ELLISON - AUXIER
ARCHITECTS

Addendum No. 3

Date: 05.24.2023

Project: **Missouri Western State University – CTAC Building**

All Prospective Bidders:

All bidders furnishing necessary materials and/or labor, this addendum is hereby part of the Contract Documents as though it were originally therein. Refer to Proposal Form for acknowledgement of Addenda.

Clarification:

1. A 2,500# bridge crane shall be provided in Shop 105, as noted on sheet A211. Bridge crane shall be 35'-0" wide x 103'-4"long with an overhead clearance of 20'-0". Crane rail power shall be 480v, see electrical drawings for additional information. Contact James Smith-Vandergriff with Anchor Sales; 816-836-5900.

2. See ASD001 for clarification on location for excess spoils.

3. The owner will provide and install all low voltage cabling to voice/data locations, access points, and security cameras as shown on the plans. Security cameras will be provided and installed by the owner.

4. OMIT requirement for fire retardant treatment for all wood blocking and plywood sheathing. The plywood decking, under the metal roof panel over the shop area, shall be fire retardant treated.

5. Contractors shall include the access control scope of work in their bid. Access control system will be an extension of the universities existing system. Contractors shall contact Bryan Cooper, American Direct 913-754-3738 ext. 370.

Bidding Requirements

1. Liquidated damages of $500/day will be enforced if work is not substantially complete by July 1, 2024.

Changes to Project Manual:

1. Section 00 0110 – TABLE OF CONTENTS

- ***1.*** OMIT section 09 6566 Resilient Athletic Flooring
- ***2.*** OMIT Section 09 6700 Fluid-Applied Flooring.

2. Section 07 2500 – WEATHER BARRIER

- ***1.*** 2.01.A.7 Products:
  - ***1.*** ADD: CCW Barrithane VP as an approved product.

3. Section 08 4229 – AUTOMATIC OPERATORS

- ***1.*** See revised section.

4. Section 08 4313 – ALUMINUM-FRAMED STOREFRONTS

- ***1.*** 2.01.A Storefront:
  - ***1.*** ADD: Manko Window Systems 2450 as an approved product.
- ***2.*** 2.02.A Wide Stile Doors
  - ***1.*** ADD: Manko Window Systems 150 as an approved product.

5. Section 08 4500 – TRANSLUCENT WALL AND ROOF ASSEMBLIES

- ***1.*** 2.01.A MANFACTURERS:
  - ***1.*** ADD: Majors Industries Guardian 275 as an approved manufacturer/product.
  - ***2.*** 2.04.A Sandwich Panel Assemblies:
    - ***1.*** ADD:
      - ***3.*** Performance:
        - ***a.*** Glazing U-Value: 0.14 BTU/hr sq ft degrees F maximum
        - ***b.*** Overall Ligth Transmittance (LT): 9 percent, nominal

6. Section 08 7100 – DOOR HARDWARE

- ***1.*** See revised section.

7. Section 09 6813 – TILE CARPETING

- ***1.*** See added section.

8. Section 12 2400 – WINDOW SHADES

- ***1.*** 2.01.A Manufacturers:
  - ***1.*** ADD: Windowtex 12830 as an approved manufacturer/product.

- ***2.*** 2.03. Shade Fabric:
  - ***1.*** ADD: Mermet Corporation; Sparta Twilight for blackout curtains. Color: as selected by Architect from manufacturer's full range of colors.

Changes to Drawings:

CIVIL

1. ***Sheet C400 – UTILITY PLAN***
    1. See revised sheet.

2. ***Sheet C500 – STORM SEWER PROFILES***
    1. See revised sheet.

3. ***Sheet C600 – LIFT STATION/FORCE MAIN PLAN AND PROFILE***
    1. See revised sheet.
4. ***Sheet C1300 – DETAILS***
    1. See revised sheet.

ARCHITECTURAL

1. ***Sheet A211 – LEVEL 1 - FLOOR PLAN***
    1. See revised sheet.

2. ***Sheet A311 – REFLECTED CEILING PLAN***
    1. See revised sheet.

3. ***Sheet A622 – INTERIOR ELEVATIONS***
    1. See revised sheet.

4. ***Sheet A623 – INTERIOR ELEVATIONS***
    1. See revised sheet.

5. ***Sheet A721 – WALL SECTIONS***
    1. See revised sheet.

6. ***Sheet A821 – PLAN DETAILS***
    1. See revised sheet.

7. ***Sheet A831 – SECTION DETAILS***
    1. See revised sheet.

8. ***Sheet A911 – SCHEDULES***
    1. See revised sheet.

STRUCTURAL

1. ***Sheet S101 -LOW ROOF FRAMING PLAN***
    1. See revised sheet.

2. ***Sheet S103 -FOUNDATION PLAN – ALTERNATE BID #1***
    1. See added sheet.

3. ***Sheet S301 -ROOF FRAMING SECTIONS***
    1. See revised sheet.

4. ***Sheet S302 -ROOF FRAMING SECTIONS***
    1. See revised sheet.

5. ***Sheet S400 -FOUNDATION PLAN – BRACE ELEVATIONS***
    1. See revised sheet.

MECHANICAL

1. ***Sheet M100 – LEVEL 1 - MECHANICAL***
    1. See revised sheet.

2. ***Sheet M300 – MECHANICAL SCHEDULES, GENERAL NOTED & SYMBOLS***
    1. See revised sheet.

ELECTRICAL

1. ***Sheet E001 – ELECTRICAL SITE PLAN***
    1. See revised sheet.

2. ***Sheet E100 – LEVEL 1 - POWER***
    1. See revised sheet.

3. ***Sheet E200 – LEVEL 1 - LIGHTING***
    1. See revised sheet.

4. ***Sheet E300 – LEVEL SYSTEMS***
    1. See revised sheet.

5. ***Sheet E301 – ROOF PLAN - SYSTEMS***
    1. See revised sheet.

6. ***Sheet E501 – ELECTRICAL SCHEDULES***
    1. See revised sheet.

7. ***Sheet E502 – ELECTRICAL SCHEDULES***
    1. See revised sheet.

8. ***Sheet E503 - ELECTRICAL SCHEDULES, GENERAL NOTES, SYMBOLS & RISER***
    1. See revised sheet.

PLUMBING

1. ***Sheet P100 – LEVEL 1 – WASTE/VENT***
    1. See reviewed sheet.

2. ***Sheet P101 – LEVEL 1 – WATER***
    1. See reviewed sheet.

3. ***Sheet P102 – LEVEL 1 – NATURAL GAS***
    1. See reviewed sheet.

4. ***Sheet P400 – PLUMBING SCHEDULES, GENERAL NOTES & SYMBOLS***
    1. See reviewed sheet.

FIRE PROTECTION

1. ***No Revisions***

END OF ADDENDUM

SECTION 08 4229
AUTOMATIC ENTRANCES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Swinging type packaged power-operated door assemblies.

B. Operators for doors provided in other sections.

C. Controllers, actuators and safety devices.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. NFPA 101 - Life Safety Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings:
   1. Indicate layout and dimensions; head, jamb, and sill conditions; elevations; components, anchorage, recesses, materials, and finishes, electrical characteristics and connection requirements.

C. Product Data: Include system components, sizes, features, and finishes.

D. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and manufacturer's hardware and component templates.

E. Manufacturer's qualification statement.

F. Installer's qualification statement.

G. Maintenance Data: Include manufacturer's parts list and maintenance instructions for each type of hardware and operating component.

H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. Wrenches and other tools required for maintenance of equipment.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience, and a member of AAADM.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience and approved by manufacturer.

1.06 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Extended Correction Period: Correct defective work within five-year period commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Swinging Automatic Entrance Door Assemblies:
   1. ASSA ABLOY Entrance Solutions; Besam SW200i
   2. Horton Automatics; Series 4000LE: www.hortondoors.com/#sle.
   3. Detex A0-19
   4. Record – HA-9
   5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 POWER OPERATED DOORS

A. Power Operated Doors: Provide products that comply with NFPA 101 and requirements of authorities having jurisdiction; provide equipment selected for actual door weight and for light pedestrian traffic, unless otherwise indicated.

1. Swinging Door Operators: Fully adjustable for opening and closing speeds, checking speeds, and hold-open time; in the event of power failure, disengage operator allowing door to function as a door with a spring closer.

2.03 CONTROLLERS, ACTUATORS, AND SAFETIES

A. Push Plate Actuator: Standard jamb mounted, recessed momentary contact type; satin stainless steel plate; 4 inches diameter; labeled PUSH.

B. Push Button Actuator: Standard momentary contact type, wall mounted, surface; stainless steel escutcheon plate.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work and dimensions are as indicated on shop drawings.

B. Verify that electric power is available and is of the correct characteristics.

3.02 INSTALLATION

A. Install equipment in accordance with manufacturer's instructions.

3.03 ADJUSTING

A. Adjust door equipment for correct function and smooth operation.

3.04 CLEANING

A. Remove temporary protection, clean exposed surfaces.

3.05 MAINTENANCE

A. Provide service and maintenance of operating equipment for one year from Date of Substantial Completion, at no extra charge to Owner.

END OF SECTION

HARDWARE SET # 1A

Access Control – Exterior Double Door w/ Operator

100

Qty		Description	Catalog Number	Finish	Mfr.
2	EA	CONT. HINGE	112HD/224HD EPT	628	IVE
2	EA	POWER TRANSFER	EPT 10	689	VON
1	EA	KEYED REMOVABLE MULLION	KR4954	689	VON
1	**EA**	**ELEC PANIC HARDWARE**	**RX-LC-QEL+-99-EO - DT**	**626**	**VON**
1	**EA**	**ELEC PANIC HARDWARE**	**RX-LC-QEL+-99-996L-NL**	**626**	**VON**
1	**EA**	**LFIC RIM HOUSING**	**20-079**	**626**	**SCH**
1	**EA**	**LFIC MORTISE HOUSING**	**30-007**	**626**	**SCH**
2	**EA**	**LFIC CORE BY OWNER**	**LFIC CORE BY OWNER**	**626**	**SCH**
1	**EA**	**SURFACE CLOSER**	**4040XP SCUSH**	**689**	**LCN**
1	EA	SURFACE AUTO OPERATOR	4642	689	LCN
1	EA	ACTUATOR PACKAGE JAMB MT.	8310-3822TW	630	LCN
1	EA	DRIP CAP	16A	CL	NGP
2	EA	DOOR SWEEP	C627A	CL	NGP
1	EA	THRESHOLD	425	AL	NGP
1	EA	MULTI-TECH READER	ACCESS CONTROL CONTR. PROVIDED	BLK	SCE
2	EA	DOOR CONTACT	7764	628	SCE
1	EA		WEATHERSTRIPING BY DOOR MANUF.		

HARDWARE SET # 1B

Access Control – Exterior Single Door

105B 105D 106B 112C 113C 117B

Qty		Description	Catalog Number	Finish	Mfr.
1	EA	CONT. HINGE	112HD/224HD EPT	628	IVE
1	EA	POWER TRANSFER	EPT 10	689	VON
1	**EA**	**ELEC PANIC HARDWARE**	**RX-LC-QEL+-996L**	**626**	**VON**
1	**EA**	**LFIC RIM HOUSING**	**20-079**	**626**	**SCH**
1	**EA**	**LFIC CORE BY OWNER**	**LFIC CORE BY OWNER**	**626**	**SCH**
1	**EA**	**SURFACE CLOSER**	**4040XP SCUSH**	**689**	**LCN**
1	EA	DRIP CAP	16A	CL	NGP
1	EA	DOOR SWEEP	C627A	CL	NGP
1	EA	THRESHOLD	425	AL	NGP
1	EA	MULTI-TECH READER	ACCESS CONTROL CONTR. PROVIDED	BLK	SCE
1	EA	DOOR CONTACT	7764	628	SCE
1	EA		WEATHERSTRIPING BY DOOR MANUF.		

HARDWARE SET # 1C

Access Control – Interior Single Door – Entrance Lockset

102 106 108 110 112A 113A 116

117A 119 120

Qty		Description	Catalog Number	Finish	Mfr.
3	EA	HW HINGE	55BB1HW 4.5 x 4.5	652	IVE
1	**EA**	**STOREROOM LOCK**	**L9080JD 06A**	**626**	**SCH**
1	**EA**	**LFIC CORE**	**LFIC CORE BY OWNER**	**626**	**SCH**
1	**EA**	**ELECTRIC STRIKE**	**6210 FSE**	**630**	**VON**

1	**EA**	**SURFACE CLOSER**	**40404XP SCUSH**	**689**	**LCN**
3	EA	SILENCER	SR64	GRY	IVE
1	EA	MULTI-TECH READER	ACCESS CONTROL CONTR. PROVIDED	BLK	SCE
1	EA	DOOR CONTACT	7764	628	SCE

HARDWARE SET # 1D
Access Control – Interior Double Door
105A

Qty		Description	Catalog Number	Finish	Mfr.
2	EA	CONT. HINGE	112HD/224HD EPT	628	IVE
2	EA	POWER TRANSFER	EPT 10	689	VON
1	EA	KEYED REMOVABLE MULLION	KR4954	689	VON
1	**EA**	**ELEC PANIC HARDWARE**	**RX-LC-QEL+-99-EO -996L- DT**	**626**	**VON**
1	**EA**	**ELEC PANIC HARDWARE**	**RX-LC-QEL+-99L-996L**	**626**	**VON**
1	**EA**	**LFIC RIM HOUSING**	**20-079**	**626**	**SCH**
1	**EA**	**LFIC CORE BY OWNER**	**LFIC CORE BY OWNER**	**626**	**SCH**
1	**EA**	**SURFACE CLOSER**	**4040XP SCUSH**	**689**	**LCN**
1	EA	MULTI-TECH READER	ACCESS CONTROL CONTR. PROVIDED	BLK	SCE
2	EA	DOOR CONTACT	7764	628	SCE

HARDWARE SET # 1E
Access Control – interior Double Door
111 121

Qty		Description	Catalog Number	Finish	Mfr.
2	EA	CONT. HINGE	112HD/224HD EPT (LHR ONLY)	628	IVE
1	EA	POWER TRANSFER	EPT 10	689	VON
1	**EA**	**STOREROOM LOCKSET**	**L9080JD 06A 626**	**626**	**SCH**
1	**EA**	**LFIC CORE BY OWNER**	**LFIC CORE BY OWNER**	**626**	**SCH**
1	**EA**	**ELECTRIC STRIKE**	**6223 x 24VDC x FSE**	**630**	**VON**
2	**EA**	**SURFACE CLOSER**	**4040XP SCUSH**	**689**	**LCN**
1	EA	COORDINATOR	COR52 FL MB AS REQUIRED	689	IVE
1	EA	CONSTANT LATCHING FB	FB51P	630	IVE
1	EA	MULTI-TECH READER	ACCESS CONTROL CONTR. PROVIDED	BLK	SCE
2	EA	DOOR CONTACT	7764	628	SCE

HARDWARE SET # 2
Interior Storefront Double Door w/ Operator
101A

Qty		Description	Catalog Number	Finish	Mfr.
2	EA	CONT. HINGE	112HD/224HD EPT	628	IVE
2	EA	90 DEG OFFSET PULL	8190HD 10” O	630	IVE
1	EA	SURFACE AUTO OPERATOR	4642	689	LCN
1	EA	ACTUATOR PACKAGE JAMB MT.	8310-3822TW	630	LCN

HARDWARE SET # 3

Storage Room Doors - Single

107 109 114 115

Qty		Description	Catalog Number	Finish	Mfr.
3	EA	HW HINGE	5BB1HW 4.5 x 4.5	652	IVE
1	**EA**	**STOREROOM LOCK**	**L9080JD 06A**	**626**	**SCH**
1	**EA**	**LFIC CORE BY OWNER**	**LFIC CORE BY OWNER**	**626**	**SCH**
1	**EA**	**SURFACE CLOSER**	**4040XP SCUSH**	**689**	**LCN**
1	EA	WALL STOP	WS406/407/CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE SET # 4

Restroom Doors – Push/Pull

104 118

Qty		Description	Catalog Number	Finish	Mfr.
3	EA	HW HINGE	5BB1HW 4.5 x 4.5	652	IVE
1	EA	PUSH PLATE	8200 4” x 16”	626	IVE
1	EA	PULL PLATE	8303 10” 4” x 16”	626	IVE
1	**EA**	**SURFACE CLOSER**	**4040XP**	**689**	**LCN**
1	EA	FLOOR STOP	FS444	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

SECTION 08 7100
DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hardware for aluminum and hollow metal doors.

B. Electrically operated and controlled hardware.

C. Lock cylinders for doors that hardware is specified in other sections.

D. Thresholds.

E. Weatherstripping and gasketing.

1.02 RELATED REQUIREMENTS

A. Section 08 1113 - Hollow Metal Doors and Frames.

B. Section 08 1416 - Flush Wood Doors.

C. Section 08 4313 - Aluminum-Framed Storefronts: Door hardware, except as noted in section.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design 2010.

B. BHMA A156.1 - Standard for Butts and Hinges 2021.

C. BHMA A156.3 - Exit Devices 2020.

D. BHMA A156.4 - Door Controls - Closers 2019.

E. BHMA A156.5 - Cylinders and Input Devices for Locks 2020.

F. BHMA A156.6 - Standard for Architectural Door Trim 2021.

G. BHMA A156.8 - Door Controls - Overhead Stops and Holders 2021.

H. BHMA A156.13 - Mortise Locks & Latches Series 1000 2017.

I. BHMA A156.16 - Auxiliary Hardware 2018.

J. BHMA A156.21 - Thresholds 2019.

K. BHMA A156.22 - Standard for Gasketing 2021.

L. BHMA A156.26 - Standard for Continuous Hinges 2021.

M. BHMA A156.31 - Electric Strikes and Frame Mounted Actuators 2019.

N. DHI (LOCS) - Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames 2004.

O. ITS (DIR) - Directory of Listed Products Current Edition.

P. UL (DIR) - Online Certifications Directory Current Edition.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.

C. Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.
   1. Provide complete description for each door listed.

D. Shop Drawings - Electrified Door Hardware: Submit diagrams for power, signal, and control wiring for electrified door hardware that include details of interface with building safety and security systems. Provide elevations and diagrams for each electrified door opening as follows:

1. Elevations: Submit front and back elevations of each door opening showing electrified devices with connections installed and an operations narrative describing how opening operates from either side at any given time.
2. Diagrams: Submit point-to-point wiring diagram that shows each device in door opening system with related colored wire connections to each device.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.06 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Warranty against defects in material and workmanship for period indicated, from Date of Substantial Completion.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.

B. Provide individual items of single type, of same model, and by same manufacturer.

C. Provide door hardware products that comply with the following requirements:
1. Hardware on Fire-Rated Doors: Listed and classified by UL (DIR), ITS (DIR), or testing firm acceptable to authorities having jurisdiction as suitable for application indicated.

2.02 HINGES

A. Manufacturers:
1. Hager Companies
2. Ives, an Allegion brand.
3. Substitutions: See Section 01 6000 - Product Requirements.

B. Hinges: Comply with BHMA A156.1, Grade 1.
1. Continuous Hinges at aluminum storefront doors: Comply with BHMA A156.26.
2. Provide hinges on every swinging door.
3. Provide five-knuckle full mortise butt hinges unless otherwise indicated.
4. Provide ball-bearing hinges at each door with closer.
5. Provide non-removable pins on exterior outswinging hollow metal doors.
6. Provide non-removable pins on interior outswinging doors at locations as indicated.
7. Provide power transfer hinges where electrified hardware is mounted in door leaf.
8. Provide following quantity of butt hinges for each door:
   a. Doors up to 60 inches High: Two hinges.
   b. Doors From 60 inches High up to 90 inches High: Three hinges.

2.03 FLUSH BOLTS

A. Manufacturers:
1. Ives, an Allegion brand; FB458
2. Substitutions: See Section 01 6000 - Product Requirements.

B. Flush Bolts: Comply with BHMA A156.16, Grade 1.
1. Flush Bolt Throw: 3/4 inch, minimum.
2. Provides extension bolts in leading edge of door, one bolt into floor, one bolt into top of frame.
   a. Pairs of Swing Doors: At inactive leaves, provide flush bolts of type as required to comply with code.
3. Provide dustproof floor strike for bolt into floor, except at metal thresholds.
4. Manual Flush Bolts: Provide lever extensions for top bolt at over-sized doors.

2.04 EXIT DEVICES

A. Manufacturers:
   1. Von Duprin, an Allegion brand; 99 Series
   2. Substitutions: Not permitted.

B. Exit Devices: Comply with BHMA A156.3, Grade 1.
   1. Lever design to match lockset trim.
   2. Provide cylinder with cylinder dogging or locking trim.
   3. Provide exit devices properly sized for door width and height.
   4. Provide strike as recommended by manufacturer for application indicated.
   5. Provide UL (DIR) listed exit device assemblies for fire-rated doors and panic device assemblies for non-fire-rated doors.

2.05 ELECTRIC STRIKES

A. Manufacturers:
   1. Von Duprin 6200 Series.
   2. Substitutions: See Section 01 6000 - Product Requirements.

B. Electric Strikes: Comply with BHMA A156.31, Grade 1.
   1. Provide UL (DIR) listed burglary-resistant electric strike; style to suit locks.
   2. Provide non-handed 24 VDC electric strike suitable for door frame material and scheduled lock configuration.

2.06 LOCK CYLINDERS

A. Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.
   1. Provide large format interchangeable cores type cylinders, Grade 1, with seven-pin core in compliance with BHMA A156.5 at locations indicated.
   2. Provide cylinders from same manufacturer as locking device.
   3. Provide cams and/or tailpieces as required for locking devices.
   4. Permanent cores provided by owner.

2.07 MORTISE LOCKS

A. Manufacturers:
   1. Schlage, an Allegion brand; L Series:
   2. Substitutions: Not permitted.

B. Mortise Locks: Comply with BHMA A156.13, Grade 1.
   1. Latchbolt Throw: 3/4 inch, minimum.
   2. Deadbolt Throw: 1 inch, minimum.
   3. Backset: 2-3/4 inch unless otherwise indicated.
   4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
      a. Finish: To match lock or latch.

2.08 DOOR PULLS AND PUSH PLATES

A. Manufacturers:
   1. IVES.
   2. Substitutions: See Section 01 6000 - Product Requirements.

B. Door Pulls and Push Plates: Comply with BHMA A156.6.
   1. Pull Type: Straight, unless otherwise indicated.
   2. Push Plate Type: Flat, with square corners, unless otherwise indicated.
      a. Edges: Beveled, unless otherwise indicated.
   3. Material: Aluminum, unless otherwise indicated.

2.09 CLOSERS

A. Manufacturers; Surface Mounted:

1. LCN, an Allegion brand; 4040XP Series
2. Substitutions: Not permitted.

B. Closers: Comply with BHMA A156.4, Grade 1.
1. Type: Surface mounted to door.
2. Provide door closer on each exterior door.
3. Provide door closer on each fire-rated and smoke-rated door.
4. At outswinging exterior doors, mount closer on interior side of door.

2.10 OVERHEAD STOPS AND HOLDERS

A. Manufacturers:
1. Glynn-Johnson, an Allegion brand; 90 Series

B. Overhead Stops and Holders (Door Checks): Comply with BHMA A156.8, Grade 1.
1. Provide stop for every swinging door, unless otherwise indicated.

2.11 WALL STOPS

A. Wall Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
1. Type: Bumper, concave, wall stop.
2. Material: Aluminum housing with rubber insert.

2.12 THRESHOLDS

A. Manufacturers:
1. Pemko; an Assa Abloy Group company
2. National Guard Products, Inc
3. Substitutions: See Section 01 6000 - Product Requirements.

B. Thresholds: Comply with BHMA A156.21.
1. Provide threshold at each exterior door, unless otherwise indicated.
2. Type: Flat surface.
3. Material: Aluminum.
4. Threshold Surface: Fluted horizontal grooves across full width.
5. Field cut threshold to profile of frame and width of door sill for tight fit.
6. Provide non-corroding fasteners at exterior locations.

2.13 WEATHERSTRIPPING AND GASKETING

A. Manufacturers:
1. Pemko; an Assa Abloy Group company
2. National Guard Products, Inc
3. Substitutions: See Section 01 6000 - Product Requirements.

B. Weatherstripping and Gasketing: Comply with BHMA A156.22.
1. Head and Jamb Type: Adjustable.
2. Door Sweep Type: Encased in retainer.
3. Material: Aluminum, with brush weatherstripping.
4. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated; .

2.14 SILENCERS

A. Silencers: Provide at equal locations on door frame to mute sound of door's impact upon closing.
1. Single Door: Provide three on strike jamb of frame.
2. Pair of Doors: Provide two on head of frame, one for each door at latch side.
3. Material: Rubber, gray color.

2.15 POWER SUPPLY

A. Power Supply: Hard wired, with multiple zones providing eight (8) breakers for each output panel with individual control switches and LED's; UL (DIR) Class 2 listed.
   1. Power: 24 VAC, 10 Amp; with 120 VAC power supply.
   2. Operating Temperature: 32 to 110 degrees F.
   3. Provide with emergency release terminals that release devices upon activation of fire alarm system.

2.16 FINISHES

A. Finishes: Identified in Door Hardware Schedule.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.

3.02 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and applicable codes.

B. Use templates provided by hardware item manufacturer.

C. Do not install surface mounted items until application of finishes to substrate are fully completed.

D. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.
   1. For Steel Doors and Frames: Install in compliance with DHI (LOCS) recommendations.
   2. For Steel Doors and Frames: Refer to Section 08 1113.
   3. For Aluminum-Framed Storefront Doors and Frames: Refer to Section 08 4313.
   4. Mounting heights in compliance with ADA Standards:
      a. Locksets: 40-5/16 inch.
      b. Push Plates/Pull Bars: 42 inch.
      c. Deadlocks (Deadbolts): 48 inch.
      d. Exit Devices: 40-5/16 inch.
      e. Door Viewer: 43 inch; standard height 60 inch.

E. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

3.03 ADJUSTING

A. Adjust work under provisions of Section 01 7000 - Execution and Closeout Requirements.

B. Adjust hardware for smooth operation.

C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.04 CLEANING

A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.

B. Clean adjacent surfaces soiled by hardware installation.

C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

END OF SECTION

SECTION 09 6813
TILE CARPETING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Carpet tile, fully adhered.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring 2022.

B. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride 2022.

C. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes 2019a.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

C. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.

D. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

E. Manufacturer's Qualification Statement.

F. Installer's Qualification Statement.

G. Operation and Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Carpet Tiles: Quantity equal to 5 percent of total installed of each color and pattern installed.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet tile with minimum three years documented experience.

B. Installer Qualifications: Company specializing in installing carpet tile with minimum three years documented experience and approved by carpet tile manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Tile Carpeting:
   1. J&J Fllooring Group, LLC; Joe Dineen (785) 550-5300.

2.02 MATERIALS

A. Tile Carpeting, Type C1: Tufted, manufactured in one color dye lot.
   1. Product: Incognito manufactured by J&J Flooring Group, LLC.
   2. Tile Size: 24 by 24 inch, nominal.
   3. Color: as indicated on the drawings.
   4. Pattern: as indicated on the drawings.

B. Tile Carpeting: Type C2: Tufted, manufactured in one color dye lot.
   1. Product: kinetix Foundry manufactured by J&J Flooring Group, LLC

2. Tile Size: 24 by 24 inch nominal
3. Color: as indicated on the drawings.
4. pattern: as indicated on the drawings.

2.03 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by flooring material manufacturer.

B. Edge Strips: Embossed aluminum, clear color.

C. Carpet Tile Adhesive: Recommended by carpet tile manufacturer; releasable type, for high moisture levels up to 99% RH

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.

B. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to subfloor surfaces.

C. Cementitious Subfloor Surfaces: Verify that substrates are ready for flooring installation by testing for moisture and alkalinity (pH).
   1. Test as Follows:
      a. Alkalinity (pH): ASTM F710.
      b. Internal Relative Humidity: ASTM F2170.
      c. Moisture Vapor Emission: ASTM F1869.
   2. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.

3.02 PREPARATION

A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.

B. Remove subfloor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with subfloor filler.

C. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.

D. Vacuum clean substrate.

3.03 INSTALLATION

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install carpet tile in accordance with manufacturer's instructions.

C. Blend carpet from different cartons to ensure minimal variation in color match.

D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.

E. Lay carpet tile in square pattern, with pile direction parallel to next unit, set parallel to building lines.

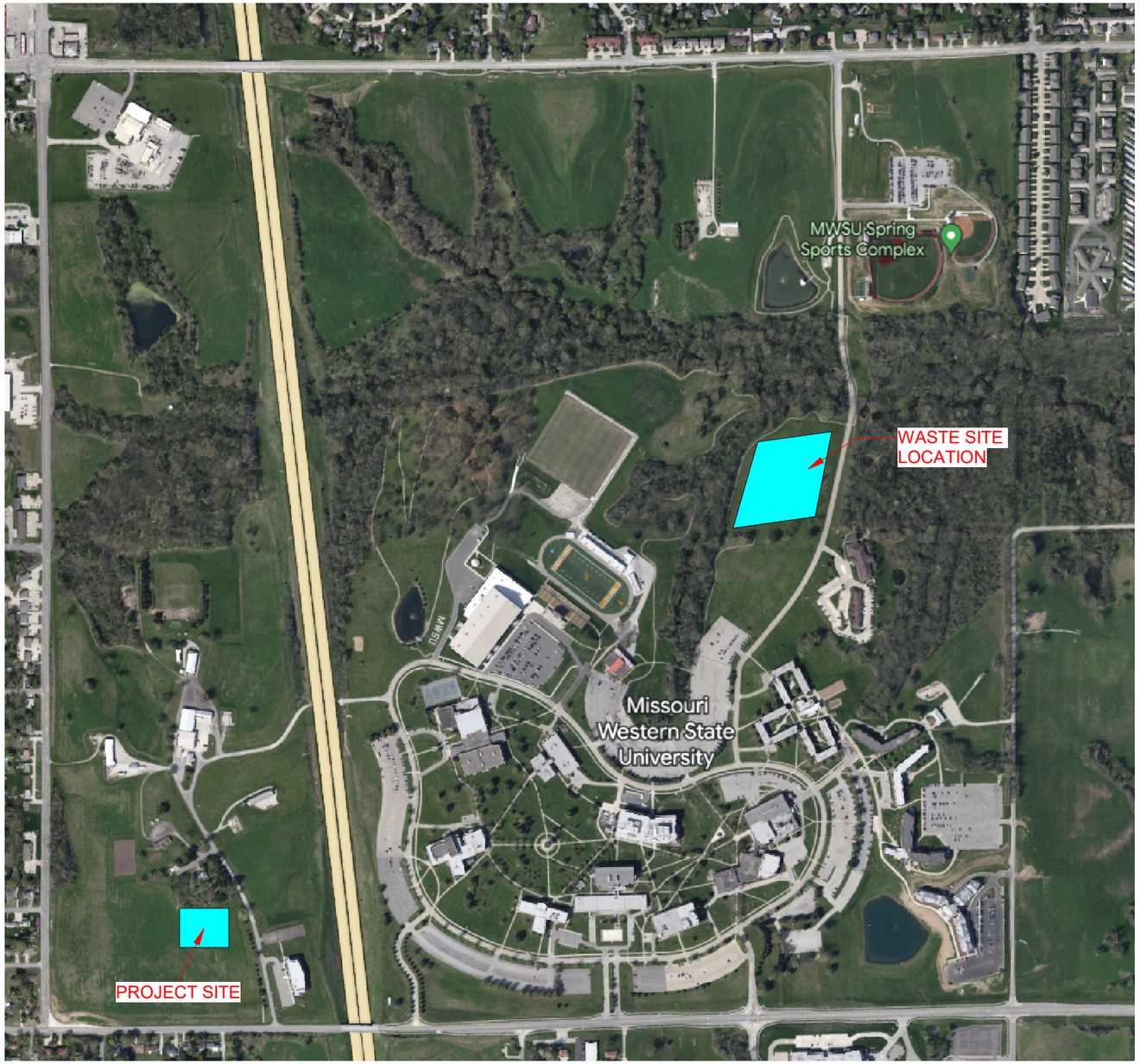
F. Locate change of color or pattern between rooms under door centerline.

G. Fully adhere carpet tile to substrate.

H. Trim carpet tile neatly at walls and around interruptions.

I. Complete installation of edge strips, concealing exposed edges.

END OF SECTION



1

CAMPUS PLAN - EXCESS SPOILS SITE CLARIFICATION

SCALE: 1" = 160'-0"

ELLISON - AUXIER ARCHITECTS
P: 816-233-8003 F: 816-233-7793

MISSOURI WESTERN STATE UNIVERSITY

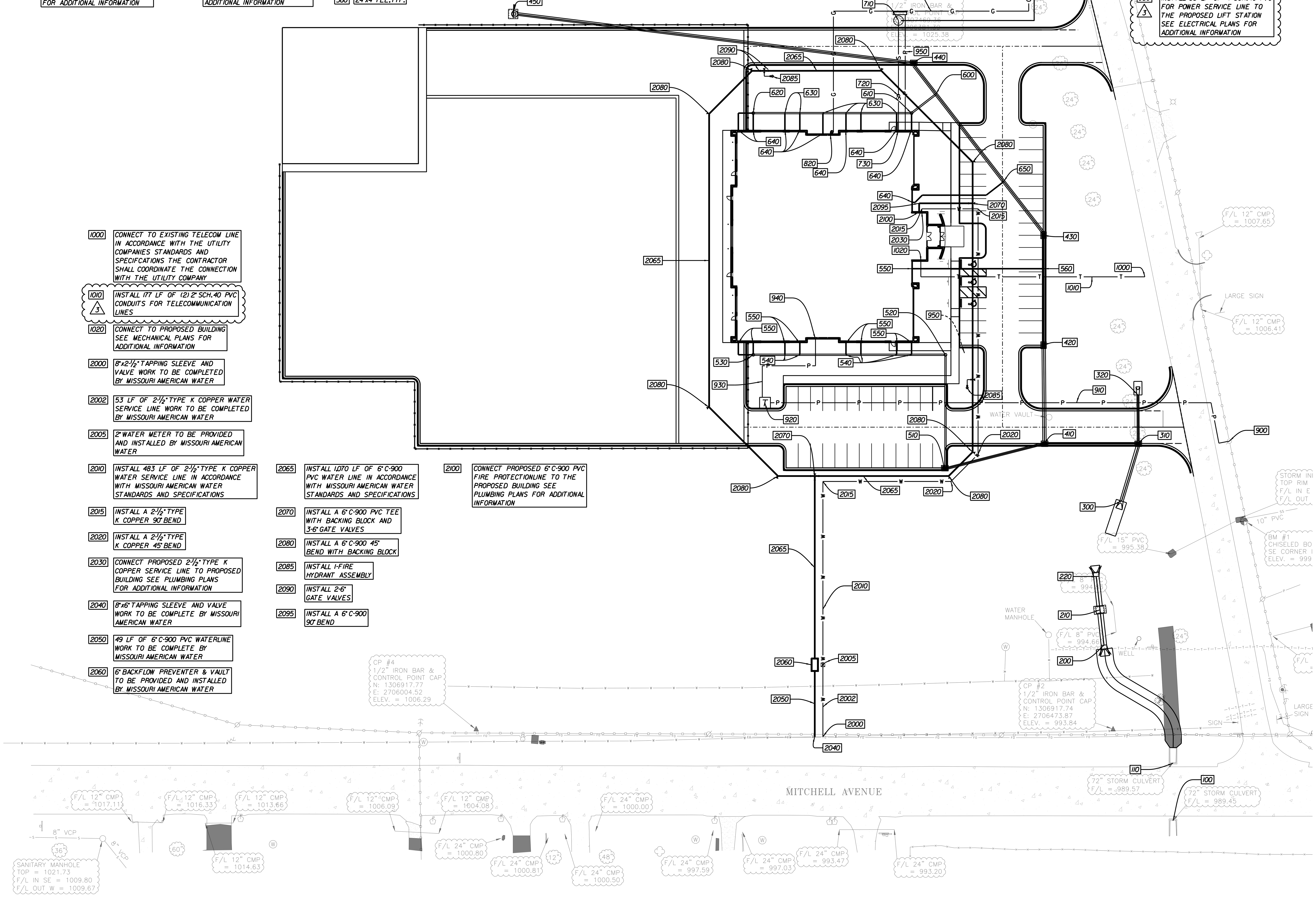
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

DETAIL REF:
DATE:

EXCESS SPOILS CLARIFICATION

ASD 001

100	EXISTING 72" CULVERT
110	EXISTING 72" CULVERT
200	INSTALL 48" END SECTION SEE STORM PROFILE FOR ADDITIONAL INFORMATION
210	INSTALL 8'x5' JUNCTION BOX WITH OUTFLOW CONTROL WEIR SEE STORM PROFILE AND DETAILS FOR ADDITIONAL INFORMATION
220	INSTALL 48" END SECTION SEE STORM PROFILE FOR ADDITIONAL INFORMATION
300	INSTALL 30" END SECTION & 23.1 S.Y.OF 18" RIP RAP SEE STORM PROFILE FOR ADDITIONAL INFORMATION
310	INSTALL A 30" NYLOPLAST INLET WITH A 2'x3' HIGH FLOW CURB INLET TOP SEE STORM PROFILE FOR ADDITIONAL INFORMATION
320	INSTALL 18" END SECTION & 6.7 S.Y.OF 18" RIP RAP SEE STORM PROFILE FOR ADDITIONAL INFORMATION
410	INSTALL A 30" NYLOPLAST INLET WITH A 2'x3' HIGH FLOW CURB INLET TOP SEE STORM PROFILE FOR ADDITIONAL INFORMATION
420	INSTALL A 30" NYLOPLAST INLET WITH A 2'x3' HIGH FLOW CURB INLET TOP SEE STORM PROFILE FOR ADDITIONAL INFORMATION
430	INSTALL A 30" NYLOPLAST INLET WITH A 2'x3' HIGH FLOW CURB INLET TOP SEE STORM PROFILE FOR ADDITIONAL INFORMATION
440	INSTALL A 30" NYLOPLAST INLET WITH A 2'x3' HIGH FLOW CURB INLET TOP SEE STORM PROFILE FOR ADDITIONAL INFORMATION
450	INSTALL A 6'x6' FIELD INLET WITH OPENINGS ON FOUR SIDES SEE STORM PROFILE FOR ADDITIONAL INFORMATION
510	INSTALL A 30" NYLOPLAST INLET WITH A 2'x3' HIGH FLOW CURB INLET TOP SEE STORM PROFILE FOR ADDITIONAL INFORMATION
520	INSTALL A 18" NYLOPLAST INLET WITH A DROP-IN GRATE & 83.33 LF OF 12" N-12 HDPE STORM PIPE AT 5.00% TOP = 1012.17 FL(INXW) = 1006.29 FL(OUTXS) = 1006.09
530	INSTALL A 18" NYLOPLAST INLET WITH A DROP-IN GRATE & 139.33 LF OF 12" N-12 HDPE STORM PIPE AT 2.00% TOP = 1013.38 FL(INXW) = 1009.57 FL(OUTXS) = 1009.07
540	12"x6" TEE,TYP.
550	CONNECT TO PROPOSED ROOF DRAIN SEE ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION
560	24"x4" TEE,TYP.
600	INSTALL 24"x12" TEE FL = 1003.08
610	INSTALL A 18" NYLOPLAST INLET WITH A DROP-IN GRATE & 22.77 LF OF 12" N-12 HDPE STORM PIPE AT 6.00% TOP = 1013.21 FL(INXW) = 1004.95 FL(OUTXS) = 1004.45
620	INSTALL A 18" NYLOPLAST INLET WITH A DROP-IN GRATE & 116.67 LF OF 12" N-12 HDPE STORM PIPE AT 3.50% TOP = 1013.25 FL(INXW) = 1009.53 FL(OUTXS) = 1009.03
630	12"x6" TEE,TYP.
640	CONNECT TO PROPOSED ROOF DRAIN SEE ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION
650	24"x4" TEE,TYP.
705	PROPOSED 4" C-900 PVC FORCEMAIN SEE FORCEMAIN PLAN AND PROFILE FOR ADDITIONAL INFORMATION
710	PROPOSED LIFT STATION SEE FORCEMAIN PLAN AND PROFILE FOR ADDITIONAL INFORMATION TOP = 1012.89 FL(INXW) = 1000.82 FL(OUTXN) = 1008.89 BOTTOM OF WET WELL = 993.82
720	INSTALL A CLEANOUT AND 55.35 LF OF 6" SDR 26 PVC AT 1.00% TOP = 1013.21 FL = 1001.37
730	CONNECT TO PROPOSED BUILDING WITH A FERNCO STRONGBACK RC COUPLING SEE ARCHITECTURAL & MECHANICAL PLANS FOR ADDITIONAL INFORMATION & INSTALL 25.55 LF OF 6" SDR 26 PVC AT 1.00% FG = 1013.50 FL = 1001.62
800	CONNECT TO EXISTING GAS LINE IN ACCORDANCE WITH SPIRE ENERGY STANDARDS AND SPECIFICATIONS THE CONTRACTOR SHALL COORDINATE THE CONNECTION WITH SPIRE ENERGY
810	INSTALL 2" GAS SERVICE LINE IN ACCORDANCE WITH SPIRE ENERGY STANDARDS AND SPECIFICATIONS
820	INSTALL THE PROPOSED GAS METER AND CONNECT TO PROPOSED BUILDING SEE PLUMBING PLANS FOR ADDITIONAL INFORMATION
900	CONNECT TO EXISTING POWER LINE IN ACCORDANCE WITH EVERGY STANDARDS AND SPECIFICATIONS. THE CONTRACTOR SHALL COORDINATE WITH EVERGY FOR THE CONNECTION
910 (3)	INSTALL 363 LF OF 4" SCH.40 PVC FOR POWER SERVICE LINE
920	INSTALL A TRANSFORMER PAD & TRANSFORMER. COORDINATE WITH EVERGY FOR THE INSTALLATION OF THE TRANSFORMER.
930 (3)	INSTALL 83 LF OF 4" SCH.40 PVC FOR POWER SERVICE LINE SEE ELECTRICAL PLANS FOR ADDITIONAL INFORMATION
940	CONNECT TO PROPOSED BUILDING SEE ELECTRICAL PLANS FOR ADDITIONAL INFORMATION
950 (3)	INSTALL 83 LF OF 4" SCH.40 PVC FOR POWER SERVICE LINE TO THE PROPOSED LIFT STATION SEE ELECTRICAL PLANS FOR ADDITIONAL INFORMATION
1000	CONNECT TO EXISTING TELECOM LINE IN ACCORDANCE WITH THE UTILITY COMPANIES STANDARDS AND SPECIFCATIONS THE CONTRACTOR SHALL COORDINATE THE CONNECTION WITH THE UTILITY COMPANY
1010 (3)	INSTALL 177 LF OF (2) 2" SCH.40 PVC CONDUITS FOR TELECOMMUNICATION LINES
1020	CONNECT TO PROPOSED BUILDING SEE MECHANICAL PLANS FOR ADDITIONAL INFORMATION
2000	8"x2-1/2" TAPPING SLEEVE AND VALVE WORK TO BE COMPLETED BY MISSOURI AMERICAN WATER
2002	53 LF OF 2-1/2" TYPE K COPPER WATER SERVICE LINE WORK TO BE COMPLETED BY MISSOURI AMERICAN WATER
2005	2" WATER METER TO BE PROVIDED AND INSTALLED BY MISSOURI AMERICAN WATER
2010	INSTALL 483 LF OF 2-1/2" TYPE K COPPER WATER SERVICE LINE IN ACCORDANCE WITH MISSOURI AMERICAN WATER STANDARDS AND SPECIFICATIONS
2015	INSTALL A 2-1/2" TYPE K COPPER 90° BEND
2020	INSTALL A 2-1/2" TYPE K COPPER 45° BEND
2030	CONNECT PROPOSED 2-1/2" TYPE K COPPER SERVICE LINE TO PROPOSED BUILDING SEE PLUMBING PLANS FOR ADDITIONAL INFORMATION
2040	8"x6" TAPPING SLEEVE AND VALVE WORK TO BE COMPLETE BY MISSOURI AMERICAN WATER
2050	49 LF OF 6" C-900 PVC WATERLINE WORK TO BE COMPLETE BY MISSOURI AMERICAN WATER
2060	6" BACKFLOW PREVENTER & VAULT TO BE PROVIDED AND INSTALLED BY MISSOURI AMERICAN WATER
2065	INSTALL 1,070 LF OF 6" C-900 PVC WATER LINE IN ACCORDANCE WITH MISSOURI AMERICAN WATER STANDARDS AND SPECIFICATIONS
2070	INSTALL A 6" C-900 PVC TEE WITH BACKING BLOCK AND 3-6" GATE VALVES
2080	INSTALL A 6" C-900 45° BEND WITH BACKING BLOCK
2085	INSTALL 1-FIRE HYDRANT ASSEMBLY
2090	INSTALL 2-6" GATE VALVES
2095	INSTALL A 6" C-900 90° BEND
2100	CONNECT PROPOSED 6" C-900 PVC FIRE PROTECTIONLINE TO THE PROPOSED BUILDING SEE PLUMBING PLANS FOR ADDITIONAL INFORMATION



N

30' 0 30' 60'
SCALE FEET
SCALE: 1" = 30'

LEGEND:

(double line)	PROPOSED STORM LINE
——P——	PROPOSED POWER LINE
——T——	PROPOSED TELECOMMUNICATIONS LINE
——S——	PROPOSED 6" SANITARY SEWER SERVICE LINE
(heavy line)	PROPOSED 6" FIRE PROTECTION LINE
(heavy line)	PROPOSED 2" WATER SERVICE LINE
(rip rap symbol)	PROPOSED 18" RIP RAP

UTILITY NOTES:

1. CONTRACTOR TO COORDINATE WITH APPROPRIATE, UTILITY COMPANIES PRIOR TO CONSTRUCTION ADJUSTMENT, OR RELOCATION OF EXISTING UTILITIES AS DESIGNATED ON PLANS. ANY DEVIATION FROM THE DESIGN LOCATIONS SHALL BE REPORTED TO THE ENGINEER OF RECORD AND THE OWNER PRIOR TO CONSTRUCTION.
2. CONTRACTOR SHALL REFER TO ARCHITECTS PLANS AND SPECIFICATIONS FOR ACTUAL LOCATION OF ALL UTILITY ENTRANCES TO INCLUDE SANITARY SEWER LATERALS. DOMESTIC AND FIRE PROTECTION, WATER SERVICE. ELECTRICAL. TELEPHONE SERVICE, AND DATA SERVICE.
3. CONTRACTOR SHALL COORDINATE INSTALLATION OF UTILITIES IN SUCH A MANNER AS TO AVOID CONFLICTS AND ASSURE PROPER DEPTHS ARE ACHIEVED AS WELL AS COORDINATING WITH CITY UTILITY REQUIREMENTS AS TO LOCATION AND SCHEDULING OF TIE-INS/CONNECTION TO THEIR FACILITIES.
4. THE CONTRACTOR SHALL COORDINATE ALL UTILITY CONNECTIONS AND RELOCATIONS AS REQUIRED WITH THE RESPECTIVE UTILITY COMPANY/OWNER.
5. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN ALL PERMITS AND PAY ALL FEES AS REQUIRED FOR UTILITY SERVICE CONNECTIONS.
6. ALL WORK SHALL CONFORM TO THE APPLICABLE SECTIONS OF THE STANDARD SPECIFICATIONS AND DESIGN CRITERIA OF THE CITY OF ST.JOSEPH,MO ,IN CURRENT USAGE EXCEPT AS NOTED.
7. THE CONTRACTOR SHALL COORDINATE LOCATIONS AND SIZES OF UTILITY SERVICE CONNECTIONS AT THE BUILDING WITH THE ARCHITECTS, MECHANICAL, PLUMBING PLANS AND DETAILS AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
8. ALL STORM SEWER STRUCTURES SHALL CONFORM TO THE KANSAS CITY METROPOLITAN CHAPTER OF APWA, STORM SEWER STANDARDS AND SPECIFICATIONS. ALL INLETS GREATER THAN 7' DEPTH SHALL BE SPECIALLY DESIGNED BY THE PRE-CAST MANUFACTURES. SHOP DRAWINGS SHALL BE SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MISSOURI. ALL DIMENSIONS ARE INSIDE OF WALL UNLESS OTHERWISE NOTED.
9. ALL STORM SEWER PIPE SHALL BE HDPE, UNLESS OTHERWISE NOTED.
10. THE CONTRACTOR SHALL COORDINATE INSTALLATION OF ELECTRICAL SERVICE AND TRANSFORMER PAD WITH THE POWER COMPANY.
11. THE CONTRACTOR SHALL COORDINATE LOCATION AND CONSTRUCTION OF GAS SERVICE LINE AND GAS METER WITH THE GAS COMPANY.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING AND INSTALLING ALL SANITARY SEWER SERVICE LINES FROM THE BUILDINGS TO THE EXISTING SERVICE LINE. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL AND PLUMBING PLANS FOR SPECIFIC LOCATIONS AND ELEVATIONS OF THE SERVICE LINES AT THE BUILDING CONNECTION. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE CITY OF ST.JOSEPH,MO.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL MATERIALS, TOOLS AND EQUIPMENT AND INSTALLATION OF ELECTRICAL POWER, TELEPHONE AND GAS SERVICE FROM A POINT OF CONNECTION FROM THE PUBLIC UTILITY LINES TO THE BUILDING STRUCTURES. THIS WILL INCLUDE ALL CONDUITS, SERVICE LINES, METERS, CONCRETE PADS AND ALL OTHER INCIDENTALS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM AS REQUIRED BY THE OWNER AND THE PUBLIC UTILITIES. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR SIZE OF UTILITIES SPECIFIC LOCATION OF SERVICE AND ENTRANCE DETAILS OF THE BUILDINGS.
14. THE CONTRACTOR SHALL COORDINATE WITH THE PHONE COMPANY FOR LOCATION AND INSTALLATION OF PHONE SERVICE TO BUILDING.
15. ALL PIPES ENTERING THE STORM SEWER STRUCTURES SHALL BE GROUTED TO ASSURE CONNECTIONS AT STRUCTURES ARE WATERTIGHT.
16. PRIOR TO INSTALLING THE PIPE ALL STORM SEWER PIPE SHALL BE INSTALLED IN A TRENCH CONDITION. CONTRACTOR SHALL FILL EIGHTEEN (18) INCHES MINIMUM ABOVE THE TOP OF THE PIPE.
17. A RIGHT-OF-WAY WORK PERMIT AND/OR STREET EXCAVATION PERMIT SHALL BE OBTAINED BY THE CONTRACTOR TO COMPLETE UTILITY WORK WITHIN THE PUBLIC STREET RIGHT-OF-WAY.
18. ALL SANITARY SEWER CLEANOUTS SHALL BE TRAFFIC RATED.
19. WATER SERVICE LINES AND METERS SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF ST.JOSEPH,MO WATER SERVICES DEPARTMENT STANDARDS AND SPECIFICATIONS.
20. ALL WATER SERVICE INSTALLATIONS INCLUDING BACKFLOW DEVICES ARE SUBJECT TO FIELD VERIFICATION AND APPROVAL BY THE WATER DEPARTMENT INSPECTOR.
21. ALL STORM SEWER INLETS SHALL BE INSTALLED WITH AN ADS "PURE INLET FILTER" OR APPROVDED EQUAL.
22. ALL RIP RAP SHOWN IS 5' WIDE BY 10' LONG AND HAVE A MINIMUM DIAMETER OF 18".

STATE OF MISSOURI — LUCAS W. WILLIAMS — NUMBER PE-2010018352 — PROFESSIONAL ENGINEER — 05/23/23

ELLISON - AUXIER ARCHITECTS
924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

CFS ENGINEERS
cfse.com
1421 E. 104th Street, Ste. 100 KCMO 64131
o: 816-333-4477 f: 816-333-6688
MISSOURI CERTIFICATE OF AUTHORITY NUMBER 000522

NO.	ISSUE DESCRIPTION	DATE
3	ADDENDUM 3	05/23/23

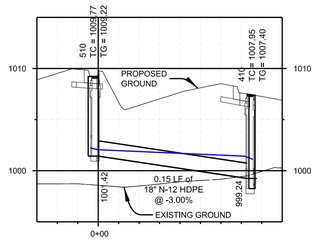
NO.	REVISION DESCRIPTION	DATE

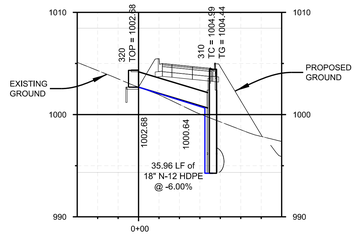
PROJECT: MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

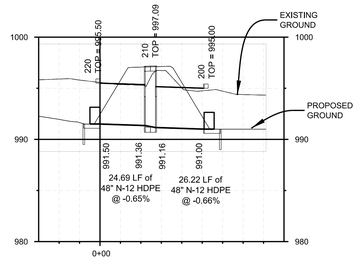
UTILITY PLAN

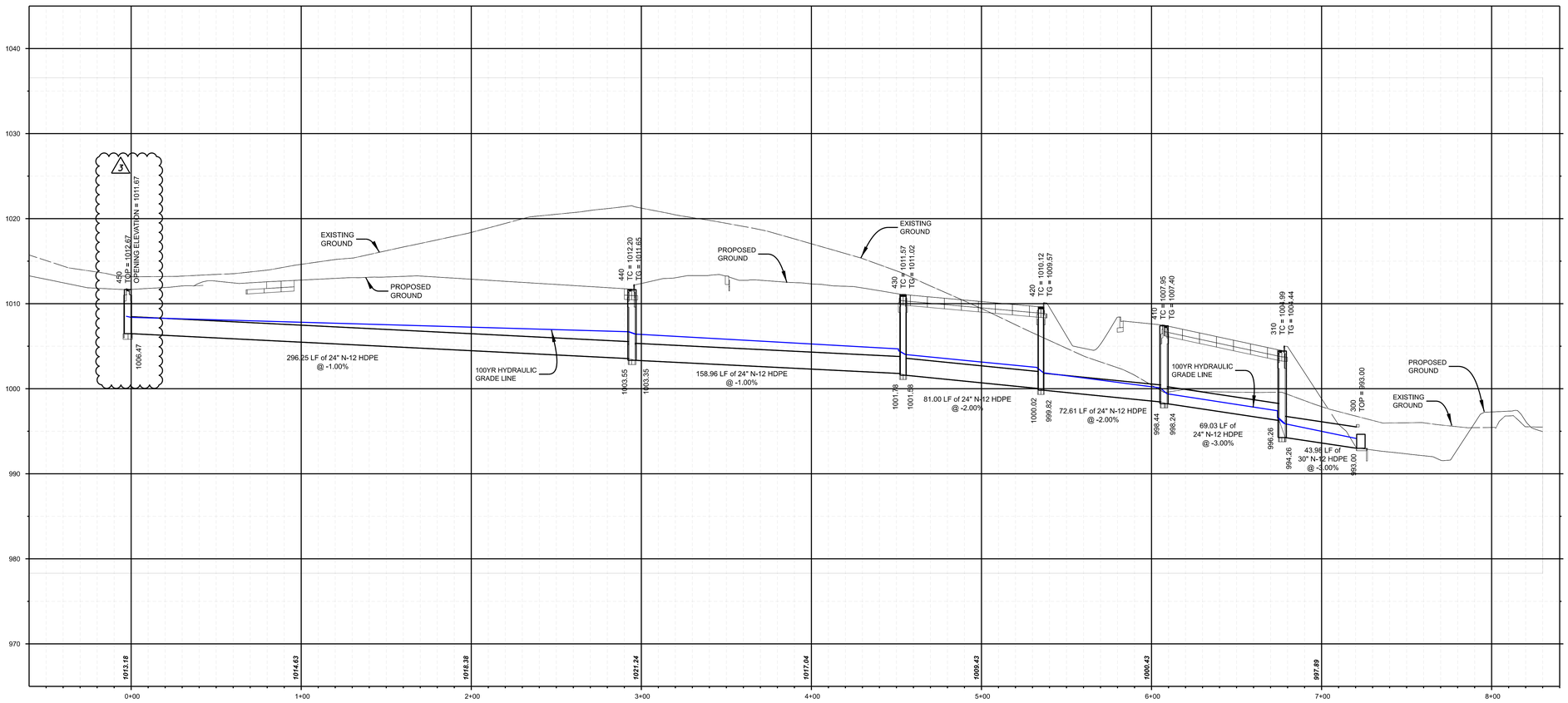
SHEET: **C400**

OF: DATE: 5.1.2023









ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

CFS ENGINEERS
1421 E. 104th Street, Ste. 100 KCMO 64131
o: 816-333-4477 f: 816-333-6688
cfse.com
MISSOURI CERTIFICATE OF AUTHORITY NUMBER 000522

NO.	ISSUE DESCRIPTION	DATE
3	ADDENDUM 3	05/23/23

NO.	REVISION DESCRIPTION	DATE

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

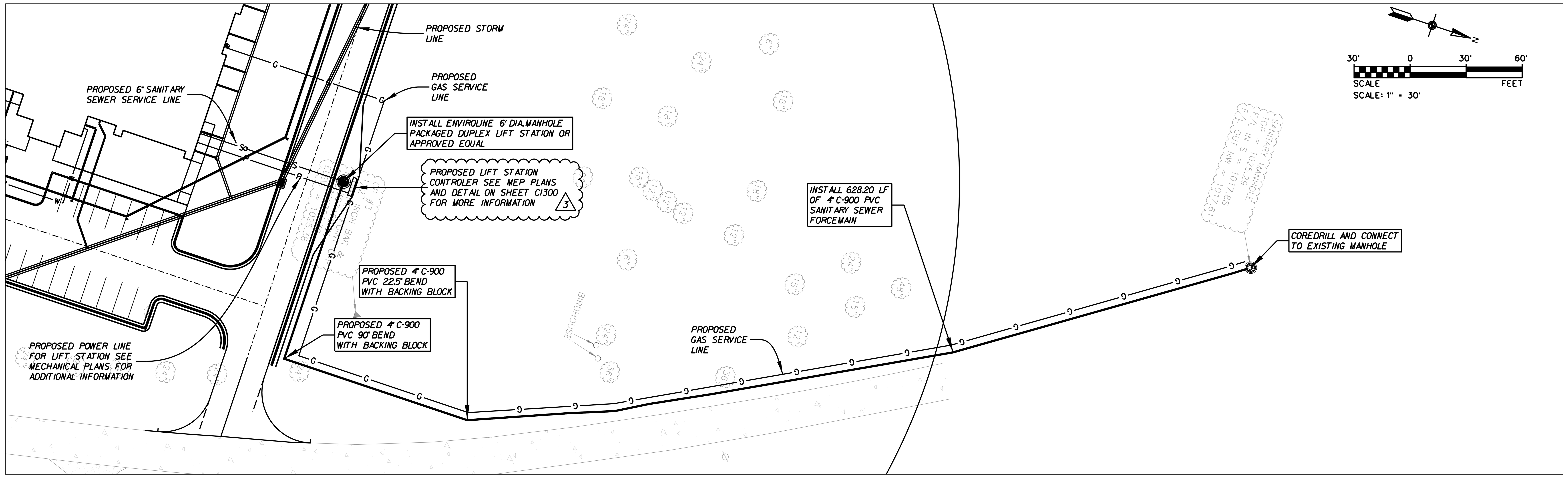
STORM SEWER PROFILES

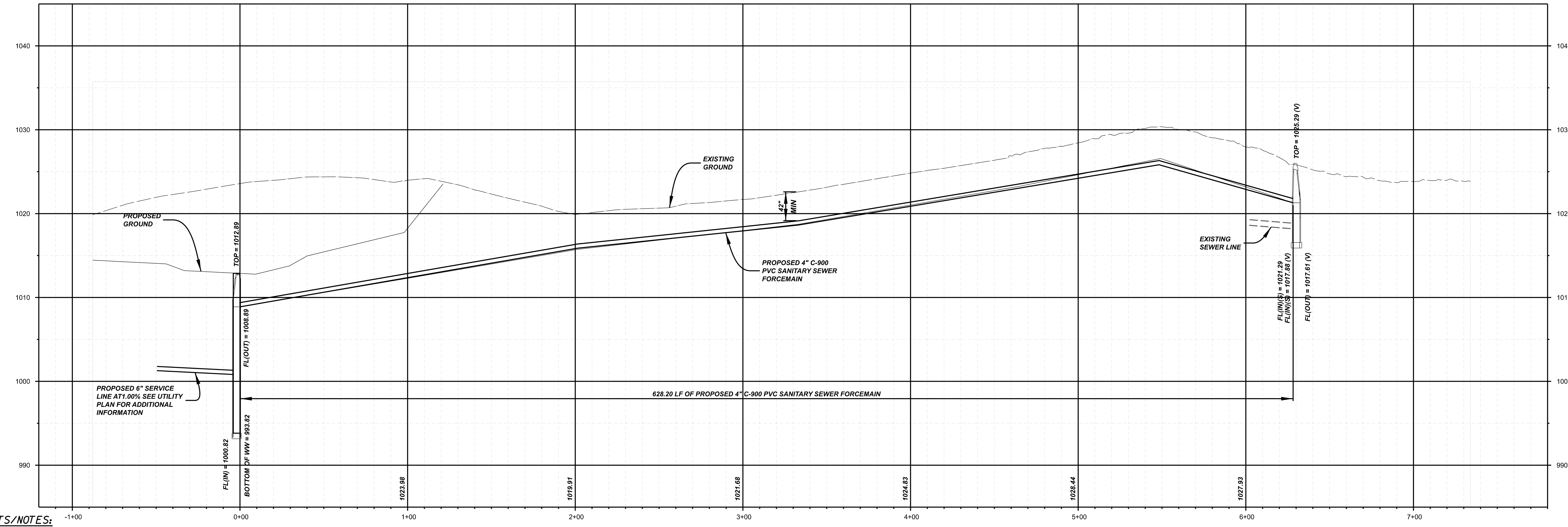
SHEET:
C500

OF: **DATE:** 5.1.2023

2/24/2023 8:45:18 AM D:\Local Revit Projects\CTAC Building-20.000_jeremy@ellison-auxier.com.rvt

235126-ST-SH-Storm-Profile.dgn 5/24/2023 1:44:07 PM





LIFT STATION REQUIREMENTS/NOTES:

GENERAL:

Each station will be complete with all needed equipment,factory installed on a welded steel base plate with a hinged,insulated,fiberglass cover on a 6' diameter wet well with a concrete cap.The standard items of equipment for each station shall include two 4" KRT F 100-215/44XEG-S IE3 Recessed impeller solids handling,motor driven, non-clog sewage pumps;valves,internal piping,ventilating blower,priming pumps with all appurtenances,and all internal wiring.

OPERATING CONDITIONS:

Each pump shall be capable of delivering 94 GPM of raw unscreened sewage against a total dynamic head of 22 feet.The minimum motor speed shall be 1750 RPM.The maximum rated horsepower of the pump motor shall be 5 HP.Pump hydraulic efficiency shall be approximately 55%.The maximum static suction lift capacity is 20 feet (including station piping) from pump centerline to the "Off" elevation float switch.

All openings and passages shall be large enough to permit the passage of three-inch spherical solids and any trash or three-inch stringy material which will pass through a four-inch house collection system.The initial anticipated operating head range is from 19.0 feet minimum to 22.0 feet maximum. Friction losses of the packaged pump system shall be included in the calculation of brake horsepower,impeller trims,and total system efficiency.

CONSTRUCTION:

Each station shall be constructed in one complete factory-built assembly.It shall be sized to rest on top of a 6-foot diameter wet well as detailed in construction drawings with suction and discharge pipe penetrations as detailed in the mechanical drawings.The supporting floor plate shall be 3/8-inch-thick,ASTM 40 carbon steel,as will beams and angle iron used above the plate for reinforcing,required to prevent deflection and insure a rigid support. Seal welding techniques shall be used throughout the baseplate structure to maximize joint strength,water intrusion sealing,and minimize paint holiday potential,as well as increase structural support transfer.

An integral hatch assembly that bolts on after baseplate and piping installation on and within the wet well,shall also be provided.The assembly shall be of the same carbon steel as the baseplate and incorporate a sliding aluminum hatch of 1/4" checkerplate designed to support 300" in a closed or partially open state.The hatch is positioned in front of the control panel to allow manual level control activity while monitoring the wet well at station platform level rather than ground level.

Each horizontal motor shall be slide base mounted on stainless steel to allow the operator to remove the motor,back-head,and impeller from the volute.The 6-inch pump suction and 6-inch station discharge piping shall be mounted in relation to the floor plate as detailed in the construction drawings.The station shall have no holes in the base plate or piping that will allow sewage gas to enter the station,either before or after start-up service.

The pump station shall be enclosed by a hinged,molded,insulated,fiberglass cover and is provided with a stainless-steel hasp connection to the vertical perimeter steel section that allows the pump chamber to be secured with a padlock.A lift assist system is included that reduces the dead lift force required to open the cover to 20 pounds or less.Two gas struts,automatic lock open assemblies,and over extension restraints are provided.A solid aluminum grab handle,secured to the cover,is provided for operator use to lift and open the cover for full walk-around access to the equipment.Closeable ventilating louvers with bug screens are provided on each end of the fiberglass cover. One vent incorporates a vent fan for seasonal heat exhaust.

The exterior surface of the cover shall be gelcoat with a smooth finish free from fiber patterns,roughness or other irregularities.The gelcoat shall be reinforced with a minimum 1/8" fiberglass laminate in non-structural areas and a minimum 1/4" in structural areas.The laminate,consisting of polyester resin and chopped strand fiberglass,shall have a minimum glass content of 30%.The molding shall be continuous,forming a one piece molded composite shelter. Each layer of laminate shall be hand rolled to eliminate air pockets and "stickers" in the completed product.1",closed cell,poly foam insulation in board form shall be encapsulated between layers of the laminate to ensure retention of the insulation quality integrity and maintain an R 9 rating.

The gel-coat material shall be an NPG isophthalic catalyzed cure product with UV stabilizers for maximum protection in continuous weather exposure applications.Color selection is a neutral tan.The resin shall be a general purpose orthophthalic catalyzed resin without additional fillers,for maximum strength.The fiberglass reinforcement shall consist of 1-1/4" long random polyester strands consisting of a minimum 30% of the finished laminate.

WELDING

All steel structural members shall be joined by electric arc welding with welds of adequate section and penetration for the joint involved.Welding shall be by MIG technique using stainless steel wire where stainless and carbon steels are to be joined. Carbon steel wire shall be used for carbon on carbon steel joining.

PROTECTION AGAINST CORROSION

After welding,all inside and outside surfaces of the structure shall be mechanically cleaned and blasted to remove rust,mill scale,weld slag,etc.All weld spatter and surface roughness are removed by grinding. Particles from cleaning are removed by air,brush,and vacuuming.Immediately following the cleaning,one coat of 83% solids, AMER lock 2 l high build epoxy,6 to 8 mils in dry thickness,shall be factory applied to all stainless and carbon steel surfaces.

SEWAGE PUMPS

The 4" pumps shall be horizontal,non-clog sewage pumps of heavy cast iron construction,especially designed for the use of mechanical seals. In order to minimize seal wear caused by the lineal movement of the shaft,the shaft bearing nearest the impeller is locked in place so that end play is limited to the clearance within the bearing. The bearing nearest the impeller shall be designed for the combined thrust and radial load.The bearing farthest from the impeller shall be free to move lineally with the thermal expansion of the shaft and shall carry only radial loads.

The pump impeller shall be made of close-grained cast iron and be of the enclosed type designed especially for the pumpage of 3" spherical solids as well as 3" long stringy solids.Prior to assembly it shall be dynamically and statically balanced.The back shroud shall incorporate pump out vanes for thrust balancing and prevention of solids build up.The volute backplate shall be designed with anti-rotation knobs that eliminate grit and other small particles from scouring the mechanical seal area thus extending seal life.

The impeller shall be keyed with a stainless-steel cap screw.The impeller shall not be screwed or pinned to the motor pump shaft and shall be readily removable without the use of special tools.Volutes are furnished with hand-hole cleanouts.

STANDARD SEAL QUALITY

The pump shaft shall be sealed against leakage by use of a single mechanical seal constructed of matched tungsten carbide against silicon carbide faces lapped to a flatness of one light beam.A stainless-steel shaft sleeve shall be utilized for shaft protection in the event of eventual seal usage failure that might otherwise scar the shaft. The seal rotating face is held in position against the stationary face with a stainless-steel spring which pressures the mating seal faces at one BAR pressure.The seal shall be Type 2 as manufactured by John Crane Company and shall be lubricated internally by process water.

MOTORS

The premium efficient pump motors as manufactured by KSB or equal quality U.S.manufacturer,are of standard NEMA design,horizontal foot mounting,JP frame, squirrel cage induction type,suitable for 3 phase,60 cycle,208/230-volt three wire electric current.The motors shall be furnished with Class F insulation and NEMA B design.The enclosures shall be open drip proof with forced air circulation by an integral fan.Openings for ventilation are of uniform spacing around the motor frame. Leads terminate in a motor connection box and are clearly identified.

The motors shall have a 1.14 Service Factor. The Service Factor is reserved for the Owners protection.The motors will not be overloaded beyond their nameplate rating,at the design condition,nor at any head in the operating range as specified under operating conditions.The motor pump shaft is centered,in relation to the motor base, within .005 inches. The shaft runout will not exceed .003 inches.

A bearing cap shall be provided to hold the motor bearing nearest to the impeller in a fixed position.Bearing housings are provided with fittings for lubrication as well as purging old lubricant.The motors shall be furnished with slide bases of stainless steel for easy removal and replacement.

CONTROLS

The control equipment shall be mounted on an equipment mounting plate per NEMA standards and installed in a NEMA 3R steel enclosure complete with nonremovable hinged outer door.Circuit breakers and H-O-A switches shall be operable from the front of the control panel door.

The control panel is mounted so the operator may stand on the portion of the base plate which has the wet well entrance hatch.This will provide a safe working platform and easy access to the controls. A grounding type convenience outlet with 20-amp breaker shall be provided on the side of the cabinet for operation of 115-volt AC equipment other than that provided with the station.All station equipment is terminal strip wired.

Magnetic air circuit breakers shall be provided for branch disconnect service and short circuit protection of auxiliary circuits.Industrial grade switch gear shall be provided. Magnetic coil starters shall be provided for pump engagement when signaled by the level control system and bi-metallic overloads shall be mounted between the starters and motors for over current protection.

Each single-phase auxiliary motor shall be equipped with an over-current protection device in addition to the branch circuit breaker or shall be impedance protected.All switches shall be labeled,and a coded wiring diagram shall be provided.All control wiring shall be numbered at termination points with permanently marked sleeves and whose numbers shall be entered on the wiring ladder diagram.Minimum 120-volt control wire is 14 AWG.

To control the operation of the pumps with variations of sewage level in the wet well,a submersible pressure transducer and a backup float switch level control system shall be provided.Four float switches shall be furnished.Three will be for level control and one will be for the high level alarm circuit.A minimum of 30 feet of cord shall be provided with the head to eliminate problems caused by splicing.The cord shall have a corrosion resistance vinyl jacket and be multi-stranded in order to prevent fatigue.

CONTROLS (CONT'D.)

The pressure transducer and float switches shall be incorporated into the "Station Centre" controller which shall be provide the operator a 7" color touch screen for viewing and controlling all operating conditions at the station. The controller shall have 30 or more screens to view wet well level conditions,pump operating status,pump run time,pump prime status,vacuum pump run time,pump run sequence,station temperature,flow metering,and any active alarm conditions.The interactive screens shall allow changes in pump operation,pump selection (alternation),alarm settings and clearance,temperature alarm set points,and password protection of the unit from unauthorized personnel changes.The controller shall incorporate a memory SD card to retain a minimum 2 year operating history of the station for future download by the City for archive or regulatory needs.The equipment shall accommodate connection to a communications device available to provide wireless remote connection and alarm reporting.The service shall allow the operator through a smart phone,tablet or internet connected computer to remotely view and change any operating settings at the station as well as alarm clearance.

Should there be a failure of the controller,provisions are made in the control circuit for backup operations to continue by automatic,independent use of the float switches. A battery pack is also provided to tie into the appropriate controller power supply terminals to supply a backup system in the event utility power is lost.The feature is designed to maintain programming and alarms within the controller and not engage the three phase pump motors when in use.

VACUUM PRIMING SYSTEM

A separate and independent priming system is furnished for each sewage pump,providing complete stand-by operation.Stainless steel probes are used with LED attenuation when prime is achieved.Priming takes place on the suction side of each sewage pump to maintain vacuum continuity on the priming system components rather than switch from vacuum to pressure during a pumping cycle.This also reduces exposure to grease.System logic is designed to not allow a sewage pump to run unless primed when in auto mode.

Each priming system is complete with vacuum pump,vacuum control solenoid valve, and prime level sensing system. Vacuum pumps shall have corrosion resistant internal components and solenoid valves shall incorporate stainless steel components. A float operated check valve is installed in each system ahead of the vacuum pump to prevent

moisture from entering the vacuum pump.The float operated check valve has a transparent body for visual inspection of the liquid level and automatically drains when the vacuum pump shuts off.Minimum tubing size used throughout is 3/8".

To prevent excessive stoppage due to grease accumulation,the priming chamber incorporated into the suction elbow is coated and no passageway in the priming system through which sewage must pass is smaller than a 2 3/4" opening.

ENVIRONMENTAL EQUIPMENT

A ventilating blower is provided,capable of delivering 250 CFM at 0.1" static water pressure,in order to remove the heat generated by continuous motor operation. The ventilating blower shall be turned on and off automatically by a panel mounted thermostat and secured to the fiberglass cover. A 500-watt electric heater also controlled by a panel mounted thermostat shall be furnished.The heater shall be rigidly mounted to the station control panel back to prevent removal.

SEWAGE PIPING

The pump suctions are drilled and tapped for a 125 lbs.American Standard flange for ready connection to the suction riser. The discharge line from each pump is fitted with a four-inch ball check valve and discharges through a lever operated,four-inch three-way plug valve .Size,location and quantity of check valves and plug valves are to be shown on the shop drawings. Ball check valves are specifically used to avoid the air and water leaks and low longevity of wafer style flapper valves that are a common maintenance and cost burden.

Protrusions through the floor plate are gas-tight to effect sealing between the equipment chamber and the wet well.Bolted and sealed joints are provided at the suction pipes in order to prevent corrosive or noxious fumes from entering the station. The 4" suction flange face and 4" plain end discharge connections are extended through the floor plate at the factory,so that field connections can be made without disturbing the gas-tight seals. The 4" discharge pipe terminates through the base plate and is seal welded. A thrust restraint,mechanical,dresser type coupling is provided for installation to the common discharge pipe.

INSTALLATION & OPERATION INSTRUCTIONS

Installation of the pump chamber must be done in accordance with the written instruction provided.Operation and Maintenance manuals are furnished,which will include parts lists of components,complete service procedures and troubleshooting guide.

FACTORY TESTS

All components of the pump stations will be given an operational test at the factory for proper trouble-free function at design conditions,as well as points above and below.
prior to shipment.

GUARANTEE

The MANUFACTURER shall guarantee the structure and all equipment to be free from defects in material and workmanship for a period of up to one (1) year from date of start-up,not to exceed 18 months from the date of shipment.The MANUFACTURER will be solely responsible for the guarantee of the station and all components.

PUMP AND MOTOR DATA

	PUMP #1	PUMP #1
DESIGN GPM & TDH	94 GPM @ 22'	94 GPM @ 22'
PUMP MODEL	KSB KRT F 100-215/44XEG-S IE3 OR APPROVED EQUAL	KSB KRT F 100-215/44XEG-S IE3 OR APPROVED EQUAL
IMPELLER DATA	6-11/16"	6-11/16"
ROTATION CW-CCW (MOTOR END)	CCW	CW
SUCTION LIFT (STATIC) AT OFF-LEVEL	20' MAX	20' MAX
MOTOR HORSEPOWER	5 HP	5 HP

LIFT STATION ELEVATIONS & CONTROL SYSTEM LIQUID LEVEL SETTINGS

TOP OF STATION	1012.89
FLOW LINE IN	1000.82
FLOW LINE OUT	1008.89
BOTTOM OF STATION	993.82
LEAD/LAG PUMP OFF	996.50
LEAD PUMP ON	997.82
LAG PUMP ON	999.32
HIGH WATER ALARM	999.82

ELLISON - AUXIER ARCHITECTS
924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

CFS ENGINEERS
1421 E. 104th Street, Ste. 100 KCMO 64131
o: 816-333-4477 f: 816-333-6688
cfse.com
MISSOURI CERTIFICATE OF AUTHORITY NUMBER 000522

NO.	ISSUE DESCRIPTION	DATE
3	ADDENDUM 3	05/23/23

NO.	REVISION DESCRIPTION	DATE

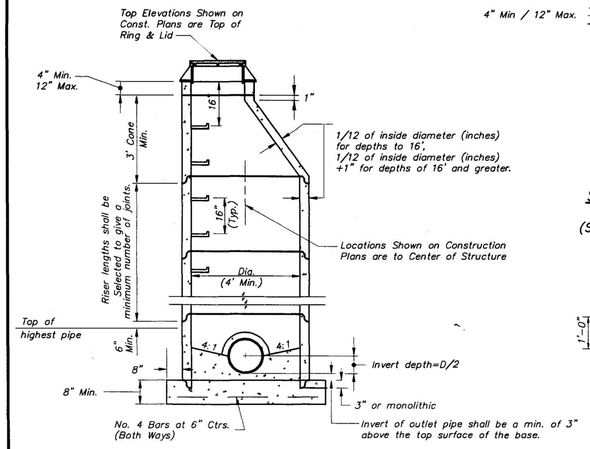
PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

LIFT STATION/FORCEMAIN PLAN AND PROFILE

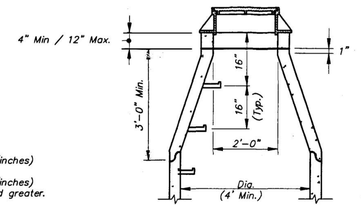
SHEET:
C600
OF:
DATE: 5.1.2023

05/23/23

D:\Local Revit Projects\CTAC Building-20,000_jeremy@ellison-auxier.com.rvt
2/24/2023 8:45:18 AM
235126-ST-CP-ForceMain.dgn 5/24/2023 1:44:21 PM

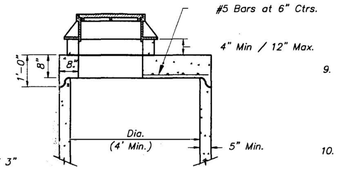


STANDARD PRECAST MANHOLE (ECCENTRIC CONE)



STANDARD PRECAST MANHOLE (CONCENTRIC CONE)

(See Eccentric Cone For Other Details)



STANDARD PRECAST MANHOLE (SHALLOW TYPE)

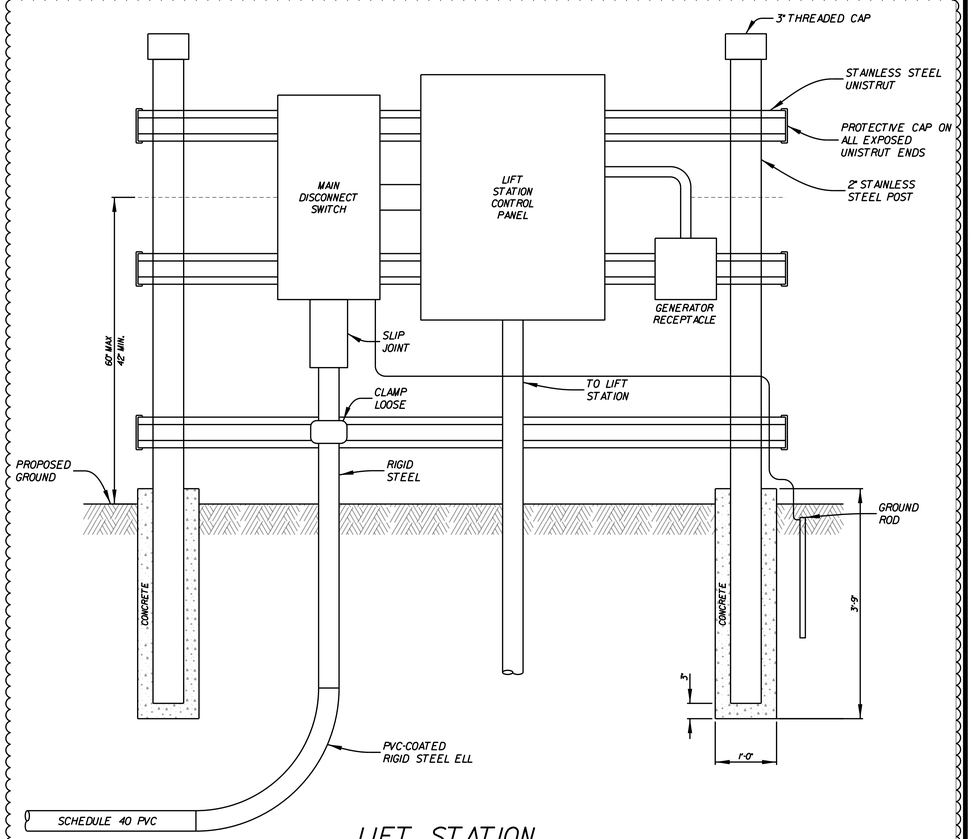
(See Eccentric Cone For Other Details)

GENERAL NOTES:

1. All manholes are to be precast concrete and of Eccentric Cone type unless otherwise specified.
2. Manhole top adjustments shall be accomplished by the use of concrete adjustment rings.
3. Top of manhole casting shall be set flush and on same slope as finished surface or as directed by the Engineer.
4. Reinforcement in all sections shall equal or exceed A.S.T.M. C-478 specifications.
5. The engineer shall designate modifications for manholes with special designs.
6. The inside diameter of the manhole shall be 4'-0" for pipe diameters from 12" thru 24", 5'-0" for pipe diameters from 27" thru 36", and 6'-0" for pipe diameters 42" thru 48".
8. Clearance Tolerance of Pipe Openings: The Maximum Allowable Pipe Opening on a Horizontal Axis Shall be the Outside Diameter of the Pipe Plus 12". The Maximum Allowable Pipe Opening on Vertical Axis Shall be the Outside Diameter Plus 8". The Minimum Clearance Between the Outside Surface of an Installed pipe and the Concrete of the Manhole Shall be 2".
9. Installation of Pipe Openings: All required pipe openings shall be plant cast in manhole units. Field alterations of openings will be permitted provided walls are scored with a masonry saw to a depth sufficient to sever reinforcing steel. A chipping hammer may then be used to remove the concrete. Minimum distance between any two adjacent pipes shall be 4".
10. No direct payment for shaping floor or connecting pipes as shown on plans.
11. Ring & Cover to be Neenah R-1736, Clay & Bailey #2008, Deeter #1316, or approved equal. (Casting may vary by municipality, refer to plans & contract documents.)
12. Sanitary Sewers shall be coated and conform to Section 2600.

* East Jordan is an approved manufacturer for casting.

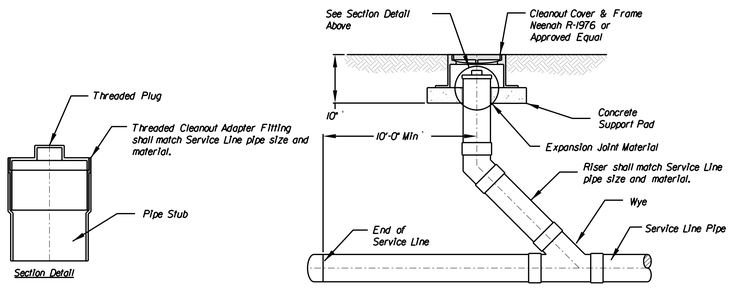
AMERICAN PUBLIC WORKS ASSOCIATION	KANSAS CITY METROPOLITAN CHAPTER	
APWA	MANHOLE DETAILS	STANDARD DRAWING NUMBER MH - 1 ADOPTED: APRIL 17, 1995



LIFT STATION EQUIPMENT STAND

SCALE: N.T.S.

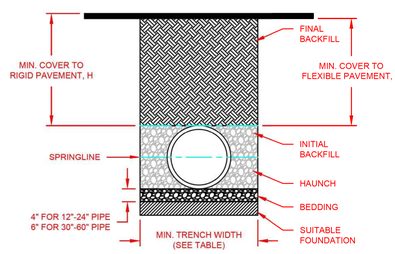
3



CLEANOUT DETAIL

No Scale

RECOMMENDED MINIMUM TRENCH WIDTHS



PIPE DIAM.	MIN. TRENCH WIDTH
4" (100mm)	21" (533mm)
6" (150mm)	23" (584mm)
8" (200mm)	26" (660mm)
10" (250mm)	28" (711mm)
12" (300mm)	30" (762mm)
15" (375mm)	34" (864mm)
18" (450mm)	39" (991mm)
24" (600mm)	48" (1219mm)
30" (750mm)	56" (1422mm)
36" (900mm)	64" (1626mm)
42" (1050mm)	72" (1829mm)
48" (1200mm)	80" (2032mm)
60" (1500mm)	96" (2438mm)

MINIMUM RECOMMENDED COVER BASED ON VEHICLE LOADING CONDITIONS**

PIPE DIAM.	SURFACE LIVE LOADING CONDITION	
	H-25	HEAVY CONSTRUCTION (75T AXLE LAOD) *
12" - 48" (300mm - 1200mm)	12" (305mm)	48" (1219mm)
60" (1500mm)	24" (610mm)	60" (1524mm)

* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER
**SEE BACKFILL REQUIREMENTS IN NOTE 6.

MAXIMUM RECOMMENDED COVER BASED ON VECHICLE LOADING CONDITIONS

PIPE DIAM.	CLASS I		CLASS II		CLASS III
	COMPACTED	DUMPED	95%	90%	95%
4" (100mm)	37 (11.3m)	18 (5.5m)	25 (7.6m)	18 (5.5m)	18 (5.5m)
6" (150mm)	44 (13.4m)	20 (6.1m)	29 (8.8m)	20 (6.1m)	21 (6.4m)
8" (200mm)	32 (9.8m)	15 (4.6m)	22 (6.7m)	15 (4.6m)	16 (4.9m)
10" (250mm)	38 (11.6m)	18 (5.5m)	26 (7.9m)	18 (5.5m)	18 (5.5m)
12" (300mm)	35 (10.7m)	17 (5.2m)	24 (7.3m)	17 (5.2m)	17 (5.2m)
15" (375mm)	38 (11.6m)	17 (5.2m)	25 (7.6m)	17 (5.2m)	18 (5.5m)
18" (450mm)	36 (11.0m)	17 (5.2m)	24 (7.3m)	17 (5.2m)	17 (5.2m)
24" (600mm)	28 (8.5m)	13 (4.0m)	20 (6.1m)	13 (4.0m)	14 (4.3m)
30" (750mm)	28 (8.5m)	13 (4.0m)	20 (6.1m)	13 (4.0m)	14 (4.3m)
36" (900mm)	26 (7.9m)	12 (3.7m)	18 (5.5m)	13 (4.0m)	13 (4.0m)
42" (1050mm)	23 (7.0m)	11 (3.4m)	16 (4.9m)	11 (3.4m)	11 (3.4m)
48" (1200mm)	25 (7.6m)	11 (3.4m)	17 (5.2m)	11 (3.4m)	12 (3.7m)
60" (1500mm)	25 (7.6m)	11 (3.4m)	17 (5.2m)	11 (3.4m)	12 (3.7m)

FILL HEIGHT TABLE GENERATED USING AASHTO SECTION 12, LOAD RESISTANCE FACTOR DESIGN (LRFD) PROCEDURE WITH THE FOLLOWING ASSUMPTIONS:
NO HYDROSTATIC PRESSURE,
UNIT WEIGHT OF SOIL (Ys) = 120 PCF

NOTES:

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION

2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.

3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.

4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (750mm-1500mm).

5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING TO THE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOTATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT. FOR TRAFFIC APPLICATIONS WITH LESS THAN FOUR FEET OF COVER, EMBEDMENT OF THE PIPE SHALL BE USING ONLY A CLASS I OR CLASS II BACKFILL.

REV.	DESCRIPTION	BY	MM/DD/YY	CHK'D
6	INITIAL BACKFILL	JAB	04/02/20	

ADVANCED DRAINAGE SYSTEMS, INC. ("ADS") HAS PREPARED THIS DETAIL BASED ON INFORMATION PROVIDED TO ADS. THIS DRAWING IS INTENDED TO DEPICT THE COMPONENTS AS REQUESTED. ADS HAS NOT PERFORMED ANY ENGINEERING OR DESIGN SERVICES FOR THIS PROJECT, NOR HAS ADS INDEPENDENTLY VERIFIED THE INFORMATION SUPPLIED. THE INSTALLATION DETAILS PROVIDED HEREIN ARE GENERAL RECOMMENDATIONS AND ARE NOT SPECIFIC FOR THIS PROJECT. THE DESIGN ENGINEER SHALL REVIEW THESE DETAILS PRIOR TO CONSTRUCTION. IT IS THE DESIGN ENGINEERS RESPONSIBILITY TO ENSURE THE DETAILS PROVIDED HEREIN MEETS OR EXCEEDS THE APPLICABLE NATIONAL, STATE, OR LOCAL REQUIREMENTS AND TO ENSURE THAT THE DETAILS PROVIDED HEREIN ARE ACCEPTABLE FOR THIS PROJECT.

TRENCH INSTALLATION DETAIL (N-12 PER AASHTO)

DRAWING NUMBER: STD-101

ADS ADVANCED DRAINAGE SYSTEMS, INC. 4640 TRUEMAN BLVD HILLIARD, OHIO 43026

DRAWN BY	TJR
DATE	12/29/16
DATE REV.	
SCALE	NTS
SHEET	1 OF 1

ELLISON - AUXIER ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

CFS ENGINEERS
1421 E. 104th Street, Ste. 100 KCMO 64131
o: 816-333-4477 f: 816-333-6688
cfse.com
MISSOURI CERTIFICATE OF AUTHORITY NUMBER 000522

NO.	ISSUE DESCRIPTION	DATE
3	ADDENDUM 3	05/23/23

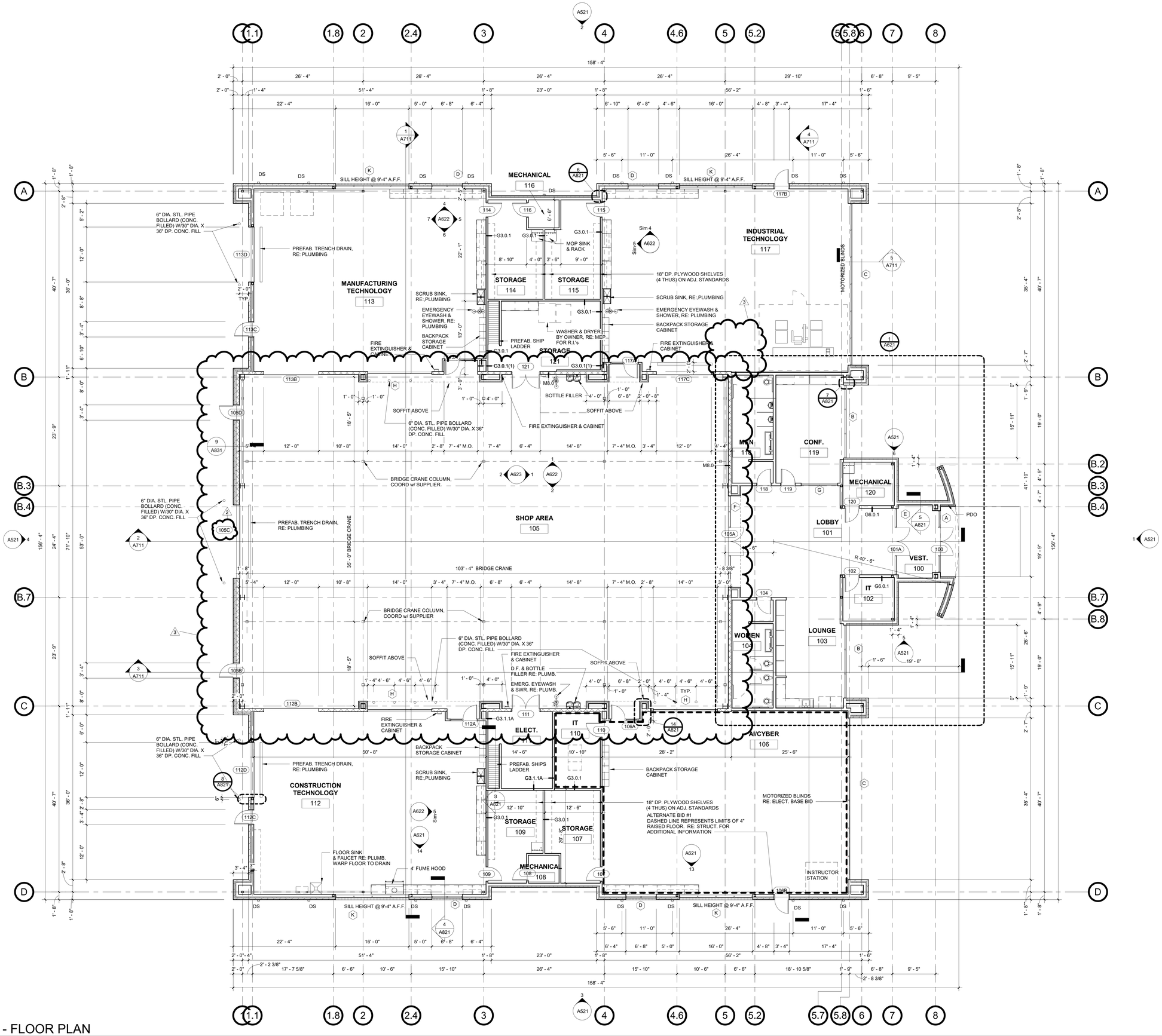
NO.	REVISION DESCRIPTION	DATE

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

DETAILS

SHEET: C1300

OF: **DATE:** 5.1.2023



1 LEVEL 1 - FLOOR PLAN

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

5/24/2023 1:03:59 PM D:\Local Revit Projects\CTAC Building-20.000_jeremy@ellison-auxier.com.rvt

JEREMY T. PROCTOR
NUMBER 2016006772
ARCHITECT
JEREMY T. PROCTOR, ARCHITECT
MO #: A-2016006772

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE

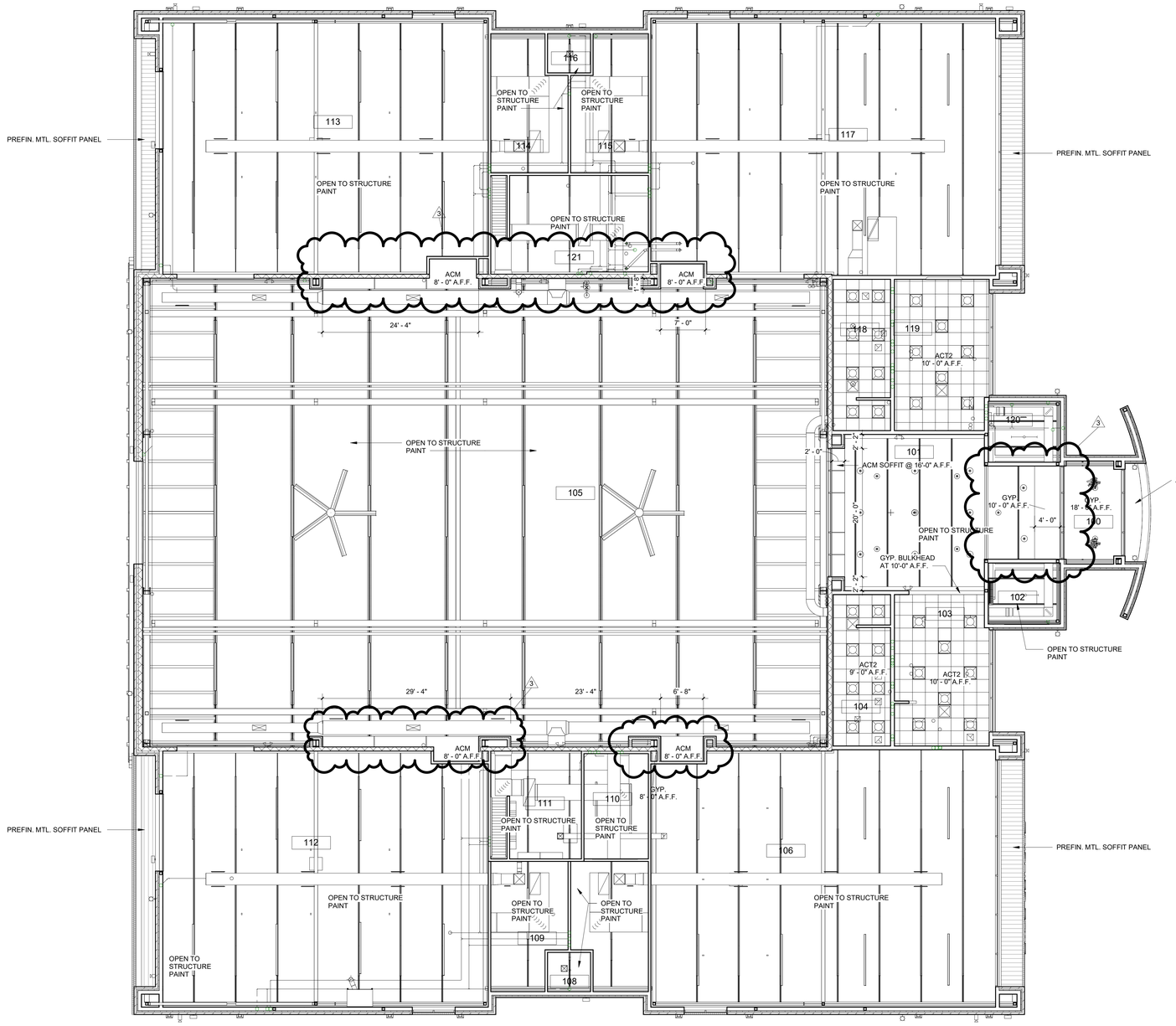
NO.	REVISION DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

LEVEL 1 - FLOOR PLAN

SHEET:
A211

OF: **DATE:** 05-01-2023



1 LEVEL 1 - REFLECTED CEILING PLAN

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

5/24/2023 1:04:02 PM D:\Local Revit Projects\CTAC Building-20.000_jeremy@ellison-auxier.com.rvt

JEREMY T. PROCTOR
NUMBER 2016006772
ARCHITECT
STATE OF MISSOURI

JEREMY T. PROCTOR, ARCHITECT
MO # A-2016006772

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE

NO.	REVISION DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

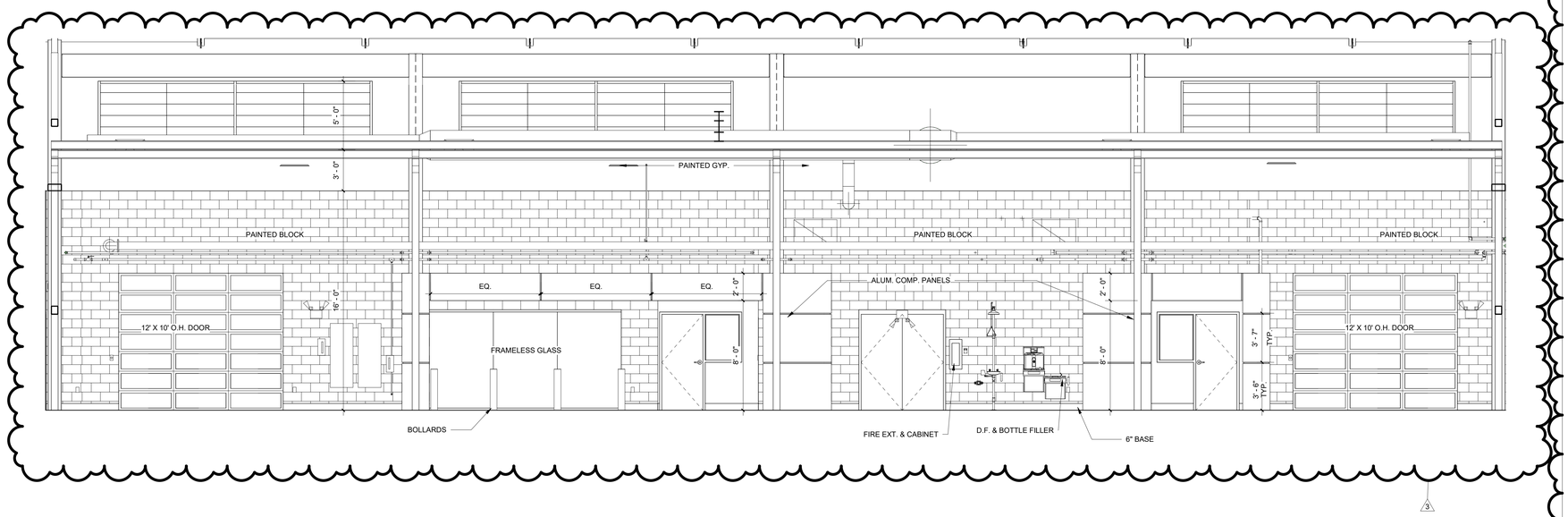
PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

LEVEL 1 - REFLECTED CEILING PLAN

SHEET:
A311

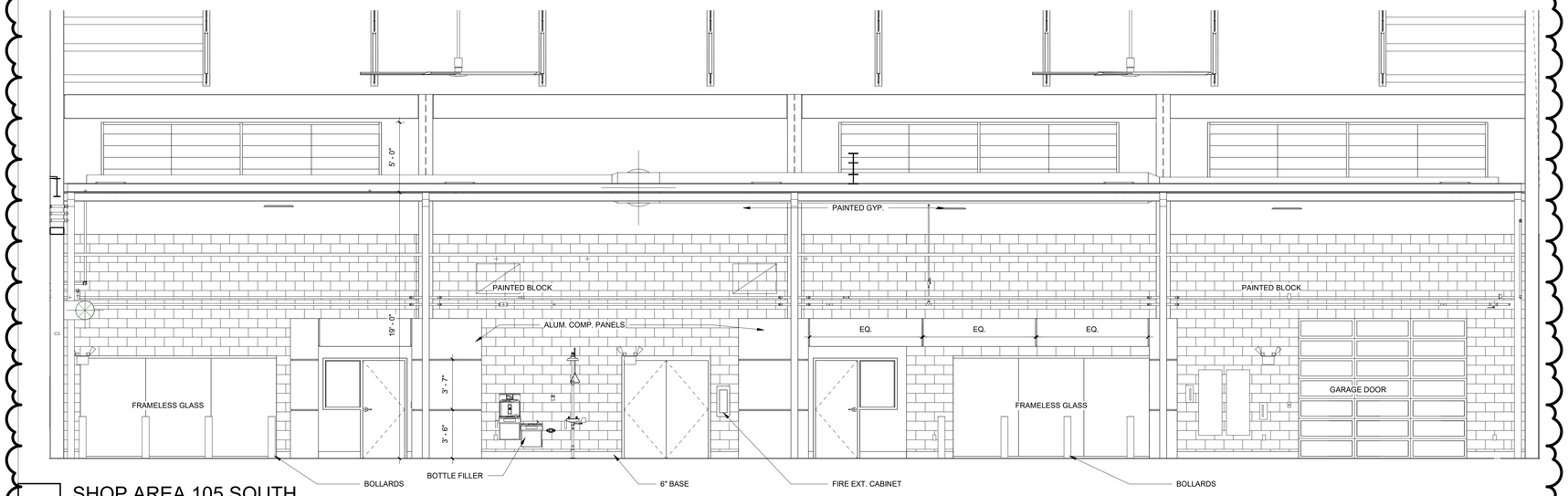
OF:

DATE: 05-01-2023



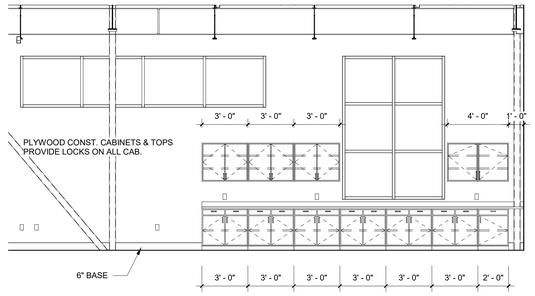
1 SHOP AREA 105 NORTH

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



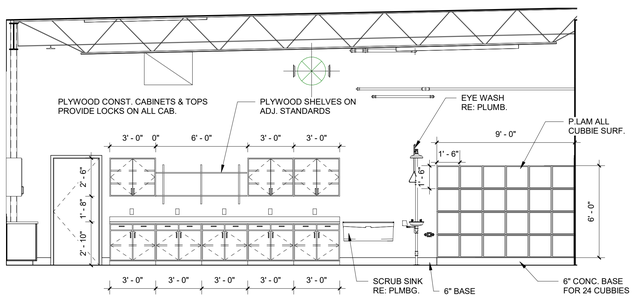
2 SHOP AREA 105 SOUTH

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



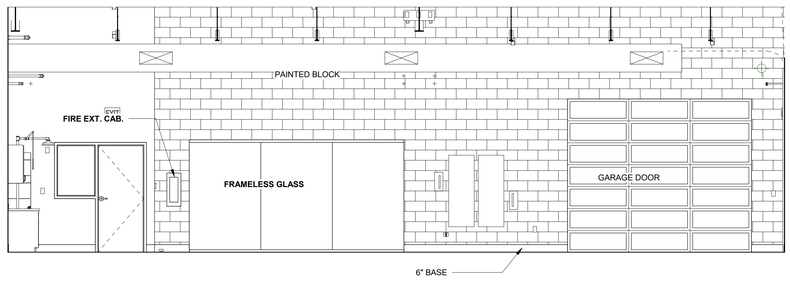
4 MANUF. TECH 113 NORTH

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



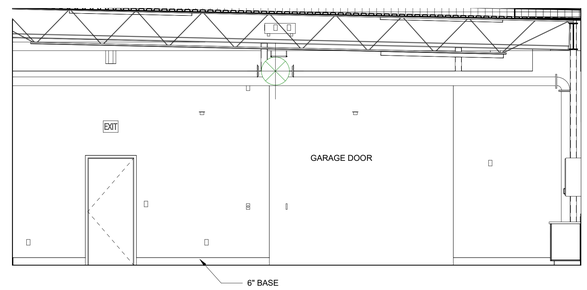
5 MANUF. TECH 113 EAST

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



6 MANUF. TECH 113 SOUTH

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



7 MANUF. TECH 113 WEST

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

JEREMY T. PROCTOR
NUMBER
A-2016006772
ARCHITECT
JEREMY T. PROCTOR, ARCHITECT
JEREMY T. PROCTOR, ARCHITECT
MO #: A-2016006772

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

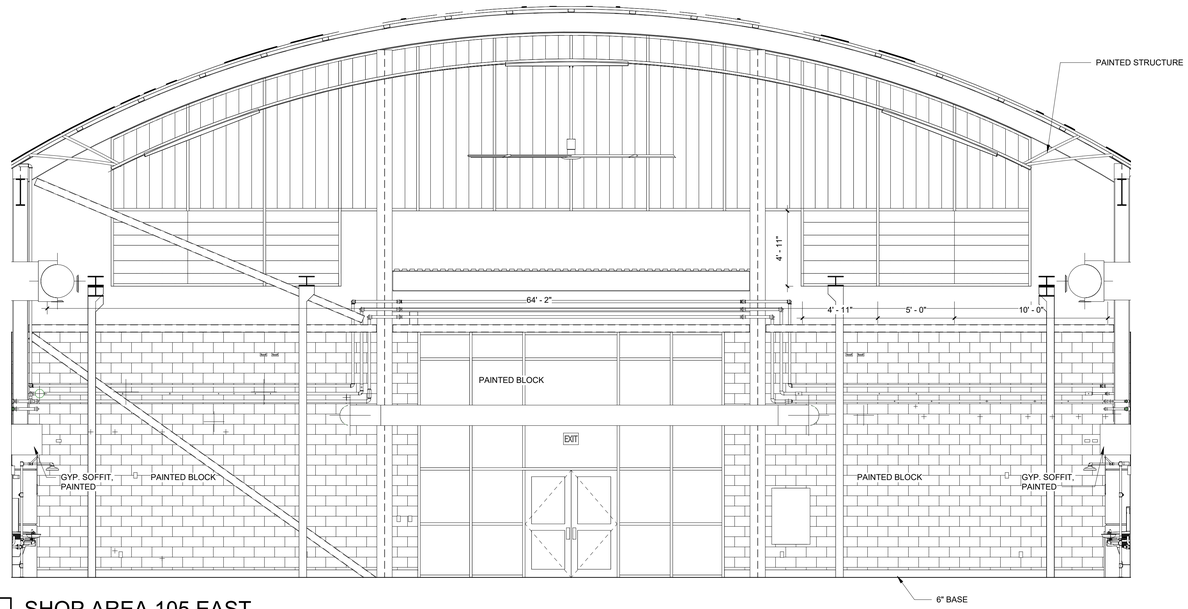
NO.	ISSUE DESCRIPTION	DATE

NO.	REVISION DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

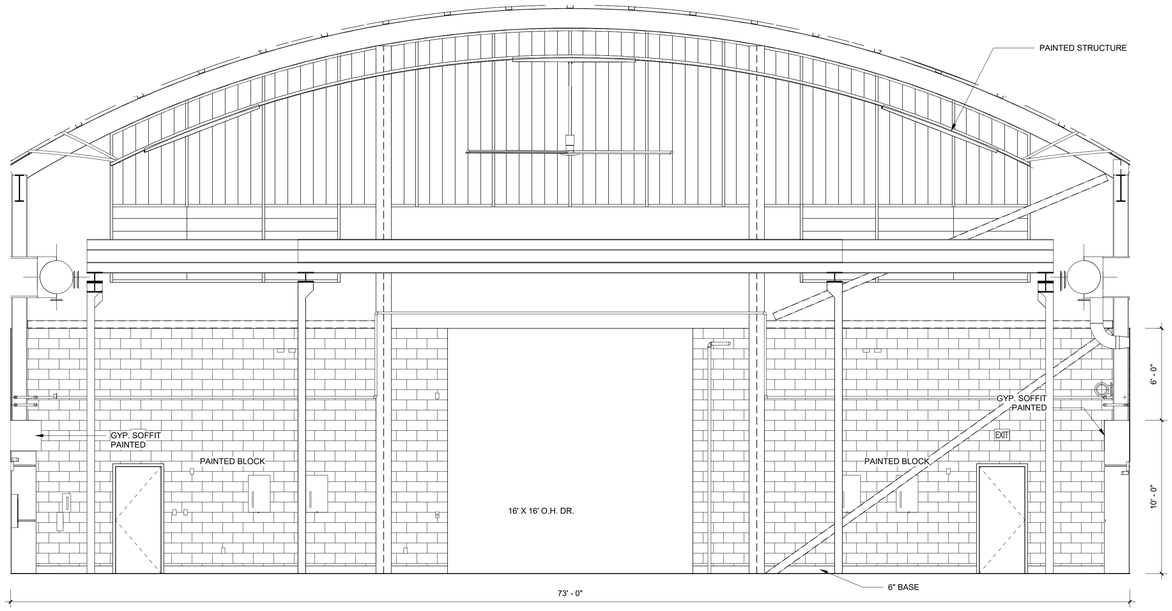
INTERIOR ELEVATIONS

SHEET:
A622
OF: **DATE:** 05-01-2023



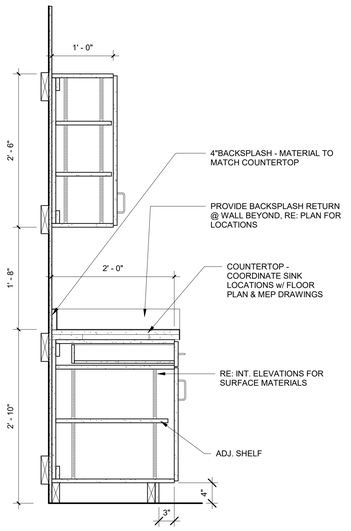
1 SHOP AREA 105 EAST

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

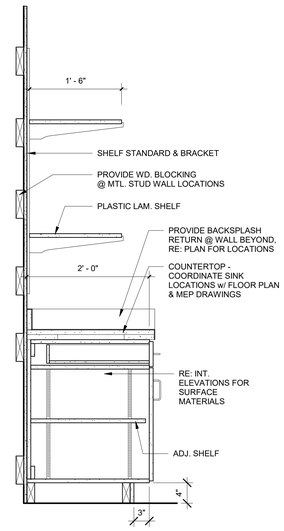


2 SHOP AREA 105 WEST

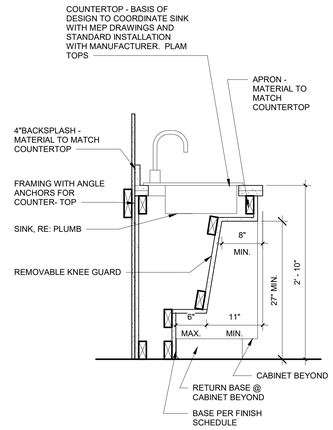
SCALE: 1/4" = 1'-0"

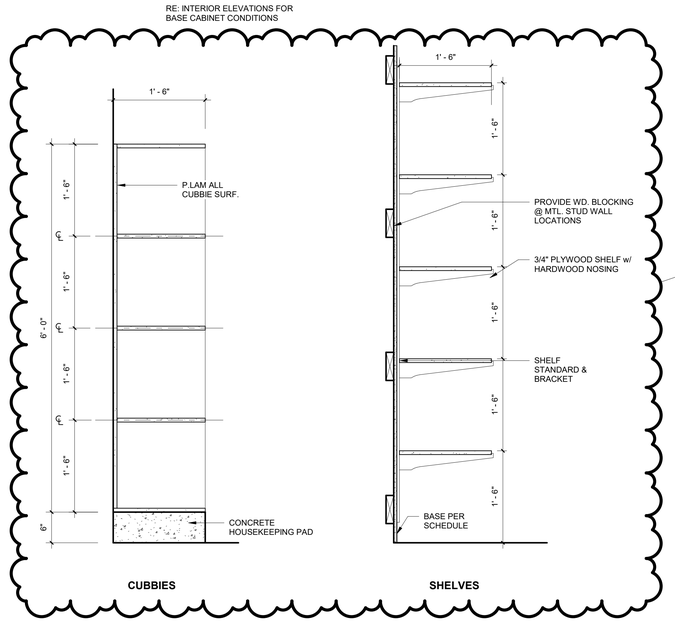


BASE AND UPPER CABINET



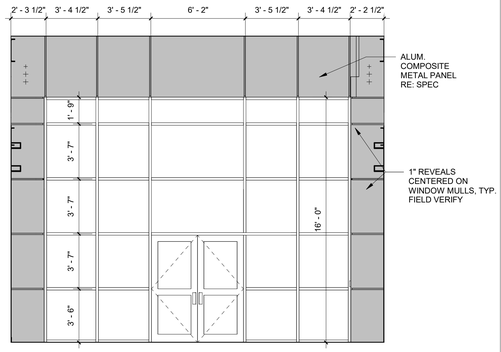
BASE CABINET w/ ADJ. SHELVING





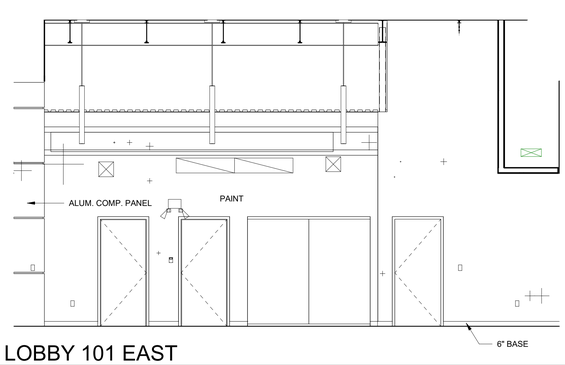
3 TYPICAL MILLWORK SECTIONS

SCALE: 1" = 1'-0"



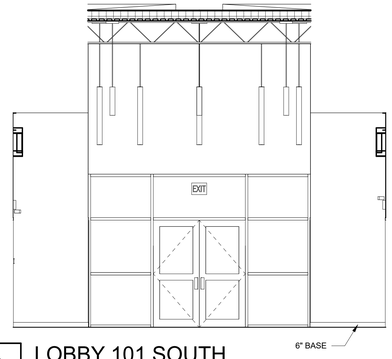
4 LOBBY 101 NORTH

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



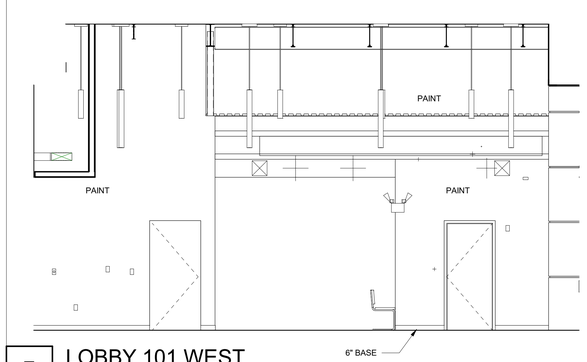
5 LOBBY 101 EAST

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



6 LOBBY 101 SOUTH

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



7 LOBBY 101 WEST

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

JEREMY T. PROCTOR
NUMBER 2016006772
ARCHITECT
STATE OF MISSOURI
JEREMY T. PROCTOR, ARCHITECT
MO # A-2016006772

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE

NO.	REVISION DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

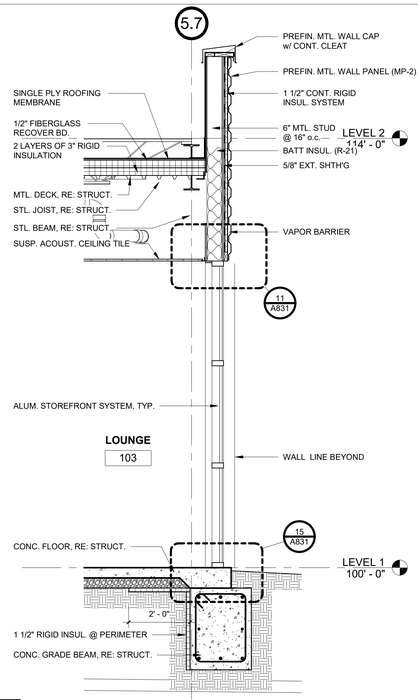
PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

INTERIOR ELEVATIONS

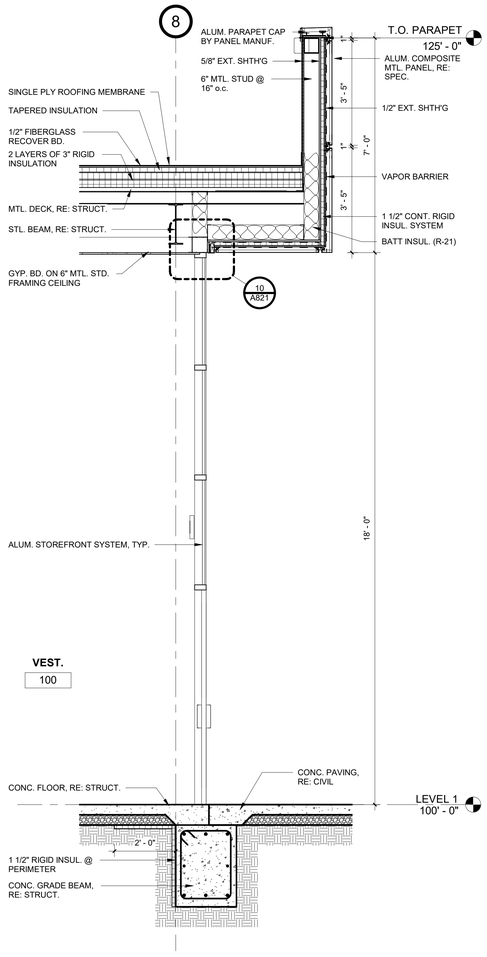
SHEET:
A623

OF: **DATE:** 05-01-2023

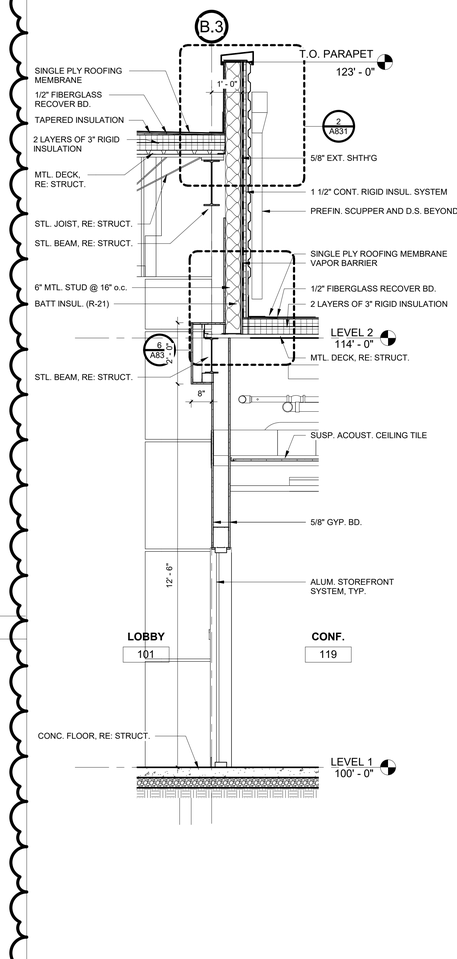
5/24/2023 1:04:11 PM D:\Local Revit Projects\CTAC Building-20.000_jeremy@ellison-auxier.com.rvt



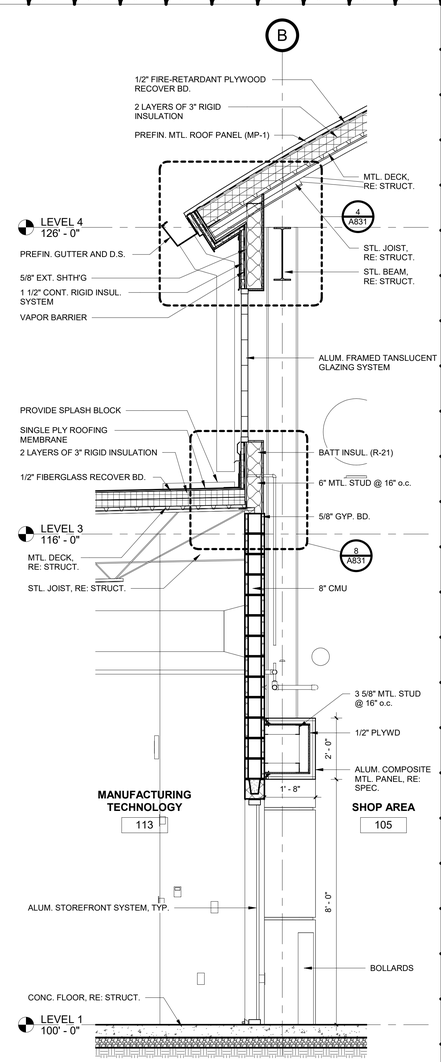
1 WALL SECTION
SCALE: 1/2" = 1'-0"



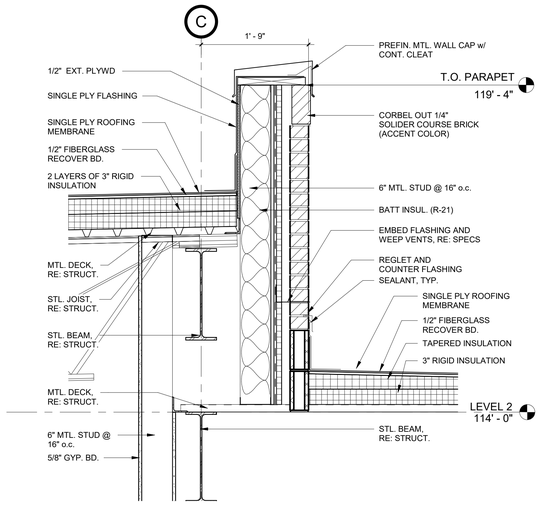
4 WALL SECTION
SCALE: 1/2" = 1'-0"



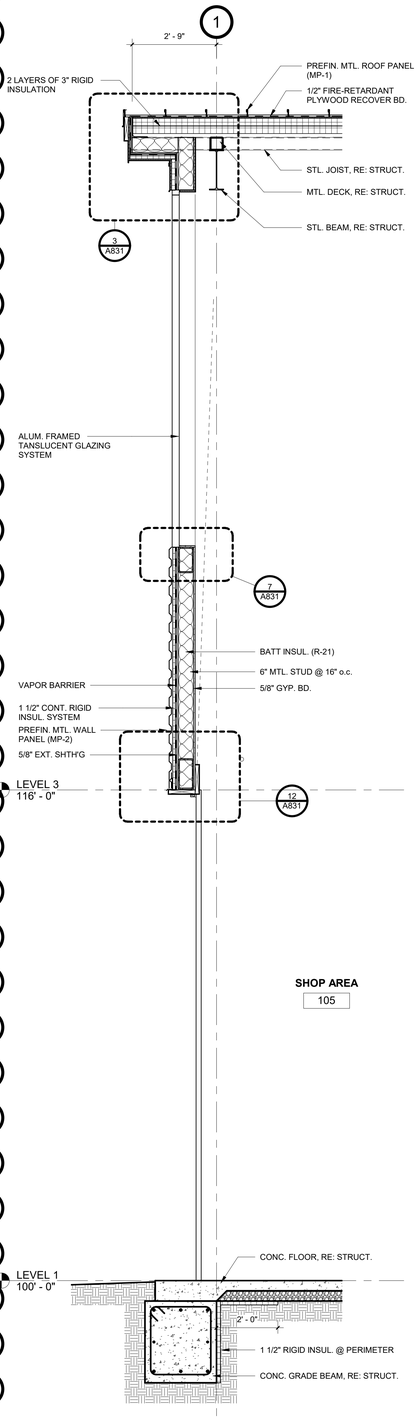
2 WALL SECTION
SCALE: 1/2" = 1'-0"



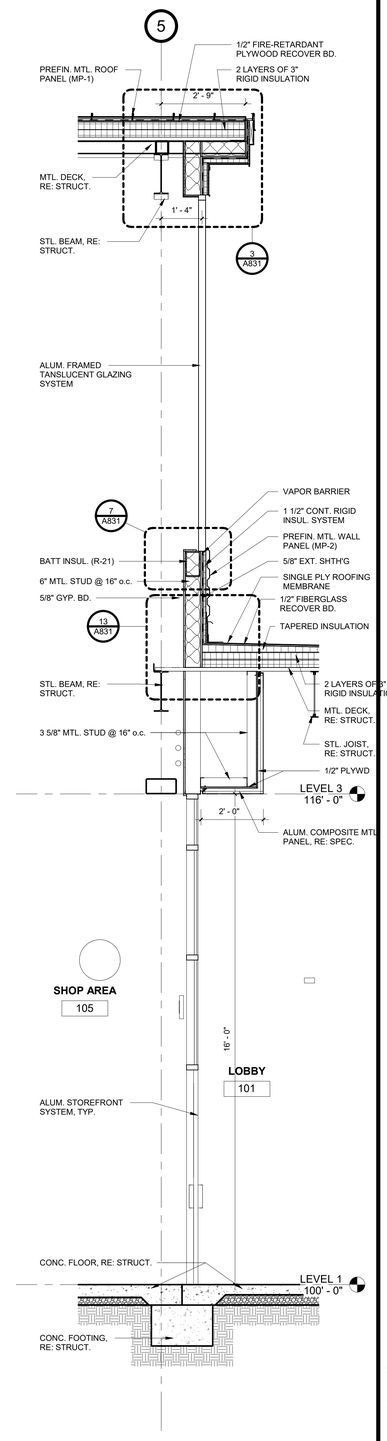
3 WALL SECTION
SCALE: 1/2" = 1'-0"



5 DETAIL
SCALE: 1" = 1'-0"



6 WALL SECTION
SCALE: 1/2" = 1'-0"



7 WALL SECTION
SCALE: 1/2" = 1'-0"

STATE OF MISSOURI
JEREMY T. PROCTOR
NUMBER 2016006772
ARCHITECT
JEREMY T. PROCTOR, ARCHITECT
MO # A-2016006772

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE

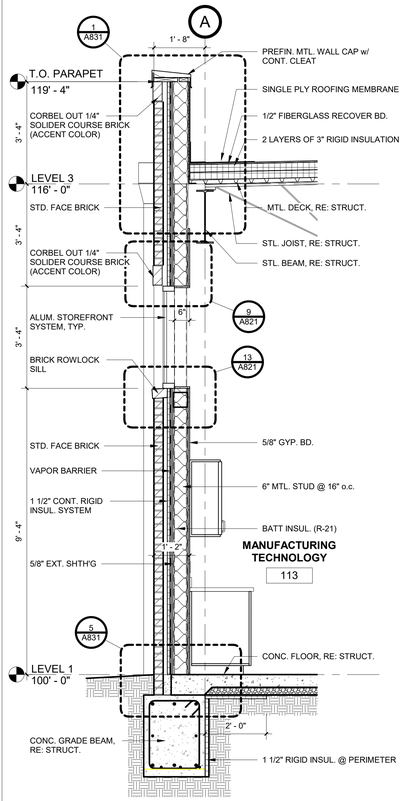
NO.	REVISION DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

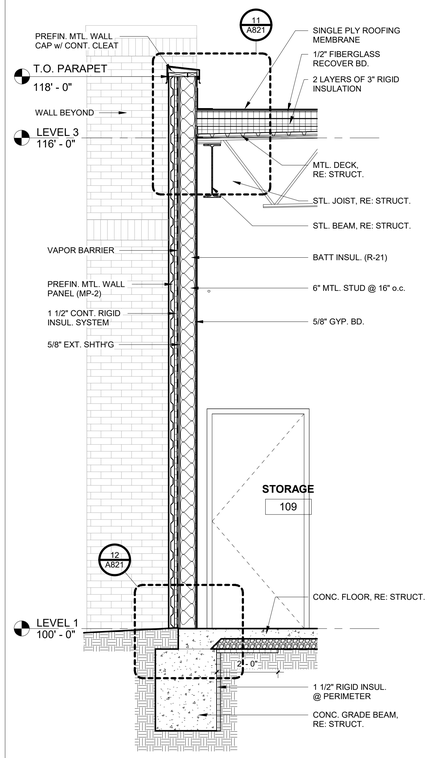
WALL SECTIONS

SHEET:
A721

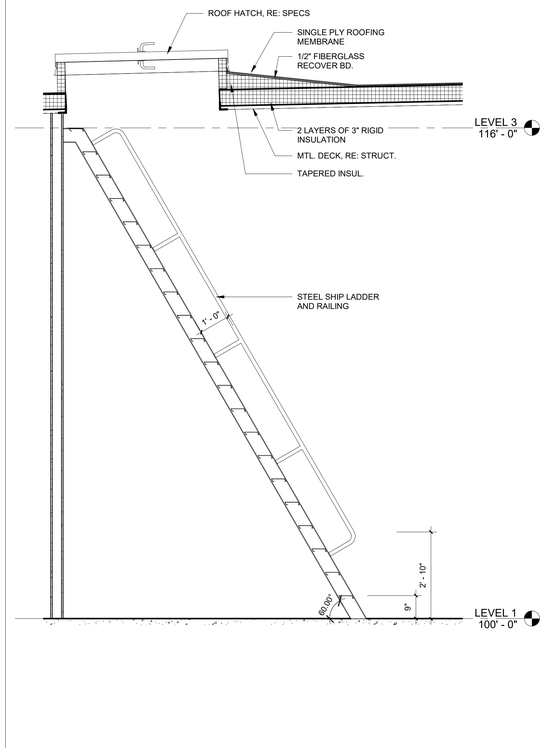
OF: DATE: 05-01-2023



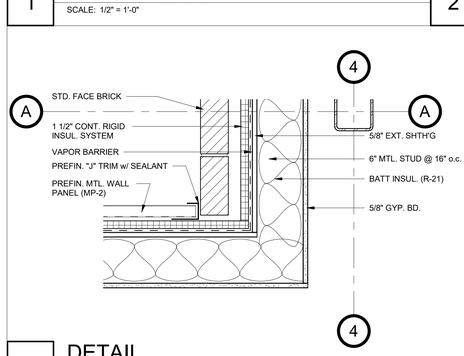
1 WALL SECTION
SCALE: 1/2" = 1'-0"



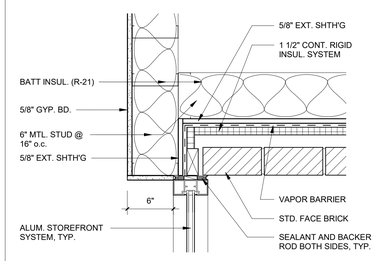
2 WALL SECTION
SCALE: 1/2" = 1'-0"



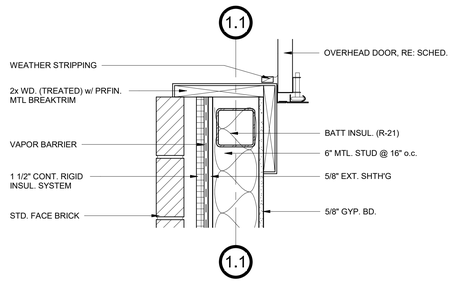
3 SECTION
SCALE: 1/2" = 1'-0"



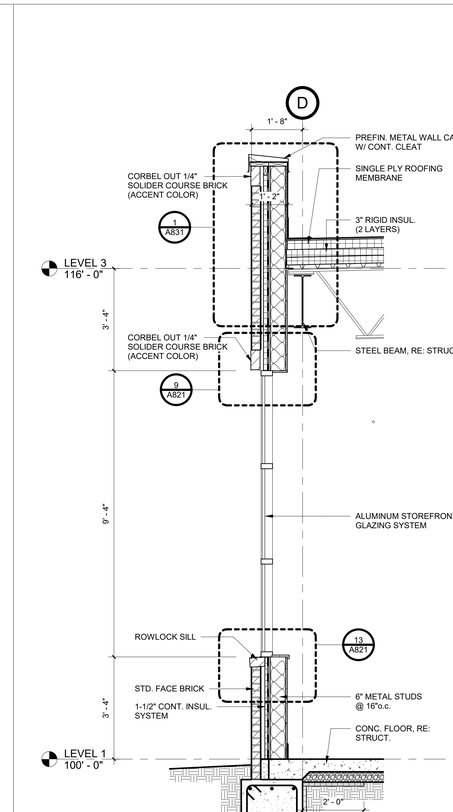
6 DETAIL
SCALE: 1 1/2" = 1'-0"



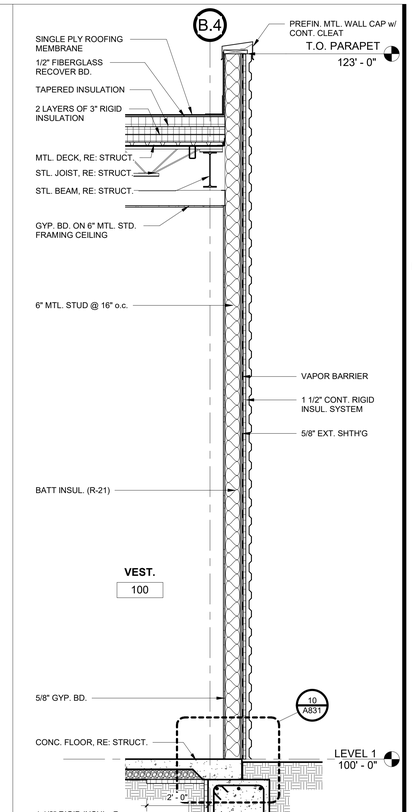
7 DETAIL
SCALE: 1 1/2" = 1'-0"



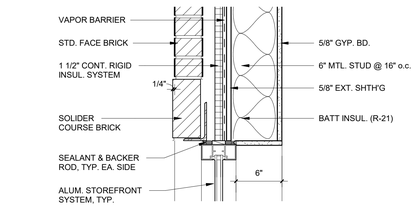
8 DETAIL
SCALE: 1 1/2" = 1'-0"



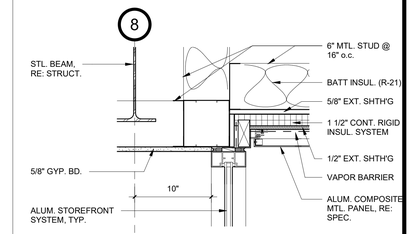
4 WALL SECTION
SCALE: 1/2" = 1'-0"



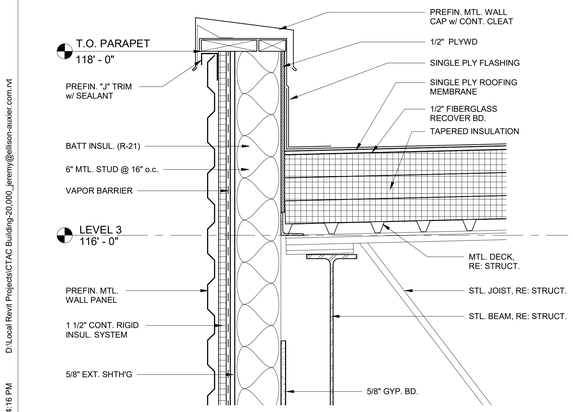
5 WALL SECTION
SCALE: 1/2" = 1'-0"



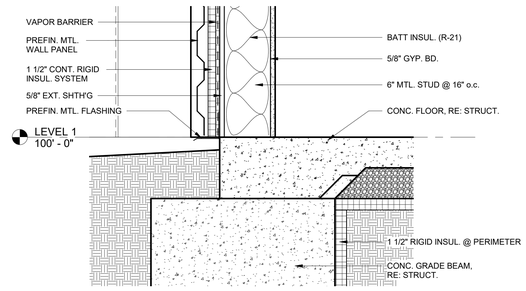
9 DETAIL
SCALE: 1 1/2" = 1'-0"



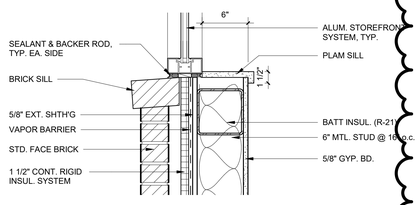
10 DETAIL
SCALE: 1 1/2" = 1'-0"



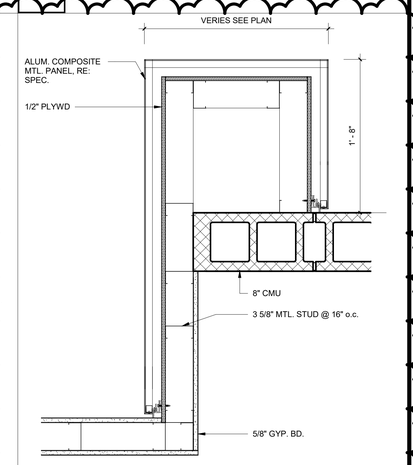
11 DETAIL
SCALE: 1 1/2" = 1'-0"



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



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



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

JEREMY T. PROCTOR
NUMBER 2016006772
ARCHITECT
JEREMY T. PROCTOR, ARCHITECT
MO # A-2016006772

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE

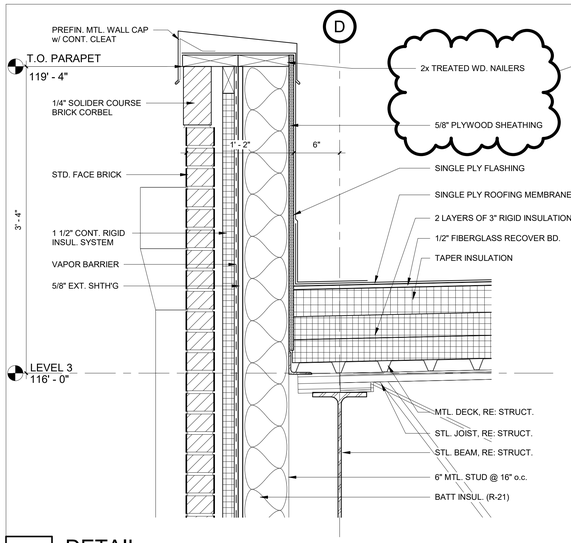
NO.	REVISION DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

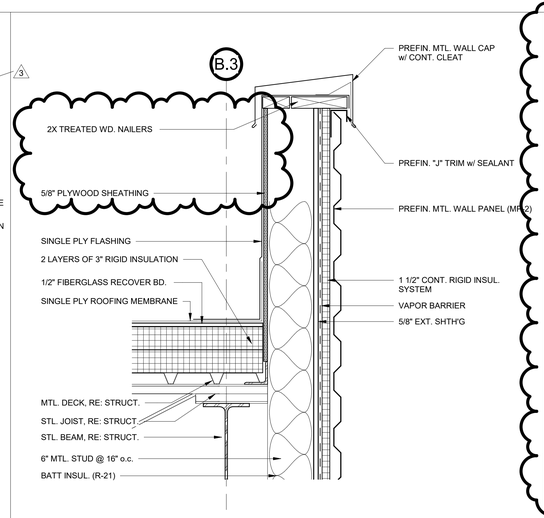
PLAN DETAILS

SHEET:
A821

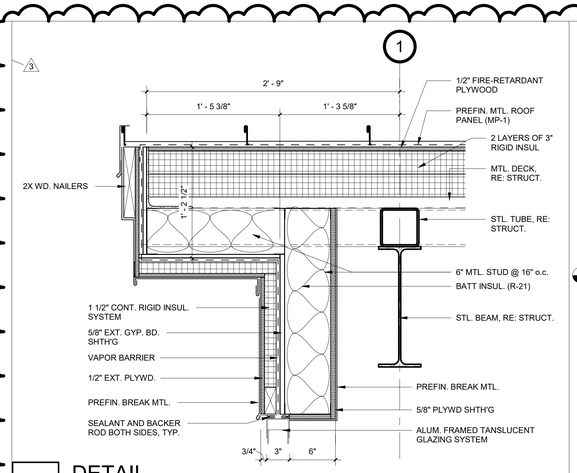
DATE: 05-01-2023



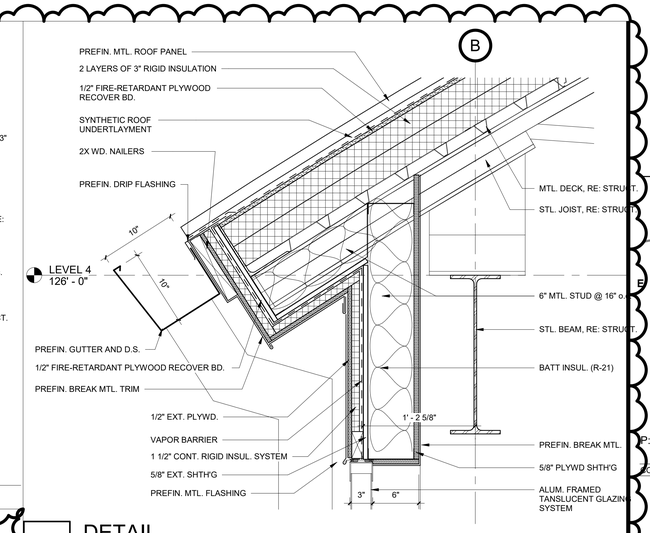
1 DETAIL
SCALE: 1 1/2" = 1'-0"



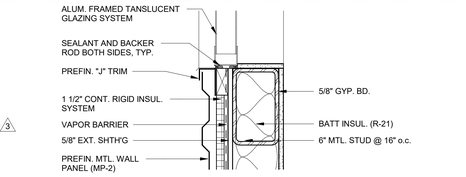
2 DETAIL
SCALE: 1 1/2" = 1'-0"



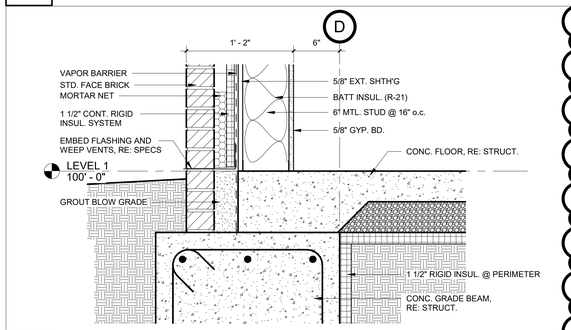
3 DETAIL
SCALE: 1 1/2" = 1'-0"



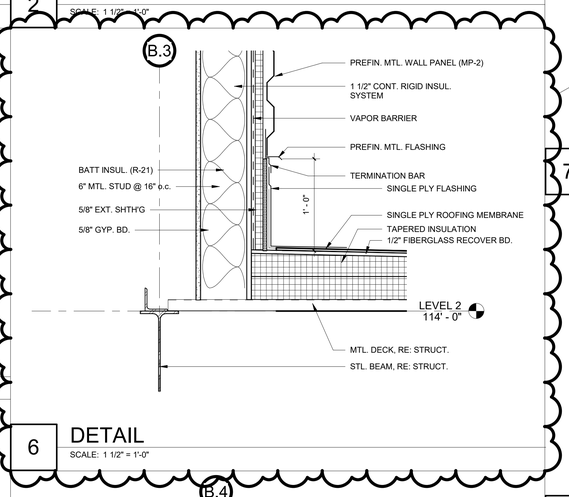
4 DETAIL
SCALE: 1 1/2" = 1'-0"



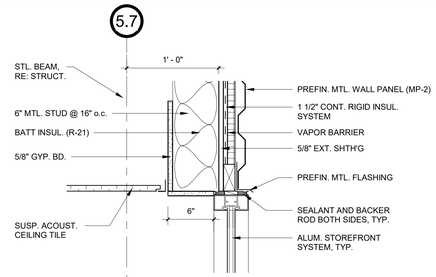
7 DETAIL
SCALE: 1 1/2" = 1'-0"



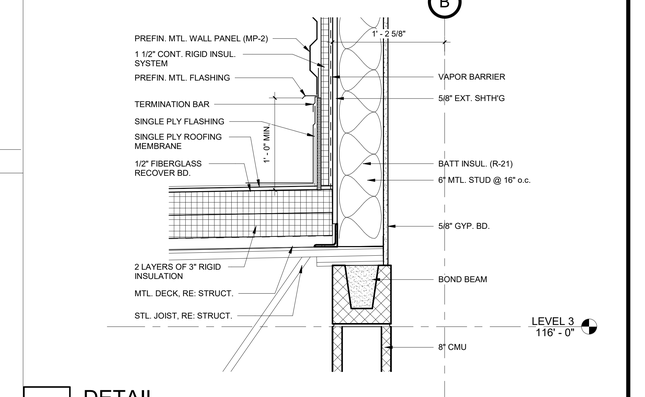
5 DETAIL
SCALE: 1 1/2" = 1'-0"



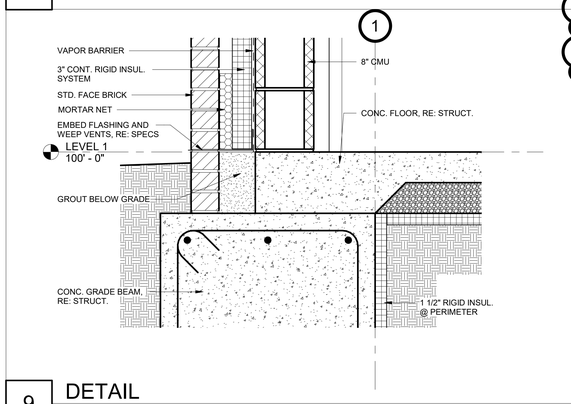
6 DETAIL
SCALE: 1 1/2" = 1'-0"



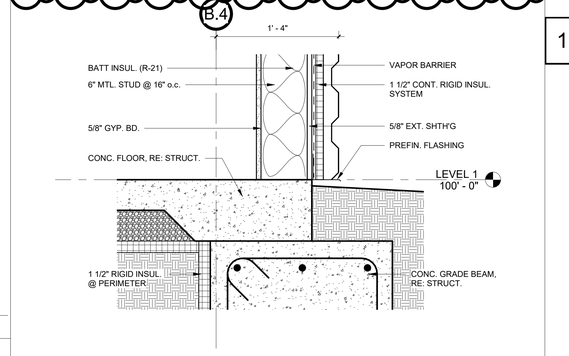
11 DETAIL
SCALE: 1 1/2" = 1'-0"



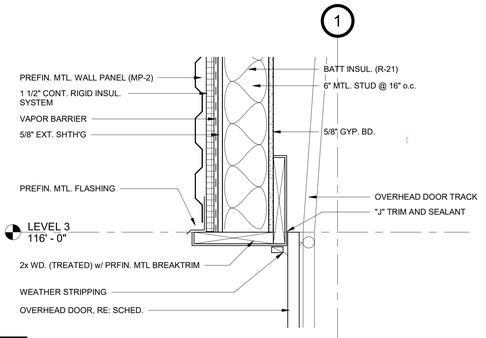
8 DETAIL
SCALE: 1 1/2" = 1'-0"



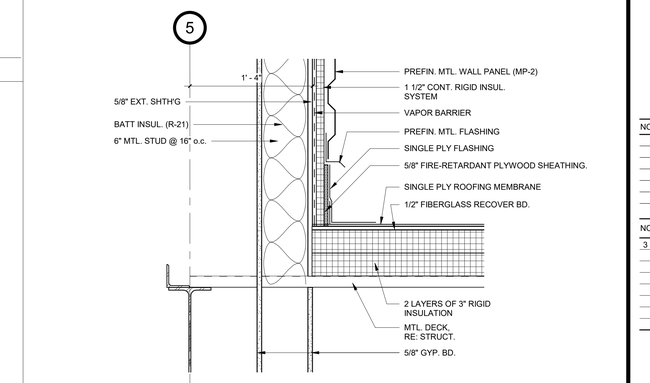
9 DETAIL
SCALE: 1 1/2" = 1'-0"



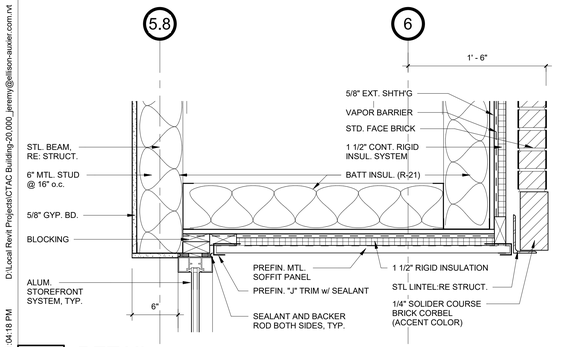
10 DETAIL
SCALE: 1 1/2" = 1'-0"



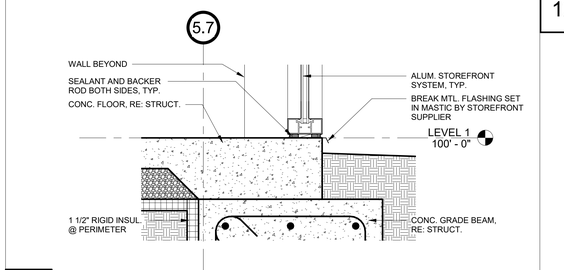
12 DETAIL
SCALE: 1 1/2" = 1'-0"



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



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



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

STATE OF MISSOURI
JEREMY T. PROCTOR
NUMBER 2016006772
ARCHITECT
JEREMY T. PROCTOR, ARCHITECT
MO # A-2016006772

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE

NO.	REVISION DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

SECTION DETAILS

SHEET:
A831

OF: **DATE:** 05-01-2023

D:\Local Revit Projects\CTAC Building-20.000_jeremy@ellison-auxier.com.rvt
5/24/2023 1:04:18 PM

FINISH SCHEDULE

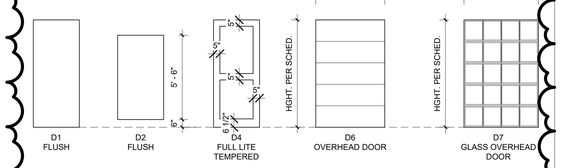
NUMBER	NAME	FLOOR FINISH	BASE FINISH	NORTH WALL	EAST WALL	SOUTH WALL	WEST WALL	COMMENTS
100	VEST.	C1	B1	P1	P1	P1	P1	
101	LOBBY	SC	B1	P1	P1	P1	P1	
102	IT	SD1	B1	P1	P1	P1	P1	
103	LOUNGE	C2	B1	P1	P1	P2	P1	
104	WOMEN	T2	T1	T1/P1	T1/P2	T1/P1	T1/P1	
105	SHOP AREA	SC	B1	P1	P2	P1	P2	
106	AI/CYBER	SC	B1	P1	P1	P1	P2	ALT. BID #1 SD1
107	STORAGE	SC	B1	P1	P1	P1	P1	
108	MECHANICAL	SC	B1	P1	P1	P1	P1	
109	STORAGE	SC	B1	P1	P1	P1	P1	
110	IT	SD1	B1	P1	P1	P1	P1	
111	ELECT.	SC	B1	P1	P1	P1	P1	
112	CONSTRUCTION TECHNOLOGY	SC	B1	P1	P2	P1	P1	
113	MANUFACTURING TECHNOLOGY	SC	B1	P1	P1	P1	P2	
114	STORAGE	SC	B1	P1	P1	P1	P1	
115	STORAGE	SC	B1	P1	P1	P1	P1	
116	MECHANICAL	SC	B1	P1	P1	P1	P1	
117	INDUSTRIAL TECHNOLOGY	SC	B1	P1	P2	P1	P1	
118	MEN	T2	T1	T1/P1	T1/P2	T1/P1	T1/P1	
119	CONF.	C2	B1	P1	P1	P1	P1	
120	MECHANICAL	SC	B1	P1	P1	P1	P1	
121	STORAGE	SC	B1	P1	P1	P1	P1	

FINISH SELECTIONS
FLOOR:
SC: SEALED CONCRETE, PROSOCO CONCRETE PROTECTOR SB
C1: J&J COMMERCIAL INCOGNITO 1837 OPERATIVE, QUARTER TURN
C2: J&J KINETIX FOUNDRY 2074 WORKS, QUARTER TURN
T2: ATLAS CONCORDE FORGE, STEEL, 12 X 24, PROVIDE SCHLUTER RENO-U AT DOORS, STAINLESS STEEL
SD1: JOHNSONITE IQ GRANIT SD 0948 GREY, ROLLED GOODS, HEAT WELD SEAMS
BASE:
B1: JOHNSONITE 40 BLACK
T2: (WALL TILE) ATLAS CONCORDE FORGE, ALUMINUM, 12 X 24
WALLS:
P1: SW TBD
P2: SW ACCENT COLOR TBD
T1: ATLAS CONCORDE FORGE, ALUMINUM, 12 X 24 W/ SCHLUTER JOLLY @ TOP AND OUTSIDE CORNERS, STAINLESS STEEL

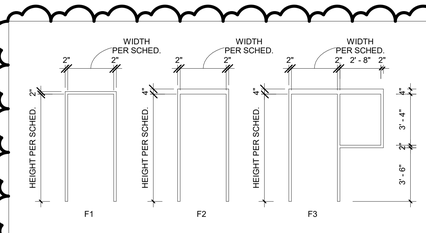
NOTES:
ALL MILLWORK WILL BE PLYWOOD U.N.O.
PAINT ALL EXPOSED METAL
PAINT ALL EXPOSED STRUCTURE
CAULK ALL SAWJOINTS IN FLOOR SLABS

DOOR SCHEDULE

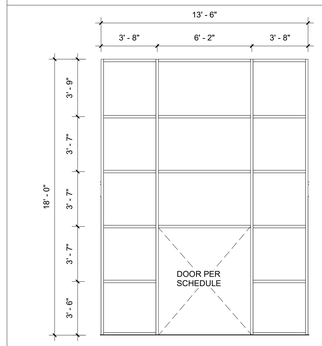
NUMBER	WIDTH	HEIGHT	THICKNESS	DOOR TYPE	DOOR MATERIAL	FRAME TYPE	FRAME MATERIAL	FIRE RATING	COMMENTS
100	6' - 0"	7' - 0"	1 3/4"	D4	ALUM.	A	ALUM.		
101A	6' - 0"	7' - 0"	1 3/4"	D4	ALUM.	E	ALUM.		
102	3' - 0"	7' - 0"	1 3/4"	D1	WD.	F1	HM.		
104	3' - 0"	7' - 0"	1 3/4"	D1	WD.	F1	HM.		
105A	6' - 0"	7' - 0"	1 3/4"	D4	ALUM.	F	ALUM.		
105B	3' - 0"	7' - 0"	1 3/4"	D1	HM.	F1	HM.		
105C	16' - 0"	16' - 0"	2"	D6	MTL.	--	STL.		
105D	3' - 0"	7' - 0"	1 3/4"	D1	HM.	F1	HM.		
106A	3' - 0"	7' - 0"	1 3/4"	D1	HM.	F3	HM.		
106B	3' - 0"	7' - 0"	1 3/4"	D1	HM.	F2	HM.		
107	3' - 0"	7' - 0"	1 3/4"	D1	HM.	F1	HM.		
108	3' - 0"	7' - 0"	1 3/4"	D1	HM.	F1	HM.		
109	3' - 0"	7' - 0"	1 3/4"	D1	HM.	F1	HM.		
110	3' - 0"	7' - 0"	1 3/4"	D1	HM.	F1	HM.		
111	6' - 0"	7' - 0"	1 3/4"	D1	HM.	F2	HM.	45 MIN	
112A	3' - 0"	7' - 0"	1 3/4"	D1	HM.	F3	HM.		
112B	12' - 0"	10' - 0"	1 1/2"	D7	ALUM.	--	-		
112C	3' - 0"	7' - 0"	1 3/4"	D1	HM.	F1	HM.		
112D	12' - 0"	12' - 0"	1 1/2"	D6	MTL.	--	STL.		
113A	3' - 0"	7' - 0"	1 3/4"	D1	HM.	F3	HM.		
113B	12' - 0"	10' - 0"	1 1/2"	D7	ALUM.	--	-		
113C	3' - 0"	7' - 0"	1 3/4"	D1	HM.	F1	HM.		
113D	12' - 0"	12' - 0"	1 1/2"	D6	MTL.	--	STL.		
114	3' - 0"	7' - 0"	1 3/4"	D1	HM.	F1	HM.		
115	3' - 0"	7' - 0"	1 3/4"	D1	HM.	F1	HM.		
116	3' - 0"	7' - 0"	1 3/4"	D1	HM.	F1	HM.		
117A	3' - 0"	7' - 0"	1 3/4"	D1	HM.	F3	HM.		
117B	3' - 0"	7' - 0"	1 3/4"	D1	HM.	F2	HM.		
117C	12' - 0"	10' - 0"	1 1/2"	D7	ALUM.	--	-		
118	3' - 0"	7' - 0"	1 3/4"	D1	WD.	F1	HM.		
119	3' - 0"	7' - 0"	1 3/4"	D1	WD.	F1	HM.		
120	3' - 0"	7' - 0"	1 3/4"	D1	WD.	F1	HM.		
121	6' - 0"	7' - 0"	1 3/4"	D1	HM.	F2	HM.		



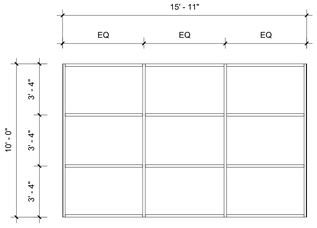
1 DOOR TYPE ELEVATIONS
SCALE: 1/4" = 1'-0"



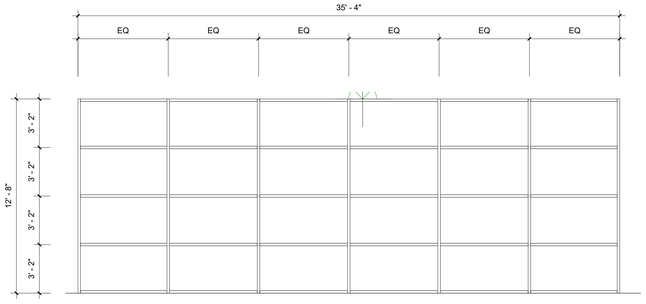
2 DOOR FRAME TYPE ELEVATIONS
SCALE: 1/4" = 1'-0"



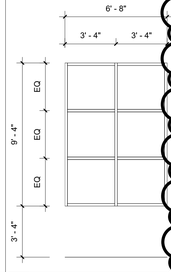
A ALUM. INSUL. GLAZING



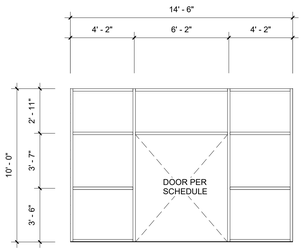
B ALUM. INSUL. GLAZING



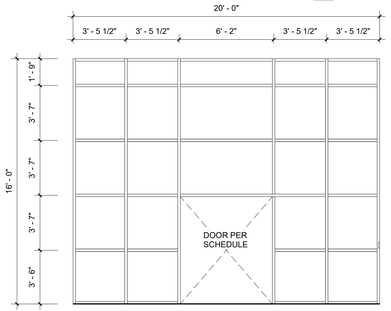
C ALUM. INSUL. GLAZING



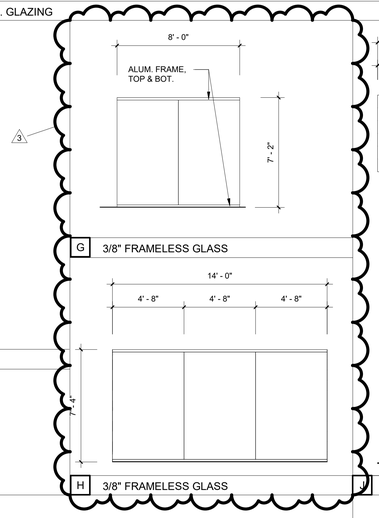
D ALUM. INSUL. GLAZING



E ALUM. - 1/4" GLAZING

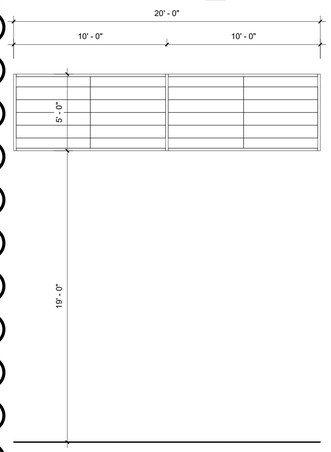


F ALUM. 1/4" TEMP. GLAZING

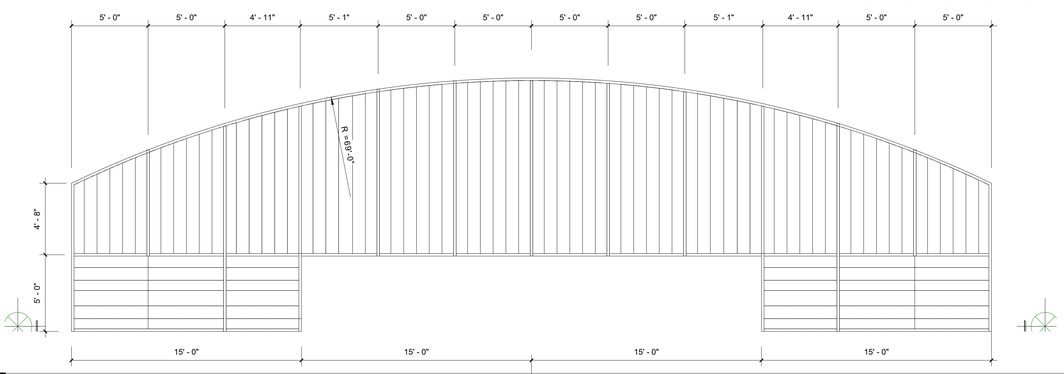


G 3/8" FRAMELESS GLASS

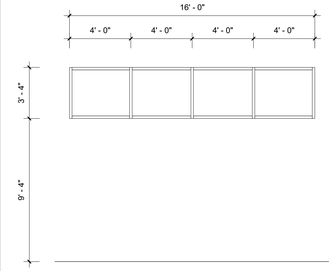
H 3/8" FRAMELESS GLASS



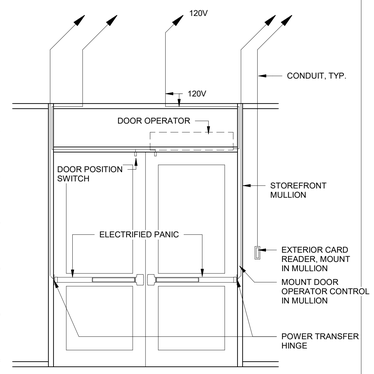
J ALUM. TRANSLUCENT GLAZING



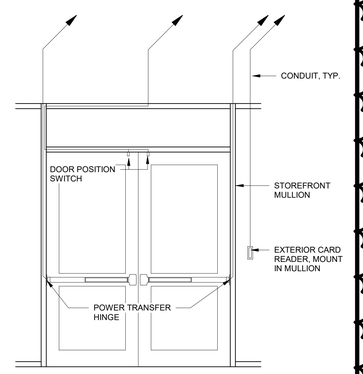
L ALUM. TRANSLUCENT GLAZING



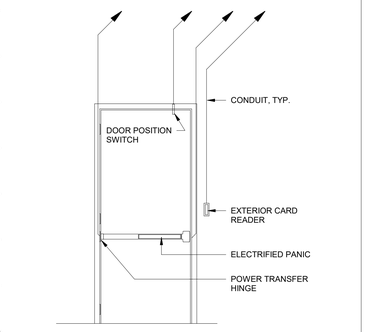
K ALUM. INSUL. GLAZING



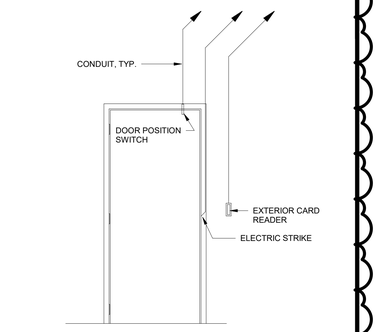
3A ACCESS CONTROL - DOOR OPERATOR



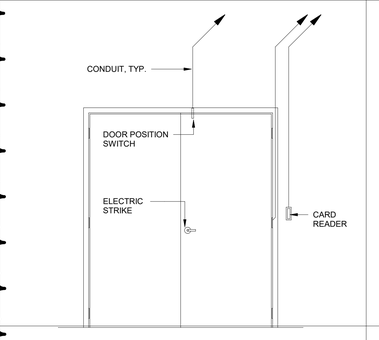
3B ACCESS CONTROL



3C ACCESS CONTROL - EXTERIOR DOOR



3D ACCESS CONTROL - INTERIOR SINGLE DOOR



3E ACCESS CONTROL - INTERIOR DOUBLE DOOR

ACCESS CONTROL NOTES:
1. ELECTRICIAN IS RESPONSIBLE ALL CONDUITS AND J-BOXES. MINIMUM CONDUIT SIZE IS 1/2". COORDINATE WITH ACCESS CONTROL SUPPLIER.
2. CABLING SHALL BE PROVIDED BY ACCESS CONTROL CONTRACTOR.

3 ACCESS CONTROL
SCALE: 1/2" = 1'-0"

STATE OF MISSOURI
JEREMY T. PROCTOR
NUMBER 2016006772
ARCHITECT
JEREMY T. PROCTOR, ARCHITECT
MO # A-2016006772

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE

NO.	REVISION DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

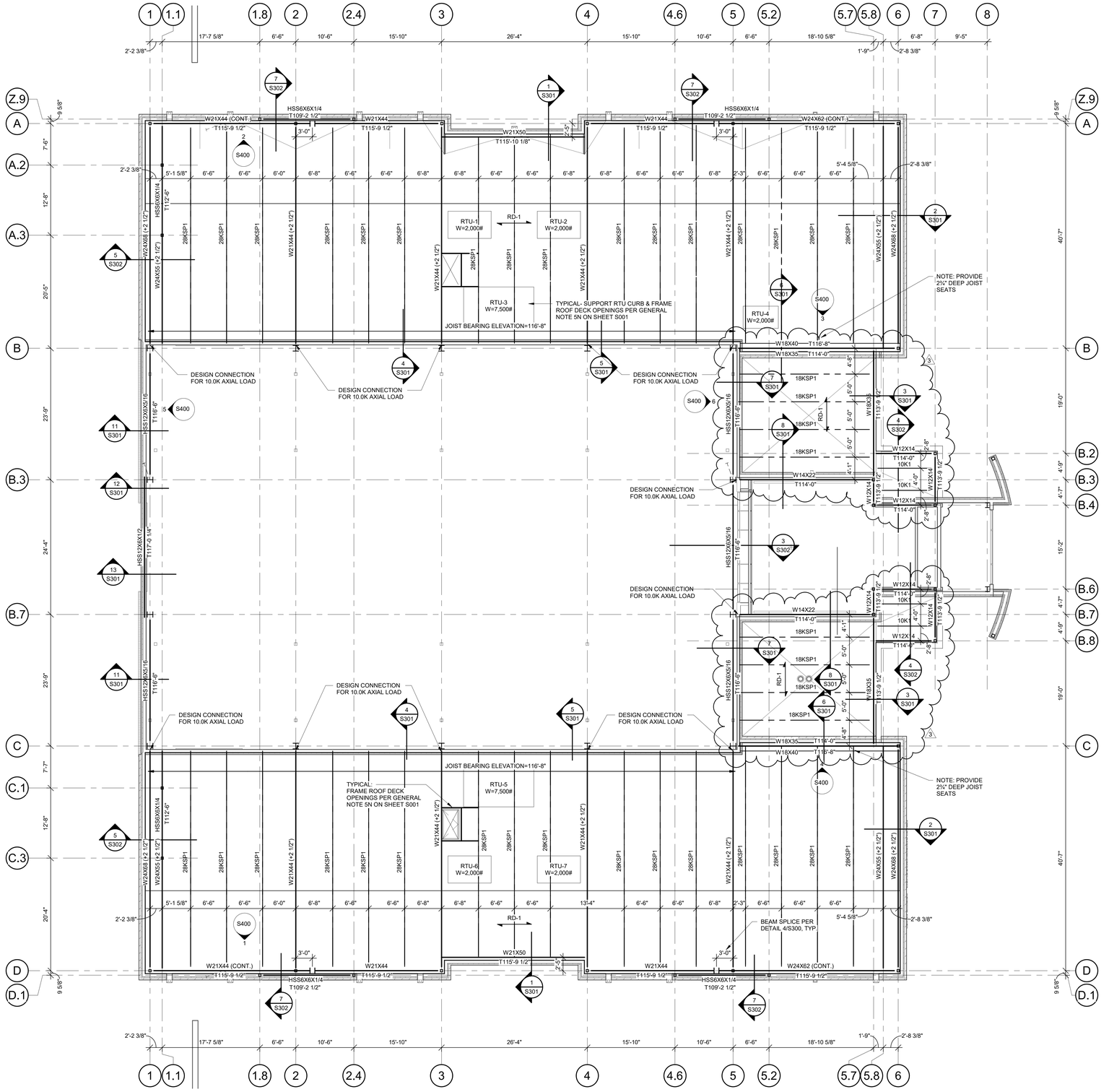
SCHEDULES

SHEET:
A911

OF:

DATE: 05-01-2023

D:\Local Revit Projects\CTAC Building-20.000_jeremy@ellison-auxier.com.rvt
5/24/2023 3:59:53 PM



1 LOW ROOF FRAMING PLAN

1/8" = 1'-0"

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE

NO.	REVISION DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

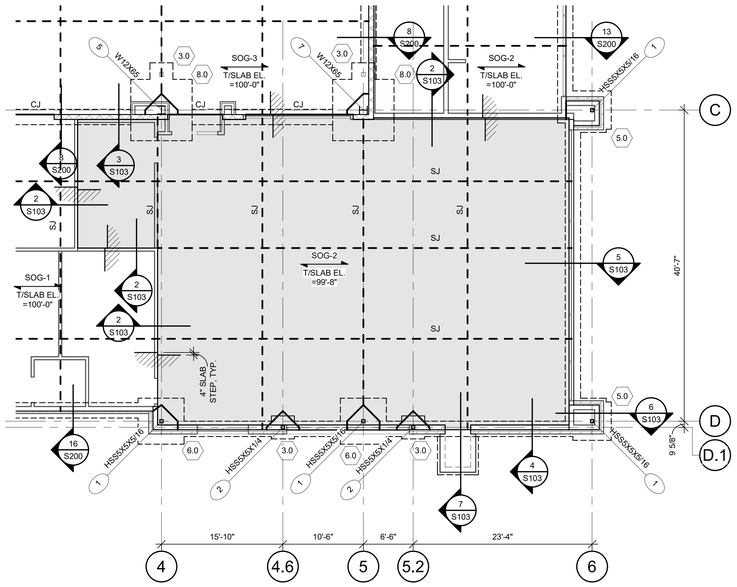
PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

LOW ROOF FRAMING PLAN

SHEET:
S101

OF: **DATE:** 5-1-23

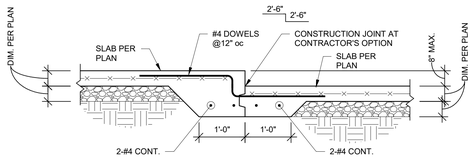
5/24/2023 10:12:32 AM U:\E-O\EAA Projects\EAA2217 - MWSU CTAC BUILDING\EAA2217 Dwg\EAA2217 -S21- MWSU CTAC Building_EJS.rvt



1 FOUNDATION PLAN - ALTERNATE BID #1

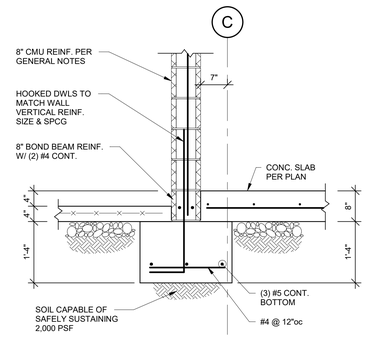
1/8" = 1'-0"

ALTERNATE BID #1 ENCOMPASSES THE RECESSED SLAB (HIGHLIGHTED IN GRAY ON PLAN). REFER TO SHEET S100 FOR ALL INFORMATION NOT SHOWN.



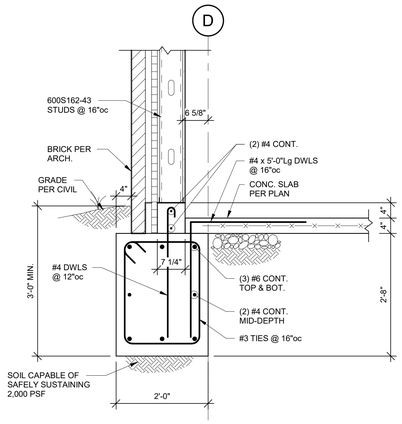
2 SECTION

3/4" = 1'-0"



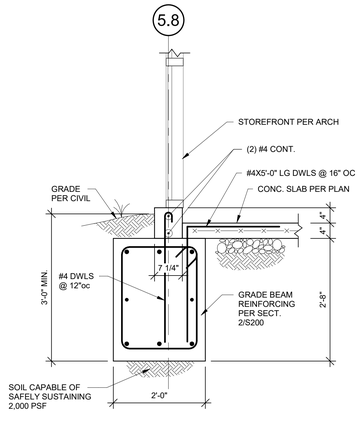
3 SECTION

3/4" = 1'-0"



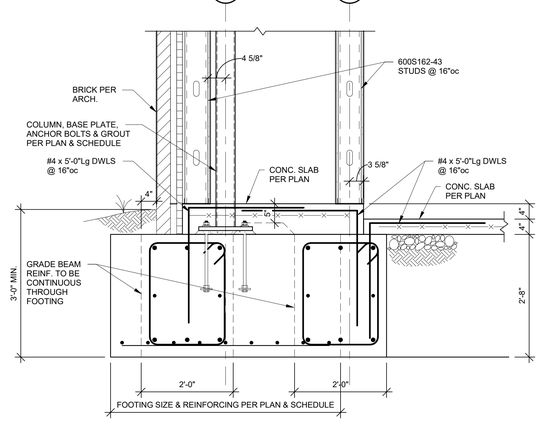
4 SECTION

3/4" = 1'-0"



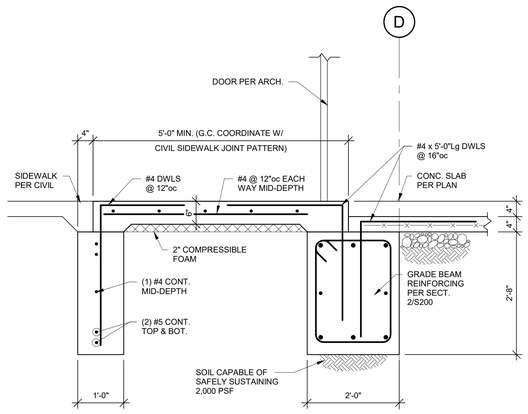
5 SECTION

3/4" = 1'-0"



6 SECTION

3/4" = 1'-0"



7 SECTION

3/4" = 1'-0"

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE

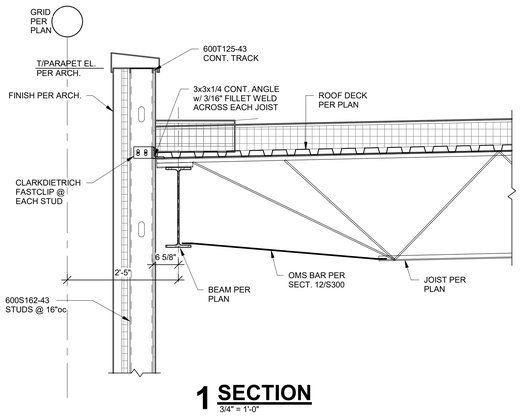
NO.	REVISION DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

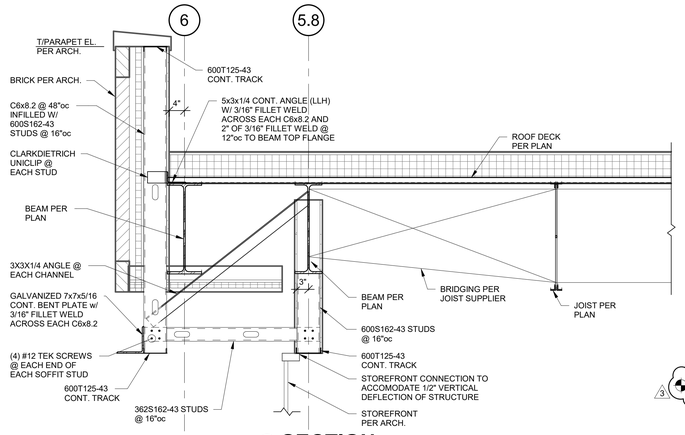
FOUNDATION PLAN - ALTERNATE BID #1

SHEET: S103

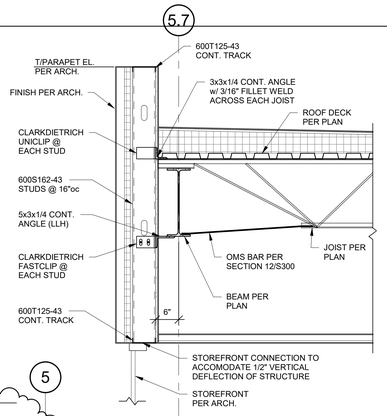
OF: **DATE:** 5-1-23



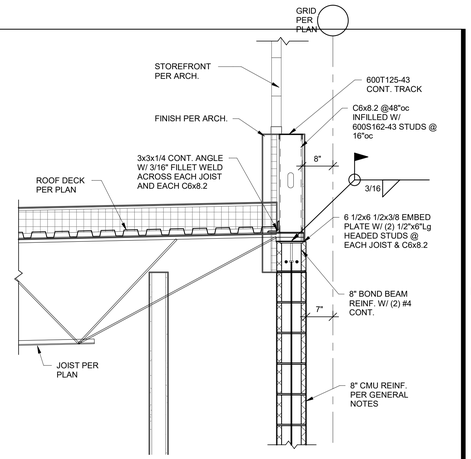
1 SECTION
3/4" = 1'-0"



2 SECTION
3/4" = 1'-0"



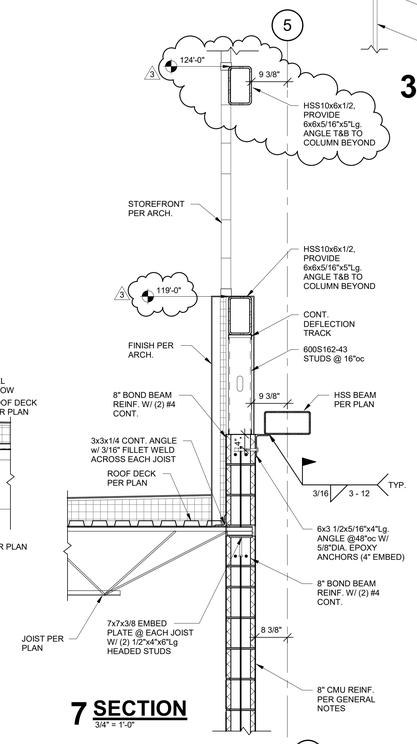
3 SECTION
3/4" = 1'-0"



4 SECTION
3/4" = 1'-0"

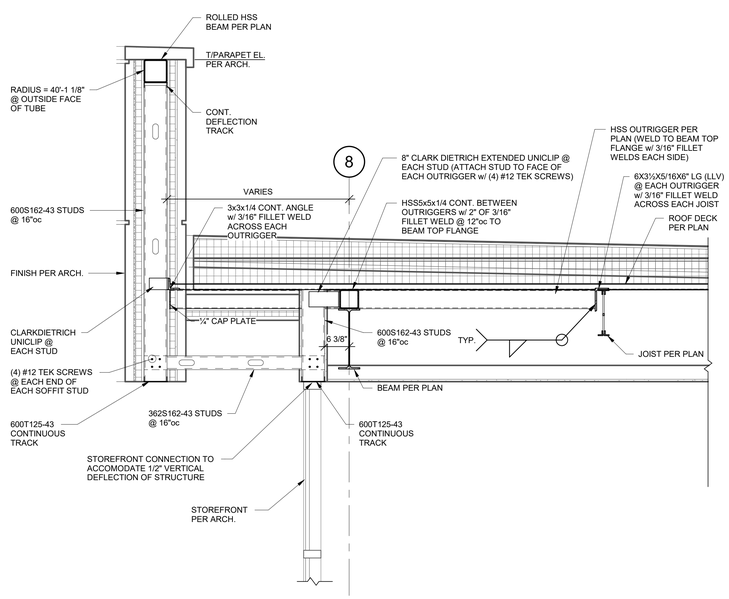
5 SECTION
3/4" = 1'-0"

6 SECTION
3/4" = 1'-0"

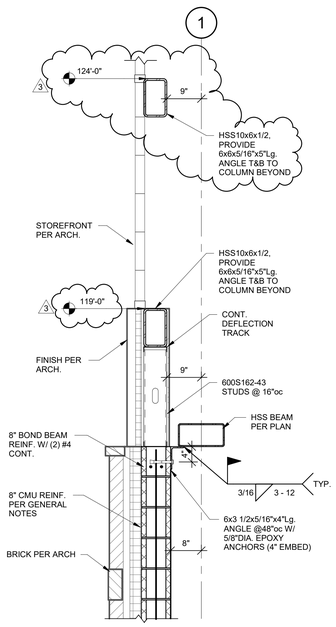


7 SECTION
3/4" = 1'-0"

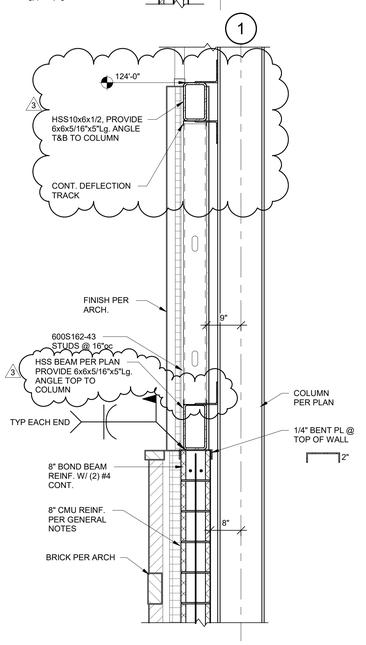
8 SECTION
3/4" = 1'-0"



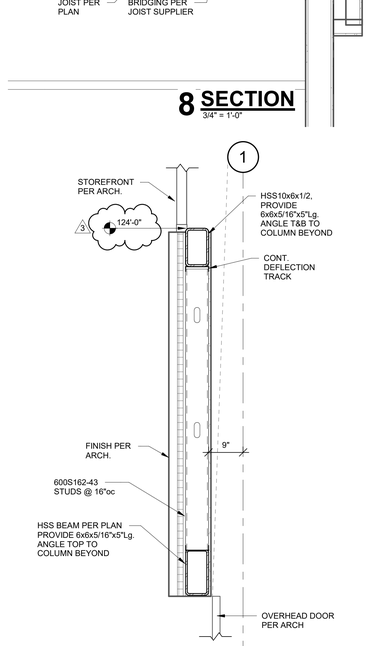
10 SECTION
3/4" = 1'-0"



11 SECTION
3/4" = 1'-0"



12 SECTION
3/4" = 1'-0"



13 SECTION
3/4" = 1'-0"

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE

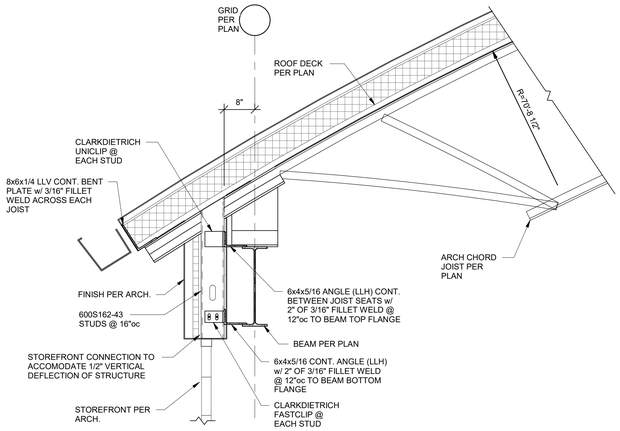
NO.	REVISION DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

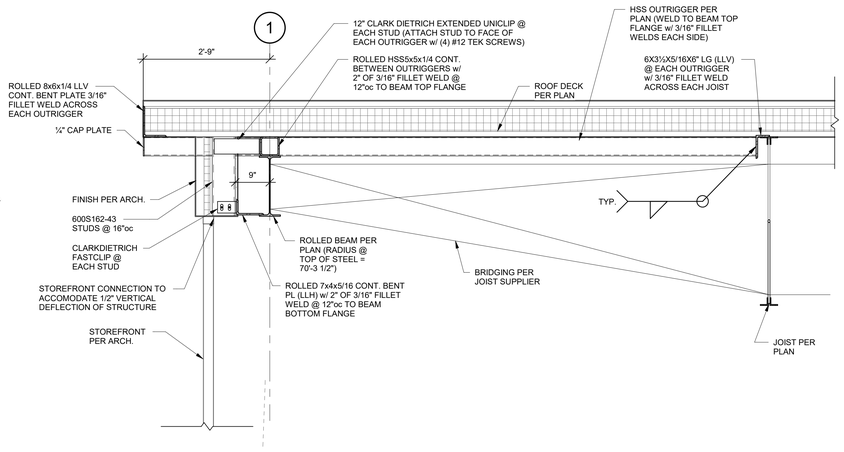
ROOF FRAMING SECTIONS

SHEET:
S301

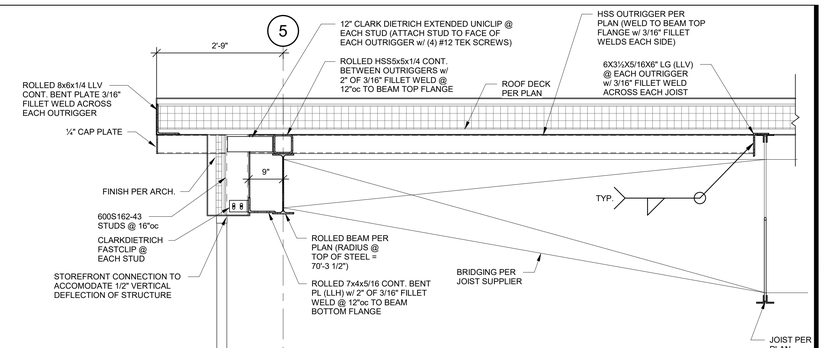
OF: DATE: 5-1-23



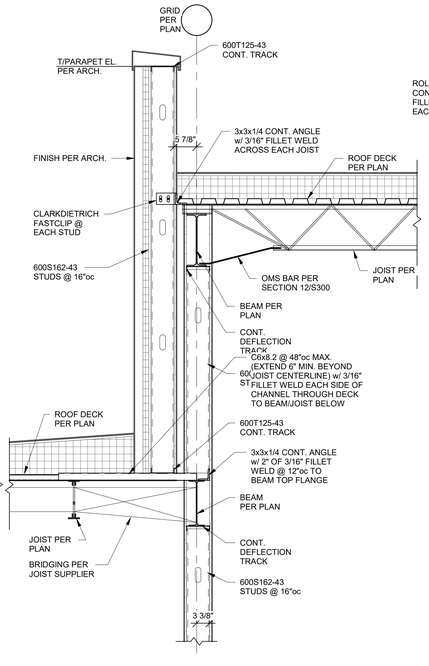
1 SECTION
3/4" = 1'-0"



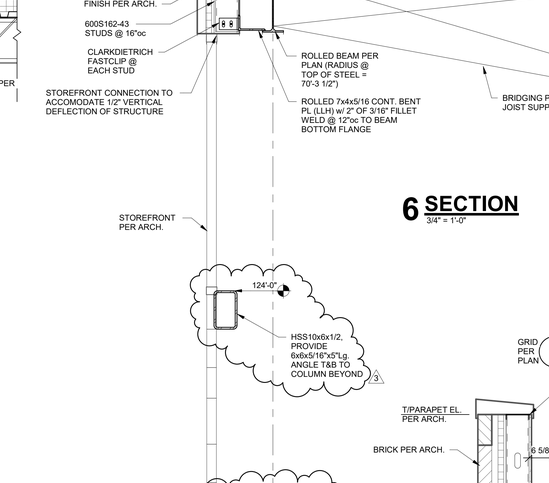
2 SECTION
3/4" = 1'-0"



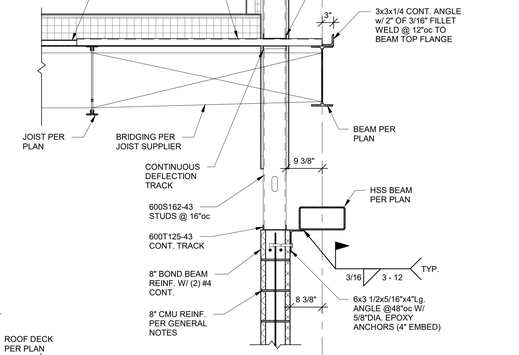
3 SECTION
3/4" = 1'-0"

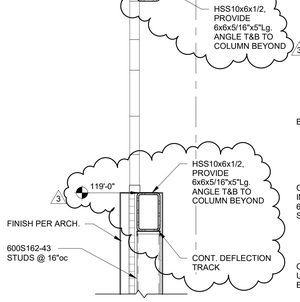


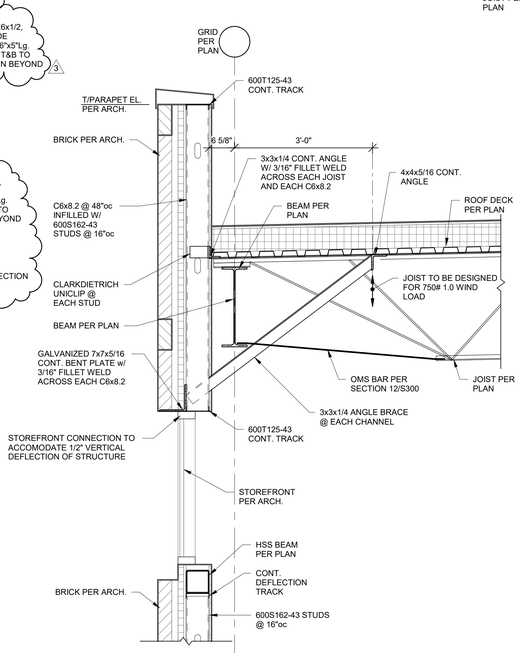
4 SECTION
3/4" = 1'-0"



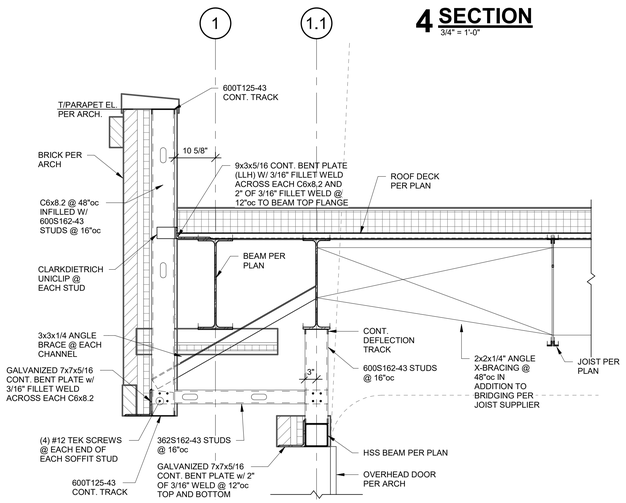
6 SECTION
3/4" = 1'-0"







7 SECTION
3/4" = 1'-0"



5 SECTION
3/4" = 1'-0"

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE

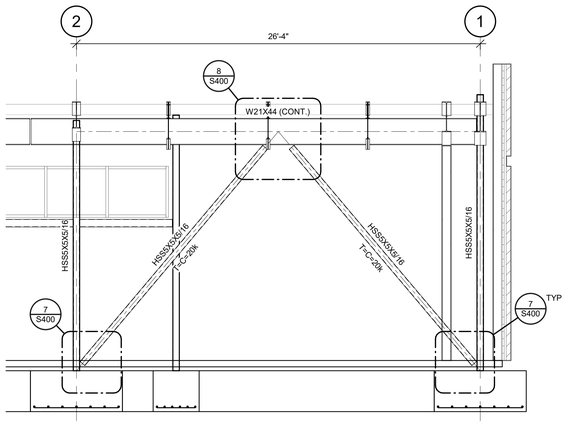
NO.	REVISION DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

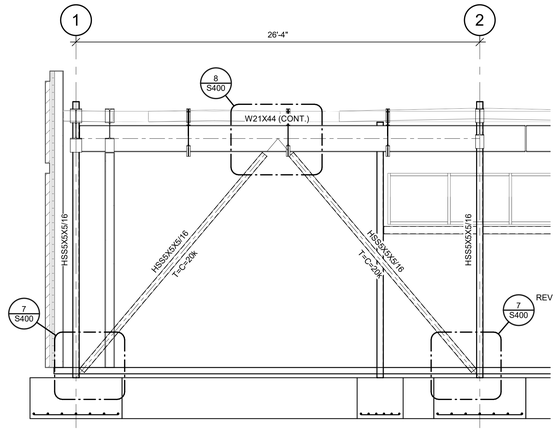
ROOF FRAMING SECTIONS

SHEET:
S302

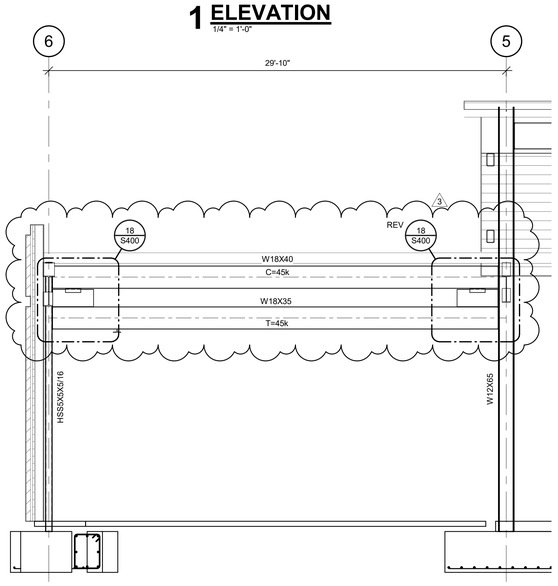
OF: **DATE:** 5-1-23



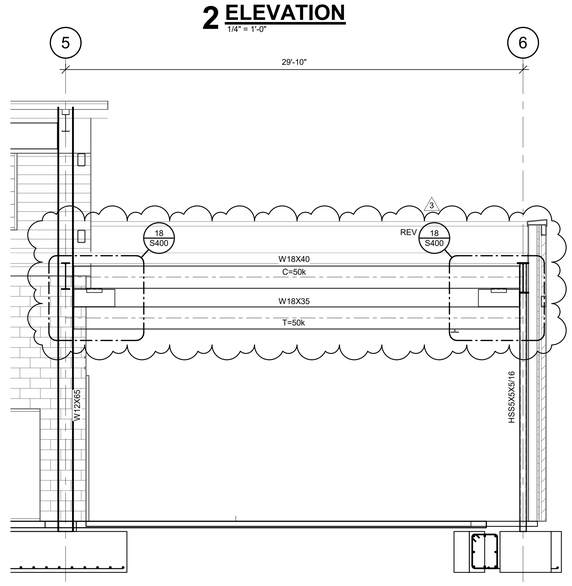
1 ELEVATION
1/4" = 1'-0"



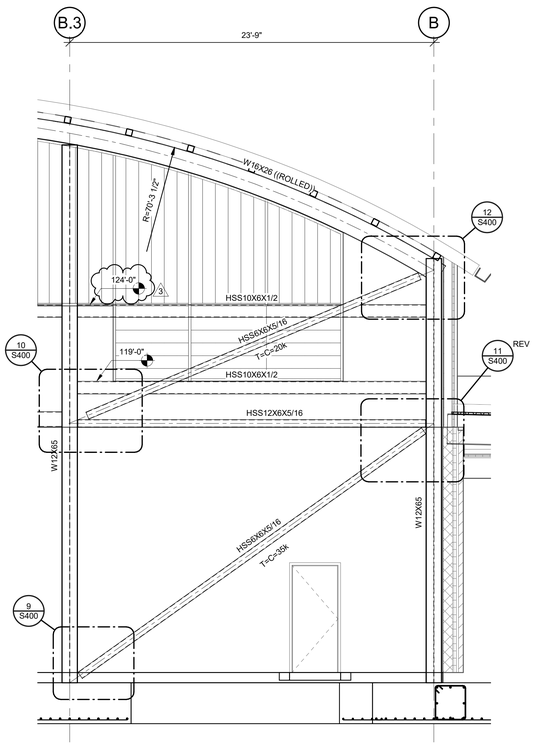
2 ELEVATION
1/4" = 1'-0"



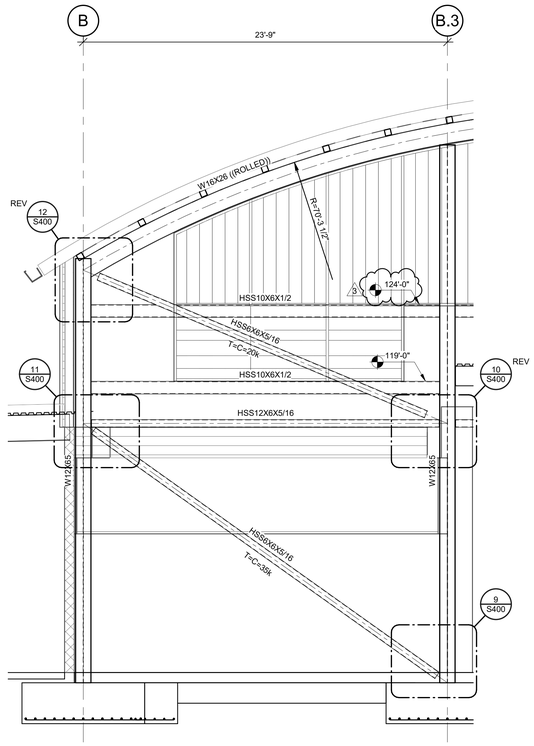
3 ELEVATION
1/4" = 1'-0"



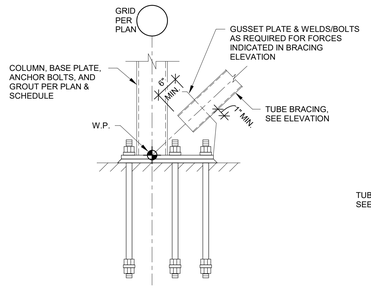
4 ELEVATION
1/4" = 1'-0"



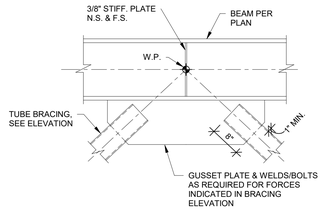
5 ELEVATION
1/4" = 1'-0"



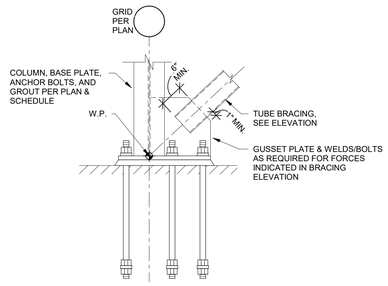
6 ELEVATION
1/4" = 1'-0"



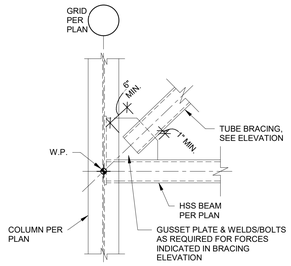
7 DETAIL
3/4" = 1'-0"



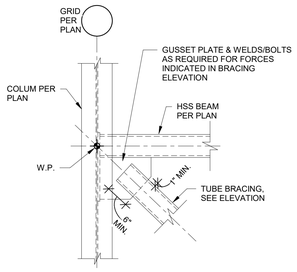
8 DETAIL
3/4" = 1'-0"



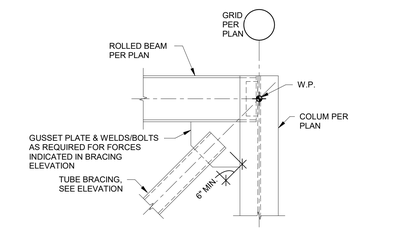
9 DETAIL
3/4" = 1'-0"



10 DETAIL
3/4" = 1'-0"



11 DETAIL
3/4" = 1'-0"



12 DETAIL
3/4" = 1'-0"

3 NOT USED

13 DETAIL
3/4" = 1'-0"

3 NOT USED

14 DETAIL
3/4" = 1'-0"

3 NOT USED

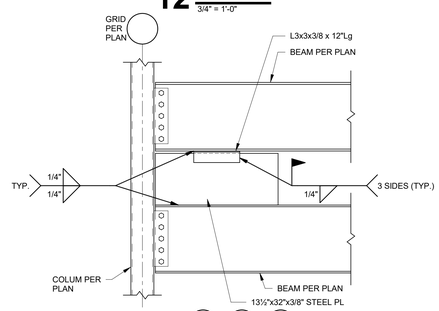
15 DETAIL
3/4" = 1'-0"

3 NOT USED

16 DETAIL
3/4" = 1'-0"

3 NOT USED

17 DETAIL
3/4" = 1'-0"



3 NOT USED

18 DETAIL
3/4" = 1'-0"

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE

NO.	REVISION DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

BRACE ELEVATIONS

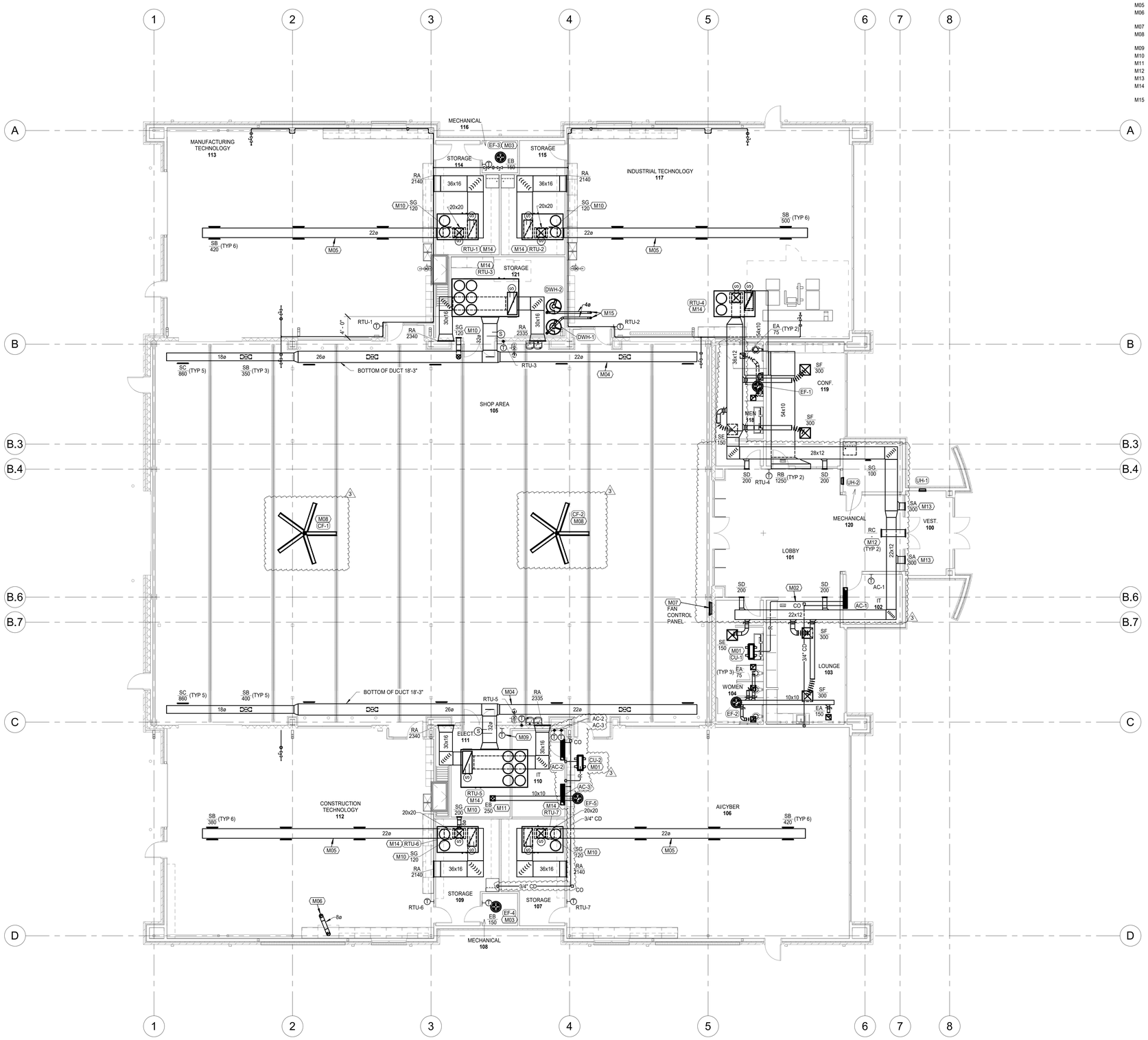
SHEET:
S400

OF: DATE: 5-1-23

FLOOR PLAN NOTES

M

M01	ROOF MOUNTED CONDENSING UNIT SET ON 4x4 TIMBERS.
M02	ROUTE REFRIGERANT PIPING IN PLENUM TO WALL MOUNTED WALL CASSETTE.
M03	10x10 UP TO ROOF MOUNTED EXHAUST FAN. PROVIDE WITH EXHAUST GRILL AND RATE OF RISE THERMOSTAT.
M04	HOLD DUCT TIGHT TO WALL AT ##'-0" A.F.F. PROVIDE STRUCTURAL BRACING OFF WALL. RE: STRUCTURAL
M05	HOLD DUCT TIGHT TO UNDERSIDE OF JOISTS.
M06	PROVIDE 8"Ø UP TO ROOF CAP. (FANTEC RCBP ROOF CAP.) OFF LAB HOOD - PROVIDED BY OTHERS.
M07	COORDINATE CONTROL PANEL LOCATION WITH OWNER PRIOR TO INSTALLATION.
M08	COORDINATE PLACEMENT OF FANS WITH ALL OTHER CEILING DEVICE/STRUCTURAL PRIOR TO INSTALLATION.
M09	RATE OF RISE THERMOSTAT FOR ELECTRICAL ROOM EXHAUST FAN.
M10	PROVIDE TAKE OFF FOR WALL GRILLE INTO STORAGE ROOM/ELECTRICAL ROOM.
M11	PROVIDE CEILING EXHAUST GRILLE AT STRUCTURE.
M12	MOUNT AS HIGH AS POSSIBLE. PROVIDE WITH WALL SLEEVE.
M13	MOUNT AS HIGH AS POSSIBLE. MATCH TRANSFER GRILL LOCATION.
M14	PROVIDE FULL SIZE DUCT CONNECTION UP TO UNITS. ROUTE CONDENSATE DISCHARGE OFF UNIT AND INDIRECT WASTE INTO ROOF GUTTER.
M15	ROUTE 4" INTAKE AND VENT PIPING FROM WATER HEATER UP TO CONCENTRIC ROOF VENT. RE: FLUE THRU ROOF DETAIL.



N

LEVEL 1 - MECHANICAL

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

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

NO.	REVISION DESCRIPTION	DATE

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

LEVEL 1 - MECHANICAL

SHEET:
M100

OF: **DATE:** 05-01-2023

Lankford Fendler + associates
1730 Walnut Street 816.221.1411
Kansas City, Missouri 64108 Fax: 816.221.1429

L.F+a Project No. 22.7184.00

STATE OF MISSOURI
ALAN W. LAMFORD
NUMBER E-24224
REGISTERED PROFESSIONAL ENGINEER
05.23.2023

5/23/2023 8:08:22 PM C:\Users\Preston\Documents\22.7184.00 CTAC MEP R21_prestonFFJDM.rvt

ROOFTOP UNIT SCHEDULE (OWNER PROVIDED/CONTRACTOR INSTALLED)

MARK NO.	MANUFACTURER	MODEL	AIRFLOW CFM	MIN O.A. CFM	EXT. S.P. (IN W.G.)	FAN HP	FAN TYPE	RPM	COOLING									HEATING-GAS			ELECTRICAL				NOTES
									AMB. (°F)	E.D.B. (°F)	E.W.B. (°F)	L.D.B. (°F)	L.W.B. (°F)	TOTAL MBH	SENS. MBH	STAGES	IEER	INPUT MBH	OUTPUT MBH	STAGES	VOLT	ø	HZ		
RTU-1	DAIKIN	MPS-SH07D	2640	500	0.75	3	FC	918	100	77	65	54.8	54.1	85.3	63	2	14.6	150	121.5	2	480	60	3		1,2,3,4,5,6,7,9,10
RTU-2	DAIKIN	MPS-SH07D	2640	500	0.75	3	FC	918	100	77	65	54.8	54.1	85.3	63	2	14.6	150	121.5	2	480	60	3		1,2,3,4,5,6,7,9,10
RTU-3	DAIKIN	MPS-015B	5500	825	0.75	5 (2 total)	FC	791	100	77	65	54.9	54.4	174	131	2	14.8	350	284	2	480	60	3		1,2,3,4,5,6,8,9,10
RTU-4	DAIKIN	MPS-SH07D	3000	600	0.75	3	FC	918	100	77	65	54.8	54.1	85.3	63	2	14.6	150	121.5	2	480	60	3		1,2,3,4,5,6,7,9,10
RTU-5	DAIKIN	MPS-015B	5500	825	0.75	5 (2 total)	FC	791	100	77	65	54.9	54.4	174	131	2	14.8	350	284	2	480	60	3		1,2,3,4,5,6,8,9,10
RTU-6	DAIKIN	MPS-SH07D	2640	500	0.75	3	FC	918	100	77	65	54.8	54.1	85.3	63	2	14.6	150	121.5	2	480	60	3		1,2,3,4,5,6,7,9,10
RTU-7	DAIKIN	MPS-SH07D	2640	500	0.75	3	FC	918	100	77	65	54.8	54.1	85.3	63	2	14.6	150	121.5	2	480	60	3		1,2,3,4,5,6,7,9,10

NOTES:
1. PROVIDE WITH DDC CONTROLS, COTTONWOOD FILTERS SUCH AS AIR SOLUTION COMPANY MEDIUM DUTY COMMERCIAL GRADE FILTERS, HINGED ACCESS PANELS, DISCONNECT SWITCH, CONDENSATE DRAIN TRAP, AND DRAIN PAN OVERFLOW SWITCH TO SHUT DOWN UNIT IF DRAIN BECOMES CLOGGED.
2. PROVIDE WITH 2" MERV 13 FILTERS.
3. PROVIDE WITH ECONOMIZER WITH DIFFERNTIAL ENTHALPY CONTROL AND BAROMETRIC RELIEF.
4. PROVIDE WITH UNIT MOUNTED GFCI OUTLET WITH WEATHERPROOF COVER. OUTLET TO BE FIELD POWERED/WIRED FROM BUILDING POWER
5. PROVIDE WITH CURB OF HEIGHT REQUIRED TO HAVE THE TOP OF THE CURB A MINIMUM OF 8" ABOVE THE TOP OF THE ROOF SURFACE.
6. PROVIDE WITH HOT GAS REHEAT COIL SECTION
7. UNIT TO BE CONFIGURED FOR DOWNFLOW DISCHARGE AND RETURN.
8. UNIT TO BE CONFIGURED FOR HORIZONTAL SUPPLY DISCHARGE WITH BOTTOM RETURN.
9. PROVIDE WITH 2 SPEED SAF CONTROL
10. PROVIDE WITH HOT GAS REHEAT COIL SECTION

DIFFUSER SCHEDULE

MARK	MANUFACTURER	MODEL	FACE SIZE (IN.)	NECK SIZE (IN.)	FRAME TYPE*	FINISH	NOTES
SA	PRICE	520D	18x8	16x6	SURFACE	PRIME COAT	
SB	PRICE	620D	26x10	24x8	DUCT	MILL	1
SC	PRICE	620D	26x14	24x12	DUCT	MILL	1
SD	PRICE	520D	12x12	10x10	SURFACE	PRIME COAT	
SE	PRICE	SPD	24x24	8"	LAY-IN	WHITE	
SF	PRICE	SPD	24x24	10"	LAY-IN	WHITE	
SG	PRICE	520D	12x8	10x6	SURFACE	PRIME COAT	1
RA	PRICE	510ZD	38x26	36x24	SURFACE	PRIME COAT	2
RB	PRICE	510ZD	46x12	44x10	SURFACE	PRIME COAT	2
RC	PRICE	530	18X8	16x6	SURFACE	PRIME COAT	
EA	PRICE	PDDR	12x12	8"	SURFACE	WHITE	
EB	PRICE	PDDR	12x12	10x10	SURFACE	MILL	

NOTES:
1. PROVIDE WITH OPPOSED BLADE DAMPER, SPIRAL DUCT FRAME, FRONT BLADES PARALLEL TO LONG DIMENSION, COUNTERSUNK SCREW HOLES
2. PROVIDE WITH OPPOSED BLADE DAMPER FRONT BLADES PARALLEL TO LONG DIMENSION, COUNTERSUNK SCREW HOLES

*CONTRACTOR SHALL VERIFY CEILING TYPE PRIOR TO ORDERING DIFFUSERS.

VENTILATION SCHEDULE

UNIT	SPACE	AREA (S.F.)	PEOPLE/ 1000 S.F.	VENTILATION			TOTAL OA CFM
				CFM/ PERSON	CFM/ S.F.	REQUIRED CFM	
RTU-1	CLASSROOM	1993	35	10	0.12	479*	500
	STORAGE	237	-	-	0.06	14	
RTU-2	CLASSROOM	1993	35	10	0.12	479*	500
	STORAGE	237	-	-	0.06	14	
RTU-3	SHOP AREA	3905	35	10	0.12	819*	825
RTU-4	CONF.	343	50	5	0.06	81*	275
	LOBBY	744	30	7.5	0.06	90*	
	VEST.	139	-	-	0.06	8	
	LOUNGE	352	30	7.5	0.06	96*	
RTU-5	SHOP AREA	3905	35	10	0.12	819*	825
RTU-6	CLASSROOM	1993	35	10	0.12	479*	500
	STORAGE	237	-	-	0.06	14	
RTU-7	CLASSROOM	1993	35	10	0.12	479*	500
	STORAGE	237	-	-	0.06	14	

*OUTSIDE AIR BASED ON ACTUAL OCCUPANCY

3

CIRCULATION FAN SCHEDULE

MARK NO.	MANUFACTURER	MODEL	DIAMETER FT.	# OF AIRFOILS	AIRFLOW (CFM)	SOUND LEVEL (DBA)	RPM	DRIVE	COLOR	ELECTRICAL			HP/WATTS	NOTES
										VOLT	ø	HZ		
CF-1	GREENHECK	DC-5-12-13LV	12	5	44,605	45	92	DIRECT	MILL	115	1	60	206W	1
CF-2	GREENHECK	DC-5-12-13LV	12	5	44,605	45	92	DIRECT	MILL	115	1	60	206W	1

3 3

NOTES:
1. PROVIDE WITH STRUCTURAL DELIGATED DESIGN MOUNTING BRACKET WITH FIELD VERIFIED EXTENSION RODS, ALUMINUM BLADES, STANDARD TOUCHSCREEN CONTROL.

CONDENSING UNIT SCHEDULE

MARK NO.	MANUFACTURER	MODEL	COOLING (MBH)	HEATING AT 5°F (MBH)	AMB. (°F)	SAT. SUCTION TEMP (°F)	STAGES	SEER	ELECTRICAL			NOTES
									VOLT	ø	HZ	
CU-1	MITSUBISHI	PUZ-A18NKA7	18.0	19.0	105	45	1	18.5	208	1	60	1
CU-2	DAIKIN	4MXL36TVJU	36.0	21.6	95	45	1	16.9	208	1	60	1

3

NOTES:
1. PROVIDE WITH MOUNTING PAD, COMPRESSOR CRANKCASE HEATER, COMPRESSOR TIME-OFF CONTROL, AND COTTON WOOD FILTER / HAIL GUARD. AND LOW AMBIENT CONTROL. PROVIDE WITH DKN PLUS INTERFACE.

FAN SCHEDULE

MARK NO.	MANUFACTURER	MODEL	TYPE	AIRFLOW (CFM)	S.P. (IN W.G.)	RPM	DRIVE	ELECTRICAL			HP/ WATTS	NOTES
								VOLT	ø	HZ		
EF-1	GREENHECK	G070	DONWBLAST	150	0.25	1300	DIRECT	120	1	60	1/60	1
EF-2	GREENHECK	G090	DONWBLAST	375	0.25	1300	DIRECT	120	1	60	1/25	1
EF-3	GREENHECK	G070	DONWBLAST	150	0.25	1300	DIRECT	120	1	60	1/60	1,2
EF-4	GREENHECK	G070	DONWBLAST	150	0.25	1300	DIRECT	120	1	60	1/60	1,2
EF-5	GREENHECK	G070	DONWBLAST	250	0.25	1300	DIRECT	120	1	60	1/60	1,2

NOTES:
1. PROVIDE WITH 14" ROOF CURB, DISCONNECT SWITCH, SPEED CONTROLLER BIRD SCREEN, AND DAMPER.
2. PROVIDE WITH RATE OF RISE THERMOSTAT (SET AT 80f) FANTECH FAT10 ATTIC THERMOSTAT 120V

AIR CONDITIONING UNIT SCHEDULE

MARK NO.	MANUFACTURER	MODEL	ARRANGEMENT	AIRFLOW CFM	COOLING MBH	HEATING MBH	ELECTRICAL			NOTES
							VOLT	ø	HZ	
AC-1	MITSUBISHI	PKA-A18HA7	WALL MOUNTED	425	18	19	208	1	60	1
AC-2	DAIKIN	FTXS18LVJU	WALL MOUNTED	580	18	21.6	208	1	60	1
AC-3	DAIKIN	FTXS18LVJU	WALL MOUNTED	580	18	21.6	208	1	60	1

3

NOTES: 1 PROVIDE WITH DDC CONTROL INTERFACE, REMOTE SENSOR, AND DISCONNECT SWITCH.

UNIT HEATER SCHEDULE

MARK NO.	MANUFACTURER	MODEL	TYPE	AIRFLOW (CFM)	HEATING (ELEC.)		ELECTRICAL			NOTES
					OUTPUT (MBH)	INPUT (KW*)	VOLT	ø	HZ	
UH-1	BERKO	FRC1512F	WALL	100	5.1	1.5	120	1	60	1
UH-2	BERKO	FRC1512F	WALL	100	5.1	1.5	120	1	60	1

NOTES:
1. PROVIDE WITH INTEGRAL THERMOSTAT, 14 GAUGE SECURITY FRONT COVER AND SURFACE MOUNTING FRAME FOR SURFACE-MOUNT INSTALLATION. COORDINATE FINISH WITH ARCHITECT.
2. ADD ALTERNATE BID

*HEATING KW IS NET CAPACITY AT VOLTAGE AND PHASE INDICATED.

GENERAL NOTES (TYPICAL ALL SHEETS)

A. MECHANICAL CONTRACTOR IS RESPONSIBLE TO SEE THAT WORK MEETS AND IS IN ACCORDANCE WITH ALL REQUIREMENTS OF FEDERAL, STATE, AND LOCAL LAWS AND CODES AND/OR REQUIREMENTS, INCLUDING HEALTH CODES AND BUILDING OWNER.

B. COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO INSTALLATION TO AVOID ROUTING CONFLICTS.

C. MECHANICAL CONTRACTOR SHALL AIR BALANCE ALL GRILLES TO CFM'S SHOWN ON PLAN.

D. INSTALL ELASTOMERIC JOINT SEALER AROUND ALL DUCTS, PIPES, ETC. PASSING THRU INTERIOR NON-RATED CONCRETE AND MASONRY WALLS, GYPSUM-BOARD PARTITIONS, AND CONCRETE FLOOR/ROOF SLABS. FOR FIRE RATED INTERIOR CONCRETE AND MASONRY WALLS, GYPSUM-BOARD PARTITIONS, AND CONCRETE FLOOR/ROOF SLABS SEAL ALL DUCTS, PIPES, ETC. INSTALL FIRESTOP MATERIALS IN ALL GAPS PRIOR TO SEALANT APPLICATION. INSTALL SEALER ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.

E. ALL CABLE TIES FOR LOW VOLTAGE SYSTEMS LOCATED IN PLENUMS UTILIZED FOR AIR MOVEMENT THAT ARE NOT INSTALLED IN CONDUIT SHALL BE 25/50 FLAME AND SMOKE RATED, HELLERMANN TYTON T50R2C2UL OR EQUIVALENT.

MECHANICAL SYMBOLS

- NEW DUCTWORK
- FLEX DUCT
- SUPPLY DUCT
- RETURN DUCT
- EXHAUST DUCT
- SUPPLY DIFFUSER
- RETURN GRILLE
- EXHAUST GRILLE
- R/D — RISE OR DROP IN DUCT
- SUPPLY DUCT DOWN
- SUPPLY DUCT UP
- RETURN DUCT DOWN
- RETURN DUCT UP
- EXHAUST DUCT DOWN
- EXHAUST DUCT UP
- WALL MOUNTED DIFFUSER/GRILLE
- MANUAL VOLUME DAMPER
- THERMOSTAT
- CD — CONDENSATE DRAIN
- ? — EQUIPMENT TYPE AND DESIGNATION
- SA / 200 — TYPE MARK- (S_) SUPPLY, (R_) RETURN, (E_) EXHAUST DIFFUSER OR GRILLE TYPE MARK AND CFM / CFM

STATE OF MISSOURI
ALLAN W. LAMFORD
NUMBER E-24224
REGISTERED PROFESSIONAL ENGINEER
05.23.2023

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

NO.	REVISION DESCRIPTION	DATE

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

MECHANICAL SCHEDULES, GENERAL NOTES, & SYMBOLS

SHEET:
M300

OF: **DATE:** 05-01-2023

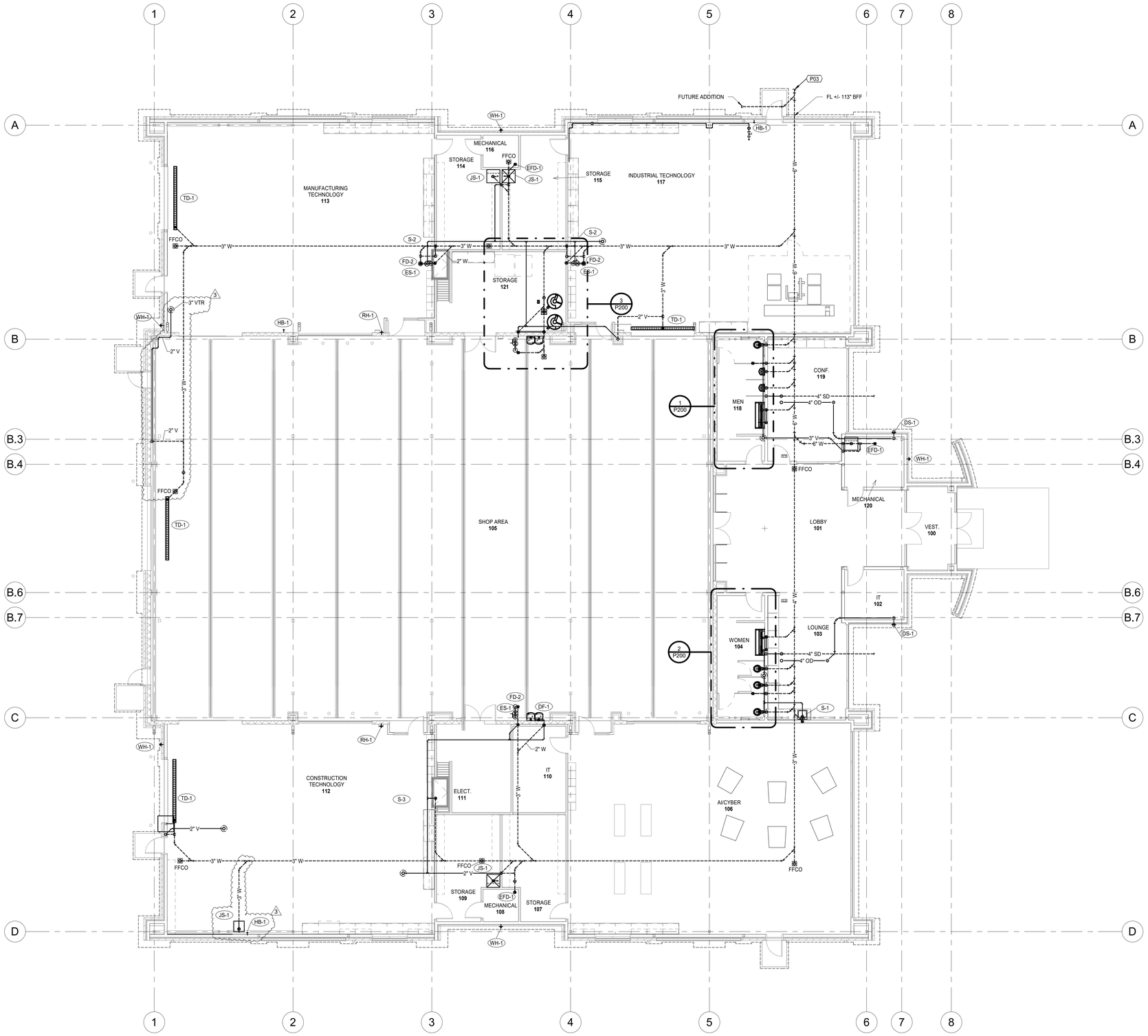
Lankford Fendler + associates
1730 Walnut Street 816.221.1411
Kansas City, Missouri 64108 Fax: 816.221.1429

L|F+a Project No. 22.7184.00

5/23/2023 8:08:23 PM C:\Users\Preston\Documents\22.7184.00 CTAC MEP R21_prestonFFJQM.rvt

FLOOR PLAN NOTES

P03 EXTEND NEW WASTE PIPE 5'-0" OUTSIDE THE BUILDING. COORDINATE WITH CIVIL CONTRACTOR ON EXACT LOCATION AND DEPTH PRIOR TO CONSTRUCTION.



N

LEVEL 1 - WASTE/VENT

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

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

NO.	REVISION DESCRIPTION	DATE

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

LEVEL 1 - WASTE/VENT

SHEET:
P100

OF: **DATE:** 05-01-2023

Lankford Fendler + associates
1730 Walnut Street 816.221.1411
Kansas City, Missouri 64108 Fax: 816.221.1429

L.F+a Project No. 22.7184.00

STATE OF MISSOURI
ALAN W. LAMFORD
NUMBER E-24224
REGISTERED PROFESSIONAL ENGINEER
05.23.2023

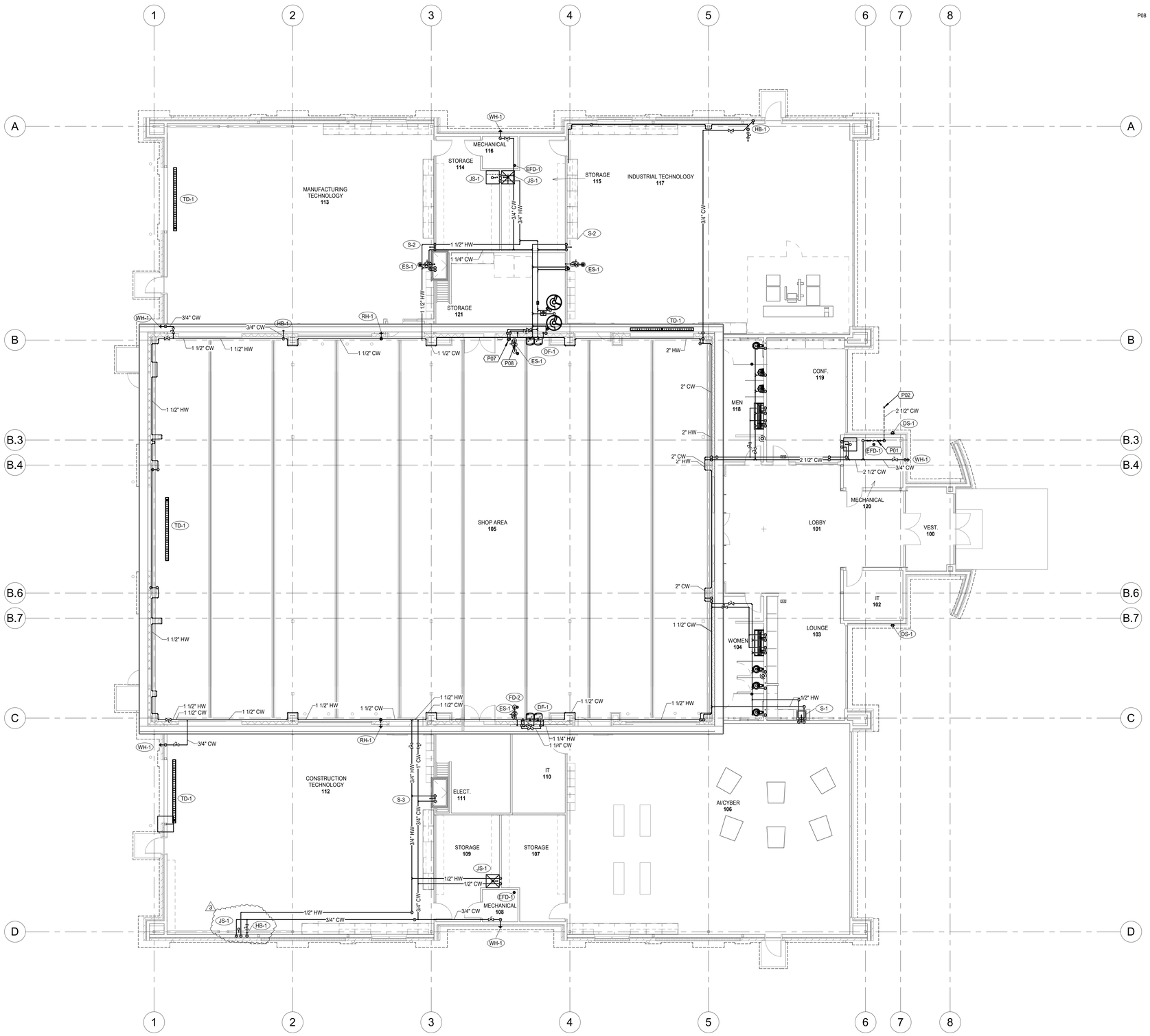
P FLOOR PLAN NOTES

P01 PROVIDE NEW 2 1/2" RPZ BACKFLOW PREVENTER WATTS MODEL LF-909 OR EQUAL. INSTALL PER MANUFACTURER'S REQUIREMENTS. ROUTE DRAIN FROM AIR GAP FITTING TO FLOOR DRAIN AND INDIRECT WASTE.

P02 EXTEND NEW DOMESTIC WATER PIPE 5'-0" OUTSIDE THE BUILDING. COORDINATE LOCATION WITH CIVIL CONTRACTOR.

P07 PROVIDE HAWS MODEL 9201H THERMOSTATIC MIXING VALVE IN ACCESSIBLE LOCATION. MAKE ALL CONNECTIONS PER MANUFACTURER'S RECOMMENDATIONS. ROUTE 1 1/4" TEPID WATER FROM OUTLET TO EMERGENCY FIXTURE.

P08 CONNECT 1 1/4" TEPID WATER TO EMERGENCY FIXTURE PER MANUFACTURER'S RECOMMENDATIONS.



LEVEL 1 - WATER

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

STATE OF MISSOURI
ALAN W. LANKFORD
NUMBER E-24224
REGISTERED PROFESSIONAL ENGINEER
05.23.2023

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

NO.	REVISION DESCRIPTION	DATE

PROJECT
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

LEVEL 1 - WATER

Lankford Fendler + associates
1730 Walnut Street 816.221.1411
Kansas City, Missouri 64108 Fax: 816.221.1429

L|F+a Project No. 22.7184.00

SHEET:
P101

OF: DATE: 05-01-2023

FLOOR PLAN NOTES

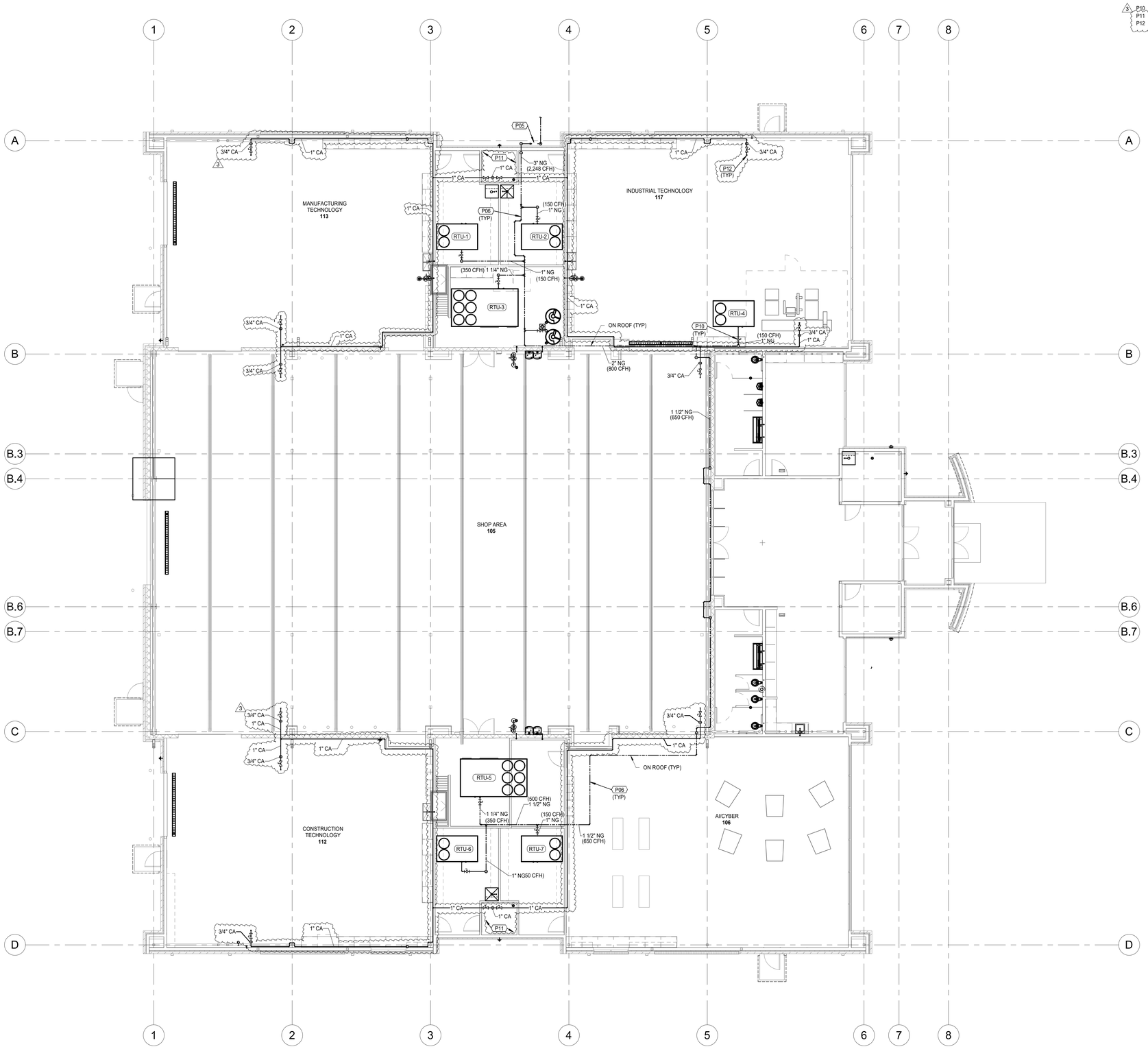
P05 NEW GAS METER BY UTILITY. COORDINATE PLACEMENT WITH UTILITY AND OWNER. TOTAL CONNECTED LOAD: 2,248 CFH, 11 W.C., 350' DEVELOPED LENGTH. PIPING SIZED PER TABLE 402.4(3) ON 2018 IFGC.

P06 SUPPORT NATURAL GAS PIPING ON ROOF WITH POLYMER SUPPORTS IN ACCORDANCE WITH NATIONAL FUEL GAS CODE. RE: DETAIL.

3 P10 CONNECT NATURAL GAS TO EQUIPMENT WITH GAS COCK, DIRT LEG, AND UNION.

P11 AIR COMPRESSOR TO BE PROVIDED BY OTHERS.

P12 COORDINATE FINAL COMPRESSED AIR DROP WITH OWNER AND EQUIPMENT.



LEVEL 1 - NATRUAL GAS
SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
ALAN W. LANKFORD
NUMBER E-24224
REGISTERED PROFESSIONAL ENGINEER
05.23.2023

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

NO.	REVISION DESCRIPTION	DATE

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

LEVEL 1 - NATRUAL GAS

SHEET:
P102

OF: **DATE:** 05-01-2023

Lankford Fendler + associates
1730 Walnut Street 816.221.1411
Kansas City, Missouri 64108 Fax: 816.221.1429

L.F+a Project No. 22.7184.00

5/23/2023 8:08:33 PM C:\Users\Preston\Documents\22.7184.00 CTAC MEP R21_prestonFFJQM.rvt

PLUMBING FIXTURE SCHEDULE

MARK NO.	FIXTURE TYPE	MANUFACTURER	MODEL NO.	DESCRIPTION	MINIMUM CONNECTION SIZE			
					CW	HW	WASTE	VENT
WC-1	WATER CLOSET (ADA)	AMERICAN-STANDARD	3043.001 "MADERA"	FLOOR MOUNTED FLUSH VALVE, WHITE VITREOUS CHINA, HIGH EFFICIENCY, DIRECT FED SIPHON JET ACTION, FULLY GLAZED 2" TRAP WAY, ELONGATED BOWL, WITH 1-1/2" TOP SPUD, 16-1/2" RIM HEIGHT. SLOAN "OPTIMA" 8111-1.28 (1.28 GPF) BATTERY OPERATED ELECTRONIC DIAPHRAGM FLUSH VALVE WITH MANUAL RELEASE, VACUUM BREAKER AND ANGLE STOP. ACCESSORIES: CHURCH 9500SSCT WHITE OPEN FRONT SEAT LESS COVER WITH SELF SUSTAINING CHECK HINGES, BOLTS AND CAPS. NOTE: MOUNT FLUSH VALVE TO WIDE SIDE OF FIXTURE.	1"	-	4"	2"
WC-2	WATER CLOSET	AMERICAN-STANDARD	2234.001 "MADERA"	FLOOR MOUNTED FLUSH VALVE, WHITE VITREOUS CHINA, HIGH EFFICIENCY, DIRECT FED SIPHON JET ACTION, FULLY GLAZED 2" TRAP WAY, ELONGATED BOWL, WITH 1-1/2" TOP SPUD, 15" RIM HEIGHT. SLOAN "OPTIMA" 8111-1.28 (1.28 GPF) BATTERY OPERATED ELECTRONIC DIAPHRAGM FLUSH VALVE WITH MANUAL RELEASE, VACUUM BREAKER AND ANGLE STOP. ACCESSORIES: CHURCH 9500SSCT WHITE OPEN FRONT SEAT LESS COVER WITH SELF SUSTAINING CHECK HINGES, BOLTS AND CAPS.	1"	-	4"	2"
U-1	URINAL (ADA)	AMERICAN-STANDARD	6590.001 "WASHBROOK"	WHITE VITREOUS CHINA, WALL-HUNG, HIGH EFFICIENCY WASHOUT FLUSH ACTION, INTEGRAL FLUSHING RIM, 3/4" TOP SPUD, 2" OUTLET. SLOAN "OPTIMA PLUS" 8186-0.5 (0.5 GPF) BATTERY OPERATED ELECTRONIC FLUSH VALVE WITH MANUAL RELEASE, VACUUM BREAKER AND ANGLE STOP. ACCESSORIES: J. R. SMITH URINAL SUPPORT. NOTE: MOUNT FIXTURE RIM 17" ABOVE FINISHED FLOOR.	3/4"	-	2"	1-1/2"
U-2	URINAL	AMERICAN-STANDARD	6590.001 "WASHBROOK"	WHITE VITREOUS CHINA, WALL-HUNG, HIGH EFFICIENCY WASHOUT FLUSH ACTION, INTEGRAL FLUSHING RIM, 3/4" TOP SPUD, 2" OUTLET. SLOAN "OPTIMA PLUS" 8186-0.5 (0.5 GPF) BATTERY OPERATED ELECTRONIC FLUSH VALVE WITH MANUAL RELEASE, VACUUM BREAKER AND ANGLE STOP. ACCESSORIES: J. R. SMITH URINAL SUPPORT. NOTE: MOUNT FIXTURE RIM 24" ABOVE FINISHED FLOOR.	3/4"	-	2"	1-1/2"
L-1	LAVATORY (ADA)	BRADLEY	LD-5010	WALL HUNG TWO STATION BRADLEY OMNIDECK WITH WASHBAR. WB1 CHROME-PLATED WASHBAR FAUCET WITH INFRARED CONTROL. ACCESSORIES: PROVIDE LEONARD 170-LF LEAD FREE BRONZE THERMOSTATIC MIXING VALVE WITH 0.25 GPM MINIMUM FLOW RATE, INTEGRAL CHECK VALVES, DISCHARGE SET AT 105 F, MOUNTED DOWNSTREAM OF FIXTURE STOPS. WITH HOT AND COLD WATER PIPED TO VALVE, TEMPERED AND COLD WATER TO LAVATORY. CHICAGO FAUCETS MODEL 327-XCP GRID DRAIN, 1-1/4" X 1-1/2" 17 GA. SEMI-CAST BRASS P-TRAP WITH CLEANOUT AND CHROME-PLATED RISERS WITH LOOSE KEY ANGLE STOPS. PROVIDE WITH FULLY MOLDED FLEXIBLE VINYL INSULATION KIT TO COVER TRAP, SUPPLIES AND STOPS, TRUBRO E-Z LAV GUARD.	1/2"	1/2"	1-1/2"	1-1/2"
S-1	SINK (ADA)	ELKAY	LRAD-1918	SINGLE COMPARTMENT SELF RIMMING SINK, 18 GA, TYPE 304 STAINLESS STEEL, 6-1/2" DEEP BOWL. CHICAGO FAUCETS MODEL 786-GR2E35V317XKAB DECK MOUNTED FAUCET WITH CERAMIC OPERATING CARTRIDGE, 4" WRIST BLADE HANDLES, 5-1/4" RESTRICTED SWING GOOSENECK SPOUT WITH VANDAL RESISTANT 1.5 GPM AERATOR. ACCESSORIES: ELKAY LK-35 STRAINER WITH 1-1/2" TAILPIECE, 1-1/2" 17 GA. SEMI-CAST BRASS P-TRAP WITH CLEANOUT, CHROME-PLATED RISERS WITH LOOSE KEY ANGLE STOPS.	1/2"	1/2"	2"	1-1/2"
S-2	SINK	ELKAY	EWMA4820C	MULTI-STATION WASH SINK WITH 2" FLAT APRON, 14 GA, TYPE 304 STAINLESS STEEL, 9-1/8" DEEP BOWL. ELKAY MODEL LK940GNOST4H SINK/WALL MOUNTED FAUCETS (TWO FAUCETS) WITH 4" WRIST BLADES, 5" SWING HIGH GOOSENECK SPOUT, VANDAL-RESISTANT ANTI-HOSE AERATOR. ACCESSORIES: ELKAY LK18B PERFORATED STRAINER GRID WITH 1-1/2" TAILPIECE, 1-1/2" 17 GA. SEMI-CAST BRASS P-TRAP WITH CLEANOUT, CHROME-PLATED RISERS WITH LOOSE KEY ANGLE STOPS.	1/2"	1/2"	2"	1-1/2"
S-3	SINK	ELKAY	EWMA4820C	MULTI-STATION WASH SINK WITH 2" FLAT APRON, 14 GA, TYPE 304 STAINLESS STEEL, 9-1/8" DEEP BOWL. ELKAY MODEL LK940GNOST4H SINK/WALL MOUNTED FAUCETS (TWO FAUCETS) WITH 4" WRIST BLADES, 5" SWING HIGH GOOSENECK SPOUT, VANDAL-RESISTANT ANTI-HOSE AERATOR. PROVIDE WITH DECK MOUNTED EYEWASH ON SINK, GUARDIAN MODEL G1100 OR EQUAL. ACCESSORIES: ELKAY LK18B PERFORATED STRAINER GRID WITH 1-1/2" TAILPIECE, 1-1/2" 17 GA. SEMI-CAST BRASS P-TRAP WITH CLEANOUT, CHROME-PLATED RISERS WITH LOOSE KEY ANGLE STOPS.	1/2"	1/2"	2"	1-1/2"
JS-1	JANITOR SINK	STERN-WILLIAMS	MTB-2424	SIZE 24" X 24" X 10", TERRAZZO SERVICE SINK WITH CAST BRASS DRAIN, STAINLESS STEEL STRAINER, 3" DRAIN CONNECTION. CHICAGO FAUCETS MODEL 897-CCP WITH QUATURN OPERATING CARTRIDGE. VACUUM BREAKER SPOUT WITH PAIL HOOK AND WALL BRACE, 3/4" MALE HOSE THREAD OUTLET, 369 LEVER HANDLES, FLANGED ADJUSTABLE SUPPLY ARM AND INTEGRAL SUPPLY STOPS AND CHECK VALVES. ACCESSORIES: V-70 EXTRUDED VINYL BUMPER GUARDS ON EXPOSED SIDES, T-35 36" RUBBER HOSE WITH STAINLESS STEEL WALL BRACKET.	1/2"	1/2"	3"	2"
FD-1	FLOOR DRAIN	J.R. SMITH	2005YA-NB	GENERAL PURPOSE, DUCO CAST IRON BODY WITH FLASHING COLLAR, ADJUSTABLE STRAINER HEAD, ROUND NICKEL BRONZE STRAINER, AND SEEPAGE OPENINGS. OUTLET SIZE PER PLANS. PROVIDE WITH SQUARE GRATE WHERE DRAIN IS INSTALLED IN TILE FLOORS. NOTE: PROVIDE WITH TRAP PRIMER CONNECTION WHERE REQUIRED BY LOCAL CODE OR AS INDICATED ON DRAWINGS.	-	-	2"	1-1/2"
FD-2	FLOOR DRAIN	J.R. SMITH	2005YA-NB	GENERAL PURPOSE, DUCO CAST IRON BODY WITH FLASHING COLLAR, ADJUSTABLE STRAINER HEAD, ROUND NICKEL BRONZE STRAINER, AND SEEPAGE OPENINGS. OUTLET SIZE PER PLANS. PROVIDE WITH SQUARE GRATE WHERE DRAIN IS INSTALLED IN TILE FLOORS. NOTE: PROVIDE WITH TRAP PRIMER CONNECTION WHERE REQUIRED BY LOCAL CODE OR AS INDICATED ON DRAWINGS.	-	-	3"	2"
EFD-1	EQUIPMENT FLOOR DRAIN	J.R. SMITH	2210Y	MEDIUM CAPACITY, MEDIUM DUTY DUCO CAST IRON BODY, SEDIMENT BUCKET AND GRATE, NO HUB OUTLET. PROVIDE WITH 3591 OVAL FUNNEL WHERE DRAIN RECEIVES INDIRECT WASTE.	-	-	3"	2"
WH-1	WALL HYDRANT	WOODFORD	67	EXPOSED, FREEZELESS WALL HYDRANT, CHROME PLATED BRASS, 3/4" INLET AND HOSE CONNECTION, INTEGRAL ASSE DOUBLE CHECK BACKFLOW PREVENTER, LOOSE KEY, STEM LENGTH AS REQUIRED.	3/4"	-	-	-
RH-1	ROOF HYDRANT	WOODFORD	67	EXPOSED, FREEZELESS WALL HYDRANT, CHROME PLATED BRASS, 3/4" INLET AND HOSE CONNECTION, INTEGRAL ASSE DOUBLE CHECK BACKFLOW PREVENTER, LOOSE KEY, STEM LENGTH AS REQUIRED.	3/4"	-	-	-
HB-1	HOSE BIBB	WOODFORD	26 FAUCET	INTERIOR, CHROME PLATED BRASS, 3/4" INLET AND HOSE CONNECTION, MOUNTING FLANGE, INTEGRAL ASSE DOUBLE CHECK BACKFLOW PREVENTER, METAL WHEEL HANDLE.	3/4"	-	-	-
DF-1	DRINKING FOUNTAIN (ADA)	ELKAY	EZSTL8WS	BI-LEVEL CABINET WITH BOTTLE FILLER, ADA BARRIER-FREE BI-LEVEL COOLER, 8.0 G.P.H. (50° F WATER WITH 90° F AIR TEMPERATURE), PUSH BAR ACTIVATION, STAINLESS STEEL COOLER TOP, HEAVY GAUGE VINYL CLAD STEEL CABINET WITH GREY FINISH, CANE APRON ON UPPER BOWL, ELECTRONIC ACTUATED INTEGRAL BOTTLE FILLER STATION ON LOWER FOUNTAIN. 120V/1PH/60HZ. ACCESSORIES: 17 GA. SEMI-CAST BRASS P-TRAP WITH CLEANOUT, CHROME-PLATED SUPPLY AND STOP, J.R. SMITH FLOOR MOUNTED TYPE SUPPORT WITH "PRO-SET" UPRIGHTS. NOTES: MOUNT WITH LOWER LEVEL SPOUT 35" ABOVE FINISH FLOOR.	1/2"	-	1-1/2"	1-1/2"
ES-1	EMERGENCY FREE STANDING SHOWER AND EYE WASH (ADA)	HAWS	8309WC	GALVANIZED STEEL STAND WITH FLOOR MOUNTING FLANGE, 1-1/4" WATER INLET AND DRAIN, SHOWER WITH ABS SHOWER HEAD WITH 20 GPM FLOW CONTROL, 1" BALL VALVE AND PULL ROD, STAINLESS STEEL EYE WASH BOWL, BALL VALVE AND OPERATOR, WASH HEAD AND DUST COVER AND EMERGENCY SIGNAGE. ACCESSORIES: 1-1/4" WATER SUPPLY WITH WALL ESCUTCHEON, 1-1/4" X 1-1/2" 17 GA. SEMI-CAST BRASS P-TRAP WITH CLEAN-OUT. HAWS MODEL 9201H LEAD-FREE EMERGENCY THERMOSTATIC HOT AND COLD WATER 31 GPM MIXING VALVE.	1-1/4"	-	2"	2"
FS-1	SANITARY FLOOR SINK	J.R. SMITH	3100Y	MEDIUM CAPACITY SANITARY FLOOR SINK, 8½" ROUND TOP, 6" DEEP CAST IRON BODY WITH ACID RESISTANT COATED INTERIOR, NICKEL BRONZE GRATE, ALUMINUM DOME STRAINER, ANCHOR FLANGE, SEEPAGE HOLES, FLASHING CLAMP. NO HUB OUTLET. PROVIDE 3/4 TOP WHERE DRAIN RECEIVES INDIRECT WASTE.	-	-	3"	2"
RD-1	ROOF DRAIN	J.R. SMITH	1310-Y OR 1320-Y	12" DIAMETER GENERAL PURPOSE TYPE WITH DUCO CAST IRON BODY AND ALUMINUM DOME, COMBINED FLASHING CLAMP AND GRAVEL STOP, UNDERDECK CLAMP AND NO-HUB OUTLET. PROVIDE WITH EXTENSION, SUMP RECEIVER AND SECONDARY FLASHING CLAMP AS REQUIRED BY APPLICATION. WHERE DRAINS HAVE NO HORIZONTAL OFFSET, PROVIDE WITH J. R. SMITH 1710 EXPANSION JOINT FITTING. SEE PLAN FOR OUTLET SIZE.	-	-	-	-
OD-1	ROOF OVERFLOW DRAIN	J.R. SMITH	1310-Y WD OR 1320-Y WD	12" DIAMETER GENERAL PURPOSE TYPE WITH WATER DAM, DUCO CAST IRON BODY AND ALUMINUM DOME, COMBINED FLASHING CLAMP AND GRAVEL STOP, UNDERDECK CLAMP AND NO-HUB OUTLET. OVERFLOW DRAINS WITH DAMS SHALL BE SET WITH INLET 2" ABOVE REGULAR DRAINS AND/OR PROVIDED WITH EXTENSION RING. PROVIDE WITH EXTENSION, SUMP RECEIVER AND SECONDARY FLASHING CLAMP AS REQUIRED BY APPLICATION. WHERE DRAINS HAVE NO HORIZONTAL OFFSET, PROVIDE WITH J. R. SMITH 1710 EXPANSION JOINT FITTING. SEE PLAN FOR OUTLET SIZE.	-	-	-	-
DS-1	DOWNSPOUT NOZZLE	J.R. SMITH	1770	CAST BRONZE NOZZLE AND WALL FLANGE. SEE PLAN FOR OUTLET SIZE.	-	-	-	-
TD-1	TRENCH DRAIN	SMITH ACO	9818	6" WIDE PRE-SLOPED MODULAR POLYMER CONCRETE TRENCH SYSTEM, STEEL POWER COATED FRAME AND ALL REQUIRED HARDWARE. 39" SECTION LENGTHS, TOTAL LENGTH 26'-0", CUT SECTIONS TO LENGTH. PROVIDE WITH MODULAR SLOTTED DUCTILE IRON CLASS C GRATE SECTIONS WITH VANDAL PROOF LOCKDOWN SYSTEM, PROVIDE WITH END CAPS AND DRAIN CONNECTION FITTINGS, LOCATION AS INDICATED ON DRAWINGS.	-	-	-	-

WATER HEATER SCHEDULE (HIGH EFFICIENCY GAS)

MARK NO.	MANUFACTURER	MODEL NO.	TANK LINING	TANK CAPACITY (GAL)	RECOVERY (GPH @ 85 F)	INPUT (MBH)	MIN. THERMAL EFF, %	VENT SIZE (IN)	THERMAL EXPANSION TANK MODEL NO.	ELECTRICAL			NOTES
										VOLT	ø	HZ	
DWH-1	AO SMITH	BTH-400A MXI	GLASS	119	541	399.9	95	4	PLT-35	120	1	60	1,2,3
DWH-2	AO SMITH	BTH-400A MXI	GLASS	119	541	399.9	95	4	PLT-35	120	1	60	1,2,3

NOTES:
1. PROVIDE WITH ASMESTAMPED, SPARK IGNITION, MODULATING BURNER, TEMPERATURE AND PRESSURE RELIEF VALVE AND DRAIN WITH CONDENSATE NEUTRALIZATION KIT.
2. PROVIDE WITH ASME STAMPED CONTROL THERMAL EXPANSION TANK, WATTS MODEL AND SCHEDULED WITH WATTS SCV SERVICE CHECK VALVE.
3. PROVIDE SEALED COMBUSTION WITH CONCENTRIC ROOF VENT KIT.

PLUMBING PUMP SCHEDULE

MARK NO.	MANUFACTURER	MODEL	USE	TYPE	FLOW (GPM)	HEAD (FT.)	RPM	ELECTRICAL				NOTES
								VOLT	ø	HZ	HP	
CP-1	BELL & GOSSETT	PL30B	RECIRC	INLINE	4	10	2450	120	1	60	1/12	1

NOTES:
1. PROVIDE WITH AQUASTAT AND AUTOMATIC TIMER KIT.
2. PROVIDE WITH WEIL 8341 HIGH LEVEL ALARM AND FLOAT SWITCH, CORD AND PLUG, AND BC2001 OIL/WATER SWITCH & ALARM.

PLUMBING SYMBOLS

- NEW PIPING
- CW - COLD WATER
- HW - HOT WATER
- HWR - HOT WATER RETURN
- NG - NATURAL GAS
- V - SANITARY VENT ABOVE GRD./FLOOR ABOVE
- V - SANITARY VENT BELOW GROUND
- W - SANITARY WASTE ABOVE GRD./FLOOR ABOVE
- W - SANITARY WASTE BELOW GROUND
- SD - PRIMARY STORM DRAINAGE ABOVE GRD./FLOOR ABOVE
- SD - PRIMARY STORM DRAINAGE BELOW GROUND
- OD - SECONDARY STORM DRAINGE ABOVE GRD./FLOOR ABOVE
- BALANCE VALVE
- GAS SHUT-OFF COCK
- SHUT-OFF VALVE
- FLOOR DRAIN OR
- PIPE DROP/ PIPE RISE
- BOTTOM OUTLET TEE
- HB — HOSE BIBB
- WH — WALL HYDRANT
- WALL CLEANOUT
- FFCO — FINISHED FLOOR CLEANOUT
- VTR — VENT THROUGH ROOF
- DWH-1 — EQUIPMENT TYPE AND DESIGNATION
- L-1 — PLUMBING FIXTURE TYPE AND DESIGNATION
- RD — ROOF DRAIN
- OD — OVERFLOW DRAIN

GENERAL NOTES (TYPICAL ALL SHEETS)

A. PLUMBING CONTRACTOR IS RESPONSIBLE TO SEE THAT WORK MEETS AND IS IN ACCORDANCE WITH ALL REQUIREMENTS OF FEDERAL, STATE, AND LOCAL LAWS AND CODES AND/OR REQUIREMENTS, INCLUDING HEALTH CODES AND BUILDING OWNER.

B. COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO INSTALLATION TO AVOID ROUTING CONFLICTS.

C. INSTALL ELASTOMERIC JOINT SEALER AROUND ALL PIPES PASSING THRU INTERIOR NON- RATED CONCRETE AND MASONRY WALLS, GYPSUM-BOARD PARTITIONS, AND CONCRETE FLOOR/ROOF SLABS. FOR FIRE RATED INTERIOR CONCRETE AND MASONRY WALLS, GYPSUM-BOARD PARTITIONS, AND CONCRETE FLOOR/ROOF SLABS SEAL ALL PIPES. INSTALL FIRESTOP MATERIALS IN ALL GAPS PRIOR TO SEALANT APPLICATION. INSTALL SEALER ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.

D. PLUMBING CONTRACTOR SHALL MAKE FINAL CONNECTION TO ALL EQUIPMENT BY OTHERS. VERIFY CONNECTIONS SIZES AND REQUIREMENTS.

E. PIPING ROUTED BELOW COUNTER IN CABINETS SHALL BE ROUTED AS NOTED. NOT TO INTERFERE WITH DRAWERS, SHELVES, EQUIPMENT, ETC., AND SUPPORT FROM BACK WALL OF CABINET.

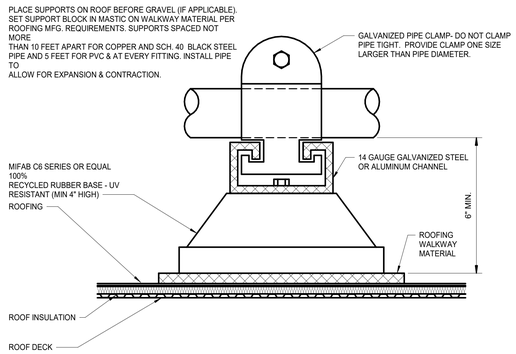
F. PLUMBING CONTRACTOR SHALL SCAN FLOOR UTILIZING GROUND PENETRATING RADAR PRIOR TO ANY CORE DRILLING OR SAW CUTTING OF SLAB AND SHALL VERIFY PLACEMENT WITH BUILDING OWNER'S REPRESENTATIVE PRIOR TO DRILLING.

G. PLUMBING CONTRACTOR SHALL PROVIDE PRO-SET SYSTEMS 'TRAP GUARD' IN ALL FLOOR DRAIN TRAPS WITHIN PROJECT SCOPE OF WORK.

H. PLUMBING CONTRACTOR SHALL VERIFY WALL THICKNESS WITH ARCHITECT PRIOR TO ORDERING FREEZE PROOF WALL HYDRANTS.

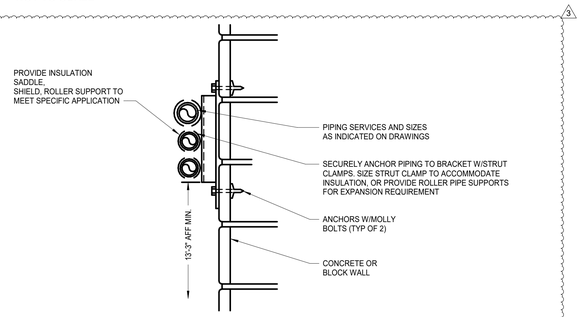
I. UPON REQUEST FOR ELECTRONIC FILES, CONTRACTOR SHALL FILL OUT, SIGN AND RETURN ELECTRONIC MEDIA RELEASE FORM FROM ENGINEER AND PROVIDE PAYMENT FOR FEES STIPULATED ON ELECTRONIC MEDIA RELEASE FORM. UPON RECEIPT OF COMPLETED RELEASE FORM AND PAYMENT, ELECTRONIC FILES WILL BE RELEASED.

J. ALL CABLE TIES FOR LOW VOLTAGE SYSTEMS LOCATED IN PLENUMS UTILIZED FOR AIR MOVEMENT THAT ARE NOT INSTALLED IN CONDUIT SHALL BE 25/50 FLAME AND SMOKE RATED, HELLERMANN TYTON T50 R2C2UL OR EQUIVALENT.



PREFAB ROOF PIPE SUPPORT DETAIL

NOT TO SCALE



NOTE:
SIZES OF PIPE INDICATED ON PLANS.

PIPE WALL RACKING DETAIL

NOT TO SCALE

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

Lankford Fendler + associates
1730 Walnut Street 816.221.1411
Kansas City, Missouri 64108 Fax: 816.221.1429

LF+a Project No. 22.7184.00

NO.	ISSUE DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

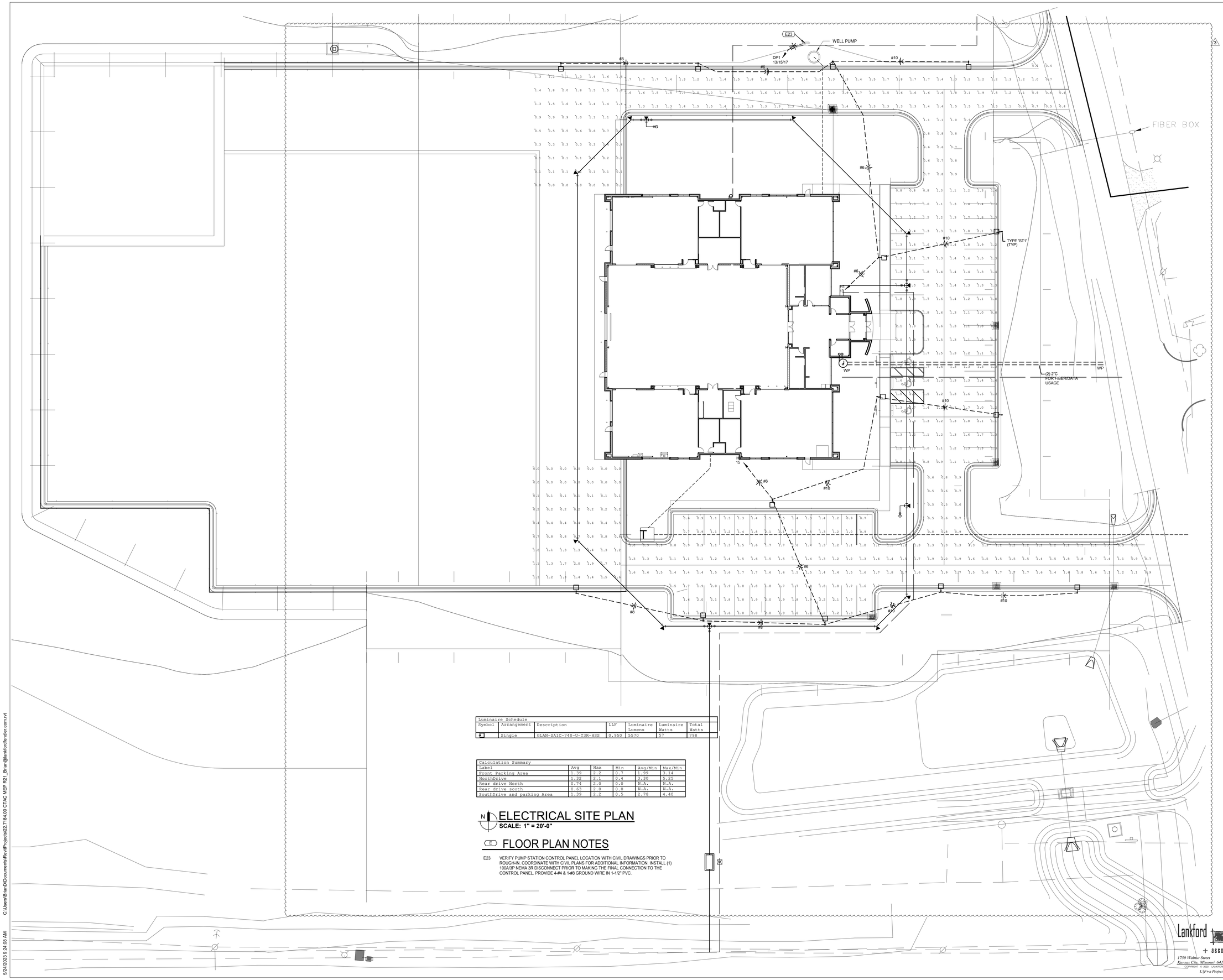
NO.	REVISION DESCRIPTION	DATE

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

PLUMBING SCHEDULES, GENERAL NOTES, & SYMBOLS

SHEET:
P400

OF: DATE: 05-01-2023



Luminaire Schedule						
Symbol	Arrangement	Description	LLF	Luminaire Lumens	Luminaire Watts	Total Watts
	Single	GLAN-SA1C-740-U-T3R-HSS	0.950	5570	57	798

Calculation Summary					
Label	Avg	Max	Min	Avg/Min	Max/Min
Front Parking Area	1.39	2.2	0.7	1.99	3.14
NorthDrive	1.32	2.1	0.4	3.30	5.25
Rear drive North	0.74	2.0	0.0	N.A.	N.A.
Rear drive south	0.63	2.0	0.0	N.A.	N.A.
SouthDrive and parking Area	1.39	2.2	0.5	2.78	4.40

ELECTRICAL SITE PLAN
SCALE: 1" = 20'-0"

FLOOR PLAN NOTES

E23 VERIFY PUMP STATION CONTROL PANEL LOCATION WITH CIVIL DRAWINGS PRIOR TO ROUGH-IN. COORDINATE WITH CIVIL PLANS FOR ADDITIONAL INFORMATION. INSTALL (1) 100A/3P NEMA 3R DISCONNECT PRIOR TO MAKING THE FINAL CONNECTION TO THE CONTROL PANEL. PROVIDE 4-#4 & 1-#8 GROUND WIRE IN 1-1/2" PVC.

Lankford Fendler + associates
1730 Walnut Street 816.221.1411
Kansas City, Missouri 64108 Fax: 816.221.1429

L.F+a Project No. 22.7164.00

STATE OF MISSOURI
ALAN W. LANKFORD
NUMBER E-24324
REGISTERED PROFESSIONAL ENGINEER
05.23.2023

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

NO.	REVISION DESCRIPTION	DATE

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

ELECTRICAL SITE PLAN

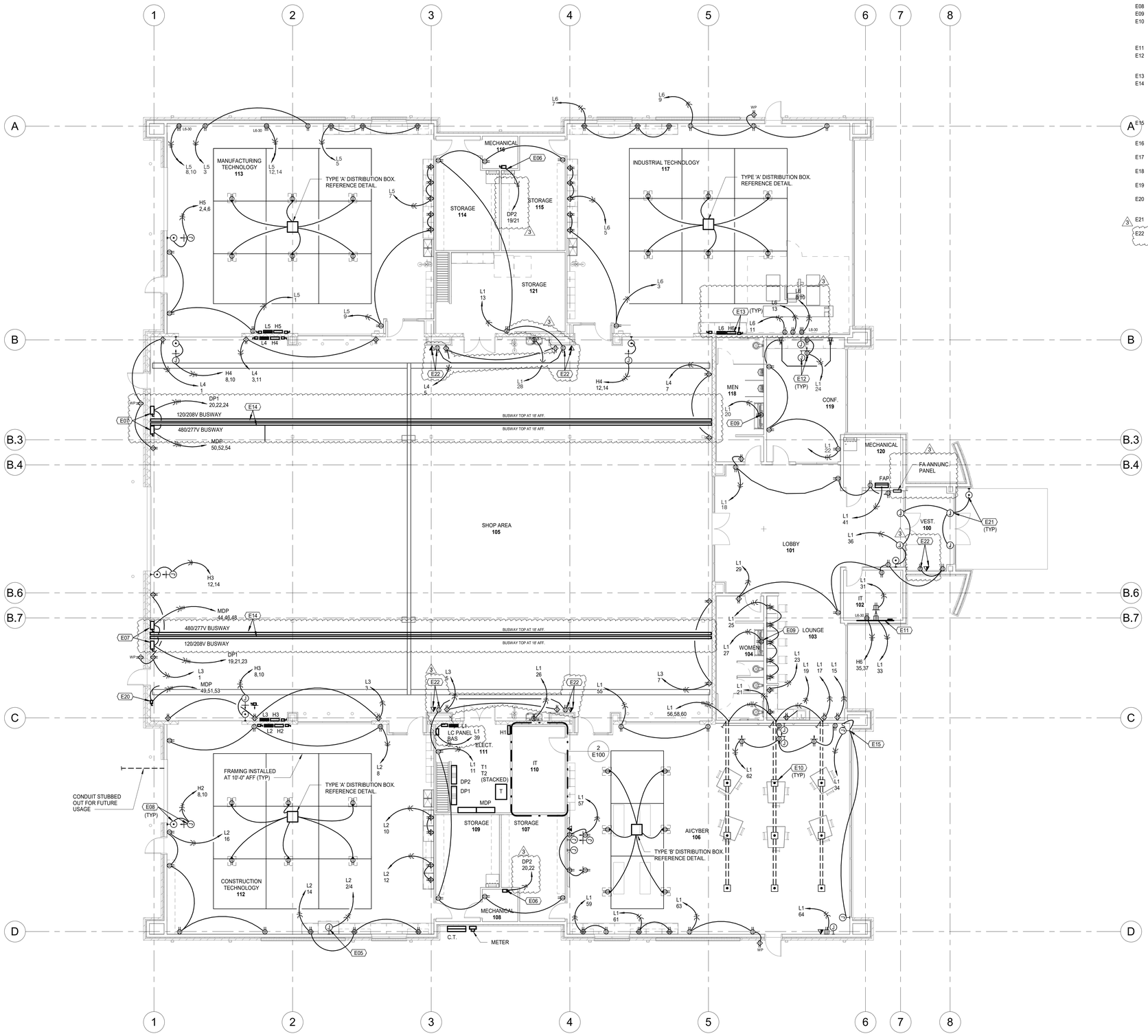
SHEET:
E001
OF: **DATE:** 05-01-2023

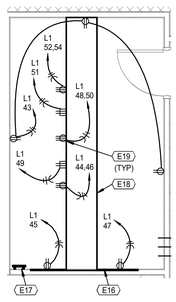
5/24/2023 9:24:08 AM C:\Users\Brian\Documents\RevitProjects\22.7164.00 CTAC MEP R21_Brian@lankfordfendler.com.rvt

FLOOR PLAN NOTES

E

- E05 COORDINTE WITH HOOD MANUFACTURER FOR ROUGH-IN AND CONNECTION PRIOR TO INSTALLATION.
- E06 INSTALL 250V RATED, 60A/3P FUSED DISCONNECT SWITCH IN A NEMA TYPE 1 ENCLOSURE. FUSE AT 60 AMPS. THE SECONDARY SIDE WILL BE USED FOR A FUTURE CONNECTION TO AN AIR COMPRESSOR BY OTHERS.
- E07 INSTALL 200A/3P NON-FUSED DISCONNECT SWITCH IN A NEMA TYPE 1 ENCLOSURE, INSTALL 4-#1\0 (75-DEGREE CU) & 1-#6 (75-DEGREE CU) GROUND WIRE IN 2" C.
- E08 COORDINATE WITH GARAGE DOOR OPENER MANUFACTURER PRIOR TO ROUGH-IN.
- E09 COORDINATE ROUGH-IN LOCATION WITH MANUFACTURER OF SINK/DRYER SYSTEM.
- E10 PROVIDE AND INSTALL RECESSSED CONCRETE FLOOR BOX SIMILAR TO H.W.D.C NO.CFB2G25RCR W/CFBS1R6FFCVRXXX COVER, TWO DUPLEX RECEPTACLES AND (1) 1-1/4" CONDUIT FOR LOW VOLTAGE USAGE. ROUTE OVER TO AND UP INSIDE THE WALL AND TURN OUT INTO ACCESSIBLE CEILING AT STRUCTURE ABOVE WITH PULL STRING.
- E11 INSTALL 4X8 3/4" THICK FIRE-TREAT PLYWOOD BACKBOARD WITH ISOLATED GROUND BAR.
- E12 COORDINATE ROUGH-IN HEIGHT FOR TV WITH ARCHITECTURAL ELEVATIONS. BETWEEN J-BOXES, ROUTE (1) 1-1/4" CONDUIT FOR CABLE PASS-THRU BY OTHERS. CONDUIT SHALL HAVE NYLON BUSHINGS INSTALLED.
- E13 REFERENCE RISER DIAGRAM FOR PANEL AND DISCONNECT INFORMATION. 3
- E14 INSTALL 225 AMP RATED, BUSWAY SYSTEM SIMILAR TO SQ.D I-LINE POWERBUS STYLE SERIES. SUSPEND FROM STRUCTURE ABOVE PER MANUFACTURER RECOMMENDATION. 208/120V BUS-SYSTEM PROVIDE (4) TYPE 1 QO 5A AND (4) TYPE 2 QO 5A RECEPTACLE/CIRCUIT BREAKER CONFIG TAP BOXES AND (2) QO 4B UNITS (PER SIDE). FOR 480/277V BUSS-SYSTEM PROVIDE (6) 4B TAP BOXES AND (4) QO 4B TAB BOXES. SUPPORT FROM BOTH ENDS AND FROM THE STRUCTURE/BEAMS ABOVE.(PER SIDE)
- E15 PROVIDE CENTER OFF, UP/DOWN SWITCH. MAKE CONNECTION TO MOTORIZED WINDOW SHADE BY OTHERS. VERIFY ROUGH-IN AND CONNECTION REQUIREMENTS WITH THE MANUFACTURER PRIOR TO ROUGH-IN.
- E16 INSTALL (2) 4X8 3/4" THICK FIRE-TREAT PLYWOOD BACKBOARD WITH ISOLATED GROUND BAR.
- E17 PROVIDE ISOLATED GROUND BAR AND INSTALL NO.L6 G.W. BACK TO SERVICE ENTRANCE GROUND BAR. 3
- E18 PROVIDE AND INSTALL 24x2 WIDE BASKET TYPE CABLETRAY AT 8' AFF. GROUND CABLETRAY TO GROUND BAR WITHIN THIS ROOM WITH NO.6 G.W.
- E19 MOUNT OUTLETS HORIZONTALL ON SIDE OF THE CABLETRAY. COORDINATE LOCATION WITH MWSU STAFF.
- E20 INSTALL 600V RATED, 30A/3P FUSED DISCONNECT SWITCH IN A NEMA TYPE 1 ENCLOSURE, FUSE AT 10 AMPS AND MAKE CONNECTION TO CRANE SYSTEM PER MANUFACTURERS RECOMMENDATION.
- 3 E21 POWER AND ROUGH-IN FOR POWER-ASSISTED DOORS BY OTHERS. COORDINATED WITH THE MANUFACTURER FOR PROPER INSTALLATION.
- E22 POWER AND DATA FOR DIGITAL DISPLAY, COORDINATE WITH UNIVERSITY FOR MOUNTING HEIGHT LOCATION.





ENLARGED PLAN - IT RM. 110

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

LEVEL 1 - POWER

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

ELLISON - AUXIER ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

NO.	REVISION DESCRIPTION	DATE

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

LEVEL 1 - POWER

SHEET:
E100

OF: **DATE:** 05-01-2023

Lankford Fendler + associates
1730 Walnut Street 816.221.1411
Kansas City, Missouri 64108 Fax: 816.221.1429

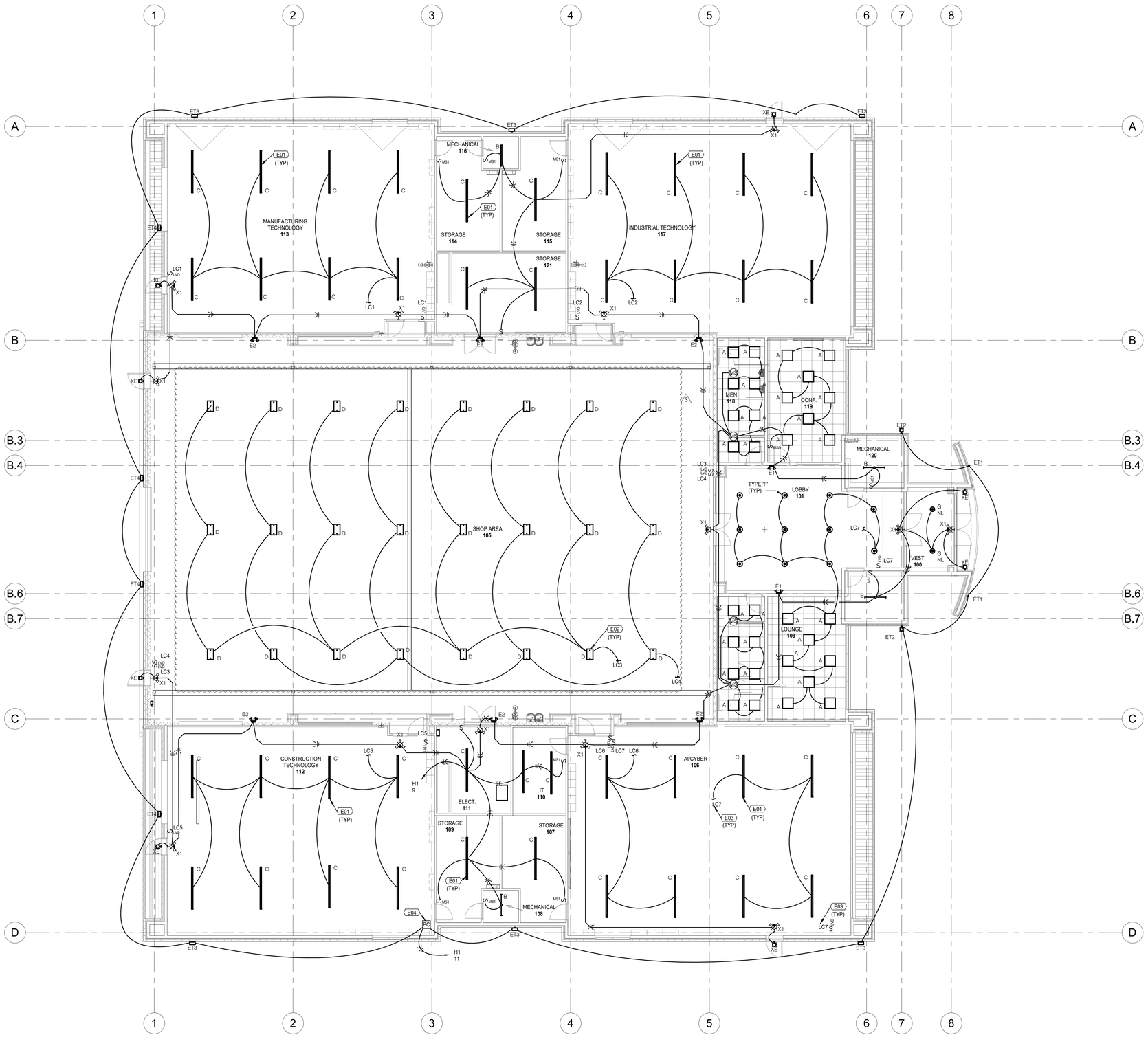
L/F+a Project No. 22.7184.00

STATE OF MISSOURI — ALAN W. LANKFORD — NUMBER E-24324 — REGISTERED PROFESSIONAL ENGINEER — 05.23.2023

5/24/2023 9:24:10 AM C:\Users\Brian\Documents\Revit\Projects\22.7184.00 CTAC MEP R21_Brian@lankfordfendler.com.rvt

E FLOOR PLAN NOTES

E01 INSTALL FIXTURES ON BOTTOM JOIST.
E02 SUSPEND FIXTURES FROM CEILING/ JOIST ABOVE AT 26' AFF.
E03 LIGHTING/CONTROL CIRCUIT ROUTED THRU LIGHTING CONTROL PANEL
E04 INSTALL PHOTO-CELL ON ROOF AND FACE NORTH.



N

LEVEL 1 - LIGHTING

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

ALAN W. LANKFORD NUMBER E-24324 REGISTERED PROFESSIONAL ENGINEER STATE OF MISSOURI
05.23.2023

ELLISON - AUXIER ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

NO.	REVISION DESCRIPTION	DATE

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

LEVEL 1 - LIGHTING

SHEET:
E200

OF: **DATE:** 05-01-2023

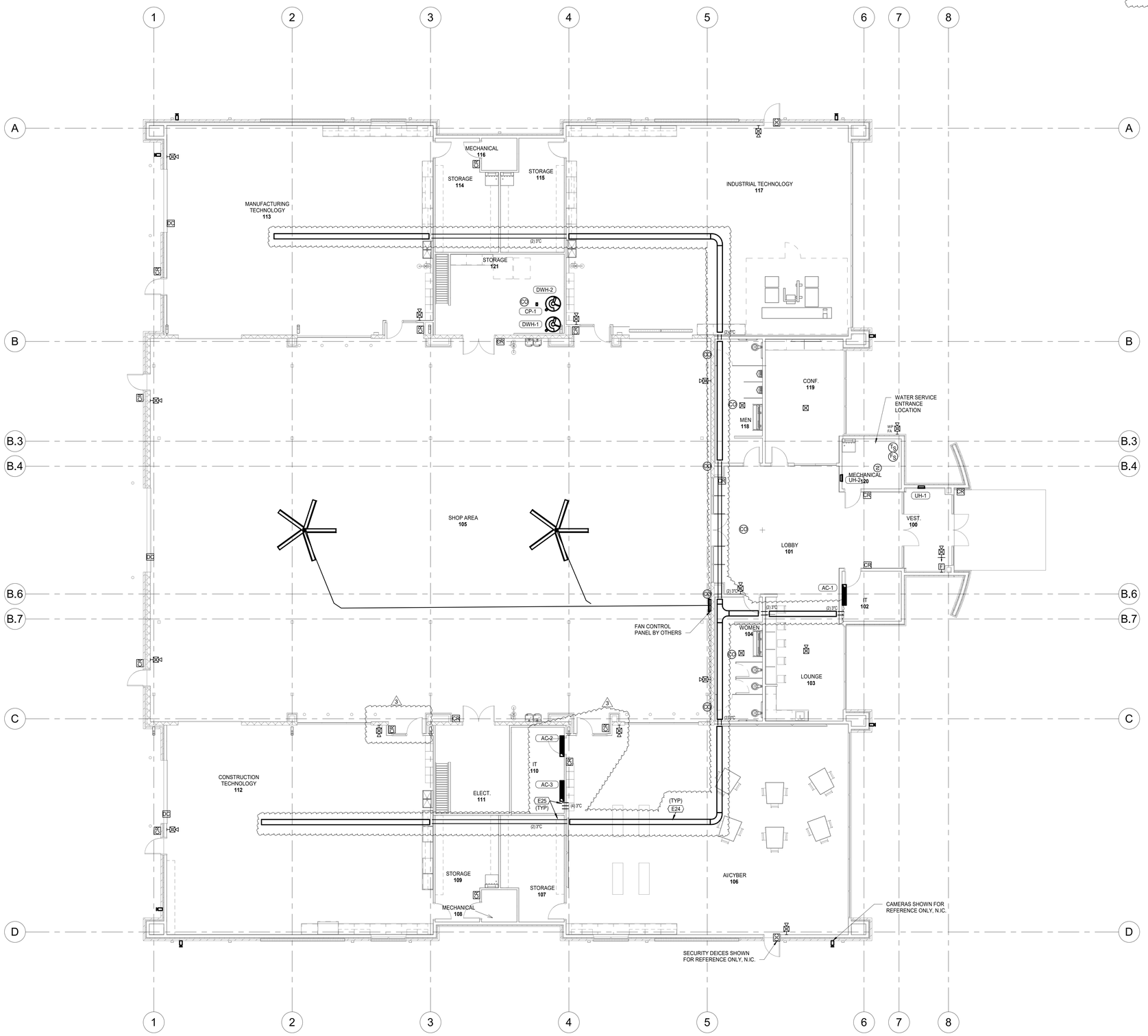
Lankford Fendler + associates
1730 Walnut Street 816.221.1411
Kansas City, Missouri 64108 Fax: 816.221.1429

L.F+a Project No. 22.7164.00

5/24/2023 9:24:15 AM C:\Users\Brian\Documents\RevitProjects\22.7164.00 CTAC MEP R21_Brian@lankfordfendler.com.rvt

FLOOR PLAN NOTES

3	E09	COORDINATE ROUGH-IN LOCATION WITH MANUFACTURER OF SINK/DRYER SYSTEM.
	E24	12x2 WIDE BASKET CABLETRAY, MOUNT AS HEIGHT AS POSSIBLE, COORDINATE WITH DUCTWORK, PIPING, & CONDUIT. GROUND CABLETRY WITH NO6 GROUND WIRE TO I.T. GROUND BAR INCLUDING NO.6 GROUNDING JUMPERS BETWEEN EACH SECTION AND FROM CABLETRAY TO EACH CONDUIT SLEEVE.
	E25	INSTALL CONDUIT SLEEVES AS INDICATED TO MATCH CABLETRY HEIGHT FOR CABLE PASS-THRU, PROVIDE NYLON BUSHING ON BOTH ENDS.



N

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

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

NO.	REVISION DESCRIPTION	DATE

PROJECT
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

LEVEL 1 - SYSTEMS

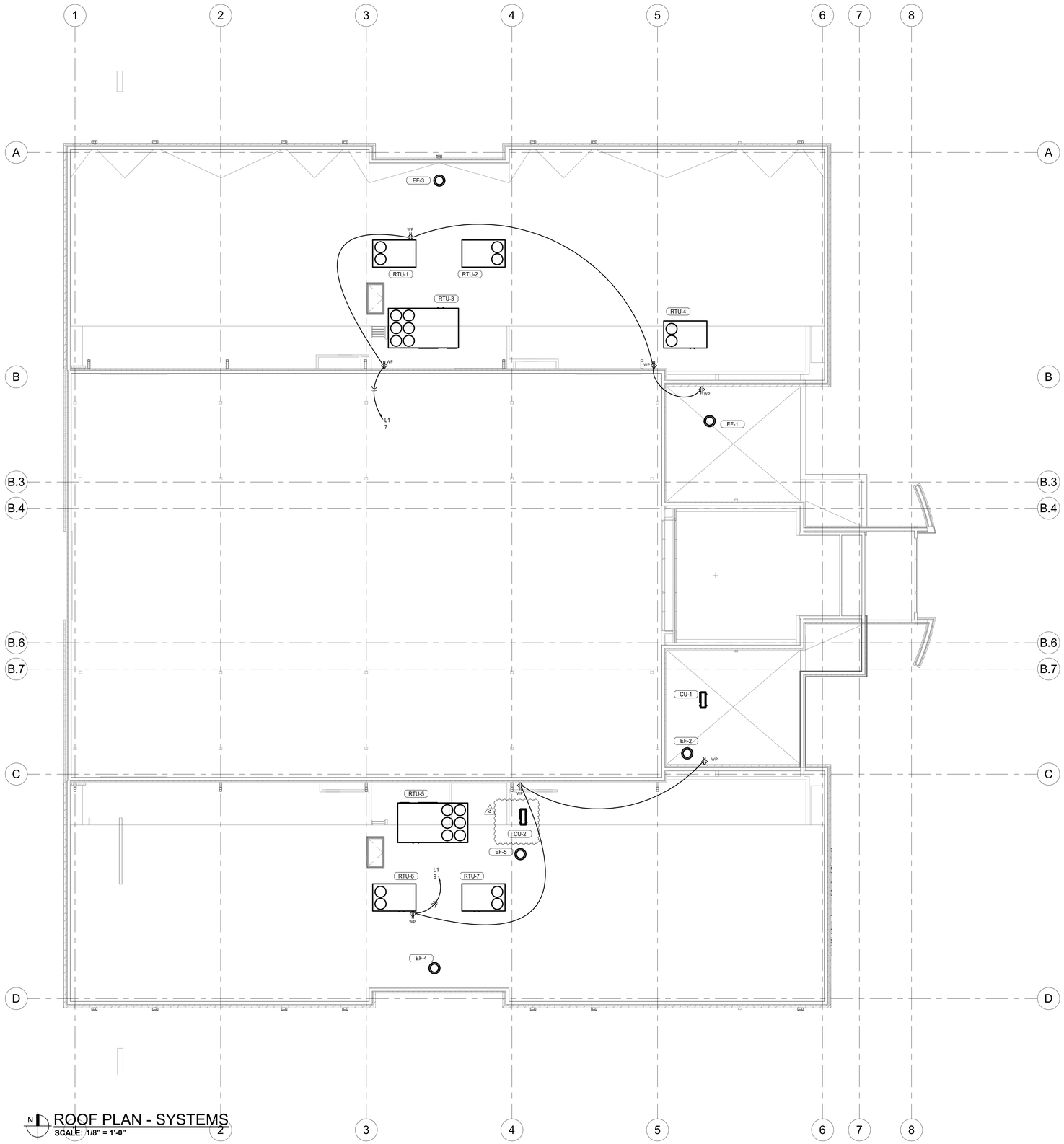
SHEET:
E300

OF: **DATE:** 05-01-2023

Lankford Fendler + associates
1730 Walnut Street 816.221.1411
Kansas City, Missouri 64108 Fax: 816.221.1429

L|F+a Project No. 22.7184.00

E FLOOR PLAN NOTES



N

ROOF PLAN - SYSTEMS

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

ALAN W. LANKFORD
NUMBER E-24324
REGISTERED PROFESSIONAL ENGINEER
STATE OF MISSOURI
05.23.2023

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

NO.	REVISION DESCRIPTION	DATE

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

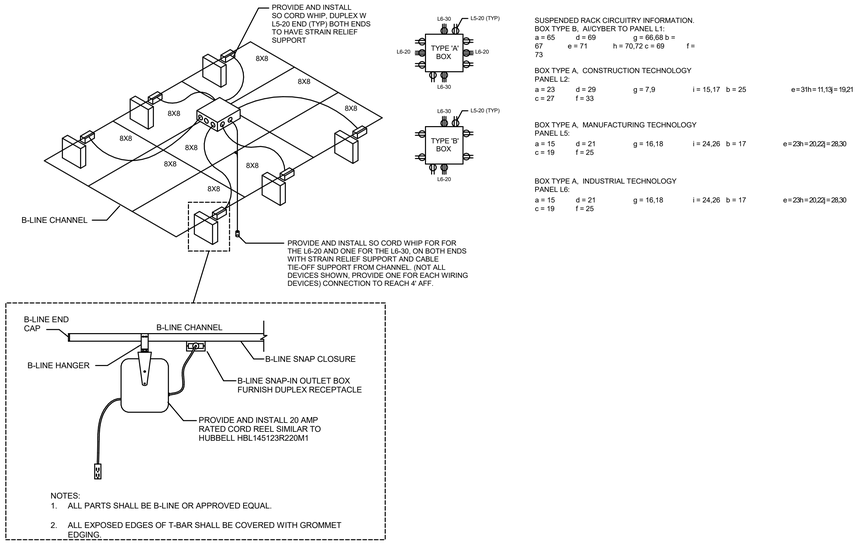
ROOF PLAN - SYSTEMS

SHEET:
E301

OF: DATE: 05-01-2023

Lankford + Fendler + associates
1730 Walnut Street 816.221.1411
Kansas City, Missouri 64108 Fax: 816.221.1429

L/F+a Project No. 22.7184.00



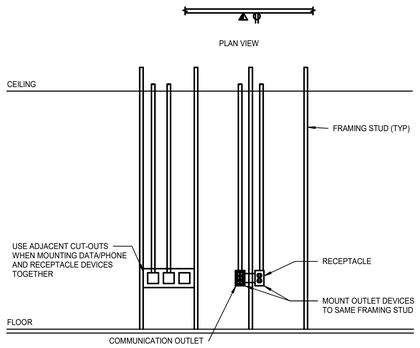
SUSPENDED RACK CIRCUITRY INFORMATION.
BOX TYPE B, AI/CYBER TO PANEL L1:
a = 65 d = 69 g = 66,68 b = 67 e = 71 h = 70,72 c = 69 f = 73

BOX TYPE A, CONSTRUCTION TECHNOLOGY
PANEL L2:
a = 23 d = 29 g = 7,9 i = 15,17 b = 25 e = 31h = 11,13 = 19,21
c = 27 f = 33

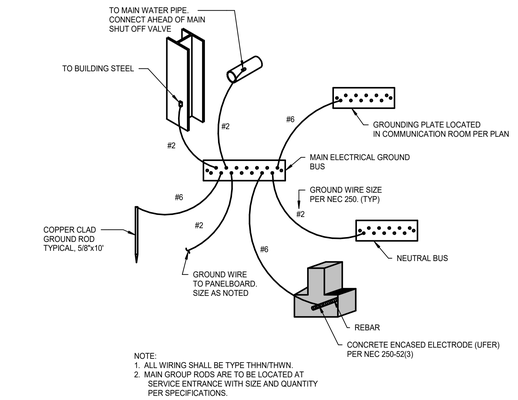
BOX TYPE A, MANUFACTURING TECHNOLOGY
PANEL L5:
a = 15 d = 21 g = 16,18 i = 24,26 b = 17 e = 23h = 20,22 = 28,30
c = 19 f = 25

BOX TYPE A, INDUSTRIAL TECHNOLOGY
PANEL L6:
a = 15 d = 21 g = 16,18 i = 24,26 b = 17 e = 23h = 20,22 = 28,30
c = 19 f = 25

SUSPENDED WIRING DEVICE DETAIL
NOT TO SCALE

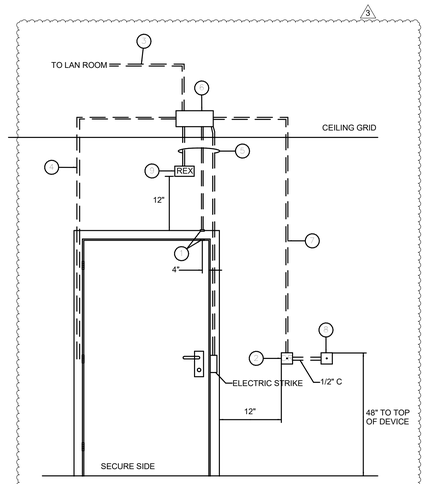


TYPICAL MOUNTING OUTLET DETAIL
NOT TO SCALE



NOTE:
1. ALL WIRING SHALL BE TYPE THHN/THWN.
2. MAIN GROUP RODS ARE TO BE LOCATED AT SERVICE ENTRANCE WITH SIZE AND QUANTITY PER SPECIFICATIONS.

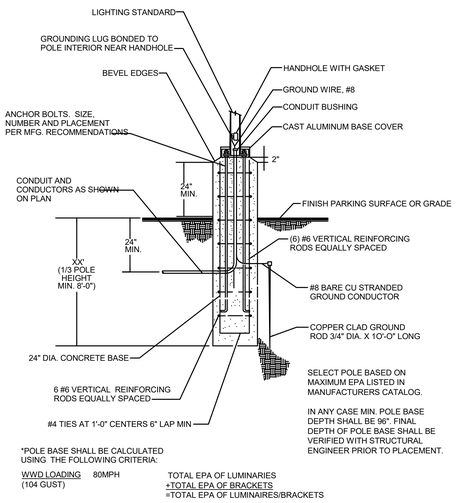
MAIN SERVICE ENTRANCE GROUNDING DETAIL
NOT TO SCALE



CARD ACCESS NOTES

1. PRE-DRILL 3/4" DIAMETER HOLE THROUGH HEADER AND DOOR.
2. PROVIDE 2"X4" SINGLE GANG JUNCTION BOX FOR CARD READER.
3. PROVIDE 1" EMPTY CONDUIT HOMERUN WITH PULL STRING WHERE CEILING IS NOT ACCESSIBLE. ROUTE BACK TO LAN ROOM AND BUSH.
4. EXTEND 1/2" CONDUIT WITH PULL STRING TO MIDDLE HINGE (FOR TOUCH-BAR WHERE APPLICABLE).
5. PROVIDE 1/2" CONDUIT WITH PULL STRING.
6. PROVIDE 8"X6"X4" JUNCTION BOX WITH BLANK COVER.
7. PROVIDE 3/4" CONDUIT WITH TWO PULL STRINGS.
8. PROVIDE 2"X4' SINGLE GANG JUNCTION BOX FOR AUTOMATIC DOOR OPENER WHERE SHOWN ON PLANS.
9. PROVIDE 2"X4" SINGLE GANG JUNCTION BOX FOR REX WHERE THERE IS AN EXIT SIGN, MOUNT REX BELOW EXIT SIGN.

CARD ACCESS SYSTEM ROUGH-IN DETAIL
NO SCALE

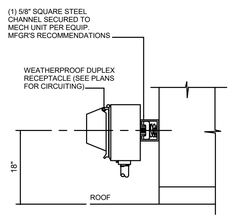


*POLE BASE SHALL BE CALCULATED USING THE FOLLOWING CRITERIA:

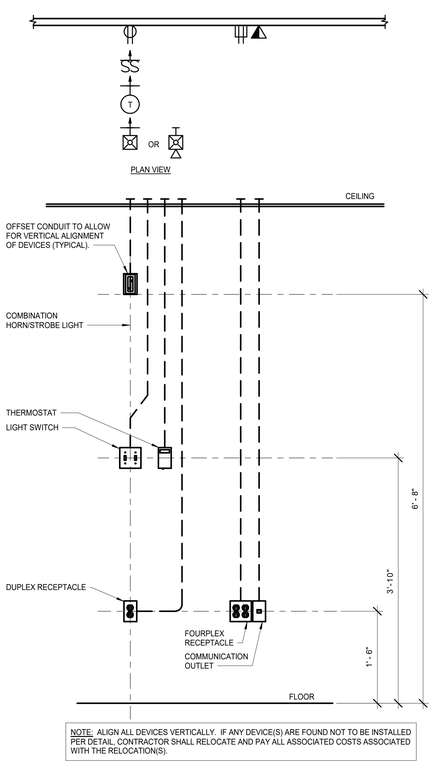
WWD LOADING (104 GUST) 80MPH

TOTAL EPA OF LUMINARIES +TOTAL EPA OF BRACKETS =TOTAL EPA OF LUMINAIRES/BRACKETS

LIGHTING POLE BASE DETAIL
NO SCALE

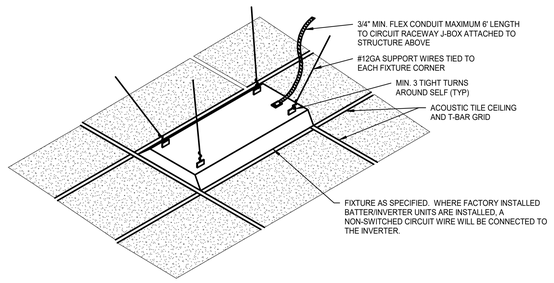


RECEPTACLE MOUNTING ON ROOF DETAIL
NO SCALE

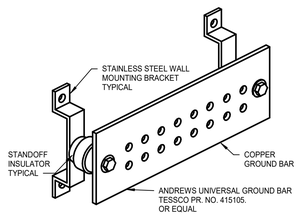


NOTE: ALIGN ALL DEVICES VERTICALLY. IF ANY DEVICE(S) ARE FOUND NOT TO BE INSTALLED PER DETAIL, CONTRACTOR SHALL RELOCATE AND PAY ALL ASSOCIATED COSTS ASSOCIATED WITH THE RELOCATION(S).

TYPICAL WALL MOUNTING DEVICE DETAIL
NOT TO SCALE



LIGHT FIXTURE MOUNTING AND BRACING DETAIL
NOT TO SCALE



GROUND BAR DETAIL
NOT TO SCALE

STATE OF MISSOURI
ALAN W. LANKFORD
NUMBER E-24324
REGISTERED PROFESSIONAL ENGINEER
05.23.2023

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

NO.	REVISION DESCRIPTION	DATE

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

ELECTRICAL DETAILS

SHEET: E400

OF: **DATE:** 05-01-2023

Lankford Fendler + associates
1730 Walnut Street 816.221.1411
Kansas City, Missouri 64108 Fax: 816.221.1429

L.F+a Project No. 22.7184.00

NEW PANELBOARD H6

BUS AMPS: 225A | SCCR: PER STUDY | FULLY RATED | TYPE: BRANCH CIRCUIT PANELBOARD
MAIN SIZE / TYPE: MLO | NEMA TYPE: 1 | MANUFACTURER:
VOLTS/PHASE: 480Y/277V, 3PH, 4W | MOUNTING: SURFACE | MFG MODEL:
LOCATION: | OPTIONS:

CKT #	CIRCUIT DECRIPTION	CB AMPS	P	LOAD VA	A VA	B VA	C VA	LOAD VA	P	CB AMPS	CIRCUIT DECRIPTION	CKT #
1	SPARE	20	1	0	13,850			13,850				2
3	SPARE	20	1	0		13,850		13,850	3	100	DISC. SWITCH	4
5	SPARE	20	1	0			13,850	13,850				6
7	SPARE	20	1	0	0			0	1	20	SPARE	8
9	SPARE	20	1	0		0		0	1	20	SPARE	10
11	SPACE ONLY			0			0	0			SPACE ONLY	12
13	SPACE ONLY			0	0			0			SPACE ONLY	14
15	SPACE ONLY			0		0		0			SPACE ONLY	16
17	SPACE ONLY			0			0	0			SPACE ONLY	18
19	SPACE ONLY			0	0			0			SPACE ONLY	20
21	SPACE ONLY			0		0		0			SPACE ONLY	22
23	SPACE ONLY			0			0	0			SPACE ONLY	24
25	SPACE ONLY			0	0			0			SPACE ONLY	26
27	SPACE ONLY			0		0		0			SPACE ONLY	28
29	SPACE ONLY			0			0	0			SPACE ONLY	30
31	SPACE ONLY			0	0			0			SPACE ONLY	32
33	SPACE ONLY			0		0		0			SPACE ONLY	34
35	SPACE ONLY			0			0	0			SPACE ONLY	36
37	SPACE ONLY			0	0			0			SPACE ONLY	38
39	SPACE ONLY			0		0		0			SPACE ONLY	40
41	SPACE ONLY			0			0	0			SPACE ONLY	42
	PER PHASE CONNECTED - VA				13,850	13,850	13,850				TOTAL CONNECTED - VA	41,550
	PER PHASE CONNECTED - AMPS				50	50	50				TOTAL CONNECTED - AMPS	50
											TOTAL DEMAND - VA	41,550
											NEC TOTAL DEMAND - AMPS	50

NOTES:

*REFER TO THE BRANCH CIRCUIT COPPER CONDUCTOR AND CONDUIT SIZING CHART FOR SIZING BRANCH CIRCUITS OF 100A OR LESS

NEW PANELBOARD DP1

BUS AMPS: 800A | SCCR: PER STUDY | FULLY RATED | TYPE: DISTRIBUTION PANELBOARD
MAIN SIZE / TYPE: 500A | NEMA TYPE: 1 | MANUFACTURER:
VOLTS/PHASE: 208Y/120V, 3PH, 4W | MOUNTING: SURFACE | MFG MODEL:
LOCATION: | OPTIONS:

CKT #	CIRCUIT DECRIPTION	CB AMPS	P	LOAD VA	A VA	B VA	C VA	LOAD VA	P	CB AMPS	CIRCUIT DECRIPTION	CKT #
1				12,000	24,000			12,000				2
3	SHOP AREA BUS #1	200	3	12,000		24,000		12,000	3	200	SHOP AREA BUS #2	4
5				12,000			24,000	12,000				6
7				21,350	34,590			13,240				8
9	PANEL 1	200	3	18,430		32,360		13,930	3	150	PANEL L2	10
3 11				21,190			31,570	10,380				12
13				5,400	5,400			0	1	20	SPARE	14
A3 15	PUMP STATION	60	3	5,400		5,400		0	1	20	SPARE	16
17				5,400			5,400	0	1	20	SPARE	18
19	SPACE ONLY			0	0			0			SPACE ONLY	20
21	SPACE ONLY			0		0		0			SPACE ONLY	22
23	SPACE ONLY			0			0	0			SPACE ONLY	24
25	SPACE ONLY			0	0			0			SPACE ONLY	26
27	SPACE ONLY			0		0		0			SPACE ONLY	28
29	SPACE ONLY			0			0	0			SPACE ONLY	30
31	SPACE ONLY			0	0			0			SPACE ONLY	32
33	SPACE ONLY			0		0		0			SPACE ONLY	34
35	SPACE ONLY			0			0	0			SPACE ONLY	36
37	SPACE ONLY			0	0			0			SPACE ONLY	38
39	SPACE ONLY			0		0		0			SPACE ONLY	40
41	SPACE ONLY			0			0	0			SPACE ONLY	42
	PER PHASE CONNECTED - VA				63,990	61,760	60,970				TOTAL CONNECTED - VA	186,720
	PER PHASE CONNECTED - AMPS				533	515	508				TOTAL CONNECTED - AMPS	518
											TOTAL DEMAND - VA	160,178
											NEC TOTAL DEMAND - AMPS	445

NOTES:

*REFER TO THE BRANCH CIRCUIT COPPER CONDUCTOR AND CONDUIT SIZING CHART FOR SIZING BRANCH CIRCUITS OF 100A OR LESS

NEW PANELBOARD DP2

BUS AMPS: 800A | SCCR: PER STUDY | FULLY RATED | TYPE: DISTRIBUTION PANELBOARD
MAIN SIZE / TYPE: 500A | NEMA TYPE: 1 | MANUFACTURER:
VOLTS/PHASE: 208Y/120V, 3PH, 4W | MOUNTING: SURFACE | MFG MODEL:
LOCATION: | OPTIONS:

CKT #	CIRCUIT DECRIPTION	CB AMPS	P	LOAD VA	A VA	B VA	C VA	LOAD VA	P	CB AMPS	CIRCUIT DECRIPTION	CKT #
1				6,900	13,800			6,900				2
3	PANEL L3	150	3	6,540		12,900		6,360	3	150	PANEL L4	4
5				6,360			12,720	6,360				6
7				14,200	26,060			11,860				8
9	PANEL L5	150	3	13,040		26,080		13,040	3	150	PANEL L6	10
11				13,660			25,520	11,860				12
13				0	0			0				14
3 15	FUTURE (OUTBLDG)	100	3	0		0		0	3		SPACE ONLY	16
17				0			0	0				18
A3 19	DISC. MECH. 116	60	2	2,912	5,824			2,912	2	60	DISC. MECH. 108	20 A3
A3 21				2,912		5,824		2,912				22 A3
23	SPACE ONLY			0			0	0			SPACE ONLY	24
25	SPACE ONLY			0	0			0			SPACE ONLY	26
27	SPACE ONLY			0		0		0			SPACE ONLY	28
29	SPACE ONLY			0			0	0			SPACE ONLY	30
31	SPACE ONLY			0	0			0			SPACE ONLY	32
33	SPACE ONLY			0		0		0			SPACE ONLY	34
35	SPACE ONLY			0			0	0			SPACE ONLY	36
37	SPACE ONLY			0	0			0			SPACE ONLY	38
39	SPACE ONLY			0		0		0			SPACE ONLY	40
41	SPACE ONLY			0			0	0			SPACE ONLY	42
	PER PHASE CONNECTED - VA				45,684	44,804	38,240				TOTAL CONNECTED - VA	128,728
	PER PHASE CONNECTED - AMPS				381	373	319				TOTAL CONNECTED - AMPS	357
											TOTAL DEMAND - VA	111,188
											NEC TOTAL DEMAND - AMPS	309

NOTES:

*REFER TO THE BRANCH CIRCUIT COPPER CONDUCTOR AND CONDUIT SIZING CHART FOR SIZING BRANCH CIRCUITS OF 100A OR LESS

NEW PANELBOARD L1

BUS AMPS: 225A | SCCR: PER STUDY | FULLY RATED | TYPE: BRANCH CIRCUIT PANELBOARD
MAIN SIZE / TYPE: MLO | NEMA TYPE: 1 | MANUFACTURER:
VOLTS/PHASE: 208Y/120V, 3PH, 4W | MOUNTING: SURFACE | MFG MODEL:
LOCATION: | OPTIONS:

CKT #	CIRCUIT DECRIPTION	CB AMPS	P	LOAD VA	A VA	B VA	C VA	LOAD VA	P	CB AMPS	CIRCUIT DECRIPTION	CKT #
1	UH-1	20	1	1,500	2,790			1,290	2	20	AC/CU-1	2
3	UH-2	20	1	1,500		2,790		1,290				4
5	UH-3	20	1	1,500			2,810	1,310	2	20	AC-2-3/CU-2	6 3
7	REC; ROOF	20	1	720	2,030			1,310				8
9	REC; ROOF	20	1	540		540		0	1	20	SPARE	10 A3
11	REC; ELEC. RM/STOR RMS	20	1	720			720	0	1	20	SPARE	12 A3
13	REC; N.SIDE STORAGE RMS	20	1	720	720			0	1	20	SPARE	14 A3
15	REC; LOUNGE VENDING	20	1	1,000		1,000		0	1	20	SPARE	16 A3
17	REC; LOUNGE VENDING	20	1	1,000			1,900	900	1	20	REC; GEN M.RR/LOBBY/MECH.RM	18
19	REC; LOUNGE CTR TOP	20	1	800	2,300			1,500	1	20	REC. M.RR SINK/DRYER	20 GF
21	REC; LOUNGE CTR TOP	20	1	800		1,700		900	1	20	REC, CONF ROOM	22
23	REC; LOUNGE CTR TOP	20	1	800			1,100	300	1	20	REC; CONF ROOM TV	24
25	REC; LOUNGE USB'S	20	1	900	1,700			800	1	20	REC; N. DRINKING F.	26
GF 27	REC; W.RR SINK/DRYER	20	1	1,500		2,300		800	1	20	REC; S. DRINKING F.	28
29	REC; GEN RR/LOBBY/IT	20	1	900			1,300	400	1	20	EX'S FANS 1-5	30
31	REC; IT ROOM	20	1	500	800			300	1	20	WATER HEATERS/RECIR PUMP	32
33	REC; IT ROOM	20	1	500		860		360	1	20	MOTORIZED SHADE	34
35	REC; IT ROOM	30	2	1,800			2,800	1,000	1	20	FRONT PWR ASSIST DOORS	36
2 37				1,800	1,800			0	1	20	SPARE	38
A3 39	BAS AND LC PANEL	20	1	400		400		0	1	20	SPARE	40
BHR 41	FIRE ALARM PANEL	20	1	1,000			1,000	0	1	20	SPARE	42
43	REC; AI/CYBER IT ROOM	20	1	540	2,340			1,800	2	30	REC; AI/CYBER IT RM CABLE TRAY	44
45	REC; AI/CYBER IT ROOM	20	1	500		2,300		1,800				46
47	REC; AI/CYBER IT ROOM	20	1	500			2,300	1,800	2	30	REC; AI/CYBER IT RM CABLE TRAY	48
49	REC; AI/CYBER IT RM CABLE TRAY	20	1	360	2,160			1,800				50
51	REC; AI/CYBER IT RM CABLE TRAY	20	1	360		2,160		1,800	2	30	REC; AI/CYBER IT RM CABLE TRAY	52
53	SPARE	20	1	0			1,800	1,800				54
55	REC; AI/CYBER TVS AI SIDE	20	1	300	1,380			1,080	1	20	REC; AI/CYBER	56
57	REC; AI/CYBER	20	1	360		1,440		1,080	1	20	REC; AI/CYBER	58
59	REC; AI/CYBER	20	1	360			1,440	1,080	1	20	REC; AI/CYBER	60
61	REC; AI/CYBER	20	1	360	810			450	1	20	REC; AI/CYBER TVS CYBER SIDE	62
63	REC; AI/CYBER	20	1	360		720		360	1	20	REC; AI/CYBER	64
65	REC; AI/CYBER CEILING RACK	20	1	360			2,160	1,800	2	30	REC; AI/CYBER CEILING RACK	66
67	REC; AI/CYBER CEILING RACK	20	1	360	2,160			1,800				68
69	REC; AI/CYBER CEILING RACK	20	1	360		1,860		1,500	2	20	REC; AI/CYBER CEILING RACK	70
71	REC; AI/CYBER CEILING RACK	20	1	360			1,860	1,500				72
73	REC; AI/CYBER CEILING RACK	20	1	360	360			0	1	20	SPARE	74
75	REC; AI/CYBER CEILING RACK	20	1	360		360		0	1	20	SPARE	76
77	SPACE ONLY			0			0	0			SPACE ONLY	78
79	SPACE ONLY			0	0			0			SPACE ONLY	80
81	SPACE ONLY			0		0		0			SPACE ONLY	82
83	SPACE ONLY			0			0	0			SPACE ONLY	84
	PER PHASE CONNECTED - VA				21,350	18,430	21,190				TOTAL CONNECTED - VA	60,970
	PER PHASE CONNECTED - AMPS				178	154	177				TOTAL CONNECTED - AMPS	169
											TOTAL DEMAND - VA	43,203
											NEC TOTAL DEMAND - AMPS	120

NOTES:

BHR=BREAKER HANDLE SHALL BE RED
GF = GROUND FAULT CIRCUIT INTERRUPTER
*REFER TO THE BRANCH CIRCUIT COPPER CONDUCTOR AND CONDUIT SIZING CHART FOR SIZING BRANCH CIRCUITS OF 100A OR LESS

NEW PANELBOARD L2

BUS AMPS: 225A | SCCR: PER STUDY | FULLY RATED | TYPE: BRANCH CIRCUIT PANELBOARD
MAIN SIZE / TYPE: MLO | NEMA TYPE: 1 | MANUFACTURER:
VOLTS/PHASE: 208Y/120V, 3PH, 4W | MOUNTING: SURFACE | MFG MODEL:
LOCATION: | OPTIONS:

CKT #	CIRCUIT DECRIPTION	CB AMPS	P	LOAD VA	A VA	B VA	C VA	LOAD VA	P	CB AMPS	CIRCUIT DECRIPTION	CKT #
1				6,000	7,000			1,000	2	20	HOOD	2
3	DISC. SWITCH	100	3	6,000		7,000		1,000				4
5				6,000			6,000	0	1	20	SPARE	6
7	REC; CONST. TECH RM CLG RACK	30	2	1,800	2,160			360	1	20	REC; CONST. TECH RM	8
9				1,800		2,160		360	1	20	REC; CONST. TECH RM	10
11	REC; CONST. TECH RM CLG RACK	20	2	1,500			1,860	360	1	20	REC; CONST. TECH RM	12
13				1,500	1,860			360	1	20	REC; CONST. TECH RM	14
15	REC; CONST. TECH RM CLG RACK	30	2	1,800		2,550		750	1	20	REC; CONST. TECH RM	16
17				1,800			1,800	0	1	20	SPARE	18
19	REC; CONST. TECH RM CLG RACK	20	2	1,500	1,500			0	1	20	SPARE	20
21				1,500		1,500		0	1	20	SPARE	22
23	REC; CONST. TECH RM CLG RACK	20	1	360			360	0	1	20	SPARE	24
25	REC; CONST. TECH RM CLG RACK	20	1	360	360			0			SPACE ONLY	26
27	REC; CONST. TECH RM CLG RACK	20	1	360		360		0			SPACE ONLY	28
29	REC; CONST. TECH RM CLG RACK	20	1	360			360	0			SPACE ONLY	30
31	REC; CONST. TECH RM CLG RACK	20	1	360	360			0			SPACE ONLY	32
33	REC; CONST. TECH RM CLG RACK	20	1	360		360		0			SPACE ONLY	34
35	SPACE ONLY			0			0	0			SPACE ONLY	36
37	SPACE ONLY			0	0			0			SPACE ONLY	38
39	SPACE ONLY			0		0		0			SPACE ONLY	40
41	SPACE ONLY			0			0	0			SPACE ONLY	42
	PER PHASE CONNECTED - VA				13,240	13,930	10,380				TOTAL CONNECTED - VA	37,550
	PER PHASE CONNECTED - AMPS				110	116	87				TOTAL CONNECTED - AMPS	104
											TOTAL DEMAND - VA	33,775
											NEC TOTAL DEMAND - AMPS	94

NOTES:

*REFER TO THE BRANCH CIRCUIT COPPER CONDUCTOR AND CONDUIT SIZING CHART FOR SIZING BRANCH CIRCUITS OF 100A OR LESS

STATE OF MISSOURI
ALAN W. LANKFORD
NUMBER E-24324
REGISTERED PROFESSIONAL ENGINEER
05.23.2023

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

NO.	REVISION DESCRIPTION	DATE

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

ELECTRICAL SCHEDULES

SHEET: E501

OF: DATE: 05-01-2023

Lankford Fendler + associates
1730 Walnut Street 816.221.1411
Kansas City, Missouri 64108 Fax: 816.221.1429

L.F+a Project No. 22.7184.00

NEW PANELBOARD L3

BUS AMPS: 225A | SCCR: PER STUDY | FULLY RATED | TYPE: BRANCH CIRCUIT PANELBOARD
MAIN SIZE / TYPE: MLO | NEMA TYPE: 1 | MANUFACTURER:
VOLTS/PHASE: 208Y/120V, 3PH, 4W | MOUNTING: SURFACE | MFG MODEL:
LOCATION: | OPTIONS:

CKT #	CIRCUIT DECRIPTION	CB AMPS	P	LOAD VA	A VA	B VA	C VA	LOAD VA	P	CB AMPS	CIRCUIT DECRIPTION	CKT #
1	REC; SHOP AREA S.WALL	20	1	540	6,540			6,000				2
3	REC; SHOP AREA S.WALL	20	1	540		6,540		6,000	3	100	DISC. SWITCH	4
5	REC; SHOP AREA S.WALL	20	1	360			6,360	6,000				6
7	REC; SHOP AREA S.WALL/FAN CTRL	20	1	360	360			0	1	20	SPARE	8
9	SPARE	20	1	0		0		0	1	20	SPARE	10
11	SPARE	20	1	0			0	0	1	20	SPARE	12
13	SPARE	20	1	0	0			0	1	20	SPARE	14
15	SPACE ONLY			0		0		0			SPACE ONLY	16
17	SPACE ONLY			0			0	0			SPACE ONLY	18
19	SPACE ONLY			0	0			0			SPACE ONLY	20
21	SPACE ONLY			0		0		0			SPACE ONLY	22
23	SPACE ONLY			0			0	0			SPACE ONLY	24
25	SPACE ONLY			0	0			0			SPACE ONLY	26
27	SPACE ONLY			0		0		0			SPACE ONLY	28
29	SPACE ONLY			0			0	0			SPACE ONLY	30
31	SPACE ONLY			0	0			0			SPACE ONLY	32
33	SPACE ONLY			0		0		0			SPACE ONLY	34
35	SPACE ONLY			0			0	0			SPACE ONLY	36
37	SPACE ONLY			0	0			0			SPACE ONLY	38
39	SPACE ONLY			0		0		0			SPACE ONLY	40
41	SPACE ONLY			0			0	0			SPACE ONLY	42
	PER PHASE CONNECTED - VA			6,900	6,540		6,360				TOTAL CONNECTED - VA	19,800
	PER PHASE CONNECTED - AMPS			58	55		53				TOTAL CONNECTED - AMPS	55
											TOTAL DEMAND - VA	19,800
											NEC TOTAL DEMAND - AMPS	55

NOTES:

*REFER TO THE BRANCH CIRCUIT COPPER CONDUCTOR AND CONDUIT SIZING CHART FOR SIZING BRANCH CIRCUITS OF 100A OR LESS

NEW PANELBOARD L5

BUS AMPS: 225A | SCCR: PER STUDY | FULLY RATED | TYPE: BRANCH CIRCUIT PANELBOARD
MAIN SIZE / TYPE: MLO | NEMA TYPE: 1 | MANUFACTURER:
VOLTS/PHASE: 208Y/120V, 3PH, 4W | MOUNTING: SURFACE | MFG MODEL:
LOCATION: | OPTIONS:

CKT #	CIRCUIT DECRIPTION	CB AMPS	P	LOAD VA	A VA	B VA	C VA	LOAD VA	P	CB AMPS	CIRCUIT DECRIPTION	CKT #
1	REC; MANUF. TECH	20	1	540	6,540			6,000				2
3	REC; MANUF. TECH	20	1	360		6,360		6,000	3	100	DISC. SWITCH	4
5	REC; MANUF. TECH	20	1	540			6,540	6,000				6
7	REC; MANUF. TECH	20	1	540	2,340			1,800	2	30	REC; MANUF. TECH	8
9	REC; MANUF. TECH	20	1	360		2,160		1,800				10
11	SPARE	20	1	0			1,800	1,800	2	30	REC; MANUF. TECH	12
13	SPARE	20	1	0	1,800			1,800				14
15	REC; MANUF. TECH CLG RACK	20	1	360		2,160		1,800	2	30	REC; MANUF. TECH CLG RACK	16
17	REC; MANUF. TECH CLG RACK	20	1	360			2,160	1,800				18
19	REC; MANUF. TECH CLG RACK	20	1	360	1,360			1,000	2	20	REC; MANUF. TECH CLG RACK	20
21	REC; MANUF. TECH CLG RACK	20	1	360		1,360		1,000				22
23	REC; MANUF. TECH CLG RACK	20	1	360			2,160	1,800	2	30	REC; MANUF. TECH CLG RACK	24
25	REC; MANUF. TECH CLG RACK	20	1	360	2,160			1,800				26
27	SPARE	20	1	0		1,000		1,000	2	20	REC; MANUF. TECH CLG RACK	28
29	SPARE	20	1	0			1,000	1,000				30
31	SPACE ONLY			0	0			0			SPACE ONLY	32
33	SPACE ONLY			0		0		0			SPACE ONLY	34
35	SPACE ONLY			0			0	0			SPACE ONLY	36
37	SPACE ONLY			0	0			0			SPACE ONLY	38
39	SPACE ONLY			0		0		0			SPACE ONLY	40
41	SPACE ONLY			0			0	0			SPACE ONLY	42
	PER PHASE CONNECTED - VA			14,200	13,040		13,660				TOTAL CONNECTED - VA	40,900
	PER PHASE CONNECTED - AMPS			118	109		114				TOTAL CONNECTED - AMPS	114
											TOTAL DEMAND - VA	34,450
											NEC TOTAL DEMAND - AMPS	96

NOTES:

*REFER TO THE BRANCH CIRCUIT COPPER CONDUCTOR AND CONDUIT SIZING CHART FOR SIZING BRANCH CIRCUITS OF 100A OR LESS

BRANCH CIRCUIT COPPER CONDUCTOR AND CONDUIT SIZING CHART*

OVERCURRENT PROTECTION DEVICE RATING (AMPS)	REQUIRED CONDUCTOR SIZE	EQUIPMENT GROUNDING CONDUCTOR SIZE	SINGLE PHASE 2 WIRE + GND. CONDUIT SIZE	SINGLE PHASE 3 WIRE + GND. CONDUIT SIZE	THREE PHASE 3 WIRE + GND. CONDUIT SIZE	THREE PHASE 4 WIRE + GND. CONDUIT SIZE
15	12 AWG	12 AWG	3/4"	3/4"	3/4"	3/4"
20	12 AWG	12 AWG	3/4"	3/4"	3/4"	3/4"
25	10 AWG	10 AWG	3/4"	3/4"	3/4"	3/4"
30	10 AWG	10 AWG	3/4"	3/4"	3/4"	3/4"
35	8 AWG	10 AWG	3/4"	3/4"	3/4"	3/4"
40	8 AWG	10 AWG	3/4"	3/4"	3/4"	3/4"
45	6 AWG	10 AWG	3/4"	3/4"	3/4"	1"
50	6 AWG	10 AWG	3/4"	3/4"	3/4"	1"
60	4 AWG	10 AWG	1"	1"	1"	1-1/4"
70	4 AWG	8 AWG	1"	1"	1"	1-1/4"
80	3 AWG	8 AWG	1"	1-1/4"	1-1/4"	1-1/4"
90	2 AWG	8 AWG	1"	1-1/4"	1-1/4"	1-1/4"
100	1 AWG	8 AWG	1-1/4"	1-1/2"	1-1/2"	1-1/2"

* = UNLESS OTHERWISE NOTED ON THE DRAWINGS.

* = UNLESS OTHERWISE NOTED ON THE DRAWINGS, ALL BRANCH CIRCUITS AND FEEDERS TO BE PROVIDED WITH A NEUTRAL WIRE.

* = ALL CONDUCTORS SIZED ON THE POWER RISER DIAGRAM OR IN BRANCH CIRCUIT CONDUCTOR TABLE ARE BASED ON 3 CURRENT CARRYING CONDUCTORS IN A RACEWAY OR CABLE. CONDUCTORS SHALL BE DERATED IN ACCORDANCE WITH THE NEC IF 4 OR MORE CONDUCTORS ARE PLACED IN A RACEWAY OR CABLE.

NEW PANELBOARD L4

BUS AMPS: 225A | SCCR: PER STUDY | FULLY RATED | TYPE: BRANCH CIRCUIT PANELBOARD
MAIN SIZE / TYPE: MLO | NEMA TYPE: 1 | MANUFACTURER:
VOLTS/PHASE: 208Y/120V, 3PH, 4W | MOUNTING: SURFACE | MFG MODEL:
LOCATION: | OPTIONS:

CKT #	CIRCUIT DECRIPTION	CB AMPS	P	LOAD VA	A VA	B VA	C VA	LOAD VA	P	CB AMPS	CIRCUIT DECRIPTION	CKT #
1	REC; SHOP AREA N.WALL	20	1	540	6,540			6,000				2
3	REC; SHOP AREA N.WALL	20	1	360		6,360		6,000	3	100	DISC. SWITCH	4
5	REC; SHOP AREA N.WALL	20	1	360			6,360	6,000				6
7	REC; SHOP AREA N.WALL	20	1	360	360			0	1	20	SPARE	8
9	SPARE	20	1	0		0		0	1	20	SPARE	10
11	SPARE	20	1	0			0	0	1	20	SPARE	12
13	SPARE	20	1	0	0			0	1	20	SPARE	14
15	SPACE ONLY			0		0		0			SPACE ONLY	16
17	SPACE ONLY			0			0	0			SPACE ONLY	18
19	SPACE ONLY			0	0			0			SPACE ONLY	20
21	SPACE ONLY			0		0		0			SPACE ONLY	22
23	SPACE ONLY			0			0	0			SPACE ONLY	24
25	SPACE ONLY			0	0			0			SPACE ONLY	26
27	SPACE ONLY			0		0		0			SPACE ONLY	28
29	SPACE ONLY			0			0	0			SPACE ONLY	30
31	SPACE ONLY			0	0			0			SPACE ONLY	32
33	SPACE ONLY			0		0		0			SPACE ONLY	34
35	SPACE ONLY			0			0	0			SPACE ONLY	36
37	SPACE ONLY			0	0			0			SPACE ONLY	38
39	SPACE ONLY			0		0		0			SPACE ONLY	40
41	SPACE ONLY			0			0	0			SPACE ONLY	42
	PER PHASE CONNECTED - VA			6,900	6,360		6,360				TOTAL CONNECTED - VA	19,620
	PER PHASE CONNECTED - AMPS			58	53		53				TOTAL CONNECTED - AMPS	54
											TOTAL DEMAND - VA	19,620
											NEC TOTAL DEMAND - AMPS	54

NOTES:

*REFER TO THE BRANCH CIRCUIT COPPER CONDUCTOR AND CONDUIT SIZING CHART FOR SIZING BRANCH CIRCUITS OF 100A OR LESS

NEW PANELBOARD L6

BUS AMPS: 225A | SCCR: PER STUDY | FULLY RATED | TYPE: BRANCH CIRCUIT PANELBOARD
MAIN SIZE / TYPE: MLO | NEMA TYPE: 1 | MANUFACTURER:
VOLTS/PHASE: 208Y/120V, 3PH, 4W | MOUNTING: SURFACE | MFG MODEL:
LOCATION: | OPTIONS:

	CKT #	CIRCUIT DECRIPTION	CB AMPS	P	LOAD VA	A VA	B VA	C VA	LOAD VA	P	CB AMPS	CIRCUIT DECRIPTION	CKT #	
A3	1	SPARE	20	1	0	6,000			6,000				2	
A3	3	REC; INDUST. TECH	20	1	360		6,360		6,000	3	100	DISC. SWITCH	4	
A3	5	REC; INDUST. TECH	20	1	540			6,540	6,000				6	
A3	7	REC; INDUST. TECH	20	1	540	2,340			1,800	2	30	REC; INDUST. TECH	8	A3
A3	9	REC; INDUST. TECH	20	1	360		2,160		1,800				10	
A3	11	REC; INDUST. TECH	20	1	0			0	0	1	20	SPARE	12	A3
A3	13	REC; INDUST. TECH	20	1	0	0			0	1	20	SPARE	14	A3
A3	15	REC; INDUSTR. TECH CLG RACK	20	1	360		2,160		1,800	2	30	REC; INDUST. TECH CLG RACK	16	A3
A3	17	REC; INDUSTR. TECH CLG RACK	20	1	360			2,160	1,800				18	
A3	19	REC; INDUSTR. TECH CLG RACK	20	1	360	1,360			1,000	2	20	REC; INDUST. TECH CLG RACK	20	A3
A3	21	REC; INDUSTR. TECH CLG RACK	20	1	360		1,360		1,000				22	
A3	23	REC; INDUSTR. TECH CLG RACK	20	1	360			2,160	1,800	2	30	REC; INDUST. TECH CLG RACK	24	A3
A3	25	REC; INDUSTR. TECH CLG RACK	20	1	360	2,160			1,800				26	
	27	SPARE	20	1	0		1,000		1,000	2	20	REC; INDUST. TECH CLG RACK	28	A3
	29	SPARE	20	1	0			1,000	1,000				30	
	31	SPACE ONLY			0	0			0			SPACE ONLY	32	
	33	SPACE ONLY			0		0		0			SPACE ONLY	34	
	35	SPACE ONLY			0			0	0			SPACE ONLY	36	
	37	SPACE ONLY			0	0			0			SPACE ONLY	38	
	39	SPACE ONLY			0		0		0			SPACE ONLY	40	
	41	SPACE ONLY			0			0	0			SPACE ONLY	42	
		PER PHASE CONNECTED - VA			11,860	13,040		11,860				TOTAL CONNECTED - VA	36,760	
		PER PHASE CONNECTED - AMPS			99	109		99				TOTAL CONNECTED - AMPS	102	
												TOTAL DEMAND - VA	32,380	
												NEC TOTAL DEMAND - AMPS	90	

NOTES:

*REFER TO THE BRANCH CIRCUIT COPPER CONDUCTOR AND CONDUIT SIZING CHART FOR SIZING BRANCH CIRCUITS OF 100A OR LESS

LIGHTING CONTROL SCHEDULE: LC1

NOTE	ZONE/ CRT #	DESCRIPTION	TYPE OF CONTROLS	LAMP SOURCE	LOAD TYPE	VOLT.	P	AMP	LOAD WATTS	NOTE	ZONE/ CRT#	DESCRIPTION	TYPE OF CONTROLS	LAMP SOURCE	LOAD TYPE	VOLT.	P	AMP	LOAD WATTS
1	1	MANUF. TECH.	0-10V DIM	LED	NORM	277	1	20	512	3	2	SHOP AREA	0-10V DIM	LED	NORM	277	1	20	1068
2	3	INDUSTRIAL TECH.	0-10V DIM	LED	NORM	277	1	20	512	3	4	SHOP AREA	0-10V DIM	LED	NORM	277	1	20	1068
2	5	CONSTR. TECH	0-10V DIM	LED	NORM	277	1	20	512	1,4	6	AI/CYBER	0-10V DIM	LED	NORM	277	1	20	256
1	7	LOBBY	ON/OFF	LED	NORM	277	1	20	542	1,4	8	AI/CYBER	0-10V DIM	LED	NORM		1	20	256
	9	SPARE		-	-	277	1	20			10	SPACE / PROVISION		-	-				
	11	SPACE / PROVISION		-	-						12	SPACE / PROVISION		-	-				
	13	SPACE / PROVISION		-	-						14	SPACE / PROVISION		-	-				
5	15	RR EXH. FANS	ON/OFF	-	NORM	120	1	20	160		16	SPACE / PROVISION		-	-				
		TOTAL:							2238			TOTAL:							2648

NOTES:
1 SINGLE POINT ENTRY DIMMING CONTROLLER.
2 TWO POINT ENTRY DIMMING CONTROLLER.
3 THREE POINT ENTRY CONTROLLER WITH TWO ZONES IN EACH LOCATION.
4 PROVIDE SECOND CONTROLLER AT TEACHER LOCATION.
5

GENERAL NOTES:
A: PROGRAM FOR BUILDING WIDE SWEEP TO TURN LIGHTS OFF. LIGHTS SHALL FLASH ONCE TO INDICATE LIGHTS SHALL TURN OFF IN 5 MINS. IF BUTTON IS NOT PRESSED, AFTER HOURS DEFAULT TO BE SET FOR 1 HOUR SWEEPS. ZONE 15 SHALL TURN OFF WHEN ALL LIGHTS HAVE BEEN TURNED OFF.
B: PROVIDE CONTROLS AND WIRING PER MANUFACTURERS INSTALLATION INSTRUCTIONS LVD = LOW VOLTAGE DIMMER (0-10V), LV = LOW VOLTAGE SWITCH ON/OFF

EQUIPMENT CONNECTION SCHEDULE

TAG	DESCRIPTION	ELECTRICAL - MOTOR SIZE HP	KW	AMPS	VOLTS/PH	SIZE	VOLTAGE RATING	ELECTRICAL - DISCONNECT SWITCH NUMBER OF POLES	NEMA TYPE	MOCP (NOTE 2)	ELECTRICAL - GENERAL NOTE 1	NEUTRAL WIRE	FEED BY PANEL	NOTES
EQUIPMENT														
RTU-1	ROOF TOP EQUIPMENT	-			480/3	--	--	--	--	25	23/23/26	N	MDP	
RTU-2	ROOF TOP EQUIPMENT	-			480/3	--	--	--	--	25	23/23/26	N	MDP	
RTU-3	ROOF TOP EQUIPMENT	-			480/3	--	--	--	--	50	23/23/26	N	MDP	4
RTU-4	ROOF TOP EQUIPMENT	-			480/3	--	--	--	--	25	23/23/26	N	MDP	4
RTU-5	ROOF TOP EQUIPMENT	-			480/3	--	--	--	--	50	23/23/26	N	MDP	
RTU-6	ROOF TOP EQUIPMENT	-			480/3	--	--	--	--	25	23/23/26	N	MDP	
RTU-7	ROOF TOP EQUIPMENT	-			480/3	--	--	--	--	25	23/23/26	N	MDP	
CU-1	HEAT PUMP	-	-	12.2	208/1	30	250	2	3R	20	26/26/26	N	L1	3,5
AC-1	WALL MOUNTED AC	-	-	0.2	208/1	20	250	2	1	20	26/26/26	Y	L1	3,5
CU-2	HEAT PUMP	-	-	12.2	208/1	30	250	2	3R	20	26/26/26	N	L1	3,5
AC-2	WALL MOUNTED AC	-	-	0.2	208/1	20	250	2	1	20	26/26/26	Y	L1	3,5
AC-3	WALL MOUNTED AC	-	-	0.2	208/1	20	250	2	1	20	26/26/26	Y	L1	3,5
UH-1	UNIT HEATER	-	1.5	24.1	120	20	250	1	1	20	26/26/26	Y	L1	3
UH-2	UNIT HEATER	-	1.5	24.1	120	20	250	1	1	20	26/26/26	Y	L1	3
CF-1	CIRCULATION FAN	3/4	-	1.4	480/3	30	600	3	1	15	23/23/26	Y	H1	3, 7
CF-1	CIRCULATION FAN	3/4	-	1.4	480/3	30	600	3	1	15	23/23/26	Y	H1	3,7
EF-1	EXHAUST FAN	-	-	1.5	120/1	-	250	1	1	20	23/23/28	Y	L1	3, 6, 8
EF-2	EXHAUST FAN	-	-	1.5	120/1	-	250	1	1	20	23/23/28	Y	L1	3, 6, 8
EF-3	EXHAUST FAN	-	-	1.5	120/1	-	250	1	1	20	23/23/28	Y	L1	3, 6, 9
EF-4	EXHAUST FAN	-	-	1.5	120/1	-	250	1	1	20	23/23/28	Y	L1	3, 6, 9
EF-5	EXHAUST FAN	-	-	1.5	120/1	-	250	1	1	20	23/23/28	Y	L1	3, 6, 9
DWH-1	DOMETIC WATER HEATER	-	-	-	120	20	250	1	1	20	26/26/26	Y	L1	-
DWH-2	DOMETIC WATER HEATER	-	-	-	120	20	250	1	1	20	26/26/26	Y	L1	
RCP-1	RECIRCULATION PUMP	-	-	-	120	20	250	1	1	20	26/26/26	Y	L1	

ELECTRICAL NOTES:
E1. XYYZ
X = FURNISHED BY DIVISION (22, 23 OR 26)
Y = INSTALLED BY DIVISION (22, 23 OR 26)
Z = CONNECTED BY DIVISION (22, 23 OR 26)
22 = PLUMBING CONTRACTOR.
23 = MECHANICAL CONTRACTOR.
26 = ELECTRICAL CONTRACTOR.
E2. MAXIMUM OVERCURRENT PROTECTION FUSE OR HVACR CIRCUIT BREAKER PER MANUFACTURER'S LABEL.
E3. PROVIDE DISCONNECT MOUNTED TO OR NEXT TO THE UNIT.
E4. PROVIDE DUCT MOUNTED SMOKE DETECTORS IN THE SUPPLY AND RETURN AIR.
E5. PACKAGED UNIT, POWER FED TO CONDENSER AND BACK TO MATCHING HEAT PUMP.
E6. TOGGLE DISCONNECT SWITCH, HP RATED.
E7. PROVIDE CONDUIT BACK TO THE CONTROLLER AND 120V CIRCUIT FROM PANEL L3
E8. FAN FOR RESTROOM CONTROLLED BY LIGHTING CONTROL SYSTEM FOR ON/OFF CONTROL.
E9. FAN PROVIDED WITH RATE OF RAISE THERMOSTAT BY M.C. INSTALLED BY E.C.

STATE OF MISSOURI
ALAN W. LANKFORD
NUMBER E-24324
REGISTERED PROFESSIONAL ENGINEER
05.23.2023

ELLISON - AUXIER
ARCHITECTS

924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

NO.	REVISION DESCRIPTION	DATE

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

ELECTRICAL SCHEDULES

SHEET:
E502
OF: DATE: 05-01-2023

LIGHT FIXTURE SCHEDULE

TYPE	MANUFACTURER	LAMPS	WATTS / VOLTS	DIMMING PROTOCOL	DESCRIPTION	NOTES
A	EIKO - VOL SERIES VOL22-PS40-840-U (NO EQUALS)	LED 4000K	26 277	ON/OFF/DIM PER DWG	2X2 RECESSED LED TROFER, WHITE TRIM, CENTER DROP-DOWN DIFFUSER PROVIDE 0-10V DIMMING IN CONR. ROOM	
B	EIKO LIGHTING STR-4-PS45-840-U-D (NO EQUALS)	LED 4000K	45 277	NO ON/OFF	4' LED STRIP FIXTURE, WHITE HOUSING, ROUND LENS. SUSPENDED FROM STRUCTURE WITH AIR-CRAFT CABLES.	
C	EIKO LIGHTING STR-8-PS90-840-U-D (NO EQUALS)	LED 4000K	90 277	YES 0-10V	8' LED STRIP FIXTURE, WHITE HOUSING, ROUND LENS. SUSPENDED FROM STRUCTURE WITH AIR-CRAFT CABLES.	
D	EIKO LIGHTING LLH-1E-130W-840-U-D-12391 (NO EQUALS)	LED 4000K	130 277	YES 0-10V	1X2' LED LINEAR HIGH BAY FIXTURE, WHITE HOUSING, FLAT LENS SUSPENDED FROM STRUCTURE	
E1	COPPER LIGHTING APEL-MINI (OR EQUAL)	LED	1.5 277	NO -	LOW PROFILE EMERGENCY LIGHT, WHITE HOUSING, TWO HEADS	
E2	COPPER LIGHTING ATLE-MINI-3H (OR EQUAL)	LED	3 277	NO -	EMERGENCY LIGHT, WHITE HOUSING, THREE HEADS	
F	SPI LIGHTING - PAVO 4" SIP12125-4FT-CYL-LED-LOW (OR EQUAL)	LED 4000K	26 277	NO -	4" DIA, 4' TALL DIA CYLINDER WITH BOTTOM 45-DEGREE OPTIC, MATTE ACRYLIC DIFFUSER, POWER SUPPLY CANOPY WITH CORD SUSPENSION, AC1 TOP ACCENT FOR AC1 OPTION PANIT MWSU GOLD.	
G	SPI LIGHTING - PAVO 4" SIP12125-2FT-CYL-LED-LOW (OR EQUAL)	LED 4000K	11 277	NO -	4" DIA, 2' TALL DIA CYLINDER WITH BOTTOM 45-DEGREE OPTIC, MATTE ACRYLIC DIFFUSER, POWER SUPPLY CANOPY WITH CORD SUSPENSION, AC1 TOP ACCENT FOR AC1 OPTION PANIT MWSU GOLD.	
X1	SURE-LITES APC-H-7-R-SQ (OR EQUAL)	LED	3 277	NO -	LED EXIT SIGN, WHITE HOUSING, RED LETTERS, 2-ADJUSTABLE EM. HEADS.	
XE	SURE-LITES SRM-M-13-S-BK (OR EQUAL)	LED	- -	NO -	WIRED AND POWERED FROM TYPE X1 FIXTURE.	
EXTERIOR						
ET1	SPI-LIGHTING PAVO 2* - 3FT-L10W-UNV-40K- MA01-MCS-W-AC1 (OR EQUAL)	LED 4000K	10 277	NO PHOTO-CELL	2" DIA SURFACE MOUNTED LIGHT FIXTURE, MOUNTED VERTICAL, FROSTED HOUSING (MOUNT POWER SUPPLY WITHIN MECHIT ROOM AT 10' AFF) FOR AC1 OPTION PANIT MWSU GOLD.	
ET2	EIKO LIGHTING CWSP-SA-10W-8CCT-UNV-X (NO EQUALS)	LED 4000K	10 277	NO PHOTO-CELL	3" DIA CYLINDER, MOUNTED IN THE DOWN POSITION. (BRONZE)	
ET3	EIKO LIGHTING WPA-PS35/8CCT/HD (NO EQUALS)	LED 4000K	35 277	NO PHOTO-CELL	LOW PROFILE EXTERIOR WALL PACK, BRONZE FINISH	
ET4	EIKO LIGHTING WPA-PS75/8CCT/HD (NO EQUALS)	LED 4000K	75 277	NO PHOTO-CELL	LOW PROFILE EXTERIOR WALL PACK, BRONZE FINISH	
ST1	COOPER LIGHTING - GALLEON NO.GLAN-SA1C-740-U-TE3-X-BZ HSS-PR (OR EQUAL)	LED 4000K	57 277	NO PHOTO-CELL	AREA SITE LED LIGHT FIXTURE, BRONZE FINISH, PHOTOCELL INSTALL ON AN 18' TALL POLE, COOPER LTG NO.SSA.4.M.18.C.X.1	

SPECIFIC NOTES:
1

SUBSTITUTION NOTES:
THE LIGHTING DESIGN FOR THIS PROJECT IS BASED UPON THE MANUFACTURERS SPECIFIED. IF AN ADDITIONAL SUBSTITUTION IS DESIRED BY THE CONTRACTOR, A SUBSTITUTION REQUEST SUBMITTAL MUST BE PROVIDED AS FOLLOWS:

S1. SUBSTITUTION REQUEST MUST BE RECEIVED BY THE ENGINEER IN WRITING 10 DAYS PRIOR TO BID. FAILURE TO SUBMIT CONSTITUTES A GUARANTEE TO SUPPLY THE SPECIFIED FIXTURES.

S2. INFORMATION IS TO BE SUPPLIED COMPARING PHOTOMETRY, (WITH FLOOR PLANS INDICATING POINT BY POINT CALCULATIONS) DIMENSIONS, MATERIAL COMPOSITION, FINISH, VISUAL APPEARANCE AS WELL AS THE "CONTRACTOR NET" PRICING. SAMPLES ARE TO BE PROVIDED UPON REQUEST.

S3. GREAT CARE, TIME AND EXPENSE HAVE BEEN USED TO PROVIDE OUR CLIENT WITH THE LIGHTING AND CONTROLS SYSTEM. THEREFORE, FOR EACH AND EVERY TYPE OF FIXTURE OFFERED AS AN UNSOLICITED ALTERNATE, A $500.00 FEE WILL BE CHARGED TO THE CONTRACTOR FOR REVIEW OF THE ALTERNATE FIXTURE. THIS CHARGE IS IN NO WAY A GUARANTEE OF APPROVAL, BUT IS SOLELY TO COMPENSATE THE ENGINEER FOR TIME SPENT VALIDATING EQUALITY AND COMPATIBILITY WITH THE PROJECT REQUIREMENTS. THIS REIMBURSEMENT MUST BE RECEIVED BY THE ENGINEER PRIOR TO ANY REVIEW COMMENCING.

S4. PACKAGING OF LIGHT FIXTURES WILL NOT BE CONSIDERED OR APPROVED.

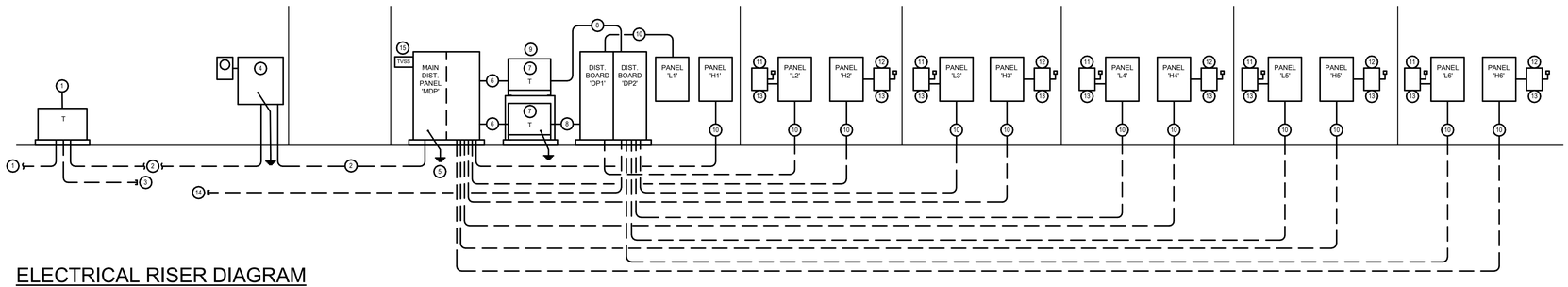
S5. MANUFACTURER'S REPRESENTATIVE AGENTS SHALL BE ALLOWED TO OFFER MINI-LOT PRICING FOR SPECIFIED LIGHTING FIXTURES.

S6. LIGHTING CONTROLS PRICING SHALL BE COMPLETELY SEPARATE OF ANY LIGHT FIXTURE PRICING. ANY LIGHTING CONTROLS PRICING THAT IS SUBMITTED WITH LIGHT FIXTURE PRICING (UNIT OR MINI-LOT) WILL BE IMMEDIATELY REJECTED IN ITS ENTIRETY.

GENERAL NOTE:

G1. ELECTRICAL CONTRACTOR SHALL VERIFY CEILING TYPE PRIOR TO ORDERING ANY LIGHT FIXTURES.

G2. ELECTRICAL CONTRACTOR SHALL COORDINATE DIMMING DRIVERS/BALLASTS WITH DIMMING SWITCHES/SYSTEMS AND SHALL INCLUDE ALL REQUIRED CONTROL WIRING.



ELECTRICAL RISER DIAGRAM
NO SCALE

ⓧ RISER PLAN NOTES

1. REFERENCE CIVIL PLAN FOR TRANSFORMER LOCATION AND PRIOR FEED.
2. INSTALL (4) SETS OF 4-#350 (75-DEGREE CU) CONDUCTORS IN 4"C.
3. PROVIDE 4-4" PVC CONDUITS STUBBED OUT 5' FROM TRANSFORMERS TO THE WEST CAN CAP FOR FUTURE USAGE. INSTALL #6 GROUND WIRE FOR FUTURE TRACING.
4. INSTALL C.T. CABINET, METER, AND GROUNDING PER EVERGY STANDARDS.
5. REFERENCE MAIN SERVICE ENTRANCE GROUNDING DETAIL.
6. INSTALL 3-#4/0 (75-DEGREE CU) & 1-#3 (75-DEGREE CU) GROUND WIRE. 2"C.
7. INSTALL 150 KVA, 480-208/120V TRANSFORMER AND GROUND PER NEC.250 WITH #8 GROUND WIRE.
8. INSTALL (2) SETS OF 4-#250 (75-DEGREE CU) & 1-#3 (75-DEGREE CU) GROUND WIRE IN 3"C.
9. STACK TRANSFORMERS. CONSULATE WITH A STRUCTURAL ENGINEER AND PROVIDE STRUCTURE TO SUPPORT TRANSFORMER.
10. INSTALL 4-#1/0 (75-DEGREE CU) & 1-#8 (75-DEGREE CU) GROUND WIRE IN 2" PVC CONDUIT.
11. INSTALL 250V RATED, 100A/3P FUSED SAFETY SWITCH IN A NEMA TYPE 1 ENCLOSURE. FROM PANEL, INSTALL 4-#3 (75-DEGREE CU) & 1-#8 (75-DEGREE CU) GROUND WIRE IN 2" CONDUIT. ON THE BOTTOM OF THE DISCONNECT INSTALL 208/120V CAM LOCK COLOR-CODED RECEPTACLES WITH PROTECTIVE
12. INSTALL 600V RATED, 100A/3P FUSED SAFETY SWITCH IN A NEMA TYPE 1 ENCLOSURE. FROM PANEL, INSTALL 4-#3 (75-DEGREE CU) & 1-#8 (75-DEGREE CU) GROUND WIRE IN 2" CONDUIT. ON THE BOTTOM OF THE DISCONNECT INSTALL 480/277V CAM LOCK COLOR-CODED RECEPTACLES WITH PROTECTIVE
13. PROVIDE WITH CAM LOCK PROTECTIVE CAPS. CAPS TO BE SECURED TO THE DISCONNECT WITH PROTECTIVE CORD ATTACHMENT.
14. INSTALL 2" PVC CONDUIT STUBBED OUT WEST 5' FROM THE BUILDING AND CAPPED. INSTALL GROUND WIRE FOR FUTURE TRACING.
15. PROVIDE TVSS UNIT FOR MAIN DISTRIBUTION PANEL.

ELECTRICAL SYMBOLS

BRANCH CIRCUIT CONCEALED IN CEILING OR WALL. ARROWS INDICATED HOMERUNS TO PANEL, ALL CONDUCTORS ARE NOTED IN PANEL SCHEDULE
PHASE CONDUCTORS
NEUTRAL CONDUCTORS
GROUND CONDUCTORS

LP1-10 — PANEL - BREAKER NUMBER (IDENTIFICATION)

1,3 OR 1,3,5 — INDICATES X,X= 2-POLE C.B. OR X,X,X= 3-POLE C.B.

5 3 1 — HOMERUN INDICATED LIKE THIS INDICATES THREE SEPARATE CIRCUITS

CONDUIT CONCEALED IN CEILING OR WALL WITH THREE CONDUCTORS: 1-PHASE, 1-NEUTRAL, 1-GROUND WIRE, MINIMUM NO.12 WIRE UNLESS OTHERWISE SPECIFIED ON PLANS

CONDUIT RUN UNDERGROUND OR CONCEALED IN FLOOR SLAB

GROUNDING CONDUCTOR, MINIMUM NO. 12 WIRE EXCEPT AS NOTED

EXIT SIGN, SINGLE FACED, ARROWS AS SHOW ON PLANS, SHADED SIDE(S) INDICATES FACE SIDE(S) OF EXIT

EXIT SIGN, DOUBLE FACED, ARROWS AS SHOW ON DRAWING, SHADED SIDE(S) INDICATES FACE SIDE(S) OF EXIT

COMBINATION EXIT SIGN/EMERGENCY LIGHTING UNIT, CEILING OR WALL MOUNTED, SHADED SIDE(S) INDICATES FACE SIDE(S) OF EXIT

CEILING OR WALL MOUNTED EMERGENCY LIGHTING UNIT WITH INTEGRAL BATTERY AND UNIT MOUNTED HEADS

A OR A — LIGHT FIXTURE; LETTER DENOTES FIXTURE TYPE

STRIP FIXTURE

RECESSED CEILING LIGHT FIXTURE

WALL MOUNTED LIGHT FIXTURE, SIZE AND TYPE AS NOTED

PENDANT MOUNTED LIGHT FIXTURE, SIZE AND TYPE AS NOTED

MOTOR

208Y/120V OR PANELBOARD (SURFACE), TOP MOUNTED 6'-0" AFF

480/277V PANELBOARD (SURFACE), TOP MOUNTED 6'-0" AFF

DISTRIBUTION PANEL (SURFACE OR FLOOR MOUNTED)

SURFACE MOUNTED EQUIPMENT, TYPE AS INDICATED ON PLANS

GROUND

DISCONNECT SWITCH, SIZE AND TYPE AS NOTED, TOP MOUNTED 5'-0" AFF

S — SINGLE POLE SWITCH, +3'-10" AFF TO CENTERLINE OF DEVICE BOX

S LVD — LOW VOLTAGE SWITCH MOUNTING HEIGHT TO CENTERLINE OF DEVICE BOX; WATTAGE AS NOTED ON PLANS. D=DIMMING

S MS — MOTION SENSOR SWITCH, +3'-10" AFF TO CENTERLINE OF DEVICE BOX

PC — PHOTO CELL, SIZE AND TYPE AS NOTED

INDICATES RECEPTACLE ABOVE COUTERTOP. RE: PLANS

DUPLEX RECEPTACLE, +1'-6" AFF OR AS NOTED

DUPLEX RECEPTACLE W/GROUND FAULT PROTECTION,+1'-6" AFF OR AS NOTED

WP — GFI DUPLEX RECEPTACLE WITH WEATHERPROOF PLATE, HEIGHT AS NOTED

DOUBLE DUPLEX RECEPTACLE, +1'-6" AFF OR AS NOTED

USB DUPLEX RECEPTACLE, +1'-6" AFF OR AS NOTED

HEAVY DUTY RECEPTACLE; VOLTAGE, PHASE AND AMPS AS NOTED, +1'-6" OR AS NOTED

SQUARE RECESSED FLUSH FLOOR BOX WITH TYPE INDICATED, SEE SPECS.

J OR J — WALL OR CEILING MOUNTED JUNCTION BOX

TV — CATV JUNCTION BOX WITH 3/4" CONDUIT STUBBED UP OUT OF BOX TO ABOVE ACCESSIBLE CEILING, +1'-6" AFF OR AS NOTED

LOW VOLTAGE OUTLET WITH 3/4" CONDUIT STUBBED UP OUT OF BOX TO ABOVE ACCESSIBLE CEILING, +1'-6" AFF OR AS NOTED

LOW/VOLTAGE OUTLET WITH 3/4" CONDUIT STUBBED UP OUT OF BOX TO ABOVE ACCESSIBLE CEILING, INSTALLED ABOVE COUNTERTOP

CEILING MOUNTED PHOTO-ELECTRIC SMOKE DETECTOR

DUCT MOUNTED PHOTO-ELECTRIC SMOKE DETECTOR

FIRE ALARM STROBE LIGHT, +6'-8" AFF

FIRE ALARM STROBE LIGHT, CEILING MOUNTED

FIRE ALARM COMBINATION AUDIBLE/VISUAL WALL MOUNTED, +6'-8" AFF

FIRE ALARM COMBINATION AUDIBLE/VISUAL CEILING MOUNTED (FLUSH)

F — FIRE ALARM MANUAL PULL STATION, +3'-10" AFF

CO — FA CARBON MONOXIDE DETECTOR

SPRINKLER ALARM SYSTEM TAMPER SWITCH

FSD — FIRE AND SMOKE DAMPER; 120V, 1PH

CR — CARD READER; PROVIDE DOUBLE-GANG J-BOX WITH SINGLE GANG PLASTER RING WITH 3/4"C STUBBED UP INSIDE WALL AND OUT TO ACCESSIBLE CEILING WITH BUSHING ON THE END,+3'-10" AFF OR AS NOTED

DC — INDOOR DOOR CONTACT (FLUSH MOUNTED)

CAMERA

INDICATES WIRING DEVICE ABOVE, RE: DRAWING

AHU-1 — MECHANICAL EQUIPMENT CALL OUT

+3'-10" — HEIGHT TO CENTERLINE OF OUTLET BOX ABOVE FINISHED FLOOR

AFF — ABOVE FINISHED FLOOR

FA — FIRE ALARM

3 CO — FA CARBON MONOXIDE DETECTOR

GENERAL NOTES (TYPICAL ALL SHEETS)

A. REFER TO ARCHITECTS REFLECTED CEILING PLANS FOR EXACT PLACEMENT OF LIGHT FIXTURES, SPEAKER AND F.A. DEVICES IN THE CEILING SYSTEM.

B. REFER TO ARCHITECTURAL DETAILS AND ELEVATIONS FOR COORDINATION OF LOCATION OF ALL WIRING DEVICES BEFORE ROUGH-IN OF J-BOXES.

C. REFER TO ARCHITECTURAL PLANS FOR DETAIL OF ALL CONDUIT THRU ROOF PENETRATIONS.

D. SUPPORT ALL LIGHT FIXTURES WITH A MINIMUM OF (2) 12 GA. HANGER WIRES TO STRUCTURE ABOVE.

E. CONNECT EXIT AND EMERGENCY LIGHTS TO HOT LEG, NOT SWITCH LEG.

F. ALIGN ALL WIRING DEVICES IN VERTICAL ALIGNMENT. IF ANY DEVICE(S) ARE FOUND NOT TO BE INSTALLED PER DETAIL CONTRACTOR SHALL RELOCATE AND PAY ALL ASSOCIATED COSTS ASSOCIATED WITH THE RELOCATION(S).

G. LIGHTING INDICATED ABOVE EXIT DISCHARGE DOOR IS FOR MEANS OF EGRESS ILLUMINATION PER IBC 1006.1.

H. CONDUIT SHALL BE USED FOR CONDUCTORS WHERE REQUIRED BY N.E.C.

I. OUTLETS INSTALLED IN FIRE RATED ASSEMBLES SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF NOT LESS THAN 24".

J. CONTRACTOR SHALL CALCULATE VOLTAGE DROP AND SIZE WIRE ACCORDINGLY. PER N.E.C.

K. PROVIDE 3'-0" CLEARANCE IN FRONT OF DISCONNECTS TO CONDENSING UNITS.

L. CONTRACTOR SHALL PROVIDE FIRE RATED ENCLOSURES AROUND ALL ROUGH-IN BOXES, PANELS ETC. THAT ARE LOCATED IN FIRE RATED WALLS AND SHALL FIRE CAULK ALL OPENING IN RATED ASSEMBLES PER MANUFACTURERS RECOMMENDATIONS PER FIRE RATED ASSEMBLES.

M. PROVIDE HOUSE KEEPING PAD FOR ALL FLOOR MOUNTED EQUIPMENT.

N. INSTALL FIRE ALARM DEVICES THAT COMPLY WITH APPLICABLE CODES. INCLUDING BUT NOT LIMITED TO THE FAIR HOUSING ACT, NFPA, UL, ADA, IBC OR ANY OTHER AUTHORITIES HAVING JURISDICTION.

O. WHERE MORE THAN ONE SWITCH IS INDICATED ON DRAWINGS SIDE BY SIDE, CONTRACTOR SHALL INSTALL SWITCHES UNDER ONE COMMON FACE PLATE.

P. CONTRACTOR MAY WIRE SO FIRST GFI OUTLET PROTECTS ALL DOWN STREAM OUTLETS.

Q. REFERENCE EQUIPMENT CONNECTION SCHEDULE FOR CONNECTION REQUIREMENTS TO ALL EQUIPMENT LISTED ON THIS SHEET.

R. WHERE THE DRAWINGS INDICATE DEDICATED CIRCUITRY WITH NO SHARED NEUTRALS, THE CONTRACTOR SHALL NOT INSTALL MULTI-WIRE BRANCH CIRCUITS WITH A COMMON NEUTRAL.

COMcheck Software Version COMcheckWeb

Interior Lighting Compliance Certificate

Project Information

Energy Code: 2018 IECC
Project Title: MWSU - CTAC BLDG
Project Type: New Construction

Construction Site:
4525 Downs Drive
St.Joseph, Missouri 64501

Owner/Agent:
Missouri Western State University
Missouri

Designer/Contractor:
Brian Day
Lankford | Fendler + associates
1730 Walnut St.
LIBERTY, Missouri 64108
8162211411
Brian@lankfordfendler.com

Additional Efficiency Package(s)

Credits: 1.0 Required 0.0 Proposed

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts
1-Common Space Types:Workshop	92000	1.14	104880
		Total Allowed Watts =	104880

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
3 1-Common Space Types:Workshop				
LED: A: 2x2: Other:	1	32	26	832
LED: B: 4' STRIP: Other:	1	4	45	180
LED: C: 8' STRIP: Other:	1	41	90	3690
LED: D: 8' STRIP: Other:	1	24	130	3120
LED: F: 4' LONG PENDANT: Other:	1	11	26	286
LED: G: 2' LONG PENDANT: Other:	1	2	22	44
		Total Proposed Watts =		8152

Interior Lighting PASSES: Design 92% better than code

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2018 IECC requirements in COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Brian Day, Electrical Designer — Name - Title
Brian C. Day — Signature
05.24.2023 — Date

Project Title: MWSU - CTAC BLDG
Data filename:
Report date: 05/24/23

Lankford Fendler + associates
1730 Walnut Street 816.221.1411
Kansas City, Missouri 64108 Fax: 816.221.1429

L|F+a Project No. 22.7184.00

ELLISON - AUXIER ARCHITECTS
924 FRANCIS ST.
ST. JOSEPH, MO 64501
P: 816-233-8003 F: 816-233-7793
www.ellison-auxier.com

CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE
3	ADDENDUM #3	05.23.2023

NO.	REVISION DESCRIPTION	DATE

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

ELECTRICAL SCHEDULES, GENERAL NOTES & SYMBOLS, & RISER

SHEET:
E503

OF: DATE: 05-01-2023