	--	--	--	SPARE	0.0 0.0			SPARE	--	--	--	1	20	26
27	20	1	--	--	--	SPARE		0.0 0.0		SPARE	--	--	--	1	20	28
29	20	1	--	--	--	SPARE			0.0 0.0	SPARE	--	--	--	1	20	30
31	--	--	--	--	--	SPACE	0.0 0.0			SPACE	--	--	--	--	--	32
33	--	--	--	--	--	SPACE		0.0 0.0		SPACE	--	--	--	--	--	34
35	--	--	--	--	--	SPACE			0.0 0.0	SPACE	--	--	--	--	--	36
37	--	--	--	--	--	SPACE	0.0 0.0			SPACE	--	--	--	--	--	38
39	--	--	--	--	--	SPACE		0.0 0.0		SPACE	--	--	--	--	--	40
41	--	--	--	--	--	SPACE			0.0 0.0	SPACE	--	--	--	--	--	42
TOTALS:						CONNECTED kVA PER PHASE	**4**	**4**	**3**	CONNECTED TOTAL kVA					**11.0**	
						CONNECTED AMPS PER PHASE	**35**	**35**	**25**	CONNECTED AVERAGE AMPS PER PHASE					**31**	

NEC DIVERSIFIED LOAD CALCULATIONS

LIGHTING ALL OTHER LOADS @100%= **11 kVA** DIVERSIFIED TOTAL kVA = **11**
RECEPTACLES 25% OF LARGEST MOTOR= AVERAGE AMPS PER PHASE = **31**

DFCM APPROVAL STAMP

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730 pacific avenue
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801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

Mark I. Payne Building
1300 East Center St. Provo, Utah
Utah State Hospital Consolidation
BID DOCUMENTS - 09/12/2012

SEAL
LICENSED PROFESSIONAL ENGINEER
No. 7057918
CARLTON A. GETZ
STATE OF UTAH
09/12/2012

DATE	STATUS

	DATE	REVISION
2	9/27/12	ADD#2

PROJECT NUMBER 11111
FILE 11111 USH Payne
DRAWN BY WRT
CHECKED BY CAG
SCALE

PANEL SCHEDULES

EP603

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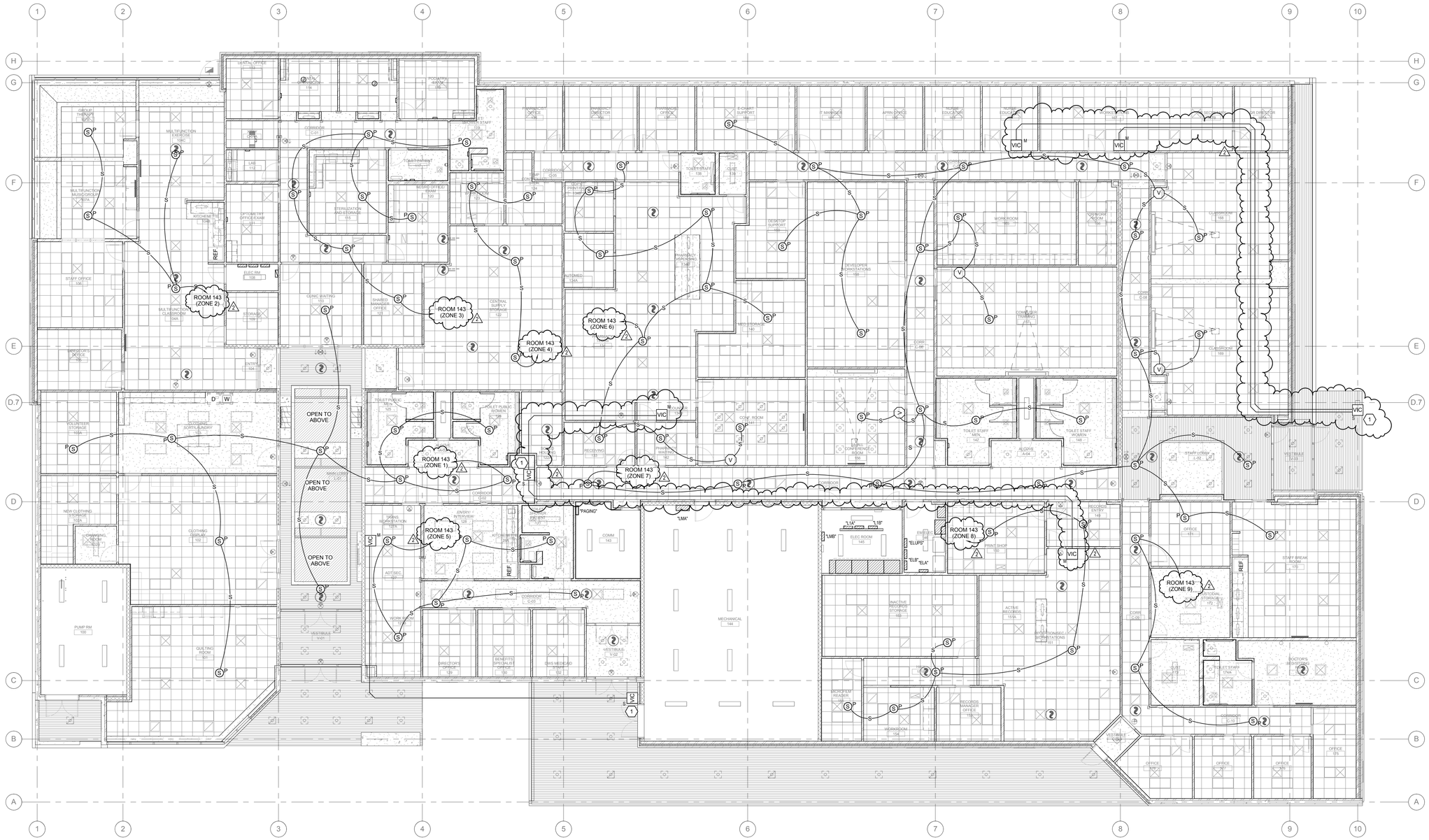

A1 LEVEL 01 AUDIO VISUAL PLAN

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

9/27/2012 10:49:23 AM

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FFKR ARCHITECTS

bogue building
730 pacific avenue
salt lake city
Utah 84104

801-521-6186
801-539-1916
ffkr.com

GENERAL SHEET NOTES

SHEET KEYNOTES

1 PROVIDE AIPHONE JK SERIES VIDEO INTERCOM.

SPECTRUM ENGINEERS

324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

Mark I. Payne Building
1300 East Center St. Provo, Utah
Utah State Hospital Consolidation
BID DOCUMENTS - 09/12/2012

SEAL

LICENSED PROFESSIONAL ENGINEER
No. 7057918
CARLTON A. GETZ
STATE OF UTAH
09/12/2012

DATE	STATUS

	DATE	REVISION
1	9/20/12	ADD #1
2	9/27/12	ADD#2

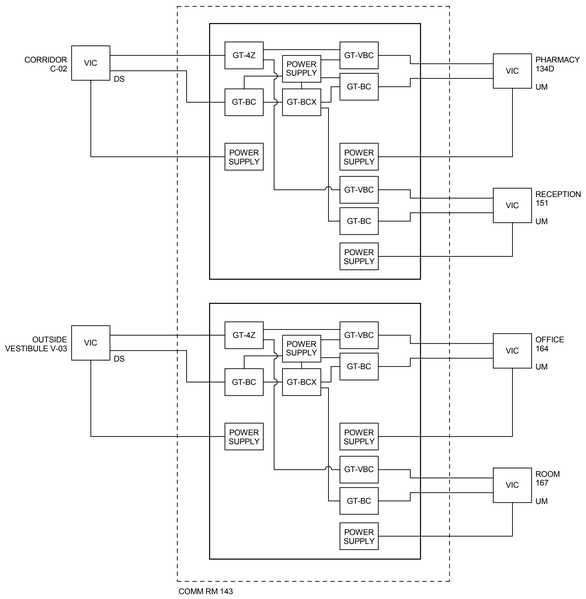
PROJECT NUMBER	11111
FILE	11111 USH Payne
DRAWN BY	WRT
CHECKED BY	CAG
SCALE	1/8" = 1'-0"

LEVEL 1 AUDIO VISUAL PLAN

EJ101

PAGING SYSTEM EQUIPMENT LIST

SYMBOL	DESCRIPTION	QUANTITY	ACCEPTABLE TYPES
AMP	70V AMPLIFIER, PROVIDE MULTIPLE AMPS AS INDICATED	A/R	BOGEN TPU-35B, 60B, 100B, 250 WALL MOUNTED
PAGE CONT	PAGING CONTROLLER W/ TIM, CPU, AND ZPM MODULES AS INDICATED	1	BOGEN PCM-2000 SYSTEM
S	8" SPEAKER, RECESSED, CEILING MOUNTED	OFP	SEE SPECIFICATIONS
LD	LINE DISTRIBUTION AMPLIFIER	OFP	RADIO DESIGN LABS RU-DA4D W/ POWER SUPPLY
XFMR	600 OHM/10K TRANSFORMER	OFP	BOGEN WMT1A
	LINE SIGNAL CABLE	A/R	1 TWISTED PAIR, SHIELDED, 18 GAUGE

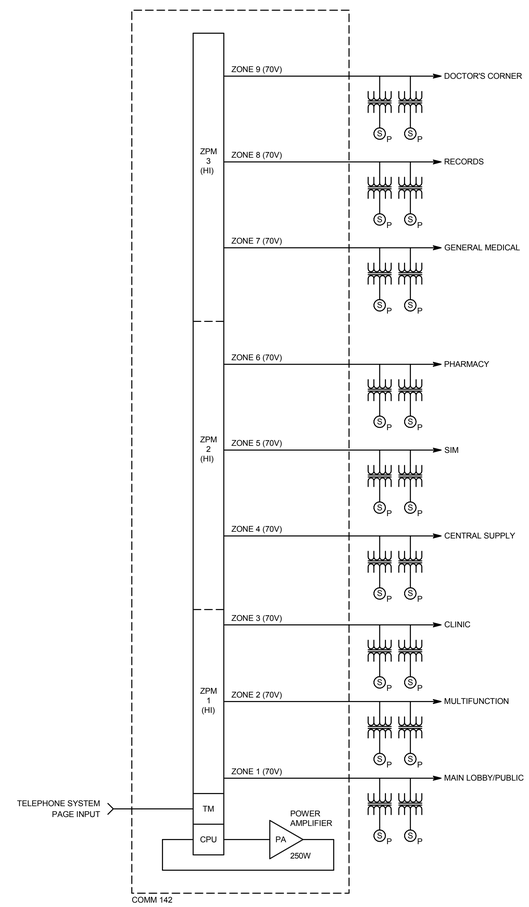


NOTES:

1. PROVIDE AIPHONE GT SERIES SYSTEM FOR BOTH SYSTEM LOCATIONS.
2. PROVIDE 1 EA. REMOTE DOOR ENTRY STATION ("DS"). PROVIDE FOR EACH ENTRY STATION, THE 3 MODULE BACK BOX, GF-3B, AND FRONT FRAME, GT-3F, WITH THESE 3 MODULE SECTIONS: 1 EA. GT-DA-L, 1 EA. GT-DP-L, 1 EA. GT-VA, 1 EA. GT-VP, 1 EA. GT-SW, 1 EA. GT-4P.
3. PROVIDE 2 EA UNIT MASTERS ("UM"). PROVIDE MODEL GT-2C W/ 1-GANG JUNCTION BOX @48" AFF TO THE BOTTOM. COORDINATE JUNCTION BOX ORIENTATION WITH INTERCOM INSTALLER. LOCATE POWER SUPPLIES AND EXTENSION MODULES IN THE CLOSEST COMM ROOM.
4. PROVIDE POWER SUPPLY MODEL PS-2420UL AS REQUIRE BY MANUFACTURER.

A2 DOOR ENTRY VIDEO INTERCOM SYSTEM DIAGRAM

SCALE: NTS



A4 OVERHEAD PAGING SYSTEM DIAGRAM

SCALE: NTS

PAGING ZONES

ZONES	DESCRIPTION	LOCATION
ZONE 1	MAIN LOBBY/PUBLIC	COMM 142
ZONE 2	MULTIFUNCTION	COMM 142
ZONE 3	CLINIC	COMM 142
ZONE 4	CENTRAL SUPPLY	COMM 142
ZONE 5	SIM	COMM 142
ZONE 6	PHARMACY	COMM 142
ZONE 7	GENERAL MEDICAL	COMM 142
ZONE 8	RECORDS	COMM 142
ZONE 9	DOCTOR'S CORNER	COMM 142

NOTES:

1. ZONE AMPLIFIERS ARE TO BE INSTALLED IN THE DESIGNATED COMM ROOMS ON THE APPROPRIATE FLOORS.
2. ALL SPEAKERS IN CORRIDORS AND LARGE AREAS ARE TO BE TAPPED AT 2 WATTS.
3. CONFIGURE SYSTEM FOR 10 ZONES AND "ALL CALL" TO ALL SPEAKERS, AS INDICATED.
4. CONNECT TO SPEAKER ZONE HOME RUNS AS SHOWN IN DRAWINGS. USING MULTIPLE HOME RUN CABLES PRESERVES THE POTENTIAL, IF DESIRED IN THE FUTURE, TO PROVIDE FOR SELECTIVE PAGE ZONES.
5. AMPLIFIERS IN COMM ROOMS ARE TO BE WALL MOUNTED AND NOT SHELF MOUNTED.

DFCM APPROVAL STAMP

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f 801-539-1916
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SEAL
LICENSED PROFESSIONAL ENGINEER
No. 7057918
CARLTON A. GETZ
STATE OF UTAH
09/12/2012

DATE	STATUS

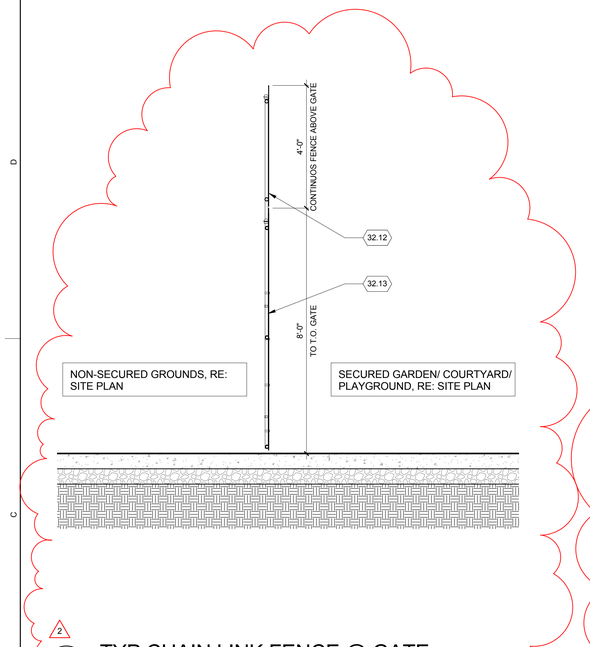
	DATE	REVISION
2	9/27/12	ADD#2

PROJECT NUMBER	11111
FILE	11111 USH Payne
DRAWN BY	Author
CHECKED BY	Checker
SCALE	1/8" = 1'-0"

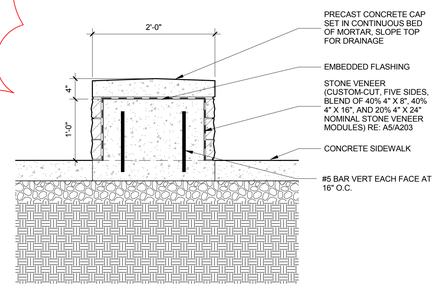
AUDIO VISUAL DIAGRAMS AND SCHEDULES

EJ601

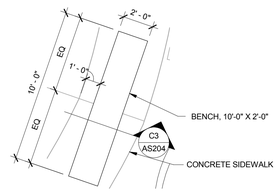
9/27/2012 10:49:24 AM



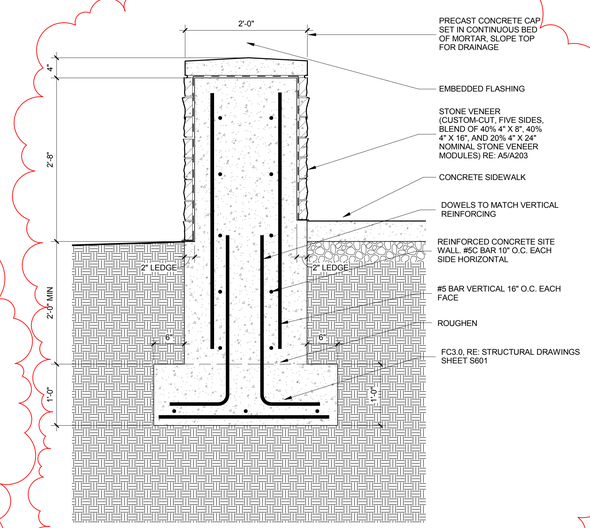
C1 TYP CHAIN LINK FENCE @ GATE
SCALE: 1/2" = 1'-0"



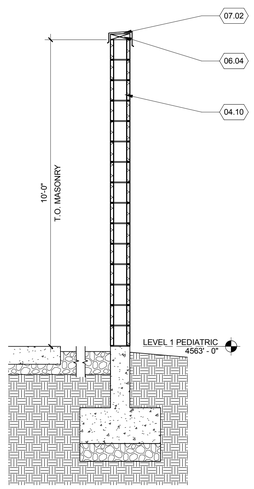
C3 SITE BENCH
SCALE: 1" = 1'-0"



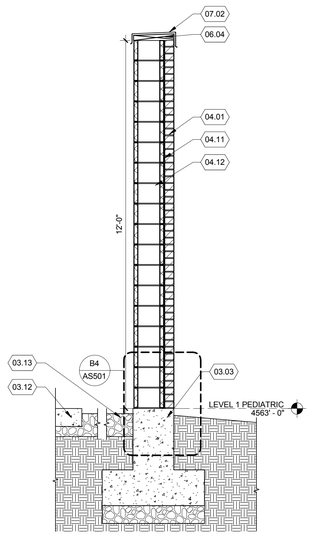
C4 SITE BENCH
SCALE: 1/4" = 1'-0"



A2 STONE SITE WALL
SCALE: 1" = 1'-0"



A4 TRANSFORMER ENCLOSURE WALL SECTION
SCALE: 1/2" = 1'-0"



A5 EQUIPMENT ENCLOSURE WALL SECTION
SCALE: 1/2" = 1'-0"

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REFERENCE NOTES

03.03	CONCRETE FOOTING, RE: STRUCTURAL DRAWINGS
03.12	CONCRETE EQUIPMENT PAD
03.13	GRAVEL FILL
03.14	PRECAST CONCRETE CAP SET IN CONTINUOUS BED OF MORTAR, SLOPE TOP FOR DRAINAGE
04.01	BRICK VENEER
04.04	EMBEDDED FLASHING
04.10	8"X8"X16" CMU
04.11	CAVITY AIR SPACE, DO NOT FILL WITH GROUT
04.12	12" X 8" X 16" CMU
04.45	STONE VENEER (CUSTOM-CUT, FIVE SIDES, BLEND OF 40% 4" X 8", 40% 4" X 16", AND 20% 4" X 24" NOMINAL STONE VENEER MODULES) RE: A5/A203
06.04	WOOD BLOCKING
07.02	METAL FLASHING
07.22	EMBEDDED FLASHING
32.01	CONCRETE SIDEWALK
32.12	CHAIN LINK FENCE
32.13	GATE, RE: EXTERIOR GATE SCHEDULE ON SHEET A610

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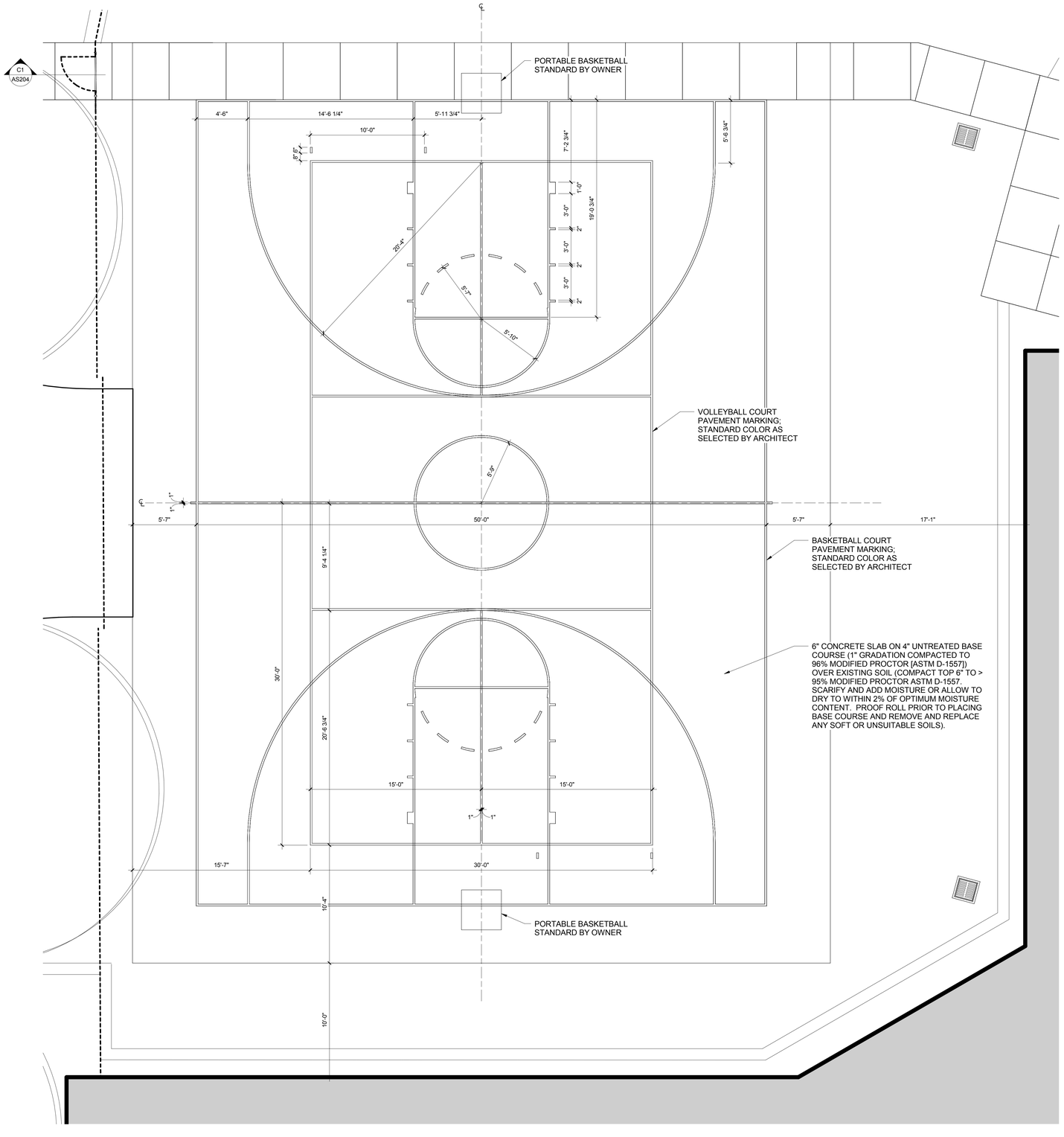
	DATE	REVISION
1	2012.09.20	ADD 1
2	2012.09.27	ADD 2

PROJECT NUMBER 11111
FILE USH-SITE

SITE DETAILS

AS204

9/27/2012 12:39:26 PM



C4 ENLARGED SPORTS COURT PLAN

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

0" 4' 8'

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REFERENCE NOTES

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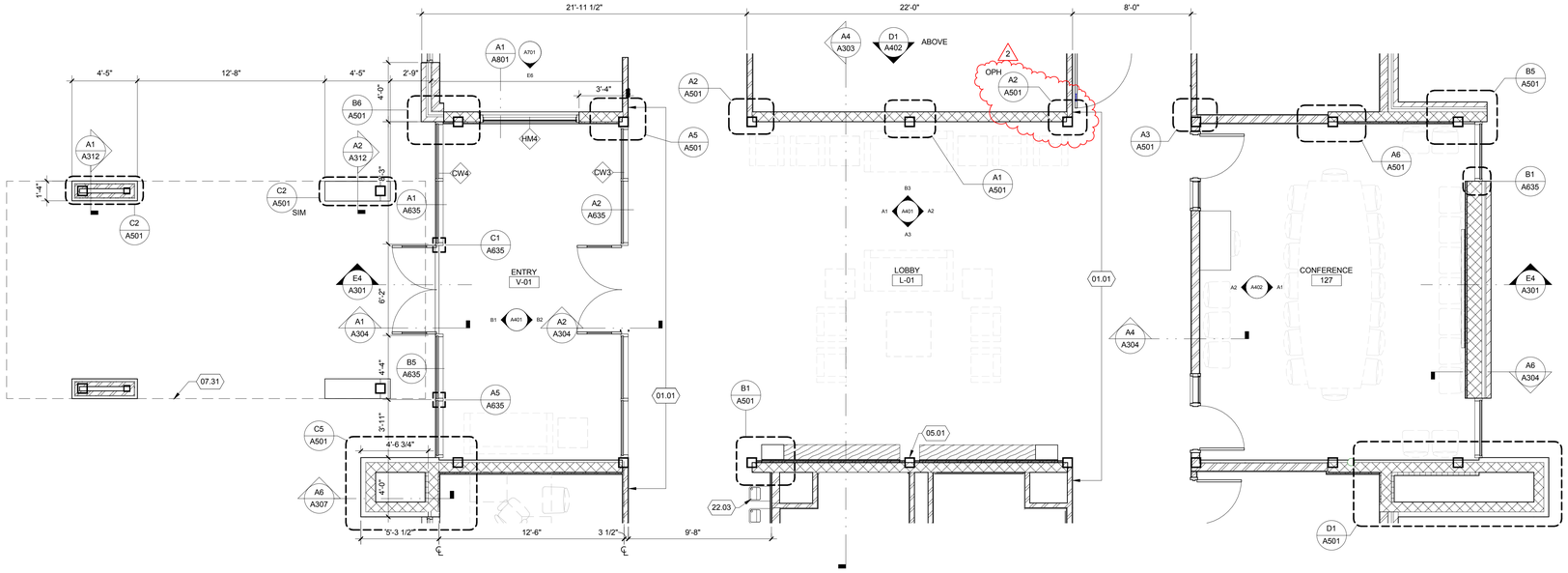
SITE DETAILS

1

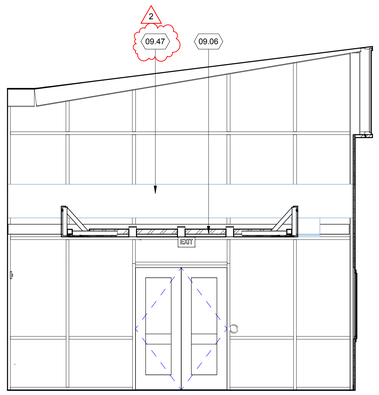
AS205

9/27/2012 12:40:43 PM



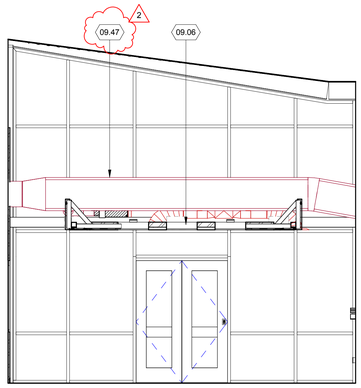
D2 ENLARGED LOBBY PLAN

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



B1 ENTRY WEST

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



B2 ENTRY EAST

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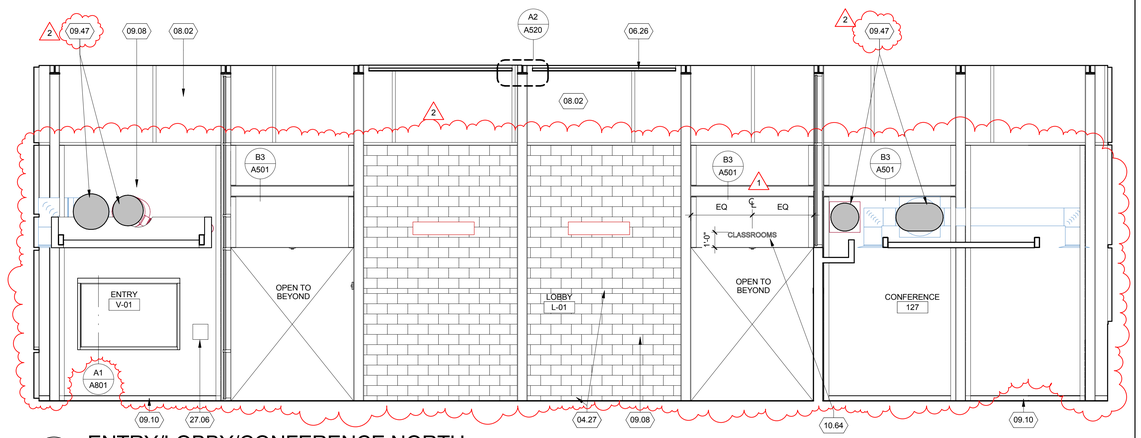
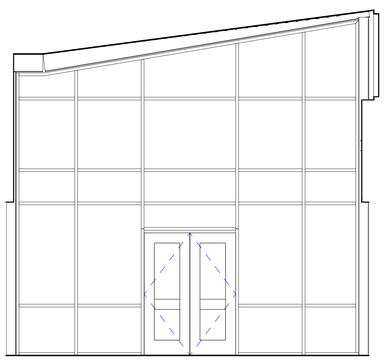


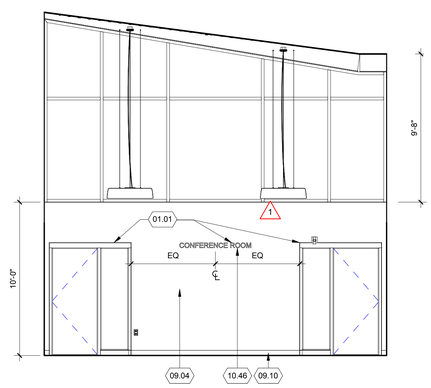
B3 ENTRY/LOBBY/CONFERENCE NORTH

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



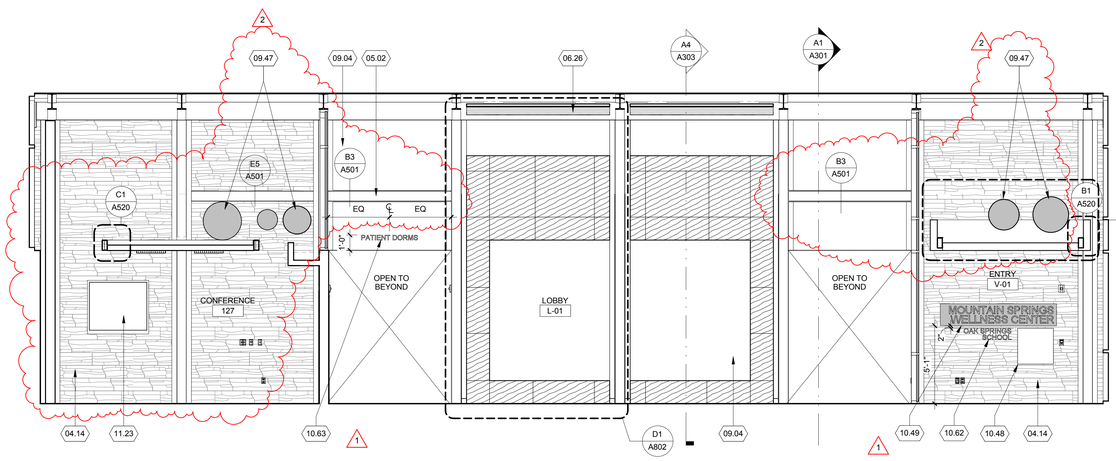
A1 LOBBY WEST

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



A2 LOBBY EAST

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



A3 ENTRY/LOBBY/CONFERENCE SOUTH

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

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REFERENCE NOTES

01.01	ALIGN
04.14	STONE VENEER, RE: A6/A203 FOR PATTERN
04.27	8" X 4" X 16" CMU COURSE, B.O. UNIT AT BASE & 7'-0" AFF
05.01	STRUCTURAL COLUMN, RE: STRUCTURAL DRAWINGS
05.02	STRUCTURAL BEAM, RE: STRUCTURAL DRAWINGS
06.26	WOOD CEILING SYSTEM PER SCHEDULE
07.31	LINE OF CANOPY ABOVE
08.02	ALUMINUM CURTAIN WALL SYSTEM
09.04	PAINTED GYPSUM BOARD
09.06	CEILING PER REFLECTED CEILING PLANS
09.08	CMU WALL
09.10	WALL BASE PER FINISH SCHEDULE
09.47	PAINTED EXPOSED DUCT, RE: FINISH LEGEND FOR COLOR
10.46	SIGN - SEE DETAIL C2/AF503
10.48	SIGN - SEE DETAIL D1/AF503
10.49	SIGN - SEE DETAIL C3/AF503
10.62	SIGN - SEE DETAIL C4/AF503
10.63	SIGN - SEE DETAIL B1/AF503
10.64	SIGN - SEE DETAIL C1/AF503
11.23	TELEVISION/MONITOR BY OWNER, PROVIDE BACKING.
22.03	DRINKING FOUNTAIN, RE: PLUMBING DRAWINGS
27.06	FIRE ALARM PANEL, RE: ELECTRICAL DRAWINGS

GENERAL NOTES

1. ALL DIMENSIONS SHOWN ARE TO FINISH FACE. CLEARANCES AND OTHER DIMENSIONS SHOWN IN 'FIXTURE & ACCESSORY MOUNTING SCHEDULE' ARE ABSOLUTE. SHOULD PLAN DIMENSIONS OR FIELD CONDITIONS RESULT IN INADEQUATE CLEARANCE, NOTIFY ARCHITECT BEFORE PROCEEDING WITH WORK.
2. ALL GROUT AT WET LOCATIONS SHALL BE EPOXY GROUT.
3. CENTER TRANSITION BETWEEN THRESHOLD AND TILE AT RESTROOMS ON DOOR IN CLOSED POSITION.
4. CENTER MIRROR ON SINKS, TYP.
5. SEE SPECIFICATIONS FOR ALL OWNER-FURNISHED, OWNER-INSTALLED TOILET ACCESSORIES. CONTRACTOR IS TO PROVIDE BACKING FOR ALL TOILET ACCESSORIES.
6. FURNITURE PROVIDED BY OWNER, SHOWN DASHED FOR INFORMATION ONLY.
7. ACCENT TILES ON WALLS SHOWN SHADED, RE: AF401 FOR WALL ACCENT TILE COLOR LOCATIONS.
8. PROVIDE HOSE BIB AND ACCESS PANEL BELOW SINK AT ALL RESTROOMS.
9. ALL WHITEBOARDS TO BE MOUNTED 3'-0" AFF AND CENTERED ON WALL, WHERE APPLICABLE.

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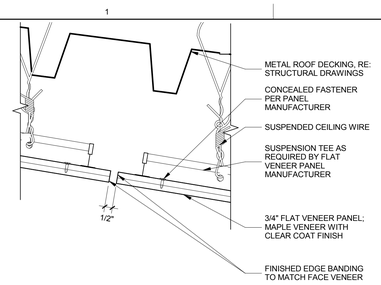
1	20.SEP.12	ADD 1
2	27.SEP.12	ADD 2

PROJECT NUMBER 11111
FILE 11111 USH Pediatric.rvt

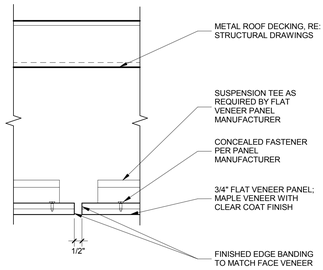
ENLARGED LOBBY PLAN & ELEVATIONS

A401

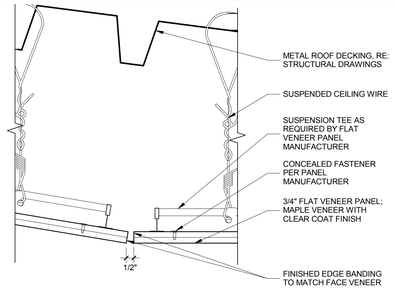
9/27/2012 11:50:41 AM



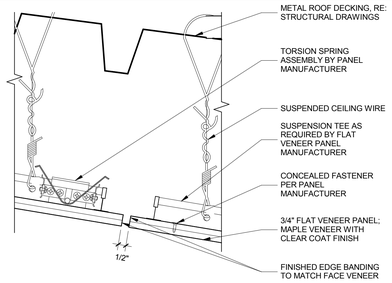
E1 FLAT PANEL REVEAL DETAIL
SCALE: 3" = 1'-0"



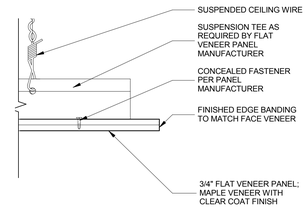
E2 FLAT PANEL REVEAL DETAIL
SCALE: 3" = 1'-0"



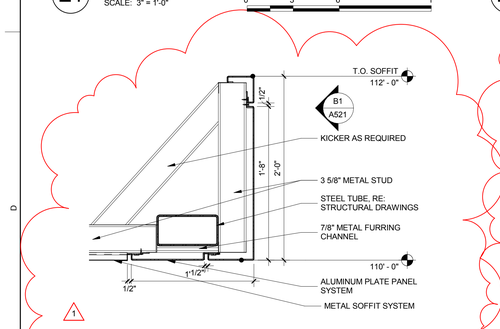
E3 FLAT PANEL REVEAL DETAIL
SCALE: 3" = 1'-0"



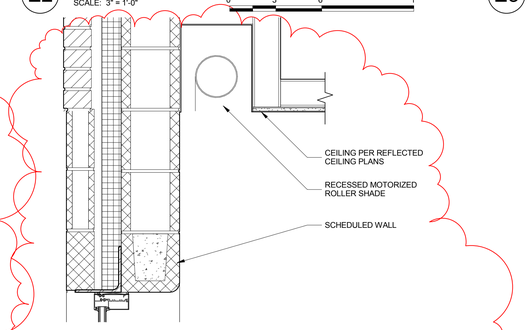
E5 FLAT PANEL REMOVABLE DETAIL
SCALE: 3" = 1'-0"



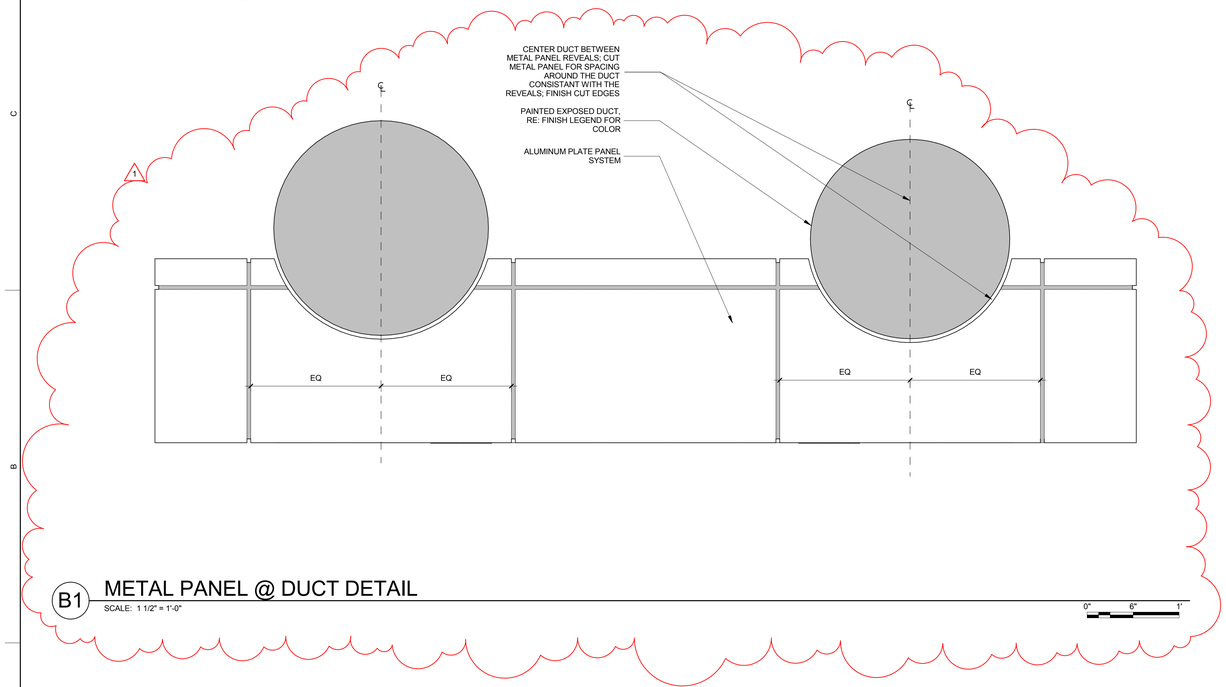
E6 FLAT PANEL EDGE DETAIL
SCALE: 3" = 1'-0"



D1 EW EDGE @ VESTIBULE CLOUD
SCALE: 1 1/2" = 1'-0"



D2 RECESSED MOTORIZED ROLLER SHADE
SCALE: 1 1/2" = 1'-0"



B1 METAL PANEL @ DUCT DETAIL
SCALE: 1 1/2" = 1'-0"

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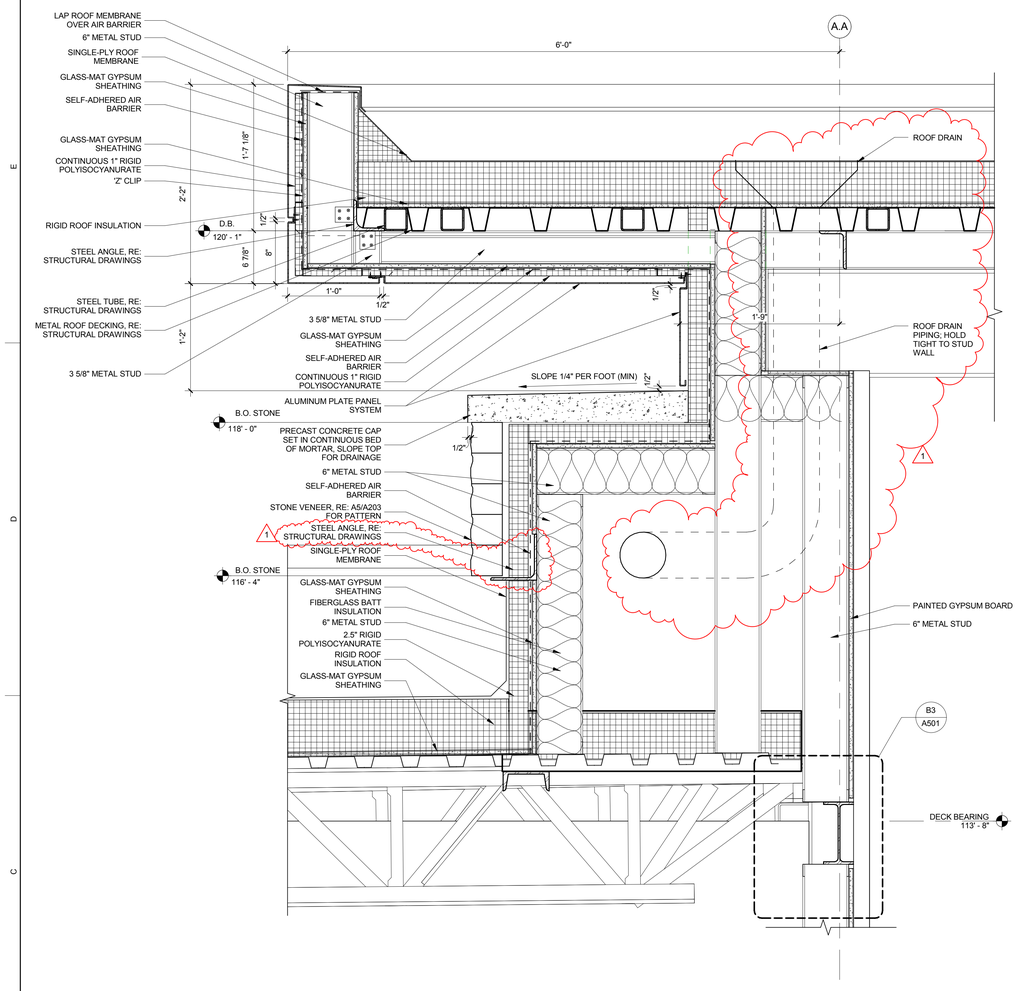
1	27.SEP.12	ADD 2

PROJECT NUMBER 11111
FILE 11111 USH Pediatric.rvt

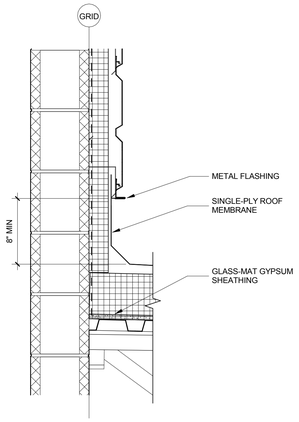
CEILING DETAILS

A521

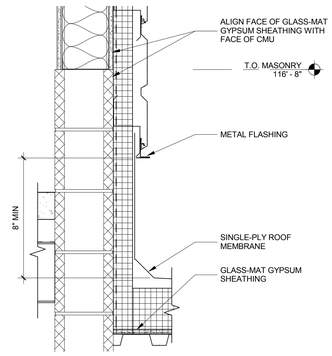
9/27/2012 1:26:57 PM



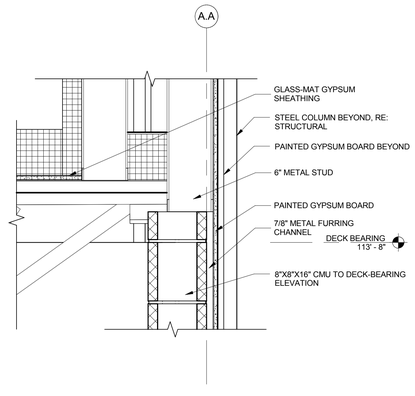
C1 LOW ROOF EDGE @ LOBBY SOUTH WALL
SCALE: 1 1/2" = 1'-0"



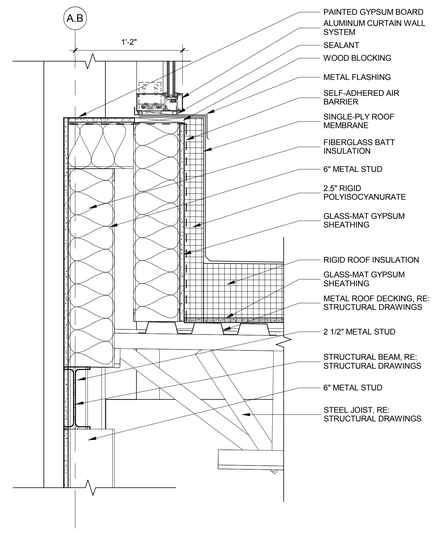
D4 LOW ROOF TO CMU W/ METAL PANEL
SCALE: 1 1/2" = 1'-0"



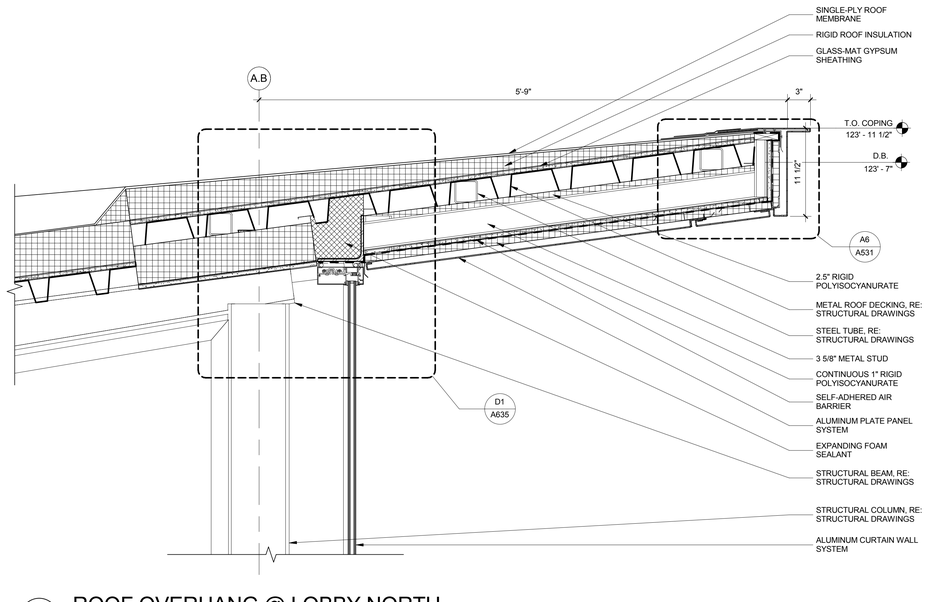
D6 LOW ROOF TO STUD W/ METAL PANEL
SCALE: 1 1/2" = 1'-0"



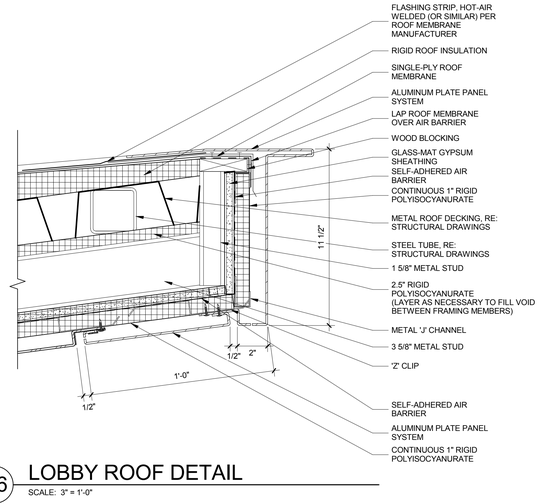
B4 CMU TO STUD @ LOBBY SOUTH WALL
SCALE: 1 1/2" = 1'-0"



B6 LOW ROOF EDGE @ LOBBY NORTH WALL
SCALE: 1 1/2" = 1'-0"



A1 ROOF OVERHANG @ LOBBY NORTH
SCALE: 1 1/2" = 1'-0"



A6 LOBBY ROOF DETAIL
SCALE: 3" = 1'-0"

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1	27.SEP.12	ADD 2

PROJECT NUMBER 11111
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ROOF DETAILS

A531

9/27/2012 12:09:36 PM

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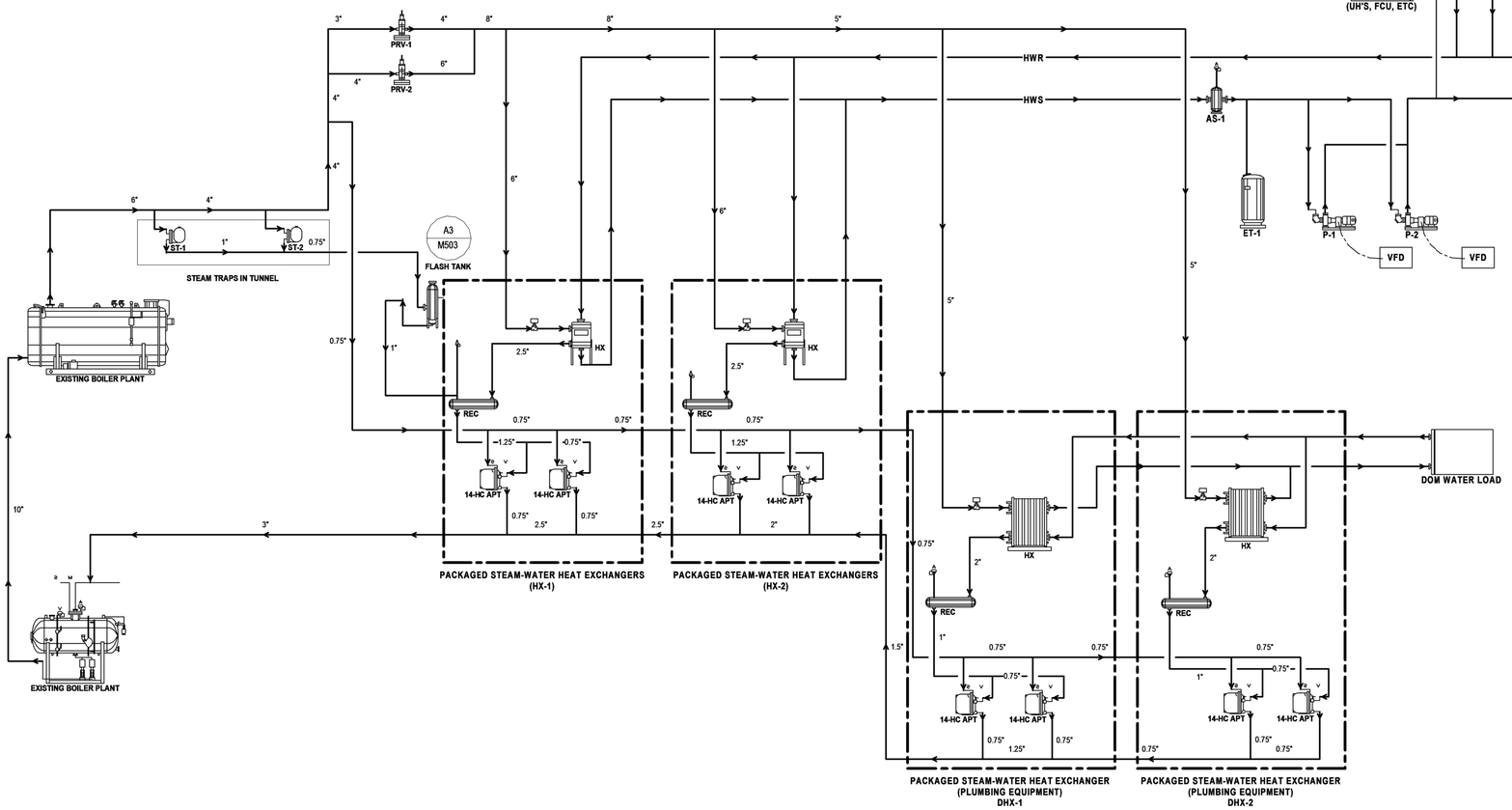
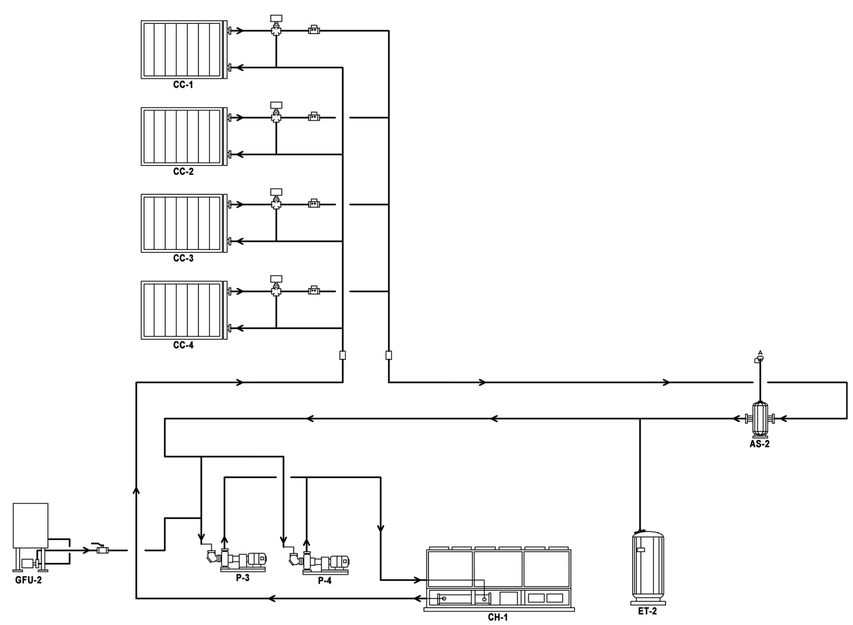
CONSULTING ENGINEERS
Salt Lake City - Logan - St. George - Tremonton
330 South 300 East 801.530.3148 T
Salt Lake City, UT 84111 801.530.3150 F
VBF4 Project Number: 11542



B2 / M701 HOT WATER PIPING SCHEMATIC
NO SCALE



A5 / M701 CHILLED WATER PIPING SCHEMATIC
NO SCALE

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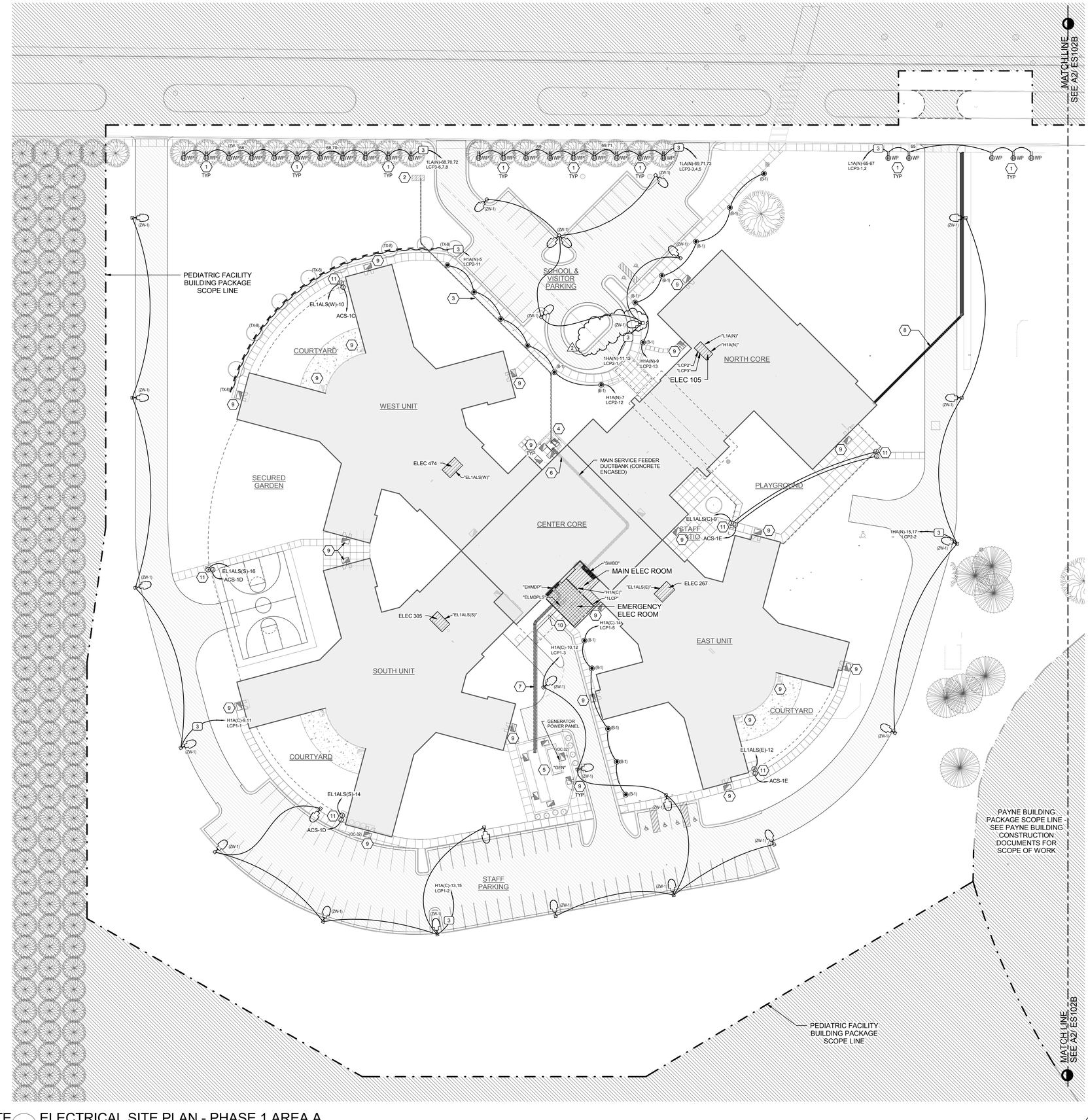
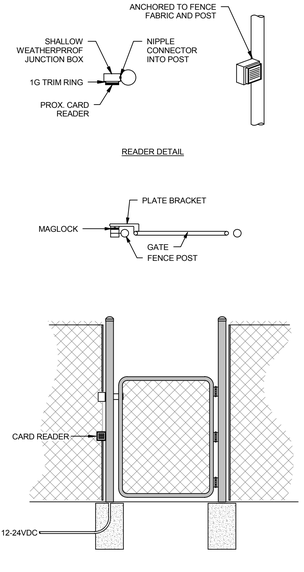
PROJECT NUMBER 11111
FILE

MECHANICAL SCHEMATICS

M701

9/27/2012 11:29:11 AM





A1 CARD READER ACCESS GATE
SCALE: NTS

A2 ELECTRICAL SITE PLAN - PHASE 1 AREA A
SCALE: 1" = 30'-0"

0 15' 30' 60'

TRUE PLAN

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SHEET KEYNOTES

1. PROVIDE GROUND MOUNTED RECEPTACLE WITH WEATHERPROOF ENCLOSURE FOR TREE LIGHTING. MOUNT RECEPTACLE TO WOOD BLOCK SET INTO GROUND. COORDINATE EXACT LOCATION WITH LANDSCAPER PRIOR TO ROUGH-IN. PROVIDE #10 AWG CONDUCTORS FOR TREE LIGHTING BRANCH CIRCUITS.
2. EXISTING CAMPUS LOOP SECTIONALIZER SWITCH. PROVIDE NEW MEDIUM VOLTAGE CABLE FROM CAMPUS LOOP SECTIONALIZER TO NEW "PEDIATRIC" BUILDING TRANSFORMER LOCATION.
3. PROVIDE (1) 6" CONCRETE ENCASED DUCT BANK FOR MEDIUM VOLTAGE CABLE FROM EXISTING SECTIONALIZER TO NEW TRANSFORMER LOCATION.
4. NEW "PEDIATRIC" BUILDING TRANSFORMER.
5. NEW "PEDIATRIC" BUILDING EMERGENCY GENERATOR.
6. PROVIDE (8) 4" CONDUITS IN CONCRETE ENCASED DUCT BANK FOR BUILDING SECONDARY SERVICE CONDUCTORS.
7. PROVIDE (6) 4" CONDUITS IN CONCRETE ENCASED DUCT BANK FOR BUILDING EMERGENCY SERVICE CONDUCTORS.
   a. PROVIDE (1) SINGLE MODE AND (1) MULTIMODE FIBER OPTIC CABLE FROM MAIN COMMUNICATIONS ROOM IN ADMINISTRATION BUILDING TO NEW BUILDING MAIN DISTRIBUTION FACILITY.
   b. PROVIDE (5) COAX CABLES FROM CABLE TELEVISION DISTRIBUTION FACILITY IN ADMINISTRATION BUILDING TO NEW BUILDING MAIN DISTRIBUTION FACILITY.
   c. PROVIDE (1) 50-PAIR COPPER TELECOMMUNICATIONS CABLE FROM TELECOM HUB IN ADMINISTRATION BUILDING TO NEW BUILDING MAIN DISTRIBUTION FACILITY.
8. PROVIDE THE FOLLOWING SERVICES TO THE NEW "PEDIATRIC" BUILDING VIA THE NEW UTILITY TUNNEL EXTENSION:
9. SEE "EL" SERIES SHEETS FOR CIRCUITING AND ADDITIONAL INFORMATION.
10. PROVIDE FEEDER FOR EMERGENCY STANDBY GENERATOR POWER PANEL BOARD IN GENERATOR ENCLOSURE.
11. CARD READER ACCESS GATE. PROVIDE POWER AND ACCESS CONTROL DEVICES. SEE DETAIL A1 ON THIS SHEET.

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SEAL
LICENSED PROFESSIONAL ENGINEER
No. 7057918
CARLTON A. GETZ
STATE OF UTAH
09/12/2012

DATE	STATUS

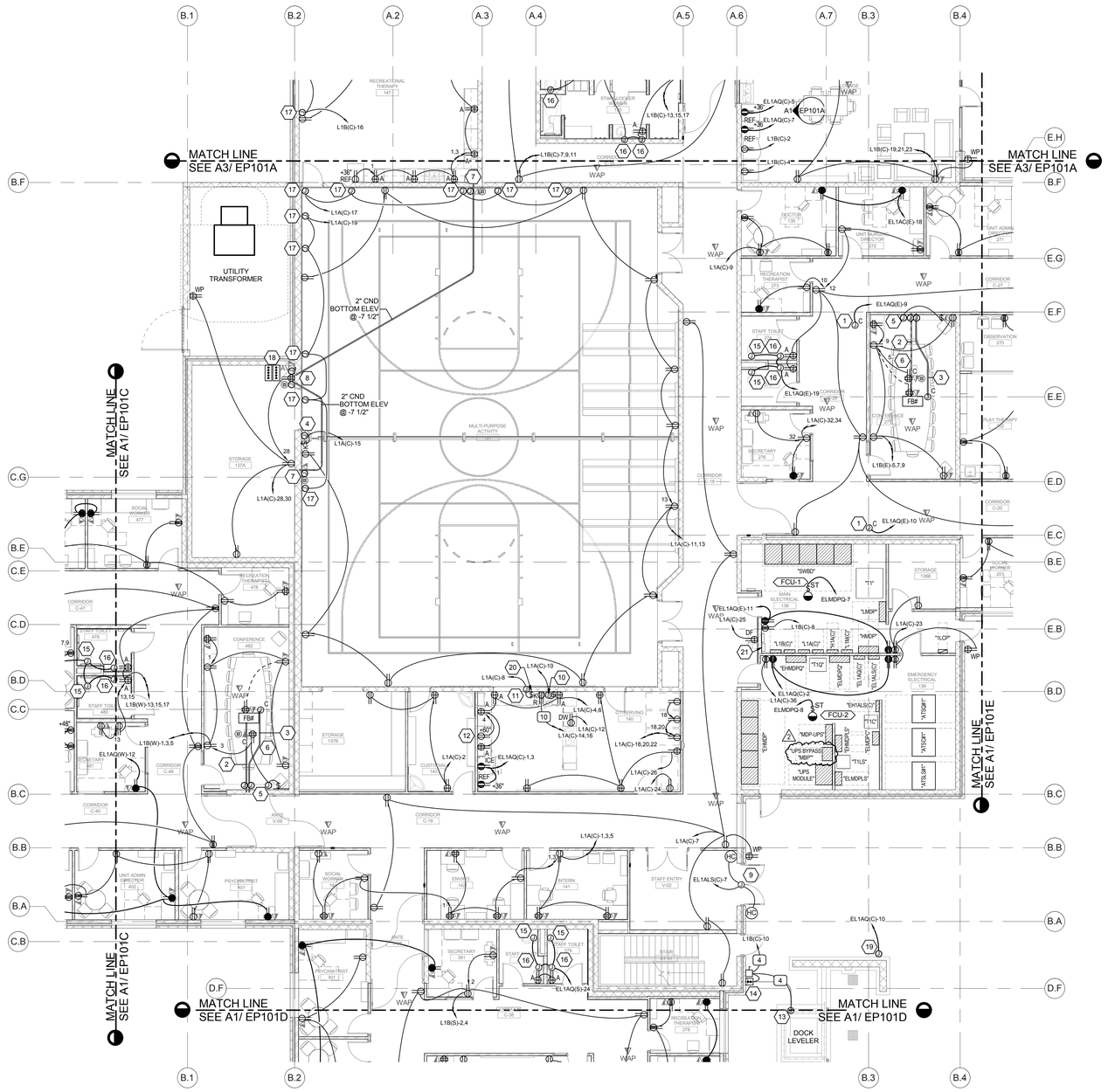
	DATE	REVISION
1	9/20/12	ADD #1
2	9/27/12	ADD#2

PROJECT NUMBER	11111
FILE	USH-SITE
DRAWN BY	WRT
CHECKED BY	CAG
SCALE	As indicated

SITE ELECTRICAL PLAN PHASE 1 AREA A

ES102A

9/27/2012 10:38:32 AM



A3 LEVEL 01 POWER PLAN (AREA B)

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

0 4' 8' 16'

TRUE PLAN

DFCM APPROVAL STAMP

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GENERAL SHEET NOTES

1 LOCATIONS OF MECHANICAL EQUIPMENT AND DEVICES SHOWN IS APPROXIMATE. COORDINATE EXACT LOCATIONS WITH MECHANICAL INSTALLER PRIOR TO ELECTRICAL CONNECTION ROUGH-IN.

2 REFER TO ELECTRICAL EQUIPMENT SCHEDULE FOR CONDUIT AND CONDUCTOR SIZE REQUIREMENTS FOR ALL MECHANICAL EQUIPMENT CONNECTIONS.

3 PROVIDE DEDICATED NEUTRAL CONDUCTOR FOR EACH BRANCH CIRCUIT. DO NOT PROVIDE SHARED OR COMMON NEUTRALS.

SHEET KEYNOTES

1 JUNCTION BOX MOUNTED IN ACCESSIBLE LOCATION ABOVE CEILING FOR VAV CONTROL POWER.

2 PROVIDE (1) 2" CONDUIT FROM FLOOR BOX TO FLUSH WALL MOUNTED JUNCTION BOX.

3 PROVIDE (1) 2" CONDUIT FROM PROJECTOR TO FLUSH WALL MOUNTED JUNCTION BOX.

4 JUNCTION BOX FOR POWER CONNECTION TO GYM DIVIDER CURTAIN. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT WITH EQUIPMENT IN FIELD PRIOR TO ROUGH-IN. MOUNT CONTROLS AT STANDARD SWITCH HEIGHT IN LOCATION SHOWN.

5 JUNCTION BOX FOR MOTORIZED SCREEN. COORDINATE EXACT LOCATION WITH EQUIPMENT PRIOR TO ROUGH-IN.

6 CEILING MOUNTED RECEPTACLE AND TELE/DATA FOR PROJECTOR.

7 PROVIDE FLUSH WALL MOUNTED RECESSED JUNCTION BOX WITH CENTERLINE AT RECEPTACLE MOUNTING HEIGHT FOR A/V OUTLET. PROVIDE (1) 2" CONDUIT FROM JUNCTION BOX TO A/V CABINET IN STORAGE ROOM.

8 PROVIDE GYM A/V JUNCTION BOXES, TELE/DATA JACK, AND POWER RECEPTACLE IN LOCKABLE A/V CABINET IN STORAGE ROOM. COORDINATE EXACT MOUNTING HEIGHT WITH MILLWORK PRIOR TO ROUGH-IN.

9 JUNCTION BOX FOR POWER CONNECTION TO AUTODOOR. COORDINATE EXACT REQUIREMENTS WITH EQUIPMENT PRIOR TO ROUGH-IN.

10 POWER CONNECTION FOR EXHAUST HOOD. EXTEND CONDUIT AND CONTROL CONDUCTORS FROM EXHAUST HOOD TO EXHAUST FANS ON ROOF FOR INTERLOCK.

11 JUNCTION BOX FOR POWER CONNECTION TO OVERHEAD DOOR. COORDINATE EXACT REQUIREMENTS WITH EQUIPMENT PRIOR TO ROUGH-IN.

12 RECEPTACLE FOR MICROWAVE. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT WITH MILLWORK PRIOR TO ROUGH-IN.

13 POWER CONNECTION TO SERVICE DOCK-LIFT. COORDINATE EXACT LOCATION PRIOR TO ROUGH-IN.

14 PUSH-BUTTON CONTROLLER FOR DOCK-LIFT. PROVIDE CONTROL WIRING AS REQUIRED BY MANUFACTURER'S INSTALLATION INSTRUCTIONS.

15 JUNCTION BOX FOR CONNECTION TO SENSOR OPERATED TOILETS. COORDINATE REQUIREMENTS WITH EQUIPMENT PRIOR TO ROUGH-IN.

16 JUNCTION BOX FOR CONNECTION TO SENSOR OPERATED SINKS. COORDINATE REQUIREMENTS WITH EQUIPMENT PRIOR TO ROUGH-IN.

17 JUNCTION BOX FOR MOTORIZED MECHOSHADES. COORDINATE EXACT LOCATION WITH EQUIPMENT PRIOR TO ROUGH-IN.

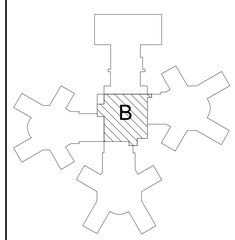
18 CONTROL SWITCH FOR MECHOSHADES LOCATED IN LOCKABLE CABINET. COORDINATE EXACT LOCATION WITH MILLWORK PRIOR TO ROUGH-IN.

19 JUNCTION BOX FOR POWER CONNECTION TO DRAIN HEAT TRACE. COORDINATE EXACT LOCATION WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.

20 COORDINATE KEYED SWITCH TYPE WITH OVERHEAD DOOR OPERATOR (KEY SWITCH 653-04/630/SCE).

21 GENERATOR ANNUNCIATOR PANEL.

KEY PLAN



PEDIATRIC FACILITY
1300 East Center St. Provo, Utah
UTAH STATE HOSPITAL CONSOLIDATION
BID DOCUMENTS - 09/12/2012

SEAL

LICENSED PROFESSIONAL ENGINEER
No. 7057918
CARLTON A. GETZ
STATE OF UTAH
09/12/2012

DATE	STATUS

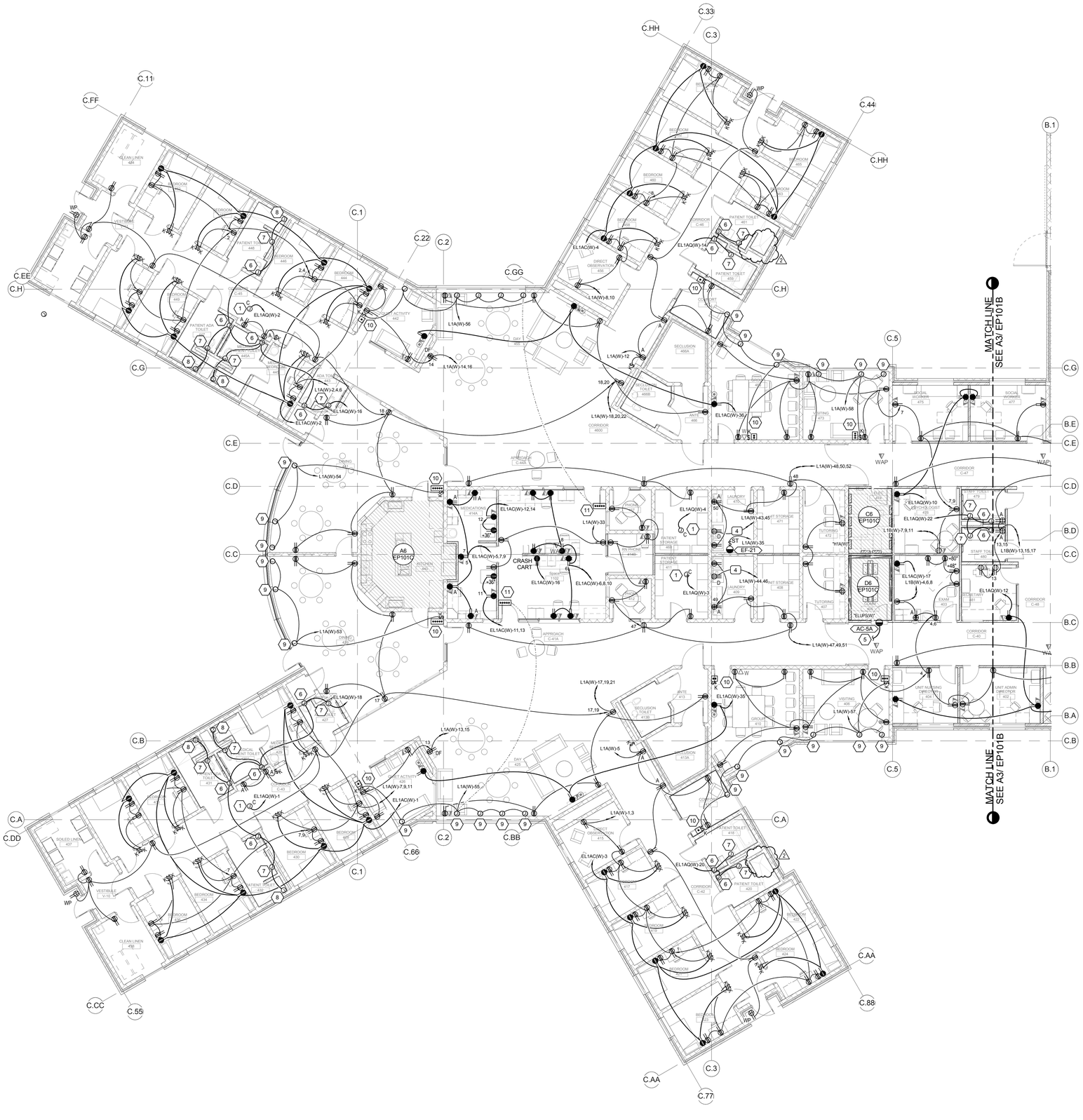
	DATE	REVISION
2	9/27/12	ADD#2

PROJECT NUMBER	11111
FILE	11111 USH Pediatric.rvt
DRAWN BY	WRT
CHECKED BY	CAG
SCALE	1/8" = 1'-0"

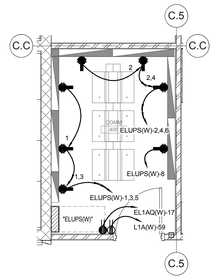
LEVEL 1 POWER PLAN AREA B (CENTER)

EP101B

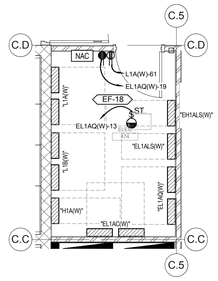
9/27/2012 10:43:29 AM



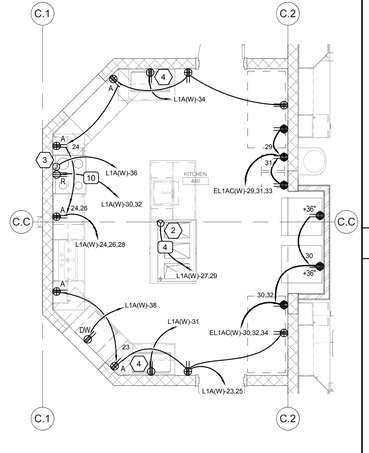
A1 LEVEL 01 POWER PLAN (AREA C)
SCALE: 1/8" = 1'-0"



D6 ENLARGED COMM 405
SCALE: 1/4" = 1'-0"



C6 ENLARGED ELEC 472
SCALE: 1/4" = 1'-0"



A6 ENLARGED KITCHEN (WEST)
SCALE: 1/4" = 1'-0"

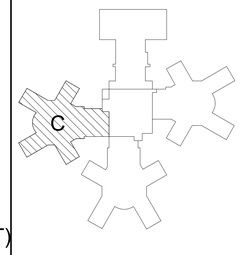
GENERAL SHEET NOTES

1. LOCATIONS OF MECHANICAL EQUIPMENT AND DEVICES SHOWN IS APPROXIMATE. COORDINATE EXACT LOCATIONS WITH MECHANICAL INSTALLER PRIOR TO ELECTRICAL CONNECTION ROUGH-IN.
2. REFER TO ELECTRICAL EQUIPMENT SCHEDULE FOR CONDUIT AND CONDUCTOR SIZE REQUIREMENTS FOR ALL MECHANICAL EQUIPMENT CONNECTIONS.
3. PROVIDE DEDICATED NEUTRAL CONDUCTOR FOR EACH BRANCH CIRCUIT. DO NOT PROVIDE SHARED OR COMMON NEUTRALS.

SHEET KEYNOTES

1. JUNCTION BOX MOUNTED IN ACCESSIBLE LOCATION ABOVE CEILING FOR VAV CONTROL POWER.
2. PROVIDE POWER CONNECTION TO HOT FOOD WELL. COORDINATE EXACT REQUIREMENTS WITH EQUIPMENT PRIOR TO ROUGH-IN.
3. PROVIDE JUNCTION BOX FOR POWER CONNECTION TO RANGE HOOD (SUPPLIED BY OWNER). INTERLOCK FAN CONTROL WITH BOOSTER EXHAUST FAN KEF-3 (ON ROOF) FOR SIMULTANEOUS OPERATION.
4. RECEPTACLE FOR MICROWAVE. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT WITH MILLWORK PRIOR TO ROUGH-IN.
5. CONNECT TO ASSOCIATED OUTDOOR CONDENSING UNIT LOCATED ON ROOF. PROVIDE CONDUIT AND CONTROL WIRING AS REQUIRED BY MANUFACTURER'S INSTALLATION INSTRUCTIONS.
6. JUNCTION BOX FOR CONNECTION TO SENSOR OPERATED SINKS. COORDINATE REQUIREMENTS WITH EQUIPMENT PRIOR TO ROUGH-IN.
7. JUNCTION BOX FOR CONNECTION TO SENSOR OPERATED TOILETS. COORDINATE REQUIREMENTS WITH EQUIPMENT PRIOR TO ROUGH-IN.
8. JUNCTION BOX FOR CONNECTION TO BRAINWAVE SHOWER. COORDINATE REQUIREMENTS WITH EQUIPMENT PRIOR TO ROUGH-IN.
9. JUNCTION BOX FOR MOTORIZED MECHOSHADES. COORDINATE EXACT LOCATION WITH EQUIPMENT PRIOR TO ROUGH-IN.
10. KEYED AND BUTTON CONTROL SWITCHES FOR CONTROLS TO MECHOSHADES IN THIS ROOM. MOUNT SWITCHES ADJACENT TO ROOM LIGHT SWITCHES.
11. CONTROL SWITCH FOR CONTROLS TO MECHOSHADES IN DAY ROOM. MOUNT SWITCH ADJACENT TO ROOM LIGHT SWITCHES.

KEY PLAN



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PEDIATRIC FACILITY
1300 East Center St. Provo, Utah
UTAH STATE HOSPITAL CONSOLIDATION
BID DOCUMENTS - 09/12/2012

SEAL: LICENSED PROFESSIONAL ENGINEER No. 7057918 CARLTON A. GETZ STATE OF UTAH
09/12/2012

DATE	STATUS

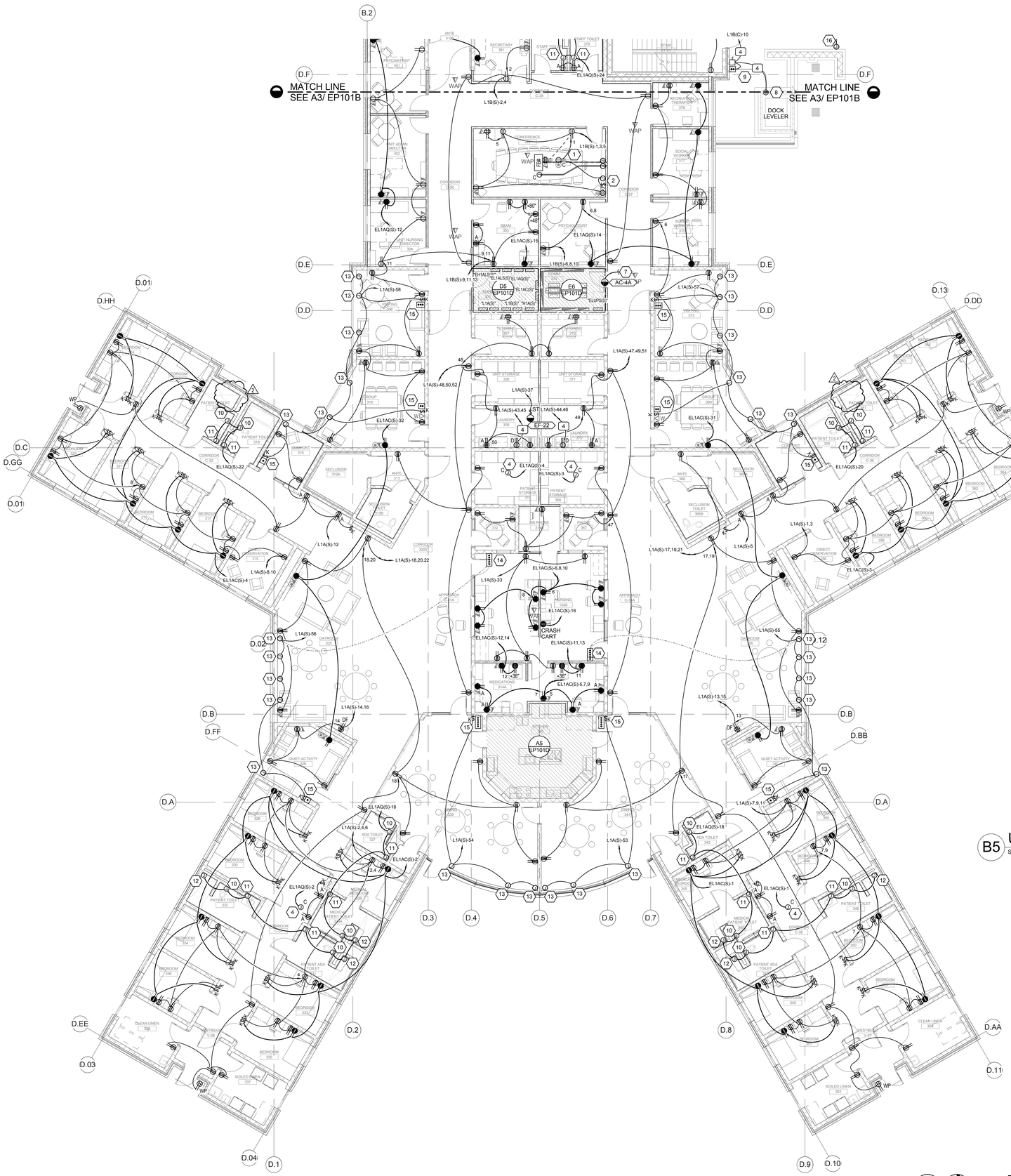
	DATE	REVISION
1	9/20/12	ADD #1
2	9/27/12	ADD#2

PROJECT NUMBER	11111
FILE	11111 USH Pediatric.rvt
DRAWN BY	WRT
CHECKED BY	CAG
SCALE	As indicated

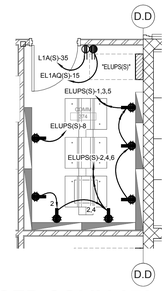
LEVEL 1 POWER PLAN AREA C (WEST)

EP101C

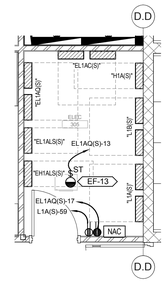
9/27/2012 10:43:38 AM



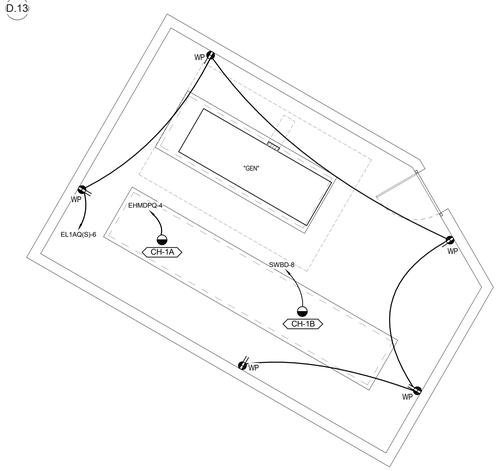
A1 LEVEL 01 POWER PLAN (AREA D)
SCALE: 1/8" = 1'-0"



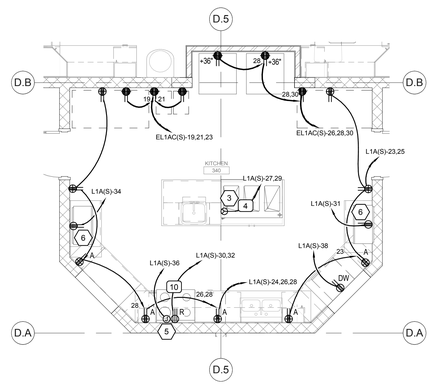
E6 ENLARGED COMM 372
SCALE: 1/4" = 1'-0"



D5 ENLARGED ELEC 305
SCALE: 1/4" = 1'-0"



B5 UTILITY YARD
SCALE: 1/8" = 1'-0"



A5 ENLARGED KITCHEN 339 (SOUTH)
SCALE: 1/4" = 1'-0"

TRUE PLAN

DFCM APPROVAL STAMP

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bogue building
730 pacific avenue
salt lake city
Utah 84104
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GENERAL SHEET NOTES

1. LOCATIONS OF MECHANICAL EQUIPMENT AND DEVICES SHOWN IS APPROXIMATE. COORDINATE EXACT LOCATIONS WITH MECHANICAL INSTALLER PRIOR TO ELECTRICAL CONNECTION ROUGH-IN.
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801-328-5151
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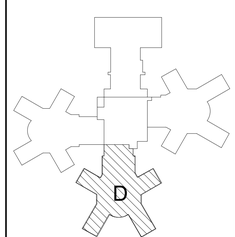
SHEET KEYNOTES

1. CEILING MOUNTED RECEPTACLE AND TELE/DATA FOR PROJECTOR.
2. JUNCTION BOX FOR MOTORIZED SCREEN. COORDINATE EXACT LOCATION WITH EQUIPMENT PRIOR TO ROUGH-IN.
3. PROVIDE POWER CONNECTION TO HOT FOOD WELL. COORDINATE EXACT REQUIREMENTS WITH EQUIPMENT PRIOR TO ROUGH-IN.
4. JUNCTION BOX MOUNTED IN ACCESSIBLE LOCATION ABOVE CEILING FOR VAV CONTROL POWER.
5. PROVIDE JUNCTION BOX FOR POWER CONNECTION TO RANGE HOOD (SUPPLIED BY OWNER). INTERLOCK FAN CONTROL WITH BOOSTER EXHAUST FAN KEF-4 (ON ROOF) FOR SIMULTANEOUS OPERATION.
6. RECEPTACLE FOR MICROWAVE. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT WITH MILLWORK PRIOR TO ROUGH-IN.
7. CONNECT TO ASSOCIATED OUTDOOR CONDENSING UNIT LOCATED ON ROOF. PROVIDE CONDUIT AND CONTROL WIRING AS REQUIRED BY MANUFACTURER'S INSTALLATION INSTRUCTIONS.
8. POWER CONNECTION TO SERVICE DOCK-LIFT. COORDINATE EXACT LOCATION PRIOR TO ROUGH-IN.
9. PUSH-BUTTON CONTROLLER FOR DOCK-LIFT. PROVIDE CONTROL WIRING AS REQUIRED BY MANUFACTURER'S INSTALLATION INSTRUCTIONS.
10. JUNCTION BOX FOR CONNECTION TO SENSOR OPERATED TOILETS. COORDINATE REQUIREMENTS WITH EQUIPMENT PRIOR TO ROUGH-IN.
11. JUNCTION BOX FOR CONNECTION TO SENSOR OPERATED SINKS. COORDINATE REQUIREMENTS WITH EQUIPMENT PRIOR TO ROUGH-IN.
12. JUNCTION BOX FOR CONNECTION TO BRAINWAVE SHOWER. COORDINATE REQUIREMENTS WITH EQUIPMENT PRIOR TO ROUGH-IN.
13. JUNCTION BOX FOR MOTORIZED MECHOSHADES. COORDINATE EXACT LOCATION WITH EQUIPMENT PRIOR TO ROUGH-IN.
14. CONTROL SWITCH FOR CONTROLS TO MECHOSHADES IN DAY ROOM. MOUNT SWITCH ADJACENT TO ROOM LIGHT SWITCHES.
15. KEYED AND BUTTON CONTROL SWITCHES FOR CONTROLS TO MECHOSHADES IN THIS ROOM. MOUNT SWITCHES ADJACENT TO ROOM LIGHT SWITCHES.
16. JUNCTION BOX FOR POWER CONNECTION TO DRAIN HEAT TRACE. COORDINATE EXACT LOCATION WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.

KEY PLAN



PEDIATRIC FACILITY
1300 East Center St. Provo, Utah
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BID DOCUMENTS - 09/12/2012

SEAL
LICENSED PROFESSIONAL ENGINEER
No. 7057918
CARLTON A. GETZ
STATE OF UTAH
09/12/2012

DATE	STATUS

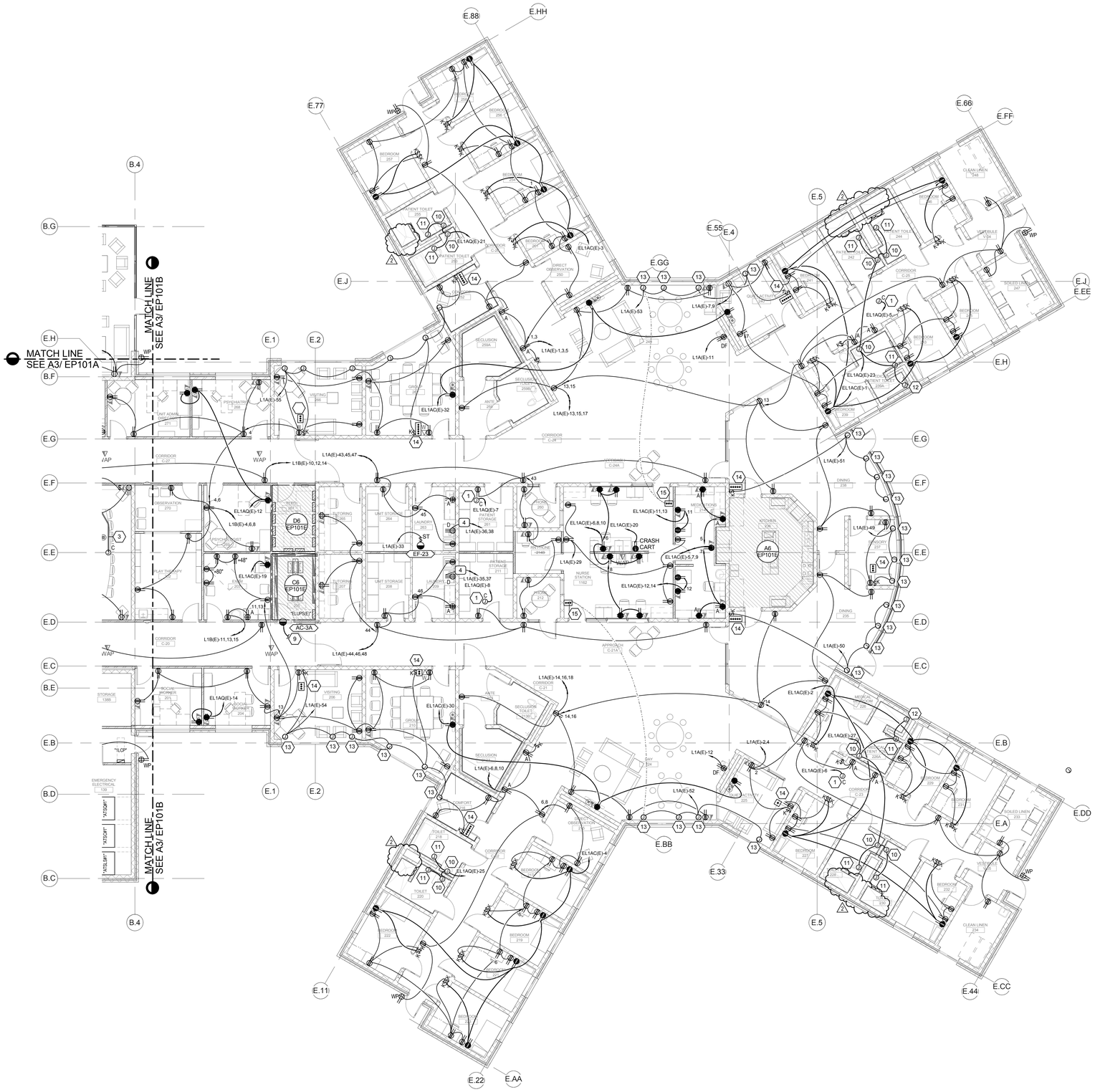
	DATE	REVISION
1	9/20/12	ADD #1
2	9/27/12	ADD#2

PROJECT NUMBER	11111
FILE	11111 USH Pediatric.rvt
DRAWN BY	WRT
CHECKED BY	CAG
SCALE	As indicated

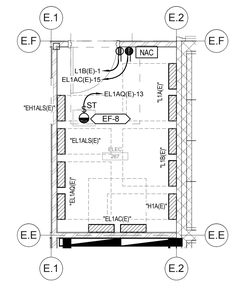
LEVEL 1 POWER PLAN AREA D (SOUTH)

EP101D

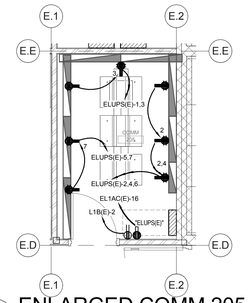
9/27/2012 10:43:48 AM



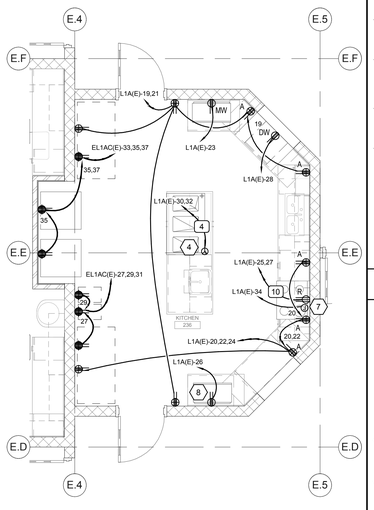
A1 LEVEL 01 POWER PLAN (AREA E)
SCALE: 1/8" = 1'-0"



D6 ENLARGED ELEC 266
SCALE: 1/4" = 1'-0"



C6 ENLARGED COMM 205
SCALE: 1/4" = 1'-0"



A6 ENLARGED KITCHEN (EAST)
SCALE: 1/4" = 1'-0"

TRUE PLAN

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730 pacific avenue
salt lake city
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GENERAL SHEET NOTES

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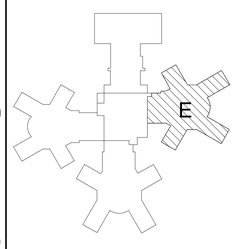
SHEET KEYNOTES

1. JUNCTION BOX MOUNTED IN ACCESSIBLE LOCATION ABOVE CEILING FOR VAV CONTROL POWER.
2. PROVIDE (1) 2" CONDUIT FROM FLOOR BOX TO FLUSH WALL MOUNTED JUNCTION BOX.
3. PROVIDE (1) 2" CONDUIT FROM PROJECTOR TO FLUSH WALL MOUNTED JUNCTION BOX.
4. PROVIDE POWER CONNECTION TO HOT FOOD WELL. COORDINATE EXACT REQUIREMENTS WITH EQUIPMENT PRIOR TO ROUGH-IN.
5. PROVIDE (1) 2" EMPTY CONDUIT WITH PULLSTRING FROM FLOOR BOX TO FLUSH MOUNTED WALL JUNCTION BOX.
6. PROVIDE (1) 2" EMPTY CONDUIT WITH PULLSTRING FROM PROJECTOR TO FLUSH MOUNTED WALL JUNCTION BOX.
7. PROVIDE JUNCTION BOX FOR POWER CONNECTION TO RANGE HOOD (SUPPLIED BY OWNER). INTERLOCK FAN CONTROL WITH BOOSTER EXHAUST FAN KEF-5 (ON ROOF) FOR SIMULTANEOUS OPERATION.
8. RECEPTACLE FOR MICROWAVE. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT WITH MILLWORK PRIOR TO ROUGH-IN.
9. CONNECT TO ASSOCIATED OUTDOOR CONDENSING UNIT LOCATED ON ROOF. PROVIDE CONDUIT AND CONTROL WIRING AS REQUIRED BY MANUFACTURER'S INSTALLATION INSTRUCTIONS.
10. JUNCTION BOX FOR CONNECTION TO SENSOR OPERATED SINKS. COORDINATE REQUIREMENTS WITH EQUIPMENT PRIOR TO ROUGH-IN.
11. JUNCTION BOX FOR CONNECTION TO SENSOR OPERATED TOILETS. COORDINATE REQUIREMENTS WITH EQUIPMENT PRIOR TO ROUGH-IN.
12. JUNCTION BOX FOR CONNECTION TO BRAINWAVE SHOWER. COORDINATE REQUIREMENTS WITH EQUIPMENT PRIOR TO ROUGH-IN.
13. JUNCTION BOX FOR MOTORIZED MECHOSHADES. COORDINATE EXACT LOCATION WITH EQUIPMENT PRIOR TO ROUGH-IN.
14. KEYED AND BUTTON CONTROL SWITCHES FOR CONTROLS TO MECHOSHADES IN THIS ROOM. MOUNT SWITCHES ADJACENT TO ROOM LIGHT SWITCHES.
15. CONTROL SWITCH FOR CONTROLS TO MECHOSHADES IN DAY ROOM. MOUNT SWITCH ADJACENT TO ROOM LIGHT SWITCHES.
16. JUNCTION BOX FOR POWER CONNECTION TO DRAIN HEAT TRACE. COORDINATE EXACT LOCATION WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.

KEY PLAN



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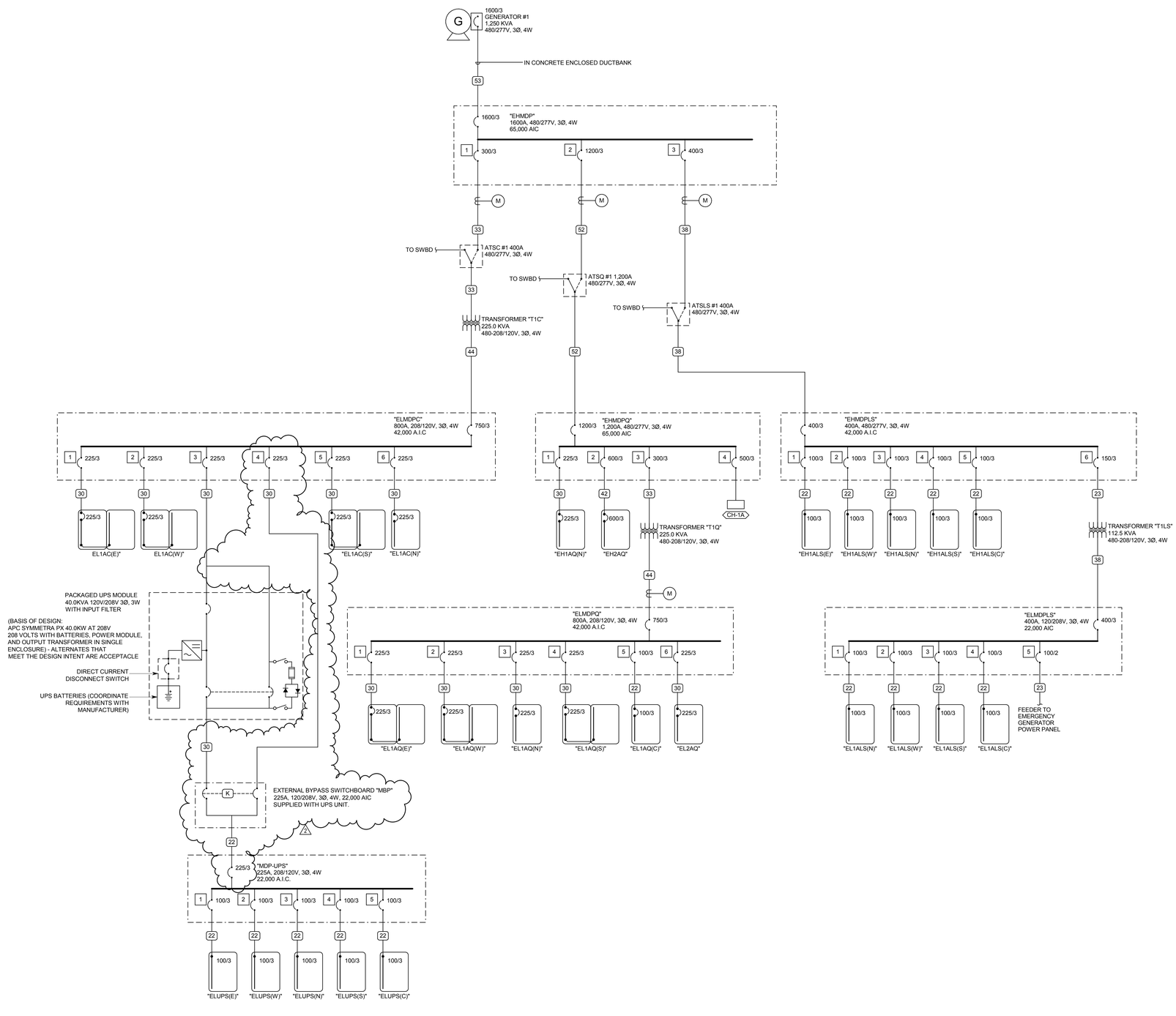
PROJECT NUMBER	11111
FILE	11111 USH Pediatric.rvt
DRAWN BY	WRT
CHECKED BY	CAG
SCALE	As indicated

LEVEL 1 POWER PLAN AREA E (EAST)

EP101E

9/27/2012 10:43:57 AM



A1 ONE-LINE DIAGRAM (EMERGENCY POWER)
SCALE: NTS

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	780	2 EA 3.50	3	500	1/0	4/0	3/0	2,4
44	780	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	2 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.
3. PROVIDE #10 NEUTRALS FOR MULTIWIRE BRANCH CIRCUITS SERVING COMPUTERS.
4. GROUND (G) CONDUCTOR MAY BE DELETED ON SERVICE ENTRANCE CONDUCTORS.
5. WHEN SYMBOL SUBSCRIPT INDICATES "IG", INCLUDE "IG" OR INSULATED GROUND CONDUCTOR SCHEDULED ALONG WITH GROUND OR EQUIPMENT GROUND CONDUCTOR. WHEN SYMBOL SUBSCRIPT INDICATES "SE", SUBSTITUTE "SE" CONDUCTOR FOR "G" CONDUCTOR SHOWN WHICH IS SIZED FOR THE GROUNDING OF THE SECONDARY OF THE SEPARATELY DERIVED SYSTEMS.
6. RACEWAY ONLY. CONDUCTORS PROVIDED BY UTILITY.

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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.

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PEDIATRIC FACILITY
1300 East Center St. Provo, Utah
UTAH STATE HOSPITAL CONSOLIDATION
BID DOCUMENTS - 09/12/2012

SEAL
LICENSED PROFESSIONAL ENGINEER
No. 7057918
CARLTON A. GETZ
STATE OF UTAH
09/12/2012

DATE	STATUS

	DATE	REVISION
2	9/27/12	ADD#2

PROJECT NUMBER	11111
FILE	11111 USH Pediatric.rvt
DRAWN BY	WRT
CHECKED BY	CAG
SCALE	1/8" = 1'-0"

ONE-LINE DIAGRAM (STANDBY POWER)

EP602

9/27/2012 10:43:59 AM

LIGHTING FIXTURE SCHEDULE

REFER TO SPECIFICATIONS FOR IMPORTANT TECHNICAL REQUIREMENTS FOR LIGHTING FIXTURES, BALLASTS, AND LAMPS. THE CATALOG NUMBERS LISTED BELOW HAVE BEEN CAREFULLY PREPARED TO ASSIST BIDDERS IN SELECTING PRODUCTS TO ACHIEVE THE DESIGN CONCEPT.,HOWEVER, PRIOR TO BIDDING, EACH MANUFACTURER SHALL COMPARE THE CATALOG NUMBERS SHOWN WITH THE DESCRIPTION AND REQUIREMENTS ON THE DRAWINGS, AND SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES. SPECIFICALLY INCLUDED IN THIS EVALUATION SHALL BE THE VERIFYING OF PROPER MOUNTING KITS OR ACCESSORIES TO FACILITATE INSTALLATION AS SHOWN AT EACH LOCATION ON THE DRAWINGS. NO ALLOWANCE OR REDRESS WILL BE ALLOWED FOR DISCREPANCIES THAT WERE NOT REPORTED TO THE ARCHITECT/ENGINEER IN TIME FOR CORRECTION OR CLARIFICATION BEFORE THE BID. THE REPORTING OF ANY AMBIGUITY IS THE RESPONSIBILITY OF THE BIDDER. PROVIDE UNIT PRICES AND FIXTURE BRAND SELECTED FOR ADD/DELETE CHANGES FOR EACH FIXTURE TYPES SHOWN WITHIN 48 BUSINESS HOURS OF THE BID DATE. FAILURE TO COMPLY WITH THIS REQUIREMENT MAY DISQUALIFY THE PRODUCTS AND EMPOWER THE ENGINEER TO DETERMINE FAIR VALUE FOR FIXTURE AND INSTALLATION CHANGES, WITHOUT FURTHER INPUT FROM THE CONTRACTOR OR INSTALLER. SUBMITTAL PACKAGE SHALL INCLUDE LAMP MANUFACTURER AND CATALOG NUMBER ON EACH FIXTURE SHEET. ON ALL PENDANT MOUNTED FIXTURES, PROVIDE A SECOND SET OF PENDANTS, OF A DIFFERENT LENGTH, AS DIRECTED BY THE ARCHITECT/ENGINEER, PROVIDED AND INSTALLED AT NO ADDITIONAL CHARGE. ALL FIXTURES SHALL BE APPROVED BY UL OR ANOTHER ACCEPTABLE TESTING LAB FOR THE PURPOSE INTENDED AND WITH THE LAMP AND BALLAST PROPOSED. CONTRACTOR ALLOWANCE PRICES ARE ACCURATE WHEN THIS JOB WAS SPECIFIED, CONTRACTOR AND ELECTRICAL DISTRIBUTOR SHALL VERIFY THIS ALLOWANCE AND REPORT ANY PROBLEMS TO THE ENGINEER BEFORE THE BID. ALLOWANCE PRICE MAY OR MAY NOT INCLUDE LAMP(S) OR FREIGHT AS NOTED, AND DO NOT INCLUDE ANY TAXES. UNIVERSAL VOLTAGE (120/277) BALLASTS REQUIRED UNLESS NOTED OTHERWISE. DIMENSION SEQUENCE = (LENGTH X WIDTH X DEPTH) IN INCHES.

SYMBOL	MARK	FIXTURE CHARACTERISTICS BODY / AIR / MOUNTING / DOOR LENS/LOUVER/REFLECTOR/OTHER	LAMP	WATTS	VOLTS	MANUFACTURER	CATALOG NUMBER	NOTES
	B	BOLLARD; ALUMINIUM HOUSING						
	B-1	BOLLARD, CONCRETE FORM, CLEAR LENS	1-50MH	50W	120V	ARCH. AREA	CB18R-25-CUTOFF-FLAT-50MH-MSB-RAL7023-INT CONTRACTOR ALLOWANCE: $1,952.45 (OR APPROVED EQUAL PRIOR TO BID)	
	D	DOWNLIGHT; THERMALLY PROTECTED HOUSING; TO ACCOMMODATE MULTIPLE ALUMINUM TRIMS AND REFLECTOR ASSEMBLIES AS LISTED BELOW; MAX 8" DEEP, NON-IC HOUSINGS EXCEPT AS NOTED.						
	D-89	LED DOWNLIGHT, SELF-FLANGED TRIM, PHOSPHOR LENS, DIMMABLE WHERE INDICATED BY SWITCHING, 1500 LUMENS (6" APERTURE)	LED 3500K	30W 3500K	277V	LIGHTOLIER LITHONIA OMEGA PORTFOLIO	C6L1520DL-CCL-W / C6L15-N-2 OM6LED-27-277-R6LED-35K-WD-CS LD6-15-D010-EMR6-835-6LM1-LI-HB26	
	D-98	LED WALLWASH, SELF-FLANGED TRIM, PHOSPHOR LENS, DIMMABLE WHERE INDICATED BY SWITCHING, 1500 LUMENS (6" APERTURE)	LED 3500K	35W 3500K	277V	OMEGA LIGHTOLIER PORTFOLIO OMEGA	OM6LED-27-277-R6LED-35K-WW-CS C6L1520-LW-35K-CCL-W / C6L15-N-2 LD6-15-D010-ERM6-835-6LM111-LI-HB26 (OR APPROVED EQUAL PRIOR TO BID)	
	E	EXIT SIGNS, LED, A/C POWER ONLY (NO BATTERY)						
	E10-1	SINGLE FACE;	LED	20W	120/277V	DUAL-LITE HUBBELL MCPHILBEN EELP ISOLITE LITHONIA SURELITES LIGHTOLIER	LECSGWA CVER-1-G-N-E 45VL-1-GC-XX EDG 1 GC W EM EDGL-S-S-G-BK (BLACK HOUSING) EDGR-W-1-GMR ELX6-1-00-00-WH-G-XX LGA1GMW	
	E98-1	SINGLE FACE WITH VANDAL SHIELD:	LED	20W	120/277V	LIGHTOLIER LITHONIA CHLORIDE SURELITES	LR-A-1-G-W-TP-VRS LRE-S-W-1-G-120/277-TP-VR SC-A-1-G-W-FRW-TP CAR6-1-00-85-G-W-VSRD	
	E99-1	SINGLE FACE;	LED	20W	120/277V	KENALL DUAL-LITE FAILSAFE LIGHTOLIER CHLORIDE LITHONIA	METSU-MW-G-DT-EL SEWL-S-G-W XLH-1-GW LD2-A-1-G-W-TP-VRS 60MLA-1-G-W-T15TPTOOL LV-S-W-1-G-120/277-UM	
	GF	TROFFERS: RECESSED FOR FLANGE MOUNTED CEILING; STATIC; HINGED AND LATCHED STEEL DOOR; .125 ACRYLIC PRISMATIC LENS, MINIMUN 1/8"; PRORGAM START ELECTRONIC BALLASTS; T8 LAMPS; ONE BALLAST PER FIXTURE WHERE POSSIBLE, UNLESS TWO LEVEL SWITCHING IS SHOWN ON THE PLANS. MAX 5" DEEP. SPECIFICATION GRADE.						
	GF-1	1X4, 2 LAMP. (TER VALUE: ~75)	2-F32T8 RE835	65W	277/120V	LITHONIA LSI METALUX DAYBRITE COLUMBIA LIGHTOLIER	SPF 232 A12125 MVOLT TUBRHP 1TFA125 232 SD SSO10PS UE FP-232A125-UNV-EB81-PROGRAM START 1DF232-FS21-UNV-1/2EB-SPEC ST814-232F-FSA12.125-EB8LHPRUNV XT1FVI232-U-SOP	
	GF-1A	1X4, 2 LAMP, WITH MAXIMUM SECURITY ENCLOSURE (MINIMUM 14 GAUGE STEEL DOOR AND FRAME WITH MINIMIUM 1/4" EXTERIOR AND 1/8" INTERIOR LENS) (PATIENT ROOMS)	2-F32T8 RE835	65W	277/120V	KENALL KIRLIN MORLITE CD LIGHTING	RCA4-0/0-2-F32T8-RS-1-XXX-2/9-1 VRT-12028-58-47 SMAX-FDPH-14-2-T8-EB10IS-5-A-FS-PF-UNV DFA-14-F-2-32-UNV-EB-25CP/15PP-SHP-SFP (OR APPROVED EQUAL PRIOR TO BID)	
	GF-3	2X4, 2 LAMP (TER VALUE: ~75)	2-F32T8 RE835	95W	277/120V	LITHONIA METALUX DAYBRITE COLUMBIA LSI LIGHTOLIER	2SP8F 232 A12125 1/3 MVOLT 2FP-232A125-UNV-EB81-PROGRAM 2DPF232-FS21-UNV-1/3EB-SPEC ST824-232F-FSA12.125-3EB8LHPRUNV FLA125 232 SD SSO10PS UE XT2FVI232-U-03P	
	GF-3A	2X4, 2 LAMP, WITH MAXIMUM SECURITY ENCLOSURE (MINIMUM 16 GAUGE STEEL DOOR AND FRAME WITH MINIMIUM 1/4" EXTERIOR AND 1/8" INTERIOR LENS) (PATIENT AREAS)	2-F32T8 RE835	65W	277/120V	KENALL KIRLIN MORLITE	RMCD4-FL/XX-4-232IS-0/0-XXX-2/9-1 MED-FDPH-24-2-T8-EB10RD-3-E-F1-PF-UNV (OR APPROVED EQUAL PRIOR TO BID)	
	GF-4	2X4, 3 LAMP (TER VALUE: ~75)	3-F32T8 RE835	95W	277/120V	LITHONIA METALUX DAYBRITE COLUMBIA LSI LIGHTOLIER	2SP8F 332 A12125 1/3 MVOLT 2FP-332A125-UNV-EB81-PROGRAM 2DPF332-FS21-UNV-1/3EB-SPEC ST824-332F-FSA12.125-3EB8LHPRUNV FLA125 332 SD SSO10PS UE XT2FVI332-U-03P	
	GF-4A	2X4, 3 LAMP, WITH MAXIMUM SECURITY ENCLOSURE (MINIMUM 16 GAUGE STEEL DOOR AND FRAME WITH MINIMIUM 1/4" EXTERIOR AND 1/8" INTERIOR LENS) (PATIENT AREAS)	3-F32T8 RE835	95W	277/120V	KENALL KIRLIN MORLITE	RMCD4-FL/XX-4-332IS-0/0-XXX-2/9-1 MED-RDPH-24-3-T8-EB10RD-3-E-F1-PF-UNV (OR APPROVED EQUAL PRIOR TO BID)	
	GS	TROFFERS: RECESSED FOR LAY-IN GRID; STATIC; HINGED AND LATCHED STEEL DOOR; .125 ACRYLIC PRISMATIC LENS, MINIMUN 1/8"; EARTHQUAKE CLIPS; MAX 5" DEEP; SPECIFICATION GRADE; PROGRAM START ELECTRONIC BALLASTS, T8 LAMPS; ONE BALLAST PER FIXTURE WHERE POSSIBLE, UNLESS TWO LEVEL SWITCHING IS SHOWN ON THE PLANS.						
	GS-1	1X4, 2 LAMP. (TER VALUE: ~75)	2-F32T8 RE835	65W	277/120V	LITHONIA LSI METALUX DAYBRITE COLUMBIA LIGHTOLIER	SPG 232 A12125 MVOLT TUBRHP 1TGA125 232 SD SSO10PS UE GP-232A125-UNV-EB81-PROGRAM START 1DG232-FS21-UNV-1/2EB-SPEC ST814-232G-FSA12.125-EB8LHPRUNV XT1GVI232-UNV-SOP	
	GS-1A	1X2, 2 LAMP, WITH TAMPER RESISTANT ENCLOSURE AND ACCESS (SCREW ACCESS IN LIEU OF CLIP ACCESS) (TER VALUE: ~75)	2-F32T8 RE835	65W	277/120V	LITHONIA LSI METALUX DAYBRITE COLUMBIA LIGHTOLIER	SPG 232 A12125 MVOLT TUBRHP 1TGA125 232 SD SSO10PS UE GP-232A125-UNV-EB81-PROGRAM START 1DG232-FS21-UNV-1/2EB-SPEC ST814-232G-FSA12.125-EB8LHPRUNV XT1GVI232-UNV-SOP	
	GS-3	2X4, 2 LAMP. (TER VALUE: ~75)	2-F32T8 RE835	65W	277/120V	LITHONIA METALUX DAYBRITE LSI LIGHTOLIER COLUMBIA	2 SP8G 232 A12125 MVOLT TUBRHP 2GP-232A125-UNV-EB81-PROGRAM START 2DPG232-FS21-UNV-1/2EB-SPEC LA125 232 SD SSO10PS UE XT2GVI232-UNV-SOP ST824-232G-FSA12.125-EB8LHPRUNV	
	GS-3A	2X4, 2 LAMP, WITH TAMPER RESISTANT ENCLOSURE AND ACCESS (SCREW ACCESS IN LIEU OF CLIP ACCESS) (TER VALUE: ~75)	2-F32T8 RE835	95W	277/120V	LITHONIA METALUX DAYBRITE LSI LIGHTOLIER COLUMBIA	2 SP8G 232 A12125 MVOLT TUBRHP 2GP-232A125-UNV-EB81-PROGRAM START 2DPG232-FS21-UNV-1/2EB-SPEC LA125 232 SD SSO10PS UE XT2GVI232-UNV-SOP ST824-232G-FSA12.125-EB8LHPRUNV	
	GS-4A	2X4, 3 LAMP, WITH TAMPER RESISTANT ENCLOSURE AND ACCESS (SCREW ACCESS IN LIEU OF CLIP ACCESS) (TER VALUE: ~75)	3-F32T8 RE835	95W	277/120V	LITHONIA METALUX DAYBRITE COLUMBIA LIGHTOLIER LSI	2 SP8G 332 A12125 1/3 MVOLT TUBRHP 2GP-332A125-UNV-EB81-PROGRAM START 2DPG332-FS21-UNV-1/3EB-SPEC ST824-332G-FSA12.125-3EB8LHPRUNV XT2GVI332-UNV-03P LA125 332 SD SSO10PS UE	
	HB	HIGH BAY INDUSTRIAL HID FIXTURES: CAST ALUMINUM BALLAST HOUSING; HIGH POWER FACTOR BALLAST; ADJUSTABLE SPUN ALUMINUM REFLECTOR; MANUFACTURER SHALL RECOMMEND SETTINGS FOR EACH SPACE AND/OR REFLECTOR SIZE WHERE MORE THAN ONE IS OFFERED TO ACHIEVE ACTUAL S/MH REQUIREMENTS; FUSED. PROVIDE MULTI-TAP BALLASTS (120,208,240,277 VOLT) UNLESS SPECIFIED OTHERWISE. USE LAMP APPROVED FOR USE IN OPEN FIXTURES IF FIXTURE USED IS OPEN, OTHERWISE USE ENCLOSED FIXTURE. PROVIDE CAST POWER HOOK WITH RECEPTACLE, POWER CORD WITH PLUG, AND SAFETY CABLE FOR SUSPENDING FIXTURES FLUSH WITH THE BOTTOM OF THE TRUSSES, UNLESS OTHERWISE INDICTED, RATED FOR 55 DEGREES C. PROVIDE WIREGUARDS FOR OPEN FIXTURES, AND HINGED LENSES/COVERS FOR ENCLOSED FIXTURES.						
	HB-4	HIGH BAY FLUORESCENT W/ POLYCARBINATE LENS AND WIREGUARD MOUNT WITH JACK CHAINS. HIGH EFFICIENCY. PROVIDE TUBE SLEEVES FOR LAMPS	4-F32T8 RE835	120W	277/120V	LITHONIA DAYBRITE METALUX LSI LA LIGHTING COLUMBIA	IBZ-432L-WD-PCL125-MVOLT-GEB10PS-LP835- -WGX-WGIBZ14 HBE4-32-W-CL/WG-UNV-L8835-ER8	
	OC	WALL PACK: ADJUSTABLE CUT OFF; FULL PERIMETER GASKETING: WET LOCATION; STAINLESS STEEL HINGES AND LATCHES; PROJECTING LENS; LED; SEE ELEVATION FOR MOUNTING HEIGHT, COLOR AS SPECIFIED BY ARCHITECT.						
	OC-32	LED, RECESSED J BOX. MEDIUM THROW, SHAPED; DECORATIVE, PROVIDE INTEGRAL PHOTOCELL	LED	40W	277/120V	LITHONIA QUALITY MCGRAW GARDCO	CSXW LED-1-30B530/40K-SR3-MVOLT-PE-DBLXD QLW-16G1-700-NW-3L-UNV-SM--PCB-TBK ISIW-B02-LED-E1-BLS-BK-P 102L-3-35LA-NW-UNV-BLP-PCB (OR APPROVED EQUAL PRIOR TO BID)	
	TX	SPECIAL FIXTURES AS INDICATED. MEET ALL REQUIREMENTS OF SPECIFICATIONS AND FIXTURE SCHEDULE. VISUAL AND FINISH APPROVAL REQUIRED.						
	TX-1	SEMIRECESSED ADJUSTABLE LINEAR FLUORESCENT WALL WASH FIXTURE	1-F14T5	15W	277V	ELLIPTIPAR ARDRON-MACKIE	F210-TX14-L-02-2-000 E9054SG7 (OR APPROVED EQUAL PRIOR TO BID)	
	TX-2	NOT USED						
	TX-3	SURFACE MOUNTED FLUORESCENT FIXTURE, HIGH ABUSE, PROVIDE TWO BALLASTS PER FIXTURE (PATIENT ROOM DESK)	2-F40BX RE835	80W	120V	KENALL FAILSAFE CD LIGHTING KIRLIN MORLITE	WCBU-2-3/3-1/1-40B-RS-2-120-2/9-1-IH4 MAX-WDPH94-2-1-1-BX-2EB10RS-3-E-F1-BN-UNV (OR APPROVED EQUAL PRIOR TO BID)	
	TX-4	MAXIMUM SECURITY WALL MOUNTED DOME LIGHT, PROVIDE 24 VOLT POWER CONVERTER FOR INTERCONNECTION (PATIENT BATH ALERT LIGHT)	LED	5W	120V	JERON	 CONTRACTOR ALLOWANCE: $250.00 (OR APPROVED EQUAL PRIOR TO BID)	
	TX-5	SURFACE MOUNTED CORNER FLUORESCENT FIXTURE, HIGH ABUSE (PATIENT ROOM BATH)	2-F32T8 RE835	65W	120V	KENALL FAILSAFE KIRLIN CD LIGHTING MORLITE	CD-4-3/3-2-32-RS-1-120-2/9-1-IH4 FCC-X-232-UNV-80/87-EB81-VRSD MAX-CDPH89-4-2-T8-EB10RS-3-E-F1-UNV (OR APPROVED EQUAL PRIOR TO BID)	
	TX-6	LOBBY PENDANT FIXTURE (LOBBY PENDANT FIXTURE)	LED	60W	277V	LOUIS POULSON	CHA-K-60W LED/4000K/120-277V/GREY ALU COL /MEDIUM/OPAL POLY. CONTRACTOR ALLOWANCE: $1,512.00 (OR APPROVED EQUAL PRIOR TO BID)	
	TX-7	RECESSED LED NIGHT LIGHT, HIGH ABUSE, LENSED, AMBER (PATIENT ROOM NIGHT LIGHT)	LED	5W	120V	KIRLIN KENALL MORLITE COLE LTG. HEALTHCARE CD LIGHTING	LNV-07126 RFW-A-0-LED-120-2/9-1 STLED3090-DC-HL-C-UNV-WT-TP-WT LA-158-TP HNL610-MVOLT-LED30-TR-AM (OR APPROVED EQUAL PRIOR TO BID)	
	TX-8	GROUND MOUNTED LINEAR SIGN FIXTURE; BASE EQUIVALENT TO BOLLARD BASE; COORDINATE ORIENTATION IN FIELD	2-F54T5HO	110W	277V	AMETRIX WINONA ARCH AREA	A08-SO-A-2-LF-054-277-K-AK6-F SB2-SSW-248T5/HO-277V-P1-SGB-X-STD PVT5HO-48-BLK-HB (OR APPROVED EQUAL PRIOR TO BID)	
	TX-9	SURFACE MOUNTED FLUORESCENT FIXTURE, HIGH ABUSE (PATIENT BATH VANITY)	2-F40BX RE835	80W	120V	KENALL FAILSAFE CD LIGHTING KIRLIN MORLITE	WCBU-2-3/3-1/1-40B-RS-1-120-2/9-1-IH4 MAX-WDPH94-2-1-1-BX-EB10RS-3-E-F1-BN-UNV (OR APPROVED EQUAL PRIOR TO BID)	
	UC	UNDERCABINET LIGHT: LOW PROFILE X 5 1/4"DEEP X LENGTH AS NOTED; HIGH IMPACT RESISTANT ACRYLIC DIFFUSER.						
	UC-99	18" NOMINAL LENGTH WITH INTEGRAL ROCKER SWITCH; LED; PROVIDE POWER PACKS AS REQUIRED	LED 4100K	18W	120V	KENALL LIGHTOLIER DECO LTG. PHILIPS GM LIGHTING	MAUCLED-X-M-18-120-SW LLP20XBK DUS-LED-24-42-SP-MC 523-000027-52 UCLED-16-WH (OR APPROVED EQUAL PRIOR TO BID)	
	W	LOW PROFILE WRAPAROUND SURFACE MOUNTED FIXTURE; ACRYLIC PRISMATIC DIFFUSER; WHITE ENAMEL ENDPLATES; MINIMUM CU OF 70 @ 80/50/20 AND RCR=1; PROGRAM START ELECTRONIC BALLASTS; T8 LAMPS; ONE BALLAST PER FIXTURE WHERE POSSIBLE UNLESS TWO LEVEL SWITCHING IS SHOWN ON THE PLANS.						
	W-4	WIDE BODY WRAPAROUND; 2-LAMP, APPROX; 3" X 16" X 48".	2-F32T8 RE835	65W	277/120V	LITHONIA DAYBRITE METALUX LIGHTOLIER LSI COLUMBIA	2LB232-MVOLT-TUBPHP CAW232-UNV-1/2-EB-SPEC WSA-232A-UNV-PROGRAM START WB232-U-SOP PR 232 SSO10PRS W UE WCW4-232-EBPS120/277	
	WB	WALL MOUNTED FLUORESCENT AT LOCATIONS AS INDICATED ON DRAWINGS; WITH ACRYLIC INJECTION MOLDED; PROGRAM START ELECTRONIC BALLASTS; T8 LAMPS; ONE BALLAST PER FIXTURE WHERE POSSIBLE, UNLESS TWO LEVEL SWITCHING IS SHOWN ON THE PLANS.						
	WB-3	2-LAMP, WALL MOUNT 48", STEEL ENCLOSURE, DOWNLIGHT ONLY; ACRYLIC INJECTION MOLDED PRISMATIC DIFFUSER.	2-F32T8 RE835	65W	277/120V	DAYBRITE LIGHTOLIER METALUX L.A.L. COLUMBIA LITHONIA LSI	CD232W-UNV-1/2-EB-SPEC CWB232-WB-U-SOP BI-232-UNV-PROGRAM START BSQ100-2-4R-INJ-WHT-T8EB-120/277-UPS WAL4-232-EBPS120/277 WP 232 DO MVOLT-TUBPHP WB 232 SSO10PRS UE	
	ZW	LIGHT POLES: TOTALLY ENCLOSED RAINTIGHT, DUST-TIGHT AND CORROSION RESISTANT; POLE AS SHOWN IN DETAIL WITH HANDHOLE, COVER, BOLT COVER, AND BASE; PAINTED (COLOR TO BE SELECTED BY ARCHITECT / ENGINEER WHICH MAY DIFFER FROM CATALOG NUMBER SHOWN). PROVIDE DRIVERS CAPABLE OF ACCEPTING 120, 208, OR 277 VOLTS. LIGHT POLES NOT INCLUDED IN THE LISTED CONTRACTOR ALLOWANCE.						
	ZW-1	LED SITE LIGHTING FIXTURE, DIRECTIONAL REMOVABLE LED SOCKET BOARDS, TYPE III DISTRIBUTION, HEAD CONFIGURATION AS SHOWN ON DRAWINGS	LED	140W	480V	KIM LIGHTING	XSA-WP9-L-E-3-L-5K-480-SG-DB-A-30 CONTRACTOR ALLOWANCE: $1,475.00 (EXCLUDING POLE)	

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PEDIATRIC FACILITY
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UTAH STATE HOSPITAL CONSOLIDATION
BID DOCUMENTS - 09/12/2012

SEAL
LICENSED PROFESSIONAL ENGINEER
No. 7057918
CARLTON A. GETZ
STATE OF UTAH
09/12/2012

DATE	STATUS

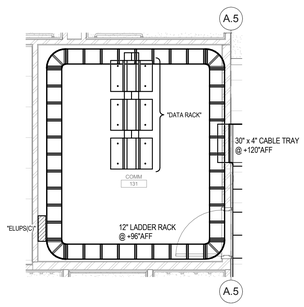
	DATE	REVISION
1	9/20/12	ADD #1
2	9/27/12	ADD#2

PROJECT NUMBER 11111
FILE 11111 USH Pediatric.rvt
DRAWN BY WRT
CHECKED BY CAG
SCALE 1/8" = 1'-0"

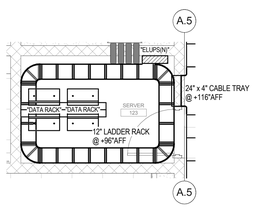
FIXTURE SCHEDULE

EL601

9/27/2012 10:43:25 AM



B2 ENLARGED COMM 131
SCALE: 1/4" = 1'-0"



A2 ENLARGED SERVER 123
SCALE: 1/4" = 1'-0"

A3 LEVEL 01 TELECOMMUNICATIONS PLAN (AREA A)
SCALE: 1/8" = 1'-0"

MATCH LINE SEE A3/ ET101B

MATCH LINE SEE A2/ ET101E

MATCH LINE SEE A3/ ET101B

TRUE PLAN

DFCM APPROVAL STAMP

FFKR ARCHITECTS

bogue building
730 pacific avenue
salt lake city
Utah 84104

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801-539-1916
ffkr.com

SPECTRUM ENGINEERS

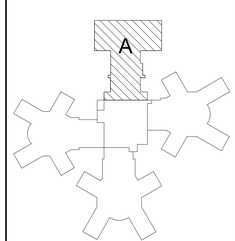
324 S. State St., Suite 400
Salt Lake City, UT 84111
800-678-7077
801-328-5151
fax: 801-328-5155
www.spectrum-engineers.com

GENERAL SHEET NOTES

1 THE SCOPE OF WORK IS LIMITED TO ROUGH-IN ONLY FOR COMMUNICATIONS AND DATA CABLING, INCLUDING ALL CONDUITS, BOXES, CABLE TRAY, AND FITTINGS. CABLING WILL BE INSTALLED UNDER A SEPARATE CONTRACT.

SHEET KEYNOTES

KEY PLAN



PEDIATRIC FACILITY
1300 East Center St. Provo, Utah
UTAH STATE HOSPITAL CONSOLIDATION
BID DOCUMENTS - 09/12/2012

SEAL
LICENSED PROFESSIONAL ENGINEER
No. 7057918
CARLTON A. GETZ
STATE OF UTAH
09/12/2012

DATE	STATUS

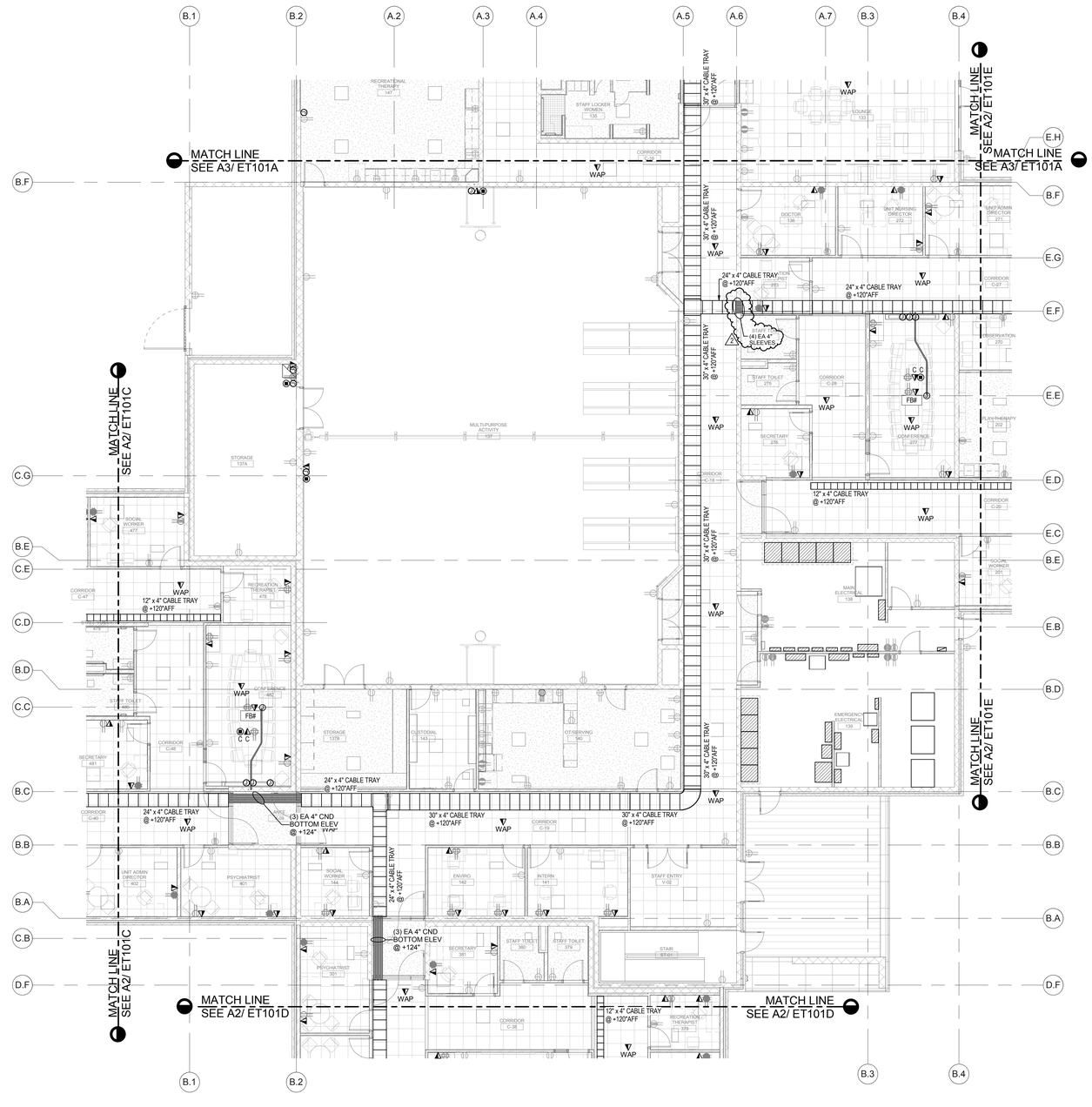
	DATE	REVISION
2	9/27/12	ADD#2

PROJECT NUMBER	11111
FILE	11111 USH Pediatric.rvt
DRAWN BY	WRT
CHECKED BY	CAG
SCALE	As indicated

LEVEL 1 TELECOM PLAN AREA A (NORTH)

ET101A

9/27/2012 10:44:04 AM



A3 LEVEL 01 TELECOMMUNICATIONS PLAN (AREA B)

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

0 4' 8' 16'

TRUE PLAN

DFCM APPROVAL STAMP

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Utah 84104

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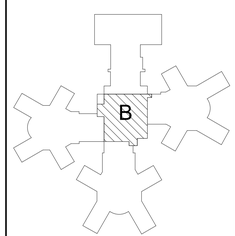
GENERAL SHEET NOTES

1 THE SCOPE OF WORK IS LIMITED TO ROUGH-IN ONLY FOR COMMUNICATIONS AND DATA CABLING, INCLUDING ALL CONDUITS, BOXES, CABLE TRAY, AND FITTINGS. CABLING WILL BE INSTALLED UNDER A SEPARATE CONTRACT.

SHEET KEYNOTES

KEY PLAN



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PEDIATRIC FACILITY
1300 East Center St. Provo, Utah
UTAH STATE HOSPITAL CONSOLIDATION
BID DOCUMENTS - 09/12/2012

SEAL

LICENSED PROFESSIONAL ENGINEER
No. 7057918
CARLTON A. GETZ
STATE OF UTAH
09/12/2012

DATE	STATUS

	DATE	REVISION
2	9/27/12	ADD#2

PROJECT NUMBER	11111
FILE	11111 USH Pediatric.rvt
DRAWN BY	WRT
CHECKED BY	CAG
SCALE	1/8" = 1'-0"

LEVEL 1 TELECOM PLAN AREA B (CENTER)

ET101B

9/27/2012 10:44:08 AM

DFCM APPROVAL STAMP

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GENERAL SHEET NOTES

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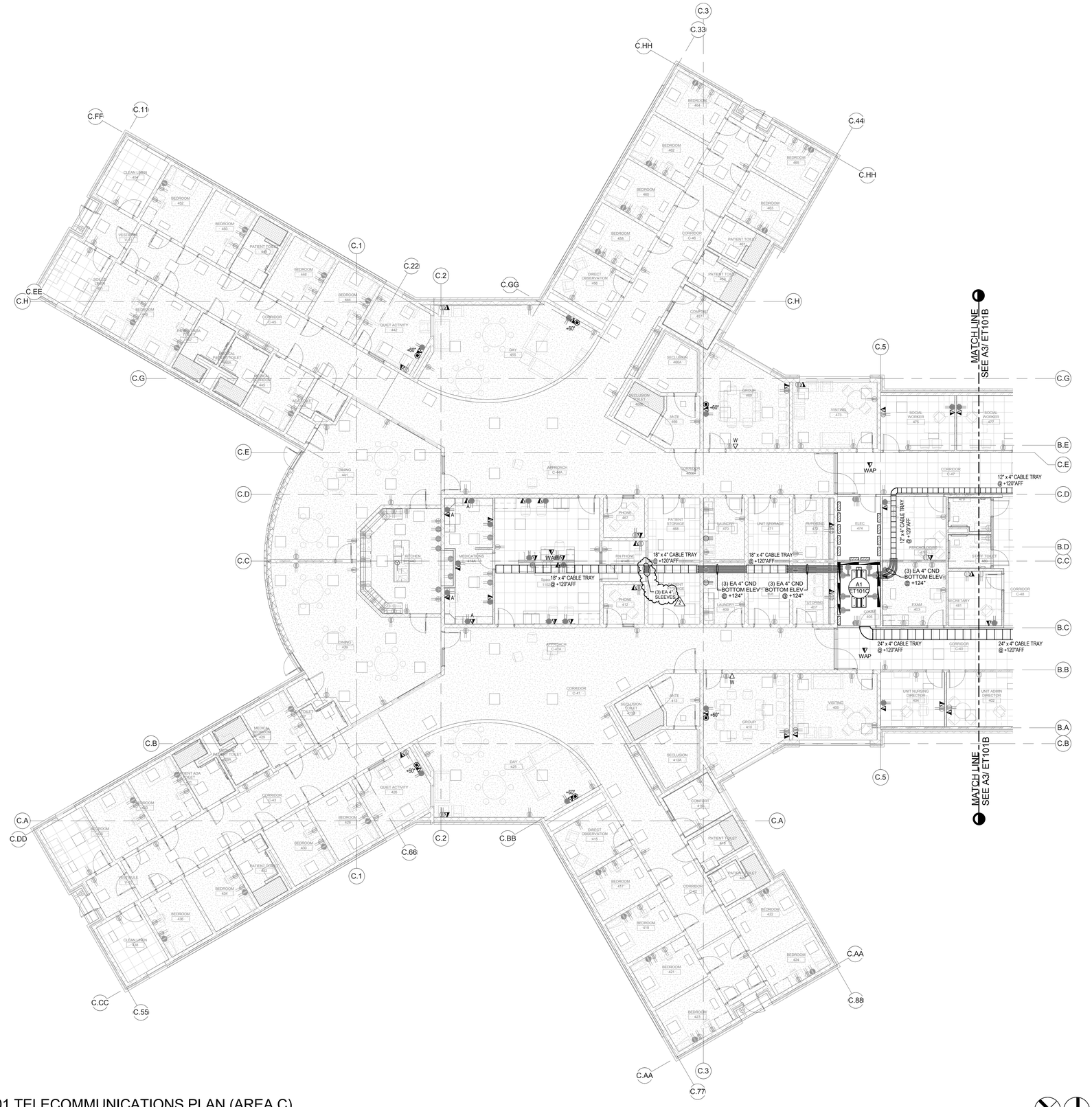
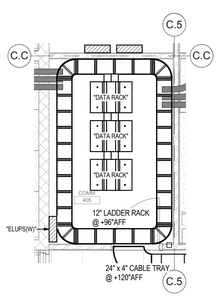
SHEET KEYNOTES

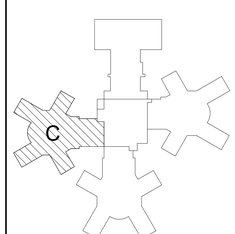




A1 ENLARGED COMM 405
SCALE: 1/4" = 1'-0"

A2 LEVEL 01 TELECOMMUNICATIONS PLAN (AREA C)
SCALE: 1/8" = 1'-0"

KEY PLAN



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BID DOCUMENTS - 09/12/2012

SEAL
LICENSED PROFESSIONAL ENGINEER
No. 7057918
CARLTON A. GETZ
STATE OF UTAH
09/12/2012

DATE	STATUS

	DATE	REVISION
2	9/27/12	ADD#2

PROJECT NUMBER	11111
FILE	11111 USH Pediatric.rvt
DRAWN BY	WRT
CHECKED BY	CAG
SCALE	As indicated

LEVEL 1 TELECOM PLAN AREA C (WEST)

ET101C

9/27/2012 10:44:14 AM

DFCM APPROVAL STAMP

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GENERAL SHEET NOTES

1 THE SCOPE OF WORK IS LIMITED TO ROUGH-IN ONLY FOR COMMUNICATIONS AND DATA CABLING, INCLUDING ALL CONDUITS, BOXES, CABLE TRAY, AND FITTINGS. CABLING WILL BE INSTALLED UNDER A SEPARATE CONTRACT.

SHEET KEYNOTES

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1300 East Center St. Provo, Utah
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BID DOCUMENTS - 09/12/2012

SEAL

LICENSED PROFESSIONAL ENGINEER
No. 7057918
CARLTON A. GETZ
STATE OF UTAH
09/12/2012

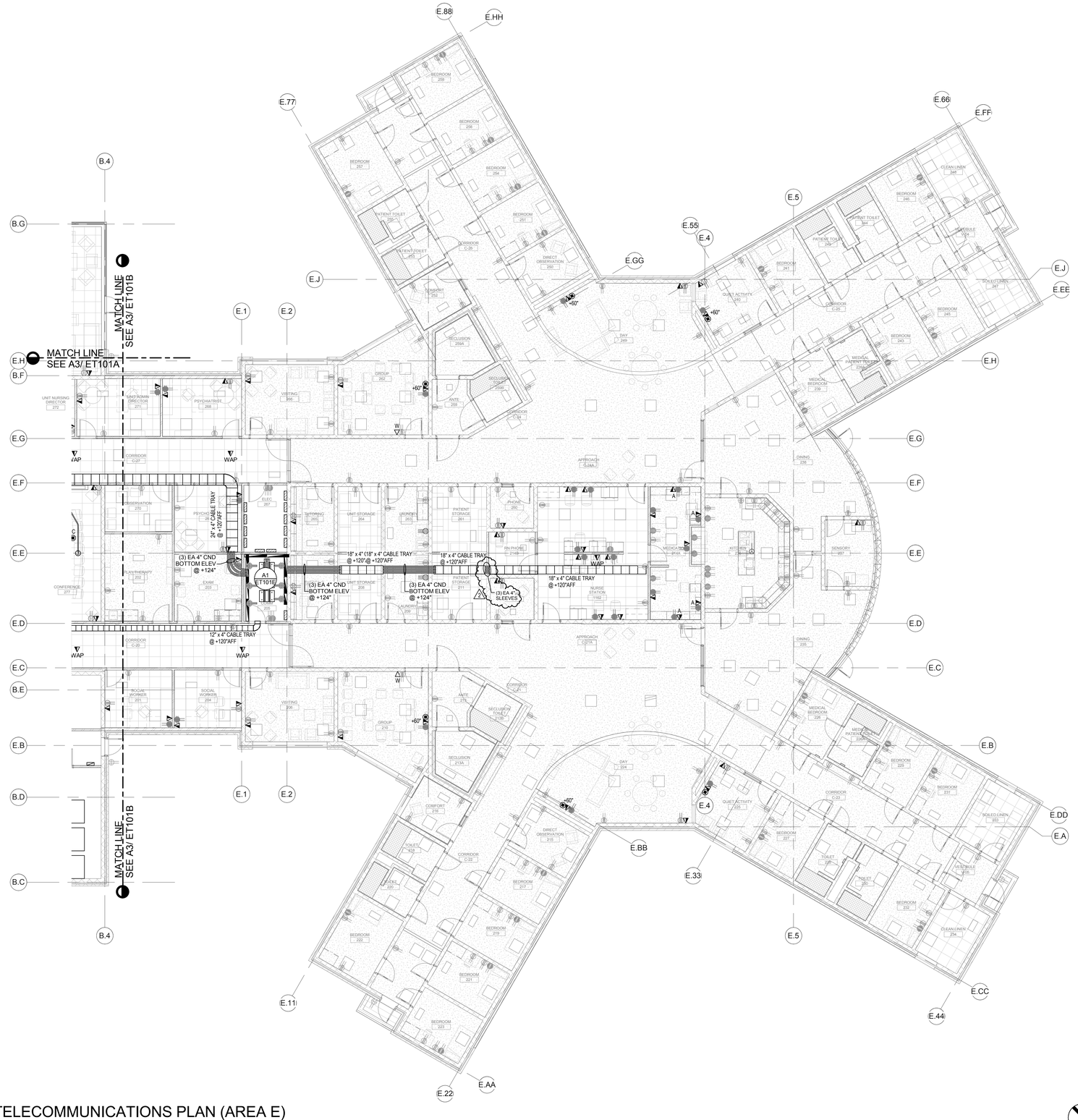
DATE	STATUS

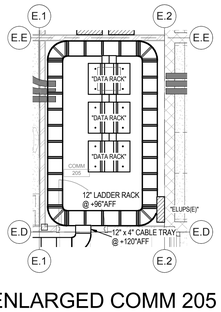
	DATE	REVISION
2	9/27/12	ADD#2

PROJECT NUMBER	11111
FILE	11111 USH Pediatric.rvt
DRAWN BY	WRT
CHECKED BY	CAG
SCALE	As indicated

LEVEL 1 TELECOM PLAN AREA E (EAST)

ET101E

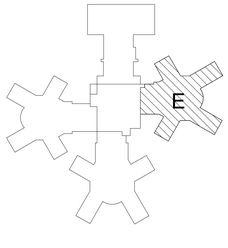




A1 ENLARGED COMM 205
SCALE: 1/4" = 1'-0"

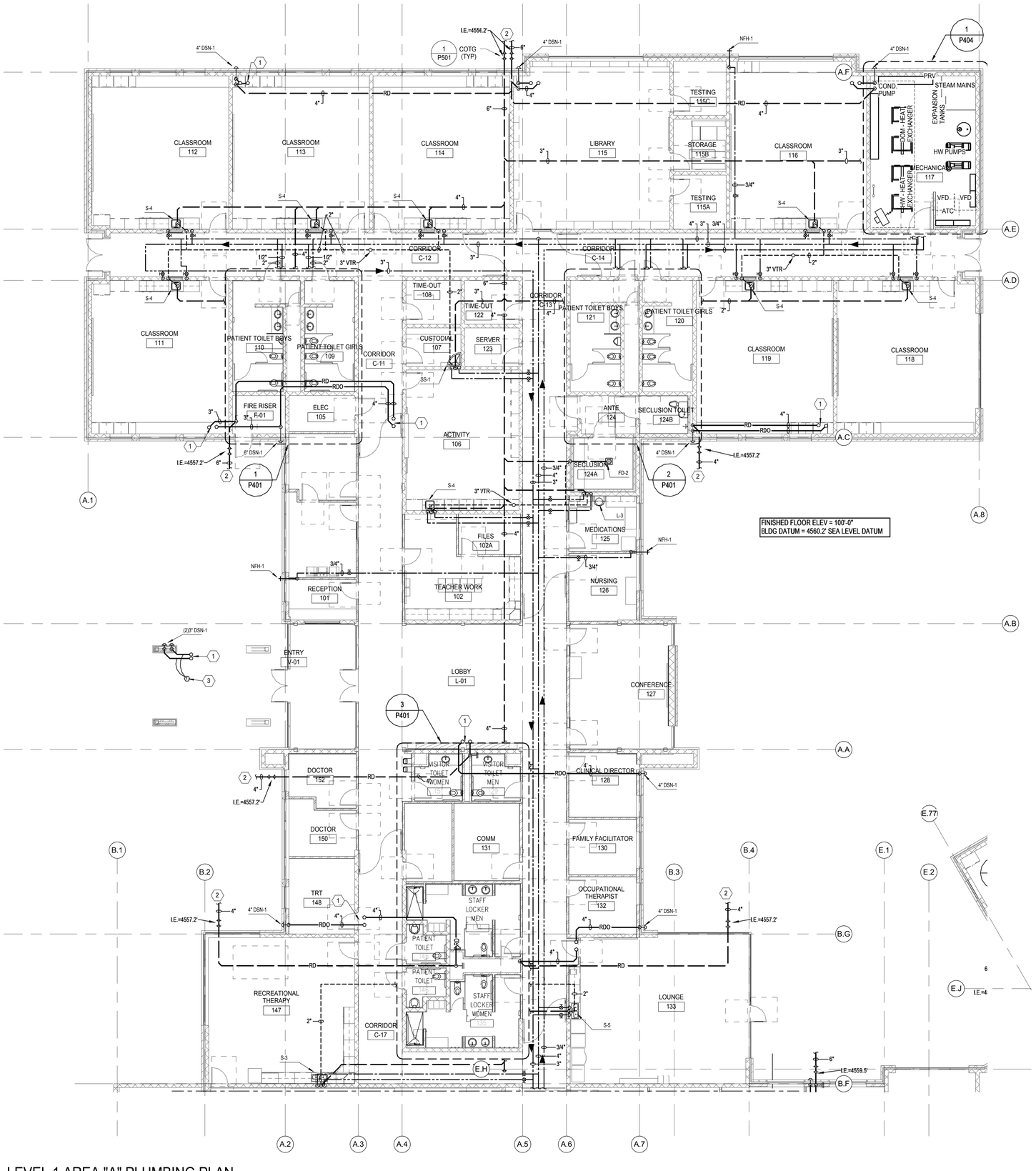
A2 LEVEL 01 TELECOMMUNICATIONS PLAN (AREA E)
SCALE: 1/8" = 1'-0"

KEY PLAN



TRUE PLAN

9/27/2012 10:44:16 AM



A2 LEVEL 1 AREA "A" PLUMBING PLAN
SCALE: 1/8" = 1'-0"

0" 8' 16'

TRUE PLAN

DFCM APPROVAL STAMP

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salt lake city
Utah 84104

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CONSULTING ENGINEERS
Salt Lake City - Logan - St. George - Tremonton
330 South 300 East 801.539.3148 T
Salt Lake City, UT 84111 801.539.3150 F
VBF& Project Number: 15142

REFERENCE NOTES

1 ROOF DRAIN PIPING UP TO DRAINS ABOVE.

2 SEE SITE UTILITY DRWGS FOR CONT.

3 HEAT TRACE EXTERIOR RO PIPING WITH 5 WATTS/FT HEAT CABLE.

PEDIATRIC FACILITY
1300 East Center St. Provo, Utah
Utah State Hospital
BID DOCUMENTS - 09/12/2012

SEAL

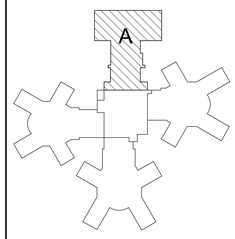
DATE	STATUS

	DATE	REVISION
2	09/27/2012	ADDENDUM 2

PROJECT NUMBER 11111

FILE

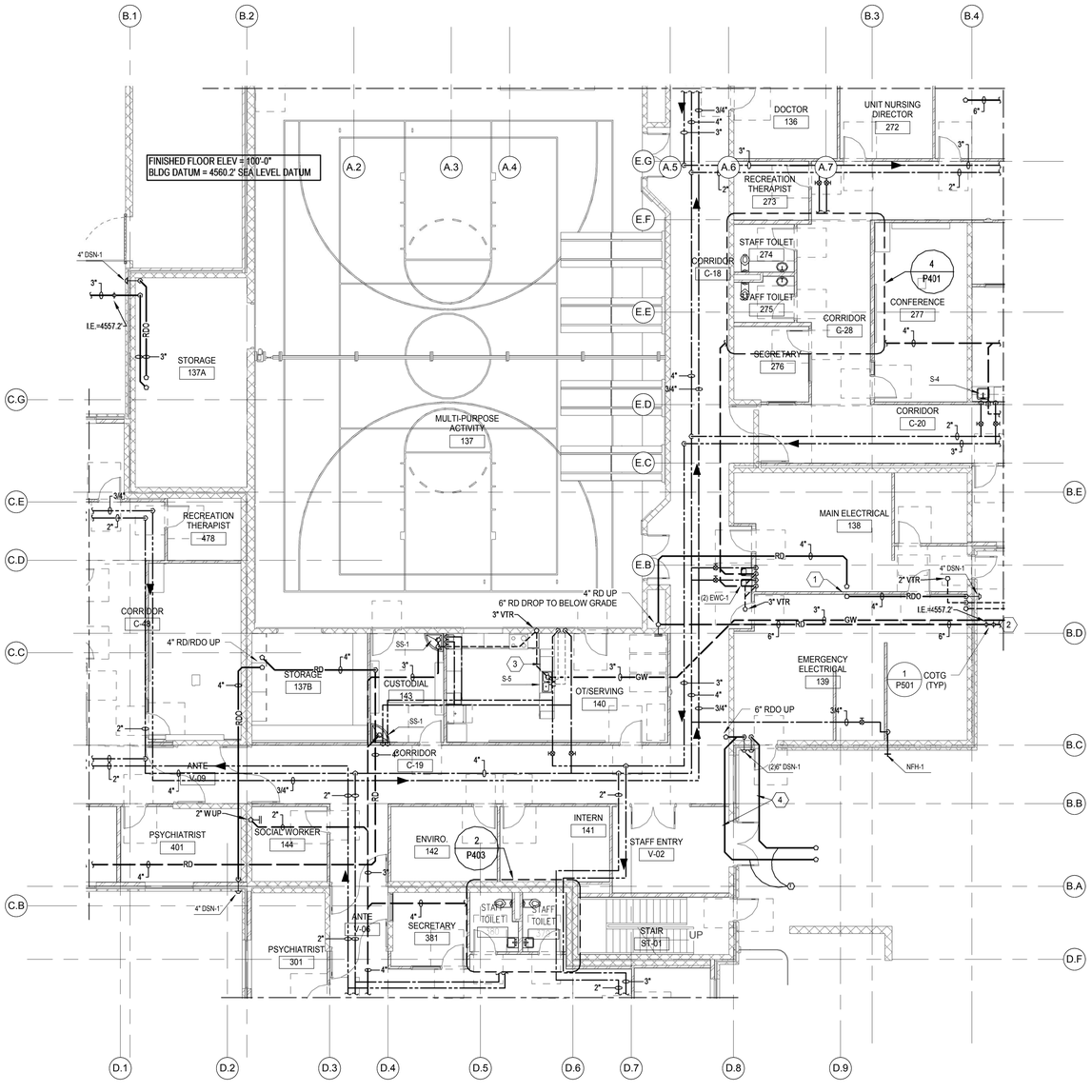
KEY PLAN



LEVEL 1 AREA "A" PLUMBING PLAN

P101A

9/27/2012 11:15:34 AM



A2 LEVEL 1 AREA "B" PLUMBING PLAN

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

0" 8' 16'

TRUE PLAN

DFCM APPROVAL STAMP

FFKR ARCHITECTS

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730 pacific avenue
salt lake city
Utah 84104

p 801-521-6186
f 801-539-1916
ffkr.com

REFERENCE NOTES

1. ROOF DRAIN PIPING UP TO DRAINS ABOVE.
2. SEE SITE UTILITY DRWGS FOR CONT.
3. EXTEND WATER AND DRAIN FROM DISHWASHER TO (2) COMP SINK.
4. HEAT TRACE EXTERIOR RO PIPING WITH 5 WATTS/FT HEAT CABLE.

VAN BOERUM & FRANK ASSOCIATES, INC.
CONSULTING ENGINEERS
M E P & T C P
Salt Lake City - Logan - St. George - Tremonton
330 South 300 East 801.530.3148 T
Salt Lake City, UT 84111 801.530.3150 F
VBF-A Project Number: 11542

PEDIATRIC FACILITY
1300 East Center St. Provo, Utah
Utah State Hospital
BID DOCUMENTS - 09/12/2012

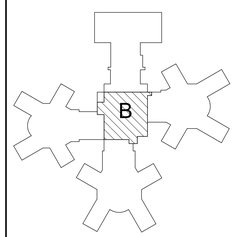
SEAL

DATE	STATUS

	DATE	REVISION
2	09/27/2012	ADDENDUM 2

PROJECT NUMBER 11111
FILE

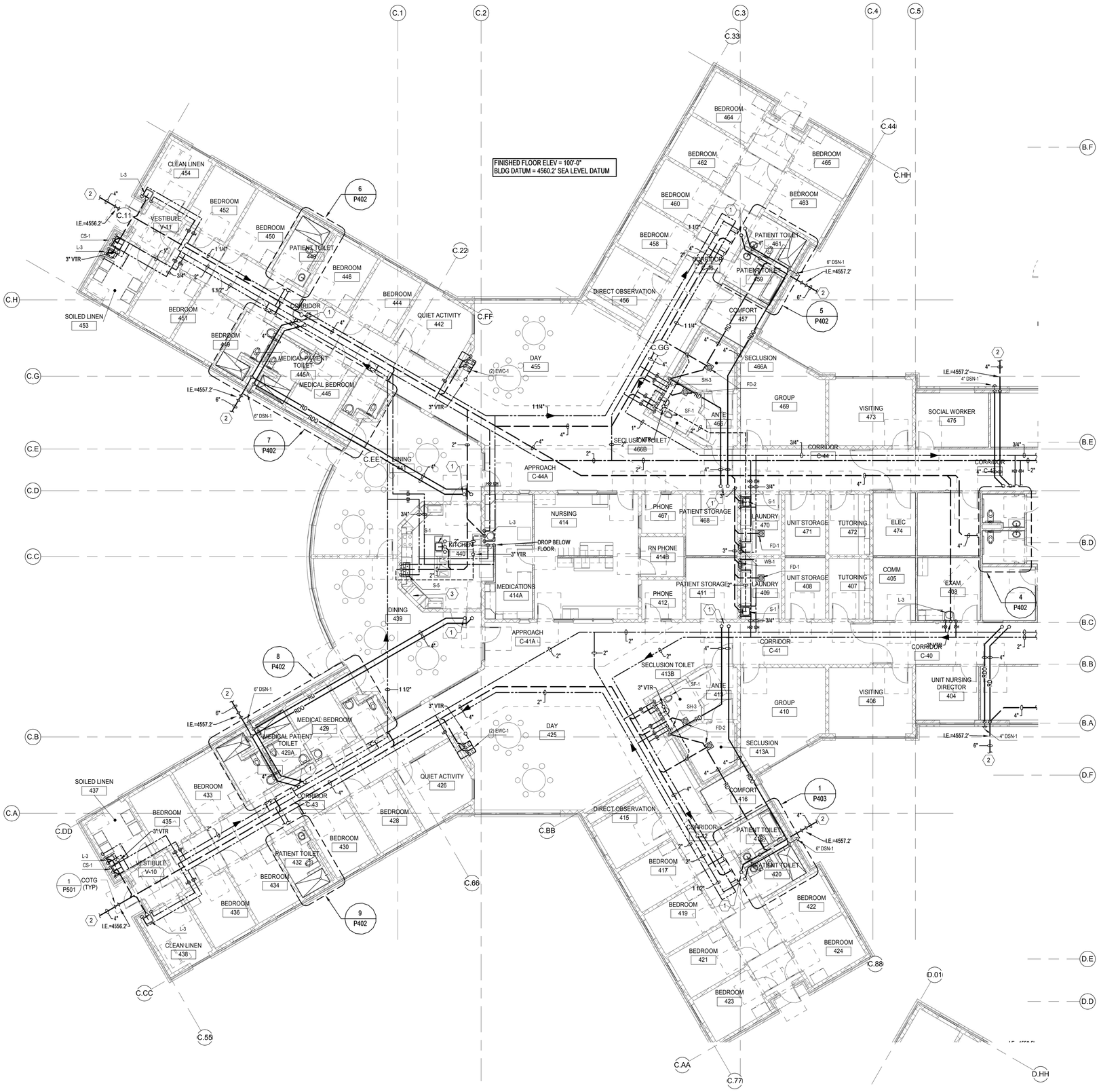
KEY PLAN



LEVEL 1 AREA "B" PLUMBING PLAN

P101B

9/27/2012 11:15:45 AM



A2 LEVEL 1 AREA "C" PLUMBING PLAN
SCALE: 1/8" = 1'-0"

0" 8' 16'

TRUE PLAN

DFCM APPROVAL STAMP

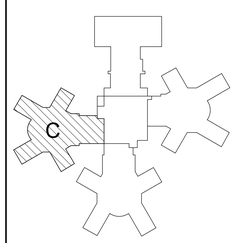
REFERENCE NOTES

1 ROOF DRAIN PIPING UP TO DRAINS ABOVE.

2 SEE SITE UTILITY DRWGS FOR CONT.

3 EXTEND WATER AND DRAIN FROM DISHWASHER TO (2) COMP SINK.

KEY PLAN



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VAN BOERUM & FRANK ASSOCIATES, INC.
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330 South 300 East Salt Lake City, UT 84111 801.530.3148 T 801.530.3150 F
VBF&A Project Number: 11542

PEDIATRIC FACILITY
1300 East Center St. Provo, Utah
Utah State Hospital
BID DOCUMENTS - 09/12/2012

SEAL

DATE	STATUS

	DATE	REVISION
2	09/27/2012	ADDENDUM 2

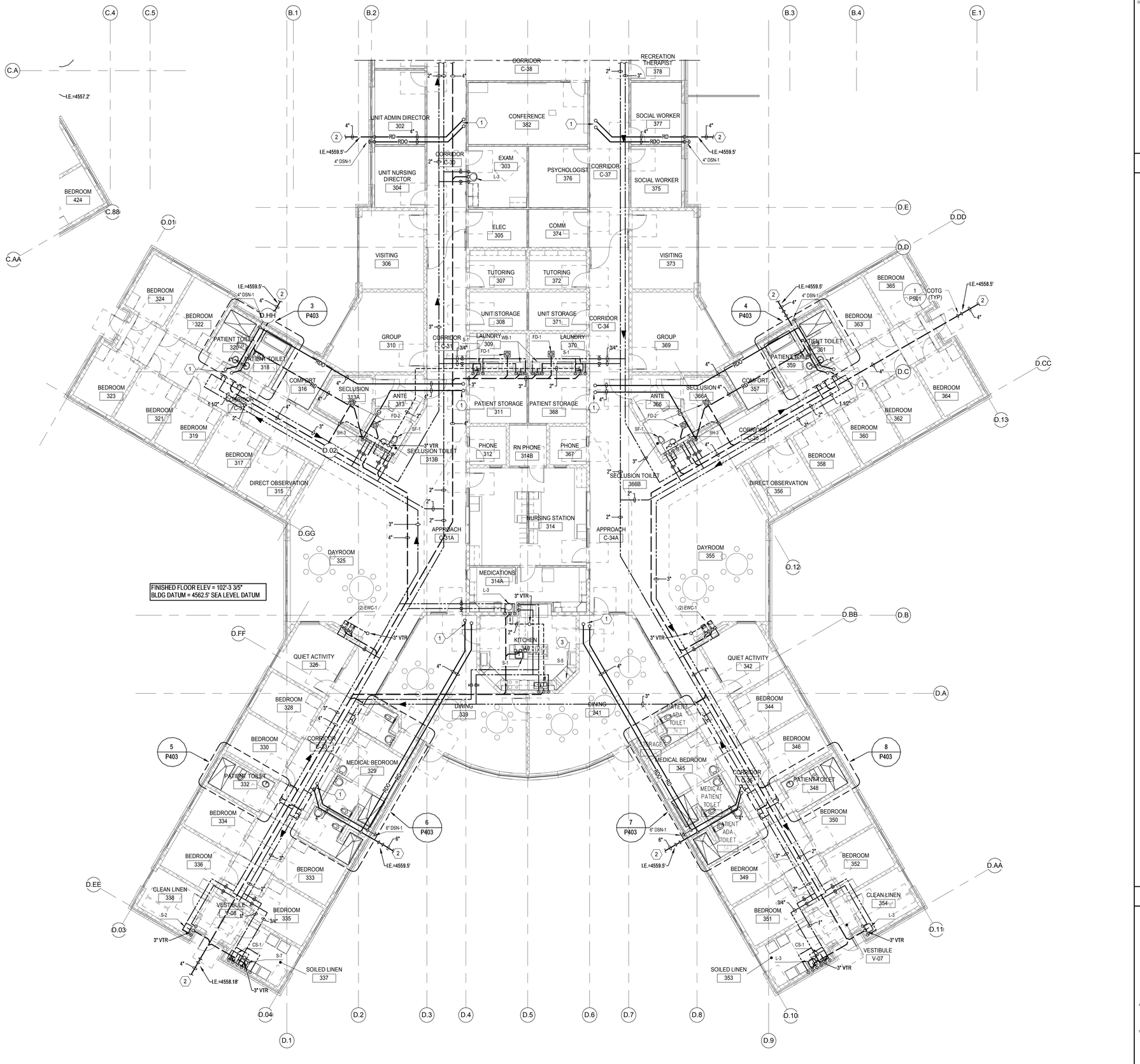
PROJECT NUMBER 11111

FILE

LEVEL 1 AREA "C" PLUMBING PLAN

P101C

9/27/2012 11:15:59 AM



A2 LEVEL 1 AREA "D" PLUMBING PLAN

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

0" 8' 16'

TRUE PLAN

DFCM APPROVAL STAMP

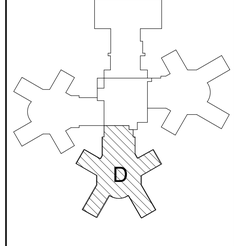
REFERENCE NOTES

1 ROOF DRAIN PIPING UP TO DRAINS ABOVE.

2 SEE SITE UTILITY DRWGS FOR CONT.

3 EXTEND WATER AND DRAIN FROM DISHWASHER TO (2) COMP SINK.

KEY PLAN



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801-539-1916
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VAN BOERUM & FRANK ASSOCIATES, INC.
CONSULTING ENGINEERS
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330 South 300 East 801.539.3148 T
Salt Lake City, UT 84111 801.539.3150 F
VBF&A Project Number: 15142

PEDIATRIC FACILITY
1300 East Center St. Provo, Utah
Utah State Hospital
BID DOCUMENTS - 09/12/2012

SEAL

DATE	STATUS

△	DATE	REVISION
2	09/27/2012	ADDENDUM 2

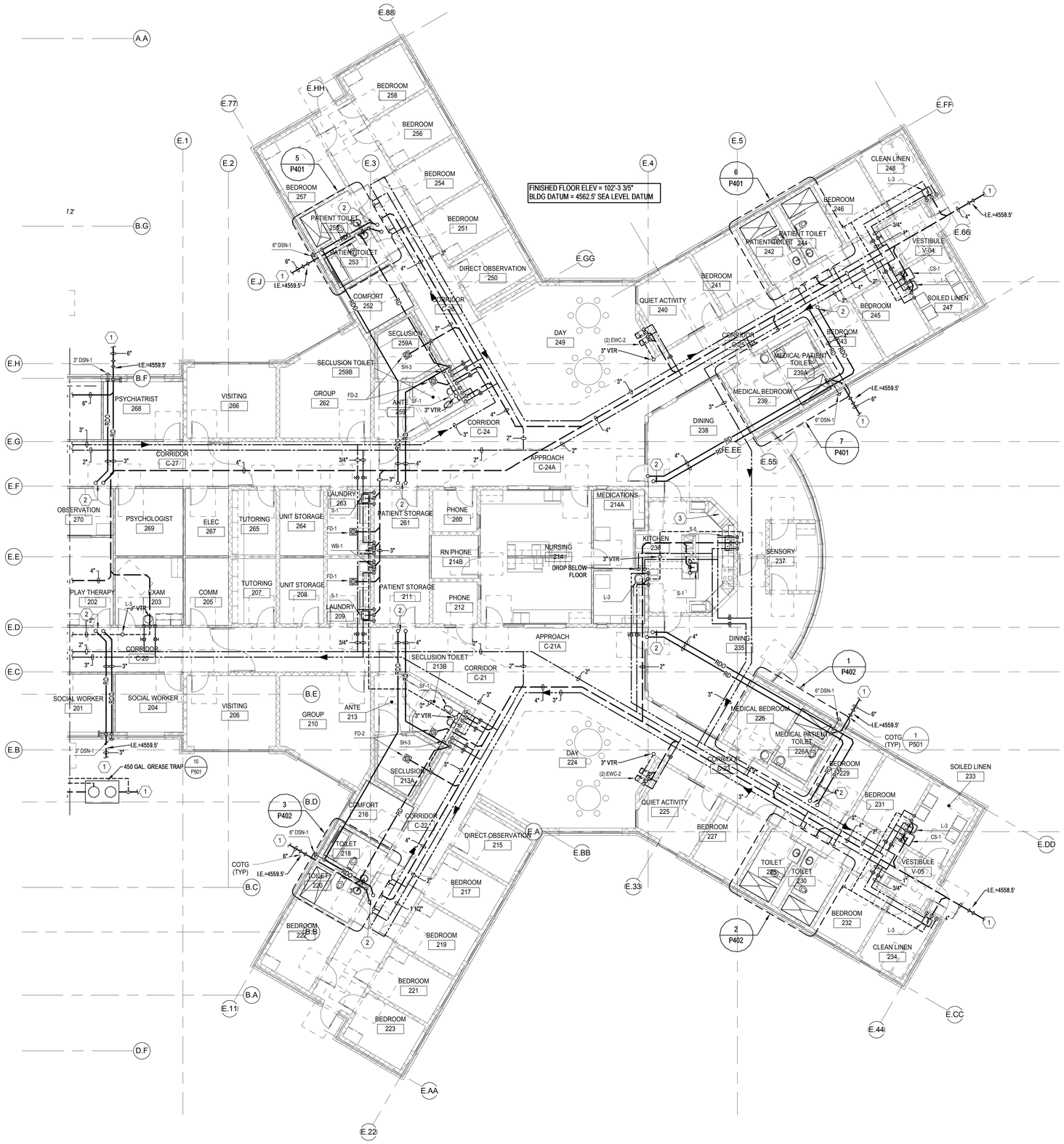
PROJECT NUMBER 11111

FILE

LEVEL 1 AREA "D" PLUMBING PLAN

P101D

9/27/2012 11:16:12 AM



A2 LEVEL 1 AREA "E" PLUMBING PLAN
SCALE: 1/8" = 1'-0"

0" 8' 16'

TRUE PLAN

DFCM APPROVAL STAMP

FFKR ARCHITECTS

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salt lake city
Utah 84104

801-521-6186
801-539-1916
ffkr.com

REFERENCE NOTES

1 SEE SITE UTILITY DRWGS FOR CONT.

2 ROOF DRAIN PIPING UP TO DRAINS ABOVE.

3 EXTEND WATER AND DRAIN FROM DISHWASHER TO (2) COMP SINK.

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CONSULTING ENGINEERS
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330 South 300 East 801.530.3148 T
Salt Lake City, UT 84111 801.530.3150 F
VBF&A Project Number: 11542

PEDIATRIC FACILITY
1300 East Center St. Provo, Utah
Utah State Hospital
BID DOCUMENTS - 09/12/2012

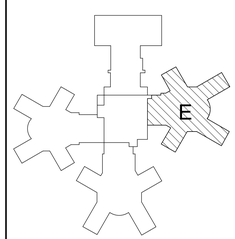
SEAL

DATE	STATUS

	DATE	REVISION
2	09/27/2012	ADDENDUM 2

PROJECT NUMBER 11111
FILE

KEY PLAN



LEVEL 1 AREA "E" PLUMBING PLAN

P101E

9/27/2012 11:16:24 AM

DFCM APPROVAL STAMP

FFKR ARCHITECTS

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730 pacific avenue
salt lake city
Utah 84104

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REFERENCE NOTES

1 WASTE AND VENT PIPING BELOW FLOOR.

2 ROOF DRAIN PIPING UP TO DRAINS ABOVE.

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CONSULTING ENGINEERS
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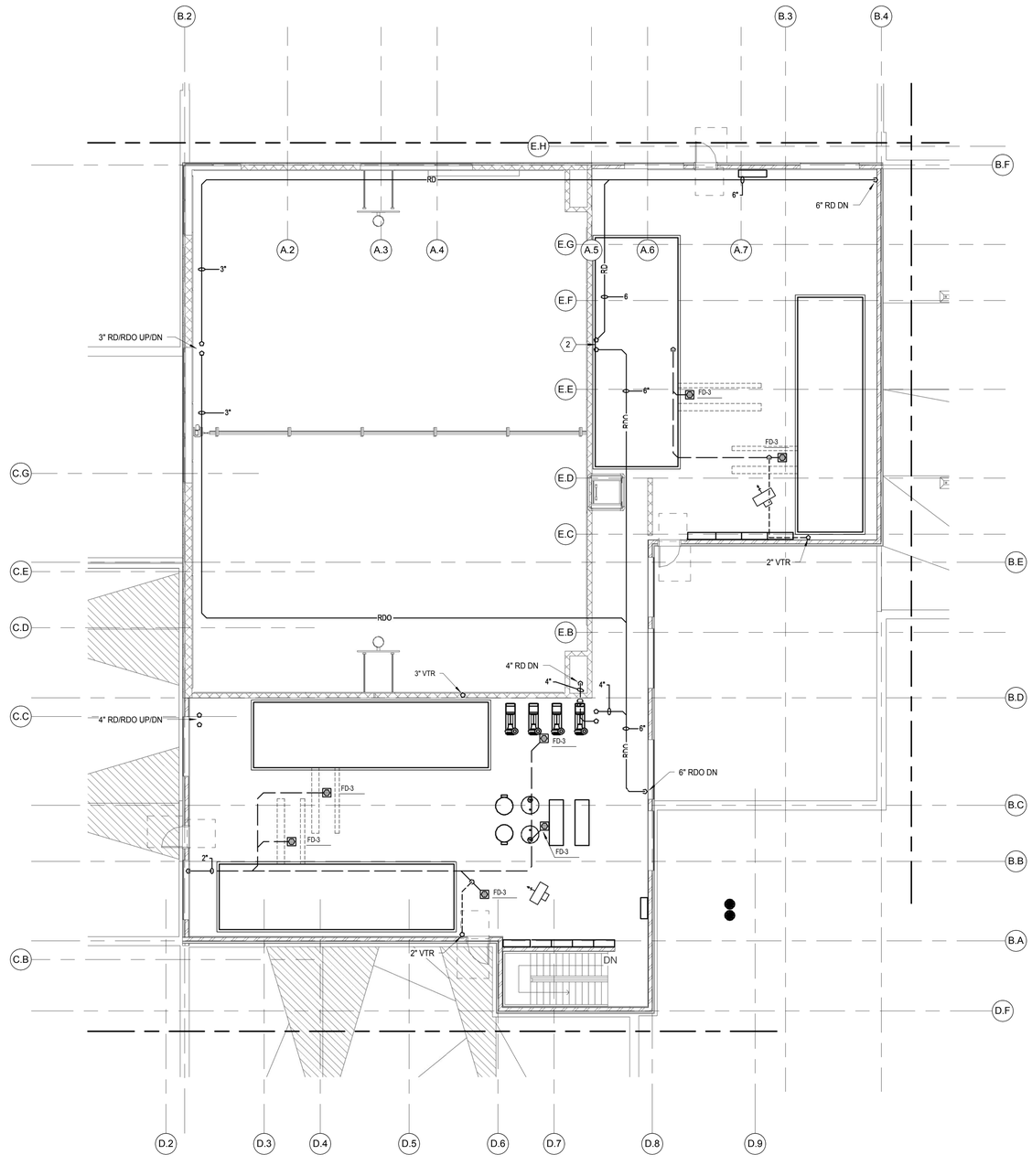
330 South 300 East 801.530.3148 T
Salt Lake City, UT 84111 801.530.3150 F
VBF4 Project Number: 11542

PEDIATRIC FACILITY
1300 East Center St. Provo, Utah
Utah State Hospital
BID DOCUMENTS - 09/12/2012

SEAL

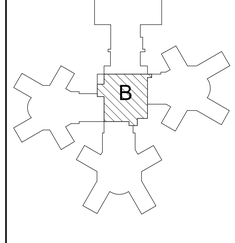


1 LEVEL 2 PLUMBING PLAN
SCALE: 1/8" = 1'-0"

0" 8' 16'

TRUE PLAN

KEY PLAN



DATE	STATUS

	DATE	REVISION
2	09/27/2012	ADDENDUM 2

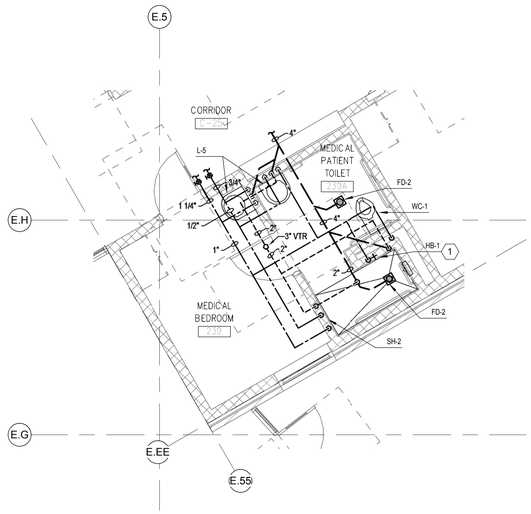
PROJECT NUMBER 11111

FILE

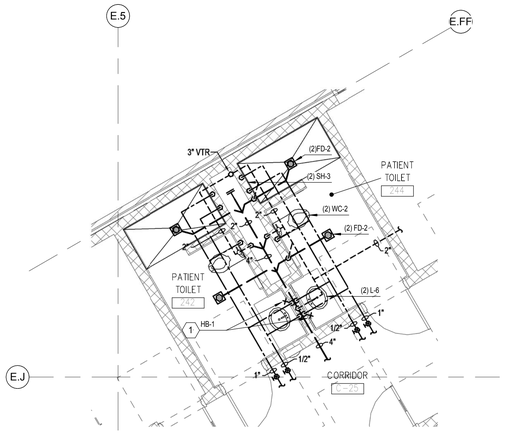
LEVEL 2 PLUMBING PLAN

P102

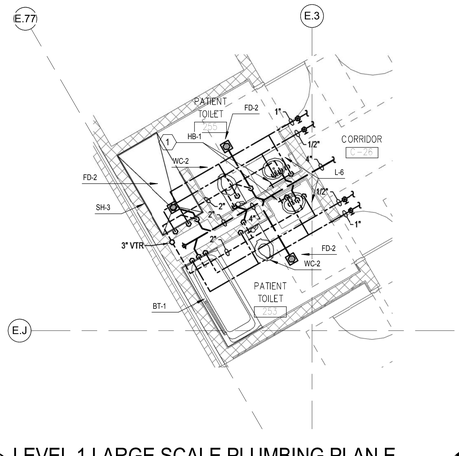
9/27/2012 11:16:33 AM



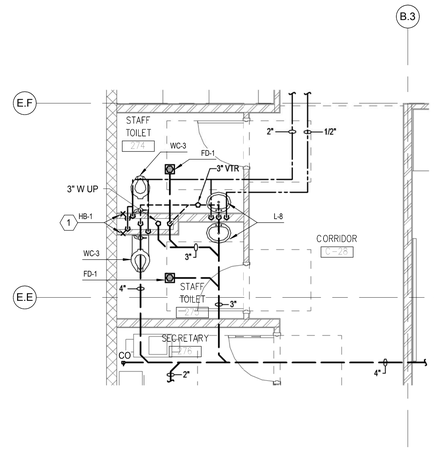
7 LEVEL 1 LARGE SCALE PLUMBING PLAN G
SCALE: 1/4" = 1'-0"



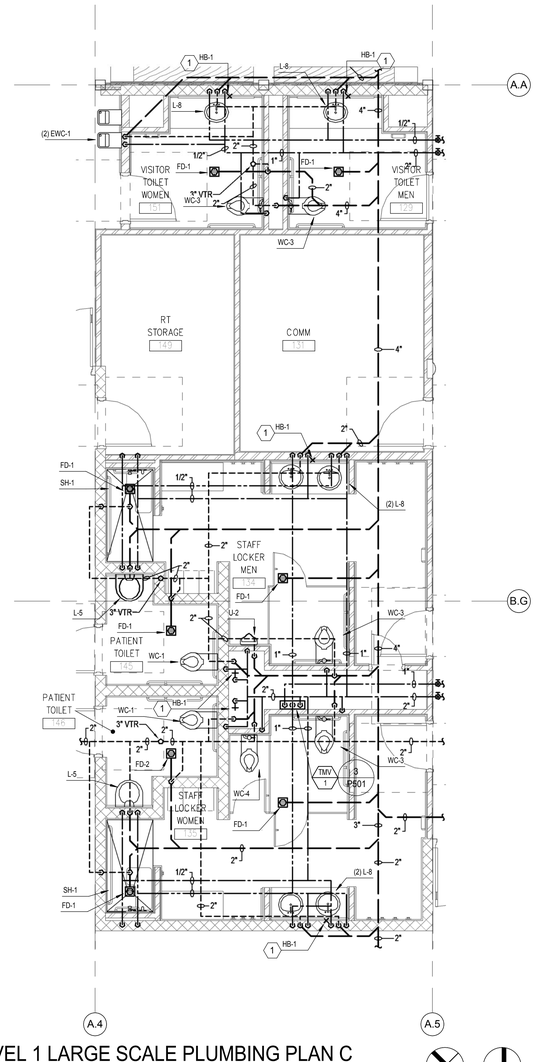
6 LEVEL 1 LARGE SCALE PLUMBING PLAN F
SCALE: 1/4" = 1'-0"



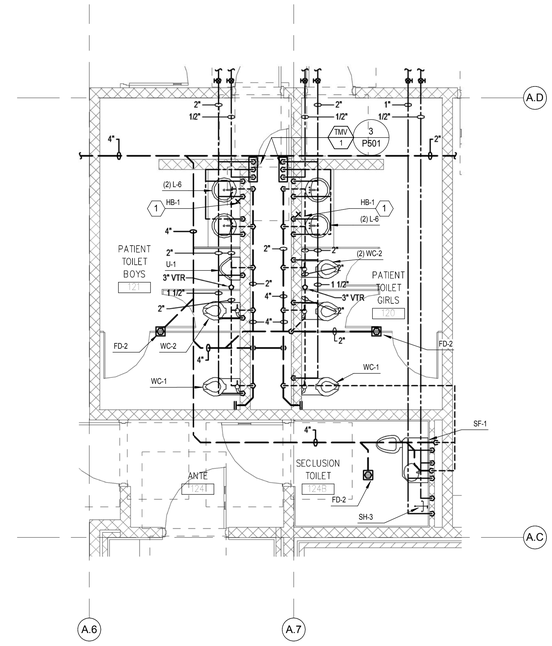
5 LEVEL 1 LARGE SCALE PLUMBING PLAN E
SCALE: 1/4" = 1'-0"



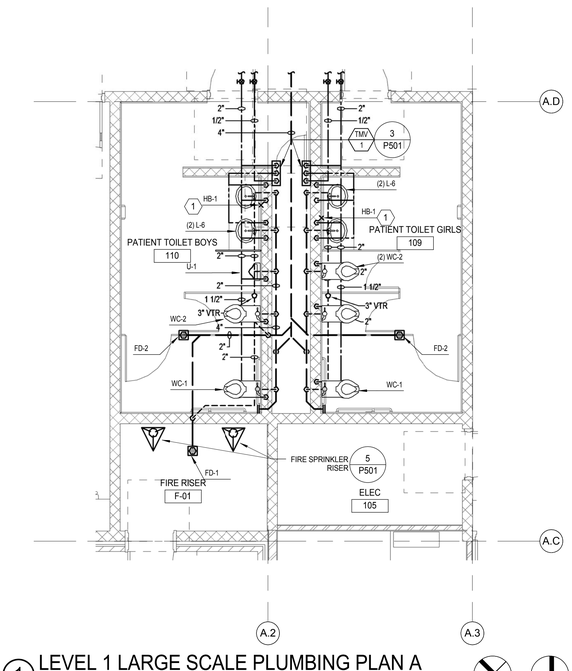
4 LEVEL 1 LARGE SCALE PLUMBING PLAN D
SCALE: 1/4" = 1'-0"



3 LEVEL 1 LARGE SCALE PLUMBING PLAN C
SCALE: 1/4" = 1'-0"



2 LEVEL 1 LARGE SCALE PLUMBING PLAN B
SCALE: 1/4" = 1'-0"



1 LEVEL 1 LARGE SCALE PLUMBING PLAN A
SCALE: 1/4" = 1'-0"

DFCM APPROVAL STAMP

REFERENCE NOTES

1 COORDINATE LOCATION OF HOSE BIBB W/ ARCHITECTURALLY SPECIFIED ACCESS PANEL.

FFKR ARCHITECTS

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VBF&A Project Number: 15142

PEDIATRIC FACILITY
1300 East Center St. Provo, Utah
Utah State Hospital
BID DOCUMENTS - 09/12/2012

SEAL

DATE	STATUS

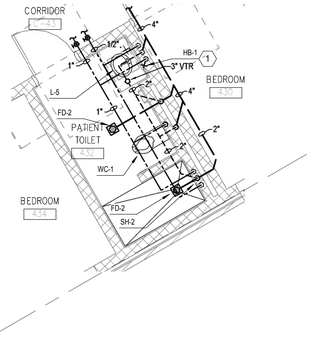
	DATE	REVISION
2	09/27/2012	ADDENDUM 2

PROJECT NUMBER 11111
FILE

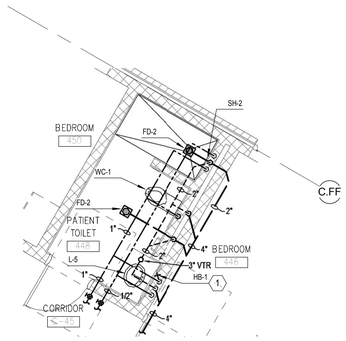
LARGE SCALE PLUMBING PLANS

P401

9/27/2012 11:16:46 AM



9 LEVEL 1 LARGE SCALE PLUMBING PLAN S
SCALE: 1/4" = 1'-0"



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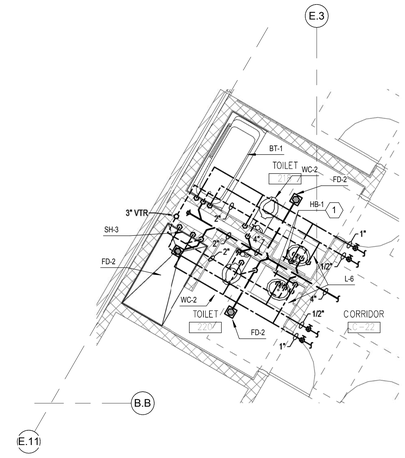
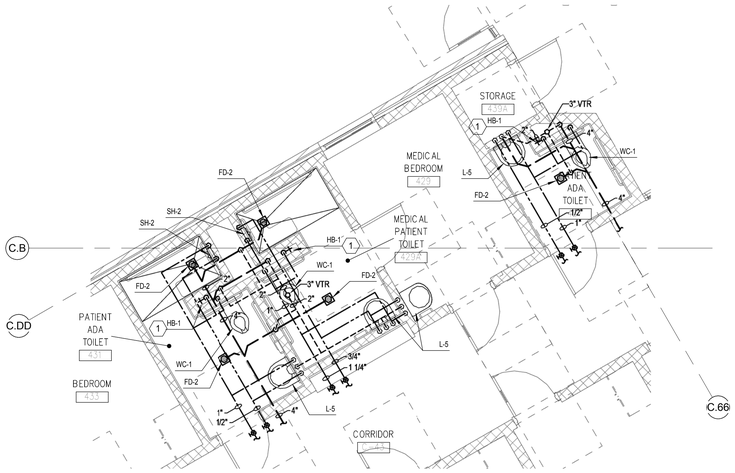
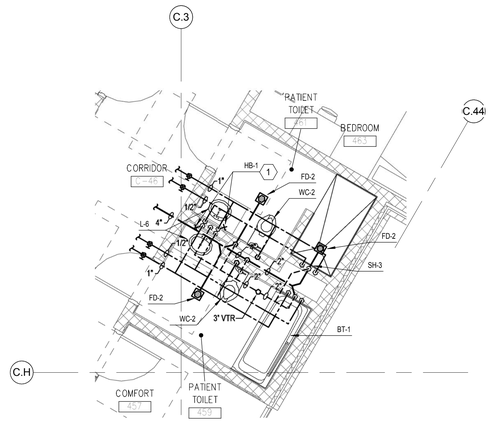
SCALE: 1/4" = 1'-0"



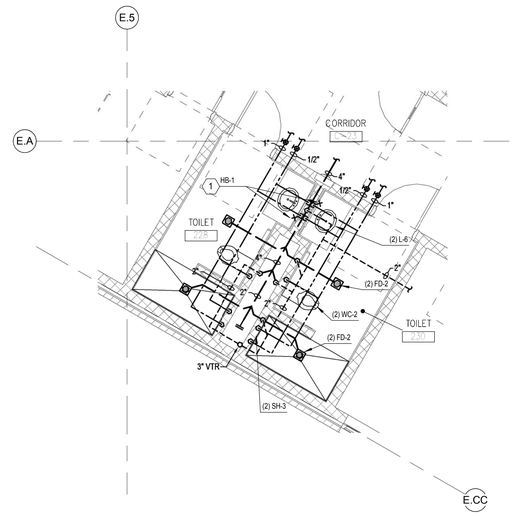
3 LEVEL 1 LARGE SCALE PLUMBING PLAN K
SCALE: 1/4" = 1'-0"



8 LEVEL 1 LARGE SCALE PLUMBING PLAN R
SCALE: 1/4" = 1'-0"



5 LEVEL 1 LARGE SCALE PLUMBING PLAN M
SCALE: 1/4" = 1'-0"



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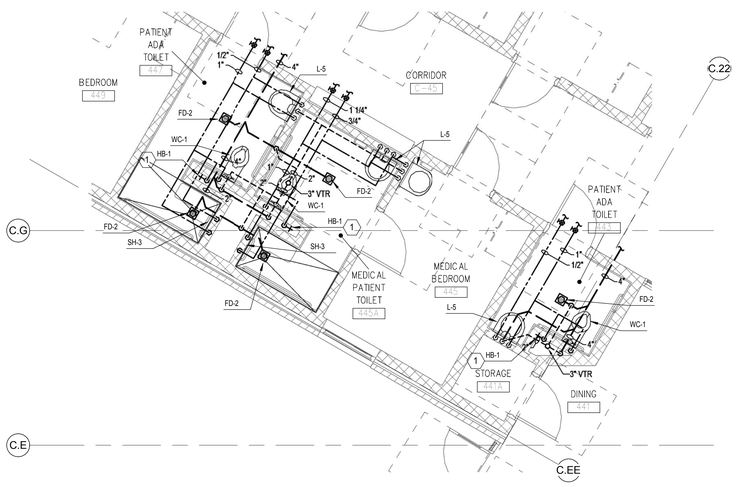
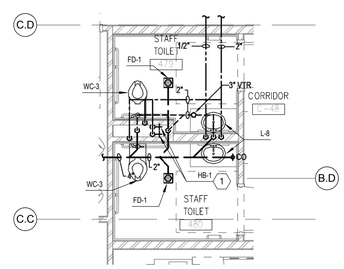
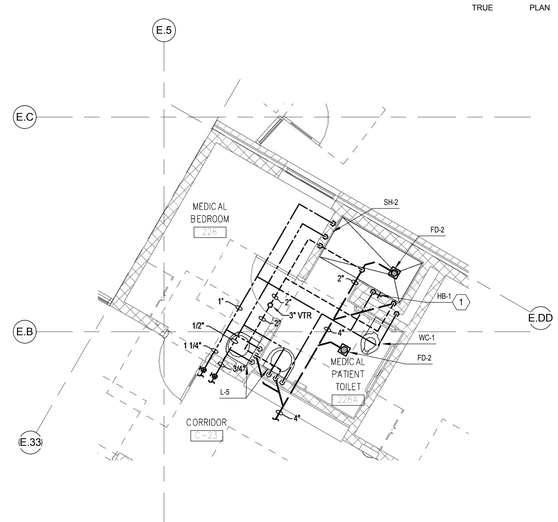
SCALE: 1/4" = 1'-0"



7 LEVEL 1 LARGE SCALE PLUMBING PLAN Q
SCALE: 1/4" = 1'-0"



4 LEVEL 1 LARGE SCALE PLUMBING PLAN L
SCALE: 1/4" = 1'-0"



1 LEVEL 1 LARGE SCALE PLUMBING PLAN H
SCALE: 1/4" = 1'-0"

DFCM APPROVAL STAMP

REFERENCE NOTES

1 COORDINATE LOCATION OF HOSE BIBB W/ ARCHITECTURALLY SPECIFIED ACCESS PANEL.

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VBF+ Project Number: 11542

PEDIATRIC FACILITY
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Utah State Hospital
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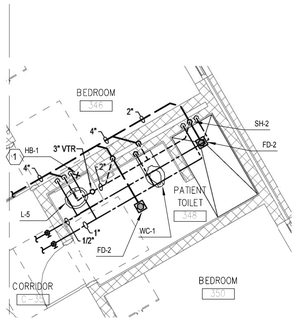
2	09/27/2012	ADDENDUM 2

PROJECT NUMBER 11111
FILE

LARGE SCALE PLUMBING PLANS

P402

9/27/2012 11:16:58 AM



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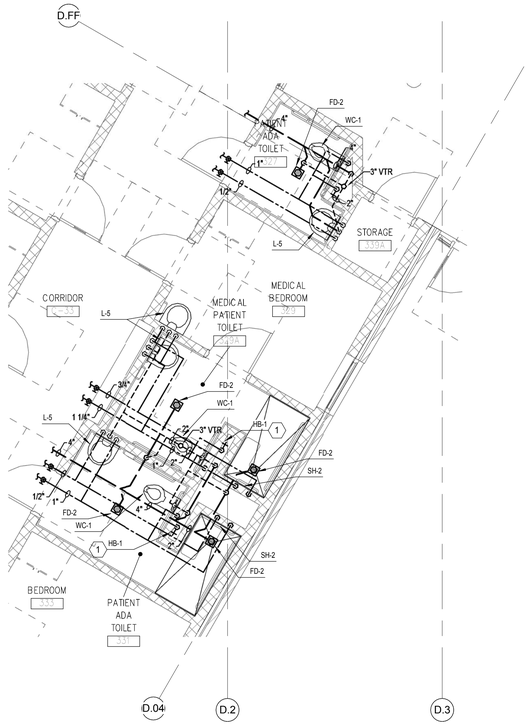
SCALE: 1/4" = 1'-0"



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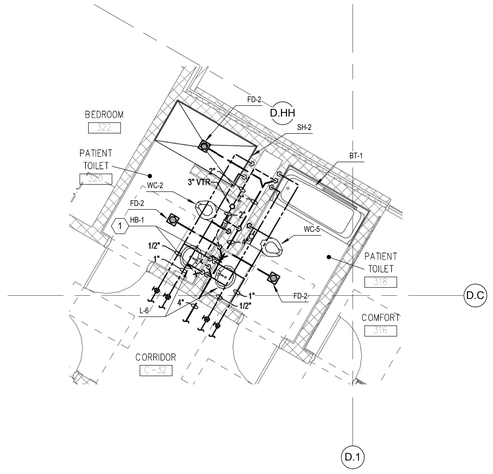
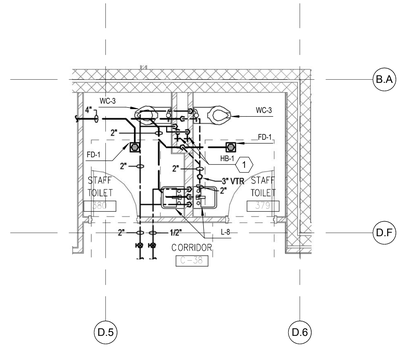
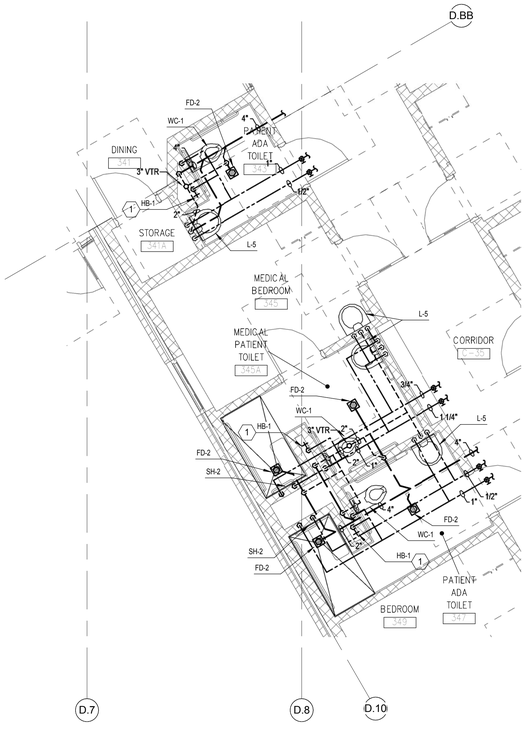
SCALE: 1/4" = 1'-0"



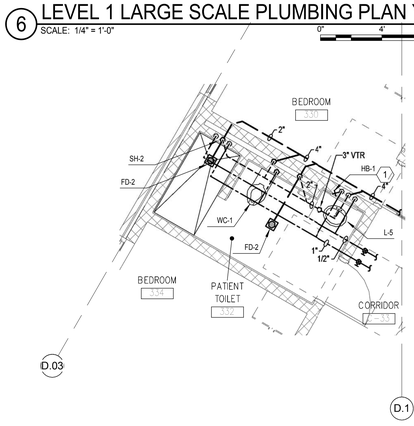
3 LEVEL 1 LARGE SCALE PLUMBING PLAN V
SCALE: 1/4" = 1'-0"



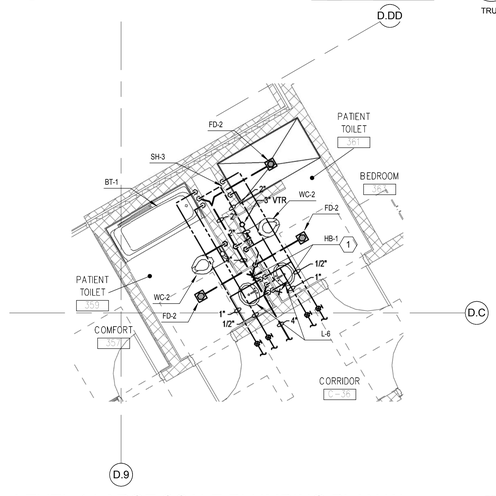
2 LEVEL 1 LARGE SCALE PLUMBING PLAN U
SCALE: 1/4" = 1'-0"



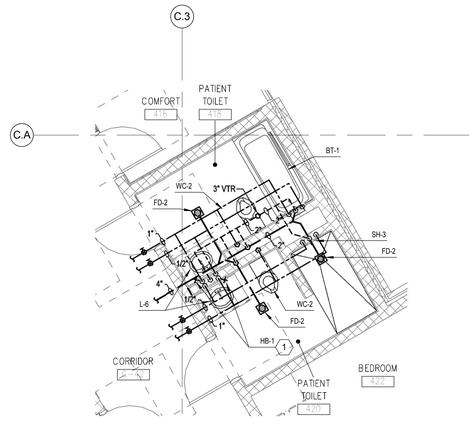
7 LEVEL 1 LARGE SCALE PLUMBING PLAN Z
SCALE: 1/4" = 1'-0"



5 LEVEL 1 LARGE SCALE PLUMBING PLAN X
SCALE: 1/4" = 1'-0"



4 LEVEL 1 LARGE SCALE PLUMBING PLAN W
SCALE: 1/4" = 1'-0"



1 LEVEL 1 LARGE SCALE PLUMBING PLAN T
SCALE: 1/4" = 1'-0"

DFCM APPROVAL STAMP

REFERENCE NOTES

1 COORDINATE LOCATION OF HOSE BIBB W/ ARCHITECTURALLY SPECIFIED ACCESS PANEL.

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VBF-A Project Number: 15142

PEDIATRIC FACILITY
1300 East Center St. Provo, Utah
Utah State Hospital
BID DOCUMENTS - 09/12/2012

SEAL

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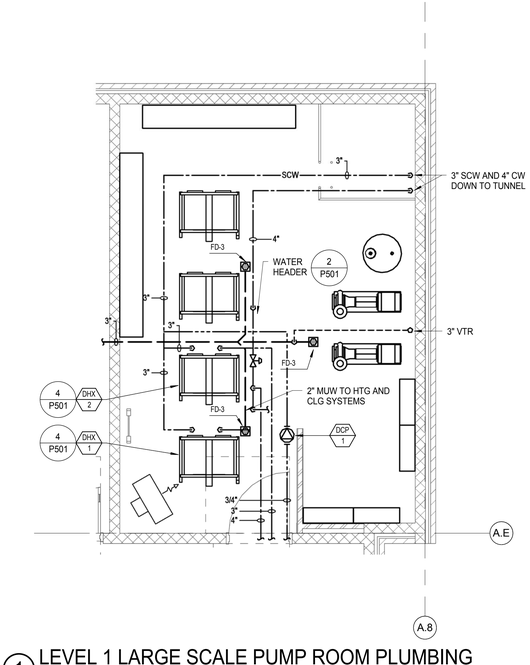
2	09/27/2012	ADDENDUM 2

PROJECT NUMBER 11111
FILE

LARGE SCALE PLUMBING PLANS

P403

9/27/2012 11:17:10 AM



1 LEVEL 1 LARGE SCALE PUMP ROOM PLUMBING
SCALE: 1/4" = 1'-0"

0" 8" 16"

TRUE PLAN

DFCM APPROVAL STAMP

REFERENCE NOTES

FFKR
ARCHITECTS

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Salt Lake City, UT 84111 801.530.3150 F
VBF4 Project Number: 11542

PEDIATRIC FACILITY
1300 East Center St. Provo, Utah
Utah State Hospital
BID DOCUMENTS - 09/12/2012

SEAL

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2	09/27/2012	ADDENDUM 2

PROJECT NUMBER 11111

FILE

LARGE SCALE PUMP ROOM PLUMBING PLAN

P404

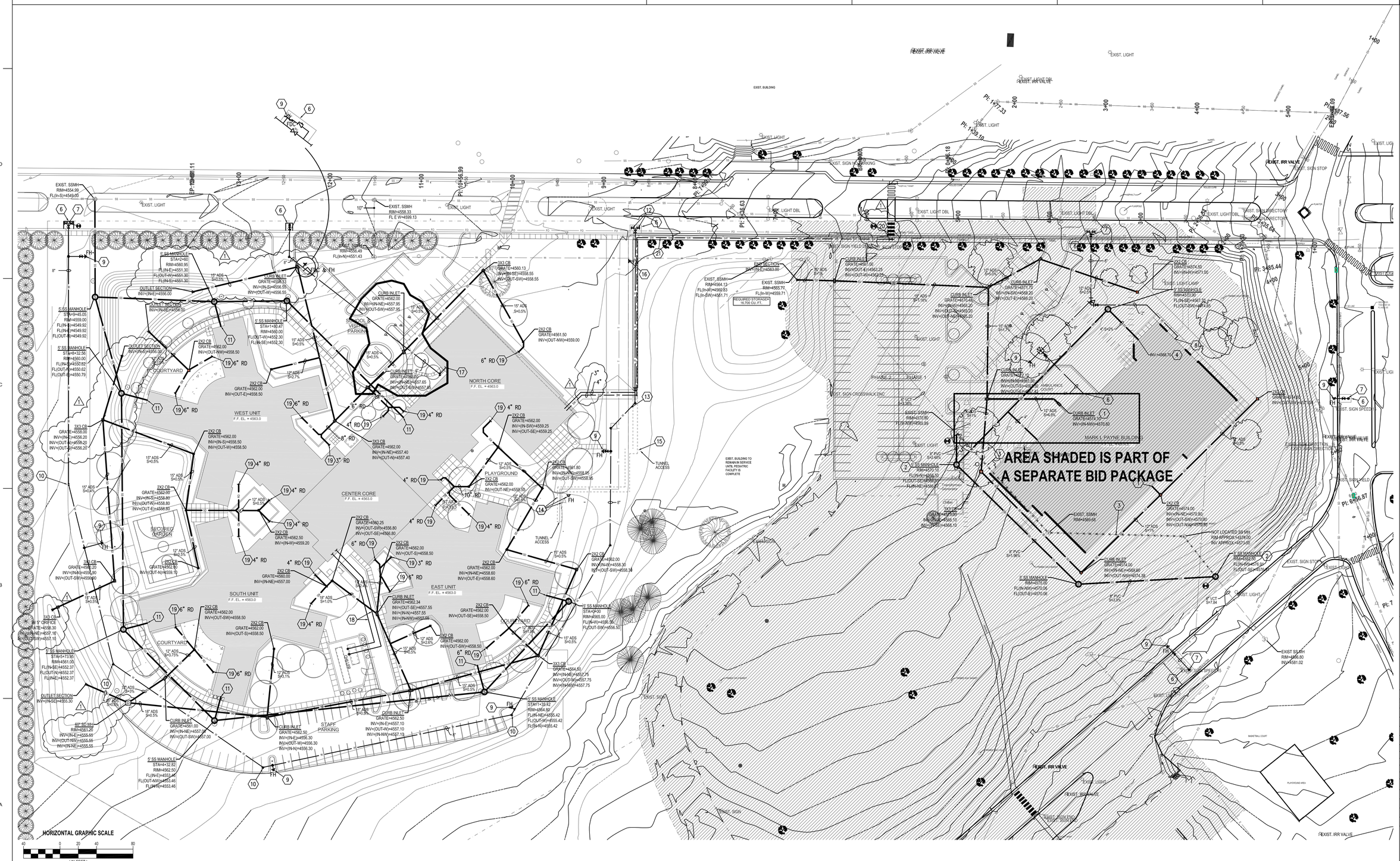
9/27/2012 11:17:19 AM

REFERENCE NOTES

17. FIRE MAIN, SEE PLUMBING PLAN FOR CONTINUATION.
18. CHILLED WATER SUPPLY AND RETURN LINES TO REMOTE CHILLER, SEE MECHANICAL PLANS.
19. SEE PLUMBING PLAN FOR CONTINUATION OF ROOF DRAIN PIPING.
20. CONNECT TO 6" SOFT WATER MAIN IN TUNNEL WITH ISOLATION VALVE IN TUNNEL.
21. PROVIDE NEW SOFT WATER LINE IN EXITING AND NEW TUNNEL AS SHOWN. USE EXISTING PIPE RACK WITH NEW HANGERS, TYPICAL.

1. ROOF DRAIN CONNECTION. SEE PLUMBING PLAN.
2. FIELD LOCATE EXISTING 6" VCT SANITARY SEWER MAIN. CONSTRUCT NEW MANHOLE TO EXISTING MAIN.
3. REMOVE EXISTING UTILITY AND CONCRETE STRUCTURES.
4. SEE PLUMBING PLAN AND COORDINATE INVERT ELEVATION.
5. SEE PLUMBING PLAN FOR FIRE PROTECTION MAIN AND SPECIAL REQUIREMENTS.
6. SAWCUT PAVEMENT AND REPAIR AND REPLACE WITH EQUIVALENT BASE AND ASPHALT.
7. TAP WATER LINE OR PROVIDE CUT-IN TEE DEPENDING ON SIZE OF LATERAL. SEE DETAILS. PROVIDE GATE VALVE AT CONNECTION.
8. WATER SERVICE TO BUILDING. ENTER TUNNEL AND EXTEND TO MECHANICAL ROOM. SEE MECHANICAL FOR CONTINUATION.
9. FIRE HYDRANT, TYPICAL. SEE DETAIL.
10. THRUST BLOCK ALL FITTINGS, TYPICAL. SEE DETAIL.
11. SEE PLUMBING PLAN FOR SIZE AND INVERT, TYPICAL PEDIATRICS BUILDING.
12. RECONFIGURE WATER LINE CONNECTION TO EXISTING TUNNEL WITH GATE VALVE ON EACH SIDE OF VALVE.
13. OFFSET WATER MAIN TO EXISTING TUNNEL AND CONNECT.
14. EXISTING FDC, PIV, AND FH TO BE REMOVED. CAP IN TUNNEL AT EXISTING YOUTH SERVICES TUNNEL.
15. CAP ALL UTILITIES IN TUNNEL NOT REQUIRED FOR YOUTH SERVICES BUILDING.
16. CONNECT TO 8" WATER IN TUNNEL AND EXTEND 6" LINE TO FIRE HYDRANT OUTSIDE TUNNEL.

DFCM APPROVAL STAMP



LOCATED IN THE
OF SECTION
TOWNSHIP , RANGE
SALT LAKE BASE AND MERIDIAN

OVERALL SITE UTILITY PLAN

SCALE: 1" = 40'-0

0 40' 80'

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Utah State Hospital Consolidation
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SEAL

DATE	STATUS
02.APR.2012	DD 100%
29.JUN.2012	REVIEW SET

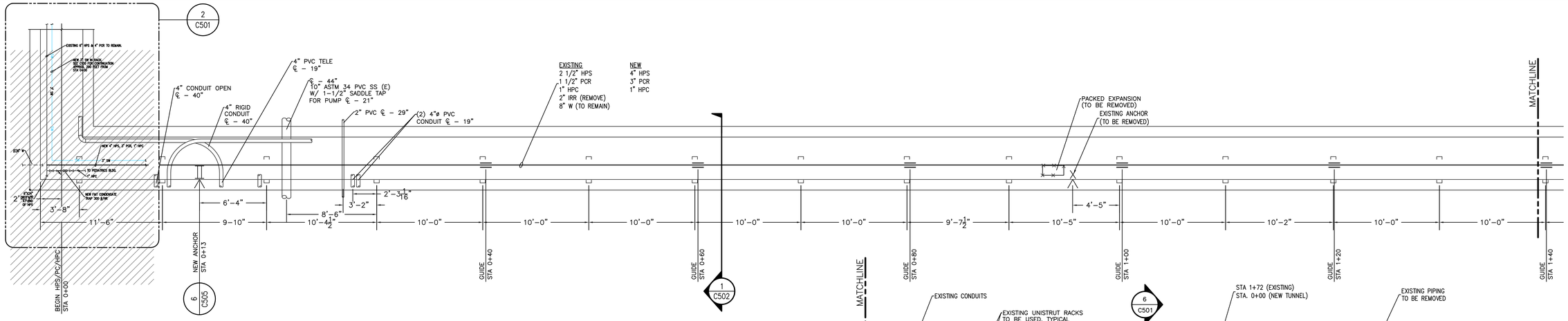
	DATE	REVISION
1	27.SEP.2012	ADDENDUM 2

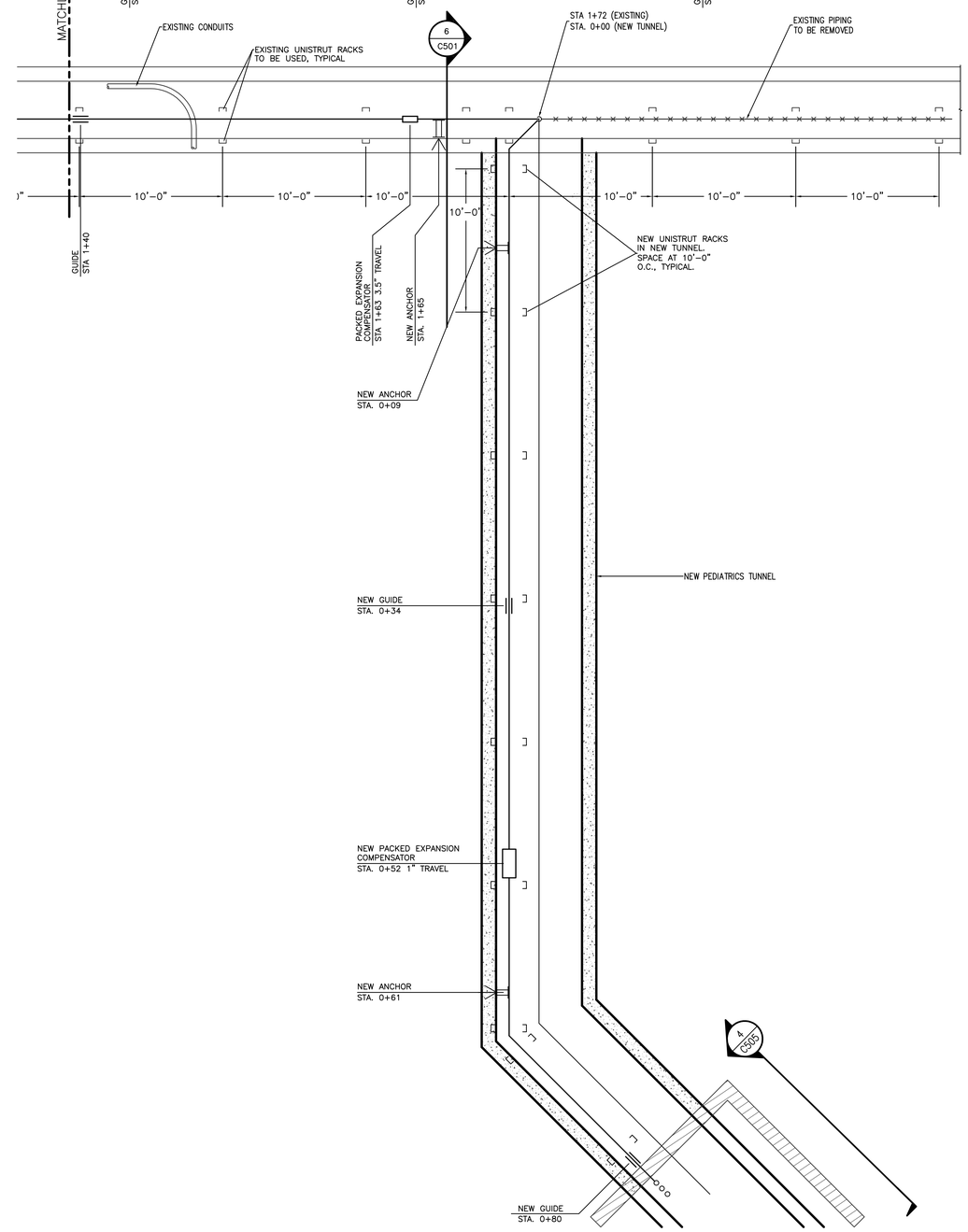
06/26/2012 12:35:00 PM

PROJECT NUMBER: 11111
FILE: 11111 USH Pediatrics
DRAWN BY: EJ,TC,MB,RG
CHECKED BY: JB,KE,DB,SS
SCALE: 1" = 40'

OVERALL SITE UTILITY PLAN

C100





2 C501 CONNECTION AT EXISTING TUNNEL STA 0+00
SCALE: 1/2" = 1'-0"

1 C501 EXISTING BEESLEY/YOUTH SERVICES TUNNEL
SCALE: 1/4" = 1'-0"

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VBFA Project Number: 11542

PEDIATRIC FACILITY
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Utah State Hospital Consolidation
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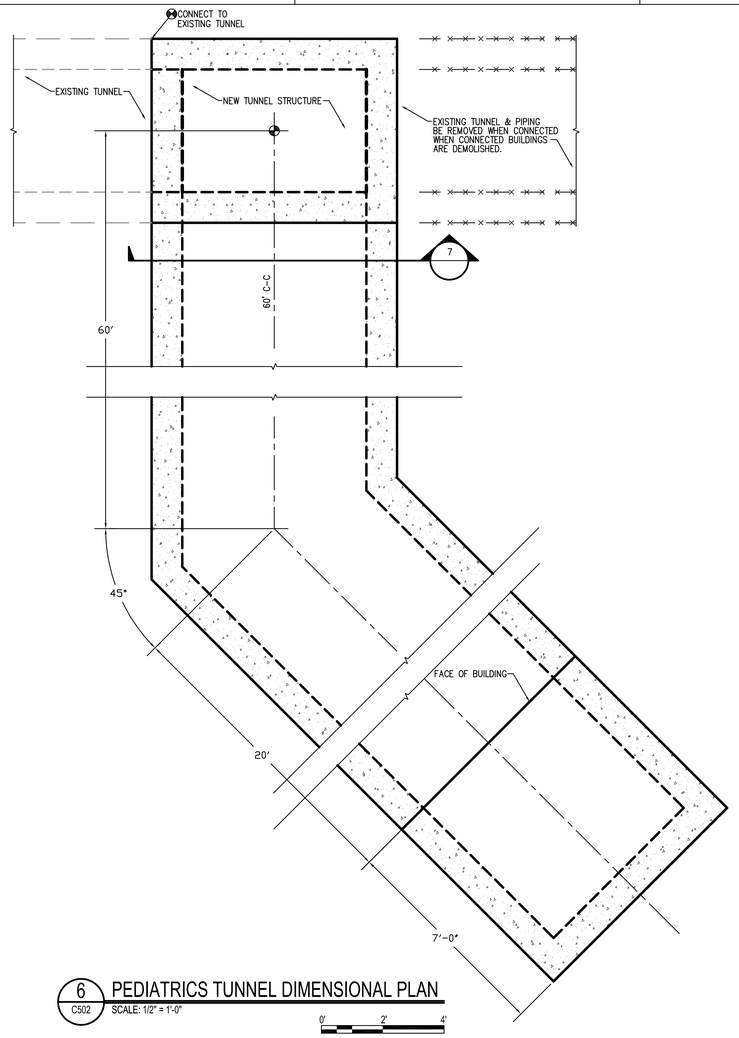
PROJECT NUMBER 11111
FILE 11111 USH Pediatrics
DRAWN BY FJ,TC,MB,RG
CHECKED BY JB,KE,DB,SS
SCALE 1/4" = 1'-0"

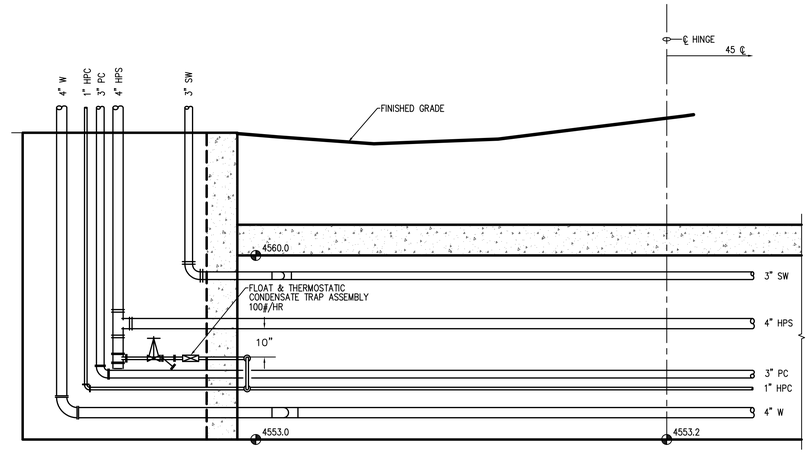
DETAILS AND SECTIONS

C501

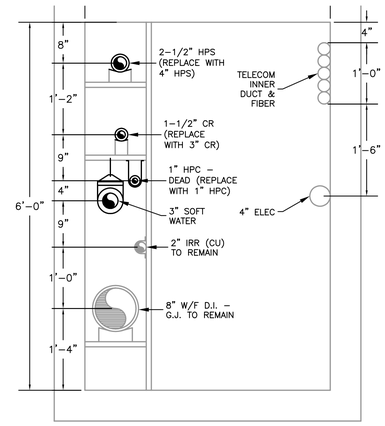
06/26/2012 12:35:00 PM



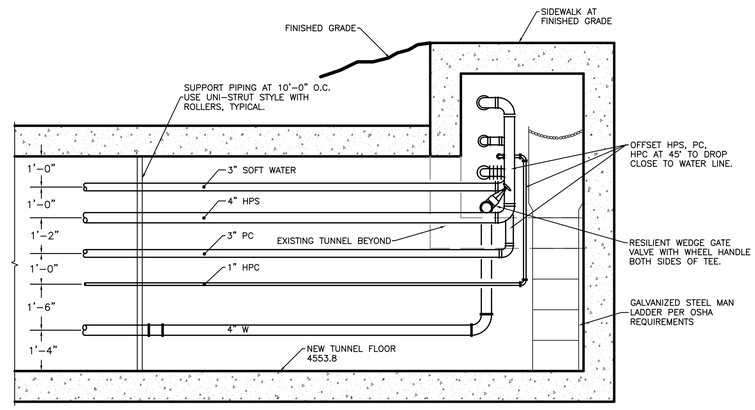
6 C502 PEDIATRICS TUNNEL DIMENSIONAL PLAN
SCALE: 1/2" = 1'-0"
0' 2' 4'



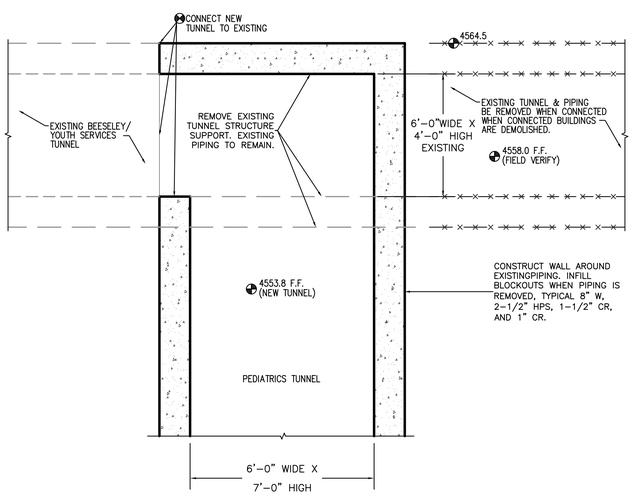
4 C502 PEDIATRICS TUNNEL LONGITUDINAL SECTION
SCALE: 1/2" = 1'-0"
0' 2' 4'



1 C502 EXISTING BEESLEY/YOUTH SERVICES TUNNEL
SCALE: 1" = 1'-0"



2 C502 PEDIATRICS TUNNEL NODE SECTION
SCALE: 1/2" = 1'-0"
0' 2' 4'



7 C502 TUNNEL DIMENSION PLAN
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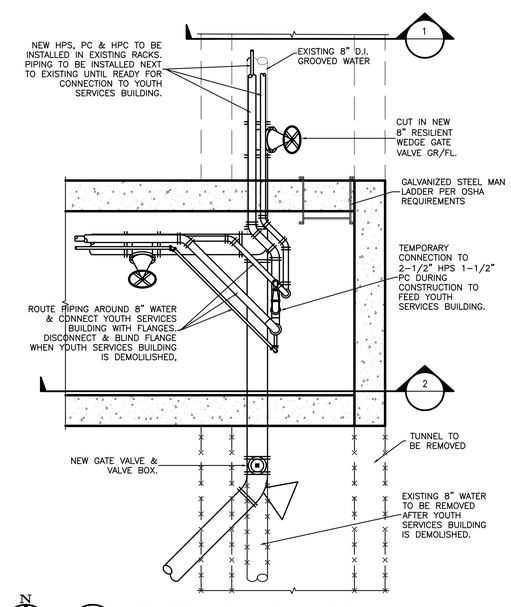

N

3 C502 PEDIATRICS TUNNEL NODE PLAN
SCALE: 1/2" = 1'-0"
0' 2' 4'

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△	DATE	REVISION
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PROJECT NUMBER 11111
FILE 11111 USH Pediatrics
DRAWN BY F.I.TC.MB.RG
CHECKED BY JB.KE.DB.SS
SCALE AS SHOWN

DETAILS AND SECTIONS

C502

08/26/2012 12:35:00 PM