

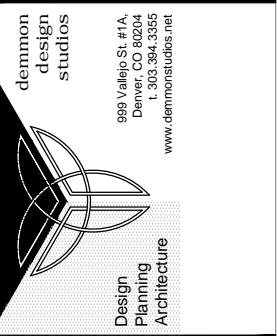
COLORADO STATE UNIVERSITY - PUEBLO

P#17026 - LIFE SCIENCE GREENHOUSE ADDITION

2200 BONFORTE BOULEVARD
PUEBLO, COLORADO 81001-4901

CONSTRUCTION DOCUMENTS

MAY 17, 2017



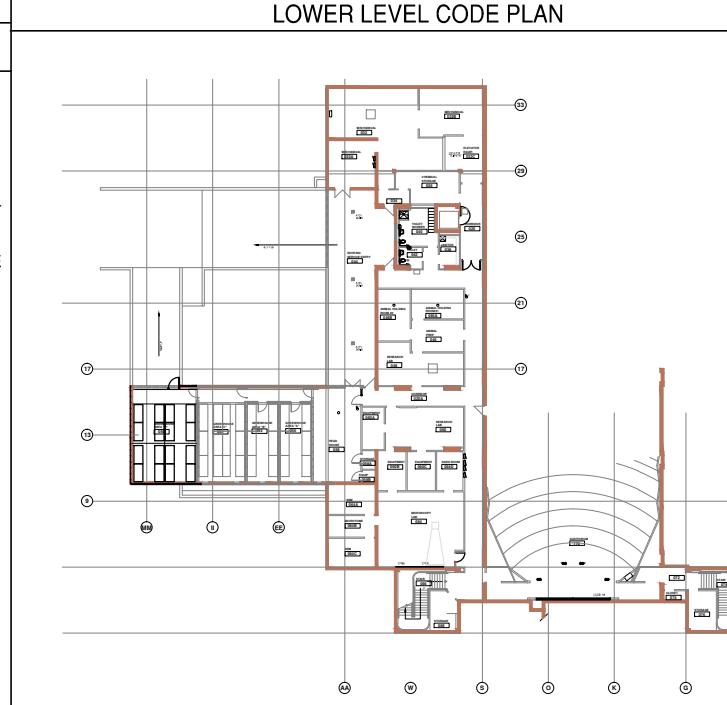
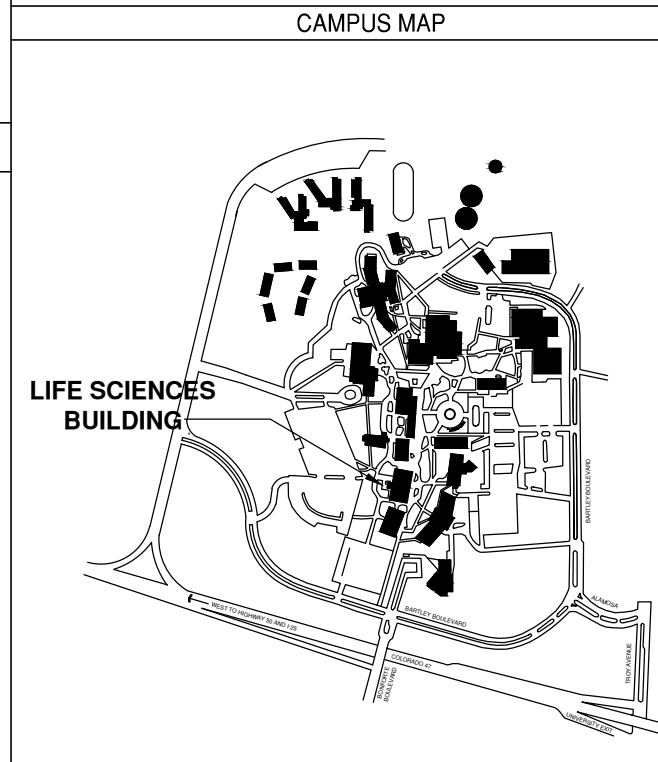
PROJECT TEAM

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BRENT@HUTCHENGINEERING.COM

PLUMBING ENGINEER:
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PARKER, CO 80138
(720) 851-6555
MHARVEYPE@COMCAST.NET



ABBREVIATIONS:	DRAWING SYMBOLS
AB Anchor Bolt AC Air Conditioning ACC Access ACOUS Acoustical ACT Acoustical Ceiling Tile AD Area Drain, Access Door ADD Addendum ADN Adhesive ADJ Adjust, Adjustable AFR Above Finished Floor AGGR Aggregate ALUM Aluminum ALT Alternate ANCH Anchor AVE Avenue APPROX Approximate APR Approximate ASCH Architect(ural) AUTO Automatic AUX Auxiliary A/V Audio Visual AVE Avenue AVG Average BAH Barrier BCH Back of Curb RD Road RET Retention REV Revealed RF Roof Feet RITUM Rhythmic RLUC Railing RLKG Racking RM Room RCH Room RSD Railing RSM Room SAB Cabinet CAP Capacity CMM Cantilever(Mount) CB Check Board CER Ceramic CFM Cubic Feet Per Minute CHM Chamber CPC Carriage CIRC Circumference CJ Control Joint CJL Control Joint CLS Closet CM Cement(Mortar) CMJ Concrete Masonry Unit CON Concrete CONSTR Construction CONTR Contractor CONTR Connector, Conspicuous CPT Carpet CSTR Cast CTR Counter CW Cold Water CON Connection DAMP Damp-proofing DND Drain DEMO Demolish, Demolition DEPT Department DESIG Designations DFA Drinking Fountain DAG Diagram, Diagonal DIM Dimension DISP Dispenser DL Deck DLN Dead Load DSD Downspout DTL DET Detail DWR Drawer EA Each EJ Expansion Joint ELEV Elevation ELEC Electric(al) ELEV Elevation, Elevation EMER Emergency ENCL Enclosure EQ Equip EQUIP Equipment EWT Electric Water Heater EWH Electric Water Heater EWA Electric Water Heater EXTG (E) Existing EXT Exterior, Exposed F Fan FA Fire Alarm Cabinet FBD Furnished By Other FD Floor Drain, Fire Damper FDTN Ceiling FE Fire Extinguisher FEC Fire Extinguisher Cabinet FHC Fire Hose Cabinet FHM Flat Head Machine Screw FHW Fire Hose Valve FHW Flat Head Wood Screw FIN Finish FIR Fir FLSH Flash FLUOR Fluorescent FLX Flexible FCC Face of Concrete FDF Face of Finish FDM Face of Masonry FDS Face of Slabs FPM Feet Per Minute FR Fire Resistant(once) FRAC Fractional FT Foot (feet) FURN Furnish, Furnished FURN Furnish(Fin) FUR Future FVC Fire Valve Cabinet G Galve GAL Galvanize GEN Generator GEOTEX Geotextile GWR Gypsum Wallboard GPM Gallons Per Minute GYP Gypsum HB Hose Bibb HC Hollow Core HBR Heater HDW Hardware HID High Intensity Discharge HM Hollow Metal HOR Horizontal HORZ Horizontal HR Hangers HR Hour/Headsail HT Height HVAC Heating Ventilating & A/C HW Hot Water HWH Hot Water Heater HWS Hot Water Supply HWH Highway ID Inside Diameter IN Inches INCL Inclusive INSUL Insulation INT Interior INTEC Intersect INTMED Intermediate INV Invert JMB Joint JT Joint KIT Kitchen KNOCKOUT Knockout KVA Kilovolt - Amperes KWT Kilowatt LAM Length LAV Lavatory LDR Ladder LHD Left Hand LIR Linear LSD Live Load LL Live Load LPL Lighting Panel, Light Proof LSR Live Floor LT Light LVT Liquid Vinyl MACH Machine(y) MAT Material MAX Maximum MECH Mechanical MEDI Medium MEMB Membrane MEZ Machine MFR Manufacturer MH Manhole MI Mile MIN Minimum MIR Mirror MIS Miscellaneous MS Mounting MOS Masonry Opening MTD Mounted MTR Metric MUL Mullion N North NIC Not in Contact NUM Number NOM Nominal NRC Noise Reduction Coefficient NTS Not to Scale N.W. Normal Weight OD Outside Diameter OFF Office ONS Owner furnished/ OUT Outer OPEN Opening OPPP Opposite PAR Parallel PART Particulate PAVE Pavement PCC Precast Concrete POUNDS PER SQUARE FOOT POUNDS PER SQUARE FOOT POT Pedestation PREP Preparation PRESS Press PRT Printer PTN Partition PVC Polyvinyl Chloride PVT Pavement QUANTITY R Radius RIB Reinforced RAD Radius RD Road REF Reference RECEPT Receptacle REFR Refrigerator REINFORCED Reinforced REINFORCED (ING) Reinforced (ing) REMOVED Removed REQUIRED Required RESIL Resilient REVISED (Revision), Revised RFL Reflective (ive), (or) RHT Right Hand RM Room RHS Right Hand RHS Right of Way RPM Revolutions per Minute REV Reverse (side) S South SAN Sanitary S.C. Solid Core SCHEDULE Schedule SD Soap Dispenser SECTION Section SEN Sensor SNG Sink On Grade SPECIFICATIONS Specifications SPRINKLER Sprinkler SPW Splice SPR Splice SS Stainless Steel S.S. Sing Sink STA Station STANDARD Standard STL Steel STR Storage STRUCT Structural SUSP Suspended SYMMETRIC Symmetrical SYS System TAB Tack Board TAB Tap and Bottom T.C. Top of Curb TEL Telephone TEMP Temperature, Temporary TENG Tongue & Groove THERM Thermistat THICK Thickness THLD Threshold TOP Top of TOP OF CONCRETE Top of Concrete TOP OF STEEL Top of Steel TOP OF SLAB Top of Slab TOP OF WALL Top of Wall T.P.D. Toilet Paper Dispenser TRANSFER Transfer TS Steel Tubing TSTAT Thermostat TEL Television TYPE Type TERAZZO Terazzo TZ Infracted UNFIN Unfinished, Otherwise Noted UNFIN Unfinished USG U.S. Gypsum VALV Valve VAR Varies VCL Vinyl Composition Tile VENT Ventilation VERT Vertical VEST Vestibule VTR Van Through Road VWC Vinyl Wall Covering W WEST, Wide WB Whole Board WC Water Closet WOOD Wood WGL Wire Glass WGT Weight WR Waterproofing WR Water Resistant WSC Walnut WST Weight WFW Waxed Wire Fabric WFG Weaving	BUILDING, WALL, OR DETAIL SECTION DETAIL / ENLARGED PLAN DOOR DESIGNATION, RE: PLANS AND DOOR SCHEDULE REVISION CLOUD AND NUMBER KEY NOTE(S) ROOM NAME AND NUMBER SPOT ELEVATION ELEVATION MARK ELEVATION REFERENCE CONCRETE EARTH ROUGH WOOD & BLOCKING BLOCKING OR SHIM FINISH WOOD GLASS IN ELEVATION RIGID INSULATION IN SECTION BATT INSULATION IN SECTION CMU IN PLAN BRICK IN PLAN GYPSUM WALL BOARD IN SECTION PLYWOOD IN SECTION STEEL IN SECTION SAND, CEMENT IN SECTION GYPSUM BOARD, PLASTER IN ELEVATION

DRAWING INDEX

GENERAL:
G1 COVER & INDEX SHEET

ARCHITECTURAL:
A1 PLANS
A2 ELEVATIONS & SECTIONS
A3 DETAILS

MECHANICAL:
M2.1 MECHANICAL PLAN

PLUMBING:
P2.1 PLUMBING PLAN

ELECTRICAL:
E1.0 COVER SHEET - ONE LINE DIAGRAM
E1.1 ELECTRICAL PLANS

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GENERAL NOTES

- ALL CONSTRUCTION IS NEW UNLESS NOTED OTHERWISE.
- THE CONTRACTOR SHALL COORDINATE THE SCHEDULING OF ALL DEMOLITION AND CONSTRUCTION ACTIVITIES WITH THE ARCHITECT AND OWNER. NO DEMOLITION SHALL START WITHOUT THE OWNER'S APPROVAL.
- THE EXIT PATHS OUT OF THE EXISTING BUILDINGS ARE UNCHANGED AND SHALL NOT BE DISRUPTED OR CLOSED WITHOUT THE COORDINATION AND APPROVAL OF THE OWNER. ALTERNATE EXIT PATHS / PLANS SHALL BE IMPLEMENTED BEFORE CLOSING AN EXISTING EXIT PATH FOR ANY REASON OR ANY LENGTH OF TIME.

CODE SUMMARY

PROJECT DESCRIPTION:	FIRE PROTECTION:
THIS PROJECT INCLUDES AN ADDITION OF (1) ONE NEW GROWING ROOM TO THE EXISTING GREENHOUSE STRUCTURE. THE ADDITION WILL BE ON TOP OF (3) THREE EXISTING CONCRETE RETAINING WALLS AND (1) NEW FOUNDATION WALL. THE EXISTING GREENHOUSE STEEL ROOF STRUCTURE AND TRANSLUCENT PANEL SYSTEM WILL BE EXTENDED OVER THE NEW GROWING ROOM. THIS PROJECT INCLUDES STRUCTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING AND ADDITIONS/ ALTERATIONS.	SPRINKLERS: NO FIRE ALARM DETECTION: YES, EXISTING
	FIRE RESISTANCE RATING REQUIREMENTS: PRIMARY STRUCTURAL FRAME: 1 HR BEARING WALL - EXTERIOR: 1 HR BEARING WALL - INTERIOR: 1 HR NONBEARING WALLS AND PARTITIONS - EXTERIOR: 0 HR NONBEARING WALLS AND PARTITIONS - INTERIOR: 0 HR FLOOR CONSTRUCTION AND ASSOCIATED SECONDARY MEMBERS: 1 HR ROOF CONSTRUCTION AND ASSOCIATED SECONDARY MEMBERS: 1 HR EXIT ENCLOSURE: 1 HR STAIRWAY ENCLOSURE: 1 HR ROOF CLASSIFICATION: B
RELEVANT GOVERNING CODES AND STANDARDS: STATE OF COLORADO 2012 INTERNATIONAL BUILDING CODE 2012 INTERNATIONAL EXISTING BUILDING CODE 2012 INTERNATIONAL PLUMBING CODE 2012 INTERNATIONAL MECHANICAL CODE 2014 NATIONAL ELECTRICAL CODE 2002 72 NATIONAL FIRE PROTECTION ASSOCIATION 2012 INTERNATIONAL ENERGY CONSERVATION CODE ICC ANSI A117.1 ACCESSIBILITY STANDARDS	
OCCUPANCY GROUP: B: EDUCATIONAL, ABOVE THE 12TH GRADE	
TYPE OF CONSTRUCTION: TYPE II - A	
GROSS FLOOR AREA: LOWER LEVEL = 11,658 GSF ADDITION = 654 GSF FIRST FLOOR = 22,872 GSF SECOND FLOOR = 28,295 GSF TOTAL BUILDING = 63,479 GSF	

REVISIONS:

NO.	DESCRIPTION	DATE

DRAWN BY: _____ CHECKED BY: _____

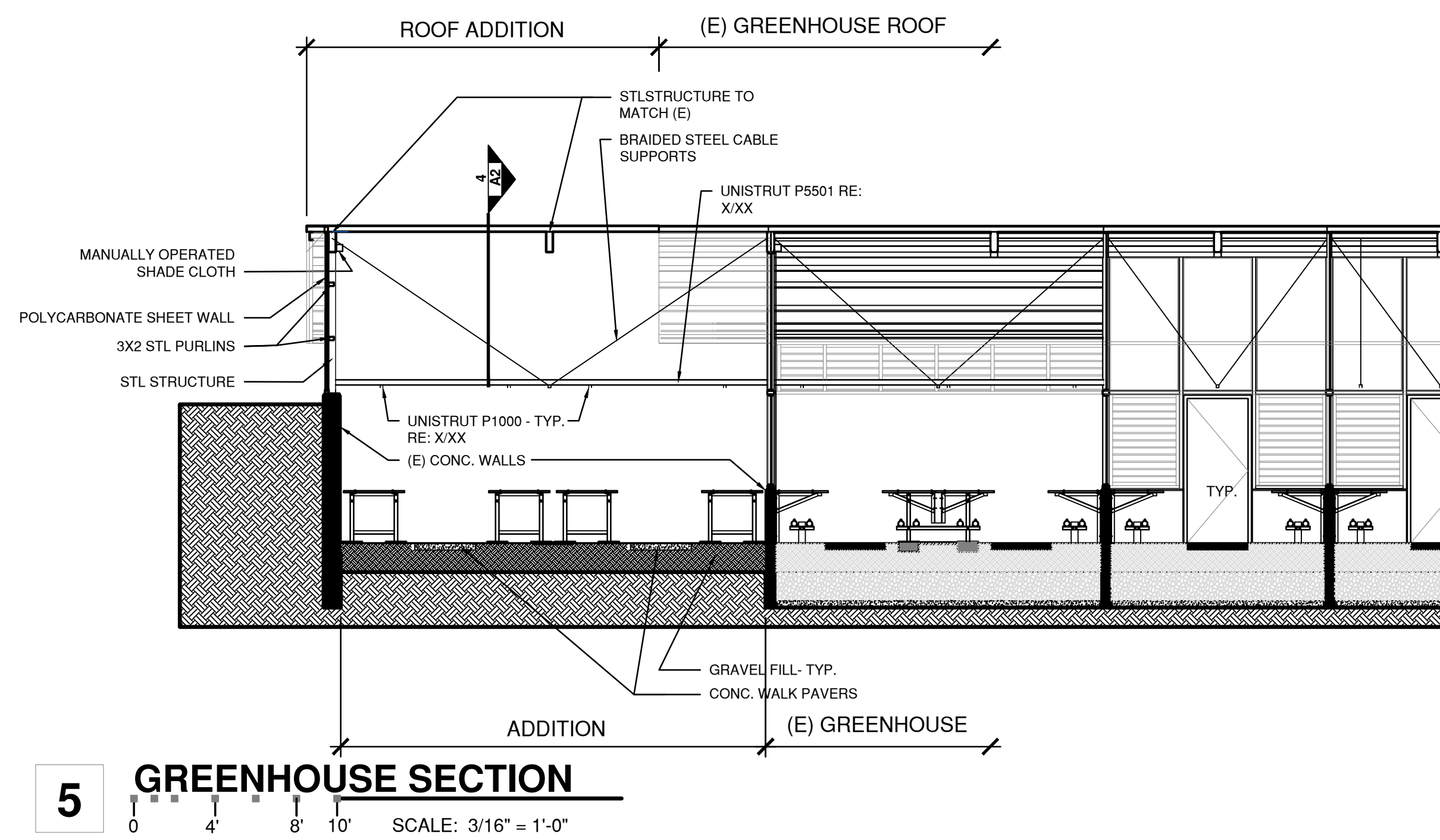
DATE:	05-17-2017
PHASE:	100% CD
JOB NUMBER:	1702

DRAWING TITLE:
COVER & INDEX SHEET
DRAWING NUMBER:
G1

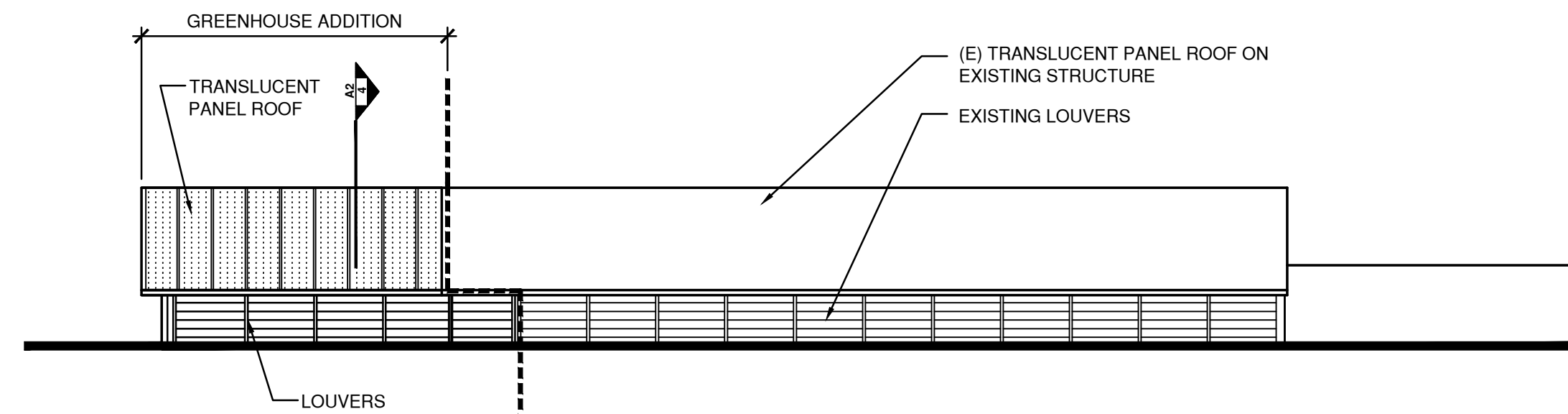
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COLORADO STATE UNIVERSITY - PUEBLO
LS GREENHOUSE EXTENSION
PROJECT# P-17026
2200 BONFORTE BOULEVARD
PUEBLO, COLORADO 81001-4901

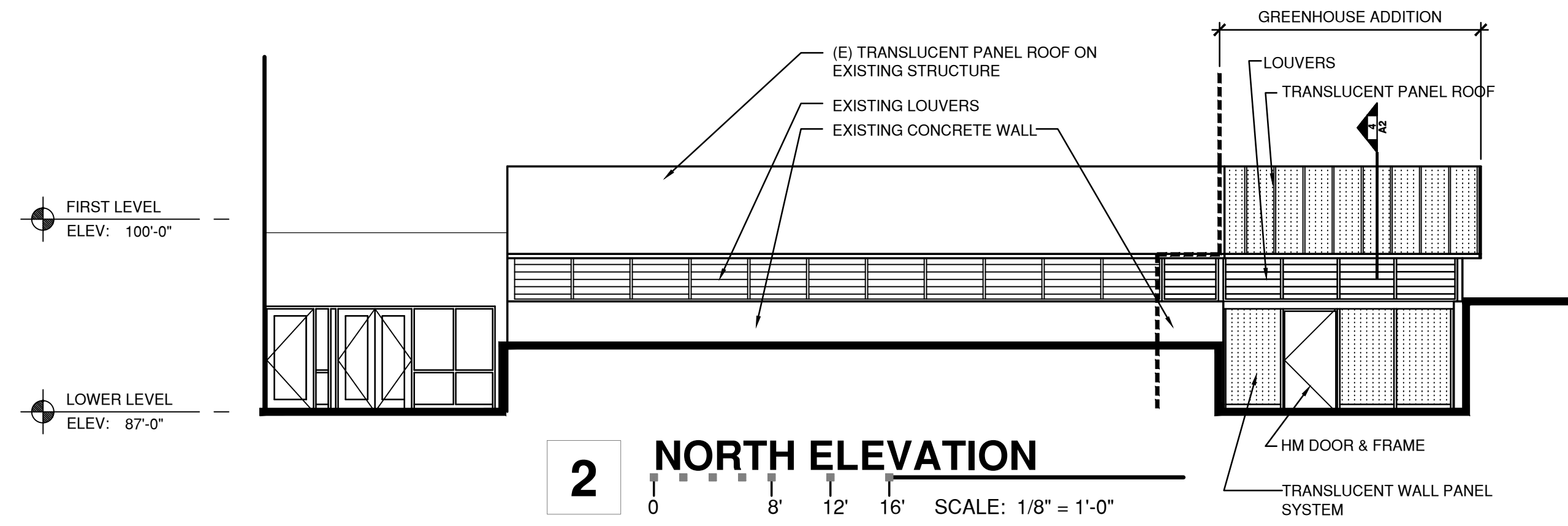
professional seal
consultant



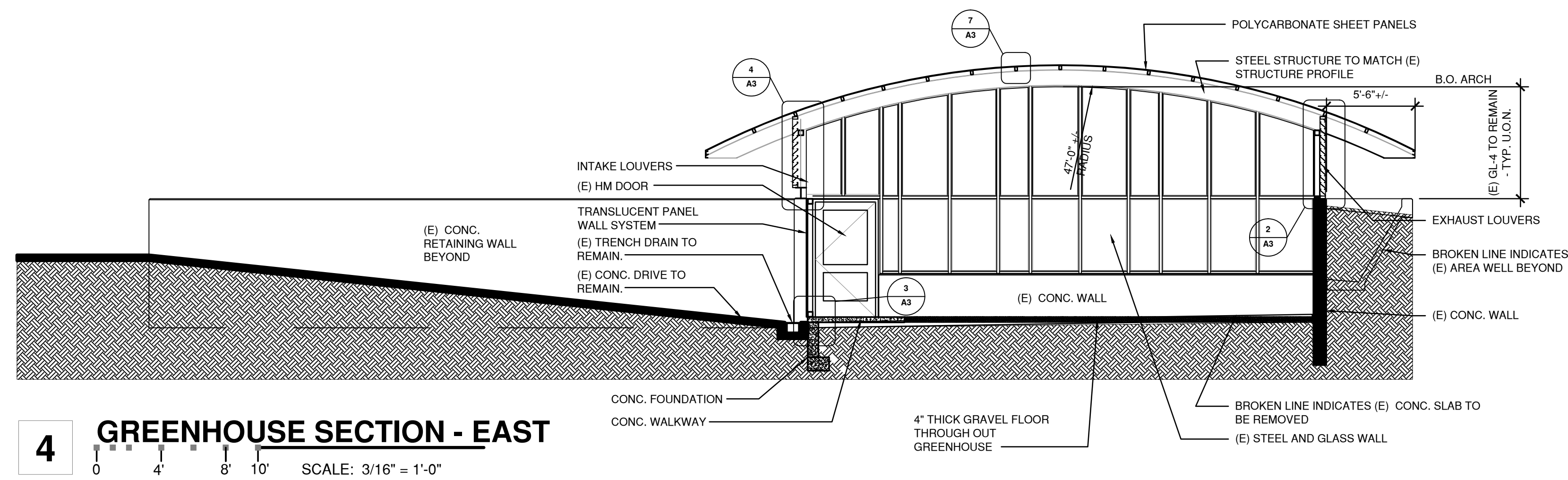
5 GREENHOUSE SECTION
SCALE: 3/16" = 1'-0"



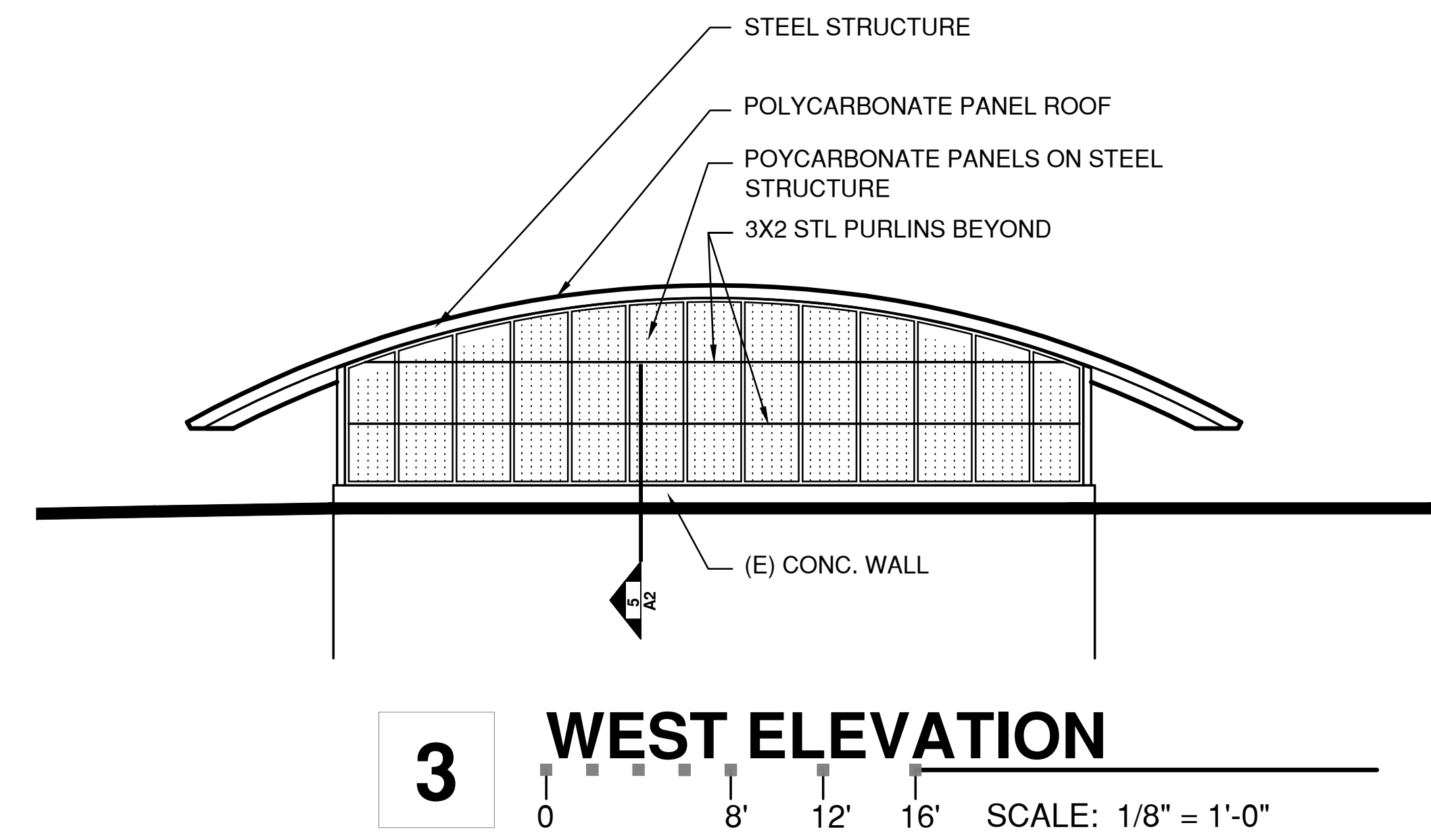
1 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



2 NORTH ELEVATION
SCALE: 1/8" = 1'-0"



4 GREENHOUSE SECTION - EAST
SCALE: 3/16" = 1'-0"



3 WEST ELEVATION
SCALE: 1/8" = 1'-0"

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LS GREENHOUSE EXTENSION
PROJECT# P-17026
2200 BONFORTE BOULEVARD
PUEBLO, COLORADO 81001-4901

REVISIONS:

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△		
△		
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△		

DRAWN BY: CHECKED BY:

DATE:	05-17-2017
PHASE:	100% CD
JOB NUMBER:	1702

DRAWING TITLE:
ELEVATIONS & SECTIONS
DRAWING NUMBER:
A2

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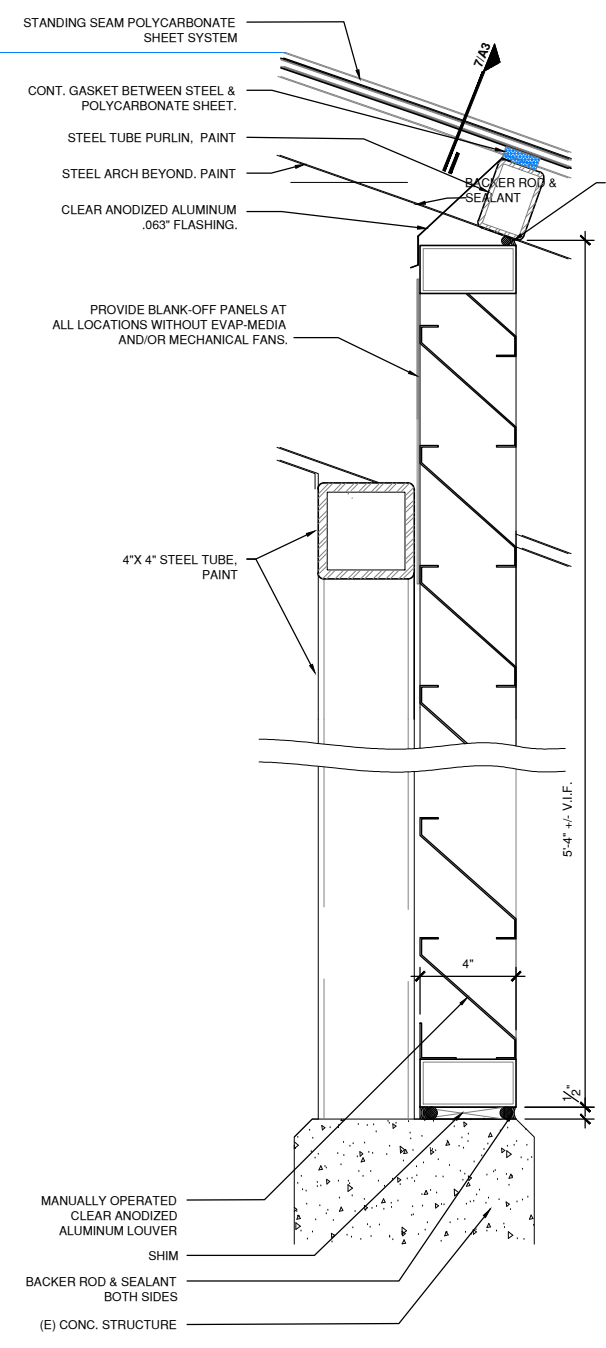
COLORADO STATE UNIVERSITY - PUEBLO
 LS GREENHOUSE EXTENSION
 PROJECT# P-17026
 2200 BONFORTE BOULEVARD
 PUEBLO, COLORADO 81001-4901

REVISIONS:

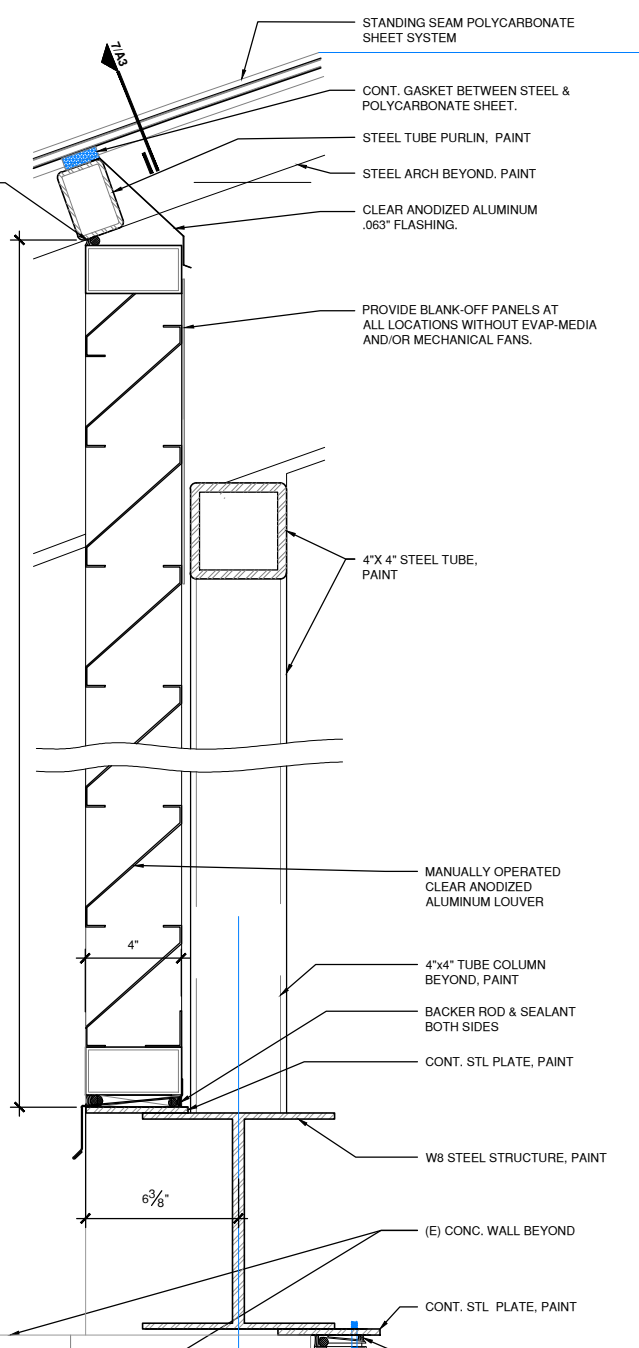
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DATE: 05-17-2017
 PHASE: 100% CD
 JOB NUMBER: 1702

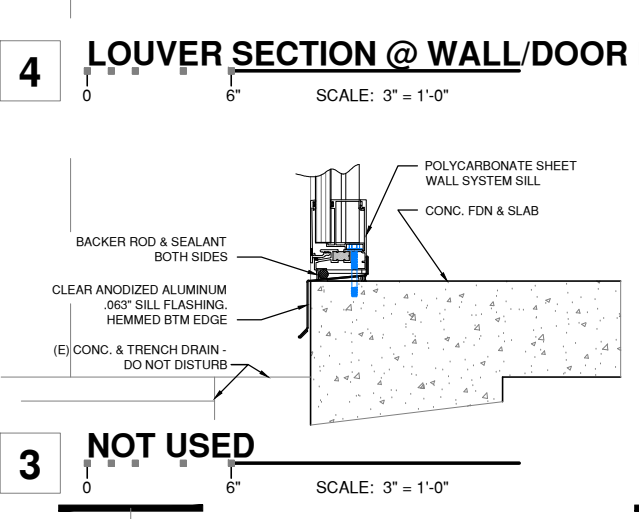
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DETAILS
 DRAWING NUMBER:
A3



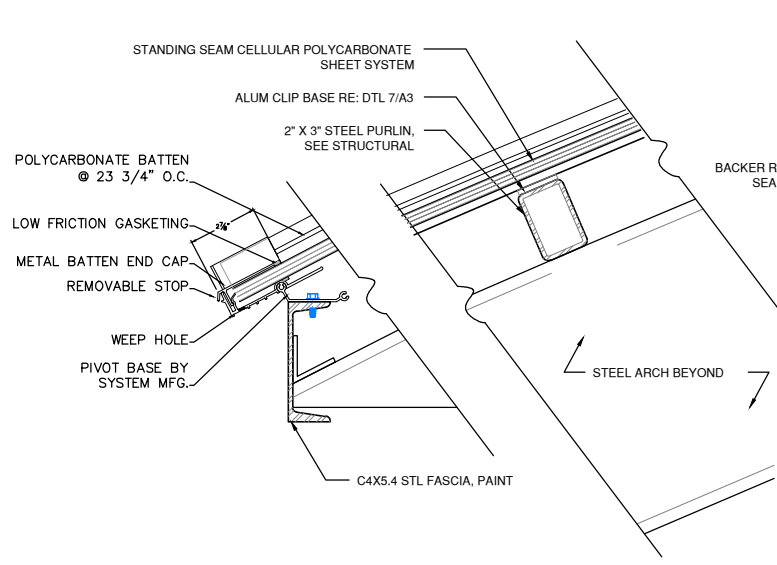
2 LOUVER SECTION @ (E) CONG.
 SCALE: 3" = 1'-0"



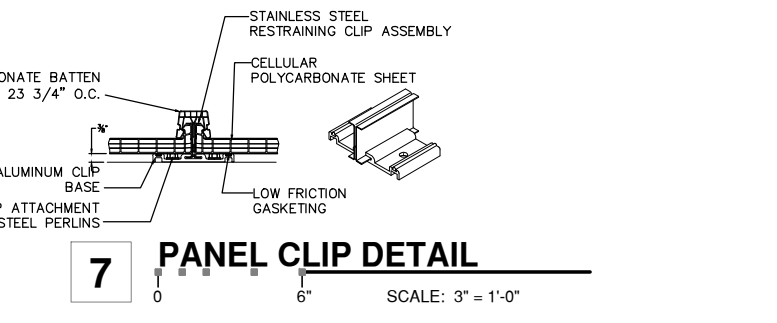
4 LOUVER SECTION @ WALL/DOOR HEAD
 SCALE: 3" = 1'-0"



3 NOT USED
 SCALE: 3" = 1'-0"

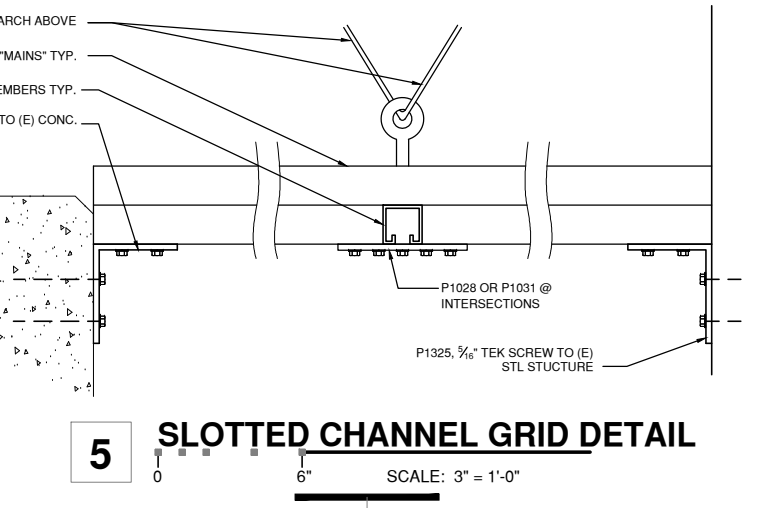


8 EAVE DETAIL
 SCALE: 3" = 1'-0"

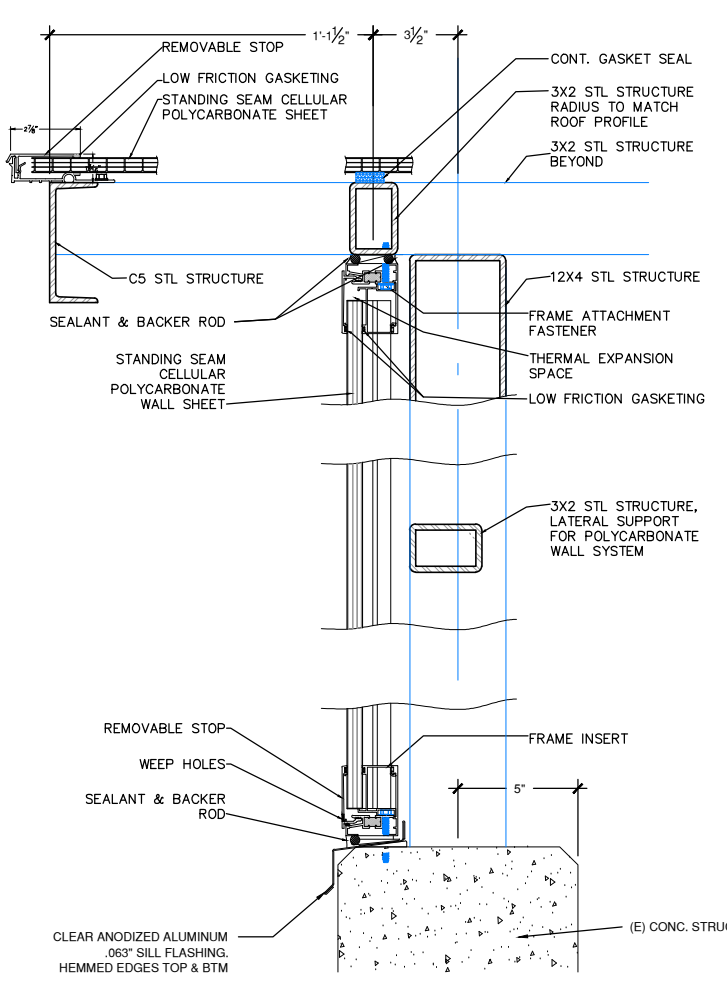


7 PANEL CLIP DETAIL
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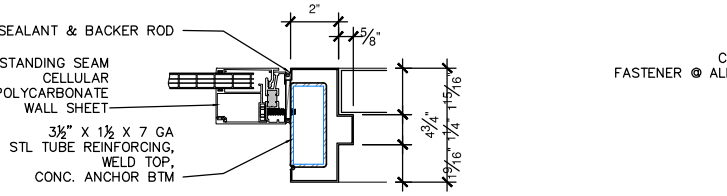
6 NOT USED
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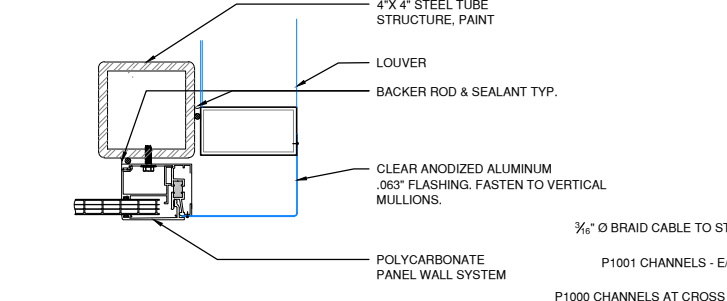
5 SLOTTED CHANNEL GRID DETAIL
 SCALE: 3" = 1'-0"



12 END WALL SECTION
 SCALE: 3" = 1'-0"

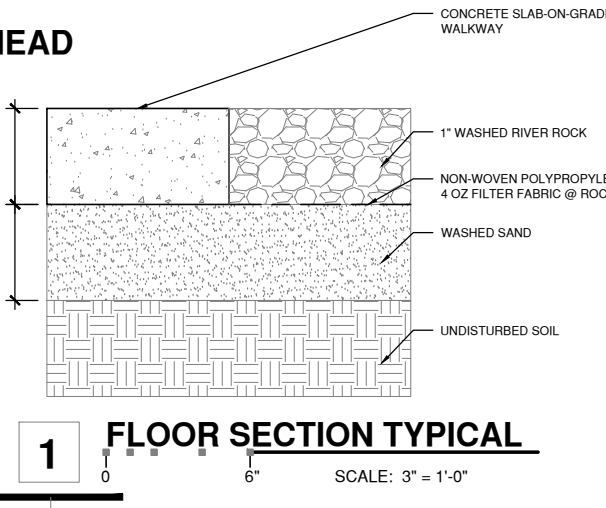


11 DOOR JAMB DETAIL
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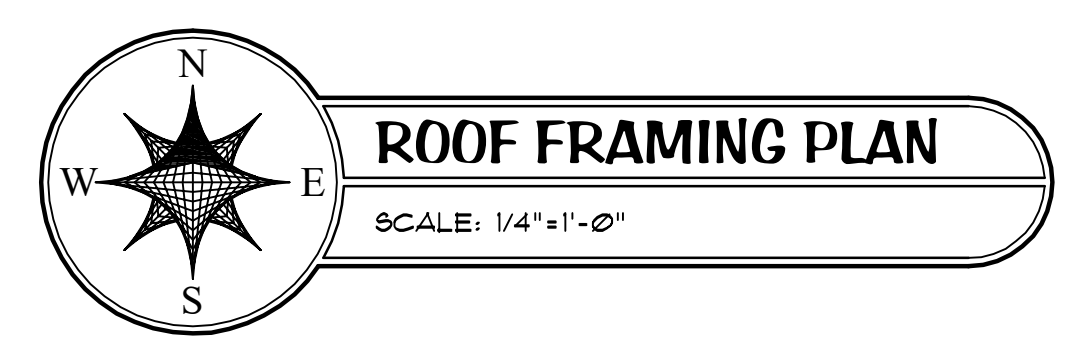
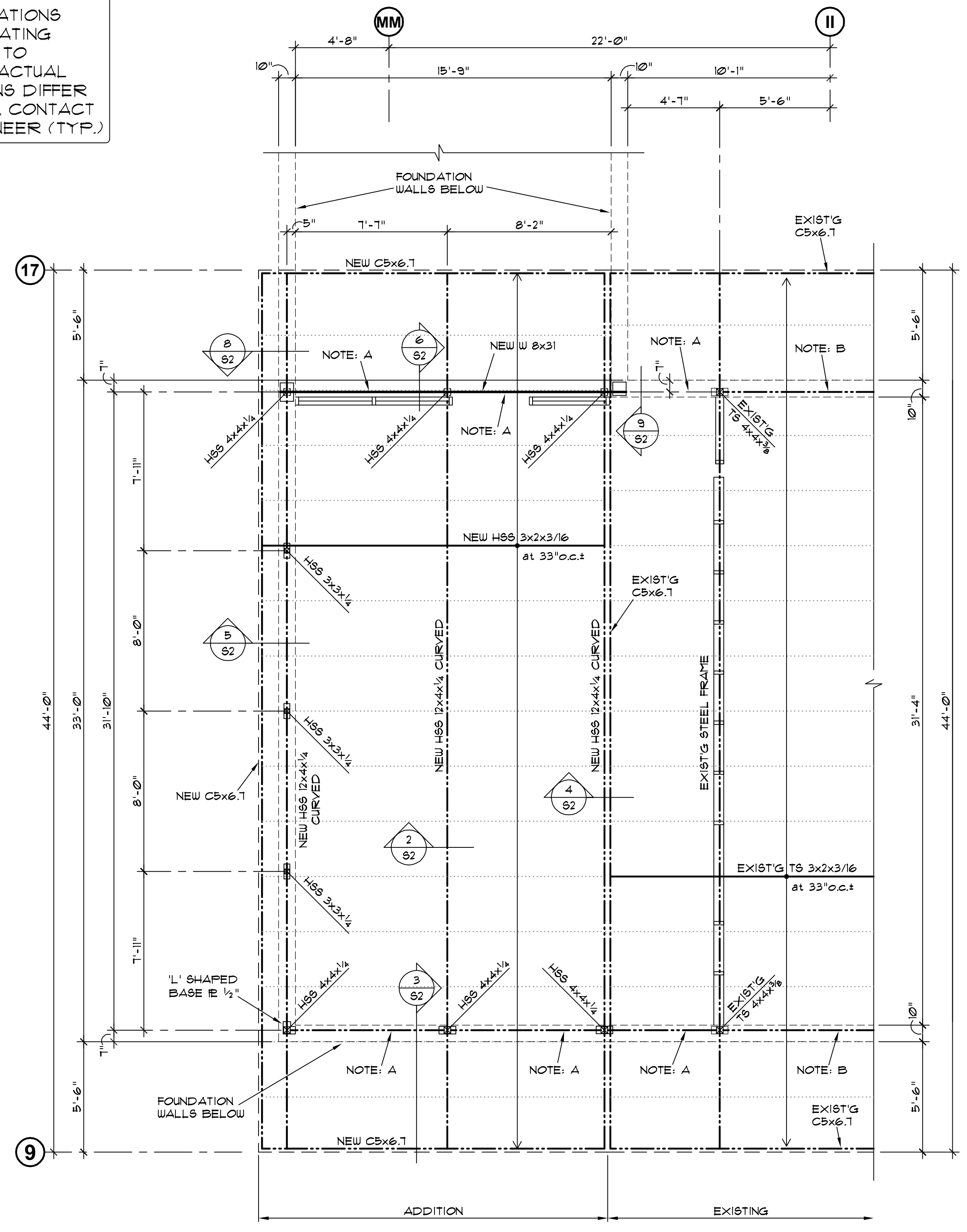
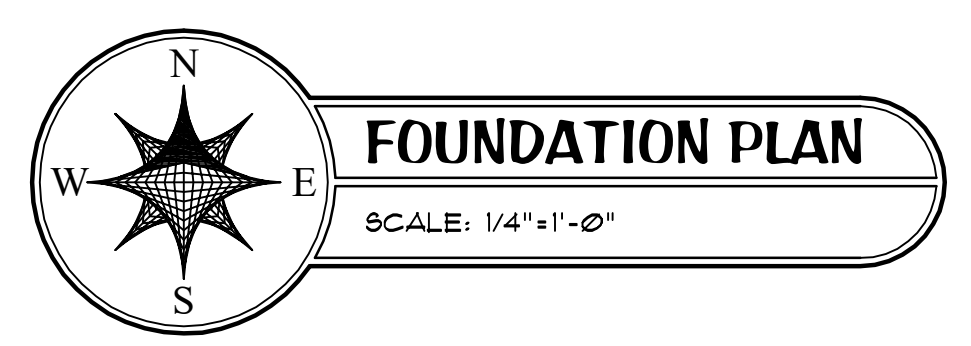
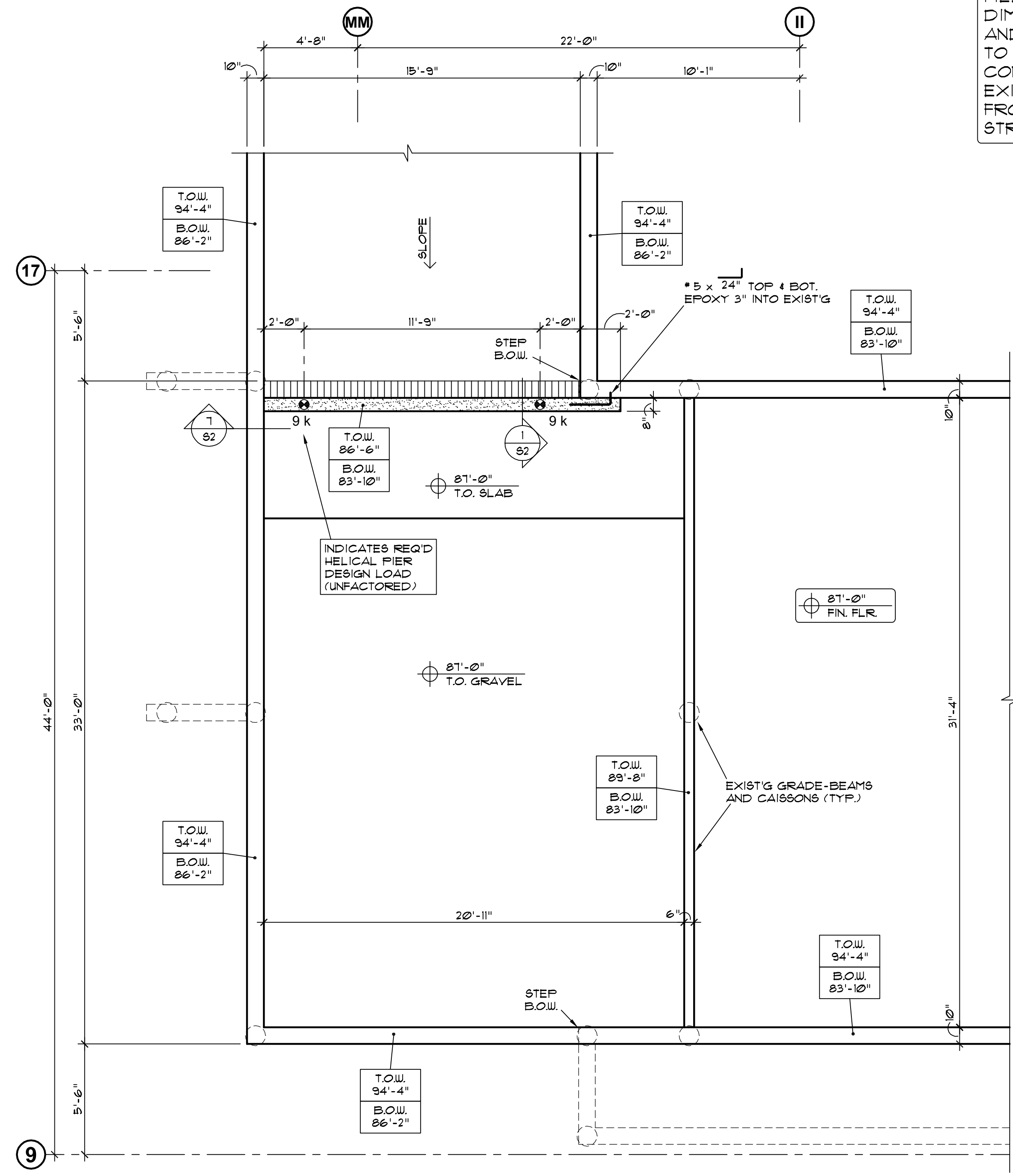
10 WALL CORNER DTL
 SCALE: 3" = 1'-0"

9 NOT USED
 SCALE: 3" = 1'-0"

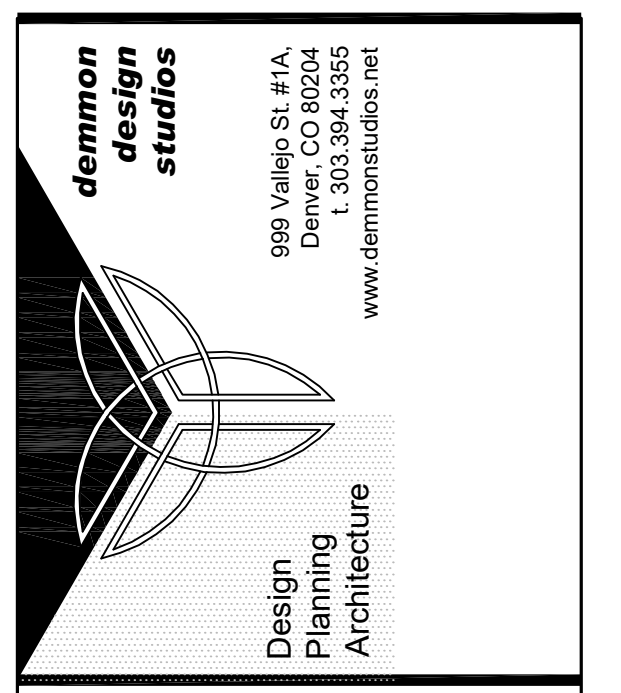


1 FLOOR SECTION TYPICAL
 SCALE: 3" = 1'-0"

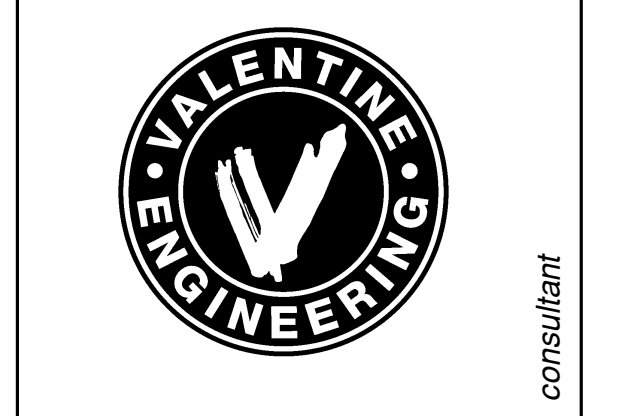
FIELD VERIFY ALL DIMENSIONS, ELEVATIONS AND FRAMING RELATING TO EXIST'G PRIOR TO CONSTRUCTION. IF ACTUAL EXIST'G CONDITIONS DIFFER FROM THAT SHOWN, CONTACT STRUCTURAL ENGINEER (TYP.)



NOTES: A) NEW H86 4x4x1/4 BETWEEN POSTS. B) EXISTING T6 4x4 BETWEEN POSTS.



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COLORADO STATE UNIVERSITY - PUEBLO
LS GREENHOUSE EXTENSION
PROJECT # P-17026
2200 BONFORTE BOULEVARD
PUEBLO, COLORADO 81001-4801

REVISIONS:

DRAWN BY: JRV
CHECKED BY: JRV

DATE: 05-17-2017
PHASE: 100% CD
JOB NUMBER: 17.044

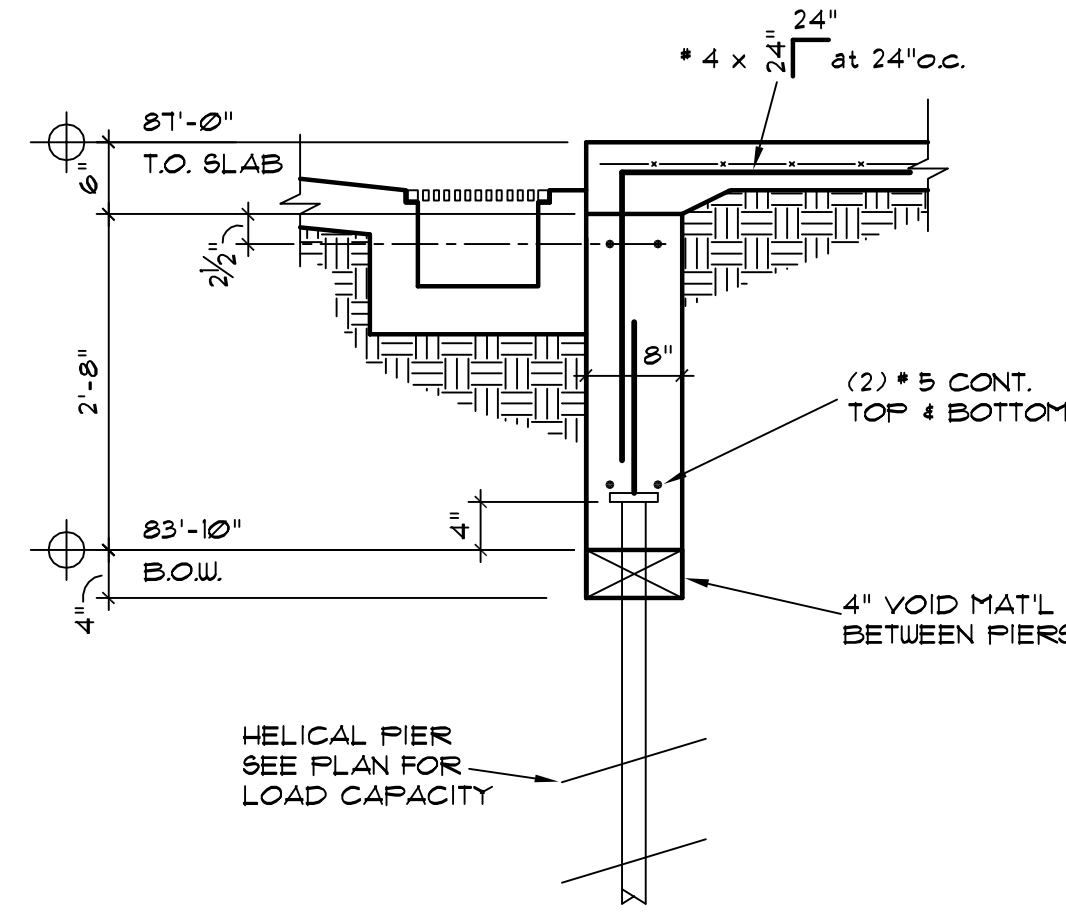
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FOUNDATION & ROOF FRAMING PLANS
DRAWING NUMBER:
S1

professional seal

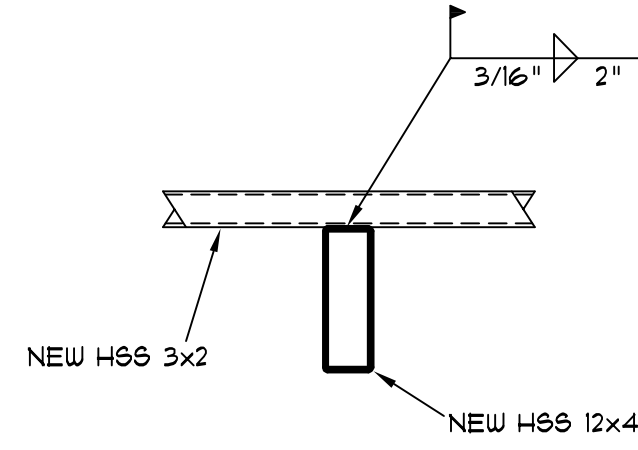
consultant

GENERAL NOTES

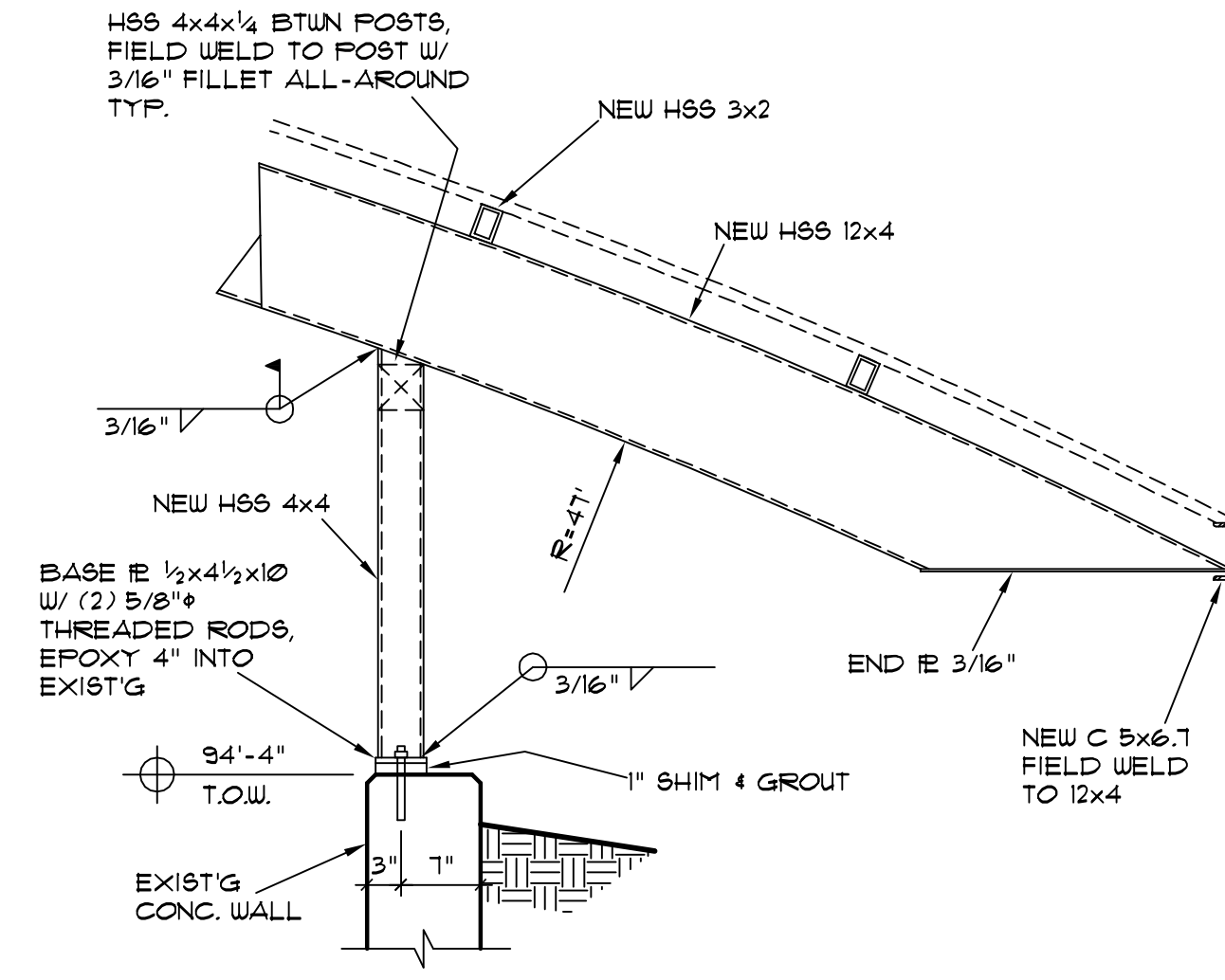
- This project is designed in accordance with the International Building Code (IBC) 2015 Edition.
- Dead Loads:
 - Roof: 10 psf
- Live Loads:
 - Roof: 20 psf
 - Wind: 115 mph (3 sec gust), Exposure 'B'
- Foundation:
 - The new grade-beam shall be founded on helical piers.
 - Provide 4" void beneath grade beam, between piers.
- Concrete:
 - Concrete has been designed and shall be constructed in accordance with the American Concrete Institute "Building Code Requirements for Structural Concrete" (ACI 318). All concrete shall be of stone aggregate, unless noted otherwise.
 - Minimum 28 day compressive strength shall be:
 - Slabs: 4000 psi
 - All other concrete: 3000 psi
 - Reinforcing shall be new billet steel ASTM A615, grade 60, except stirrups, ties and bars to be welded shall be grade 40. Provide corner bars to match all horizontal reinforcing. Provide (2) #5 around all openings in concrete and extend bars 24" past edges of openings.
 - Lap Splices shall be Class B. Use the following lap lengths, U.N.O.:
 - No. 6 bars and smaller:
 - 57 bar diameters for 3,000 psi concrete.
 - 50 bar diameters for 4,000 psi concrete.
 - Reinforcing placement: Provide chairs, standees, additional reinforcement, and accessories necessary to support reinforcement at position shown. Support of reinforcement on form ties, brick, or other unacceptable material will not be allowed.
 - Minimum concrete cover:
 - Concrete cast against and permanently exposed to earth: 3 inches
 - Concrete exposed to earth or weather:
 - #5 bar and larger: 2 inches
 - #5 bar and smaller: 1.5 inches
 - Concrete not exposed to earth or weather:
 - #11 bar and smaller: 3/4 inches
 - Anchor rods (Anchor bolts) shall be grade 36, conforming to ASTM F1554, and shall have a minimum concrete embedment of 7" with a 2" hook, unless noted otherwise.
 - Slabs/sidewalks shall be 4" thick (minimum) reinforced with 6x6-W1.4xW1.4 w.w.f.
- Steel:
 - Structural steel shall be detailed and erected in accordance with the American Institute of Steel Construction Specifications and Code of Standard Practice. Minimum yield strength:
 - 50 ksi for square/rectangular HSS (ASTM A500, GR. C)
 - 50 ksi for wide-flange members (ASTM A992)
 - 36 ksi for all other members (ASTM A36)
 - Connections:
 - Unfactored connection capacities are noted on drawings. Use standard framed beam connections meeting the requirements of the "Manual of Steel Construction-ASD", latest edition. Use 3/4" diameter, A325-N bolts, minimum, snug-tightened; or ASTM F1852 tension-control (TC) bolts.
 - Minimum welds per AISC Specification and AWS D1.1, not less than continuous 3/16" fillet, E70XX electrodes, unless noted otherwise. Welding of reinforcing to embeds shall be done to develop 1.5 times the yield strength of the reinforcing.
 - Column base plates that require grout shall bear on non-shrink grout.
 - Helical Piles (Piers):
 - Shall be designed and manufactured in accordance with the 2015 International Building Code (2015 IBC).
 - Shall be recognized by ICC and the manufacturer shall hold a current ICC-ES ESR report showing compliance with AC308 and 2015 IBC.
 - Dimensions of the central shaft and the number, size, spacing and thickness of the helical bearing plates shall be designed and fabricated to support the specified design loads.
 - Minimum and maximum installation torques shall be specified by the pile manufacturer. The minimum installation torque shall be high enough to achieve the required bearing capacity, including a safety factor of 2. The maximum installation torque shall not exceed the allowable torsional capacity of the pile shafts.
 - Shall be designed and manufactured to resist all stresses induced by installation.
 - Existing conditions and underground obstructions shall be confirmed by the pile installer. Probing or scanning may be necessary to locate underground obstructions. Report any unforeseen obstructions to the Structural Engineer.
 - Centerline of piles shall not be more than 2 inches from indicated plan location.
 - Plumbness shall be within 2 degrees of design alignment.
 - Top elevation of pile shall be within +1" to -2" of design vertical elevation.
 - Pile shaft, bearing plates and bolts shall be hot dip galvanized.
 - The Contractor shall provide the Architect and Structural Engineer copies of the Installation Records for all piles.
- Statement of Special Inspections:
 - As per IBC Section 1704, the owner (or owner's agent) shall employ one or more special inspectors to provide inspections during construction on these types of work:
 - Steel construction (1705.2)
 - Concrete construction (1705.3)
 - Helical pile foundations (1705.9)
- Drawing Coordination:
 - Dimensions on these Structural drawings shall be verified with the Architectural drawings and any discrepancy shall be brought to the Architect's attention.
 - DRAWINGS SHALL NOT BE SCALED. Written dimensions shall take precedence over scaled measurements.
 - Shop drawings shall be prepared and drawn by the fabricator. Copying these drawings for shop drawing use will not be permitted.
 - Any and all material substitutions shall be approved by the Structural Engineer prior to construction.



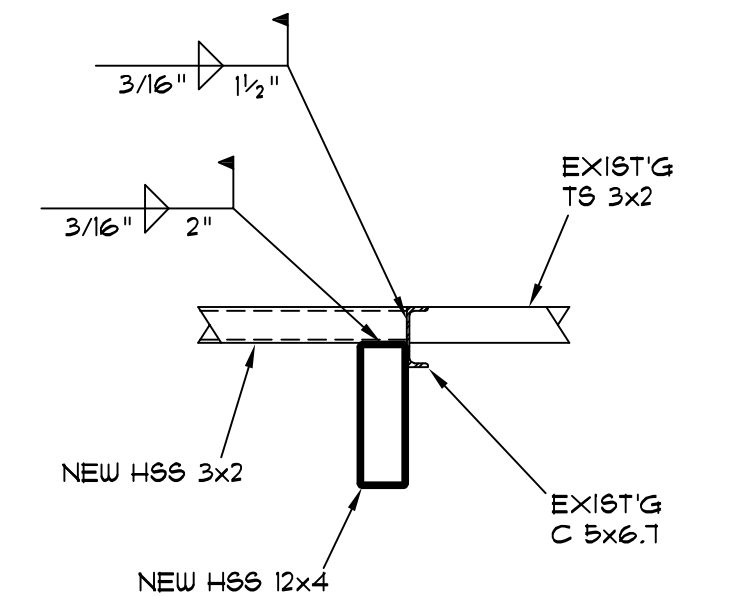
1 SCALE: 3/4"=1'-0"



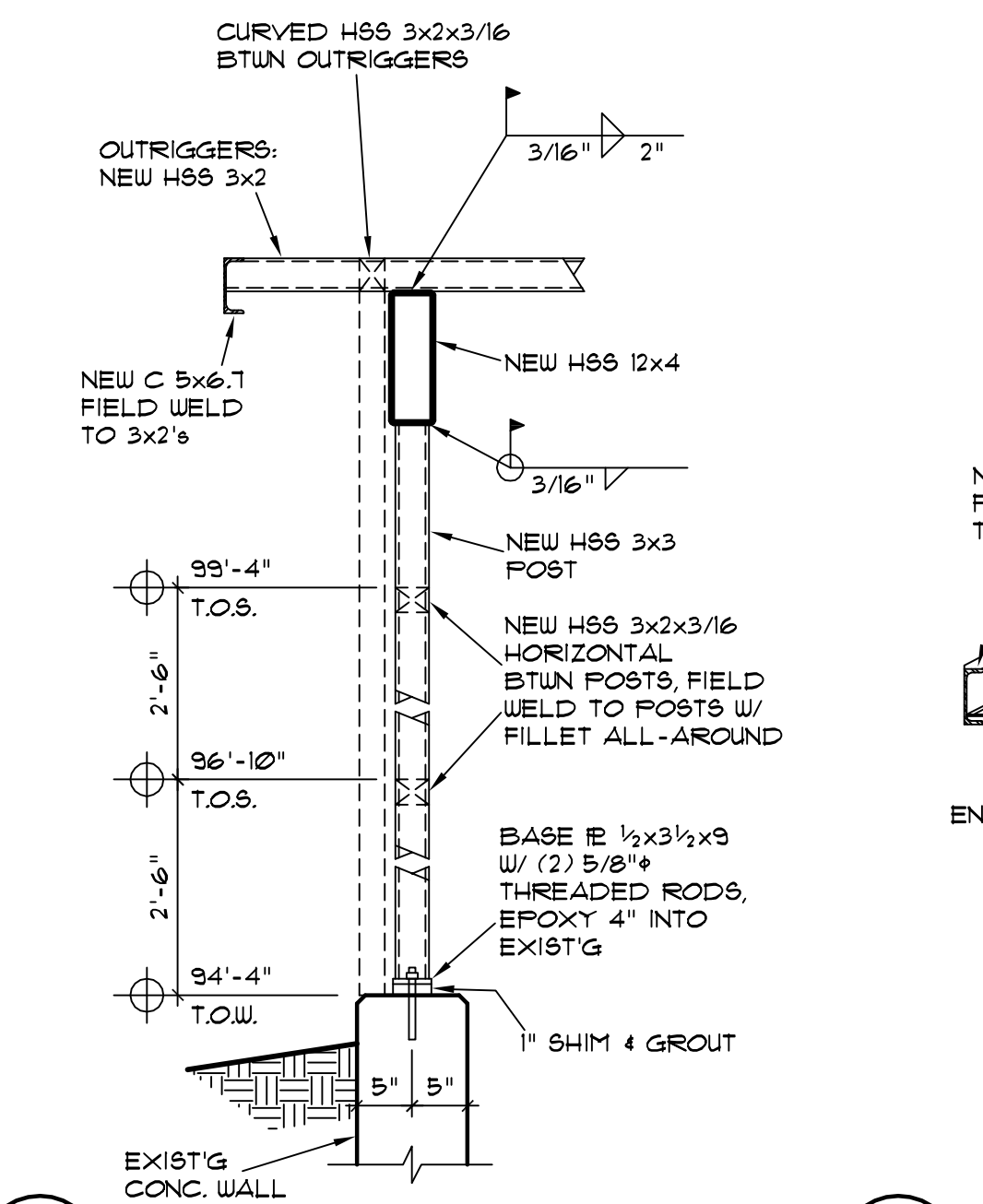
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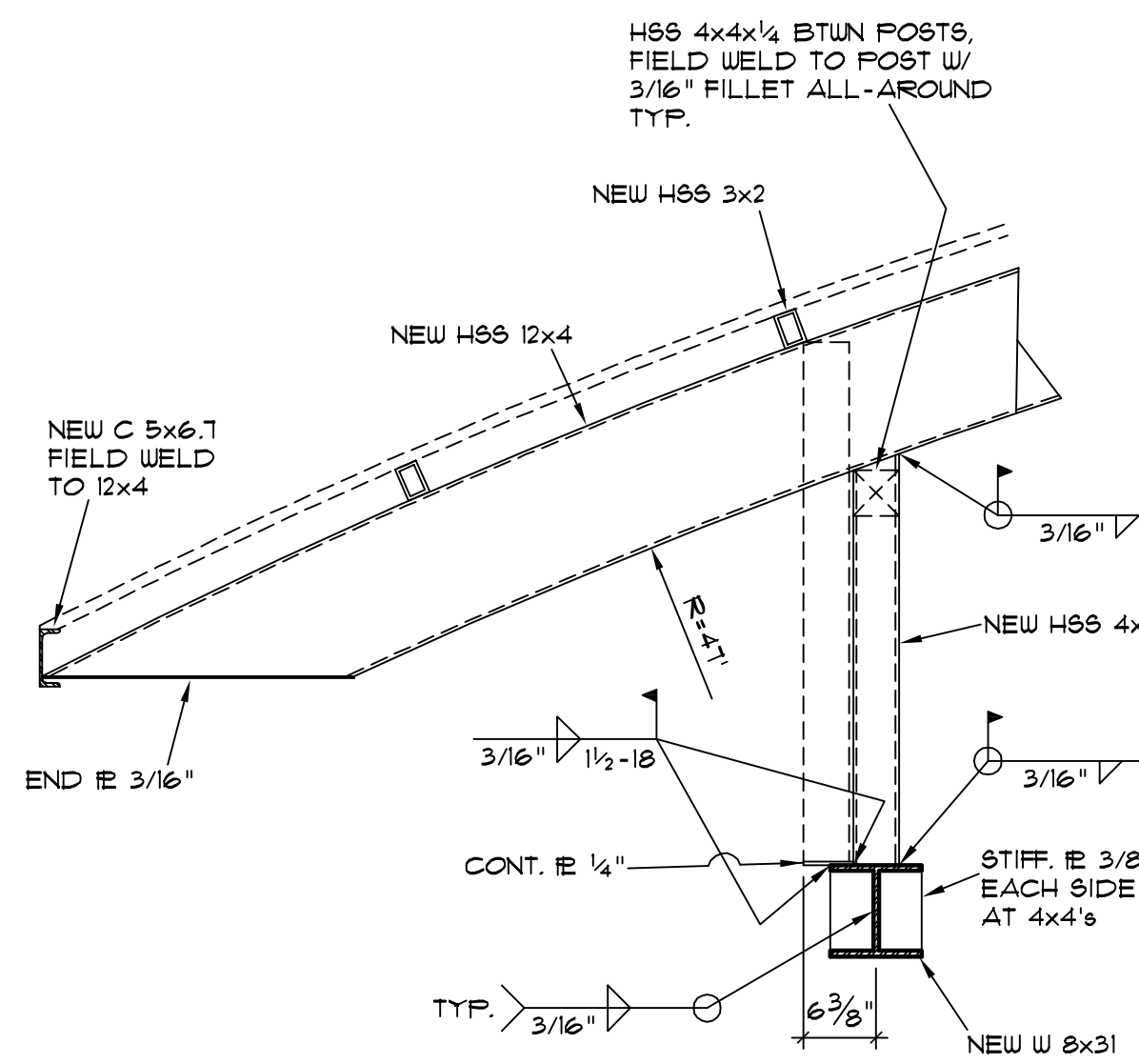
3 SCALE: 3/4"=1'-0"



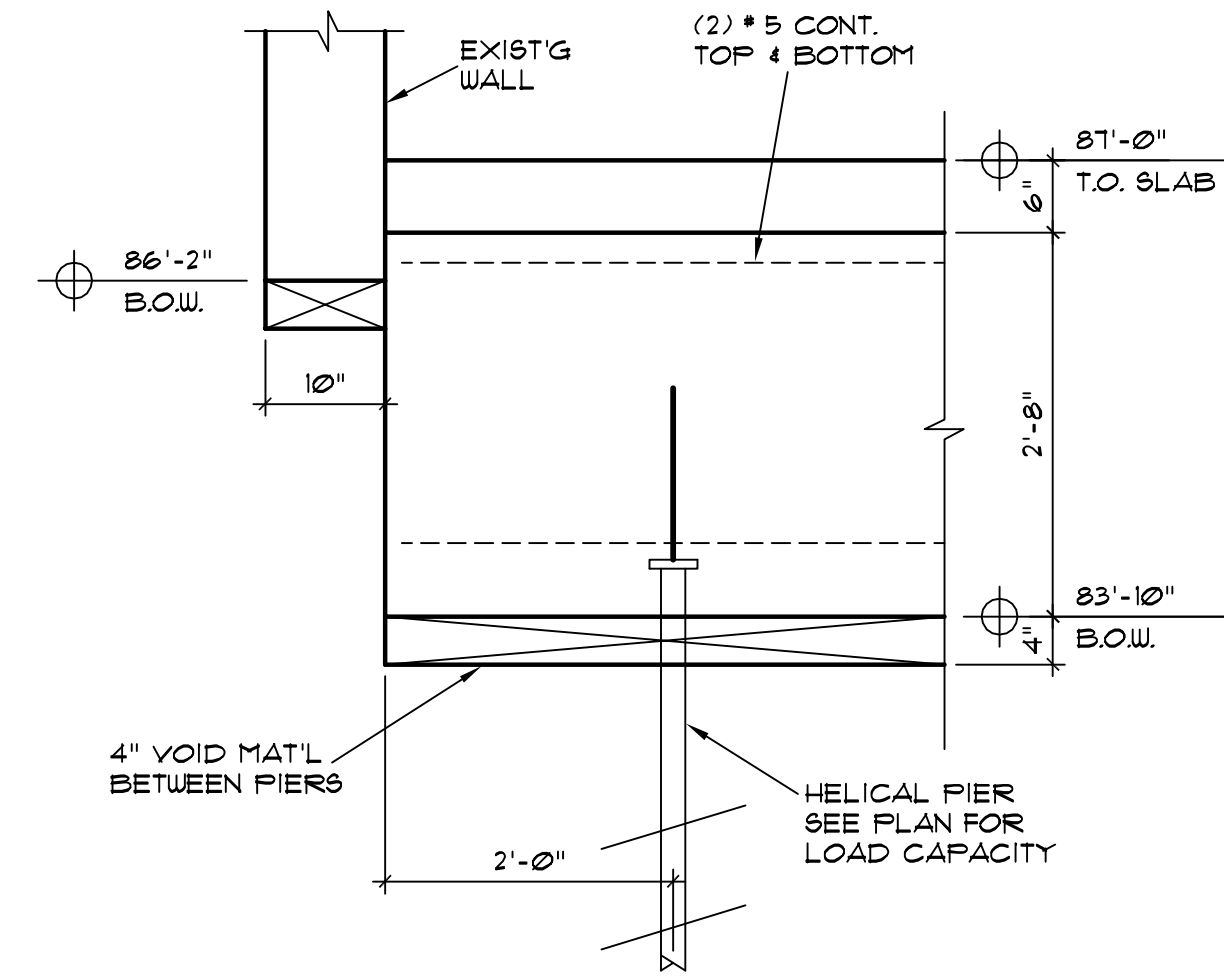
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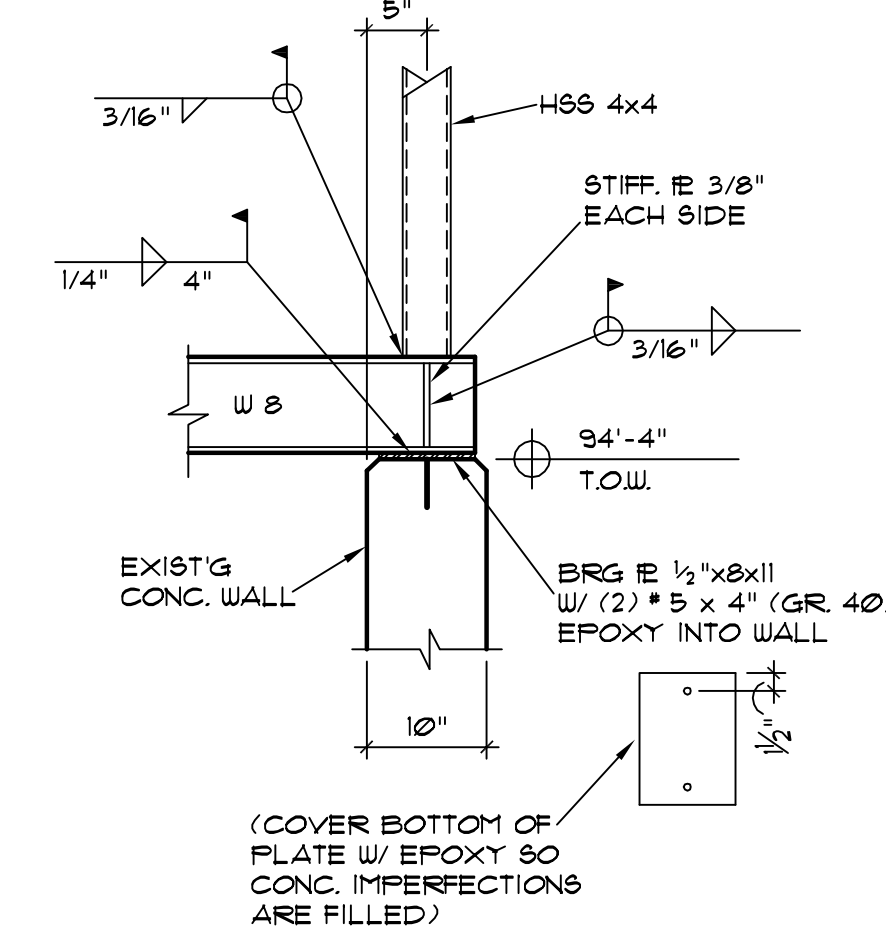
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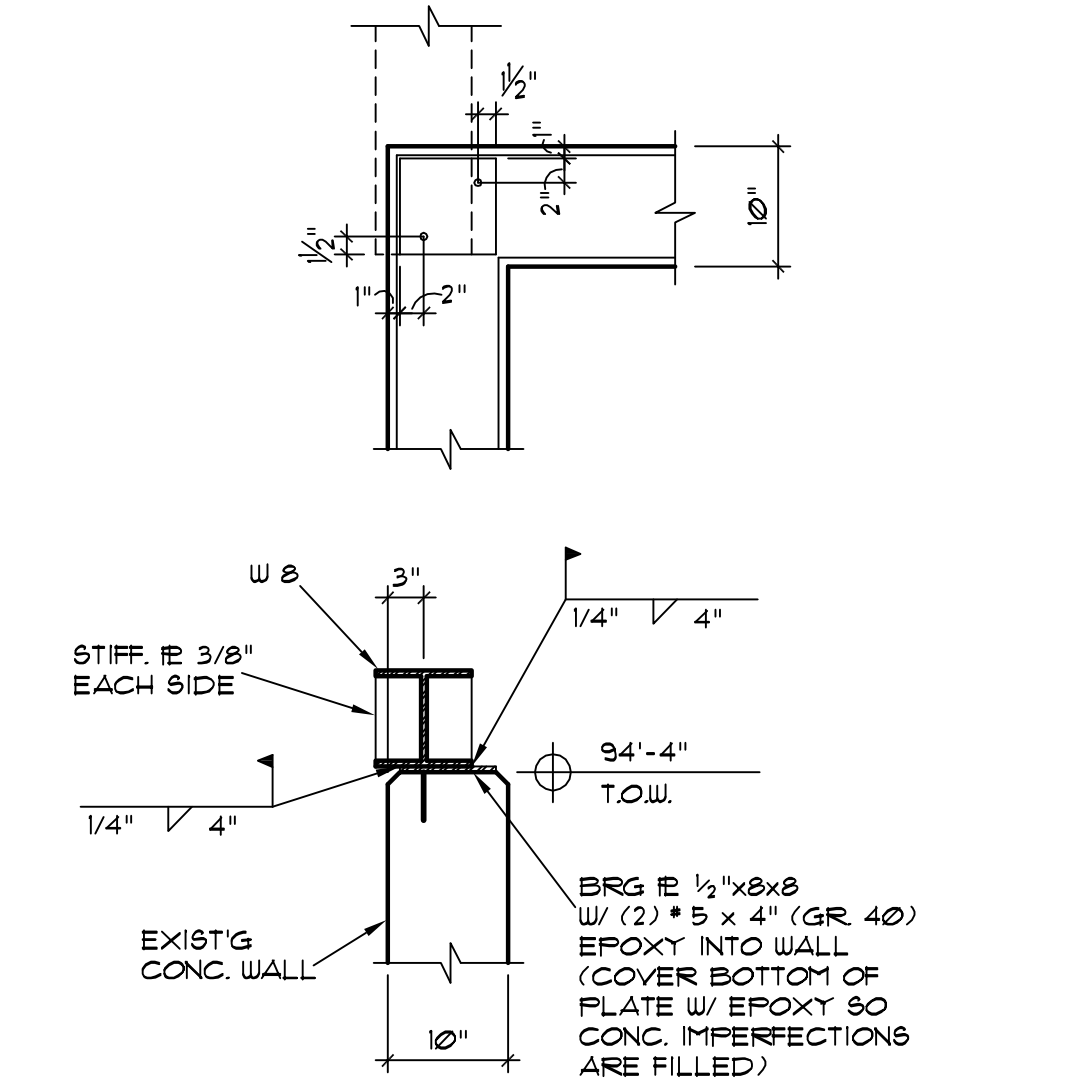
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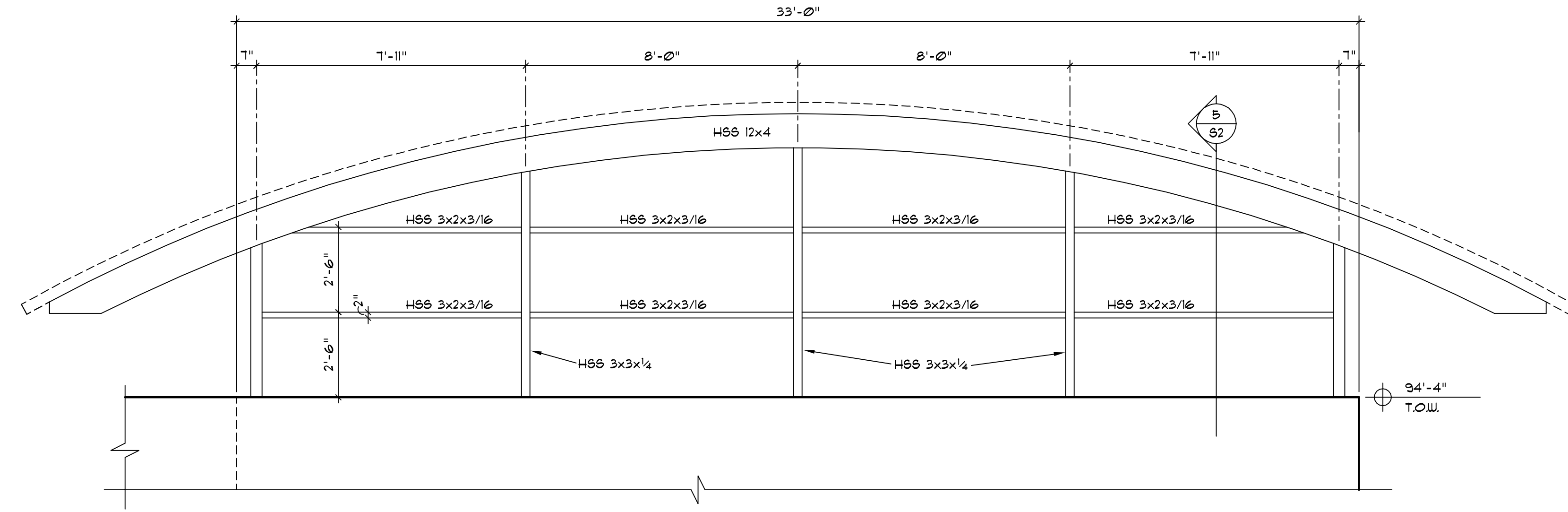
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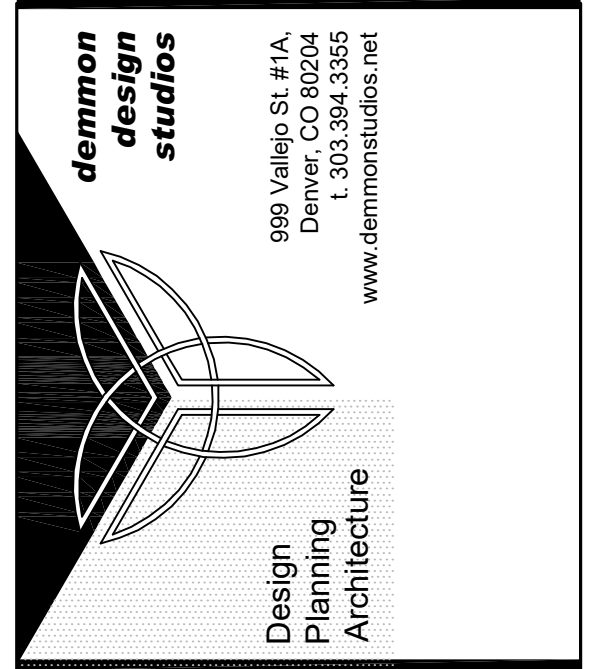
8 SCALE: 3/4"=1'-0"



9 SCALE: 3/4"=1'-0"



WEST ELEVATION
SCALE: 3/8"=1'-0"



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COLORADO STATE UNIVERSITY - PUEBLO
LS GREENHOUSE EXTENSION
PROJECT # P-17026
2200 BONFORTE BOULEVARD
PUEBLO, COLORADO 81001-4891

REVISIONS:	

DRAWN BY:	CHECKED BY:
JRV	JRV

DATE:	05-17-2017
PHASE:	100% CD
JOB NUMBER:	17.044

DRAWING TITLE:
GENERAL NOTES & DETAILS
DRAWING NUMBER:
S2

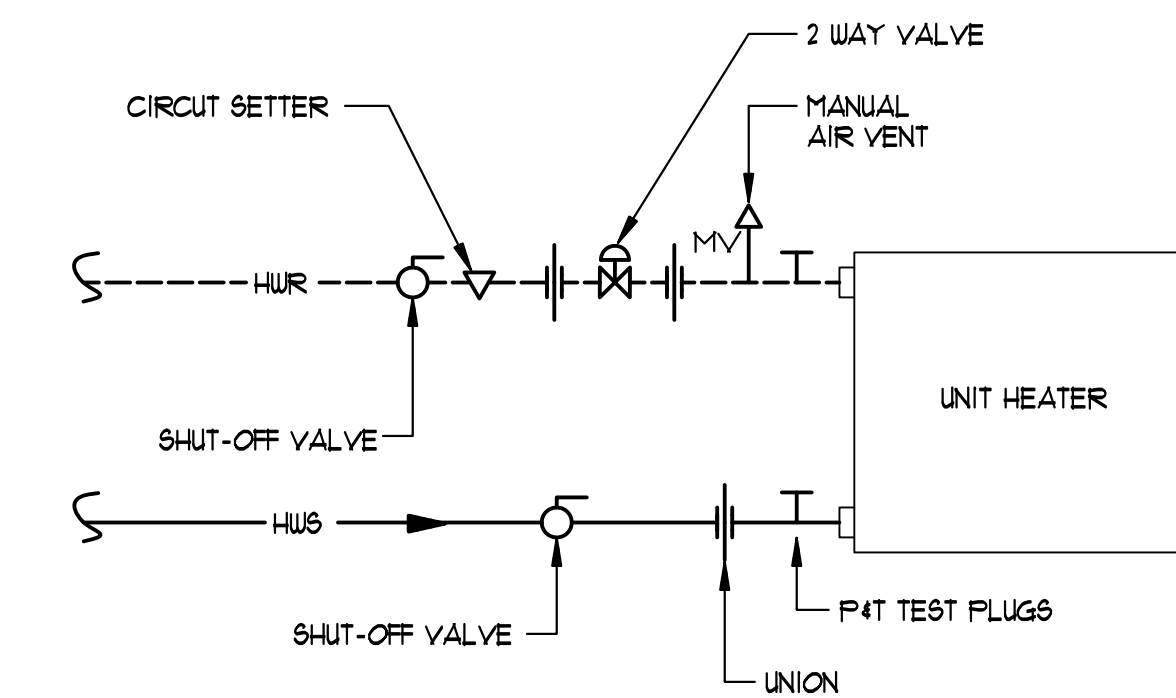
KEY NOTES

1. INSTALL NEW EVAPORATIVE COOLING SYSTEM IN LOCATION SHOWN. (5) PADS TO BE 34 IN. WIDE X 48 IN. HIGH. REFER TO DETAIL 2 AND 3 ON M2.1 FOR ADDITIONAL INFORMATION. MATCH EXISTING INSTALLATIONS.
2. INSTALL WALL MOUNTED FAN IN LOCATION SHOWN. INSTALLATION TO MATCH EXISTING EXHAUST FANS IN OTHER GREENHOUSES.
3. INSTALL HUI UNIT HEATER IN LOCATION SHOWN. REFER TO DETAIL 1 ON M2.1 FOR ADDITIONAL INFORMATION.
4. CONNECT NEW HUI5 AND HUI6 PIPING TO EXISTING IN LOCATION INDICATED. FIELD VERIFY TIE IN LOCATIONS PRIOR TO ROUGH-IN AND FABRICATION.
5. THERMOSTAT TO SERIES START STOP OF EXHAUST FANS BASED ON TEMPERATURE. IF ONE FAN IS NOT SUFFICIENT TO MAINTAIN COOLING ENABLE SECOND FAN. IF SECOND FAN IS NOT SUFFICIENT, ENABLE EVAP. WALL CIRC. PUMP.
6. EXISTING EVAPORATIVE COOLER HEADER TO EXISTING EVAPORATIVE COOLER HEADER.

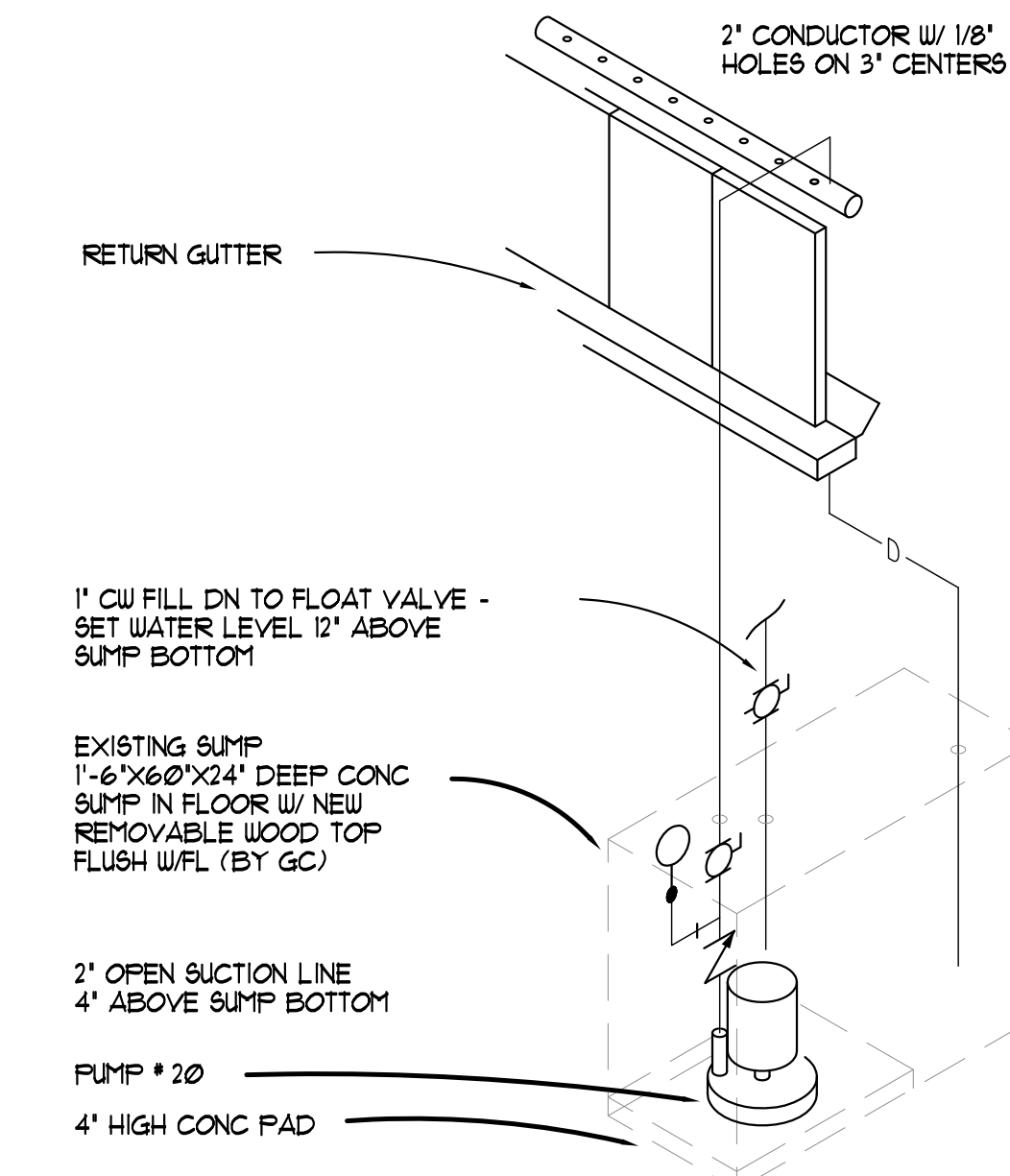
EQUIPMENT LIST

GREENHOUSE EXHAUST FAN EF-1J AND 1K TO MATCH EXISTING
 ACME WALL MOUNTED EXHAUST FAN MODEL DC-30E, 5100 CFM AT ALTITUDE 01 S.F., AT 5L 1/4 HP. COORDINATE INSTALLATION WITH G.C. PROVIDE WITH THERMOSTAT FOR PARALLEL START/ STOP. PROVIDE WITH BA SAFETY GUARD, WALL COLLAR AND MOTORIZED SHUTTER. INSTALLATION TO MATCH EXISTING GREENHOUSE EXHAUST FANS.

UNIT HEATER UH-1 AND 2
 TRANE HOT WATER UNIT HEATER MODEL UH5 B0481, 480 MBH, 115 V/1 PHASE. PROVIDE WITH FAN GUARD, COPPER TUBING, LINE-VOLTAGE THERMOSTAT. HANG FROM GREENHOUSE STRUCTURE. COORDINATE INSTALLATION WITH THE G.C. BOTTOM OF UNIT TO BE MIN. 1'-6" AFF.



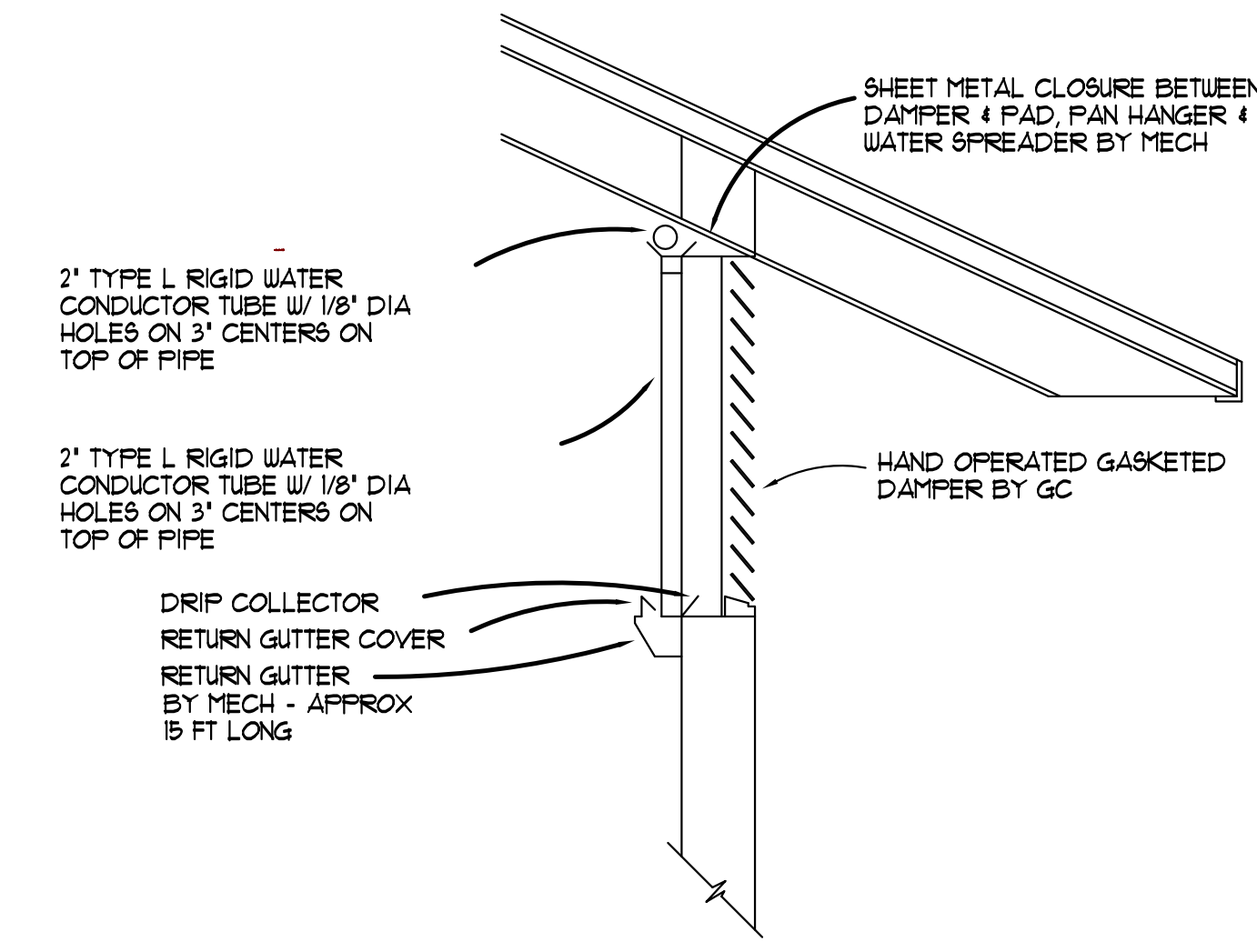
1 FAN TERMINAL PIPING
 SCALE: NONE
 2-WAY VALVE



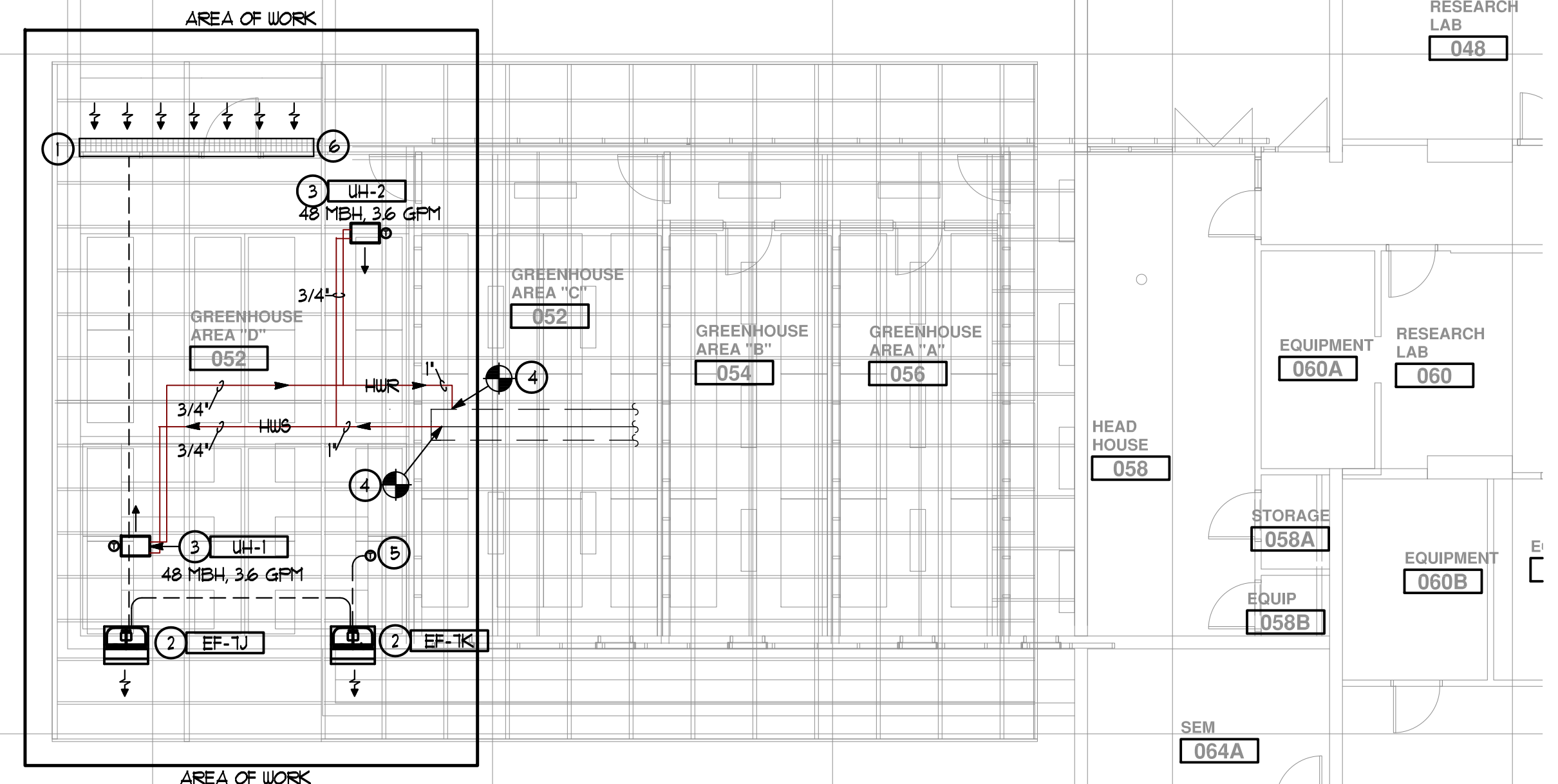
2 EVAP WALL CIRC. PUMP DETAIL
 SCALE: NONE
 2-WAY VALVE

GENERAL NOTES

1. PERFORM WORK IN ACCORDANCE WITH THE LATEST EDITION OF ALL RULES, REGULATIONS AND CODES OF THE STATE OF COLORADO AND LOCAL JURISDICTIONAL REQUIREMENTS.
2. THE MECHANICAL DRAWINGS INDICATE THE GENERAL DESIGN AND ARRANGEMENT OF LINES, EQUIPMENT, SYSTEM, ETC. INFORMATION SHOWN IS DIAGRAMMATIC IN CHARACTER AND DOES NOT INDICATE EVERY REQUIRED OFFSET, FITTING, ETC. DO NOT SCALE FOR DIMENSIONS.
3. THIS CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL WORK UNDER HIS CONTRACT WITH ALL OTHER BUILDING TRADES.
4. SOME ASSUMPTIONS WERE MADE REGARDING DUCT CONFIGURATION DURING DESIGN. THIS CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL FIELD CONDITIONS PRIOR TO THE PURCHASE OF ANY MATERIALS AND COMMENCEMENT OF ANY WORK AND IS TO NOTIFY THE ARCHITECT OF ANY DISCREPANCIES FOR RESOLUTION.
5. PROVIDE SUFFICIENT ACCESS TO SERVICE ALL MECHANICAL EQUIPMENT.
6. MAINTAIN ONE SET ON RED-LINE AS-BUILT DRAWINGS ON JOB SITE. SUBMIT TO ARCHITECT AT COMPLETION OF ALL WORK.
7. SUBMIT SHOP DRAWINGS OF ALL EQUIPMENT TO ARCHITECT. IN ADDITION, SUBMIT THE FOLLOWING INFORMATION TO THE ARCHITECT AT COMPLETION OF WORK:
 - A. OPERATION AND MAINTENANCE MANUAL
 - B. TESTING AND BALANCING DATA
 - C. CERTIFICATION OF FINAL INSPECTION
8. ALL EQUIPMENT, MATERIALS AND INSTALLATION IS TO BE WARRANTED FOR ONE YEAR TO BE FREE FROM DEFECT. PROVIDE WRITTEN WARRANTY TO OWNER.
9. ALL CONTROL WORK TO BE PER MECHANICAL EQUIPMENT LIST. PROVIDE ANY NECESSARY TRANSFORMERS FOR LOW VOLTAGE CONTROL CIRCUITS. LOW VOLTAGE (24V) WIRING TO BE BY M.C.
10. AT THE COMPLETION OF WORK, PROVIDE TESTING AND BALANCING SERVICES FOR MECHANICAL SYSTEMS. AT COMPLETION OF WORK, SUBMIT WRITTEN REPORT TO ARCHITECT LISTING DIFFUSER AIR FLOWS AND ROOF-TOP UNIT WATER FLOWS, ELECTRIC DATA, TEMPERATURES AND PRESSURE DROPS.
11. INSTALL ALL THERMOSTAT AND SWITCHES WHERE SHOWN ON PLANS AT 48" AFF. COORDINATE LOCATION WITH ELECTRICAL CONTRACTOR.



3 SECTION THROUGH EVAP. WALL
 SCALE: NONE
 2-WAY VALVE



1 GREENHOUSE FLOOR PLAN
 SCALE: 1/8" = 1'-0"

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Design
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COLORADO STATE UNIVERSITY - PUEBLO
LS GREENHOUSE EXTENSION
PROJECT# P-17026
 2200 BONFORTE BOULEVARD
 PUEBLO, COLORADO 81001-4901

REVISIONS:

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DRAWN BY: BZ
 CHECKED BY: BZ

DATE: 05-17-2017
 PHASE: 100% CD
 JOB NUMBER: 17-026

DRAWING TITLE:
MECHANICAL FLOOR PLAN
 DRAWING NUMBER:
M2.1

KEY NOTES

① CONNECT 1-1/2" CW(NP) TO (E)1-1/2" CW(NP) HEADER. CONTRACTOR SHALL FIELD VERIFY EXACT SIZE AND LOCATION OF EXISTING PIPING. MODIFY AS REQUIRED FOR CONNECTION. ROUTE PER BASE BUILDING STANDARDS.

② CONNECT 1" CW(NP) TO EVAP WALL MAKEUP. PROVIDE AND INSTALL BALL VALVE AND SOLENOID OPERATED ZONE VALVE PRIOR TO CONNECTION. ROUTE EVAP WALL DRAIN TO SUMP. SOLENOID ZONE VALVE TO BE CONNECTED TO EXISTING BASE BUILDING GREENHOUSE ZONE VALVE SYSTEM.

PLUMBING LEGEND

NOTE: NOT ALL ITEMS LISTED MAY APPEAR ON DRAWINGS

SYMBOL	ABBREV	DESCRIPTION
--- NP ---	NP	NON POTABLE COLD WATER
--- D ---	D	POTABLE HOT WATER 110° F
f		BALL VALVE
		SOLENOID VALVE

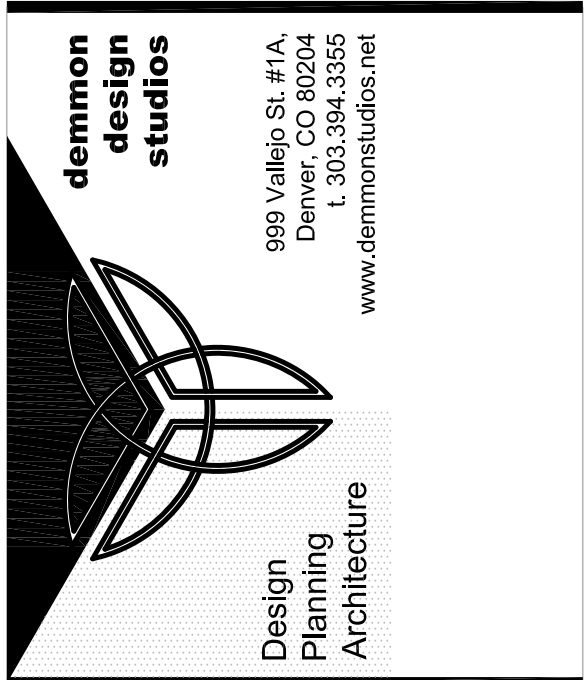
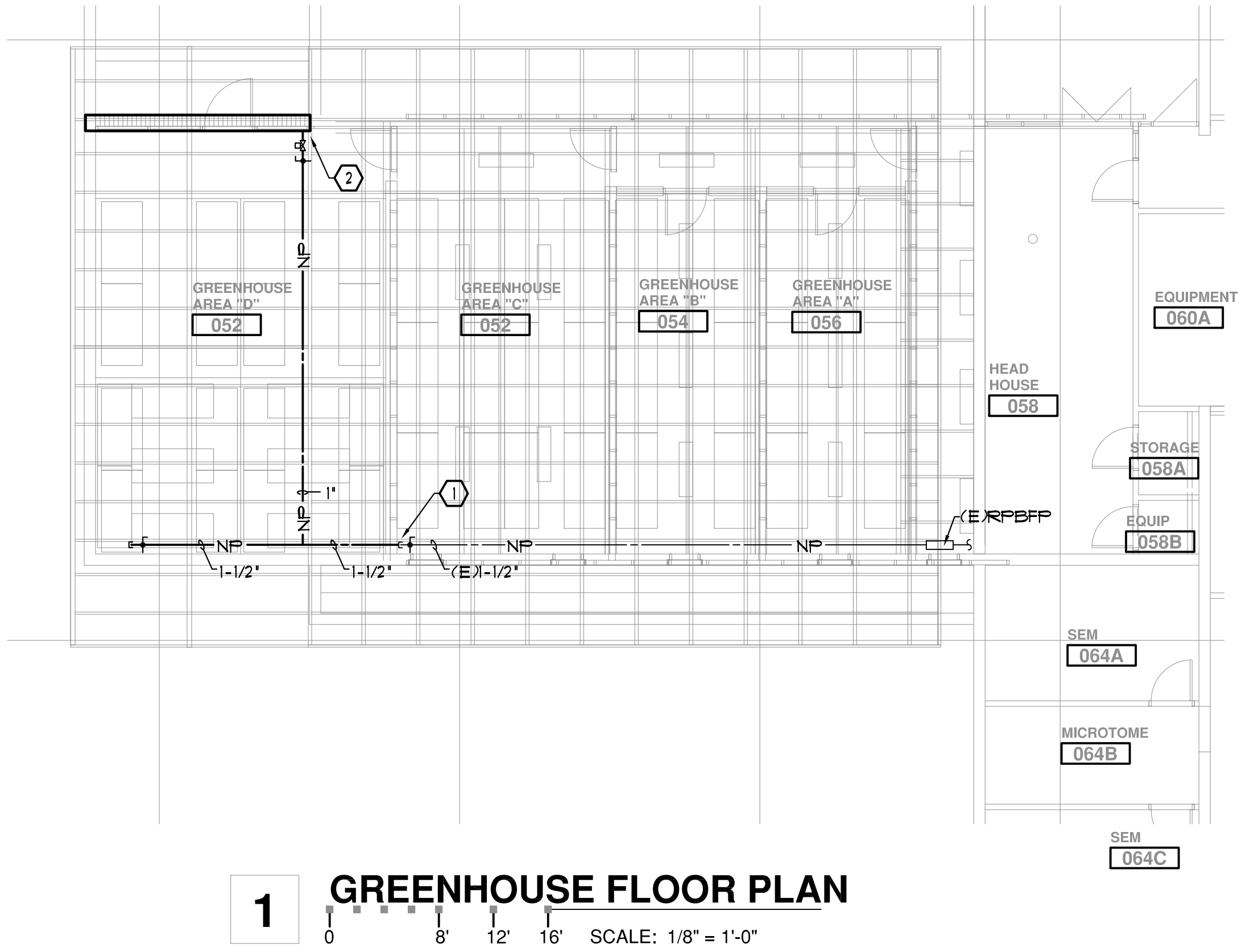
GENERAL NOTES

- THIS CONTRACTOR SHALL COORDINATE AND VERIFY LOCATIONS AND SIZES OF ALL EQUIPMENT, DUCTWORK, PIPING, ELECTRICAL CONDUIT, STRUCTURAL MEMBERS, ETC. PRIOR TO STARTING OF CONSTRUCTION. COORDINATE CONFLICTS WITH THE GENERAL CONTRACTOR.
- AT THE COMPLETION OF THE WORK AND PRIOR TO FINAL ACCEPTANCE, ALL PARTS OF THE WORK INSTALLED UNDER THIS SPECIFICATION SHALL BE THOROUGHLY CLEANED.
- ALL PLUMBING SYSTEMS ARE REQUIRED TO BE INSTALLED IN ACCORDANCE WITH BUILDING SPECIFICATIONS, LOCAL AND STATE JURISDICTIONAL CODES, ORDINANCES, AND APPLICABLE REGULATIONS.
- THE WORK REQUIRED CONSISTS OF PERFORMING ALL LABOR AND FURNISHING ALL MATERIALS, FIXTURES, AND EQUIPMENT REQUIRED TO PROVIDE A COMPLETE PLUMBING INSTALLATION AS INDICATED ON THE DRAWINGS. IT SHALL FURTHER INCLUDE FURNISHING AND INSTALLING ALL MISCELLANEOUS MINOR ITEMS REQUIRED FOR THE OPERATION OF THE SYSTEM WHETHER SPECIFICALLY CALLED FOR OR NOT.
- THIS CONTRACTOR SHALL PAY FOR ALL PERMITS AND INSPECTION FEES REQUIRED BY STATE AND LOCAL AUTHORITIES.
- VALVES AND CLEAN-OUTS SHALL BE INSTALLED AS SHOWN ON THE DRAWINGS OR AS REQUIRED BY LOCAL CODES AND REGULATIONS.

PIPING MATERIALS

NON POTABLE WATER DISTRIBUTION PIPING
 ABOVE GRADE:
 MAINS:
 PIPE: TYPE 'L' COPPER TUBE
 FITTINGS: WROUGHT COPPER FITTINGS AND 95-5 TIN ANTIMONY JOINTS
 TYPE K WATER SERVICE TUBING SHALL COMPLY WITH ASTM B75, ASTM B88, ASTM B251, ASTM B447.
 TYPE L WATER DISTRIBUTION TUBING SHALL COMPLY WITH ASTM B75, ASTM B88, ASTM B251, ASTM B447.
 COPPER/COPPER ALLOY FITTINGS SHALL COMPLY WITH ASSE 1061, ASME B16.15, ASME B16.18, ASME B16.22, ASME B16.23, ASME B16.26, ASME B16.23.
 VALVES: VALVES TO BE OF APPROVED TYPE AND COMPATIBLE WITH TYPE OF PIPING MATERIAL INSTALLED.

CONDENSATE PIPING:
 PROVIDE TYPE M COPPER TUBING WITH WROUGHT COPPER FITTINGS OR FLOUGUARD GOLD CTS FOR PIPE SIZES SMALLER THAN 1-1/4". JOINTS AND CONNECTIONS SHALL COMPLY WITH PIPING TYPE REQUIREMENTS, PER IPC CHAPTER 7. NO CONDENSATE TO BE SMALLER THAN 3/4" I.D. AND SHALL NOT DECREASE IN SIZE FROM DRAIN/PAN CONNECTION TO PLACE OF DISPOSER. ALL CONDENSATE PIPING SHALL COMPLY WITH IPC SECTION 314.



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COLORADO STATE UNIVERSITY - PUEBLO
 LS GREENHOUSE EXTENSION
 PROJECT# P-17026
 2200 BONFORTE BOULEVARD
 PUEBLO, COLORADO 81001-4901

REVISIONS:

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DRAWN BY: BZ
 CHECKED BY: BZ

DATE: 05-17-2017
 PHASE: 100% CD
 JOB NUMBER: 17-026

DRAWING TITLE:
PLUMBING FLOOR PLAN
 DRAWING NUMBER:
P2.1

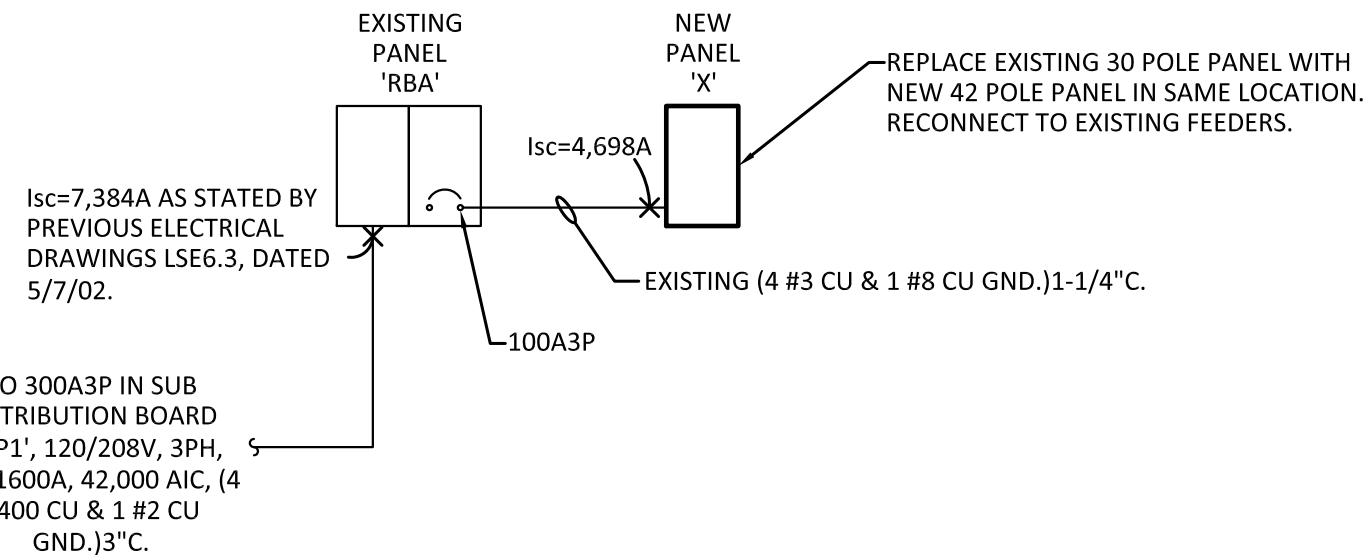
professional seal

consultant

GENERAL NOTES:

- 1. EXISTING CONDITIONS SHALL BE VERIFIED AT THE SITE PRIOR TO SUBMITTING BIDS. ALL WORK PERFORMED UNDER THIS CONTRACT SHALL CONFORM WITH LATEST EDITIONS OF THE NATIONAL ELECTRICAL CODE AND INTERNATIONAL BUILDING CODE AS AMENDED BY THE LOCAL JURISDICTION FOR ELECTRICAL INSTALLATIONS.
2. ELECTRICAL CONTRACTOR SHALL MAINTAIN ON THE JOB AN UP TO DATE SET OF WORKING DRAWINGS AND SPECIFICATIONS, MARKED UP TO SHOW ELECTRICAL SYSTEMS AS INSTALLED. PROVIDE THE OWNER WITH ONE SET OF REPRODUCIBLE DRAWINGS WITH "AS BUILT" INFORMATION CLEARLY INDICATED.
3. THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF ELECTRICAL WORK. LOCATIONS ARE APPROXIMATE AND SHALL BE SUBJECT TO MINOR MODIFICATIONS AS DIRECTED. VERIFY ALL FIXTURE AND DEVICE LOCATIONS WITH ARCHITECTURAL PLANS. CONTRACTOR SHALL BE RESPONSIBLE FOR THE EXACT FITTING OF ALL MATERIALS, EQUIPMENT, ETC., IN BUILDING. ALL DIMENSIONS SHALL BE VERIFIED ON THE JOB. ELECTRICAL CONTRACTOR SHALL CUT, CHANNEL, CHASE, AND/OR DRILL FLOORS, WALLS, PARTITIONS, CEILINGS, OR OTHER SURFACES AS REQUIRED FOR INSTALLATION, SUPPORT, ANCHORAGE, ETC., OF WORK. ALL PATCHING SHALL BE DONE BY THE GENERAL CONTRACTOR.
4. PROVIDE NEW TYPED PANEL CIRCUIT DIRECTORY FOR EACH PANEL AFFECTED BY CONSTRUCTION. PANEL DIRECTORY SHALL INCORPORATE ACCURATE DESCRIPTIONS FOR EACH CIRCUIT BREAKER.
5. NEW WIRING DEVICES SHALL BE SPECIFICATION GRADE; 15 AMP FOR GENERAL APPLICATION, 20 AMP OR GREATER FOR DEDICATED CIRCUITS AND AS REQUIRED BY CIRCUIT LOAD. LEVITON #5262-1 RECEPTACLES AND #1201-21 SWITCHES (OR EQUAL). COLOR LISTED IS IVORY. VERIFY WITH ARCHITECT BEFORE ORDERING. PROVIDE MATCHING SMOOTH NYLON COVER PLATES FOR ALL OUTLETS.
6. ALL WIRING SHALL BE COPPER. #12 AWG MINIMUM FOR 20 AMP CIRCUITS 75'-0" OR LESS TO FIRST OUTLET; TYPE THHN OR THWN INSULATION. PROVIDE WIRE COLOR CODING AS REQUIRED BY THE NATIONAL ELECTRICAL CODE. ALL WIRING SHALL BE RUN CONCEALED AND IN EMT CONDUIT OR "MC" TYPE CABLE. "MC" CABLE SHALL BE PERMITTED FOR BRANCH CIRCUIT WIRING IN APPROVED LOCATIONS ONLY PER LOCAL CODES AND NATIONAL ELECTRICAL CODE REQUIREMENTS. USE APPROVED TYPE COUPLINGS AND CONNECTORS. PROVIDE CONDUIT SUPPORTS AS REQUIRED BY THE NATIONAL ELECTRICAL CODE AS A MINIMUM. HOMERUN JUNCTION BOXES SHALL BE LABELED WITH PANEL AND CIRCUIT DESIGNATIONS. ALL HOME RUNS SHALL BE IN EMT CONDUIT, (TYPICAL).
7. NEUTRALS, RACEWAYS, AND NON-CURRENT CARRYING PARTS OF ELECTRICAL EQUIPMENT AND ASSOCIATED ENCLOSURES SHALL BE GROUNDED IN FULL ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. PROVIDE HARD WIRED GROUND CONNECTIONS TO ALL DEVICES, AND SEPARATE INSULATED GROUND WIRE CONTINUOUS IN EACH CIRCUIT, (#12 CU MINIMUM "GREEN").
8. ALL NEW POWER, TELEPHONE, AND COMMUNICATIONS RECEPTACLES SHALL MATCH EXISTING MOUNTING HEIGHTS AND ORIENTATIONS, TYPICAL UNLESS OTHERWISE NOTED. COORDINATE MOUNTING HEIGHTS AND LOCATIONS OF ALL ELECTRICAL DEVICES LOCATED WITHIN, ABOVE, OR NEAR MILLWORK WITH ARCHITECTURAL MILLWORK DRAWINGS. MAINTAIN CONSISTENT MOUNTING PRACTICES FOR A UNIFORM APPEARANCE. VERIFY ALL OUTLET REQUIREMENTS PRIOR TO BEGINNING WORK.
9. COORDINATE THE EXACT WIRING AND RECONFIGURATION OF LIGHTING AS SHOWN ON NEW LIGHTING PLAN WITH EXISTING CONDITIONS. PROVIDE SWITCHING AND CONTROLS AS REQUIRED TO MATCH THE INTENT OF THE DESIGN SHOWN.
10. VERIFY ALL FIXTURE AND DEVICE LOCATIONS WITH ARCHITECTURAL PLANS. REFER TO ARCHITECTURAL PLANS FOR DEMOLITION OF ELECTRICAL DEVICES AND LIGHT FIXTURES, (TYPICAL). ALL DEMOLISHED EQUIPMENT AND LIGHT FIXTURES SHALL BECOME THE PROPERTY OF BUILDING MANAGEMENT. ANY DEVICES OR EQUIPMENT NOT WANTED BY PROPERTY MANAGER SHALL BE PROPERTY OF ELECTRICAL CONTRACTOR AND REMOVED FROM PREMISES.
11. PROVIDE DEMOLITION OF ALL EXISTING ELECTRICAL WORK, ELECTRICAL CONTRACTOR WILL BE RESPONSIBLE TO VISIT SITE TO DETERMINE THE EXTENT OF DEMOLITION. MAINTAIN CONTINUITY OF ALL CIRCUITS FEEDING EXISTING DEVICES AND LIGHTING TO BE REUSED IF ANY. RE-WORK ITEMS THAT CONFLICT WITH THE NEW CONSTRUCTION TO ACCOMMODATE THE NEW CONSTRUCTION. RE-WORK AND RECONNECT AS REQUIRED FOR ALL EXISTING CIRCUITS SUPPLYING EQUIPMENT, FIXTURES AND DEVICES TO REMAIN FOR THIS SPACE, AND EXISTING CIRCUITS TO REMAIN FOR ALL OTHER SPACES THAT ARE AFFECTED BY THIS CONSTRUCTION. ALL POWER DEVICES WITH THE EXCEPTION OF THOSE EXISTING BEING REUSED ARE TO BE REMOVED. REFER TO ARCHITECTURAL PLANS FOR WALLS BEING REMOVED.
12. REWORK AND PROVIDE NEW FIRE ALARM DEVICES IN ACCORDANCE WITH AUTHORITY HAVING JURISDICTION AND FIRE DEPARTMENT REQUIREMENTS. FIRE ALARM SYSTEM SHALL BE DESIGNED AND INSTALLED UNDER A DESIGN/BUILD CONTRACT BY THE ELECTRICAL CONTRACTOR. COORDINATE EXACT FIRE ALARM REQUIREMENTS WITH FIRE DEPARTMENT PRIOR TO BIDS. MAKE NECESSARY CHANGES TO DESIGN/BUILD DOCUMENTS AS DESIGNED PER FIRE DEPARTMENT COMMENTS. PROVIDE SHOP DRAWINGS FOR APPROVAL, REVISE AND RE-SUBMIT AS REQUIRED FOR FIRE DEPARTMENT APPROVAL AND OBTAINING APPLICABLE PERMITS. AFTER THE INSTALLATION IS COMPLETE, THE FIRE ALARM SYSTEM SHALL BE TESTED IN THE PRESENCE OF FIRE DEPARTMENT REPRESENTATIVES AND THE OWNER'S REPRESENTATIVE FOR SYSTEM INTEGRITY AND OPERATION.

SYMBOL LEGEND table with columns for Symbol and Description, listing various electrical symbols like Distribution Equipment, Branch Circuit Panel, Telephone Terminal, Transformer, Fused Disconnect Switch, etc.



PARTIAL ONE-LINE DIAGRAM

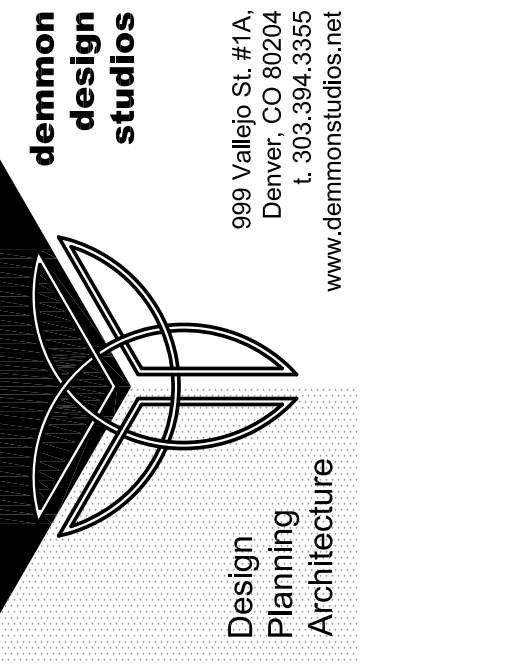
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EXISTING PANEL "RBA" table with columns for Description, T, KVA, BKR, CKT#, BKR, KVA, T, and Description. Includes load summary table at the bottom with columns for Load KVA, Connected, NEC Demand, and Amps.

CSU Pueblo Greenhouse Short Circuit Calculations table. Includes formulas for fault current calculation, transformer data table, and a detailed circuit diagram with columns for Point, Ending Point, Dist., Ft., Beginning, XFMR, Fuse Reduction, and Feeder Length Reduction.

NEW PANEL "X" table with columns for Description, T, KVA, BKR, CKT#, BKR, KVA, T, and Description. Includes load summary table at the bottom with columns for Load KVA, Connected, NEC Demand, and Amps.

RECONNECT EXISTING CIRCUIT FROM PANEL BEING REPLACED. NEW PANEL TO REPLACE EXISTING 30 POLE PANEL IN SAME LOCATION. RECONNECT TO EXISTING FEEDERS. REFER TO ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.



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COLORADO STATE UNIVERSITY - PUEBLO LS GREENHOUSE EXTENSION PROJECT# P-17026

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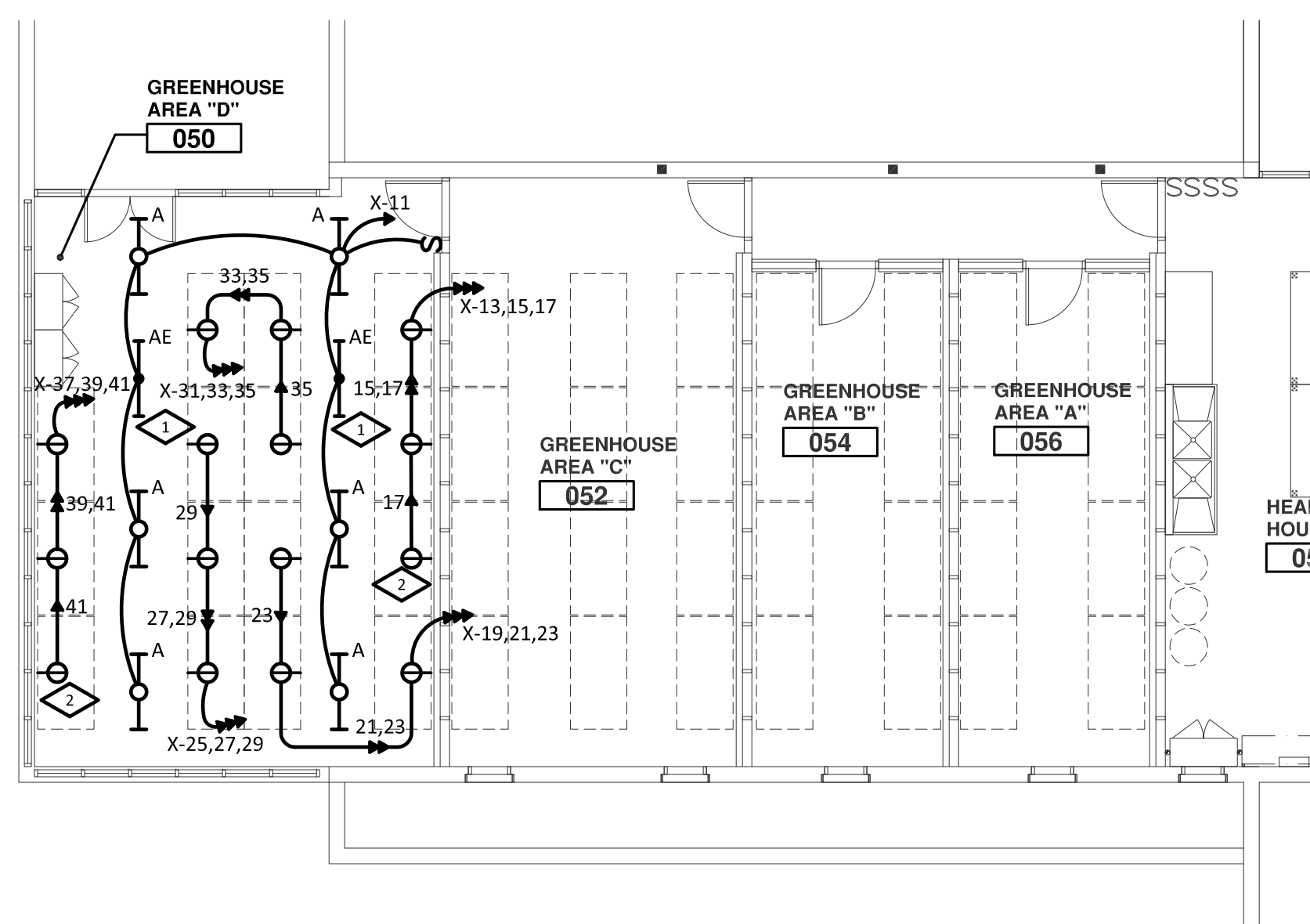
REVISIONS table with columns for Description, Date, and Checked By.

DRAWN BY: CHECKED BY: DATE: 05-17-2017 PHASE: 100% CD JOB NUMBER: 1702

DRAWING TITLE: COVER SHEET - ONE-LINE DIAGRAM

DRAWING NUMBER:

E0.0



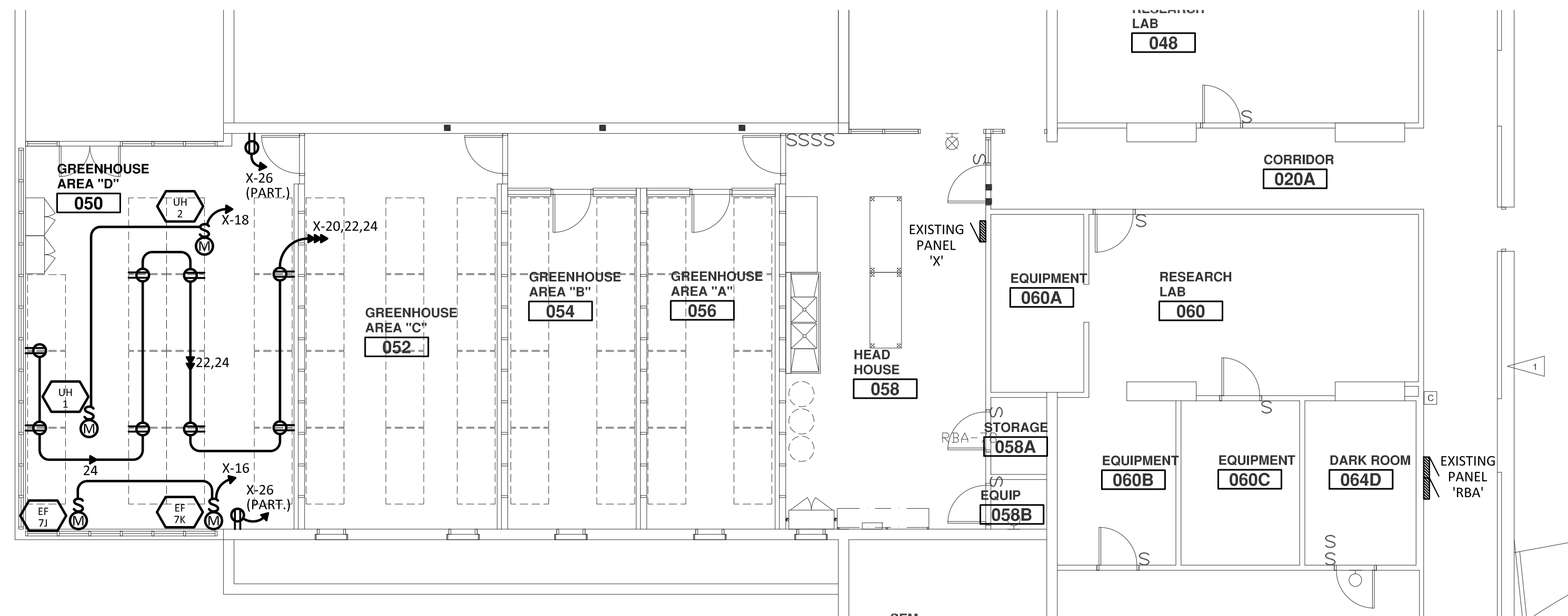
1 LIGHTING PLAN

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

COORDINATE WITH CSU REPRESENTATIVE FOR EXACT LOCATION OF ALL DEVICES PRIOR TO BIDS.

DETAIL NOTES

- 1. CONNECT ALL EXIT LIGHTS, EMERGENCY BATTERY PACKS FOR SHADED FIXTURES AHEAD OF SWITCHING FOR CONTINUOUS EGRESS/NIGHTLIGHT FUNCTIONS, (TYPICAL).
- 2. PROVIDE 120V, 20 AMP SIMPLEX RECEPTACLE FOR 1000W CULTIVATION LIGHT. COORDINATE MOUNTING LOCATION WITH CSU PRIOR TO ROUGH-IN. (TYPICAL FOR ALL SIMPLEX RECEPTACLES).



2 POWER PLAN

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

COORDINATE WITH CSU REPRESENTATIVE FOR EXACT LOCATION OF ALL DEVICES PRIOR TO BIDS.

Light Fixture Schedule										
	Lamps		Fixture Characteristics		Fixture Mounting			Fixture Specification		Voltage
	# of lamps	Lamp Type	Description	Finish	Method	Ceiling Type	Recess Depth	Manufacturer	Catalog #	
A	2	F32T8 (3500K)	4' Strip Fluorescent	White	Surface	--	--	Metalux	SSF-232-UNV-EB81	120
AE	2	F32T8 (3500K)	Same as Type 'A' Fixture with 90 Minute Emergency Battery Backup	White	Surface	--	--	Metalux	SSF-232-UNV-EL4-EB81	120

Mechanical Equipment Schedule															
Equipment Designation	Description	Characteristics				Supply Data					Fire Provisions				
		Load Form	Load	Volts	Phase	Feeder	Circuit Protection			Control		Detection			
							Breaker	Disc. Switch	Fuse	type:	by	CFM	Smoke	Furnished	Installed
EF-7J & EF-7K	Exhaust Fan	HP	1/4	120	--	(2 #12 THWN CU & 1 #12 CU GND.)3/4"C.	20A1P	--	--	Match Existing Controls	MC	--	--	--	--
UH-1 & UH-2	Unit Heater	HP	1/6	120	--	(2 #12 THWN CU & 1 #12 CU GND.)3/4"C.	20A1P	--	--	LV T-Stat	EC/MC*	--	--	--	--

* Installed by EC and furnished by MC.



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COLORADO STATE
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LS GREENHOUSE EXTENSION
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DRAWN BY: CHECKED BY:

DATE: 05-17-2017

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DRAWING TITLE:

ELECTRICAL
PLANS

DRAWING NUMBER:

E1.0