PRCOM20225301

ALTERNATES LIST:

1) Paint ALL exterior of existing metal panel and CMU on Building D and Building E
   Base Bid: existing finish to remain.

2) Replace existing Robotics space general lighting in Building D with efficient LED
   Base Bid: existing lighting to remain.

3) Replace existing weight room, new weight room, and new GiC space general lighting in Building E with efficient LED.
   Base Bid: existing lighting to remain.

4) Exclude exterior canopy scope at GiC space North of Building E.
   Base Bid: as documented in Construction Documents.

LSR7 Robotics, GiC & Phys Education: Construction Documents

RELEASED FOR CONSTRUCTION
As Noted on Plans Review

Development Services Department
Lee's Summit, Missouri
11/23/2022

Digitally signed by Mike Weisenborn
Mike Weisenborn Date: 2022.11.23 11:01:52-06'00'

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LSW: 2600 SW Ward Rd,
Lee's Summit MO 64082
LSHS: 400 SE Blue Pkwy,
Lee's Summit MO 64063
Project Number: 0121-0100
Issue Date: September 9, 2022

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LSHS Index of Drawings
Volume 1

01.0 General Information
G001-C Index of Drawings & General Project Notes

01.1 Code Information
G100-C Code Review
G101-C LSHS - Code Plan - Building B & D

02.0 Civil
C000-C General Layout Sheet (3)
C100-C Site Plan
C105-C Dimensions Plan
C190-C Site Details
C200-C Demolition Plan
C300-C Grading Plan
C500-C Utility Plan
C590-C Utility Details
C600-C Storm Sewer Plan & Profile
C690-C Storm Sewer Details
C700-C Sanitary Sewer Plan & Profile
C790-C Sanitary Sewer Details

03.1 Architectural Site
AS100-C LSHS - Architectural Site Plan

04.1 Structural
S001-C General Notes
S002-C CMU Details
S101-C Overall Floor Plans - Building D & E
S102-C Enlarged Floor Plan - Robotics & GiC
S103-C Enlarged Floor Plan - Weights
S111-C Roof Framing Plans
S200-C Foundation Sections
S300-C Framing Sections

05.0 Architectural Demolition
AD101-C Demolition Plan - Building D
AD102-C Demolition Plan - Building E

05.1 Architectural
A001-C Graphic Symbols, Abbreviations, and General Information
A002-C Accessibility Standards
A020-C Exterior Enclosure Types, Door Schedule, Door Types
A090-C Interior Partition Types
A101-C Overall Floor Plans - Building D & E
A102-C Enlarged Floor Plan - Building D & E
A103-C Enlarged Floor Plan - Building E
A111-C Roof Plan
A151-C Reflected Ceiling Plan - Building D & E
A152-C Reflected Ceiling Plan - Building E
A201-C Exterior Elevations
A301-C Wall Sections
A305-C Exterior Details
A501-C Interior Context Drawings - Football Locker Room & Weight Room
A502-C Interior Context Drawings - Coaches Office

05.2 Architectural Finishes
AF001-C Finish Legend & Details
AF101-C Finish Floor Plan - Robotics & GiC
AF102-C Finish Floor Plan - Weights
AF103-C Furniture Plan - Building D & E

06.0 Plumbing Demo
PD101-C LSHS - Plumbing Demolition Plan - Level 1 - Building D & E

06.1 Plumbing
P000-C LSHS - Plumbing Legend & General Notes
P100-C LSHS - Plumbing Site Plan
P101-C LSHS - Plumbing Plan - Level 1 - Building D & E
P501-C LSHS - Plumbing Schedules & Details

07.0 Mechanical Demo
MD101-C LSHS - HVAC Demolition Plan - Level 1 - Building D & E

07.1 Mechanical
M000-C LSHS - Mechanical General Notes & Legend
M101-C LSHS - HVAC Plan - Level 1 - Building D & E
M201-C LSHS - Mechanical Details
M301-C LSHS - Mechanical Schedules
M401-C LSHS - Mechanical Controls
M402-C LSHS - Mechanical Controls

08.0 Electrical Demo
ED101-C LSHS - Lighting Demolition RCP - Level 1 - Building D & E
ED201-C LSHS - Power Demolition Plan - Level 1 - Building D & E
ED301-C LSHS - Equipment Connection Demolition Plan - Level 1 - Building D & E
ED800-C LSHS - Electrical One-Line Diagram - Demo

08.1 Electrical
E000-C LSHS - Electrical General Notes & Legend
E100-C LSHS - Electrical Site Plan
E101-C LSHS - Lighting RCP - Level 1 -Building D & E
E201-C LSHS - Power Plan - Level 1 - Building D & E
E301-C LSHS - Equipment Connection Plan - Level 1 - Building D & E
E600-C LSHS - Panelboard Schedules
E700-C LSHS - Lighting Fixture Schedule
E800-C LSHS - Electrical One-Line Diagram
E801-C LSHS - Electrical Calculations

09.0 Fire Protection
FA000-C LSHS - Fire Alarm General Notes & Legend
FA101-C LSHS - Fire Alarm RCP - Level 1 - Building D & E

10.0 Technology Demo
TND101-C LSHS - Technology Demoltion Plan - Level 1 - Building D & E

10.1 Technology
TN000-C LSHS - Technology General Notes & Legend
TN101-C LSHS - Technology Plan - Level 1 - Building D & E
TN400-C LSHS - Technology Details

10.3 Security
TY000-C LSHS - Security General Notes & Legend
TY101-C LSHS - Security Plan - Level 1 - Building D & E
TY500-C LSHS - Security Details

SITE LOCATION MAP

General Notes:

1. THE INTENT OF THE CONTRACT DOCUMENTS IS TO INCLUDE ALL ITEMS NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK BY THE CONTRACTOR. THE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ONE SHALL BE AS BINDING AS IF REQUIRED BY ALL; PERFORMANCE BY THE CONTRACTOR SHALL BE REQUIRED ONLY TO THE EXTENT CONSISTENT WITH THE CONTRACT DOCUMENTS AND REASONABLY INFERABLE FROM THEM AS BEING NECESSARY TO PRODUCE THE INDICATED RESULTS.
2. ORGANIZATION OF THE SPECIFICATIONS INTO DIVISIONS, SECTIONS AND ARTICLES, AND ARRANGEMENT OF DRAWINGS SHALL NOT CONTROL THE CONTRACTOR IN DIVIDING THE WORK AMONG SUBCONTRACTORS OR IN ESTABLISHING THE EXTENT OF WORK TO BE PERFORMED BY ANY TRADE.
3. DRAWINGS, SPECIFICATIONS, GENERAL AND SUPPLEMENTARY CONDITIONS ARE ESSENTIAL PARTS OF THE CONTRACT. IN THE EVENT OF ANY DISCREPANCY BETWEEN A DRAWING AND FIGURES WRITTEN THEREON, THE FIGURES, UNLESS OBVIOUSLY INCORRECT, ARE TO GOVERN OVER SCALED DIMENSIONS. IN THE CASE OF ANY DISCREPANCY BETWEEN THE DRAWINGS AND THE SPECIFICATIONS, THE SPECIFICATIONS ARE TO GOVERN. IF THERE IS A DISCREPANCY BETWEEN LARGE AND SMALL SCALE DETAILS, THE LARGER SCALE DETAILS ARE TO GOVERN. SUPPLEMENTARY CONDITIONS SHALL GOVERN OVER SPECIFICATIONS, DRAWINGS AND GENERAL CONDITIONS. THE CONTRACTOR SHALL ADVISE THE ARCHITECT OF ANY DISCREPANCIES OR CONFLICTS BETWEEN CONTRACT DOCUMENTS AS SOON AS THEY ARE DISCOVERED.
4. NOTWITHSTANDING THE ABOVE, IN THE CASE OF INCONSISTENCY BETWEEN DRAWINGS AND SPECIFICATIONS, OR WITHIN EITHER DOCUMENT NOT CLARIFIED BY ADDENDUM OR BY ARCHITECT'S SUPPLEMENTAL INSTRUCTION, THE BETTER QUALITY OR GREATER QUANTITY SHALL BE PROVIDED.
5. DRAWINGS SHALL NOT BE SCALED TO DETERMINE DIMENSIONS. IF DIMENSIONS APPEAR TO BE INSUFFICIENT OR INCORRECT, THE CONTRACTOR SHALL REQUEST CLARIFICATION FROM THE ARCHITECT.
6. WHENEVER CONTRACT DOCUMENTS REASONABLY IMPLY MATERIALS OR INSTALLATION AS NECESSARY TO PRODUCE THE INTENDED RESULTS, BUT DO NOT FULLY DETAIL OR SPECIFY SUCH MATERIALS, THE CONTRACTOR SHALL PROVIDE THE MATERIALS AND LABOR REQUIRED FOR INSTALLATION NONETHELESS.
7. PROVIDE ALL WORK INDICATED UNLESS SPECIFICALLY INDICATED AS "NOT IN CONTRACT" (NIC), "FURNISHED BY OTHERS" (FBO) OR "EXISTING".
8. CONTRACT DOCUMENTS ARE INTENDED TO CONVEY DESIGN INTENT ONLY. PROVIDE PRODUCTS COMPLETE WITH ACCESSORIES, TRIM, FINISH, FASTENERS, AND OTHER ITEMS NEEDED FOR A COMPLETE INSTALLATION AND INDICATED USE AND EFFECT.
9. THESE NOTES ARE NOT INTENDED TO LIMIT THE RESPONSIBILITIES OF THE CONTRACTOR AS DEFINED ELSEWHERE IN THE CONTRACT DOCUMENTS

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LSR7 Robotics, GiC & Phys Education

LSN: 901 NE Douglas St., Lee's Summit MO 64086
LSW: 2600 SW Ward Rd, Lee's Summit MO 64082
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Issue Date: September 9, 2022

Revisions

NUMBER	DESCRIPTION	DATE
3	ASI01 - Code Comments	11/09/2022

RELEASED FOR CONSTRUCTION
As Noted on Plans Review

Development Services Department
Lee's Summit, Missouri
11/23/2022

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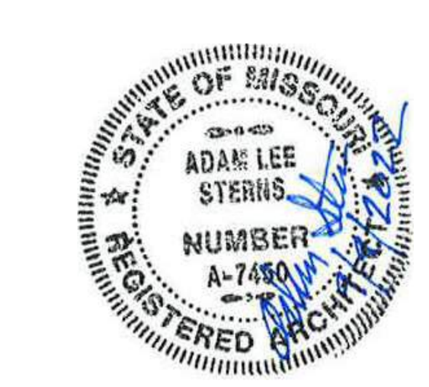


Index of Drawings & General Project Notes

G001-C

CODE ANALYSIS:

Based on Building Code Summary
Prepared by: Clinton J. Armstrong

1.0 INTRODUCTION

1.1 SCOPE

This documentation outlines major fire and life safety issues affecting the design of the renovations and additions to Lee's Summit High School. Fire and life safety criteria are summarized from the 2018 International Building Code (IBC) AND 2018 Internation Existing Building Code (IEBC) as adopted by the City of Lee's Summit, and with approval from the State of Missouri Fire Marshal (DFS), and the 2018 International Existing Building Code (IEBC).

The existing Building D and E will receive material finish upgrades through less than 50% of building area and is therefor a Level 2 Alteration per IEBC 2018, Section 603. New exterior openings will be added to the GiC and Robotics spaces. A pre-engineered metal building addition to the South of Building D will be erected to house the Robotics play field and results in an increase in building occupancy of less than 20%.

1.2 APPLICABLE CODES:

This code summary utilized the following codes as adopted by the City of Lee's Summit, Missouri and the DFS's office (with approval by DFS to be noted on code footprint) :

- 2018 International Building Code (IBC)
- 2018 International Plumbing Code (IPC)
- 2017 National Electrical Code (NEC)
- 2018 International Fire Code (IFC)
- 2018 International Mechanical Code (IMC)
- 2018 International Fuel Gas Code (IFGC)
- ICC/ANSI A117.1-2009, Accessible and Usable Buildings and Facilities.
- Referenced Standards within each of the above codes

2.0 CONSTRUCTION CLASSIFICATIONS:

2.1 OCCUPANCY GROUP CLASSIFICATIONS

- Vocational Shop — Group E (Section 305.1)

2.2 TYPES OF CONSTRUCTION CLASSIFICATION

- Type II-B (Section 602.2)

2.3 ALLOWABLE AREA AND HEIGHT (TABLE 504.3, 504.4, 506.2):

Type IIB Construction	Allowable		Actual	
	Group E		Building D	Building E
Area/story (square feet)	14,500			
Allowable Area Increase (per 506.2)	Building D 0.22	Building E 0.28		
Allowable Area / story (per 506.2)	17,690	18,560	16,974	17,829
Total area (square feet)	29,000		16,974	17,829
Height (feet)	55		24	22
Height (number of stories)	2		1	1

3.0 FIRE RESISTIVE OCCUPANCY AND USE SEPARATIONS:

3.1 USE SEPARATIONS

Fire resistive separations and enclosures are intended to address individual use hazards and are identified below.

Use/Occupancy

Service entrance conductors.	Encased in 2 inches of concrete, listed 2-hour electrical circuit protective system, or in a vault - NEC Article 230.6
Information technology equipment room (Not Data Closets)	Room is required to be separated with 1-hour fire resistant rated walls, floors and ceilings with protected openings; ducts extending through assembly are required to be provided with fire/smoke dampers - NEC Article 654.2

3.2 OCCUPANCY SEPARATIONS

The new construction is classified throughout as a Group E Occupancy. No occupancy separations are required except as follows:

- Group E to Group S-2: 1-hour

4.0 FIRE RESISTIVE REQUIREMENTS FOR ELEMENTS OF THE STRUCTURE

4.1 ACCEPTABLE MATERIALS

Structural elements Type II-B resistive buildings are limited to non-combustible materials (IBC Section 602.2).

Fire retardant plywood or other wood products are permitted as sheathing or applied directly on studs within non-bearing partitions where the required fire rating is 2-hour or less (IBC Section 603.1, Exception 1 & 7).

Interior wood products installed as part of wall or ceiling finishes are required to meet the following Flame Spread Index:

-Non-Sprinklered Buildings:
- Corridors and enclosures for exit access stairways and ramps: Class B
- Rooms and enclosed spaces: Class C

Incidental 2 x blocking is permitted if of fire retardant treated wood. Fire retardant treated plywood is permitted within 1-hour or 2-hour walls that are not part of a shaft. Specific instances should be evaluated individually.

4.2 STRUCTURAL, INTERIOR, AND EXTERIOR ELEMENTS

Passive fire resistance for the structural frame insures that stability of the building, as a whole, can be maintained during the anticipated fire condition. The structural frame is defined as columns, as well as trusses, girders, and beams, having direct connection to columns. Beams and trusses not having direct connection to columns are considered secondary elements. Depending on where they occur, these secondary elements may be classified as an element of either a roof or floor assembly for purposes of determining fire resistance requirements.

Restrained versus unrestrained designations: All fire resistive assemblies should be viewed as unrestrained, except where the Structural Engineer has demonstrated otherwise.

Exterior walls provide exposure protection based on fire separation distances.

New construction will be required to follow seismic, wind, snow, and dead-end line loads as required for new buildings. Any new construction that affects existing structural conditions by more than five percent, that portion of the existing structure is required to be brought up to current code.

The following fire resistive requirements are documented from IBC Table 601 and other applicable sections.

FIRE RESISTANCE RATING REQUIREMENTS (TABLE 601)

BUILDING ELEMENT	Type IIB
Structural Frame	0
Walls:	
Exterior Bearing Walls	0
Exterior non-bearing walls per Table 602	0
Interior Bearing Walls	0
Interior non-bearing walls	0
Floor Assembly, including secondary beams and trusses.	0
Roof Assembly, including secondary beams and trusses	0

FIRE RESISTANCE RATED CONSTRUCTION

Building Element	Fire Resistance/Code Section
Corridors	0-hour – IBC Section 1020.1, Exception 1.
Other permanent partitions	0-hour - IBC Table 601
Roof covering	Class C - Table 1505.1
Projections (e.g., canopies)	0-hour, non-combustible – Section 705.2.1

5.0 FIRE RESISTANCE RATINGS

5.1 OPENINGS IN EXTERIOR WALLS (TABLE 705.8)

Distances (x) to Center Line of Street or Property Line	Non-Rated Openings as Percent Area of Exterior Wall
10' < x <15'	45%

This table assumes the building is considered as non sprinklered - Section 705.8.1

5.2 OPENINGS IN FLOORS/CEILING AND ROOF/CEILING ASSEMBLIES

Ceilings	Where the ceiling is part of a fire resistive floor/ceiling or roof/ceiling assembly, HVAC duct openings are required to be provided with ceiling type fire dampers – Section 716.6.2
Roofs	Roofs may have unprotected openings – Section 712.4

5.3 PENETRATIONS

Roofs	Roofs may have unprotected penetrations – Section 712.4

6.0 FIRE RESISTIVE INTERIOR FINISHES

6.1 WALL AND CEILING FINISHES SECTION 803

Flame Spread Classifications

WALL& CEILING FINISH	
Flame spread 0-25, smoke developed 0-450	Class A
Flame spread 26-75, smoke developed 0-450	Class B
Flame spread 76-200, smoke developed 0-450	Class C

Maximum Flame Spread Class (Table 803.13)

Occupancy Group	Vertical Exits and Exit Passageways	Exit Access Corridors and Other Exit Ways	Room or Enclosed Spaces
E	A	B	C

6.2 FLOOR FINISH

Rooms, exit stairs, exit passageways, rated and non-rated corridors	Material complying with DOC FF-1 "pill test" (CPSC 16 CFR 1030)

6.3 PLENUMS

Plenums are defined as any space used for air movement – IMC Section 602.1

Exposed materials within plenums are required to have a flame spread index of 25 & a smoke developed rating of 50 – IMC Section 602.2

For requirements on wiring, plastic sprinkler piping, & pneumatic tubing see Section 602.2, Exceptions of the IMC

Use of corridor as plenum	Use of corridor as a source of make-up air for exhaust systems that open directly onto such corridors is permitted provided make-up air rate is less than supply of outdoor air to the corridor – Section 1020.5, Exception 1 Corridors are permitted to serve as supply, return, exhaust, relief, or ventilation because the corridors are not required to be rated – Section 1020.5.1

6.4 FOAM PLASTIC (E.G., RIGID INSULATION)

Required to have a flame spread rating of 75 or less & a maximum smoke developed rating of 450 – Section 2603.3

Required to be separated from the building interior by a thermal barrier of 15 (½ inch regular gypsum board or other material that will limit the average temperature rise of the unexposed surface to not more than 250°F after 15-minutes) – Section 2603.4

May be used in roofing & exterior walls if part of a fire resistive assembly – Sections 2603.4.1.5 & 2603.5.1

May be used as interior trim if covering is no more than 10% of walls or ceilings – Section 2604.2

7.0 EXIT REQUIREMENTS

7.1 GENERAL EXIT CRITERIA

Occupant Load Factors

Mechanical or storage spaces	300 square feet gross/person – Table 1004.5
Vocational classrooms (i.e., computers, industrial arts, etc.)	50 square feet net/person – Table 1004.5

Number of Exits

2 exits from each floor required; 3 exits required in areas where there are 501 to 1,000 persons; 4 exits required in areas where there is more than 1,000 people –Table 1006.3.2 2 exit doors required from a room in the following conditions – Table 1006.3.3(2):

Mechanical or storage rooms serving 29 or more people

Office/classroom serving 49 or more people

Arrangement of Exits

Where 2 exits are required, they must be placed a minimum distance apart of ½ the overall diagonal dimension of the room or building; ½ diagonal if fully sprinklered (also see Section 7.9 of this report) – Section 1007.1.1

Doors	Where 3 or more exits are required, at least 2 must be separated by ½ the diagonal; ½ diagonal if fully sprinklered – Section 1007.1.2 Additional exits are required to be separated such that if 1 becomes blocked, the others remain available

Capacity of Exits

Groups E and S-2

Doors/ramps	60 people/foot (0.2 inches/person) – Section 1005.3.2

Travel Distance

Non-Smoke Protected

Group E	200 feet to an exit – Table 1017.2
Group S-2	300 feet to an exit – Table 1017.2

Note: Travel distance is measured to an "exit". By definition, an "exit" is one of the following: an exterior door, a stair enclosure, an exit passageway, or a horizontal exit (i.e., a 2-hour wall subdividing a floor plate).

Common Path of Travel

Group E	75 feet – Table 1006.2.1
Group S-2	100 feet – Table 1006.2.1

7.2 DOOR CRITERIA

Maximum leaf width	48 inches – Section 1010.1.1
Minimum leaf width	Wide enough to allow minimum clearance width of 32 inches when open – Section 1010.1.1
Minimum clear height	6 feet, 8 inches – Section 1010.1.1
Exit door swing	Exit doors are required to be swinging type – Section 1010.1.2 Exit doors serving 50 or more people or high hazard or refrigeration uses are required to swing in the direction of egress – Section 1010.1.2
Doors in series	Doors in series required to swing in the same direction or away from the space in between a minimum of 48 inches plus 1 door width between doors – Section 1010.1.8
Panic hardware requirements	Required on latched doors serving assembly areas having an occupant load of 50 or more & electrical rooms with equipment rated 1,200 amps or more & greater than 6 feet wide that contain over-current devices, switching devices, or control devices with exit access doors –Section 1010.1.10

7.3 CORRIDORS

Minimum height	7 feet, 6 inches – Section 1208.2
Minimum width	44 inches serving an occupant load of more than 50 – Section 1020.2 72 inches serving a Group E occupancies with 100 or more people – Section 1020.2
Maximum allowable dead-end corridor	20 feet or 2.5 times the least width of the corridor – Section 1020.4
Construction	0-hour – Section 1020.1, Exception 1
Projections	Not permitted except when doors are fully opened; exception may project no more than 7 inches into the required width – Section 1005.7 Doors in any position cannot reduce the required width by more than half Fixtures & furnishings may project up to 4 inches on either side into the required width between heights of 27 & 80 inches – Section 1003.3.3 & ADAAG Section 4.4.1 Ceiling projections may extend below the ceiling but not less than 80 inches above the finished floor for not more than 50% of the ceiling – Section 1003.3.1

7.4 STAIRWAY CRITERIA

Access to Roof Required – IMC Section 306.5

If roof is unoccupied, access may be by a roof hatch providing a minimum of 16 square feet with a 2 feet minimum dimension
- Section 1011.12.2

7.5 OTHER EXIT ISSUES

Exit access through adjoining spaces	Permitted No limitations on number of exits or number of occupants limited by travel distance provided the space is accessory & not a storage room, kitchen, closet, or other room of similar use - Section 1016.2, Part 2

7.5 EXIT PROVISIONS FOR THE DISABLED

Number of exits	2 accessible exits are required when 2 or more exits are required – Section 1009.1 Required to be provided in the same number as required for exits – ADAAG Section 4.1.3(9)
Area of refuge	Not required – ADAAG Section 4.1.3(9)
Areas not required to be accessible	Elevator pits & similar areas accessed only by ladders & frequented only by service personnel & the like are not required to be accessible – ADAAG Section 4.1.3 (5), Exception 2

7.6 EXIT SIGNS AND EXIT LIGHTING

Exit lighting requirements	Required for means of egress with a minimum intensity of 1 footcandle at floor level; emergency power is required – Section 1008.2.1
Exit sign requirements	Required for means of egress from a room or space where 2 or more exits are required & placed no greater than 100 feet apart in corridors – Section 1013.1 Required to be illuminated at all times & be provided with emergency power – Section 1013.5
Tactile exit signs	Required at exit doors – Section 1013.4
Tactile sign requirements	Exterior exit doors are to be identified with a tactile sign with the word "EXIT" – Section 1013.4

8.0 FIRE PROTECTION ISSUES

8.1 FIRE SUPPRESSION

Automatic sprinklers	Not required -Section 903.2.3
Portable Fire Extinguishers	Required by Local Authority Required per IFC 906.1

8.3 FIRE ALARMS

Manual pull stations	Required – Section 907.2.3
Visual	Visual alarms are required to be installed in accordance with ADAAG & NFPA 72,
Audible	Audible alarms are required by the ADAAG to provide a sound intensity exceeding the average ambient sound level by 15 dBA or a level which exceeds the maximum sound level by 5 dBA with a duration of 60 The average sound pressure for notification appliances shall provide a sound pressure level of 15 decibels above average ambient sound level or 5 dBA above maximum sound level having a duration of not less than 60 seconds. – Section 907.5.2.1.1 Maximum sound pressure level for audible alarm notification appliances shall be 110 dBA. Where ambient noise is greater than 95 dBA, visible alarm shall be provided and audible alarm shall not be required. – Section 907.5.2.1.2

8.4 FIRE AND SMOKE DETECTION

Smoke detection required to shut-off heating or cooling air systems 2,000 cfm capacity or serving more than 1 occupancy – IMC

Duct smoke detectors are required to initiate a visible & supervisory signal at a constantly attended location - Section 907.11; the supervisory signal is not required when the duct smoke detectors activate the building's alarm notification system

Smoke detection is required at elevator lobbies & machine rooms to initiate fireman's service (Phase I) recall – Section 3003.2

Heat detector with a shunt trip device required in sprinklered machine rooms – ANSI A17.1, Section 2.8.2.3

Smoke detector(s) provided in conjunction with smoke dampers & hold openers at rated doors – NFPA 72

8.5 BACK-UP POWER

Fire alarm system	Emergency power is required per NFPA 72
Exit signs & exit lights	Emergency power is required; may be unit batteries – Sections 1006.3 &
Elevator	Not required – Section 1007.2.1

9.0 MISCELLANEOUS ISSUES

9.1 ROOM HEIGHT CRITERIA

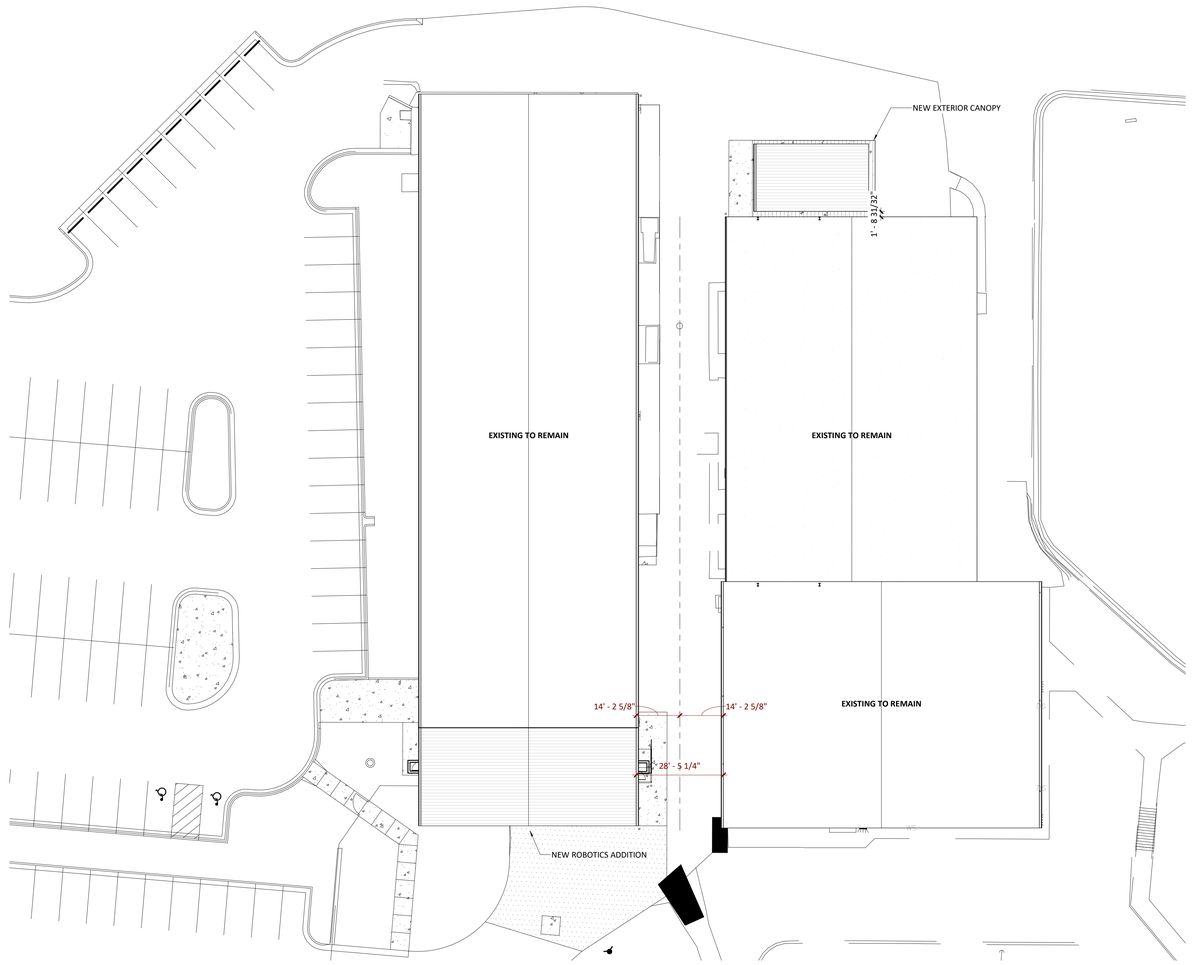
Classroom, assembly and office spaces	7 feet, 6 inches – Section 1208.2
Corridors	7 feet, 6 inches; means of egress (i.e., including rooms) – Section 1208.2
Doors	7 feet, 6 inches – Section 1208.2
Bathrooms	7 feet – Section 1208.2

9.2 Restroom Count

Area of Level 2 renovation in Building D is limited to the Robotics classroom. The *work area* is 3,100sf or 21% of the existing *building area.* The *OCCUPIABLE* area of the addition to the Building D Robotics classroom is 1,800sf and contributes an additional 36 occupants. The existing building occupancy is 269 occupants.

Per Section 809.1, "where the occupant load of the story is increased by more than 20%, plumbing fixtures for the story shall be provided in quantities specified in the International Plumbing Code based on the increased occupant load."

The planned addition to Building D represents a 13% increase to the building occupancy and does not meet the threshold to increase the plumbing fixture count within the building.



Code Site Plan - Building D & E A3
1" = 20'-0"

General Notes (Code Plans):

1. ALL WORK, MATERIALS, AND METHODS SHALL BE IN CONFORMANCE WITH THE CODES, ORDINANCES AND REGULATIONS OF ALL GOVERNMENTAL AGENCIES HAVING JURISDICTION AT THE PROJECT LOCATION.
2. CONTRACTOR SHALL PROVIDE AND IS SOLELY RESPONSIBLE AND LIABLE FOR PUBLIC AND EMPLOYEE PROTECTION AS NECESSARY AND AS REQUIRED BY THE CODES, INCLUDING EXTERIOR PEDESTRIAN AND TRAFFIC BARRIERS. ALL WORK SHALL CONFORM TO ORDINANCES AND REGULATIONS OF GOVERNMENTAL AGENCIES HAVING JURISDICTION AT THE PROJECT LOCATION.
3. THE SIZE, TYPE, QUANTITY, AND LOCATION OF ALL TEMPORARY FIRE EXTINGUISHERS SHALL BE DETERMINED BY THE AUTHORITY HAVING JUISDICTION.
4. COORDINATE LOCATION OF KNOX BOX WITH ARCHITECT, OWNER'S REPRESENTATIVE, AND THE AUTHORITY HAVING JUISDICTION IN THE FIELD.

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LSR7 Robotics, GiC & Phys Education

LSN: 901 NE Douglas St., Lee's Summit MO 64086
LSW: 2600 SW Ward Rd, Lee's Summit MO 64082
LSHS: 400 SE Blue Pkwy, Lee's Summit MO 64063

Project Number: 0121-0100

owner:
Lee's Summit R-7 School
301 NE Tudor Road
Lee's Summit, MO 64086

architect:
Multistudio
4200 Pennsylvania
Kansas City, MO 64111
816.931.6655
multi.studio

civil engineer:
Kaw Valley Engineering
14700 West 114th Terrace
Lenexa, KS 66215
913.485.0318
kveng.com

structural engineer:
Bob D. Campbell &
4338 Belleview
Kansas City, MO 64111
816.531.4144
www.bdc-engrs.com

MEPFT/Code::
Henderson Engineers
8345 Lenexa Drive, Suite 300
Lenexa, KS 66214
816.742.5000
www.hendersonengineers.com

Issue Date: September 9, 2022

Revisions

NUMBER	DESCRIPTION	DATE
3	ASI01 - Code Comments	11/09/2022

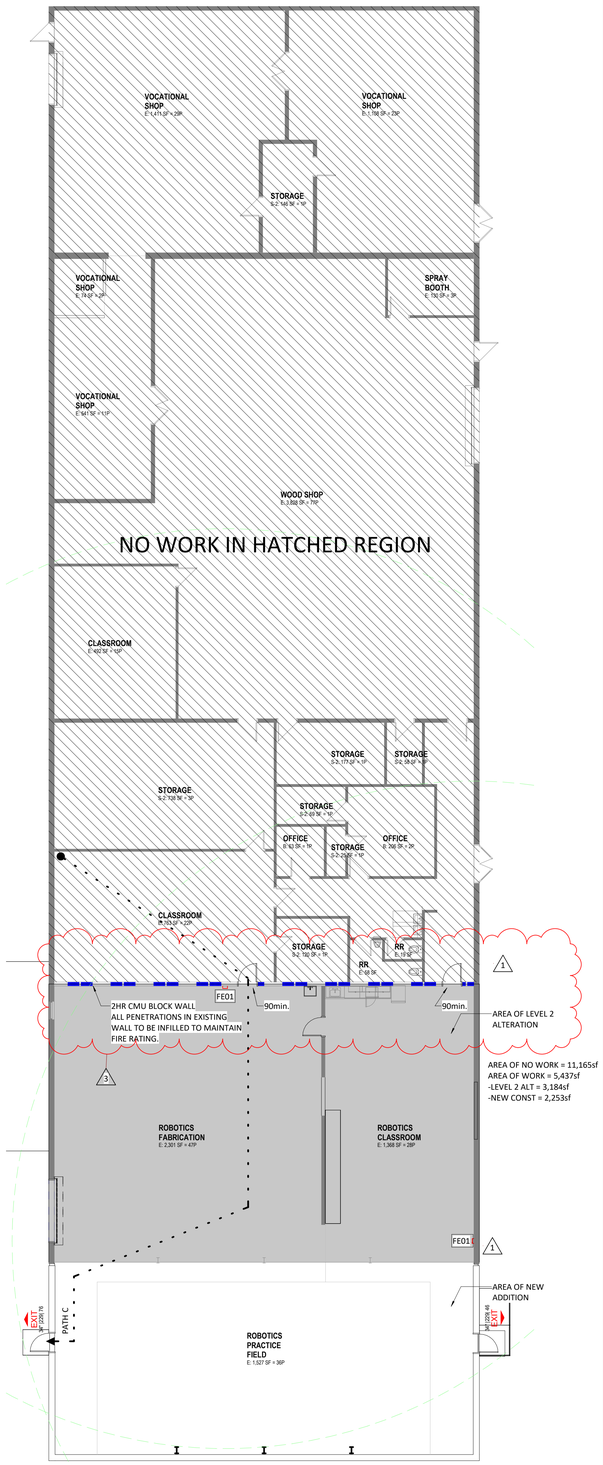
RELEASED FOR CONSTRUCTION
As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
11/23/2022

STATE OF MISSOURI
ADAE LEE STERNS
NUMBER A-7460
REGISTERED ARCHITECT

Code Review
G100-C

	WATER CLOSETS + LAVATORIES						DRINKING FOUNTAINS		SERVICE SINK	
OCCUPANT LOAD: 305	TABLE 2902.1	WOMEN		MEN		TOTALS		TABLE 2902.1	DRINKING FOUNTAINS	TABLE 2902.1	SERVICE SINKS
		WC	LAV	WC	LAV	WC	LAV				
COUNT REQ:	1 per 50	4	4	4	4	8	8	1 per 100	4	1 per	1
COUNT PROV:		1	1	1	1	2	2		0		1

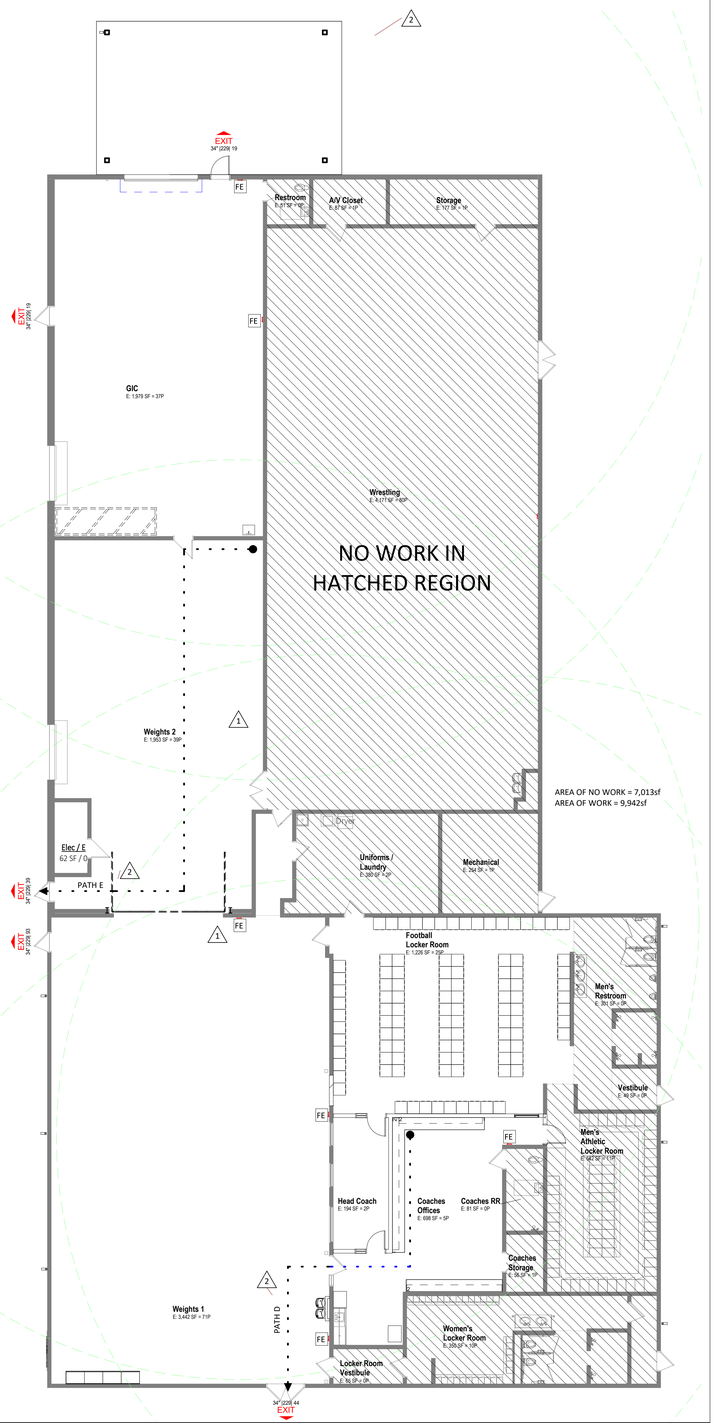
NOTE: BUILDING D PLUMBING COUNTS ARE EXISTING NON-CONFORMING. BUILDINGS OCCUPANT LOAD PRIOR TO THE ADDITION IS 269occ. AFTER THE ADDITION, THE BUILDING OCCUPANT LOAD IS INCREASED BY 12% TO 305occ. PER IBC 2018, SECTION 809.1, AN INCREASE IN THE EXISTING BUILDING OCCUPANT LOAD LESS THAN 20% DOES NOT REQUIRE A CHANGE IN THE QUANTITIES OF PLUMBING FIXTURES. THE ADDITION TO THE EXISTING CONDITIONS (NON-CONFORMITY) SHALL COMPLY WITH IEBC 2018, SECTION 1101. PER RULES OF LEVEL 2 ALTERATIONS THERE ARE NO ADDITIONAL PLUMBING FIXTURES REQUIRED AS ALTERATIONS + ADDITION INCREASED THE BUILDING OCCUPANCY BY LESS THAN 20%.



LSHS - Building D - Code Footprint A9

1" = 10'-0"

	WATER CLOSETS + LAVATORIES						DRINKING FOUNTAINS		SERVICE SINK	
OCCUPANT LOAD: 279	TABLE 2902.1	WOMEN		MEN		TOTALS		TABLE 2902.1	DRINKING FOUNTAINS	TABLE 2902.1	SERVICE SINKS
		WC	LAV	WC	LAV	WC	LAV				
COUNT REQ:	1 per 50	3	3	3	3	6	6	1 per 100	3	1 per	1
COUNT PROV:		4	4	4	3	8	7		4		1



LSHS - Building E - Code Footprint A3

1" = 10'-0"

Occupant Load Schedule - Full LSHS Building D

Occupancy	Number	Name	Area	Occupant Load Factor	Occupant Load
B					
B	D109	OFFICE	206 SF	150 SF	2
B	D111	OFFICE	63 SF	150 SF	1
E					
E	D101	ROBOTICS FABRICATION	2,301 SF	50 SF	47
E	D102	ROBOTICS CLASSROOM	1,368 SF	50 SF	28
E	D103	ROBOTICS PRACTICE FIELD	1,527 SF	50 SF	36
E	D104	CLASSROOM	763 SF	35 SF	22
E	D107	RR	58 SF	0 SF	
E	D108	RR	19 SF	0 SF	
E	D115	WOOD SHOP	3,828 SF	50 SF	77
E	D116	CLASSROOM	492 SF	35 SF	15
E	D117	VOCATIONAL SHOP	541 SF	50 SF	11
E	D118	VOCATIONAL SHOP	74 SF	50 SF	2
E	D119	SPRAY BOOTH	130 SF	50 SF	3
E	D121	VOCATIONAL SHOP	1,411 SF	50 SF	29
E	D122	VOCATIONAL SHOP	1,108 SF	50 SF	23
S-2					
S-2	D105	STORAGE	738 SF	300 SF	3
S-2	D106	STORAGE	120 SF	300 SF	1
S-2	D110	STORAGE	25 SF	300 SF	1
S-2	D112	STORAGE	69 SF	300 SF	1
S-2	D113	STORAGE	177 SF	300 SF	1
S-2	D114	STORAGE	58 SF	300 SF	1
S-2	D120	STORAGE	146 SF	300 SF	1
			15,221 SF		305

Occupant Load Schedule - Full LSHS Building E

Occupancy	Number	Name	Area	Occupant Load Factor	Occupant Load
E					
E	E100	Restroom	51 SF	0 SF	0
E	E101	GIC	1,979 SF	50 SF	37
E	E102	Weights 2	1,953 SF	50 SF	39
E	E104	Elec	62 SF	300 SF	0
E	E105	A/V Closet	87 SF	300 SF	1
E	E106	Storage	177 SF	300 SF	1
E	E107	Wrestling	4,171 SF	50 SF	80
E	E109	Uniforms / Laundry	380 SF	50 SF	2
E	E110	Mechanical	254 SF	300 SF	1
E	E111	Weights 1	3,442 SF	50 SF	71
E	E112	Football Locker Room	1,226 SF	50 SF	25
E	E113	Men's Restroom	301 SF	0 SF	0
E	E115	Vestibule	49 SF	0 SF	0
E	E116	Men's Athletic Locker Room	542 SF	50 SF	11
E	E119	Coaches RR	81 SF	0 SF	0
E	E122	Head Coach	194 SF		2
E	E123	Coaches Storage	56 SF	300 SF	1
E	E124	Locker Room Vestibule	65 SF	0 SF	0
E	E125	Women's Locker Room	350 SF	50 SF	10
E	E126	Women's Showers	139 SF	0 SF	0
			15,560 SF		281

Path of Travel - Building D

Mark	Path of Egress (200' Max)	Common Path (75' Max)
PATH C	118'	73'

Path of Travel - Building E

Mark	Path of Egress (200' Max)	Common Path (75' Max)
PATH D	60'	35'
PATH E	89'	67'

General Notes (Code Plans):

1. ALL WORK, MATERIALS, AND METHODS SHALL BE IN CONFORMANCE WITH THE CODES, ORDINANCES AND REGULATIONS OF ALL GOVERNMENTAL AGENCIES HAVING JURISDICTION AT THE PROJECT LOCATION.
2. CONTRACTOR SHALL PROVIDE AND IS SOLELY RESPONSIBLE AND LIABLE FOR PUBLIC AND EMPLOYEE PROTECTION AS NECESSARY AND AS REQUIRED BY THE CODES, INCLUDING EXTERIOR PEDESTRIAN AND TRAFFIC BARRIERS. ALL WORK SHALL CONFORM TO ORDINANCES AND REGULATIONS OF GOVERNMENTAL AGENCIES HAVING JURISDICTION AT THE PROJECT LOCATION.
3. THE SIZE, TYPE, QUANTITY, AND LOCATION OF ALL TEMPORARY FIRE EXTINGUISHERS SHALL BE DETERMINED BY THE AUTHORITY HAVING JUISDICTION.
4. COORDINATE LOCATION OF KNOX BOX WITH ARCHITECT, OWNER'S REPRESENTATIVE, AND THE AUTHORITY HAVING JUISDICTION IN THE FIELD.

Code Plan Legend:

Egress Path of Travel — Distance to Exit: 100' / Common Path of Travel Distance: 50' CPT

Egress Point — Maximum # of Occupants (by width): 40" 1066.44 / Required # of Occupants: EXIT

Stair Egress — Stair #1 | 4'-0" — Maximum # of Occupants (by width): 792.4 — Required # of Occupants:

Occupancy Tag — Room name — Occupancy Group: B — Area: 222 SF — Occupant Load: 20

Fire Extinguisher Radius — 75' Typ

Fire Extinguisher Symbol — FE

1-Hour: Fire Rated Assembly

2-Hour: Fire Rated Assembly

3-Hour: Fire Rated Assembly

4-Hour: Fire Rated Assembly

Smoke Barrier

Smoke Partition

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Issue Date: September 9, 2022

Revisions

NUMBER	DESCRIPTION	DATE
1	Addendum 01	09/19/2022
2	Addendum 02	09/23/2022
3	ASI03 - Code Comments	11/09/2022

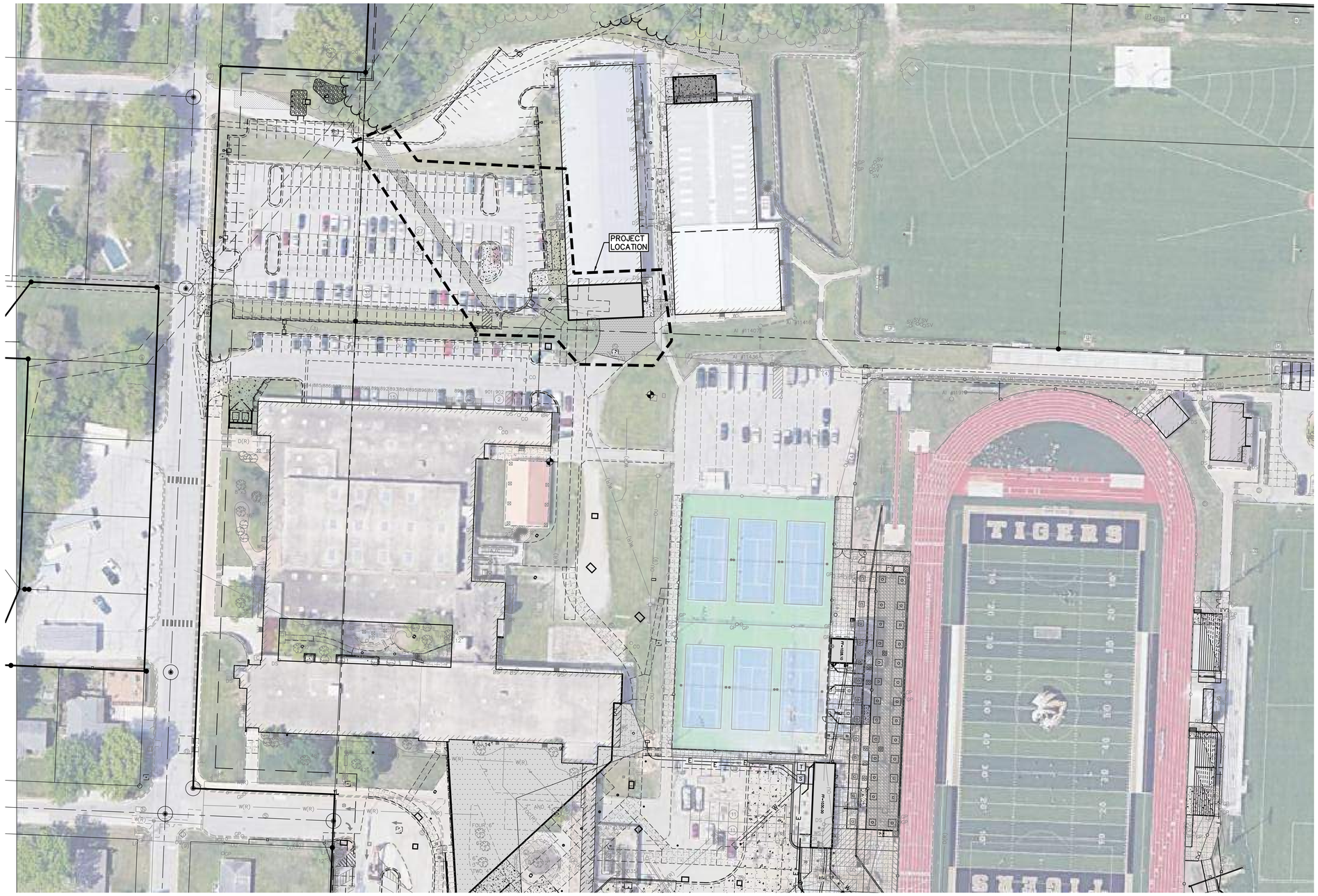
RELEASED FOR CONSTRUCTION
As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
11/23/2022

STATE OF MISSOURI — ADAM LEE STERNS — NUMBER A-7450 — REGISTERED ARCHITECT

LSHS - Code Plan - Building B & D

G101-C

LEE'S SUMMIT HIGH SCHOOL
GENERAL LAYOUT SHEET
400 SE BLUE PARKWAY, LEE'S SUMMIT, MO 64063
SECTION 8 - TOWNSHIP 47 N - RANGE 31 W



00°04'45"
PROJECT NORTH
TRUE NORTH

0 20 40 80
SCALE: 1" = 40'
CONVERGENCE ANGLE ESTABLISHED BY JA-25 (PID: 095025)

811 Know what's below. Call before you dig.

PRINT DATE/TIME: 11/8/2022 3:20 PM

PROJ. NO. C20_0496-1 DSN: CJC
CFN: 0496-1GLS DWN: NJN

CHRISTIAN J. CROWDER
ENGINEER
MO # 2015000538

14700 WEST 114TH TERRACE
LENEXA, KANSAS 66215
PH. (913) 894-5150 | FAX (913) 894-5977
lx@kveng.com | www.kveng.com

KAW VALLEY ENGINEERING

KAW VALLEY ENGINEERING, INC., IS AUTHORIZED TO OFFER ENGINEERING SERVICES BY MISSOURI STATE CERTIFICATE OF AUTHORITY # 000842. EXPIRES 12/31/23

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Lee's Summit Robotics, GiC & Phys Educaiton

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Issue Date: September 9, 2022

Revisions

NUMBER	DESCRIPTION	DATE
1	ADDENDUM 2	9/23/2022
2	ASI 01 - CODE COMMENTS	11/8/2022

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Lee's Summit, Missouri
11/23/2022

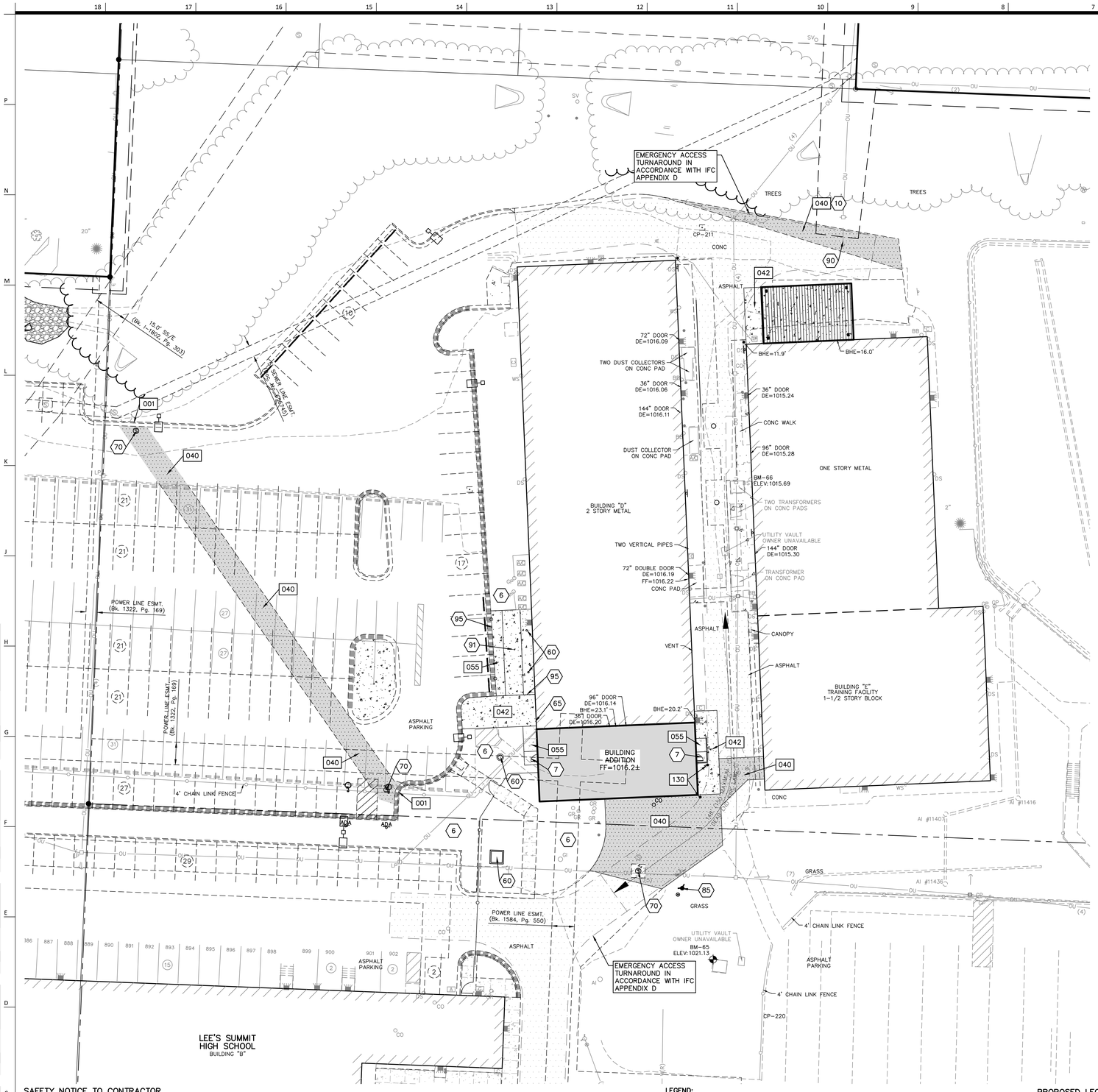
UNLESS A PROFESSIONAL SEAL WITH SIGNATURE AND DATE IS AFFIXED, THIS DOCUMENT IS PRELIMINARY AND IS NOT INTENDED FOR CONSTRUCTION, BIDDING PURPOSES OR IMPLEMENTATION

STATE OF MISSOURI
CHRISTIAN J. CROWDER
NUMBER
PE-2015000538
PROFESSIONAL ENGINEER
11.8.22

Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
Christian Crowder Date: 9/23/2022
Engineer License No. PE-2015000538

GENERAL LAYOUT SHEET

C000-C



LEE'S SUMMIT HIGH SCHOOL
SITE PLAN
400 SE BLUE PARKWAY, LEE'S SUMMIT, MO 64063
SECTION 8 - TOWNSHIP 47 N - RANGE 31 W

PREPARED FOR:
LEE'S SUMMIT SCHOOL DISTRICT
302 SE TRANSPORT RD,
LEE'S SUMMIT, MO 64081
PHONE: (816) 986-2421
CONTACT: KYLE GORRELL
EMAIL: kyle.gorrell@lsr7.net

PREPARED BY:
KAW VALLEY ENGINEERING, INC.
14700 W 114TH TERR.
LENEXA, KANSAS 66215
PHONE: (913) 894-5150
CONTACT: DAVID WOOD
EMAIL: wood@kveng.com

VICINITY MAP
SEC 8 – TWP 47N – RNG 31W
NOT TO SCALE

CONSTRUCTION NOTES:

1. COORDINATE START-UP AND ALL CONSTRUCTION ACTIVITIES WITH THE ARCHITECT.
2. CONSTRUCTION METHODS AND MATERIALS NOT SPECIFIED IN THESE PLANS ARE TO MEET OR EXCEED THE KANSAS CITY METROPOLITAN CHAPTER OF APWA STANDARD SPECIFICATIONS AS ADOPTED AND AMENDED BY THE CITY OF LEE'S SUMMIT.
3. ALL CONSTRUCTION WORK AND UTILITY WORK OUTSIDE OF PROPERTY BOUNDARIES SHALL BE PERFORMED IN COOPERATION WITH AND IN ACCORDANCE WITH REGULATIONS OF THE AUTHORITIES CONCERNED.
4. PUBLIC CONVENIENCE AND SAFETY: THE CONTRACTOR SHALL CONDUCT THE WORK IN A MANNER THAT WILL INSURE, AS FAR AS PRACTICABLE, THE LEAST OBSTRUCTION TO TRAFFIC, AND SHALL PROVIDE FOR THE CONVENIENCE AND SAFETY OF THE GENERAL PUBLIC AND RESIDENTS ALONG AND ADJACENT TO PUBLIC RIGHT-OF-WAYS IN THE CONSTRUCTION AREA.
5. ALL DIMENSIONS SHOWN ARE TO THE BACK OF CURB UNLESS OTHERWISE NOTED.
6. ALL TRAFFIC CONTROL DEVICES, INSTALLATION AND OPERATIONS SHALL CONFORM WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

HORIZONTAL AND VERTICAL DATUM:

UNLESS OTHERWISE NOTED THE COORDINATES SHOWN HEREON ARE GRID COORDINATES BASED ON THE MISSOURI STATE PLANE, WEST ZONE (NAD 1983) (NAVD 1988)
CAF: 0.9998978
1 METER = 3.28083333 U.S. SURVEY FEET
GROUND COORDINATES X COMBINED ADJUSTMENT FACTOR (CAF) = GRID COORDINATES
SCALED AROUND 0,0

JA-25 (PID-095025)

NORTHING:	303646.030 (GRID/METERS)	996212.016 (GROUND/FEET)
EASTING:	860950.475 (GRID/METERS)	2824635.014 (GROUND/FEET)
ELEV =	321.8 (METERS)	1055.77 (FEET)

PROJECT BENCH MARK:

BM-64
CHISELED SQUARE AT THE TOP NORTHEAST CORNER OF STEPS TO THE NORTH ENTRY TO BUILDING "B" ON WEST SIDE.
ELEV = 1015.34

BM-65
CHISELED SQUARE ON NORTHEAST CORNER CONCRETE TRANSFORMERS PAD WEST OF PARKING LOT NORTH OF TENNIS COURTS.
ELEV = 1021.13

BM-66
CHISELED SQUARE ON NORTHEAST CORNER CONCRETE TRANSFORMERS PAD (NORTH MOST) BETWEEN BUILDINGS "D" AND "E".
ELEV = 1015.69

PROJECT CONTROL:

CP #206
1/2" REBAR W/ CONTROL POINT CAP
NORTHING: 997985.92 (GROUND)
EASTING: 2826567.03 (GROUND)
ELEV = 1012.56

CP #211
1/2" REBAR W/ CONTROL POINT CAP
NORTHING: 998086.62 (GROUND)
EASTING: 2826963.98 (GROUND)
ELEV = 1014.61

CP #220
1/2" REBAR W/ CONTROL POINT CAP
NORTHING: 997737.04 (GROUND)
EASTING: 2826986.56 (GROUND)
ELEV = 1024.94

UTILITY STATEMENT:

THE UNDERGROUND UTILITIES SHOWN HEREON ARE FROM FIELD SURVEY INFORMATION OF ONE-CALL LOCATED UTILITIES, FIELD SURVEY INFORMATION OF ABOVE GROUND OBSERVABLE EVIDENCE, AND/OR THE SCALING AND PLOTTING OF EXISTING UTILITY MAPS AND DRAWINGS AVAILABLE TO THE SURVEYOR AT THE TIME OF SURVEY. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. FURTHERMORE, THE SURVEYOR DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES BY EXCAVATION UNLESS OTHERWISE NOTED ON THIS SURVEY.
MISSOURI ONE CALL TICKET #221653482 & #222143061
BLOOD HOUND WORK ORDER #202977

LAND USE TABLE:

TOTAL SITE AREA: 1,983,297 SF – 45.53 Ac
TOTAL FLOOR AREA: 372,682 SF
FLOOR AREA RATIO: 11.4%±

PROJECT AREA/AREA OF DISTURBANCE
TOTAL: 761,400 SF (17.48 AC.)

PARKING
REQUIRED BY ZONING ORDINANCE:
6 STALLS PER CLASSROOM (103 CLASSROOMS = 618 PARKING STALLS)

EXISTING:	PROJECT AREA: 758 (11 ACCESSIBLE) STALLS
	TOTAL: 1166 REGULAR (18 ACCESSIBLE) STALLS
PROPOSED:	PROJECT AREA: 744 (15 ACCESSIBLE) STALLS
	TOTAL: 1154 REGULAR (22 ACCESSIBLE) STALLS

20' ALONG STREETS AND RESIDENTIAL PROPERTIES. 6' OTHER LOCATIONS. SETBACKS PROVIDED MEET OR EXCEED CURRENT SETBACKS ON LSHS CAMPUS. SEE C200 SHEETS FOR DIMENSIONS.

IMPERVIOUS COVERAGE WITHIN PROJECT AREA

EXISTING:	581,150 S.F. – 13.34 AC.
PROPOSED:	583,950 S.F. – 13.41 AC.
INCREASE:	2,800 S.F. – 0.07 AC.

ZONING: RP-2, CP-1(EAST 290')

SETBACKS: FRONT: 50' MAJOR STREETS OTHERWISE 20'
SIDE: 5'
REAR: 20'

BUILDING HEIGHT: 40'

☐ DETAILS – SEE SHEET C190-C FOR THE FOLLOWING DETAILS

001	STANDARD CONCRETE CURB & GUTTER
002	ZERO HEIGHT CURB
005	INTEGRAL CURB AND SIDEWALK
040	ASPHALT PAVEMENT
042	CONCRETE PAVEMENT
055	CONCRETE SIDEWALK
060	SIDEWALK RAMP

⬡ NOTES:

6	DISTURBED AREAS TO BE LANDSCAPED OR SODDED AS NOTED ON L SERIES SHEETS.
7	CONCRETE STOOP (REFER TO STRUCTURAL SHEETS)
10	CONTRACTOR TO EXPAND PROPOSED ASPHALT LIMITS AS SHOWN TO FACILITATE FIRE LANE ACCESS.
60	STORM SEWER STRUCTURE (SEE SHEET C500-C)
65	CONTRACTOR TO RELOCATE DOWNSPOUT TO FACILITATE IMPROVEMENTS
70	SANITARY SEWER STRUCTURE (SEE SHEET C700-C)
85	CONTRACTOR TO RELOCATE EXISTING HYDRANT TO FACILITATE FIRE LANE ACCESS
90	CONTRACTOR TO COORDINATE WITH LSR7 AND TO RELOCATE GUY ANCHOR OUTSIDE OF PROPOSED PAVEMENT
91	MECHANICAL EQUIPMENT PAD (REFER TO STRUCTURAL SHEETS).
95	CONTRACTOR TO EXTEND CHAIN LINK FENCE AROUND PROPOSED EQUIPMENT PAD.

SCALE: 1" = 20'
CONVERGENCE ANGLE ESTABLISHED BY JA-25 (PID: 095025)

NOTE:
1. **CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF ENTRANCE, SLOPED PAVING, EXIT PORCHES, RAMPS, TRUCK DOCKS, PRECISE BUILDING DIMENSIONS AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.**
2. **THESE PLANS HAVE NOT BEEN VERIFIED WITH FINAL ARCHITECTURAL CONTRACT DRAWINGS. CONTRACTOR SHALL VERIFY AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES. CONTRACTOR IS FULLY RESPONSIBLE FOR REVIEW AND COORDINATION OF ALL DRAWINGS AND CONTRACTOR DOCUMENTS.**
3. **ALL DIMENSIONS ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.**
4. **ALL DIMENSIONS ARE PERPENDICULAR TO PROPERTY LINE.**

SAFETY NOTICE TO CONTRACTOR

IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

WARRANTY / DISCLAIMER

THE DESIGNS REPRESENTED IN THESE PLANS ARE IN ACCORDANCE WITH ESTABLISHED PRACTICES OF CIVIL ENGINEERING FOR THE DESIGN FUNCTIONS AND USES INTENDED BY THE OWNER AT THIS TIME. HOWEVER, NEITHER KAW VALLEY ENGINEERING, INC NOR ITS PERSONNEL CAN OR DO WARRANTY THESE DESIGNS OR PLANS AS CONSTRUCTED, EXCEPT IN THE SPECIFIC CASES WHERE KAW VALLEY ENGINEERING PERSONNEL INSPECT AND CONTROL THE PHYSICAL CONSTRUCTION ON A CONTEMPORARY BASIS AT THE SITE.

CAUTION – NOTICE TO CONTRACTOR

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT LOCATIONS OF POSSIBLE CONFLICTS PRIOR TO ANY CONSTRUCTION.

LEGEND:

A/C	AIR CONDITIONER
EO	WALL MOUNTED ELECTRICAL OUTLET
—G—	UNDERGROUND GAS
G	GAS METER
	CONTROL POINT
	BENCHMARK
GP○	GATE POST
—○—	CHAIN LINK FENCE
—□—	WOOD FENCE
●	BOLLARD
	STREET/TRAFFIC SIGN
→	PAINTED DIRECTIONAL ARROW
↰	TURN LANE DIRECTION
♿	HANDICAP SYMBOL
③	PARKING STALL COUNT
ADA	HANDICAP SIGN
HRMP	HANDICAP RAMP
	WHEEL STOP
DIP	DUCTILE IRON PIPE
HDPE	HIGH DENSITY POLYETHYLENE
	WALL MOUNTED LIGHT
C	WALL MOUNTED CAMERA
G⊗	GAS VALVE
GR○	GAS RISER
G	GAS LINE SIGN
DE	DOOR ELEVATION AT THRESHOLD
FF	FINISH FLOOR ELEVATION
BHE	BUILDING HEIGHT/ELEVATION
B/B	BACK TO BACK OF CURB MEASUREMENT
E/E	EDGE TO EDGE OF ASPHALT
W	WATER METER
⊗	WATER LINE GATE VALVE
	FIRE HYDRANT
⊠	SPRINKLER CONTROL BOX
Ⓦ	WATER MANHOLE
(2) OU	OVERHEAD UTILITY LINE (# OF LINES)
P	PULL BOX
	LIGHT POLE
	UTILITY POLE
LP	UTILITY POLE W/ LIGHT
	UTILITY POLE W/ TRANSFORMER
	GUY ANCHOR
	CONIFEROUS TREE
	TREE LINE
FP○	FLAG POLE
E	ELECTRIC METER
EP	UNDERGROUND ELECTRIC PEDESTAL
■	SPEAKER BOX
BB○	BREAKER BOX
TP	TELEPHONE PEDESTAL
Ⓢ	SANITARY SEWER MANHOLE
Ⓓ	STORM SEWER MANHOLE
AI○	AREA INLET
CI○	CURB INLET
CO○	SANITARY SEWER CLEAN OUT
DS○	DOWN SPOUT
FD○	FLOOR DRAIN
	FLARED END SECTION
SV○	SPRINKLER VALVE
	SIAMESE FIRE CONNECTOR
⊠	CANOPY SUPPORT
MB○	MAIL BOX
— — —	CONCRETE JOINT/CUT LINE
	BUSH
	DECIDUOUS TREE
T/E	TRASH ENCLOSURE
L/S	LANDSCAPING AREA
CONC	CONCRETE
LW	LOWEST WIRE HEIGHT

PROPOSED LEGEND

A—A B—B	ASPHALT EDGE TREATMENT. SEE SECTION ON C190
▨	ASPHALT OVERLAY (040)
▩	AREAS OF FULL DEPTH ASPHALT (040)
	TURF
	CONCRETE PAVEMENT (042) W/JOINTING
TYPE 1 JOINT (TYP) / TYPE 3 JOINT (TYP)	
	CONCRETE SIDEWALK (055+005) W/JOINTING
TYPE 1/TYPE 3	JOINT TYPE
L	LANDING
R	RAMP
T	TRANSITION
— — —	PROJECT AREA (LIMITS OF DISTURBANCE)

Know what's **below.**
Call before you dig.

PROJ. NO. C20_0496-1 DSN: CJC
CFN: 0496-1SP DWN: NJN

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MO # 2015000538

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KAW VALLEY ENGINEERING

KAW VALLEY ENGINEERING, INC., IS AUTHORIZED TO OFFER ENGINEERING SERVICES BY MISSOURI STATE CERTIFICATE OF AUTHORITY # 000842. EXPIRES 12/31/23

multistudio
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Lee's Summit Robotics, GiC & Phys Educaiton

LSN: 901 NE Douglas St., Lee's Summit MO 64086
LSW: 2600 SW Ward Rd, Lee's Summit MO 64082
LSHS: 400 SE Blue Pkwy, Lee's Summit MO 64063

Project Number: 0121-0100

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Issue Date: September 9, 2022

Revisions

NUMBER	DESCRIPTION	DATE
1	ADDENDUM 2	9/23/2022
2	ASI 01 - CODE COMMENTS	11/8/2022

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As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
11/23/2022

UNLESS A PROFESSIONAL SEAL WITH SIGNATURE AND DATE IS AFFIXED, THIS DOCUMENT IS PRELIMINARY AND IS NOT INTENDED FOR CONSTRUCTION, RECORDING PURPOSES OR IMPLEMENTATION

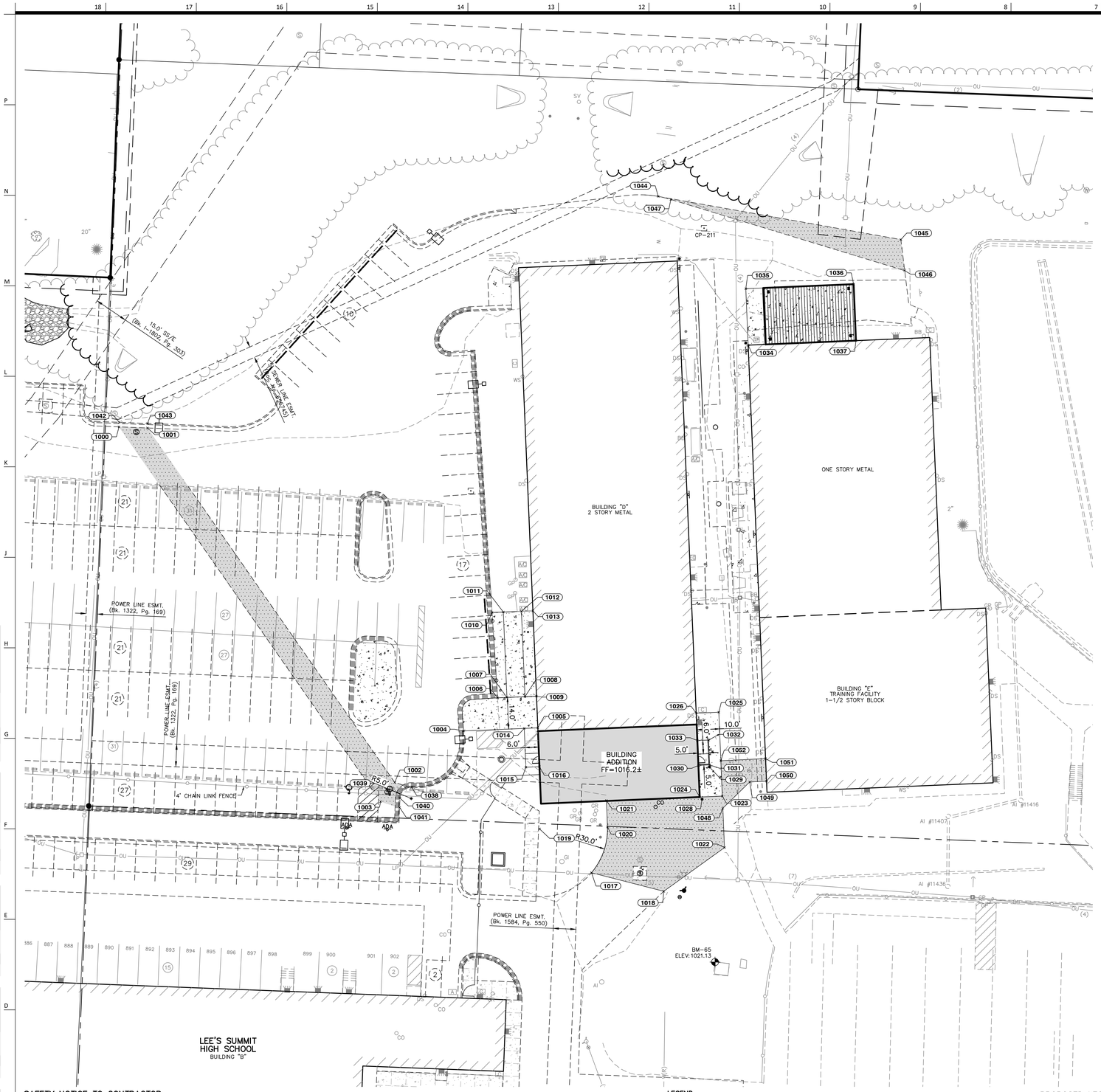
CHRISTIAN J. CROWDER
NUMBER PE-2015000538
11-8-22

Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
Christian Crowder Date: 9/23/2022
Engineer License No. PE-2015000538

SITE PLAN

C100-C

PRINT DATE/TIME: 11/8/2022 3:20 PM



COORDINATE TABLE			
◇	NORTHING	EASTING	DESCRIPTION
1000	997998.91	2826705.12	SAW CUT
1001	997998.41	2826717.66	SAW CUT
1002	997841.78	2826826.96	SAW CUT
1003	997833.29	2826820.69	SAW CUT
1004	997864.51	2826857.35	EC
1005	997865.89	2826890.18	EC
1006	997879.16	2826872.43	EC
1007	997879.33	2826876.53	EC
1008	997879.67	2826884.52	EC
1009	997879.88	2826889.60	EC
1010	997916.86	2826869.98	EC
1011	997917.07	2826874.95	EC
1012	997917.40	2826882.94	EC
1013	997917.62	2826888.01	EC
1014	997865.64	2826884.19	SW
1015	997848.49	2826884.91	SW
1016	997848.74	2826890.90	SW
1017	997801.87	2826913.91	EA
1018	997793.66	2826945.83	EA
1019	997821.21	2826890.98	R30.0
1020	997822.11	2826920.97	EA
1021	997833.78	2826920.48	EA
1022	997812.98	2826972.67	EA
1023	997835.73	2826971.72	EA
1024	997835.31	2826961.73	EA
1025	997872.80	2826970.16	EC
1026	997872.38	2826960.17	EC
1028	997834.35	2826962.77	BOLLARD
1029	997848.60	2826966.03	BOLLARD
1030	997849.30	2826961.14	SW
1031	997849.51	2826966.13	SW
1032	997860.50	2826965.67	SW
1033	997860.29	2826960.68	SW
1034	998035.02	2826983.13	EC
1035	998059.97	2826982.08	EC
1036	998061.97	2827029.72	EC
1037	998037.02	2827030.77	EC
1038	997839.64	2826834.47	BC
1039	997834.65	2826834.27	R5.0
1040	997834.85	2826829.28	BC
1041	997830.74	2826829.11	BC
1042	998000.91	2826705.20	BC
1043	998000.41	2826717.74	BC
1044	998100.74	2826943.39	EA
1045	998081.68	2827050.62	EA
1046	998067.95	2827052.30	EA
1047	998099.40	2826948.97	EA
1048	997830.38	2826971.94	EA
1049	997841.96	2826983.80	EA
1050	997842.32	2826991.25	EA

HORIZONTAL AND VERTICAL DATUM:

UNLESS OTHERWISE NOTED THE COORDINATES SHOWN HEREON ARE GRID COORDINATES BASED ON THE MISSOURI STATE PLANE, WEST ZONE (NAD 1983) (NAVD 1988)
CAF: 0.9998978
1 METER = 3.28083333 U.S. SURVEY FEET
GROUND COORDINATES X COMBINED ADJUSTMENT FACTOR (CAF) = GRID COORDINATES SCALED AROUND 0,0

JA-25 (PID-095025)
NORTHING: 303646.030 (GRID/METERS) 996212.016 (GROUND/FEET)
EASTING: 860950.475 (GRID/METERS) 2824635.014 (GROUND/FEET)
ELEV = 321.8 (METERS) 1055.77 (FEET)

PROJECT BENCH MARK:

BM-64
CHISELED SQUARE AT THE TOP NORTHEAST CORNER OF STEPS TO THE NORTH ENTRY TO BUILDING "B" ON WEST SIDE.
ELEV = 1015.34

BM-65
CHISELED SQUARE ON NORTHEAST CORNER CONCRETE TRANSFORMERS PAD WEST OF PARKING LOT NORTH OF TENNIS COURTS.
ELEV = 1021.13

BM-66
CHISELED SQUARE ON NORTHEAST CORNER CONCRETE TRANSFORMERS PAD (NORTH MOST) BETWEEN BUILDINGS "D" AND "E".
ELEV = 1015.69

PROJECT CONTROL:

CP #206
1/2" REBAR W/ CONTROL POINT CAP
NORTHING: 997985.92 (GROUND)
EASTING: 2826567.03 (GROUND)
ELEV = 1012.56

CP #211
1/2" REBAR W/ CONTROL POINT CAP
NORTHING: 998086.62 (GROUND)
EASTING: 2826963.98 (GROUND)
ELEV = 1014.61

CP #220
1/2" REBAR W/ CONTROL POINT CAP
NORTHING: 997737.04 (GROUND)
EASTING: 2826986.56 (GROUND)
ELEV = 1024.94

UTILITY STATEMENT:

THE UNDERGROUND UTILITIES SHOWN HEREON ARE FROM FIELD SURVEY INFORMATION OF ONE-CALL LOCATED UTILITIES, FIELD SURVEY INFORMATION OF ABOVE GROUND OBSERVABLE EVIDENCE, AND/OR THE SCALING AND PLOTTING OF EXISTING UTILITY MAPS AND DRAWINGS AVAILABLE TO THE SURVEYOR AT THE TIME OF SURVEY. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. FURTHERMORE, THE SURVEYOR DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES BY EXCAVATION UNLESS OTHERWISE NOTED ON THIS SURVEY.
MISSOURI ONE CALL TICKET #221653482 & #222143061
BLOOD HOUND WORK ORDER #202977

SAFETY NOTICE TO CONTRACTOR

IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

WARRANTY / DISCLAIMER

THE DESIGNS REPRESENTED IN THESE PLANS ARE IN ACCORDANCE WITH ESTABLISHED PRACTICES OF CIVIL ENGINEERING FOR THE DESIGN FUNCTIONS AND USES INTENDED BY THE OWNER AT THIS TIME. HOWEVER, NEITHER KAW VALLEY ENGINEERING, INC NOR ITS PERSONNEL CAN OR DO WARRANTY THESE DESIGNS OR PLANS AS CONSTRUCTED, EXCEPT IN THE SPECIFIC CASES WHERE KAW VALLEY ENGINEERING PERSONNEL INSPECT AND CONTROL THE PHYSICAL CONSTRUCTION ON A CONTEMPORARY BASIS AT THE SITE.

CAUTION – NOTICE TO CONTRACTOR

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT LOCATIONS OF POSSIBLE CONFLICTS PRIOR TO ANY CONSTRUCTION.

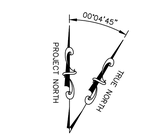
LEGEND:

AC	AIR CONDITIONER	DIP	DUCTILE IRON PIPE
E	WALL MOUNTED ELECTRICAL OUTLET	HDPE	HIGH DENSITY POLYETHYLENE
G	UNDERGROUND GAS		WALL MOUNTED LIGHT
G	GAS METER		WALL MOUNTED CAMERA
	CONTROL POINT		GAS VALVE
	BENCHMARK	GR	GAS RISER
GP	GATE POST		GAS LINE SIGN
	CHAIN LINK FENCE	DE	DOOR ELEVATION
	WOOD FENCE		AT THRESHOLD
	BOLLARD	FF	FINISH FLOOR ELEVATION
	STREET/TRAFFIC SIGN	BHE	BUILDING HEIGHT/ELEVATION
	PAINTED DIRECTIONAL ARROW	B/B	BACK TO BACK OF CURB MEASUREMENT
	TURN LANE DIRECTION	E/E	EDGE TO EDGE OF ASPHALT
	HANDICAP SYMBOL		WATER METER
3	PARKING STALL COUNT		WATER LINE GATE VALVE
ADA	HANDICAP SIGN		FIRE HYDRANT
HRMP	HANDICAP RAMP		SPRINKLER CONTROL BOX
	WHEEL STOP		WATER MANHOLE

(2) OU	OVERHEAD UTILITY LINE (# OF LINES)	CO	CURB INLET
P	PULL BOX	CO	SANITARY SEWER CLEAN OUT
	LIGHT POLE	DS	DOWN SPOUT
	UTILITY POLE	FD	FLOOR DRAIN
	UTILITY POLE W/ LIGHT		FLARED END SECTION
T	UTILITY POLE W/ TRANSFORMER	SV	SPRINKLER VALVE
	GUY ANCHOR		SIAMESE FIRE CONNECTOR
	CONIFEROUS TREE		CANOPY SUPPORT
	TREE LINE	MB	MAIL BOX
FP	FLAG POLE		CONCRETE JOINT/CUT LINE
E	ELECTRIC METER		BUSH
	UNDERGROUND ELECTRIC PEDESTAL		DECIDUOUS TREE
	SPEAKER BOX	T/E	TRASH ENCLOSURE
BB	BREAKER BOX	L/S	LANDSCAPING AREA
	TELEPHONE PEDESTAL	CONC	CONCRETE
	SANITARY SEWER MANHOLE	LW	LOWEST WIRE HEIGHT
	STORM SEWER MANHOLE		
AI	AREA INLET		

PROPOSED LEGEND

- ASPHALT EDGE TREATMENT. SEE SECTION ON C190
- ASPHALT OVERLAY (040)
- AREAS OF FULL DEPTH ASPHALT (040)
- TURF
- CONCRETE PAVEMENT (042) W/JOINTING
- TYPE 1 JOINT (TYP) / TYPE 3 JOINT (TYP)
- CONCRETE SIDEWALK (055+005) W/JOINTING
- TYPE 1/TYPE 3 JOINT TYPE
- L LANDING
- R RAMP
- T TRANSITION
- PROJECT AREA (LIMITS OF DISTURBANCE)



CONVERGENCE ANGLE ESTABLISHED BY JA-25 (PID: 095025)

NOTE:
1. **CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF ENTRANCE, SLOPED PAVING, EXIT PORCHES, RAMPS, TRUCK DOCKS, PRECISE BUILDING DIMENSIONS AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.**
2. **THESE PLANS HAVE NOT BEEN VERIFIED WITH FINAL ARCHITECTURAL CONTRACT DRAWINGS. CONTRACTOR SHALL VERIFY AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES. CONTRACTOR IS FULLY RESPONSIBLE FOR REVIEW AND COORDINATION OF ALL DRAWINGS AND CONTRACTOR DOCUMENTS.**
3. **ALL DIMENSIONS ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.**
4. **ALL DIMENSIONS ARE PERPENDICULAR TO PROPERTY LINE.**

Know what's **below.** **Call** before you dig.

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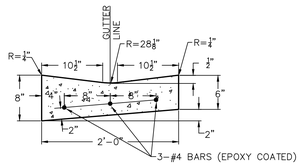
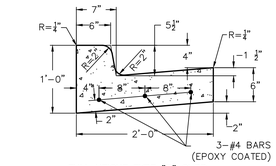
Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
Christian Crowder Date: 9/23/2022
Engineer License No. PE-2015000538

DIMENSION PLAN

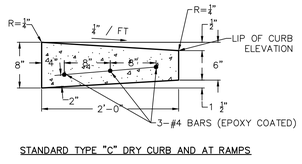
C105-C



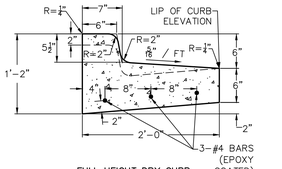
STANDARD TYPE "C" CURB



FULL HEIGHT TYPE "B" CURB



STANDARD TYPE "C" DRY CURB AND AT RAMPS



FULL HEIGHT DRY CURB

ZERO HEIGHT CURB 002

FULL HEIGHT CURB 001

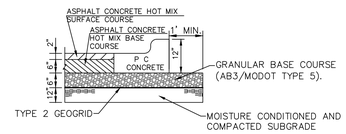
*GUTTER DEPTH MAY VARY TO IMPROVE DRAINAGE

CURB & GUTTER NOTES:

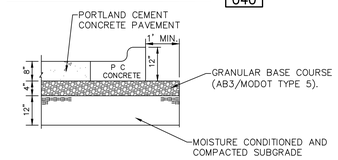
1. ½" PREMOLDED EXPANSION JOINTS SHALL BE PLACED AT POINTS OF CURVATURE, CURB RETURNS, CURB INLETS AND AT 250' CENTERS. THE EXPANSION JOINTS SHALL BE DOWELED IN ACCORDANCE WITH THE SPECIFICATIONS. CONTRACTION JOINTS SHALL BE 2" DEEP AND PLACED AT 15' INTERVALS EQUALLY SPACED BETWEEN EXPANSION JOINTS.
2. ALL CONCRETE USED IN THIS WORK SHALL MEET THE LATEST EDITION OF THE KANSAS CITY METROPOLITAN CHAPTER OF THE AMERICAN PUBLIC WORKS ASSOCIATION. KCMMB4K CONCRETE SHALL BE USED THROUGHOUT.
3. ALL REINFORCING STEEL SHALL BE SUPPORTED ON FABRICATED STEEL BAR SUPPORTS @ 3'-0" MAXIMUM SPACING.
4. SEE SIDEWALK RAMP DETAILS FOR TYPICAL SIDEWALK RAMP CURB & GUTTER SECTIONS.
5. DETAILS AS SHOWN FOR CONCRETE AND ASPHALT PAVING. WHEN USED WITH CONCRETE PAVING POURED MONOLITHICALLY WITH CURB NO MODIFICATIONS ARE REQUIRED. WHEN CURB AND CONCRETE PAVING ARE TO BE POURED SEPARATELY #4 BARS, 24" LONG ARE TO BE PROVIDED TO TIE CURB TOGETHER WITH CONCRETE PAVING. PLACE AT 8" O.C.
6. ALL REINFORCING SHALL BE 60 GRADE 60 DEFORMED BARS AND COMPLY WITH ASTM A615. EPOXY BARS AS NOTED, SHALL COMPLY WITH ASTM A775.
7. CURBS TO BE CONSTRUCTED ON MINIMUM 6 INCHES OF COMPACTED WELL GRADED BASE ROCK.

CURB & GUTTER

N.T.S



ASPHALT PAVEMENT 040



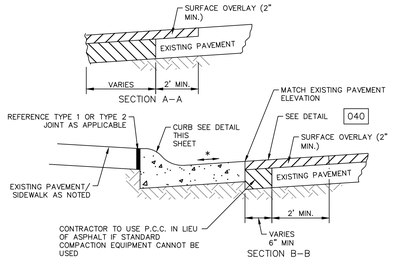
CONCRETE PAVEMENT 042

1. FLEXIBLE PAVEMENT SHALL BE IN ACCORDANCE WITH THE LATEST (FEBRUARY 2017) EDITION OF THE KANSAS CITY METROPOLITAN CHAPTER OF APWA SECTION 2200 AS AMENDED BY PROJECT SPECIFICATIONS.

   ASPHALT SURFACE COURSE – APWA TYPE 3–01

   ASPHALT BASE COURSE – APWA TYPE 2–01

2. PORTLAND CEMENT CONCRETE FOR DRIVEWAYS SHALL BE A KCMMB4K MIX AND SHALL MEET THE LATEST EDITION OF THE KANSAS CITY METROPOLITAN CHAPTER OF APWA SECTION 2200.



* REFERENCE SHEET C300 FOR SLOPE DIRECTION

MILL AND OVERLAY DETAIL

ASPHALT NOTES:

PAVING SHALL BE IN ACCORDANCE WITH THE KANSAS CITY METROPOLITAN CHAPTER OF APWA SECTION 2200 AS AMENDED BELOW.

MILLING FOR THE DRIVES AND PARKING LOTS SHALL BE COLD MILLED AS FOLLOWS:

1. EQUIPMENT: MILLING THE SURFACE OF PAVEMENTS SHALL BE COMPLETED BY USE OF A MILLING MACHINE CONFORMING TO THE FOLLOWING.

   A. MACHINE: THE COLD MILLING MACHINE SHALL BE SELF–PROPELLED AND SHALL HAVE IN COMBINATION THE MEANS OF MILLING AND CUTTING, WITHOUT SOFTENING THE OLD SURFACE AND BLADING THE CUTTING INTO A SINGLE WINDROW, OR DEPOSITING THEM DIRECTLY INTO A TRUCK.
   B. AIR POLLUTION: THE MACHINE SHALL BE EQUIPPED WITH A DUST SUPPRESSION SYSTEM INCLUDING WATER STORAGE TANKS AND HIGH PRESSURE SPRAY BARS.
   C. OPERATING WIDTH: IT IS DESIRABLE THAT THE CUTTING WIDTH BE GREATER THAN 1 FEET (0.3 m). IN THE EVENT THE CUTTING WIDTH IS LESS THAN 1 FEET (0.3 m) CONTRACTOR IS RESPONSIBLE FOR ENSURING GRADE CONTROL AS NOTED ON PLANS.
   D. CUTTING DRUM: THE CUTTING DRUM SHALL BE TOTALLY ENCLOSED TO PREVENT DISCHARGE OF ANY LOOSENED MATERIAL ADJACENT TO WORK AREAS.

2. CONSTRUCTION DETAILS

   A. METHODS OF OPERATIONS FOR MILLING:

1. OPERATOR: THE MILLING MACHINE SHALL BE OPERATED BY AN EXPERIENCED AND CAPABLE OPERATOR.
2. UTILITIES: STREET SURFACES ADJACENT TO MANHOLE, WATER VALVES AND OTHER UTILITY EXTENSIONS, SHALL BE COMPLETELY REMOVED TO THE FULL DEPTH THE CUT SPECIFIED FOR THE STREET UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
3. MATERIAL DISPOSAL: THE MATERIAL WITHDREW BY THE MACHINE SHALL BE REMOVED FROM THE SURFACE OF THE PAVEMENT AND PROPERLY DISPOSED OF BY THE CONTRACTOR.
4. SURFACE CONDITIONS: THE DRUM LACING PATTERNS SHALL PRODUCE A SMOOTH SURFACE AFTER MILLING WITH GROOVE DEPTHS NOT TO EXCEED 1/4 INCH (0.64 cm) AND GROOVE SPACING NOT TO EXCEED 1 INCH (2.54 cm) UNLESS OTHERWISE APPROVED BY THE ENGINEER.

   B. TYPES OF CUTS TO BE MADE BY MILLING:

5. LEVELING: SUFFICIENT PASSES SHALL BE MADE SUCH THAT ALL IRREGULARITIES OR HIGH SPOTS ARE ELIMINATED, AND THAT 100% OF THE SURFACE IS MILLED.
6. AVERAGE DEPTH: SUFFICIENT PASSES, OR CUTS, SHALL BE MADE IN ORDER TO REMOVE A SPECIFIED DEPTH OVER THE ENTIRE STREET SECTION. THESE DEPTHS WILL BE DESIGNATED ON THE PLANS.
7. CURB CUT: SUFFICIENT PASSES, OR CUTS, SHALL BE MADE IN ORDER TO REMOVE A SPECIFIED DEPTH AT THE CURB FOR A SPECIFIED WIDTH. THE DEPTH AT THE WIDTH FURTHEST FROM THE CURB IS 0. THESE DIMENSIONS WILL BE DESIGNATED ON THE PLANS.

   C. CLEANUP: ALL LOOSE ASPHALT AND DEBRIS SHALL BE REMOVED FROM THE STREET SURFACE AND CURB AND GUTTER. ANY MATERIAL AND DEBRIS THAT ADHERES TO THE CURB AND GUTTER SHALL BE REMOVED.

CRACKS: REFER TO CRACK SEALING/FILLING GUIDELINES.

1. AREAS OF THE PAVEMENT REQUIRING PATCHING WILL BE DESIGNATED ON THE PLANS OR MARKED BY THE ENGINEER AFTER COMPLETION OF MILLING OPERATIONS FOR THE SECTION OF PAVEMENT UNDER CONSTRUCTION. THE DETERIORATED PAVEMENT WILL BE REMOVED TO THE LIMITS DESIGNATED BY THE ENGINEER. THE SUBGRADE SHALL BE ADJUSTED TO PERMIT THE THICKNESS OF ASPHALT INDICATED ON THE PLANS. THE SUBGRADE SHALL CONSIST OF MODOT TYPE 5 AGGREGATE AND SHALL BE UNIFORMLY COMPACTED BY HAND TAMPING OR ROLLING. BITUMINOUS MIX FOR PATCHING WILL MEET THE REQUIREMENTS FOR APWA TYPE 1 OR 2 ASPHALT CONCRETE AS SPECIFIED IN THE KANSAS CITY METROPOLITAN CHAPTER OF APWA SECTION 2200. AT THE TIME OF PLACING ASPHALT THE EDGE OF THE AREA TO BE PATCHED WILL BE COATED WITH SS–1H EMULSIFIED ASPHALT OR APPROVED EQUAL. THE ASPHALT IN THE PATCH SHALL BE PLACED IN TWO EQUAL LIFTS WITH EACH LIFT THOROUGHLY COMPACTED PRIOR TO PLACEMENT OF THE SUBSEQUENT LIFT.

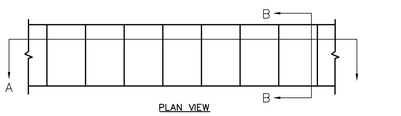
2. CONSTRUCTION OF THE 2 INCH OVERLAY WILL BE PERFORMED IN ACCORDANCE WITH THE KANSAS CITY METROPOLITAN CHAPTER OF APWA SECTION 2200 – ASPHALT CONCRETE SURFACE WITH THE FOLLOWING MODIFICATIONS:

3. THE APWA TYPE 3 ASPHALT CONCRETE MIX MAY CONTAIN RECYCLED ASPHALT CONTENT. RECYCLED ASPHALT MIX DESIGN APWA TYPE 3 (FRAP) AND APWA TYPE 1 OR 2 (FRAP) (FOR FULL DEPTH PATCH) MUST BE A 50–BLOW MARSHALL MIX MEETING THE AGGREGATE, GRADATION, AND VOLUMETRIC DESIGN REQUIREMENTS FOR APWA TYPE 3 OR APWA TYPE 3 (FRAP) FOR SURFACE COURSE AND APWA TYPE 1 OR 2 OR APWA TYPE 1 OR 2 (FRAP) FOR BASE COURSES AS DEFINED BY THE KANSAS CITY METROPOLITAN CHAPTER OF APWA SECTION 2200, CURRENT EDITION. ANY SUBMITTED 50–BLOW MARSHALL MIX DESIGN MUST ALSO BE CHECKED FOR RESISTANCE TO STRIPPING DURING DESIGN USING AASHTO T–283 TO DETERMINE IF ANTISTRIPPING AGENT IS NEEDED FOR THE SAME ASPHALT CONCRETE CHOSEN FOR THE PROJECT. THE INDEX OF RETAINED STRENGTH SHALL EXCEED 80%. ANY ASPHALT MIX SUPPLIED TO THE PROJECT DURING PLACEMENT WILL BE SUBJECT TO TESTING BY THE OWNERS REPRESENTATIVES USING THE AASHTO T–283 PROCEDURE FOR TENSILE STRENGTH RATIO.)

4. MEASURED DENSITY OF THE COMPLETED OVERLAY SHALL HAVE A COMPACTED DENSITY OF 92% TO 97% OF THE DAILY THEORETICAL MAXIMUM SPECIFIC GRAVITY (GMM) OF THE APWA TYPE 3 MIX SUPPLIED TO THE PROJECT.

5. AREAS OF THE PAVEMENT SURFACE ON THE DRIVES AND PARKING LOTS THAT ARE SHOWN TO HAVE SEGREGATION UPON COMPLETION OF FINAL ROLLING SHALL RECEIVE AN ADDITIONAL SURFACE TREATMENT TO CLOSE THE SURFACE VOIDS. THE SURFACE TREATMENT SHALL CONSIST OF MANUFACTURED SAND COATED WITH SS–1H EMULSION WORKED INTO THE SURFACE VOIDS TO YIELD A UNIFORM APPEARING SURFACE.

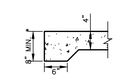
INTEGRAL CURB AND SIDEWALK 005



NOTE:
1. CONTRACTOR SHALL BACKFILL SIDEWALKS WITH TOPSOIL AND SEED IN ACCORDANCE WITH NOTES ON PLANS.

CONCRETE AND SIDEWALK NOTES:

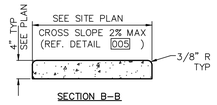
1. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AND COMPLY WITH KCMMB SPECIFICATIONS. ALL CONCRETE SHALL BE PLACED IN ACCORDANCE WITH APWA SECTION 2200.
2. REINFORCING STEEL SHALL BE GRADE 60 AND COMPLY WITH ASTM A615. EPOXY COATED BARS AS NOTED SHALL COMPLY WITH ASTM A775. ALL CUT ENDS OR DAMAGED AREAS SHALL BE FIELD REPAIRED WITH EPOXY COATING.
3. SIDEWALKS TO BE BROOM FINISHED.
4. SUBGRADE TO BE COMPACTED TO 90% MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698. MOISTURE CONTENT TO BE WITHIN A RANGE OF 2% BELOW TO 2% ABOVE OPTIMUM MOISTURE AS DEFINED BY ASTM D698.
5. SIDEWALK JOINTS MAY BE SAWN UNLESS OTHERWISE NOTED ON ARCHITECTURAL PLANS.



TURNDOWN

*MATCH ASPHALT THICKNESS

PROVIDE TURN DOWN ALONG PLAYGROUND EDGE CURB PROVIDE 12" BARS AT 24" O.C.



CONCRETE SIDEWALK 055

multistudio
the evolution of gould evans

Lee's Summit Robotics, GiC & Phys Educaiton

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LSW: 2600 SW Ward Rd, Lee's Summit MO 64082
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Issue Date: September 9, 2022

Revisions

NUMBER	DESCRIPTION	DATE
1	ADDENDUM 2	9/23/2022
2	ASI 01 - CODE COMMENTS	11/8/2022

RELEASED FOR CONSTRUCTION
As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
11/23/2022

Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
Christian Crowder Date: 9/23/2022
Engineer License No. PE-2015000538

SITE DETAILS

C190-C

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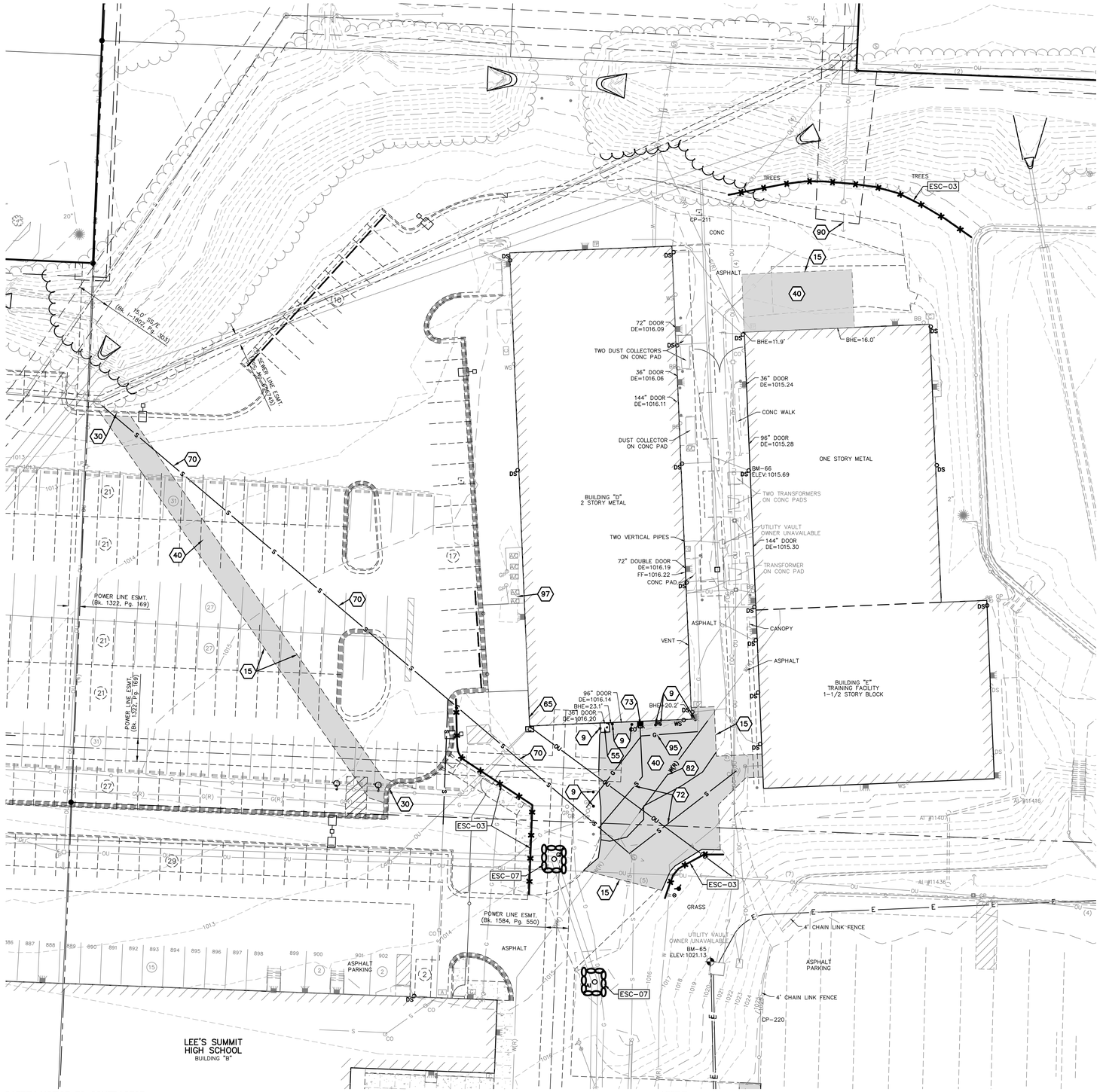
KAW VALLEY ENGINEERING, INC., IS AUTHORIZED TO OFFER ENGINEERING SERVICES BY MISSOURI STATE CERTIFICATE OF AUTHORITY # 000842. EXPIRES 12/31/23

PROJ. NO. C20_0496–1 DSN: CJC
CFN: 0496–1DET DWN: NJN

PRINT DATE/TIME: 11/8/2022 3:21 PM



SAFETY NOTICE TO CONTRACTOR

IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

WARRANTY / DISCLAIMER

THE DESIGNS REPRESENTED IN THESE PLANS ARE IN ACCORDANCE WITH ESTABLISHED PRACTICES OF CIVIL ENGINEERING FOR THE DESIGN FUNCTIONS AND USES INTENDED BY THE OWNER AT THIS TIME. HOWEVER, NEITHER KAW VALLEY ENGINEERING, INC NOR ITS PERSONNEL CAN OR DO WARRANTY THESE DESIGNS OR PLANS AS CONSTRUCTED, EXCEPT IN THE SPECIFIC CASES WHERE KAW VALLEY ENGINEERING PERSONNEL INSPECT AND CONTROL THE PHYSICAL CONSTRUCTION ON A CONTEMPORARY BASIS AT THE SITE.

CAUTION – NOTICE TO CONTRACTOR

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT LOCATIONS OF POSSIBLE CONFLICTS PRIOR TO ANY CONSTRUCTION.

PRINT DATE/TIME: 11/8/2022 3:21 PM

LEGEND:

- AIR CONDITIONER
- WALL MOUNTED ELECTRICAL OUTLET
- UNDERGROUND GAS
- GAS METER
- CONTROL POINT
- BENCHMARK
- GATE POST
- CHAIN LINK FENCE
- WOOD FENCE
- BOLLARD
- STREET/TRAFFIC SIGN
- PAINTED DIRECTIONAL ARROW
- TURN LANE DIRECTION
- HANDICAP SYMBOL
- PARKING STALL COUNT
- HANDICAP SIGN
- HRMP HANDICAP RAMP
- WHEEL STOP
- DIP DUCTILE IRON PIPE
- HDPE HIGH DENSITY POLYETHYLENE
- WALL MOUNTED LIGHT
- WALL MOUNTED CAMERA
- GAS VALVE
- GR GAS RISER
- GAS LINE SIGN
- DE DOOR ELEVATION AT THRESHOLD
- FF FINISH FLOOR ELEVATION
- BHE BUILDING HEIGHT/ELEVATION
- B/B BACK TO BACK OF CURB MEASUREMENT
- E/E EDGE TO EDGE OF ASPHALT
- WATER METER
- WATER LINE GATE VALVE
- FIRE HYDRANT
- SPRINKLER CONTROL BOX
- WATER MANHOLE
- (2) OU OVERHEAD UTILITY LINE (# OF LINES)
- PULL BOX
- LIGHT POLE
- UTILITY POLE
- UP UTILITY POLE W/ LIGHT
- UTILITY POLE W/ TRANSFORMER
- GUY ANCHOR
- CONIFEROUS TREE
- TREE LINE
- FP FLAG POLE
- ELECTRIC METER
- UNDERGROUND ELECTRIC PEDESTAL
- SPEAKER BOX
- BREAKER BOX
- TELEPHONE PEDESTAL
- SANITARY SEWER MANHOLE
- STORM SEWER MANHOLE
- AI AREA INLET
- CURB INLET
- CO SANITARY SEWER CLEAN OUT
- DS DOWN SPOUT
- FD FLOOR DRAIN
- FLARED END SECTION
- SV SPRINKLER VALVE
- SIAMESE FIRE CONNECTOR
- CANOPY SUPPORT
- MB MAIL BOX
- CONCRETE JOINT/CUT LINE
- BUSH
- DECIDUOUS TREE
- T/E TRASH ENCLOSURE
- L/S LANDSCAPING AREA
- CONC CONCRETE
- LW LOWEST WIRE HEIGHT

EROSION & PROPOSED IMPROVEMENTS LEGEND:

- 1218 EXISTING GROUND CONTOUR (1' INTERVALS)
- 1218 PROPOSED FINISHED GROUND CONTOUR (1' INTERVALS)
- GRAVEL FILTER BAGS AND INLET PROTECTION (ESC-06 & ESC-07)
- OTPF FENCE (OTPF)
- SEDIMENTATION FENCE (ESC-03)
- LIMITS OF DISTURBANCE
- (R) INDICATES TREE/SHRUB TO BE REMOVED
- CONSTRUCTION ENTRANCE AND STAGING (ESC-01)
- WATTLE/BIODEGRADABLE LOG (ESC-04)
- ROCK DITCH CHECK (ESC-10) OR OUTLET PROTECTION (ESC-14)
- CW CONCRETE WASH AREA (ESC-01)

DEMOLITION

- **1** TO REMAIN.
- **6** SIGN TO BE REMOVED
- **7** SIGN TO BE RELOCATED
- **8** REMOVE BUILDING AND BUILDING EQUIPMENT. (COORDINATE WITH ARCHITECTURAL AND MEP PLAN)
- **8A** REMOVE EXISTING SERVICE TUNNEL AFTER UTILITIES HAVE BEEN ABANDONED. SEAL PENETRATIONS AT BUILDING IN ACCORDANCE WITH ARCHITECTURAL AND STRUCTURAL PLANS
- **9** CONCRETE BOLLARD/TALL DELINEATORS TO BE REMOVED. (COORDINATE WITH ARCHITECTURAL PLAN)
- **10** FENCE AND FENCE POST TO BE REMOVED AS NECESSARY TO CONSTRUCT IMPROVEMENTS.
- **15** SAW CUT LINE (FOR CONCRETE SAW CUT AT NEAREST CONTROL JOINT. FOR ASPHALT SAW CUT MINIMUM OF 6" FROM NEW CURB LINE). SEE SHEET C100 AND C200 FOR LIMITS.
- **30** CONTRACTOR TO REMOVE CONCRETE CURBS TO CONSTRUCT IMPROVEMENTS. SEE SHEET C100 AND C200 FOR LIMITS.
- **40** CONTRACTOR TO REMOVE ASPHALT PAVING AS REQUIRED TO CONSTRUCT IMPROVEMENTS.
- **55** CONTRACTOR TO REMOVE CONCRETE PAVING AND WALKS.
- **60** CONTRACTOR TO MODIFY, REMOVE AND/OR REROUTE STORM SEWER PRIOR TO CONSTRUCTING ADDITIONS. REFER TO C600 SHEETS FOR ADDITIONAL INFORMATION.
- **65** CONTRACTOR TO RELOCATE DOWNSPOUT TO FACILITATE IMPROVEMENTS
- **70** CONTRACTOR TO REMOVE PORTION OF EXISTING SANITARY SEWER MAIN LOCATED UNDER PROPOSED BUILDING D ADDITION. REMAINDER OF SANITARY MAIN LOCATED UNDER PAVEMENT TO BE PLUGGED AT BOTH ENDS PER CITY/STATE REGULATIONS AND ABANDON IN PLACE, FOLLOWING INSTALLATION OF NEW SANITARY MAIN. REFER TO C500, AND C700 SERIES SHEETS FOR ADDITIONAL INFORMATION.
- **72** CONTRACTOR TO DISCONNECT AND REMOVE AND RELOCATE EXISTING SANITARY SERVICE LINE ROUTED EXTERIOR TO THE BUILDING AS NECESSARY TO CONSTRUCT THE BUILDING ADDITIONS AND SITE IMPROVEMENTS AS APPLICABLE REFER TO C500 SHEETS AND MEP PLANS FOR ADDITIONAL INFORMATION.
- **73** CONTRACTOR TO DISCONNECT AND REMOVE AND RELOCATE EXISTING CLEANOUT AS NECESSARY TO CONSTRUCT THE BUILDING ADDITIONS AND SITE IMPROVEMENTS AS APPLICABLE REFER TO C500 SHEETS AND MEP PLANS FOR ADDITIONAL INFORMATION.
- **82** CONTRACTOR TO DISCONNECT AND REMOVE AND RELOCATE EXISTING DOMESTIC WATER SERVICE LINE ROUTED EXTERIOR TO THE BUILDING AS NECESSARY TO CONSTRUCT THE BUILDING ADDITIONS AND SITE IMPROVEMENTS AS APPLICABLE REFER TO C500 SHEETS AND MEP PLANS FOR ADDITIONAL INFORMATION.
- **90** CONTRACTOR TO COORDINATE WITH LSR7 TO RELOCATE GUY ANCHOR OUTSIDE OF PROPOSED PAVING
- **95** EXISTING GAS SERVICE AND APPURTENANCES TO BE REMOVED, REPLACED OR RELOCATED PRIOR TO CONSTRUCTING ADDITION. (COORDINATE WITH C500, SPIRE ENERGY AND MEP PLANS)
- **97** CONTRACTOR TO REMOVE HVAC UNITS. COORDINATE WITH LSR7 AND MEP PLANS

CONSTRUCTION NOTES:

1. CONTRACTOR SHALL VERIFY SITE CONDITIONS PRIOR TO BIDDING. CONTRACTOR SHALL REMOVE ALL BUILDINGS, UTILITIES, PAVEMENT, FOUNDATIONS, FENCES, CURBS AND ALL OTHER STRUCTURES FROM WITHIN PROPERTY LINES EXCEPT AS DESIGNATED "TO REMAIN" OR "TO BE REMOVED BY OTHERS", IN ACCORDANCE WITH THE SPECIFICATIONS AND THE CITY OF LEE'S SUMMIT AND STATE REGULATIONS. SITE CONDITIONS SHOWN WERE AS OF MARCH 19, 2020.
2. ALL UTILITY PIPE LINES TO BE ABANDONED SHALL BE PLUGGED PER CITY AND STATE REGULATIONS.
3. DRIVES, PAVING AND OTHER STRUCTURES ON STREET OR HIGHWAY RIGHT-OF-WAY SHALL BE REMOVED AS NECESSARY TO CONSTRUCT IMPROVEMENTS SHOWN ON THESE PLANS. REMOVAL AND DISPOSAL SHALL BE IN CONFORMANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
4. ALL PAVING WITHIN PROPERTY TO BE REMOVED AND DISPOSED OF IN CONFORMANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
5. ALL EXISTING UTILITIES ETC. LOCATED WITHIN THE BOUNDARIES OF THE PROPOSED BUILDING SHALL BE COMPLETELY REMOVED TO 10 FEET OUTSIDE OF BUILDING LINE.
6. ALL HAZARDOUS ASBESTOS AND OTHER HAZARDOUS MATERIALS MUST BE IDENTIFIED AND REMOVED PRIOR TO ANY BUILDING DEMOLITION, IN STRICT CONFORMANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
7. CONTRACTOR SHALL VERIFY THAT ALL UTILITIES TO EXISTING STRUCTURES HAVE BEEN DISCONNECTED PRIOR TO COMMENCING DEMOLITION.
8. EXISTING POWER LINES AND APPURTENANCES TO BE RELOCATED. COORDINATE WITH LOCAL UTILITIES.
9. ALL SLOPES THAT ARE 4:1 OR STEEPER MUST BE FULLY OR PERMANENTLY STABILIZED WITHIN TWO WEEKS OF FINAL GRADING.
10. CONTRACTOR HAS THE OPTION TO CONSTRUCT MULCH BERMS FROM TREE REMOVAL IN LIEU OF SILT FENCE ALONG TREE LINES. SEE DETAIL ESC-04.
11. STAGE INSTALL OF CONSTRUCTION STAGING AND ACCESS AREA AS CONSTRUCTION PROGRESSES ON SITE. WEST PARKING LOT TO REMAIN TO THE MAXIMUM EXTENTS PRACTICAL TO MAINTAIN SITE CIRCULATION AND BUS ACCESS. COORDINATE WITH CM'S SITE LOGISTIC PLAN.
12. PROVIDE CONSTRUCTION FENCING AS NOTED ON CM'S SITE LOGISTIC PLAN.

DESCRIPTION OF WORK – PRE CLEAR AND PHASE I:

- OBTAIN REVIEW COMPLIANCE AND APPLICABLE PERMITS.
- HOLD PRE-CONSTRUCTION CONFERENCE.
- INSTALL PERIMETER EROSION CONTROL MEASURES, INLET PROTECTION DOWNSTREAM OF DEMOLITION AREAS AND TREE PROTECTION FENCING WITHIN CLEARING LIMITS AS APPLICABLE
- SAWCUT AND REMOVE PAVEMENT, FLATWORK AND CURBING IN IMMEDIATE VICINITY OF PROPOSED WORK AREAS AND UTILITY RELOCATION POINTS. COORDINATE WORK WITH SCHOOL SCHEDULE TO MAINTAIN PEDESTRIAN AND VEHICULAR TRAFFIC FLOW AROUND CONSTRUCTION SITE. PROVIDE STABILIZED CONSTRUCTION ENTRANCE OR TEMPORARY ACCESS ROAD AS REQUIRED.
- REMOVE/RELOCATE UTILITIES IN ACCORDANCE WITH DEMOLITION PLANS AS REQUIRED TO CONSTRUCT CLASSROOM BUILDING ADDITIONS.

NOTE: IT IS ANTICIPATED THAT WORK WILL BE STAGED AS DIFFERENT RENOVATION AND CONSTRUCTION ACTIVITIES OCCUR. CONTRACTOR SHALL COORDINATE WITH CM'S SITE LOGISTICS PLAN AND CONSTRUCTION SCHEDULE.

NOTE:

THIS EROSION CONTROL PLAN HAS BEEN PLACED IN THE CITY'S FILE FOR THIS PROJECT. THE PLAN APPEARS TO FULFILL THE MISSOURI DEPARTMENT OF NATURAL RESOURCES TECHNICAL CRITERIA AND THE CRITERIA FOR EROSION CONTROL AND REQUIREMENTS OF THE CITY. I UNDERSTAND THAT ADDITIONAL EROSION CONTROL MEASURES MAY BE NEEDED IF UNFORESEEN EROSION PROBLEMS ARISE OR IF THE SUBMITTED PLAN DOES NOT FUNCTION AS INTENDED. THE REQUIREMENTS OF THIS PLAN SHALL RUN WITH THE LAND AND BE THE OBLIGATION OF THE LAND OWNER UNTIL SUCH TIME AS THE PLAN IS PROPERLY COMPLETED, MODIFIED OR VOIDED.

GENERAL NOTES:

1. REFER TO SHEET C490 AND LANDSCAPE PLAN FOR TEMPORARY AND PERMANENT SEEDING/STABILIZATION REQUIREMENTS.
2. REFER TO APWA STANDARD ESC DRAWINGS FOR ADDITIONAL DETAILS AND SPECIFICATIONS.

00°04'45"
PROJECT NORTH
TRUE NORTH

0 10 20 40
SCALE: 1" = 20'
CONVERGENCE ANGLE ESTABLISHED BY JA-25 (PID: 095025)

FOR THE FOLLOWING DETAILS REFER TO THE KC METROPOLITAN CHAPTER ADOPTED DIVISION III APWA STANDARD DRAWINGS FOR EROSION AND SEDIMENT CONTROL (2017 VERSION) ON SHEETS C480 AND C485.

- ESC-01 CONSTRUCTION ENTRANCE AND CONCRETE WASHOUT
- ESC-02 EROSION CONTROL BLANKETS AND TURF REINFORCEMENT MAT
- ESC-03 SEDIMENTATION FENCE
- ESC-04 WATTLES/BIODEGRADABLE LOGS AND MULCH/COMPOST FILTER BERMS
- ESC-06 CURB INLET PROTECTION
- ESC-07 AREA INLET PROTECTION
- ESC-10 ROCK DITCH CHECKS
- ESC-14 OUTLET PROTECTION (REFERENCE DETAIL 406 ON SHEET C695)

- GRAVEL TO BE REMOVED
- ASPHALT PAVING TO BE REMOVED
- CONCRETE PAVING/SIDEWALKS TO BE REMOVED
- AREA TO BE MILLED
- BUILDING TO BE REMOVED

811 Know what's below. Call before you dig.

PROJ. NO. C20_0496-1 DSN: CJC
CFN: 0496-1DEMO DWN: NJN

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MO # 2015000538

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KAW VALLEY ENGINEERING, INC., IS AUTHORIZED TO OFFER ENGINEERING SERVICES BY MISSOURI STATE CERTIFICATE OF AUTHORITY # 000842. EXPIRES 12/31/23

multistudio
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Lee's Summit Robotics, GiC & Phys Educaiton

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LSHS: 400 SE Blue Pkwy, Lee's Summit MO 64063

Project Number: 0121-0100

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Issue Date: September 9, 2022

Revisions

NUMBER	DESCRIPTION	DATE
1	ADDENDUM 2	9/23/2022
2	ASI 01 - CODE COMMENTS	11/8/2022

RELEASED FOR CONSTRUCTION
As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
11/23/2022

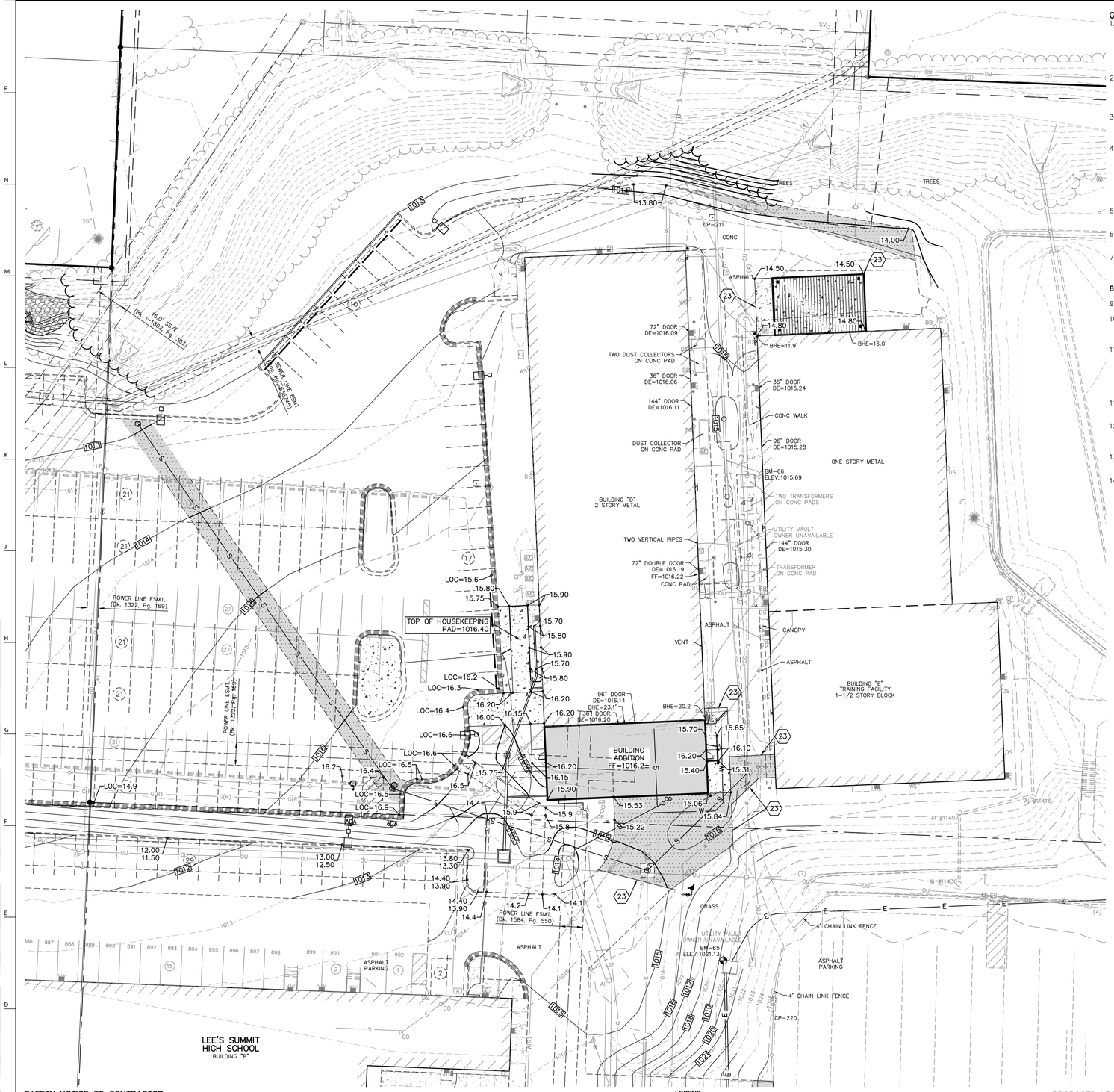
UNLESS A PROFESSIONAL SEAL WITH SIGNATURE AND DATE IS AFFIXED, THIS DOCUMENT IS PRELIMINARY AND IS NOT INTENDED FOR CONSTRUCTION, RECORDING PURPOSES OR IMPLEMENTATION

STATE OF MISSOURI
CHRISTIAN J. CROWDER
NUMBER
PE-2015000538
11.8.22

Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
Christian Crowder Date: 9/23/2022
Engineer License No. PE-2015000538

DEMOLITION PLAN

C200



GRADING NOTES:

1. THE CONSTRUCTION AREA SHALL BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL AND ORGANIC MATTER FROM ALL AREAS TO BE OCCUPIED BY BUILDING AND PAVING. TOPSOIL FOR REPLACEMENT ON SLOPES MAY BE STOCKPILED ON SITE. EXCESS TOPSOIL MAY BE WASTED IN FILL SLOPES PROVIDED THAT NO TOPSOIL WILL BE WASTED WITHIN 10 FEET OF THE EDGE OF THE BUILDING OR PARKING AREA. BURNING OF TIMBER WILL NOT BE PERMITTED UNLESS APPROVAL IS OBTAINED FROM GOVERNING OFFICIALS. STRIPPING EXISTING TOPSOIL AND ORGANIC MATTER SHALL BE TO A MINIMUM DEPTH OF 6 INCHES. CONSTRUCTION MANAGER SHALL DESIGNATE LOCATION OF STOCKPILE AREAS DURING CONSTRUCTION. ANY UNAUTHORIZED STOCKPILE SHALL BE REMOVE/RELOCATED AT THE CONTRACTORS EXPENSE.
2. AREAS TO RECEIVE FILL SHALL BE SCARIFIED AND THE TOP 12–INCH DEPTH COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698 WITH A MOISTURE CONTENT OF +/–3% OF OPTIMUM FOR SOILS WITH A LIQUID LIMIT OF LESS THAN 40 AND 0 TO +4% FOR SOILS WITH A LIQUID LIMIT GREATER THAN 40. ANY UNSUITABLE AREAS SHALL BE UNDERCUT AND REPLACED WITH SUITABLE MATERIAL BEFORE ANY FILL MATERIAL CAN BE APPLIED.
3. OFF–SITE SOIL MATERIAL FOR USE UNDER BUILDING AND PAVED AREAS SHALL HAVE A PLASTICITY INDEX OF 25 OR LESS, A LIQUID LIMIT OF 45 OR LESS AND CONTAIN NO ROCK LARGER THAN THREE INCHES. OFF–SITE FILL MATERIAL SHALL BE APPROVED BY THE OWNER'S TESTING AGENCY PRIOR TO BRINGING ON SITE.
4. EARTHWORK UNDER THE BUILDING, PAVING AND LIGHTLY LOADED STRUCTURAL FEATURES SHALL COMPLY WITH THE CONTRACT DOCUMENTS AND PROJECT GEOTECHNICAL REPORT. THE BUILDING PAD SHALL BE EXCAVATED AS REQUIRED TO ALLOW THE PLACEMENT OF LOW VOLUME CHANGE MATERIAL. REFER TO GEOTECHNICAL REPORT FOR PREPARING BUILDING PAD AND LOW VOLUME CHANGE THICKNESS REQUIREMENTS. OTHER FILL MATERIAL SHALL BE MADE IN LIFTS NOT TO EXCEED EIGHT INCHES DEPTH COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698. LVC SOILS SHALL BE COMPACTED AT A MOISTURE CONTENT OF 0 TO +4% OF OPTIMUM FOR SOILS WITH A LIQUID LIMIT GREATER THAN 40 AND +/–3% OF OPTIMUM FOR SOILS WITH A LIQUID LIMIT LESS THAN 40. NO ROCK LARGER THAN THREE INCHES IN ANY DIMENSION NOR ANY SHALE SHALL BE PLACED IN THE TOP 24 INCHES OF EMBANKMENT.
5. ON–SITE HIGH PLASTICITY CLAYS MAY BE TREATED WITH 5% TYPE 1/2 PORTLAND CEMENT BY WEIGHT. REFER TO PROJECT GEOTECHNICAL REPORT FOR REQUIREMENTS.
6. AREAS THAT ARE TO BE CUT TO SUBGRADE LEVELS SHALL BE PROOF ROLLED WITH A LOADED DUMP TRUCK OR SIMILAR APPROVED CONSTRUCTION EQUIPMENT TO DETECT UNSUITABLE SOIL CONDITIONS.
7. IN ALL AREAS OF EXCAVATION, IF UNSUITABLE SOIL CONDITIONS ARE ENCOUNTERED, THE OWNER'S ENGINEER SHALL RECOMMEND TO THE OWNER THE METHODS OF UNDERCUTTING AND REPLACEMENT OF PROPERLY COMPACTED, APPROVED FILL MATERIAL. ALL PROOFROLLING AND UNDERCUTTING SHOULD BE PERFORMED DURING A PERIOD OF DRY WEATHER.
8. **ALL EXCAVATIONS SHALL BE CONSIDERED AS UNCLASSIFIED. REFER TO PROJECT GEOTECHNICAL REPORT.**
9. ALL DISTURBED SLOPES ARE TO BE 3:1 OR FLATTER.
10. DETENTION BASIN AND ALL SLOPES DISTURBED EXCEEDING 4:1 SHALL BE HYDROSEEDED, SODDED OR PROTECTED BY EROSION CONTROL BLANKETS THAT WILL PREVENT EROSION AND PLACED SUCH THAT THE SURFACE IS FLUSH WITH SURROUNDING GROUND AND SHAPED TO CHANNEL WATER IN DIRECTIONS INDICATED. SEE GENERAL NOTES ON THIS SHEETS.
11. ALL SLOPES AND AREAS DISTURBED BY CONSTRUCTION SHALL BE GRADED SMOOTH AND A MINIMUM OF FOUR INCHES OF TOPSOIL APPLIED. IF ADEQUATE TOPSOIL IS NOT AVAILABLE ON–SITE, THE CONTRACTOR SHALL PROVIDE TOPSOIL, APPROVED BY THE OWNER, AS NEEDED. THE AREA SHALL THEN BE SODDED OR SEEDED, FERTILIZED, MULCHED, WATERED AND MAINTAINED UNTIL HARDY GRASS GROWTH IS ESTABLISHED IN ALL AREAS. ANY AREAS DISTURBED FOR ANY REASON SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER PRIOR TO FINAL ACCEPTANCE OF THE PROJECT. REFER TO THE NOTES ON THIS SHEET FOR TEMPORARY SEEDING SPECIFICATIONS. REFER TO PROJECT SITE PLAN FOR FINAL STABILIZATION TREATMENTS.
11. CONTRACTOR IS TO REMOVE AND DISPOSE OF ALL DEBRIS, RUBBISH AND OTHER MATERIALS RESULTING FROM PREVIOUS AND CURRENT DEMOLITION OPERATIONS.
12. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING THE CONSTRUCTION PHASES OF THIS PROJECT. THE CONTRACTOR WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES TO THE ADJACENT PROPERTIES OCCURRING DURING THE CONSTRUCTION PHASES OF THIS PROJECT.
13. IT IS NOT THE DUTY OF THE ENGINEER OR THE OWNER TO REVIEW THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES, IN, ON OR NEAR THE CONSTRUCTION SITE AT ANY TIME DURING CONSTRUCTION.
14. IF ANY OF THESE NOTES CONFLICT WITH THE PROJECT GEOTECHNICAL REPORT (CFS PROJECT 22–5546) AND ALL ADDENDUMS PREPARED BY CFS ENGINEERS DATED AUGUST 3, 2022, RECOMMENDATIONS IN GEOTECHNICAL REPORT SHALL GOVERN.

HORIZONTAL AND VERTICAL DATUM:

UNLESS OTHERWISE NOTED THE COORDINATES SHOWN HEREON ARE GRID COORDINATES BASED ON THE MISSOURI STATE PLANE, WEST ZONE (NAD 1983) (NAVD 1988)
CAF: 0.9998978
1 METER = 3.28083333 U.S. SURVEY FEET
GROUND COORDINATES X COMBINED ADJUSTMENT FACTOR (CAF) = GRID COORDINATES SCALED AROUND 0,0

JA–25 (PID–095025)
NORTHING: 303646.030 (GRID/METERS) 996212.016 (GROUND/FEET)
EASTING: 860950.475 (GRID/METERS) 2824635.014 (GROUND/FEET)
ELEV = 321.8 (METERS) 1055.77 (FEET)

PROJECT BENCH MARK:

BM–64
CHISELED SQUARE AT THE TOP NORTHEAST CORNER OF STEPS TO THE NORTH ENTRY TO BUILDING "B" ON WEST SIDE.
ELEV = 1015.34

BM–65
CHISELED SQUARE ON NORTHEAST CORNER CONCRETE TRANSFORMERS PAD WEST OF PARKING LOT NORTH OF TENNIS COURTS.
ELEV = 1021.13

BM–66
CHISELED SQUARE ON NORTHEAST CORNER CONCRETE TRANSFORMERS PAD (NORTH MOST) BETWEEN BUILDINGS "D" AND "E".
ELEV = 1015.69

PROJECT CONTROL:

CP #206
1/2" REBAR W/ CONTROL POINT CAP
NORTHING: 997985.92 (GROUND)
EASTING: 2826567.03 (GROUND)
ELEV = 1012.56

CP #211
1/2" REBAR W/ CONTROL POINT CAP
NORTHING: 998086.62 (GROUND)
EASTING: 2826963.98 (GROUND)
ELEV = 1014.61

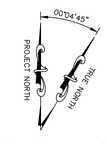
CP #220
1/2" REBAR W/ CONTROL POINT CAP
NORTHING: 997737.04 (GROUND)
EASTING: 2826986.56 (GROUND)
ELEV = 1024.94

UTILITY STATEMENT:

THE UNDERGROUND UTILITIES SHOWN HEREON ARE FROM FIELD SURVEY INFORMATION OF ONE–CALL LOCATED UTILITIES, FIELD SURVEY INFORMATION OF ABOVE GROUND OBSERVABLE EVIDENCE, AND/OR THE SCALING AND PLOTTING OF EXISTING UTILITY MAPS AND DRAWINGS AVAILABLE TO THE SURVEYOR AT THE TIME OF SURVEY. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. FURTHERMORE, THE SURVEYOR DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES BY EXCAVATION UNLESS OTHERWISE NOTED ON THIS SURVEY.
MISSOURI ONE CALL TICKET #221653482 & #222143061
BLOOD HOUND WORK ORDER #202977

FLOOD STATEMENT:

THE SURVEYED PARCEL LIES WITHIN ZONE "X" (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AS DETERMINED BY FEMA FLOOD INSURANCE RATE MAP NUMBER 29095C0438G, MAP REVISED JANUARY 20, 2017, AND BY MAP NUMBER 29095C0436G, REVISED JANUARY 20, 2017 LEE'S SUMMIT, JACKSON COUNTY, MISSOURI. LOCATION DETERMINED BY A SCALED GRAPHICAL PLOT OF THE FLOOD INSURANCE RATE MAP.



0 10 20 40
SCALE: 1" = 20'
CONVERGENCE ANGLE ESTABLISHED BY JA–25 (PID: 095025)

NOTES:
21 MATCH EXISTING CURB ELEVATION.
22 MATCH EXISTING SIDEWALK ELEVATION.
23 MATCH EXISTING PAVEMENT ELEVATION.
24 TRANSITION FROM ZERO HEIGHT CURB TO FULL HEIGHT CURB

Know what's **below.**
Call before you dig.

SAFETY NOTICE TO CONTRACTOR

IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

WARRANTY / DISCLAIMER

THE DESIGNS REPRESENTED IN THESE PLANS ARE IN ACCORDANCE WITH ESTABLISHED PRACTICES OF CIVIL ENGINEERING FOR THE DESIGN FUNCTIONS AND USES INTENDED BY THE OWNER AT THIS TIME. HOWEVER, NEITHER KAW VALLEY ENGINEERING, INC NOR ITS PERSONNEL CAN OR DO WARRANTY THESE DESIGNS OR PLANS AS CONSTRUCTED, EXCEPT IN THE SPECIFIC CASES WHERE KAW VALLEY ENGINEERING PERSONNEL INSPECT AND CONTROL THE PHYSICAL CONSTRUCTION ON A CONTEMPORARY BASIS AT THE SITE.

CAUTION – NOTICE TO CONTRACTOR

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT LOCATIONS OF POSSIBLE CONFLICTS PRIOR TO ANY CONSTRUCTION.

LEGEND:

- AIR CONDITIONER
- WALL MOUNTED ELECTRICAL OUTLET
- UNDERGROUND GAS
- GAS METER
- CONTROL POINT
- BENCHMARK
- GATE POST
- CHAIN LINK FENCE
- WOOD FENCE
- BOLLARD
- STREET/TRAFFIC SIGN
- PAINTED DIRECTIONAL ARROW
- TURN LANE DIRECTION
- HANDICAP SYMBOL
- PARKING STALL COUNT
- HANDICAP SIGN
- HANDICAP RAMP
- WHEEL STOP
- DUCTILE IRON PIPE
- HIGH DENSITY POLYETHYLENE
- WALL MOUNTED LIGHT
- WALL MOUNTED CAMERA
- GAS VALVE
- GAS RISER
- GAS LINE SIGN
- DOOR ELEVATION
- AT THRESHOLD
- FINISH FLOOR ELEVATION
- BUILDING HEIGHT/ELEVATION
- BACK TO BACK OF CURB MEASUREMENT
- EDGE TO EDGE OF ASPHALT
- WATER METER
- WATER LINE GATE VALVE
- FIRE HYDRANT
- SPRINKLER CONTROL BOX
- WATER MANHOLE
- OVERHEAD UTILITY LINE (# OF LINES)
- PULL BOX
- LIGHT POLE
- UTILITY POLE
- UTILITY POLE W/ LIGHT
- UTILITY POLE W/ TRANSFORMER
- GUY ANCHOR
- CONIFEROUS TREE
- TREE LINE
- FLAG POLE
- ELECTRIC METER
- UNDERGROUND ELECTRIC PEDESTAL
- SPEAKER BOX
- BREAKER BOX
- TELEPHONE PEDESTAL
- SANITARY SEWER MANHOLE
- STORM SEWER MANHOLE
- AREA INLET
- CURB INLET
- SANITARY SEWER CLEAN OUT
- DOWN SPOUT
- FLOOR DRAIN
- FLARED END SECTION
- SPRINKLER VALVE
- SIAMESE FIRE CONNECTOR
- CANOPY SUPPORT
- MAIL BOX
- CONCRETE JOINT/CUT LINE
- BUSH
- DECIDUOUS TREE
- TRASH ENCLOSURE
- LANDSCAPING AREA
- CONCRETE
- LOWEST WIRE HEIGHT

PROPOSED LEGEND

- ASPHALT EDGE TREATMENT. SEE SECTION ON C190
- ASPHALT OVERLAY (040)
- AREAS OF FULL DEPTH ASPHALT (040)
- TURF
- CONCRETE PAVEMENT (042) W/JOINTING
- CONCRETE SIDEWALK (055+005) W/JOINTING
- TYPE 1/TYPE 3 JOINT TYPE
- L LANDING
- R RAMP
- T TRANSITION
- PROJECT AREA (LIMITS OF DISTURBANCE)

LEGEND (PROPOSED)

- 22.9 SPOT ELEVATION (ADD 900), TOP OF PAVEMENT
- 23.6 TOP OF CURB (ADD 900)
- 23.1 FLOWLINE OF CURB (ADD 900)
- FLOW DIRECTION
- 950 FINISHED 1' CONTOUR INTERVALS, TOP OF PAVEMENT
- SWALE
- LP LOW POINT
- HP HIGH POINT
- LOC LIP OF CURB
- TW TOP OF WALL
- BW BOTTOM OF WALL
- SW SIDEWALK ELEVATION
- P PAVEMENT ELEVATION

NOTE:
1. **CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF ENTRANCE, SLOPED PAVING, EXIT PORCHES, RAMPS, TRUCK DOCKS, PRECISE BUILDING DIMENSIONS AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.**
2. **THESE PLANS HAVE NOT BEEN VERIFIED WITH FINAL ARCHITECTURAL CONTRACT DRAWINGS. CONTRACTOR SHALL VERIFY AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES. CONTRACTOR IS FULLY RESPONSIBLE FOR REVIEW AND COORDINATION OF ALL DRAWINGS AND CONTRACTOR DOCUMENTS.**
3. **ALL DIMENSIONS ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.**
4. **ALL DIMENSIONS ARE PERPENDICULAR TO PROPERTY LINE.**

CHRISTIAN J. CROWDER
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KAW VALLEY ENGINEERING, INC., IS AUTHORIZED TO OFFER ENGINEERING SERVICES BY MISSOURI STATE CERTIFICATE OF AUTHORITY # 000842. EXPIRES 12/31/23

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Lee's Summit Robotics, GiC & Phys Educaiton

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LSW: 2600 SW Ward Rd, Lee's Summit MO 64082
LSHS: 400 SE Blue Pkwy, Lee's Summit MO 64063

Project Number: 0121-0100

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Issue Date: September 9, 2022

Revisions

NUMBER	DESCRIPTION	DATE
1	ADDENDUM 2	9/23/2022
2	ASI 01 - CODE COMMENTS	11/8/2022

RELEASED FOR CONSTRUCTION
As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
11/23/2022

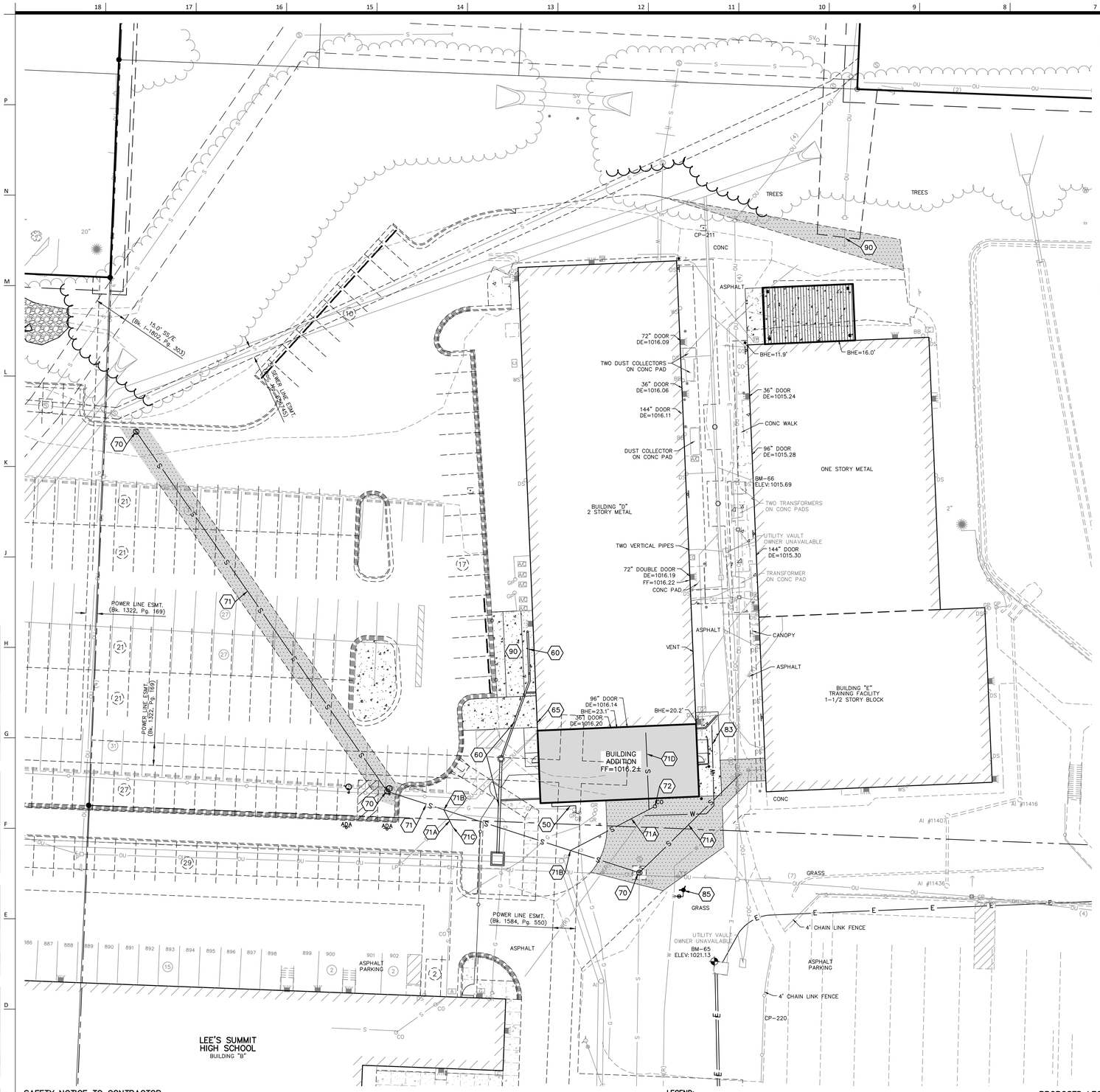
UNLESS A PROFESSIONAL SEAL WITH SIGNATURE AND DATE IS AFFIXED, THIS DOCUMENT IS PRELIMINARY AND IS NOT INTENDED FOR CONSTRUCTION, RECORDING PURPOSES OR IMPLEMENTATION

STATE OF MISSOURI
CHRISTIAN J. CROWDER
NUMBER
PE-2015000538
PROFESSIONAL ENGINEER
11.8.22

Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
Christian Crowder Date: 9/23/2022
Engineer License No. PE-2015000538

GRADING PLAN

C300-C



CONSTRUCTION NOTE:

1. INSTALLATION OF ELECTRICAL CONDUITS SHALL BE COORDINATED WITH WEIGHT ROOM CONTRACTOR. CONDUIT ROUTING MAY BE IN CONFLICT WITH EXCAVATION FOR BUILDING FOUNDATION WALL. IF CONDUIT IS INSTALLED PRIOR TO WEIGHT ROOM CONSTRUCTION, CONDUIT SHOULD BE LOCATED A MINIMUM OF 55' SOUTH AND PARALLEL TO BUILDING TO CLEAR OVER DIG AND SLOPE LAY BACK.

UTILITY NOTES:

1. EXCAVATION, TRENCHING AND BACKFILL SHALL BE COMPLETED IN ACCORDANCE WITH SECTION 2100 GRADING AND SITE PREPARATION OF THE KANSAS CITY METROPOLITAN CHAPTER OF APWA SPECIFICATIONS AS ADOPTED AND AMENDED BY THE CITY OF LEE'S SUMMIT.
2. ALL BACKFILL SHALL BE TAMPED. BACKFILL WITHIN THE RIGHT-OF-WAY AND UNDER PARKING AREAS AND SLABS SHALL BE 95% COMPACTION OF OPTIMUM MOISTURE.
3. CONTRACTOR SHALL NOT OPEN, TURN OFF, INTERFERE WITH, OR ATTACH ANY PIPE OR HOSE TO OR TAP ANY WATER MAIN BELONGING TO THE CITY OF LEE'S SUMMIT UTILITIES DEPARTMENT UNLESS DULY AUTHORIZED TO DO SO. ANY ADVERSE CONSEQUENCE OF ANY SCHEDULED OR UNSCHEDULED DISRUPTIONS OF SERVICE TO THE PUBLIC ARE TO BE THE LIABILITY OF THE CONTRACTOR. KAW VALLEY ENGINEERING AND OWNER ARE TO BE HELD HARMLESS. CONTRACTOR SHALL NOTIFY THE UTILITIES DEPARTMENT 48 HOURS MINIMUM.
4. CONTRACTOR TO INSTALL TRACING TAPE ALONG ALL NON-METALLIC SERVICE LINES PER SPECIFICATIONS.
5. CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT LOCATIONS OF POSSIBLE CONFLICT AND POINTS OF CONNECTION PRIOR TO ANY CONSTRUCTION OF NEW UTILITIES.
6. A MINIMUM HORIZONTAL DISTANCE SHALL BE MAINTAINED BETWEEN PARALLEL WATER AND SANITARY SEWER LINES. REFERENCE LEE'S SUMMIT SPECIFICATIONS. SECTIONS 3500 AND 3900
7. CONTRACTOR TO SCHEDULE ALL INSPECTIONS FOR SEWER MAIN CONNECTIONS THROUGH THE PUBLIC WORKS DEPARTMENT.

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MISSOURI ONE CALL TICKET #221653482 & #222143061
BLOOD HOUND WORK ORDER #202977

NOTES:

50	PROPOSED GAS SERVICE LINE (COORDINATE WITH MEP PLANS, SPIRE AND CONSTRUCTION MANAGER)
60	STORM SEWER (SEE SHEET C600-C)
65	CONTRACTOR TO RELOCATE DOWNSPOUT TO FACILITATE IMPROVEMENTS
70	SANITARY SEWER MANHOLE
71	SANITARY SEWER MAIN (SEE C700-C SERIES SHEETS)
71A	CONTRACTOR TO DISCONNECT AND REMOVE AND RELOCATE EXISTING SANITARY SERVICE LINE ROUTED EXTERIOR TO THE BUILDING AS NECESSARY TO CONSTRUCT THE BUILDING ADDITIONS AND SITE IMPROVEMENTS AS APPLICABLE REFER TO C500, C700 SHEETS AND MEP PLANS FOR ADDITIONAL INFORMATION.
71B	POINT OF CONNECTION AT SANITARY SEWER MAIN
71C	6" WYE
71D	SANITARY SERVICE LINE UNDER BUILDING TO BE EXTENDED USING MATERIALS SUITABLE FOR UNDER SLAB PLUMBING (COORDINATE WITH MEP PLANS AND SPECIFICATIONS)
72	SANITARY SEWER CLEANOUTS (SEE DETAIL ON SHEET C790-C)
81	WATER MAIN UNDER BUILDING TO BE RELOCATED AS REQUIRED TO CONSTRUCT IMPROVEMENTS.
83	RELOCATE EXISTING DOMESTIC WATERLINE AS REQUIRED TO CONSTRUCT IMPROVEMENTS. FIELD VERIFY SIZE AND MATERIAL. NEW MATERIALS SHALL MEET REQUIREMENTS OUTLINED IN THE CONSTRUCTION NOTES ON SHEET C520 AND PROJECT SPECIFICATIONS.
85	CONTRACTOR TO RELOCATE EXISTING HYDRANT TO FACILITATE FIRE LANE ACCESS
90	CONTRACTOR TO COORDINATE WITH LSR7 AND TO RELOCATE GUY ANCHOR OUTSIDE OF PROPOSED PAVEMENT
91	MECHANICAL EQUIPMENT ON HOUSE KEEPING PAD (REFER TO MEP & STRUCTURAL SHEETS)

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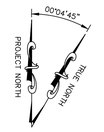
LEGEND:

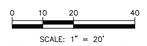
AC	AIR CONDITIONER	DIP	DUCTILE IRON PIPE
E	WALL MOUNTED ELECTRICAL OUTLET	HDPE	HIGH DENSITY POLYETHYLENE
G	UNDERGROUND GAS		WALL MOUNTED LIGHT
GM	GAS METER		WALL MOUNTED CAMERA
CP	CONTROL POINT		GAS VALVE
BM	BENCHMARK	GR	GAS RISER
GP	GATE POST		GAS LINE SIGN
	CHAIN LINK FENCE	DE	DOOR ELEVATION AT THRESHOLD
	WOOD FENCE	FF	FINISH FLOOR ELEVATION
	BOLLARD	BHE	BUILDING HEIGHT/ELEVATION
	STREET/TRAFFIC SIGN	B/B	BACK TO BACK OF CURB MEASUREMENT
	PAINTED DIRECTIONAL ARROW	E/E	EDGE TO EDGE OF ASPHALT
	TURN LANE DIRECTION	WM	WATER METER
HP	HANDICAP SYMBOL		WATER LINE GATE VALVE
3	PARKING STALL COUNT		FIRE HYDRANT
ADA	HANDICAP SIGN		SPRINKLER CONTROL BOX
HRMP	HANDICAP RAMP	W	WATER MANHOLE
	WHEEL STOP		

(2)OU	OVERHEAD UTILITY LINE (# OF LINES)	CO	CURB INLET
P	PULL BOX	CO	SANITARY SEWER CLEAN OUT
	LIGHT POLE	DS	DOWN SPOUT
	UTILITY POLE	FD	FLOOR DRAIN
LP	UTILITY POLE W/ LIGHT		FLARED END SECTION
TP	UTILITY POLE W/ TRANSFORMER	SV	SPRINKLER VALVE
	GUY ANCHOR		SIAMESE FIRE CONNECTOR
	CONIFEROUS TREE		CANOPY SUPPORT
	TREE LINE	MB	MAIL BOX
FP	FLAG POLE		CONCRETE JOINT/CUT LINE
E	ELECTRIC METER		BUSH
E	UNDERGROUND ELECTRIC PEDESTAL		DECIDUOUS TREE
SB	SPEAKER BOX	T/E	TRASH ENCLOSURE
BB	BREAKER BOX	L/S	LANDSCAPING AREA
T	TELEPHONE PEDESTAL	CONC	CONCRETE
S	SANITARY SEWER MANHOLE	LW	LOWEST WIRE HEIGHT
ST	STORM SEWER MANHOLE		
AI	AREA INLET		

PROPOSED LEGEND

A B / A B	ASPHALT EDGE TREATMENT. SEE SECTION ON C190
	ASPHALT OVERLAY (040)
	AREAS OF FULL DEPTH ASPHALT (040)
	TURF
TYPE 1 JOINT (TYP) / TYPE 3 JOINT (TYP)	CONCRETE PAVEMENT (042) W/JOINTING
	CONCRETE SIDEWALK (055+005) W/JOINTING
TYPE 1/TYPE 3	JOINT TYPE
L	LANDING
R	RAMP
T	TRANSITION
	PROJECT AREA (LIMITS OF DISTURBANCE)





NOTE:
1. **REFER TO SHEETS E001 THRU E004 FOR ADDITIONAL SITE ELECTRICAL AND TELECOM REQUIREMENTS FOR SITE ELECTRICAL, LIGHTING AND SIGNAGE.**
2. **ALL WATER SERVICE INSTALLATIONS INCLUDING BACKFLOW DEVICES ARE SUBJECT TO FIELD VERIFICATION AND APPROVAL BY THE WATER DEPARTMENT INSPECTOR.**

NOTE:
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Know what's below. Call before you dig.

CHRISTIAN J. CROWDER
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LSW: 2600 SW Ward Rd, Lee's Summit MO 64082
LSHS: 400 SE Blue Pkwy, Lee's Summit MO 64063

Project Number: 0121-0100

owner:
Lee's Summit R-7 School
301 NE Tudor Road
Lee's Summit, MO 64086

architect:
Multistudio
4200 Pennsylvania
Kansas City, MO 64111
816.931.6655
multi.studio

civil engineer:
Kaw Valley Engineering
14700 West 114th Terrace
Lenexa, KS 66215
913.485.0318
kveng.com

structural engineer:
Bob D. Campbell &
4338 Belleview
Kansas City, MO 64111
816.531.4144
www.bdc-engrs.com

MEPFT/Code::
Henderson Engineers
8345 Lenexa Drive, Suite 300
Lenexa, KS 66214
816.742.5000
www.hendersonengineers.com

Issue Date: September 9, 2022

Revisions

NUMBER	DESCRIPTION	DATE
1	ADDENDUM 2	9/23/2022
2	ASI 01 - CODE COMMENTS	11/8/2022

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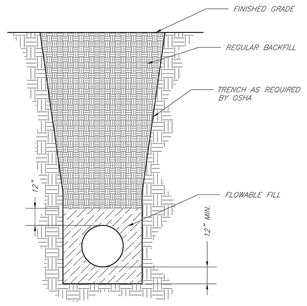
Lee's Summit, Missouri
11/23/2022

STATE OF MISSOURI
CHRISTIAN J.
CROWDER
NUMBER
PE-2015000538
11-8-22
PROFESSIONAL ENGINEER

Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
Christian Crowder Date: 9/23/2022
Engineer License No. PE-2015000538

UTILITY PLAN

C500-C



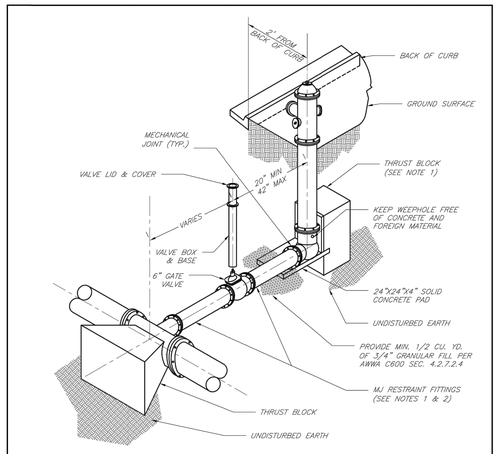
NOT TO SCALE

NOTES:
1. FLOWABLE FILL SHALL MEET THE REQUIREMENTS OF THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL.
2. REGULAR BACKFILL ABOVE THE TRENCH CHECK SHALL BE FREE OF DEBRIS, ORGANIC MATTER, AND STONES > 6" IN ANY DIMENSION.
3. TOP OF FLOWABLE BACKFILL SHALL EXTEND 12" ABOVE THE TOP OF THE PIPE.
4. LENGTH OF TRENCH CHECK SHALL BE A MINIMUM OF 12".

LEE'S SUMMIT
MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

TRENCH CHECK

Date: 02/13
Drawn By: JN
Checked By: DL
FILE: WAT-6
Rev: 1/14
Rev:



NOTES:
1. WHEN RETAINER GLANDS ARE USED IN LIEU OF MECHANICAL JOINT (MJ) RESTRAINT FITTINGS, HORIZONTAL THRUST BLOCKS ARE REQUIRED.
2. GATE VALVE MAY BE BOLTED DIRECTLY TO MJ RESTRAINT TEE.
3. SEE APPROVED PRODUCTS LIST FOR WATER UTILITIES FOR FIRE HYDRANT, VALVES, VALVE BOX LID, AND COVER.
4. BOTTOM HYDRANT FLANGE SHALL BE 2" TO 6" ABOVE FINISHED GRADE.
5. FOR STREETS WITHOUT CURBS FIRE HYDRANTS SHALL BE PLACED WITHIN 1 FOOT OF THE R/W LINE, BUT NOT MORE THAN 10' FROM EDGE OF PAVEMENT. FIRE HYDRANT SHALL NOT BE PLACED IN BOTTOM OF DITCH.
6. HYDRANT SHALL BE ROTATED AS DIRECTED BY INSPECTOR.

LEE'S SUMMIT
MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

HYDRANT INSTALLATION – STRAIGHT SET

Date: 02/13
Drawn By: JN
Checked By: DL
FILE: WAT-7
Rev: 1/14
Rev:

PRINT DATE/TIME: 11/8/2022 3:22 PM

multistudio
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Lee's Summit Robotics, GiC & Phys Educaiton

LSN: 901 NE Douglas St., Lee's Summit MO 64086
LSW: 2600 SW Ward Rd, Lee's Summit MO 64082
LSHS: 400 SE Blue Pkwy, Lee's Summit MO 64063

Project Number: 0121-0100

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STATE OF MISSOURI
CHRISTIAN J. CROWDER
NUMBER
PE-2015000538
11.8.22
PROFESSIONAL ENGINEER

Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
Christian Crowder Date: 9/23/2022
Engineer License No. PE-2015000538

UTILITY DETAILS

C590-C

PROJ. NO. C20_0496-1DSN: CJC
CFN: 0496-1DET DWN: NJN

CHRISTIAN J. CROWDER
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14700 WEST 114TH TERRACE
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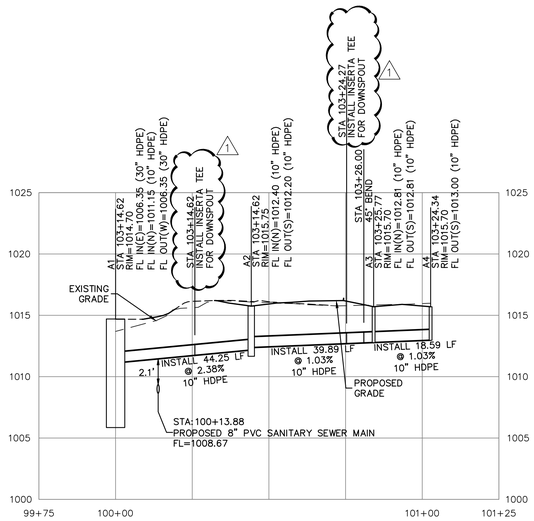
KAW VALLEY ENGINEERING

KAW VALLEY ENGINEERING, INC., IS AUTHORIZED TO OFFER ENGINEERING SERVICES BY MISSOURI STATE CERTIFICATE OF AUTHORITY # 000842. EXPIRES 12/31/23

PROPOSED STORM SEWER LINE A PLAN



PROPOSED STORM SEWER LINE A PROFILE

DETAILS SEE SHEET C690-C

402 CONCRETE JUNCTION BOX
433 DOWNSPOUT COLLECTOR
433A MODIFIED DOWNSPOUT COLLECTOR
450 PVC DRAIN BASIN
460 PVC INLINE DRAIN

NOTES

62 PVC SDR-26 ROOF DRAIN. IF DRAIN IS LESS THAN 2' USE SCHEDULE 40 PVC FOR THE ENTIRE RUN. SLOPE TO DRAIN (1% MINIMUM FOR 6" AND LARGER ROOF DRAINS, 2% MINIMUM FOR 4" ROOF DRAINS)

STORM SEWER CONSTRUCTION NOTES:

1. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH SECTION 2600 STORM SEWER OF THE KANSAS CITY METRO CHAPTER OF APWA SPECIFICATIONS AS ADOPTED AND AMENDED BY THE CITY OF PLATTE CITY, MISSOURI STANDARD SPECIFICATIONS. REFERENCE APWA SPECIFICATION SECTION 2102.4 FOR EXCAVATION, TRENCHING AND BACKFILLING FOR PIPE AND STORM STRUCTURES. REFER TO PROJECT GEOTECHNICAL REPORT AND PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. A MINIMUM OF 18" COVER SHALL BE PROVIDED PRIOR TO AND MAINTAINED AFTER INSTALLATION OF STORM SEWER.
3. ALL COORDINATES FOR CURB INLETS ARE TO THE MIDDLE OF THE INSIDE FRONT FACE. ALL COORDINATES FOR PVC STRUCTURES AND CONCRETE YARD INLETS ARE TO THE CENTER OF THE STRUCTURE.
4. ALL JUNCTION BOXES/AREA INLETS HAVE ONE COORDINATE PROVIDED AT THE CENTER OF STRUCTURE. SEE PLAN FOR CLARIFICATION. ORIENT STRUCTURES PARALLEL TO ADJACENT CURB, BUILDING OR WALL FACE, UNLESS NOTED OTHERWISE.
5. RIM ELEVATION IS PROVIDED AT COORDINATE, UNLESS NOTED OTHERWISE. CONTRACTOR TO ADJUST ELEVATION OF RIM AS REQUIRED TO MATCH SLOPE OF ADJACENT CURB LINE. REFER TO GRADING PLAN (C3.0 SERIES SHEETS).
6. ALL EXISTING UTILITIES INDICATED ON THE DRAWING ARE ACCORDING TO THE BEST INFORMATION AVAILABLE TO THE ENGINEER; HOWEVER, ALL UTILITIES ACTUALLY EXISTING MAY NOT BE SHOWN. UTILITIES DAMAGED THROUGH THE NEGLIGENCE OF THE CONTRACTOR TO OBTAIN THE LOCATION OF SAME SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT THEIR EXPENSE.
7. ALL BACKFILL SHALL BE COMPACTED TO 95 PERCENT STANDARD DENSITY AT OPTIMUM MOISTURE.
8. ALL EXCAVATION BENEATH THE STREETS AND PARKING LOTS FOR DRAINAGE PIPE LESS THAN 4'-0" IN DIAMETER SHALL BE BACKFILLED WITH AGGREGATE TO FOUR FEET (4') PAST BACK OF CURB IN ACCORDANCE WITH APWA SPECIFICATIONS SECTION 2102.4.J.
9. RELOCATION OF ANY WATER LINE, SEWER LINE OR SERVICE LINE THEREOF REQUIRED FOR THE CONSTRUCTION OF THIS PROJECT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE AT THEIR EXPENSE.
10. IF PRECAST STORM STRUCTURES ARE TO BE USED ON THIS PROJECT, THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND HAVE THEM APPROVED BY THE ENGINEER PRIOR TO FABRICATION OF THE STRUCTURES. FAILURE TO DO SO SHALL BE CAUSE FOR REJECTION.
11. ALL HDPE PIPE JOINTS SHALL BE WATER TIGHT.

UTILITY NOTES:

1. EXCAVATION, TRENCHING AND BACKFILL SHALL BE COMPLETED IN ACCORDANCE WITH SECTION 2100 GRADING AND SITE PREPARATION OF THE KANSAS CITY METROPOLITAN CHAPTER OF APWA SPECIFICATIONS AS ADOPTED AND AMENDED BY THE CITY OF LEE'S SUMMIT.
2. ALL BACKFILL SHALL BE TAMPED. BACKFILL WITHIN THE RIGHT-OF-WAY AND UNDER PARKING AREAS AND SLABS SHALL BE 95% COMPACTION OF OPTIMUM MOISTURE.
3. CONTRACTOR SHALL NOT OPEN, TURN OFF, INTERFERE WITH, OR ATTACH ANY PIPE OR HOSE TO OR TAP ANY WATER MAIN BELONGING TO THE CITY OF LEE'S SUMMIT UNLESS DULY AUTHORIZED TO DO SO. ANY ADVERSE CONSEQUENCE OF ANY SCHEDULED OR UNSCHEDULED DISRUPTIONS OF SERVICE TO THE PUBLIC ARE TO BE THE LIABILITY OF THE CONTRACTOR. KAW VALLEY ENGINEERING AND OWNER ARE TO BE HELD HARMLESS. CONTRACTOR SHALL NOTIFY THE KCMO WSD 48 HOURS MINIMUM.
4. CONTRACTOR TO INSTALL TRACING TAPE ALONG ALL NON-METALLIC SERVICE LINES PER SPECIFICATIONS.
5. CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT LOCATIONS OF POSSIBLE CONFLICT AND POINTS OF CONNECTION PRIOR TO ANY CONSTRUCTION OF NEW UTILITIES.
6. A MINIMUM HORIZONTAL DISTANCE OF 10' SHALL BE MAINTAINED BETWEEN PARALLEL WATER AND SANITARY SEWER LINES. REFERENCE APWA SPECIFICATIONS AS ADOPTED AND AMENDED BY THE CITY OF LEE'S SUMMIT.
7. CONTRACTOR TO SCHEDULE ALL INSPECTIONS FOR SEWER MAIN CONNECTIONS THROUGH THE PUBLIC WORKS DEPARTMENT.

WARRANTY / DISCLAIMER

THE DESIGNS REPRESENTED IN THESE PLANS ARE IN ACCORDANCE WITH ESTABLISHED PRACTICES OF CIVIL ENGINEERING FOR THE DESIGN FUNCTIONS AND USES INTENDED BY THE OWNER AT THIS TIME. HOWEVER, NEITHER KAW VALLEY ENGINEERING, INC NOR ITS PERSONNEL CAN OR DO WARRANTY THESE DESIGNS OR PLANS AS CONSTRUCTED, EXCEPT IN THE SPECIFIC CASES WHERE KAW VALLEY ENGINEERING PERSONNEL INSPECT AND CONTROL THE PHYSICAL CONSTRUCTION ON A CONTEMPORARY BASIS AT THE SITE.

CAUTION – NOTICE TO CONTRACTOR

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT LOCATIONS OF POSSIBLE CONFLICTS PRIOR TO ANY CONSTRUCTION.

SAFETY NOTICE TO CONTRACTOR

IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

Know what's below. Call before you dig.

CHRISTIAN J. CROWDER
ENGINEER
MO # 2015000538
PROJ. NO. C20_0496-1 DSN: CJC
CFN: 0496-1DPP DWN: NJN
14700 WEST 114TH TERRACE
LENEXA, KANSAS 66215
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lx@kveng.com | www.kveng.com
KAW VALLEY ENGINEERING
KAW VALLEY ENGINEERING, INC., IS AUTHORIZED TO OFFER ENGINEERING SERVICES BY MISSOURI STATE CERTIFICATE OF AUTHORITY # 000842. EXPIRES 12/31/23

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multistudio
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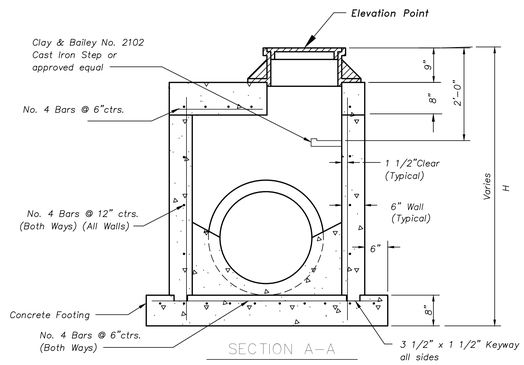
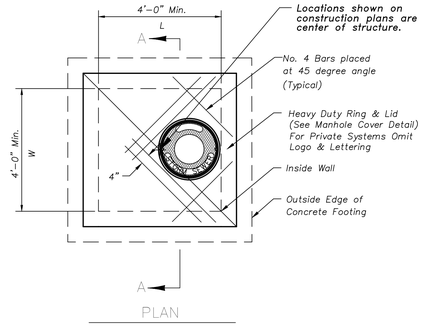
Christian Crowder Date: 9/23/2022
Engineer License No. PE-2015000538

STORM SEWER PLAN & PROFILE

C600-C





JUNCTION BOX/GRATE INLET 402

JUNCTION BOX YARD INLETS AND CURB INLET NOTES

GENERAL

1. ALL STORM SEWER STRUCTURES SHALL BE PRE-CAST OR POURED IN PLACE. IF PRE-CAST STRUCTURES ARE USED FOR PUBLICLY FINANCED, MAINTAINED OR ADMINISTERED CONSTRUCTION, THE TOPS SHALL BE POURED IN PLACE AND THE WALL STEEL SHALL BE LEFT EXPOSED TO A HEIGHT 2" BELOW THE FINISH TOP ELEVATION, OR AS DIRECTED BY THE CITY ENGINEER.
2. PRE-CAST SHOP DRAWINGS ARE TO BE APPROVED BY THE ENGINEER.
3. DO NOT SCALE THESE DRAWINGS FOR DIMENSIONS OR CLEARANCES. ANY QUESTIONS REGARDING DIMENSIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO CONSTRUCTION.
4. THE FIRST DIMENSION LISTED IN THE CONSTRUCTION NOTES IS THE "L" DIMENSION. THE SECOND DIMENSION IS THE "W" DIMENSION. THE CONCRETE THICKNESS AND REINFORCEMENT SHOWN IS FOR BOXES WITH ("L"+"H") AND ("W"+"H") LESS THEN OR EQUAL TO 20. FOR BOXES WITH EITHER OF THESE CALCULATIONS GREATER THAN 20, A SPECIAL DESIGN IS REQUIRED. PRECASTER SHALL PROVIDE DESIGN CALCULATIONS FOR DEEP STRUCTURES TO ENGINEER PRIOR TO CONSTRUCTING BOX.

CONCRETE

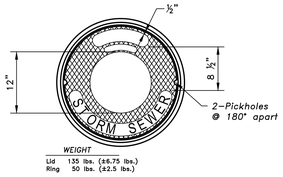
5. CONCRETE USED IN THIS WORK SHALL BE CLASS "A" CONCRETE (AE) THROUGHOUT, AND SHALL MEET THE REQUIREMENTS OF THE KANSAS CITY METROPOLITAN CHAPTER OF THE APWA TECHNICAL SPECIFICATIONS.
6. CONCRETE CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF STANDARD SPECIFICATIONS FOR MCIB, LATEST EDITION, EXCEPT AS MODIFIED IN THE APWA TECHNICAL SPECIFICATIONS.
7. INLET FLOORS SHALL BE SHAPED WITH NON-REINFORCED CONCRETE INVERTS TO PROVIDE SMOOTH FLOW.
8. BEVEL ALL EXPOSED EDGES WITH ¾" TRIANGULAR MOLDING.
9. 8" SOLID CONCRETE BLOCK OR BRICK MAY BE USED IN WALLS IN LIEU OF POURED CONCRETE WHERE NEITHER "H"+"L" NOR "H"+"W" (IN FEET) EXCEED FOURTEEN. BLOCK OR BRICK MAY BE USED IN ANY BOX WHERE "H" IS 5' OR LESS.
10. ALL CRUSHED STONE USED AS AGGREGATE FOR CONCRETE CONSTRUCTION SHALL BE OBTAINED FROM QUARRIES AND BEDS DESIGNATED BY THE MISSOURI DEPARTMENT OF TRANSPORTATION AS MEETING DURABILITY REQUIREMENTS OF KANSAS CITY METROPOLITAN CHAPTER OF THE APWA TECHNICAL SPECIFICATIONS.

REINFORCING STEEL

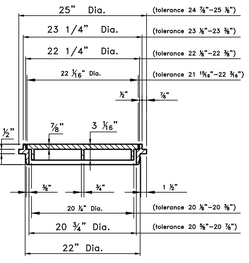
11. REINFORCING STEEL SHALL BE NEW BILLET, MINIMUM GRADE 60 AS PER ASTM A615, AND SHALL BE BENT COLD.
12. ALL DIMENSIONS RELATIVE TO REINFORCING STEEL ARE TO CENTERLINE OF BARS. 2" CLEARANCE SHALL BE PROVIDED THROUGHOUT UNLESS NOTED OTHERWISE. TOLERANCE OF +/- ½" SHALL BE PERMITTED.
13. ALL LAP SPLICES NOT SHOWN SHALL BE A MINIMUM OF 40 BAR DIAMETERS IN LENGTH.
14. ALL REINFORCING STEEL SHALL BE SUPPORTED ON FABRICATED STEEL BAR SUPPORTS @ 3'-0" MAXIMUM SPACING.
15. ALL DOWELS SHALL BE ACCURATELY PLACED AND SECURELY TIED IN PLACE PRIOR TO PLACEMENT OF BOTTOM SLAB CONCRETE. STICKING OF DOWELS INTO FRESH OR PARTIALLY HARDENED CONCRETE WILL NOT BE ACCEPTABLE.

CONSTRUCTION

16. THE BOTTOM SLAB SHALL BE AT LEAST 24 HOURS OLD BEFORE PLACING SIDEWALL CONCRETE. ALL SIDEWALL FORMS SHALL REMAIN IN PLACE A MINIMUM OF 24 HOURS AFTER SIDEWALLS ARE POURED BEFORE REMOVAL, AND AFTER REMOVAL SHALL BE IMMEDIATELY TREATED WITH MEMBRANE CURING COMPOUND.
17. PIPE CONNECTIONS TO PRE-CAST STRUCTURES SHALL HAVE A MINIMUM OF 6" OF CONCRETE AROUND THE ENTIRE PIPE WITHIN 2' OF THE STRUCTURE.
18. MATERIAL SELECTION AND COMPACTION REQUIREMENTS FOR BACKFILL AROUND STRUCTURES SHALL BE AS SPECIFIED IN THE KANSAS CITY METROPOLITAN CHAPTER OF THE APWA TECHNICAL SPECIFICATIONS.



WEIGHT
Lid 135 lbs. (±6.75 lbs.)
Ring 50 lbs. (±2.5 lbs.)

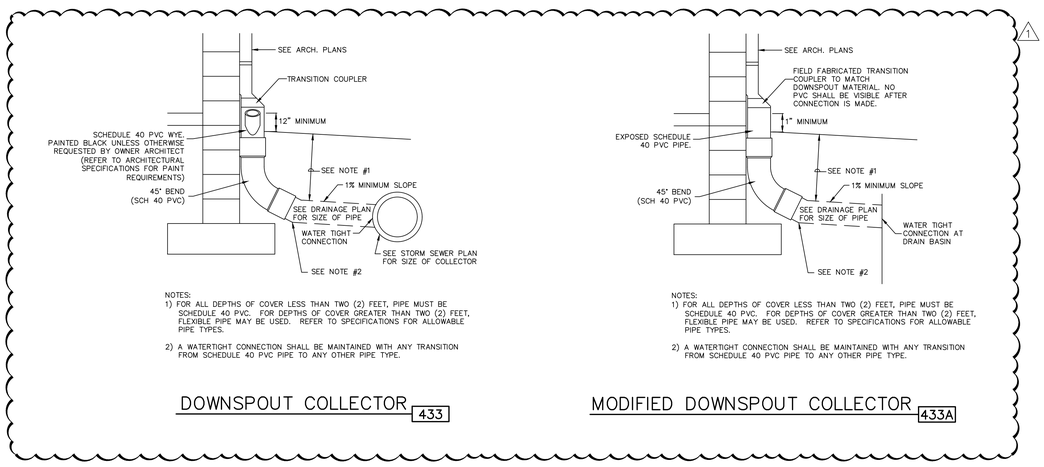


Medium Duty Ring & Lid
Clay & Bailey No. 2020
Dexter No. 2016
or Approved Equal

Manhole Cover Notes:

1. **Casting shall comply with ASTM A-48 and AASHTO M306-04.**
2. **As-cast dimensions may vary ± 1/16 inch per foot.**
3. **Each Casting shall be marked in accordance with AASHTO M 306-04, Sec.9.**
4. **Raised surfaces shall be cast as non-skid finish.**
5. **Horizontal bearing surfaces shall be machined.**
6. **Paint is optional unless specified.**

MANHOLE COVER
(Public Systems Only)
SCALE: 1 ½" = 1'(NOV. Feb. 2005)



NOTES:
1) FOR ALL DEPTHS OF COVER LESS THAN TWO (2) FEET, PIPE MUST BE SCHEDULE 40 PVC. FOR DEPTHS OF COVER GREATER THAN TWO (2) FEET, FLEXIBLE PIPE MAY BE USED. REFER TO SPECIFICATIONS FOR ALLOWABLE PIPE TYPES.

2) A WATERTIGHT CONNECTION SHALL BE MAINTAINED WITH ANY TRANSITION FROM SCHEDULE 40 PVC PIPE TO ANY OTHER PIPE TYPE.

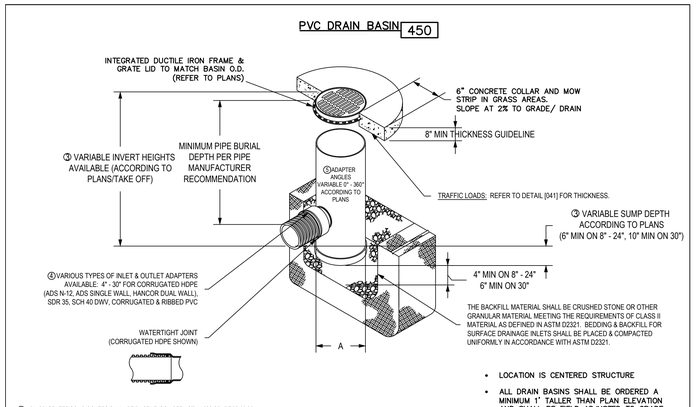
DOWNSPOUT COLLECTOR 433

NOTES:
1) FOR ALL DEPTHS OF COVER LESS THAN TWO (2) FEET, PIPE MUST BE SCHEDULE 40 PVC. FOR DEPTHS OF COVER GREATER THAN TWO (2) FEET, FLEXIBLE PIPE MAY BE USED. REFER TO SPECIFICATIONS FOR ALLOWABLE PIPE TYPES.

2) A WATERTIGHT CONNECTION SHALL BE MAINTAINED WITH ANY TRANSITION FROM SCHEDULE 40 PVC PIPE TO ANY OTHER PIPE TYPE.

MODIFIED DOWNSPOUT COLLECTOR 433A

PVC DRAIN BASIN 450



- LOCATION IS CENTERED STRUCTURE
- ALL DRAIN BASINS SHALL BE ORDERED A MINIMUM 1' TALLER THAN PLAN ELEVATION AND SHALL BE FIELD ADJUSTED TO GRADE UPON COMPLETED OF CONSTRUCTION

① 8" - 30" GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05, WITH THE EXCEPTION OF THE 8" - 15" BRONZE GRATES
② 12" - 30" FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
③ DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065
④ DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
⑤ ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012, 7001-110-013, & 7001-110-014.
6 - GRATES SHALL MEET H-10 LOAD RATING FOR 12" - 24" PED
7 - GRATES SHALL MEET H-20 LOAD RATING FOR 30" PED & 12" - 30" STD & SOLID
8 - ALL BRONZE GRATES, DROP IN GRATES, & 8" & 10" PED/STD GRATES & SOLID COVERS ARE RATED FOR LIGHT DUTY APPLICATIONS ONLY
9 - DOME GRATES HAVE NO LOAD RATING

NYLOPLAST BASIN IS THE BASIS OF DESIGN

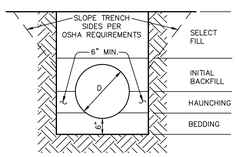
DRAWN BY EBC	MATERIAL	Nyloplast	3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
DATE 1-23-06			
APPD BY CJA	PROJECT NO./NAME	TITLE	DRAIN BASIN WITH STANDARD GRATE QUICK SPEC INSTALLATION DETAIL 450
DATE 1-23-06			
DWG SIZE A	SCALE 1:40 SHEET 1 OF 1	DWG NO. 7001-110-144	REV D

DRAIN BASIN

INLINE DRAIN

1. GRATES/SOLID COVERS SHALL MEET H-20 LOAD RATING FOR 30" PEDESTRIAN & 12" - 30" STANDARD & SOLID
2. DESIGN SHOULD ACCOUNT FOR ROOT DEPTH TO ALLOW TURF TO GROW AND PREVENT EROSION AROUND GRATE SO THAT HAZARDS DO NOT FORM.

DRAWN BY EBC	MATERIAL	Nyloplast	3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
DATE 01-05-09			
REVISED BY NMH	PROJECT NO./NAME	TITLE	DRAIN BASIN & INLINE DRAIN TURF TRAFFIC INSTALLATION 460
DATE 06-12-18			
DWG SIZE A	SCALE 1:25 SHEET 1 OF 1	DWG NO. 7001-110-340	REV G



FLEXIBLE PIPE: INCLUDES CORRUGATED POLYETHELENE PIPE AND/OR POLYVINYL CHLORIDE PIPE.

RIGID PIPE: INCLUDES REINFORCED CONCRETE, DUCTILE IRON, & CAST IRON

1. BEDDING SHALL BE COMPACTED CRUSHED STONE AND SHALL BE SHAPED TO THE BOTTOM OF THE PIPE.
2. HAUNCHING AND INITIAL BACKFILL MATERIAL SHALL BE CLASS I OR II (REF. ASTM D2321) GRANULAR MATERIAL AND SHALL BE COMPACTED TO 95% STANDARD PROCTOR.

TRENCH AND BEDDING DETAILS

REFER TO KANSAS CITY METROPOLITAN CHAPTER OF APWA SPECIFICATIONS SECTION 2102.4

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KAW VALLEY ENGINEERING

PROJ. NO. C20_0496-1 DSN: CJC
CFN: 0496-1DET DWN: NJN

KAW VALLEY ENGINEERING, INC., IS AUTHORIZED TO OFFER ENGINEERING SERVICES BY MISSOURI STATE CERTIFICATE OF AUTHORITY # 000842. EXPIRES 12/31/23

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1	ADDENDUM 2	9/23/2022
2	ASI 01 - CODE COMMENTS	11/8/2022

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Development Services Department
Lee's Summit, Missouri
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STATE OF MISSOURI
CHRISTIAN J. CROWDER
NUMBER
PE-2015000538
11.8.22
PROFESSIONAL ENGINEER

Kaw Valley Engineering, Inc.
Missouri Certificate of Authority: 000842
Christian Crowder Date: 9/23/2022
Engineer License No. PE-2015000538

STORM SEWER DETAILS

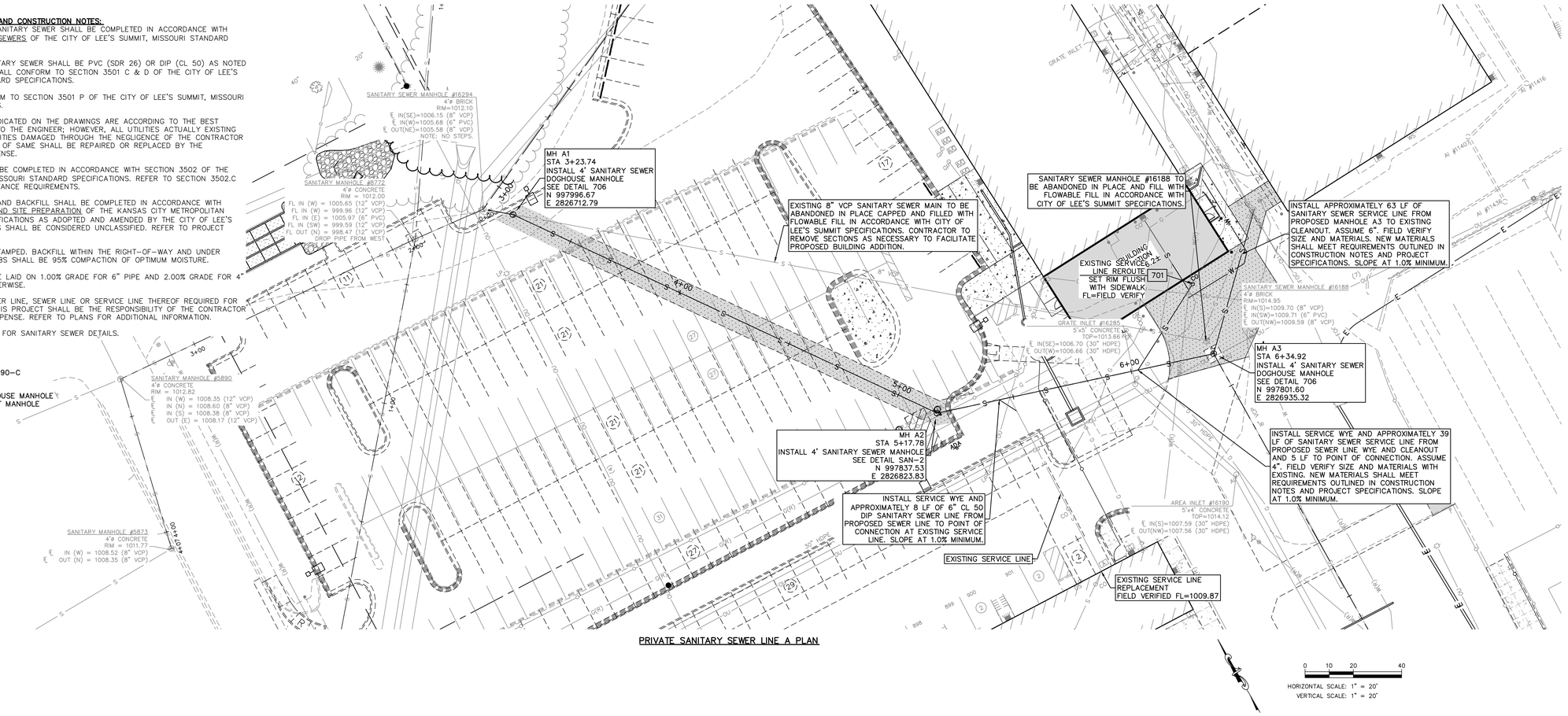
C690-C

SANITARY SEWER MATERIALS AND CONSTRUCTION NOTES:

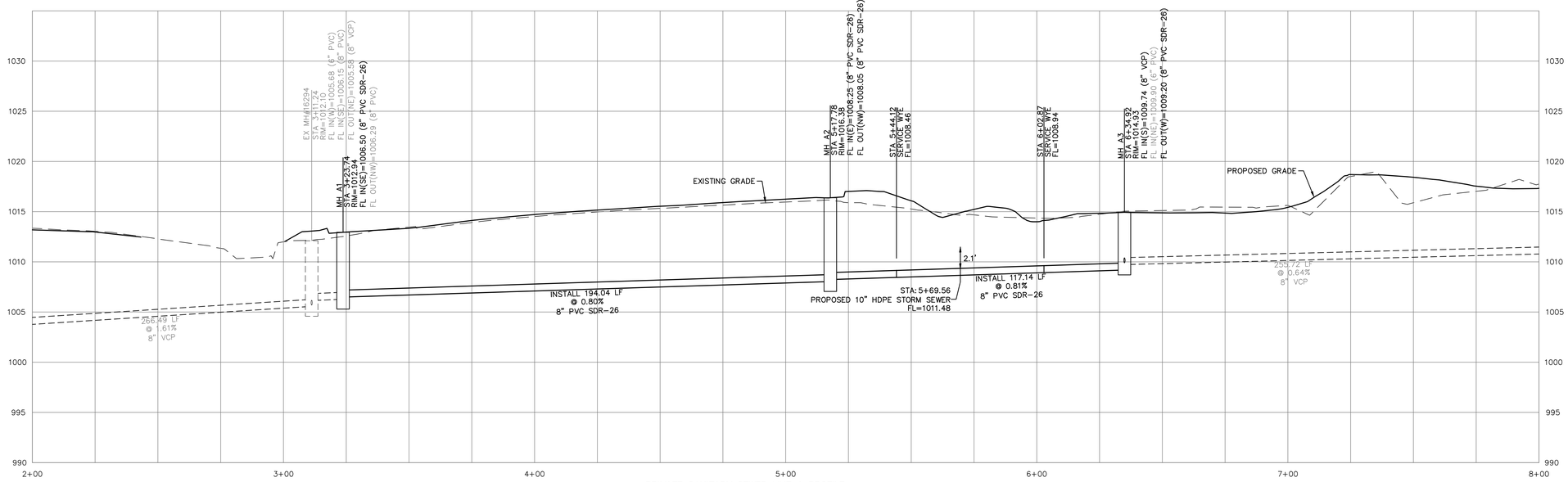
1. ALL WORK RELATED TO SANITARY SEWER SHALL BE COMPLETED IN ACCORDANCE WITH SECTION 3500 SANITARY SEWERS OF THE CITY OF LEE'S SUMMIT, MISSOURI STANDARD SPECIFICATIONS.
2. ALL PIPE USED FOR SANITARY SEWER SHALL BE PVC (SDR 26) OR DIP (CL 50) AS NOTED ON PLANS. MATERIAL SHALL CONFORM TO SECTION 3501 C & D OF THE CITY OF LEE'S SUMMIT, MISSOURI STANDARD SPECIFICATIONS.
3. MANHOLES SHALL CONFORM TO SECTION 3501 P OF THE CITY OF LEE'S SUMMIT, MISSOURI STANDARD SPECIFICATIONS.
4. ALL EXISTING UTILITIES INDICATED ON THE DRAWINGS ARE ACCORDING TO THE BEST INFORMATION AVAILABLE TO THE ENGINEER; HOWEVER, ALL UTILITIES ACTUALLY EXISTING MAY NOT BE SHOWN. UTILITIES DAMAGED THROUGH THE NEGLIGENCE OF THE CONTRACTOR TO OBTAIN THE LOCATION OF SAME SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT HIS EXPENSE.
5. ALL INSTALLATION SHALL BE COMPLETED IN ACCORDANCE WITH SECTION 3502 OF THE CITY OF LEE'S SUMMIT, MISSOURI STANDARD SPECIFICATIONS. REFER TO SECTION 3502.C FOR TESTING AND ACCEPTANCE REQUIREMENTS.
6. EXCAVATION, TRENCHING AND BACKFILL SHALL BE COMPLETED IN ACCORDANCE WITH SECTION 2100 GRADING AND SITE PREPARATION OF THE KANSAS CITY METROPOLITAN CHAPTER OF APWA SPECIFICATIONS AS ADOPTED AND AMENDED BY THE CITY OF LEE'S SUMMIT. ALL EXCAVATIONS SHALL BE CONSIDERED UNCLASSIFIED. REFER TO PROJECT GEOTECHNICAL REPORT.
7. ALL BACKFILL SHALL BE TAMPED. BACKFILL WITHIN THE RIGHT-OF-WAY AND UNDER PARKING AREAS AND SLABS SHALL BE 95% COMPACTION OF OPTIMUM MOISTURE.
8. ALL STUB LINES SHALL BE LAID ON 1.00% GRADE FOR 6" PIPE AND 2.00% GRADE FOR 4" PIPE, UNLESS NOTED OTHERWISE.
9. RELOCATION OF ANY WATER LINE, SEWER LINE OR SERVICE LINE THEREOF REQUIRED FOR THE CONSTRUCTION OF THIS PROJECT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE AT HIS EXPENSE. REFER TO PLANS FOR ADDITIONAL INFORMATION.
10. REFER TO SHEET C790-C FOR SANITARY SEWER DETAILS.

DETAILS SEE SHEET C690-C

701 CLEANOUT
706 4' DIAMETER DOGHOUSE MANHOLE
SAN-2 STANDARD PRECAST MANHOLE



PRIVATE SANITARY SEWER LINE A PLAN



PRIVATE SANITARY SEWER LINE A PROFILE

WARRANTY / DISCLAIMER
THE DESIGNS REPRESENTED IN THESE PLANS ARE IN ACCORDANCE WITH ESTABLISHED PRACTICES OF CIVIL ENGINEERING FOR THE DESIGN FUNCTIONS AND USES INTENDED BY THE OWNER AT THIS TIME. HOWEVER, NEITHER KAW VALLEY ENGINEERING, INC NOR ITS PERSONNEL CAN OR DO WARRANTY THESE DESIGNS OR PLANS AS CONSTRUCTED, EXCEPT IN THE SPECIFIC CASES WHERE KAW VALLEY ENGINEERING PERSONNEL INSPECT AND CONTROL THE PHYSICAL CONSTRUCTION ON A CONTEMPORARY BASIS AT THE SITE.

SAFETY NOTICE TO CONTRACTOR
IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

CAUTION – NOTICE TO CONTRACTOR
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT LOCATIONS OF POSSIBLE CONFLICTS PRIOR TO ANY CONSTRUCTION.

811 Know what's below. Call before you dig.

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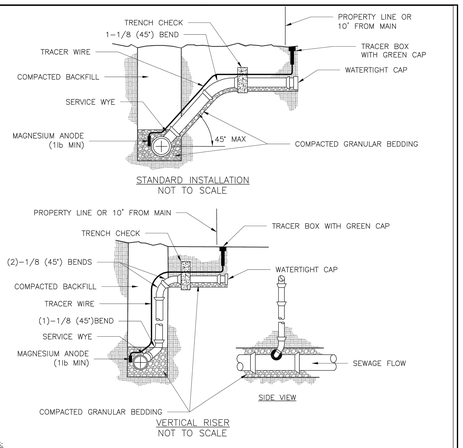
Christian Crowder Date: 9/23/2022
Engineer License No. PE-2015000538

SANITARY SEWER PLAN & PROFILE

C700-C



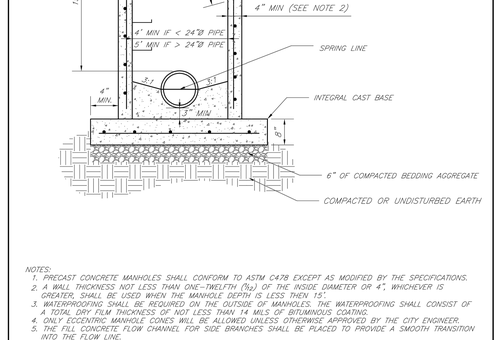
NOTES:

1. ALL SEWER STUBS SHALL BE CONSTRUCTED TO PROPERTY LINE OR 10' MINIMUM FROM THE MAIN. WHERE SIDEWALKS ARE PRESENT, CONTRACTOR SHALL EXTEND SERVICE LINE UNDER EXISTING SIDEWALK TO TWO FEET BEYOND.
2. ALL NEW CONSTRUCTION OFF SEWER STUBS SHALL BE TEMPORARILY MARKED WITH A MARKING STAKE, 36" ABOVE GROUND AND PAINTED GREEN.
3. IMPERVIOUS TRENCH CHECKS SHALL BE PLACED ON BUILDING SEWER STUBS (AT LEAST 5' AWAY FROM THE SANITARY SEWER MAIN).
4. TRENCH CHECKS ON THE BUILDING SEWER STUBS SHALL EXTEND 6" BELOW THE BOTTOM OF THE PIPE. LENGTH SHALL BE A MINIMUM OF 12". THE HEIGHT OF THE TRENCH CHECK SHALL EXTEND 12" ABOVE THE TOP OF THE PIPE. THE WIDTH OF THE TRENCH CHECK SHALL BE THE WIDTH OF THE TRENCH.
5. SEE SPECIFICATION SECTION 2100 FOR SEWER MAIN BEDDING AND BACKFILL.
6. #12 GAUGE GREEN INSULATED COPPER TRACER WIRE SHALL BE INSTALLED. TRACER WIRE TERMINAL BOXES SHALL BE INSTALLED DIRECTLY ABOVE THE SEWER SERVICE OR AS DETERMINED BY THE ENGINEER.
7. FOR SERVICES, TRACER WIRE SHALL RUN FROM THE WYE AND TERMINATE IN A FLUSH MOUNTED TRACER BOX WITH A GREEN CAST IRON LOCKABLE TOP. WIRE SHALL BE TAPED OR TIED TO THE PIPE AT 5' INTERVALS.
8. TRACER WIRE BOX SHALL BE INSTALLED WITHIN 1.0' OF PROPERTY LINE.
9. THE TRACER WIRE SHALL REMAIN CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. SPLICES IN THE TRACER WIRE SHOULD BE MADE WITH SPLIT BOLT CONNECTORS. WIRE NUTS SHALL NOT BE USED. A WATER-PROOF CONNECTION IS NECESSARY TO PREVENT CORROSION.

LEE'S SUMMIT
MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

BUILDING SEWER STUB AND RISER

Date: 04/17 | Drawn By: MJF | Checked By: DL | SAN-1



NOTES:

1. PRECAST CONCRETE MANHOLES SHALL CONFORM TO ASTM C478 EXCEPT AS MODIFIED BY THE SPECIFICATIONS.
2. A WALL THICKNESS NOT LESS THAN ONE-TWELFTH ($\frac{1}{12}$) OF THE INSIDE DIAMETER OR 4", WHICHEVER IS GREATER, SHALL BE USED WHEN THE MANHOLE DEPTH IS LESS THEN 15'.
3. WATERPROOFING SHALL BE REQUIRED ON THE OUTSIDE OF MANHOLES. THE WATERPROOFING SHALL CONSIST OF A TOTAL DRY FILM THICKNESS OF NOT LESS THAN 14 MILS OF BITUMINOUS COATING.
4. ONLY ECCENTRIC MANHOLE CONES WILL BE ALLOWED UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
5. THE FILL CONCRETE FLOW CHANNEL FOR SIDE BRANCHES SHALL BE PLACED TO PROVIDE A SMOOTH TRANSITION INTO THE FLOW LINE.
6. REFER TO THE APPROVED PRODUCTS LIST FOR WATER UTILITIES FOR APPROVED MANHOLE GASKET MODELS.
7. REFER TO THE APPROVED PRODUCTS LIST FOR APPROVED STEPS.

LEE'S SUMMIT
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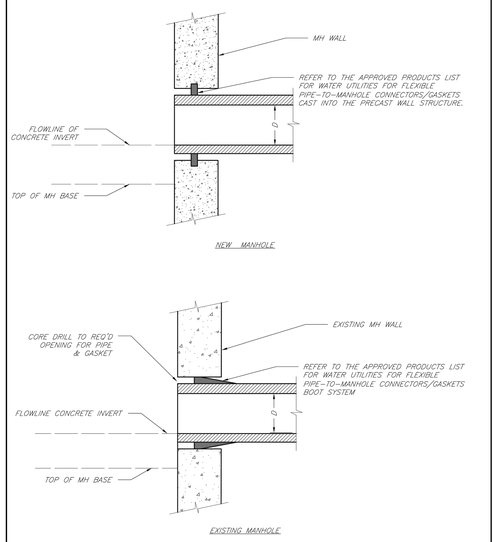
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

STANDARD PRECAST MANHOLE – SANITARY SEWER

Date: 02/13 | Drawn By: JN | Checked By: DL | FILE: SAN-2 | Rev: 1/14 | Rev:



LEE'S SUMMIT
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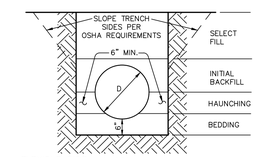
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

MANHOLE WALL CONNECTIONS

Date: 02/13 | Drawn By: JN | Checked By: DL | FILE: SAN-5 | Rev: 1/14 | Rev:



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RIGID PIPE: INCLUDES REINFORCED CONCRETE, DUCTILE IRON, & CAST IRON

1. BEDDING SHALL BE COMPACTED CRUSHED STONE AND SHALL BE SHAPED TO THE BOTTOM OF THE PIPE.
2. HAUNCHING AND INITIAL BACKFILL MATERIAL SHALL BE CLASS I OR II (REF. ASTM D2321) GRANULAR MATERIAL AND SHALL BE COMPACTED TO 95% STANDARD PROCTOR.

TRENCH AND BEDDING DETAILS

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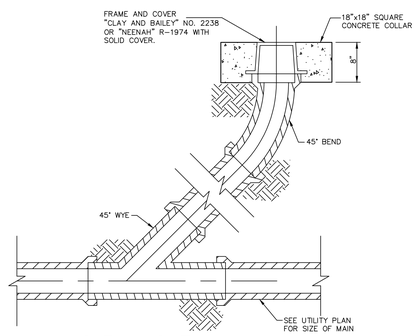
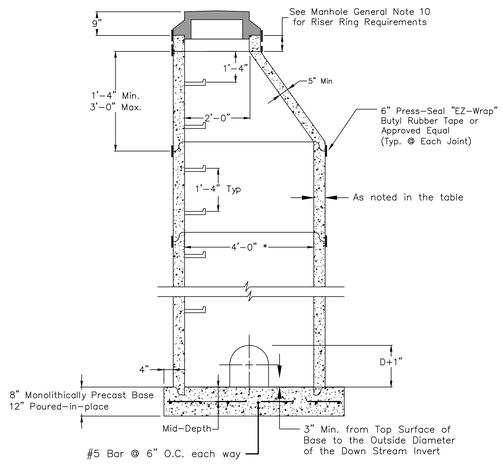
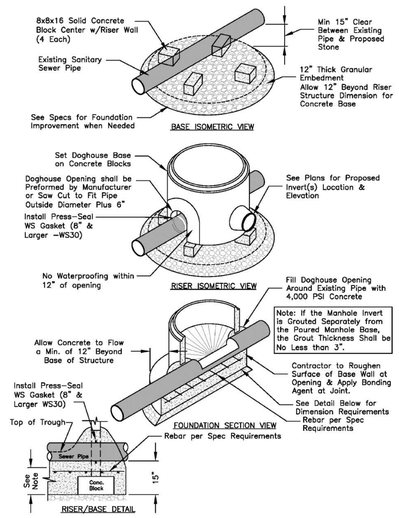


CLEAN-OUT 701



* UNLESS OTHERWISE NOTED ON PLANS

4' DIA. DOGHOUSE MANHOLE 706



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C790-C

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COORDINATE ALL UTILITY WORK WITH CURRENT CONSTRUCTION AT LSHS, INCLUDING SEWER RELOCATE AT WEST PARKING LOT

NEW CONCRETE, SEE CIVIL, TYP.

ALTERATE #4: GIC CANOPY AND BUILD SPACE SLAB.

LEE'S SUMMIT HIGH SCHOOL BUILDING D

LEE'S SUMMIT HIGH SCHOOL BUILDING E

EXISTING HOUSEKEEPING PAD

EXISTING CHAIN LINK FENCING

EXISTING HOUSEKEEPING PAD

EXISTING CHAIN LINK FENCE

HOUSE KEEPING PAD RE: CIVIL

NEW CHAIN LINK FENCE AND GATE W/ VINYL SLAT INFILL. RE: CIVIL

NEW ISLAND, RE: CIVIL

DRIVEWAY APRON, RE: CIVIL

CONCRETE DRIVEWAY, RE: CIVIL

BUILDING D ADDITION

NEW CONCRETE, SEE CIVIL, TYP.

NEW ASPHALT PATCH, SEE CIVIL

LEE'S SUMMIT HIGH SCHOOL BUILDING B

Site Plan_Building D & E A3

1/16" = 1'-0"

General Notes (Site Plan):

1. COORDINATE ALL SPOT ELEVATIONS AND DIMENSIONS WITH CIVIL/LANDSCAPE/STRUCTURAL DRAWINGS
2. PROVIDE POSITIVE DRAINAGE OF 1% MINIMUM / 2% MAXIMUM AT ALL EXTERIOR PAVED PEDESTRIAN AREAS SUCH AS SIDEWALKS, PATIOS, STAIRS, ETC. UNLESS NOTED OTHERWISE
3. PROVIDE POSITIVE DRAINAGE AWAY FROM THE
4. BUILDING OF 5% FOR A DISTANCE OF 10 FEET UNLESS NOTED OTHERWISE.
5. FINISH GRADE SLOPES SHALL BE NO STEEPER THAN 1 FOOT VERTICAL IN 3 FEET HORIZONTAL UNLESS NOTED OTHERWISE.

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LSR7 Robotics, GiC & Phys Education

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STATE OF MISSOURI
ADAM LEE STERNS
NUMBER A-7480
REGISTERED ARCHITECT

LSHS - Architectural Site Plan

AS100-C

GENERAL NOTES - STRUCTURAL

1. General Information

A. The contractor shall verify dimensions and conditions before construction and notify the engineer of any discrepancies, inconsistencies, or difficulties affecting the work before proceeding.

B. The contractor shall coordinate all disciplines, verifying size and location of all openings, whether shown on structural drawings or not, as called for on architectural, mechanical, or electrical drawings. In the case of work in an existing building the contractor shall scan existing structure to locate all rebar in the area of the new core/opening using ground penetrating radar and notify the engineer of record for review prior to coring/cutting. Conflicts, inconsistencies, or other difficulties affecting structural work shall be called to the architect or engineer's attention for direction before proceeding.

C. All design and construction work for this project shall conform to the requirements of the following governing design codes:
   1. International Building Code (IBC 2018) as amended by the city of Lee Summit, MO
   2. Minimum Design Loads for Buildings and Other Structures (ASCE7-16)
   3. Specification for Structural Steel Buildings (AISC 360-16)
      Member Design Basis is Allowable Stress Design (ASD)
      Connection Design Basis is Allowable Stress Design (ASD)
   4. Structural Welding Code (AWS D1.4-2017)
   5. Building Code Requirements for Structural Concrete (ACI 318-14)
   6. Building Code Requirements for Masonry Structures (TMS 402-2016)
   7. North American Specification for the Design of Cold-Formed Steel Structural Members (AISI S100-16)

D. These drawings are for this specific project and no other use is authorized.

2. Structural Load Design Criteria

A. Roof Live = 30 psf; Roof Dead = 25psf

B. Snow: Pg = 20psf, Pf =14psf, Is = 1.0, Ce = 1.0, Ct = 1.0, Drift per ASCE/SEI 7

C. Lateral Loads:
   1.) Wind: V = 109 mph, Exposure C
       Occupancy [Risk] Category II, Iw=1.0 GCpi=+/-0.18
       Design wind pressures to be used for the design of exterior component and cladding materials on the designated zones of wall and roof surfaces shall be per section 30.7 and Table 30.7-2 of ASCE/SEI 7. Tabulated pressures shall be multiplied by effective area reduction factors, exposure adjustment factors, and topographic factors where applicable
   2.) Seismic: Ss = 0.101, S1 = 0.069
       Occupancy [Risk] Category II, Ie=1.0,
       Site Classification D; Sds = 0.108; Sd1 = 0.110
       Seismic Design Category B
       Basic Seismic Force-resisting System:
       Steel system not specifically detailed for seismic resistance
       Equivalent Lateral Force Procedure
       R = 3; V = 0.036W; Omega = 3; Cd= 3

D. This project is designed to resist the most critical effects resulting from the load combinations of section 1605.3 of the International Building Code.

3. Concrete

A. All concrete for foundations (walls, grade beams, footings and piers) shall develop minimum ultimate compressive design strength of 3500 psi in 28 days, but not less than 500 pounds of cement shall be used per cubic yard of concrete regardless of strengths obtained, not over 6 gallons of water per 100 pounds of cement and not over 4 inches of slump.

B. All concrete for interior flatwork (without floor covering) shall develop minimum ultimate compressive design strength of 4000 psi in 28 days, but not less than 525 pounds of cement shall be used per cubic yard of concrete regardless of strengths obtained, not over 5.75 gallons of water per 100 pounds of cement and not over 4 inches of slump. Concrete mix shop drawing shall contain testing data proving concrete design mix shrinkage is less than 0.034% at 28 days when tested according to ASTM C157 (air drying method only).

C. All concrete for interior flatwork (with floor covering) shall develop minimum ultimate compressive design strength of 4000 psi in 28 days, but not less than 540 pounds of cement shall be used per cubic yard of concrete regardless of strengths obtained, not over 5.40 gallons of water per 100 pounds of cement and not over 4 inches of slump. Concrete mix shop drawing shall contain testing data proving concrete design mix shrinkage is less than 0.034% at 28 days when tested according to ASTM C157 (air drying method only).

D. All concrete for exterior flatwork shall have a minimum design compressive strength of 4500 psi in 28 days, with not less than 560 pounds of cement per cubic yard of concrete, not over 5 gallons of water per 100 pounds of cement, with 6% +/- 1% air entrainment, and a maximum of 4 inches of slump.

E. The preceding minimum mix requirements may have water-reducing admixtures conforming to ASTM C494 added to the mix at manufacturer's dosage rates for improved workability.

F. The preceding minimum mix requirements may have up to 15% maximum of the cement content replaced with an approved ASTM C618 Class C fly ash, provided the total minimum cementitious content is not reduced.

G. Combined aggregate (coarse plus fine) for all concrete shall be well graded from coarsest to finest with no more than 18 percent and not less than 8 percent retained on an individual sieve, except that less than 8 percent may be retained on coarsest sieve and on No. 50 and finer sieves. Submit this gradation report with the concrete mix design shop drawings.

H. All interior concrete slabs on grade shall be placed over 15 mil, Class A Vapor Barrier per ASTM E1745 with less than 0.01 perms, tested after mandatory conditioning. All joints shall be lapped and sealed per manufacturer's recommendations. All penetrations, as well as damaged vapor barrier material shall also be sealed per manufacturer's recommendation prior to concrete placement. Install barrier per manufacturer recommended details at all discontinuous edges (at interior columns, exterior edge of slab, etc.) to ensure terms of warranty are followed. The vapor barrier shall be placed over free-draining granular material as prescribed by the project soils report.

I. All concrete is reinforced concrete unless specifically called out as unreinforced. Reinforce all concrete not otherwise shown with same steel as in similar sections or areas. Any details not shown shall be detailed per ACI 315 and meet requirements of ACI 318, current editions.

J. Control joints in dirt formed slab to be as shown on plans. Where not shown, limit controlled areas to not more than 144 square feet, or 12 feet on any side. Slab panel side ratio shall not exceed 1 1/2 to 1.

K. Contractor shall verify that all concrete inserts, reinforcing and embedded items are correctly located and rigidly secured prior to concrete placement.

L. Construction joints in beams, slabs, and grade beams shall occur at midspan (middle third) unless noted otherwise. Provide 2 x 4 horizontal keys at construction joints for shear transfer.

M. No aluminum items shall be embedded in any concrete.

4. Reinforcing Steel

A. All reinforcing steel shall conform to the requirements of ASTM A615 or A706 grade 60 steel. Welded plain wire fabric shall be supplied in sheets and conform to the requirements of ASTM A185.

B. Clear coverage of concrete over reinforcing steel shall be as follows:
   1. Concrete placed against earth: 3"
   2. Formed concrete against earth: 2"
   3. Slabs: 1"
   4. Beams or Columns: 1-1/2"
   5. Other 2"

   All coverage shall be nominal bar diameter minimum.

C. All dowels shall be the same size and spacing as adjoining main bars (splice lap 48 bar diameters or 24" minimum unless noted otherwise).

D. At corners of all walls, beams, and grade beams supply corner bars (minimum 2'-0" in each direction or 48 bar diameters) in outside face of wall, matching size and spacing of horizontal bars. Where there are no vertical bars in outside face of wall, supply 3 - #4 vertical support bars for corner bars.

E. Bars marked continuous and all vertical steel shall be lapped 48 bar diameters (2'-0" minimum) at splices and embedments, unless shown otherwise. Splice top bars near midspan and splice bottom bars over supports, unless noted otherwise.

F. At all holes in concrete walls and slabs, add 2 - #5 bars (opening dimension plus 96 diameters long) at each of four sides and add 2 - #5 x 5'-0" diagonally at each of four corners of hole. Openings in 8" thick walls are reinforced similar, but with 1 - #5 instead of 2 - #5, respectively.

G. Unless otherwise covered on architectural plans or specifications, vertical control joints in concrete wall shall be spaced at a maximum of 20'-0" on center and coordinated with the architect. Every other horizontal wall reinforcing bar shall be discontinuous at control joints except heavy top and bottom bars unless noted otherwise. Provide base seal waterstop style number 772 (by Greenstreak Inc. or approved equal) on dirt face side of wall at all walls below grade.

H. Accessories shall be as specified in latest edition of the ACI Detailing Handbook and the concrete Reinforcing Steel Institute Design Handbook. Maximum accessory spacing shall be 4'-0" on center, and all accessories on exposed surfaces are to have plastic coated feet.

I. All slabs and stairs not shown otherwise shall be 6" thick with #4 bars at 12" on center each way. All exterior porches and stoops not otherwise detailed may be constructed in any standard manner, solid or hollow, but must be reinforced with #4 bars at 12" on center each way minimum. Porches shall be doweled to adjacent walls or grade beams with #4 bars at 12" on center, hooked or embedded 48 diameters into both members. Slope porches 1/8" per foot for drainage unless noted otherwise.

J. Allow 2 ton of reinforcing bars #4 or larger to be used as directed in the field for special conditions by the engineer of record (labor for placing same to be included).

5. Structural Steel

A. All structural steel beams and columns shall be ASTM A992, grade 50 steel and all miscellaneous steel shall be ASTM A36 grade steel (except at moment connections where plates shall be ASTM A572, grade 50). Hollow Structural Sections (HSS) shall be ASTM A500, grade C. Fabrication and erection shall be in accordance with AISC 303-05 "Code of Standard Practice for Steel Buildings and Bridges" in the 13th Edition of the AISC Steel Construction Manual.

B. All welding shall conform to the recommendations of the AWS.

C. All exterior steel and connections, and brick relief angles shall be hot-dip galvanized.

D. All bolts not otherwise specified shall be 3/4" diameter high strength (ASTM A325-N). All bolts shall be fully pretensioned. All beam connections shall be designed per the AISC Manual of Steel Construction "Framed Beam Connections" for the indicated reactions or at least 0.4 x beam total shear capacity, Vn/Omega, shown in the maximum total uniform load tables, whichever is greater; and, shall account for eccentricity when the bolt line is more than 2" from the center of the support. All connections must be two bolt minimum. Additional connection elements may not be specifically shown in the conceptual details in this set but may be required by the final connection design, such as stiffener plates, doubler plates, supplement/reinforcing plates or other connection material. Connection design and shop drawing preparation shall be completed under the direct supervision of a professional engineer licensed in the state the project is located and shop drawings and connection calculations shall bear his/her seal.

E. All anchor bolts shall be 3/4" diameter, ASTM F1554, Grade 36 unless noted otherwise. Washers of minimum size and thickness for the given anchor diameter in Table 14-2 of the AISC Steel Construction Manual shall be provided at every column anchor bolt. Washers shall have a standard size hole for the anchor bolt. At braced frames washers shall be welded all around to the column base plate with 3/16" fillet weld.

F. All openings in steel beam roof to have L6x4x5/16 (LLV) frame set between beams. Support mechanical equipment with L6x4x3/8 (LLV) frame laid between beams

G. Design and installation of steel decking shall comply with the recommendations of the Steel Deck Institute (SDI). All decking shall be galvanized unless noted otherwise.

H. Allow 2.0 tons structural steel to be used as directed in field for special conditions by the engineer of record. Cost for shop drawings, fabrication, delivery, detailing, and erection to be included. 50% of structural steel allowance shall be bid as miscellaneous galvanized angle and plate.

6. Post Installed Anchors

A. Post-installed anchors shall be used only where specified on the drawings unless approved in writing by the engineer of record. See drawings for anchor diameter, spacing and embedment. Performance values of the anchors shall be obtained for specified products using appropriate design procedures and/or standards as required by the governing building code. Anchors installed in concrete shall have an ICC-ES Evaluation Service Report. Special inspection is required for all post installed anchors. The contractor shall coordinate an on-site meeting with the post installed anchor manufacturer field representative to educate the construction team on the anchor installation guidelines and requirements.

B. Mechanical anchors used in cracked and uncracked concrete shall have been tested and qualified for use in accordance with ACI 355.2 and ICC-ES AC193. All anchors shall be installed per the anchor manufacturer's written instructions.

C. Adhesive anchors used in cracked and uncracked concrete shall have been tested and qualified for use in accordance with ICC-ES AC308. All anchors shall be installed per the anchor manufacturer's written instructions.

D. Mechanical anchors used in solid grouted masonry shall have been tested and qualified for use in accordance with ICC-ES AC01. All anchors shall be installed per the anchor manufacturer's written instructions.

E. Adhesive anchors used in solid grouted masonry shall have been tested and qualified for use in accordance with ICC-ES AC58. All anchors shall be installed per the anchor manufacturer's written instructions.

F. Anchors used in hollow concrete masonry shall have been tested and qualified in accordance with ICC-ES AC106 or ICC-ES AC58 as appropriate. All anchors shall be installed per the anchor manufacturer's written instructions with appropriate screen tubes used for adhesives.

7. Foundations

Lee's Summit High School:

A. The soil investigation was prepared by Cook, Flatt & Strobel Engineers, P.A., the report number is 22-5546 and the telephone number is 913-627-9040.

B. Spread footings and grade beams are designed to bear on engineered fill or undisturbed soil capable of safely sustaining 1,500 psf.

C. Contractor shall provide for dewatering at excavations from either surface water or seepage.

D. All foundation excavations shall be inspected by a qualified soil engineer, approved by the architect and/or structural engineer, prior to placement of steel or concrete. This inspection shall be at the owner's expense.

E. All concrete in the structural portion retaining the backfill shall have attained its design strength prior to being backfilled.

F. Moisture content in soils beneath building locations should not be allowed to change after footing excavations and after grading for slabs on grade are completed. If subgrade materials become desiccated or softened by water or other conditions, recompact materials to the density and water content specified for engineered fill. Do not place concrete on frozen ground.

8. Concrete Masonry Units

A. Concrete block used in exterior walls or load bearing walls shall meet the requirements of ASTM C90 and have a minimum net compressive strength of 2650 psi and laid up using type N mortar such that f'm equals 2000 psi. Mortar shall be volume proportion based cement lime mortar. Proportioning shall be completed by box measure. Any block in contact with earth shall be normal weight units, laid using type "S" mortar and grouted solid.

B. The contractor shall provide adequate temporary bracing for all masonry walls during construction.

C. All concrete block shall have 9 gage (or larger) horizontal joint reinforcing (ladder or truss) per architectural drawings and specifications (16" maximum vertical spacing).

D. Cavity wall construction shall be reinforced as designed for specific concrete block used. The horizontal joint reinforcing shall be of the ladder or truss style per specification and continuous between brick and block, as prescribed by the architectural drawings.

E. Concrete block shall be reinforced as follows in 6", 8", 10", and 12" walls:
   1. Vertical reinforcing shall be a minimum of 1 - #4 bar in 6" and 8" walls and 2 - #4 bars in 10" and 12" walls at 4'-0" on center, at each corner, at each door and window jamb, each side of control joints and in the end void of each length of wall. Lap splices for masonry vertical reinforcing shall be 48 bar diameters, 24" minimum.
   2. Horizontal reinforcing:
      A. Horizontal joint reinforcing as noted above.
      B. Continuous horizontal bars shall be included per section or detail in bond beam or optional running bond beam where noted. Where bond beams are continuous at corners of walls, supply corner bars matching size of horizontal bars (minimum 2'-0" or 40 bar diameters in each direction).

F. Grout, where noted above, shall have a minimum design ultimate compressive strength of 2500 psi at 28 day test and 3/8" maximum aggregate size.

G. Non-load bearing concrete block walls shall be isolated from adjacent structural elements with vertical 3/8" control joints and at the top of the wall with 1" air space or compressible material and support per architectural detail.

H. Unless otherwise covered on architectural plans or specifications, vertical control joints in masonry construction shall be 3/8" wide, full height of wall. Joints shall be spaced at a maximum of 24'-0" on center and coordinated with the architect. All horizontal joint reinforcing shall be discontinuous at control joints in masonry. All bond beam horizontal reinforcing shall be continuous through control joints.

I. Lintels over all openings up to 8'-0" wide in new and existing masonry walls not otherwise covered shall be one 6x3 1/2x5/16 angle for each 4" width of masonry. All exterior lintels to be galvanized.

J. Walls shall be anchored top and bottom by dowels matching wall vertical reinforcing(unless noted otherwise) from floor slab bottom and bracing angles at the top, per details on the drawings.

9. Light Gage Metal Structural Framing

A. All load bearing, light gage structural studs, track, and bridging shall be of the type, size, gage, and spacing as shown on the plans, minimum.

B. All materials shall be 33,000 psi minimum yield, except studs of 16 gage or heavier shall have a minimum yield of 50,000 psi.

C. All properties, fabrication, and erection shall be in accordance with latest editions of the AISI "Specifications for the Design of Cold-Formed Structural Members."

D. All framing components shall be cut squarely or at an angle to fit squarely against abutting members. Splicing of axially loaded members is not permitted. Members shall be held firmly in place until properly fastened. Attachments of similar components shall be by welding, screw attachment, or bolting. Wire tying of components is not permitted.

E. Tracks shall be securely anchored to floor and overhead members. Special anchorage requirements required for wind bracing shall be as shown on the plans.

F. Prior to fabrication and/or erection, the contractor shall submit shop drawings complete with detail of erection, fabrication, attachments, anchorages, lintels, etc., for review by the architect/engineer.

10. Deferred Submittal and Shop Drawing

A. Bob D. Campbell and Company, Inc. will review the General Contractor's (GC) shop drawings and related submittals (as indicated below) with respect to the ability of the detailed work, when complete, to be a properly functioning integral element of the overall structural system designed by Bob D. Campbell and Company, Inc.

B. Deferred submittals shall be submitted to the architect of record for review who shall forward to the building official for review and approval. Design calculations for deferred sub mittals shall be submitted at the same time as the shop drawings for review. Design calculations shall be prepared and sealed by a Professional Engineer licensed in the state of the project. The deferred submittal items shall not be installed until the deferred submittal documents have been approved by the building official.

C. Prior to submittal of a shop drawing or any related material to Bob D. Campbell and Company, Inc., the GC shall:
   1. Review each submission for conformance with the means, methods, techniques, sequences and operations of construction and safety precautions and programs incidental thereto, all of which are the sole responsibility of the GC.
   2. Review and approve each submission.
   3. Stamp each submission as approved.

D. Bob D. Campbell and Company, Inc. shall assume that no submission comprises a variation unless the GC advises Bob D. Campbell and Company, Inc. with written documentation.

E. Bob D. Campbell and Company, Inc. shall review shop drawings and related materials with comments provided that each submission has met the above requirements. Bob D. Campbell and Company, Inc. shall return without comment unrequired material or submissions without GC approval stamp.

F. Shop drawings and related material (if any) required are indicated below. Should Bob D. Campbell and Company, Inc. require more than ten (10) working days to perform the review, Bob D. Campbell and Company, Inc. shall so notify the GC.
   1. Concrete mix designs and material certificates including admixtures and compounds applied to the concrete after placement.
   2. Reinforcing steel shop drawings including erection drawings and bending details.Bar list will not be reviewed for correct quantities.
   3. Elevations of all reinforced concrete masonry walls at a scale no smaller than 3/8" = 1'-0" showing all required reinforcing.
   4. Grout mix designs (for CMU).
   5. Construction and control joint plans and/or elevations.
   6. Structural steel shop drawings including erection drawings and piece details. Include joist, decking and connector submittals. Include miscellaneous framing specified on the structural drawings, but do not submit framing specified on non-structural drawings for Bob D. Campbell and Company, Inc. review.
   7. Deferred Submittal: Exterior curtain wall
   8. Deferred Submittal: Structural steel connection design calculations submitted concurrently with structural steel shop drawings.
   9. Miscellaneous anchors shown on the structural drawings.
   10. Deferred Submittal: Light gage framing design calculations and detailed erection and fabrication drawings.

11. Statement of Structural Special Inspections

A. The structural design for this project is based on completion of special inspections during construction in accordance with section 1704 of the International Building Code. The owner shall employ one or more qualified special inspectors to provide the required special inspections.

B. The special inspector shall furnish inspection reports to the building official, owner, architect and structural engineer, and any other designated person.

C. All discrepancies shall be brought to the immediate attention of the contractor for correction, then, if uncorrected, to the proper design authority, building official and structural engineer.

D. The special inspector shall submit a final signed report stating that the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved plans and specifications and the applicable workmanship provisions of the building code.

E. The following inspections and tests are required with the frequency (continuous or periodic) as defined within the referenced section or standard listed below. The General Contractor shall provide notification to the inspector when items requiring inspection are ready to be inspected and provide access for those inspections.
   1. Shop Fabrication – structural steel and steel bar joist per Section 1704.2.5 unless AISC certified shop
   2. Steel Construction per Section 1705.2 and the quality assurance requirements of AISC 341 Chapter J (as referenced by AISC 360)
   3. Cold-Formed Steel Deck per Section 1705.2.2 and the quality assurance requirements of SDI QA/QC.
   4. Concrete Construction per Section 1705.3 and Table 1705.3
      a. Reinforcing Steel Placement
      b. Cast in Place Anchors
      c. Post Installed Anchors
      d. Design Mix Verification
      e. Concrete Sampling and Testing
      f. Concrete Placement
      g. Concrete Curing
   5. Masonry Construction per Section 1705.4 and the quality assurance requirements of TMS 602 Level 2
   6. Verification of Soils per Table 1705.6

12. Copyright and Disclaimer

A. All drawings in the structural set (S-series drawings) are the copyrighted work of Bob D. Campbell and company, Inc. These drawings may not be photographed, traced, or copies in any manner without the written permission of Bob D. Campbell and Company, Inc. Exception: Original drawings may be printed for distribution to the owner, architect, and general contractor for coordination, bidding, and construction. Subcontractors may not reproduce these drawings for any purpose or in any manner.

B. I, Wayne E. Davis, P.E., registered engineer and a representative of Bob D. Campbell and Company, Inc., do hereby accept professional responsibility as required by the professional registration laws of this state for the structural design drawings consisting of S-series drawings. I hereby disclaim responsibility for all other drawings in the construction document package, they being the responsibility of other design professionals whose seals and signed statements may appear elsewhere in the construction document package.

STRUCTURAL ABBREVIATIONS

@	AT
&	AND
Ø	ROUND, DIAMETER
ADTL	ADDITIONAL
AFF	ABOVE FINISHED FLOOR
ALT	ALTERNATE
ARCH	ARCHITECTURAL
BLDG	BUILDING
B/	BOTTOM OF
BM	BEAM
BOTT	BOTTOM
BRG	BEARING
C	CAMBER
CD-#	CONCRETE DECK TYPE
CJ	CONSTRUCTION/CONTROL JOINT
CJP	COMPLETE JOINT PENETRATION
CL	CENTERLINE
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONT	CONTINUOUS
COORD	COORDINATE
COV, CVR	COVER
DBL	DOUBLE
DET	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DL	DEAD LOAD
DWG	DRAWING
EA	EACH
EF	EACH FACE
EJ	EXPANSION JOINT
EL, ELEV	ELEVATION
EMBED	EMBEDMENT, EMBEDDED
ENGR	ENGINEER
EOD	EDGE OF DECK
EOR	ENGINEER OF RECORD
EOS	EDGE OF SLAB
EQ	EQUAL
EQUIP	EQUIPMENT
EW	EACH WAY
EXP	EXPANSION
EXT	EXTERIOR
EXTG, EXIST	EXISTING
FD-#	FLOOR DECK TYPE
FDN	FOUNDATION
FF	FAR FACE
FIN	FINISH
FLR	FLOOR
FS	FAR SIDE
FTG	FOOTING
FV	FIELD VERIFY

GA	GAGE
GALV	GALVANIZE(D)
GEN	GENERAL
GR	GRADE
HORIZ	HORIZONTAL
HSS	HOLLOW STRUCTURAL SECTION
IF	INSIDE FACE
INFO	INFORMATION
INT	INTERIOR
JST	JOIST
JT	JOINT
K	KIPS (1000 LBS)
KSF	KIPS PER SQUARE FOOT
KSI	KIPS PER SQUARE INCH
LBS, #	POUNDS
Ld	DEVELOPMENT LENGTH
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LONG	LONGITUDINAL
LSLT	LONG-SLOTTED HOLE TRANSVERSE
LTWT	LIGHTWEIGHT
M	MOMENT FORCE
MAX	MAXIMUM
MECH	MECHANICAL
MFGR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MSRY	MASONRY
MTL	METAL
NF	NEAR FACE
NS	NEAR SIDE
NTS	NOT TO SCALE
NW	NORMAL WEIGHT
OC	ON CENTER
OF	OUTSIDE FACE
OPNG	OPENING
OPP	OPPOSITE
OVS	OVERSIZED HOLE
P	AXIAL FORCE
PAF	POWDER ACTUATED FASTENER
PC	PRECAST
PCF	POUNDS PER CUBIC FOOT
PEMB	PRE-ENGINEERED METAL BUILDING
PERP	PERPENDICULAR
PL	PLATE
PLF	POUNDS PER LINEAR FOOT
PJP	PARTIAL JOINT PENETRATION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
QTY	QUANTITY

RAD	RADIUS
RD-#	ROOF DECK TYPE
REF	REFERENCE
REINF	REINFORCEMENT
REQD	REQUIRED
REV	REVISION
RLL	ROOF LIVE LOAD
RTU	ROOF TOP UNIT
SC	SLIP CRITICAL
SCHED	SCHEDULE(D)
SECT	SECTION
SHT	SHEET
SIM	SIMILAR
SJ	SAW JOINT
SL	SNOW LOAD
SOG	SLAB-ON-GRADE
SOG-#	SLAB-ON-GRADE TYPE
SPCG	SPACING
SPEC	SPECIFICATION
SPRT	SUPPORT
SQ	SQUARE
SS	STAINLESS STEEL
SSLT	SHORT-SLOTTED HOLE TRANSVERSE
STD	STANDARD
STIFF	STIFFENER
STIR	STIRRUP
STL	STEEL
STRUCT	STRUCTURE, STRUCTURAL
T/	TOP OF
THRU	THROUGH
TOS	TOP OF STEEL, TOP OF SLAB
TRANS	TRANSVERSE
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
V	SHEAR FORCE
VERT	VERTICAL
W/	WITH
W/0	WITHOUT
WF	WIDE FLANGE
WL	WIND LOAD
WP	WORK POINT
WWF	WELDED WIRE FABRIC

LEGEND:

...... SPAN DIRECTION OF DECK

BP-1 ...... BEARING PLATE 3/8"x8"x8" WITH (2) 1/2"Ø x 6" STUDS GROUT (3) COURSES BELOW PLATE SOLID (3) COURSES WIDE.

BP-2 ...... BEARING PLATE 3/8"x7 1/2"x7 1/2" WITH (2) 1/2"Ø x 6" STUDS GROUT (3) COURSES BELOW PLATE SOLID (3) COURSES WIDE.

RD-1 ...... 3", 20ga GALVANIZED TYPE N ROOF DECK (3 SPAN CONTINUOUS) ATTACH TO STRUCTURE TO DEVELOP 325plf DIAPHRAGM SHEAR (ASD LOAD).

3.0 ...... FOOTING MARK - SEE SCHEDULE ON SHEET S101-B.

1 HSS8x8x5/16 ....COLUMN SIZE
BASE PLATE MARK - SEE SCHEDULE ON SHEET S101-B

LEVEL BEAM DESIGNATION: W14x22 — STEEL BEAM SIZE; T 117'-6" — TOP OF BEAM ELEVATION

SLOPING BEAM DESIGNATION: W14x22 — STEEL BEAM SIZE; T 133'-0" T 132'-5" — TOP OF BEAM ELEVATION EACH END

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the evolution of gould evans

LSR7 Robotics, GiC & Phys Education

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Revisions

NUMBER	DESCRIPTION	DATE

RELEASED FOR CONSTRUCTION
As Noted on Plans Review
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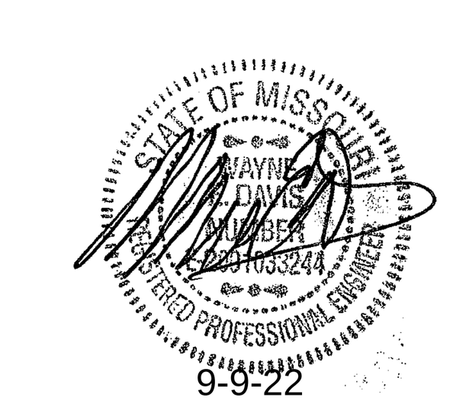
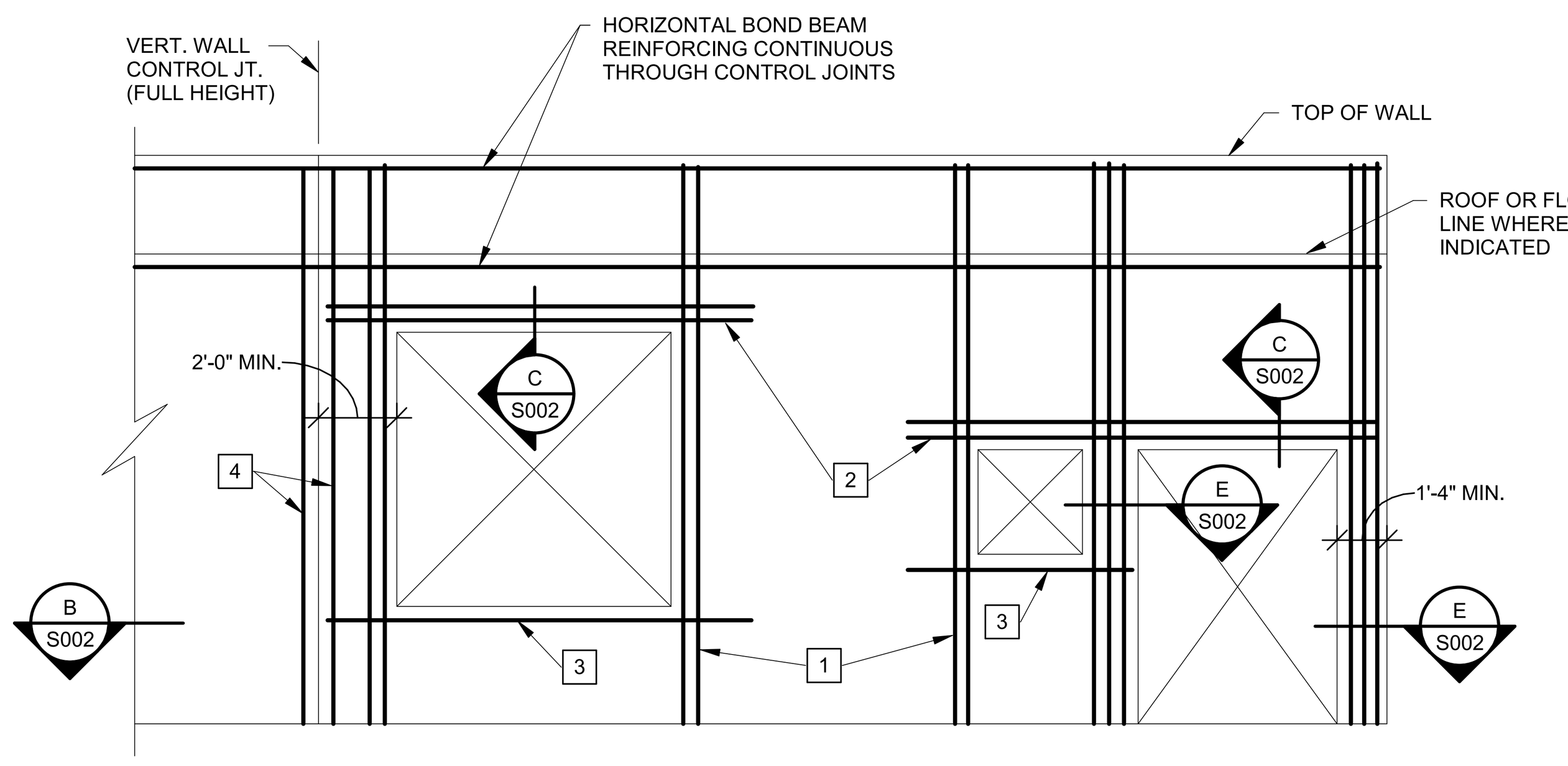
Lee's Summit, Missouri
11/23/2022



9-9-22

GENERAL NOTES

S001-C



TYPICAL CMU WALL REINFORCING AT OPENINGS

LEGEND:

1. FULL HEIGHT VERTICAL BARS AS JAMB REINFORCING IN FIRST 2 CELLS ADJACENT TO OPENING. REINFORCE EACH CELL WITH SIZE & QUANTITY OF BAR TO MATCH WALL REINFORCING (1 BAR TYPICAL IN 8" WALLS AND 2 BARS TYPICAL IN 12" WALLS).
2. LINTEL REINFORCING PER SECTION C. EXTEND 2'-0" PAST EDGE OF OPENING ON EACH SIDE (TYPICAL).
3. 2-#5 CONTINUOUS HORIZONTAL BARS AS SILL REINFORCING IN 8" COURSE BELOW OPENING (U.N.O.). EXTEND 2'-0" PAST EDGE OF OPENING ON EACH SIDE (TYPICAL).
4. FULL HEIGHT VERTICAL BARS PER MASONRY VERTICAL REINFORCING SCHEDULE LOCATED IN END CELL AT EACH SIDE OF VERTICAL WALL CONTROL JOINTS.

GENERAL CRITERIA: (SECTION A CONTINUED):

1. VERTICAL REINFORCING BARS SHALL BE DOWELED TO FOUNDATION WITH A DOWEL OF MATCHING SIZE AND SPACING.
2. CONTRACTOR SHALL COORDINATE AND VERIFY OPENINGS IN MASONRY WALLS. OPENINGS SHALL BE DETAILED ON REINFORCING STEEL SHOP DRAWING ELEVATIONS.
3. VERTICAL CONTROL JOINTS IN MASONRY WALLS SHALL BE 3/8" WIDE, FULL HEIGHT OF WALL. JOINTS SHALL BE SPACED AT A MAXIMUM OF 24'-0" ON CENTER AND NOT LESS THAN 2'-0" FROM THE EDGE OF ANY OPENING. ALL HORIZONTAL JOINT REINFORCING SHALL BE DISCONTINUOUS AT CONTROL JOINTS. ALL BOND BEAM HORIZONTAL REINFORCING SHALL BE CONTINUOUS THROUGH CONTROL JOINTS. CONTRACTOR SHALL COORDINATE AND VERIFY ALL CONTROL JOINT LOCATIONS.

MASONRY VERTICAL REINFORCING SCHEDULE

FOR LOAD BEARING MASONRY (CMU) WALLS

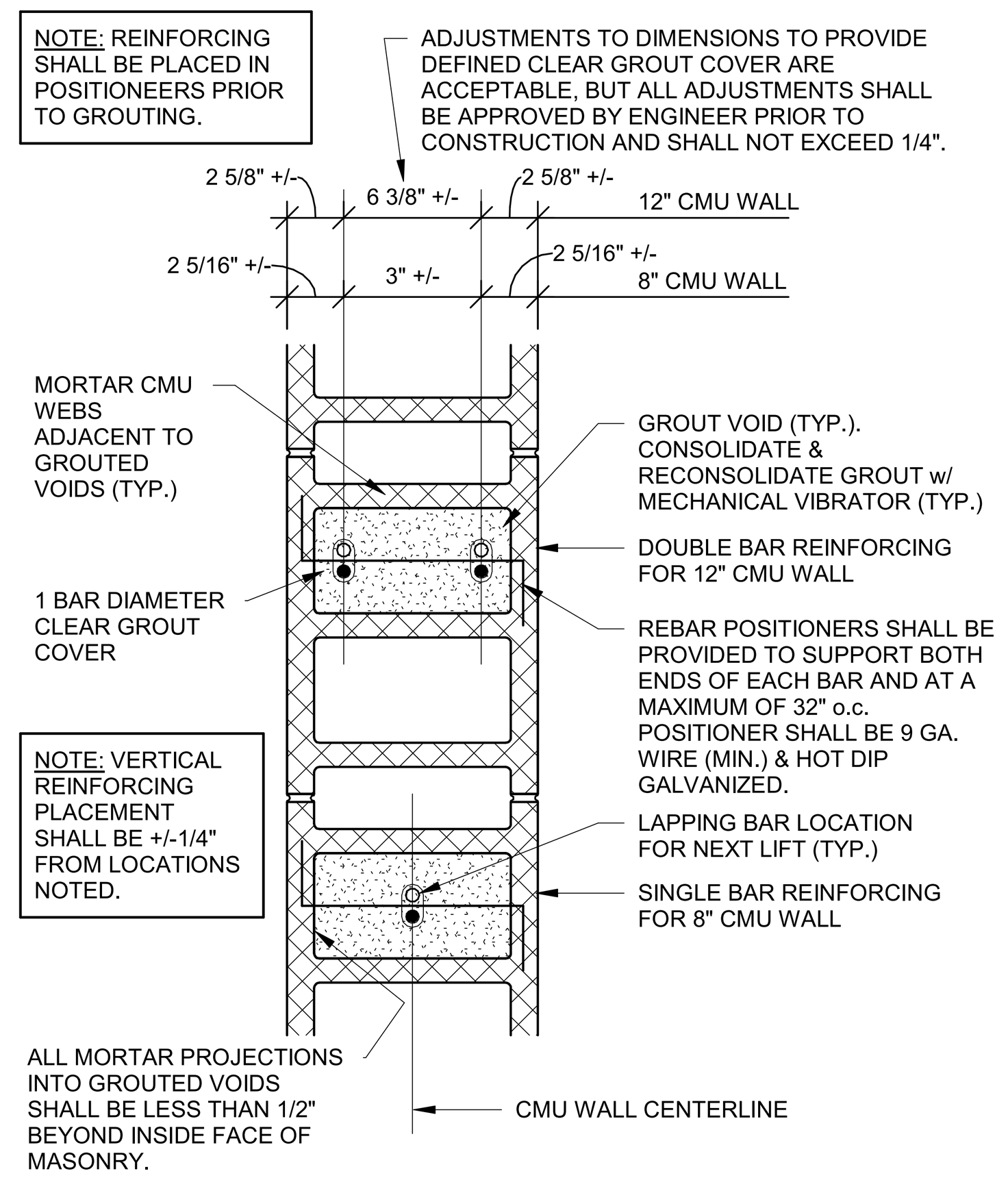
WALL THICKNESS	LOCATION	VERTICAL REINF. (IN GROUTED CELLS)	SPACING
8"	ALL 8" WALLS (U.N.O.)	1- #5	32"oc
12"	ALL 12" WALLS (U.N.O.)	2- #5	16"oc

NOTES:

1. IN ADDITION TO SPACING SHOWN IN SCHEDULE, VERTICAL REINFORCING SHALL BE PROVIDED IN GROUTED CELLS AT THE FOLLOWING LOCATIONS
   - A.) IN THE FIRST 2 CELLS ADJACENT TO EACH OPENING
   - B.) IN THE END CELLS ON EACH SIDE OF VERTICAL CONTROL JOINTS
   - C.) IN THE END CELLS OF EACH LENGTH OF WALL
   - D.) AT EACH CORNER OF WALLS
2. ALL MASONRY VOIDS AND BOND BEAMS TO BE GROUTED SHALL BE FREE OF DEBRIS AND MORTAR DROPPINGS PRIOR TO GROUTING. ANY MASONRY w/ DROPPINGS OR DEBRIS OBSERVED IN VOIDS SHALL BE REJECTED.

A CMU WALL ELEVATION

1 1/2" = 1'-0"



NOTE: ALL MASONRY VOIDS AND BOND BEAMS TO BE GROUTED SHALL BE FREE OF DEBRIS AND MORTAR DROPPINGS PRIOR TO GROUTING. ANY MASONRY w/ DROPPINGS OR DEBRIS OBSERVED IN VOIDS SHALL BE REJECTED.

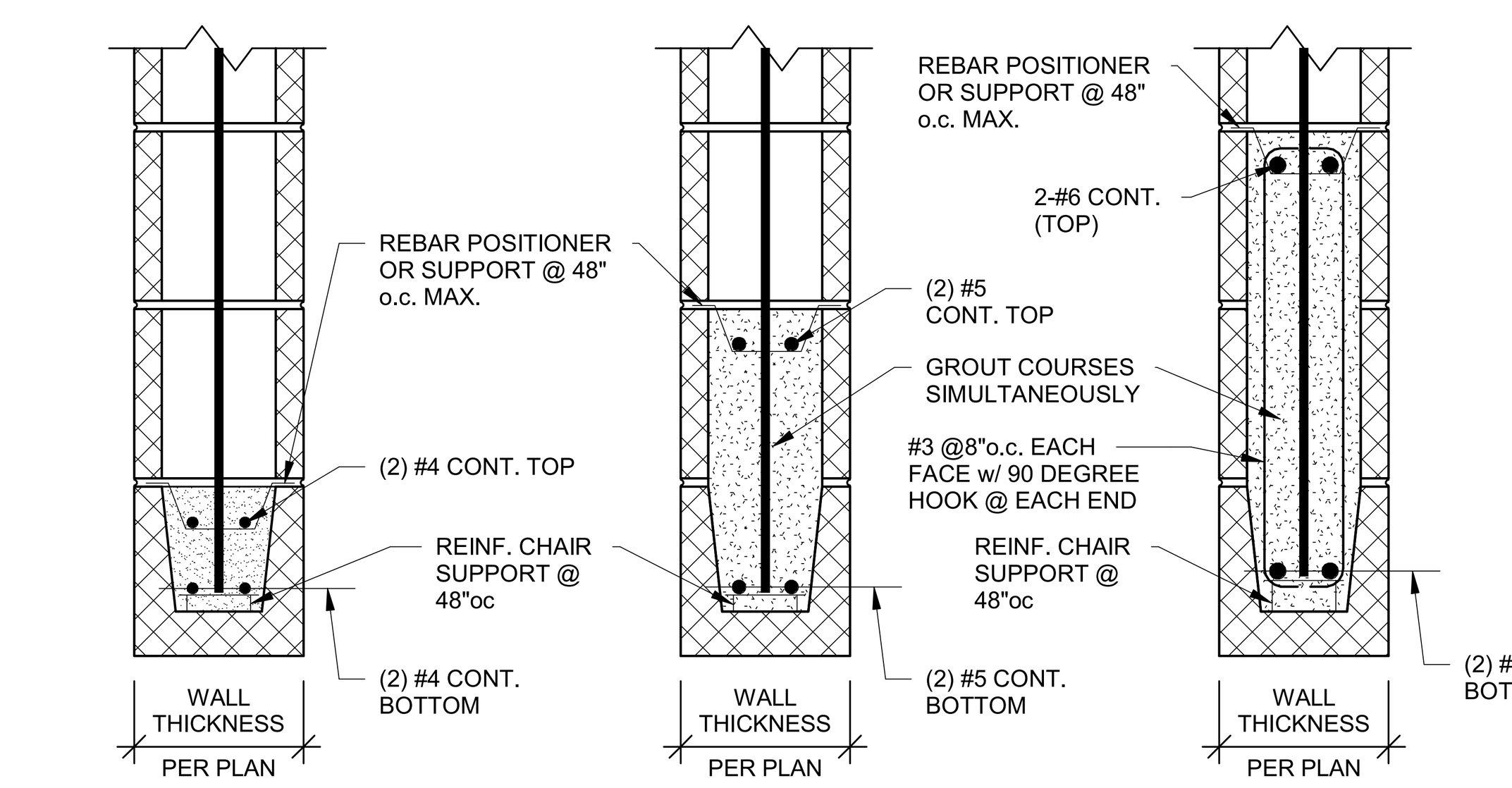
TYPICAL REBAR POSITIONING DETAIL

B SECTION

1 1/2" = 1'-0"

TYPICAL MASONRY REINFORCING NOTE:

ALL INTERIOR & EXTERIOR MASONRY WALLS SHOWN ON ARCHITECTURAL AND STRUCTURAL DRAWINGS ARE TO BE REINFORCED HORIZONTALLY WITH BOND BEAMS (2 - #5 BOTTOM) AT BOTTOM COURSE, TOP COURSE, JOIST BEARING ELEVATION AND AT 8'-0" MAXIMUM O.C. AND VERTICALLY AS INDICATED ON DRAWINGS. THESE WALLS ARE TO BE ANCHORED TOP AND BOTTOM TO THE FOUNDATION, FLOOR, OR ROOF PER TYPICAL DETAILS. THE VERTICAL REINFORCING IS CONTINUOUS (IN 6'-8" MAXIMUM LENGTHS, LAPPED 2'-6" MINIMUM). FILL BLOCK CELLS AND BOND BEAMS WITH 2,500psi GROUT. RE: DETAILS "A" THROUGH "E" ON THIS SHEET.

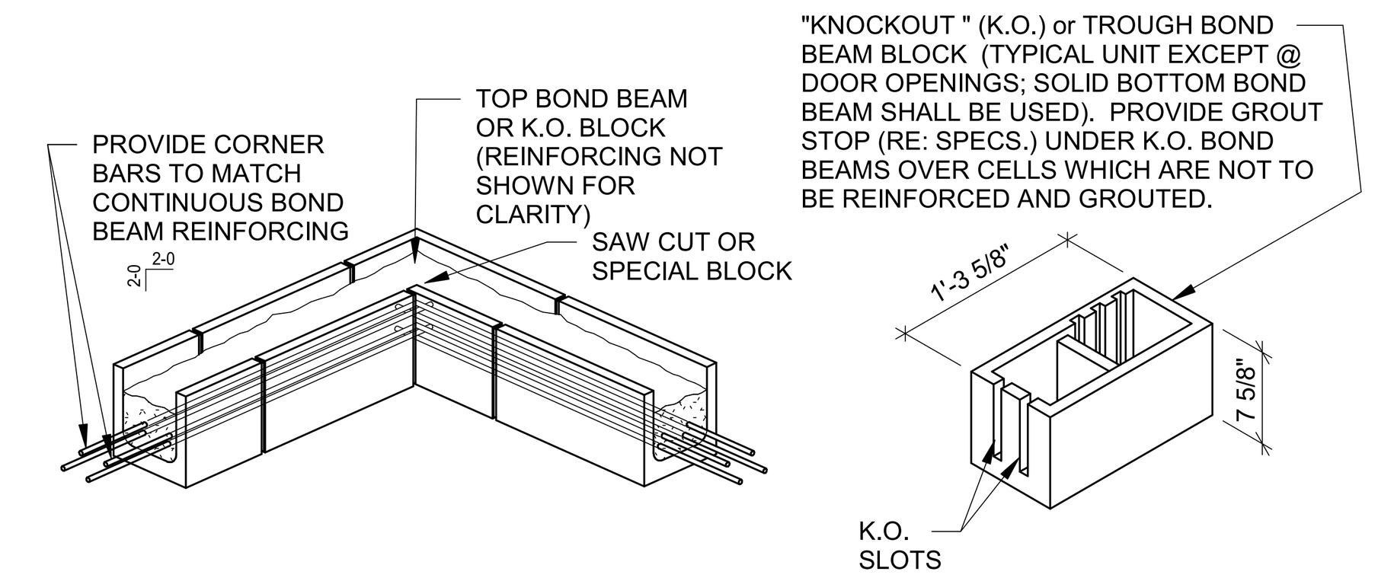


OPENINGS UP TO 4'-0" | OPENINGS 4'-0" TO 7'-4" | OPENINGS 7'-4" TO 12'-0"

TYPICAL LINTELS AT ALL CMU WALLS (U.N.O.)

C SECTION

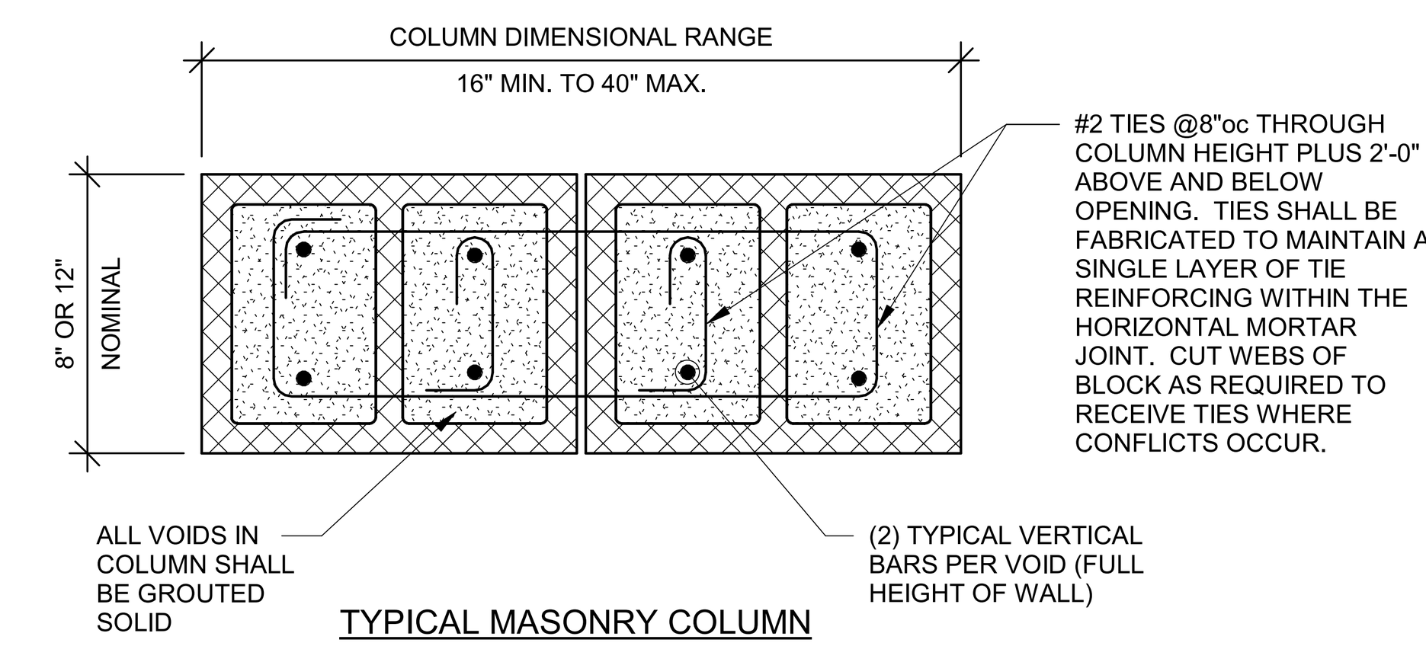
1 1/2" = 1'-0"



TYPICAL BOND BEAM DETAIL AT CORNER OF CMU WALL

D DETAIL

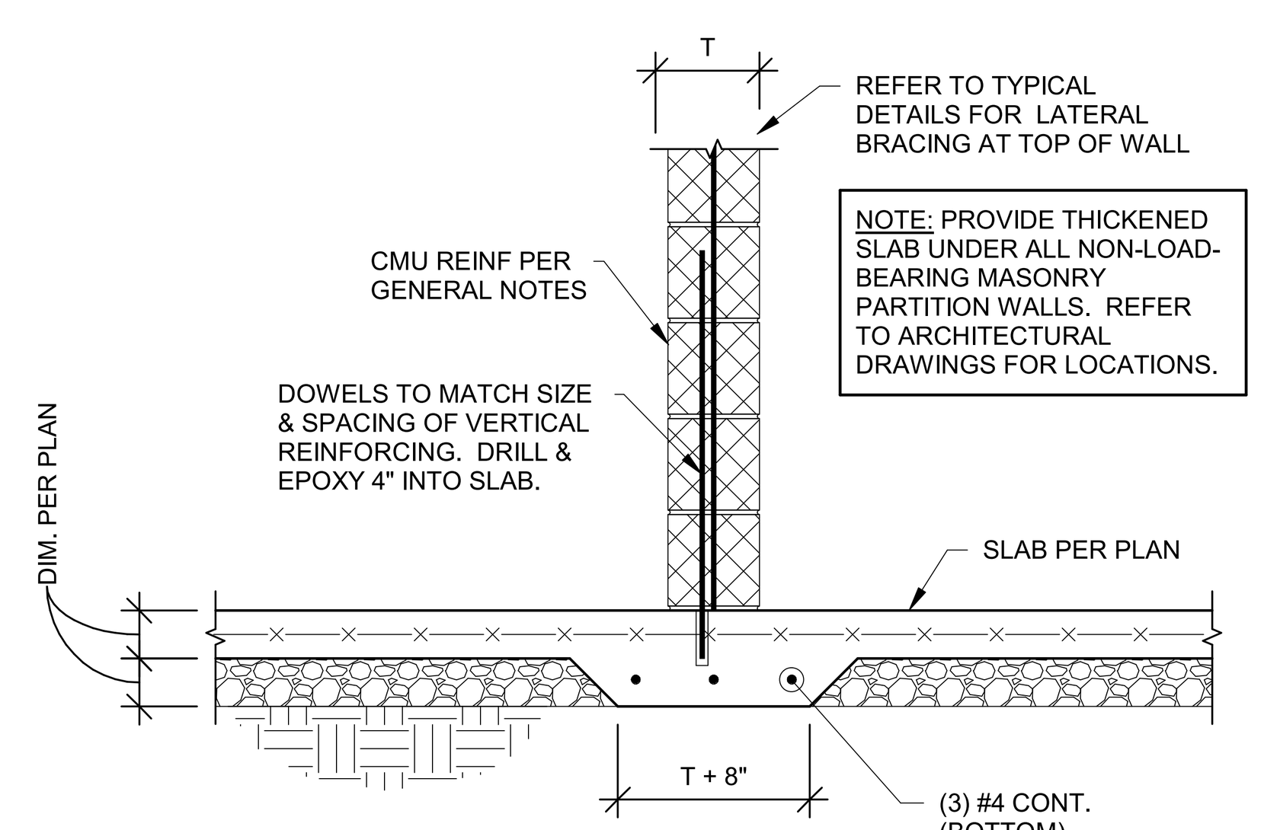
3/4" = 1'-0"



TYPICAL MASONRY COLUMN

E SECTION

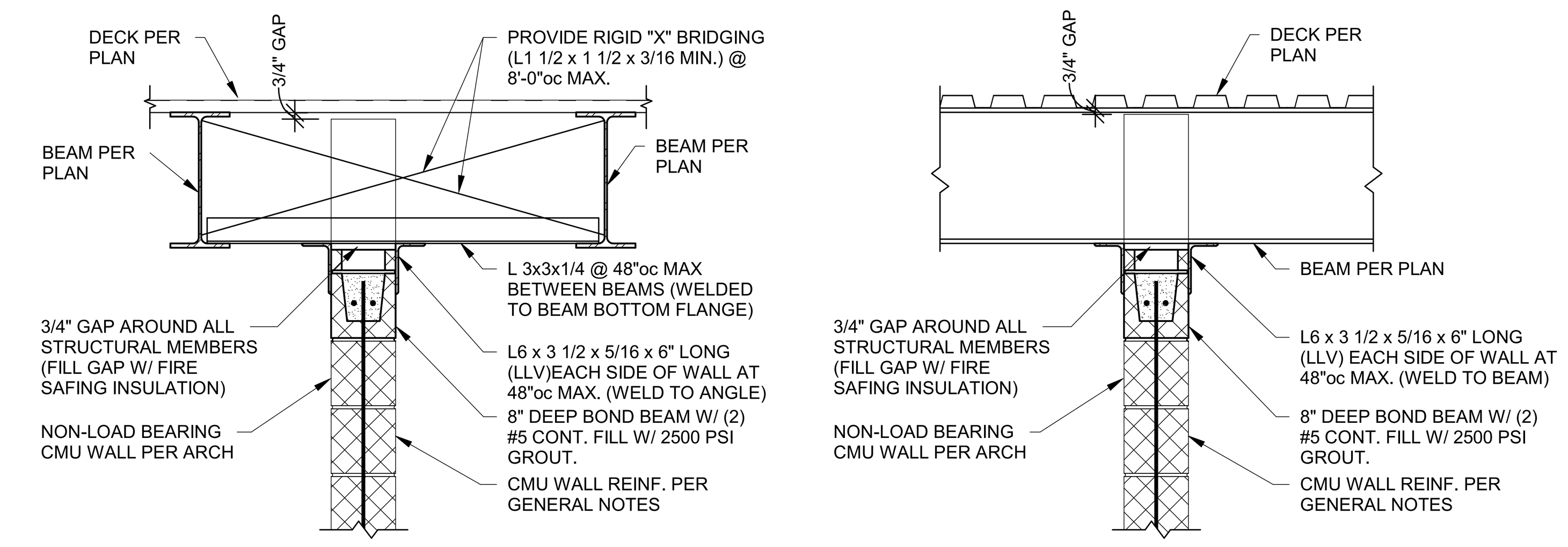
1 1/2" = 1'-0"



TYPICAL THICKENED SLAB
(UNDER NON-LOAD-BEARING MASONRY)

1 SECTION

3/4" = 1'-0"

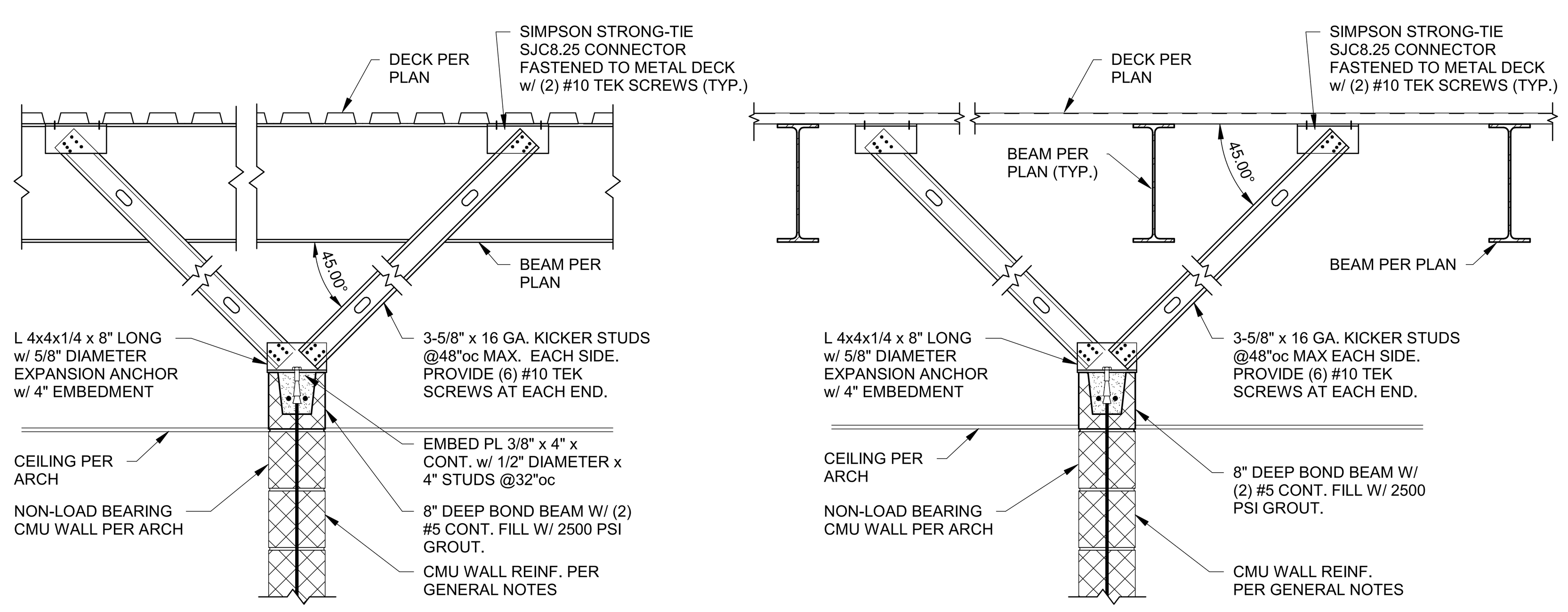


WALL PARALLEL TO BEAM | WALL PERPENDICULAR TO BEAM

TYPICAL BRACING DETAILS FOR NON-LOAD-BEARING CMU WALLS THAT EXTEND TO DECK
(REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION)

2 SECTION

3/4" = 1'-0"

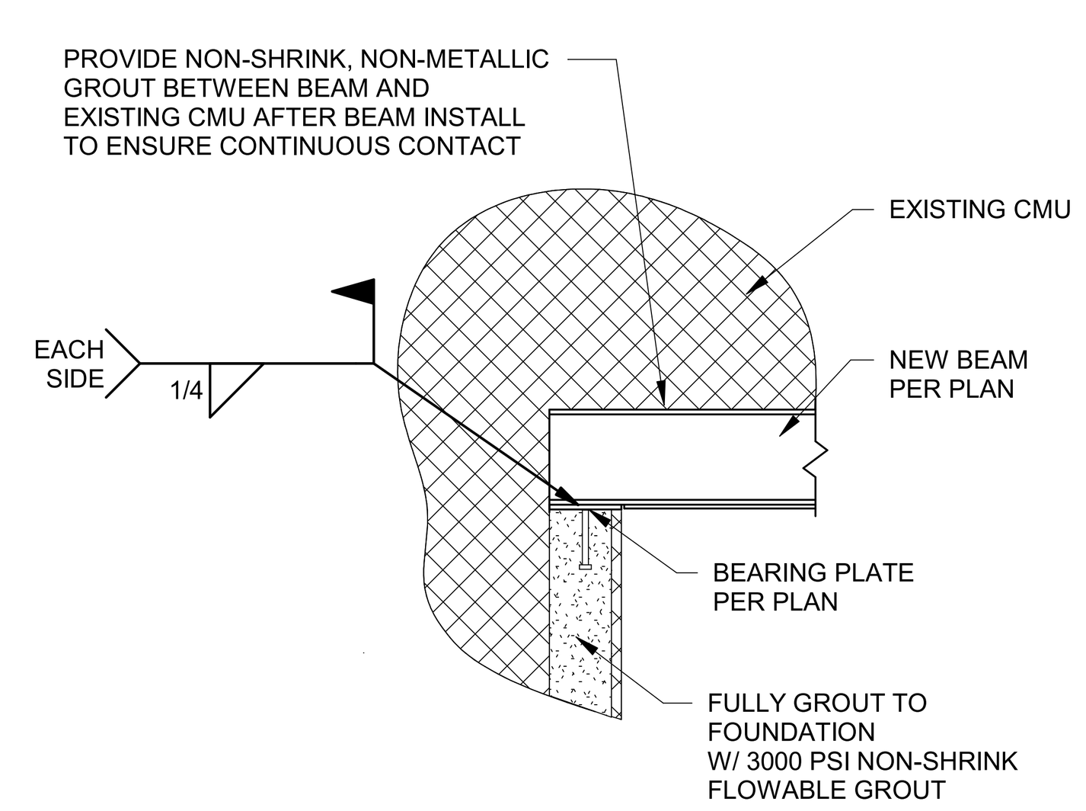


WALL PERPENDICULAR TO BEAM | WALL PARALLEL TO BEAM

TYPICAL BRACING DETAILS FOR NON-LOAD-BEARING CMU WALLS THAT DO NOT EXTEND TO DECK
(REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION)

3 SECTION

3/4" = 1'-0"



TYPICAL STEEL BEAM LINTEL BEARING ON EXISTING CMU WALL

4 SECTION

3/4" = 1'-0"

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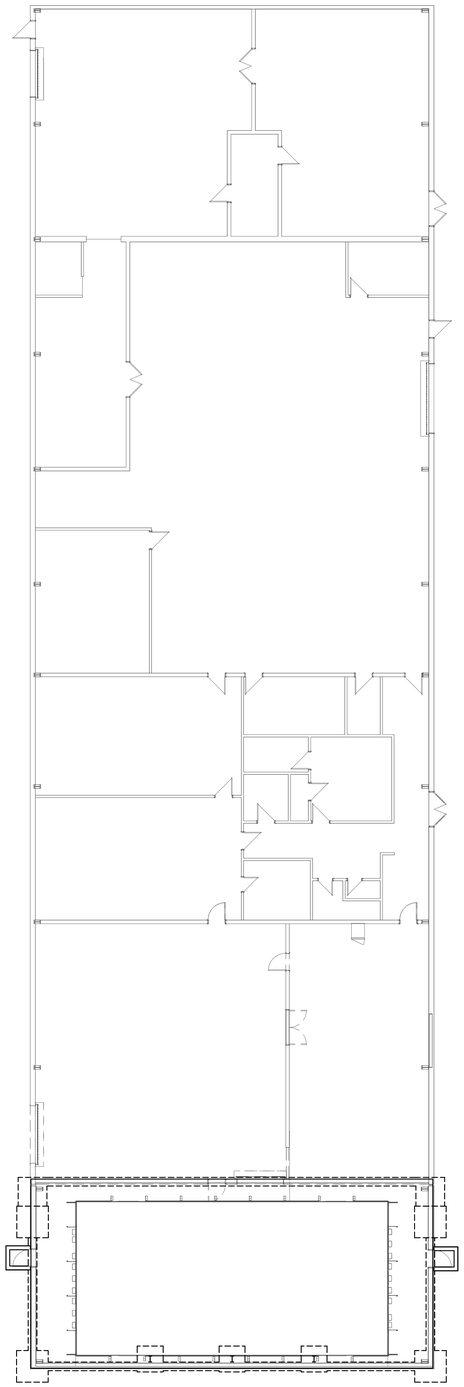
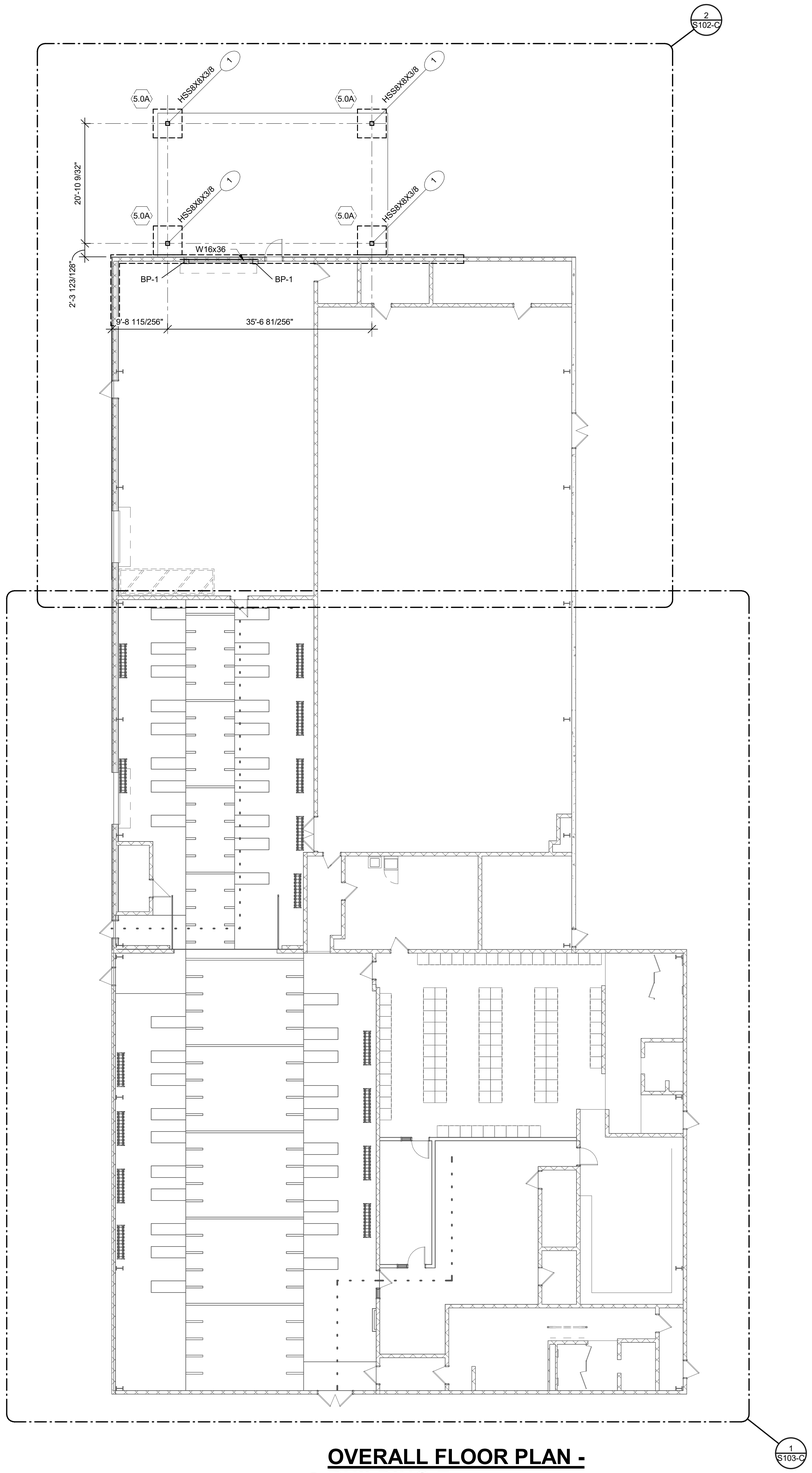
CMU DETAILS

S002-C



1 **OVERALL FLOOR PLAN - BUILDING D**
3/32" = 1'-0"



2 **OVERALL FLOOR PLAN - BUILDING E**
3/32" = 1'-0"

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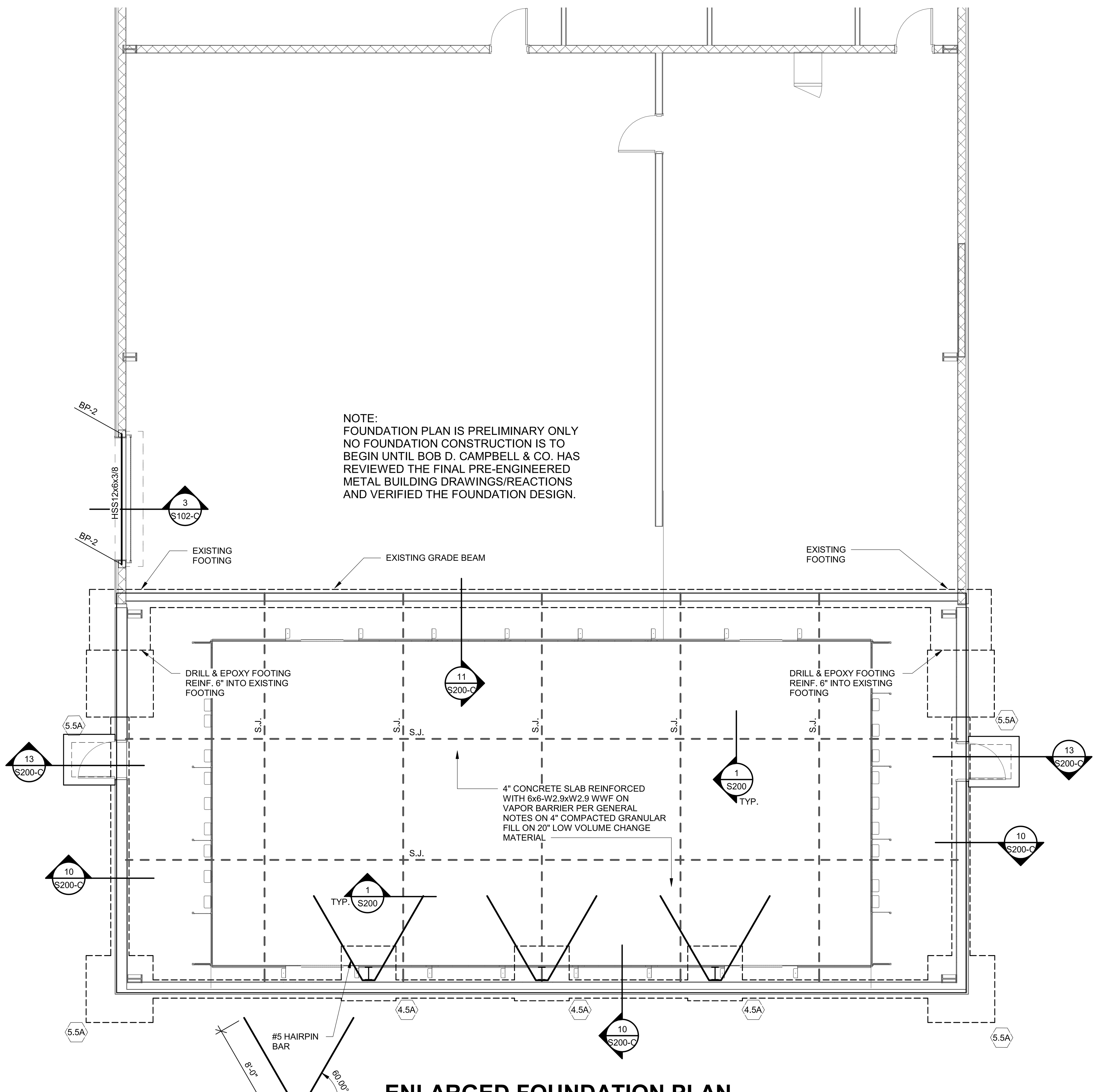
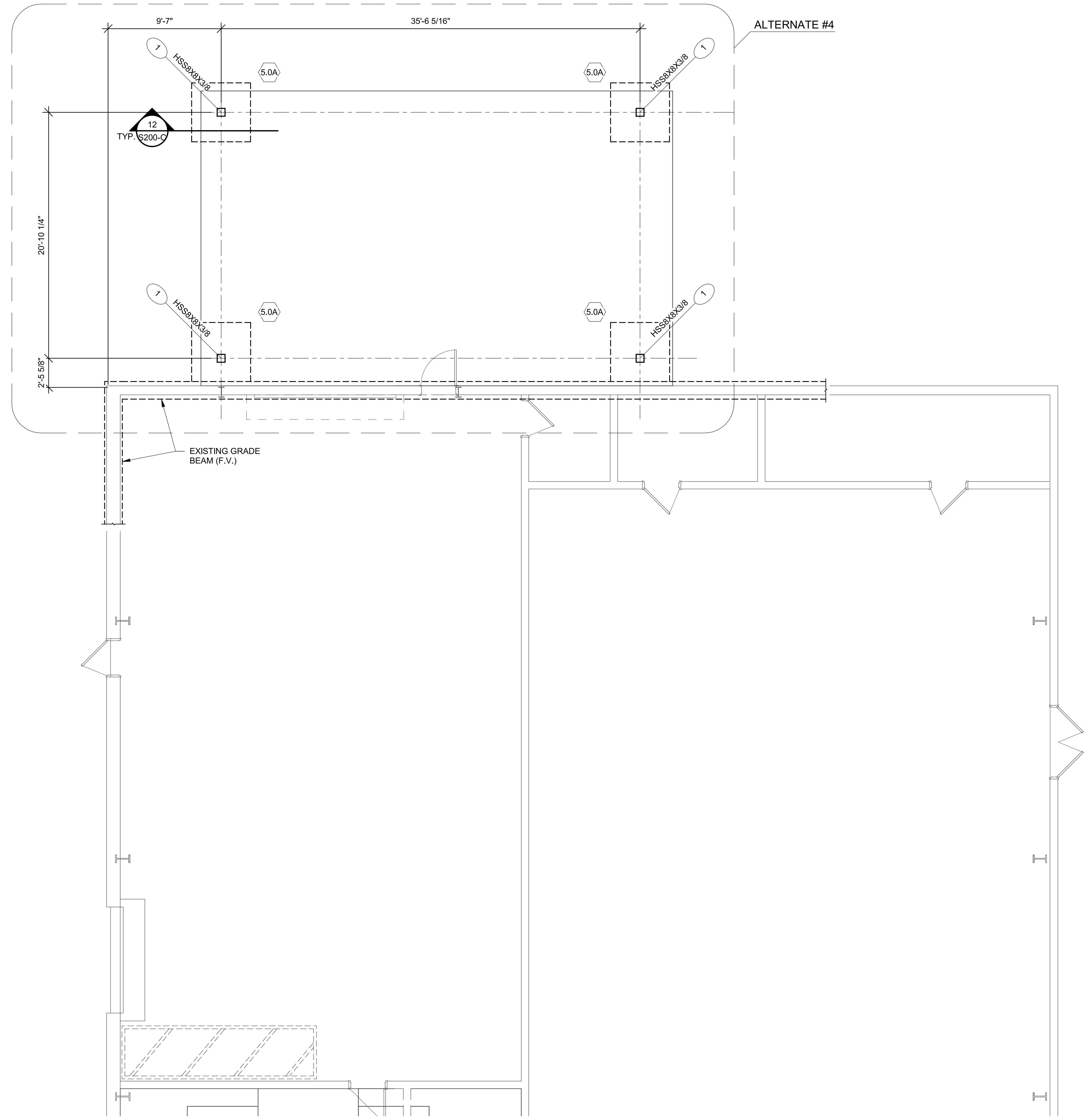
OVERALL FLOOR PLANS - BUILDING D & E

S101-C



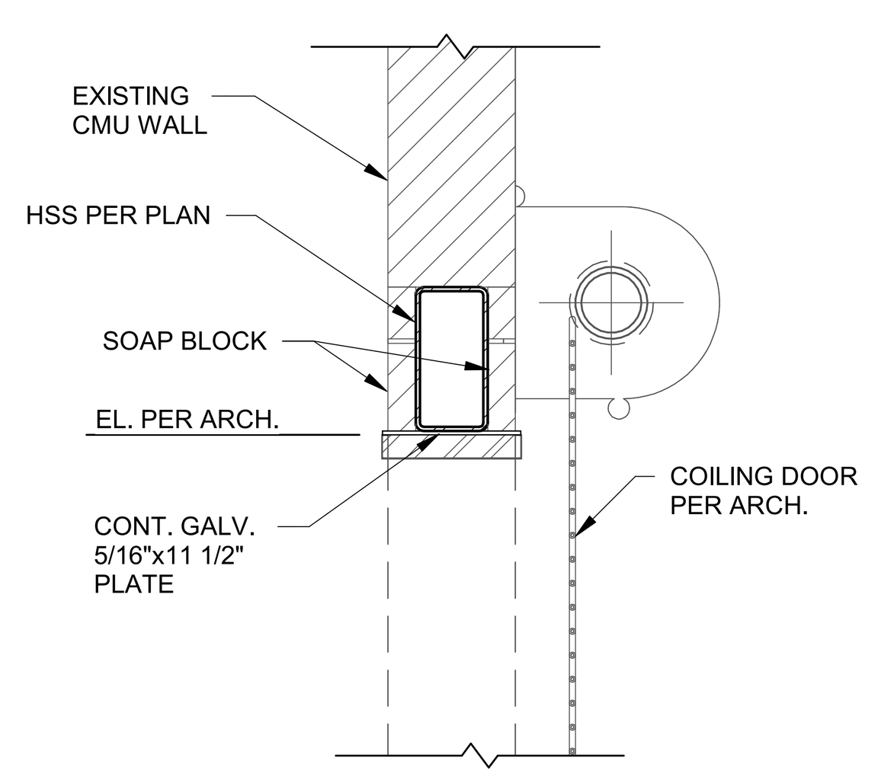
1 ENLARGED FOUNDATION PLAN - BUILDING D - ROBOTICS

3/16" = 1'-0"



2 ENLARGED FLOOR PLAN - BUILDING E - GIC

3/16" = 1'-0"



3 SECTION

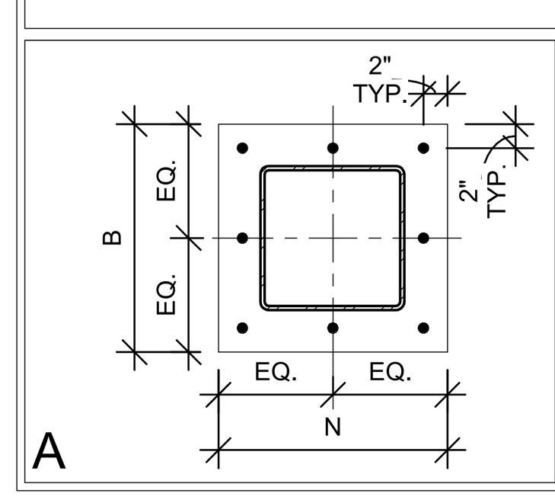
3/4" = 1'-0"

Structural Foundation Schedule C

NOTE:
1) EXTERIOR FOOTINGS OR FOOTING AT GRADE BEAM SHALL MATCH GRADE BEAM DEPTH AND BE PLACED WITH GRADE BEAM. PROVIDE SPECIFIED REBAR TOP AND BOTTOM WITH 4 STANDEES TO SUPPORT MATS.
2.) PROVIDE REINFORCING PER SCHEDULE EACH WAY IN TOP OF FTG. AT ALL MOMENT FRAME AND BRACED BAY COLUMNS.
3.) CENTER FOOTINGS ON COLUMNS AND/OR WALL CENTER LINES PER PLAN UNLESS NOTED OTHERWISE (U.N.O.).

Type Mark	Length	Width	Footing Thickness	Bottom Bars	Quantity (E.W. Top & Bott)	
4.5A	4'-6"	4'-6"	2'-8"	Rebar : # 4	9	
5.0A	5'-0"	5'-0"	2'-8"	Rebar : # 5	6	
5.5A	5'-6"	5'-6"	2'-8"	Rebar : # 5	7	

BASE PLATE SHAPE (NOT TO SCALE)



COLUMN BASE PLATE SCHEDULE

TYPE	COLUMN	BASE PLATE (txBxN)	SHAPE	ANCHOR RODS	EMBEDMENT
1	PER PLAN	1"x16"x16"	A	(8) 1"Ø	1'-6"

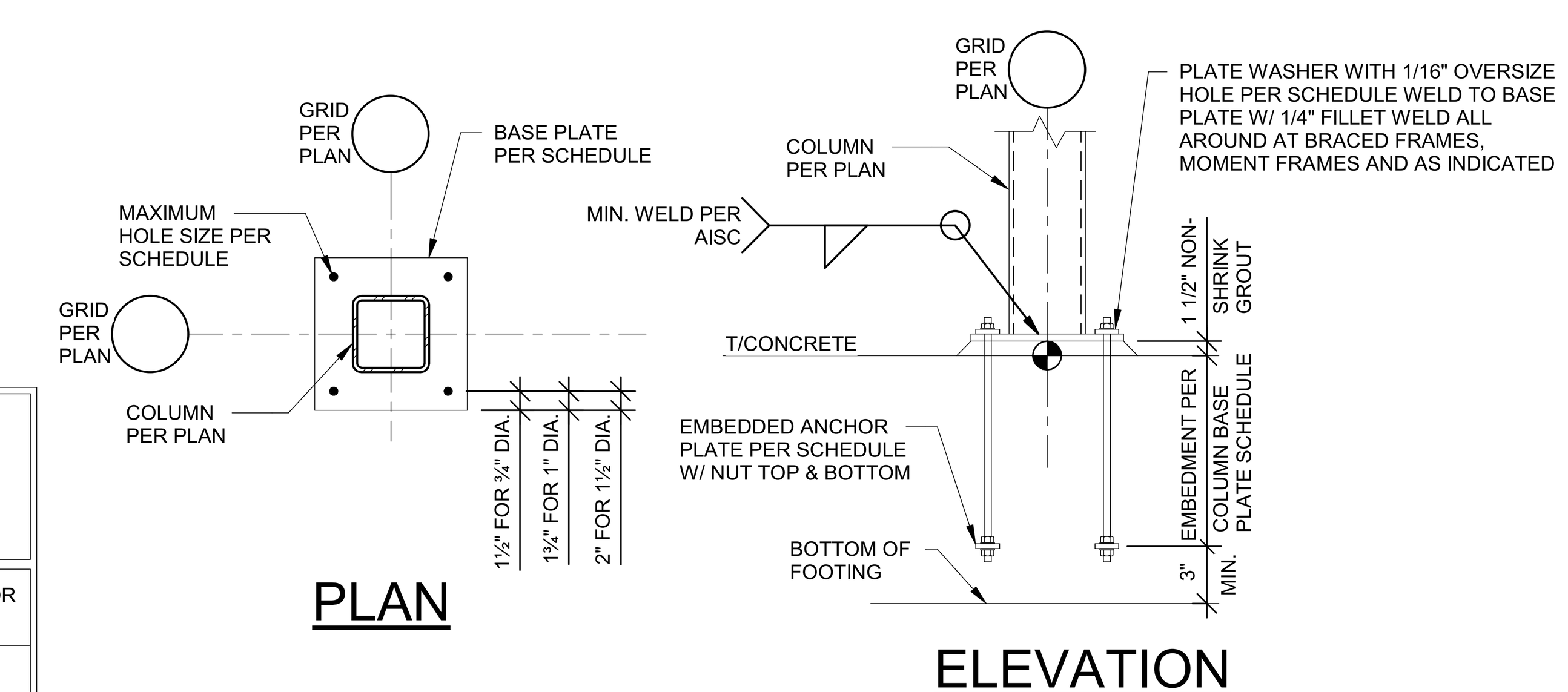
NOTES:

1. SEE PLAN FOR ORIENTATION OF COLUMNS.
2. PROVIDE PLATE WASHER & EMBEDDED PLATE PER SCHEDULE @ ALL ANCHOR BOLTS.
3. U.N.O. ALL THREADED ROD A.B's SHALL BE F1554 (36ksi) MATERIAL.

COLUMN BASE PLATE AND ANCHOR-ROD CRITERIA

ANCHOR-ROD DIAMETER.	MAX. BASE PLATE HOLE DIAMETER.	MIN. PLATE WASHER SIZE.	MIN. PLATE WASHER THICKNESS	EMBEDDED ANCHOR PLATE SIZE
3/4"	1 5/16"	2"	1/4"	1/2"x2 1/2"x2 1/2"
7/8"	1 9/16"	2 1/2"	5/16"	1/2"x2 1/2"x2 1/2"
1"	1 7/8"	3"	3/8"	5/8"x3"x3"
1 1/4"	2 1/8"	3 1/2"	1/2"	5/8"x3 1/2"x3 1/2"
1 1/2"	2 3/8"	4"	1/2"	5/8"x3 1/2"x3 1/2"
1 3/4"	2 7/8"	4 1/2"	5/8"	3/4"x3 1/2"x3 1/2"
2"	3 1/4"	5"	3/4"	3/4"x3 1/2"x3 1/2"
2 1/2"	3 3/4"	5 1/2"	7/8"	3/4"x3 1/2"x3 1/2"

NOTES:
1. HOLE SIZES PROVIDED ARE BASED ON ANCHOR ROD SIZE AND CORRELEATE WITH ACI 117 (ACI, 2010)
2. CIRCULAR OR SQUARE WASHERS MEETING THE WASHER SIZE ARE ACCEPTABLE.
3. HOLE IN PLATE WASHER SHALL BE 1/16" LARGER THAN ANCHOR DIAMETER.



4 BASE PLATE DETAIL

3/4" = 1'-0"

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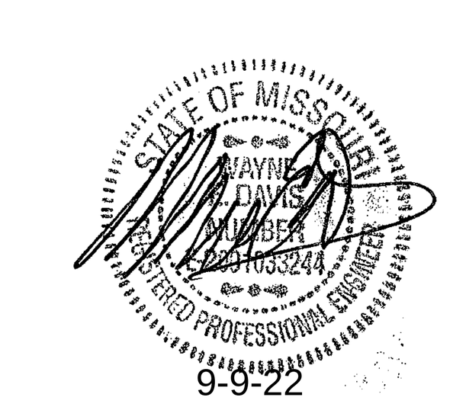
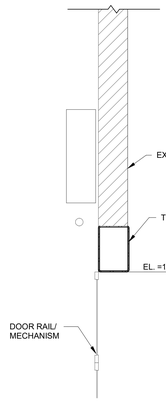
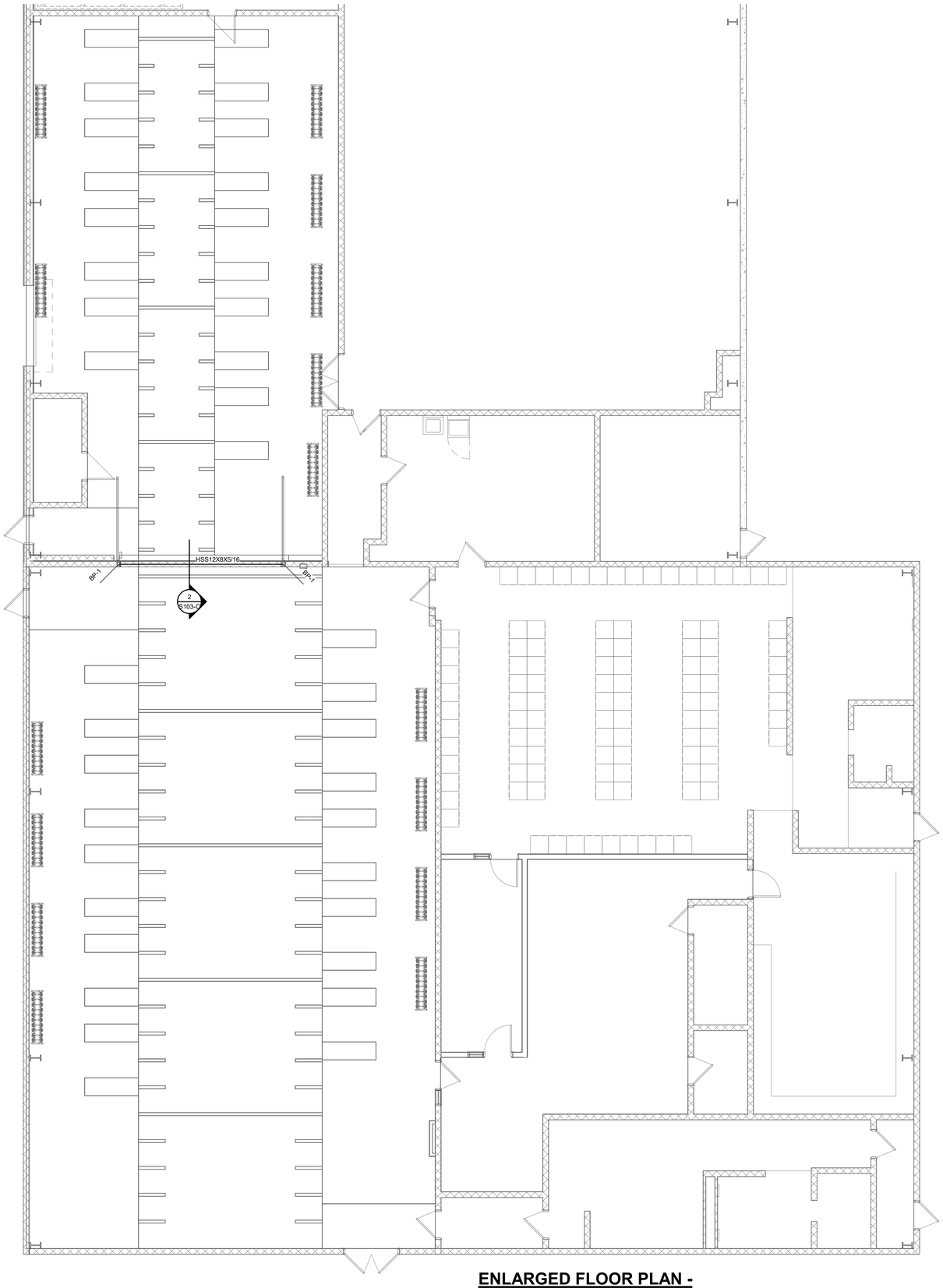


ENLARGED FLOOR PLAN - ROBOTICS & GIC

S102-C



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



1 ENLARGED FLOOR PLAN - WEIGHTS
3/16" = 1'-0"

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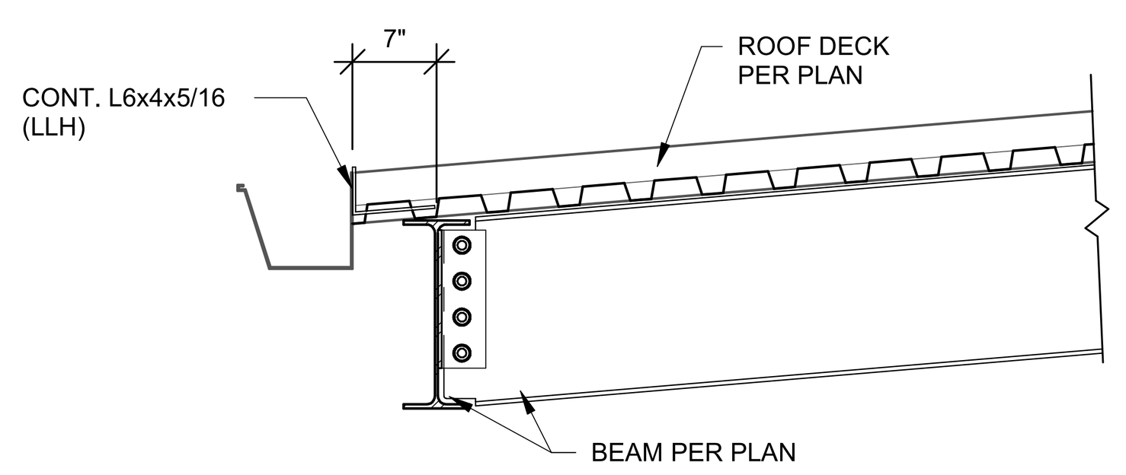
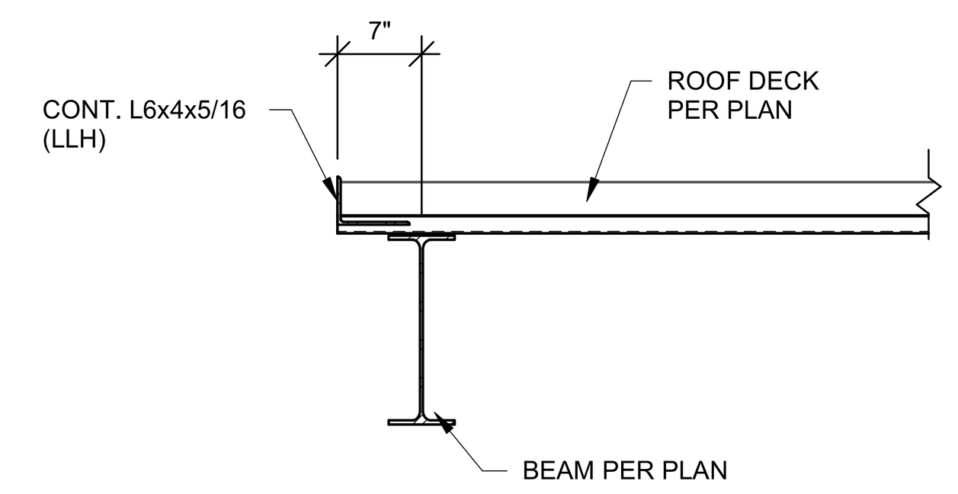
ENLARGED FLOOR PLAN - WEIGHTS

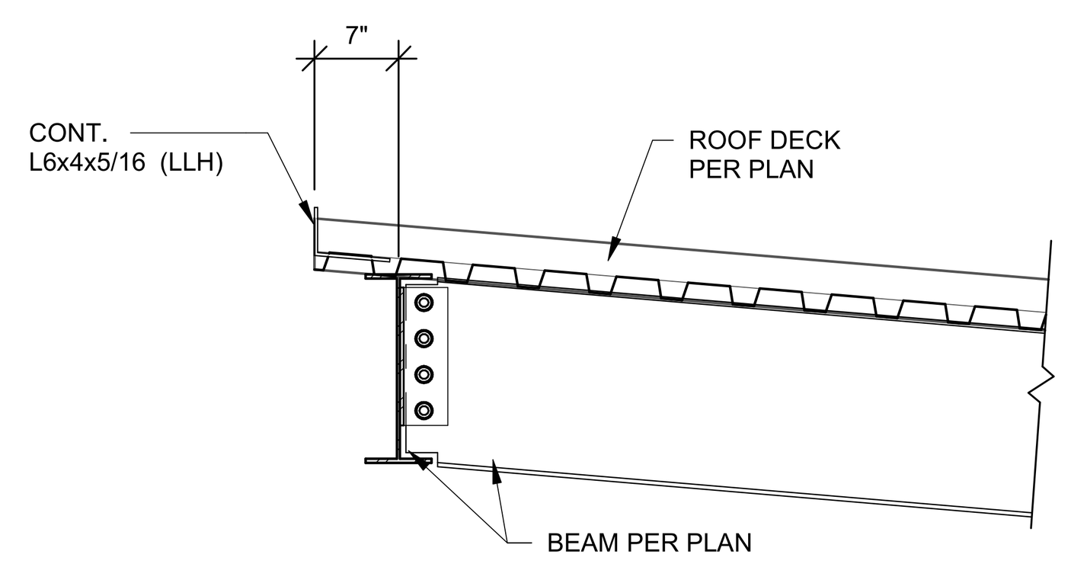
S103-C



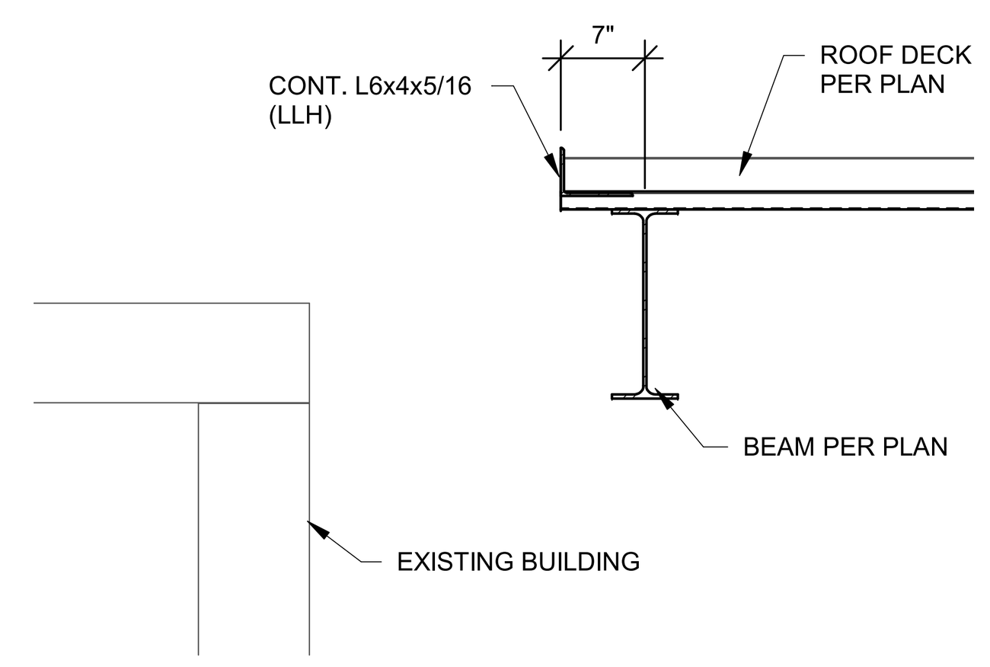
2 SECTION
3/4" = 1'-0"
(ALTERNATE #4)



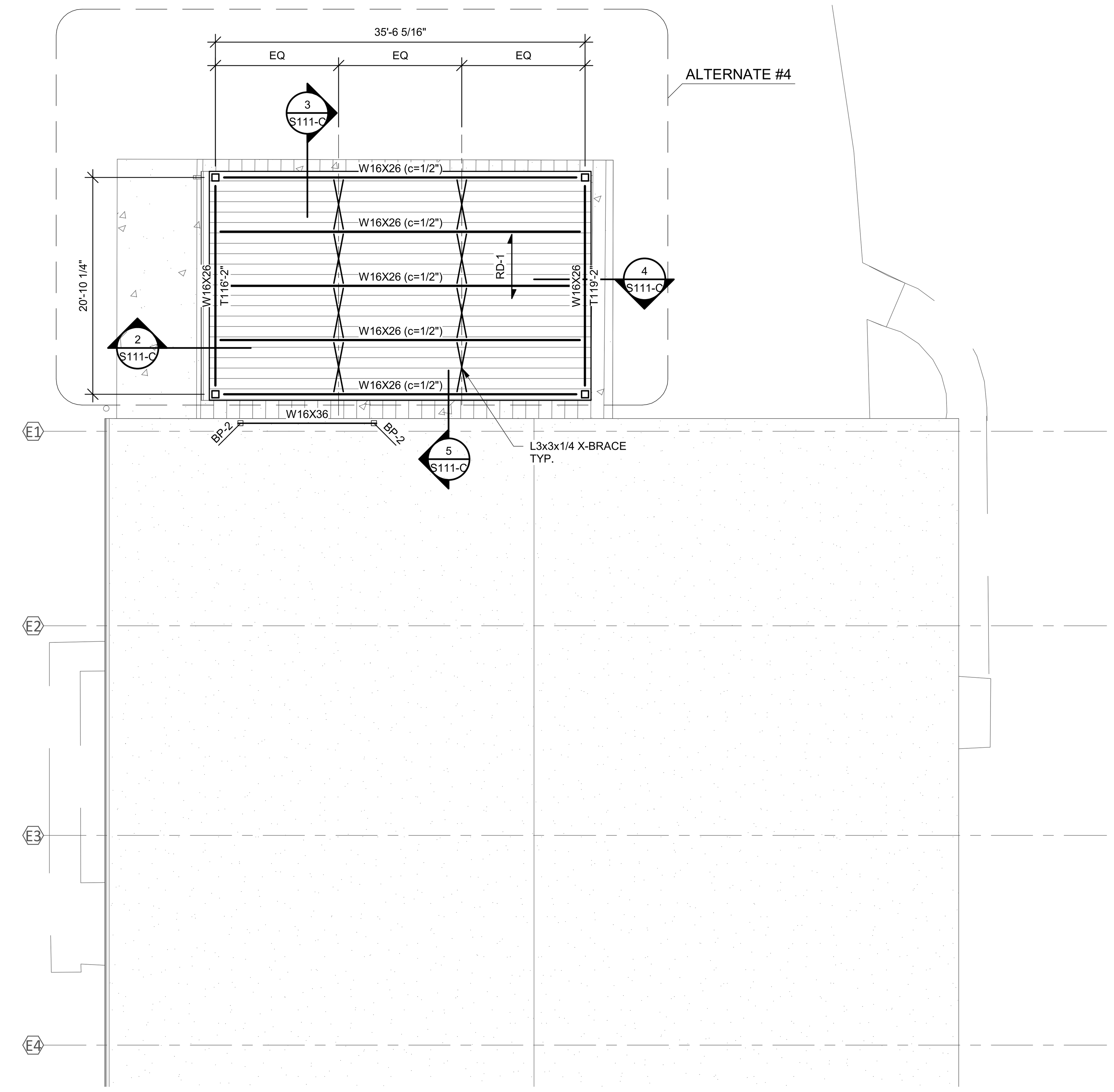
3 SECTION
3/4" = 1'-0"
(ALTERNATE #4)



4 SECTION
3/4" = 1'-0"
(ALTERNATE #4)



5 SECTION
3/4" = 1'-0"
(ALTERNATE #4)



1 ROOF FRAMING PLAN
1/8" = 1'-0"

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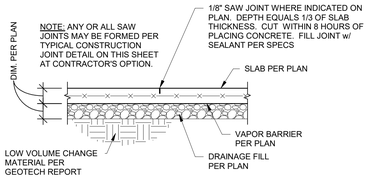
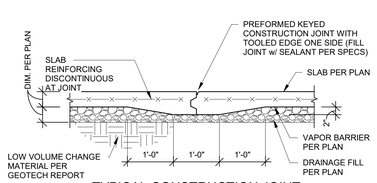
ROOF FRAMING PLAN

S111-C



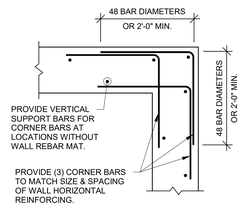
TYPICAL SAW JOINT
NOTED "SJ" ON PLAN

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

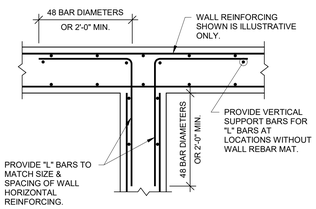


TYPICAL CONSTRUCTION JOINT
NOTED "CJ" ON PLAN

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

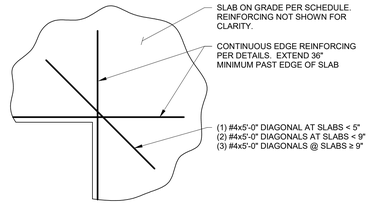


TYPICAL CORNER BARS AT
CONCRETE WALLS & FOUNDATIONS



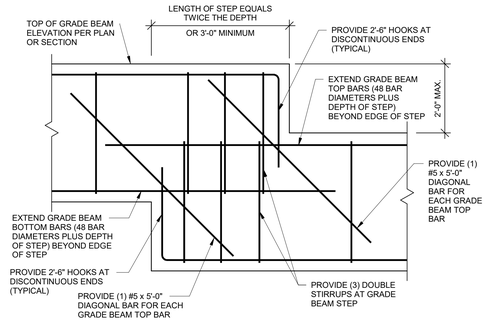
TYPICAL T-INTERSECTION REINFORCING
AT CONCRETE WALLS & FOUNDATIONS

3 TYPICAL INTERSECTING CONCRETE WALL REINFORCING
3/4" = 1'-0"

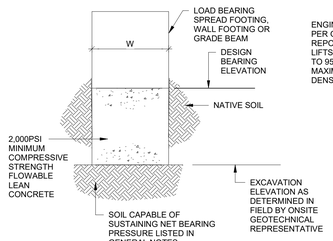


TYPICAL SLAB ON GRADE RE-ENTRANT CORNER BARS

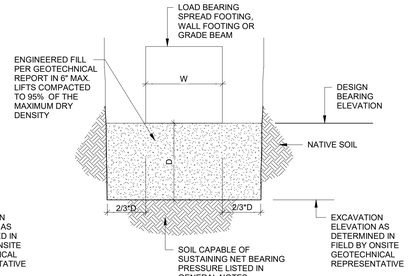
4 DETAIL
1/2" = 1'-0"



5 TYPICAL GRADE BEAM STEP
3/4" = 1'-0"

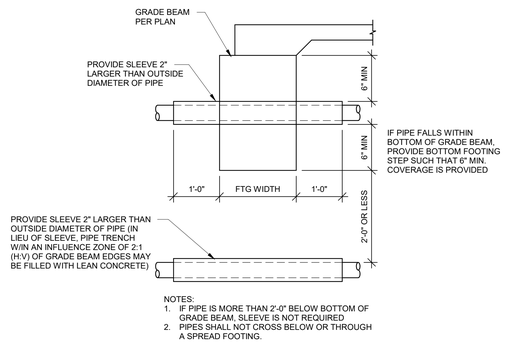


LEAN CONCRETE BACKFILL



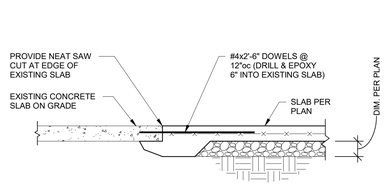
ENGINEERED FILL BACKFILL

6 OVEREXCAVATION DETAIL
3/4" = 1'-0"



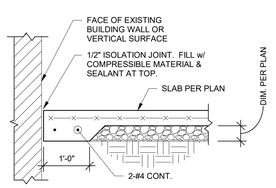
NOTES:
1. IF PIPE IS MORE THAN 2'-0" BELOW BOTTOM OF GRADE BEAM, SLEEVE IS NOT REQUIRED
2. PIPES SHALL NOT CROSS BELOW OR THROUGH A SPREAD FOOTING.

TYPICAL GRADE BEAM SLEEVE



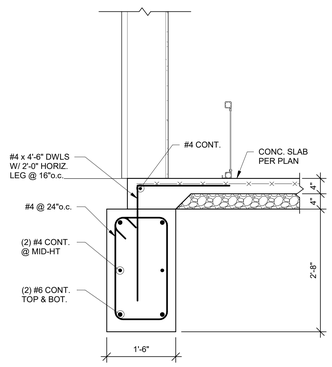
TYPICAL AT NEW-TO-EXISTING SLAB ON GRADE

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

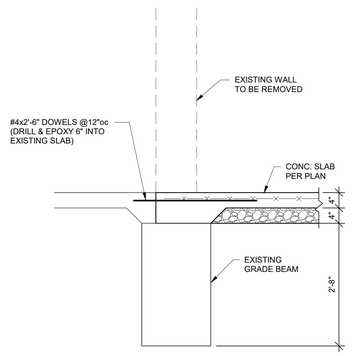


TYPICAL SLAB EDGE DETAIL AGAINST EXISTING
BUILDING WALL OR VERTICAL SURFACE

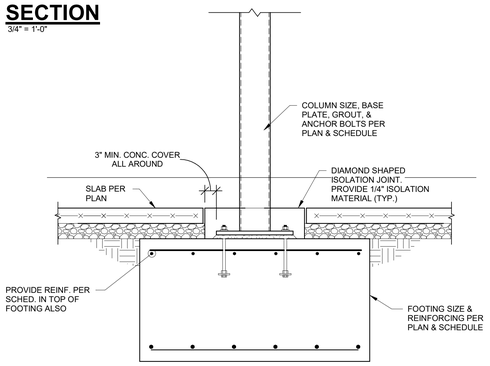
9 SECTION
3/4" = 1'-0"



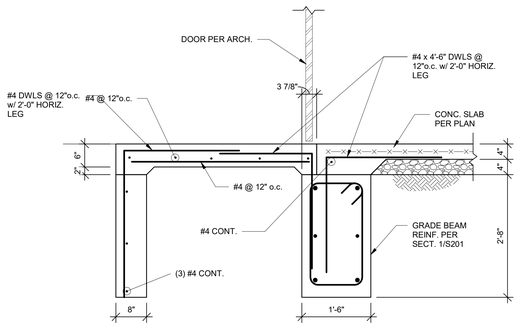
10 SECTION
3/4" = 1'-0"



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



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



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

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LSR7 Robotics, GiC & Phys Education

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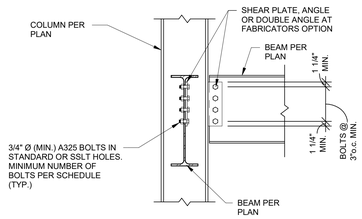
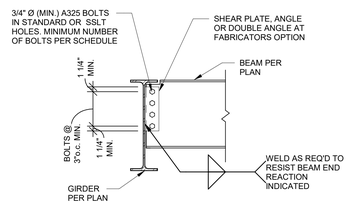
FOUNDATION SECTIONS

S200-C



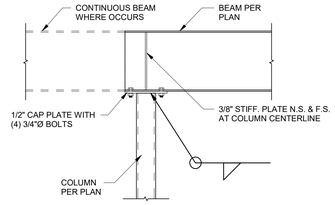
TYPICAL BEAM TO COLUMN SHEAR CONNECTION

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



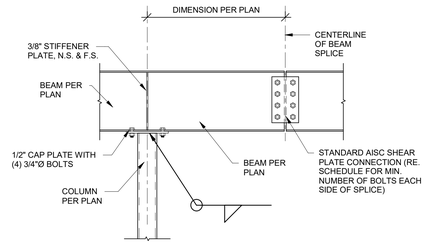
TYPICAL BEAM TO GIRDER CONNECTION

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



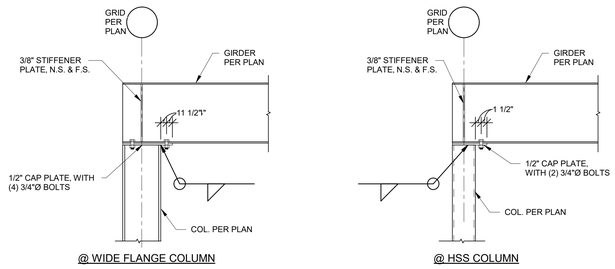
TYPICAL BEAM TO COLUMN CONNECTION

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



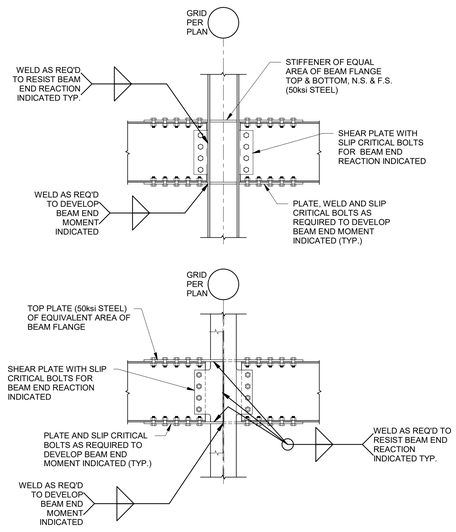
TYPICAL BEAM SPLICE

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



TYPICAL ROOF BEAM TO COLUMN CONNECTION AT EXTERIOR WALL

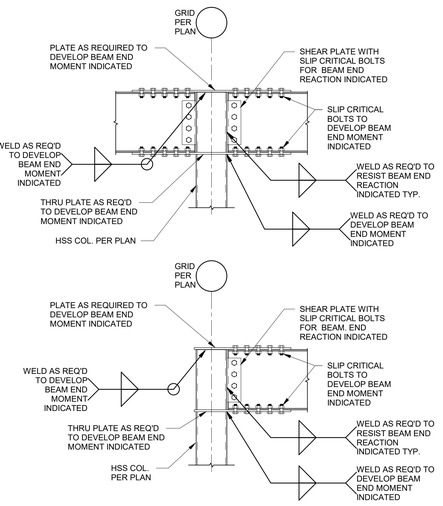
5 SECTION
3/4" = 1'-0"



TYP. BEAM TO WIDE FLANGE COL. MOMENT CONNECTIONS

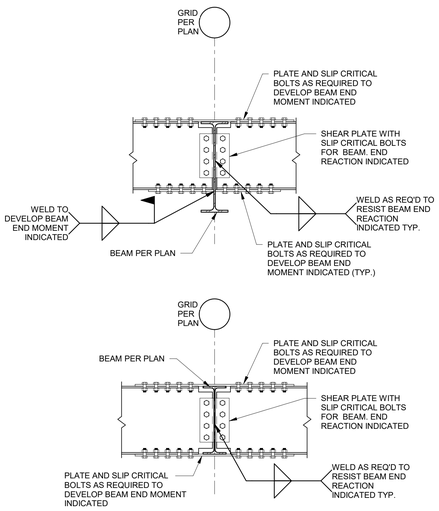
NOTE: FLANGE PLATES MAY BE FULL PENETRATION WELDED TO COLUMN AT CONTRACTORS OPTION

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



TYPICAL BEAM TO HSS COLUMN MOMENT CONNECTIONS

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



TYP. BEAM TO BEAM MOMENT CONNECTIONS

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

BEAM SHEAR CONNECTION SCHEDULE

BEAM SIZE	MINIMUM ROWS OF BOLTS	END REACTION (kips)(U.N.O.)
W8,C8	2	16
W10,C10	2	16
W12,C12	2	16
W14	3	24
W16, C15	3	24
W18	4	32
W21	5	40
W24	5	40
W27	6	48
W30	7	56
W33	8	64
W36	8	64

STEEL CONNECTION NOTES:

1. REFER TO GENERAL NOTES ON SHEET S001.
2. CONNECTIONS SHOWN IN THESE DETAILS ARE MINIMUM REQUIREMENTS.
3. FABRICATOR SHALL BE RESPONSIBLE FOR THE ENGINEERING, DESIGNING, AND DETAILING OF EACH CONNECTION FOR LOADS SHOWN ON THE DRAWINGS IN ACCORDANCE WITH THE SPECIFICATIONS AND THE STRUCTURAL GENERAL NOTES.
4. SUGGESTED CONNECTION DETAILS ARE SHOWN. FINAL CONNECTION CONFIGURATION AND DESIGN SHALL BE COMPLETED BY THE CONNECTION ENGINEER. CONNECTION DESIGN SHALL INCLUDE COLUMN OR BEAM CONTINUITY PLATES, WEB STIFFENERS, AND/OR DOUBLER PLATES AS REQUIRED FOR THE FORCES INDICATED.
5. FABRICATOR MAY OPT TO USE OTHER AISC APPROVED CONNECTIONS IN LIEU OF THESE SHOWN HEREIN TO MEET END REACTION REQUIREMENTS (i.e. DOUBLE ANGLE CONNECTION).
6. CONNECTION DETAILING SHALL COMPLY WITH THE STANDARD DETAILS SHOWN IN THE LATEST EDITION OF THE AISC MANUAL OF STEEL CONSTRUCTION.
7. ALL BOLTS SHALL BE 3/4" Ø ASTM A325 MINIMUM.
8. ALL BOLTS SHALL BE SPACED AT 3"o.c. MINIMUM.
9. ALL BOLTS SHALL HAVE HEAVY HEX NUTS.
10. ALL BOLTS SHALL BE FULLY PRE-TENSIONED.
11. BOLT SPACING AND EDGE DISTANCES SHALL BE ADJUSTED PER AISC MANUAL FOR BOLTS LARGER THAN 3/4" DIAMETER.
12. CLIP ANGLES MAY BE SHOP WELDED TO BEAM WEB PER AISC.
13. FOR BEAMS WITH AXIAL LOADS PER DRAWINGS, BOLTS AND CONNECTIONS SHALL BE SLIP-CRITICAL PER AISC GUIDELINES. INCREASE NUMBER OF BOLTS AND/OR PROVIDE EXTENDED SHEAR PLATE CONNECTION W/ AN ADDITIONAL COLUMN OF BOLTS TO ACCOMODATE COMBINED FORCES.
14. PROVIDE ASTM A490 BOLTS IF REQUIRED TO MEET END REACTION LOAD REQUIREMENTS.
15. REFER TO ELEVATIONS ON SHEET S___ FOR BRACE FORCES. REFER TO PLANS FOR ADDITIONAL BEAM AXIAL FORCES. BRACE AND BEAM FORCES INDICATED ARE UNFACTORED (ASD) LOADS AND SHALL BE CONSIDERED CONCURRENT W/ BEAM SHEAR DESIGN FORCES LISTED IN THE BEAM SHEAR CONNECTION SCHEDULE.
16. COORDINATE BRACED FRAME CONNECTION W/ ARCHITECTURAL WALLS AS REQUIRED TO AVOID CONFLICT OR EXPOSURE OUTSIDE OF WALL OR FINISH.
17. ALL END REACTIONS INDICATED ARE UNFACTORED (ASD) LOADS.

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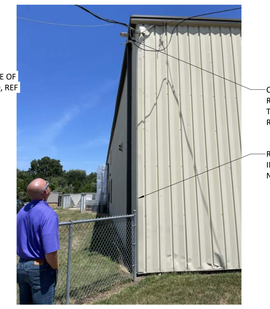
FRAMING SECTIONS

S300-C

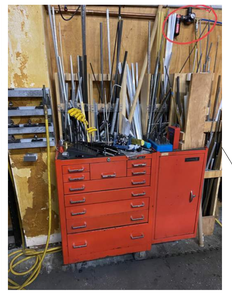
ALL LIGHTING ON SOUTH SIDE OF BUILDING D TO BE REMOVED, REF ELECTRICAL

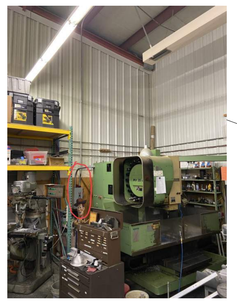


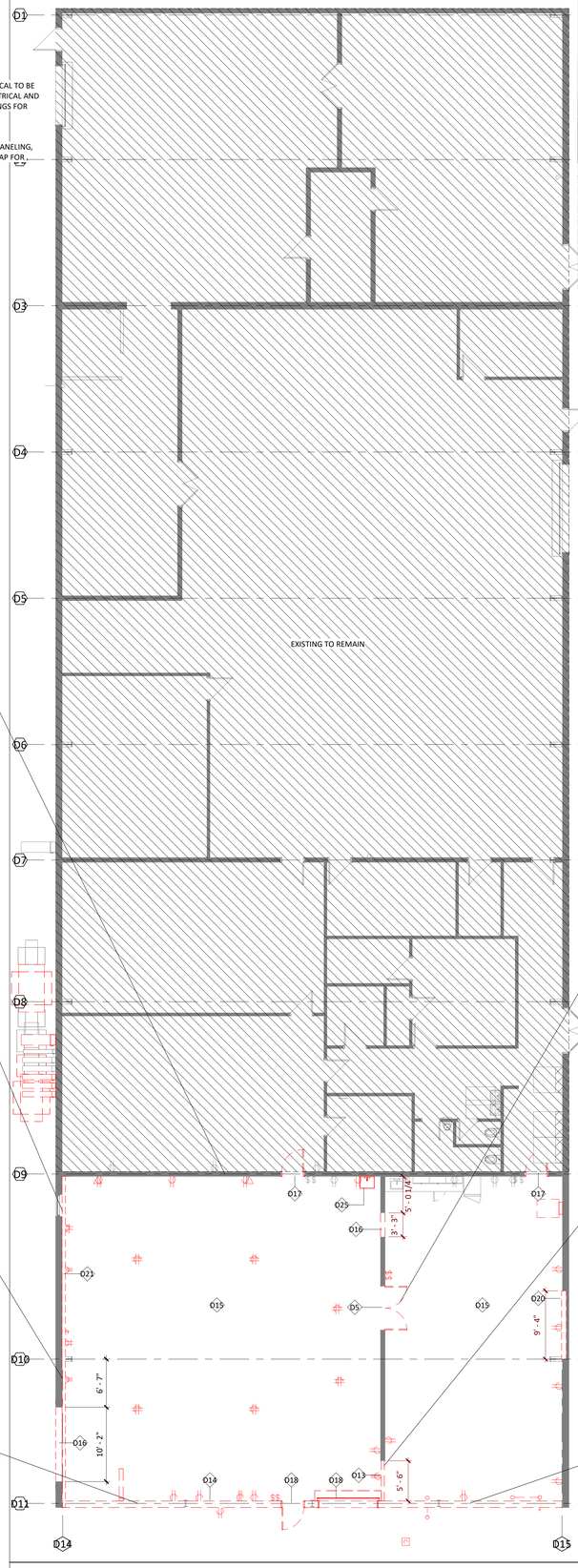
CAMERA AND ELECTRICAL TO BE RE-ROUTED, REF ELECTRICAL AND TECHNOLOGY DRAWINGS FOR RELOCATION

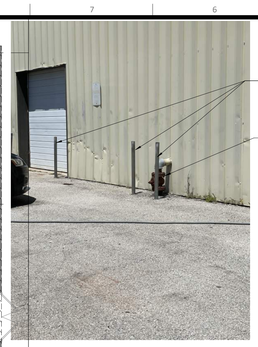
REMOVE ALL SOUTH PANELING, INCLUDING CORNER CAP FOR NEW ADDITION

ALL PENETRATIONS THROUGH WALL NEED TO BE FIRE RATED







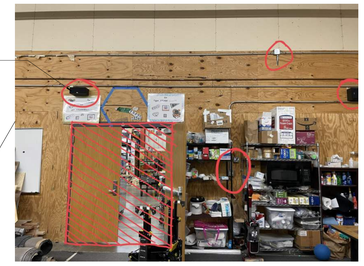


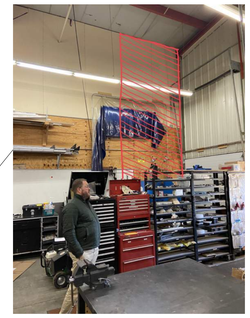
ALL BOLLARDS ON SOUTH SIDE OF BUILDING D SHOULD BE REMOVED PRIOR TO CONSTRUCTION

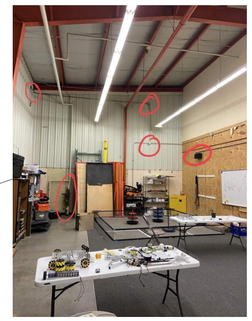
GAS LINE TO BE RE-ROUTED, REF PLUMBING DRAWINGS

ASK MEP??

CONTRACTOR TO VERIFY OWNER PROVIDED SPEAKERS HAVE BEEN REMOVED PRIOR TO CONSTRUCTION







Demo Notes	
No.	**Keynote Text**
D5	REMOVE EXISTING DOOR & FRAME. INFILL WALL AS REQ'D.
D13	REMOVE PORTION OF EXISTING WALL, PATCH FLOOR AS REQ'D FOR FLOORING FINISH.
D14	CUT A CLEAN JOINT AND REMOVE EXTERIOR WALL UP TO ROOF. RE: STRUCTURAL
D15	REMOVE, STORE & PROTECT ALL EQUIPMENT, SHELVING, ACCESSORIES FOR RELOCATION.
D16	CUT OPENING IN EXISTING WALL. RE: ENLARGED FLOOR PLAN FOR NEW DOOR LOCATION.
D17	REMOVE EXISTING DOOR & FRAME. PREP FOR NEW FIRE RATED DOOR & FRAME.
D18	REMOVE EXISTING DOOR & FRAME.
D20	SAW CUT AND REMOVE PORTION OF EXISTING CMU WALL UNDER Z-GIRTS. INFILL WITH STUDS AND GYP, RE: STRUCT.
D21	REMOVE EXISTING PLYWOOD FURRING WALL TO EXPOSE CMU WALL.
D25	REMOVE EXISTING WASH BASIN, PLUMBING TO REMAIN. RE: PLUMBING DRAWINGS FOR NEW

General Notes (Demolition):

1. THIS DEMOLITION PLAN OUTLINES THE SCOPE OF THE WORK INVOLVED FOR THE DEMOLITION PHASE OF THIS PROJECT. CONTRACTOR SHALL ALSO REFER TO THE DRAWINGS FOR THE CONSTRUCTION OF THE NEW ADDITION FOR ADDITIONAL INFORMATION.
2. EXISTING CONDITIONS INFORMATION WAS OBTAINED FROM DOCUMENTS AND INFORMATION SUPPLIED TO THE ARCHITECT, THE CONTRACTOR IS TO VERIFY EXACT LOCATIONS, SIZES, ELEVATIONS, ETC. AND REPORT ANY DISCREPANCIES TO THE ARCHITECT
3. IF SUSPECTED HAZARDOUS MATERIALS ARE ENCOUNTERED STOP WORK IMMEDIATELY AND NOTIFY OWNER. DO NOT RESUME WORK UNTIL DIRECTED BY THE OWNER.
4. ALL FURNITURE WILL BE REMOVED OR RELOCATED BY THE OWNER AS NECESSARY PRIOR TO THE DEMOLITION WORK OF THIS PROJECT. CONTRACTOR SHALL COORDINATE WITH OWNER AS REQUIRED.
5. REMOVE EXISTING CONSTRUCTION TO THE EXTENT INDICATED ON THE DRAWINGS. SHOULD ANY DAMAGE OCCUR TO ANY EXISTING CONSTRUCTION TO REMAIN ON SITE, THE CONTRACTOR SHALL REPAIR THE DAMAGE.
6. CONTRACTOR IS TO VERIFY THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO DEMOLITION ACTIVITIES.
7. CONTRACTOR SHALL PROTECT ALL EXISTING CONSTRUCTION NOTED TO REMAIN FROM DAMAGE AND SOILING DURING DEMOLITION. REMOVE DEBRIS REGULARLY AS NECESSARY TO ELIMINATED INTERFERENCE WITH ROADS, STREET, WALKS, AND ALL OTHER ADJACENT FACILITIES.
8. CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION OF TEMPORARY DUST AND NOISE PROOF PARTITION BETWEEN CONSTRUCTION AREA AND ADJACENT PROPERTIES AS NECESSARY
9. NOTIFY THE BUILDING OWNER OF ANY MATERIALS, FIXTURES, ETC. THAT ARE TO BE REMOVED THAT ARE DEEMED SALVAGEABLE TURN OVER ANY REQUESTED ITEMS TO THE BUILDING OWNER IN GOOD CONDITION.
10. ALL DEMOLITION MATERIALS NOT CLAIMED BY THE OWNER, OR TO BE REUSES ARE TO BE DISPOSED OF OFF SITE AS PER LOCAL REGULATIONS AT THE CONTRACTOR'S EXPENSE.
11. THE CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE ON A DAILY BASIS.
12. MAINTAIN THE INTEGRITY OF ALL EXISTING RATED WALLS, FIRE SEAL ANY PENETRATIONS WITH U.L. APPROVED ASSEMBLY.
13. WHEN UNANTICIPATED MECHANICAL, ELECTRICAL, OR STRUCTURAL ELEMENTS THAT CONFLICT WITH THE INTENDED FUNCTION OR DESIGN ARE ENCOUNTERED, DETERMINE THE NATURE AND EXTENT OF THE CONFLICT AND NOTIFY THE ARCHITECT IMMEDIATELY FOR RESOLUTION.
14. PROTECT EXISTING SITE IMPROVEMENTS AND LANDSCAPING TO REMAIN. INCLUDING BUT NOT LIMITED TO EXISTING TREES AND OTHER VEGETATION INDICATED TO REMAIN IN PLACE AGAINST UNNECESSARY CUTTING, BREAKING, OR SKINNING OF ROOTS, SKINNING OR BRUISING OF BARK, SMOTHERING OF TREES BY STOCKPILING CONSTRUCTION MATERIAL OR EXCAVATED MATERIAL WITHIN DRIP LINES.
15. CONTRACTOR SHALL PROVIDE TRAFFIC HANDLING MEASURES AS NECESSARY TO PROTECT THE GENERAL PUBLIC AT ALL TIMES, AND AS REQUIRED BY THE CITY.
16. DO NOT INTERRUPT EXISTING UTILITIES, EXCEPT WHEN AUTHORIZED IN WRITING BY AUTHORITIES HAVING JURISDICTION. PROVIDE TEMPORARY SERVICES DURING INTERRUPTIONS TO EXISTING UTILITIES, AS ACCEPTABLE TO GOVERNING AUTHORITIES.
17. WHEN UTILITY SERVICES ARE REQUIRED TO BE REMOVED, RELOCATED, OR ABANDONED, PROVIDE BYPASS CONNECTIONS TO MAINTAIN CONTINUITY OF SERVICE BEFORE PROCEEDING WITH DEMOLITION.
18. CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT ALL UTILITY COMPANIES INCLUDING BUT NOT LIMITED TO THE FOLLOWING: ELECTRIC, GAS, WATER, TELEPHONE, STORM SEWER, AND SANITARY SEWER FOR FIELD LOCATION OF ALL UNDERGROUND AND OVERHEAD UTILITY LINES. PRIOR TO COMMENCEMENT WITH ANY DEMOLITION WORK, CONTRACTOR SHALL IDENTIFY ALL ELECTRICAL CIRCUITS SERVICING THE AREA INVOLVED WITH THIS DEMOLITION. THOSE CIRCUITS SHALL THEN BE LOCKED OUT AND TAGGED OUT IF THEY DO NOT SERVICE ANY OF THE REMAINING BUILDING. THOSE CIRCUITS WHICH ARE IDENTIFIED TO SERVICE BOTH THE AREA TO BE DEMOLISHED AND THE REMAINING BUILDING SHALL BE SPLIT SO AS TO KILL ALL ELECTRICAL POWER TO THE AREA TO BE DEMOLISHED WHILE MAINTAINING POWER TO THE REMAINDER OF THE BUILDING.
19. CONTRACTOR TO PATCH/REPAIR ALL HOLES IN WALLS, FLOORS, &/ OR CEILINGS, AS REQUIRED. PAINT TO MATCH ADJACENT WALL/CEILING.
20. CONTRACTOR TO RE-LOCATE UTILITIES & EQUIPMENT AS REQUIRED TO ACCOMMODATE NEW HVAC, ELECTRICAL & PLUMBING REQUIREMENTS FOR NEW RENOVATION WORK.
21. REFER TO DEMOLITION PLUMBING PLANS FOR EXTENT OF CONCRETE SLAB TO BE REMOVED AND REPLACED FOR UNDER FLOOR PIPING INSTALLATION.
22. FILL ALL EXISTING FLOOR AND WALL PENETRATIONS RESULTING FROM PIPING AND CONDUIT REMOVAL WITH NON-SHRINK GROUT, READY TO RECEIVE FINAL FLOOR OR WALL FINISH.
23. EXISTING WALLS (OR PORTIONS OF WALLS) TO BE REMOVED SHALL BE CUT FLUSH WHERE INTERSECTING WITH WALLS TO REMAIN. REMAINING WALLS TO BE PATCHED AND FINISHED SMOOTH.
24. NEW OPENING TO BE CUT IN EXISTING WALLS SHALL BE SAW-CUT AT LOCATIONS INDICATED TO THE HEIGHT AND WIDTH INDICATED. NEW LINTELS SHALL BE INSTALLED TO SUPPORT EXISTING WALL CONSTRUCTION ABOVE AS INDICATED ON THE DRAWINGS, OR IF NOT INDICATED, AS REQUIRED FOR NEW WALL CONSTRUCTION PER STRUCTURAL DRAWINGS.
25. WHERE EXISTING INTERIOR WALLS ARE REPLACED OR REMOVED, REMOVE MEP SYSTEMS BACK TO PANEL OR MECHANICAL ROOM OR FARTHEST POSSIBLE POINT WITHOUT DISTURBING EXISTING CONSTRUCTION, REMOVE EXISTING MECHANICAL EQUIPMENT, RELOCATE POWER PER MEP DRAWINGS
26. REFER TO MEP DRAWINGS FOR DEMOLITION OF MEP SYSTEMS TO IDENTIFY WORK REQUIRED BY THIS CONTRACTOR WHICH MAY AFFECT DEMOLITION AND/OR REPAIRS OF ARCHITECTURAL ELEMENTS. COORDINATE WITH RELATED SUBS THE EXTENT OF ALL DEMOLITION WORK.
27. PATCH FLOORS, WALLS CEILINGS WHICH REMAIN AT LOCATIONS WHERE PIPES, CONDUITS, ETC. ARE REMOVED AS REQUIRED TO MATCH EXISTING CONDITIONS OR FOR NEW FINISHES.
28. PROTECT ALL EXISTING HORIZONTAL BLINDS TO REMAIN UNLESS NOTED OTHERWISE.
29. WHERE EXISTING FINISH FLOOR IS REMOVED, PREPARE SURFACE TO RECEIVE NEW FLOORING
30. REMOVE ANY EXISTING VINYL MATERIALS IN ACCORDANCE WITH EPA STANDARDS, NOTIFY ARCHITECT & OWNER OF ANY ADDITIONAL ASBESTOS CONTAINING MATERIALS DISCOVERED BEFORE PROCEEDING WITH WORK, PROTECT INTERIOR CONSTRUCTION TO REMAIN DURING DEMOLITION AND CONSTRUCTION.

Demo - LSHS - Building D A8

1/8" = 1'-0"

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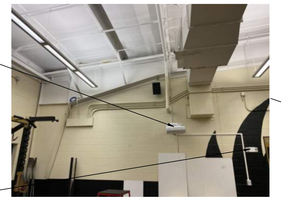
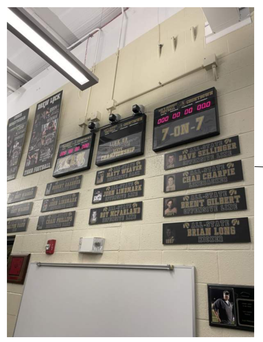
Demolition Plan - Building D

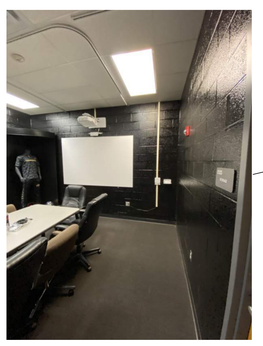
AD101-C



PROJECTOR TO BE REMOVED AND RELOCATED IN NEW SPACE, REF A504.

EMERGENCY LIGHT TO BE RELOCATED





RE: STRUCUTRAL FOR OPENING DETAILS. PREP FOR NEW 12' X 12' NEW COILING DOOR

12' - 0"

2' - 0"

3' - 3"

5' - 4 1/2"

EXISTING TO REMAIN

RE: STRUCTURAL FOR OPENING DETAILS. PREP FOR NEW 20' X 8' NEW COILING DOOR

19' - 6"

EXISTING TO REMAIN

E1 E2 E3 E4 E5 E6 E7 E8 E9 E10 E11

A1 A2 A3

Demo Plan - LSHS - Building E A5

1/8" = 1'-0"

Demo Notes

No.	Keynote Text
D1	CUT CLEAN JOINT AND REMOVE CMU WALL, PATCH FLOOR AS REQ'D FOR FLOORING FINISH.
D2	REMOVE EXISTING ATHLETIC FLOORING & WALL BASE INCLUDING ALL ADHESIVES. PREP FOR NEW FLOORING.
D3	REMOVE AND PROTECT ALL EXITING PROJECTORS FOR REINSTALL.
D4	CUT OPENING IN EXISTING STRUCTURAL WALL. RE: STRUCTURAL FOR NEW BRACING DETAIL.
D5	REMOVE EXISTING DOOR & FRAME. INFILL WALL AS REQ'D.
D6	REMOVE EXISTING LOCKERS & CONCRETE BASE. PATCH FLOOR AS REQ'D.
D7	REMOVE AND RELOCATE EXISTING DRINKING FOUNTAINS. RE: PLUMBING.
D8	REMOVE ALL EXISTING EQUIPMENT. CONFIRM WITH SCHOOL WHAT NEEDS TO BE STORED AND PROTECTED.
D9	REMOVE EXISTING WALL, PATCH FLOOR AS REQ'D FOR FLOORING FINISH.
D10	REMOVE EXISTING PLUMBING FIXTURES AND ALL ASSOCIATED PLUMBING.
D12	STORE, PROTECT AND REUSE EXISTING FURNITURE.
D15	REMOVE, STORE & PROTECT ALL EQUIPMENT, SHELVING, ACCESSORIES FOR RELOCATION.
D22	REMOVE EXISTING CARPET FLOORING & ANY ASSOCIATED ADHESIVE.
D26	SALVAGE EXISTING STAINLESS STEEL SHEET COUNTERTOP FOR RELOCATION IN SAME SPACE

General Notes (Demolition):

1. THIS DEMOLITION PLAN OUTLINES THE SCOPE OF THE WORK INVOLVED FOR THE DEMOLITION PHASE OF THIS PROJECT. CONTRACTOR SHALL ALSO REFER TO THE DRAWINGS FOR THE CONSTRUCTION OF THE NEW ADDITION FOR ADDITIONAL INFORMATION.
2. EXISTING CONDITIONS INFORMATION WAS OBTAINED FROM DOCUMENTS AND INFORMATION SUPPLIED TO THE ARCHITECT, THE CONTRACTOR IS TO VERIFY EXACT LOCATIONS, SIZES, ELEVATIONS, ETC. AND REPORT ANY DISCREPANCIES TO THE ARCHITECT
3. IF SUSPECTED HAZARDOUS MATERIALS ARE ENCOUNTERED STOP WORK IMMEDIATELY AND NOTIFY OWNER. DO NOT RESUME WORK UNTIL DIRECTED BY THE OWNER.
4. ALL FURNITURE WILL BE REMOVED OR RELOCATED BY THE OWNER AS NECESSARY PRIOR TO THE DEMOLITION WORK OF THIS PROJECT. CONTRACTOR SHALL COORDINATE WITH OWNER AS REQUIRED.
5. REMOVE EXISTING CONSTRUCTION TO THE EXTENT INDICATED ON THE DRAWINGS. SHOULD ANY DAMAGE OCCUR TO ANY EXISTING CONSTRUCTION TO REMAIN ON SITE, THE CONTRACTOR SHALL REPAIR THE DAMAGE.
6. CONTRACTOR IS TO VERIFY THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO DEMOLITION ACTIVITIES.
7. CONTRACTOR SHALL PROTECT ALL EXISTING CONSTRUCTION NOTED TO REMAIN FROM DAMAGE AND SOILING DURING DEMOLITION. REMOVE DEBRIS REGULARLY AS NECESSARY TO ELIMINATED INTERFERENCE WITH ROADS, STREET, WALKS, AND ALL OTHER ADJACENT FACILITIES.
8. CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION OF TEMPORARY DUST AND NOISE PROOF PARTITION BETWEEN CONSTRUCTION AREA AND ADJACENT PROPERTIES AS NECESSARY
9. NOTIFY THE BUILDING OWNER OF ANY MATERIALS, FIXTURES, ETC. THAT ARE TO BE REMOVED THAT ARE DEEMED SALVAGEABLE TURN OVER ANY REQUESTED ITEMS TO THE BUILDING OWNER IN GOOD CONDITION.
10. ALL DEMOLITION MATERIALS NOT CLAIMED BY THE OWNER, OR TO BE REUSES ARE TO BE DISPOSED OF OFF SITE AS PER LOCAL REGULATIONS AT THE CONTRACTOR'S EXPENSE.
11. THE CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE ON A DAILY BASIS.
12. MAINTAIN THE INTEGRITY OF ALL EXISTING RATED WALLS, FIRE SEAL ANY PENETRATIONS WITH U.L. APPROVED ASSEMBLY.
13. WHEN UNANTICIPATED MECHANICAL, ELECTRICAL, OR STRUCTURAL ELEMENTS THAT CONFLICT WITH THE INTENDED FUNCTION OR DESIGN ARE ENCOUNTERED, DETERMINE THE NATURE AND EXTENT OF THE CONFLICT AND NOTIFY THE ARCHITECT IMMEDIATELY FOR RESOLUTION.
14. PROTECT EXISTING SITE IMPROVEMENTS AND LANDSCAPING TO REMAIN. INCLUDING BUT NOT LIMITED TO EXISTING TREES AND OTHER VEGETATION INDICATED TO REMAIN IN PLACE AGAINST UNNECESSARY CUTTING, BREAKING, OR SKINNING OF ROOTS, SKINNING OR BRUISING OF BARK, SMOTHERING OF TREES BY STOCKPILING CONSTRUCTION MATERIAL OR EXCAVATED MATERIAL WITHIN DRIP LINES.
15. CONTRACTOR SHALL PROVIDE TRAFFIC HANDLING MEASURES AS NECESSARY TO PROTECT THE GENERAL PUBLIC AT ALL TIMES, AND AS REQUIRED BY THE CITY.
16. DO NOT INTERRUPT EXISTING UTILITIES, EXCEPT WHEN AUTHORIZED IN WRITING BY AUTHORITIES HAVING JURISDICTION. PROVIDE TEMPORARY SERVICES DURING INTERRUPTIONS TO EXISTING UTILITIES, AS ACCEPTABLE TO GOVERNING AUTHORITIES.
17. WHEN UTILITY SERVICES ARE REQUIRED TO BE REMOVED, RELOCATED, OR ABANDONED, PROVIDE BYPASS CONNECTIONS TO MAINTAIN CONTINUITY OF SERVICE BEFORE PROCEEDING WITH DEMOLITION.
18. CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT ALL UTILITY COMPANIES INCLUDING BUT NOT LIMITED TO THE FOLLOWING: ELECTRIC, GAS, WATER, TELEPHONE, STORM SEWER, AND SANITARY SEWER FOR FIELD LOCATION OF ALL UNDERGROUND AND OVERHEAD UTILITY LINES. PRIOR TO COMMENCEMENT WITH ANY DEMOLITION WORK, CONTRACTOR SHALL IDENTIFY ALL ELECTRICAL CIRCUITS SERVICING THE AREA INVOLVED WITH THIS DEMOLITION. THOSE CIRCUITS SHALL THEN BE LOCKED OUT AND TAGGED OUT IF THEY DO NOT SERVICE ANY OF THE REMAINING BUILDING. THOSE CIRCUITS WHICH ARE IDENTIFIED TO SERVICE BOTH THE AREA TO BE DEMOLISHED AND THE REMAINING BUILDING SHALL BE SPLIT SO AS TO KILL ALL ELECTRICAL POWER TO THE AREA TO BE DEMOLISHED WHILE MAINTAINING POWER TO THE REMAINDER OF THE BUILDING.
19. CONTRACTOR TO PATCH/REPAIR ALL HOLES IN WALLS, FLOORS, &/ OR CEILINGS, AS REQUIRED. PAINT TO MATCH ADJACENT WALL/CEILING.
20. CONTRACTOR TO RE-LOCATE UTILITIES & EQUIPMENT AS REQUIRED TO ACCOMMODATE NEW HVAC, ELECTRICAL & PLUMBING REQUIREMENTS FOR NEW RENOVATION WORK.
21. REFER TO DEMOLITION PLUMBING PLANS FOR EXTENT OF CONCRETE SLAB TO BE REMOVED AND REPLACED FOR UNDER FLOOR PIPING INSTALLATION.
22. FILL ALL EXISTING FLOOR AND WALL PENETRATIONS RESULTING FROM PIPING AND CONDUIT REMOVAL WITH NON-SHRINK GROUT, READY TO RECEIVE FINAL FLOOR OR WALL FINISH.
23. EXISTING WALLS (OR PORTIONS OF WALLS) TO BE REMOVED SHALL BE CUT FLUSH WHERE INTERSECTING WITH WALLS TO REMAIN. REMAINING WALLS TO BE PATCHED AND FINISHED SMOOTH.
24. NEW OPENING TO BE CUT IN EXISTING WALLS SHALL BE SAW-CUT AT LOCATIONS INDICATED TO THE HEIGHT AND WIDTH INDICATED. NEW LINTELS SHALL BE INSTALLED TO SUPPORT EXISTING WALL CONSTRUCTION ABOVE AS INDICATED ON THE DRAWINGS, OR IF NOT INDICATED, AS REQUIRED FOR NEW WALL CONSTRUCTION PER STRUCTURAL DRAWINGS.
25. WHERE EXISTING INTERIOR WALLS ARE REPLACED OR REMOVED, REMOVE MEP SYSTEMS BACK TO PANEL OR MECHANICAL ROOM OR FARTHEST POSSIBLE POINT WITHOUT DISTURBING EXISTING CONSTRUCTION, REMOVE EXISTING MECHANICAL EQUIPMENT, RELOCATE POWER PER MEP DRAWINGS
26. REFER TO MEP DRAWINGS FOR DEMOLITION OF MEP SYSTEMS TO IDENTIFY WORK REQUIRED BY THIS CONTRACTOR WHICH MAY AFFECT DEMOLITION AND/OR REPAIRS OF ARCHITECTURAL ELEMENTS. COORDINATE WITH RELATED SUBS THE EXTENT OF ALL DEMOLITION WORK.
27. PATCH FLOORS, WALLS CEILINGS WHICH REMAIN AT LOCATIONS WHERE PIPES, CONDUITS, ETC. ARE REMOVED AS REQUIRED TO MATCH EXISTING CONDITIONS OR FOR NEW FINISHES.
28. PROTECT ALL EXISTING HORIZONTAL BLINDS TO REMAIN UNLESS NOTED OTHERWISE.
29. WHERE EXISTING FINISH FLOOR IS REMOVED, PREPARE SURFACE TO RECEIVE NEW FLOORING
30. REMOVE ANY EXISTING VINYL MATERIALS IN ACCORDANCE WITH EPA STANDARDS, NOTIFY ARCHITECT & OWNER OF ANY ADDITIONAL ASBESTOS CONTAINING MATERIALS DISCOVERED BEFORE PROCEEDING WITH WORK, PROTECT INTERIOR CONSTRUCTION TO REMAIN DURING DEMOLITION AND CONSTRUCTION.

multistudio
the evolution of gould evans

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Revisions

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2	Addendum 02	09/23/2022

RELEASED FOR CONSTRUCTION
As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
11/23/2022

STATE OF MISSOURI
ADAM LEE STERNS
NUMBER A-7650
REGISTERED ARCHITECT

Demolition Plan - Building E

AD102-C

Abbreviations

A	
@	AT
A/C	AIR CONDITION(ING) (ED)
A/C UNIT	AIR CONDITIONING UNIT
AB	ANCHOR BOLT
ABBVR	
ACC	ACCESSIBLE
ACCU	AIR COOLED CONDENSING UNIT
ACI	AMERICAN CONCRETE INSTITUTE
ACOUS INSUL	ACOUSTICAL INSULATION
ACOUS PNL	ACOUSTICAL PANEL
ACST	ACOUSTIC
ACT	ACOUSTICAL CEILING TILE
ADA	AMERICANS WITH DISABILITIES ACT
ADDL	ADDITIONAL
ADDM	ADDENDUM
ADH	ADHESIVE
ADJ	ADJUSTABLE, ADJACENT
AE	ARCHITECT/ ENGINEER
AFF	ABOVE FINISHED FLOOR
AGGR	AGGREGATE
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ALT	ALTERNATE
ALUM	ALUMINUM
ANOD	ANNODIZED
APC	ACOUSTICAL PANEL CEILING
ARCH	ARCHITECT(URAL)
ASL	ABOVE STRUCTURAL LEVEL
AWT	ACOUSTICAL WALL TREATMENT
B	
B BD	BASE BOARD
B/B	BACK-TO-BACK
BAT	BATTEN
BD	BOARD
BDRM	BEDROOM
BITUM	BITUMINOUS
BLDG	BUILDING
BLKG	BLOCKING
BM	BENCHMARK, BEAM
BOT	BOTTOM
BRG	BEARING
BRZ	BRONZE
BSMT	BASEMENT
BTWN	BETWEEN
BUR	BUILT-UP ROOFING
BW	BOTH WAYS
C	
CAB	CABINET
CB	CARRIAGE BOLT, CATCH BASIN
CCTV	CLOSED-CIRCUIT TELEVISION
CD	CONSTRUCTION DOCUMENTS, CONTRACT DOCUMENTS
CEM	CEMENT
CERT	CERTIFY, CERTIFICATE, CERTIFICATION
CF/CI	CONRACTOR FURNISHED/ CONTRACTOR INSTALLED
CF/OI	CONTRACTOR FURNISHED/ OWNER INSTALLED
CG	CORNER GUARD
CH	COAT HOOK
CHBD	CHALK BOARD
CHEM	CHEMICAL
CI	CAST IRON
CIP	CAST-IN-PLACE
CJ	CONTROL JOINT, CONSTRUCTION JOINT
CL	CENTER LINE
CLG	CEILING
CLO	CLOSET
CLR	CLEAR
CLRM	CLASSROOM
CMU	CONCRETE MASONRY UNIT
CNR	CORNER
CNTR	COUNTER
COL	COLUMN
CONC	CONCRETE
CONF	CONFERENCE
CONN	CONNECT(ION)
CONSTR	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRCT(OR)
COORD	COORDINATE, COORDINATION
CORR	CORRIDOR
CPT	CARPET
CSK	COUNTERSINK
CSWK	CASEWORK
CT	CERAMIC TILE
CTR	CENTER
CTRL	CONTROL
CU	CUBIC
CUH	CABINET UNIT HEATER
CUST	CUSTODIAL
CW	COLD WATER, CASEMENT WINDOW

D	
D	DEEP, DEPTH
DBL	DOUBLE
DEG	DEGREE
DEMO	DEMOLITION
DEPT	DEPARTMENT
DET	DETAIL
DF	DRINKING FOUNTAIN
DH	DOUBLE HUNG
DIA or Ø	DIAMETER
DIFF	DIFFERENCE
DIM	DIMENSION
DIR	DIRECTION
DISP	DISPENSER
DIST	DISTANCE
DIV	DIVIDE, DIVISION
DL	DEAD LOAD
DMPF	DAMPPROOFING
DMPR	DAMPER
DN	DOWN
DO	DITTO
DOC	DOCUMENT
DOZ	DOZEN
DR	DOOR
DS	DOWNSPOUT
DSGN	DESIGN
DT	DRAIN TILE
DW	DISH WASHER
DWG	DRAWING
E	
E	EAST
EA	EACH
EC	ELECTRICAL CONTRACTOR
EF	EACH FACE
EIFS	EXTERIOR INSULATION AND FINISH SYSTEM
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRIC(AL)
ELEM	ELEMENTARY
ELEV	ELEVATOR
ENAM	ENAMEL
ENCL	ENCLOSURE
ENGR	ENGINEER
ENVIR	ENVIRONMENT
EOS	EDGE OF SLAB
EP	ELECTRIC PANEL
EPDM	ETHYLENE PROPYLENE DIENE MONOMER
EPS	EXPANDED POLYSTYRENE BOARD
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ETC	ET CETERA
ETR	EXISTING TO REMAIN
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EXC	EXCAVATE
EXH	EXHAUST
EXIST	EXISTING
EXP	EXPAND, EXPANSION
EXT	EXTERIOR
F	
F/F	FACE-TO-FACE
FA	FIRE ALARM
FAAP	FIRA ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FIN	FINISH
FIXT	FIXTURE
FLOUR	FLOURESCENT
FLR	FLOOR
FNDN	FOUNDATION
FO	FINISHED OPENING
FRJS	FIRE RESISTIVE JOINT SYSTEM
FRP	FIBERGLASS REINFORCED PLASTIC
FRTW	FIRE RETARDANT TREATED WOOD
FT	FOOT, FEET
FTG	FOOTING
FURN	FURNITURE
FW	FIRE WALL
FWC	FABRIC WALL COVERING
G	
GA	GAGE
GAL	GALLON
GALV	GALVANIZED
GALV STL	GALVANIZED STEEL
GB	GRAB BAR
GC	GENERAL CONTRACTOR
GEN	GENERAL, GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFRC	GLASS FIBER RINFORCED CONCRETE
GFRG	GLASS FIBER REINFORCED GYPSUM
GL	GLASS, GROUND LEVEL
GL BLK	GLASS BLOCK
GLU LAM	GLUED LAMINATED BEAM
GLZ	GLAZING
GWT	GLAZED WALL TILE
GYM	GYMNASIUM
GYP	GYPSUM
GYP BD	GYPSUM BOARD
GYP PLAS	GYPSUM PLASTER

H	
HB	HOSE BIBB
HC	HANDICAP, HOLLOW CORE
HCP	HANDICAPPED
HD	HEAVY DUTY
HDW	HARDWARE
HDWD	HARDWOOD
HM	HOLLOW METAL
HO	HOLD OPEN
HORIZ	HORIZON
HR	HOUR
HSS	HOLLOW STRUCTURAL SECTION
HT	HEIGHT
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
HW	HOT WATER
HYD	HYDRANT
I	
ID	INSIDE DIAMETER
IN	INCHES
INCAND	INCANDESCENT
INCL	INCLUDE
INFO	INFORMATION
INSUL	INSULATION
INT	INTERIOR
INTERM	INTERMEDIATE
J	
JAN	JANITOR
JAN CLO	JANITOR CLOSET
JNT	JOINT
JR	JUNIOR
JST	JOIST
K	
KD	KNOCK DOWN
KIP	1000 POUNDS
KIT	KITCHEN
KO	KNOCK OUT
KPL	KICK PLATE
L	
L	LITER, ANGLE
LAB	LABORATORY
LAM	LAMINATE(D)
LAV	LAVATORY
LBL	LABEL
LBS	POUND
LD	LOAD
LF	LINEAR FEET
LH	LATENT HEAT, LEFT HAND
LIB	LIBRARY
LIN	LINEAR
LKR	LOCKER
LKR RM	LOCKER ROOM
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LT	LINOLEUM TILE, LIGHT
LTG	LIGHTING
M	
MACH	MATCHLINE
MACH RM	MACHINE ROOM
MAHOG	MAHOGANY
MAINT	MAINTENANCE
MATL	MATERIAL
MAX	MAXIMUM
MB or MKR BD	MARKERBOARD
MC	MECHANICAL CONTRACTOR
MDF	MEDIUM DENSITY FIBERBAORD
MDO	MEDIUM DENSITY OVERLAY
ME	MATCH EXISTING
MECH	MECHANICAL
MECH RM	MECHANICAL ROOM
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MM	MILIMETER
MO	MASONRY OPENING
MOD BIT	MODIFIED BITUMEN
MTD	MOUNTED
MTL	METAL, MATERIAL
MULL	MULLION
N	
N	NORTH
NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
NO or #	NUMBER
NOM	NOMINAL
NORM	NORMAL
NTS	NOT TO SCALE
O	
O/A	OVERALL
O/O	OUT TO OUT
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF/ OI	OWNER FURNISHED/ OWNER INSTALLED
OF/CI	OWNER FURNISEHD/ CONTRACTOR INSTALLED
OFF	OFFICE
OH	OVERHANG
OH DR	OVERHEAD DOOR
OPH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE
OPT	OPTIONAL, OPTIMUM

P	
PA	PUBLIC ADDRESS
PAR	PARALLEL
PART	PARTIAL
PAT	PATTERN
PC	PLUMBING CONTRACTOR
PERF	PERFORATED
PERIM	PERIMETER
PL	PLATE, PROPERTY LINE
PL GL	PLATE GLASS
PLAM	PLASTIC LAMINATE
PLAS	PLASTER, PLASTIC
PLBG	PLUMBING
PLYWD	PLYWOOD
PNL	PANEL
POL	POLISHED
POLY	POLYETHYLENE (PLASTIC)
PORC	PORCELAIN
PORT	PORTABLE
POS	POSITIVE
PR	PAIR
PRCST	PRECAST
PREFAB	PREFABRICATED
PREFIN	PREFINISHED
PRELIM	PRELIMINARY
PRKG	PARKING
PROJ	PROJECT
PROP	PROPERTY
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POST TENSIONED
PTD	PAPER TOWER DISPENSER
PTN	PARTITION
PVC	POLYVINYL CHLORIDE (PLASTIC)
PWR	POWER
Q	
QT	QUARRY TILE
QTR	QUARTER
QTY	QUANTITY
R	
R	RISER, RADIUS, HEAT RESISTANCE
RA	RETURN AIR
RAD	RADIATOR
RB	RUBBER BASE, RESILIENT BASE
RC	ROOFING CONTRACTOR
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REC	RECESSED
REC RM	RECREATION ROOM
REF	REFRIGERATOR
REG	REGISTER, REGULATION
REINF	REINFORCE
REQD	REQUIRED
RESIL	RESILIENT
REV	REVISION
RFG	ROOFING
RFI	REQUEST FOR INFORMATION
RFP	REQUEST FOR PROPOSAL
RH	RIGHT HAND, ROOF HATCH
RM	ROOM
RO	ROUGH OPENING
ROW	RIGHT OF WAY
RTF	RUBBER TILE FLOOR
RTU	ROOF TOP UNIT
RV	ROOF VENT
RW	RESCUE WINDOW
RWB	RUBBER WALL BASE
S	
S	SOUTH
SAB	SOUND ATTENUATION BATTS
SAN	SANITARY
SC	SOLID CORE, SHADING COEFFICIENT
SCHED	SCHEDULE
SD	SOAP DISPENSER
SECT	SECTION
SF	SQUARE FOOT, SAFETY FACTOR
SGT	STRUCTURAL GLAZED TILE
SHR	SHOWER
SHT	SHEET
SIM	SIMILAR
SND	SANITARY NAPKIN DISPENSER
SOG	SLAB ON GRADE
SPC	SUSPENDED SPLASTER CEILING
SPEC	SPECIFICATION(S)
SPKR	SPEAKER
SQ	SQUARE
SST	STAINLESS STEEL
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STOR	STORAGE
STRM	STOREROOM
STRUCT	STRUCTURAL
SUB	UBSTITUTE
SUB FL	SUBFLOOR
SUSP	SUSPENDED
SUSP CLG	SUSPENDED CEILING
SV	SAFETY VALVE, SHEET VINYL
SWBD	SWITCHBOARD
SY	SQUARE YARD
SYM	SYMBOL
SYS	SYSTEM

T	
T	TREAD
T & B	TOP AND BOTTOM
T & G	TONGUE AND GROOVE
TB	THROUGH BOLT, TOWEL BAR
TECH	TECHNICAL, TECHNOLOGY
TEL	TELEPHONE
TEMP	TEMPORARY, TEMPERATURE
TERR	TERRAZZO
THERM	THERMAL
THK	THICKNESS
THRU	THROUGH
TK BD	TACK BOARD
TMPD	TEMPERED
TMPD GL	TEMPERED GLASS
TOC	TOP OF CONCRETE
TOF	TOP OF FOOTING, TOP OF FLOOR, TOP OF FRAME
TOM	TOP OF MASONRY
TOPO	TOPOGRAPHY
TOS	TOP OF STEEL
TPD	TOILET PAPER DISPENSER
TV	TELEVISION
TYP	TYPICAL
U	
U	HEAT TRANSFER COEFFICIENT
UC	UNDERCUT
UGND	UNDERGROUND
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORIES
UNFIN	UNFINISH(ED)
UNO	UNLESS NOTED OTHERWISE
UTIL	UTILITY
UV	UNIT VENTILATOR
V	
V	VOLT
VAR	VARIES, VARIATION
VB	VINYL BASE
VCT	VINYL COMPOSITE TILE
VENT	VENTILATION
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
VOC	VOLATILE ORGANIC COMPOUND
VOL	VOLUME
VR	VAPOR RETARDER
VUH	VERTICAL UNIT HEATER
VWC	VERTICAL WALL COVERING
W	
W	WATT, WEST
W/	WITH
W/O	WITHOUT
W/W	WALL TO WALL
WB	WOOD BASE
WC	WALL COVERING, WATER CLOSET
WD	WOOD
WDW	WINDOW
WF	WIDE FLANGE
WH	WATER HEATER, WALL HUNG
WI	WROUGHT IRON
WM	WIRE MESH
WP	WATER PROOFING, WEATHERPROOF
WR	WATER REPELENT, WEATHER RESISTANT
WSCT	WAINSCOT
WT	WEIGHT
WWF	WELDED WIRE FABRIC
WWM	WELDED WIRE MESH
X	
X	BY
Y	
Y	YD

Graphic Symbols

01 GENERAL

NEW WALL

EXISTING WALL TO BE REMOVED

EXISTING WALL

BUILDING SECTION

WALL SECTION

DETAIL SECTION

DETAIL REFERENCE

EXTERIOR ELEVATION TAG

INTERIOR ELEVATION TAG

BREAK LINE

ROOM TAG

INTERIOR PARTITION TYPE SYMBOL

WINDOW TYPE SYMBOL

BENCHMARK/SPOT ELEV. SYMBOL

COLUMN LINE/GRID INDICATOR

REVISION INDICATOR

DOOR TAG

FLOOR LEVEL SYMBOL

CEILING HEIGHT SYMBOL

NORTH ARROWS

DIMENSION

ALIGN TWO WALLS OR OBJECTS

Materials Graphics

02 SITE CONSTRUCTION

EARTH (existing)

EARTH (backfill)

DRAINAGE FILL

03 CONCRETE

CAST-IN-PLACE CONCRETE

PRECAST CONCRETE

04 MASONRY

BRICK

CONCRETE MASONRY UNITS

GLASS BLOCK

STONE

CAST STONE

GROUT

05 METALS

ALUMINUM

STEEL

06 WOODS AND PLASTICS

CONTINUOUS WOOD

INTERMITTENT WOOD

FINISH WOOD

HARDBOARD

MEDIUM DENSITY FIBER BOARD (MDF)

PARTICLE BOARD

PLYWOOD

SOLID SURFACE MATERIAL

07 THERMAL & MOISTURE PROTECTION

BATT INSULATION

LOOSE FILL INSULATION

RIGID INSULATION

08 GLAZING

GLASS

09 FINISHES

LATH AND PLASTER

GYPSUM BOARD

General Architectural Drawing Notes:

1. VERIFY DIMENSIONS AND EXISTING CONDITIONS BEFORE COMMENCING WORK. REPORT DISCREPANCIES TO THE ARCHITECT PRIOR TO PROCEEDING WITH AFFECTED WORK.
2. BUILDING FLOOR PLAN DIMENSIONS ARE REFERENCED FROM STRUCTURAL GRID, FACE OF CONCRETE, FACE OF MASONRY, OR FACE OF FINISHED SURFACE, UNLESS NOTED OTHERWISE.
3. REFLECTED CEILING PLAN DIMENSIONS ARE REFERENCED FROM FINISHED SURFACES UNLESS NOTED OTHERWISE. CEILING HEIGHTS ARE DIMENSIONED FROM FLOOR TO FINISHED CEILING HEIGHT.
4. CASEWORK, PLUMBING FIXTURES, TOILET PARTITIONS, AND OTHER FIXTURES AND EQUIPMENT ARE DIMENSIONED FROM FINISHED SURFACES UNLESS NOTED OTHERWISE.
5. DIMENSIONS NOTED AS "FIELD VERIFY" SHALL BE CHECKED AT THE SITE BY THE CONTRACTOR AND REVIEWED WITH THE ARCHITECT BEFORE INCORPORATING INTO THE WORK.
6. DIMENSIONS NOTED AS "CLEAR" REQUIRE SPECIFIC COORDINATION BETWEEN DISCIPLINES AND/OR MANUFACTURERS.
7. DRAWINGS NOTED AT "N.T.S." ARE NOT TO SCALE.
8. DO NOT SCALE DRAWING. WRITTEN DIMENSIONS TAKE PRECEDENCE. IF CLARIFICATION IS REQUIRED IN ORDER TO DETERMINE THE INTENT OF THE CONTRACT DOCUMENTS, CONTACT THE ARCHITECT.
9. NOTES OR DIMENSIONS LABELED "TYPICAL" SHALL APPLY TO SITUATIONS THAT ARE THE SAME OR SIMILAR.

General Materials & Equipment Notes:

1. PROVIDE GALVANIC PROTECTION BETWEEN DISSIMILAR METALS.
2. INSTALL PIPING AND CONDUIT TIGHT TO WALLS, COLUMNS AND ROOF DECK.
3. SEAL ALL PIPE OR CONDUIT PENETRATIONS WITH APPROPRIATE SEALANT. PROVIDE FIRE SEALANT AT RATED PARTITIONS.
4. PLYWOOD AND WOOD BLOCKING SHALL BE FIRE RESISTANT.
5. DO NOT CUT OR DRILL ANY STRUCTURAL MEMBER, OTHER THAN DESCRIBED ON THE STRUCTURAL DRAWINGS, WITHOUT WRITTEN APPROVAL FROM THE STRUCTURAL ENGINEER.

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LSR7 Robotics, GiC & Phys Education

LSN: 901 NE Douglas St., Lee's Summit MO 64086
LSW: 2600 SW Ward Rd, Lee's Summit MO 64082
LSHS: 400 SE Blue Pkwy, Lee's Summit MO 64063

Project Number: 0121-0100

owner:
Lee's Summit R-7 School
301 NE Tudor Road
Lee's Summit, MO 64086

architect:
Multistudio
4200 Pennsylvania
Kansas City, MO 64111
816.931.6655
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civil engineer:
Kaw Valley Engineering
14700 West 114th Terrace
Lenexa, KS 66215
913.485.0318
kveng.com

structural engineer:
Bob D. Campbell &
4338 Belleview
Kansas City, MO 64111
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www.bdc-engrs.com

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www.hendersonengineers.com

Issue Date: September 9, 2022

Revisions

NUMBER	DESCRIPTION	DATE

RELEASED FOR CONSTRUCTION
As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
11/23/2022

STATE OF MISSOURI
ADAM LEE STERNS
NUMBER A-7450
REGISTERED ARCHITECT

Graphic Symbols, Abbreviations, and General Information

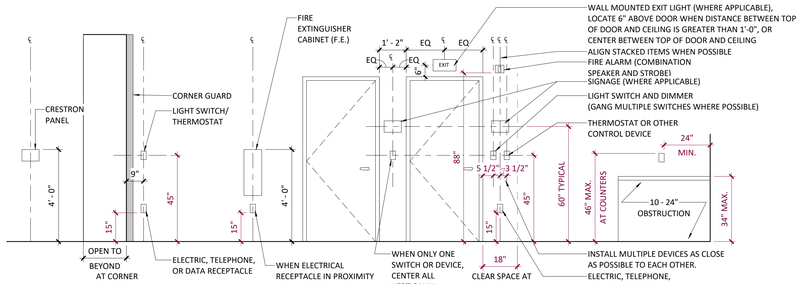
A001-C

Specialty Equipment Schedule LSHS

Mark	Description	Manufacturer	Model Number	Comments
Fire Extinguisher Cabinets				
FE01	FIRE EXTINGUISHER CABINET			SEMI-RECESSED
FE02	FIRE EXTINGUISHER CABINET			WALL MOUNTED

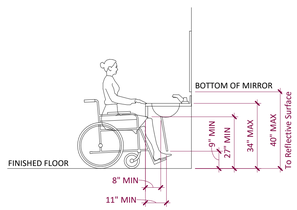
Specialty Equipment Notes:

1. THIS PROJECT WILL COMPLY WITH ALL AMERICAN WITH DISABILITIES REGULATIONS AND ALL LOCAL ACCESSIBILITY CODE REQUIREMENTS.
2. ALL MOUNTING HEIGHTS ARE TO COMPLY WITH ICC/ANSI-A117.1 REFER TO FIXTURE HEIGHT GUIDELINES FOR TYPICAL MOUNTING HEIGHTS. COORDINATE WITH OWNER/ARCHITECT FOR ANY ITEMS IN CONFLICT OR NOT EXPLICITLY INDICATED.
3. PROVIDE WOOD BLOCKING AT ALL EQUIPMENT FIXTURES, AND ACCESSORIES INCLUDED OWNER PROVIDED ITEMS WHETHER OR NOT SUCH BLOCKING IS NOTED OR SPECIFIED.
4. ACCESSORIES SHOWN ARE GENERIC. REFER TO SCHEDULE SPECIFIED MODEL.
5. FIXTURES ACCESSORIES SHOWN ARE GENERIC. REFER TO PLUMBING DRAWINGS FOR SCHEDULED FIXTURES.



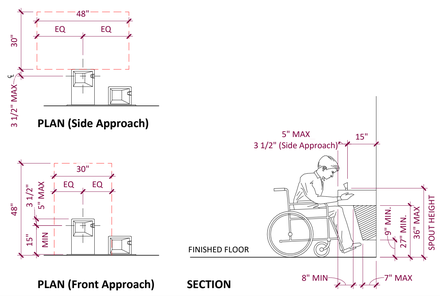
Miscellaneous Heights G1

3/8" = 1'-0"



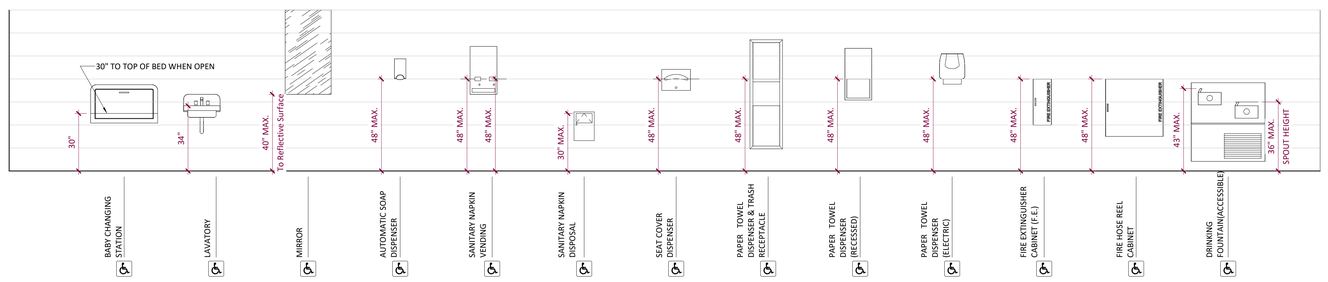
Lavatory Guidelines D7

3/8" = 1'-0"



Drinking Fountain Guidelines D1

3/8" = 1'-0"



Fixture Height Guidelines A1

3/8" = 1'-0"

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STATE OF MISSOURI
ADAE LEE STERNS
NUMBER A-7450
REGISTERED ARCHITECT

Accessibility Standards

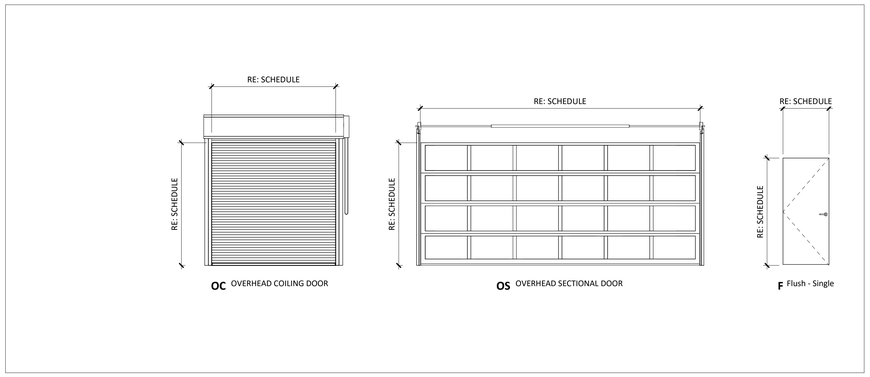
A002-C

Door Schedule - Building D

Mark	Room From:	Room To:	Assembly Fire Rating	Assembly Hardware Set	Assembly Detail Type	Size Finished Opening Width	Size Finished Opening Height	Size Finished Opening Thickness	Door Leaf Type	Door Material	Door Finish	Frame Type	Frame Finish	Comments
D101.1	D101	D104	90min	12	B	3' - 0"	7' - 0"	1 3/4"	I	HM	PT	HM1	PT	
D101.2		D101	NR	16	E6/A305-C	10' - 0"	10' - 0"	1/2"	OC	GALV STEEL	POWDER COAT	N/A	POWDER COAT	083323 OVERHEAD COILING DOOR
D102.1	D102	D100	90min	12	B	3' - 0"	7' - 0"	1 3/4"	I	HM	PT	HM1	PT	
D102.2	D102	D101	NR	11	A	3' - 0"	7' - 0"	1 3/4"	F	HM	PT	HM1	PT	
D103.1	D101		NR	03	J11/A305-C	3' - 0"	7' - 0"	1 3/4"	F	HM	PT	N/A	PT	
D103.2	D102		NR	04	J11/A305-C	3' - 0"	7' - 0"	1 3/4"	F	HM	PT	N/A	PT	

Door Schedule - Building E - New Doors

Mark	Room From:	Room To:	Assembly Fire Rating	Assembly Hardware Set	Assembly Detail Type	Size Finished Opening Width	Size Finished Opening Height	Size Finished Opening Thickness	Door Leaf Type	Door Material	Door Finish	Frame Type	Frame Finish	Comments
E101.3	E101		NR	16	E11/A305-C	12' - 0"	12' - 0"	3"	OC	GALV STEEL	POWDER COAT	N/A	POWDER COAT	083323 OVERHEAD COILING DOOR
E101.4	E101		NR	03	J11/A305-C	3' - 0"	7' - 0"	1 3/4"	F	HM	PT	HM1	PT	PAINT FRAME AND DOOR TO MATCH ADJ. SURFACE
E121.2	E116	E121	NR	12	B	3' - 0"	7' - 0"	1 3/4"	F	WD	PT	HM1	PT	
E122.1	E121	E122	NR	14	A	3' - 0"	7' - 0"	1 3/4"	F	WD	PT	HM1.19	PT	
E122.2	E122	E112	NR	14	A	3' - 0"	7' - 0"	1 3/4"	F	WD	PT	HM1.19	PT	PAINT FRAME AND DOOR ON FREE WEIGHT ROOM SIDE TO MATCH ADJ. SURFACE
E111.3	E111	E102	NR	16	A11-A305-C	18' - 0"	8' - 0"	0"	OS	GALV STEEL	POWDER COAT/ GL	N/A	POWDER COAT	083323 OVERHEAD SECTIONAL DOO



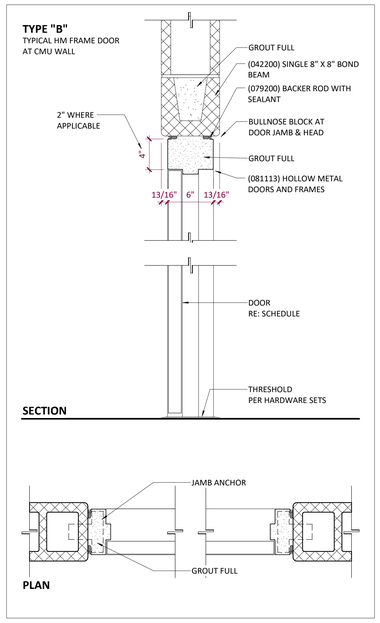
OC OVERHEAD COILING DOOR

OS OVERHEAD SECTIONAL DOOR

F Flush - Single

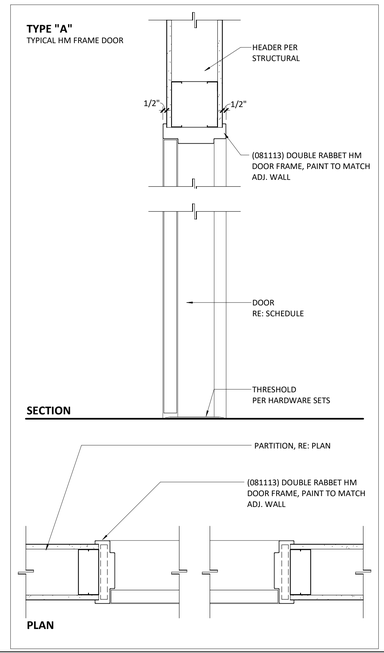
Door Types - LSHS

1/4" = 1'-0"



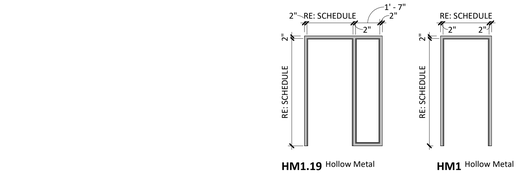
Frame Detail - Type B A12

1 1/2" = 1'-0"



Frame Detail - Type A A8

1 1/2" = 1'-0"

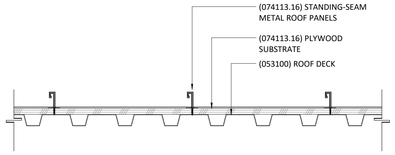


HM1.19 Hollow Metal

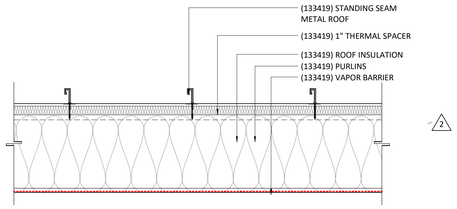
HM1 Hollow Metal

Frame Types

1/4" = 1'-0"



ROOF-E
MECHANICALLY SEAMED STANDING SEAM METAL ROOF

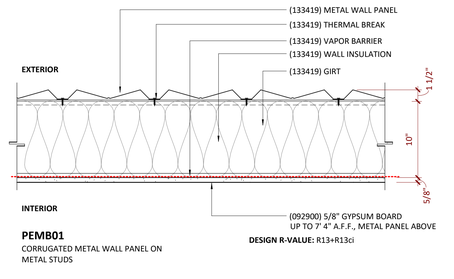


ROOF-D
STANDING SEAM METAL ROOF

DESIGN R-VALUE: R19+R11ci

Roof Types - Buildings D & E E3

1 1/2" = 1'-0"



PEMB01
CORRUGATED METAL WALL PANEL ON METAL STUDS

DESIGN R-VALUE: R13+R13ci

Exterior Wall Types - Building D A3

1 1/2" = 1'-0"

General Notes (Exterior Enclosure):

1. ALL OPENINGS, FLASHING, COUNTER FLASHING, AND EXPANSION JOINTS SHALL BE WATERTIGHT.
2. ALL OPEN JOINTS, PENETRATIONS, AND OTHER OPENINGS IN THE ENVELOPE SHALL BE SEALED, GASKETED, OR WEATHER-STRIPPED TO LIMIT AIR LEAKAGE.
3. PROVIDE MOLD RESISTANT GYPSUM BOARD AT ALL EXTERIOR WALLS.

General Notes (Door Schedule):

Note: SHADED CELLS IN THE SCHEDULE ARE ELEMENTS OF THE DOOR THAT ARE EXISTING TO REMAIN AND FOR INFORMATION ONLY.

1. THRESHOLDS SHALL COMPLY WITH ACCESSIBILITY REGULATIONS.
2. ALL DOOR FRAMES ARE TO BE WELDED.
3. EDGE CLEARANCES IN ACCORDANCE WITH AWI QUALITY STANDARDS.
4. DOORS LOCATED IN CORNERS ARE TO HAVE THE INSIDE FACE OF JAMB LOCATED 4 INCHES FROM THE ADJACENT WALL FINISH (8 INCHES IN MASONRY WALLS) UNLESS NOTED OTHERWISE.
5. PROVIDE BLOCKING AT ALL WALL MOUNTED DOOR STOPS.
6. GLAZING STOPS IN WOOD DOORS: SAME SPECIES AS DOOR FACE, MITERED CORNERS, CONCEALED FASTENERS.
7. FACTORY FINISH WOOD DOORS.
8. ALL EXIT DOORS SHALL BE OPERABLE FROM INSIDE WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT AND SHALL BE LABELED "THIS DOOR TO REMAIN UNLOCKED DURING BUSINESS HOURS." THIS SIGN SHALL BE IN LETTERS NOT LESS THAN ONE INCH HIGH ON A CONTRASTING BACKGROUND. SPECIAL LOCKING DEVICES SHALL BE OF AN APPROVED TYPE, MANUALLY OPERATED. FLUSH BOLTS OR SURFACE BOLTS ARE PROHIBITED.
9. PROVIDE CLOSERS AT ALL FIRE RATED AND EXTERIOR DOORS. COORDINATE WITH HARDWARE SETS.
10. PROVIDE SAFETY GLAZING IN ALL DOORS AND ASSOCIATED ACTIVE/FIXED PANELS.
11. PROVIDE SAFETY GLAZING IN FIXED OR OPERABLE PANELS WHERE WITHIN 24 INCHES OF EITHER EDGE OF AN OPERABLE DOOR.
12. PROVIDE SAFETY GLAZING IN FIXED OR OPERABLE PANELS WHERE WITHIN 18 INCHES FROM AND RAMP/STAIR LANDING OR HAND/GUARDRAIL.
13. ANY DOOR CARRYING A U.L. RATING SHALL BE INSTALLED IN A U.L. RATED FRAME CARRYING THE SAME DESIGNATION.
14. PROVIDE FIRE RATED GLAZING IN PANELS LOCATED WITHIN A RATED WALL.
15. CONTRACTOR TO COORDINATE SILL HEIGHTS WITH ELEVATIONS AND WALL SECTIONS.
16. PAINT METAL DOORS AND FRAMES TO MATCH ADJACENT WALLS UNLESS OTHERWISE NOTED. REFER TO FINISH LEGEND FOR ADDITIONAL INFORMATION.
17. REFER TO "PROJECT MANUAL" FOR HARDWARE SETS AND ADDITIONAL DOOR REQUIREMENTS.

DOOR LEGEND:

AL	ALUMINUM
ANNO	ANODIZED
CA	CARD ACCESS DEVICE
CL	CLOSER
FRP	FIBERGLASS
GL	GLASS
HC	HOLLOW CORE
HM	HOLLOW METAL
IMP	INSULATED METAL PANEL
L	LOUVER
PF	PRE-FINISHED/FACTORY FINISHED
PH	PANIC HARDWARE
PR	PAIR
PTD	PAINTED
SD	SMOKE & DRAFT CONTROL
SS	STAINLESS STEEL
STL	STEEL
T	TEMPERED GLASS
V	VISION
WD	WOOD

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2	Addendum 02	09/23/2022
3	ASI01 - Code Comments	11/09/2022

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Lee's Summit, Missouri
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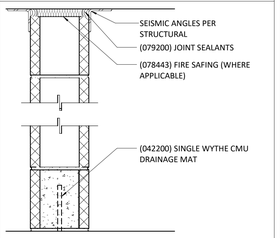
Exterior Enclosure Types, Door Schedule, Door Types

A020-C

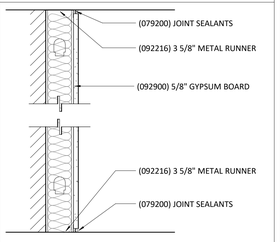
NOTES:
1. REFER TO STRUCTURAL FOR ADDITIONAL INFORMATION



PARTITION SYSTEM:
CONCRETE MASONRY UNIT PARTITION **M**

PARTITION IDENTIFICATION PLAN SYMBOL	M8
BASE PARTITION THICKNESS	7 5/8"
MASONRY MATERIAL	CMU
MASONRY SIZE (NOMINAL)	8X16
BEARING WALL	-
FIRE RATING (HRS)	-
FIRE TEST NUMBER	-
FIRE TEST NUMBER (HEAD OF WALL)	-
(078443) FIRE RESISTIVE JOINTS	-
	-
	-
	-
	-
TO 6" ABOVE CEILING	NO
TO STRUCTURE ABOVE	YES
REMARKS:	

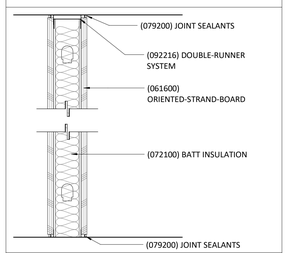
NOTES:



PARTITION SYSTEM:
GYPSUM FURING PARTITION **F**

PARTITION IDENTIFICATION PLAN SYMBOL	F4
BASE PARTITION THICKNESS	4 1/4"
STUD SPACING (O.C.)	16"
STUD SIZE	3 5/8"
GYPSUM WALLBOARD	5/8"
PLYWOOD SHEATHING	-
FIRE RATING (HRS)	-
FIRE TEST NUMBER	-
FIRE TEST NUMBER (HEAD OF WALL)	-
FIRE RESISTIVE JOINTS (079500)	-
ACOUSTIC RATING (STC)	-
ACOUSTICAL TEST NUMBER	-
RESILIENT CHANNELS	-
INSULATION THICKNES	-
(079219) ACOUSTICAL JOINTS	-
TO 6" ABOVE CEILING	NO
GWB STRUCTURE ABOVE	YES
STUDS TO STRUCTURE ABOVE	YES
REMARKS:	

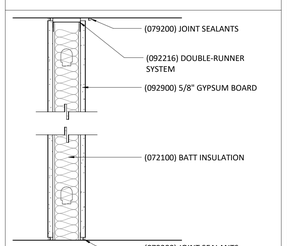
NOTES:



PARTITION SYSTEM:
PLYWOOD PARTITION **W**

PARTITION IDENTIFICATION PLAN SYMBOL	W6
BASE PARTITION THICKNESS	F.V.
STUD SPACING (O.C.)	16"
STUD SIZE	6"
GYPSUM WALLBOARD, EACH SIDE	-
GYPSUM WALLBOARD, ONE SIDE	-
PLYWOOD SUBSTRATE, ONE SIDE	F.V.
PLYWOOD FINISH, ONE SIDE	-
FIRE RATING (HRS)	-
FIRE TEST NUMBER	-
FIRE TEST NUMBER (HEAD OF WALL)	-
(078443) FIRE RESISTIVE JOINTS	-
ACOUSTIC RATING (STC)	-
ACOUSTICAL TEST NUMBER	-
RESILIENT CHANNELS	-
INSULATION THICKNES	-
ACOUSTICAL JOINTS (079219)	-
TO 6" ABOVE CEILING	YES
GWB STRUCTURE ABOVE	NO
STUDS TO STRUCTURE ABOVE	NO
REMARKS:	

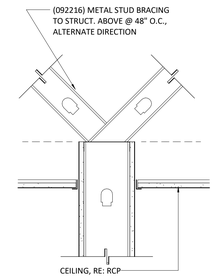
NOTES:
1. PROVIDE MOISTURE RESISTANT GWB IN WET AREAS
2. EXTEND ALL FIRE RATED WALLS STRUCTURE TO STRUCTURE.
3. USE TYPE "X" GWB FOR ALL FIRE RATED PARTITIONS

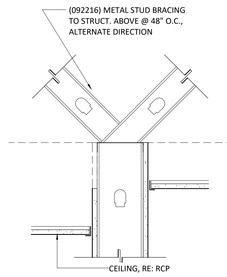


PARTITION SYSTEM:
GYPSUM WALL BOARD PARTITION **G**

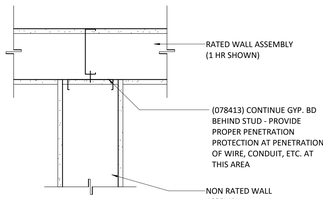
PARTITION IDENTIFICATION PLAN SYMBOL	G6
BASE PARTITION THICKNESS	7 1/4"
STUD SPACING (O.C.)	16"
STUD SIZE	6"
GYPSUM WALLBOARD, EACH SIDE	5/8"
GYPSUM WALLBOARD, ONE SIDE	-
PLYWOOD SUBSTRATE, ONE SIDE	-
PLYWOOD FINISH, ONE SIDE	-
FIRE RATING (HRS)	-
FIRE TEST NUMBER	-
FIRE TEST NUMBER (HEAD OF WALL)	-
(078443) FIRE RESISTIVE JOINTS	-
ACOUSTIC RATING (STC)	-
ACOUSTICAL TEST NUMBER	-
RESILIENT CHANNELS	-
INSULATION THICKNES	-
ACOUSTICAL JOINTS (079219)	-
TO 6" ABOVE CEILING	YES
GWB STRUCTURE ABOVE	NO
STUDS TO STRUCTURE ABOVE	NO
REMARKS:	

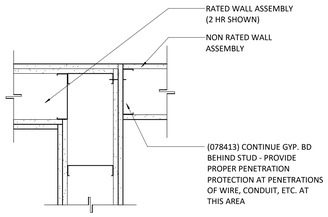
Interior Partition Types A10
1 1/2" = 1'-0"



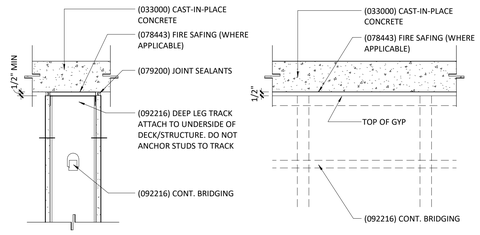


Non-rated Partition 6" Above Ceiling M3
1 1/2" = 1'-0"

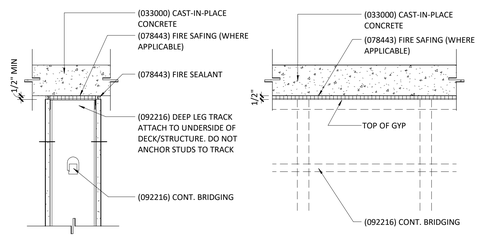




Wall Intersections G3
1 1/2" = 1'-0"



Partition to Underside of Deck - Non-Rated D3
1 1/2" = 1'-0"



Partition to Underside of Deck - Rated A3
1 1/2" = 1'-0"

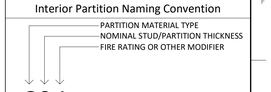
General Notes (Interior Partitions):

1. REFER TO PLANS/CODE PLANS FOR PARTITION TYPE LOCATIONS.
2. PARTITION TYPES DESIGNATED ON PLANS SHALL RUN FROM CORNER TO CORNER UNLESS OTHERWISE NOTED.
3. PARTITIONS SHALL EXTEND TO STRUCTURE ABOVE AND SHALL BE CONSTRUCTED TO ACCOMMODATE DEFLECTION UNLESS NOTED OTHERWISE.
4. FIRE-RESISTANCE-RATED PARTITIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REFERENCED ASSEMBLY DESCRIPTION. REFER TO CODE PLANS FOR MORE INFORMATION.
5. FIRE-RATED WALLS REQUIRED TO HAVE PROTECTED OPENINGS SHALL BE PERMANENTLY IDENTIFIED WITH SIGNS OR STENCILING ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION. SUCH SIGNAGE SHOULD BE ABOVE ACCESSIBLE CEILINGS AND/OR BELOW ACCESSIBLE FLOORS.
6. WHERE DIFFERENT PARTITION TYPES INTERSECT, THE PARTITION TYPE WITH THE GREATER FIRE-RESISTANCE RATING SHALL CONTINUE WITHOUT INTERRUPTION.
7. PENETRATIONS OF FIRE-RESISTANCE-RATED ASSEMBLIES SHALL BE PROVIDED WITH FIRE-RATED PENETRATION PROTECTION IN ACCORDANCE WITH AN APPROVED UNDERWRITERS LABORATORY SYSTEM.
8. FIRE DAMPERS OR FIRE DOORS SHALL BE PROVIDED WHERE AIR DUCTS OR OPENINGS PENETRATE FIRE-RATED PARTITIONS.
9. AT ALL WET AREAS AND LOCATIONS TO RECEIVE TILE. COORDINATE THE SUBSTRATE MATERIAL WITH PROJECT MANUAL. EXTEND THE SUBSTRATE A MINIMUM OF 4'-0" BEYOND THE WET AREA.
10. USE ACOUSTICAL SEALANT AROUND ALL PIPES, DUCTS, CONDUIT, JUNCTION BOXES, ETC. ON BOTH SIDES OF CROSSING / PENETRATING WALLS WITH ACOUSTICAL RATINGS. COLOR MATCH SEALANT TO THE ADJACENT WALL COLOR.
11. PROVIDE IMPACT RESISTANT TRIM OR CASING AT ALL EDGES OF PLASTER AND GYPSUM BOARD SURFACES WHERE IT TERMINATES OR MEETS ANY OTHER MATERIAL, UNLESS NOTED OTHERWISE
12. PROVIDE IMPACT RESISTANT CORNER BEADS AT ALL OUTSIDE CORNERS OF PLASTER AND GYPSUM BOARD SURFACES, UNLESS NOTED OTHERWISE.
13. CONTRACTOR TO PROVIDE WOOD BLOCKING BEHIND ALL TOILET ROOM ACCESSORIES, GRAB BARS, HANDRAILS, WOOD TRIM, AND WALL MOUNTED FIXTURES.
14. INSTALL CONTROL JOINTS IN GYPSUM BOARD CONSTRUCTION AS SHOWN ON THE DRAWINGS AND IN PARTITIONS AND WALL FURRING RUNS EXCEEDING 30 FEET, SPACING CONTROL JOINTS NOT MORE THAN 30 FEET O.C. VERIFY LOCATIONS WITH ARCHITECT. INSTALL CONTROL JOINTS IN FURRED ASSEMBLIES WHERE CONTROL JOINTS OCCUR IN BASE EXTERIOR WALL.

Gypsum Board Schedule

5/8" GYPSUM BOARD	ALL LOCATIONS UNLESS NOTED BELOW OR DETAILED OTHERWISE.
5/8" ABUSE RESISTANT GYPSUM	HIGH TRAFFIC AREAS SUCH AS LOBBIES, PUBLIC CORRIDORS AND WORK ROOMS SUCH AS: JANITOR, HOUSEKEEPING, MECHANICAL, ETC.
5/8" GLASS MAT BACKING BOARD	"WET" WALLS NON-RATED WITH PLUMBING FIXTURES, DRINKING FOUNTAINS, TOILETS, LAVATORIES, URINALS, ETC.
1/2" FIBER CEMENT BACKING PANELS	WALLS EXPOSED DIRECTLY TO RUNNING WATER AND SCHEDULE TO RECIEVE TILE. BATHTUBS, SHOWERS, ETC.

Interior Partition Naming Convention



G6.1

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LSW: 2600 SW Ward Rd, Lee's Summit MO 64082
LSHS: 400 SE Blue Pkwy, Lee's Summit MO 64063

Project Number: 0121-0100

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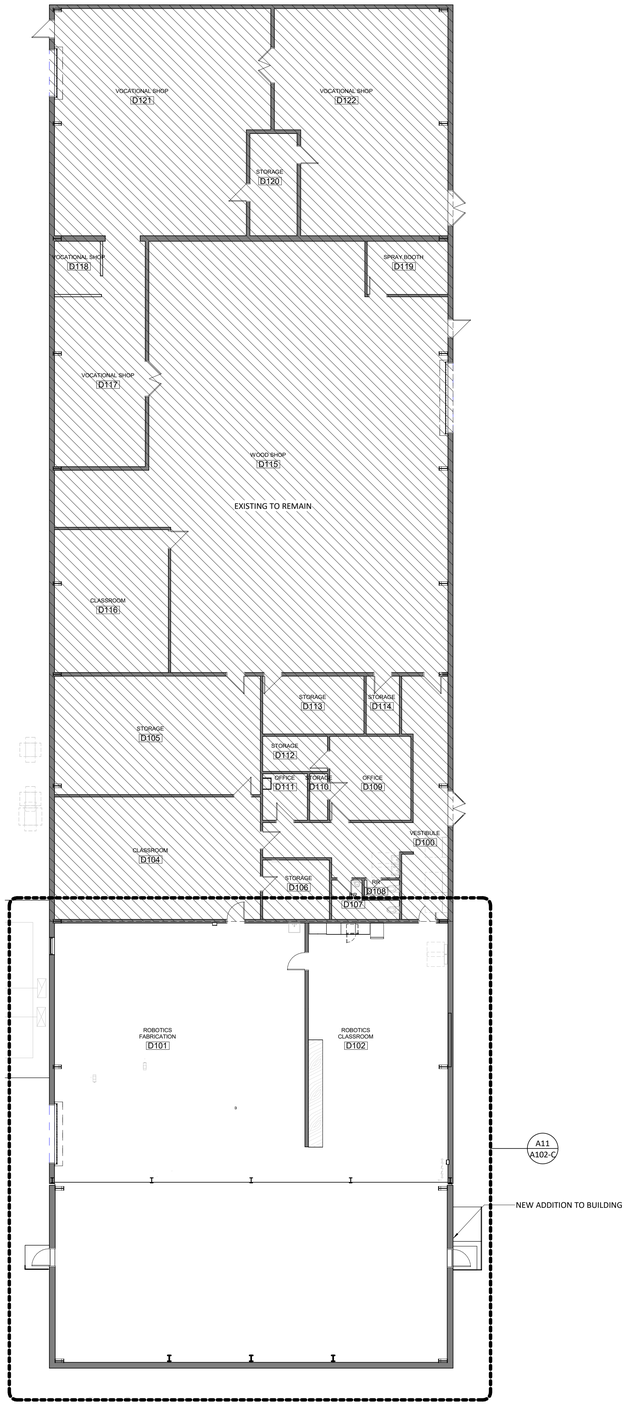
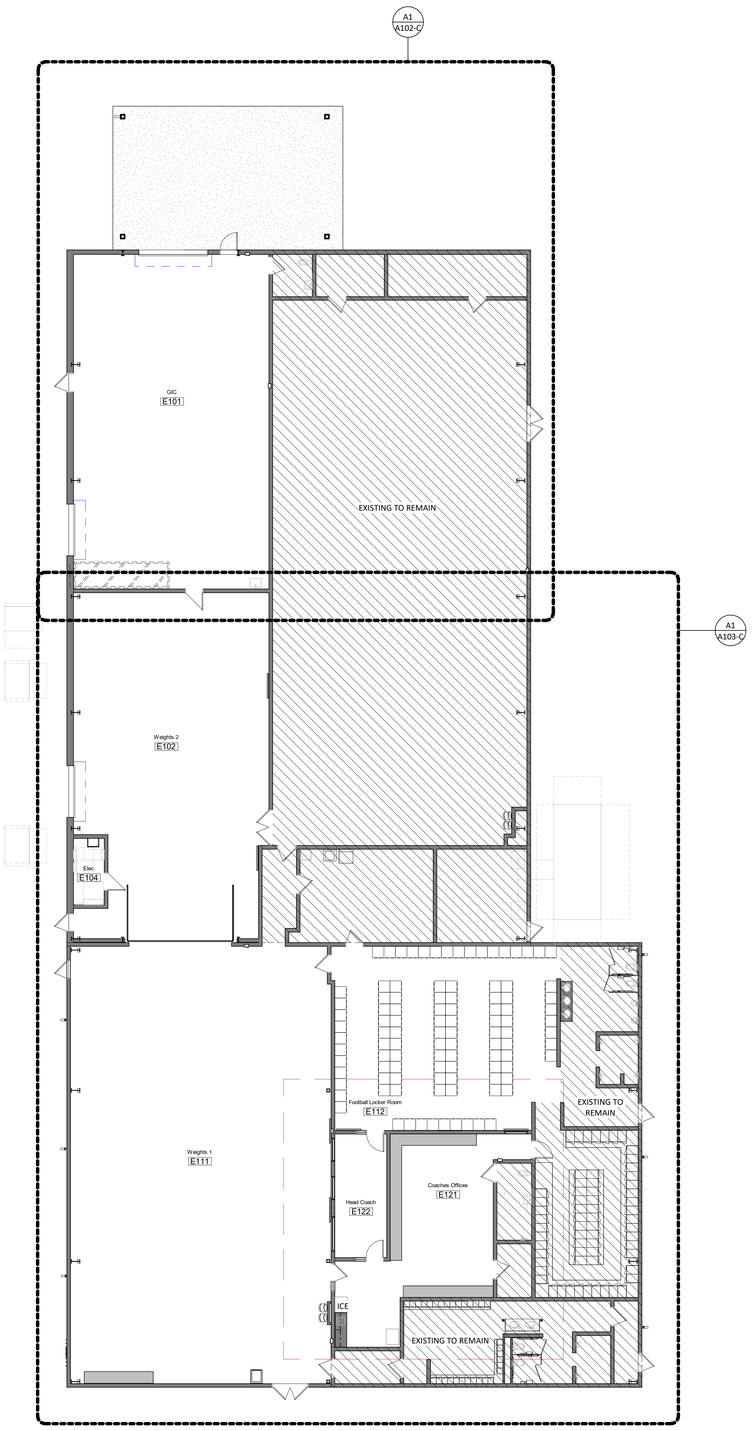
Interior Partition Types
A090-C



Overall Floor Plan - Building D A1
3/32" = 1'-0"



Overall Floor Plan - Building E A3
3/32" = 1'-0"

General Notes (Floor Plans):

1. ALL WALL TYPES TO BE G4.1 UNLESS OTHERWISE NOTED.
2. ALL WALL DIMENSIONS ARE TO FACE OF WALL UNLESS OTHERWISE NOTED.
3. MASONRY WALLS ARE NOMINALLY CENTERED ON GRID LINES AND MASONRY DIMENSIONS ARE NOMINAL UNLESS OTHERWISE NOTED
4. DOORS IN STUD WALLS NEAR PERPENDICULAR WALLS ARE LOCATED 4" OFF FACE OF PERPENDICULAR WALL UNLESS OTHERWISE NOTED.
5. DOORS IN MASONRY WALLS ARE LOCATED IN ROUGH OPENINGS DIMENSIONED ON SHEET
6. SEE GENERAL ACCESSIBILITY SHEET FOR HEIGHTS AND LOCATIONS OF TOILET ACCESSORIES NOT SHOWN ON ELSEWHERE.
7. CONTRACTOR TO FIELD VERIFY ALL MEASUREMENTS AND CONDITIONS NEW AND EXISTING. NOTIFY THE ARCHITECT/OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES.
8. ENLARGED PLANS MAY BE ROTATED OR MIRRORED COORDINATE WITH MAIN FLOOR PLAN.
9. CONTRACTOR TO PROVIDE 4'-0" HIGH PLYWOOD BACKER BOARD IN ALL MECHANICAL AND ELECTRICAL ROOMS MOUNTED 3'-6" A.F.F. FOR PERIMETER OF ROOM

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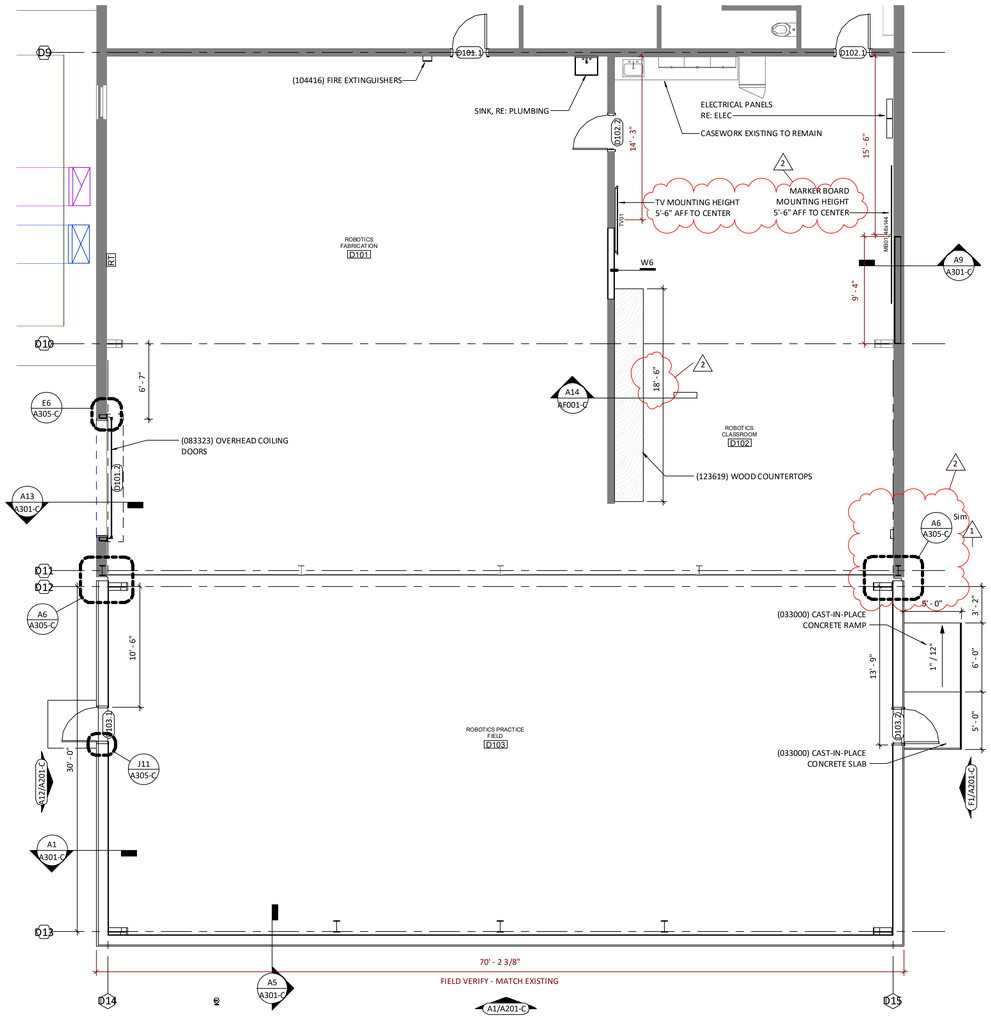
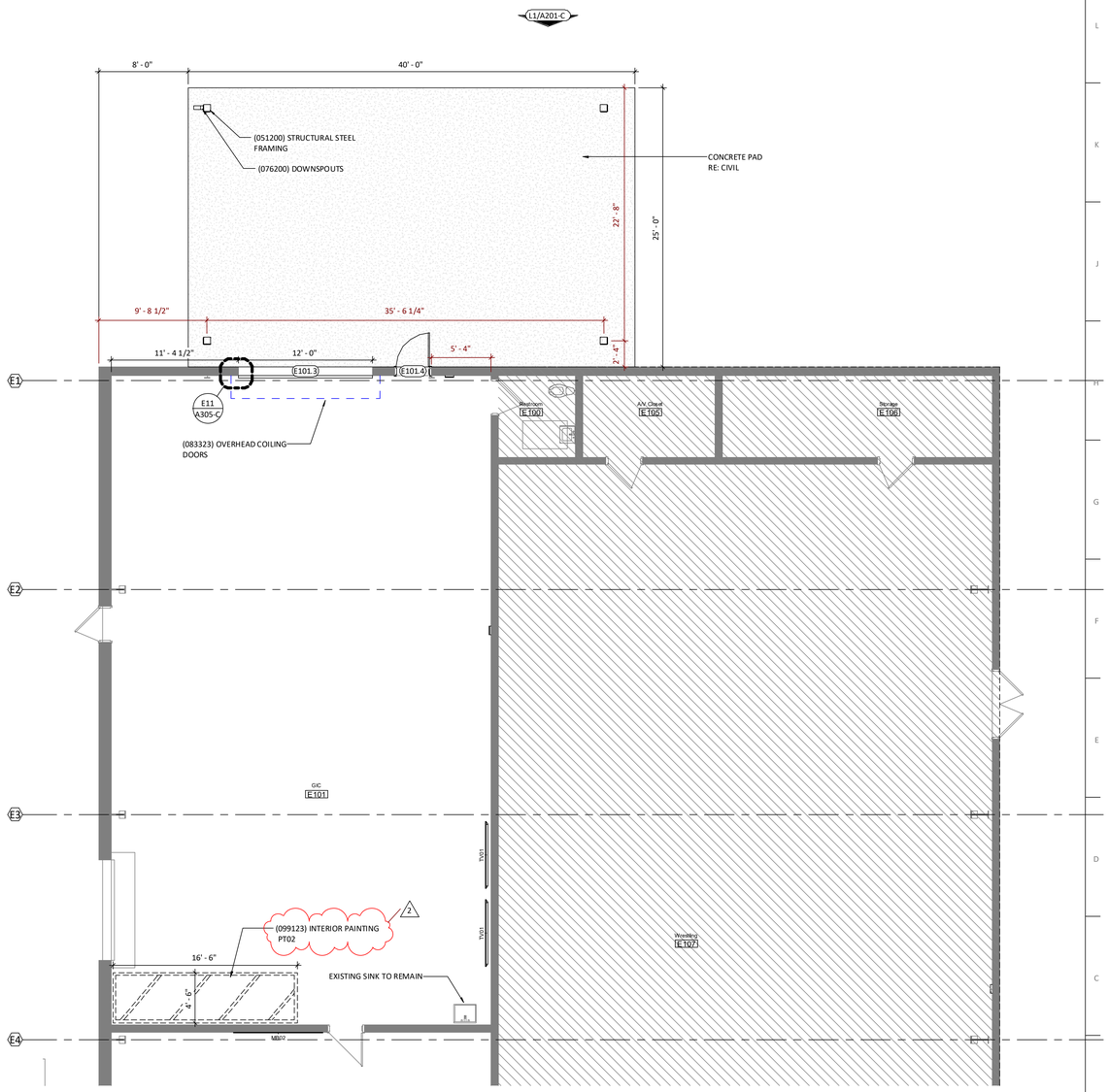
STATE OF MISSOURI
ADAM LEE STERNS
NUMBER A-7450
REGISTERED ARCHITECT

Overall Floor Plans - Building D & E

A101-C



Enlarged Floor Plan - Building D - Robotics A11
3/16" = 1'-0"



Enlarged Floor Plan - Building E - GIC A1
3/16" = 1'-0"

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1	Addendum 01	09/19/2022
2	Addendum 02	09/23/2022

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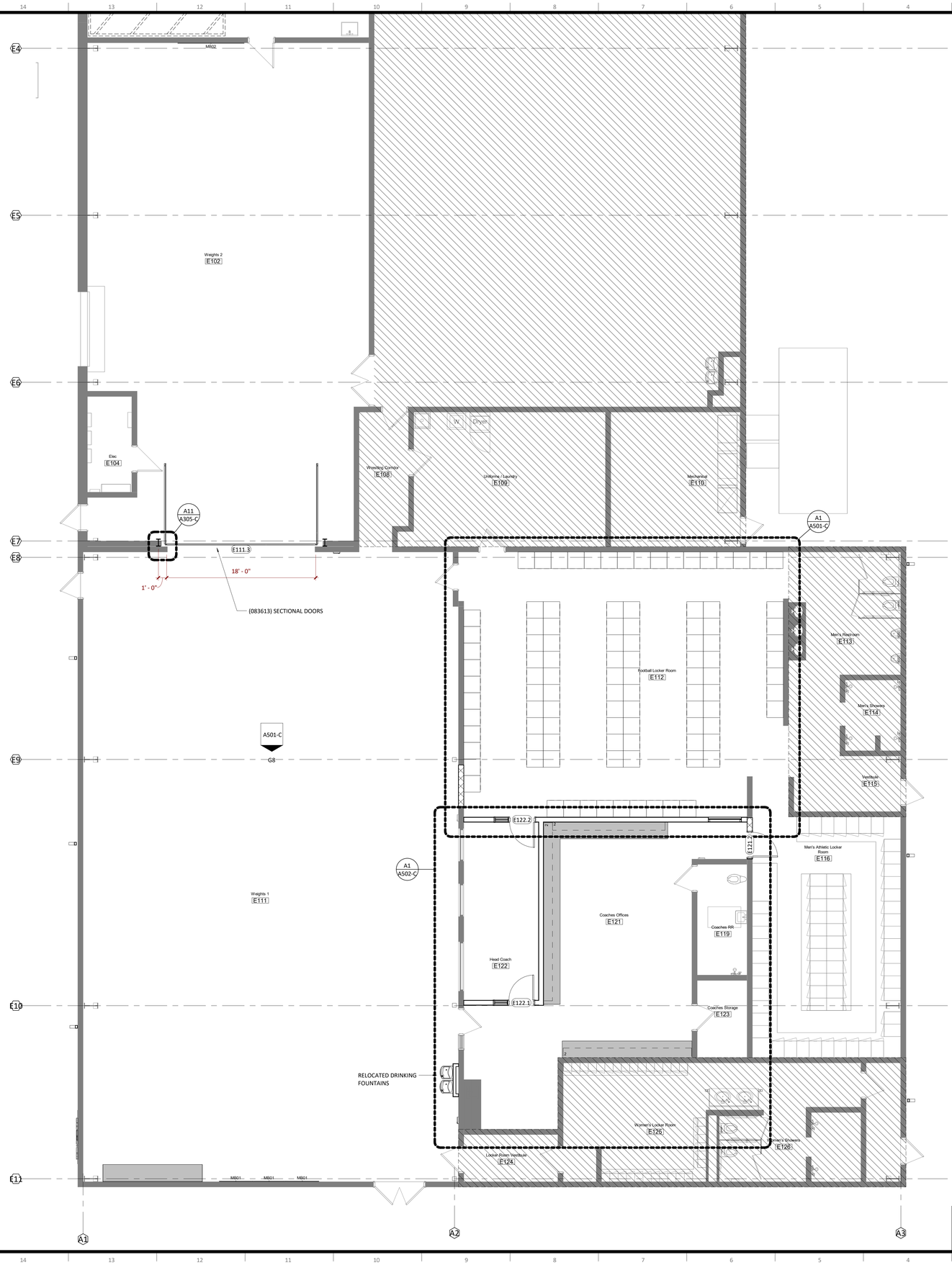
Enlarged Floor Plan - Building D & E

A102-C



Enlarged Floor Plan - Weights A1

3/16" = 1'-0"

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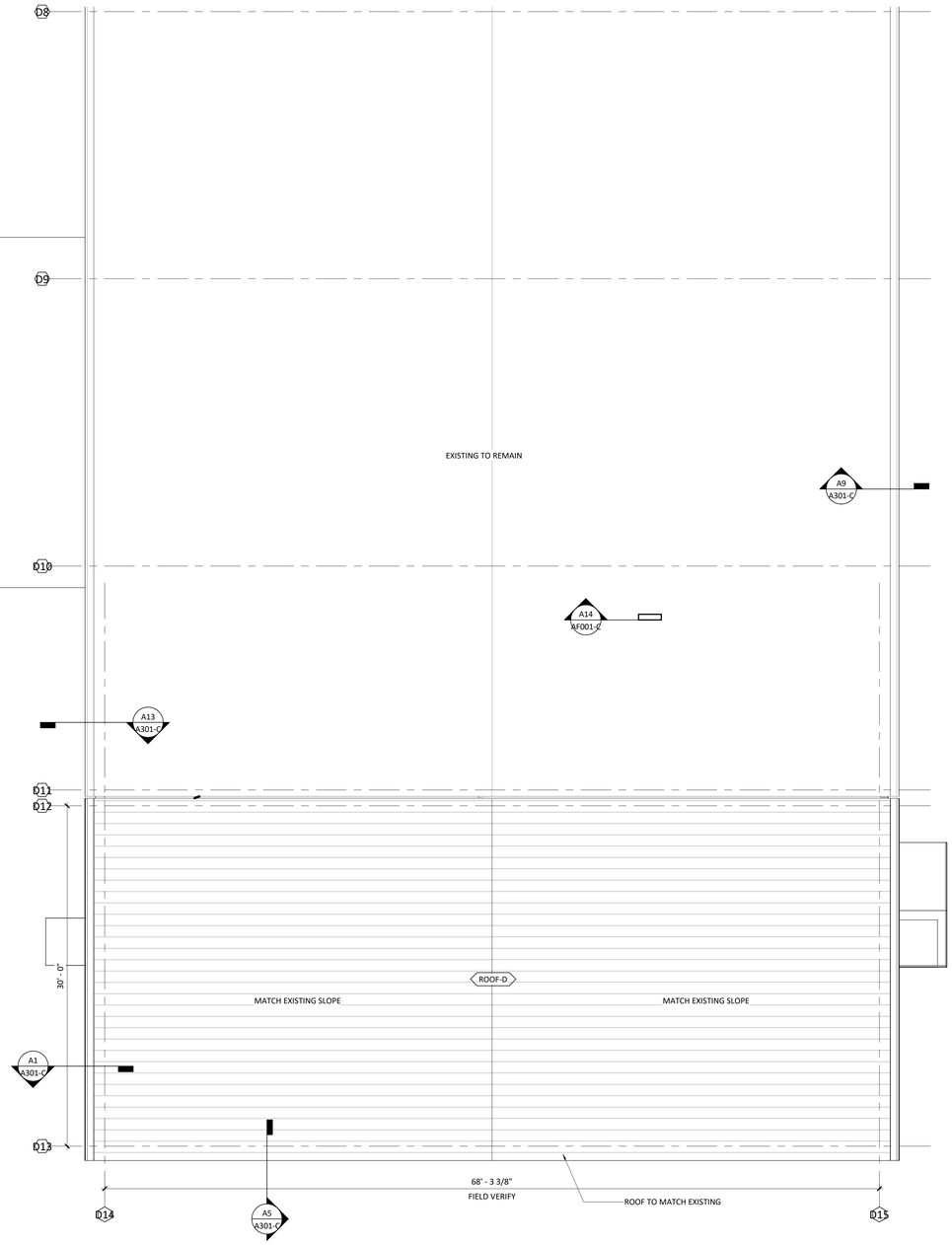
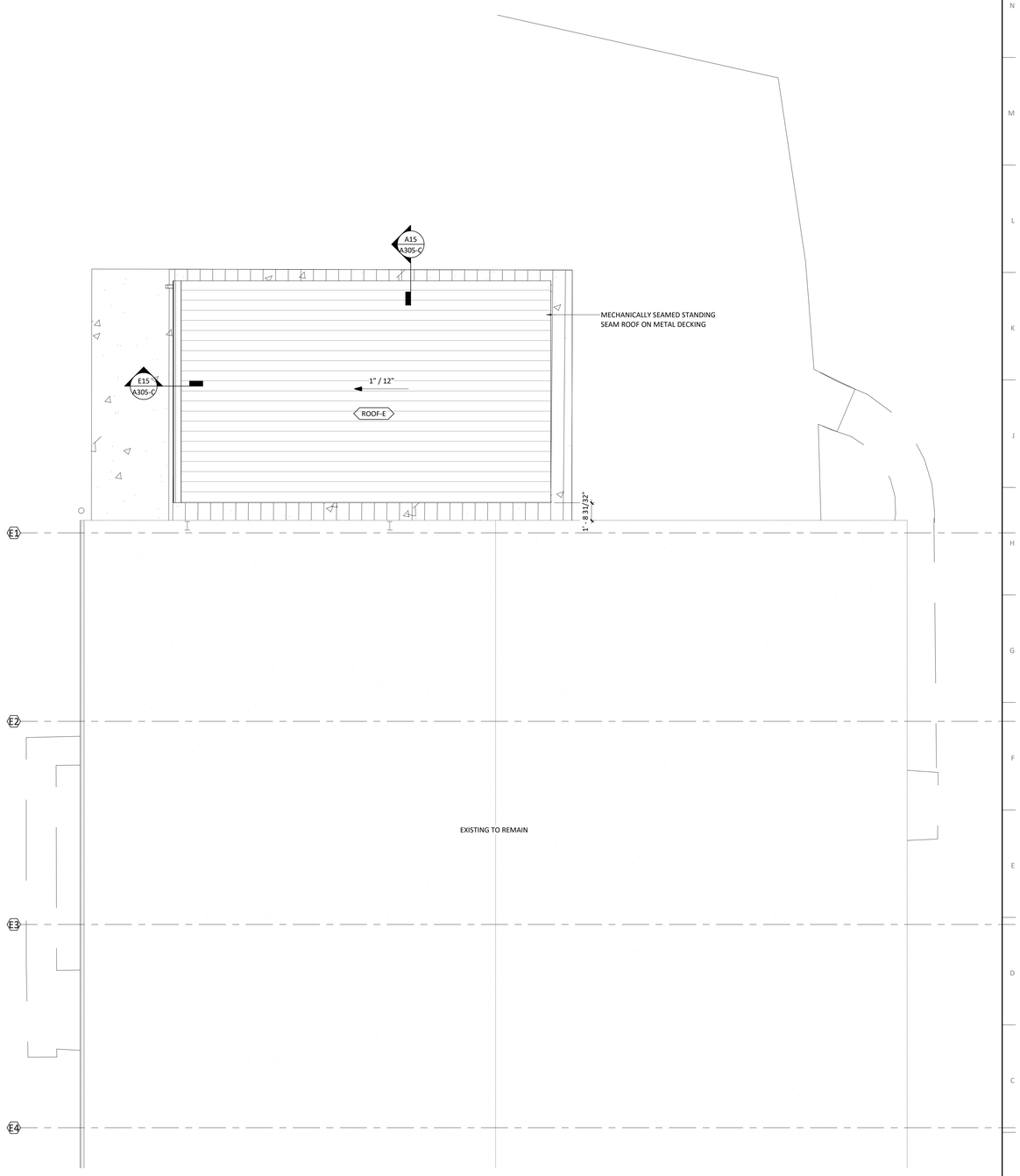
Enlarged Floor Plan - Building E

A103-C



Enlarged Roof Plan - Building D - Robotics A11

3/16" = 1'-0"



Enlarged Roof Plan - Building E - GIC A1

3/16" = 1'-0"

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STATE OF MISSOURI
ADAM LEE STEVENS
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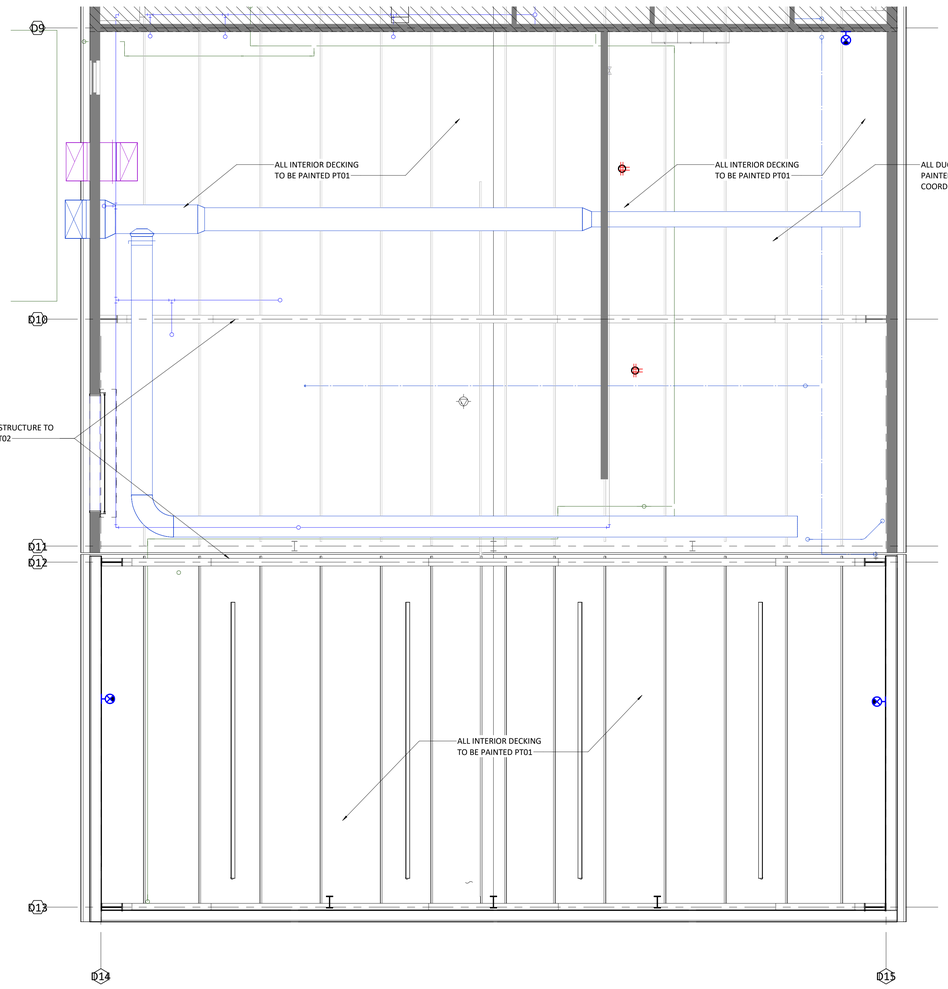
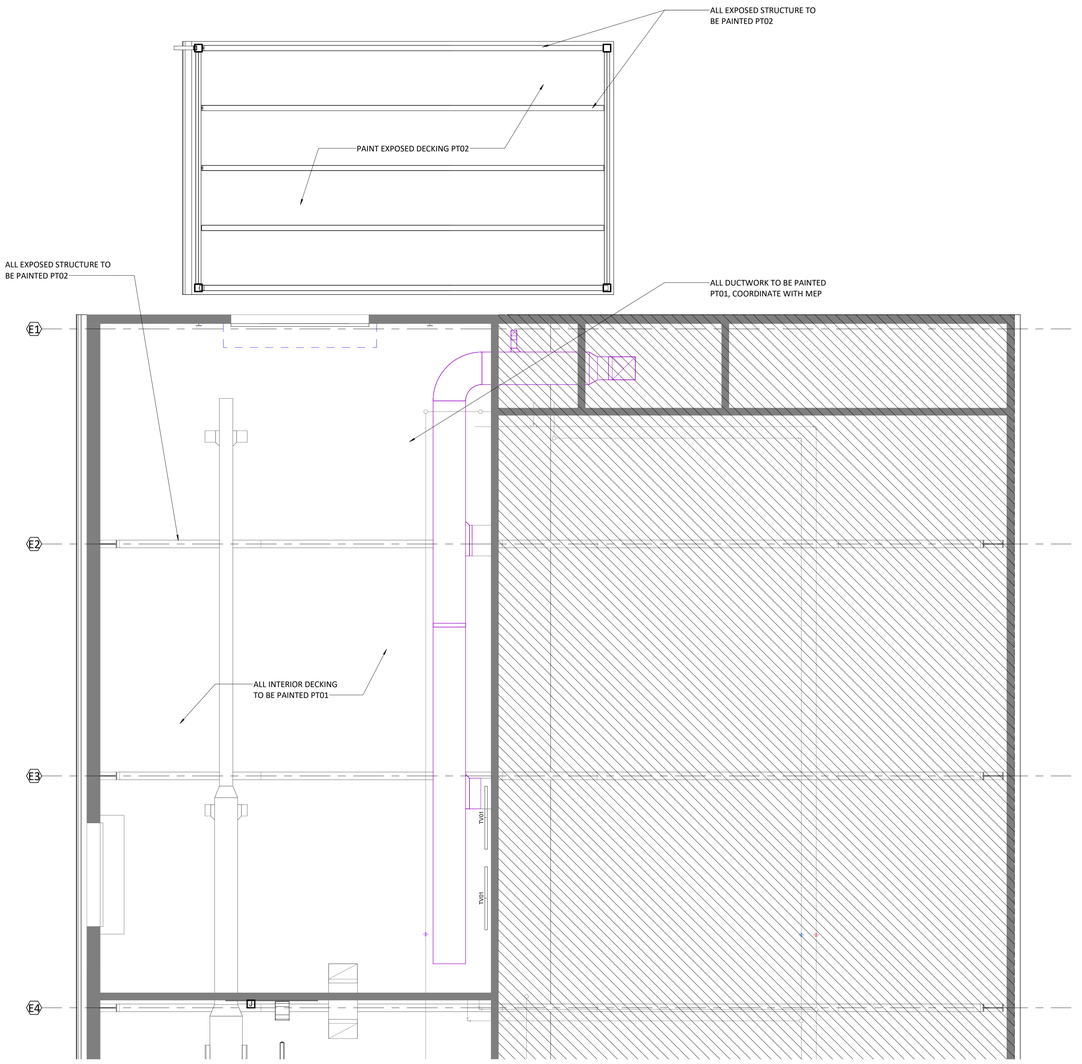
Roof Plan

A111-C



Reflected Ceiling Plan - Robotics A10
3/16" = 1'-0"



Reflected Ceiling Plan - GIC A1
3/16" = 1'-0"

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Reflected Ceiling Plan - Building D & E

A151-C

Reflected Ceiling Plan - Building E A1

3/16" = 1'-0"

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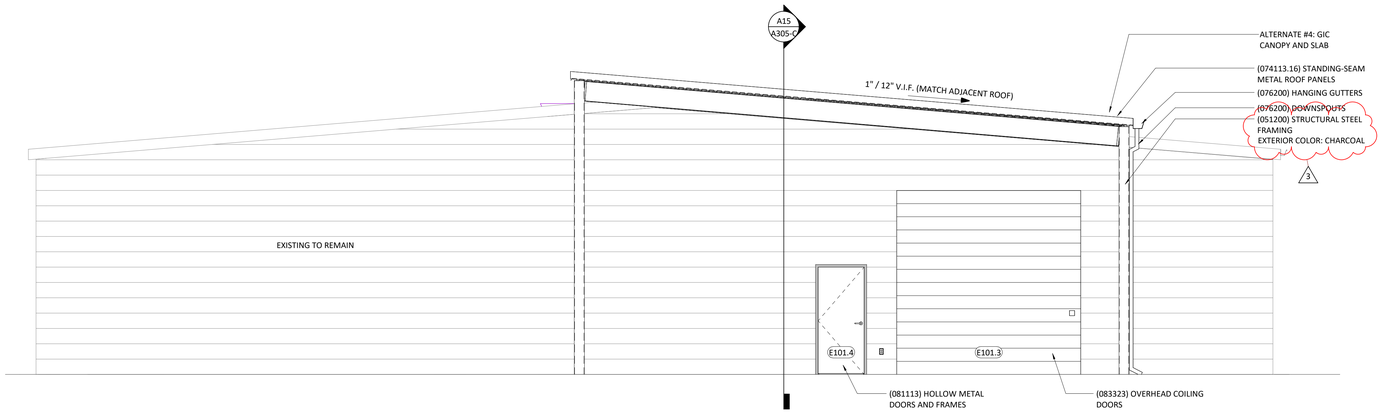
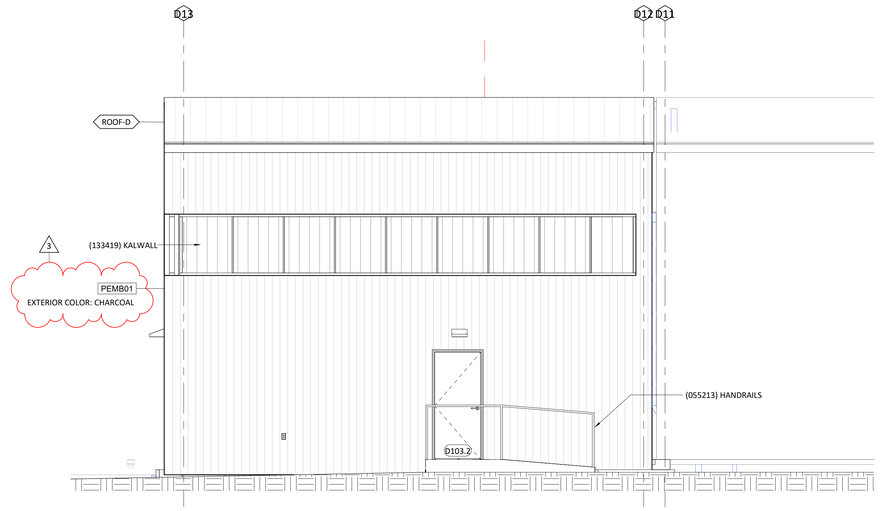
Reflected Ceiling Plan - Building E

A152-C



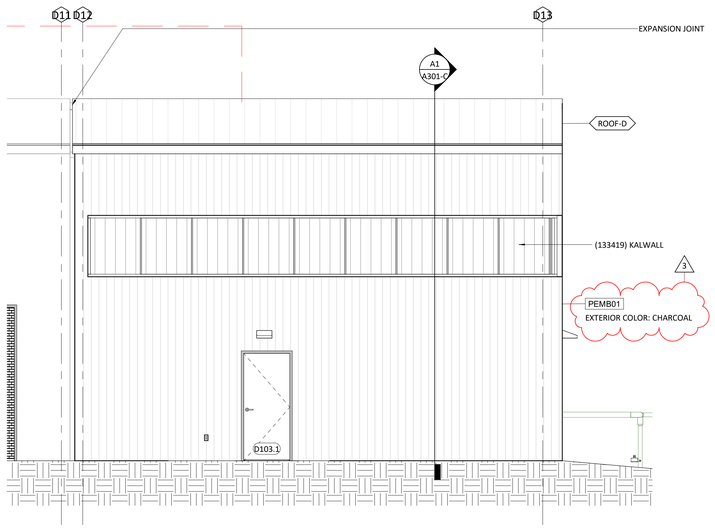
Building E - LSHS - North Elevation L1

1/4" = 1'-0"



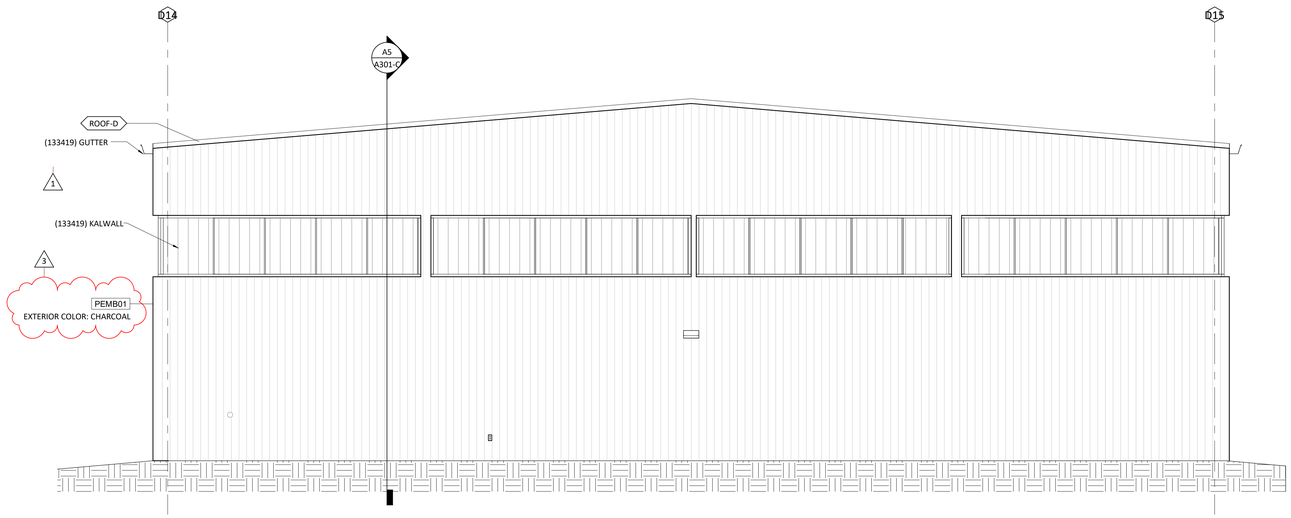
Building D - LSHS - East Elevation F1

1/4" = 1'-0"



Building D - LSHS - West Elevation A12

1/4" = 1'-0"



Building D - LSHS - South Elevation A1

1/4" = 1'-0"

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1	Addendum 01	09/16/2022
3	AS01 - Code Comments	11/09/2022

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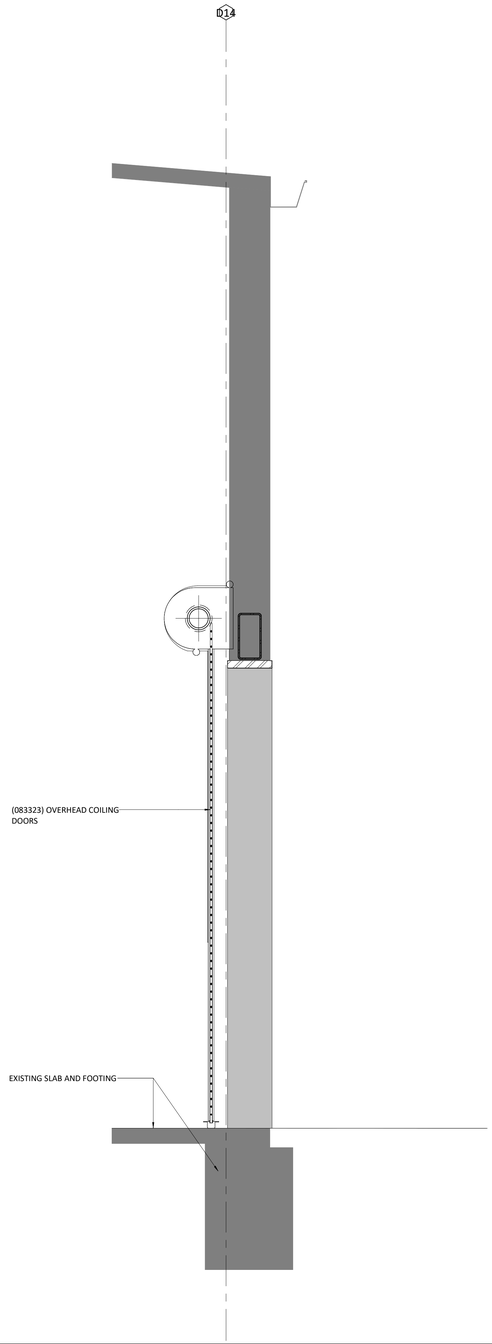
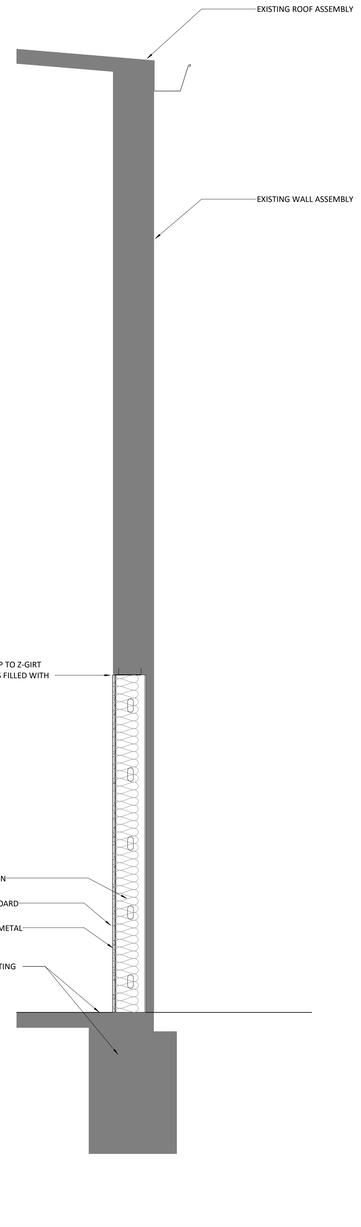
Exterior Elevations

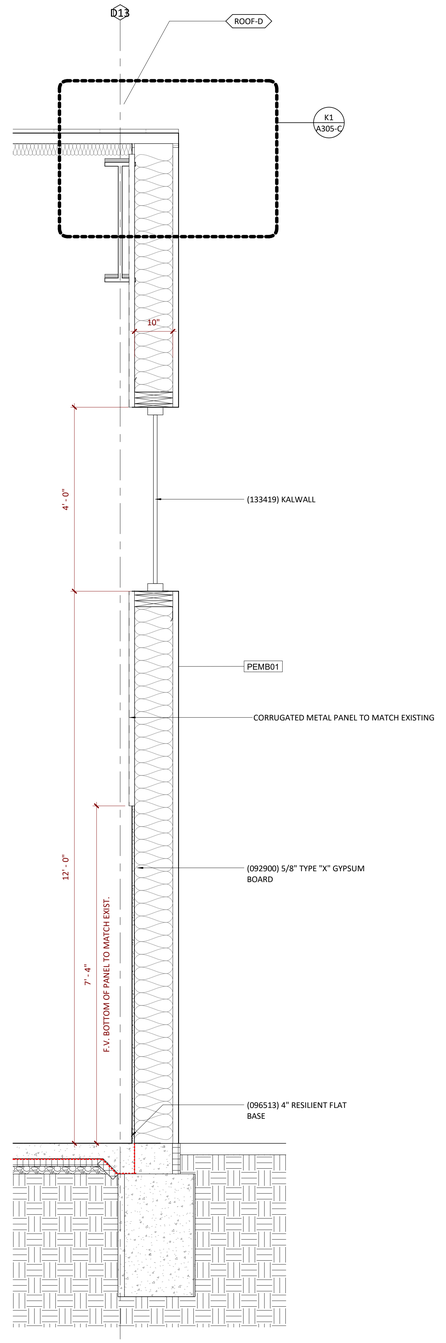
A201-C



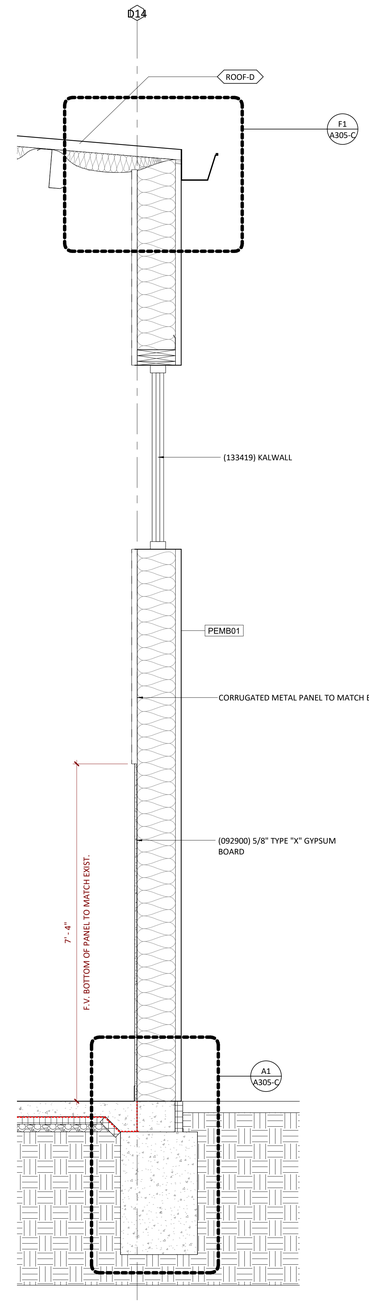
Wall Section @ Coiling Door A13
3/4" = 1'-0"



Wall Section @ Building D Existing East Wall A9
3/4" = 1'-0"



Wall Section @ Building D Addition South Wall A5
3/4" = 1'-0"



Wall Section @ Building D Addition West Wall A1
3/4" = 1'-0"

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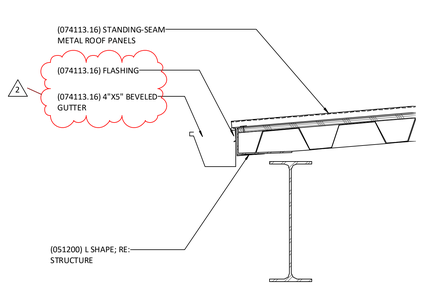
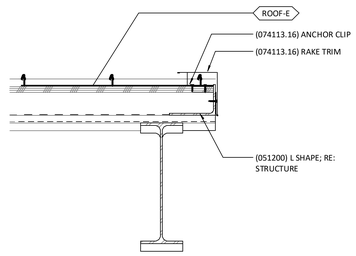
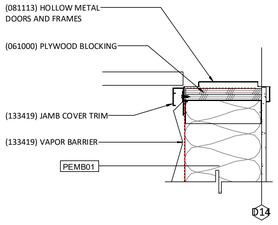
Wall Sections
A301-C



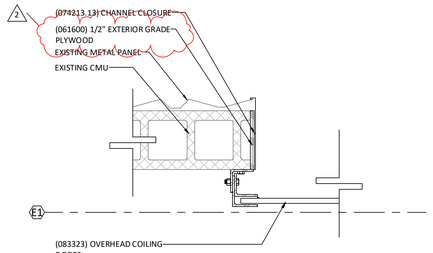
Section Detail @ Canopy Gutter E15
1 1/2" = 1'-0"



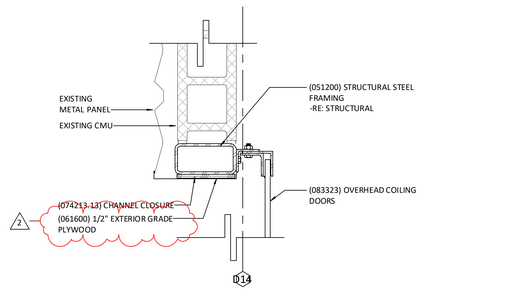
Section Detail @ Canopy A15
1 1/2" = 1'-0"



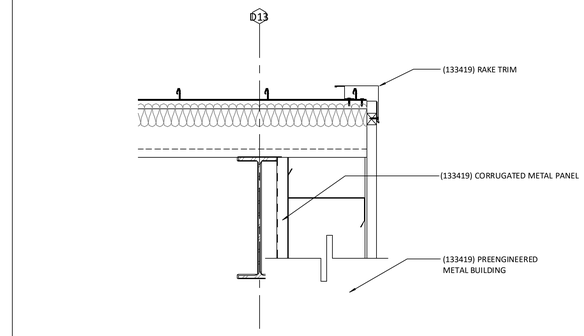
Plan Detail @ PEMB Door Jamb J11
1 1/2" = 1'-0"



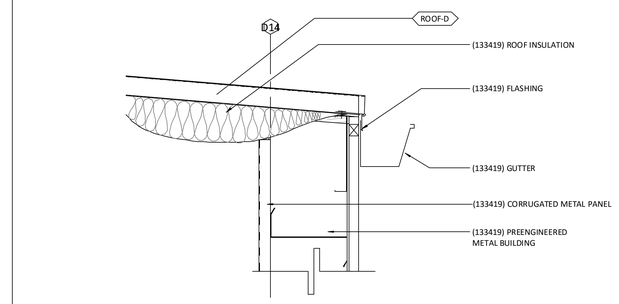
Plan Detail @ GIC Garage Door E11
1 1/2" = 1'-0"



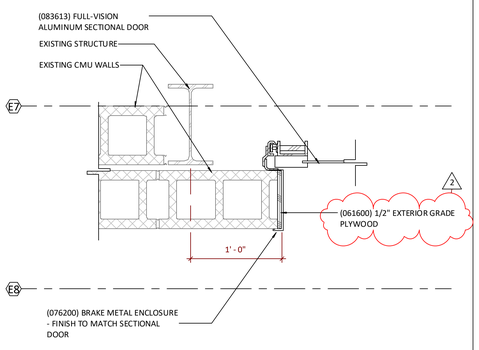
Plan Detail @ Building D Coiling Door E6
1 1/2" = 1'-0"



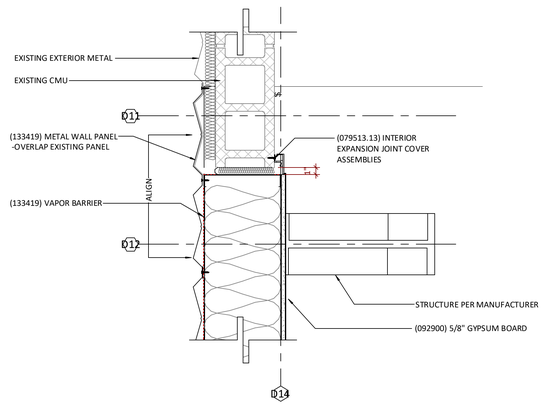
Section Detail @ PEMB Rake K1
1 1/2" = 1'-0"



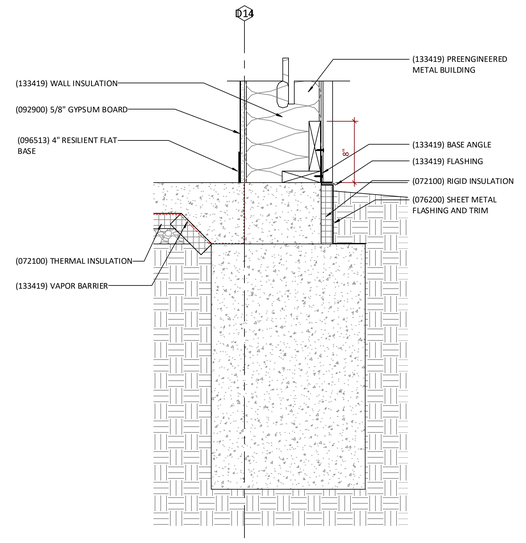
Section Detail @ PEMB Gutter F1
1 1/2" = 1'-0"



Plan Detail @ Weight Room Garage Door A11
1 1/2" = 1'-0"



Plan Detail @ Building D Addition A6
1 1/2" = 1'-0"



Foundation Detail @ PEMB01 A1
1 1/2" = 1'-0"

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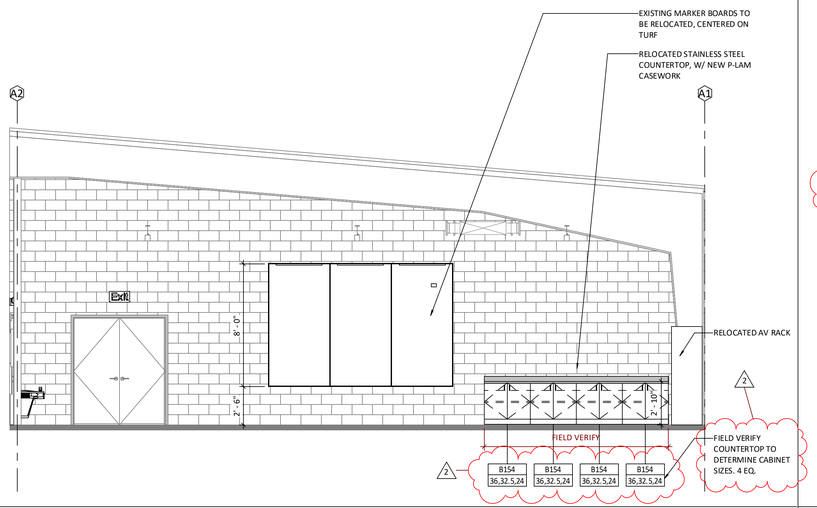
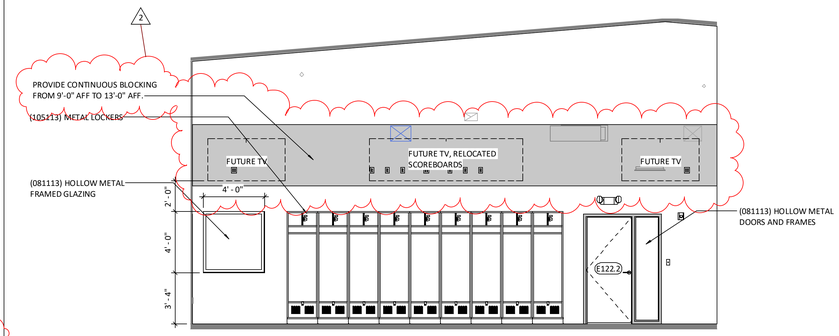
Exterior Details

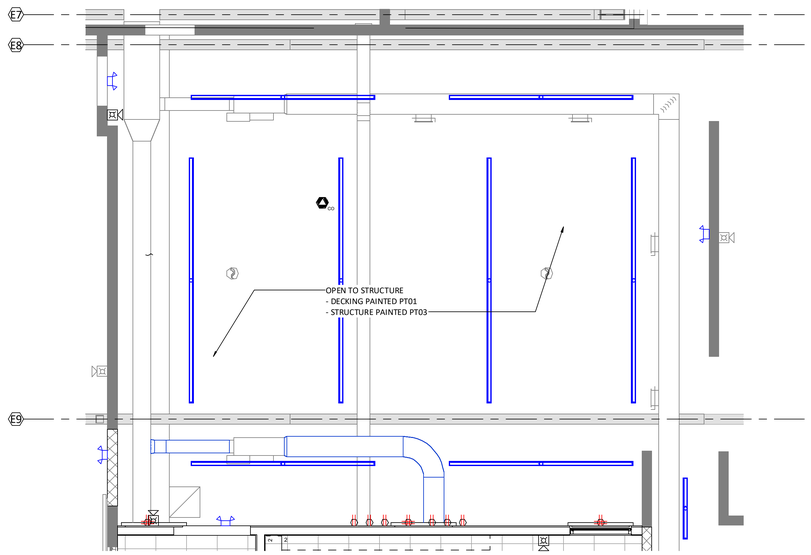
A305-C



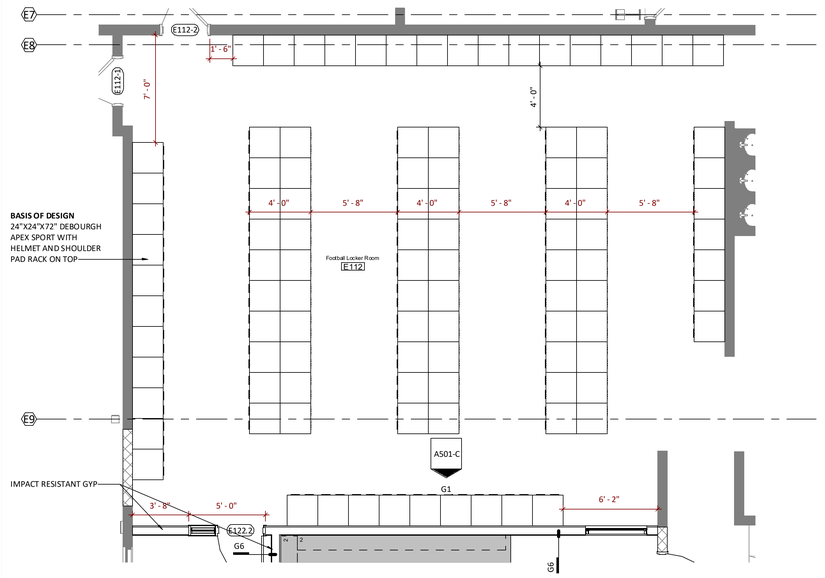
Weight Room 1 - South Elevation G8
1/4" = 1'-0"



Football Locker Room - South Elevation G1
1/4" = 1'-0"



Reflected Ceiling Plan - Football Locker Room A8
1/4" = 1'-0"



Enlarged Floor Plan - Football Locker Room A1
1/4" = 1'-0"

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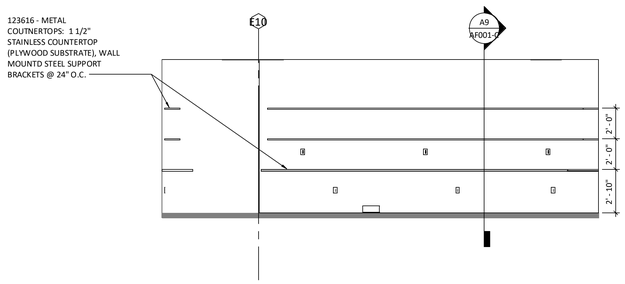
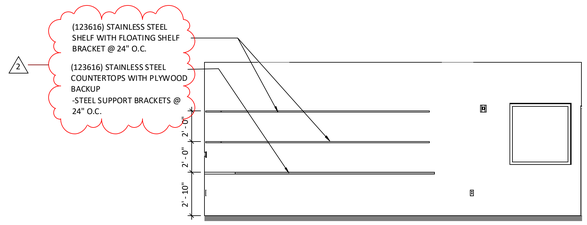
Interior Context Drawings - Football Locker Room & Weight Room

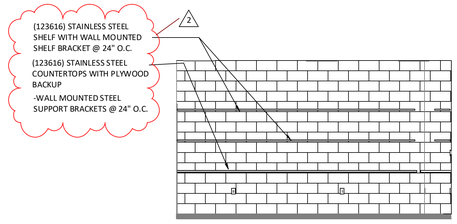
A501-C



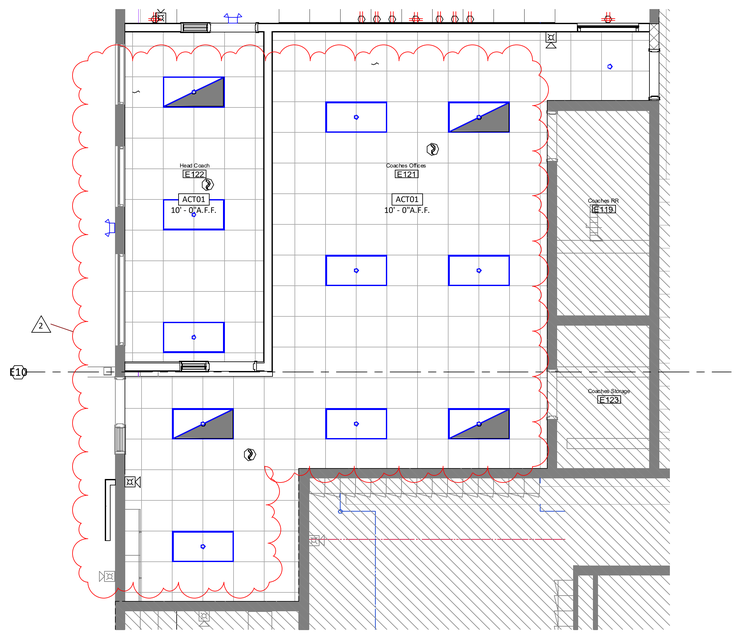
Coaches Office - West Elevation L12
1/4" = 1'-0"



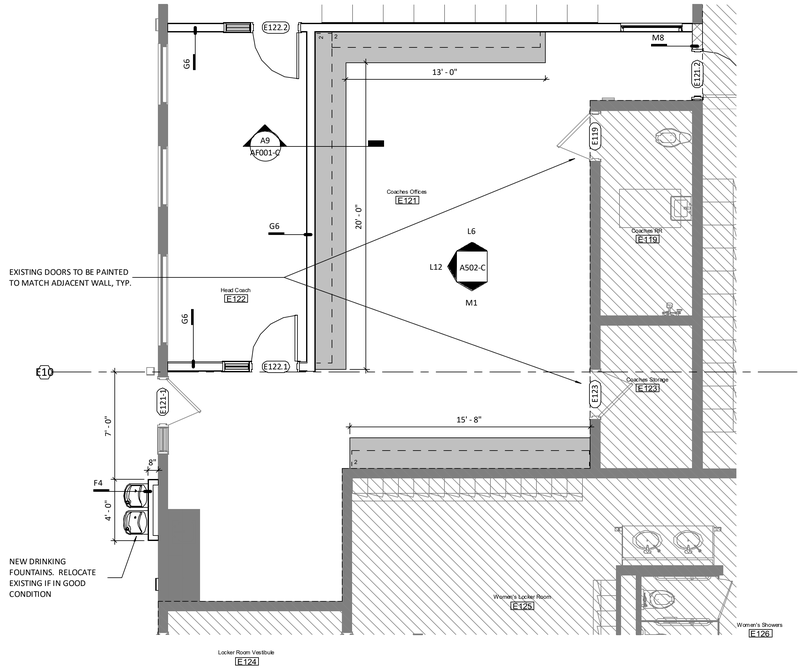
Coaches Office - North Elevation L6
1/4" = 1'-0"



Coaches Office - South Elevation M1
1/4" = 1'-0"



Reflected Ceiling Plan - Coaches Office A8
1/4" = 1'-0"



Enlarged Floor Plan - Coaches Office A1
1/4" = 1'-0"

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STATE OF MISSOURI
ADAM LEE STERNS
NUMBER A-7450
REGISTERED ARCHITECT

Interior Context Drawings - Coaches Office

A502-C

Finish Legend - LSHS

Mark	Manufacturer	Model	Material Color	Comments
033000 CAST-IN-PLACE CONCRETE				
SC01	SEALED CONCRETE			CONCRETE WITH SURFACE SEALER
095113 ACOUSTICAL PANEL CEILINGS				
ACT01	USG	ASTRO CLIMA PLUS HIGH NRC	COLOR: WHITE, SIZE: 24" X 24" X 5/8"	
096513 RESILIENT BASE AND ACCESSORIES				
RB03	ROPPE	PINNACLE	123 CHARCOAL	4" FLAT WALL BASE
RB04	ROPPE	PINNACLE	123 CHARCOAL	4" COVE WALL BASE
096566 RESILIENT FLOORING				
RF01	ECORE ATHLETIC	PERFORMANCE - RALLY	CHARCOAL ESS05	
RF02	ECORE ATHLETIC	PERFORMANCE - BEAST PLUS	BASIC BLACK ES00	
RF03	ECORE ATHLETIC	RAGE TURF - RALLY	BLACK	BLACK TURF WITH WHITE HASH MARKS
096813 TILE CARPET				
CPT01	MATS INC	SUPER NOP 52	GRIJIS/CHARCOAL	WALK OFF CARPET
CPT02	INTERFACE	AERIAL - NEIGHBORHOOD SMOOTH	IRON	ASHLAR
099123 INTERIOR PAINTING				
PT01	SHERWIN WILLIAMS	N/A	PURE WHITE SW7005	EPOXY PAINT REQUIRED FOR ALL WET WALL LOCATIONS IN RESTROOMS.
PT02	SHERWIN WILLIAMS	N/A	PEPPERCORN SW7674	ALL STRUCTURE TO BE PAINTED, TYP. EPOXY PAINT REQUIRED FOR ALL WET WALL LOCATIONS: KITCHEN, WATER FOUNTAINS, SHOP SINK ALCOVE.
PT03	PANTONE 4515C	N/A	VEGAS GOLD	ALL EXPOSED INTERIOR STRUCTURE IN WEIGHT ROOM & LOCKER ROOM
101100 VISUAL DISPLAY UNITS				
MB01	CLARIDGE	LCS DELUXE PORCELAINE WHITEBOARD	WHITE	60" ROLL MOUNTED HORIZONTALLY. 3'-0" ALUM TRAY AT BASE. J TRIM CONTINUOUS AT TOP. 5'-6" HIGH STARTING 2'-6" AFF
123616 METAL COUNTERTOPS				
SSC01	TBD	STAINLESS STEEL COUNTERTOP		COACHES OFFICES

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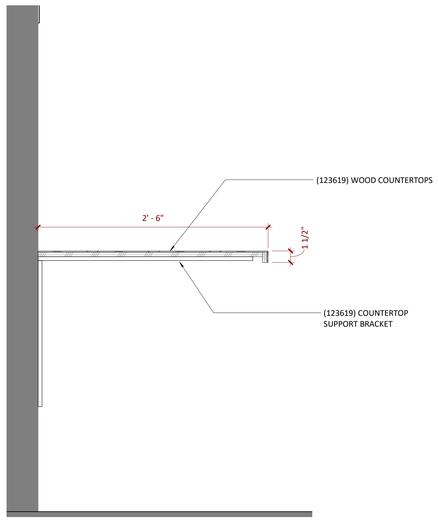
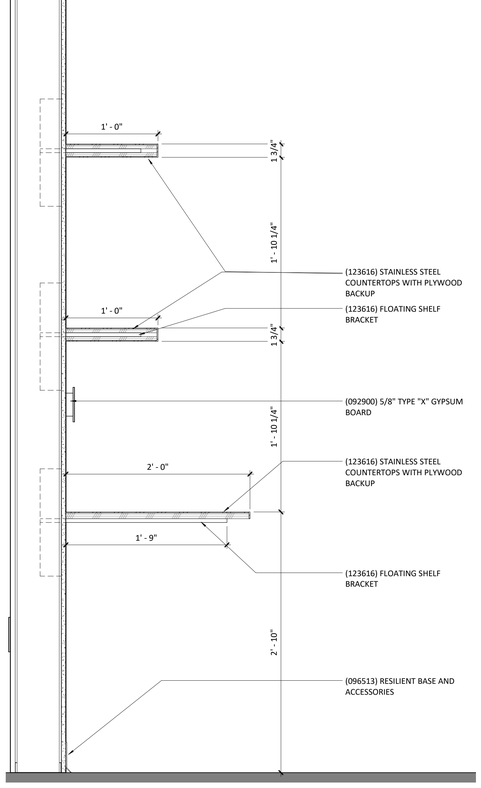
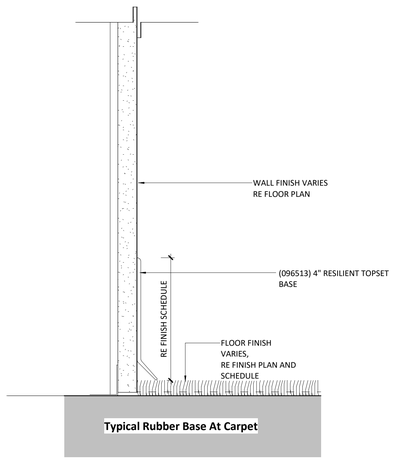
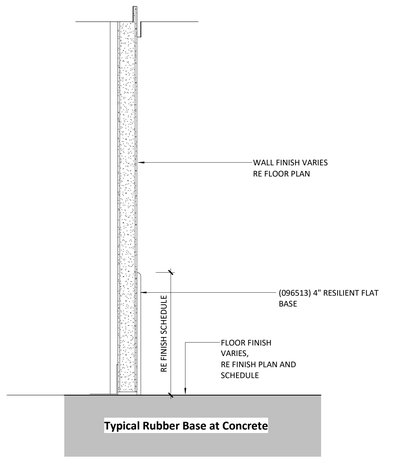


Wall Section @ Robotics A14
1 1/2" = 1'-0"

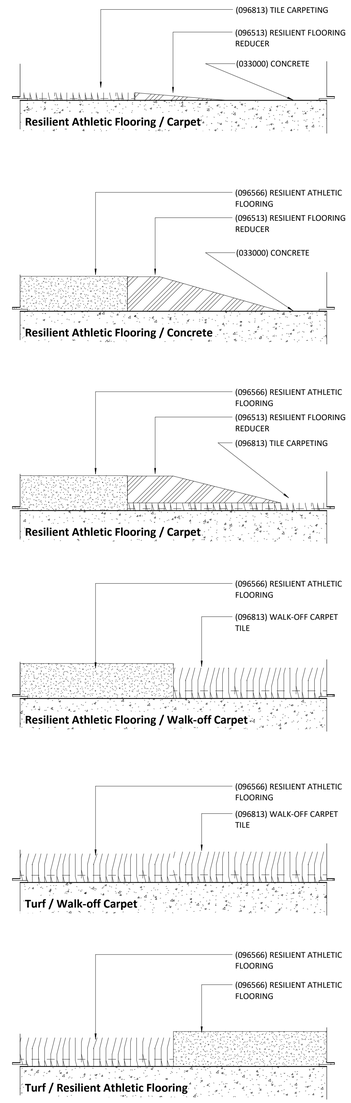


Wall Section @ Coaches Office A9
1 1/2" = 1'-0"





Wall Base Details A5
6" = 1'-0"



Flooring Transitions A1
12" = 1'-0"

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ADAM LEE STEVENS
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Finish Legend & Details

AF001-C

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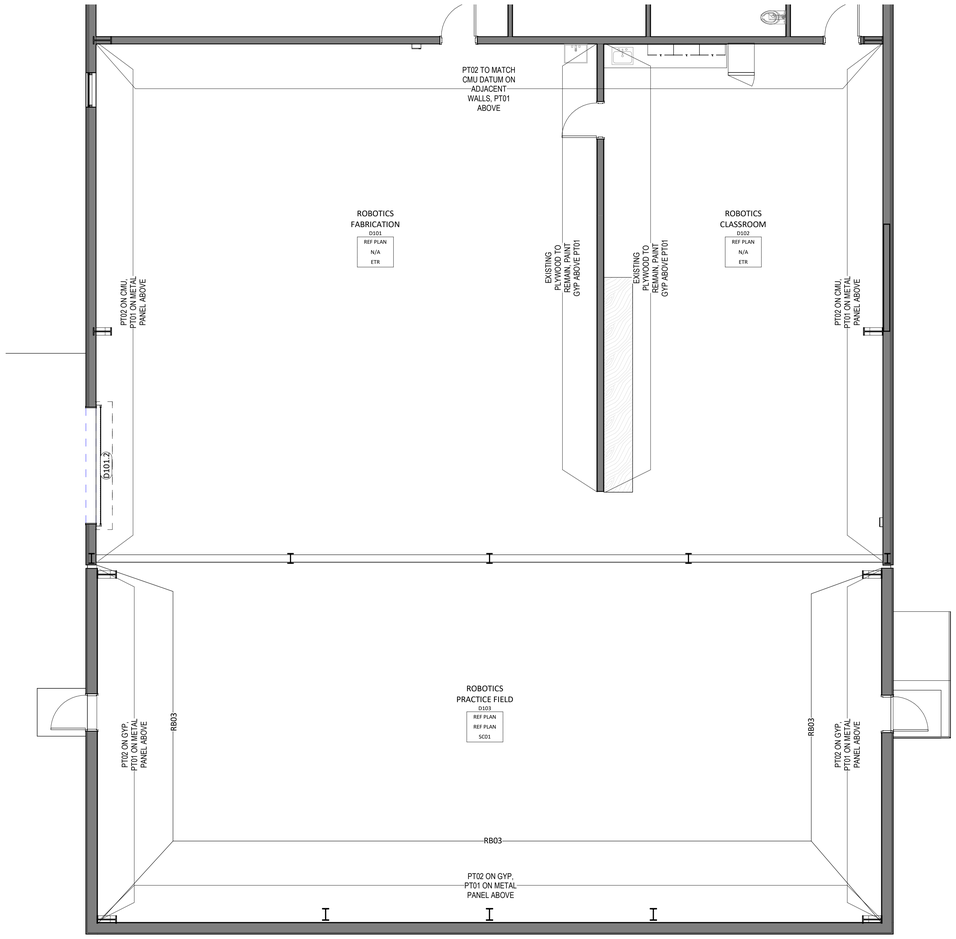
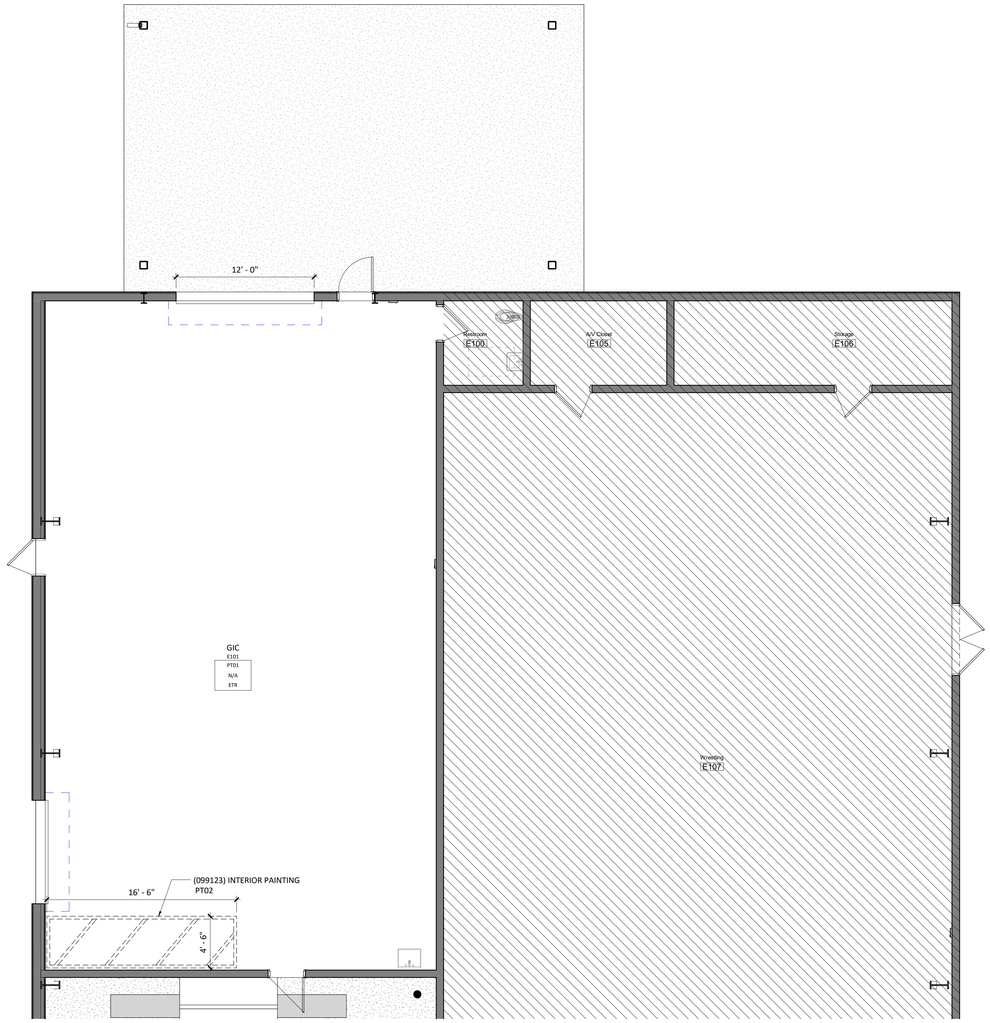


Finish Floor Plan - Robotics A11
3/16" = 1'-0"



Finish Floor Plan - GIC A1
3/16" = 1'-0"

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Finish Floor Plan - Robotics & GIC

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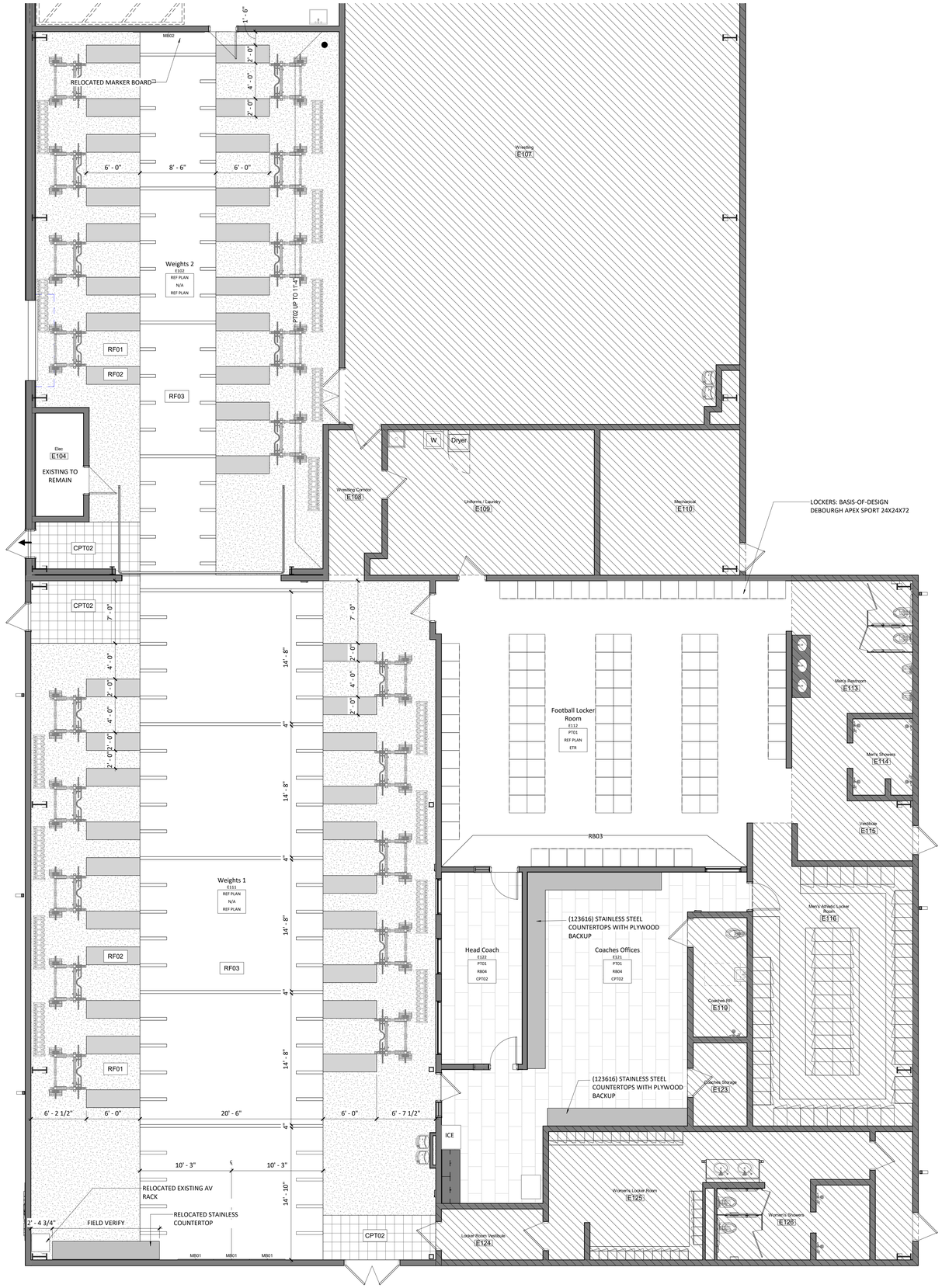

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Finish Floor Plan - Weights A1
3/16" = 1'-0"

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Issue Date: September 9, 2022

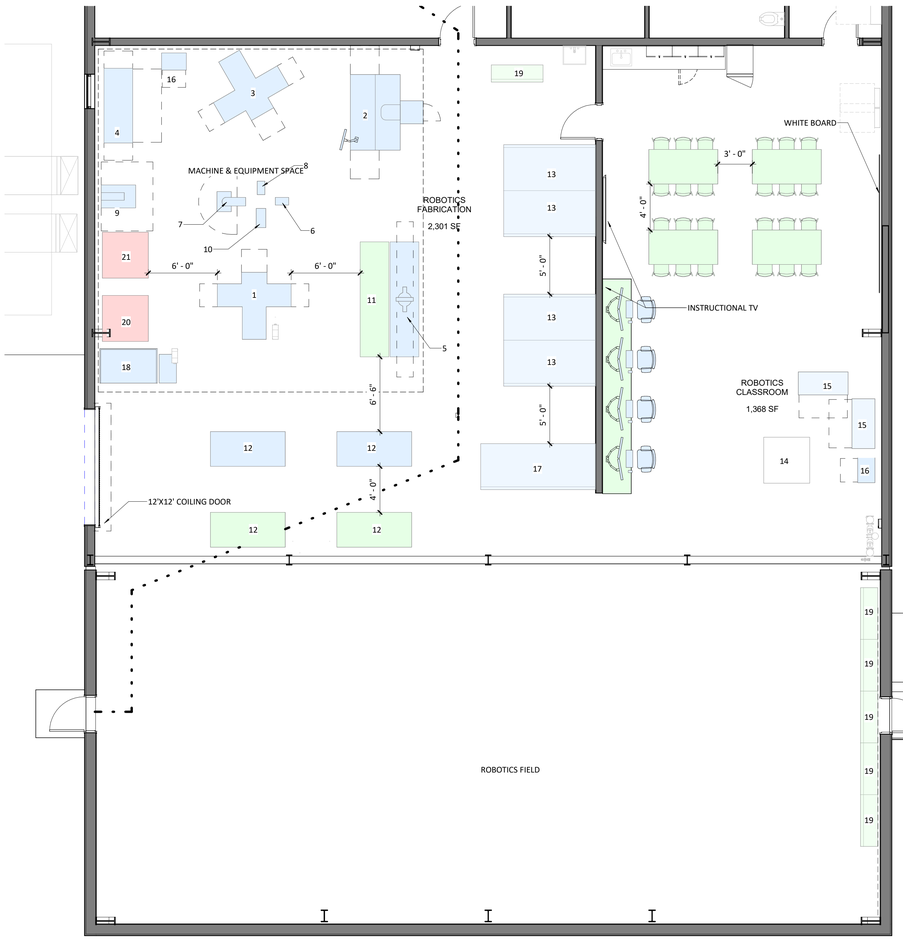
Revisions

NUMBER	DESCRIPTION	DATE

RELEASED FOR CONSTRUCTION
As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
11/23/2022

Finish Floor Plan - Weights

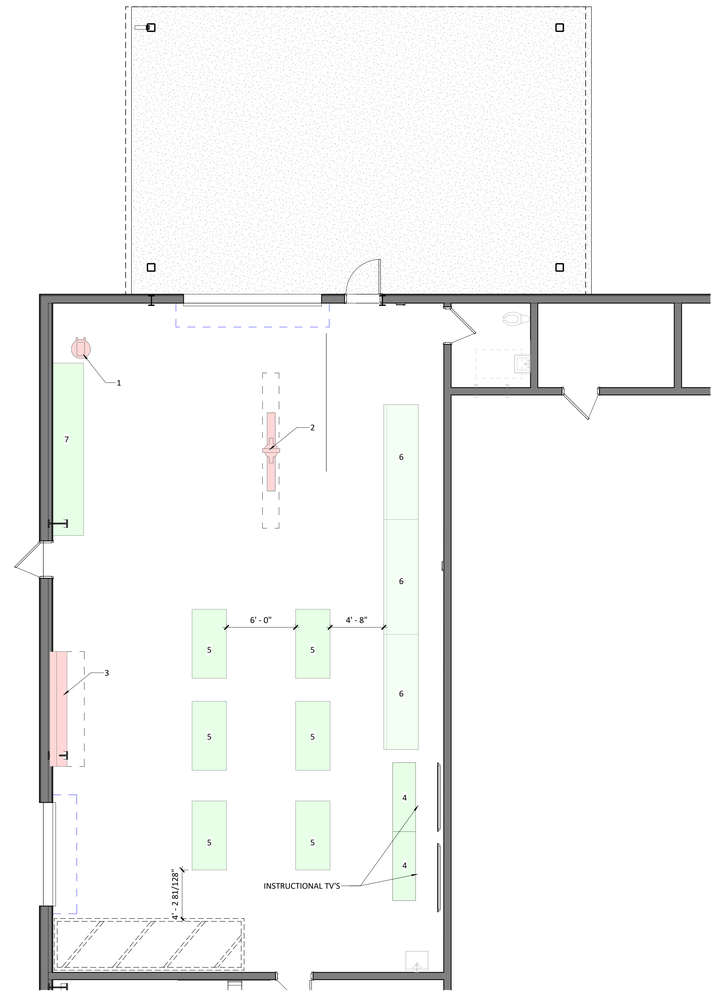
AF102-C



LSHS Equipment List:

1. BRIDGEPORT 3-AXIS CNC
2. HURCO BMC-2416 CNC
3. HURCO HAWK 5M 3-AXIS CNC
4. HARDINGE HLV-H LATHE
5. DEWALT MITER SAW
6. BURR KING BELT SANDER
7. WILTON A5816 DRILL PRESS
8. RYOBI BENCH GRINDER
9. JET VERTICAL METAL BANDSAW
10. SHOP FOX DISC SANDER
11. 2' X 10' WORK TABLE
12. 3' X 6' WORK TABLE
13. 4' X 8' SHELVING
14. 4' X 4' WORK TABLE
15. LARGE CRAFTSMAN TOOL BOX
16. SMALL CRAFTSMAN TOOL BOX
17. 4' X 10' SHELVING
18. WELDING TABLE & TIG WELDER
19. 4.5' x 1.5' SHELVING
20. POWDER COATING BOOTH
21. POWDER COATING OVEN

Enlarged Furniture Plan - LSHS - Robotics A10
3/16" = 1'-0"



GiC Equipment List:

1. AIR COMPRESSOR
2. MITER SAW
3. PANEL SAW
4. 6' X 2' ROLLING TABLES
5. 6' X 3' WORK TABLES
6. 3' X 10' TOOL CRIB
7. BUTCHER BLOCK WORK COUNTER

Enlarged Furniture Plan - LSHS - GiC A1
3/16" = 1'-0"

multistudio
the evolution of gould evans

LSR7 Robotics, GiC & Phys Education

LSN: 901 NE Douglas St., Lee's Summit MO 64086
LSW: 2600 SW Ward Rd, Lee's Summit MO 64082
LSHS: 400 SE Blue Pkwy, Lee's Summit MO 64063

Project Number: 0121-0100

owner:
Lee's Summit R-7 School
301 NE Tudor Road
Lee's Summit, MO 64086

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STATE OF MISSOURI
ADAM LEE STERNS
NUMBER A-7490
REGISTERED ARCHITECT

Furniture Plan - Building D & E

AF103-C

PLUMBING DEMOLITION PLAN NOTES:

PD1 REMOVE EXISTING PLUMBING FIXTURES IN THIS AREA AS WELL AS PIPING (WASTE, VENT, HOT AND COLD WATER) TO BELOW FINISHED FLOOR AND TO ACTIVE MAINS ABOVE CEILING AND CAP.

PD2 REMOVE EXISTING PLUMBING FIXTURE AS WELL AS PIPING (WASTE, VENT, HOT AND COLD WATER) TO BELOW FINISHED FLOOR AND TO ACTIVE MAINS ABOVE CEILING AND CAP. KEEP EXISTING PLUMBING FIXTURE FOR INSTALLATION UNDER NEW WORK.

PD3 DEMO ABANDONED GAS PIPING TO THE CONSTRUCTION AREA BOUNDARY AND CAP.

PD4 DEMO ACTIVE GAS PIPING TO APPROXIMATELY 15 FEET SOUTH OF NEW ADDITION AND CAP FOR FUTURE CONNECTION UNDER NEW WORK.

PD5 RETAIN EXISTING GAS PRESSURE REGULATOR SET FOR USE IN NEW WORK.

PD6 REMOVE EXISTING WATER SERVICE ENTRY.

PD7 REMOVE EXISTING COMPRESSED AIR PIPING AND ASSOCIATED ACCESSORIES. RETAIN PRESSURE REGULATOR FOR NEW WORK.

PD8 REMOVE EXISTING PLUMBING PIPING (SANITARY AND GAS) TO BELOW FINISHED FLOOR AND TO ACTIVE MAINS ABOVE CEILING AND CAP. REPAIR REMAINING SURFACES TO MATCH EXISTING WHERE REQUIRED.

PD9 EXISTING PLUMBING FIXTURE SHALL REMAIN. PROTECT FROM DAMAGE DURING DEMOLITION AND RENOVATION.

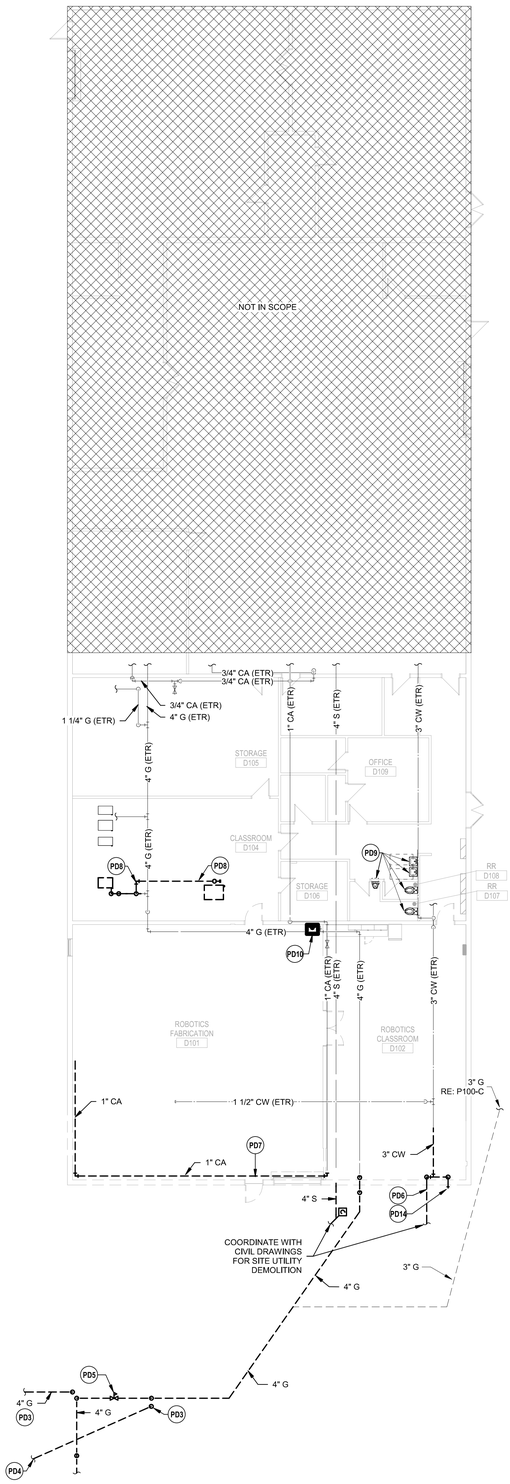
PD10 REMOVE EXISTING PLUMBING FIXTURE AND CAP PIPING (SANITARY, VENT, HOT AND COLD WATER) AT WALL FOR RECONNECTION UNDER NEW WORK.

2 PD11 REMOVE EXISTING COMPRESSED AIR PIPING. REMOVE AIR COMPRESSOR TANK AND COMPRESSED AIR DRYER AND RELINQUISH TO OWNER.

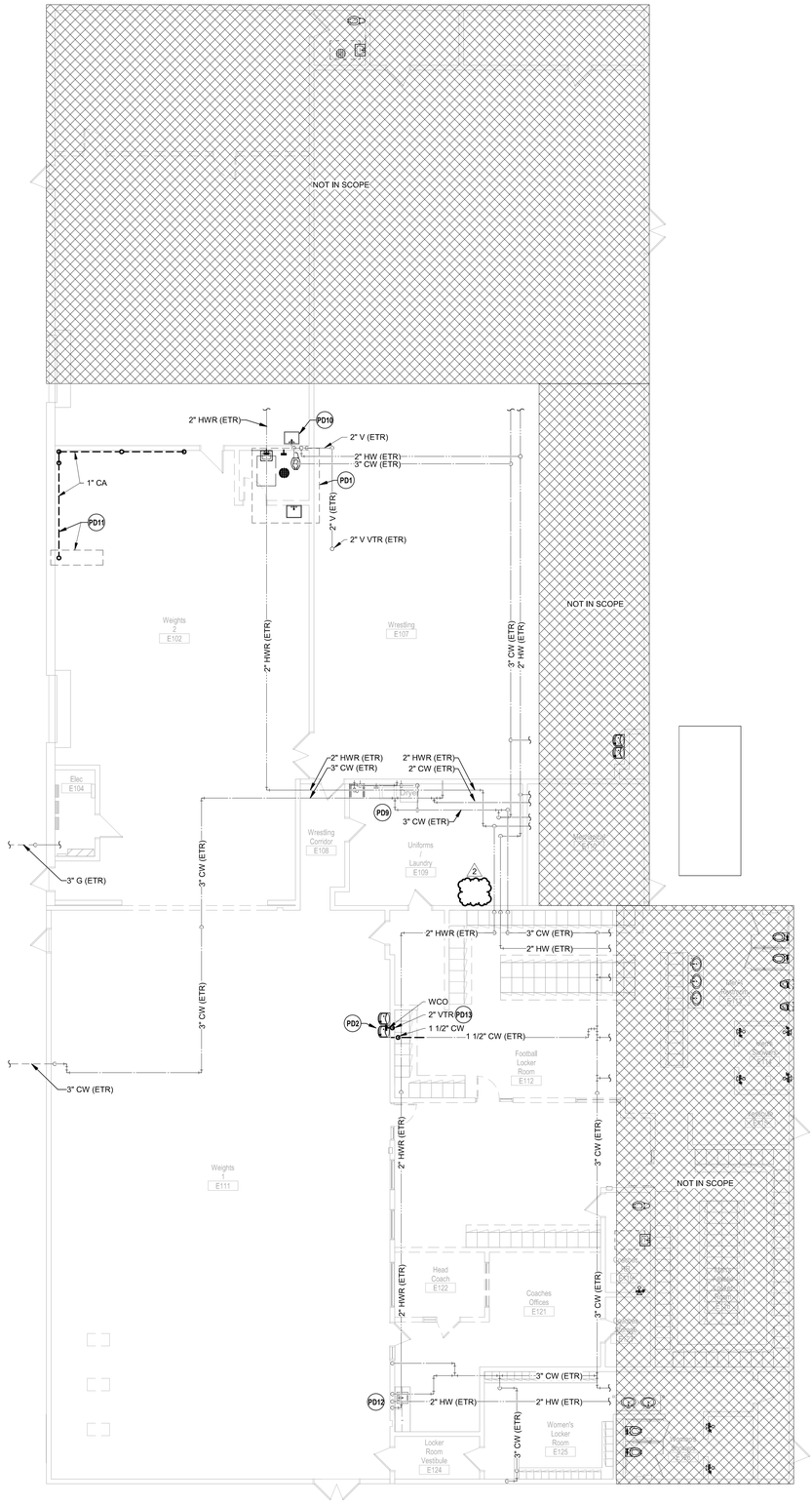
PD12 CUT AND PATCH EXISTING WALL AND CONCRETE FLOOR SLABS REQUIRED FOR PREP OF INSTALLATION OF FIXTURE IN NEW WORK.

PD13 CAP AND ABANDON EXISTING VENT THROUGH ROOF WITH NEW PIPE CAPS ABOVE AND BELOW ROOF.

PD14 REMOVE EXISTING WALL HYDRANT AS WELL AS PIPING (COLD WATER) TO ACTIVE MAIN ABOVE CEILING AND CAP.



1 BSHS - PLUMBING DEMOLITION PLAN - LEVEL 1 - BUILDING D
3/32" = 1'-0"



2 LSHS - PLUMBING DEMOLITION PLAN - LEVEL 1 - BUILDING E
1/8" = 1'-0"

multistudio
the evolution of gould evans

LSR7 Robotics, GiC & Phys Education

LSN: 901 NE Douglas St., Lee's Summit MO 64086
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MO. CORPORATE NO: E-556D
EXPIRES 12/31/2022

Issue Date: September 9, 2022

Revisions

NUMBER	DESCRIPTION	DATE
2	Addendum 02	09/23/2022

RELEASED FOR CONSTRUCTION
As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
11/23/2022

STATE OF MISSOURI
CARL J. HOLDEN
NUMBER PE-2020016283
PROFESSIONAL ENGINEER

09/22/2022
CARL J. HOLDEN
LICENSE # PE-2020016283

LSHS - PLUMBING DEMOLITION PLAN - LEVEL 1 - BUILDING D & E

PD101-C

CARL J. HOLDEN

GENERAL DEMOLITION NOTES:

1. PRIOR TO SUBMITTING BID, VISIT THE JOB SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS OF THE PROJECT. REVIEW THE GENERAL NOTES, SPECIFICATIONS AND OTHER DRAWINGS FOR ADDITIONAL REQUIREMENTS WHICH MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY ARCHITECT OF CONFLICTS OR DISCREPANCIES PRIOR TO SUBMISSION OF BID.
2. EXISTING CONDITIONS WERE TAKEN FROM ORIGINAL DRAWINGS AND SITE VISITS AND MAY NOT REFLECT EXACT "AS-BUILT" CONDITIONS. FIELD VERIFY EXISTING CONDITIONS PRIOR TO SUBMITTING FINAL BIDS. COORDINATE NEW WORK AND DEMOLITION WITH OTHER DISCIPLINES AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION.
3. OWNER RETAINS RIGHTS OF SALVAGE FOR EQUIPMENT AND FIXTURES TO BE REMOVED. COORDINATE WITH THE OWNER THE EQUIPMENT AND FIXTURES TO BE SALVAGED AND THE LOCATION FOR STORAGE. AVOID DAMAGE TO EQUIPMENT, FIXTURES AND DEVICES DURING DEMOLITION WORK AND DURING TRANSPORT TO OWNER'S DESIGNATED STORAGE LOCATION.
4. REMOVE ITEMS SHOWN HEAVY LINED AND/OR CROSSHATCHED AND/OR NOTED TO BE REMOVED.
5. AVOID DAMAGING EXISTING SURFACES AND EQUIPMENT TO REMAIN FOR NEW INSTALLATION. REPAIR ANY DAMAGE CAUSED DURING WORK AT NO EXTRA COST TO THE OWNER.
6. SEAL ALL PENETRATIONS THROUGH FLOORS, WALLS, CEILINGS AND ROOFS WHERE PLUMBING COMPONENTS ARE REMOVED AND WHERE THE EXISTING PENETRATION IS NOT USED FOR THE NEW INSTALLATION. REPAIR SURFACES TO MATCH ADJACENT AREAS.
7. INSTALL PERMANENT CAPS WHERE PIPING IS REMOVED AND THE EXISTING TAPS ARE NOT USED FOR THE NEW INSTALLATION. INSTALL TEMPORARY CAPS WHERE PIPING IS REMOVED AND THE EXISTING TAPS WILL BE USED FOR THE NEW INSTALLATION TO PROTECT THE INTERIOR SURFACES UNTIL NEW PIPING IS INSTALLED.
8. REMOVE PIPE HANGERS, PIPE SUPPORTS AND EQUIPMENT SUPPORTS WHERE PIPING OR EQUIPMENT IS REMOVED AND THE EXISTING HANGERS AND SUPPORTS ARE NOT USED FOR THE NEW INSTALLATION.
9. VERIFY THAT EXISTING EQUIPMENT TO REMAIN IS OPERATING PROPERLY. NOTIFY THE ARCHITECT OF ANY DAMAGED AND/OR MALFUNCTIONING COMPONENTS.
10. WHERE SHUTDOWN OF EXISTING ACTIVE PIPING SYSTEMS IS REQUIRED DURING DEMOLITION PHASE OF WORK IN PREPARATION FOR NEW TIE-IN PHASE OF WORK, COORDINATE WITH THE OWNER AND MINIMIZE DOWNTIME. VERIFY EXISTING SYSTEMS, EQUIPMENT, AND COMPONENTS WILL BE PROVIDED WITH BACKUP SERVICE WHERE REQUIRED. NOTIFY OWNER A MINIMUM OF SEVEN (7) DAYS PRIOR TO INTERRUPTION OF SERVICE.

GENERAL NOTES:

1. PROVIDE A CONSTRUCTION RECORD SET OF "AS-BUILT" DOCUMENTS TO THE ARCHITECT REFLECTING ANY VARIANCES OF INSTALLED PIPING LOCATIONS OR EQUIPMENT CONTRARY TO THE CONSTRUCTION DOCUMENTS, REFER TO SPECIFICATIONS.
2. DRAWINGS ARE DIAGRAMMATIC ONLY AND REPRESENT THE GENERAL SCOPE OF THE WORK. REVIEW THE GENERAL NOTES, SPECIFICATIONS AND PLANS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY THE ARCHITECT OF ANY CONFLICTS OR DISCREPANCIES PRIOR TO SUBMISSION OF BID.
3. PROVIDE TO THE ARCHITECT A COPY OF INSPECTION REPORTS AND APPROVAL CERTIFICATES FROM LOCAL AND STATE INSPECTIONS, REFER TO SPECIFICATIONS.
4. INSTALLATION SHALL COMPLY WITH LEGALLY CONSTITUTED CODES AND THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
5. PLANS AND SPECIFICATIONS GOVERN WHERE THEY EXCEED CODE REQUIREMENTS.
6. VERIFY LOCATION AND DEPTH OF UTILITIES AT POINTS OF CONNECTION BEFORE START OF PIPING INSTALLATION.
7. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHTS OF PLUMBING FIXTURES.
8. DO NOT SCALE FLOOR PLANS FOR EXACT HORIZONTAL LOCATION OF PIPE ROUTING.
9. INSTALL CONCEALED PIPING TIGHT TO THE STRUCTURE AND AS HIGH AS POSSIBLE.
10. VALVES SHALL BE LINE SIZE UNLESS OTHERWISE NOTED.
11. INSTALL EXPOSED PIPING, WHERE NECESSARY, IN FINISHED AREAS TIGHT TO THE STRUCTURE, WALL OR CEILING AND AS HIGH AS POSSIBLE. INSTALL PIPING PARALLEL AND / OR PERPENDICULAR TO WALLS.
12. INSTALL VALVES AND APPURTENANCES A MAXIMUM OF 24" ABOVE CEILING IN ACCESSIBLE LOCATION WITHIN 24" OF ACCESS DOORS OR ACCESSIBLE CEILING TILES. PROVIDE PIPE AND FITTINGS TO INSTALL VALVES AND APPURTENANCES AT REQUIRED HEIGHT AND WITHIN 24" OF ACCESS DOORS OR ACCESSIBLE CEILING TILES.
13. INSTALL NO PLASTIC PIPE OF ANY KIND ABOVE SLAB INSIDE THE BUILDING, INSTALL NO PLASTIC PIPE IN THE CEILING RETURN AIR PLENUM.
14. COORDINATE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
15. COORDINATE PIPING INSTALLATION WITH STRUCTURAL GRADE BEAMS, FOOTINGS, COLUMN PIERS, ETC. SLEEVE PIPING THROUGH GRADE BEAMS, FOOTING, ETC. WHERE REQUIRED AND AS NOTED ON PLANS. COORDINATE SLEEVE INSTALLATIONS WITH THE ARCHITECT, STRUCTURAL ENGINEER, STRUCTURAL CONTRACTOR AND GENERAL CONTRACTOR BEFORE CONCRETE IS INSTALLED.
16. CLEAN FAUCET AERATORS AND PIPE STRAINERS PRIOR TO TURNING BUILDING OVER TO THE OWNER.
17. PROVIDE TRAP PRIMERS WHERE REQUIRED BY LOCAL AUTHORITIES.
18. COORDINATE PIPE ROUTING AWAY FROM ELECTRICAL PANELS. DO NOT INSTALL PIPING OVER ELECTRICAL PANELS.
19. PAINT ALL EXPOSED GAS AND WATER PIPING USING RUST INHIBITOR PAINT. PAINT AND COLOR SHALL BE COORDINATED WITH THE ARCHITECT AND / OR OWNER.
20. COORDINATE ALL ROOF PENETRATIONS WITH OTHER TRADES. MAINTAIN 10' MINIMUM CLEARANCE FROM ALL AIR INTAKES. MAINTAIN 2' CLEARANCE FROM ALL OTHER EQUIPMENT.
21. INSULATE PIPING ROUTED IN EXTERIOR BUILDING WALLS WITH MINIMUM 2" BATT INSULATION TO PREVENT FREEZING.
22. PROVIDE "HEAVY-DUTY" NO-HUB COUPLINGS ON SANITARY PIPING 4" AND LARGER. SEE DIVISION 22 SPECIFICATION SECTION "SANITARY DRAINAGE AND VENT AND PIPING SPECIALTIES" FOR MORE INFORMATION.
23. PROVIDE "HEAVY-DUTY" NO-HUB COUPLINGS ON STORM PIPING, INCLUDING CONNECTIONS TO ROOF DRAINS. SEE DIVISION 22 SPECIFICATION SECTION "STORM DRAINAGE PIPING AND SPECIALTIES" FOR MORE INFORMATION.
24. PROVIDE TRANSITION ADAPTER COUPLINGS FOR CONNECTION OF PVC DWV TO CAST IRON AT SLAB ON GRADE. SEE DIVISION 22 SPECIFICATION FOR MORE INFORMATION.
25. PROVIDE TRANSITION ADAPTER COUPLINGS FOR CONNECTION OF PVC DWV TO CAST IRON SANITARY, WASTE AND VENT PIPE AT SLAB ON GRADE. SEE DIVISION 22 SPECIFICATION SECTION "SANITARY DRAINAGE AND VENT PIPING AND SPECIALTIES" FOR MORE INFORMATION.
26. PROVIDE TRANSITION ADAPTER COUPLINGS FOR CONNECTION OF PVC DWV TO CAST IRON STORM PIPE AT SLAB ON GRADE. SEE DIVISION 22 SPECIFICATION SECTION "STORM DRAINAGE PIPING AND SPECIALTIES" FOR MORE INFORMATION.
27. FLOW CONTROL VALVES SHALL BE SIZE 1/2" AND SET AT 0.5 GPM UNLESS NOTED OTHERWISE.
28. WATER HAMMER ARRESTORS SHALL BE SIZE "A" UNLESS NOTED OTHERWISE.
29. PROVIDE VERTICAL LIFT SPRING LOADED CHECK VALVES IN HOT AND COLD WATER SUPPLIES FOR MOP SINK FAUCETS DOWNSTREAM OF SHUTOFF VALVES.
30. PROVIDE WALL PIPES AT PIPING PENETRATIONS OF ELEVATED WATERPROOF FLOOR SLABS, REFER TO SPECIFICATIONS.
31. VERIFY EXISTING EQUIPMENT, INCLUDING ACCESSORIES, IS NOT DAMAGED AND IS IN GOOD WORKING ORDER. REPORT ANY DEFICIENCIES TO THE ARCHITECT.
32. PROVIDE SIZE AND LENGTH OF HOT WATER FIXTURE SUPPLY PIPE FROM CIRCULATED HOT WATER BRANCH OR MAIN TO TERMINATION OF HOT WATER FIXTURE SUPPLY PIPE AT EACH FIXTURE PER 2015 INTERNATIONAL ENERGY CONSERVATION CODE, TABLE C404.3.1. FOR ½" HOT WATER FIXTURE SUPPLY PIPE SIZE TO INDIVIDUAL LAVATORIES, PROVIDE MAXIMUM LENGTH OF TWO FEET. FOR ½" HOT WATER FIXTURE SUPPLY PIPE SIZE TO INDIVIDUAL SINKS, PROVIDE MAXIMUM LENGTH OF 43 FEET. FOR 3/4" HOT WATER FIXTURE SUPPLY PIPE SIZE TO INDIVIDUAL SINKS, PROVIDE MAXIMUM LENGTH OF 21 FEET.

PLUMBING SYMBOLS

THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED. V2.02

STANDARD MOUNTING HEIGHTS

HOSE BIBB (CENTERLINE)	36"
ICE MAKER OUTLET BOX (CENTER OF BOX)	24"
JANITOR'S SINK FAUCET FITTINGS (CENTERLINE)	42"
NON FREEZE WALL HYDRANT (AFG TO CENTERLINE)	18"
WASHING MACHINE OUTLET BOX (RIM)	42"

INSTALL PLUMBING FIXTURES AT THE MOUNTING HEIGHTS SHOWN ABOVE UNO IN THE ARCHITECTURAL DRAWINGS OR ELSEWHERE IN THE CONSTRUCTION DOCUMENTS. FINAL APPROVAL OF LOCATIONS BY ARCHITECT. MOUNTING HEIGHTS LISTED ABOVE, OR ELSEWHERE IN THE CONSTRUCTION DOCUMENTS, ARE AFF. UNO. ALL DEVICES SHALL BE INSTALLED IN COMPLIANCE WITH CURRENT ADA AND LOCAL REQUIREMENTS.

ANNOTATION

- (1) PLUMBING PLAN NOTE CALLOUT
- (1) PLUMBING EQUIPMENT DESIGNATION. (CONTRACTOR FURNISHED AND INSTALLED). REFER TO PLUMBING FIXTURE OR EQUIPMENT SCHEDULES
- 1 EQUIPMENT DESIGNATION (OWNER FURNISHED, CONTRACTOR INSTALLED)
- CU 1 MECHANICAL EQUIPMENT DESIGNATION (CONTRACTOR FURNISHED AND INSTALLED UNLESS NOTED OTHERWISE)
- CONNECTION POINT OF NEW WORK TO EXISTING
- 1 / P1 DETAIL REFERENCE UPPER NUMBER INDICATES DETAIL NUMBER LOWER NUMBER INDICATES SHEET NUMBER
- A 1 / P1 SECTION CUT DESIGNATION
- DEDICATED EQUIPMENT ACCESS TILE
- ACCESS PANEL

ABBREVIATIONS

ADA	AMERICANS WITH DISABILITIES ACT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AP	ACCESS PANEL
BAS	BUILDING AUTOMATION SYSTEM
BFF	BELOW FINISHED FLOOR
BFG	BELOW FINISHED GRADE
BOP	BOTTOM OF PIPE
BOS	BOTTOM OF STRUCTURE
BTU	BRITISH THERMAL UNIT
CP	CONDENSATE PUMP
CPVC	CHLORINATED POLYVINYL CHLORIDE
CU	COPPER
DI	DUCTILE IRON
DN	DOWN
DFU	DRAINAGE FIXTURE UNIT
DS	DOWNSPOUT
(E)	EXISTING
EMS	ENERGY MANAGEMENT SYSTEM
ETR	EXISTING TO REMAIN
EWC	ELECTRIC WATER COOLER
FD	FLOOR DRAIN
FFA	FROM FLOOR ABOVE
FFB	FROM FLOOR BELOW
FF	FINISHED FLOOR
FL	FLOW LINE
FLA	FULL LOAD AMPS
FLR	FLOOR
GPM	GALLONS PER MINUTE
HD	HEAD, HUB DRAIN
HZ	HERTZ
IE	INVERT ELEVATION
IN WC	INCHES OF WATER COLUMN
JB	JUNCTION BOX
J-BOX	JUNCTION BOX
KW	KILOWATT
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MBH	1000 BTU PER HOUR
MH	MANHOLE
MIN	MINIMUM
N/C	NORMALLY CLOSED
N/O	NORMALLY OPEN
NIC	NOT IN CONTRACT
ORD	OVERFLOW ROOF DRAIN
PDI	PLUMBING DRAINAGE INSTITUTE
PHØ	PHASE
PRV	PRESSURE REDUCING VALVE
PVC	POLYVINYL CHLORIDE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
RPM	REVOLUTIONS PER MINUTE
RTU	ROOFTOP UNIT
SF	SQUARE FEET
SP	SUMP
SS	STAINLESS STEEL SANITARY SEWER, SOIL STACK
TDH	TOTAL DYNAMIC HEAD
TFA	TO FLOOR ABOVE
TFB	TO FLOOR BELOW
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES, INC.
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
VCP	VITRIFIED CLAY PIPE
VFD	VARIABLE FREQUENCY DRIVE
VS	VENT STACK
VTR	VENT THROUGH ROOF
W/	WITH
W/O	WITHOUT
WC	WATER COLUMN
WS	WASTE STACK
WSFU	WATER SUPPLY FIXTURE UNIT
WVS	WASTE VENT STACK

PIPING SYMBOLS

- OXYGEN OUTLET
- NITROUS OXIDE OUTLET
- MEDICAL AIR OUTLET
- NITROGEN OUTLET
- MEDICAL VACUUM INLET
- FLOOR SINK (FS), SIZE & TYPE
- FLOOR DRAIN (FD), SIZE & TYPE
- ROOF DRAIN (RD), SIZE & TYPE
- BALL VALVE
- CONTROL VALVE
- SHUTOFF VALVE
- CHECK VALVE
- BALANCING VALVE WITH PRESSURE PORTS
- WATER METER
- STRAINER
- STRAINER WITH BLOWOFF
- RELIEF/SAFETY VALVE
- SOLENOID VALVE
- PRESSURE REDUCING VALVE
- GAS PRESSURE REGULATOR
- THERMOSTATIC MIXING VALVE
- PA PIPE ANCHOR
- EXPANSION JOINT
- BACKFLOW PREVENTER
- PRESSURE GAUGE
- THERMOMETER
- UNION
- FLANGE CONNECTION
- HOSE BIBB (HB)
- NON-FREEZING WALL HYDRANT (NW)
- MANUAL / AUTOMATIC AIR VENT OR VACUUM RELIEF VALVE
- PRESSURE / VACUUM SWITCH
- CLEANOUT
- CAP
- WALL CLEANOUT (WCO)
- FLOOR CLEANOUT (FCO)
- EXTERIOR CLEANOUT (ECO)
- ELBOW UP
- ELBOW DOWN
- TEE UP
- TEE DOWN
- ELBOW UP WITH SHUT-OFF VALVE (SOV)
- ELBOW DOWN WITH SHUT-OFF VALVE (SOV)
- TEE UP WITH SHUT-OFF VALVE (SOV)
- TEE DOWN WITH SHUT OFF VALVE (SOV)
- "A" WATER HAMMER ARRESTER (WHA) WITH PDI SIZES, (A, B, C, D, & E)
- RECIRCULATION PUMP
- P-TRAP
- GAS COCK
- TRAP PRIMER
- TRAP PRIMER WITH DISTRIBUTION UNIT

PIPING LINETYPES

- DOMESTIC COLD WATER (CW)
- SOFTENED COLD WATER (SCW)
- DOMESTIC HOT WATER (HW)
- DOMESTIC HOT WATER RECIRC. (HWR)
- DOMESTIC HOT WATER (140°)
- TRAP PRIMER LINE (T)
- SOIL PIPING - ABOVE FLOOR (S)
- SOIL PIPING - BELOW FLOOR (S)
- WASTE PIPING - ABOVE FLOOR (W)
- WASTE PIPING - BELOW FLOOR (W)
- GREASE WASTE - ABOVE FLOOR (GW)
- GREASE WASTE - BELOW FLOOR (GW)
- COMBINATION GREASE WASTE AND VENT (CGWV)
- COMBINATION WASTE AND VENT (CWV)
- STORM DRAIN - ABOVE FLOOR (ST)
- STORM DRAIN - BELOW FLOOR (ST)
- OVERFLOW STORM DRAIN - ABOVE FLOOR (OST)
- VENT BELOW GRADE (VBG)
- VENT BELOW FLOOR (VBF)
- INDIRECT DRAIN (ID)
- CONDENSATE DRAIN - HIGH EFFICIENCY RTU (CDH)
- CONDENSATE DRAIN (CD)
- AUXILIARY CONDENSATE DRAIN (ACD)
- SUMP OR SEWAGE PUMP DISCHARGE (SPD)
- NATURAL GAS (G)
- NATURAL GAS ON ROOF (G)
- MEDIUM PRESSURE NATURAL GAS (MPG)
- MEDIUM PRESSURE NATURAL GAS ON ROOF (MPG)
- NON-POTABLE WATER (NPW)
- LIQUEFIED PETROLEUM GAS (LPG)
- WATER SERVICE (WS)
- FIRE PROTECTION SPRINKLER DRY (DFP)
- FIRE PROTECTION SPRINKLER WET (FP)
- FIRE PROTECTION STANDPIPE DRY (DSP)
- FIRE PROTECTION STANDPIPE WET (WSP)
- CONDENSATE PUMP DISCHARGE (PD)
- VENT PIPING (V)
- ACID WASTE - ABOVE FLOOR (AW)
- ACID WASTE - BELOW FLOOR (AW)
- ACID VENT (AV)
- GRAY WATER (GWS)
- COMPRESSED AIR (CA)
- MEDICAL AIR (MA)
- MEDICAL VACUUM (VE)
- HELIUM (HE)
- INSTRUMENT AIR (IA)
- INSTRUMENT VACUUM (IV)
- NITROGEN (N2)
- NITROUS OXIDE (N20)
- OXYGEN (O2)
- EVAC/WAGD (EV)
- CARBON DIOXIDE (CO2)
- MEDICAL AIR INTAKE (AI)
- MEDICAL VACUUM EXHAUST (VE)
- DENTAL AIR (DA)
- DENTAL VACUUM (DV)
- FILTERED WATER (FW1)
- FILTERED WATER W/ SCALE INHIBITOR (FW2)
- REVERSE OSMOSIS (RO)
- REVERSE OSMOSIS REMINERALIZATION (ROR)

LINETYPE LEGEND

THROUGHOUT THE DRAWINGS DIFFERENT LINETYPES ARE USED IN COMBINATION WITH THE SYMBOLS TO INDICATE THE STATUS OF ITEMS AS EXISTING, TO BE DEMOLISHED, TO BE INCLUDED AS PART OF NEW WORK AND/OR ITEMS WHICH ARE ANTICIPATED TO BE PROVIDED IN THE FUTURE. THE STATUS OF ITEMS USING THESE LINETYPES ARE RELATIVE TO THE VIEW IN WHICH THEY APPEAR. PHASING SHOWN IN DRAWINGS IS NOT INTENDED TO FULLY DESCRIBE ALL NECESSARY CONSTRUCTION PHASING, WHICH IS DETERMINED BY THE CONTRACTOR AS PART OF THEIR RESPONSIBILITIES. ANY SUCH PHASES DESCRIBED IN THE CONSTRUCTION DOCUMENTS ARE GENERAL AND ONLY INTENDED TO INDICATE A BROAD ORDER FOR THE SAKE OF DESCRIBING THE PROJECT. THE FOLLOWING LINETYPES MAY BE USED ON ANY DEVICE, EQUIPMENT, NOTE, LINE, SHAPE, ETC.

EXISTING	NEW
DEMOLISH	FUTURE

CALL OUTS

- ENLARGED PLAN CALLOUT
- NOT IN SCOPE

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Lee's Summit, Missouri
11/23/2022

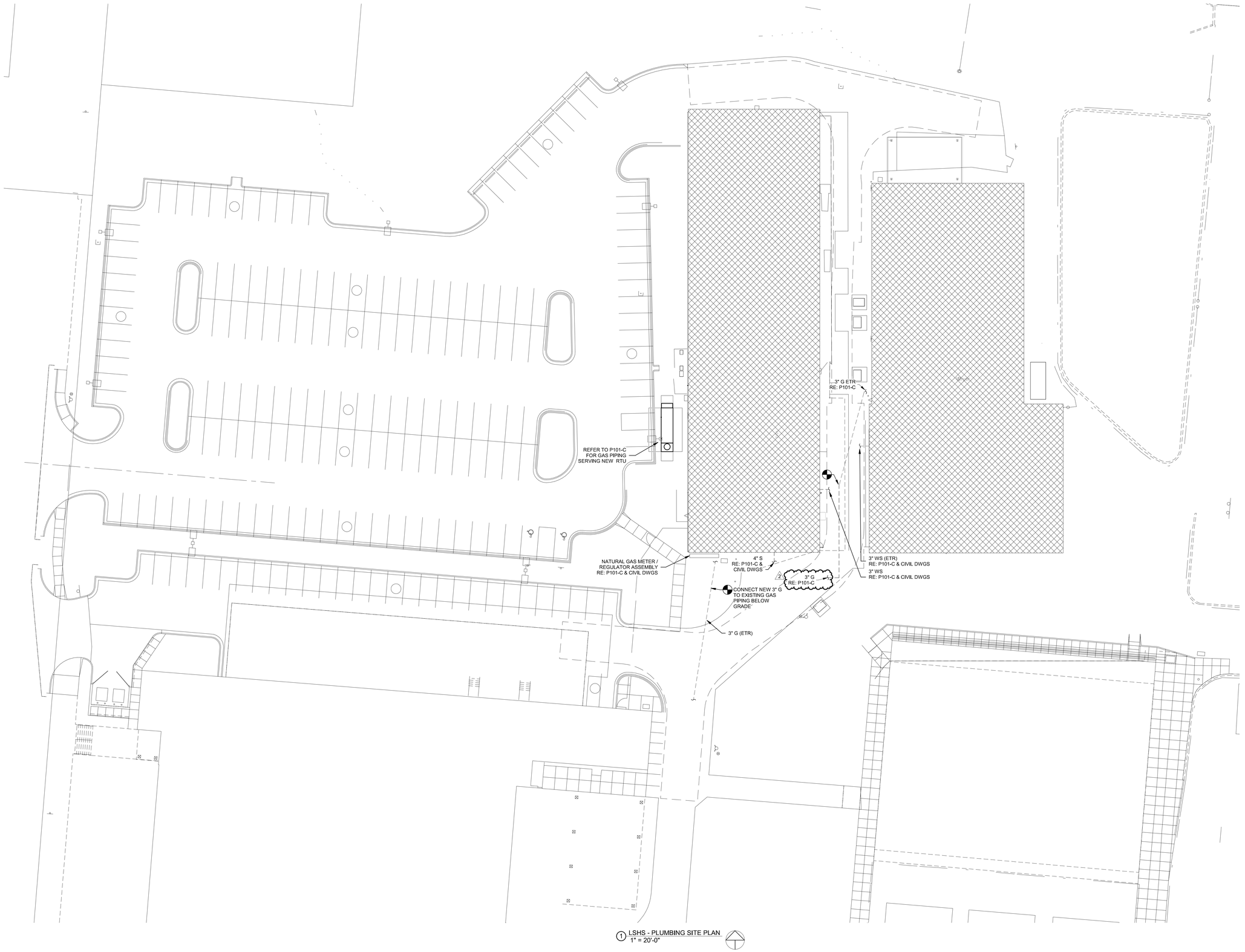
STATE OF MISSOURI · CARL J. HOLDEN · NUMBER PE-2020016283 · PROFESSIONAL ENGINEER

09/09/2022
CARL J. HOLDEN
LICENSE # PE-2020016283

LSHS - PLUMBING LEGEND AND GENERAL NOTES

P000-C

CARL J. HOLDEN



1 LSHS - PLUMBING SITE PLAN
1" = 20'-0"

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LSHS - PLUMBING SITE PLAN

P100-C

PLUMBING PLAN NOTES:

P3 CONNECT RELOCATED PLUMBING FIXTURE TO EXISTING PLUMBING PIPING (WASTE, VENT, AND COLD/HOT WATER) IN THIS AREA. PROVIDE ADDITIONAL PIPING AND INSULATION TO MATCH EXISTING AS REQUIRED. REPAIR AND MATCH FINAL FINISH PER ARCHITECTURAL INSTRUCTIONS.

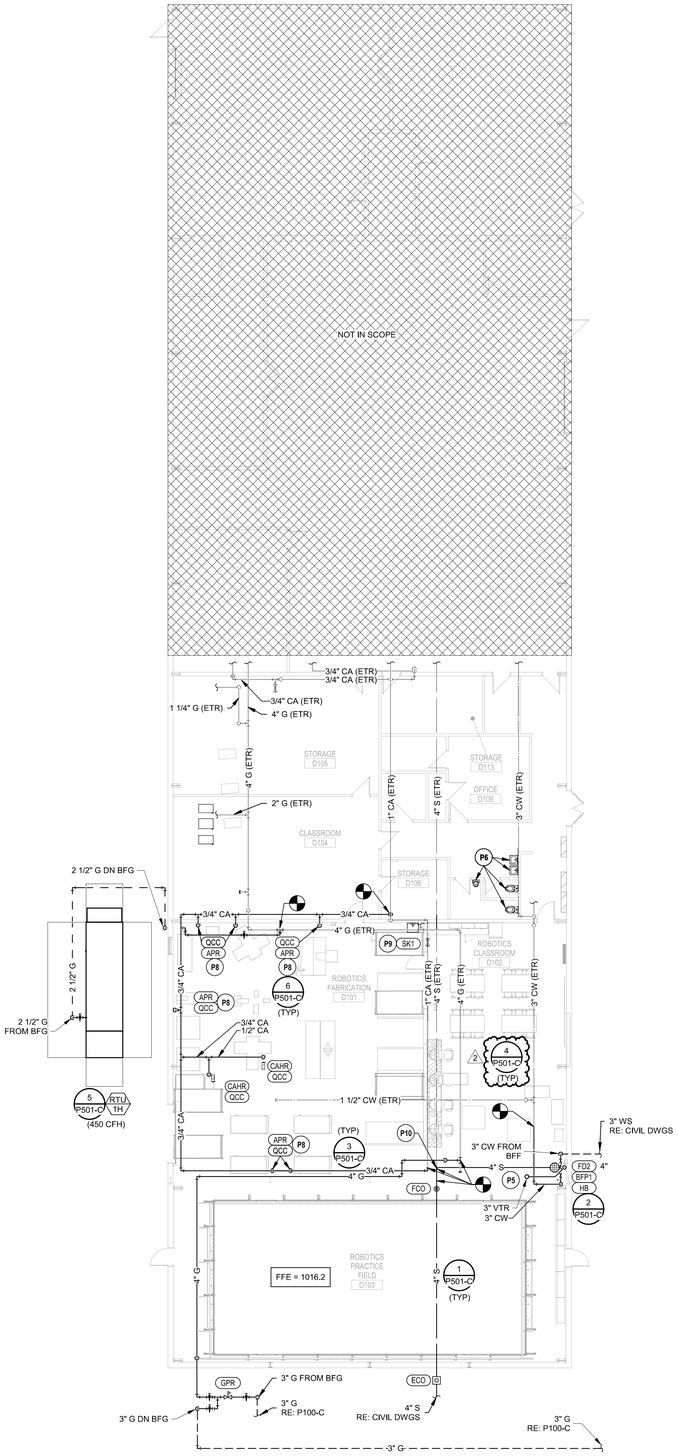
P5 CUT AND PATCH EXISTING CONCRETE FLOOR SLAB FOR INSTALLATION OF NEW UNDERGROUND PLUMBING PIPE. REPAIR AND MATCH FINAL FINISH PER ARCHITECTURAL INSTRUCTIONS.

P6 EXISTING PLUMBING FIXTURE SHALL REMAIN. PROTECT FROM DAMAGE DURING DEMOLITION AND RENOVATION.

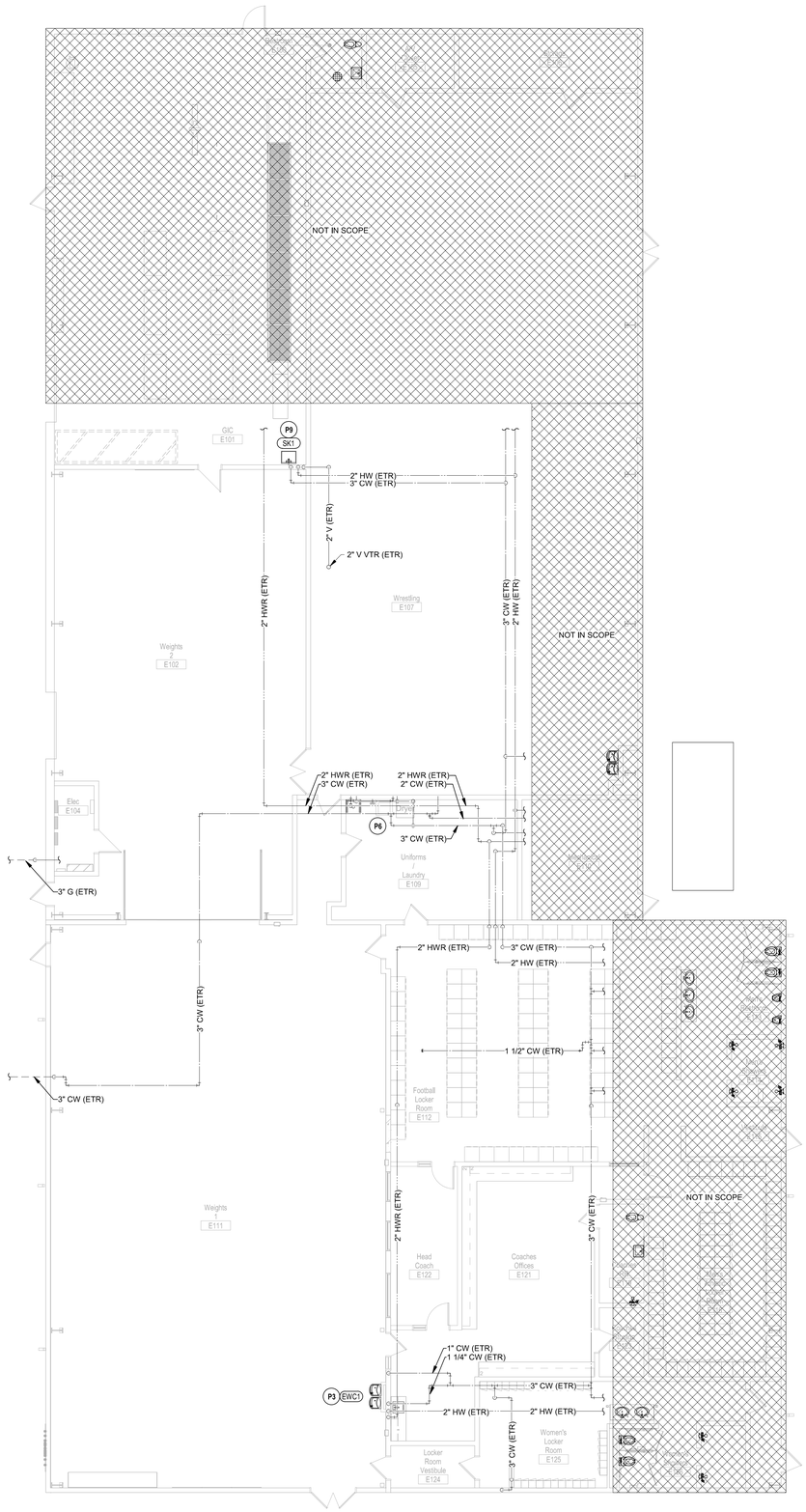
P8 1/2" CA DROP WITH SHUTOFF VALVE. DROP TO 4' AFF

P9 CONNECT NEW PLUMBING FIXTURE TO EXISTING PLUMBING SERVICE PIPING (WASTE, VENT, AND COLD/HOT WATER). PROVIDE ADDITIONAL PIPING AND INSULATION TO MATCH EXISTING AS REQUIRED

P10 CONNECT NEW SANITARY PIPING TO EXISTING SANITARY PIPING IN THIS VICINITY. FIELD VERIFY THE EXACT LOCATION, SIZE AND INVERT ELEVATION OF PIPING PRIOR TO START OF INSTALLATION.



1 LSHS - PLUMBING PLAN - LEVEL 1 - BUILDING D
3/32" = 1'-0"



2 LSHS - PLUMBING PLAN - LEVEL 1 - BUILDING E
1/8" = 1'-0"

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LSHS - PLUMBING PLAN - LEVEL 1 - BUILDING D & E

P101-C

PLUMBING FIXTURE CONNECTION SCHEDULE

FIXTURE	COLD WATER	HOT WATER	WASTE	VENT
WATER CLOSET (FV)	1-1/4" (NOTE 1)	--	4"	2"
URINAL	3/4" (NOTE 2)	--	2"	2"
LAVATORY	1/2"	1/2"	2"	1-1/2"
ELECTRIC WATER COOLER	1/2"	--	2"	1-1/2"
JANITOR'S SINK	1/2"	1/2"	3"	2"
FLOOR DRAIN	--	--	2"	2"
SINK	1/2"	1/2"	2"	1-1/2"

NOTES:

PIPE SIZES SHOWN ARE MINIMUM. AND ARE FOR INDIVIUAL SERVICE PIPE SIZES

(NOTE 1) PROVIDE 1-1/4" CW TO FLUSH VALVE, REDUCE TO 1" PRIOR TO CONNECTING TO FLUSH VALVE INLET AT INSIDE OF WALL
(NOTE 2) PROVIDE 1" CW TO FLUSH VALV...

GAS PRESSURE REGULATOR SCHEDULE FOR 2 PSI SYSTEMS

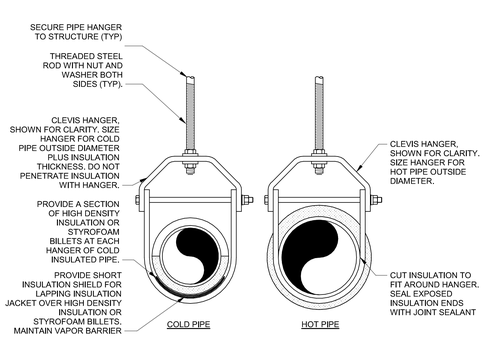
MARK	MANUFACTURER	MODEL	VALVE TYPE	VALVE BODY SIZE (INCHES)	MAX. FLOW RATE (CFH)	INLET PRESSURE (PSI)	OUTLET PRESSURE (INCHES WATER COLUMN)	NOTES
GPR	PIETRO-FIORENTINI	31057/F	C	3"	12,993	1	7"	A, B, D, E, F, G, H & I

NOTES:

A. C = SELF CONTAINED "DIRECT ACTING" DIAPHRAGM TYPE WITH INTERNAL VENT LIMITER
B. DROOP = 1" WATER COLUMN MAXIMUM
C. DROOP = 2" WATER COLUMN MAXIMUM
D. 65# ALUMINUM BODY, SCREWED CONNECTIONS AND OVERPRESSURE PROTECTION TO 25 PSI
E. MAXIMUM FLOW RATE SCHEDULED, MATCH BODY SIZE AND MAXIMUM FLOW RATE TO EQUIPMENT FLOW RATE. REFER TO EQUIPMENT SHOP DRAWINGS FOR EXACT LOADS.
F. LISTED TO MEET ANSI Z21.80 / CSA 6.22 WITH CSA LISTING STAMP ON REGULATOR BODY
G. GAS PRESSURE REGULATOR INLET PRESSURE = OPERATING PRESSURE - DESIGN FRICTION LOSS
H. 2 PSI MAXIMUM INLET PRESSURE AND 1 PSI MINIMUM INLET PRESSURE
I. PROVIDE EXTERNAL VENT LIMITER (WHERE APPROVED BY LOCAL AUTHORITIES) FOR INDOOR INSTALLATION AND INSTALL PER SPECIFICATIONS. INSTALL OUTDOORS PER SPECIFICATIONS.

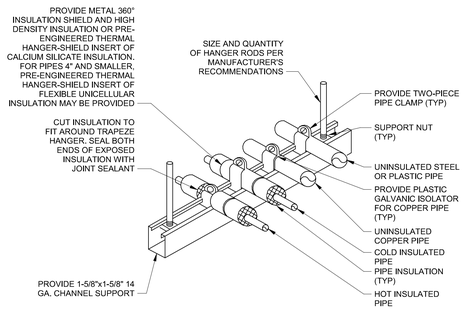
PLUMBING FIXTURE SCHEDULE - LSHS

PLUMBING PLAN MARK	DESCRIPTION
APR	AIR PRESSURE REGULATOR: WILKERSON #R-8, ALUMINUM BODY, BRASSVALVE STEM, NITRILE DIAPHRAGM AND SEALS, OUTLET PRESSURE GAGE, 3/8" FNPT CONNECTIONS AND MAXIMUM FLOW OF 68 SCFM WITH PRESSURE ADJUSTMENT RANGE OF 0 -125 PSIG.
BFP1	REDUCED PRESSURE ZONE BACKFLOW PREVENTER: WATTS # 957-NRS, MEETING ASSE 1013, 304 STAINLESS STEEL BODY AND SLEEVE, QUARTER TURN TEST COCKS, RESILIENT SEATED NON-RISING STEM GATE VALVES AND WATTS #77F-DI-FDA EPOXY COATED CAST IRON STRAINER AND # 957AG AIR GAP FITTING.
CAHR	COMPRESSED AIR HOSE REEL: COXREELS EZ-P-LP430 RETRACTABLE HOSE REEL , WITH SPRING LOADED "EZ-COIL REWIND SAFETY SYSTEM" WITH LOW RETRACTION SPEED, BRASS BEARING AND 30 FEET OF 1/2" LOW PRESSURE AIR HOSE WITH A MAXIMUM PRESSURE RATING OF 180 PSIG. PROVIDE WITH 4-WAY ROLLER BRACKET #4RB, PROVIDE WITH MOUNTING BRACKET KIT FOR MOUNTING SINGLE HOSE REEL # 15723 EZ-UP BRACKET, PROVIDE WITH # 5155-1.5 3/4" X 24" INCH LOW PRESSURE HOSE FOR CONNECTION FROM THE COMPRESSED AIR LINE TO THE HOSE REEL INLET. PROVIDE WITH QUICK DISCONNECT (QCC) DESCRIBED ELSE WHERE IN THIS PLUMBING FIXTURE SCHEDULE.
2 ECO	EXTERIOR CLEANOUT: EXTERIOR CLEANOUT: JAY R. SMITH # 4261L, SERIES DUCO CAST IRON DOUBLE FLANGED HOUSING WITH HEAVY DUTY SECURED SCORIATED CAST IRON COVER WITH LIFTING DEVICE AND CLEANOUT BODY WITH ABS PLASTIC PLUG WITH GASKET SEAL AND PUSH-ON JOINT. REFER TO SPECIFICATIONS FOR INSTALLATION.CLEANOUT COVERS SHALL HAVE EITHER "SANITARY" OR "STORM" CAST INTO THE COVER TO IDENTIFY SYSTEM SERVED.
EWC1	ELECTRIC WATER COOLER (ADA ACCESSIBLE) RELOCATED FIXTURE. TRIM: McGUIRE # LF2165CC LEAD FREE BRASS COMPRESSION ANGLE STOP VALVE WITH RISER AND ESCUTCHEON, McGUIRE # B8912CF 1-1/2" 17 GAUGE CAST CHROME PLATED BRASS ADJUSTABLE P-TRAP AND WASTE ARM WITH CLEANOUT PLUG AND ESCUTCHEON, AND SUITABLE CARRIER WITH STANCHIONS TO FLOOR. ELECTRICAL REQUIREMENTS: 120-VOLT, 4 FULL LOAD AMPS.
2 FCO	FLOOR CLEANOUT: JAY R. SMITH, CAST IRON BODY, FLASHING FLANGE WITH CLAMPING COLLAR, ABS PLUG, AND ADJUSTABLE, ROUND, SECURED, NICKEL BRONZE, TOP. # 4031L (-F-C), SCORIATED TOP FOR EXPOSED, FLUSH WITH FINISHED FLOOR, APPLICATION(S), # 4031L (-F-C-Y), STAINLESS STEEL MARKER FOR INSTALLATION IN CARPETED FLOOR AREA(S), # 4151 (-F-C), 1/8" RECESS FOR INSTALLATION IN TILED FLOOR AREA(S), # 4191 (-F-C), 1/2" RECESS FOR INSTALLATION IN TERRAZZO AND SIMILAR POURED FLOOR AREA(S). REFER TO SPECIFICATIONS FOR INSTALLATION. CLEANOUT COVERS SHALL HAVE EITHER 'SANITARY" OR "STORM" CAST INTO THE COVER TO IDENTIFY SYSTEM SERVED.
FD2	FLOOR DRAIN: JAY R. SMITH # 2005L (-A), CAST IRON BODY AND CLAMPING COLLAR, ADJUSTABLE 8" ROUND NICKEL BRONZE STRAINER. PROVIDE TRAP PRIMER PORT IF TRAP PRIMER IS PROVIDED ON THE DRAWINGS. USE PUSH-ON JOINT OF OUTLET SIZE AS SHOWN ON PLANS.
HB	HOSE BIBB: PRIER PRODUCTS # C-258CP.75, POLISHED CHROME PLATED BRASS 3/4" MALE INLET, 3/4" THREADED HOSE CONNECTION, LOOSE KEY HANDLE, AND ASSE 1011 INTEGRAL VACUUM BREAKER.
QCC	QUICK CONNECT COUPLER: GRACO #110198 COUPLER WITH 3/8" FNPT END. GRACO #110199 COUPLER WITH 1/2" FNPT END. VERIFY WITH OWNER THE TYPE OF COUPLER NECESSARY TO MATCH TOOL AND EQUIPMENT CONNECTION NEEDS FOR NEW AND RELOCATED EQUIPMENT.
2 SK1	SINK: ELKAY # WNSF-8124, ONE 24" x 24" x 14" DEEP COMPARTMENT, 8" HIGH BACKSPLASH, 14 GAUGE TYPE 304 STAINLESS STEEL, AND 16 GAUGE STAINLESS STEEL ADJUSTABLE LEGS. FAUCET: CHICAGO FAUCET #445-206578AB 3 3/8" BACK MOUNT FAUCET WITH 3" – 3 3/8" ADJUSTABLE "R" ARMS WITH INTEGRAL SHUT OFF, VANDAL RESISTANT # 369 LEVER HANDLES, L9 SWING SPOUT, # E FULL FLOW OUTLET, QUARTER TURN CERAMIC CARTRIDGES TRIM: ELKAY # LK24RT GRID STRAINER WITH LEVER HANDLE AND 1-1/2" TAILPIECE, AND 1-1/2" HARD COPPER TYPE "DWV" FABRICATED INDIRECT WASTE LINE ROUTED TO FLOOR SINK.



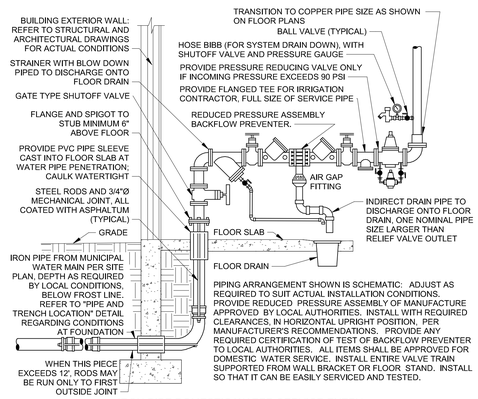
REFER TO SPECIFICATIONS FOR INSULATION TYPES, INSULATION THICKNESSES, HANGER TYPES, HANGER ROD CONNECTIONS TO STRUCTURE AND HANGER SPACING.

4 PIPE HANGER DETAIL
NTS



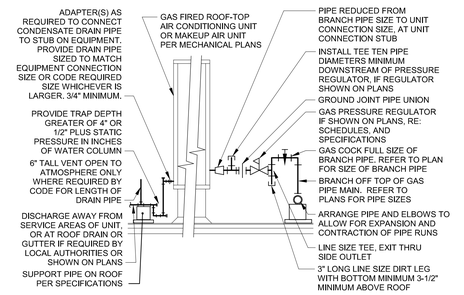
PIPING ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITONS. REFER TO SPECIFICATIONS FOR MORE INFORMATION. PIPE AND CONDUIT OF ALL TRADES MAY BE COMBINED ON THE SAME SUPPORT CHANNEL. COORDINATE SUPPORT CHANNEL LENGTH WITH PIPING AND CONDUIT TO BE SUPPORTED. SUPPORT CHANNEL SPACING SHALL BE DETERMINED BY SMALLEST PIPE TO BE SUPPORTED. CHANNEL SUPPORT MAY BE USED AS A WALL BRACKET. ATTACH TO WALL WITH ANCHOR BOLTS PER SPECIFICATIONS. FOR HORIZONTAL INSULATED PIPING, ATTACH CLAMPS AS INDICATED ABOVE, FOR VERTICAL INSULATED PIPING, ATTACH CLAMPS TO THE PIPE AND SEAL INSULATION AT BOTH CLAMP ENDS.

3 TRAPEZE PIPE HANGER
NTS



PIPING ARRANGEMENT SHOWN IS SCHEMATIC: ADJUST AS REQUIRED TO SUIT ACTUAL INSTALLATION CONDITIONS. PROVIDE REDUCED PRESSURE ASSEMBLY OF MANUFACTURE APPROVED BY LOCAL AUTHORITIES. INSTALL WITH REQUIRED CLEARANCES, IN HORIZONTAL UPRIGHT POSITION, PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE ANY REQUIRED CERTIFICATION OF TEST OF BACKFLOW PREVENTER TO LOCAL AUTHORITIES. ALL ITEMS SHALL BE APPROVED FOR DOMESTIC WATER SERVICE. INSTALL ENTIRE VALVE TRAIN SUPPORTED FROM WALL BRACKET OR FLOOR STAND. INSTALL SO THAT IT CAN BE EASILY SERVICED AND TESTED.

2 IRON PIPE DOMESTIC WATER SERVICE ENTRY
NTS

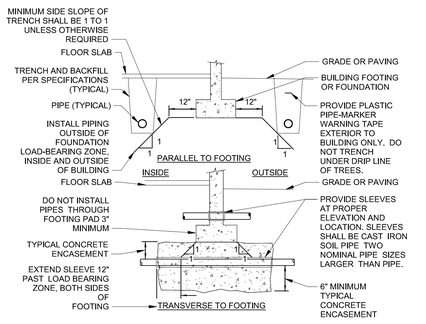


REFER TO SPECIFICATIONS FOR FURTHER INFORMATION ABOUT PIPE, FITTINGS, AND DEVICES. PIPING ARRANGEMENT SHOWN IS SCHEMATIC: ADJUST TO SUIT CONDITIONS. REFER TO FLOOR PLANS FOR LOCATION OF OUTLETS, DRIP LEGS, AND AIR MAIN PIPE SIZES.

6 COMPRESSED AIR OUTLET - WITH REGULATOR
NTS

ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS. PROVIDE CONNECTIONS SHOWN IN EQUIPMENT MANUFACTURER'S INSTALLATION INSTRUCTIONS. VERIFY CONNECTION LOCATIONS BEFORE INSTALLING PIPE RUNS. REFER TO SPECIFICATIONS FOR PIPE AND FITTING MATERIALS AND INSTALLATION. PROVIDE DIELECTRIC UNION IF CONNECTING DISSIMILAR METALS. FOR PIPE SIZE(S) REFER TO FLOOR PLANS, OR CODE REQUIREMENTS FOR HVAC UNIT TONNAGE. PROVIDE GAS COCK, UNION AND DIRT LEG SAME SIZE AS BRANCH PIPE. SLOPE CONDENSATE PIPE AS MUCH AS POSSIBLE TOWARD DISCHARGE, 2% MINIMUM. PROVIDE CLEANOUTS IN ENDS AND TURNS OF PIPE PER LOCAL CODE REQUIREMENTS: ADAPTER WITH THREADED CLEANOUT PLUG. PROVIDE MINIMUM 6" CLEARANCE TO ROOF UNDER PIPES.

5 CONNECTIONS TO ROOF-TOP UNIT
NTS



VERIFY EXCAVATION CONDITIONS (SOIL/ROCK) WITH GEOTECHNICAL REPORT AND/OR SITE INVESTIGATIONS. REFER TO SPECIFICATIONS FOR OTHER CONDITIONS. DO NOT INSTALL PIPES UNDER INTERIOR BUILDING SPREAD FOOTINGS OR PILE CAPS. COORDINATE WITH AFFECTED CONTRACTORS PRIOR TO THE START OF WORK.

1 PIPE AND TRENCH LOCATION
NTS

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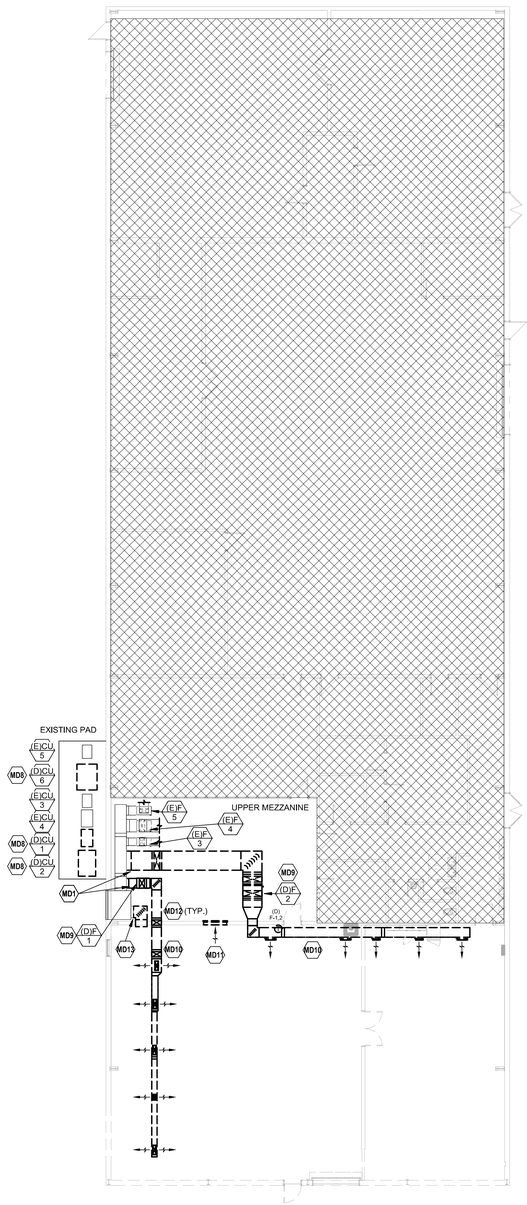
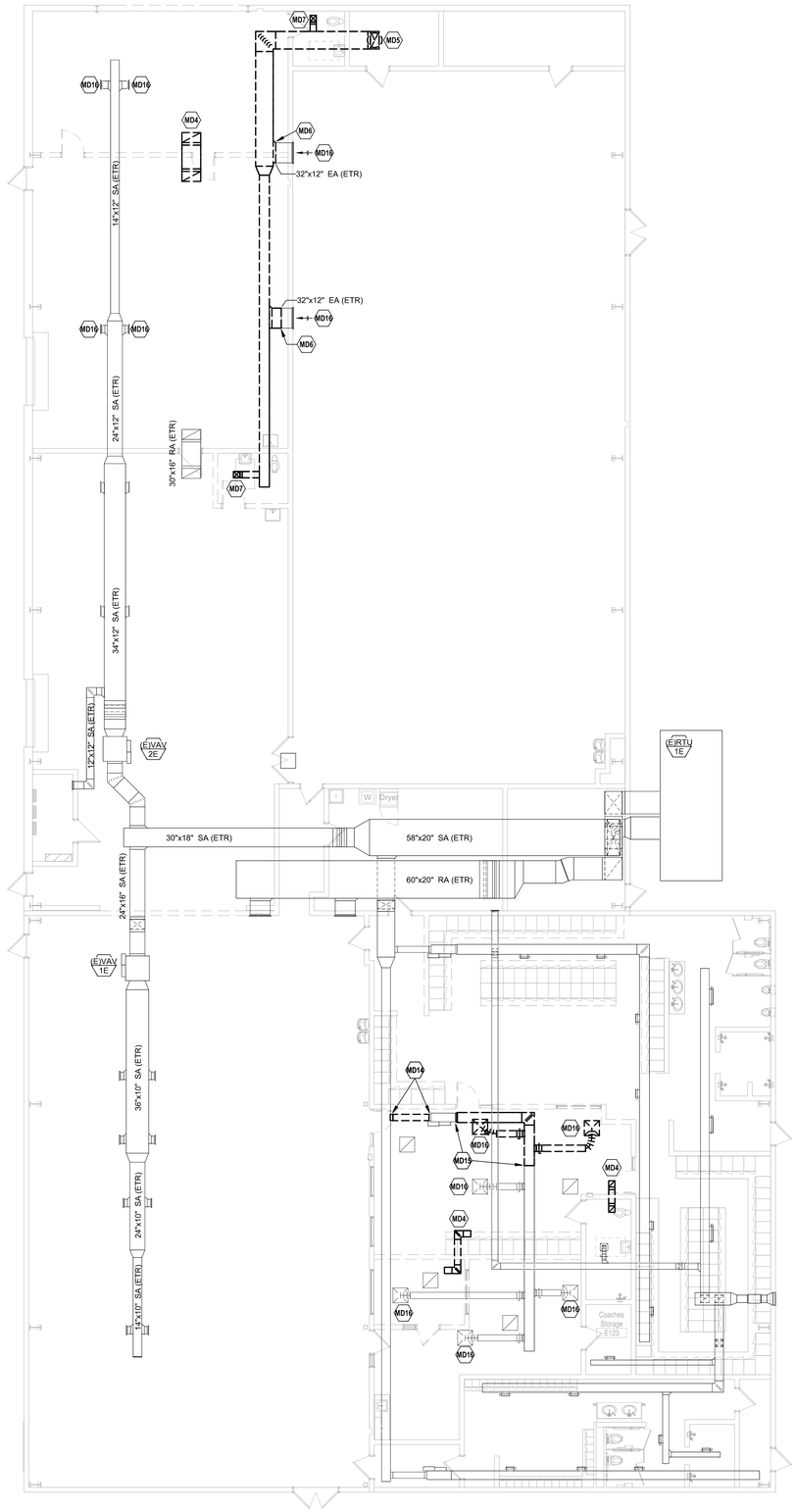
LSHS - PLUMBING SCHEDULES & DETAILS

P501-C



1 HVAC LEVEL 1 DEMO PLAN - LSHS - BUILDING D
3/32" = 1'-0"



2 HVAC LEVEL 1 DEMO PLAN - LSHS - BUILDING E
1/8" = 1'-0"

MECHANICAL DEMOLITION PLAN NOTES:

MD1 DEMOLISH DUCT AND SUPPLY DIFFUSER(S) BACK TO MAIN. PROVIDE PERMANENT INSULATED SHEET METAL CAP OVER DUCT OPENING.
MD4 DEMOLISH TRANSFER DUCT.
MD5 DEMOLISH EXHAUST FAN AND ASSOCIATED DUCTWORK, GRILLES, AND CONTROLS. PROVIDE TEMPORARY TAP OVER ROOF FOR RE-USE OF PENETRATION IN NEW WORK.
MD6 DEMOLISH EXHAUST TAP TO POINT SHOWN. PROVIDE TEMPORARY CAP OVER OPENING FOR RE-USE OF DUCT AND GRILLE IN NEW WORK.
MD7 DEMOLISH EXHAUST GRILLE AND ASSOCIATED DUCTWORK.
MD8 DEMOLISH ABANDONED IN PLACE CONDENSING UNIT.
MD9 DEMOLISH EVAPORATOR COIL, FURNACE, ASSOCIATED CONDENSING UNIT, CONTROL DEVICES, AND PIPING. PROVIDE PERMANENT SHEET METAL CAP OVER PIPE/WALL EXTERIOR PENETRATIONS. SEAL PENETRATIONS AIR/WATER TIGHT.
MD10 DEMOLISH ALL DUCTWORK AND SUPPLY GRILLES SERVED BY EVAP COIL AND FURNACE.
MD11 DEMOLISH RELIEF LOUVER AND ASSOCIATED DUCTWORK/GRILLE. INFILL WALL OPENING TO MAINTAIN REQUIRED WALL RATING CALLED OUT IN NEW WORK. COORDINATE WITH ARCHITECTURAL PLANS FOR RECONSTRUCTION MATERIALS AND WALL RATINGS (TYP.).
MD12 INFILL WALL OPENINGS CREATED BY DEMOLITION. INFILL TO MAINTAIN REQUIRED WALL RATING CALLED OUT IN NEW WORK. COORDINATE WITH ARCHITECTURAL PLANS FOR RECONSTRUCTION MATERIALS AND WALL RATINGS (TYP.).
MD13 DEMOLISH RETURN DUCT BACK TO POINT SHOWN. LEAVE DUCT OPEN TO SPACE AND PROVIDE BIRDSCREEN OVER OPENING TO PROTECT FROM DEBRIS.
MD14 DEMOLISH VAV INLET DUCT AND PROVIDE TEMPORARY CAP OVER DUCT AND BOX INLET FOR RECONNECTION IN NEW WORK.
MD15 DEMOLISH DUCTWORK SHOWN. PROVIDE TEMPORARY CAP OVER DUCT AND BOX OUTLET FOR RECONNECTION IN NEW WORK.
MD16 PRE-TEST EXISTING DIFFUSERS/GRILLES IN ROOM NOTED TO DETERMINE EXISTING AIRFLOW.

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LSHS - HVAC DEMOLITION PLAN - LEVEL 1 - BUILDING D & E

MD101-C

MECHANICAL SYMBOLS

THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED. V3.0

STANDARD MOUNTING HEIGHT

THERMOSTATS (USER ADJUSTABLE)	46"
CONTROLS	46"

INSTALL DEVICES AT THE MOUNTING HEIGHTS SHOWN ABOVE UNO IN THE CONSTRUCTION DOCUMENTS. MOUNTING HEIGHTS LISTED ABOVE OR ELSEWHERE IN THE CONSTRUCTION DOCUMENTS ARE AFF OR AFG TO TOP OF THE DEVICE UNO. ALL DEVICES SHALL BE INSTALLED IN COMPLIANCE WITH CURRENT ADA AND LOCAL REQUIREMENTS.

ANNOTATION

- 1 — MECHANICAL PLAN NOTE CALLOUT
- CU 1 — MECHANICAL EQUIPMENT DESIGNATION (CONTRACTOR FURNISHED AND INSTALLED UNLESS NOTED OTHERWISE)
- CONNECTION POINT OF NEW WORK TO EXISTING
- 1 / M1 — DETAIL REFERENCE. UPPER NUMBER INDICATES DETAIL NUMBER LOWER NUMBER INDICATES SHEET NUMBER
- 1 / M1 — SECTION CUT DESIGNATION
- DEDICATED EQUIPMENT ACCESS TILE
- ACCESS PANEL

ABBREVIATIONS

A/C	AIR CONDITIONING
ACC	AIR COOLED CHILLER
ACCU	AIR COOLED CONDENSING UNIT
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AI	ANALOG INPUT
AO	ANALOG OUTPUT
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
AWG	AMERICAN WIRE GAUGE
B	BOILER
BAS	BUILDING AUTOMATION SYSTEM
BB	BACKBONE
BD	BACKDRAFT DAMPER
BD	BLOWDOWN
BFC	BELOW FINISHED CEILING
BFF	BELOW FINISHED FLOOR
BFG	BELOW FINISHED GRADE
BFP	BOILER FEED PUMP
BHP	BRAKE HORSEPOWER
BI	BINARY INPUT
BO	BINARY OUTPUT
BOD	BOTTOM OF DUCT
BOS	BOTTOM OF STRUCTURE
BTU	BRITISH THERMAL UNIT
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CLG	COOLING
CP	CONDENSATE PUMP
CPT	CONTROL POWER TRANSFORMER
CRAC	COMPUTER ROOM AIR CONDITIONING UNIT
CRU	COMPUTER ROOM UNIT
CT	COOLING TOWER
CV	CONTROL VALVE
CWP	CONDENSER WATER PUMP
CU	CONDENSING UNIT
CHWP	CHILLED WATER PUMP
DB	DECIBELS
DBA	DECIBEL AVERAGE
DDC	DIRECT DIGITAL CONTROL
DI	DIGITAL INPUT
DISC	DISCONNECT
DN	DOWN
DS	DUCT SILENCER
DX	DIRECT EXPANSION
(E)	EXISTING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
ED	EXHAUST DUCT
EDB	ENTERING DRY BULB
EF	EXHAUST FAN
EFF	EFFICIENCY
EMS	ENERGY MANAGEMENT SYSTEM
ESP	EXTERNAL STATIC PRESSURE
ETR	EXISTING TO REMAIN
EWB	ENTERING WET BULB
EWT	ENTERING WATER TEMPERATURE
FCU	FAN COIL UNIT
FFA	FROM FLOOR ABOVE
FFB	FROM FLOOR BELOW
FF	FINISHED FLOOR
FPI	FINS PER INCH
FPM	FEET PER MINUTE
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
HTG	HEATING
HWP	HEATING WATER PUMP
IN WC	INCHES OF WATER COLUMN
L	LOUVER
LAT	LEAVING AIR TEMPERATURE
LDB	LEAVING DRY BULB
LP	LOW PRESSURE
LWB	LEAVING WET BULB
LWT	LEAVING WATER TEMPERATURE
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MBH	1000 BTU PER HOUR
MD	MOTORIZED DAMPER
MFR	MANUFACTURER
MIN	MINIMUM
N/A	NOT APPLICABLE
N/C	NORMALLY CLOSED
N/O	NORMALLY OPEN
NOM	NOMINAL
NC	NOISE CRITERIA
NF	NON-FUSED
NIC	NOT IN CONTRACT
OA	OUTSIDE AIR
PICV	PRESSURE INDEP. CONTROL VALVE
PROVIDE	FURNISH AND INSTALL
QTY	QUANTITY
RA	RETURN AIR
RC	ROOM CRITERIA
RD	RETURN DUCT
REA	RELIEF AIR
RF	RETURN FAN
RFR	REFRIGERANT
RH	RELATIVE HUMIDITY
RH	ROOF HOOD
RPM	REVOLUTIONS PER MINUTE
RTU	ROOFTOP UNIT
SA	SUPPLY AIR
SCP	STEAM CONDENSATE PUMP
SD	SMOKE DUCT DETECTOR
SD	SUPPLY DUCT
SF	SUPPLY FAN
SH	SENSIBLE HEAT CAPACITY
SOW	SCOPE OF WORK
SP	STATIC PRESSURE
ST	STEAM TRAP
STM	STEAM
TBD	TO BE DETERMINED
TC/C	TEMPERATURE CONTROLS CONTRACTOR
TCP	TEMPERATURE CONTROL PANEL
TF	TRANSFER FAN
TFA	TO FLOOR ABOVE
TFB	TO FLOOR BELOW
TH	TOTAL HEAT CAPACITY
TSP	TOTAL STATIC PRESSURE
TT	TEMPERATURE TRANSMITTAL
TYP	TYPICAL
U/F	UNDERFLOOR
U/G	UNDERGROUND
U/S	UNDERSLAB
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
VAV	VARIABLE AIR VOLUME
VEL	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
VRF	VARIABLE REFRIGERANT FLOW
VRV	VARIABLE REFRIGERANT VOLUME
W/	WITH
W/O	WITHOUT
WB	WET BULB
WC	WATER COLUMN
WPD	WATER PRESSURE DROP
XP	EXPLOSION PROOF

HVAC DUCTWORK AND ACCESSORIES

- DUCTWORK/EQUIPMENT TO BE REMOVED OR RELOCATED
- EXISTING DUCTWORK/EQUIPMENT TO REMAIN
- LINEAR SLOT DIFFUSER
- INSULATED FLEXIBLE DUCT (MAX. 5'-0" LONG)
- BRANCH DUCT WITH 45° RECTANGLE-ROUND BRANCH FITTING AND MANUAL VOLUME DAMPER
- ELBOW WITH TURNING VANES
- BRANCH DUCT WITH BELL-MOUTH FITTING & MANUAL VOLUME CONTROL DAMPER
- DUCT UP
- DUCT DOWN
- EA — EXHAUST AIR
- GEA — EXHAUST AIR - GREASE
- OA — OUTSIDE AIR
- REA — RELIEF AIR
- EA — RETURN AIR
- XEA — SPECIAL EXHAUST
- SA — SUPPLY AIR
- EQUIPMENT WITH FLEXIBLE DUCT CONNECTION
- 10" (NECK SIZE) CSD-1 (TYPE) 300 CFM (CFM OF SUPPLY DIFFUSER OR REGISTER)
- 24x24 (NECK SIZE) CEG-1 (TYPE) 800 CFM (CFM OF EXHAUST GRILLE)
- EQUIPMENT ACCESS TILE (IN ACT CEILINGS)
- ACCESS PANEL (IN GYPSUM)
- MANUAL VOLUME DAMPER
- SQUARE TO ROUND TRANSITION
- RD — DUCT MOUNTED SMOKE DETECTOR (SD=SUPPLY/RD=RETURN)
- XX" Ø — ROUND DUCT TAG INDICATING DIAMETER
- XX" x XX" — RECTANGULAR DUCT TAG INDICATING INTERNAL DUCT DIMENSIONS.
- XX' / XX" — FLAT OVAL DUCT TAG INDICATING INTERNAL DUCT DIMENSIONS
- R — RISER DESIGNATION
- FD — FIRE DAMPER
- FSD — FIRE SMOKE DAMPER
- SD — SMOKE DAMPER
- VD — VOLUME DAMPER
- MD — MOTORIZED DAMPER
- BD — BACKDRAFT DAMPER

ALL DUCT DIMENSIONS SHOWN ON DRAWINGS ARE INSIDE DIMENSIONS. REFER TO DUCTWORK SPECIFICATIONS FOR DUCTWORK INSULATION AND LINER INFORMATION.

HVAC CONTROL DEVICES

- H — HUMIDISTAT
- T — THERMOSTAT
- CO — CARBON MONOXIDE SENSOR
- CO2 — CARBON DIOXIDE SENSOR
- DP — DIFFERENTIAL PRESSURE SENSOR
- FS — FLOW SWITCH
- HS — HUMIDITY SENSOR
- PS — PULL STATION
- RT — REMOTE TESTING STATION WITH INDICATING LIGHT
- SP — STATIC PRESSURE
- TS — TEMPERATURE SENSOR

PIPING SYMBOLS

- DIRECTION OF FLOW
- CONTROL VALVE
- THREE-WAY CONTROL VALVE
- SHUTOFF VALVE
- CHECK VALVE
- BALANCING VALVE WITH PRESSURE PORTS
- TRIPLE DUTY VALVE WITH PRESSURE PORTS
- STRAINER
- STRAINER WITH BLOWOFF
- RELIEF / SAFETY VALVE
- SOLENOID VALVE
- PRESSURE REDUCING VALVE
- GAS PRESSURE REGULATOR
- THERMOSTATIC MIXING VALVE
- PIPE ANCHOR (PA)
- EXPANSION JOINT
- PIPE GUIDE
- PIPING SUPPORT
- F & T TRAP
- BUCKET TRAP
- THERMOSTATIC TRAP
- BACKFLOW PREVENTER
- PRESSURE GAUGE
- THERMOMETER
- PRESSURE AND TEMPERATURE TEST PLUG
- UNION
- FLANGE CONNECTION
- VACUUM RELIEF VALVE
- AV — AUTOMATIC AIR VENT
- MV — MANUAL AIR VENT
- PRESSURE / VACUUM SWITCH
- CLEANOUT
- CAP
- ELBOW UP
- ELBOW DOWN
- TEE UP
- TEE DOWN
- ELBOW UP WITH SHUT-OFF VALVE (SOV)
- ELBOW DOWN WITH SHUT-OFF VALVE (SOV)
- TEE UP WITH SHUT-OFF VALVE (SOV)
- TEE DOWN WITH SHUT-OFF VALVE (SOV)
- REDUCER
- RECIRCULATION PUMP
- P-TRAP
- GAS COCK
- TOP BEAM CLAMP
- TRAPEZE HANGER
- FLEXIBLE CONNECTION

PIPING LINETYPES

- EXISTING PIPING TO BE REMOVED OR RELOCATED
- EXISTING PIPING TO REMAIN
- CD — CONDENSATE DRAIN (CD)
- ACD — AUXILIARY CONDENSATE DRAIN (ACD)
- NPW — NON-POTABLE WATER (NPW)
- G — NATURAL GAS (G)
- G — NATURAL GAS ON ROOF (G)
- MPG — MEDIUM PRESSURE NATURAL GAS (MPG)
- MPG — MEDIUM PRESSURE NATURAL GAS ON ROOF (MGP)
- FOS — FUEL OIL SUPPLY (FOS)
- FOR — FUEL OIL RETURN (FOR)
- FOV — FUEL OIL VENT (FOV)
- LPG — LIQUEFIED PETROLEUM GAS (LPG)
- BFW — BOILER FEED WATER (BFW)
- HPS — HIGH PRESSURE STEAM SUPPLY (HPS)
- HPC — HIGH PRESSURE STEAM CONDENSATE (HPC)
- LPS — LOW PRESSURE STEAM SUPPLY (LPS)
- LPC — LOW PRESSURE STEAM CONDENSATE (LPC)
- CPD — CONDENSATE PUMP DISCHARGE (CPD)
- HWS — HEATING HOT WATER SUPPLY (HWS)
- HWR — HEATING HOT WATER RETURN (HWR)
- CHWS — CHILLED WATER SUPPLY (CHWS)
- CHWR — CHILLED WATER RETURN (CHWR)
- HCS — HOT / CHILLED WATER SUPPLY (HCS)
- HCR — HOT / CHILLED WATER SUPPLY (HCR)
- CWS — CONDENSER WATER SUPPLY (CWS)
- CWR — CONDENSER WATER RETURN (CWR)
- RL — REFRIGERANT LIQUID (RL)
- RD — REFRIGERANT DISCHARGE (HOT GAS) (RD)
- RS — REFRIGERANT SUCTION (RS)
- RDB — REFRIGERANT DISCHARGE BYPASS (RDB)
- RV — REFRIGERANT VENT (RV)

CALL OUTS

- ENLARGED PLAN CALLOUT
- NOT IN SCOPE

LINETYPE LEGEND

THROUGHOUT THE DRAWINGS DIFFERENT LINETYPES ARE USED IN COMBINATION WITH THE SYMBOLS TO INDICATE THE STATUS OF ITEMS AS EXISTING, TO BE DEMOLISHED, TO BE INCLUDED AS PART OF NEW WORK AND/OR ITEMS WHICH ARE ANTICIPATED TO BE PROVIDED IN THE FUTURE. THE STATUS OF ITEMS USING THESE LINETYPES ARE RELATIVE TO THE VIEW IN WHICH THEY APPEAR. PHASING SHOWN IN DRAWINGS IS NOT INTENDED TO FULLY DESCRIBE ALL NECESSARY CONSTRUCTION PHASING, WHICH IS DETERMINED BY THE CONTRACTOR AS PART OF THEIR RESPONSIBILITIES. ANY SUCH PHASES DESCRIBED IN THE CONSTRUCTION DOCUMENTS ARE GENERAL AND ONLY INTENDED TO INDICATE A BROAD ORDER FOR THE SAKE OF DESCRIBING THE PROJECT. THE FOLLOWING LINETYPES MAY BE USED ON ANY DEVICE, EQUIPMENT, NOTE, LINE, SHAPE, ETC.

EXISTING	NEW
DEMOLISH	FUTURE

GENERAL DEMOLITION NOTES:

1. COORDINATE ALL DEMOLITION WITH WHAT IS SHOWN ON ARCHITECTURAL PLANS. NOTIFY ARCHITECT OF ANY DISCREPANCIES.
2. PRIOR TO SUBMITTING BID, VISIT THE JOB SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS OF THE PROJECT. REVIEW GENERAL NOTES, SPECIFICATIONS AND OTHER DRAWINGS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY ARCHITECT, ENGINEER OR OWNER, AS DEFINED IN BID DOCUMENTS, OF CONFLICTS OR DISCREPANCIES PRIOR TO SUBMISSION OF BID.
3. OWNER RETAINS RIGHTS OF SALVAGE FOR EQUIPMENT AND FIXTURES TO BE REMOVED. COORDINATE WITH OWNER THE EQUIPMENT AND FIXTURES TO BE SALVAGED AND THE LOCATION FOR STORAGE. AVOID DAMAGE TO SALVAGED EQUIPMENT, FIXTURES AND DEVICES DURING DEMOLITION WORK AND DURING TRANSPORT TO OWNER'S DESIGNATED STORAGE LOCATION.
4. REMOVE ITEMS SHOWN HEAVY-LINED DASHED, AND/OR NOTED TO BE REMOVED.
5. AVOID DAMAGING EXISTING SURFACES AND EQUIPMENT TO REMAIN FOR NEW INSTALLATION. REPAIR DAMAGE CAUSED DURING WORK AT NO EXTRA COST TO THE OWNER.
6. SEAL PENETRATIONS THROUGH FLOORS, WALLS, CEILINGS AND ROOFS WHERE MECHANICAL COMPONENTS ARE REMOVED AND WHERE THE EXISTING PENETRATION IS NOT USED FOR THE NEW INSTALLATION. REPAIR DAMAGED SURFACES TO MATCH ADJACENT AREAS OR AS INDICATED ON THE ARCHITECTURAL DRAWINGS.
7. REMOVE HANGERS AND SUPPORTS WHERE DUCTWORK, PIPING AND/OR EQUIPMENT ARE REMOVED AND THE EXISTING HANGERS AND SUPPORTS ARE NOT USED FOR THE NEW INSTALLATION.
8. INSTALL PERMANENT CAPS WHERE DUCTWORK AND PIPING IS REMOVED AND THE EXISTING TAPS ARE NOT USED FOR THE NEW INSTALLATION. WHERE DUCTWORK AND PIPING ARE REMOVED AND THE EXISTING TAPS WILL BE USED FOR THE NEW INSTALLATION, INSTALL TEMPORARY CAPS TO PROTECT THE INTERIOR SURFACES UNTIL NEW DUCTWORK AND PIPING ARE INSTALLED.
9. INSPECT EXISTING EQUIPMENT TO REMAIN TO VERIFY THAT EQUIPMENT IS OPERATING PROPERLY. NOTIFY OWNER OF DAMAGED AND/OR MALFUNCTIONING COMPONENTS.
10. WHERE SHUTDOWN OF EXISTING SYSTEMS IS REQUIRED DURING DEMOLITION, COORDINATE SHUTDOWN TIME AND DURATION WITH OWNER TO MINIMIZE DOWNTIME. NOTIFY OWNER SEVEN (7) DAYS PRIOR TO INTERRUPTION OF SERVICE.
11. CEASE WORK AND IMMEDIATELY NOTIFY THE OWNER SHOULD ANY HAZARDOUS MATERIALS BE ENCOUNTERED DURING THE PERFORMANCE OF THE WORK.
12. REMOVAL, RECOVERY, RECYCLING, AND DISPOSAL OF REFRIGERANT, CONTAINED IN ANY EQUIPMENT TO BE REMOVED, SHALL BE PERFORMED IN STRICT ACCORDANCE WITH CURRENT EPA GUIDELINES.

GENERAL NEW NOTES:

1. PRIOR TO SUBMITTING BID, VISIT THE JOB SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS OF THE PROJECT. REVIEW THE GENERAL NOTES, SPECIFICATIONS AND OTHER DRAWINGS FOR ADDITIONAL REQUIREMENTS WHICH MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY ARCHITECT, ENGINEER AND/OR OWNER OF CONFLICTS OR DISCREPANCIES PRIOR TO SUBMISSION OF BID.
2. EXISTING CONDITIONS WERE TAKEN FROM ORIGINAL DRAWINGS AND SITE VISITS AND MAY NOT REFLECT EXACT "AS-BUILT" CONDITIONS. FIELD VERIFY EXISTING CONDITIONS PRIOR TO SUBMITTING FINAL BIDS. COORDINATE NEW WORK AND DEMOLITION WITH OTHER DISCIPLINES AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION.
3. COORDINATE THE INSTALLATION OF THE MECHANICAL SYSTEMS WITH OTHER TRADES TO ENSURE A NEAT AND ORDERLY INSTALLATION. INSTALL DUCTWORK AND PIPING AS TIGHT TO STRUCTURE AS POSSIBLE. COORDINATE WITH OTHER TRADES TO AVOID CONFLICTS. COORDINATE INSTALLATION OF DUCTWORK AND PIPING TO AVOID CONFLICTS WITH ELECTRICAL PANELS, LIGHTING FIXTURES, ETC. ANY MODIFICATIONS REQUIRED DUE TO LACK OF COORDINATION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AT NO EXTRA COST TO THE OWNER.
4. WHERE SHUTDOWN OF EXISTING SYSTEMS IS REQUIRED DURING NEW WORK, COORDINATE SHUTDOWN TIME AND DURATION WITH THE OWNER TO MINIMIZE DOWNTIME. NOTIFY OWNER SEVEN (7) DAYS PRIOR TO INTERRUPTION OF SERVICE.
5. DURING INSTALLATION OF NEW WORK, AVOID DAMAGING EXISTING SURFACES AND EQUIPMENT TO REMAIN. REPAIR DAMAGE CAUSED DURING CONSTRUCTION AT NO EXTRA COST TO THE OWNER.
6. PROVIDE TEMPORARY BARRIERS TO CONTAIN DUST AND DEBRIS RESULTING FROM THE PERFORMANCE OF THE WORK TO THE AREA WHERE WORK IS BEING PERFORMED.
7. ALL MECHANICAL EQUIPMENT SHOWN ON THE MECHANICAL PLANS SHALL BE PROVIDED BY DIVISION 23 UNLESS OTHERWISE NOTED.
8. NEW MECHANICAL EQUIPMENT, DUCTWORK AND PIPING ARE SHOWN AT APPROXIMATE LOCATIONS. FIELD MEASURE FINAL DUCTWORK AND PIPING LOCATIONS PRIOR TO FABRICATION AND MAKE ADJUSTMENTS AS REQUIRED TO FIT THE DUCTWORK AND PIPING WITHIN THE AVAILABLE SPACE. VERIFY THAT FINAL EQUIPMENT LOCATIONS MEET MANUFACTURER'S RECOMMENDATIONS REGARDING SERVICE CLEARANCE AND PROPER AIRFLOW CLEARANCE AROUND EQUIPMENT.
9. REFER TO ARCHITECTURAL DRAWINGS FOR RELATED CONSTRUCTION DETAILS AS APPLICABLE TO THE HVAC SYSTEM. VERIFY CHASES AND PENETRATIONS SHOWN ON ARCHITECTURAL DRAWINGS THAT ARE INTENDED FOR DUCTWORK AND PIPING MEET REQUIREMENTS.
10. COORDINATE LOCATION OF ROOF MOUNTED HVAC EQUIPMENT AND ROOF PENETRATIONS WITH THE ARCHITECTURAL AND STRUCTURAL DRAWINGS.
11. INDOOR AIR QUALITY MEASURES: PROTECT INSIDE OF (INSTALLED AND DELIVERED) DUCTWORK AND HVAC UNITS FROM EXPOSURE TO DUST, DIRT, PAINT AND MOISTURE. REPLACE INSULATION THAT HAS BECOME WET AT ANY TIME DURING CONSTRUCTION. DRYING THE INSULATION IS NOT ACCEPTABLE. SEAL ANY TEARS OR JOINTS OF INTERNAL FIBERGLASS INSULATION. REMOVE DEBRIS FROM CEILING/RETURN PLENUM INCLUDING DUST. VACUUM CLEAN ANY DUCTWORK CONNECTED TO HVAC UNITS THAT WERE OPERATED DURING THE CONSTRUCTION PERIOD AFTER NEW FILTERS ARE INSTALLED AND PRIOR TO TURNING SYSTEM OVER TO THE OWNER. THE INTERNAL SURFACES AND ASSOCIATED COILS OF ANY HVAC UNITS THAT WERE OPERATED SHALL ALSO BE CLEANED.
12. INSTALL DUCTWORK AND PIPING PARALLEL TO BUILDING COLUMN LINES UNLESS OTHERWISE SHOWN OR NOTED.
13. OVERHEAD HANGERS AND SUPPORTS FOR EQUIPMENT, DUCTWORK AND PIPING SHALL BE FASTENED TO BUILDING JOISTS OR BEAMS. DO NOT ATTACH HANGERS AND SUPPORTS TO THE ABOVE FLOOR SLAB OR ROOF EXCEPT WHERE CONCRETE INSERTS IN CONCRETE SLABS ARE ALLOWED BY THE SPECIFICATIONS.
14. COORDINATE LOCATION OF EQUIPMENT SUPPORTS WITH LOCATION OF EQUIPMENT ACCESS PANELS/DOORS TO ENABLE SERVICE OF EQUIPMENT AND/OR FILTER REPLACEMENT.
15. SEAL PENETRATIONS THROUGH THE BUILDING COMPONENTS IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS. FIREPROOF PENETRATIONS THROUGH FIRE RATED COMPONENTS IN ACCORDANCE WITH U.L. REQUIREMENTS.
16. COORDINATE THE EXACT MOUNTING SIZE AND FRAME TYPE OF DIFFUSERS, REGISTERS AND GRILLES WITH THE SUPPLIER TO MEET THE CEILING, WALL AND DUCT INSTALLATION REQUIREMENTS.
17. ADJUST LOCATION OF CEILING DIFFUSERS, REGISTERS AND GRILLES AS REQUIRED TO ACCOMMODATE FINAL CEILING GRID AND LIGHTING LOCATIONS.
18. PAINT PORTIONS OF DUCTWORK AND INSULATION THAT ARE EXPOSED TO VIEW BY THE INSTALLATION OF DIFFUSERS, REGISTERS, AND GRILLES IN CEILINGS OR WALLS FLAT BLACK. PORTIONS INCLUDE BOTH THE INTERIOR OF UNLINED DUCTWORK AND THE EXTERIOR OF DUCTWORK AND INSULATION.
19. DUCTWORK CROSSING FIRE RATED WALLS OR OTHER FIRE RATED ASSEMBLIES SHALL BE MINIMUM 26 GAUGE SHEET METAL.
20. PROVIDE FIRE OR FIRE/SMOKE DAMPERS, AS APPLICABLE, IN DUCTWORK AT CEILINGS AND WALLS AT LOCATIONS SHOWN ON THE PLANS. FIRE AND FIRE/SMOKE DAMPERS SHALL CONFORM TO NFPA AS APPLICABLE. COORDINATE SLEEVE LENGTH WITH REQUIREMENTS OF INSTALLED LOCATION.
21. PROVIDE WALL OR DUCT ACCESS PANELS OR DOORS FOR ACCESS TO FIRE AND FIRE/SMOKE DAMPERS. ACCESS PANEL OR DOOR SHALL BE MINIMUM SIZE OF 10" BY 10" AND SHALL BE INSTALLED WITHIN 12" OF DAMPER. PROVIDE A REMOVABLE DUCT SECTION WHERE DUCT SIZE IS TOO SMALL FOR A 10" BY 10" ACCESS DOOR.
22. LOCATE AND SET THERMOSTATS AND HUMIDISTATS AT LOCATIONS SHOWN ON PLANS. VERIFY EXACT LOCATIONS WITH ARCHITECT PRIOR TO INSTALLATION. INSTALL DEVICES WITH TOP OF DEVICE AT MAXIMUM 48" AFF TO MEET ADA REQUIREMENTS UNLESS NOTED OTHERWISE ON PLANS. PROVIDE INSULATED BACKING FOR THERMOSTATS MOUNTED ON EXTERIOR BUILDING WALLS. INSTALL WIRING IN CONDUIT PROVIDED BY DIVISION 26. AT A MINIMUM, PROVIDE CONDUIT IN THE WALL FROM THE JUNCTION BOX TO 6" ABOVE THE CEILING.
23. COORDINATE THE LOCATION AND ELEVATION OF WALL-MOUNTED DEVICES WITH PRESENTATION BOARDS, DISPLAY CABINETS, SHELVES OR OTHER COMPONENTS SHOWN ON THE ARCHITECTURAL DRAWINGS THAT ARE TO BE INSTALLED UNDER OTHER DIVISIONS. CONTRACTOR WILL NOT BE REIMBURSED FOR RELOCATION OF WALL-MOUNTED DEVICES CAUSED BY A LACK OF COORDINATION.
24. PROVIDE A MANUAL BALANCING DAMPER IN EACH DUCT TAKEOFF FROM SUPPLY, RETURN, OUTDOOR AND EXHAUST AIR DUCTS.
25. PROVIDE A PREFABRICATED 45 DEGREE, HIGH EFFICIENCY, RECTANGULAR/ROUND BRANCH DUCT TAKEOFF FITTING FOR BRANCH DUCT CONNECTIONS AND TAKE-OFFS TO INDIVIDUAL DIFFUSERS, REGISTERS AND GRILLES. PROVIDE WITH INTEGRAL MANUAL BALANCING DAMPER AND LOCKING QUADRANT WHERE INDICATED ON PLANS.
26. BRANCH DUCTWORK TO AIR OUTLETS SHALL BE SAME SIZE AS OUTLET NECK SIZE UNLESS OTHERWISE NOTED.
27. REFER TO SPECIFICATIONS FOR DUCTWORK AND PIPING INSULATION REQUIREMENTS. DUCT SIZES ON MECHANICAL PLANS INDICATE CLEAR INSIDE AIRFLOW DIMENSIONS, INCREASE SHEET METAL SIZES ACCORDINGLY TO ACCOUNT FOR THICKNESS OF DUCT LINER.
28. FLEXIBLE DUCTWORK SHALL NOT EXCEED 5'-0" IN LENGTH AND SHALL BE INSTALLED AND SUPPORTED TO AVOID SHARP BENDS AND SAGGING. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
29. PROVIDE EQUIPMENT VENTS AND FLUES PER EQUIPMENT MANUFACTURERS RECOMMENDATIONS AND EQUIPMENT SPECIFICATIONS. KEEP PENETRATIONS THROUGH ROOF A MINIMUM OF 10'-0" FROM HVAC EQUIPMENT FRESH AIR INLETS AND 2'-0" FROM ROOF PARAPETS.
30. PROVIDE WALL MOUNTED LOUVERS AND DAMPERS WITH SUITABLE MOUNTING FRAME TO MATCH WALL CONSTRUCTION. COORDINATE WITH ARCHITECTURAL DRAWINGS.
31. PROVIDE A NEW SET OF AIR FILTERS IN UNITS PRIOR TO TESTING, ADJUSTING AND BALANCING AND BEFORE TURNING SYSTEM(S) OVER TO OWNER.
32. FIELD VERIFY THAT THE EXISTING EQUIPMENT INCLUDING ACCESSORIES BEING REUSED FOR THIS PROJECT IS NOT DAMAGED AND IS IN GOOD WORKING ORDER. REPORT ANY DEFICIENCIES TO THE OWNER OR ARCHITECT. SUBMIT TO THE OWNER AND ARCHITECT A WRITTEN REPORT DESCRIBING TESTS PERFORMED TO VERIFY OPERATION AND RESULTS OF THE TESTS.
33. CLEAN EXISTING EQUIPMENT AND EQUIPMENT COMPONENTS BEING REUSED FOR THIS PROJECT. PROVIDE NEW FILTERS FOR EXISTING AIR HANDLING EQUIPMENT PRIOR TO STARTUP OF EQUIPMENT. NEW FILTERS SHALL BE COMPATIBLE WITH THE EXISTING EQUIPMENT AND EQUAL IN PERFORMANCE TO THE EXISTING FILTERS AT NEW CONDITION UNLESS OTHERWISE NOTED. CLEAN STRAINERS IN PIPING SYSTEMS PRIOR TO STARTING PUMPS.
34. CLEAN THE EXTERIOR OF EXISTING COILS TO BE REUSED FOR THIS PROJECT. VACUUM BRUSH THE COIL IN THE DIRECTION OF THE FINS AND CLEAN THE COILS WITH COIL CLEANING FLUID. COMB ANY FINS BENT TO PROVIDE A STRAIGHT SURFACE FOR AIRFLOW.
35. LUBRICATE EXISTING EQUIPMENT BEING REUSED FOR THIS PROJECT IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. OBTAIN INSTRUCTIONS FROM MANUFACTURER IF THEY ARE NOT AVAILABLE AT THE SITE.
36. FULLY CHARGE EXISTING REFRIGERANT SYSTEMS BEING REUSED FOR THIS PROJECT IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. CHARGE SYSTEMS WITH NEW REFRIGERANT MATCHING EXISTING.

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NUMBER PE-2020016283
PROFESSIONAL ENGINEER

09/09/2022

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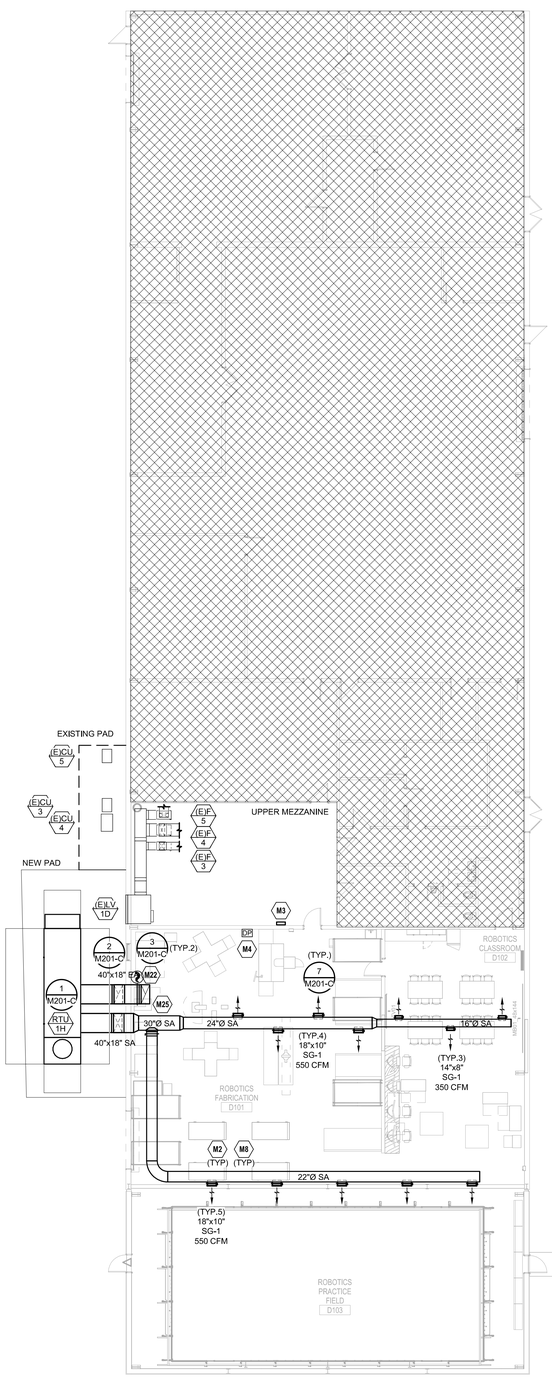
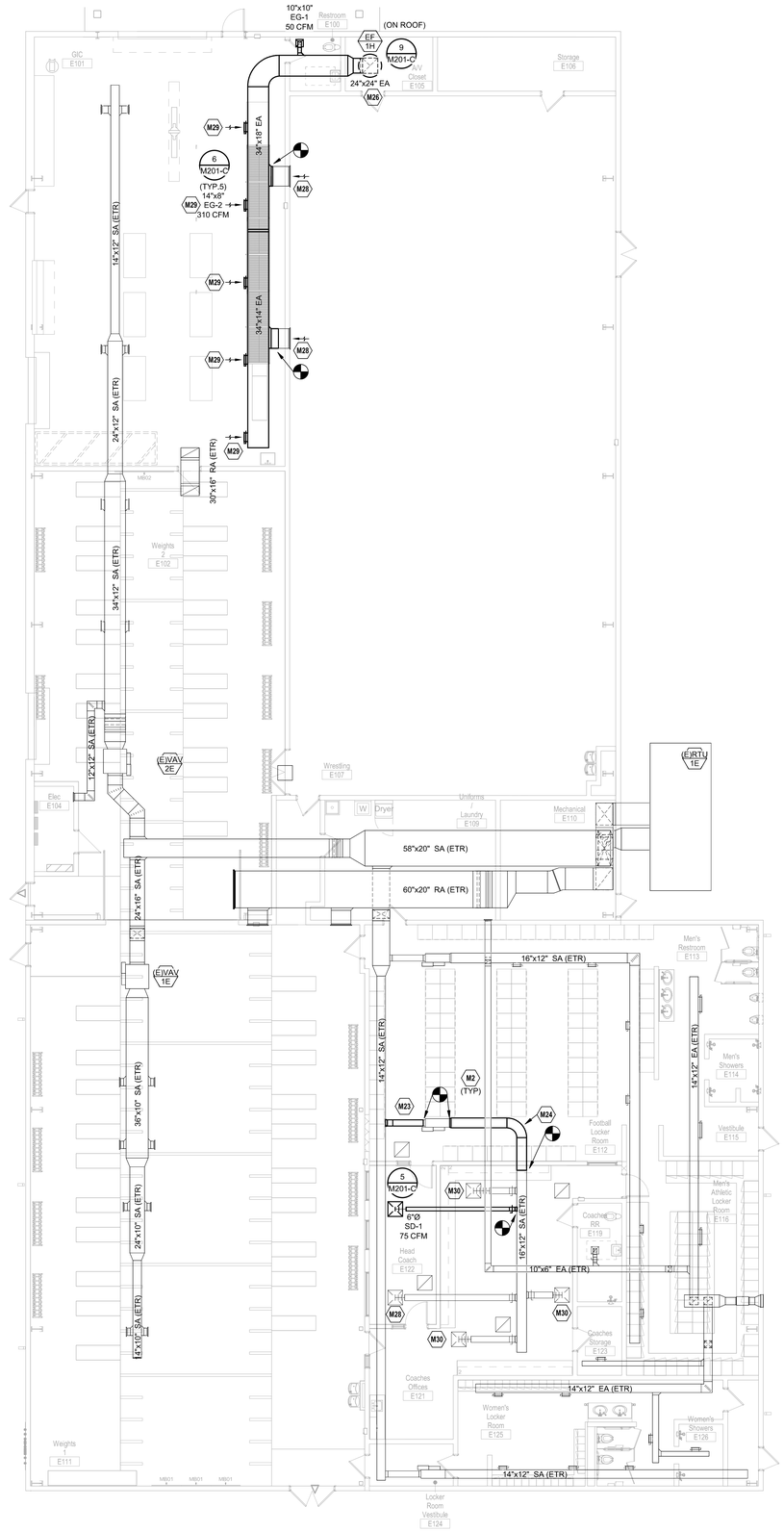
LSHS - MECHANICAL GENERAL NOTES AND LEGEND

M000-C

CARL J. HOLDEN



1 HVAC LEVEL 1 PLAN - LSHS - BUILDING D
3/32" = 1'-0"



2 HVAC LEVEL 1 PLAN - LSHS - BUILDING E
1/8" = 1'-0"

MECHANICAL PLAN NOTES:

M2 ALL FULLY AND PARTIALLY EXPOSED SUPPLY SPIRAL AND RECTANGULAR DUCT SHALL BE INTERNALLY LINED AND FIELD PAINTED. COLOR BY ARCHITECT.

M3 PROVIDE BUILDING BAS PANEL(S). QUANTITY OF PANELS TO BE DETERMINED BY CONTROLS CONTRACTOR. COORDINATE LOCATIONS WITH ARCHITECT AND OTHER TRADES.

M4 INSTALL BUILDING DIFFERENTIAL PRESSURE SENSOR. EXTEND LOW PORT TUBING UP THRU ROOF TO MATCH MANUFACTURER RECOMMENDATIONS/REQUIREMENTS.

M8 COORDINATE PIPING, CONDUIT, AND DUCT ROUTING THROUGH EXPOSED AREAS TO CLEANLY ROUTE/GROUP TOGETHER. COORDINATE WITH ALL OTHER TRADES.

M22 ELBOW EXHAUST DUCT UP AND LEAVE OPEN TO SPACE. PROVIDE BIRDSCREEN OVER OPENING TO PROTECT DUCT FROM DEBRIS.

M23 PROVIDE NEW BRANCH DUCT SERVING EXISTING VAV, BRANCH DUCT TO MATCH EXISTING VAV INLET SIZE.

M24 FIELD VERIFY SIZE OF EXISTING DUCT AND PROVIDE NEW DUCT CONNECTION BETWEEN EXISTING VAV AND EXISTING DUCTWORK.

M25 ROUTE SUPPLY AND EXHAUST DUCT UP EXTERIOR WALL, BOTTOM OF DUCT TO PENETRATE EXTERIOR WALL AT 15'-0" ABOVE ROBOTICS FABRICATION FINISHED FLOOR.

M26 ROUTE EXHAUST DUCT UP THROUGH ROOF. TRANSITION TO DUCT/FAN CONNECTION SIZE IN CURB. RE-USE EXISTING ROOF PENETRATION.

M28 BALANCE EXISTING DIFFUSER/GRILLE TO CFM DETERMINED DURING PRE-TESTING.

M29 BALANCE NEW EXHAUST GRILLES TO ENSURE EXHAUST AIRFLOW IS 10% HIGHER THAN SUPPLY AIRFLOW. SUPPLY AIRFLOW DETERMINED DURING TESTING.

M30 REBALANCE EXISTING DIFFUSERS. DISTRIBUTE CFM SO THAT THREE REMAINING CEILING MOUNTED DIFFUSERS HAVE SAME AIRFLOW. REFER TO BOX AIRFLOW DETERMINE IN PRETESTING. NEW CFM DETERMINE BASED OFF OF BOX AIRFLOW MINUS TO SUPPLY DIFFUSERS IN E122 HEAD COACH.

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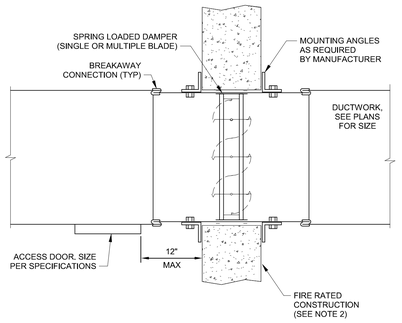
LSHS - HVAC PLAN - LEVEL 1 - BUILDING D & E

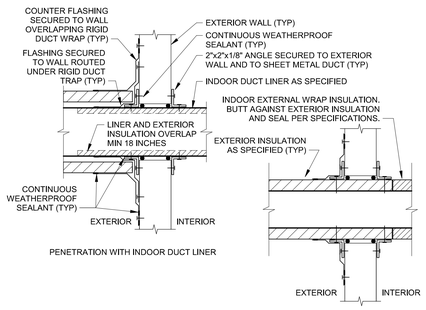
M101-C

CARL J. HOLDEN



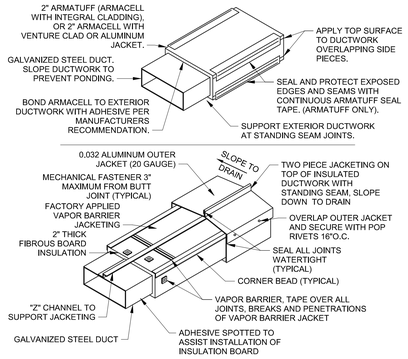
NOTES:
1. INSTALL DAMPER PER MANUFACTURER'S INSTRUCTIONS/RECOMMENDATIONS.
2. MAKE PENETRATION OPENING 1/8" PER FOOT LARGER THAN DAMPER DIMENSIONS WITH 1/4" MINIMUM REQUIRED, MAXIMUM 1".
3. INSTALL ACCESS DOOR (WHEN REQUIRED) IN AN ACCESSIBLE LOCATION FOR MAINTENANCE IN ACCORDANCE WITH NFPA REQUIREMENTS.
4. FRAME OUT OPENINGS FOR MULTIPLE SECTION INSTALLATIONS OR PROVIDE FALSE MULLIONS TO SUPPORT MULTIPLE SECTION INSTALLATIONS PER MANUFACTURER'S RECOMMENDATIONS.

4 FIRE DAMPER IN WALL DETAIL
NTS

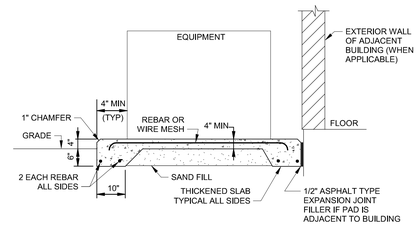


NOTES:
1. COORDINATE SIZE AND LOCATION OF DUCT WITH STRUCTURAL ENGINEER AND ARCHITECTURAL ELEVATIONS.

3 DUCT EXTERIOR WALL PENETRATION
NTS

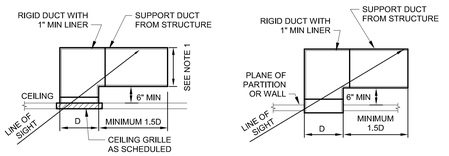


2 EXTERIOR DUCTWORK INSULATION DETAIL
NTS



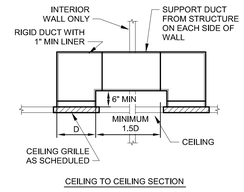
NOTES:
1. SLOPE SLAB A MINIMUM OF 1/16"/FOOT IN ONE DIRECTION (AWAY FROM BUILDING) FOR DRAINAGE.
2. PROVIDE MINIMUM CLEARANCE AROUND EQUIPMENT. ALL SIDES, PER MANUFACTURER.
3. DIMENSIONS SHOWN ARE MINIMUM ACCEPTABLE; REVISE AS REQUIRED FOR EQUIPMENT BEING PROVIDED.
4. WHERE WALL DOES NOT EXIST, INSTALL EQUIPMENT IN CENTER OF PAD AND ENCLOSE AS SHOWN ON ARCHITECTURAL DRAWINGS.

1 EXTERIOR EQUIPMENT PAD DETAIL
NTS

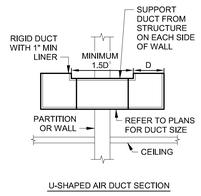


CEILING RETURN GRILLE BOOT

L-SHAPED AIR DUCT (PLAN VIEW)



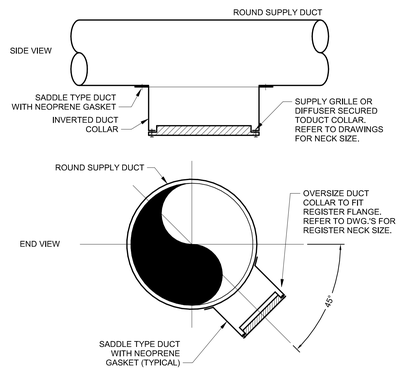
CEILING TO CEILING SECTION



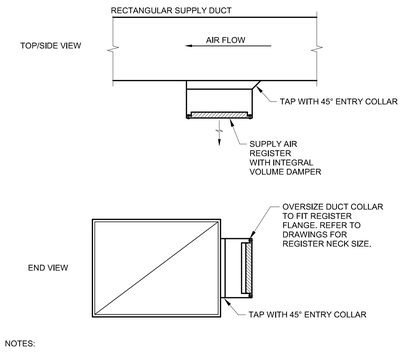
U-SHAPED AIR DUCT SECTION

NOTES:
1. REFER TO FLOOR PLAN FOR OUTLET DEPTH. WHEN NO DEPTH IS SHOWN, MINIMUM DEPTH SHALL BE AS REQUIRED TO LIMIT AIR VELOCITY TO 500 FPM WITH A MINIMUM SIZE OF 0.5D.

8 RETURN TRANSFER AIR DUCT DETAIL
NTS

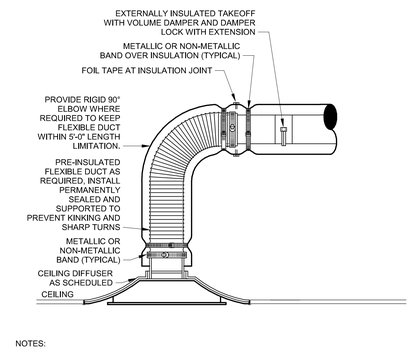


7 REGISTER MOUNTING TO ROUND DUCT DETAIL
NTS



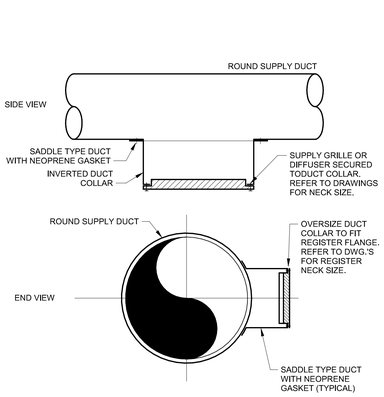
NOTES:
1. POSITION ADJUSTABLE LOUVERS DURING TESTING AND BALANCING FOR OCCUPANT COMFORT AND TO DECREASE DRAFTS IN THE SPACE.

6 REGISTER MOUNTING TO RECTANGULAR DUCT DETAIL
NTS

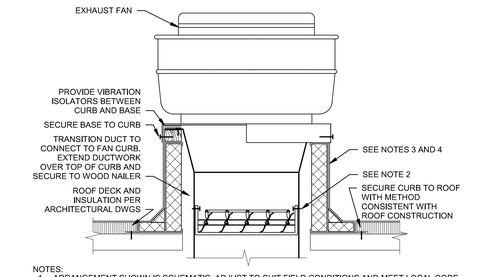


NOTES:
1. FLEXIBLE DUCT LENGTH MAY NOT EXCEED 5'-0". EXTEND RIGID DUCT AS REQUIRED.
2. REFER TO SPECIFICATIONS FOR FLEXIBLE DUCTWORK INSTALLATION REQUIREMENTS.

5 CEILING DIFFUSER DETAIL
NTS



10 REGISTER MOUNTING TO ROUND DUCT DETAIL - NO ANGLE
NTS



NOTES:
1. ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS AND MEET LOCAL CODE.
2. IF DAMPER IS SPECIFIED IN EQUIPMENT SCHEDULE, INSTALL DAMPER AT BASE OF CURB AND SECURE FROM ABOVE TO ALLOW SERVICE THROUGH TOP OF CURB.
3. PREFABRICATED INSULATED ROOF CURB WITH TREATED WOOD NAILER, CANT, AND STEP AS REQUIRED TO ACCOMMODATE ROOF INSULATION. FRAME AND SECURE CURB TO ROOF WITH METHOD CONSISTENT WITH ROOF CONSTRUCTION. ROOF CURB SHALL BEAR ON ROOF STRUCTURE. REFER TO ARCHITECTURAL DRAWINGS AND CURB MANUFACTURER'S DETAILS FOR MORE INFORMATION.
4. FOR SLOPED ROOFS, PROVIDE CURB WITH DIMENSIONS CAPABLE OF COMPENSATING ROOF SLOPE TO ENSURE FAN IS INSTALLED LEVEL.

HIGH WIND STRAPPING: PROVIDE STAINLESS STEEL STRAPS OF LENGTH, WIDTH, THICKNESS, AND SPACING SUFFICIENT TO SECURE FAN TO CURB TO WITHSTAND WIND SPEED REQUIREMENTS PER LOCAL CODE. WRAP STRAPS OVER FAN AND SECURELY ATTACH TO OPPOSITE SIDE OF THE CURB.

9 ROOF MOUNTED UPBLAST FAN DETAIL
NTS

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LSHS - MECHANICAL DETAILS

M201-C

CARL J. HOLDEN

ROOFTOP UNIT W/ STATIC CORE ENERGY RECOVERY WHEEL SCHEDULE (DX COOLING, NATURAL GAS HEATING) - LSHS

MARK	MANUFACTURER	MODEL	NOMINAL TONS	UNIT TYPE	SUPPLY FAN							EXHAUST FAN					MAX PLATE PRESSURE DROP (IN)	SUMMER HEAT RECOVERY						DX COOLING COIL								HOT GAS REHEAT			WINTER HEAT RECOVERY						NATURAL GAS HEAT EXCHANGER								MIN. O/A CFM	ABS. MIN. O/A	ELECTRICAL				WEIGHT (LBS)	NOTES
					FAN TYPE	CFM	ESP (IN)	TSP (IN)	BHP	NOM HP	ECM (Y/N)	CFM	ESP (IN)	BHP	NOM HP	ECM (Y/N)		OAT		EXAUST EAT		WHEEL SA LAT		REFR TYPE	TH (MBH)	SH (MBH)	EAT		LAT		MIN NO STAGES	MIN EFF (EER)	MAX VEL (FPM)	CAP. (MBH)	EAT (°F DB)	LAT (°F DB)	OAT		EXHAUST LAT		WHEEL SA LAT		MIN OUT (MBH)	NOM INPUT (MBH)	MIN EFF (%)	EAT (°F DB)	LAT (°F DB)	MIN NO STAGES	MAX VEL (FPM)			V/PH	MCA	MOCP	DISC TYPE		
																		(°F DB)	(°F WB)	(°F DB)	(°F WB)	(°F DB)	(°F WB)				(°F DB)	(°F WB)	(°F DB)	(°F WB)							(°F DB)	(°F DB)	(°F WB)	(°F DB)	(°F WB)												
RTU 1H	DAIKIN	DPS025A	25	100% OA SZ-VAV	SWSI	6000	1.40	3.53	6.0	7.50	Yes	5400	0.50	3.1	5.00	Yes	1.35	95.5	75.3	75.0	62.0	82.4	68.6	R-410A	272.9	184.4	82.4	68.6	54.5	54.2	MOD.	10.1	350	132.8	54.5	75.0	0.0	70.0	50.0	44.8	34.4	260.7	450.0	80	44.8	85.0	MOD.	350	6000	1900	460/3	157.6	200.0	F	6750	A-V

MODEL NUMBERS AND NOMINAL TONS LISTED SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER, MODEL NUMBERS, OR NOMINAL TONS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:

A. REFER TO SHEET M402-C FOR CUSTOM ROOFTOP UNIT CONTROL DRAWING, POINTS LIST, AND SEQUENCE.
B. EQUIPMENT SIZED FOR 100°F AMBIENT TEMPERATURE.
C. PROVIDE 2" MERV 13, EFFICIENT PLEATED THROWAWAY AIR FILTERS.
D. DIV. 26 TO PROVIDE FUSED DISCONNECT.
E. STARTERS FOR ALL MOTORS SHALL BE FURNISHED INTEGRAL WITH UNIT.
F. PROVIDE SINGLE POINT POWER CONNECTION.
G. COORDINATE SIZE OF CONDUCTOR TERMINATION LUGS WITH CONDUCTOR SIZES SHOWN ON ELECTRICAL DRAWINGS.
H. PROVIDE 125 VAC, 20 AMP DUPLEX CONVENIENCE RECEPTACLE MOUNTED TO UNIT READY FOR FIELD WIRING WITH A COVER UL LISTED FOR WET AND DAMPER LOCATIONS WHEN IN USE.
J. SPECIFIED FAN ESP ACCOUNTS FOR DUCT LOSSES EXTERNAL TO UNIT.
K. SPECIFIED FAN TSP INCLUDES EXTERNAL DUCT AND INTERNAL FILTER, COIL, AND CASING LOSSES. FILTER LOSS IS AT A MAXIMUM OF 400 FPM FACE VELOCITY.
L. PROVIDE MOTOR HORSEPOWER TO OVERCOME INTERNAL UNIT STATIC PRESSURE DROP PLUS SPECIFIED EXTERNAL STATIC PRESSURE DROP. NOMINAL MOTOR HP SHALL BE NO LARGER THAN THE FIRST AVAILABLE NOMINAL MOTOR SIZE GREATER THAN THE REQUIRED BHP.
M. PROVIDE INSULATED HORIZONTAL DISCHARGE CURB MOUNTED ON GRADE.
N. SCHEDULED WEIGHT IS THE MAXIMUM ALLOWABLE OPERATING WEIGHT OF THE EQUIPMENT AND CURB.
O. COOLING COIL LAT IS LEAVING AIR TEMPERATURE OF COIL.
P. PROVIDE GUARDS TO PROTECT CONDENSER COIL FROM HAIL OR OTHER DAMAGE.
Q. PROVIDE HEATER TO MEET OR EXCEED SCHEDULED MINIMUM MBH OUTPUT. NOMINAL INPUT IS BASED ON LISTED MANUFACTURER'S STANDARD PRODUCT. COORDINATE EQUIPMENT GAS LOAD WITH PLUMBING CONTRACTOR IF DIFFERENT FROM THAT SCHEDULED. MEET MINIMUM EFFICIENCY SCHEDULED.
R. SELECT EQUIPMENT FOR ELEVATION OF 1000 FEET ABOVE SEA LEVEL.
S. PROVIDE UNIT WITH FULLY MODULATING HOT GAS REHEAT.
T. PROVIDE UNIT WITH INTERNAL VIBRATION ISOLATION.
U. PROVIDE UNIT WITH STATIC CORE ENERGY RECOVERY DEVICE.
V. DAIKIN IS BASIS OF DESIGN. ACCEPTABLE MANUFACTURERS ARE VALENT AND AAON. REFER TO UNIT MAX DIMENSIONS IN SCHEDULE.

ROOFTOP UNIT SIZE - LSHS

PLAN MARK	UNIT LENGTH (FT-IN)	UNIT WIDTH (FT-IN)	UNIT HEIGHT (FT-IN)	SIZE NOTES
RTU 1H	35'-3"	18'-3"	9'-3"	A,B

NOTES:

A. UNIT WIDTH AND LENGTH INCLUDE CLEARANCE REQUIREMENTS.
B. HEIGHT INCLUDES HORIZONTAL DISCHARGE CURB HEIGHT.

FAN SCHEDULE - LSHS

MARK	SERVICE DESCRIPTION	MANUFACTURER	MOUNTING	MODEL	CFM	ESP (IN)	BHP	NOM HP	FAN RPM	DRIVE (BELT/DIRECT)	VFD (Y/N)	ELECTRICAL			WEIGHT (LBS)	NOTES
												V/PH	DISC TYPE	STARTER TYPE		
EF 1H	GIC EXHAUST	GREENHECK	ROOF	CUE-161-VG	4800	0.5	1.9	2.00	1725	DIRECT	Yes	208/1	NF	EC	125	A-E

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:

A. PROVIDE INSULATED ROOF CURB WITH MINIMUM HEIGHT REQUIRED TO MAINTAIN BOTTOM OF EQUIPMENT A MINIMUM OF 16 INCHES ABOVE FINISHED ROOF SURFACE.
B. COORDINATE WITH ROOF INSULATION THICKNESS AND ROOF TAPER AT INSTALLED LOCATION.
B. PROVIDE BIRDSCREEN AND GRAVITY BACKDRAFT DAMPER.
C. PROVIDE FACTORY MOUNTED DISCONNECT SWITCH.
D. PROVIDE WITH MANUFACTURER'S ELECTRONICALLY COMMUTATED (EC) MOTOR.
E. NOMINAL MOTOR HP SHALL BE NO LARGER THAN THE FIRST AVAILABLE NOMINAL MOTOR SIZE GREATER THAN THE BHP.

GRILLE, REGISTER AND DIFFUSER SCHEDULE - LSHS

MARK	MANUFACTURER	SERVICE	MODEL	CONSTRUCTION TYPE	FACE TYPE	MOUNTING LOCATION	BORDER TYPE	FACE SIZE (IN)	MAX NC	MAX PRESS DROP (IN W.C.)	NOTES
EG-1	PRICE	EXHAUST	80	ALUMINUM	EGG CRATE	CEILING	LAY-IN	12"x12"	20	0.08	C,F,H
EG-2	PRICE	EXHUAST	600	ALUMINUM	LOUVERED	DUCT	FLANGED	REFER TO PLANS	20	0.00	B,D,E,G,J
RG-2	PRICE	RETURN	600	ALUMINUM	LOUVERED	SIDEWALL	FLANGED	REFER TO PLANS	20	0.08	B,D,E,F,G,J
SD-1	PRICE	SUPPLY	ASPD	STEEL	PLAQUE	CEILING	LAY-IN	24"x24"	20	0.08	A,B,C,F
SG-1	PRICE	SUPPLY	500	STEEL	LOUVERED	DUCT	FLANGED	REFER TO PLANS	20	0.08	B,D,E,G,J

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:

A. 4-WAY THROW PATTERN UNLESS OTHERWISE INDICATED BY FLOW ARROWS ON DRAWINGS. [PROVIDE ONE SPARE LOOSE BLANK-OFF DEFLECTOR PER DIFFUSER FOR USE DURING BALANCING AS REQUIRED.]
B. NECK SIZE SHOWN ON DRAWINGS. PROVIDE BRANCH DUCT TO MATCH NECK SIZE UNLESS OTHERWISE SHOWN ON DRAWINGS.
C. BAKED ENAMEL FINISH, WHITE TO MATCH CEILING COLOR.
D. FRONT BLADES PARALLEL TO LONG DIMENSION.
E. DOUBLE DEFLECTION BARS SHALL BE ADJUSTABLE.
F. FRAME TYPE TO MATCH CEILING/WALL CONSTRUCTION, COORDINATE WITH ARCHITECTURAL REFLECTED CEILING/WALL PLAN.
G. PAINT ALL INTERIOR SURFACES SLOTS, GRILLES AND PLENUMS FLAT BLACK.
H. PROVIDE WITH RAPID MOUNT FRAMING OPTION FOR LAY-IN TYPE DIFFUSERS INSTALLED IN A HARD CEILING.
J. PROVIDE GRILLE PRIMED FOR FIELD PAINTING.

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1	Addendum 01	09/16/2022

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Development Services Department
Lee's Summit, Missouri
11/23/2022

STATE OF MISSOURI
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LSHS - MECHANICAL SCHEDULES

M301-C

CARL J. HOLDEN

MECHANICAL SYMBOLS

NOTE: THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS, ABBREVIATIONS, ETC. ARE NECESSARILY USED ON THE DRAWINGS.

CONTROLS SYMBOLS AND NOMENCLATURE

	FLUE DAMPER (BOILERS)
CONTROL PANEL	BOILER
	COOLING TOWER
	CONDENSING UNIT
	FLUID COOLER
CONDENSER / EVAPORATOR / CONTROL PANEL	WATER-COOLED CHILLER
AIR-COOLED	AIR-COOLED CHILLER
HX	GENERIC HEAT EXCHANGER
HEAT EXCHANGER	SHELL AND TUBE HEAT EXCHANGER
BHTR	BASIN HEATER
	GROUND HEAT EXCHANGER
	HEAT RECOVERY WHEEL

H / G	HOT GAS REHEAT COIL
C / C	COOLING COIL
	FURNACE
H / C	HEATING COIL
	DAMPER - GENERIC BLADE TYPE
	DAMPER - OPPOSED BLADE TYPE
	DAMPER - PARALLEL BLADE TYPE
	FLEXIBLE SENSING ELEMENT
	AIRFLOW STATION
	PUMP
	FAN
	HUMIDIFIER
	AIR FILTER
	3-WAY CONTROL VALVE
	2-WAY CONTROL VALVE
	AIR BYPASS DAMPER
AFS	AIRFLOW MEASURING STATION
DX	DIRECT EXPANSION COOLING UNIT CONTROLLER
GAS	FURNACE BURNER CONTROLLER
SCR	SILICON-CONTROLLED RECTIFIER ELECTRIC HEATER CONTROL (MODULATING)
ELEC	ELECTRIC HEATER CONTROLLER (ON/OFF)
ECM	ELECTRONIC COMMUTATED MOTOR
VFD	VARIABLE FREQUENCY DRIVE
STARTER	MOTOR STARTER
LTC	LOW LIMIT TEMPERATURE CONTROLLER (FREEZESTAT)
	EMERGENCY PUSH BUTTON

(#)	RISER DESIGNATION
FD	FIRE DAMPER
FSD	FIRE SMOKE DAMPER
SD	SMOKE DAMPER
	SMOKE DETECTOR (SD(SD=SUPPLY / RD=RETURN))
BTU	BTU METER
CO	CARBON MONOXIDE SENSOR
CO2	CARBON DIOXIDE SENSOR
CP	CONTROL PANEL
CT	CURRENT CIRCUIT RELAY
DP	DIFFERENTIAL PRESSURE SENSOR
EM	ELECTRIC METER
FM	FLOW METER; FUEL METER
FS	FLOW SWITCH
HS	HUMIDITY SENSOR
MD	MOTORIZED DAMPER
BD	BACKDRAFT DAMPER
VD	VOLUME DAMPER
H	HUMIDISTAT
T	THERMOSTAT
P	PRESSURE SENSOR
PA	POLLUTANT ALARM
PS	PULL STATION
R	REFRIGERANT LEAK SENSOR
S	SENSOR - GENERIC
SP	STATIC PRESSURE PORT
SW	SWITCH
TS	TEMPERATURE SENSOR
WM	WATER METER

-X	GENERIC INDICATOR OF PLAN MARK NUMBER OR QTY
<>	NOT EQUAL TO
AI	ANALOG INPUT (MODULATING)
AO	ANALOG OUTPUT (MODULATING)
AV	ANALOG VIRTUAL (VALUE)
BI	BINARY INPUT (ON/OFF, OPEN/CLOSED, ETC)
BO	BINARY OUTPUT (ON/OFF, OPEN/CLOSED, ETC)
BV	BINARY VIRTUAL (VALUE)
BAS	BUILDING AUTOMATION SYSTEM
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
CMD	COMMAND
COM	COMMUNICATION LINK
CP	CONTROL PANEL
CV	CONTROL VALVE
CWS	CONDENSER WATER SUPPLY
CWR	CONDENSER WATER RETURN
DCW	DOMESTIC COLD WATER
DDC	DIRECT DIGITAL CONTROL
E/C	ELECTRICAL CONTRACTOR
EOA	ECONOMIZER OUTSIDE AIR
EQ	EQUALIZER
E/M	EQUIPMENT MANUFACTURER
FA/C	FIRE ALARM CONTRACTOR
FIP	FAIL IN POSITION
G	NATURAL GAS
HWS	HEATING WATER SUPPLY
HWR	HEATING WATER RETURN
HPWS	HEAT PUMP WATER SUPPLY
HPWR	HEAT PUMP WATER RETURN
LPS	LOW PRESSURE STEAM SUPPLY
LPC	LOW PRESSURE STEAM CONDENSATE
M/C	MECHANICAL CONTRACTOR
MIN	MINIMUM; MINUTES
MOA	MINIMUM OUTSIDE AIR
NC	NORMALLY CLOSED
NIA	NOT IN AUTO (IN HAND)
NO	NORMALLY OPEN
PID	PROPORTIONAL INTEGRAL DERIVATIVE
RA	RETURN AIR
REA	RELIEF/EXHAUST AIR
RH	RELATIVE HUMIDITY
SA	SUPPLY AIR
SCHE	AS SCHEDULED ON DRAWINGS
SPEC	SPECIFIED
SPT	SETPOINT
TBD	TO BE DETERMINED
TC/C	TEMPERATURE CONTROLS CONTRACTOR
///	POWER WIRING
//	CONTROL WIRING
	ETHERNET LAN WIRING
	BAS COMMUNICATION WIRING

PROJECT DESIGN CONDITIONS - LSHS

CLIMATE CONDITONS

WEATHER STATION:		LEE'S SUMMIT MUNICIPAL, MO					
CLIMATE ZONE:		4A					
HEATING (DB):	99.6%	4.7	°F				
DESIGN HEATING CONDITIONS (DB):		0	°F				
HUMIDIFICATION (DP/ HR/ MCDB):	99.6%		°F/		gr/lb		°F
COOLING (DB/MCWB):	0.4%	96.4	°F/	74.7	°F/		
DESIGN COOLING CONDITIONS (DB/ MCWB):		96.4	°F/	74.7	°F/		
DEHUMIDIFICATION (DP/ HR/ MCDB):	0.4%	79.9	°F/	135.8	gr/lb	85.9	°F

BUILDING OPERATING HOURS:

MONDAY - FRIDAY	TBD BY OWNER
SATURDAY	TBD BY OWNER
SUNDAY	TBD BY OWNER
HOLIDAY	TBD BY OWNER

SPACE / UNIT DESCRIPTION	SET POINTS									SPACE OPERATING HOURS			NOTES
	COOLING / DE-HUMIDIFICATION				HEATING		HUMIDIFICATION		ZONE VENTILATION RESET			OCCUPIED / UNOCCUPIED			
	OCC °F	UNOCC °F	MAX RH %	MIN RH %	OCC °F	UNOCC °F	MIN RH %	MAX RH %	CONTROL METHOD	BASE PPM	MAXIMUM PPM	M-F	SAT	SUN	
GIC	75	80	60%	NA	70	60	NA	NA	CO2	400	900	TBD	TBD	TBD	A-C
ROBOTICS	75	80	60%	NA	70	60	NA	NA	OCC	400	900	TBD	TBD	TBD	A-C
LOCKER	75	80	60%	NA	70	60	NA	NA	OCC	400	900	TBD	TBD	TBD	A-C
WEIGHTS	75	80	60%	NA	70	60	NA	NA	OCC	400	900	TBD	TBD	TBD	A-C

NOTES:
A. ZONE LEVEL VENTILATION RESET / DEMAND CONTROL VENTILATION (DCV) CONTROL METHOD: CARBON DIOXIDE SENSOR (CO2).
B. ZONE LEVEL SET POINT CONDITIONS SHALL BE AS SCHEDULED UNLESS OTHERWISE SCHEDULED OR NOTED ON THE DRAWINGS FOR ROOM SPECIFIC SPACE CONDITIONS.
C. ZONE LEVEL OCCUPANCY HOUR SCHEDULE SHALL BE PER BUILDING OPERATING HOURS UNLESS OTHERWISE SCHEDULED.

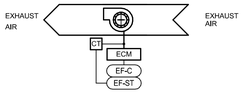
POINTS LIST - GLOBAL BUILDING MONITORING - LSHS

POINT ID	DESCRIPTION	POINT TYPE	UNITS	ACCURACY	TRENDING INTERVAL	ENERGY DASHBOARD DISPLAY	STATUS ALARM	ALARM RANGE	NOTES
BUILDING SENSORS									
BDP	BUILDING DIFFERENTIAL PRESSURE	AI	IN. W.G.	SPEC	15 MIN.	X	X	-0.15 > BDP > +0.20	A, B
OAC02	OUTSIDE AIR CARBON DIOXIDE LEVEL	AI	PPM	SPEC	15 MIN.				
OAT	OUTSIDE AIR DRY BULB TEMPERATURE	AI	°F	SPEC	15 MIN.	X			
OAH	OUTSIDE AIR RELATIVE HUMIDITY	AI	%	SPEC	15 MIN.	X			

NOTES:
A. INITIAL SETPOINT SHALL BE 0.05 IN. W.G. COORDINATE FINAL SETPOINT AT BUILDING STARTUP.
B. APPLY A MOVING TIME AVERAGE TO BUILDING DIFFERENTIAL PRESSURE USING A SLIDING 5-MINUTE WINDOW TO REDUCE DAMPER AND FAN CONTROL FLUCTUATIONS.

1 BUILDING GLOBAL WEATHER MONITORING STATION
NONE

2 BUILDING DIFFERENTIAL PRESSURE SENSOR
NONE



3 EXHAUST FANS (EF-XX)
NTS

SEQUENCE OF OPERATIONS MISCELLANEOUS EQUIPMENT

This sequence of operations is organized into the following main categories:
safeties, overrides and interlocks, and component control loops
either enable or disable the various modes of operation. If a mode of operation is not listed within a component control loop section then that mode of operation has no direct influence on the operation of the component. The control setpoint reset section describes the logic and reference variables that will be used to reset control setpoints to a new value within its reset range. The safeties and interlocks section outlines the hardwired interlocks that will be required to meet life safety requirements. Safeties and interlocks take precedence over all other control strategies outlined in this document. The control responses of each component for the various modes of operation are described in the component control loop sections.

The sequence of operations, the points list and control diagrams shall be used to provide a complete description of the control philosophy for the controlled equipment. Individual setpoint values, reset ranges, and alarm action levels are listed in the points list. Components and control sensor locations are graphically depicted on the control diagram.

EXHAUST FANS (EF-XX)

OPERATING MODES

OCCUPIED MODE:

The units shall be in occupied mode per the project design conditions schedule shown on the control drawings.

UNOCCUPIED MODE:

The units shall be in unoccupied mode for all periods not included in the occupied hours of operation.

COMPONENT CONTROL LOOPS

FAN CONTROL - CONSTANT VOLUME BMS SCHEDULED

When in Occupied Mode:

The fan shall be ON.

When in Unoccupied Mode:

The fan shall be OFF.

EXHAUST FAN CONTROL POINTS - LSHS

POINT ID	DESCRIPTION	POINT TYPE	DEFAULT SETPOINT	FAIL POSITION	STATUS ALARM	ALARM RANGE	NOTES
EXHAUST FANS (EF-1H)							
EF-C	EXHAUST FAN COMMAND (START/STOP)	BO					A
EF-ST	EXHAUST FAN STATUS (CT)	BI			X	EF-C=ON, EF-ST=OFF	

NOTES:
A. POINTS APPLY TO MULTIPLE UNITS. SEE CONTROL DIAGRAMS FOR NUMBER OF UNITS.
C. ALARM TO SIGNAL AFTER 30 SECOND TIME DELAY (ADJ.)
D. ALARM TO SIGNAL AFTER 10 MINUTE TIME DELAY (ADJ.)

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LSHS - MECHANICAL CONTROLS

M401-C

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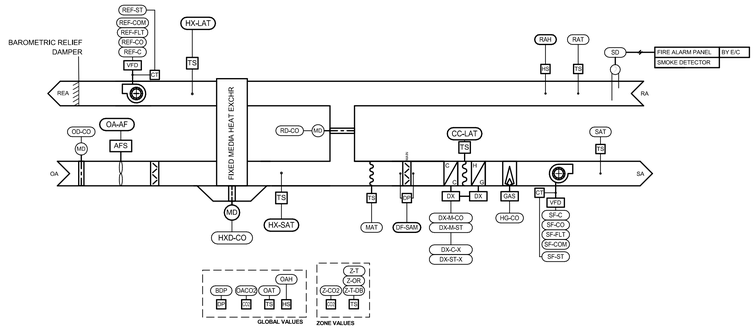

1 ROBOTICS - 100% OA SZ-VAV RTU (RTU-1H -LSHS)
NTS

POINTS LIST - ROBOTICS - LSHS

POINT ID	DESCRIPTION	POINT TYPE	DEFAULT SET POINT	SET POINT RESET RANGE	FAIL POSITION	STATUS ALARM	ALARM RANGE	NOTES
GLOBAL VALUES								
BDP	BUILDING DIFFERENTIAL PRESSURE	AV						A
OAT	OUTSIDE AIR TEMPERATURE	AV						A
OAH	OUTSIDE AIR HUMIDITY	AV						A
OACO2	OUTSIDE AIR CO2 LEVEL	AV						A
AIR SENSING								
SAT	SUPPLY AIR TEMPERATURE	AI	55 F CLG; 90 F HTG	52 - 65 F CLG		X	50 F > SAT > 100 F	D
RAT	RETURN AIR TEMPERATURE	AI						
RAH	RETURN AIR HUMIDITY	AI	50 PCT	30-55 PCT		X	15RH > RAH >65RH	D
MAT	MIXED AIR TEMPERATURE	AI	55 F	52 - 65 F CLG				D
CC-LAT	COOLING COIL LEAVING AIR TEMPERATURE	AI	SCHED			X	50 F > CC-LAT > 100 F	D
OA-AF	OUTSIDE AIR AIRFLOW QUANTITY ABSOL. MIN./ MIN.(CFM)	AI	SCHED			X	MOA-AF < SCHED - 15%	D
ZONE LEVEL SENSORS								
Z-T	ZONE TEMPERATURE	AI	SCHED					C, D
Z-OR	MANUAL OCCUPANCY OVERRIDE	BI	2 HOURS					D
Z-T-DB	ZONE TEMPERATURE	BV	5 F	-2.5 F < Z-T < +2.5 F				D
Z-CO2	ZONE CO2	AI	SCHED				Z-CO2 > SPT	C, D
SUPPLY FAN								
SF-COM	SUPPLY FAN VFD COMMUNICATION	COM						
SF-C	SUPPLY FAN COMMAND (START/STOP)	BO						
SF-CO	SUPPLY FAN CONTROL OUTPUT - SPEED (PERCENT)	AO		SCHED				
SF-ST	SUPPLY FAN STATUS	BI				X	SF-ST <> SF-C	
SF-FLT	SUPPLY FAN VFD FAULT	BI				X	COMMON ALARM	
RELIEF-EXHAUST FAN								
REF-COM	RELIEF-EXHAUSTFAN VFD COMMUNICATION	COM						
REF-C	RELIEF-EXHAUST FAN COMMAND (START/STOP)	BO						
REF-CO	RELIEF-EXHAUST FAN CONTROL OUTPUT - SPEED (PERCENT)	AO		SCHED.				
REF-ST	RELIEF-EXHAUST FAN STATUS	BI				X	REF-ST <> REF-C	
REF-FLT	RELIEF-EXHAUST FAN VFD FAULT	BI				X	COMMON ALARM	
RETURN AIR DAMPER (MODULATING)								
RD-CO	RETURN AIR DAMPER CONTROL OUTPUT	AO			NO			
OUTSIDE AIR DAMPER (MODULATING)								
OD-CO	OUTSIDE AIR DAMPER CONTROL OUTPUT	AO			NC			
FILTERS								
DF-SAM	DIRTY FILTER INDICATION (SA MAIN FILTER)	BI	SCHED.			X	ON ACTIVATION	D
COOLING COIL - DX MODULATING AND BINARY STAGES								
DX-M-CO	DX MODULATING COMPRESSOR CONTROL OUTPUT	AO						J
DX-M-ST	DX MODULATING COMPRESSOR STATUS	AI				X	DX-M-ST <> DX-M-CO	J
DX-C-X	DX COMPRESSOR STAGE "X" COMMAND	BO						J
DX-ST-X	DX COMPRESSOR STAGE "X" STATUS	BI				X	DX-ST-X <> DX-C-X	J
HEATING COIL - GAS FURNACE MODULATING								
HG-CO	GAS FURNACE HEAT MODULATION CONTROL OUTPUT	AO						
HEAT EXCHANGER - TEMPERATURE SENSING								
HX-LAT	LEAVING AIR TEMPERATURE	AI						
HX-SAT	SUPPLY AIR TEMPERATURE	AI				X	HX-SAT< 35 F	
HEAT EXCHANGER - FIXED MEDIA								
	(NO ADDITIONAL CONTROL)							
HEAT EXCHANGER - BYPASS DAMPERS								
HXD-CO	BYPASS DAMPER CONTROL OUTPUT	AO			NC			
FIRE ALARM/SMOKE DETECTORS								
SD	SMOKE DETECTOR STATUS	BI				X	ON ACTIVATION	K

ALL POINTS SHOWN SHALL BE PROVIDED BY BAS CONTRACTOR UNLESS NOTED OTHERWISE.

NOTES:
A. DISPLAY VALUE WITH AHU GRAPHIC AT BAS FRONT-END. REFERENCE GLOBAL BUILDING MONITORING SCHEDULE FOR CONTROL POINT.
C. REFERENCE PROJECT DESIGN CONDITIONS SCHEDULE FOR SETPOINT.
D. POINT SHALL BE ADJUSTABLE.
J. COORDINATE NUMBER OF STAGES FOR CONTROL WITH EQUIPMENT FURNISHED.
K. DEVICE AND RELAY FROM FIRE ALARM SYSTEM PROVIDED BY DIVISION 28. DISPLAY DETECTOR RELAY STATUS (NORMAL/ALARM) AT BAS FRONT END.

SEQUENCE OF OPERATIONS
SINGLE ZONE VARIABLE AIR VOLUME
ROOFTOP UNIT (RTU-1H)

This sequence of operations is organized into the following main categories: operating modes; control setpoint resets; safeties, overrides and interlocks; and component control loops. The operating modes describe the criteria that either enable or disable the various modes of operation. If a mode of operation is not listed within a component control loop section then that mode of operation has no direct influence on the operation of the component. The control setpoint reset section describes the logic and reference variables that will be used to reset control setpoints to a new value within its reset range. The safeties, overrides, and interlocks section outlines the hardwired interlocks that are required to meet life safety requirements. Safeties and interlocks take precedence over all other control strategies outlined in this document. The control responses of each component for the various modes of operation are described in the component control loop sections. Setpoints shall be adjustable (adj.) as noted.

The sequence of operations, the points list and control diagrams shall be used to provide a complete description of the control philosophy for the controlled equipment. Individual setpoint values, reset ranges, and alarm action levels are listed in the points list. Components and control sensor locations are graphically depicted on the control diagram. The controls contractor shall be responsible for coordinating any necessary time delay setpoints to establish stable system operation.

GENERAL DESCRIPTION

The rooftop unit described by this sequence of operations consist of a 100% OA DX/Gas RTU with modulating supply fan, modulating powered exhaust, and static core energy recovery device. The RTU shall be provided with refrigeration only and control to its own internal safeties and time delays. Controls shown in the diagram, points list, and described in the sequence are intended to be performed by controllers, sensors, and programming to achieve the specified sequence of operations indicated.

OPERATING MODES

OCCUPIED MODE:
The unit shall be in occupied mode per the Project Design Conditions Schedule shown on the control drawings.

UNOCCUPIED MODE:
The unit shall be in unoccupied mode for all periods not included in the occupied hours of operation. Overrides of unoccupied schedule are defined at the zone level control.

OCCUPIED STANDBY MODE:
The unit shall be in occupied standby mode when the associated zone is scheduled to be occupied and an occupant sensor indicates zero population within the zone subject to a 5-minute (adj.) delay. The unit shall exit occupied standby mode when occupancy is detected.

COOLING MODE:
The unit shall be in cooling mode when the outside air temperature (OAT) rises above the outside air cooling enable setpoint (OAT-C)

HEATING MODE:
The unit shall be in heating mode when the outside air temperature (OAT) falls below the outside air heating enable setpoint (OAT-H)

VENTILATION ONLY MODE:
The unit shall be in ventilation only mode when the outdoor air temperature is between the outdoor air cooling enable (OAT-C) and outdoor air heating enable (OAT-H) setpoints.

DEHUMIDIFICATION MODE:
The unit shall be in dehumidification mode when the outside air dewpoint (OADP) is greater than the setpoint. The unit shall exit dehumidification mode when the outside air dewpoint (OADP) is less than its setpoint minus the outside air dewpoint deadband (OADP-DB).
Dehumidification mode shall take priority over other modes.

ENERGY RECOVERY COOLING MODE- TEMPERATURE ENABLED:
The unit shall be in energy recovery cooling mode when the outside air temperature (OAT) is greater than the return air temperature (RAT).

ENERGY RECOVERY HEATING MODE- TEMPERATURE ENABLED:
The unit shall be in energy recovery heating mode when:
The outside air temperature (OAT) is lower than the return air temperature (RAT) and the outside air temperature (OAT) is colder than the supply air temperature (SAT) setpoint).

ENERGY RECOVERY FROST PREVENTION MODE- TEMPERATURE ENABLED:
The unit shall be in energy recovery frost prevention mode when the heat exchanger exhaust leaving air temperature (HX-LAT) falls below setpoint.
The unit shall be in energy recovery frost prevention mode when the outside air temperature (OAT) is below 30 degrees F (adj).

CONTROL SETPOINT RESETS

SUPPLY AIR TEMPERATURE RESET - DIRECT OUTSIDE AIR RESET:
The supply air temperature (SAT) setpoint shall linearly reset within the range as listed in the "setpoint reset range" column of the points list based on the outside air temperature (OAT) according to the following schedule:

(OAT)	(SAT)
OAT-C setpoint	minimum value of the SAT setpoint range
OAT-H setpoint	maximum value of the SAT setpoint range

VENTILATION RESET (CO2):
The outside airflow CFM (OA-AF) setpoint shall be reset between the minimum and maximum values subject to the associated zone level CO2 value as scheduled in the Project Design Conditions Schedule.
The airflow setpoint shall be at its maximum value when the associated zone CO2 sensor detects levels at or above the maximum CO2 range.
The airflow setpoint shall be at its minimum value when the associated zone CO2 sensor detects levels at or below the minimum CO2 range.
The airflow setpoint shall vary between its minimum and maximum setpoint range linearly as the associated zone CO2 sensor varies between is minimum and maximum value.

SAFETIES, OVERRIDES AND INTERLOCKS

SMOKE DETECTOR INTERLOCK:
The unit shall be disabled via hard wired interlock on activation of a system smoke detector. Display smoke detector relay status (normal or alarm) at the BAS front end.

COMPONENT CONTROL LOOPS

SUPPLY FAN CONTROL- SINGLE ZONE VARIABLE VOLUME:
When the HOA switch is in hand position, the variable speed supply fan shall operate at a speed set manually by the operator at the user interface of the drive.
When the HOA switch is in off position, the fan shall be off.
When the HOA switch is in auto position, the variable speed supply fan shall operate subject to the unit enable signal, and unit operating modes.
When in Occupied Mode:
The fan shall energize and slowly ramp to the initial minimum fan speed determined during system startup. Minimum fan speed shall be established during balancing.
The fan VFD shall modulate to maintain the design outside airflow CFM (OA-AF) as measured by the outside airflow sensor.
When in Occupied Standby Mode:
The fan shall be OFF.
When in Unoccupied Mode:
The fan shall be OFF. On an override signal from the zone level, the fan shall operate as in occupied mode until the override is removed.
When in Pre-Occupancy Purge Mode:
The fan shall operate as in occupied mode.

RELIEF - EXHAUST FAN (REF) - BUILDING PRESSURE SENSOR CONTROL
When in Occupied Mode:
The fan shall be ON. When the building differential pressure (BDP) exceeds setpoint, the fan shall energize and slowly ramp to the initial minimum fan speed determined during system startup. The fan VFD speed shall vary to maintain the building differential pressure (BDP) setpoint.
When in Unoccupied Mode:
The fan shall be OFF.
When in Pre-Occupancy Purge Mode:
The fan shall operate as in occupied mode.

OUTSIDE AIR DAMPER (OA)
When in Occupied Mode:
The damper shall be open.
When in Unoccupied Mode:
The damper shall close after the supply fan is off and a time delay.
When in Pre-Occupancy Purge Mode:
The damper shall be open.

FILTER MONITORING
When in All Modes:
The controller shall monitor the differential pressure across each filter bank and shall provide a signal when the setpoint is exceeded.

ENERGY RECOVERY BYPASS DAMPERS
The supply and exhaust bypass dampers shall be linked together on a common actuator.
When in Occupied Mode:
The dampers shall be open unless unit is in one of the following modes.
When in Ventilation Mode
The dampers shall be open. This takes priority over other energy recovery modes listed below.
When in Energy Recovery Cooling Mode:
The dampers shall be closed.
When in Energy Recovery Heating Mode:
The dampers shall be closed.
The dampers shall modulate to maintain the heat exchanger leaving air temperature (HX-SAT) setpoint.
When in Energy Recovery Frost Prevention Mode:
Capacity modulation: The energy recovery bypass dampers shall modulate to maintain the heat exchanger exhaust leaving air temperature (HX-LAT) setpoint.
When in Unoccupied Mode:
The dampers shall be open.
On an override signal from the zone level the dampers shall operate as in occupied mode until the override is removed.

HEATING COIL- GAS MODULATED
When in Occupied Mode:
When in Ventilation Only Mode:
The coil shall be OFF.
When in Cooling Mode:
The coil shall be OFF.
When in Heating Mode:
The controller shall modulate the heating to maintain the supply air temperature setpoint (SAT).
When in Dehumidification Mode:
The coil shall be OFF.
When in Unoccupied Mode:
The coil shall be OFF.
On an override signal from the zone level the coil shall operate as in occupied mode until the override is removed.

COOLING COIL DX STAGED + VARIABLE CONTROL (MULTIPLE COMPRESSORS)
When in Occupied Mode:
When in Ventilation Only Mode:
The compressors shall be OFF.
When in Cooling Mode:
The variable compressor shall modulate in coordination with the constant speed compressors (subject to the manufacturer's standard safeties) to maintain the supply air temperature setpoint (SAT).
When in Heating Mode:
The compressors shall be OFF.
When in Dehumidification Mode:
The variable compressor shall modulate in coordination with the constant speed compressors (subject to the manufacturer's standard safeties) to maintain the cooling coil leaving air temperature (CC-LAT).
The variable compressor represents the primary stage of cooling and shall vary continuously between minimum capacity and 100% capacity to maintain the supply air set point temperature. When the supply air temperature setpoint cannot be maintained and the variable compressor is at 100%, then the constant speed compressor shall be energized and the variable compressor shall return to minimum speed and modulate to maintain the supply air setpoint. Units with subsequent stages of cooling shall follow a similar loading and unloading logic.
When in Unoccupied Mode:
The compressors shall be OFF.
On an override signal from the zone level the compressors shall operate as in occupied mode until override is removed.

REHEAT COIL- DX HOT GAS REHEAT
When in Occupied Mode:
When in Ventilation Only Mode:
The coil shall be OFF.
When in Cooling Mode:
The coil shall be OFF.
When in Heating Mode:
The coil shall be OFF.
When in Dehumidification Mode:
The manufacturer onboard controller shall control the hot gas reheat coil valve to maintain the supply air temperature setpoint (SAT).
When in Unoccupied Mode:
The coil shall be OFF.
On an override signal from the zone level the coil shall operate as in occupied mode until the override is removed.

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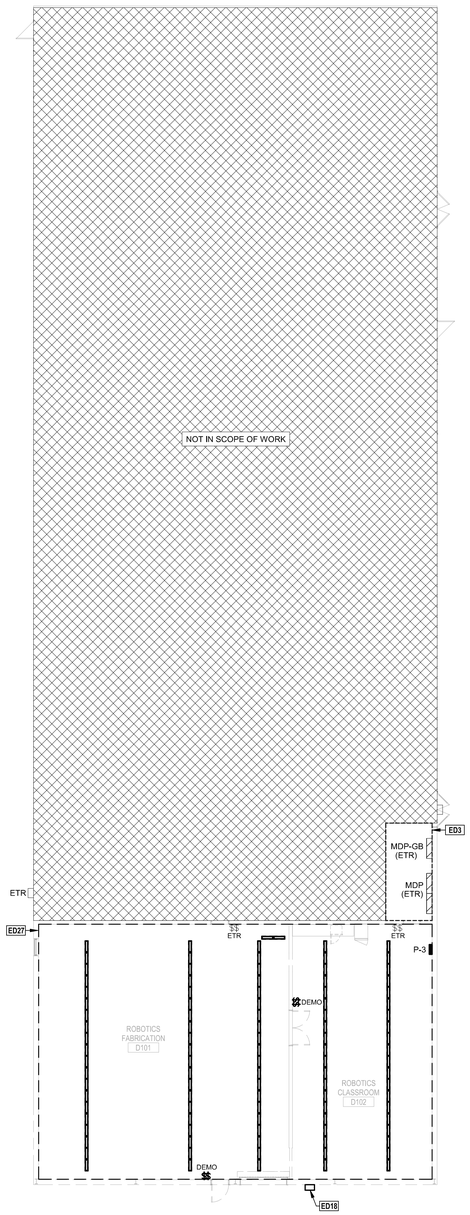
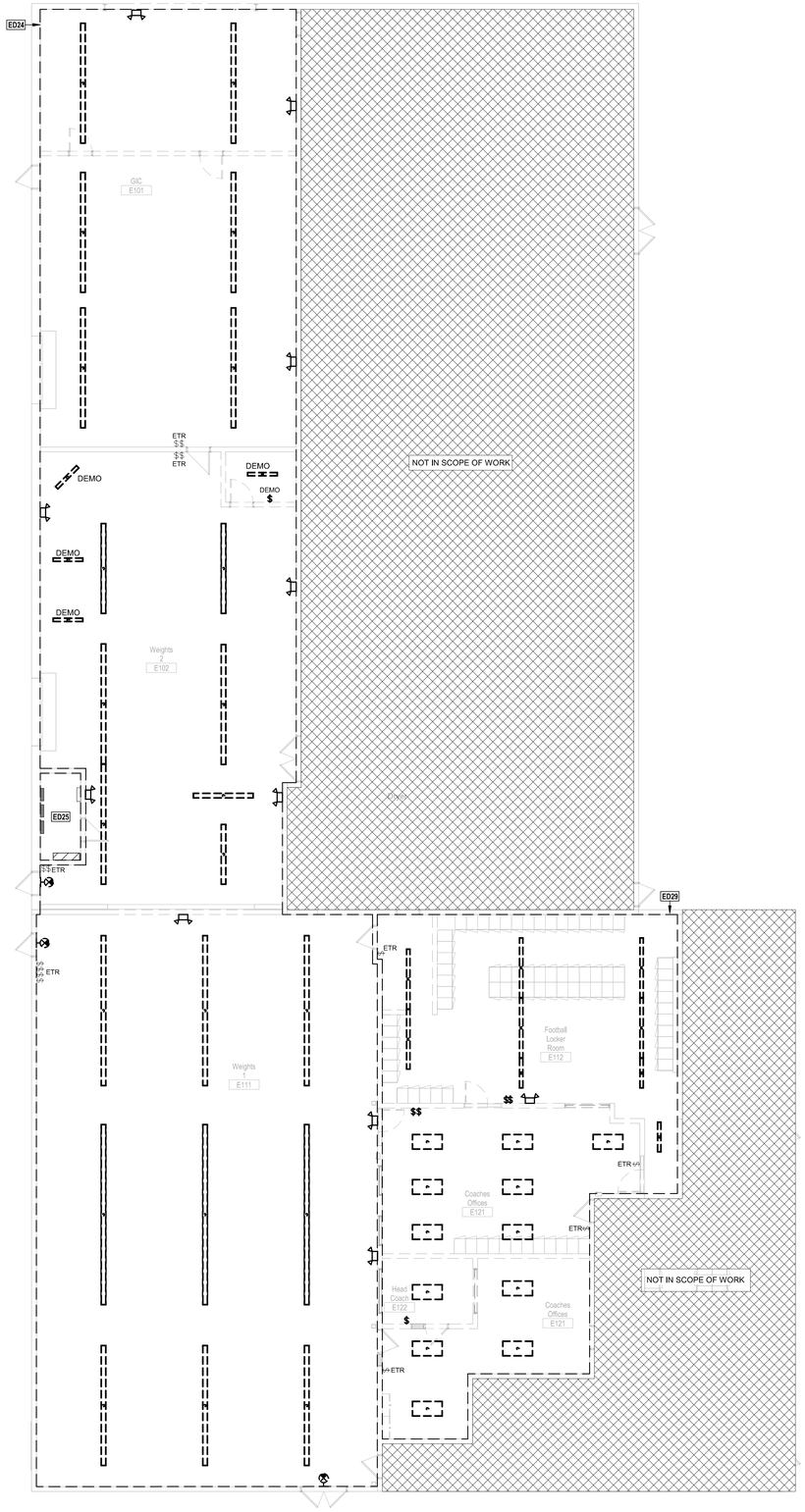
LSHS - MECHANICAL CONTROLS
M402-C

CARL J. HOLDEN



1 LIGHTING LEVEL 1 DEMO RCP - LSHS - BUILDING D
3/32" = 1'-0"



2 LIGHTING LEVEL 1 DEMO RCP - LSHS - BUILDING E
1/8" = 1'-0"

ELECTRICAL DEMOLITION PLAN NOTES:

ED3 MAIN SERVICE ENTRANCE LOCATION IS ON MEZZANINE LEVEL ABOVE. EQUIPMENT IS ETR.

ED18 RELOCATE WALL PACK TO SOUTH SIDE OF NEW ROBOTICS FIELD ADDITION. RE: 1/E101-C FOR ADDITIONAL INFORMATION.

ED24 BASE BID: REMOVE FIXTURES AND LIGHTING CONTROLS MARKED AS "DEMO". ALL OTHER LIGHT FIXTURES AND CONTROLS ARE TO EXISTING TO REMAIN WITHIN DASHED REGION.
ADD ALTERNATE #3: DEMOLISH ALL LIGHTING IN AREA SHOWN BOLD AND DASHED UNLESS NOTED OTHERWISE. REMOVE ALL EXISTING LIGHT FIXTURES, RACEWAY, CIRCUITRY, AND RELATED ACCESSORIES NOT BEING REUSED BACK TO SOURCE PANELBOARD OR NEAREST REMAINING DEVICE/LIGHT FIXTURE. LIGHTING CONTROLS ARE EXISTING TO REMAIN. MAINTAIN ALL EXISTING CIRCUITRY FOR REUSE WHERE NOTED ON NEW CONSTRUCTION DRAWINGS.

ED25 DEMO FIXTURE AND SUPPORTS. REMOVE CIRCUITRY BACK TO JUNCTION BOX.

ED27 BASE BID: REMOVE FIXTURES AND LIGHTING CONTROLS MARKED AS "DEMO". ALL OTHER LIGHT FIXTURES AND CONTROLS ARE EXISTING TO REMAIN WITHIN DASHED REGION.
ADD ALTERNATE #2: REMOVE ALL LIGHT FIXTURES AND SUPPORTS, REMOVE CIRCUITRY BACK TO JUNCTION BOX FOR RE-USE. LIGHTING CONTROLS ARE EXISTING TO REMAIN, UNLESS NOTED OTHERWISE. REFER TO NEW CONSTRUCTION DRAWINGS FOR ADDITIONAL INFORMATION.

ED29 DEMOLISH ALL LIGHTING AND CONTROLS IN AREA SHOWN BOLD AND DASHED UNLESS NOTED OTHERWISE. REMOVE ALL EXISTING LIGHT FIXTURES, RACEWAY, CIRCUITRY, AND RELATED ACCESSORIES NOT BEING REUSED BACK TO SOURCE PANELBOARD OR NEAREST REMAINING DEVICE/LIGHT FIXTURE. MAINTAIN ALL EXISTING CIRCUITRY AND CONTROLS FOR REUSE WHERE NOTED ON NEW CONSTRUCTION DRAWINGS.

ELECTRICAL DEMOLITION GENERAL NOTES:

1. REFERENCE ARCHITECTURAL DRAWINGS FOR FULL EXTENT OF DEMOLITION WORK AND PHASING. NOTIFY ARCHITECT, ENGINEER AND OWNER, AS APPLICABLE, OF ANY CONFLICTS OR DISCREPANCIES BETWEEN DRAWINGS AND JOB SITE CONDITIONS PRIOR TO SUBMITTING BID.
2. COORDINATE DEMOLITION AND REMOVAL OF EXISTING LIGHTING SYSTEMS WITH ARCHITECTURAL PHASING DRAWING AND OWNER TO ALLOW NECESSARY SYSTEMS TO REMAIN OPERATIONAL DURING CONSTRUCTION. (NOTE: NOT ALL EXISTING/DEMOLISHED EQUIPMENT, LIGHT FIXTURES, DEVICES OR RACEWAYS WILL BE SHOWN ON THE DRAWINGS). COORDINATE ELECTRICAL REQUIREMENTS FOR REMODELED/RENOVATED SPACES WITH THE OWNER.
3. AVOID DAMAGING FACILITIES, INCLUDING EQUIPMENT, LIGHT FIXTURES AND DEVICES THAT ARE EXISTING TO REMAIN, NEW OR REUSED. REPAIR ALL DAMAGE CAUSED DURING WORK AT NO EXTRA COST TO THE OWNER.
4. DISPOSE OF ALL ELECTRICAL EQUIPMENT, LIGHT FIXTURES, AND DEVICES SHOWN TO BE REMOVED, UNLESS NOTED OTHERWISE. COORDINATE WITH THE OWNER THE ITEMS TO BE SALVAGED, AND THE LOCATION FOR STORAGE. AVOID DAMAGING SALVAGED ITEMS DURING DEMOLITION WORK AND DURING TRANSPORT TO OWNER'S DESIGNATED STORAGE LOCATION.
5. WHERE ALTERATION OF ELECTRICAL EQUIPMENT, LIGHT FIXTURES, RACEWAYS OR WIRING DEVICES AFFECTS EXISTING SURFACES/FINISHES: REPAIR/PAINT AFFECTED SURFACE TO MATCH EXISTING ADJACENT SURFACE IN ACCORDANCE WITH OWNER REQUIREMENTS. MAINTAIN FIRE RATING OF ALL FLOORS/WALLS/CEILINGS THAT ARE RATED.
6. WHERE DEMOLITION WORK INTERRUPTS ELECTRICAL CONTINUITY OF CIRCUITS THAT ARE TO REMAIN IN USE, PROVIDE NECESSARY DEVICES AND RELATED CIRCUITRY TO MAINTAIN ELECTRICAL CONTINUITY IN ACCORDANCE WITH OWNER REQUIREMENTS. RECIRCUIT REUSED ELECTRICAL EQUIPMENT, LIGHT FIXTURES AND WIRING DEVICES PREVIOUSLY POWERED FROM DEMOLISHED EQUIPMENT TO NEW OR TEMPORARY EQUIPMENT AS NEEDED.
7. COORDINATE DISCONNECTION OF POWER TO EQUIPMENT BEING DEMOLISHED/REMOVED/RELOCATED WITH OTHER TRADES PRIOR TO START OF WORK. ALL ELECTRICAL EQUIPMENT, LIGHT FIXTURES, RACEWAYS, WIRING DEVICES AND RELATED CIRCUITRY NOT BEING REUSED SHALL BE REMOVED IN ALL ACCESSIBLE AREAS AND IN FLOORS/WALLS/CEILINGS THAT ARE TO BE REMOVED, UNLESS NOTED OTHERWISE, AS ALLOWED BY OWNER. UNUSED ELECTRICAL EQUIPMENT, RACEWAYS AND RELATED CIRCUITRY THAT ARE INACCESSIBLE MAY BE ABANDONED IN PLACE AND SHALL BE PERMANENTLY DISCONNECTED FROM ALL POWER SOURCES, INSULATED FROM CONTACT WITH OTHER LIVE ELECTRICAL WIRING/DEVICES, AND IDENTIFIED AT THE TERMINATIONS AS NO LONGER BEING IN SERVICE.
8. LOW VOLTAGE CABLES/WIRING NOT BEING REUSED SHALL BE REMOVED UNLESS IDENTIFIED FOR FUTURE USE. COORDINATE REQUIREMENTS WITH OWNER. CARE SHOULD BE TAKEN DURING THE REMOVAL PROCESS TO PROTECT THE EXISTING REUSED CABLES/WIRING FROM DAMAGE.

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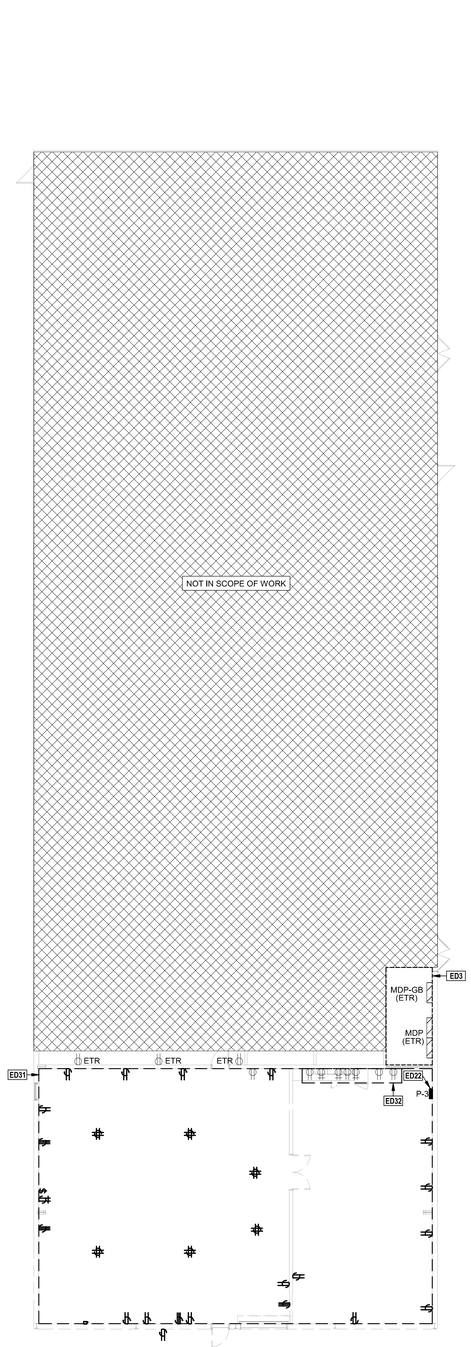
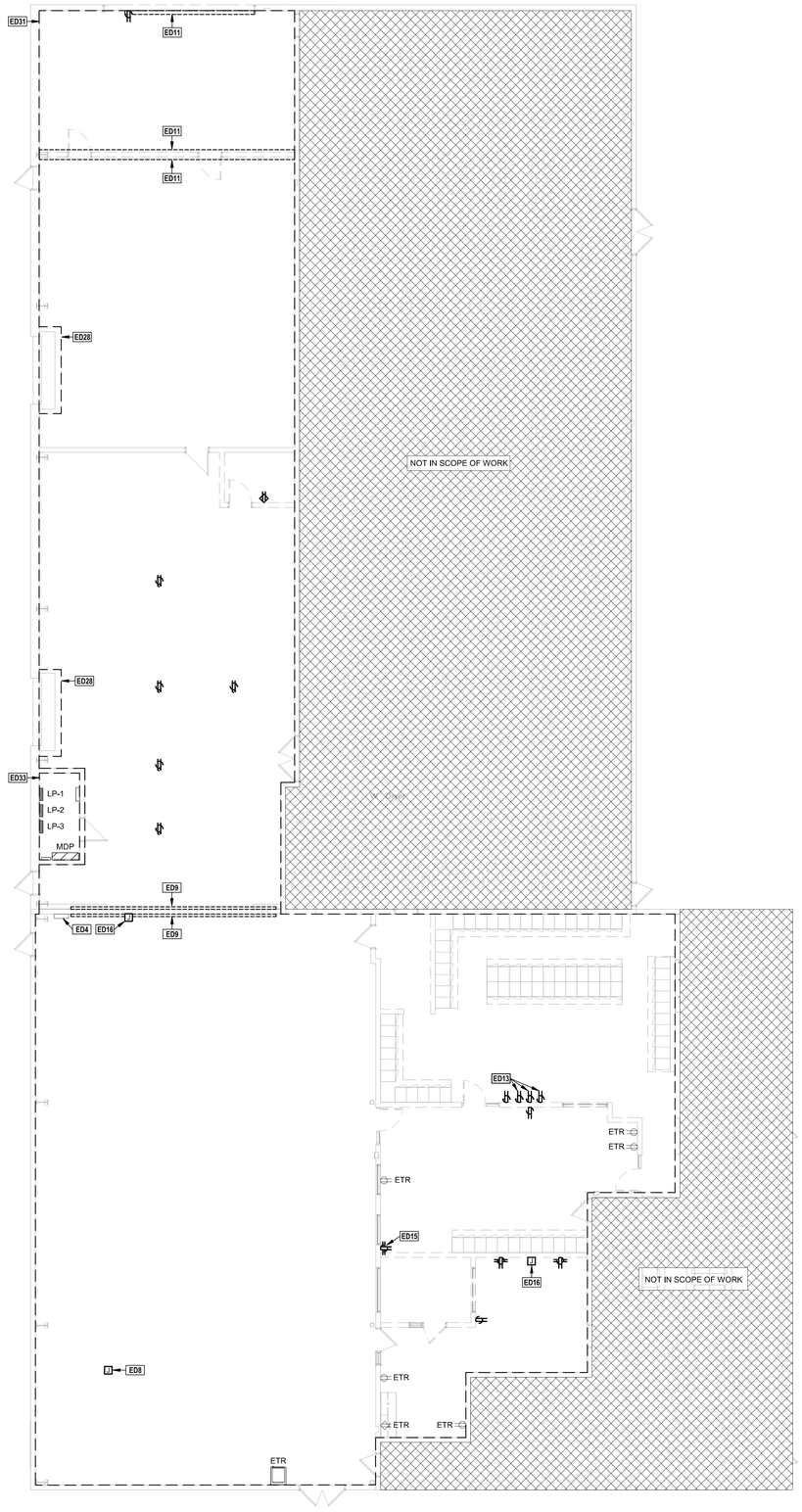
LSHS - LIGHTING DEMOLITION RCP - LEVEL 1 - BUILDING D & E

ED101-C

DOUGLAS M. EVERHART



1 POWER LEVEL 1 DEMO PLAN - BUILDING D
3/32" = 1'-0"



2 POWER LEVEL 1 DEMO PLAN - BUILDING E
1/8" = 1'-0"

ELECTRICAL DEMOLITION PLAN NOTES:

ED3 MAIN SERVICE ENTRANCE LOCATION IS ON MEZZANINE LEVEL ABOVE. EQUIPMENT IS ETR.

ED4 EXISTING WIREWAY MOUNTED AT APPROXIMATELY 10' AFF. PROTECT EXISTING WIREWAY AND ALL CONDUIT TERMINATIONS ENTERING AND LEAVING WIREWAY.

ED8 RELOCATE EXISTING PENDANT MOUNTED PROJECTOR AND REVISE AND EXTEND RELATED CIRCUITRY. EXISTING RACEWAY, CIRCUITRY, AND RELATED ACCESSORIES MAY BE REUSED IF IN GOOD CONDITION AND NEW DESIGN CRITERIA CAN BE MET, OTHERWISE REPLACE. RE: NEW CONSTRUCTION DRAWINGS FOR ADDITIONAL INFORMATION.

ED9 PROTECT EXISTING EXPOSED CONDUIT WITHIN DASHED REGION DURING CONSTRUCTION OF NEW GARAGE DOOR. RELOCATE ALL EXPOSED CONDUIT SURFACE MOUNTED TO PORTION OF WALL GETTING DEMOLISHED TIGHT TO DECK. REMOVE ALL RECEPTACLES WITHIN PORTION OF WALL GETTING DEMOLISHED. REMOVE CONDUIT AND CIRCUITRY BACK TO SOURCE.

ED11 DEMOLISH ALL ELECTRICAL DEVICES LOCATED ON WALL OR PORTION OF WALL TO BE REMOVED UNLESS NOTED OTHERWISE. REMOVE EXISTING ELECTRICAL DEVICES, RACEWAY, CIRCUITRY, AND RELATED ACCESSORIES NOT BEING REUSED BACK TO SOURCE PANELBOARD OR NEAREST REMAINING DEVICE, NOT ALL EXISTING TO REMAIN RECEPTACLES ARE SHOWN.

ED13 RELOCATE EXISTING RECEPTACLES SERVING GAME CLOCKS AND REVISE AND EXTEND RELATED CIRCUITRY. EXISTING RACEWAY, CIRCUITRY, AND RELATED ACCESSORIES MAY BE REUSED IF IN GOOD CONDITION AND NEW DESIGN CRITERIA CAN BE MET, OTHERWISE REPLACE. RE: NEW CONSTRUCTION DRAWINGS FOR ADDITIONAL INFORMATION.

ED15 RELOCATE EXISTING RECEPTACLE SERVING WALL RACK AND REVISE AND EXTEND RELATED CIRCUITRY. EXISTING RACEWAY, CIRCUITRY, AND RELATED ACCESSORIES MAY BE REUSED IF IN GOOD CONDITION AND NEW DESIGN CRITERIA CAN BE MET, OTHERWISE REPLACE. RE: NEW CONSTRUCTION DRAWINGS FOR ADDITIONAL INFORMATION.

ED16 RELOCATE EXISTING WALL MOUNTED PROJECTOR AND REVISE AND EXTEND RELATED CIRCUITRY. EXISTING RACEWAY, CIRCUITRY, AND RELATED ACCESSORIES MAY BE REUSED IF IN GOOD CONDITION AND NEW DESIGN CRITERIA CAN BE MET, OTHERWISE REPLACE. RE: NEW CONSTRUCTION DRAWINGS FOR ADDITIONAL INFORMATION.

ED22 REMOVE PANEL. DISCONNECT ALL EXISTING BRANCH CIRCUITRY LOADS AND MAINTAIN CONDITION FOR RECONNECTION TO NEW PANEL.

ED28 EXISTING ROLLING DOOR TO REMAIN.

ED31 DEMOLISH ALL RECEPTACLES IN AREA SHOWN BOLD AND DASHED UNLESS NOTED OTHERWISE. REMOVE EXISTING ELECTRICAL DEVICES, RACEWAY, CIRCUITRY, AND RELATED ACCESSORIES NOT BEING REUSED BACK TO SOURCE PANELBOARD OR NEAREST REMAINING DEVICE.

ED32 ALL RECEPTACLES WITHIN DASHED REGION ARE EXISTING TO REMAIN.

ED33 NO DEMOLITION WORK IN THIS AREA. ALL EQUIPMENT IS EXISTING TO REMAIN.

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LSHS - POWER DEMOLITION PLAN - LEVEL 1 - BUILDING D & E

ED201-C

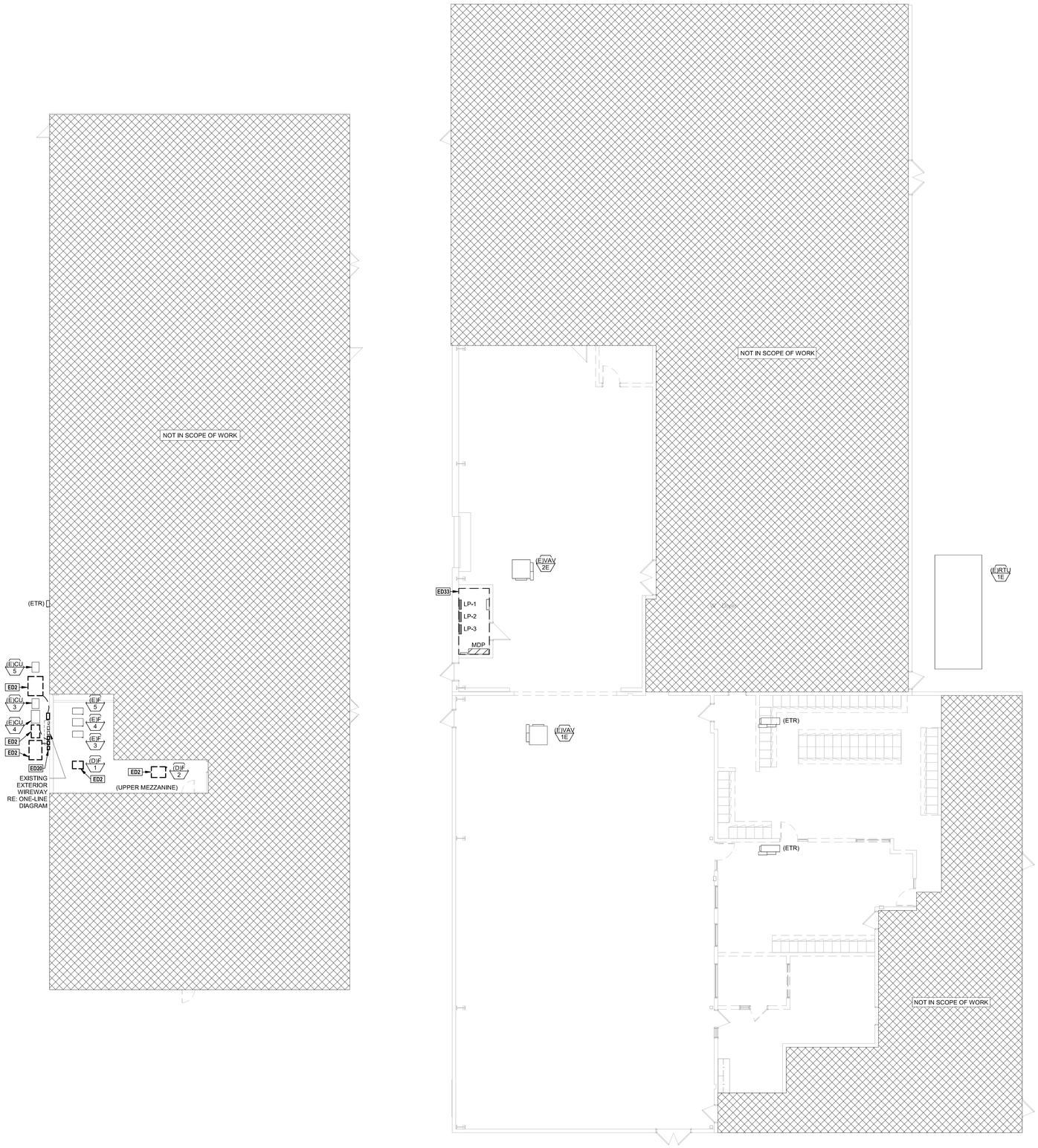
DOUGLAS M. EVERHART

ELECTRICAL DEMOLITION PLAN NOTES:

ED2 EXISTING EQUIPMENT TO BE REMOVED. REMOVE EXISTING RACEWAY, CIRCUITRY, AND RELATED ACCESSORIES NOT BEING REUSED BACK TO SOURCE. REFER TO NEW CONSTRUCTION DRAWINGS FOR ADDITIONAL INFORMATION.

ED20 REMOVE SPARE DISCONNECT AND SALVAGE. COORDINATE SALVAGE LOCATION WITH OWNER.

ED33 NO DEMOLITION WORK IN THIS AREA. ALL EQUIPMENT IS EXISTING TO REMAIN.



1 EQUIPMENT CONNECTION LEVEL 1 DEMO PLAN - BUILDING D
3/32" = 1'-0"

2 EQUIPMENT CONNECTION LEVEL 1 DEMO PLAN - BUILDING E
1/8" = 1'-0"

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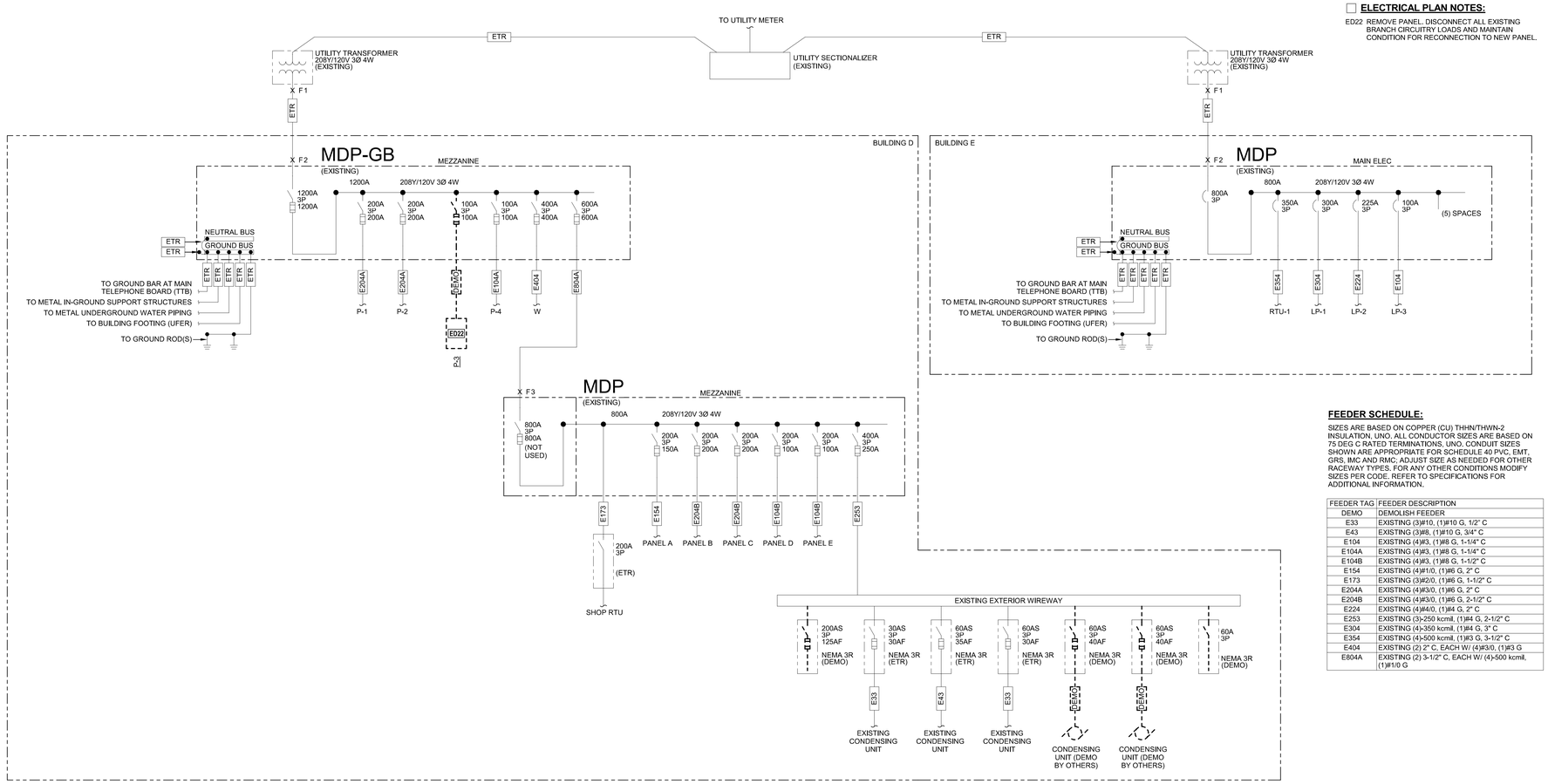
LSHS - EQUIPMENT CONNECTION DEMOLITION PLAN - LEVEL 1 - BUILDING D & E

ED301-C

DOUGLAS M. EVERHART



1 ELECTRICAL PARTIAL ONE-LINE DIAGRAM - DEMO - LSHS BUILDINGS D&E
NTS

☐ ELECTRICAL PLAN NOTES:

ED22 REMOVE PANEL. DISCONNECT ALL EXISTING BRANCH CIRCUITRY LOADS AND MAINTAIN CONDITION FOR RECONNECTION TO NEW PANEL.

FEEDER SCHEDULE:

SIZES ARE BASED ON COPPER (CU) THHN/THWN-2 INSULATION, UNO. ALL CONDUCTOR SIZES ARE BASED ON 75 DEG C RATED TERMINATIONS, UNO. CONDUIT SIZES SHOWN ARE APPROPRIATE FOR SCHEDULE 40 PVC, EMT, GRS, IMC AND RMC. ADJUST SIZE AS NEEDED FOR OTHER RACEWAY TYPES. FOR ANY OTHER CONDITIONS MODIFY SIZES PER CODE. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

FEEDER TAG	FEEDER DESCRIPTION
DEMO	DEMOLISH FEEDER
E33	EXISTING (3)#10, (1)#10 G, 1/2" C
E43	EXISTING (3)#8, (1)#10 G, 3/4" C
E104	EXISTING (4)#3, (1)#8 G, 1-1/4" C
E104A	EXISTING (4)#3, (1)#8 G, 1-1/4" C
E104B	EXISTING (4)#3, (1)#8 G, 1-1/2" C
E154	EXISTING (4)#1/0, (1)#6 G, 2" C
E173	EXISTING (3)#2/0, (1)#6 G, 1-1/2" C
E204A	EXISTING (4)#3/0, (1)#6 G, 2" C
E204B	EXISTING (4)#3/0, (1)#6 G, 2-1/2" C
E224	EXISTING (4)#4/0, (1)#4 G, 2" C
E253	EXISTING (3)-250 kcmil, (1)#4 G, 2-1/2" C
E304	EXISTING (4)-350 kcmil, (1)#4 G, 3" C
E354	EXISTING (4)-500 kcmil, (1)#3 G, 3-1/2" C
E404	EXISTING (2) 2" C, EACH W/ (4)#3/0, (1)#3 G
E804A	EXISTING (2) 3-1/2" C, EACH W/ (4)-500 kcmil, (1)#1/0 G

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LSHS - ELECTRICAL ONE-LINE DIAGRAM - DEMO

ED800-C

DOUGLAS M. EVERHART

ELECTRICAL SYMBOLS

THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED. V3.00

STANDARD MOUNTING HEIGHTS

AUDIBLE APPLIANCE (CENTERLINE)	84"
ALARM (TOP OF DEVICE)	46"
ANNUNCIATOR PANEL (DISPLAY)	60"
CONTROLS (TOP OF DEVICE)	46"
DATA WALL OUTLET	SAME AS ADJACENT DEVICE, UNO
EXIT SIGNS (WALL MOUNTED)	12" ABOVE DOOR OPENING
FIRE ALARM ANNUNCIATOR PANEL (TOP OF DISPLAY)	60"
FIRE ALARM BELL (EXTERIOR) (CENTERLINE)	120"
FIRE ALARM CONTROL PANEL/UNIT (TOP OF DISPLAY)	60"
INTERCOM (TOP OF DEVICE)	46"
PULL STATION (TOP OF DEVICE)	46"
RECEPTACLE	16"
RECEPTACLE (ABOVE COUNTER)	+6" ABOVE BACKSPLASH/COUNTER, 40"MAX
RECEPTACLE (CLOCK)(CENTERLINE)	84"
RECEPTACLE (EQUIPMENT ROOMS)(TOP OF DEVICE)	46"
RECEPTACLE (EXTERIOR)	24"
RECEPTACLE (GARAGES)	24"
REMOTE INDICATING LIGHT (EQUIPMENT ROOMS)(TOP OF DEVICE)	46"
REMOTE INDICATING LIGHT (FINISHED AREAS)	CEILING
SAFETY SWITCH (TOP OF DEVICE)	46"
STARTER (TOP OF DEVICE)	46"
SWITCH (TOP OF DEVICE)	46"
TELEPHONE WALL OUTLET (TOP OF DEVICE)	46"
TELECOMMUNICATIONS BACKBOARD	6"
TELEVISION OUTLET	REFER TO ARCH
VISIBLE APPLIANCE (CENTERLINE)	84"

INSTALL OUTLET BOXES AT THE MOUNTING HEIGHTS SHOWN ABOVE UNO IN THE CONSTRUCTION DOCUMENTS. MOUNTING HEIGHTS LISTED ABOVE, OR ELSEWHERE IN THE CONSTRUCTION DOCUMENTS, ARE AFF OR AFG TO BOTTOM OF OUTLET BOX, UNO. ALL DEVICES SHALL BE INSTALLED IN COMPLIANCE WITH CURRENT ADA AND LOCAL REQUIREMENTS.

ABBREVIATIONS

AF	AMPERE FUSE SIZE
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
AS	AMPERE SWITCH SIZE
AT	AMPERE TRIP SETTING
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO VISUAL
BAS	BUILDING AUTOMATION SYSTEM
BKR	BREAKER
C	CONDUIT
CAT	CATEGORY
CATV	CABLE TELEVISION SYSTEM
CCTV	CLOSED CIRCUIT TELEVISION
CD	CANDELA
CKT	CIRCUIT
CODE	APPLICABLE CODE ADOPTED BY JURISDICTION
CT	CURRENT TRANSFORMER
CTR	CENTER
CVD	CUMULATIVE VOLTAGE DROP
D/DEMO	DEMOLITION
DPDT	DOUBLE-POLE, DOUBLE-THROW
DPST	DOUBLE-POLE, SINGLE-THROW
E/ETR/EX	EXISTING TO REMAIN
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EM	EMERGENCY
EMS	ENERGY MANAGEMENT SYSTEM
ELV	ELECTRONIC LOW-VOLTAGE
EWC	ELECTRIC WATER COOLER
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FCA	FAULT CURRENT AMPS AVAILABLE
FCU	FAN COIL UNIT
FF	FINISHED FLOOR
FLA	FULL LOAD AMPS
FLR	FLOOR
GC	GENERAL CONTRACTOR
GEC	GROUNDING ELECTRODE CONDUCTOR
GES	GROUNDING ELECTRODE SYSTEM
GFR	GROUND FAULT RELAY
G	GROUND
IG	ISOLATED GROUND
ISC	SHORT CIRCUIT CURRENT
JB/J-BOX	JUNCTION BOX
LF	LINEAR FEET
LRA	LOCKED ROTOR AMPS
LTG/LTS	LIGHTING/LIGHTS
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MFR	MANUFACTURER
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MLV	MAGNETIC LOW-VOLTAGE
MOCP	MAXIMUM OVERCURRENT PROTECTION
MTD	MOUNTED
N/A	NOT APPLICABLE
NF	NON-FUSED
NL	NIGHT LIGHT (24HR ON)
NRTL	NATIONALLY RECOGNIZED TESTING LABORATORY (CSA, ETL, NSF, UL)
NTS	NOT TO SCALE
OS	OCCUPANCY SENSOR
P	POLE
PART	PARTIAL CIRCUIT
PH/Ø	PHASE
PNL	PANEL
PNLBD	PANELBOARD
PROVIDE	FURNISH AND INSTALL
PT	POTENTIAL TRANSFORMER
QTY	QUANTITY
R/REL	RELOCATE
RCPT	RECEPTACLE
RLA	RUNNING LOAD AMPS
RTU	ROOFTOP UNIT
SCCR	SHORT-CIRCUIT CURRENT RATING
SD	SMOKE DUCT DETECTOR
SF	SQUARE FEET
SPDT	SINGLE-POLE, DOUBLE-THROW
SPST	SINGLE-POLE, SINGLE-THROW
SSBJ	SUPPLY-SIDE BONDING JUMPER
ST	SHUNT TRIP
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TBB	TELECOMMUNICATIONS BONDING BACKBONE
TBD	TO BE DETERMINED
TGB	TELECOMMUNICATIONS GROUND BUS BAR
TL	TWISTLOCK
TMGB	TELECOMMUNICATIONS MAIN GROUND BUS BAR
TX/XFMR	TRANSFORMER
TYP	TYPICAL
U/F	UNDERFLOOR
U/G	UNDERGROUND
U/S	UNDERSLAB
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
VD	VOLTAGE DROP
VFD	VARIABLE FREQUENCY DRIVE
VS	VACANCY SENSOR
W	WIRE
W/	WITH
WP	WEATHER PROOF
WR	WEATHER RESISTANT
WT	WATERTIGHT
XP	EXPLOSION PROOF

LINETYPE LEGEND

THROUGHOUT THE DRAWINGS DIFFERENT LINETYPES ARE USED IN COMBINATION WITH THE SYMBOLS TO INDICATE THE STATUS OF ITEMS AS EXISTING, TO BE DEMOLISHED, TO BE INCLUDED AS PART OF NEW WORK AND/OR ITEMS WHICH ARE ANTICIPATED TO BE PROVIDED IN THE FUTURE. THE STATUS OF ITEMS USING THESE LINETYPES ARE RELATIVE TO THE VIEW IN WHICH THEY APPEAR. PHASING SHOWN IN DRAWINGS IS NOT INTENDED TO FULLY DESCRIBE ALL NECESSARY CONSTRUCTION PHASING, WHICH IS DETERMINED BY THE CONTRACTOR AS PART OF THEIR RESPONSIBILITIES. ANY SUCH PHASES DESCRIBED IN THE CONSTRUCTION DOCUMENTS ARE GENERAL AND ONLY INTENDED TO INDICATE A BROAD ORDER FOR THE SAKE OF DESCRIBING THE PROJECT. THE FOLLOWING LINETYPES MAY BE USED ON ANY DEVICE, EQUIPMENT, NOTE, LINE, SHAPE, ETC.

EXISTING	─────	ARTICLE 700 OR LIFE SAFETY	─────
DEMOLISH	— — — —	ARTICLE 701 OR CRITICAL / EQUIPMENT BRANCH	─────
NEW	━━━━━	ARTICLE 702 OR OPTIONAL	─────
FUTURE	- - - - - - - - - - -		

ANNOTATION

1	MECHANICAL OR FIRE PROTECTION PLAN NOTE CALLOUT
1	PLUMBING PLAN NOTE CALLOUT
1	ELECTRICAL OR FIRE ALARM PLAN NOTE CALLOUT
1	TECHNOLOGY PLAN CALLOUT
1	PLUMBING EQUIPMENT DESIGNATION. (CONTRACTOR FURNISHED AND INSTALLED). REFER TO PLUMBING FIXTURE OR EQUIPMENT SCHEDULES
1	EQUIPMENT DESIGNATION (OWNER FURNISHED, CONTRACTOR INSTALLED)
CU 1	MECHANICAL EQUIPMENT DESIGNATION (CONTRACTOR FURNISHED AND INSTALLED UNLESS NOTED OTHERWISE)
◕	CONNECTION POINT OF NEW WORK TO EXISTING
1 E1	DETAIL REFERENCE UPPER NUMBER INDICATES DETAIL NUMBER LOWER NUMBER INDICATES SHEET NUMBER
1 E1	SECTION CUT DESIGNATION
▨	DEDICATED EQUIPMENT ACCESS TILE
⊠	ACCESS PANEL

CIRCUITING & WIRING

7 5 3 OR [R#] P1 P1-3,5,7	HOMERUN TO PANELBOARD. INFORMATION AT ARROWS ARE CIRCUIT NUMBERS AND PANELBOARD FOR TERMINATION. REFER TO PANELBOARD SCHEDULES FOR BRANCH CIRCUIT CONDUCTOR SIZES.
	INDICATES RELAY NUMBER
	CIRCUIT CONTINUATION OR PARTIAL CIRCUIT
	CONDUIT CONCEALED
EM	CONDUIT CONCEALED (EMERGENCY)
	CONDUIT IN/UNDER FLOOR/GROUND CONSTRUCTION
— - - —	EXPOSED CONDUIT
—EM—	EXPOSED CONDUIT (EMERGENCY)
∿	FLEXIBLE CONDUIT
	LOW VOLTAGE CABLE (NOT ROUTED IN CONDUIT)
	CONDUIT TURNING DOWN
—○	CONDUIT TURNING UP
—●—	CONNECTION POINT OR EQUIPMENT TERMINATION
—■	EQUIPMENT TERMINATION

CONDUCTOR TICK MARK LEGEND

WHERE TICK MARKS ARE SHOWN, THE FOLLOWING SHALL GOVERN:

- SWITCHED HOT (PHASE) CONDUCTORS (SHOWN TRAILING NEUTRAL)
- NEUTRAL (GROUNDED) CONDUCTOR
- UNSWITCHED HOT (PHASE) CONDUCTORS (SHOWN LEADING NEUTRAL)
- NOTE: HASH MARKS INDICATE QUANTITY OF CONDUCTORS
- EQUIPMENT GROUNDING CONDUCTOR IN CONDUIT (GREEN INSULATION OR BARE)
- ISOLATED GROUNDING CONDUCTOR IN CONDUIT (GREEN INSULATION WITH YELLOW TRACER)

BRANCH CIRCUIT CONDUCTOR TABLE

WHERE TICK MARKS ARE NOT SHOWN, THE FOLLOWING SHALL GOVERN:

# OF POLES	HOT (PHASE)*	NEUTRAL (GROUNDED)**	GROUNDING***
1P	(1)	(1) UNO	(1)
2P	(2)	(1) UNO	(1)
3P	(3)	(1) UNO	(1)

* PROVIDE ADDITIONAL CONDUCTORS THROUGH ENTIRE CIRCUIT (SWITCHED, UNSWITCHED/EM, ETC.) AS INDICATED THROUGHOUT CONSTRUCTION DOCUMENTS AND AS REQUIRED FOR A COMPLETE AND WORKING SYSTEM.

** REFER TO SPECIFICATIONS FOR LIMITATIONS ON SHARING NEUTRAL (GROUNDED) CONDUCTORS. DO NOT CIRCUIT AS A MULTI-WIRE BRANCH CIRCUIT, UNO.

*** PROVIDE ADDITIONAL ISOLATED GROUNDING CONDUCTORS WHERE INDICATED.

REFER TO SPECIFICATIONS, PLANS, NOTES, WIRING AND CONTROL DIAGRAMS FOR ADDITIONAL CIRCUITING REQUIREMENTS.

LIGHTING

A a	LIGHT FIXTURE
	a = LOWER CASE LETTER IS SWITCH IDENTIFIER
	A = UPPER CASE LETTER INDICATES LIGHT FIXTURE TYPE
	⊥ = WALL MOUNT
	〉 = ARROW INDICATED AIMING DIRECTION
⊠	LIGHT FIXTURE CIRCUITED AS A NIGHT LIGHT (NL)
	EMERGENCY LIGHT FIXTURE WITH EMERGENCY LIGHTING BATTERY PACK OR CONNECTED TO EMERGENCY SOURCE
	NIGHT LIGHT/EMERGENCY LIGHT FIXTURE WITH EMERGENCY BATTERY PACK OR CONNECTED TO EMERGENCY SOURCE
	LIGHT FIXTURE WITH DUAL BALLASTS CIRCUITED SEPARATELY (SHADING IMPLIES EMERGENCY LIGHT FIXTURE)
▽▽▽ [#]	LIGHTING TRACK (# INDICATES RELAY NUMBER)
	MIRROR LIGHTS
	EXTERIOR PARKING LOT LIGHT FIXTURE
◎	EXTERIOR PEDESTRIAN POST TOP LIGHT FIXTURE
○	EXTERIOR LIT BOLLARD LIGHT
⊗	EXIT SIGN - CEILING / WALL MOUNTED, ARROWS AS INDICATED, FACE HATCHED
	EMERGENCY LIGHTING UNIT EQUIPMENT WITH BATTERY PACK - CEILING/WALL MOUNTED
⊠	AFEA (AREA FOR EVACUATION ASSISTANCE) SIGN - CEILING/WALL MOUNTED, ARROWS AS INDICATED

REFER TO LIGHT FIXTURE SCHEDULE FOR MORE INFORMATION

POWER EQUIPMENT & DEVICES

▬	ELECTRICAL PANELBOARD (SURFACE OR FLUSH MOUNT)
▭	ELECTRICAL CABINET (SURFACE OR FLUSH MOUNT), TYPE AS NOTED
	PLYWOOD TERMINAL BOARD FOR TELEPHONE SYSTEM, UNO. SIZE AS NOTED
▨	SWITCHBOARD OR MOTOR CONTROL CENTER ON HOUSEKEEPING PAD
▨	ELECTRICAL DISTRIBUTION PANELBOARD
☐	TRANSFORMER
200/3/150/3R	DISCONNECT SWITCH - "200/3/150/3R" DENOTES AMPERES/POLE/FUSE/NEMA ENCLOSURE RATING, NF= NON-FUSED, CB= CIRCUIT BREAKER (200/3/CB), NO VALUE (200/3/150) FOR NEMA ENCLOSURE MEANS STANDARD NEMA 1 RATING
30/3/15/1/3R	COMBINATION DISCONNECT (SAFETY) SWITCH AND MOTOR STARTER "30/3/15/1/3R" DENOTES AMPERES/POLE/FUSE/NEMA STARTER SIZE/NEMA ENCLOSURE RATING. NF= NON-FUSED, CB= CIRCUIT BREAKER (30/3/CB/1), NO VALUE (200/3/150/1) FOR NEMA ENCLOSURE MEANS STANDARD NEMA 1 ENCLOSURE RATING
⊠2	MAGNETIC MOTOR STARTER, NEMA SIZE AS NOTED. 3-POLE, UNO
VFD	VARIABLE FREQUENCY DRIVE
	INDICATING LIGHT
	EMERGENCY POWER OFF BUTTON
●●	STOP-START PUSH BUTTON CONTROL STATION
●●●	HAND-OFF-AUTO PUSH BUTTON CONTROL STATION
	MUSHROOM-TYPE PUSH BUTTON
	OVERHEAD PADDLE FAN

BOXES, LIGHTING CONTROL & WIRING DEVICES

$#	SWITCH LETTER DESIGNATIONS AS FOLLOWS: BLANK = SINGLE 2 = TWO POLE 3 = THREE-WAY 4 = FOUR-WAY D = DIMMER F = FAN SPEED CONTROL FH = FRACTIONAL HORSEPOWER MANUAL CONTROLLER IH = INTEGRAL HORSEPOWER MANUAL CONTROLLER K = KEYED LV# = LOW VOLTAGE / DIGITAL M = MANUAL MOTOR STARTER DISCONNECT OS# = OCCUPANCY SENSOR P = SPST PILOT LIGHT WP = WEATHER PROOF # = REFER TO LIGHTING CONTROL DEVICE SCHEDULE
ALC	AUTOMATIC LOAD CONTROL RELAY
BTS	BRANCH CIRCUIT TRANSFER SWITCH
# # # #	CEILING / WALL MOUNTED OCCUPANCY SENSOR (# INDICATES TYPE PER SCHEDULE) CORNER 90 DEGREE SENSING ONE-DIRECTION SENSING, CEILING/WALL MOUNT CEILING MOUNT, TWO DIRECTION SENSING CEILING MOUNT, FOUR DIRECTION SENSING
C#	CONTACTOR (SIZE, COIL VOLTAGE AND NUMBER OF POLES AS INDICATED)
CL##	TRACK-MOUNTED CURRENT LIMITER (## INDICATES AMPERAGE)
D#	DAYLIGHT SENSOR (# INDICATES TYPE PER SCHEDULE)
LC	LIGHTING CONTROLS PROCESSOR AND/OR EQUIPMENT
P#	POWER PACK (# INDICATES TYPE PER SCHEDULE)
PS#	PHOTOELECTRIC SWITCH
R##	ROOM CONTROLLER (# INDICATES TYPE PER SCHEDULE)
TS#	TIME SWITCH
	SIMPLEX RECEPTACLE - NEMA 5-20R, UNO
	DUPLEX RECEPTACLE - NEMA 5-20R, UNO
	DOUBLE DUPLEX RECEPTACLE - NEMA 5-20R, UNO
	SPECIAL RECEPTACLE - NEMA TYPE AS NOTED
	TWIST-LOCK TYPE RECEPTACLE
G	BLANK FACE GFCI FEED THROUGH DEVICE
OR GFCI	GFCI TYPE RECEPTACLE*
OR IG	ISOLATED GROUND TYPE RECEPTACLE*
OR EM	EMERGENCY RECEPTACLE*
	RECEPTACLE INSTALLED ABOVE COUNTER OR BACKSPLASH*
	RECEPTACLE INSTALLED IN CEILING*
	RECEPTACLE INSTALLED IN FLOOR*
	RECEPTACLE INSTALLED VIA DROP CORD*
#	RECEPTACLE LETTER DESIGNATIONS AS FOLLOWS: C = AUTOMATICALLY CONTROLLED CH = CLOCK HANGER TYPE G=RCPT PROTECTED BY GFCI CIRCUIT BREAKER OR UPSTREAM GFCI DEVICE H = HORIZONTALLY MOUNTED S = MANUALLY CONTROLLED SP / TVSS = SURGE PROTECTION TR = TAMPER RESISTANT TV = TELEVISION USB = USB/DUPLEX WP = WEATHER PROOF COVER WR = WEATHER RESISTANT
• • • •	MULTI-OUTLET ASSEMBLY
▼	TELEPHONE OUTLET
▽	DATA OUTLET
	MULTI-SERVICE OUTLET; TELEPHONE AND DATA ABOVE COUNTER, TYP WALL, TYP FLOOR, TYP
A	MULTI-SERVICE POWER POLE WITH TELEPHONE, DATA AND POWER OUTLETS A = TYPE, REFER TO PLANS, SCHEDULES AND SPECIFICATIONS
A	MULTI-SERVICE FLOOR BOX WITH TELEPHONE, DATA AND POWER OUTLETS A = TYPE, REFER TO PLANS, SCHEDULES AND SPECIFICATIONS
◎ A	POKE THROUGH, A = TYPE, REFER TO PLANS, SCHEDULES AND SPECIFICATIONS
Ⓣ	THERMOSTAT
J Ⓙ	CEILING/FLOOR MOUNT JUNCTION/OUTLET BOX
J Ⓙ	WALL MOUNT JUNCTION/OUTLET BOX

* SYMBOL DEMONSTRATED WITH DUPLEX RECEPTACLE, WHEN USED IN COMBINATION WITH OTHER DEVICES MEANING IS SIMILAR FOR THOSE DEVICE TYPES.

REFER TO LIGHTING CONTROL DEVICE SCHEDULE FOR MORE INFORMATION.

ELECTRICAL ONE-LINE & RISER DIAGRAM

###A 3P	SWITCH (RATING AS INDICATED)
###A 3P	DRAWOUT CIRCUIT BREAKER (RATINGS AS INDICATED)
###AS 3P ###AF FRS	FUSED SWITCH (RATING, POLES AND FUSE TYPE AS INDICATED)
###AS 3P ###AF FRS NEMA #	COMBINATION FUSED SWITCH/STARTER AND STARTER SIZE
###AS 3P FRS NEMA #	CIRCUIT BREAKER (RATINGS AS INDICATED)
###A 3P NEMA #	COMBINATION CIRCUIT BREAKER/STARTER AND STARTER SIZE
	PANELBOARD, SINGLE OR MULTI-SECTION (REFER TO SCHEDULES)
	ISOLATED POWER PANELBOARD W/ INTEGRAL TRANSFORMER (REFER TO SCHEDULES)
TX##	TRANSFORMER (TYPE AND RATINGS AS INDICATED)
TX##	SHIELDED TRANSFORMER (TYPE AND RATINGS AS INDICATED)
ATS# ###A ATS# (W/BYPASS)	AUTOMATIC TRANSFER SWITCH (RATINGS AS INDICATED)
ATS# (W/BYPASS) ###A	AUTOMATIC TRANSFER SWITCH WITH BYPASS (RATINGS AS INDICATED)
##KW GENERATOR 480Y/277V, 3Ø, 4W ###A, 3P M/G	GENERATOR (RATINGS AS INDICATED) NON-SEPARATELY DERIVED SOURCE OR SEPARATELY DERIVED SOURCE
MDP SWITCHBOARD ELEC ROOM ### AMPS 480Y/277V 3Ø 4W	SWITCHGEAR, SWITCHBOARD AND/OR DISTRIBUTION PANELBOARD (TYPE, RATING, DEVICES AND ACCESSORIES AS INDICATED)
DIGITAL VM AM	COMBINATION DIGITAL VOLT METER/AMMETER
###	CIRCUIT IDENTIFICATION (REFER TO CIRCUIT SCHEDULE)
GFR	GROUND FAULT RELAY
PFR	PHASE FAILURE RELAY
KK#	KIRK-KEY INTERLOCK (# INDICATES KEY PAIR)
ST	SHUNT TRIP
AM	AMMETER (RANGE AS SPECIFIED OR REQUIRED)
VM	VOLTMETER (RANGE AS SPECIFIED OR REQUIRED)
UTILITY METER Ⓜ	UTILITY METER (AS REQUIRED BY UTILITY)
AS	AMMETER SWITCH
VS	VOLTMETER SWITCH
WH D 15	WATT-HOUR METER, "D" DENOTES DEMAND REGISTER, "15" DENOTES MINUTES OF DEMAND INTERVAL
	CURRENT TRANSFORMER RATING AS SPECIFIED OR REQUIRED
	POTENTIAL TRANSFORMER RATING AS SPECIFIED OR REQUIRED
SPD	SURGE-PROTECTIVE DEVICE
	GROUND CONNECTION
	GROUND CONNECTION WITH TEST WELL
	GROUND ROD
	LIGHTNING ARRESTER
	CAPACITOR
= ≠	CONTACT (OPEN OR CLOSED)
	HEATER
HP	MOTOR
##	BLOCK LOAD KW OR KVA
×F# ×FP#	FAULT POINT REFERENCED IN SHORT CIRCUIT CURRENT AND VOLTAGE DROP SPREADSHEET

CALL OUTS

ENLARGED PLAN CALLOUT	⋙
NOT IN SCOPE	▩

APPLICABLE ELECTRICAL CODES:

NOTE: PROJECT IS DESIGNED IN COMPLIANCE WITH THE FOLLOWING CODES. THIS IS NOT AN EXHAUSTIVE LIST. PROJECT SHALL COMPLY WITH ALL APPLICABLE CODES, STANDARDS AND LOCAL REQUIREMENTS. REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE, (NFPA 70)
BUILDING CODE: 2018 INTERNATIONAL BUILDING CODE
ENERGY CODE: N/A

SPECIAL SYSTEMS SUPPLEMENTAL SPECIFICATIONS:

1. PROVIDE NECESSARY BOXES, CONDUIT AND MAKE FINAL CONNECTIONS TO TEMPERATURE CONTROL DEVICES PER MANUFACTURER'S RECOMMENDATIONS. THIS INCLUDES BUT IS NOT LIMITED TO: MAIN CONTROL PANELS, THERMOSTATS, HUMIDISTATS, AC SOLENOIDS, HEAT RECLAIM WIRING, AHU CONTROL WIRING, DUCT FURNACE CONTROL WIRING, TIMERS, AND SIMILAR CONTROLS. PROVIDE CONDUIT FOR ALL WIRING WITHIN WALLS. PROVIDE CONTROL AND INTERLOCK WIRING WHEN NOT PROVIDED BY OTHER TRADES. COORDINATE REQUIREMENTS WITH EQUIPMENT SUPPLIERS AND OTHER TRADES PRIOR TO ROUGH-IN.
2. PROVIDE LINE VOLTAGE WIRING AND MAKE FINAL CONNECTIONS TO ALL DUCT-MOUNTED SMOKE DETECTORS, FIRE/SMOKE AND SMOKE DAMPERS WHERE APPLICABLE. COORDINATE REQUIREMENTS WITH OTHER TRADES PRIOR TO INSTALLATION.
3. DEVICES MOUNTED ON ACOUSTICAL TILE CEILINGS SHALL BE CENTERED ON THE TILE, UNO.
4. PROVIDE BOX AND 3/4" CONDUIT FROM EACH THERMOSTAT LOCATION TO MECHANICAL EQUIPMENT, (FLUSH MOUNT BOX WHEREVER PRACTICABLE). COORDINATE LOCATION OF ALL THERMOSTAT BOXES WITH MECHANICAL/CONTROLS CONTRACTOR AND OWNER PRIOR TO ROUGH-IN.
5. PROVIDE BOXES AND CONDUITS FOR THE FIRE PROTECTION SYSTEM LOW VOLTAGE WIRING AS REQUIRED. THIS INCLUDES EXPOSED WIRING LESS THAN 96" AFF. AT A MINIMUM, PROVIDE 3/4" CONDUIT, UNLESS NOTED OTHERWISE. COORDINATE REQUIREMENTS AND LOCATIONS WITH SYSTEM INSTALLER AND FIRE ALARM SPECIFICATIONS.
6. AT A MINIMUM, PROVIDE EXTRA DEEP, DOUBLE GANG COMMUNICATION OUTLET BOXES, (FLUSH MOUNTED WHEREVER PRACTICABLE), WITH SINGLE-GANG PLASTER RING AND 1" CONDUIT STUBBED-UP CONCEALED TO ACCESSIBLE CEILING SPACE, UNLESS NOTED OTHERWISE. PROVIDE SURFACE MOUNTED DATA BOXES WITHIN CABINETRY, AND SELECT OTHER LOCATIONS AS INDICATED ON THE DRAWINGS. COORDINATE TELEPHONE/DATA BOX AND CONDUIT LOCATIONS AND SIZES WITH OWNER AND OTHER TRADES PRIOR TO ROUGH-IN.
7. PROVIDE NYLON BUSHINGS FOR ALL COMMUNICATIONS AND LOW VOLTAGE WIRING CONDUITS AND SLEEVES, UNLESS NOTED OTHERWISE.
8. ALL COMMUNICATIONS AND LOW VOLTAGE WIRING CONDUIT SHALL BE INSTALLED WITH AN ACCESSIBLE PULLBOX BETWEEN EVERY 180 DEGREE CHANGE IN DIRECTION AND AT 100' INTERVALS OF CONTINUOUS RUNS.
9. MINIMUM BEND RADIUS FOR COMMUNICATIONS CONDUIT IS 6 TIMES THE INSIDE DIAMETER FOR CONDUITS 2" IN DIAMETER AND SMALLER AND 10 TIMES THE INSIDE DIAMETER FOR CONDUITS GREATER THAN 2" IN DIAMETER, UNLESS NOTED OTHERWISE.
10. ALL LOW VOLTAGE CLASS 2 OR 3 WIRING NOT IN CONDUIT SHALL BE PLENUM RATED WHERE APPLICABLE.
11. LOW VOLTAGE CABLE SHEATH LABELS AND RELATED MANUFACTURER INFO SHALL REMAIN APPARENT IN ALL EXPOSED APPLICATIONS. PROTECT ALL EXPOSED CABLING FROM PAINTING AND OVERSPRAY (INCLUDES CABLE NOT ROUTED IN CONDUIT AND THAT IS IN CABLE TRAY).

ELECTRICAL SUPPLEMENTAL SPECIFICATIONS:

1. EXISTING CONDITIONS WERE TAKEN FROM ORIGINAL DRAWINGS AND SITE VISITS AND MAY NOT REFLECT ACTUAL "AS-BUILT" CONDITIONS. VERIFY EXISTING CONDITIONS PRIOR TO SUBMITTING FINAL BID. COORDINATE NEW AND DEMOLITION WORK WITH ALL OTHER TRADES AND EXISTING CONDITIONS.
2. NOTIFY ARCHITECT, ENGINEER AND OWNER, AS APPLICABLE, IF ANY DANGEROUS CONDITIONS EXIST ON JOB SITE BEFORE ANY DEMOLITION OR REMODEL WORK BEGINS.
3. FOR AREAS AND EQUIPMENT WITHIN THE SCOPE OF THIS REMODEL: EXISTING ELECTRICAL EQUIPMENT AND CIRCUITRY MAY BE REUSED IF IN GOOD CONDITION AND NEW DESIGN REQUIREMENTS CAN BE MET; OTHERWISE REPLACE.
4. FOR AREAS AND EQUIPMENT WITHIN THE SCOPE OF THIS REMODEL: REPAIR OR REPLACE ANY EXISTING DAMAGED OR RECALLED ELECTRICAL EQUIPMENT, LIGHT FIXTURES, WIRING DEVICES AND RELATED CIRCUITRY AND RESTORE ALL ELECTRICAL SYSTEMS TO PROPER WORKING ORDER. THE FINAL ELECTRICAL INSTALLATION SHALL BE FREE FROM ELECTRICAL DEFECTS TO THE SATISFACTION OF THE AHJ, OWNER, ARCHITECT AND ENGINEER.
5. PRIOR TO SUBMITTING BID, VISIT THE JOB SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS. AS APPLICABLE, REVIEW THE OWNER CRITERIA, GENERAL NOTES, OTHER TRADE DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY ARCHITECT AND ENGINEER OF ANY CONFLICTS OR DISCREPANCIES PRIOR TO SUBMITTING BID.
6. ALL WORK SHALL CONFORM TO ALL LOCAL CODES AND ORDINANCES AS WELL AS APPLICABLE INDUSTRY STANDARDS. ALL EQUIPMENT SHALL BEAR LABELS FOR THE USE INTENDED BY AN AHJ ACCEPTED NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL), SUCH AS UL OR ETL. THE FINAL ELECTRICAL INSTALLATION OF THE FACILITY OCCUPIED BY OWNER SHALL BE FREE FROM ELECTRICAL DEFECTS TO THE SATISFACTION OF THE AHJ, OWNER, ARCHITECT AND ENGINEER.
7. COORDINATE FINAL LOCATION AND INSTALLATION REQUIREMENTS OF ALL LIGHT FIXTURES, ELECTRICAL EQUIPMENT AND ELECTRICAL DEVICES WITH ARCHITECTURAL DRAWINGS, EXISTING CONDITIONS AND OTHER TRADES PRIOR TO ROUGH-IN. PROVIDE ALL NECESSARY DEVICES, CORDS, PLUGS, DISCONNECTS AND FINAL CONNECTIONS TO ELECTRICAL EQUIPMENT FOR PROPER OPERATION IN ACCORDANCE WITH CODE, OWNER AND MANUFACTURER REQUIREMENTS.
8. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC/SCHEMATIC IN NATURE AND REPRESENT THE GENERAL SCOPE OF WORK. IT IS NOT WITHIN THE SCOPE OF THE ELECTRICAL DRAWINGS TO SHOW ALL NECESSARY RACEWAY ROUTING, BENDS, OFFSETS, PULL BOXES AND OBSTRUCTIONS. CONTRACTOR SHALL COORDINATE THE FINAL LOCATION OF EQUIPMENT AND WIRING DEVICES WITH OTHER TRADES PRIOR TO INSTALLATION AND INSTALL ALL WORK TO CONFORM TO THE OWNER REQUIREMENTS.
9. ALL CONDUCTOR AND CONDUIT LENGTHS SHOWN IN THESE DESIGN DOCUMENTS ARE INTENDED SOLELY FOR USE IN THE DESIGN CALCULATIONS BY THE DESIGN PROFESSIONAL, UNLESS NOTED OTHERWISE. LENGTHS SHOWN SHALL NOT BE USED TO ASSIST IN THE BIDDING TAKEOFF PROCESS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE MATERIAL QUANTITIES REQUIRED TO BID AND CONSTRUCT THE COMPLETE PROJECT.
10. PROVIDE PROPER FIRE PROOFING AND SEALANT FOR PENETRATIONS THROUGH FIRE RATED ASSEMBLIES. THE FIRE STOPPING METHOD, MATERIAL AND ITS APPLICATION SHALL BE NRTL LISTED, CODE COMPLIANT AND APPROVED BY AHJ.
11. WHEN CONCRETE TRENCHING/CORING IS REQUIRED, THE METHODS, DEPTHS, AND LOCATIONS SHALL BE PRE-APPROVED BY ARCHITECT AND STRUCTURAL ENGINEER PRIOR TO THE START OF WORK. X-RAY SLAB AS NECESSARY TO AVOID DAMAGING ANY UNDER-SLAB UTILITIES OR STRUCTURE. SLAB REPLACEMENT SHALL BE INSTALLED WITH DOWELLING AND REINFORCED CONCRETE AS DIRECTED BY THE STRUCTURAL ENGINEER. WHERE SLAB ON GRADE IS SAW-CUT AND REMOVED FOR TRENCHING THE CONTRACTOR SHALL INSTALL MOISTURE BARRIER PER LANDLORD'S REQUIREMENTS. PROVIDE 3/4" MINIMUM CONDUITS ROUTED THROUGH SLAB AND STUBBED UP INTO DEVICES. FOR SLAB ON DECK, THE FLOOR SHALL BE SLEEVED AND EQUIPPED WITH THE APPROPRIATE LISTED ASSEMBLY. PROVIDE 3/4" MINIMUM CONDUITS ROUTED BELOW SLAB, TIGHT TO STRUCTURE, AND STUBBED UP INTO DEVICES.
12. ALL APPLICABLE SWITCHES, RECEPTACLES, OUTLETS, AND CONTROLS SHALL BE PLACED AT HEIGHTS THAT ARE IN ACCORDANCE WITH ADA ACCESSIBILITY GUIDELINES.
13. COORDINATE FLOOR MOUNTED BOX, RECEPTACLE, AND COVER PLATE TYPES WITH ARCHITECT AND OWNER PRIOR TO ORDER.
14. WIRING DEVICES ADJACENT TO EACH OTHER SHALL BE INSTALLED UNDER A SINGLE COVER PLATE, UNO.
15. WIRING DEVICES SHOWN BACK-TO-BACK ON A COMMON WALL SHALL BE OFFSET A MINIMUM OF 12" HORIZONTALLY TO REDUCE SOUND TRANSMISSION BETWEEN ROOMS, UNO.
16. ALL WP OUTLET BOX HOODS SHALL BE "EXTRA-DUTY" AND "WHILE-IN-USE COVER" TYPE. OUTLET BOX HOODS SHALL BE LOW PROFILE WHEREVER PRACTICABLE, UNLESS NOTED OTHERWISE. THE USE OF LARGE BUBBLE COVERS SHALL BE AVOIDED ON THE EXTERIOR OF THE BUILDING OR BEHIND EQUIPMENT IN ORDER TO PREVENT DAMAGE TO THE COVER AND TO ALLOW THE EQUIPMENT TO BE LOCATED CLOSE TO THE WALL.
17. ALL 120V RECEPTACLES 50A OR LESS, 208V AND 240V RECEPTACLES 100A OR LESS, SHALL BE GFCI PROTECTED IN LOCATIONS REQUIRED BY CODE; THIS INCLUDES EXTERIOR LOCATIONS AND RECEPTACLES WITHIN 6 FEET OF A SINK. GFCI RECEPTACLES SHALL BE READILY ACCESSIBLE AND SHALL NOT BE LOCATED BEHIND STATIONARY EQUIPMENT. GFCI PROTECTION MAY BE VIA A GFCI CIRCUIT BREAKER OR GFCI RECEPTACLE, UNLESS NOTED OTHERWISE. WHERE NECESSARY, GFCI PROTECTION MAY BE ACHIEVED VIA A BLANK FACE GFCI DEVICE LOCATED IN A READILY ACCESSIBLE LOCATION NEAR RECEPTACLE BEING PROTECTED. FOR DOWNSTREAM WIRING DEVICES LOCATED ON THE SAME BRANCH CIRCUIT, THE GFCI PROTECTION MAY BE PROVIDED FOR BY A SINGLE UPSTREAM DEVICE IF ALL PROTECTED DEVICES ARE LABELED PER CODE.
18. PROVIDE TAMPER-RESISTANT (TR) TYPE RECEPTACLES AT ALL CODE REQUIRED LOCATIONS AND AT LOCATIONS WHERE RECEPTACLES ARE MOUNTED LESS THAN 5'-6" AFF AND ARE EASILY ACCESSIBLE BY CHILDREN, UNLESS NOTED OTHERWISE.
19. FLEXIBLE CONDUIT IS ONLY PERMITTED WHERE SPECIFICALLY ALLOWED IN THE CONSTRUCTION DOCUMENTS, WHERE CONCEALED FROM VIEW OR EXPOSED FINAL CONNECTIONS TO LIGHT FIXTURES AND EQUIPMENT IN LENGTHS OF 6'-0" OR LESS.
20. ALL EMPTY CONDUIT/RACEWAY SHALL BE INSTALLED WITH PULL STRINGS. TERMINATE CONDUIT STUB-UP WITH A NYLON BUSHING.
21. EXPOSED CONDUIT/RACEWAY SHALL BE PAINTED TO MATCH ADJACENT SURFACE, UNLESS NOTED OTHERWISE. COORDINATE REQUIREMENTS WITH ARCHITECT AND OWNER PRIOR TO INSTALLATION.
22. CONDUITS/RACEWAYS SHALL BE CONCEALED FROM VIEW WHEREVER PRACTICABLE, UNLESS NOTED OTHERWISE. DO NOT ROUTE CONDUITS ACROSS SKYLIGHTS, ACCESS PANELS, HATCHED TILES, HVAC DIFFUSERS, OR EQUIPMENT WORKING CLEARANCE SPACE. ROUTE ALL EXPOSED NON-FLEXIBLE CONDUITS TIGHT TO STRUCTURE, PARALLEL TO BUILDING LINES AND IN STRUT OR CABLE/PIPE TRAY WHERE PRACTICABLE. INSTALL CONDUITS PLUMB/ LEVEL WHERE EXPOSED TO VIEW. COORDINATE RACEWAY ROUTING AND INSTALLATION WITH OTHER TRADES PRIOR TO ROUGH-IN.
23. PROVIDE LABEL AT EACH RECEPTACLE COVER PLATE WITH THE RESPECTIVE "PNLBD-CKT#" DESIGNATION. COORDINATE LABEL REQUIREMENTS WITH THE OWNER PRIOR TO INSTALLATION. REFER TO THE SPECIFICATIONS FOR MORE INFORMATION.
24. MULTIWIRE BRANCH CIRCUITS ARE NOT ALLOWED, UNLESS NOTED OTHERWISE.
25. PROVIDE INSULATED EQUIPMENT GROUNDING CONDUCTOR FOR ALL CIRCUITS, UNLESS NOTED OTHERWISE.
26. THE EMERGENCY LIGHTING SYSTEM HAS BEEN DESIGNED TO PROVIDE AN INITIAL FLOOR ILLUMINANCE LEVEL OF 1 FC AVERAGE, 0.1 FC MINIMUM AND NO MORE THAN A 40:1 MAX/MIN RATIO ALONG THE EMERGENCY EGRESS PATHS.
27. ALL REMOTELY LOCATED LIGHT FIXTURE POWER SUPPLIES SHALL BE LOCATED IN AN ACCESSIBLE LOCATION WITH PROPER VENTILATION IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. CONCEAL DEVICES AND RELATED WIRING FROM CUSTOMER/PUBLIC VIEW. PROVIDE ENCLOSURE IF REQUIRED. COORDINATE LOCATION AND ENCLOSURE TYPE WITH ARCHITECT AND OWNER PRIOR TO INSTALLATION.
28. REFER TO THE ARCHITECTURAL DRAWINGS FOR LIGHT FIXTURE LOCATIONS, MOUNTING HEIGHTS, TRACK LENGTHS AND ADDITIONAL MOUNTING INFORMATION. CONTRACTOR SHALL BE RESPONSIBLE FOR INSURING THAT COORDINATION AND CONFLICT ISSUES ARE RESOLVED PRIOR TO INSTALLATION OF LIGHT FIXTURES. CONTACT ARCHITECT/ENGINEER IMMEDIATELY IF THERE ARE DISCREPANCIES.
29. THROUGH WIRING OF RECESSED LIGHT FIXTURES, IN SUSPENDED CEILINGS, IS NOT PERMITTED. CONNECT EACH LIGHT FIXTURE BY A WHIP TO A JUNCTION BOX. PROVIDE CABLE WHIPS OF SUFFICIENT LENGTHS TO ALLOW FOR RELOCATING EACH LIGHT FIXTURE WITHIN A 5'-0" RADIUS OF ITS INDICATED LOCATION. CABLE WHIPS SHALL NOT EXCEED 6'-0" OF UNSUPPORTED LENGTHS.
30. ALL EMERGENCY LIGHTS AND EXIT SIGNS WITH INTEGRAL BATTERY BACK-UP SHALL BE CONNECTED TO A SEPARATE UNSWITCHED CONDUCTOR BYPASSING ALL OTHER CONTROLS AND CONTACTORS, UNLESS NOTED OTHERWISE. EXIT SIGNS SHALL NOT BE SWITCHED. REFER TO MANUFACTURER'S WRITTEN INSTRUCTIONS FOR PROPER INSTALLATION AND TESTING. ALLOW BATTERY TO CHARGE FOR A MINIMUM OF 48 HOURS BEFORE LIGHT LEVEL TESTING. IN ORDER TO PREVENT BATTERY DAMAGE, DO NOT TURN OFF POWER FOR EXTENDED PERIODS OF TIME AFTER EMERGENCY LIGHT HAS BEEN POWERED.
31. PROVIDE A NEUTRAL CONDUCTOR TO ALL WALL MOUNTED LINE VOLTAGE LIGHT SWITCHES, UNLESS NOTED OTHERWISE. IF NEUTRAL TERMINATION IS NOT REQUIRED FOR THE DEVICE THEN CAP CONDUCTOR AND TAG AS "NEUTRAL FOR FUTURE USE".
32. COORDINATE ALL OCCUPANCY/VACANCY SENSOR SETTINGS WITH OWNER AND ADJUST AS NECESSARY FOR PROPER OPERATION.
33. DO NOT INSTALL OCCUPANCY/VACANCY SENSORS WITHIN 48" OF AIR DIFFUSER OR SIMILAR OBSTRUCTION THAT MAY ADVERSLY AFFECT THE SENSOR PERFORMANCE. COORDINATE FINAL SENSOR LOCATIONS WITH OTHER TRADES AND INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

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NUMBER PE-2019007648

09/09/2022
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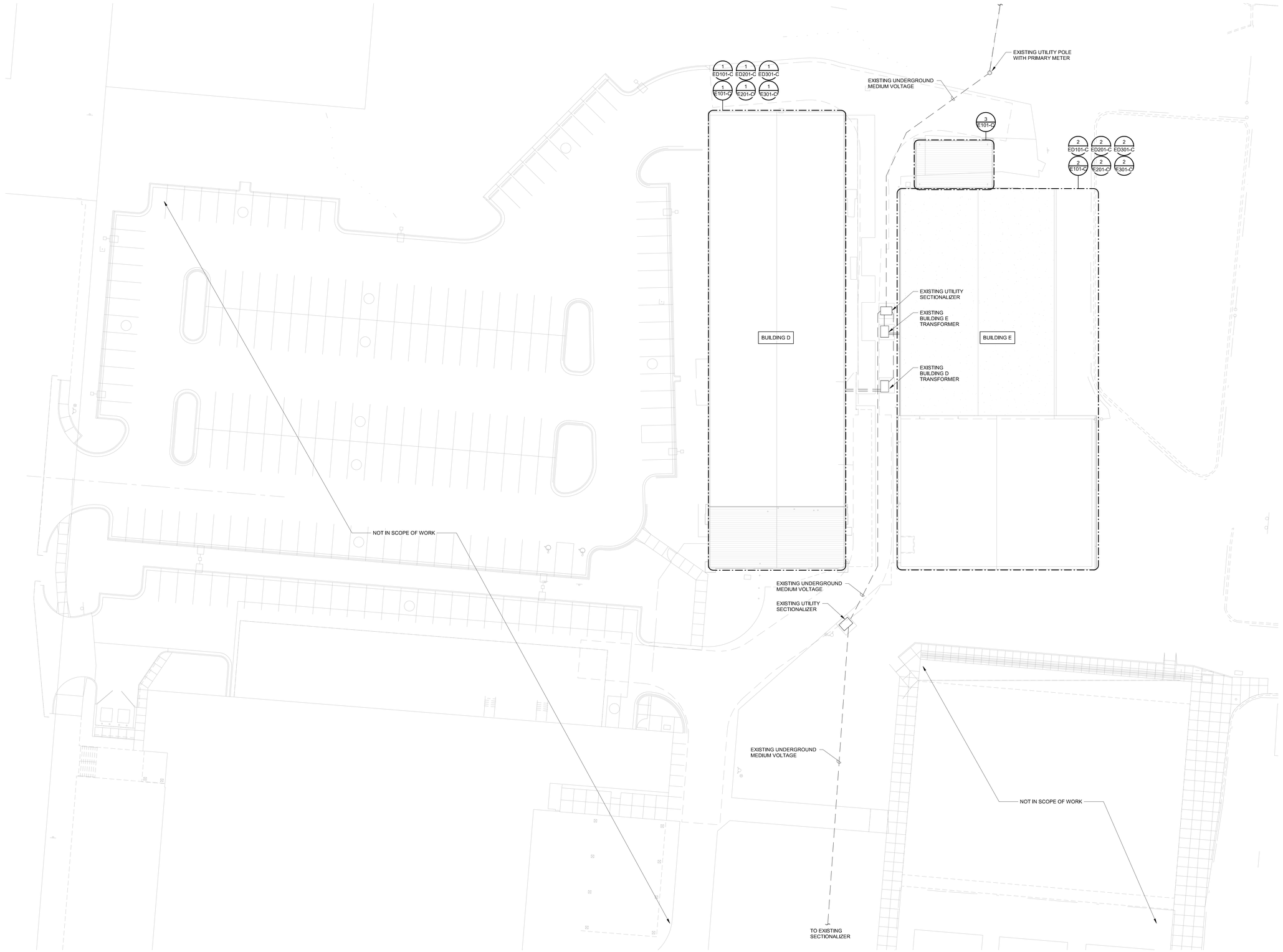
LICENSE # PE-2019007648

LSHS - ELECTRICAL GENERAL NOTES AND LEGEND

E000-C

DOUGLAS M. EVERHART



1 ELECTRICAL SITE PLAN - LSHS
1" = 20'-0"

DOUGLAS M. EVERHART

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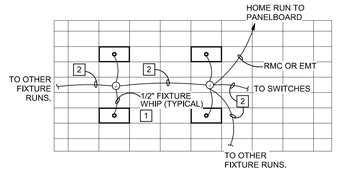
LSHS - ELECTRICAL SITE PLAN

E100-C

NO EXPOSED CONDUITS SHALL PENETRATE FINISHED PLYWOOD ON WALLS. ALL CONDUITS SHALL ROUTE ABOVE PLYWOOD WHEN PENETRATING WALLS. ALL SURFACE MOUNTED CONDUIT SHALL FIT BEHIND NEW PLYWOOD FURRING. RE: ARCH FOR LOCATIONS AND EXACT HEIGHTS OF FINISHED PLYWOOD.

ELECTRICAL NOTES:

1. PROVIDE SUFFICIENT LENGTH TO MOVE CENTER OF LUMINAIRE IN A 5'-0" RADIUS OF THE LOCATION SHOWN ON THE PLANS.
2. RMC OR EMT (UNLESS TYPE MC CABLE IS ALLOWED BY SPECIFICATIONS. IF MORE THAN 4 CURRENT CARRYING CONDUCTORS INCLUDING NEUTRALS, MC CABLE IS NOT ALLOWED).



4 LIGHTING STANDARD LUMINAIRE WIRING
NTS

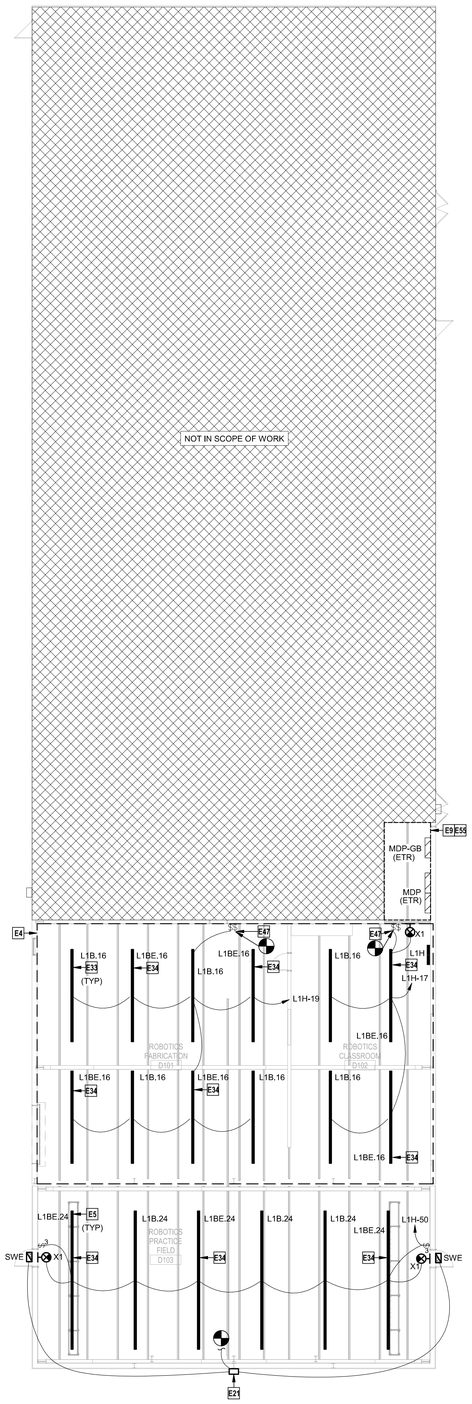
ELECTRICAL PLAN NOTES:

- E4 BASE BID: NO SCOPE OF WORK. ALL EXISTING LIGHTING AND CONTROLS ARE TO REMAIN WITHIN DASHED REGION.

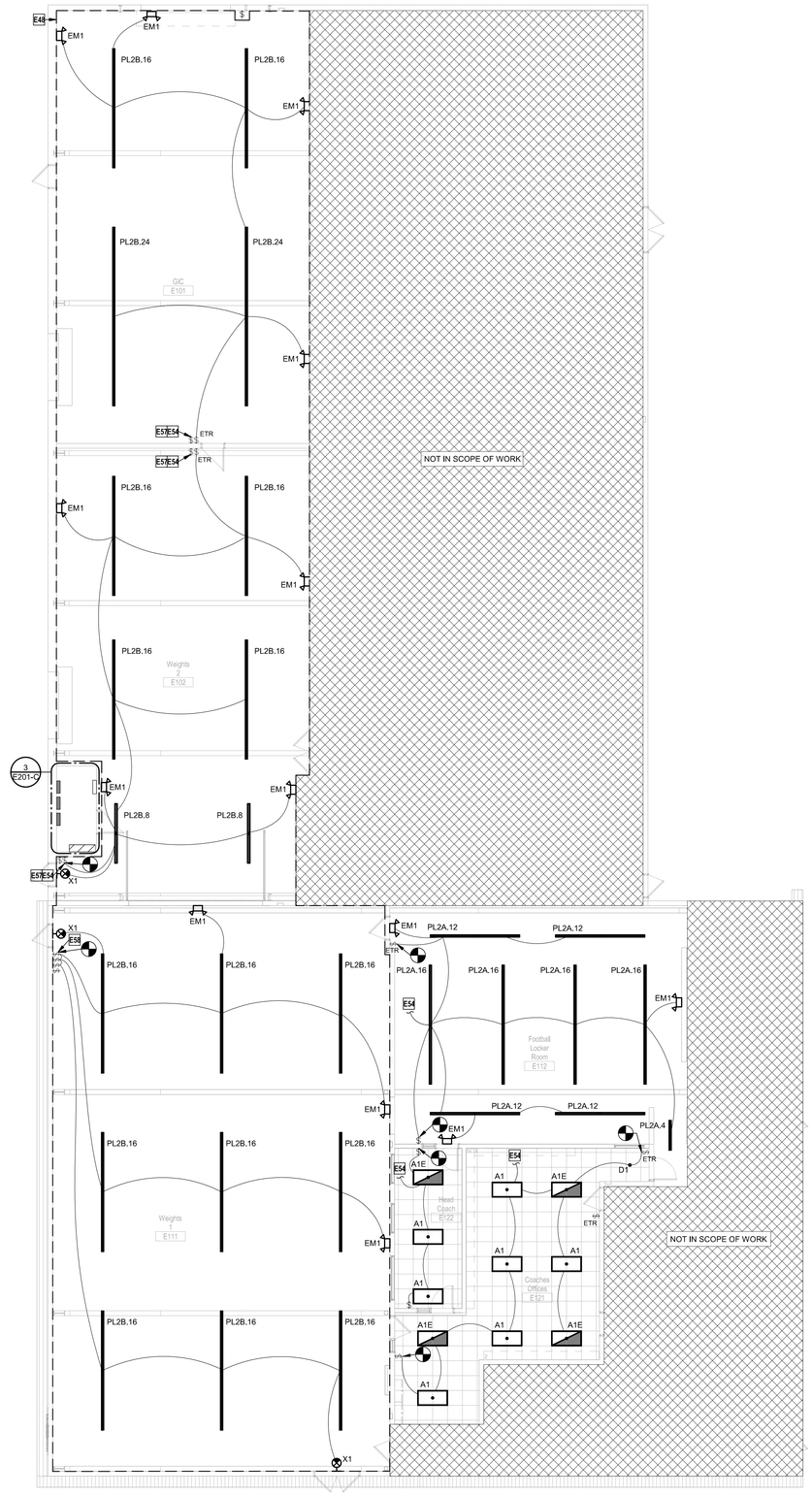
  ADD ALTERNATE #2: PROVIDE WORK AS SHOWN WITHIN DASHED REGION.
- E5 SUSPEND FIXTURES OVER ROBOTICS FIELD SO BOTTOM OF FIXTURE IS 17' AFF.
- E9 MAIN SERVICE ENTRANCE LOCATION IS ON MEZZANINE LEVEL ABOVE. EQUIPMENT IS ETR.
- E21 NEW LOCATION OF RELOCATED WALL PACK. EXTEND EXISTING CIRCUITRY AND CONTROL TO NEW LOCATION.
- E33 SUSPEND FIXTURES OVER ROBOTICS FABRICATION AND ROBOTICS CLASSROOM SO BOTTOM OF FIXTURE IS 14'-6" AFF. COORDINATE LOCATION AND MOUNTING POINTS WITH DUCTWORK.
- E34 PROVIDE EMERGENCY BATTERY PACK CAPABLE OF OPERATING 4' SECTION OF FIXTURE AT THIS LOCATION WITHIN CONTINUOUS FIXTURE RUN. REFER TO LIGHT FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION.
- E47 RECONFIGURE EXISTING LIGHTING CONTROLS SO ROBOTICS FABRICATION, ROBOTICS CLASSROOM, AND ROBOTICS FIELD ARE CONTROLLED SEPARATELY. REMOVE AND CAP 3-WAY SWITCH AS NEEDED TO MAKE CONFIGURATION OPERATE TO MEET DESIGN INTENT.
- E48 BASE BID: NO SCOPE OF WORK. ALL EXISTING LIGHTING AND CONTROLS ARE TO REMAIN WITHIN DASHED REGION.

  ADD ALTERNATE #3: PROVIDE WORK AS SHOWN WITHIN DASHED REGION.
- E49 BASE BID: PROVIDE WORK AS SHOWN WITHIN DASHED REGION.

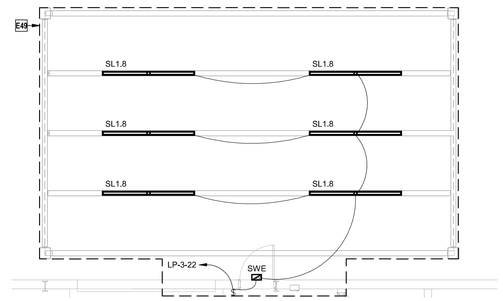
  DEDUCT ALTERNATE #4: NO SCOPE OF WORK.
- E54 CONNECT NEW LIGHTING TO EXISTING LIGHTING CIRCUIT SERVING SPACE. EXTEND CONDUIT AND WIRE AS NEEDED.
- E55 PENDANT MOUNT OCCUPANCY SENSOR NO HIGHER THAN 12' AFF.
- E57 RECONFIGURE EXISTING LIGHTING CONTROLS SO GIC AND WEIGHTS 2 ARE CONTROLLED SEPARATELY. REMOVE AND CAP 3-WAY SWITCH AS NEEDED TO MAKE CONFIGURATION OPERATE TO MEET DESIGN INTENT.
- E58 RECONFIGURE EXISTING LIGHTING CONTROLS AS NEEDED SO EACH ROW OF FIXTURES IS CONTROLLED SEPARATELY. REMOVE AND CAP ANY SWITCHES NOT NEEDED TO MEET DESIGN INTENT. REUSE EXISTING LIGHTING CIRCUIT SERVING SPACE. EXTEND CONDUIT AND WIRE AS NEEDED.



1 LIGHTING LEVEL 1 RCP - LSHS - BUILDING D
3/32" = 1'-0"



2 LIGHTING LEVEL 1 RCP - LSHS - BUILDING E
1/8" = 1'-0"



3 LIGHTING LEVEL 1 RCP - LSHS - BUILDING E NORTH CANOPY
3/16" = 1'-0"

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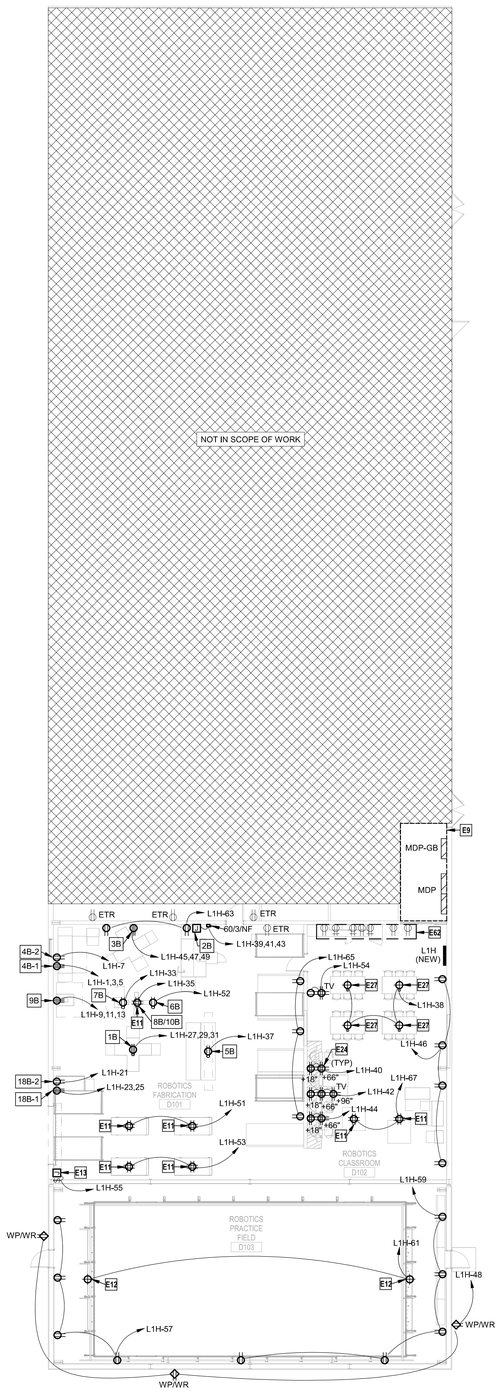
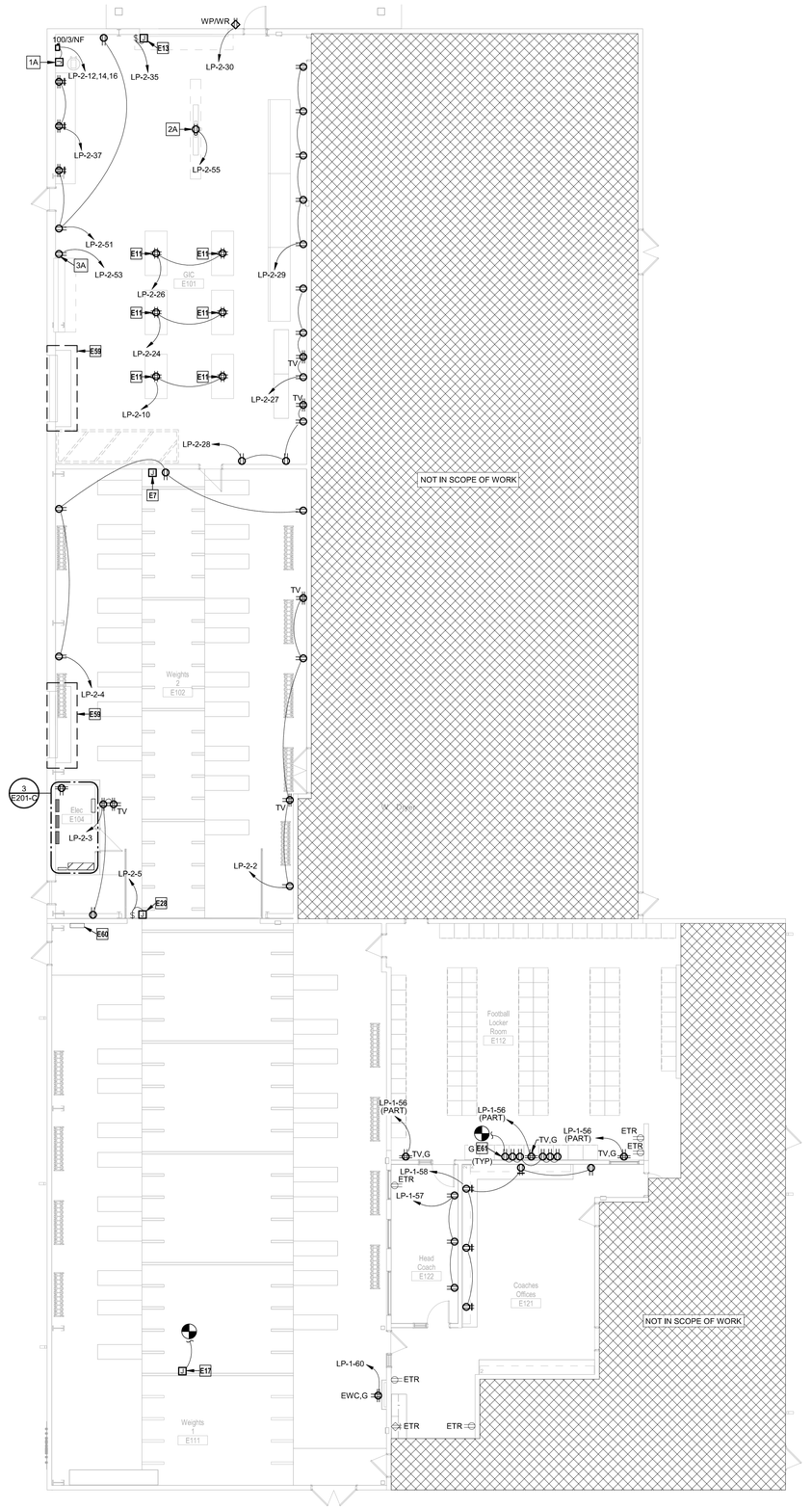
LICENSE # PE-2019007648

LSHS - LIGHTING RCP - LEVEL 1 - BUILDING D & E

E101-C



1 POWER LEVEL 1 PLAN - LSHS - BUILDING D
3/32" = 1'-0"



2 POWER LEVEL 1 PLAN - LSHS - BUILDING E
1/8" = 1'-0"

NO EXPOSED CONDUITS SHALL PENETRATE FINISHED PLYWOOD ON WALLS. ALL CONDUITS SHALL ROUTE ABOVE PLYWOOD WHEN PENETRATING WALLS. ALL SURFACE MOUNTED CONDUIT SHALL FIT BEHIND NEW PLYWOOD FURRING. RE: ARCH FOR LOCATIONS AND EXACT HEIGHTS OF FINISHED PLYWOOD.

VERIFY ALL EQUIPMENT PLUG TYPES AND ASSOCIATED RECEPTACLE NEMA RATINGS PRIOR TO ROUGH-IN.

ROBOTICS EQUIPMENT SCHEDULE

TAG	EQUIPMENT DESCRIPTION	VOLTAGE	PHASE	RECEPTACLE TYPE
1B	BRIDGEPORT 3-AXIS CNC	208 V	3	15-20R
2B	HURCO BMC-2416 CNC	208 V	3	HARDWIRED
3B	HURCO HAWK 5M 3-AXIS CNC	208 V	3	15-30R
4B-1	HARDINGE LATHE (MAIN)	208 V	3	14-20R
4B-2	HARDINGE LATHE (CONTROLS)	120 V	1	5-20R
5B	DEWALT MITER SAW	120 V	1	5-20R
6B	BURR KING BELT SANDER	120 V	1	5-20R
7B	WILTON A5816 DRILL PRESS	120 V	1	5-20R
8B/10B	RYOBI BENCH GRINDER SHOP FOX DISC SANDER	120 V	1	RE: PLAN NOTE
9B	JET VERTICAL BANDSAW	208 V	3	14-20R
18B-1	TIG WELDER (MAIN)	208 V	1	6-50R
18B-2	TIG WELDER (MISC)	120 V	1	5-20R

GIC EQUIPMENT SCHEDULE

TAG	EQUIPMENT DESCRIPTION	VOLTAGE	PHASE	RECEPTACLE TYPE
1A	AIR COMPRESSOR	208 V	3	HARDWIRED
2A	MITER SAW	120 V	1	5-20R
3A	PANEL SAW	120 V	1	5-20R

☐ ELECTRICAL PLAN NOTES:

E7 REVISE AND EXTEND CIRCUITRY FOR RELOCATED SHORT THROW PROJECTOR. COORDINATE CONDUIT ROUTING WITH OWNER AND OTHER TRADES. EXISTING DEVICES AND RELATED CIRCUITRY MAY BE REUSED IF IN GOOD CONDITION, OTHERWISE REPLACE.

E9 MAIN SERVICE ENTRANCE LOCATION IS ON MEZZANINE LEVEL ABOVE. EQUIPMENT IS ETR.

E11 PROVIDE KH INDUSTRIES RTBB3L-WDD520-J12F RETRACTABLE CORD REEL OR APPROVED EQUIVALENT. 25' CORD LENGTH WITH #12/3 WIRES RATED FOR 20A AT 120V. (2) DUPLEX RECEPTACLES. NEMA 2 ENCLOSURE. SJOW BLACK CORD. 12 POSITION ADJUSTABLE GUIDE ARM WITH ADJUSTABLE RATCHED AND BALL STOP. 6' FEEDER CORD.

E12 PROVIDE KH INDUSTRIES RTAN3LW-WCL520-J12F RETRACTABLE CORD REEL OR APPROVED EQUIVALENT. 25' CORD LENGTH WITH #12/3 WIRES RATED FOR 20A AT 120V. (1) TWISTLOCK L5-20R RECEPTACLE. NEMA 2 ENCLOSURE. SJOW BLACK CORD. 4-POSITION ADJUSTABLE ARM WITH (4) ROLLER GUIDES AND ADJUSTABLE BALL STOP. 6' FEEDER CORD. WHITE FINISH.

E13 PROVIDE JUNCTION BOX AND HARDWIRE CONNECTION TO MOTORIZED ROLL-UP DOOR. COORDINATE ROUGH-IN AND CONTROL LOCATIONS WITH APPROVED MANUFACTURER PRIOR TO INSTALL.

E17 REVISE AND EXTEND CIRCUITRY FOR RELOCATED PENDANT MOUNT PROJECTOR. COORDINATE CONDUIT ROUTING WITH OWNER AND OTHER TRADES. EXISTING DEVICES AND RELATED CIRCUITRY MAY BE REUSED IF IN GOOD CONDITION, OTHERWISE REPLACE.

E24 REFER TO ARCHITECTURAL ELEVATIONS FOR RECEPTACLE MOUNTING HEIGHT(S) AT CAD STATIONS.

E27 PROVIDE L5-20R TWISTLOCK RECEPTACLE ON DROP CORD.

E28 PROVIDE JUNCTION BOX AND HARDWIRE CONNECTION TO MOTORIZED OVERHEAD GARAGE DOOR. COORDINATE ROUGH-IN AND CONTROL LOCATIONS WITH APPROVED MANUFACTURER PRIOR TO INSTALL.

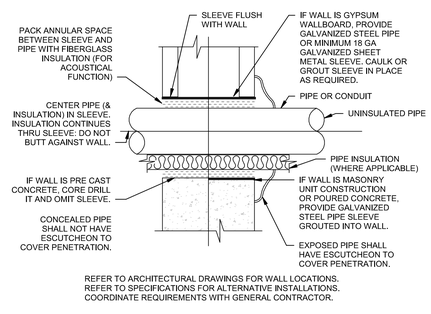
E32 PROVIDE RECEPTACLE FOR NEW WALL MOUNTED IT RACK. COORDINATE FINAL LOCATION WITH TECHNOLOGY DRAWINGS PRIOR TO ROUGH-IN.

E59 EXISTING ROLLING DOOR. PROTECT EXISTING CIRCUITRY AND CONTROL.

E60 EXISTING WIREWAY MOUNTED AT APPROXIMATELY 10' AFF. PROTECT EXISTING WIREWAY AND ALL CONDUIT TERMINATIONS ENTERING AND LEAVING WIREWAY.

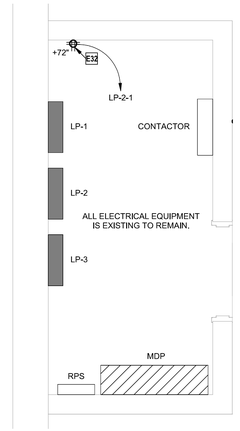
E61 REVISE AND EXTEND CIRCUITRY FOR RELOCATED GAME CLOCKS. COORDINATE CONDUIT ROUTING WITH OWNER AND OTHER TRADES. EXISTING DEVICES AND RELATED CIRCUITRY MAY BE REUSED IF IN GOOD CONDITION, OTHERWISE REPLACE. REPLACE EXISTING CIRCUIT BREAKER WITH GFCI CIRCUIT BREAKER TO COMPLY WITH NEC 2017 210.8(B)(7).

E62 ALL RECEPTACLES WITHIN DASHED REGION ARE EXISTING TO REMAIN.



REFER TO ARCHITECTURAL DRAWINGS FOR WALL LOCATIONS.
REFER TO SPECIFICATIONS FOR ALTERNATIVE INSTALLATIONS.
COORDINATE REQUIREMENTS WITH GENERAL CONTRACTOR.

4 CONDUIT PENETRATION THRU NON-FIREWALL
NTS



3 POWER LEVEL 1 PLAN - LSHS - BUILDING E - ELEC ROOM
1/2" = 1'-0"

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2150005255
MO. CORPORATE NO: E-556D
EXPIRES 12/31/2022

Issue Date: September 9, 2022

Revisions

NUMBER	DESCRIPTION	DATE

RELEASED FOR CONSTRUCTION
As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
11/23/2022

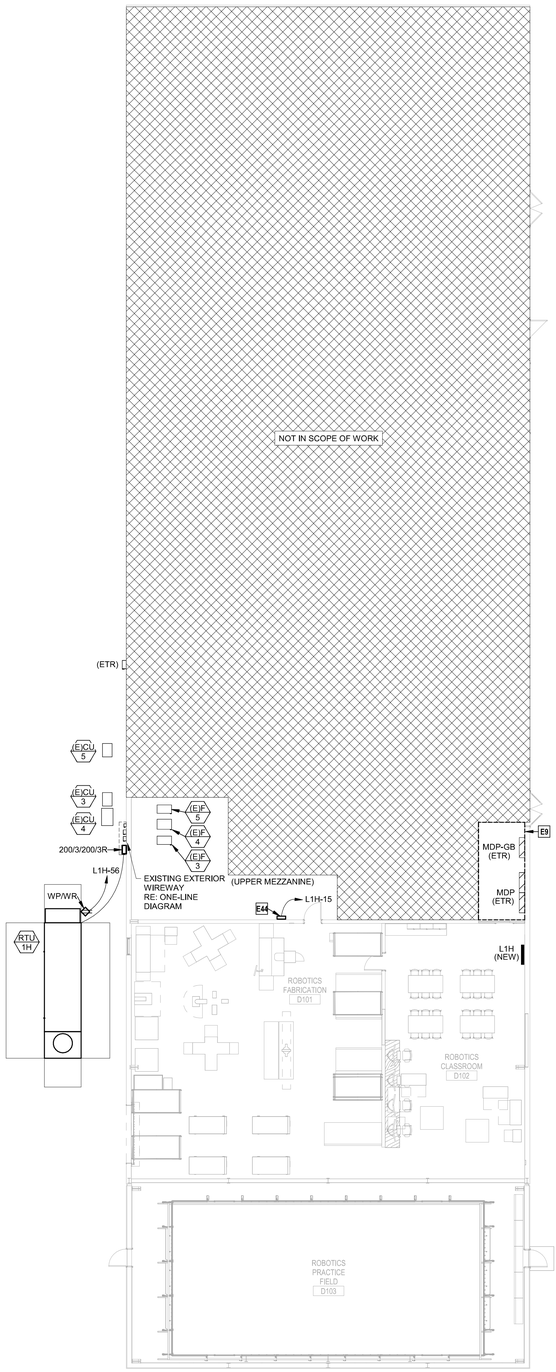
STATE OF MISSOURI
DOUGLAS M. EVERHART
NUMBER PE-2019007648
PROFESSIONAL ENGINEER

09/09/2022
DOUGLAS M. EVERHART
LICENSE # PE-2019007648

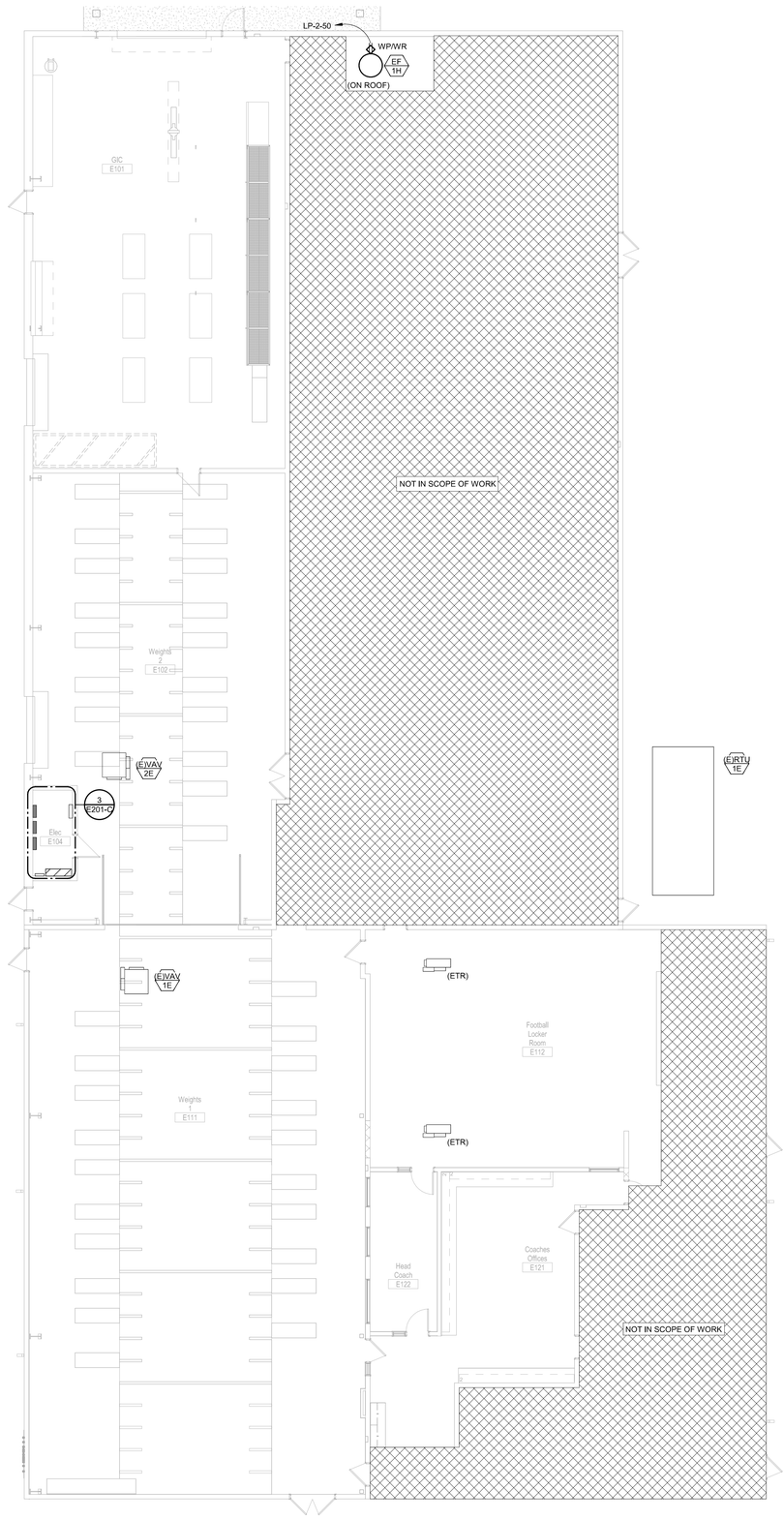
LSHS - POWER PLAN - LEVEL 1 - BUILDING D & E

E201-C

DOUGLAS M. EVERHART



1 EQUIPMENT CONNECTION LEVEL 1 PLAN - LSHS - BUILDING D
3/32" = 1'-0"



2 EQUIPMENT CONNECTION LEVEL 1 PLAN - LSHS - BUILDING E
1/8" = 1'-0"

NO EXPOSED CONDUITS SHALL PENETRATE FINISHED PLYWOOD ON WALLS. ALL CONDUITS SHALL ROUTE ABOVE PLYWOOD WHEN PENETRATING WALLS. ALL SURFACE MOUNTED CONDUIT SHALL FIT BEHIND NEW PLYWOOD FURRING. RE: ARCH FOR LOCATIONS AND EXACT HEIGHTS OF FINISHED PLYWOOD.

ELECTRICAL PLAN NOTES:

E9 MAIN SERVICE ENTRANCE LOCATION IS ON MEZZANINE LEVEL ABOVE. EQUIPMENT IS ETR.

E44 PROVIDE CONNECTION TO BAS PANEL. COORDINATE FINAL LOCATION WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.

EQUIPMENT CONNECTION SCHEDULE

MARK	PANEL	CIRCUIT	NOTES
RTU-1H	MDP	1,3,5	B,C
FAN			
EF 1H	LP-2	57	A

EQUIPMENT CONNECTION GENERAL NOTES:

1. COORDINATE FINAL LOCATIONS WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.
2. REFER TO MECHANICAL SCHEDULES FOR ADDITIONAL INFORMATION WITHIN SCOPE OF DIVISION 26.
3. COORDINATE WITH MECHANICAL CONTRACTOR TO PROVIDE FINAL POWER REQUIREMENTS FOR ALL SUBMITTED EQUIPMENT THAT DIFFERS FROM BASIS-OF-DESIGN.

EQUIPMENT CONNECTION SCHEDULE NOTES:

A. DISCONNECTING MEANS (FRACTIONAL HP SWITCH, FUSED DISCONNECT SWITCH, ETC.) AND/OR CONTROLLER (STARTER, VFD, ETC.) IS FACTORY MOUNTED OR PROVIDED BY DIVISION 23.
B. PROVIDE FUSED DISCONNECT SWITCH SIZED PER EQUIPMENT MANUFACTURER'S SPECIFICATIONS AND THE NEC. REFER TO ELECTRICAL SYMBOLS LEGEND FOR NAMING DESIGNATIONS.
C. PROVIDE CONNECTION TO FACTORY PROVIDED 120V 20A GFCI RECEPTACLE.

multistudio
the evolution of gould evans

LSR7 Robotics, GiC & Phys Education

LSN: 901 NE Douglas St., Lee's Summit MO 64086
LSW: 2600 SW Ward Rd, Lee's Summit MO 64082
LSHS: 400 SE Blue Pkwy, Lee's Summit MO 64063

0121-0100

owner:
Lee's Summit R-7 School
301 NE Tudor Road
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civil engineer:
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MO. CORPORATE NO: E-656D
EXPIRES 12/31/2022

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11/23/2022

STATE OF MISSOURI
DOUGLAS M. EVERHART
NUMBER PE-2019007648
PROFESSIONAL ENGINEER

09/09/2022
DOUGLAS M. EVERHART
LICENSE # PE-2019007648

LSHS - EQUIPMENT CONNECTION PLAN - LEVEL 1 - BUILDING D & E

E301-C

DOUGLAS M. EVERHART

PANELBOARD: LP-1 (EXISTING)

BUS AMPS: 400A
MAIN SIZE/TYPE: MLO
VOLTS/PHASE: 208Y/120 V 3P/4W
SUPPLIED BY: MDP

FAULT CURRENT: <10,000
AIC RATED: FULLY RATED
AIC RATING: 10,000
SERVES: BUILDING E
MOUNTING: SURFACE
LOCATION: Elec E104

EQUIPMENT GROUND BUS

LINE-SIDE LUGS: MECHANICAL

CKT NO.	DESCRIPTION	LOAD TYPE	NOTES	WIRE SIZE	BKR AMP	P	PHASE A	PHASE B	PHASE C	P	BKR AMP	WIRE SIZE	NOTES	LOAD TYPE	DESCRIPTION	CKT NO.
1	RCPT - WEIGHTS GENERAL		EX	EX	20	1	720	250		1	20	EX	EX		WATER COOLER - WEIGHTS	2
3	RCPT - MAIN LOCKER GENERAL		EX	EX	20	1		720	540	1	20	EX	EX		RCPT - WHIRLPOOL	4
5	RCPT - AUX LOCKER GENERAL		EX	EX	20	1			720	1	20	EX	EX		RCPT - TRAINER	6
7	RCPT - CARDIO EQUIPMENT		EX	EX	20	1	720	720		1	20	EX	EX		RCPT - TRAINER	8
9	RCPT - COACHES LOCKER		EX	EX	20	1		720	720	1	20	EX	EX		RCPT - TRAINER	10
11	RCPT - COACHES OFFICE		EX	EX	20	1			540	500	1	20	EX	EX	EF-2	12
13	RCPT - COACHES OFFICE		EX	EX	20	1	540	250		1	20	EX	EX		WATER COOLER - WRESTLING	14
15	PROJECTOR - LOCKER		EX	EX	20	1		500	800	1	20	EX	EX		RCPT - WASHER	16
17	PROJECT/SMART BOARDS - WEIGHTS		EX	EX	20	1			500	0	1	20	EX	EX	SPARE - ABV CLG IN COACH OFFICE	18
19	PROJECTOR - WRESTLING		EX	EX	20	1	500	1200		1	20	EX	EX		ICE MACHINE - TRAILER	20
21	SCOREBOARDS - WRESTLING		EX	EX	20	1		500	250	1	20	EX	EX		PLASMA SCREEN - WRESTLING	22
23	RCPT - WRESTLING GENERAL		EX	EX	20	1			720	250	1	20	EX	EX	SPEAKERS - WRESTLING	24
25	CEILING FANS - WRESTLING		EX	EX	20	1	500	800		1	20	EX	EX		RCPT - WASHER	26
27	PROJECTOR SCREEN		EX	EX	20	1		500	2200	2	30	EX			RCPT - DRYER	28
29	RCPT - AV CLOSET		EX	EX	20	1			500	2200			EX			30
31							6000	540		1	20	EX	EX		RCPT - LAUNDRY ROOM/UNIFORMS	32
33	VAV 1-1		EX	EX	70	3		6000	500	1	20	EX	EX		WH RECIRC PUMP	34
35									6000	500	1	20	EX	EX	BAS PANEL	36
37							6000	1500								38
39	VAV 1-2		EX	EX	70	3		6000	1500	3	20	EX	EX		UH-1	40
41									6000	1500						42
43							6000	2000								44
45	VAV 1-3		EX	EX	70	3		6000	2000	3	25	EX	EX		VAV 1-5	46
47									6000	2000						48
49							2000	2000								50
51	VAV 1-4		EX	EX	25	3		2000	2000	3	25	EX	EX		VAV 1-6	52
53									2000	2000						54
55	EXHAUST FAN EF-1		EX	EX	20	1	250	1080		1	20	12	R,GF	R	RCPT - LCKR RM TVS	56
57	RCPT - HEAD COACH	R	R	12	20	1		540	900	1	20	12	R	R	RCPT - COACHES OFFICE	58
59	SPARE				20	1			0	250	1	20	12	N, GF	Z	RCPT - WEIGHTS EWC	60
61	EQUIPPED SPACE					1	0	0		1						EQUIPPED SPACE	62
63	EQUIPPED SPACE					1		0	0	1						EQUIPPED SPACE	64
65	EQUIPPED SPACE					1			0	0	1					EQUIPPED SPACE	66
67	EQUIPPED SPACE					1	0	0		1						EQUIPPED SPACE	68
69	EQUIPPED SPACE					1		0	0	1						EQUIPPED SPACE	70
71	EQUIPPED SPACE					1			0	0	1					EQUIPPED SPACE	72
			TOTAL LOAD (VA):				33570 VA	34890 VA	32900 VA							
			TOTAL AMPS:				281 A	292 A	274 A							

LOAD TYPE	CONNECTED LOAD	DEMAND FACTOR	NEC DEMAND
EXISTING LOAD (E)	98590 VA	100%	98590 VA
COOLING (C)	0 VA	0%	0 VA
HEATING (H)	0 VA	100%	0 VA
LIGHTING (L)	0 VA	125%	0 VA
RECEPTACLES (R)	2520 VA	100%	2520 VA
MOTORS (M)	0 VA	100%	0 VA
SUPPLEMENTAL HEAT (U)	0 VA	100%	0 VA
MISC EQUIP (Z)	250 VA	100%	250 VA
REFRIGERATION (F)	0 VA	100%	0 VA
SIGNAGE (S)	0 VA	125%	0 VA
KITCHEN (K)	0 VA	100%	0 VA
LARGEST MOTOR	0 VA	125%	0 VA
SHOW WINDOW (W)	0 VA	125%	0 VA
TRACK LIGHTING	0 VA	100%	0 VA

PANELBOARD NOTES

PANELBOARD TOTALS	
TOTAL CONNECTED LOAD	101360 VA
TOTAL NEC LOAD	101360 VA
TOTAL CONNECTED CURRENT	281 A
TOTAL NEC DEMAND CURRENT	281 A

PANELBOARD: LP-2 (EXISTING)

BUS AMPS: 225A
MAIN SIZE/TYPE: MLO
VOLTS/PHASE: 208Y/120 V 3P/4W
SUPPLIED BY: MDP

FAULT CURRENT: <10,000
AIC RATED: FULLY RATED
AIC RATING: 10,000
SERVES: BUILDING E
MOUNTING: SURFACE
LOCATION: Elec E104

EQUIPMENT GROUND BUS

LINE-SIDE LUGS: MECHANICAL

CKT NO.	DESCRIPTION	LOAD TYPE	NOTES	WIRE SIZE	BKR AMP	P	PHASE A	PHASE B	PHASE C	P	BKR AMP	WIRE SIZE	NOTES	LOAD TYPE	DESCRIPTION	CKT NO.
1	RCPT - ELEC E104 DATA	Z	R	12	20	1	800	1080		1	20	12	R	R	RCPT - NEW WEIGHTS E	2
3	RCPT - NEW WEIGHTS W	R	R	12	20	1		900	720	1	20	12	R	R	RCPT - NEW WEIGHTS N	4
5	WEIGHTS GARAGE DOOR	Z	R	12	20	1			800	0	2	20			SPARE	6
7	SPARE		D		20	2	0	0					D			8
9								0	720	1	20	12	R	R	CRD REEL - GIC TABLES 1	10
11	SPARE		D		20	2			0	5820						12
13							0	5820		3	70	4	N	M	GIC AIR COMPRESSOR	14
15								0	5820							16
17	SPARE		D		20	3			0	0						18
19							0	0		3	20		D		SPARE	20
21								0	0							22
23	SPARE		D		20	3			0	720	1	20	12	R	R	CRD REEL - GIC TABLES 2	24
25							0	720		1	20	12	R	R	CRD REEL - GIC TABLES 3	26
27	RCPT - GIC E WALL	R	R	12	20	1		900	900	1	20	12	R	R	RCPT - GIC SE WALL	28
29	RCPT - GIC NE WALL	R	R	12	20	1			900	180	1	20	12	R	R	EXT RCPT - GIC CANOPY	30
31	SPARE		D		20	2	0	0					D		SPARE	32
33								0	0							34
35	GIC N GARAGE DOOR	Z	R, VD	10	20	1			1200	0	2	20			SPARE	36
37	RCPT - GIC ABV CTR W 1	R	R	12	20	1	360	0					D			38
39								0	0		2	20			SPARE	40
41	SPARE		D		20	3			0	0			D			42
43							0	0		1					EQUIPPED SPACE	44
45	SPARE		D		20	2		0	0	2	20				SPARE	46
47									0	0			D			48
49	EQUIPPED SPACE					1	0	180		1	20	12	R	R	EXT RCPT - EF-1H	50
51	RCPT - GIC ABV CTR W 2	R	R	12	20	1		540	0	1	20		D		SPARE	52
53	RCPT - GIC PANEL SAW	M	R, VD	10	20	1			1800	0	1	20		D	SPARE	54
55	DROP RCPT - GIC MITER SAW	M	R, VD	10	20	1	1800	0		1	20			D	SPARE	56
57	EF-1H	M	R,VD	10	20	1		1656	0	1	20			D	SPARE	58
59	SPARE		D		20	1			0	0	1	20		D	SPARE	60
61	SPARE		D		20	1	0	0		1					EQUIPPED SPACE	62
63	SPARE		D		20	1		0	0	1					EQUIPPED SPACE	64
65	SPARE		D		20	1			0	0	1				EQUIPPED SPACE	66
67	SPARE		D		20	1	0	0		1					EQUIPPED SPACE	68
69	EQUIPPED SPACE					1		0	0	1					EQUIPPED SPACE	70
71	EQUIPPED SPACE					1			0	0	1				EQUIPPED SPACE	72
			TOTAL LOAD (VA):				10760 VA	12156 VA	11420 VA							
			TOTAL AMPS:				90 A	102 A	96 A							

LOAD TYPE	CONNECTED LOAD	DEMAND FACTOR	NEC DEMAND
EXISTING LOAD (E)	0 VA	100%	0 VA
COOLING (C)	0 VA	0%	0 VA
HEATING (H)	0 VA	100%	0 VA
LIGHTING (L)	0 VA	125%	0 VA
RECEPTACLES (R)	8820 VA	100%	8820 VA
MOTORS (M)	5256 VA	100%	5256 VA
SUPPLEMENTAL HEAT (U)	0 VA	100%	0 VA
MISC EQUIP (Z)	2800 VA	100%	2800 VA
REFRIGERATION (F)	0 VA	100%	0 VA
SIGNAGE (S)	0 VA	125%	0 VA
KITCHEN (K)	0 VA	100%	0 VA
LARGEST MOTOR	17459 VA	125%	21824 VA
SHOW WINDOW (W)	0 VA	125%	0 VA
TRACK LIGHTING	0 VA	100%	0 VA

PANELBOARD NOTES

PANELBOARD TOTALS	
TOTAL CONNECTED LOAD	34335 VA
TOTAL NEC LOAD	38700 VA
TOTAL CONNECTED CURRENT	95 A
TOTAL NEC DEMAND CURRENT	107 A

PANELBOARD: L1H (NEW)

BUS AMPS: 400A
MAIN SIZE/TYPE: MLO
VOLTS/PHASE: 208Y/120 V 3P/4W
SUPPLIED BY: MDP-GB

FAULT CURRENT: REFER TO ONE-LINE
AIC RATED: FULLY RATED
AIC RATING: FCA +10% MINIMUM
SERVES: ROBOTICS/CLASSROOM
MOUNTING: SURFACE
LOCATION: ROBOTICS CLASSROOM D102

EQUIPMENT GROUND BUS

LINE-SIDE LUGS: MECHANICAL

CKT NO.	DESCRIPTION	LOAD TYPE	NOTES	WIRE SIZE	BKR AMP	P	PHASE A	PHASE B	PHASE C	P	BKR AMP	WIRE SIZE	NOTES	LOAD TYPE	DESCRIPTION	CKT NO.
1							757	1900								2
3	RCPT - HARDINGE LATHE (MAIN)	M		12	20	3		757	1900	3	20		V		SHARED ROBOTICS	4
5									757	1900						6
7	RCPT - HARDINGE LATHE (CTRLS)	Z		12	20	1	500	1500		2	20		V		SHARED ROBOTICS	8
9								481	1500							10
11	RCPT - JET VERTICAL BANDSAW	M		12	20	3			481	1500	2	20		V	FUME COLLECTOR	12
13							481	1500								14
15	BAS PANEL	Z		12	20	1		500	1500	2	20		V		LASER ENGRAVER	16
17	LTG - ROBOTICS CLASSROOM	L		12	20	1			393	1500						18
19	LTG - ROBOTICS FAB	L		12	20	1	1552	1200		1	20		V		MICROWAVE #1	20
21	RCPT - TIG WELDER MISC	R		12	20	1		180	1200	1	20		V		MICROWAVE #2	22
23	RCPT - TIG WELDER MAIN	M		8	50	2			4160	1200	1	20		V	MICROWAVE #3	24
25							4160	800		1	20		V		REFRIGERATOR #1	26
27								829	800	1	20		V		REFRIGERATOR #2	28
29	DROP RCPT - 3 AXIS CNC	M		12	20	3			829	800	1	20		V	REFRIGERATOR #3	30
31							829	1080		1	20		V		SHARED ROBOTICS	32
33	DROP RCPT - WILTON DRILL PRESS	M		12	20	1		1320	1080	1	20		V		RECEPTACLE FRONT HALL	34
35	CRD REEL - ROB AREA 1	Z		12	20	1			1440	1080	1	20		V	RECEPTACLE FRONT HALL	36
37	DROP RCPT - DEW MITER SAW	M		12	20	1	1680	720		1	20	12		R	RCPT - ROB CLSRM TWSTLCKS	38
39								4972	720	1	20	12		R	RCPT - CAD STATION CKT 1	40
41	HURCO BMC-2416 CNC	M		6	60	3			4972	1080	1	20	12		R	RCPT - CAD STATION CKT 2	42
43							4972	720		1	20	12		R	RCPT - CAD STATION CKT 3	44
45								2642	720	1	20	12		R	RCPT - ROB CLSRM E WALL	46
47	RCPT - HURCO HAWK 3-AXIS	M		10	30	3			2642	540	1	20	12	R	RCPT - S EXTERIOR	48
49							2642	1756		1	20	10	VD	L	LTG - ROBOTICS FIELD	50
51	CRD REEL - ROB TABLES 1	R		12	20	1		720	1320	1	20	12		M	DROP RCPT - BURR BELT SANDER	52
53	CRD REEL - ROB TABLES 2	R		12	20	1			720	540	1	20	12		R	RCPT - N CLSRM TV	54
55	ROBOTICS COILING DOOR	M		12	20	1	1200	180		1	20	12		R	EXT RCPT - RTU-1H	56
57	RCPT - ROB FIELD S	R		12	20	1		720	0	1	20				SPARE	58
59	RCPT - ROB FIELD SE	R		12	20	1			900	0	1	20			SPARE	60
61	RCPT - TWSTLCK ROB FIELD	R		12	20	1	360	0		1	20				SPARE	62
63	RCPT - ROB NORTH WALL	R		12	20	1		360	0	1	20				SPARE	64
65	RCPT - ROB EAST WALL	R		12	20	1			540	0	1	20			SPARE	66
67	CRD REEL - ROB CLSRM	R		12	20	1	720	0		1	20				SPARE	68
69	SPARE				20	1		0	0	1	20				SPARE	70
71	SPARE				20	1			0	0	1	20			SPARE	72
73	SPARE				20	1	0	0		1	20				SPARE	74
75	SPARE				20	1		0	0	1	20				SPARE	76
77	EQUIPPED SPACE					1			0	0	1				EQUIPPED SPACE	78
79	EQUIPPED SPACE					1	0	0		1					EQUIPPED SPACE	80
81	EQUIPPED SPACE					1		0	0	1					EQUIPPED SPACE	82
83	EQUIPPED SPACE					1			0	0	1				EQUIPPED SPACE	84
			TOTAL LOAD (VA):				31207 VA	24219 VA	27972 VA							
			TOTAL AMPS:				265 A	202 A	238 A							

LOAD TYPE	CONNECTED LOAD	DEMAND FACTOR	NEC DEMAND
EXISTING LOAD (E)	23940 VA	100%	23940 VA
COOLING (C)	0 VA	0%	0 VA
HEATING (H)	0 VA	100%	0 VA
LIGHTING (L)	3701 VA	125%	4626 VA
RECEPTACLES (R)	10440 VA	98%	10220 VA
MOTORS (M)	27964 VA	100%	27964 VA
SUPPLEMENTAL HEAT (U)	0 VA	100%	0 VA
MISC EQUIP (Z)	2440 VA	100%	2440 VA
REFRIGERATION (F)	0 VA	100%	0 VA
SIGNAGE (S)	0 VA	125%	0 VA
KITCHEN (K)	0 VA	100%	0 VA
LARGEST MOTOR	14915 VA	125%	18644 VA
SHOW WINDOW (W)	0 VA	125%	0 VA
TRACK LIGHTING	0 VA	100%	0 VA

PANELBOARD NOTES

PANELBOARD TOTALS	
TOTAL CONNECTED LOAD	83400 VA
TOTAL NEC LOAD	87834 VA
TOTAL CONNECTED CURRENT	231 A
TOTAL NEC DEMAND CURRENT	244 A

PANELBOARD: LP-3 (EXISTING)

BUS AMPS: 100A
MAIN SIZE/TYPE: MLO
VOLTS/PHASE: 208Y/120 V 3P/4W
SUPPLIED BY: MDP

FAULT CURRENT: <10,000
AIC RATED: FULLY RATED
AIC RATING: 10,000
SERVES: BUILDING E
MOUNTING: SURFACE
LOCATION: Elec E104

EQUIPMENT GROUND BUS

LINE-SIDE LUGS: MECHANICAL

CKT NO.	DESCRIPTION	LOAD TYPE	NOTES	WIRE SIZE	BKR AMP	P	PHASE A	PHASE B	PHASE C	P	BKR AMP	WIRE SIZE	NOTES	LOAD TYPE	DESCRIPTION	CKT NO.
1	LTG - WEIGHTS SOUTH		EX	EX	20	1	800	800		1	20	EX	EX		LTG - ROBOTICS #2	2
3	LTG - WEIGHTS MIDDLE		EX	EX	20	1		800	800	1	20	EX	EX		LTG - ROBOTICS 2 #1	4
5	LTG - WEIGHTS NORTH		EX	EX	20	1			800	800	1	20	EX	EX	LTG - WRESTLING	6
7	LTG - WRESTLING		EX	EX	20	1	800	800		1	20	EX	EX		LTG - WRESTLING	8
9	LTG - WRESTLING		EX	EX	20	1		800	200	1	20	EX	EX		LTG - LAUNDRY/MECHANICAL	10
11	LTG - TOILET, AV, STORAGE		EX	EX	20	1			200	300	1	20	EX	EX	LTG - OFFICE AND SUPPORT	12
13	LTG - MAIN LOCKER		EX	EX	20	1	300	800		1	20	EX	EX		LTG - MAIN LOCKER 2	14
15	LTG - AUX. LOCKER		EX	EX	20	1		300	300	1	20	EX	EX		LTG - BUILDING EXTERIOR	16
17	LTG - BUILDING EXTERIOR		EX	EX	20	1			300	800	1	20	EX	EX	LTG - ROBOTICS 1 #2	18
19	CONTACTOR		EX	EX	20	1	500	800		1	20	EX	EX		IRRIGATION SYSTEM	20
21	SPARE		D		30	1		0	478	1	20	10	R, VD	L	EXT LTG - GIC CANOPY	22
23	SPARE		EX		20	1			0	0	1	20			SPARE	24
25							0	0		1	20				SPARE	26
27	SPARE		D		50	3		0	0	1	20				SPARE	28
29									0	0	1	20			SPARE	30
			TOTAL LOAD (VA):				5600 VA	3678 VA	3200 VA							
			TOTAL AMPS:				47 A	31 A	27 A							

LOAD TYPE	CONNECTED LOAD	DEMAND FACTOR	NEC DEMAND
EXISTING LOAD (E)	12000 VA	100%	12000 VA
COOLING (C)	0 VA	0%	0 VA
HEATING (H)	0 VA	100%	0 VA
LIGHTING (L)	478 VA	125%	598 VA
RECEPTACLES (R)	0 VA	0%	0 VA
MOTORS (M)	0 VA	100%	0 VA
SUPPLEMENTAL HEAT (U)	0 VA	100%	0 VA
MISC EQUIP (Z)	0 VA	100%	0 VA
REFRIGERATION (F)	0 VA	100%	0 VA
SIGNAGE (S)	0 VA	125%	0 VA
KITCHEN (K)	0 VA	100%	0 VA
LARGEST MOTOR	0 VA	125%	0 VA
SHOW WINDOW (W)	0 VA	125%	0 VA
TRACK LIGHTING	0 VA	100%	0 VA

PANELBOARD NOTES

PANELBOARD TOTALS	
TOTAL CONNECTED LOAD	12478 VA
TOTAL NEC LOAD	12598 VA
TOTAL CONNECTED CURRENT	35 A
TOTAL NEC DEMAND CURRENT	35 A

PANELBOARD LEGEND

ABBREVIATIONS V1.01

AF	ARC FAULT CIRCUIT INTERRUPTER.
C#	CIRCUIT VIA CONTACTOR #.
CL	CIRCUIT VIA CURRENT LIMITING DEVICE.
D	DISCONNECT CIRCUITRY FOR REMOVED LOAD, UPDATE CIRCUIT DIRECTORY TO SPARE AND TURN OFF.
EM	EMERGENCY LIGHTING HANDLE-ON CLAMP.
EX	EXISTING.
F	FUTURE LOAD; NOTE AS SPARE AND TURN OFF.
FA	RED/HANDLE-ON CLAMP.
GF	GROUND-FAULT CIRCUIT INTERRUPTER TYPE CIRCUIT BREAKER (5 mA).
GFEP	GROUND FAULT EQUIPMENT PROTECTION BREAKER (30 mA).
HT	PROVIDE HANDLE-TIE FOR MULTI-WIRE BRANCH CIRCUIT PER CODE.
IG	ISOLATED GROUND CIRCUIT.
L#	LIGHTING CONTROL SCHEME NUMBER.
LCK	HANDLE PADLOCKABLE-OFF DEVICE.
LO	HANDLE-ON CLAMP.
N	PROVIDE NEW CIRCUIT BREAKER.
OL	REFER TO ELECTRICAL ONE-LINE/RISER DIAGRAM.
PS	POWER-SWITCHING CIRCUIT BREAKER.
PSE	EMERGENCY POWER-SWITCHING CIRCUIT BREAKER.
R	REUSE EXISTING CIRCUIT BREAKER FOR NEW/REVISED LOAD.
RP	CIRCUIT VIA RELAY PANEL.
ST	SHUNT TRIP CIRCUIT BREAKER.
V	CIRCUITS RECONNECTED FROM DEMOLISHED PANEL. VERIFY EXISTING LOAD AND UPDATE DIRECTORY, IF UNUSED, NOTE AS SPARE AND TURN OFF.
VD	BRANCH CIRCUITRY HAS BEEN UPSIZED TO REDUCE VOLTAGE DROP. ADJUST GROUND WIRE SIZE PER CODE. PROVIDE LUG ADAPTORS IF REQUIRED.
Z	CORRECT/REPAIR EXISTING HAZARD TO MAKE CODE COMPLIANT INSTALLATION.

NOT ALL ABBREVIATIONS ARE USED.

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11/23/2022

STATE OF MISSOURI
DOUGLAS M. EVERHART
NUMBER PE-2019007648
PROFESSIONAL ENGINEER

09/09/2022
DOUGLAS M. EVERHART
LICENSE # PE-2019007648

LSHS - PANELBOARD SCHEDULES

E600-C

DOUGLAS M. EVERHART

LIGHT FIXTURE SCHEDULE

TYPE	MANUFACTURER	SERIES / MODEL	APPROVED ALTERNATES	SOURCE				DIMMING TYPE	VOLTAGE	INPUT WATTS	INPUT VA	DESCRIPTION	NOTES
				TYPE	CRI	CCT	LUMENS						
A1	METALUX	24CZ2 SERIES 24CZ2-45-UNV-L935-CD-1-U	HEW LT SERIES LITHONIA BLT SERIES COLUMBIA LCAT SERIES DAY-BRITE CFI SERIES	LED	90	3500K	4500 LM	0-10V	120	35	39	2'X4' CENTER BASKET TROFFER WITH RIBBED FROSTED ACRYLIC LENS. SUITABLE FOR GRID CEILINGS. STANDARD WHITE FINISH.	
A1E	METALUX	24CZ2 SERIES 24CZ2-45-UNV-EL7W-L935-CD-1-U	REFER TO TYPE A1	LED	90	3500K	4500 LM	0-10V	120	35	39	SIMILAR TO TYPE A1 EXCEPT WITH 7W EMERGENCY BATTERY BACKUP.	
D1	H.E. WILLIAMS	4DR SERIES 4DR-TL-L10/935-DIM-UNV-OW-OF-CS-TD-N-F1	PORTFOLIO LD4C SERIES LITHONIA LDN4 SERIES INTENSE GRAVITY SERIES PRESCOLITE LTR-4RD SERIES	LED	90	3500K	1000 LM	0-10V	120	9	10	NOMINAL 4" DIAMETER DOWNLIGHT WITH WIDE DISTRIBUTION OPTICS. CLEAR SEMI-SPECULAR ANODIZED REFLECTOR FINISH. DIFFUSE POLYCARBONATE LENS MEDIA AT TOP OF OPEN REFLECTOR.	
EM1	H.E. WILLIAMS	EMER/LED SERIES EMER/LED-WHT-SDT-D	COLUMBIA CU2SQ SERIES LITHONIA EU2C SERIES CHLORIDE VLTU SERIES	LED	N/A	N/A	N/A	N/A	120	2	2	DUAL-HEAD EMERGENCY BUGEYE SUITABLE FOR WALL MOUNTING. 90 MINUTE RUNTIME, SELF-DIAGNOSTIC TEST. STANDARD WHITE FINISH.	
L1B.16	H.E. WILLIAMS	MX4 SERIES MX4D-16-L12/935-P-AC/D96-DIM-UNV	AXIS BEAM SERIES LUMENWERX VIA 4 SERIES ALW LIGHTPLANE SERIES METALUMEN RAIL SERIES PINNACLE EDGE SERIES	LED	90	3500K	1200 LM/FT	0-10V	120	176	194	NOMINAL 4" W X 4" H X 8' LONG FULLY EXTRUDED LINEAR WITH DIRECT OPTICS. PROUD, DIFFUSE ACRYLIC LENS WITH 5/16" DROP. 96" FIELD ADJUSTABLE AIRCRAFT CABLE. BLACK FINISH.	
L1B.24	H.E. WILLIAMS	MX4 SERIES MX4D-24-L12/935-P-AC/D96-DIM-UNV	REFER TO TYPE L1B.16	LED	90	3500K	1200 LM/FT	0-10V	120	264	291	SIMILAR TO L1B.16 EXCEPT 24' IN LENGTH.	
L1BE.16	H.E. WILLIAMS	MX4 SERIES MX4D-16-L12/935-P-AC/D96-EM/7W-DIM-UNV	REFER TO TYPE L1B.16	LED	90	3500K	1200 LM/FT	0-10V	120	176	194	SIMILAR TO TYPE L1B.16 EXCEPT WITH 7W EMERGENCY BATTERY BACKUP.	
L1BE.24	H.E. WILLIAMS	MX4 SERIES MX4D-24-L12/935-P-AC/D96-EM/7W-DIM-UNV	REFER TO TYPE L1B.16	LED	90	3500K	1200 LM/FT	0-10V	120	264	291	SIMILAR TO TYPE L1B.24 EXCEPT WITH 7W EMERGENCY BATTERY BACKUP.	
PL2A.4	STARTEK	BEAM DI SERIES BEAMDI-4-500-350-SD-BW-35K-90-PB-ACW10-U-1C	LUX EOS 4.0 SERIES FINELITE HP-4 SERIES ALW HBEAM 3.5 SERIES AXIS BEAM 4 SERIES	LED	90	3500K	500 LM/FT DOWN 350 LM/FT UP	0-10V	120	40	44	NOMINAL 3.5" W X 3.5" TALL X 4' LONG CONTINUOUS LINEAR CONSTRUCTED IN FULLY ALUMINUM HOUSING. DIRECT/INDIRECT DISTRIBUTION. SATIN ICE DIFFUSE FLUSH LENS FOR DIRECT OPTICS WITH BATWING DISTRIBUTION FOR INDIRECT OPTICS.10' FIELD CUTTABLE BLACK MOUNTING CORD, BLACK FINISH.	
PL2A.12	STARTEK	BEAM DI SERIES BEAMDI-S12-500-350-SD-BW-35K-90-PW-ACW10-U-1C	REFER TO TYPE PL2A.4	LED	90	3500K	500 LM/FT DOWN 350 LM/FT UP	0-10V	120	120	132	SIMILAR TO TYPE PL2A.4 EXCEPT 12' IN LENGTH.	
PL2A.16	STARTEK	BEAM DI SERIES BEAMDI-S16-500-350-SD-BW-35K-90-PW-ACW10-U-1C	REFER TO TYPE PL2A.4	LED	90	3500K	500 LM/FT DOWN 350 LM/FT UP	0-10V	120	160	176	SIMILAR TO TYPE PL2A.4 EXCEPT 16' IN LENGTH.	
PL2B.8	STARTEK	BEAM DI SERIES BEAMDI-S8-1000-350-SD-BW-35K-90-PW-ACW10-U-1C	REFER TO TYPE PL2A.4	LED	90	3500K	1000 LM/FT DOWN 350 LM/FT UP	0-10V	120	120	132	SIMILAR TO TYPE PL2A.4 EXCEPT 8' IN LENGTH AND WITH HIGHER LUMEN OUTPUT.	
PL2B.16	STARTEK	BEAM DI SERIES BEAMDI-S16-1000-350-SD-BW-35K-90-PW-ACW10-U-1C	REFER TO TYPE PL2A.4	LED	90	3500K	1000 LM/FT DOWN 350 LM/FT UP	0-10V	120	240	264	SIMILAR TO TYPE PL2B.8 EXCEPT 16' IN LENGTH.	
PL2B.24	STARTEK	BEAM DI SERIES BEAMDI-S24-1000-350-SD-BW-35K-90-PW-ACW10-U-1C	REFER TO TYPE PL2A.4	LED	90	3500K	1000 LM/FT DOWN 350 LM/FT UP	0-10V	120	360	396	SIMILAR TO TYPE PL2B.8 EXCEPT 24' IN LENGTH.	
SL1.8	STARTEK	BEAM D SERIES BEAMD-S8-500-SD-40K-80-PW-U-1C	HEW MX4D SERIES LUX EOS 4.0 SERIES AXIS WET BEAM 4 SERIES LUMENWERX VIA 4 SEAL SERIES ALW LITEPLANE 3.5 SERIES	LED	80	4000K	500 LM/FT	0-10V	120	64	71	NOMINAL 3.5" W X 3.5" TALL X 8' LONG CONTINUOUS LINEAR CONSTRUCTED IN FULLY EXTRUDED ALUMINUM. DIRECT DISTRIBUTION WITH SATIN ICE DIFFUSE LENS. END CONDUIT FEED FOR SURFACE MOUNT APPLICATIONS. BLACK FINISH.	
SWE	LITHONIA	WPX SERIES WPX2LED-40K-MVOLT-E14WC-DNAXD	-	LED	70	4000K	6000 LM	N/A	120	47	52	SIMILAR TO TYPE SW EXCEPT WITH 14W EMERGENCY BATTERY BACKUP.	1
X1	SURE-LITES	EUX SERIES EUX7RSD	LITHONIA COLUMBIA SIGNIFY	LED	N/A	N/A	N/A	N/A	<varies>	5	5	UNIVERSALLY MOUNTED EDGE-LIT EXIT SIGN. RED LETTERING. SELF-DIAGNOSTICS.	

LIGHT FIXTURE SCHEDULE NOTES:

1. BASIS-OF-DESIGN FIXTURE IS SPECIFIED TO MATCH EXISTING FIXTURES FOR RE-USE. ANY SUBSTITUTIONS SHALL BE DIRECTED TO ENGINEER FOR APPROVAL.

LIGHT FIXTURE SCHEDULE SUPPLEMENTAL SPECIFICATIONS:

1. ANY PROPRIETARY, SOLE-SOURCED LIGHT FIXTURE LISTED IN THE LIGHT FIXTURE SCHEDULE SHALL BE UNIT PRICED ONLY. NO PACKAGING OR LOT PRICING OF THESE LIGHT FIXTURES SHALL BE ALLOWED. UNIT PRICES SHALL BE CLEARLY IDENTIFIED ON THE BID FORM.
2. LIGHTING CONTROLS PRICING, INCLUDING BUT NOT LIMITED TO THOSE REFERENCED IN ELECTRICAL SPECIFICATIONS, 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.
3. CATALOG NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND CATALOG NUMBERS ONLY. FIRST READ THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS IN CONJUNCTION WITH THE CATALOG NUMBER TO DETERMINE THE MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.
4. COORDINATE LIGHT FIXTURE MOUNTING HARDWARE AND TRIMS NEEDED TO SUIT CEILING CONDITIONS. LIGHT FIXTURES NEAR OR IN CONTACT WITH INSULATION SHALL COMPLY WITH CODE. MAINTAIN 3" MINIMUM WORKING CLEARANCE BETWEEN NON-IC RATED LIGHT FIXTURE HOUSINGS AND INSULATION ON ALL ADJACENT DUCTWORK, PIPING, WALLS, AND CEILINGS.
5. ALL LIGHT FIXTURES AND RELATED COMPONENTS SHALL BE PROVIDED BY THE CONTRACTOR, UNLESS NOTED OTHERWISE.
6. THE PARTY SUPPLYING THE LIGHT FIXTURES IS RESPONSIBLE FOR SUPPLYING THE PROPER QUANTITY OF LIGHT FIXTURES.

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Lee's Summit, Missouri
11/23/2022

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PROFESSIONAL ENGINEER

09/09/2022
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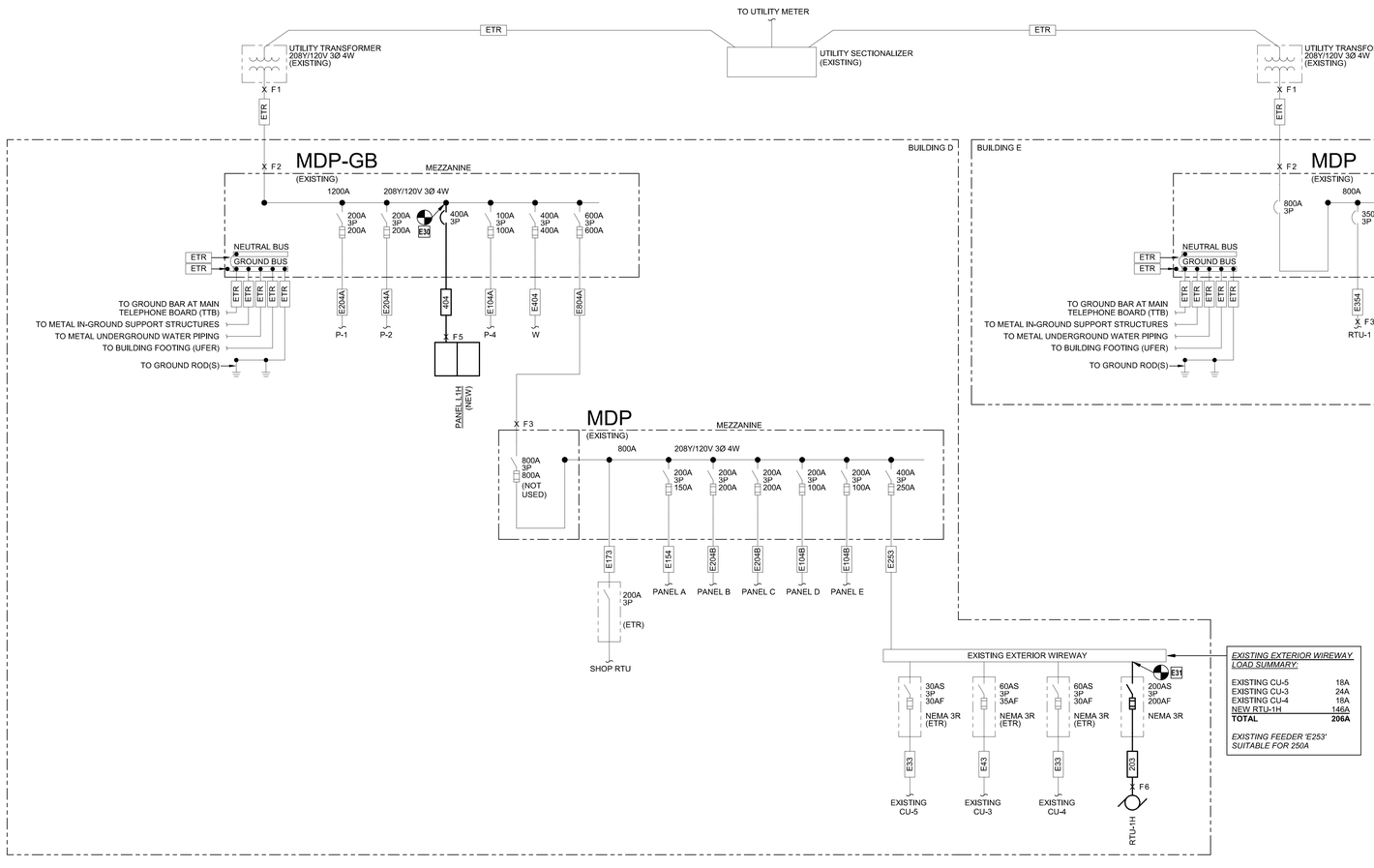
LICENSE # PE-2019007648

LSHS - LIGHT FIXTURE SCHEDULE

E700-C

DOUGLAS M. EVERHART



② ELECTRICAL PARTIAL ONE-LINE DIAGRAM - LSHS BUILDINGS D&E
NTS

☐ ELECTRICAL PLAN NOTES:

E30 REPLACE EXISTING 100A FUSED SWITCH WITH NEW SIEMENS 400A/3P CIRCUIT BREAKER. REFER TO SPECIFICATIONS FOR CIRCUIT BREAKER TYPE. PROVIDE NEW FEED AS INDICATED FOR NEW PANELBOARD L1H.

E31 TAP OFF EXISTING WIREWAY FEEDING CONDENSING UNITS ON WEST SIDE OF BUILDING D. FEED RTU-1H WITH EXISTING 250A FEED. VERIFY EXISTING 250A FEED IS IN GOOD WORKING CONDITION. NOTIFY ENGINEER OF ANY DISCREPANCIES.

FEEDER SCHEDULE:

SIZES ARE BASED ON COPPER (CU) THHN/THWN-2 INSULATION, UNO. ALL CONDUCTOR SIZES ARE BASED ON 75 DEG C RATED TERMINATIONS, UNO. CONDUIT SIZES SHOWN ARE APPROPRIATE FOR SCHEDULE 40 PVC, EMT, GRS, IMC AND RMC; ADJUST SIZE AS NEEDED FOR OTHER RACEWAY TYPES. FOR ANY OTHER CONDITIONS MODIFY SIZES PER CODE. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

FEEDER TAG	FEEDER DESCRIPTION
203	(3)#3/0, (1)#6 G, 2" C
404	(2) 2" C, EACH W/ (4)#3/0, (1)#3 G
E33	EXISTING (3)#10, (1)#10 G, 1/2" C
E43	EXISTING (3)#8, (1)#10 G, 3/4" C
E104	EXISTING (4)#3, (1)#8 G, 1-1/4" C
E104A	EXISTING (4)#3, (1)#8 G, 1-1/4" C
E104B	EXISTING (4)#3, (1)#8 G, 1-1/2" C
E154	EXISTING (4)#1/0, (1)#6 G, 2" C
E173	EXISTING (3)#2/0, (1)#6 G, 1-1/2" C
E204A	EXISTING (4)#3/0, (1)#6 G, 2" C
E204B	EXISTING (4)#3/0, (1)#6 G, 2-1/2" C
E224	EXISTING (4)#4/0, (1)#4 G, 2" C
E253	EXISTING (3)-250 kcmil, (1)#4 G, 2-1/2" C
E304	EXISTING (4)-350 kcmil, (1)#4 G, 3" C
E354	EXISTING (4)-500 kcmil, (1)#3 G, 3-1/2" C
E404	EXISTING (2) 2" C, EACH W/ (4)#3/0, (1)#3 G
E804A	EXISTING (2) 3-1/2" C, EACH W/ (4)-500 kcmil, (1)#1/0 G
ETR	UNKNOWN FEEDER - EXISTING TO REMAIN

ONE-LINE DIAGRAM GENERAL NOTES:

1. THE INFORMATION SHOWN IN THE SHORT-CIRCUIT AND VOLTAGE DROP CALCULATIONS SCHEDULE IS SHOWN FOR CALCULATION PURPOSES ONLY. CONTRACTOR SHALL NOT USE THE CONDUIT TYPES, CONDUCTOR TYPES, SIZES, QUANTITIES OR LENGTHS FOR TAKEOFFS OR BIDDING PURPOSES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN THIS SCHEDULE AND OTHER PORTIONS OF THE CONSTRUCTION DOCUMENTS. CONTRACTOR SHALL NOTIFY ENGINEER OF AS-BUILT CONDITIONS THAT CONSTITUTE A CHANGE FROM WHAT IS SHOWN BELOW; THIS INCLUDES CONDUCTOR LENGTHS DIFFERING BY MORE THAN 10%.
2. REFER TO THE SHORT-CIRCUIT AND VOLTAGE DROP CALCULATIONS TABLE ON SHEET E801-C. AVAILABLE FAULT CURRENT INFORMATION IS LISTED UNDER THE "FAULT CURRENT" COLUMN. VOLTAGE DROP VALUES ARE LISTED UNDER THE "CUMULATIVE VOLTAGE DROP" COLUMN. THE AIC/SCCR RATING OF THE EQUIPMENT SHALL NOT BE LESS THAN THE AVAILABLE 3-PHASE SYMMETRICAL FAULT CURRENT. ALL SERIES RATED EQUIPMENT SHALL BE PROPERLY LISTED AND LABELED PER CODE.
3. CIRCUITRY SIZES ARE BASED ON COPPER (CU) THHN/THWN-2 INSULATION, UNLESS NOTED OTHERWISE. CONDUIT SIZES SHOWN ARE APPROPRIATE FOR SCHEDULE 40 PVC, EMT, GRS, IMC AND RMC; ADJUST SIZE AS NEEDED FOR OTHER RACEWAY TYPES. ALL CONDUCTOR SIZES ARE BASED ON 75 DEG C RATED TERMINATIONS, UNLESS NOTED OTHERWISE. FOR ANY OTHER CONDITIONS MODIFY SIZES PER CODE. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
4. INSTALL FEEDERS OVERHEAD AS HIGH AS PRACTICABLE AND ORTHOGONALLY ALONG BUILDING STRUCTURE, UNLESS NOTED OTHERWISE. COORDINATE FINAL ROUTING WITH OTHER TRADES.
5. PROVIDE A PERMANENT LABEL ON FRONT OF EQUIPMENT ENCLOSURE; REFER TO SPECIFICATIONS FOR LABEL REQUIREMENTS. LABEL SHALL READ AS FOLLOWS (INCLUDE RESPECTIVE NAMES IN BLANKS):

   SERVICE EQUIPMENT LABEL:

   EXAMPLE:
   208Y/120V, 60HZ
   800A
   SCCR = 65,000A
   MAX AVAILABLE FAULT CURRENT = 58,815A
   CALCULATED: 01/01/2018

   PANELBOARD/SWITCHBOARD LABEL:
   LINE 1: PANELBOARD "_____" SUPPLIED BY UPSTREAM
   LINE 2: PANELBOARD/SWITCHBOARD "_____"
   LINE 3: LOCATED IN "_____"
   LINE 4: PANELBOARD "_____" SUPPLIES DOWNSTREAM
   LINE 5: PANELBOARD(S) "_____"

ELECTRICAL UTILITY CONTACT NOTE:

UTILITY COMPANY: EVERGY
UTILITY CONTACT: PHILLIP INGRAM
PHONE: 816-347-4339
EMAIL: PHILLIP.INGRAM@EVERGY.COM

FAULT CURRENT GENERAL NOTE (UTILITY VALUE):

THE MAXIMUM AVAILABLE 3-PHASE SYMMETRICAL FAULT CURRENT VALUE AT THE UTILITY TRANSFORMER SECONDARY/POINT OF SERVICE COULD NOT BE DETERMINED AT THE TIME OF THIS SUBMITTAL. THE ESTIMATED WORST CASE VALUE OF 23,530A IS BASED ON AN INFINITE BUS CALCULATION AT THE UTILITY TRANSFORMER. CONTRACTOR SHALL VERIFY ACTUAL AVAILABLE FAULT CURRENT VALUE WITH UTILITY PRIOR TO BEGINNING CONSTRUCTION. NOTIFY ENGINEER IF ACTUAL VALUE EXCEEDS ESTIMATED CALCULATED VALUE. ESTIMATED DESIGN VALUE IS BASED ON THE FOLLOWING:

UTILITY TRANSFORMER SECONDARY VOLTAGE: 208V
UTILITY TRANSFORMER SIZE: 225 KVA, 3PH 4W

OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDY GENERAL NOTE:

CONTRACTOR SHALL PROVIDE AN OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDY TO DETERMINE THE CORRECT SETTINGS FOR THE ADJUSTABLE TRIP CIRCUIT BREAKERS TO DOCUMENT ARC-FLASH HAZARDS. PROVIDE ALL NECESSARY AS-BUILT INFORMATION REQUIRED FOR COMPLETION OF THE STUDY TO THE ENGINEER DOING THE STUDY. PROVIDE SUBMITTALS INDICATED WITHIN THE SPECIFICATIONS TO OWNER AND ARCHITECT/ENGINEER TO CONFIRM STUDY HAS BEEN COMPLETED. CONTRACTOR SHALL INCLUDE THE COST FOR THIS WORK IN THEIR BID. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

ONE-LINE DIAGRAM GENERAL NOTES:

1. COORDINATE WORK WITH ARCHITECTURAL PHASING DRAWINGS TO PROPERLY STAGE TRANSITION TO PROVIDE POWER TO EXISTING, NEW AND TEMPORARY LOADS. MONITOR LOADS ON DISTRIBUTION SYSTEM TO MAKE SURE SHIFTING OF LOADS DOES NOT OVERLOAD ELECTRICAL EQUIPMENT.
2. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE EXISTING AIC/SCCR RATING OF EACH PANELBOARD/SWITCHBOARD. ALL NEW AND EXISTING OVER-CURRENT PROTECTION DEVICES (CIRCUIT BREAKERS AND FUSES) MUST HAVE AN AIC/SCCR RATING EXCEEDING THE AVAILABLE FAULT CURRENT AT THAT POINT IN THE SYSTEM. NOTIFY THE OWNER AND THE ENGINEER IF THE EXISTING EQUIPMENT DOES NOT COMPLY WITH THIS REQUIREMENT.
3. VERIFY THE INTEGRITY OF THE EXISTING GROUNDING ELECTRODE SYSTEM AND THAT THE NEUTRAL AND GROUND ARE PROPERLY BONDED TOGETHER AT THE POINT OF SERVICE ENTRANCE. NOTIFY THE LANDLORD, OWNER AND THE ENGINEER OF ANY EXISTING DEFICIENCIES.

ONE-LINE DIAGRAM SUPPLEMENTAL SPECIFICATIONS:

1. GROUNDING ELECTRODE SYSTEM SHALL BE PER LOCAL REQUIREMENTS AND SHALL NOT BE LESS STRINGENT THAN THAT SPECIFIED IN THE CONSTRUCTION DOCUMENTS.
2. PROVIDE PROPERLY SIZED LUGS FOR ALL EQUIPMENT. CIRCUIT BREAKERS, AND OTHER ELECTRICAL DEVICES TO ACCOMMODATE INSTALLED CONDUCTORS. A LARGER FRAME, OVERSIZED LUGS OR NON-STANDARD PRODUCT MAY BE REQUIRED IN SOME INSTANCES. UTILIZE PIN ADAPTERS ONLY IF NECESSARY AND ONLY AS ALLOWED BY MANUFACTURER AND AHJ.
3. PROVIDE ANY AVAILABLE SPACE IN SWITCHBOARDS/PANELBOARDS WITH BUSSING.
4. PROVIDE TYPED FINAL CIRCUIT DIRECTORY FOR ALL PANELBOARDS TO REFLECT ACTUAL AS-BUILT CONDITIONS. COORDINATE FINAL ROOM NAMES, NUMBERS AND DESCRIPTIONS WITH OWNER PRIOR TO COMPLETION. CIRCUIT DESCRIPTIONS SHALL BE PER CODE AND SHALL BE DISTINGUISHABLE FROM ALL OTHERS.

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EXPIRES 12/31/2022

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As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
11/23/2022

STATE OF MISSOURI
DOUGLAS M. EVERHART
NUMBER PE-2019007648
PROFESSIONAL ENGINEER

09/09/2022
DOUGLAS M. EVERHART
LICENSE # PE-2019007648

LSHS - ELECTRICAL ONE-LINE DIAGRAM

E800-C

DOUGLAS M. EVERHART

Short-Circuit and Voltage Drop Calculations (BUILDING D)

Version 2.12

Distances are for calculation purposes only and shall not be used for contractor takeoffs nor bidding - Contractor shall notify Engineer of any field condition that results in a change of 10% or greater circuit distance

The following calculations are based on the "Point-by-Point" method where:
ISC (2) = ISC(1) x M(1) M= 1/(1+f)
ISC (1) = short circuit current at fault point 1
ISC (2) = short circuit current at fault point 2

Feeder: f (3Ø) = 1.732 x L x Isc / C x E
Feeder: f (1Ø)= 2 x L x Isc / C x E

XFMR: f (3Ø) = IP(sca)x Vp x 1.73 x %Z / 100,000 x KVA
XFMR: f (1Ø)= IP(sca)x Vp x %Z / 100,000 x KVA

IS(sca)= Vp x M x IP(sca) / Vs

VOLTAGE DROP (3Ø):
%VD = ((R x cos(arccos(pf)) + X x sin (arccos(pf))) x L/# x I x 1.73) / E
VOLTAGE DROP (1Ø):
%VD = ((R x cos(arccos(pf)) + X x sin(arccos(pf))) x 2 x L/# x I) / E

E = Line to line volts
IP = Primary short circuit current
Vp = Primary voltage
IS= Secondary short circuit current
Vs= Secondary voltage
L = Length of circuit
C = "C" Factor from Bussman table where "C" = 1 / impedance per linear foot
Feeder Types: NM - Non Magnetic Conduit, M - Magnetic Conduit, FB - Feeder Busway, PB - Plug-in Busway, TX - Transformer

%VD CUM = Cumulative Voltage Drop from Fault Point 1 to Fault Point #
R = resistance in ohms per LF
X = reactances in ohms per LF

System Voltage: 208Y/120V - 3 phase

Date of Calculations: 08/29/2022

Fault Point (F#)	Bus/Feeder Description	Source (Fault Point)	Phase	Source Isc (amps)	Feeder: Conduit Type/ TX	Feeder: Material	Feeder: Quantity of Parallel Sets and Bus/ Phase & Neutral Size	Conductor 'C' Value	Busway 'C' Value	L-L Voltage (E)	Circuit Length (L)	Load Power Factor (pf)	Circuit Load (Amperage)	Conductor: Resistance (R)	Conductor: Reactance (X)	Conductor: Arccos (pf) (Radians)	Transformer: Type	Transformer: Degree Rise	Transformer: kVA	Transformer: New Xfmr Z	Transformer: Existing Xfmr Z	Transformer: Secondary Voltage	Transformer: Tap Setting	f	M	Fault Current (amps)	Voltage Drop (%VD)	Cumulative Voltage Drop (%VD)	Fault Point (F#)
1	Utility Service Point			23,530 at the secondary of the utility transformer																									1
	Motor Contribution			480 The connected full load motor amps (includes compressors) on the system																				Source Isc + 6X Motor Contribution =		26,410			
2	MDP-GB	1	3	26,410	M	CU	4 Set(s) of 350 kcmil	19704	--	208	80	0.9	900	0.000039	0.000050	0.451027								0.223	0.82	21,590	-0.85%	-0.85%	2
3	MDP	2	3	21,590	M	CU	4 Set(s) of 350 kcmil	19704	--	208	15	0.9	500	0.000039	0.000050	0.451027								0.034	0.97	20,876	-0.09%	-0.94%	3
5	L1H	3	3	20,876	M	CU	2 Set(s) of 3/0 AWG	12844	--	208	35	0.9	320	0.000079	0.000052	0.451027								0.237	0.81	16,878	-0.44%	-1.38%	5
6	RTU-1H	3	3	20,876	M	CU	1 Set(s) of 250 kcmil	16483	--	208	100	0.85	146	0.000054	0.000052	0.554811								1.055	0.49	10,160	-0.89%	-1.83%	6

BUILDING LOAD SUMMARY (MDP-GB)

(BUILDING D)

BUILDING OCCUPANCY TYPE: SCHOOL
BUILDING SQUARE FOOTAGE: 14400
SERVICE DESCRIPTION: 208Y/120 V

LOAD TYPE	CONNECTED LOAD KVA	DEMAND FACTOR	NEC DEMAND KVA
EXISTING PEAK UTILITY (@ 0.9 pf)	222.22	125%	277.78
COOLING (C)	0.00	0%	0.00
HEATING (H)	0.00	100%	0.00
LIGHTING (L) (PER NEC-220)	3.70	125%	4.63
RECEPTACLES (R)	10.44	98%	10.22
MOTORS (M)	27.96	100%	27.96
SUPPLEMENTAL HEAT (U)	0.00	100%	0.00
MISC EQUIP (Z)	2.44	100%	2.44
REFRIGERATION (F)	0.00	100%	0.00
SIGNAGE (S)	0.00	125%	0.00
KITCHEN (K)	0.00	100%	0.00
LARGEST MOTOR	14.92	125%	18.64
SHOW WINDOW (W)	0.00	125%	0.00
TRACK LIGHTING	0.00	100%	0.00
EXISTING LOAD TO BE DELETED	55.00	100%	55.00
ELEVATOR (V)	0.00	100%	0.00
TOTAL LOAD	226.68	KVA	286.67
TOTAL AMPACITY	629.21	AMPS	795.73
SERVICE AMPACITY		AMPS	1200.00
SPARE CAPACITY		AMPS	404.27
*PER UTILITY COMPANY BILLING PEAK DEMAND OF:		200.00 KW	

Short-Circuit and Voltage Drop Calculations (BUILDING E)

Version 2.12

Distances are for calculation purposes only and shall not be used for contractor takeoffs nor bidding - Contractor shall notify Engineer of any field condition that results in a change of 10% or greater circuit distance

The following calculations are based on the "Point-by-Point" method where:
ISC (2) = ISC(1) x M(1) M= 1/(1+f)
ISC (1) = short circuit current at fault point 1
ISC (2) = short circuit current at fault point 2

Feeder: f (3Ø) = 1.732 x L x Isc / C x E
Feeder: f (1Ø)= 2 x L x Isc / C x E

XFMR: f (3Ø) = IP(sca)x Vp x 1.73 x %Z / 100,000 x KVA
XFMR: f (1Ø)= IP(sca)x Vp x %Z / 100,000 x KVA

IS(sca)= Vp x M x IP(sca) / Vs

VOLTAGE DROP (3Ø):
%VD = ((R x cos(arccos(pf)) + X x sin (arccos(pf))) x L/# x I x 1.73) / E
VOLTAGE DROP (1Ø):
%VD = ((R x cos(arccos(pf)) + X x sin(arccos(pf))) x 2 x L/# x I) / E

E = Line to line volts
IP = Primary short circuit current
Vp = Primary voltage
IS= Secondary short circuit current
Vs= Secondary voltage
L = Length of circuit
C = "C" Factor from Bussman table where "C" = 1 / impedance per linear foot.
Feeder Types: NM - Non Magnetic Conduit, M - Magnetic Conduit, FB - Feeder Busway, PB - Plug-in Busway, TX - Transformer

%VD CUM = Cumulative Voltage Drop from Fault Point 1 to Fault Point #
R = resistance in ohms per LF
X = reactances in ohms per LF

System Voltage: 208Y/120V - 3 phase

Date of Calculations: 08/22/2022

Fault Point (F#)	Bus/Feeder Description	Source (Fault Point)	Phase	Source Isc (amps)	Feeder: Conduit Type/ TX	Feeder: Material	Feeder: Quantity of Parallel Sets and Bus/ Phase & Neutral Size	Conductor 'C' Value	Busway 'C' Value	L-L Voltage (E)	Circuit Length (L)	Load Power Factor (pf)	Circuit Load (Amperage)	Conductor: Resistance (R)	Conductor: Reactance (X)	Conductor: Arccos (pf) (Radians)	Transformer: Type	Transformer: Degree Rise	Transformer: kVA	Transformer: New Xfmr Z	Transformer: Existing Xfmr Z	Transformer: Secondary Voltage	Transformer: Tap Setting	f	M	Fault Current (amps)	Voltage Drop (%VD)	Cumulative Voltage Drop (%VD)	Fault Point (F#)
1	Utility Service Point			15,898 at the secondary of the utility transformer																									1
	Motor Contribution			320 The connected full load motor amps (includes compressors) on the system																				Source Isc + 6X Motor Contribution =		17,818			
2	MDP	1	3	17,818	M	CU	3 Set(s) of 300 kcmil	18177	--	208	50	0.9	500	0.000045	0.000051	0.451027								0.136	0.88	15,684	-0.44%	-0.44%	2
3	RTU-1	2	3	15,684	M	CU	1 Set(s) of 500 kcmil	22185	--	208	150	0.85	310	0.000029	0.000048	0.554811								0.883	0.53	8,329	-1.93%	-2.37%	3
4	LP-1	2	3	15,684	M	CU	1 Set(s) of 350 kcmil	19704	--	208	15	0.9	240	0.000039	0.000050	0.451027								0.099	0.91	14,266	-0.17%	-0.61%	4
5	LP-2	2	3	15,684	M	CU	1 Set(s) of 4/0 AWG	15082	--	208	13	0.9	180	0.000063	0.000051	0.451027								0.113	0.90	14,097	-0.15%	-0.59%	5
6	LP-3	2	3	15,684	M	CU	1 Set(s) of 3 AWG	4774	--	208	10	0.9	80	0.000250	0.000059	0.451027								0.274	0.79	12,315	-0.17%	-0.60%	6

BUILDING LOAD SUMMARY (MDP)

(BUILDING E)

BUILDING OCCUPANCY TYPE: SCHOOL
BUILDING SQUARE FOOTAGE: 14400
SERVICE DESCRIPTION: 208Y/120 V

LOAD TYPE	CONNECTED LOAD KVA	DEMAND FACTOR	NEC DEMAND KVA
EXISTING PEAK UTILITY (@ 0.9 pf)	111.11	125%	138.89
COOLING (C)	31.02	100%	31.02
HEATING (H)	0.00	0%	0.00
LIGHTING (L) (PER NEC-220)	0.48	125%	0.60
RECEPTACLES (R)	11.34	94%	10.67
MOTORS (M)	22.72	100%	22.72
SUPPLEMENTAL HEAT (U)	0.00	100%	0.00
MISC EQUIP (Z)	3.05	100%	3.05
REFRIGERATION (F)	0.00	100%	0.00
SIGNAGE (S)	0.00	125%	0.00
KITCHEN (K)	0.00	100%	0.00
LARGEST MOTOR	20.79	125%	25.98
SHOW WINDOW (W)	0.00	125%	0.00
TRACK LIGHTING	0.00	100%	0.00
EXISTING LOAD TO BE DELETED	18.00	100%	18.00
ELEVATOR (V)	0.00	100%	0.00
TOTAL LOAD	182.50	KVA	214.92
TOTAL AMPACITY	506.57	AMPS	596.57
SERVICE AMPACITY		AMPS	800.00
SPARE CAPACITY		AMPS	203.43
*PER UTILITY COMPANY BILLING PEAK DEMAND OF:		100.00 KW	

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LICENSE # PE-2019007648

LSHS - ELECTRICAL CALCULATIONS

E801-C

FIRE ALARM SCOPE NOTES:

1. FIRE ALARM SCOPE INCLUDES THE MODIFICATION OF THE EXISTING FIRE ALARM SYSTEM.
2. MODIFY EXISTING HORN/STROBE NOTIFICATION IN THE EXISTING BUILDINGS D & E FOR THE MODFIED BUILDING LAYOUT IN ACCORDANCE WITH NFPA 72 AND ANY LOCAL LAWS.

FIRE ALARM GENERAL NOTES:

1. PRIOR TO SUBMITTING BID, VISIT THE JOB SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS OF THE PROJECT. REVIEW THE GENERAL NOTES, SPECIFICATIONS AND OTHER DRAWINGS FOR ADDITIONAL REQUIREMENTS WHICH MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY ARCHITECT, ENGINEER AND/OR OWNER OF CONFLICTS OR DISCREPANCIES PRIOR TO SUBMISSION OF BID.
2. SYSTEM DESIGN, INSTALLATION AND MATERIALS SHALL BE IN ACCORDANCE WITH APPLICABLE NFPA STANDARDS. SYSTEM SHALL ALSO MEET ALL APPLICABLE BUILDING CODES, FIRE CODES AND THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION AND INSURANCE CARRIER. VERIFY REQUIREMENTS PRIOR TO BID SUBMITTAL.
3. INFORMATION ON CONTRACT DOCUMENTS IS GENERAL INFORMATION AND FOR BID PURPOSES ONLY. CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE FINAL SYSTEM DESIGN AND LAYOUT OF ALL COMPONENTS, COORDINATION WITH ALL OTHER TRADES, AND SYSTEM CALCULATIONS REQUIRED FOR APPROVAL BY THE AUTHORITY HAVING JURISDICTION, ENGINEER, AND OWNER'S INSURER.
4. THE CONTRACTOR SHALL FOLLOW THE ENGINEER OF RECORD'S SYSTEM DESIGN AND LAYOUT OF ALL COMPONENTS EXCEPT WHERE MODIFICATION TO THE DESIGN IS NECESSARY. MODIFICATIONS SHALL BE REFLECTED IN THE CONTRACTOR'S SHOP DRAWINGS AND CALCULATIONS.
5. DEVIATIONS FROM ENGINEER'S DESIGN WILL NOT BE CONSIDERED UNLESS A FORMALLY SUBMITTED RFI IS RECEIVED AND APPROVED.
6. THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT AND LABOR REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM AS INDICATED IN THE DRAWINGS AND SPECIFICATIONS.
7. WHERE EXISTING SYSTEMS ARE PRESENT, CONTRACTOR SHALL MODIFY, RELOCATE AND/OR PROVIDE ADDITIONAL EQUIPMENT AS REQUIRED FOR SCOPE OF WORK AS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM. COORDINATE WITH WALLS, CEILINGS, LIGHTS, DIFFUSERS, STRUCTURE, OBSTRUCTIONS, ETC. IN AREAS AFFECTED BY SCOPE OF WORK. NEW EQUIPMENT SHALL BE COMPATIBLE WITH EXISTING SYSTEMS. CONTRACTOR SHALL REMOVE ALL ABANDONED EQUIPMENT. COORDINATE SYSTEM MODIFICATIONS TO MINIMIZE SYSTEM IMPAIRMENT, AND PROVIDE FIRE WATCH AND/OR INTERIM FIRE PROTECTION MEASURES WHERE REQUIRED BY THE AUTHORITY HAVING JURISDICTION, INSURANCE CARRIER OR OWNER.
8. PROVIDE ADDITIONAL MATERIALS AND LABOR REQUIRED DUE TO LACK OF COORDINATION OR TO MEET AUTHORITY HAVING JURISDICTION AND INSURANCE CARRIER REQUIREMENTS AT NO ADDITIONAL COST TO THE OWNER.
9. FORWARD COMPLETED CERTIFICATE OF COMPLETION AND CONTRACTOR MATERIAL TEST CERTIFICATES TO THE OWNER.
10. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

FIRE ALARM GENERAL DEMOLITION NOTES:

1. COORDINATE ALL DEMOLITION WITH WHAT IS SHOWN ON ARCHITECTURAL PLANS. NOTIFY ARCHITECT OF ANY DISCREPANCIES.
2. COORDINATE NEW WORK AND DEMOLITION WITH OTHER DISCIPLINES AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION.
3. PRIOR TO SUBMITTING BID, VISIT THE JOB SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS OF THE PROJECT. REVIEW GENERAL NOTES, SPECIFICATIONS AND OTHER DRAWINGS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY ARCHITECT, ENGINEER OR OWNER, AS DEFINED IN BID DOCUMENTS, OF CONFLICTS OR DISCREPANCIES PRIOR TO SUBMISSION OF BID. ADDITIONAL COMPENSATION WILL NOT BE PAID FOR LACK OF SUCH DETERMINATION, FAMILIARIZATION, AND/OR ALLOWANCE.
4. EXISTING CONDITIONS WERE TAKEN FROM ORIGINAL DRAWINGS AND SITE VISITS AND MAY NOT REFLECT EXACT "AS-BUILT" CONDITIONS. FIELD VERIFY EXISTING CONDITIONS PRIOR TO SUBMITTING FINAL BIDS. COORDINATE NEW WORK AND DEMOLITION WITH OTHER DISCIPLINES AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION.
5. OWNER RETAINS RIGHTS OF SALVAGE FOR EQUIPMENT AND FIXTURES TO BE REMOVED. COORDINATE WITH THE OWNER THE EQUIPMENT AND FIXTURES TO BE SALVAGED AND THE LOCATION FOR STORAGE. AVOID DAMAGE TO EQUIPMENT DURING DEMOLITION WORK AND DURING TRANSPORT TO OWNER'S DESIGNATED STORAGE LOCATION. PROPERLY DISPOSE OF MATERIALS THAT ARE REMOVED AND ARE NOT REQUESTED TO BE SALVAGED BY THE OWNER.
6. EQUIPMENT TO BE REMOVED SHALL BE KEPT FOR REINSTALLATION DURING THE CONSTRUCTION PHASE WHEN POSSIBLE AND/OR INDICATED ON THE DRAWINGS. AVOID DAMAGING EXISTING SURFACES AND EQUIPMENT TO REMAIN FOR NEW INSTALLATION. REPAIR ANY DAMAGE CAUSED DURING WORK AT NO EXTRA COST TO THE OWNER.
7. SEAL PENETRATIONS THROUGH FLOORS, WALLS, CEILINGS AND ROOFS WHERE COMPONENTS ARE REMOVED AND WHERE THE EXISTING PENETRATION IS NOT USED FOR THE NEW INSTALLATION. REPAIR DAMAGED SURFACES TO MATCH ADJACENT AREAS OR AS INDICATED ON THE ARCHITECTURAL DRAWINGS.
8. PERFORM ALL WORK ACCORDING TO THE PHASING SCHEDULE FOR THIS PROJECT. PROVIDE ALL TEMPORARY DESIGN AND/OR CONFIGURATIONS THAT MEET APPLICABLE CODE REQUIREMENTS AS NECESSARY TO CONFORM TO THE REQUIRED CONSTRUCTION PHASING OF THE PROJECT.
9. ONLY THE PORTIONS OF THE BUILDING AFFECTED BY THE SCOPE OF THE PROJECT HAVE BEEN SHOWN. INFORMATION SHOWN AS EXISTING TO REMAIN IS NOT BEING MODIFIED AS A PART OF THIS PROJECT.
10. ALL WORK SHALL BE PERFORMED SO AS TO NOT INTERRUPT SERVICE. THE CONTRACTOR SHALL PROPERLY NOTIFY THE BUILDING OWNER, LANDLORD, THE LEASER AND ADJACENT TENANTS AS APPLICABLE A MINIMUM OF 48 HOURS IN ADVANCE BEFORE PROCEEDING WITH THIS WORK.
11. REMOVE ALL UNUSED AND DEMOLISHED EQUIPMENT AND ASSOCIATED MATERIALS FROM SITE. ABANDONING UNUSED PORTIONS WILL NOT BE ACCEPTABLE.
12. SYSTEM(S) NOT ASSOCIATED WITH THE DEMOLITION SHALL BE LEFT IN SERVICE AS APPLICABLE.
13. INSPECT EXISTING EQUIPMENT TO REMAIN TO VERIFY THAT EQUIPMENT IS OPERATING PROPERLY. NOTIFY OWNER OF DAMAGED AND/OR MALFUNCTIONING COMPONENTS.
14. ALL SYSTEMS TO BE LEFT IN SERVICE PRIOR TO THE END OF EACH WORKDAY.

FIRE PROTECTION SYMBOLS

THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED. V2.02

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	NIC	NOT IN CONTRACT
AFG	ABOVE FINISHED GRADE	OC	ON CENTER
CD	CANDELA	PIV	POST INDICATOR VALVE
DI	DUCTILE IRON	PROVIDE	FURNISH AND INSTALL
ESFR	EARLY SUPPRESSION FAST RESPONSE	PRV	PRESSURE REDUCING VALVE
ETR	EXISTING TO REMAIN	RD	RETURN DUCT
FHC	FIRE HOSE CABINET	REV	REVISION
FP	FIRE PROTECTION	SD	SUPPLY DUCT
GC	CONTRACTOR	SF	SQUARE FEET
GPM	GALLONS PER MINUTE	TYP	TYPICAL
JBU-BOX	JUNCTION BOX	UNO	UNLESS NOTES OTHERWISE
MAX	MAXIMUM	V	VOLT(S)
MIN	MINIMUM	W	WATTS
N/A	NOT APPLICABLE	WP	WEATHERPROOF

ANNOTATION

- (1) FIRE PROTECTION PLAN NOTE CALLOUT
- CONNECTION POINT OF NEW WORK TO EXISTING
- (1 / F1) DETAIL REFERENCE UPPER NUMBER INDICATES DETAIL NUMBER LOWER NUMBER INDICATES SHEET NUMBER
- (1 / F1) SECTION CUT DESIGNATION
- DEDICATED EQUIPMENT ACCESS TILE
- ACCESS PANEL

STANDARD MOUNTING HEIGHTS

AUDIBLE APPLIANCE (TOP OF APPLIANCE)	90"
FIRE ALARM ANNUNCIATOR PANEL (TOP OF DISPLAY)	60"
FIRE ALARM BELL (EXTERIOR) (CENTERLINE)	120"
FIRE ALARM CONTROL PANEL/UNIT (TOP OF DISPLAY)	60"
PULL STATION (TOP OF DEVICE)	48"
VISIBLE APPLIANCE (CENTERLINE)	84"

INSTALL DEVICES AT THE MOUNTING HEIGHTS SHOWN ABOVE UNO IN THE CONSTRUCTION DOCUMENTS. MOUNTING HEIGHTS LISTED ABOVE, OR ELSEWHERE IN THE CONSTRUCTION DOCUMENTS, ARE AFF OR AFG, UNO. ALL DEVICES SHALL BE INSTALLED IN COMPLIANCE WITH CURRENT ADA AND LOCAL REQUIREMENTS.

CALL OUTS

ENLARGED PLAN CALLOUT

NOT IN SCOPE

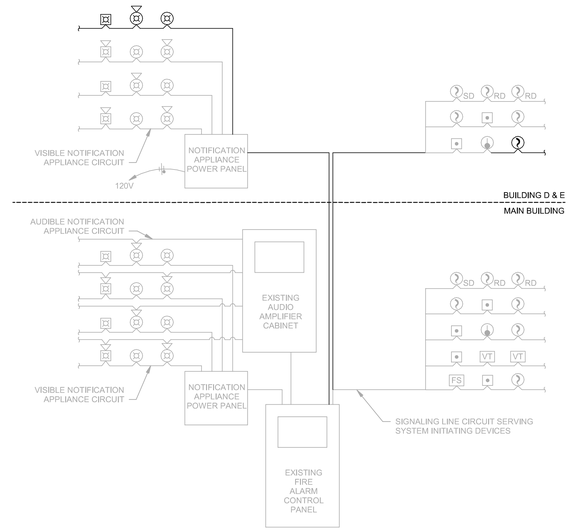
LINETYPE LEGEND

THROUGHOUT THE DRAWINGS DIFFERENT LINETYPES ARE USED IN COMBINATION WITH THE SYMBOLS TO INDICATE THE STATUS OF ITEMS AS EXISTING, TO BE DEMOLISHED, TO BE INCLUDED AS PART OF NEW WORK AND/OR ITEMS WHICH ARE ANTICIPATED TO BE PROVIDED IN THE FUTURE. THE STATUS OF ITEMS USING THESE LINETYPES ARE RELATIVE TO THE VIEW IN WHICH THEY APPEAR. PHASING SHOWN IN DRAWINGS IS NOT INTENDED TO FULLY DESCRIBE ALL NECESSARY CONSTRUCTION PHASING, WHICH IS DETERMINED BY THE CONTRACTOR AS PART OF THEIR RESPONSIBILITIES. ANY SUCH PHASES DESCRIBED IN THE CONSTRUCTION DOCUMENTS ARE GENERAL AND ONLY INTENDED TO INDICATE A BROAD ORDER FOR THE SAKE OF DESCRIBING THE PROJECT. THE FOLLOWING LINETYPES MAY BE USED ON ANY DEVICE, EQUIPMENT, NOTE, LINE, SHAPE, ETC.

EXISTING	NEW
DEMOLISH	FUTURE

FIRE ALARM

- FACP — FIRE ALARM CONTROL PANEL/UNIT
- FACP — RECESSED FIRE ALARM CONTROL PANEL/UNIT
- FAAP — FIRE ALARM ANNUNCIATOR PANEL
- FAAP — RECESSED FIRE ALARM ANNUNCIATOR PANEL
- AMP — AMPLIFIER PANEL
- RPS — REMOTE POWER SUPPLY
- RT — REMOTE TEST STATION WITH INDICATING LIGHT
- RL — REMOTE INDICATING LIGHT
- PS — PRESSURE SWITCH LOW/HIGH
- FS — WATERFLOW ALARM SWITCH
- VT — CONTROL VALVE TAMPER SWITCH
- DH — MAGNETIC DOOR HOLD OPEN DEVICE
- CM — CONTROL MODULE
- MM — MONITOR MODULE
- K — FIRE DEPARTMENT KEY BOX
- PULL STATION
- F — FIREFIGHTER'S PHONE JACK
- HEAT DETECTOR (E INDICATES ELEVATOR RECALL)
- SMOKE DETECTOR (E INDICATES ELEVATOR RECALL)
- SINGLE STATION SMOKE DETECTOR
- PROJECTED BEAM SMOKE DETECTOR
- RD / DD — DUCT MOUNTED SMOKE DETECTOR (SD=SUPPLY/RD=RETURN)
- CO — CARBON MONOXIDE DETECTOR
- AREA OF REFUGE 2-WAY COMMUNICATION SYSTEM
- #W — WALL MOUNTED AUDIBLE NOTIFICATION APPLIANCE #W INDICATES WATTAGE (VOICE EVACUATION SYSTEMS ONLY)
- ## — WALL MOUNTED VISIBLE NOTIFICATION APPLIANCE ## INDICATES CANDELA
- #W / ## — WALL MOUNTED AUDIBLE/VISIBLE NOTIFICATION APPLIANCE ## INDICATES CANDELA #W INDICATES WATTAGE (VOICE EVACUATION SYSTEMS ONLY)
- #W — CEILING MOUNTED AUDIBLE NOTIFICATION APPLIANCE #W INDICATES WATTAGE (VOICE EVACUATION SYSTEMS ONLY)
- ## — CEILING MOUNTED VISIBLE NOTIFICATION APPLIANCE ## INDICATES CANDELA
- #W / ## — CEILING MOUNTED AUDIBLE/VISIBLE NOTIFICATION APPLIANCE ## INDICATES CANDELA #W INDICATES WATTAGE (VOICE EVACUATION SYSTEMS ONLY)
- END OF LINE RESISTOR
- ABORT SWITCH
- BELL



RISER DIAGRAM IS SCHEMATIC IN NATURE. NOT ALL DEVICES ARE SHOWN. REFER TO PLANS FOR EQUIPMENT QUANTITIES AND LOCATIONS.

DUCT DETECTORS MAY HAVE INTEGRAL RELAYS FOR AIR HANDLING UNIT SHUT-DOWN AND FIRE/SMOKE DAMPER CONTROL. WIRING FOR THIS FUNCTION HAS NOT BEEN SHOWN. COORDINATE WITH MECHANICAL SYSTEM INSTALLER.

REFER TO PLANS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.

(1) FIRE ALARM RISER DIAGRAM - ADDRESSABLE SYSTEM (VOICE)
NTS

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LSR7 Robotics, GiC & Phys Education

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LSW: 2600 SW Ward Rd, Lee's Summit MO 64082
LSHS: 400 SE Blue Pkwy, Lee's Summit MO 64063

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EXPIRES 12/31/2022

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As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
11/23/2022

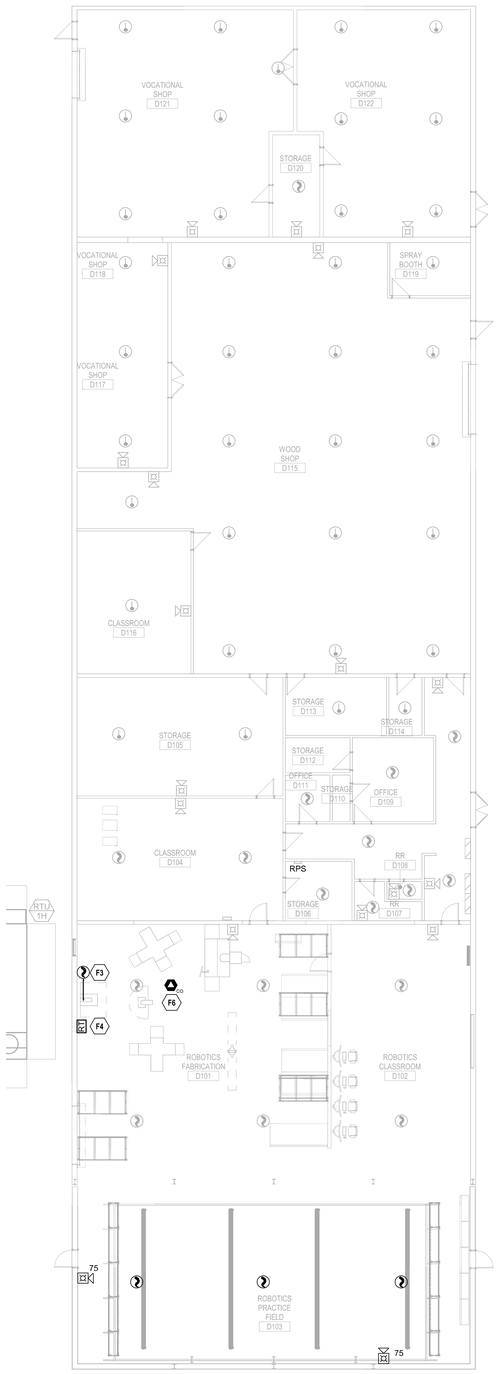
STATE OF MISSOURI · CHRISTOPHER J. CULP · NUMBER PE-2013037646 · PROFESSIONAL ENGINEER

CHRISTOPHER J. CULP
LICENSE # PE-2013037646

09/08/2022

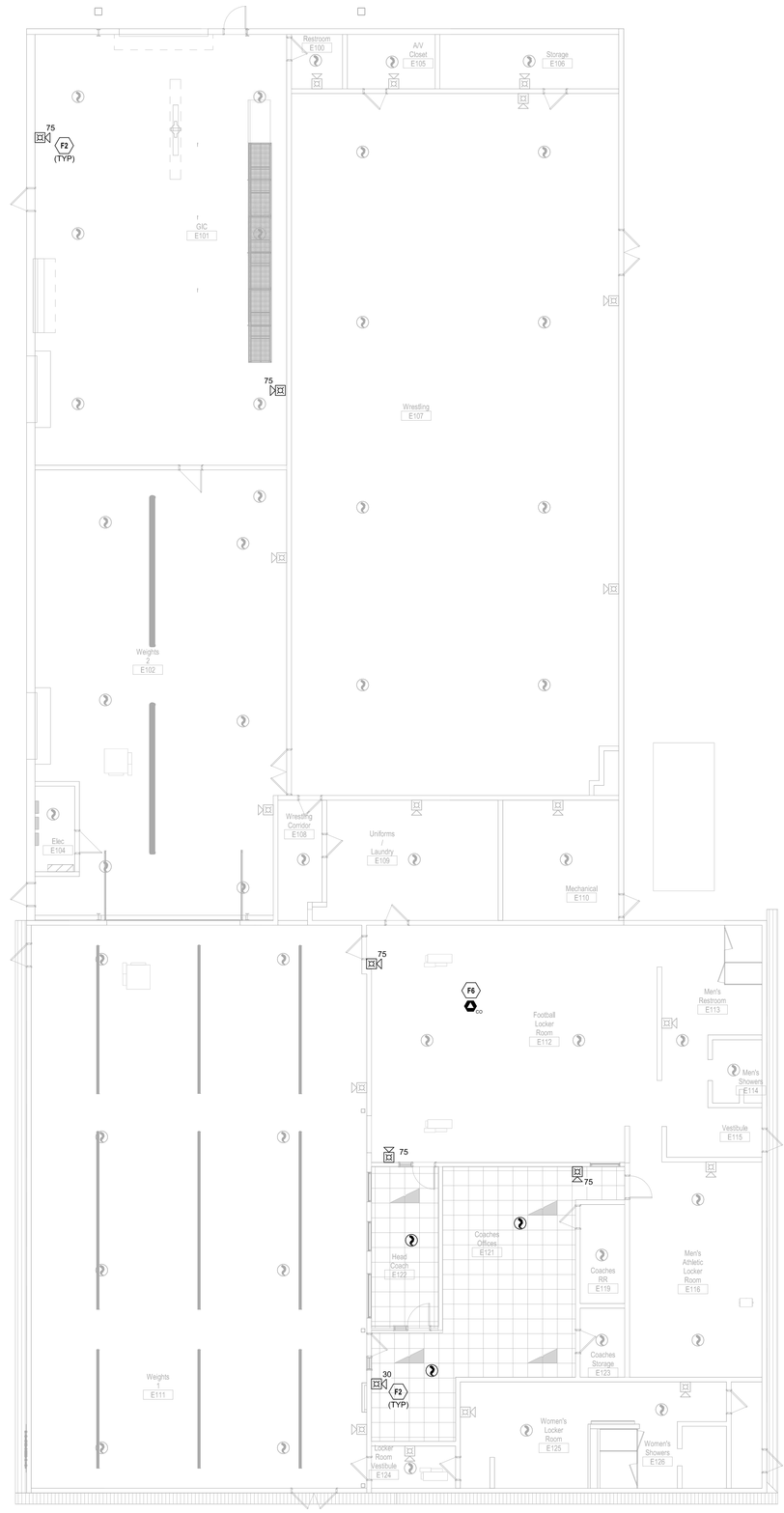
LSHS - FIRE ALARM GENERAL NOTES AND LEGEND

FA000-C



1 FIRE ALARM PLAN - LSHS - BUILDING D
3/32" = 1'-0"

0 4' 8' 12' 16'
SCALE: 3/32"=1'-0"



2 FIRE ALARM PLAN - LSHS - BUILDING E
1/8" = 1'-0"

0 4' 8' 12'
SCALE: 1/8"=1'-0"

FIRE ALARM PLAN NOTES:

F2 ADJUST OR REPLACE APPLIANCE AS NECESSARY TO MEET THE REQUIRED CANDELA RATING REQUIREMENTS PER CODE AND LAYOUT SHOWN.

F3 PROVIDE DUCT MOUNTED SMOKE DETECTOR FOR FAN POWERED MECHANICAL AIR HANDLING EQUIPMENT SHUTDOWN. INSTALL DETECTOR PER MANUFACTURER'S RECOMMENDATIONS. REFER TO MECHANICAL SHEETS FOR EQUIPMENT AND DUCTWORK LAYOUT AND DETAILS.

F4 PROVIDE LOW VOLTAGE WIRING FROM DUCT DETECTOR TO REMOTE TEST STATION. MOUNT REMOTE TEST STATION ON WALL AT 48" AFF.

F6 PROVIDE A CARBON MONOXIDE DETECTOR IN ROOMS CONTAINING FIRST DIFFUSER FROM GAS POWERED AIR HANDLING UNITS. CARBON MONOXIDE DETECTOR SHALL EMIT A LOCAL ALARM TONE UPON DETECTION OF CARBON MONOXIDE.

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LSHS - FIRE ALARM RCP - LEVEL 1 - BUILDING D & E

FA101-C

CHRISTOPHER J. CULP

TECHNOLOGY DEMOLITION PLAN NOTES:

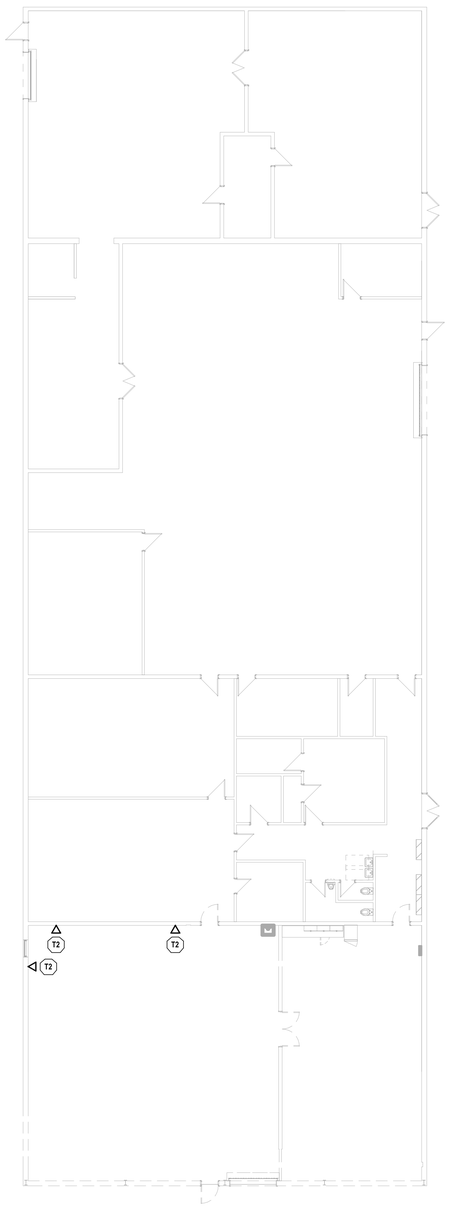
T2 EXISTING DATA OUTLETS TO BE DEMOLISHED. CONTRACTOR TO REMOVE WALL DEVICES AND REMOVE ASSOCIATED CABLING BACK TO THE POINT OF ORIGIN. CABLES LEFT IN PLACE WILL NOT BE ACCEPTED.

T3 EXISTING TV TO REMAIN.

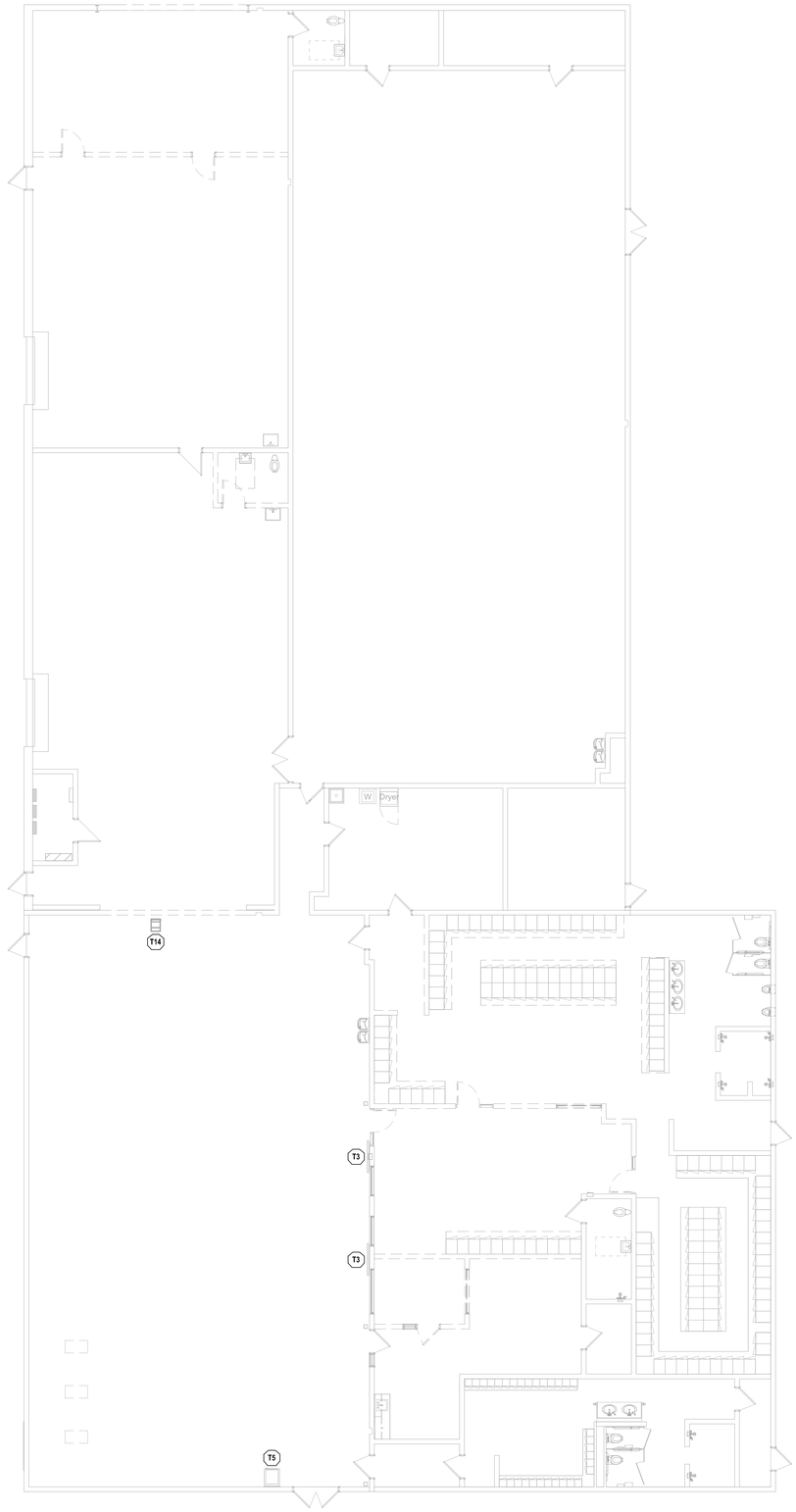
T5 EXISTING AV RACK TO REMAIN.

T14 EXISTING SHORT-THROW PROJECTOR TO REMAIN.

2



1 TECHNOLOGY LEVEL 1 DEMO PLAN - BUILDING D
3/32" = 1'-0"



2 TECHNOLOGY LEVEL 1 DEMO PLAN - BUILDING E
1/8" = 1'-0"

DOUGLAS M. EVERHART

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LSHS - TECHNOLOGY DEMOLITION PLAN - LEVEL 1 - BUILDING D & E

TND101-C

TELECOMMUNICATIONS SYMBOLS

THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED.

V2.00

STANDARD MOUNTING HEIGHTS

TELECOM BACKBOARD (BOTTOM OF BACKBOARD)	4"
LADDER RACK IN TELECOM ROOMS (BOTTOM OF DEVICE)	90"
CABLE TRAY / CONDUIT AFC (BOTTOM OF PATHWAY)	3"(MIN)
LIGHT FIXTURE IN TELECOM ROOMS (BOTTOM OF DEVICE)	108"(MIN)
TELEPHONE WALL OUTLET (CENTERLINE)	48"
DATA WALL OUTLET	SAME AS ADJACENT DEVICE, UNO
TELEVISION OUTLET	REFER TO ARCH DRAWINGS
TMGB/TGB (CENTERLINE)	84"
WALL CLOCK (CENTERLINE)	84"
INTERCOM (CENTERLINE)	48"

USE THE DEFAULT MOUNTING HEIGHTS SHOWN ABOVE UNO IN THE CONSTRUCTION DOCUMENTS. MOUNTING HEIGHTS LISTED ARE ABOVE FINISHED FLOOR (AFF) OR ABOVE FINISHED GRADE (AFG) TO BOTTOM OF OUTLET BOX. ALL DEVICES SHALL BE INSTALLED IN COMPLIANCE WITH CURRENT ADA AND LOCAL REQUIREMENTS.

ABBREVIATIONS

A	AMPERES
ADA	AMERICANS WITH DISABILITIES ACT
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AP	ACCESS POINT
AV	AUDIO-VIDEO
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BBC	BACKBONE BONDING CONDUCTOR
BD	BUILDING DISTRIBUTOR
BDF	BUILDING DISTRIBUTION FRAME
BFC	BELOW FINISHED CEILING
C	CONDUIT
CAT	CATEGORY
CATV	COMMUNITY ANTENNA TELEVISION
CCTV	CLOSED CIRCUIT TELEVISION
CD	CAMPUS DISTRIBUTOR
CMP	COMMUNICATIONS PLENUM JACKET
CMR	COMMUNICATIONS RISER JACKET
DAS	DISTRIBUTED ANTENNA SYSTEM
dB	DECIBELS
DEMO	DEMOLITION
(E)	EXISTING
EC	ELECTRICAL CONTRACTOR
ECIA	ELECTRONIC COMPONENTS INDUSTRY ASSOCIATION
EMI	ELECTROMAGNETIC INTERFERENCE
EMS	ENERGY MANAGEMENT SYSTEM
EMT	ELECTRICAL METALLIC TUBING
ER	EQUIPMENT ROOM
ETR	EXISTING TO REMAIN
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FD	FLOOR DISTRIBUTOR
FMC	FLEXIBLE METAL CONDUIT
FS	FIRE STOP SYSTEM
FLR	FLOOR
F/UTP	SCREEN TWISTED PAIR (SHIELDED)
GC	GENERAL CONTRACTOR
GYP	GYPSUM BOARD
HC	HORIZONTAL CROSS-CONNECT
HCM	HORIZONTAL CABLE MANAGER
HH	HAND HOLE
Hz	HERTZ
IMC	INTERMEDIATE METAL CONDUIT
IP	INTERNET PROTOCOL
ISP	INTERNET SERVICE PROVIDER
ISP	INSIDE PLANT CABLE
JB	JUNCTION BOX
J-BOX	JUNCTION BOX
LAN	LOCAL AREA NETWORK
LCC	LIMITED COMBUSTIBLE CABLE
LEC	LOCAL EXCHANGE CARRIER
LED	LIGHT-EMITTING DIODE
LF	LINEAR FEET
MAN	METROPOLITAN AREA NETWORK
MATV	MASTER ANTENNA TELEVISION
MC	MAIN CROSS-CONNECT
MDF	MAIN DISTRIBUTION FRAME
MFR	MANUFACTURER
MH	MAINTENANCE HOLE
MM	MULTIMODE
MPOE	MAIN POINT OF ENTRANCE
MPOP	MAIN POINT OF PRESENCE
MTD	MOUNTED
N/A	NOT APPLICABLE
NEC	NATIONAL ELECTRICAL CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
nm	NANOMETER
NRTL	NATIONALLY RECOGNIZED TESTING LAB
OC	ON CENTER
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
OSP	OUTSIDE PLANT
PBB	PRIMARY BONDING BUSBAR
PBX	PRIVATE BRANCH EXCHANGE
POE	POWER OVER ETHERNET
PON	PASSIVE OPTICAL NETWORK
POTS	PLAIN OLD TELEPHONE SERVICE
PSTN	PUBLIC SWITCHED TELEPHONE NETWORK
QTY	QUANTITY
RCDD	REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER
RMC	RIGID METAL CONDUIT
RU	RACK UNIT
SBB	SECONDARY BONDING BUSBAR
SCS	STRUCTURED CABLING SYSTEM
SF	SQUARE FEET
SM	SINGLEMODE
SPECS	SPECIFICATIONS
TBB	TELECOMMUNICATIONS BONDING BACKBONE
TBD	TO BE DETERMINED
TIA	TELECOMMUNICATIONS INDUSTRY ASSOCIATION
TR	TELECOMMUNICATIONS ROOM
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
UL	UNDERWRITER LABORATORIES, INC.
UPS	UNINTERRUPTIBLE POWER SUPPLY
U/UTP	UNSHIELDED TWISTED PAIR
V	VOLT(S)
VCM	VERTICAL CABLE MANAGER
W	WIRE
WAN	WIDE AREA NETWORK
WAO	WORK AREA OUTLET
WAP	WIRELESS ACCESS POINT
WP	WEATHER PROOF
WR	WEATHER RESISTANT
WT	WATERTIGHT
XP	EXPLOSION-PROOF

ANNOTATION

- TECHNOLOGY PLAN CALLOUT
- EQUIPMENT DESIGNATION (OWNER FURNISHED, CONTRACTOR INSTALLED)
- CONNECTION POINT OF NEW WORK TO EXISTING
- DETAIL REFERENCE UPPER NUMBER INDICATES DETAIL NUMBER. LOWER NUMBER INDICATES SHEET NUMBER
- SECTION CUT DESIGNATION
- DEDICATED EQUIPMENT ACCESS TILE
- ACCESS PANEL

LINETYPE LEGEND

THROUGHOUT THE DRAWINGS DIFFERENT LINE-TYPES ARE USED IN COMBINATION WITH THE SYMBOLS TO INDICATE THE STATUS OF ITEMS AS EXISTING, TO BE DEMOLISHED, TO BE INCLUDED AS PART OF THE NEW WORK AND/OR ITEMS WHICH ARE ANTICIPATED TO BE PROVIDED IN THE FUTURE. THE STATUS OF ITEMS USING THESE LINETYPES ARE RELATIVE TO THE VIEW IN WHICH THEY APPEAR. PHASING SHOWN IN DRAWINGS IS NOT INTENDED TO FULLY DESCRIBE ALL NECESSARY CONSTRUCTION PHASING, WHICH IS DETERMINED BY THE CONTRACTOR AS PART OF THEIR RESPONSIBILITIES. ANY SUCH PHASES DESCRIBED IN THE CONSTRUCTION DOCUMENTS ARE GENERAL AND ONLY INTENDED TO INDICATE A BROAD ORDER FOR THE SAKE OF DESCRIBING THE PROJECT. THE FOLLOWING LINETYPES MAY BE USED ON ANY DEVICE, EQUIPMENT, NOTE, LINE, SHAPE, ETC.

EXISTING	———————	NEW	———————
DEMOLISH	— — — — —	FUTURE	- - - - - - - -

CABLE TYPES

A	CATEGORY 6 CABLE
B	PAGING SPEAKER CABLE
C	HDMI CABLE

PATHWAYS

- W"xH" — WIRE MESH CABLE TRAY (W"=WIDTH, "H"=HEIGHT)
- VERTICAL CABLE TRAY
- (#) D" — UNDERGROUND CONDUIT ("#"=QUANTITY, "D"=CONDUIT DIAMETER)
- (#) D" — CONDUIT ("#"=QUANTITY, "D"=CONDUIT DIAMETER)
- CABLE SUPPORTS OR J-HOOKS
- (#) D" / FS — CONDUIT SLEEVE ("#"=QUANTITY, "D"=CONDUIT DIAMETER); UL FIRESTOP SYSTEM ASSEMBLY
- PB L"xW"xH" — PULL BOX ("L"=LENGTH, "W"=WIDTH, "H"=HEIGHT)
- SC — SPLICE

RISER DIAGRAMS

- FIBER OPTIC CROSS CONNECT
- COPPER UTP CROSS CONNECT
- 110-TYPE PROTECTOR BLOCK
- PATCH PANEL — PATCH PANEL
- SBB — SECONDARY BONDING BUSBAR (SBB)
- PBB — PRIMARY BONDING BUSBAR (PBB)
- TELECOMMUNICATIONS BACKBONE CABLING (REFER TO RISER DIAGRAM FOR MORE INFORMATION)

TELECOMMUNICATIONS ROOM

- LADDER RACK
- PBB — PRIMARY BONDING BUSBAR (PBB) - WALL ELEVATION VIEW
- SBB — SECONDARY BONDING BUSBAR (SBB) - WALL ELEVATION VIEW
- PBB/SBB - PLAN VIEW
- TELECOM BACKBOARD
- TWO-POST EQUIPMENT RACK
- FOUR-POST EQUIPMENT RACK
- EQUIPMENT CABINET (REFER TO PLAN NOTES ON ENLARGED PLANS FOR MORE INFORMATION)

TELECOMMUNICATIONS OUTLETS

SYMBOL	DESCRIPTION	CABLE(S) A	B	C	DETAIL
▽ 2D	DATA WALL OUTLET	2	0	0	3/TN400-C
▽ 4D	DATA WALL OUTLET	4	0	0	3/TN400-C
▽ 4D	DATA WALL OUTLET	4	0	0	3/TN400-C
▽ 2D	DATA CEILING OUTLET	2	0	0	4/TN400-C
▽ W.2D	TELEPHONE, VoIP WALL OUTLET	2	0	0	3/TN400-C

TELECOMMUNICATIONS END-POINT DEVICES

DEVICE SCHEDULE

SYMBOL	DESCRIPTION	CABLE(S) A	B	C	DETAIL
C S	CLOCK, ANALOG SINGLE SIDED, WALL MOUNT	0	0	0	N/A
S RC	PAGING SPEAKER, RECESSED CAN CEILING MOUNT	0	1	0	2/TN400-C
S P	PAGING SPEAKER, PENDANT CEILING MOUNT	0	1	0	2/TN400-C

AUDIO-VIDEO IP END-POINT DEVICES

REFER TO TA-SERIES DRAWINGS FOR AV DEVICES

SYMBOL	DESCRIPTION	CABLE(S) A	B	C	DETAIL
TV	TELEVISION WALL OUTLET	1	0	2	6/TN400-C
HDMI	HDMI INTERFACE PLATE	2	0	1	5/TN400-C

TELECOMMUNICATIONS RESPONSIBILITY MATRIX

Description	Furnish: Construction Team	Furnish: Owner	Install: Construction Team	Install: Owner	Comments
General Communications					
Grounding and Bonding	X		X		
Hangers and Supports	X		X		
Conduits and Backboxes	X		X		
Cable Trays	X		X		
Underground pathways for utility entrance and floor boxes	X		X		
Firestops, Conduit Sleeves, and Sleeve Seals	X		X		
Structured Cabling					
Telecom Room Cabinets, Racks, Frames, and Enclosures	X		X		
Telecom Room Backboard (plywood backboard and ladder rack)	X		X		
Telecom Room Uninterruptible Power Supply (UPS)		X		X	
Telecom Room Power Strips		X		X	
Optical Fiber Backbone Cable and Connectivity	X		X		
Copper Backbone Cable and Connectivity	X		X		
Copper Horizontal Cable and Connectivity	X		X		
Data Communications					
Router / Firewall		X		X	
Core Switch / Edge Switch		X		X	
Wireless Access Points		X		X	
Servers / Storage and Backup		X		X	
Laptops / Desktops / Copiers / Printers / Scanners		X		X	
Software		X		X	
Voice Communications					
VoIP Gateway / Analog handsets		X		X	
VoIP handset wall mount kit		X		X	
VoIP handsets		X		X	
VoIP Network licensing		X		X	
Audio-Video Communications					
Conduits and Backboxes for AV systems	X		X		
HDMI Classroom Cabling and Connectivity	X		X		
Refer to AV drawings for AV Scope					
Distributed & Monitoring Communications					
K12 Classroom Analog Paging	X		X		
Wireless Clock Systems	X		X		
Electronic Safety and Security					
Conduits and Backboxes for Security systems	X		X		
Refer to Security drawings for Security Scope					

GENERAL NEW WORK NOTES

1. READ THE SPECIFICATIONS AND REVIEW DRAWINGS OF ALL DIVISIONS OF WORK. COORDINATE THIS WORK WITH ALL OTHER DIVISIONS OF WORK AND ALL SUBCONTRACTORS.
2. ALL WORK SHALL CONFORM TO THE APPLICABLE SPECIFICATIONS (DIVISION 26, DIVISION 27, DIVISION 28, ETC.) AND THE CUSTOMER PRE-ESTABLISHED STRUCTURED CABLING STANDARDS; SHOULD DIFFERENCES EXIST IN THE SPECIFICATIONS RELATING TO TECHNOLOGY AND THE CLIENT'S PRE-ESTABLISHED STANDARDS THE CONTRACTOR SHALL CONTACT THE LOW VOLTAGE ENGINEER FOR CLARIFICATION THROUGH THE RFI PROCESS.
3. FULLY COORDINATE ALL CABLE TRAY, FIRE STOP CONDUITS / SLEEVES, AND CONDUIT ROUTING WITH STRUCTURAL ELEMENTS. COORDINATE CABLE TRAY AND CONDUIT INSTALLATIONS WITH ARCHITECT, STRUCTURAL ENGINEER, STRUCTURAL CONTRACTOR, AND GENERAL CONTRACTOR PRIOR TO INSTALLATION. ROUTING IN CONCRETE SLAB OR UNDER SLAB (WHERE CONDUIT WOULD BE ON GRADE) REQUIRES THE USE OF WET LOCATION RATED CABLES.
4. ALL TELECOMMUNICATIONS CONTINUOUS PATHWAYS SHALL BE BONDED TO THE TELECOMMUNICATIONS BONDING BACKBONE; FOR CONDUITS, INSULATION BUSHINGS SHALL BE USED AT THE END OF THE CONDUIT THE FARTHEST AWAY FROM THE SERVING TR; A BONDING BUSHING SHALL BE USED AT THE END CLOSEST TO THE SERVING TR. CONTRACTOR TO REFER TO THE ANSI-STD-J 607 STANDARD FOR ADDITIONAL INFORMATION AS TO THE INSTALLATION OF THE TELECOMMUNICATIONS BONDING BACKBONE.
5. ALL FIRE RATED WALL / FLOOR ASSEMBLIES PENETRATED FOR TELECOMMUNICATIONS CABLING PATHWAYS SHALL BE FIRE STOPPED WITH THE APPROVED FIRE STOP SYSTEMS (F/S). ALL FIRESTOP SYSTEMS SHALL BE INSTALLED AS DIRECTED BY THE MANUFACTURER AND AS SPECIFIED IN DIVISION 07 07 84 00 - "FIRESTOPPING". FIRE STOP ASSEMBLY LOCATIONS ARE TO BE COORDINATED WITH CABLE TRAY PATHWAY TO TELECOMMUNICATIONS ROOM.
6. BACK BOXES AND CONDUIT LOCATIONS IN PRECAST CONCRETE WALLS SHALL BE COORDINATED WITH ARCHITECT, STRUCTURAL ENGINEER, AND GC PRIOR TO ORDERING THE PRECAST WALLS.
7. ROUTING OF CABLES SHALL BE CONCEALED. CABLES SHALL BE ROUTED IN CONDUIT IN EXPOSED AREAS. MINIMIZE AMOUNT OF EXPOSED CONDUIT BY EMBEDDING CONDUIT IN SLAB WHEN POSSIBLE. EMBEDDED CONDUITS AND PENETRATIONS OF STRUCTURE SHALL FOLLOW DETAILS IN STRUCTURAL DRAWINGS. WHEN CONDUITS CAN ONLY BE INSTALLED EXPOSED, NOTIFY ARCHITECT PRIOR TO START OF INSTALLATION OF CONDUITS. CABLES SHALL BE ROUTED IN CONDUIT WHEN ABOVE HARD CEILINGS. CONDUITS FOR ELEVATOR PHONES AND FIRE ALARM CONTROL PANEL SHALL BE CONTINUOUS (HOMERUN) FROM THE TELECOMMUNICATIONS ROOM TO THE APPLICABLE BOX / CABINET. CONTRACTOR SHALL SIZE AND PROVIDE CONDUITS TO MEET TIA-569.
8. TELECOMMUNICATIONS ROOMS SHALL BE DEDICATED FOR INFORMATION TECHNOLOGY USE (I.E. NO SHARED SPACE WITH A JANITOR, FIRE ALARM SYSTEM, ETC.) NO SERVICES SHALL PASS THROUGH THE SPACE UNLESS DEDICATED TO THE SPACE (NO PLUMBING, MECHANICAL, ELECTRICAL, FIRE, ETC.)

GENERAL DEMOLITION NOTES

1. PRIOR TO SUBMITTING BID, VISIT THE JOB SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS OF THE FACILITY, INCLUDING PATHWAY LOCATIONS AND ELEVATIONS. REVIEW THE GENERAL NOTES AND ALL OTHER TRADE DRAWINGS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS, INCLUDING ALL DEMOLITION AND NEW WORK DOCUMENTS. NOTIFY ARCHITECT, ENGINEER OR OWNER, AS SPECIFIED, OF ANY CONFLICTS OR DISCREPANCIES.
2. EXISTING CONDITIONS WERE TAKEN FROM ORIGINAL DRAWINGS AND SITE VISITS AND MAY NOT REFLECT EXACT "AS-BUILT" CONDITIONS. FIELD VERIFY CONDITIONS PRIOR TO SUBMITTING FINAL BIDS. COORDINATE NEW WORK AND DEMOLITION WITH OTHER DISCIPLINES AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION.
3. AVOID DAMAGING EXISTING SURFACES AND EQUIPMENT TO REMAIN FOR NEW INSTALLATION. REPAIR DAMAGE CAUSED DURING WORK AT NO EXTRA COST TO OWNER.
4. REMOVE ALL PATHWAYS, CABLING AND ASSOCIATED DEVICES FOR ALL ITEMS INTENDED TO BE REMOVED. ABANDONING UNUSED PORTIONS WILL NOT BE ACCEPTABLE.
5. REMOVE EXISTING ITEMS AS REQUIRED TO ACCOMMODATE THE GENERAL DEMOLITION SCOPE. ANY SYSTEMS PASSING THROUGH THE SPACE INTENDED TO REMAIN IN SERVICE SHALL BE PROTECTED, OR RELOCATED AS REQUIRED TO MAINTAIN SERVICE AND ACCOMMODATE THE GENERAL DEMOLITION AND NEW SCOPE OF WORK.
6. REFER TO ARCHITECTURAL PLANS FOR SCOPE OF AREAS THAT ARE TO BE DEMOLISHED UNDER THIS PHASE OF CONSTRUCTION. NOTE THAT IN SOME CASES, MEPFT DEMOLITION WORK EXTENDS BEYOND SCOPE OF AREA IDENTIFIED DUE TO EXISTING SYSTEM DESIGN. NOTIFY ARCHITECT AND ENGINEER OF ANY CONFLICTS OR DISCREPANCIES PRIOR TO STARTING WORK.
7. COORDINATE THE INTERMEDIATE STORAGE, REMOVAL AND FINAL DISPOSITION OF TELECOMMUNICATIONS SCS COMPONENTS (PATHWAYS, CABLE, TERMINATION COMPONENTS, ETC.) AND THE REQUIRED PROTECTION OF EXISTING SPECIAL SYSTEMS EQUIPMENT WITH OWNER PRIOR TO IMPLEMENTATION THAT ARE TO BE REMOVED AS A RESULT OF THE DEMOLITION / RENOVATION WORK.
8. EXISTING TELECOMMUNICATIONS CABLES AND COMPONENTS THAT PASS THROUGH THE CONSTRUCTION ZONE SHALL BE PROTECTED AND REMAIN IN PLACE SO AS TO MAINTAIN SERVICE WHILE ALSO ACCOMMODATING THE GENERAL DEMOLITION AND NEW SCOPE OF WORK. CONTRACTOR SHALL COORDINATE ALL SUCH EFFORTS WITH THE CLIENT PRIOR TO IMPLEMENTATION. DAMAGE TO EXISTING AND TO REMAIN IN PLACE TELECOMMUNICATIONS CABLES AND COMPONENTS CAUSED BY THE CONTRACTOR SHALL BE REPAIRED IN A TIMELY MANNER AND TO THE WRITTEN SATISFACTION OF THE CLIENT AND AT NO ADDITIONAL COST TO THE CLIENT. CONTRACTOR SHALL PROVIDE CABLE SUPPORTS FOR ANY EXISTING CABLES THAT ARE NOT PROPERLY SUPPORTED.

CALL OUTS

- ENLARGED PLAN CALLOUT
- NOT IN SCOPE

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Lee's Summit, Missouri
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STATE OF MISSOURI
DOUGLAS M. EVERHART
NUMBER PE-2019007648
PROFESSIONAL ENGINEER

09/09/2022
DOUGLAS M. EVERHART
LICENSE # PE-2019007648

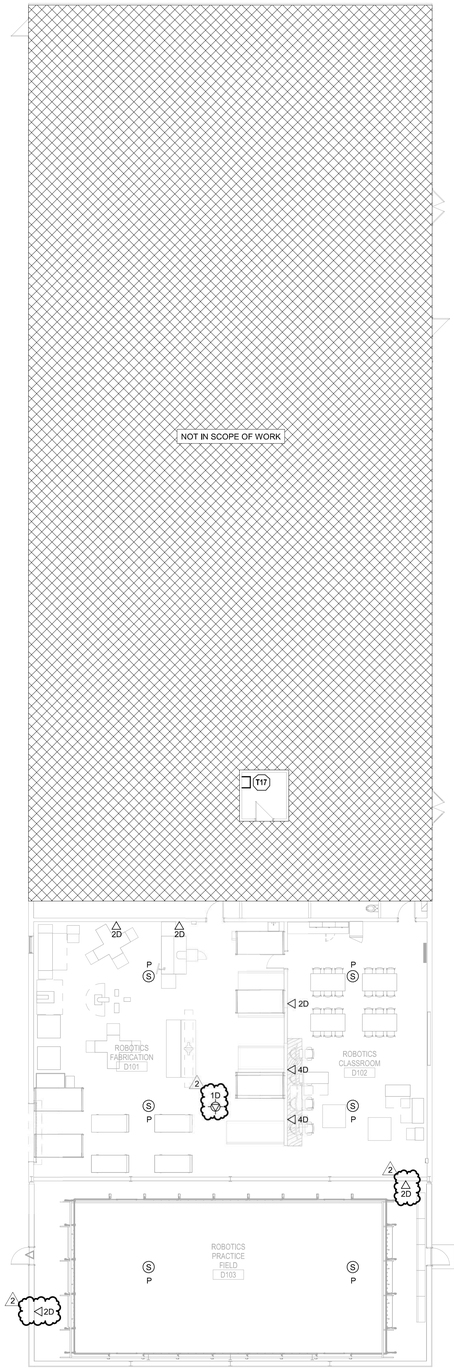
LSHS - TECHNOLOGY GENERAL NOTES AND LEGEND

TN000-C

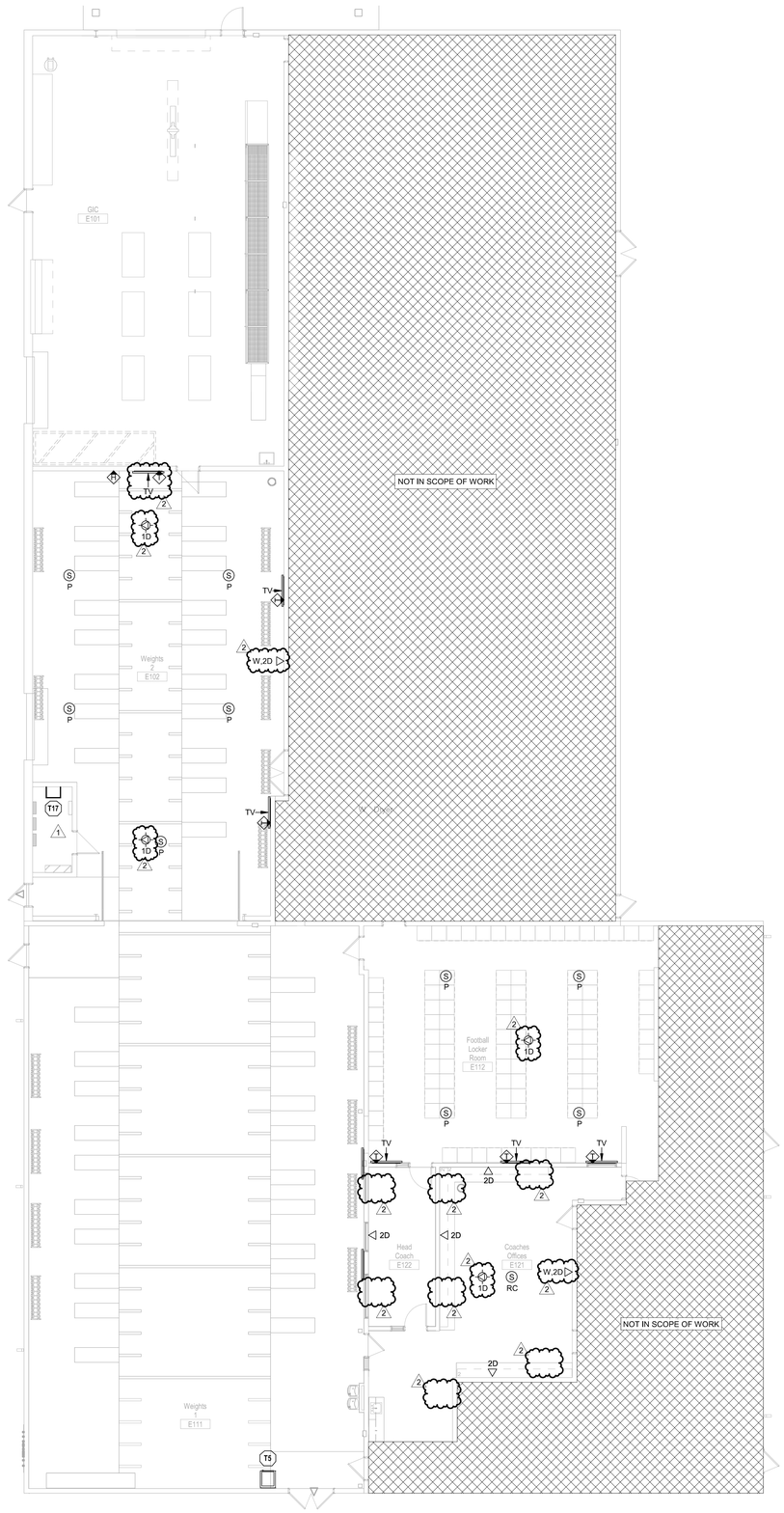
TECHNOLOGY PLAN NOTES:

T5 EXISTING AV RACK TO REMAIN.

T17 LOCATION OF EXISTING WALL MOUNTED SHALLOW RACK. CONTRACTOR TO REPLACE WITH A NEW STANDARD OPEN WALL MOUNT RACK THAT SHALL BE 19" W X 36" H X 18" D. REFER TO SPEC SECTION "271100 TELECOMMUNICATIONS EQUIPMENT ROOM FITTINGS" FOR FURTHER REQUIREMENTS.



1 TECHNOLOGY LEVEL 1 PLAN - LSHS - BUILDING D
3/32" = 1'-0"



2 TECHNOLOGY LEVEL 1 PLAN - LSHS - BUILDING E
1/8" = 1'-0"

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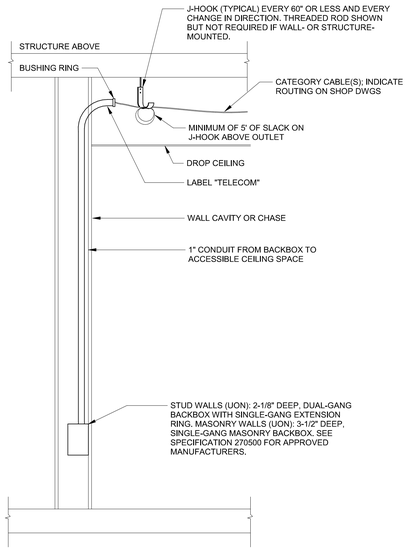
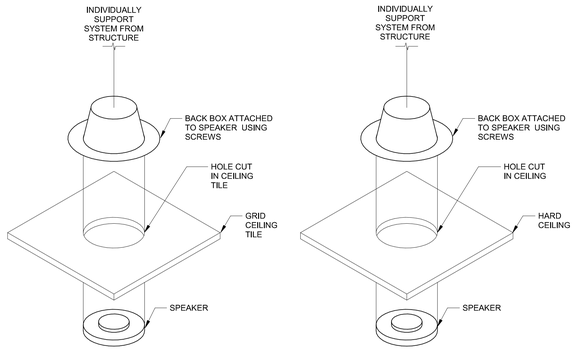
LSHS - TECHNOLOGY PLAN - LEVEL 1 - BUILDING D & E

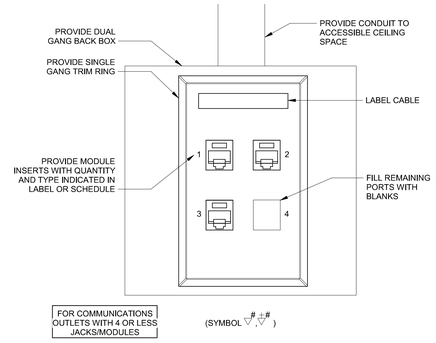
TN101-C



1 COMMUNICATIONS OUTLET MOUNTING
NTS

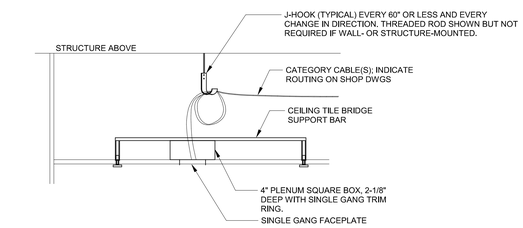


2 SPEAKER INSTALLATION
NTS

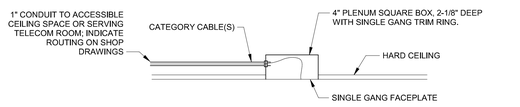


3 SINGLE GANG COMM OUTLET (2D)
NTS

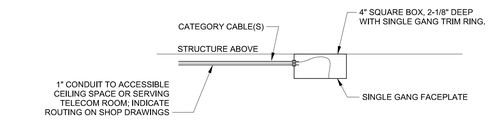
FOR OUTLETS IN SUSPENDED CEILING TILES



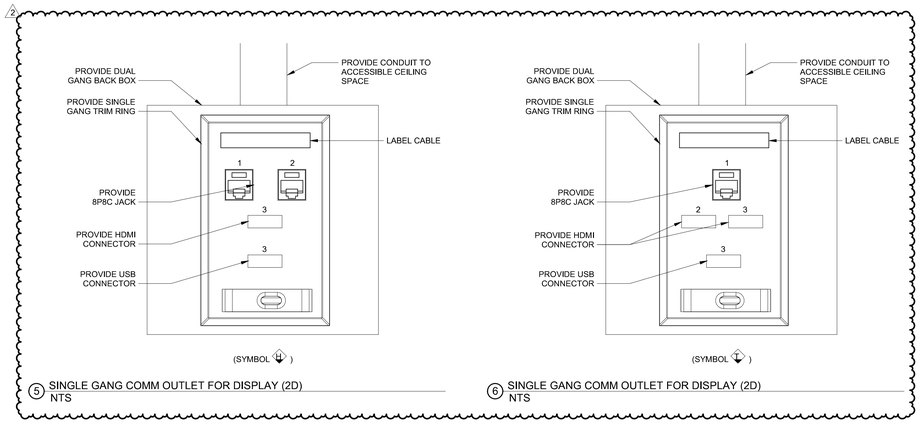
FOR OUTLETS IN GYPSUM BOARD CEILINGS



FOR OUTLETS IN EXPOSED TO STRUCTURE AREAS

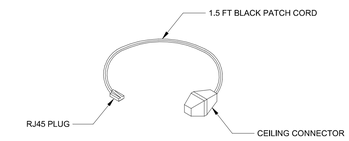


4 CEILING COMM OUTLET 2D
NTS

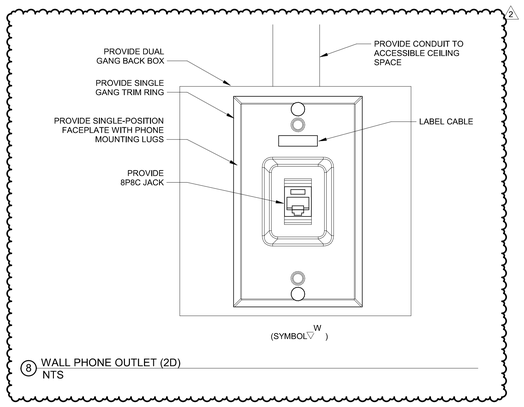


5 SINGLE GANG COMM OUTLET FOR DISPLAY (2D)
NTS

6 SINGLE GANG COMM OUTLET FOR DISPLAY (2D)
NTS



7 ACCESS POINT CONNECTOR ASSEMBLY
NTS



8 WALL PHONE OUTLET (2D)
NTS

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LSHS - TECHNOLOGY DETAILS

TN400-C

SECURITY SYMBOLS

THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED.

STANDARD MOUNTING HEIGHTS

INTERCOM (OPERABLE PART)	48"
CARD READER (CENTER OR TOP WHERE OPERABLE PARTS EXIST)	44"
EMERGENCY LOCK RELEASE	48"
EMERGENCY PHONE (OPERABLE PARTS)	48"

DEFAULT MOUNTING HEIGHTS SHOWN ABOVE WHERE NO CALL-OUT IS PROVIDED. MOUNTING HEIGHTS LISTED ARE ABOVE FINISHED FLOOR (AFF) OR ABOVE FINISHED GRADE (AFG). ALL DEVICES SHALL BE INSTALLED IN COMPLIANCE WITH CURRENT ADA AND LOCAL REQUIREMENTS.

ABBREVIATIONS

A	AMPERS
ACP	ACCESS CONTROL PANEL
ADA	AMERICANS WITH DISABILITIES ACT
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AV	AUDIO-VIDEO
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BD	BUILDING DISTRIBUTOR
BDF	BUILDING DISTRIBUTION FRAME
BFC	BELOW FINISHED CEILING
BR	BIOMETRIC READER
C	CONDUIT
CAT	CATEGORY
CC	CENTRAL CONTROL
CCTV	CLOSED CIRCUIT TELEVISION
CD	CAMPUS DISTRIBUTOR
CMP	COMMUNICATIONS PLENUM JACKET
CMR	COMMUNICATIONS RISER JACKET
(D)	REMOTE DEVICE
DAS	DISTRIBUTED ANTENNA SYSTEM
dB	DECIBELS
DCS	DOOR CONTROL SYSTEM
DEMO	DEMOLITION
DSP	DIGITAL SIGNAL PROCESSOR
DVR	DIGITAL VIDEO RECORDER
(E)	EXISTING DEVICE
EC	ELECTRICAL CONTRACTOR
ECIA	ELECTRONIC OMPONENTS INDUSTRY ASSOCIATION
EMI	ELECTROMAGNETIC INTERFERENCE
EMS	ENERGY MANAGEMENT SYSTEM
EMT	ELECTRICAL METALLIC TUBING
ER	EQUIPMENT ROOM
(ETR)	EXISTING TO REMAIN
(F)	DOOR FRAME MOUNTED DEVICE
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FD	FLOOR DISTRIBUTOR
FMC	FLEXIBLE METAL CONDUIT
FOR	FIBER OPTIC RACK
FS	FIRE STOP SYSTEM
FLR	FLOOR
GC	GENERAL CONTRACTOR
(GT)	GUARD TOUR
GYP	GYPSUM BOARD
HH	HAND HOLE
Hz	HERTZ
IMC	INTERMEDIATE METAL CONDUIT
ICS	INTERCOM CONTROL SYSTEM
IP	INTERNET PROTOCOL
ISP	INSIDE PLANT CABLE
J-BOX	JUNCTION BOX
(K)	ELECTRICALLY OPERATED BY KEY
KP	KEY PAD
KVM	KEYBOARD VIDEO MOUSE SWITCH
LAN	LOCAL AREA NETWORK
LED	LIGHT-EMITTING DIODE
LF	LINEAR FEET
MBS	MAINTENANCE BYPASS SWITCH
MDF	MAIN DISTRIBUTION FRAME
MFR	MANUFACTURER
MH	MAINTENANCE HOLE
MM	MULTIMODE
MPOE	MAIN POINT OF ENTRANCE
MPOP	MAIN POINT OF PRESENCE
MTD	MOUNTED
N/A	NOT APPLICABLE
NEC	NATIONAL ELECTRICAL CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCATION
NIC	NOT IN CONTRACT
nm	NANOMETER
NRTL	NATIONALLY RECOGNIZED TESTING LAB
NVR	NETWORK VIDEO RECORDER
OC	ON CENTER
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
OSP	OUTSIDE PLANT
POE	POWER OVER ETHERNET
PON	PASSIVE OPTICAL NETWORK
QTY	QUANTITY
(R)	RELOCATED EXISTING DEVICE
(RE)	REMOVE EXISTING DEVICE AND INSTALL AT ANOTHER LOCATION, SEE (R)
RMC	RIGID METAL CONDUIT
RMS	REMOTE MONITORING STATION
RU	RACK UNIT
SCS	STRUCTURED CABLING SYSTEM
SF	SQUARE FEET
SM	SINGLEMODE
SP	SCRAMBLE PAD
TBD	TO BE DETERMINED
TIA	TELECOMMUNICATIONS INDUSTRY ASSOCIATION
TGB	TELECOMMUNICATIONS GROUND BUS BAR
TMGB	TELECOMMUNICATIONS MAIN GROUND BUS BAR
TR	TELECOMMUNICATIONS ROOM
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
UL	UNDERWRITER LABORATORIES, INC.
UPS	UNINTERRUPTIBLE POWER SUPPLY
UPSDP	UNINTERRUPTIBLE POWER SUPPLY DISTRIBUTION PANEL
V	VOLT(S)
VCM	VERTICAL CABLE MANAGER
VMS	VIDEO MANAGEMENT SYSTEM
WAO	WORK AREA OUTLET
WP	WEATHER PROOF
WR	WEATHER RESISTANT
WT	WATERTIGHT
XP	EXPLOSION-PROOF

( ) - INDICATES MODIFIER FOR SPECIAL OPERATION IN LABELING SCHEME

ANNOTATION

- 1 — SECURITY PLAN CALLOUT
- CONNECTION POINT OF NEW WORK TO EXISTING
- 1 / TY1 — DETAIL REFERENCE UPPER NUMBER INDICATES DETAIL NUMBER. LOWER NUMBER INDICATES SHEET NUMBER
- 1 / TY1 — SECTION CUT DESIGNATION

LINETYPE LEGEND

THROUGHOUT THE DRAWINGS DIFFERENT LINE-TYPES ARE USED IN COMBINATION WITH THE SYMBOLS TO INDICATE THE STATUS OF ITEMS AS EXISTING, TO BE DEMOLISHED, TO BE INCLUDED AS PART OF THE NEW WORK AND/OR ITEMS WHICH ARE ANTICIPATED TO BE PROVIDED IN THE FUTURE. THE STATUS OF ITEMS USING THESE LINETYPES ARE RELATIVE TO THE VIEW IN WHICH THEY APPEAR. PHASING SHOWN IN DRAWINGS IS NOT INTENDED TO FULLY DESCRIBE ALL NECESSARY CONSTRUCTION PHASING, WHICH IS DETERMINED BY THE CONTRACTOR AS PART OF THEIR RESPONSIBILITIES. ANY SUCH PHASES DESCRIBED IN THE CONSTRUCTION DOCUMENTS ARE GENERAL AND ONLY INTENDED TO INDICATE A BROAD ORDER FOR THE SAKE OF DESCRIBING THE PROJECT. THE FOLLOWING LINETYPES MAY BE USED ON ANY DEVICE, EQUIPMENT, NOTE, LINE, SHAPE, ETC.

EXISTING	———	NEW	———
DEMOLISH	— — — — —	FUTURE	- - - - - - - -

SECURITY SYMBOLS

- AR — AREA OF REFUGE CALL BOX
- CR — CARD READER
- CW X — CLIENT WORKSTATION WHERE X = NUMBER OF MONITORS (AC) ACCESS CONTROL (SM) SECURITY MANAGEMENT (TS) TOUCHSCREEN CONTROL (VS) VIDEO SURVEILLANCE
- DO — DOOR OPERATOR
- DB — DOOR BELL (PB) PUSH BUTTON (CH) CHIME
- DM — DOOR POSITION SWITCH SEE ARCHITECTURAL DOOR HARDWARE SCHEDULE
- DL — DOOR POSITION SWITCH AND LATCHBOLT MONITOR SEE ARCHITECTURAL DOOR HARDWARE SCHEDULE
- EL — ELECTRIFIED LOCKING DEVICE SEE ARCHITECTURAL DOOR HARDWARE SCHEDULE
- EO — ELECTRIFIED LOOKING DEVICE SEE ARCHITECTURAL DOOR HARDWARE SCHEDULE
- EP — EMERGENCY PHONE
- GB — GLASS BREAK DETECTOR
- IC — INTERCOM (CR) WITH CARD READER (DS) DOOR STATION (RS) RECEIVING (MASTER) STATION (VS) VIDEO STATION
- IP — INMATE PHONE
- KP — KEYPAD (ID) INTRUSION DETECTION SYSTEM (AC) ACCESS CONTROL
- LC — LIGHTING CONTROL RELAYS
- MD — MOTION DETECTOR
- PL — PANIC ALARM THREE-COLOR INDICATOR LIGHT
- PB — PANIC/DURESS BUTTON
- RE — REQUEST-TO-EXIT PUSH PAD
- RO — REMOTE UNLOCK/OPEN BUTTON
- ML — MICROPHONE STATUS LIGHT, WALL MOUNT
- MP — MICROPHONE
- MS — MICROPHONE MUTE ILLUMINATED SWITCH
- S — SPEAKER (DOOR BELL)
- SP — PAGING SPEAKER
- VM — VAULT MONITOR
- WC — WATER CONTROL VALVE VALVE BY DIVISION 22, CONTROL BY DIVISION 28
- WT — WATCH TOUR

SECURITY CAMERAS

- FIXED CAMERA
- PTZ CAMERA
- 360 CAMERA
- 180 CAMERA
- TWO IMAGER CAMERA
- FOUR IMAGER CAMERA

MOUNTING TYPE SYMBOLS (APPLIES TO ANY SECURITY DEVICE SYMBOL)

- CEILING MOUNT
- WALL MOUNT
- POLE / BOLLARD MOUNT
- CORNER MOUNT
- PENDANT MOUNT
- WALL MOUNT PENDANT ARM

LABELING SCHEME

SECURITY DEVICES (TYPICAL)

A XX YY
- A: DEVICE SYMBOL
- XX: MODIFIER FOR SPECIAL OPERATION IF APPLICABLE
- YY: DEVICE TYPE

SEE MATCHING SCHEDULES ON THIS SHEET (IF APPLICABLE)

SECURITY CAMERAS (TYPICAL)

C-XX AA ##' AFF
- XX: CAMERA NUMBER
- AA: CAMERA TYPE (SEE CAMERA SCHEDULE ON THIS PAGE)
- FOR WALL MOUNTED CAMERAS, HEIGHT ABOVE FINISHED FLOOR

SEE MATCHING SCHEDULES ON THIS SHEET (IF APPLICABLE)

GENERAL NOTES

1. CONTRACTOR SHALL SUPPORT ALL CABLE WITH APPROVED PATHWAY.
2. ALL CABLES SHALL BE ROUTED PARALLEL AND PERPENDICULAR TO THE BUILDING STRUCTURE, UNLESS OTHERWISE NOTED.
3. DOOR HARDWARE AND OPENING CONDITIONS SHOULD BE EVALUATED PRIOR TO CONDUIT AND CABLING INSTALLATION AND COORDINATED WITH DIVISION 08.
4. PROVIDE CONDUIT SLEEVE WITH NYLON BUSHINGS FOR NON-RATED WALL PENENTRATIONS FOR COMMUNICATIONS CABLES. PATHWAYS SHALL BE SIZED FOR NO MORE THAN FOURTY (40) PERCENT FILL.
5. PROVIDE CONDUIT SLEEVE WITH NYLON BUSHINGS FOR OVERHEAD CEILINGS THAT BLOCK ACCESS FOR MOVE/ADD/CHANGES TO CABLE PATHWAY, LIKE HARD GYPSUM CEILING. PATHWAYS SHALL BE SIZED FOR NO MORE THAN FOURTY (40) PERCENT FILL.
6. PROVIDE UL LISTED FIRESTOP ASSEMBLY AT FIRE WALL PENETRATIONS FOR COMMUNICATIONS CABLES. MATERIAL AND INSTALLATION SHALL MAINTAIN THE RATED CAPACITY OF WALL AND MEET ALL APPLICABLE CODES.
7. CONTRACTOR SHALL COORDINATE ALL COMMUNICATIONS AND CABLING PATHWAYS WITH OTHER DIVISIONS (08, 21, 22, 23, 26, AND 27) PRIOR TO INSTALL OF DUCTWORK, PIPING, CONDUITS, AND ETC.
8. FULLY COORDINATE ALL CONDUIT ROUTING WITH STRUCTURAL ELEMENTS. COORDINATE CONDUIT INSTALLATIONS WITH ARCHITECT, STRUCTURAL ENGINEER, STRUCTURAL CONTRACTOR, AND GENERAL CONTRACTOR PRIOR TO INSTALLATION. ROUTING IN OR UNDER THE SLAB FLOOR REQUIRES THE USE OF CABLE RATED FOR A WET ENVIRONMENT.
9. VERIFY ALL CAMERA LOCATIONS PRIOR TO ROUGH-IN. FIELD OF VIEW SHALL NOT BE OBSTRUCTED BY OTHER ELEMENTS INCLUDING, BUT NOT LIMITED TO, EXIT SIGNS, LIGHT FIXTURES, MILLWORK, SPRINKLERS, CURTAINS, AND SIGNAGE.
10. ALL WIRING SHALL BE INSTALLED COMPLETE AND UNSPLICED FROM THE SERVING EQUIPMENT PANEL TO DEVICE.
11. REFER TO TN0.1 FOR TECHNOLOGY GENERAL NOTES THAT ALSO DESCRIBES SECURITY COMPONENTS.

SECURITY ROUGH-IN

ROUGH-IN ONLY SCHEDULE

SYMBOL	DESCRIPTION	BACK BOX	CONDUIT	CABLE(S)	MOUNTING HEIGHT	DETAIL
EL	SECURITY ELECTRIFIED LOCK	N/A	(1) 1/2" EMT TO DOOR FRAME	C	N/A	
CR	SECURITY CARD READER, WALL	2-GANG BACKBOX WITH 1-GANG MUD RING	(1) 3/4" EMT	B	44"	
CR M	SECURITY CARD READER, MULLION	N/A	(1) 3/4" EMT	B	44"	
RE	SECURITY REQUEST-TO-EXIT	1-GANG BACKBOX WITH 1-GANG MUD RING	(1) 1/2" EMT	E	REFER TO DOOR HARDWARE SCHEDULE	
	SECURITY CAMERA, CEILING - RECESSED	INSTALL SECURITY PROVIDER'S BACKBOX	(1) 3/4" EMT	A	N/A	
	SECURITY CAMERA, CEILING - SURFACE	2-GANG BACKBOX WITH 1-GANG MUD RING	(1) 3/4" EMT	A	N/A	
	SECURITY CAMERA, WALL - INTERIOR	2-GANG BACKBOX WITH 1-GANG MUD RING	(1) 3/4" EMT	A	9' - 0"	
	SECURITY CAMERA, WALL - EXTERIOR	INSTALL SECURITY PROVIDER'S BACKBOX	(1) 3/4" EMT	A	10' - 0"	
IC	SECURITY VIDEO INTERCOM, WALL	4-GANG BACKBOX WITH PROVIDER'S PLATE	(1) 3/4" EMT	A,E	48" TO PUSH BUTTON	
PB	SECURITY PANIC BUTTON, DESK/WALL	1-GANG BACKBOX WITH 1-GANG MUD RING	(1) 1/2" EMT	D	N/A	
DM	DOOR POSTION SWITCH	N/A	(1) 1/2" EMT TO DOOR FRAME	D	N/A	

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CABLE TYPES

A	CATEGORY 6 CABLE
B	22 AWG, 6C SHIELDED
C	18 AWG, 4C UNSHIELDED
D	22 AWG, 2C UNSHIELDED
E	22 AWG, 4C UNSHEILDED

CABLE TYPES SHOWN ABOVE ARE TYPICAL FOR CABLE DISTANCES LESS THAN 500 FEET. REFER TO DEVICE MANUFACTUERER'S INSTALLATION REQUIREMENTS FOR LONGER DISTANCES. COORDINATE WITH DOOR HARDWARE PROVIDER TO CONFIRM CABLING REQUIREMENTS FOR LOCK POWER.

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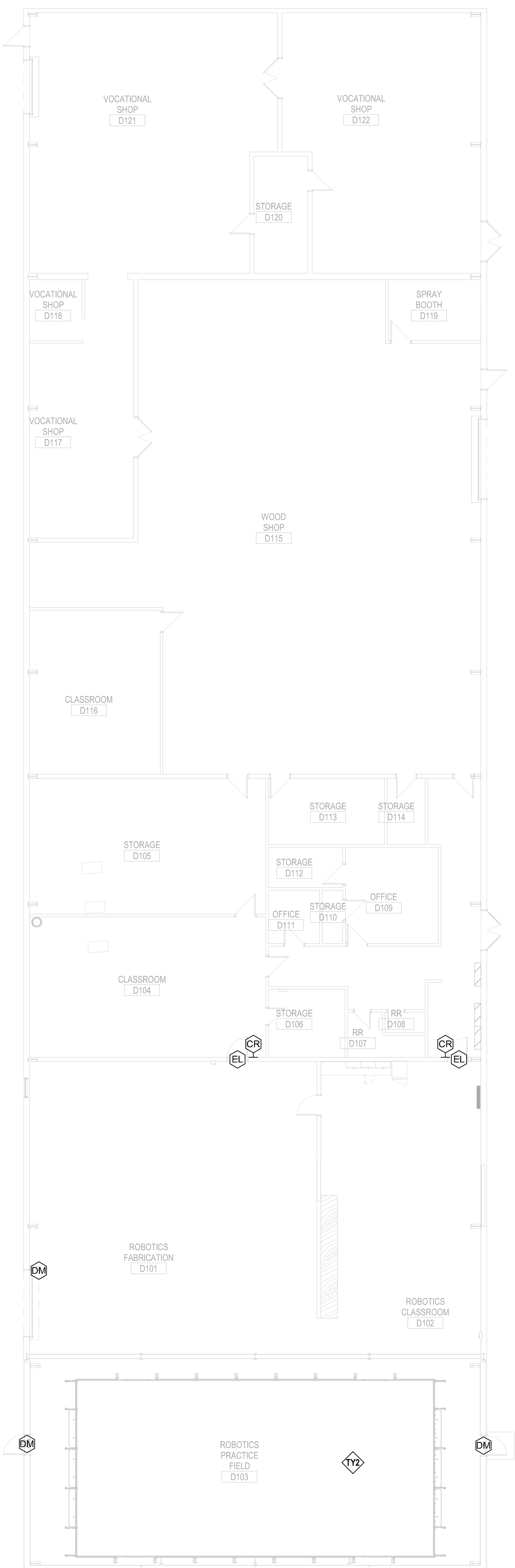
LSHS - SECURITY GENERAL NOTES AND LEGEND

TY000-C

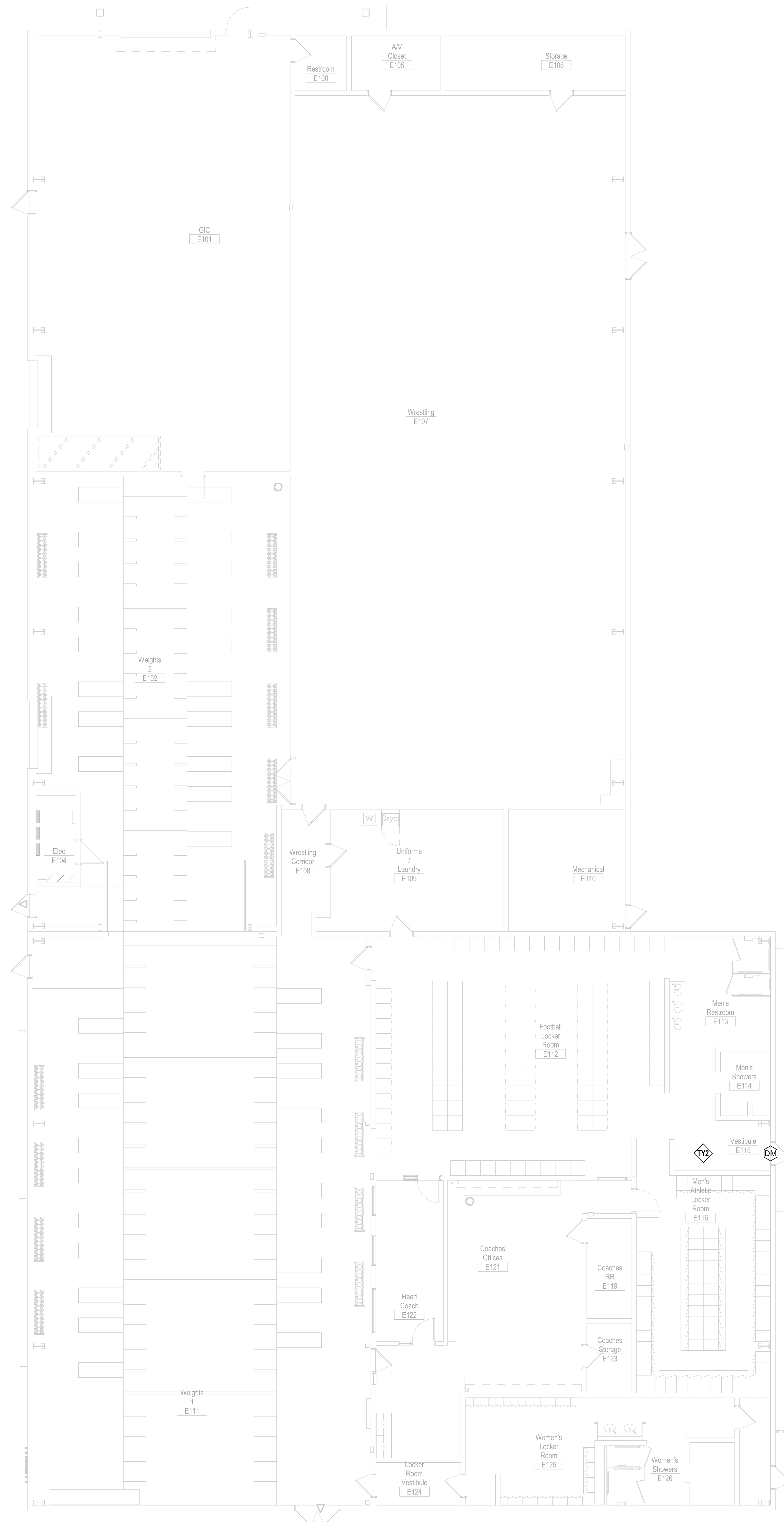
DOUGLAS M. EVERHART

SECURITY PLAN NOTES:

TY2 ALL SECURITY DEVICES SHOWN SHALL BE SERVED BY EXISTING PANELS NOT SHOWN ON PLAN. COORDINATE WITH OWNER'S SECURITY VENDOR.



1 SECURITY LEVEL 1 PLAN - LSHS - BUILDING D
3/32" = 1'-0"



2 SECURITY LEVEL 1 PLAN - LSHS - BUILDING E
1/8" = 1'-0"

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LSR7 Robotics, GiC & Phys Education

LSN: 901 NE Douglas St., Lee's Summit MO 64086
LSW: 2600 SW Ward Rd, Lee's Summit MO 64082
LSHS: 400 SE Blue Pkwy, Lee's Summit MO 64063

0121-0100

owner:
Lee's Summit R-7 School
301 NE Tudor Road
Lee's Summit, MO 64086

architect:
Multistudio
4200 Pennsylvania
Kansas City, MO 64111
816.931.6655
multi.studio

civil engineer:
Kaw Valley Engineering
14700 West 114th Terrace
Lenexa, KS 66215
913.485.0318
kveng.com

structural engineer:
Bob D. Campbell & Company, Inc.
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Kansas City, MO 64111
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WWW.HENDERSONENGINEERS.COM
2150005255
MO. CORPORATE NO: E-556D
EXPIRES 12/31/2022

Issue Date: September 9, 2022

Revisions

NUMBER	DESCRIPTION	DATE

RELEASED FOR CONSTRUCTION
As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
11/23/2022

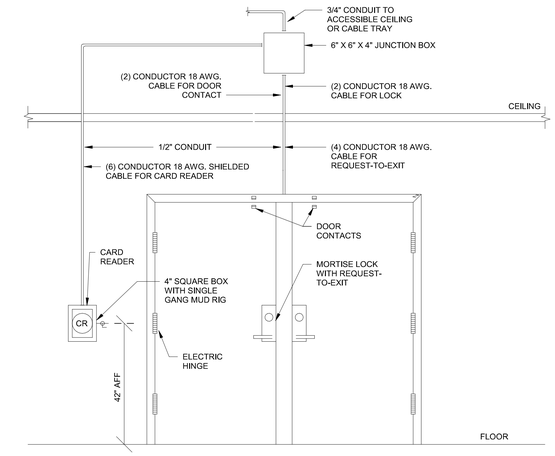
STATE OF MISSOURI
DOUGLAS M. EVERHART
NUMBER PE-2019007648
PROFESSIONAL ENGINEER

09/09/2022
DOUGLAS M. EVERHART
LICENSE # PE-2019007648

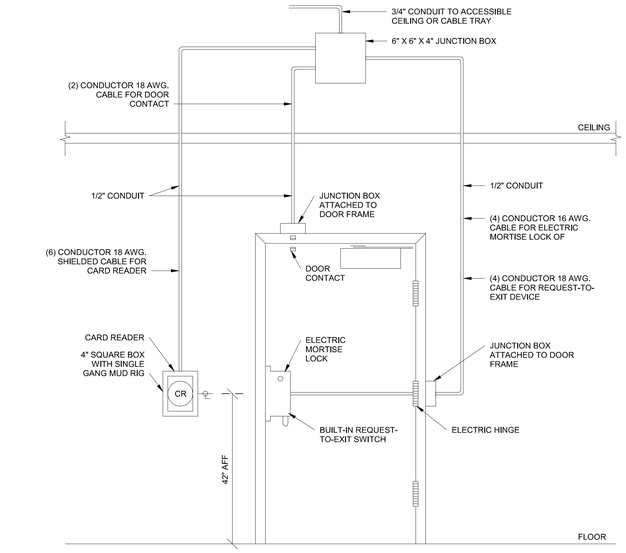
LSHS - SECURITY PLAN - LEVEL 1 - BUILDING D & E

TY101-C

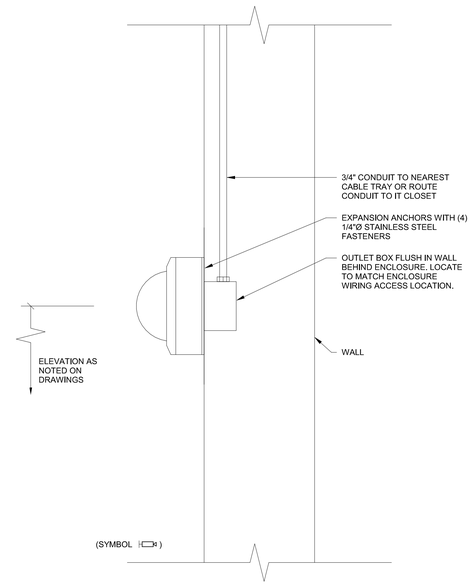
DOUGLAS M. EVERHART



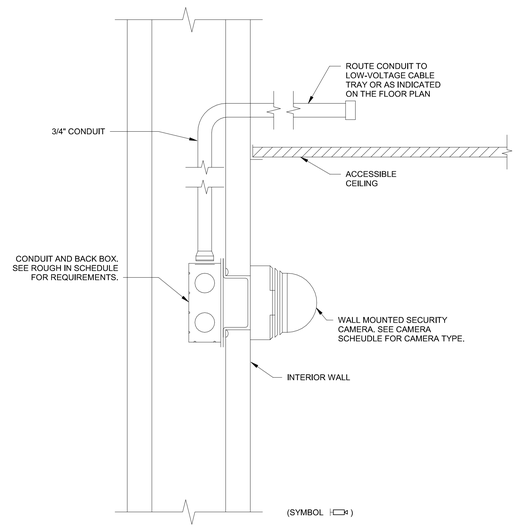
5 DOUBLE DOOR
NTS



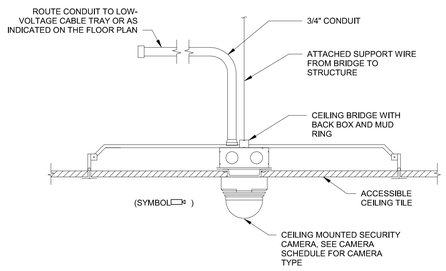
4 SINGLE DOOR
NTS



3 SURFACE MOUNTED DOME CAMERA DETAIL
NTS



2 TYPICAL CAMERA INSTALLATION DETAIL - INTERIOR WALL MOUNT SURFACE
NTS



1 TYPICAL CAMERA INSTALLATION DETAIL - INTERIOR CEILING MOUNT SURFACE
NTS

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LSHS - SECURITY DETAILS

TY500-C