TM Aviation

TM AVATION HANGER

AT LXT

PERMIT SET
MAR 21, 2025

GENERAL NOTES

1. ALL WORK SHALL CONFORM WITH THE APPLICABLE BUILDING CODES, REGULATIONS, OCCUPANCY PERMITS AND ORDINANCES. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ORDERS OF ANY PUBLIC AUTHORITY BEARING ON THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL APPLY FOR, OBTAIN AND PAY FOR ALL PERMITS, FEES, INSPECTIONS AND APPROVALS BY LOCAL AUTHORITIES HAVING JURISDICTION OVER THE PROJECT. IN THE EVENT OF A CONFLICT BETWEEN THE CONSTRUCTION DOCUMENTS AND AN APPLICABLE CODE, CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER AND THE ARCHITECT FOR DIRECTION AND RESOLUTION. FAILURE TO NOTIFY EITHER OF THESE PARTIES PRIOR TO COMMENCEMENT OF THE WORK, SHALL MAKE THE CONTRACTOR RESPONSIBLE FOR ANY CORRECTIVE MEASURES NEEDED TO BRING THE PROBLEM INTO PROPER CONFORMANCE, WITHOUT ADDITIONAL COSTS OR CHARGES TO THE OWNER. PROVIDE COPIES OF ALL TRANSACTIONS TO OWNER.
2. CONTRACTOR SHALL PROVIDE & MAINTAIN A REDLINED AS-BUILT CONSTRUCTION DOCUMENT SET AT THE SITE. THE OWNER OR THE ARCHITECT RESERVES THE RIGHT TO REVIEW THESE DOCUMENTS ON A WEEKLY BASIS.
3. PROVIDE THE ARCHITECT WITH A COMPLETE COPY OF AS-BUILT DRAWINGS AT THE COMPLETION OF THE PROJECT.
4. GENERAL CONTRACTOR SHALL FURNISH A COMPLETE LIST OF CHEMICALS TO BE USED IN THE PROJECT ALONG WITH THE MATERIAL DATA SAFETY SHEET ON EACH PRODUCT TO THE ARCHITECT. A COPY SHALL BE KEPT ON SITE FOR REFERENCE.
5. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR, AND HAVE CONTROL OVER, ALL CONSTRUCTION MEANS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK REQUIRED BY THE CONTRACT DOCUMENTS.
6. NO EQUIP., MATERIALS, OR VEHICLES ARE TO BE STORED OR PARKED ON AREAS NOT WITHIN THE AREAS INDICATED AS BEING DEMOLISHED ON THE DRAWINGS. IF AREAS ARE DISTURBED OR DAMAGED THE CONTRACTOR IS RESPONSIBLE FOR REPLACEMENT AT CONTRACTORS EXPENSE.
7. PRIOR TO LEAVING THE SITE DAILY, THE CONTRACTOR IS TO LEAVE THE FACILITY SECURABLE.
8. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION PERSONNEL AND AUTHORIZED VISITORS.
9. SCOPE OF WORK OF ALL TRADES IS TO INCLUDE ALL MATERIALS AND LABOR AS REQUIRED TO TOTALLY COMPLETE THE PROJECT. ALL WORK SHALL BE COMPLETE, CONSISTENT WITH THE DESIGN INTENT AS EXPRESSED IN THESE DOCUMENTS, WHETHER SPECIFICALLY ADDRESSED IN THESE DOCUMENTS OR NOT. ANY QUESTIONS CONCERNING THE COMPLETENESS OF THE WORK SHALL BE ADDRESSED TO THE ARCHITECT.
10. ALL WORK SHALL BE PERFORMED BY THE GENERAL CONTRACTOR UNLESS OTHERWISE NOTED. ALL REFERENCES TO THE "CONTRACTOR" INCLUDE THE GENERAL CONTRACTOR AND THE SUBCONTRACTORS.
11. THE GENERAL CONTRACTOR SHALL SEE THAT ALL SUBCONTRACTORS RECEIVE COMPLETE SETS OF WORKING DRAWINGS FOR COORDINATION OF THEIR WORK AND DESCRIPTION OF SCOPE.
12. CONTRACTOR SHALL NOT MAKE, CAUSED TO BE MADE, OR PERMIT A SUBCONTRACTOR TO MAKE ANY CHANGE TO WHAT IS SPECIFIED ON THE PLAN WITHOUT SPECIFIC AUTHORIZATION OF THE ARCHITECT.
13. THE ARCHITECT IS NOT RESPONSIBLE FOR ERRORS, OMISSIONS OR DELAYS BY THE CONTRACTOR.
14. DO NOT SCALE DRAWINGS, FOLLOW WRITTEN DIMENSIONS OR KEYED NOTES ONLY. CONTACT ARCHITECT IMMEDIATELY FOR CLARIFICATION IF REQUIRED. VERIFY DIMENSIONS IN THE FIELD. LARGE SCALE DETAILS GOVERN OVER SMALL SCALE DETAILS.
15. ALL WALL DIMENSIONS ARE FOR GENERAL REFERENCE ONLY AND MAY VARY.
16. "MINIMUM" OR "MIN" AS USED IN THESE DOCUMENTS SHALL MEAN THAT THE CONDITION IS SLIGHTLY ADJUSTABLE BUT MAY NOT VARY TO A DIMENSION OR QUANTITY LESS THAN THAT SHOWN WITHOUT THE APPROVAL OF THE ARCHITECT.
17. "MAXIMUM" OR "MAX" AS USED IN THESE DOCUMENTS SHALL MEAN THAT THE CONDITION IS SLIGHTLY ADJUSTABLE BUT MAY NOT VARY TO A DIMENSION OR QUANTITY GREATER THAN THAT SHOWN WITHOUT THE APPROVAL OF THE ARCHITECT.
18. "±" AS USED IN THESE DOCUMENTS SHALL MEAN THAT THE DIMENSION OR QUANTITY IS SLIGHTLY ADJUSTABLE TO ACCOMMODATE ACTUAL CONDITIONS. VERIFY THE EXACT DIMENSION IN THE FIELD PRIOR TO FABRICATION.
19. "TYPICAL" OR "TYP." AS USED IN THESE DOCUMENTS SHALL MEAN THAT THE CONDITION OR DIMENSION IS THE SAME OR REPRESENTATIVE FOR SIMILAR CONDITIONS THROUGHOUT.
20. "MATCH EXIST." AS USED IN THE DOCUMENTS SHALL MEAN THAT THE CONDITION OR MATERIAL IS TO SEAMLESSLY MATCH THE SURROUNDING OR PRESCRIBE MATERIAL IN STYLE, PROFILE, COLOR, TEXTURE & WHERE POSSIBLE MANUFACTURE.
21. "CLEAR" AS USED IN THESE DOCUMENTS SHALL MEAN THAT THE DIMENSION IS NOT ADJUSTABLE WITHOUT THE APPROVAL OF THE ARCHITECT. CLEAR DIMENSIONS SHALL BE ACCURATE TO FINISH WALL MATERIAL. CONTACT ARCHITECT PRIOR TO CONSTRUCTION IF FIELD CONDITIONS DO NOT ACCOMMODATE SAID DIMENSION.
22. "ALIGN" AS USED IN THESE DOCUMENTS SHALL MEAN TO ACCURATELY LOCATE AND FINISH FACES IN THE SAME PLANE; AND/OR TO INSTALL NEW CONSTRUCTION ADJACENT TO EXISTING CONSTRUCTION WITHOUT ANY VISIBLE JOINTS OR SURFACE IRREGULARITIES.
23. ANY DISCREPANCIES AS TO LOCATION BETWEEN THE ARCHITECTURAL AND ENGINEERING DRAWINGS OR BETWEEN THE DRAWINGS AND EXISTING FIELD CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT FOR CLARIFICATIONS. WORK INSTALLED IN CONFLICT WITH THE CONTRACT DOCUMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE AND SHALL NOT IMPACT THE SCHEDULE.
24. THE ARCHITECT SHALL HAVE THE RIGHT TO MAKE FIELD ADJUSTMENTS IN ORDER TO MAINTAIN DESIGN INTENT.
25. CONTRACTOR SHALL FULLY ACQUAINT HIMSELF WITH THE CONDITIONS OF THE CONTRACT. LOCAL CONDITIONS RELATING TO LOCATION, ACCESSIBILITY AND GENERAL CHARACTER OF THE CONSTRUCTION SITE AND LOCAL LABOR CONDITIONS SO THAT HE UNDERSTANDS THE NATURE, EXTENT, DIFFICULTIES AND RESTRICTIONS RELATED TO THE EXECUTION OF THE WORK.
26. INVESTIGATE JOB SITE TO COMPARE CONTRACT DOCUMENTS AND EXISTING CONDITIONS. INCLUDE COST FOR ALL WORK DESCRIBED IN CONTRACT DOCUMENTS AND REQUIRED OR IMPLIED BY EXISTING CONDITIONS. NOTIFY ARCHITECT OF ANY CONFLICTS BETWEEN EXISTING CONDITIONS AND NEW WORK, OMISSIONS OR CONFLICTS IN THE DRAWINGS AND ANY RESTRICTIONS RELATED TO THE EXECUTION OF THE WORK.
27. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR VERIFYING AND LOCATING ALL UNDERGROUND UTILITIES, ETC. PRIOR TO START OF CONSTRUCTION.
28. OBTAIN THE OWNER'S WRITTEN AUTHORIZATION BEFORE ANY WORK IS PERFORMED OR MATERIAL ORDERED WHICH INVOLVES EXTRA COST OVER AND ABOVE CONTRACT PRICE.
29. INSTALL AND MAINTAIN ALL NECESSARY COVERINGS. PROTECTIVE ENCLOSURES, TEMPORARY DOORS AND PARTITIONS AND DUST BARRIERS TO PROTECT ALL OCCUPANTS AND REPLACE ANY DAMAGES CAUSED BY IMPROPER PROTECTION AT NO ADDITIONAL CHARGE TO OWNER.
30. SUBMIT FOR APPROVAL TO THE ARCHITECT FINISHES LISTED AS MATCH EXISTING.
31. WHERE WALLS, CEILINGS, OR FLOORS ARE PATCHED, EXTENDED, OR REPAIRED, MATCH EXISTING MATERIALS, SIZE, PATTERN, TEXTURE, & COLOR UNLESS INDICATED OTHERWISE.
32. MATERIALS INDICATED TO BE REINSTALLED IN PROJECT ARE TO BE CLEANED, PAINTED, REPAIRED AS APPROPRIATE FOR REINSTALLATION IN "LIKE NEW" CONDITION.
33. CONTRACTOR TO PROTECT SITE FROM DAMAGE TO VEGETATION, DRIVES, PAVEMENT, AND WALKS. CONTRACTOR TO REPAIR OR REPLACE DISTURBED OR DAMAGED AREAS.
34. CALL MISSOURI ONE-CALL SYSTEMS BEFORE EXCAVATING: 1-800-DIG-RITE

DESIGN AIRCRAFT - GEOMETRY
CANADAIR CL-600
AIRCRAFT APPROACH CATEGORY C
AIRPLANE DESIGN GROUP II

DESIGN AIRCRAFT - STRUCTURE
GRUMMAN GULFSTREAM IV
GROSS WEIGHT - 71,800 LBS
EQUIVALENT ANNUAL DEPARTURES - 651

MAXIMUM EQUIPMENT HEIGHT: 100'

UNICOM/CTAF FREQUENCY - 122.80

ABBREVIATIONS

ADJ	ADJACENT
A.F.F.	ABOVE FINISHED FLOOR
ALUM	ALUMINUM
ALT	ALTERNATE
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
A.S.	ABOVE SLAB
BB	BASE BID
BD	BOARD
BL	BORROWED LITE
BLDG	BUILDING
BLKG	BLOCKING
BRG	BEARING
BOT	BOTTOM
B.O.	BOTTOM OF
B.O.S.	BOTTOM OF STEEL
CJ	CONTROL JOINT
CL	CLOSET
CLNG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
C.O.	CLEAN OUT
COL	COLUMN
CONC	CONCRETE
CONST	CONSTRCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
CORR	CORRIDOR
CPT	CARPET
CT	CERAMIC TILE
CTR	CENTER
DBL	DOUBLE
DEPT	DEPARTMENT
DET	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DN	DOWN
DR	DOOR
DTL	DETAIL
DW	DISHWASHER
DWG(S)	DRAWING/DRAWINGS
E	EAST
EA	EACH
EJ	EXPANSION JOINT
EL, ELEV	ELEVATION
ELEC	ELECTRIC, ELECTRICAL
ENCL	ENCLOSURE
E.O.S.	EDGE OF SLAB
EQ	EQUAL
EQUIP	EQUIPMENT
E.T.R.	EXISTING TO REMAIN
E.W.	EACH WAY
EXIST.	EXISTING
EXT	EXTERIOR
FAP	FIRE ALARM PANEL
FD	FLOOR DRAIN
FDN	FOUNDATION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FIN.	FINISH
FIX, FIXT	FIXTURE
FL, FLR	FLOOR
FLASH	FLASHING
F.O.C.	FACE OF CONCRETE
F.O.F.	FACE OF FINISH
F.O.S.	FACE OF STUD
F.O.W.	FACE OF WALL
FR	FIRE RATED, FIRE RETARDANT
FT	FOOT, FEET
FTG	FOOTING
FURR	FURRING
F.V.	FIELD VERIFY
FVC	FIRE VALVE CABINET
GA	GAUGE
GALV	GALVANIZED
G.C.	GENERAL CONTRACTOR
GRND	GROUND
GL	GLASS, GRID LINE
G.S.F.	GROSS SQUARE FOOTAGE
GYP BD	GYPSUM WALLBOARD
GYP	GYPSUM
H.B.	HOSE BIB
HC	HANDICAPPED
HD	HEAD
HDWR	HARDWARE
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HR	HOUR
HT	HEIGHT
HVAC	HEATING, VENTILATION, AIR CONDITIONING
ID	INSIDE DIAMETER
IN	INCH
INSUL	INSULATION
INT	INTERIOR
JAN	JANITOR
JST	JOIST
JT/ JNT	JOINT
KEC	KITCHEN EQUIPMENT CONTRACTOR
KIT	KITCHEN
L	LONG / LENGTH
LAM	LAMINATE, LAMINATED
LAV	LAVATORY
LT	LIGHT
M&MR	MOLD & MOISTURE RESISTANT
MAT'L	MATERIAL
MAS	MASONRY
MAX	MAXIMUM
MECH	MECHANICAL
MEMB	MEMBRANE
MTL	METAL
MEZZ	MEZZANINE
MFR, MANUF.	MANUFACTURER
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
MR	MOISTURE RESISTANT
MTD	MOUNTED
MWS	MOVABLE WALL SYSTEM
N	NORTH
N.I.C.	NOT IN CONTRACT
NO, NUM	NUMBER
NOM	NOMINAL
N.S.F.	NET SQUARE FEET
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
OD	OUTSIDE DIAMETER
OFF.	OFFICE
OFD	OVERFLOW DRAIN
OGPP	OPERABLE GLASS PANEL PARTITION
OPNG	OPENING
OPP	OPPOSITE
OSF	OFFICE SYSTEMS FURNITURE
PERP.	PERPENDICULAR
PL	PLATE
PLAM	PLASTICAL LAMINATE
PLYWD	PLYWOOD
PNL, PANEL	PANELBOARD
PR	PAIR
PROJ	PROJECT
PROP.	PROPERTY
P.T.	PRESSURE TREATED
PT	PAINT
QT	QUARRY TILE
QTY	QUANTITY
R	RISER
RCP	REFLECTED CEILING PLAN
RAD, R	RADIUS
RD	ROOF DRAIN
REINF, R.I.	REINFORCED
REQ, REQ'D	REQUIRED
REV	REVISION
RM	ROOM
R.O.	ROUGH OPENING
S	SOUTH
SC	SOLID CORE
SCHED	SCHEDULE
SECT	SECTION
S.F.	SQUARE FEET
SGD	SAFETY GLASSES DISPENSER
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
S.S.	STAINLESS STEEL
ST	STAIR
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUCT.	STRUCTURAL
SUSP	SUSPENDED
SYM	SYMMETRICAL
TRD	TREAD
T.C.	THEATER CONSULTANT
TEMP.	TEMPORARY
THK	THICK
T.O.	TOP OF
T.O.S.	TOP OF STEEL
T.O.M.	TOP OF MASONRY
T.O.W.	TOP OF WALL
TR	TRASH RECEPTACLE
T.S.	TUBE STEEL
TYP	TYPICAL
UNFIN.	UNFINISHED
U.O.N.	UNLESS OTHERWISE NOTED
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VEST.	VESTIBULE
V.I.F.	VERIFY IN FIELD
VWC	VINYL WALLCOVERING
W	WEST, WIDE, WIDTH
W/, W/O	WITH, WITHOUT
WC	WATER CLOSET
WDW	WINDOW
WH	WATER HEATER
W.R.	WATER RESISTANT

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G-003	CAP NOTES
G-004	TRAFFIC CONTROL DETAILS
G-005	CODE PLAN
G-006	WALL TYPES
G-007	GENERAL ACCESSIBILITY
G-008	INTERIOR ACCESSIBILITY
C-101	EXISTING CONDITIONS AND DEMOLITION
C-102	TYPICAL SECTIONS PLAN VIEW
C-103	TYPICAL SECTIONS SHEET 1 OF 2
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C-105	SITE PLAN
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C-108	AIRFIELD JOINTING PLAN
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C-110	PARKING LOT JOINTING PLAN
C-111	PAVEMENT JOINTING DETAILS 1 OF 2
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C-113	GRADING PLAN
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C-117	SANITARY SEWER DETAILS
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C-119	WATERLINE PROFILE SHEET 1 OF 2
C-120	WATERLINE PROFILE SHEET 2 OF 2
C-121	ELECTRICAL PLAN
C-122	ELECTRICAL DETAILS
C-123	FENCING PLAN
C-124	FENCING DETAILS SHEET 1 OF 2
C-125	FENCING DETAILS SHEET 2 OF 2
C-126	SLIDING GATE DETAILS 1 OF 5
C-127	SLIDING GATE DETAILS 2 OF 5
C-128	SLIDING GATE DETAILS 3 OF 5
C-129	SLIDING GATE DETAILS 4 OF 5
C-130	SLIDING GATE DETAILS 5 OF 5
C-131	EROSION CONTROL PLAN
C-132	EROSION CONTROL DETAILS
C-133	AIRFIELD MARKING PLAN
C-134	PARKING LOT MARKING PLAN
C-135	MARKING & SIGNAGE DETAIL 1 OF 2
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L-100	OVERALL LANDSCAPE PLAN

SHEET NUMBER	SHEET NAME
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S-002	IBC INSPECTION TABLES
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S-502	FOUNDATION DETAILS
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AS100	ARCHITECTURAL SITE PLAN
A-100	FLOOR PLANS
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A-201	EXTERIOR ELEVATIONS
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A-310	WALL SECTIONS
A-311	WALL SECTIONS
A-312	WALL SECTIONS
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FP100	FIRE PROTECTION PLANS
M-100	MECHANICAL PLANS
M-110	RADIANT FLOOR MECHANICAL PLANS
M-200	MECHANICAL PIPING PLANS
M-300	MECHANICAL DIAGRAMS
M-310	MECHANICAL DIAGRAMS
M-400	MECHANICAL DETAILS
M-410	MECHANICAL DETAILS
M-500	MECHANICAL SCHEDULES
ME000	MECHANICAL/ELECTRICAL SYMBOLS LEGEND
ME001	MECHANICAL / ELECTRICAL GENERAL NOTES
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ME003	SITE LIGHTING PHOTOMETRIC PLAN
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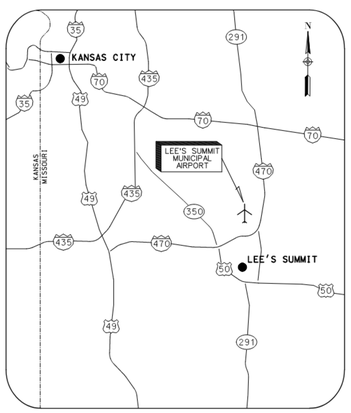
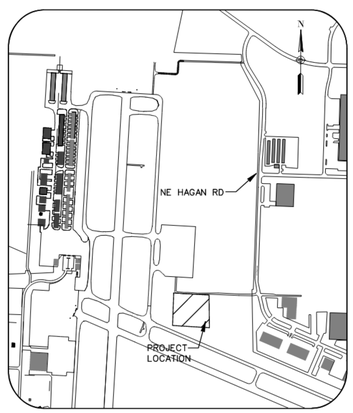
E-310	FIRE ALARM RISER AND DETAILS
E-400	ELECTRICAL DETAILS
E-410	ELECTRICAL DETAILS
E-420	ELECTRICAL DETAILS
E-500	ELECTRICAL SCHEDULES
E-510	ELECTRICAL SCHEDULES

SYMBOLS

GRID LINE
LEVEL
BUILDING SECTION
WALL SECTION
DETAIL SECTION
DETAIL CALLOUT ENLARGED PLAN
EXTERIOR ELEVATION
INTERIOR ELEVATION
PARTITION TYPE
WINDOW TYPE
DOOR TAG
CEILING TAG
CASEWORK TAG
ROOM TAG
REVISION NUMBER
REVISION AREA/ITEM
MATCH LINE
EXISTING WALL TO REMAIN
EXISTING WALL TO BE REMOVED
NEW GYP BD/MTL STUD WALL
EXISTING DOOR & FRAME TO REMAIN
EXISTING DOOR & FRAME TO BE REMOVED
NEW DOOR & FRAME



LOCATION MAP



SITE PLAN

PROJECT TEAM

ARCHITECTURAL, MECHANICAL, ELECTRICAL, & PLUMBING, FIRE ALARM, AUDIO/VISUAL
Wellner Architects + Engineers
1627 Main Street #100
Kansas City, MO 64108
816.221.0017

STRUCTURAL
OWN Engineering
8455 College Blvd
Overland Park, KS 66210
816.777.0400

CIVIL
CMT Engineering
1627 Main Street, Suite 600
Kansas City, MO 64108
816.272.8318

STATE OF MISSOURI
JASON SCOTT BARKER
NUMBER A-2005001198
REGISTERED ARCHITECT

03/21/2025
Jason Scott Barker - MO #A-2005001198
Certificate of Authority - MO #000767

TM Aviation
TM AVATION HANGER
AT LXT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **Author** | Checked By **Checker**

KEY PLAN
NORTH

SHEET NAME
COVER

SHEET NUMBER
G-000

PROJECT NUMBER
2404

4/9/2025 4:09:55 PM

SUMMARY OF QUANTITIES
TM AVIATION HANGAR - INFRASTRUCTURE ONLY

BID ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
1	EXISTING ROAD REMOVAL	LS	1
2	EROSION CONTROL	LS	1
3	FENCE REMOVAL	LF	244
4	MAINTENANCE OF TRAFFIC	LS	1
5	ELECTRIC BLACK VINYL BI-DIRECTIONAL ROLLING GATE SYSTEM	EA	1
6	12" 6% CEMENT-TREATED SUBGRADE	SY	1326
7	CEMENT (SOIL STABILIZATION)	TON	48
8	4" COMPACTED AGGREGATE BASE COURSE	SY	642
9	9" PORTLAND CEMENT CONCRETE PAVEMENT	SY	699
10	8" PORTLAND CEMENT CONCRETE PAVEMENT	SY	549
11	4" PORTLAND CEMENT CONCRETE SIDEWALK	SY	91
12	TYPE CG-1 CONCRETE CURB AND GUTTER	LF	338
13	4" YELLOW PARKING STALL WATERBORNE MARKINGS	LF	277
14	THERMOPLASTIC ADA ACCESSIBLE PARKING SYMBOL MARKINGS	EA	1
15	AGGREGATE OR SOIL MATERIAL FROM OFF-SITE	CY	1,922
16	UNCLASSIFIED EXCAVATION	CY	602
17	SEEDING	AC	4.85
18	MULCHING	AC	0.1
19	FIRE HYDRANT ASSEMBLY (WITH NEW HYDRANT)	EA	1
20	DRAINAGE	LS	1
21	8' BLACK VINYL CHAIN LINK FENCE WITH BARBED WIRE	LF	435
22	UTILITIES - ELECTRIC	LS	1
23	UTILITIES - GAS	LS	1
24	UTILITIES - WATER	LS	1
25	UTILITIES - SANITARY SEWER	LS	1
	REIMBURSIBLE		
1	REMOVAL OF CONCRETE CURB AND GUTTER	LF	35
2	9" PORTLAND CEMENT CONCRETE PAVEMENT	SY	2,486
3	8" PORTLAND CEMENT CONCRETE PAVEMENT	SY	78
4	4" COMPACTED AGGREGATE BASE COURSE	SY	78
5	12" 6% CEMENT-TREATED SUBGRADE	SY	2,709
6	CEMENT (SOIL STABILIZATION)	TON	97
7	TYPE CG-1 CONCRETE CURB AND GUTTER	LF	86
8	EXCAVATION - AGGREGATE OR SOIL MATERIAL RECYCLED ON-SITE	CY	2,423
9	UNCLASSIFIED EXCAVATION	CY	1,107
10	4-WAY - 4" PVC CONCRETE ENCASED DUCT BANK	LF	85
11	PAVEMENT MARKING REMOVAL	SF	95
12	WATERBORNE PAINT, YELLOW WITH REFLECTIVE MEDIA	SF	314
13	WATERBORNE PAINT, BLACK WITHOUT REFLECTIVE MEDIA	SF	62

CMT
1627 MAIN STREET, SUITE 600
KANSAS CITY, MO 64108

WELLNER ARCHITECTS + engineers
1627 MAIN STREET, SUITE 100
KANSAS CITY, MO 64108

PEC
1100 MAIN ST, STE 1800
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olsson
1301 BURLINGTON
NORTH KANSAS CITY, MO 64116

KC - LEE'S SUMMIT REGIONAL
LEE'S SUMMIT, MISSOURI

TM AVIATION HANGAR
CITY PROJECT NO. - XXXXXXXX

STATE OF MISSOURI
GERALD BOLLINGER
Gerald T. Bollinger
NUMBER PE-2021009173
PROFESSIONAL ENGINEER

March 21, 2025

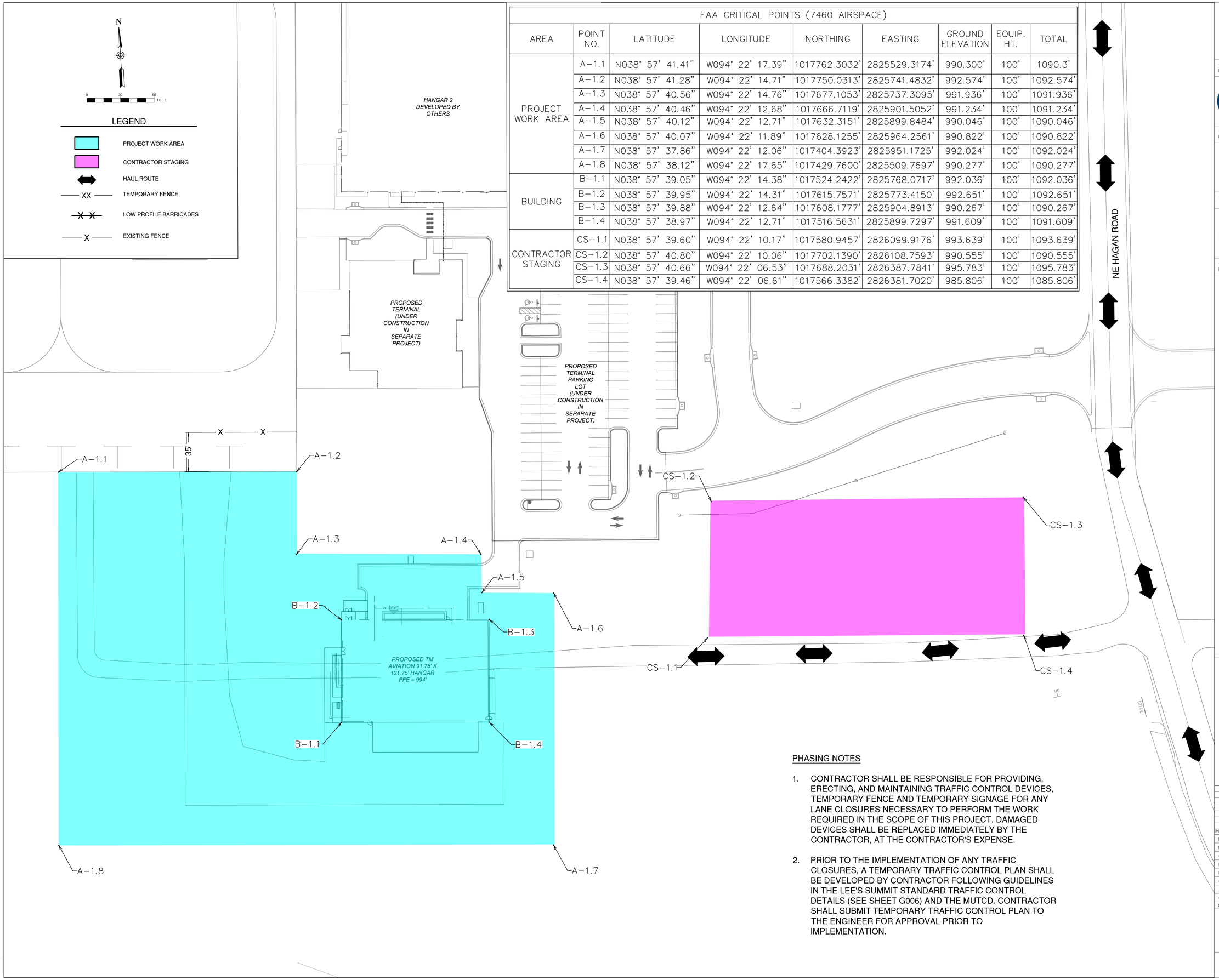
MARK	DATE	DESCRIPTION

PROJECT NO:	PERMIT SET
PROJECT NO:	Project Number
CAD FILE:	FILE NAME
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
COPYRIGHT 2025	
SHEET TITLE	

SUMMARY OF QUANTITIES

G-001

Jan 01, 2010 10:32:00 AM



FAA CRITICAL POINTS (7460 AIRSPACE)

AREA	POINT NO.	LATITUDE	LONGITUDE	NORTHING	EASTING	GROUND ELEVATION	EQUIP. HT.	TOTAL
PROJECT WORK AREA	A-1.1	N038° 57' 41.41"	W094° 22' 17.39"	1017762.3032'	2825529.3174'	990.300'	100'	1090.3'
	A-1.2	N038° 57' 41.28"	W094° 22' 14.71"	1017750.0313'	2825741.4832'	992.574'	100'	1092.574'
	A-1.3	N038° 57' 40.56"	W094° 22' 14.76"	1017677.1053'	2825737.3095'	991.936'	100'	1091.936'
	A-1.4	N038° 57' 40.46"	W094° 22' 12.68"	1017666.7119'	2825901.5052'	991.234'	100'	1091.234'
	A-1.5	N038° 57' 40.12"	W094° 22' 12.71"	1017632.3151'	2825899.8484'	990.046'	100'	1090.046'
	A-1.6	N038° 57' 40.07"	W094° 22' 11.89"	1017628.1255'	2825964.2561'	990.822'	100'	1090.822'
	A-1.7	N038° 57' 37.86"	W094° 22' 12.06"	1017404.3923'	2825951.1725'	992.024'	100'	1092.024'
	A-1.8	N038° 57' 38.12"	W094° 22' 17.65"	1017429.7600'	2825509.7697'	990.277'	100'	1090.277'
BUILDING	B-1.1	N038° 57' 39.05"	W094° 22' 14.38"	1017524.2422'	2825768.0717'	992.036'	100'	1092.036'
	B-1.2	N038° 57' 39.95"	W094° 22' 14.31"	1017615.7571'	2825773.4150'	992.651'	100'	1092.651'
	B-1.3	N038° 57' 39.88"	W094° 22' 12.64"	1017608.1777'	2825904.8913'	990.267'	100'	1090.267'
	B-1.4	N038° 57' 38.97"	W094° 22' 12.71"	1017516.5631'	2825899.7297'	991.609'	100'	1091.609'
CONTRACTOR STAGING	CS-1.1	N038° 57' 39.60"	W094° 22' 10.17"	1017580.9457'	2826099.9176'	993.639'	100'	1093.639'
	CS-1.2	N038° 57' 40.80"	W094° 22' 10.06"	1017702.1390'	2826108.7593'	990.555'	100'	1090.555'
	CS-1.3	N038° 57' 40.66"	W094° 22' 06.53"	1017688.2031'	2826387.7841'	995.783'	100'	1095.783'
	CS-1.4	N038° 57' 39.46"	W094° 22' 06.61"	1017566.3382'	2826381.7020'	985.806'	100'	1085.806'

PHASING NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING, ERECTING, AND MAINTAINING TRAFFIC CONTROL DEVICES, TEMPORARY FENCE AND TEMPORARY SIGNAGE FOR ANY LANE CLOSURES NECESSARY TO PERFORM THE WORK REQUIRED IN THE SCOPE OF THIS PROJECT. DAMAGED DEVICES SHALL BE REPLACED IMMEDIATELY BY THE CONTRACTOR, AT THE CONTRACTOR'S EXPENSE.

2. PRIOR TO THE IMPLEMENTATION OF ANY TRAFFIC CLOSURES, A TEMPORARY TRAFFIC CONTROL PLAN SHALL BE DEVELOPED BY CONTRACTOR FOLLOWING GUIDELINES IN THE LEE'S SUMMIT STANDARD TRAFFIC CONTROL DETAILS (SEE SHEET G006) AND THE MUTCD. CONTRACTOR SHALL SUBMIT TEMPORARY TRAFFIC CONTROL PLAN TO THE ENGINEER FOR APPROVAL PRIOR TO IMPLEMENTATION.

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1301 BURLINGTON
NORTH KANSAS CITY, MO 64116

KC - LEE'S SUMMIT REGIONAL
LEE'S SUMMIT, MISSOURI

TM AVIATION HANGAR
CITY PROJECT NO. - XXXXXXXX

STATE OF MISSOURI
GERALD BOLLINGER
NUMBER PE-2021009173
PROFESSIONAL ENGINEER

March 21, 2025

MARK	DATE	DESCRIPTION
PROJECT NO:		PERMIT SET
PROJECT NO:		Project Number
CAD FILE:		FILE NAME
DESIGNED BY:		
DRAWN BY:		
CHECKED BY:		
APPROVED BY:		
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SHEET TITLE		

CONSTRUCTION ACTIVITY PLAN

G-002

SHEET 3 OF 39

Jan 01, 2010 10:32:00 AM

GENERAL

1. THE CONTRACTOR AND ALL SUBCONTRACTORS SHALL FOLLOW THE REQUIREMENTS OF THE AIRPORT'S APPROVED CONSTRUCTION SAFETY AND PHASING PLAN (CSPP), FAA AC 150/5370-2G, AND ALL AIRPORT SAFETY AND SECURITY REQUIREMENTS.
2. PRIOR TO THE START OF CONSTRUCTION THE CONTRACTOR SHALL SUBMIT TO THE CITY FOR APPROVAL A SAFETY PLAN COMPLIANCE DOCUMENT (SPCD) IN ACCORDANCE WITH FAA AC 150/5370-2G. NO CONSTRUCTION ACTIVITY SHALL BEGIN UNTIL THE CITY HAS APPROVED THE SPCD.
3. THE CSPP COVERS OPERATIONAL SAFETY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INDIVIDUAL SAFETY OF HIS/HER PERSONNEL AND MEETING OSHA REQUIREMENTS.
4. A MINIMUM OF 10 DAYS PRIOR TO THE PRE-CONSTRUCTION MEETING THE CONTRACTOR SHALL PROVIDE A LIST OF SUBCONTRACTORS AND MATERIAL SUPPLIERS.
5. THE CONTRACTOR SHALL EXERCISE BEST MANAGEMENT PRACTICES IN ACCORDANCE WITH STORM WATER POLLUTION PREVENTION AND PROJECT SPECIFICATION C-102 EROSION AND SEDIMENT CONTROL THROUGHOUT THE LIFE OF THE PROJECT TO CONTROL WATER POLLUTION.
6. ALL CONTRACTOR COSTS ASSOCIATED WITH THE REQUIREMENTS LISTED ON THIS SHEET SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT UNLESS A SPECIFIC PAY ITEM IS PROVIDED.
7. THE EXISTING FEATURES SHOWN ON THESE PLANS ARE THOSE NOTED IN THE FIELD AND THOSE TAKEN FROM RECORD DRAWINGS. THIS DOES NOT GUARANTEE THAT ALL FEATURES ARE SHOWN ON THE PLANS. THERE WILL BE NO ADDITIONAL PAYMENT TO THE CONTRACTOR DUE TO VARIATIONS IN SIZE, QUANTITY OR LOCATION OF EXISTING FEATURES.
8. CRAWLER TYPE EQUIPMENT SHALL NOT BE ALLOWED ON ANY PAVED SURFACE ON THE AIRPORT. ONLY RUBBER-TIRED VEHICLES, WHICH WILL NOT CAUSE DAMAGE TO THE PAVEMENTS, SHALL BE ALLOWED WITHOUT PROVIDING SOME TYPE OF PROTECTION.
9. THE CONTRACTOR SHALL HAVE PROPER IDENTIFICATION ON ALL EQUIPMENT AND VEHICLES ON THE AIRPORT.
10. NO EDGE DROP GREATER THAN 3 INCHES WILL BE ALLOWED AT ANY ACTIVE RUNWAY PAVEMENT EDGE OR SAFETY AREA. IF NECESSARY, THE CONTRACTOR SHALL PLACE TEMPORARY MATERIAL TO ELIMINATE VERTICAL DROPS GREATER THAN 3 INCHES OR SLOPES GREATER THAN 5% IN THESE AREAS. THIS WORK SHALL BE SUBSIDIARY TO OTHER ITEMS IN THE PROJECT.
11. THE CONTRACTOR SHALL CONSTRUCT HAUL ROADS FOR ALL PHASES OF CONSTRUCTION. THE HAUL ROADS SHALL BE CONSTRUCTED OF MATERIALS THAT ALLOW ACCESS TO THE SITE DURING POOR CONDITIONS. THE HAUL ROADS SHALL BE REMOVED AFTER CONSTRUCTION OF EACH PHASE IS COMPLETE. THE AREAS WHERE HAUL ROADS WERE CONSTRUCTED SHALL BE RESTORED BACK TO THEIR ORIGINAL CONDITION. CONSTRUCTION OF THE HAUL ROADS, REMOVAL OF THE HAUL ROADS AND RESTORING THE AREAS BACK TO THEIR ORIGINAL CONDITION SHALL BE INCIDENTAL TO THE PROJECT.

1. COORDINATION

1. PRIOR TO THE START OF CONSTRUCTION THE CONTRACTOR SHALL ATTEND A PRECONSTRUCTION CONFERENCE WITH THE AIRPORT AND THE ENGINEER. THE COST OF PREPARING FOR AND ATTENDING THE PRECONSTRUCTION CONFERENCE SHALL BE INCIDENTAL TO THE CONTRACT.
2. ON OR BEFORE THE PRECONSTRUCTION CONFERENCE, THE CONTRACTOR SHALL SUBMIT A PROPOSED SCHEDULE FOR THE PROJECT. THE SCHEDULE SHALL INCLUDE A START AND COMPLETION DATE FOR EACH ITEM OF WORK. THE SCHEDULE SHALL BE UPDATED ON A WEEKLY BASIS. ALL COSTS ASSOCIATED WITH THE SCHEDULE SHALL BE INCIDENTAL TO THE CONTRACT.
3. DURING CONSTRUCTION THE CONTRACTOR SHALL ATTEND A WEEKLY COORDINATION MEETING WITH THE RESIDENT ENGINEER/OBSERVER. ALL COSTS ASSOCIATED WITH ATTENDING THE WEEKLY MEETING SHALL BE INCIDENTAL TO THE CONTRACT.
4. CHANGES MADE TO THE SCOPE OR DURATION OF THE PROJECT MAY NECESSITATE REVISIONS TO THE CSPP AND SHALL REQUIRE REVIEW AND APPROVAL BY THE ENGINEER AND AIRPORT OPERATOR.

2. CONSTRUCTION ACTIVITY

1. THE SOUTH EAST CORNER OF THE EAST APRON SHALL BE CLOSED FOR THE DURATION OF THE PROJECT
2. NO CONSTRUCTION TRAFFIC SHALL CROSS INTO ANY OPEN AIRFIELD PAVEMENT OR AIRFIELD OBJECT FREE AREAS FOR ANY REASON WHATSOEVER. SHALL ACCESS BE NECESSARY FOR ANY REASON, CONTRACTOR SHALL COORDINATE WITH THE AIRPORT WHO SHALL PROVIDE ESCORT.
3. UNAUTHORIZED ENTRY BY ANY PERSONNEL, VEHICLE OR EQUIPMENT WOULD BE A MAJOR INFRACTION OF AIRPORT SAFETY. THE PERSONNEL RESPONSIBLE FOR THE INCURSION SHALL BE SUSPENDED FROM ACCESS ONTO AIRPORT PROPERTY AND WILL NOT BE ALLOWED RE-ENTRY WITHOUT THE CONSENT OF THE AIRPORT. IF MULITPLE INCURSIONS OCCUR, THE AIRPORT RESERVES THE RIGHT TO SUSPEND ALL ACCESS ONTO AIRPORT PROPERTY UNTIL ALL KEY CONTRACTOR STAFF ARE RETRAINED IN AIRPORT SAFETY. PROJECT CALENDAR DAYS WILL CONTINUE TO BE COUNTED DURING THE WORK SUSPENSION.

3. PROTECTION OF NAVIGATION AIDS (NAVAIDS)

1. THE CONTRACTOR SHALL REMAIN CLEAR OF THE PAPI SYSTEMS, WIND CONE, BEACON, AWOS AND OTHER NAVAIDS FACILITIES AT ALL TIMES, UNLESS SPECIFICALLY NOTED OTHERWISE.
2. THE CONTRACTOR SHALL LOCATE FAA UTILITIES WITH FAA TECHNICAL OPERATIONS PRIOR TO START OF ALL CONSTRUCTION.

4. CONTRACTOR ACCESS

1. CONTRACTOR ACCESS SHALL BE AS NOTED BELOW AND AS SHOWN ON THE SITE PLAN AND CONSTRUCTION ACTIVITY PLAN SHEETS.
2. THE CONTRACTOR SHALL DESIGNATE AT LEAST ONE PERSON TO MONITOR THE AIRPORT UNICOM FREQUENCY OF 122.80. THE PERSON DESIGNATED SHALL HAVE THE ABILITY TO EASILY COMMUNICATE WITH OTHER CONTRACTOR PERSONNEL WORKING ON THE JOBSITE. THE CONTRACTOR SHALL PROVIDE THEIR OWN WORKING RADIO(S).
3. THE STORAGE AND STAGING AREAS SHALL BE AS SHOWN ON THE SITE PLAN.
4. THE CONTRACTOR SHALL KEEP A RECORD OF THE NAMES OF ALL EMPLOYEES ENTERING THE JOB SITE ON A DAILY BASIS AND BE RESPONSIBLE FOR MAINTAINING THE SECURITY OF THE ACCESS GATES BY KEEPING THE GATES LOCKED AND GUARDED AT ALL TIMES. A RECORD OF EACH SUBCONTRACTOR ENTERING THE JOB SITE SHALL ALSO BE KEPT BY THE CONTRACTOR.
5. WHEN THE CONTRACTOR IS NOT WORKING, EQUIPMENT SHALL BE STORED AT THE STAGING AREA OR WITHIN THE WORK AREA LIMITS
6. THE CONTRACTOR SHALL STORE EQUIPMENT AND MATERIALS ONLY AT THE LOCATIONS SHOWN. PARKED EQUIPMENT AND MATERIAL STOCKPILES SHALL NOT PENETRATE SURFACES DEFINED BY F.A.R. TITLE 14 PART 77 - OBJECTS AFFECTING NAVIGABLE AIRSPACE.
7. ALL CONSTRUCTION TRAFFIC OPERATING WITHIN AN ACTIVE RUNWAY OR TAXIWAY SAFETY AREA OR ON AN ACTIVE APRON SHALL BE UNDER CONTROL BY A FLAGMAN OR ESCORT WHO IS MONITORING THE AIRPORT UNICOM FREQUENCY. THE CONTRACTOR SHALL PROVIDE HIS/HER OWN FLAGMEN.
8. THE CONTRACTOR SHALL THOROUGHLY AND CONTINUOUSLY CLEAN ALL CONSTRUCTION AREAS AND HAUL ROUTES WHICH WILL BE OPENED TO AIR TRAFFIC TO THE SATISFACTION OF THE ENGINEER. A POWER BROOM AND OPERATOR SHALL BE ON SITE AT ALL TIMES WHEN ACTIVE PAVEMENTS ARE UTILIZED FOR CONSTRUCTION TRAFFIC.
9. ALL PAVEMENTS, DRIVES OR ANY OTHER AREAS UTILIZED BY THE CONTRACTOR FOR HAUL ROADS OR STORAGE AREAS SHALL BE MAINTAINED AND REPAIRED TO THE SAME CONDITION OR BETTER THAN THEY WERE PRIOR TO BEGINNING CONSTRUCTION. NO ADDITIONAL COMPENSATION WILL BE MADE TO THE CONTRACTOR FOR THIS WORK.
10. ALL VEHICLE AND EQUIPMENT OPERATORS USED BY THE CONTRACTOR SHALL BE PROPERLY TRAINED BY THE CONTRACTOR. VEHICLE OPERATORS HAVING ACCESS TO THE MOVEMENT AREA SHALL BE FAMILIAR WITH AIRPORT PROCEDURES FOR THE OPERATION OF GROUND VEHICLES AND THE CONSEQUENCES OF NONCOMPLIANCE OR BE ESCORTED BY SOMEONE WHO IS.
11. THE CONTRACTOR SHALL NOTIFY THE LOCAL FIRE DEPARTMENT IF CONSTRUCTION ACTIVITY WILL REQUIRE THE BLOCKAGE OF EMERGENCY ACCESS TO THE AIRPORT.

5. TEMPORARY FENCING AND PROJECT ACCESS NOTES

1. SEE FENCING PLAN FOR LAYOUT OF PROPOSED FENCE AND FOR LAYOUT OF FENCE REMOVALS
2. ALL PROPOSED FENCING SHALL BE INSTALLED PRIOR TO REMOVAL OF EXISTING. ANY GAPS IN FENCING SHALL ONLY BE ALLOWED TEMPORARILY AND UNDER DIRECT SUPERVISION OF CONTRACTOR PERSONNEL.

6. WILDLIFE MANAGEMENT

1. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OR AIRPORT MANAGER IF ANY WILDLIFE IS SEEN ENTERING THE AIRPORT.
2. THE CONTRACTOR SHALL DISPOSE OF ALL TRASH INCLUDING FOOD SCRAPS IN APPROVED CONTRACTOR PROVIDED CONTAINERS.

7. FOREIGN OBJECT DEBRIS (FOD) MANAGEMENT

1. THE CONTRACTOR SHALL PICK UP ANY FOREIGN OBJECT DEBRIS (FOD) SEEN ON THE AIRFIELD PAVEMENTS.
2. THE CONTRACTOR SHALL SECURE ALL LOOSE ITEMS FROM VEHICLES PRIOR TO DRIVING ON AIRFIELD PAVEMENTS.

8. HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT

1. THE CONTRACTOR SHALL DEVELOP A HAZMAT MANAGEMENT PLAN AND KEEP COPIES ON THE JOBSITE OF MATERIAL SAFETY DATA SHEETS (SDS) FOR ALL MATERIALS HANDLED ON THE JOBSITE.

9. NOTIFICATION OF CONSTRUCTION ACTIVITIES

1. THE CONTRACTOR SHALL PROVIDE A 24 HOUR EMERGENCY CONTACT PERSON AND PHONE NUMBER.
2. THE CONTRACTOR SHALL GIVE A MINIMUM OF 72 HOURS NOTICE TO THE AIRPORT PRIOR TO CLOSING ANY PAVEMENTS SO THAT PROPER NOTAMS MAY BE ISSUED BY THE AIRPORT AND TO ALLOW FOR COORDINATION WITH THE AIRPORT TENANTS BY THE AIRPORT.
3. FOR ANY EQUIPMENT USED BY THE CONTRACTOR WITH A HEIGHT GREATER THAN 100', THE CONTRACTOR SHALL SUBMIT FAA FORM 7460-1 TO THE FAA FOR AN AIRSPACE STUDY. NO EQUIPMENT WITH A HEIGHT GREATER THAN 100' SHALL BE USED UNTIL A DETERMINATION FROM FAA IS RECEIVED.
4. IN THE EVENT OF AN EMERGENCY, THE CONTRACTOR SHALL CALL 911.
5. CONTACTS FOR THIS PROJECT ARE AS LISTED BELOW.

CITY (OWNER)	
MIKE ANDERSON - DEPUTY DIRECTOR OF LSPW	(816) 969-1800
AIRPORT	
JOEL ARRINGTON - AIRPORT MANAGER	(816) 969-1181
AIRPORT FRONT DESK	(816) 969-1186
ENGINEER	
JERRY BOLLINGER - PROJECT MANAGER	(317) 492-9173
WATER UTILITIES	(816) 989-1900
FIRE DEPARTMENT	(816) 969-1300
POLICE DEPARTMENT	(816) 969-1700
FAA TECHNICAL OPERATIONS	
BRIAN CHITTUM	(816) 329-2828
EMERGENCY	911

10. INSPECTION REQUIREMENTS

1. THE CONTRACTOR SHALL INSPECT THE JOBSITE DAILY TO ENSURE COMPLIANCE WITH THE CSPP. THE CHECKLIST FOUND IN APPENDIX 3 OF FAA AC 150/5370-2G MAY BE USED TO AID IN THE INSPECTIONS.
2. THE CONTRACTOR SHALL ATTEND A FINAL INSPECTION OF EACH PHASE WORK AREA PRIOR TO OPENING THE AREA TO AIRPORT OPERATIONS.

11. UNDERGROUND UTILITIES

1. THE CONTRACTOR SHALL MAKE HIS OWN FIELD INVESTIGATION TO DETERMINE THE EXACT LOCATION OF THE UNDERGROUND UTILITIES AT CRITICAL POINTS. THE LOCATION OF UNDERGROUND UTILITIES AS INDICATED ON THE PLANS HAS BEEN OBTAINED FROM EXISTING RECORDS. NEITHER THE OWNER NOR THE ENGINEER ASSUMES ANY RESPONSIBILITY IN RESPECT TO THE ACCURACY, COMPLETENESS OR SUFFICIENCY OF THE INFORMATION.
2. BEFORE INITIATING ANY DIGGING, DRILLING OR EXCAVATING ON THE AIRPORT PROPERTY, THE CONTRACTOR SHALL CALL 1-800-DIG-RITE AND FAA TECHNICAL OPERATIONS TO ARRANGE FOR UTILITY LOCATES.

12. PENALTIES

1. NONCOMPLIANCE BY THE CONTRACTOR WITH AIRPORT RULES AND REGULATIONS OR FAILURE TO COMPLY WITH THE AIRPORT'S APPROVED CSPP AND THE CONTRACTOR'S APPROVED SPCD MAY RESULT IN FINES AS ALLOWED BY LAW OR APPLICABLE REGULATION.

13. RUNWAY AND TAXIWAY VISUAL AIDS

1. AIRPORT PAVEMENT SHALL BE CLOSED DURING THIS PROJECT. THE CONTRACTOR SHALL USE MARKING, LIGHTING AND SIGNS THAT FOLLOW THE REQUIREMENTS OF FAA AC 150/5370-2G.
2. BARRICADES SHALL BE USED AND MAINTAINED AS SHOWN ON THE CONSTRUCTION ACTIVITY PLAN SHEETS.

14. TRAFFIC CONTROL AND SIGNAGE NOTES

1. PRIOR TO BEGINNING PROJECT CONSTRUCTION, A CONSTRUCTION TRAFFIC CONTROL PLAN SHALL BE DEVELOPED BY THE CONTRACTOR FOLLOWING GUIDELINES AS DESCRIBED IN THE CITY OF LEE'S SUMMIT TRAFFIC CONTROL PLAN ON SHEET G006 TRAFFIC CONTROL DETAILS. CONTRACTOR SHALL SUBMIT THE TRAFFIC CONTROL PLAN TO THE ENGINEER FOR APPROVAL PRIOR TO IMPLEMENTATION.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING, ERECTING, AND MAINTAINING TRAFFIC CONTROL DEVICES AND TEMPORARY SIGNAGE FOR SURROUNDING ROADWAYS AS IDENTIFIED ON THE SUBMITTED TRAFFIC CONTROL PLAN. DAMAGED DEVICES SHALL BE REPLACED IMMEDIATELY BY THE CONTRACTOR, AT THE CONTRACTOR'S EXPENSE.
3. CONTRACTOR SHALL INSTALL 'AUTHORIZED PERSONNEL ONLY' SIGN AT ACCESS ROAD ENTRANCE FOR PROJECT DURATION.

15. EROSION CONTROL NOTES

1. PRIOR TO COMMENCING ANY SITE GRADING OR DEMOLITION, CONTRACTOR MUST INSTALL EROSION CONTROL MEASURES PER THE REQUIRED MINIMUM PERMANENT STORMWATER MANAGEMENT PRACTICES TO SATISFY STORMWATER PLANS, LOCAL PERMITTING REQUIREMENTS, AND THE EROSION CONTROL DEVICES AS DESIGNATED PER THESE PROJECT PLANS.
2. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED AS EARLY AS PRACTICAL. ALL CONTROLS SHALL BE MONITORED REGULARLY, MAINTAINED, AND MODIFIED TO MAINTAIN EFFECTIVENESS.

16. HAZARD MARKING AND LIGHTING

1. THE CONTRACTOR SHALL FURNISH, ERECT, AND MAINTAIN MARKINGS AND ASSOCIATED LIGHTING OF OPEN TRENCHES, EXCAVATIONS, TEMPORARY STOCKPILES, AND HIS/HER CONSTRUCTION EQUIPMENT.
2. ALL CONSTRUCTION EQUIPMENT SHALL BE FLAGGED AND/OR LIGHTED IN ACCORDANCE WITH FAA ADVISORY CIRCULAR 150/5370-2G AND 150/5210-5D AT ALL TIMES WHILE OPERATING ON AIRPORT PROPERTY.
3. BARRICADES SHALL BE PLACED AT THE LOCATIONS SHOWN ON THE CONSTRUCTION ACTIVITY PLAN SHEET OR AS DIRECTED BY THE AIRPORT.
4. THE CONTRACTOR SHALL INSPECT THE BARRICADES ONCE DURING EACH WORK DAY TO ENSURE PROPER PLACEMENT AND PROPER OPERATION OF THE RED LIGHTS.

17. PROTECTION

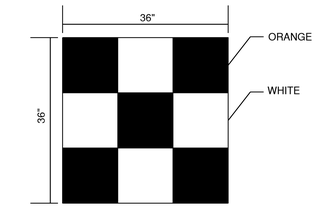
1. THE CONTRACTOR SHALL NOT OPERATE ON ANY ACTIVE AIRFIELD PAVEMENTS.
2. IF THE CONTRACTOR DAMAGES OR DIRTIES ANY ACTIVE PAVEMENTS THEY SHALL BE FIXED/CLEANED IMMEDIATELY.
3. THE CONTRACTOR SHALL STAY CLEAR OF ALL TAXIWAY OBJECT FREE AREAS AND RUNWAY OBJECT FREE AREAS. THESE LIMITS CAN BE FOUND ON THE CONSTRUCTION ACTIVITY PLAN.
4. THE RUNWAY APPROACH/DEPARTURE SURFACE IS A PROTECTED AIRSPACE SURFACE BEGINNING 200 FEET BEYOND ALL RUNWAY ENDS AND EXTENDS OUTWARED FROM THE RUNWAY AT A SLOPE OF 34:1 FOR 1,000 FEET. ALL CONSTRUCTION EQUIPMENT AND PERSONNEL SHALL NOT BE PERMITTED TO PENETRATE THIS SURFACE.

18. OTHER LIMITATIONS ON CONSTRUCTION

1. IF, DURING CONSTRUCTION, AN EMERGENCY IS DECLARED BY THE AIRPORT, THE CONTRACTOR SHALL IMMEDIATELY CLEAR THE PAVEMENT OF ALL VEHICLES, PERSONNEL AND EQUIPMENT.
2. BROKEN CONCRETE, BROKEN ASPHALT, UNUSED PAINT, UNUSED SEALANT AND OTHER MISCELLANEOUS DEBRIS SHALL BE DISPOSED OF OFF AIRPORT PROPERTY IN ACCORDANCE WITH APPLICABLE LAWS AND REGULATIONS, UNLESS OTHERWISE SPECIFIED.
3. PER AC 150/5370-2G, SECTION 2.22.2, EQUIPMENT MUST BE REMOVED FROM THE ROFA WHEN NOT IN USE.

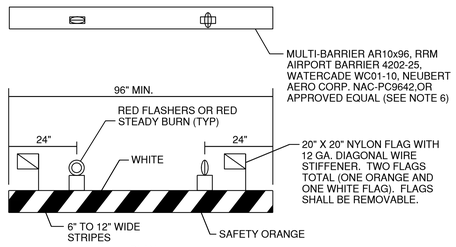
19. SITE CONSIDERATIONS

1. AS OF APRIL 6, 2025, THE SITE LOCATION IS NOT IN A 100 YEAR FLOODPLAIN, USING THE FIRM PANEL 29095C0430G, WHICH WAS EFFECTIVE JANUARY 20, 2017.
2. AS OF APRIL 6, 2025, THE SITE IS NOT LOCATED IN THE PRESENCE OF ANY ACTIVE, INACTIVE, OR CAPPED OIL OR GAS WELL PER THE MISSOURI DEPARTMENT OF NATURAL RESOURCES'S GEOSTRAT DATABASE.



CONSTRUCTION EQUIPMENT AND TRUCK SIGNAL FLAG

N.T.S



PLAN

LOW PROFILE LIGHTED BARRICADE

N.T.S.

BARRICADE NOTES:

1. FLASHER OR STEADY BURN LIGHTS SHALL BE BATTERY OR SOLAR POWER OPERATED AND SHALL BE SECURED FIRMLY TO THE BARRICADES, AS APPROVED BY THE RESIDENT ENGINEER. LENS SHALL BE RED AND BE ABLE TO ROTATE 90^.
2. FACING OF BARRICADE SHALL BE COVERED WITH REFLECTIVE TAPE OR PAINT.
3. BARRICADES TO BE PLACED AT SPACINGS AS INDICATED ON THE CAP SHEETS. BARRICADES WILL EITHER BE PLACED WITH MAXIMUM 4' GAPS FROM EACH OTHER, OR 0' GAPS (OR INTERLOCKING BARRICADES) PER FAA AC 150/5370-2F, IN THE LOCATIONS AS SHOWN ON THE CONSTRUCTION ACTIVITY PLAN SHEETS.
4. BARRICADES SHALL BE OF LOW MASS, EASILY COLLAPSIBLE UPON CONTACT WITH AN AIRCRAFT OR ANY OF IT COMPONENTS, AND WEIGHTED OR STURDILY ATTACHED TO THE SURFACE. IF AFFIXED TO THE SURFACE, THE BARRICADE MUST BE FRANGIBLE AT GRADE LEVEL OR LOW AS POSSIBLE, BUT NOT TO EXCEED 3 INCHES ABOVE THE GROUND.
5. BARRICADES SHALL BE OF A COMMERCIAL DESIGN AND SHALL MEET CURRENT FAA REQUIREMENTS.
6. THE COST OF FURNISHING AND MAINTAINING BARRICADES THROUGHOUT THE LIFE OF THE PROJECT SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
7. ALL BARRICADES ON RUNWAY, TAXIWAY OR APRONS SHALL BE LOW PROFILE BARRICADES.

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KC - LEE'S SUMMIT REGIONAL
LEE'S SUMMIT, MISSOURI

TM AVIATION HANGAR
CITY PROJECT NO. - XXXXXXXX

STATE OF MISSOURI
GERALD BOLLINGER
NUMBER PE-2021009173
PROFESSIONAL ENGINEER

March 21, 2025

MARK	DATE	DESCRIPTION
PROJECT NO:		PERMIT SET
PROJECT NO:		Project Number
CAD FILE:		FILE NAME
DESIGNED BY:		
DRAWN BY:		
CHECKED BY:		
APPROVED BY:		
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SHEET TITLE		

CAP NOTES

G-003

SHEET 4 OF 39

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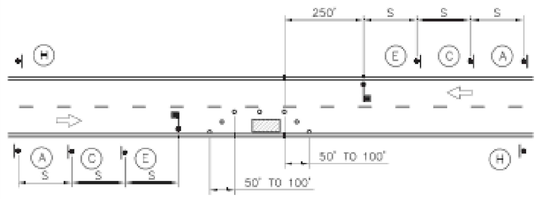
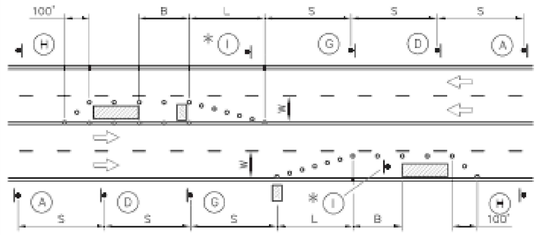
SYMBOL LEGEND

WORK AREA — CHANNELIZER
SIGN — ARROW PANEL
BARRICADE — FLAGGER
DIRECTION OF TRAVEL

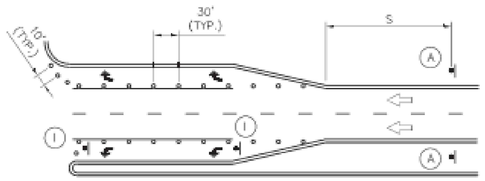


LANE CLOSURE – TWO LANE STREET

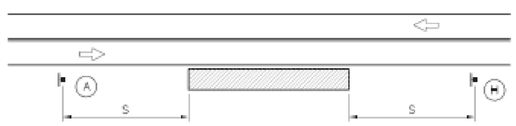


LANE CLOSURE – FOUR LANE STREET

*INSTALL SIGNS EVERY 200 FEET THROUGHOUT THE CLOSED LANE OR AS NEEDED



TURN LANE CLOSURE



TYPICAL SIGNING FOR WORK ADJACENT TO THE STREET

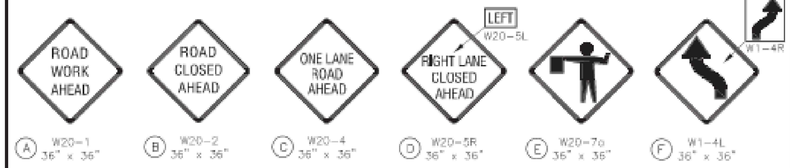
GUIDELINES FOR LENGTH OF LONGITUDINAL BUFFER SPACE "B"	
SPEED LIMIT (MPH)	LENGTH (FEET)
25	35
30	55
35	85
40	120
45	170

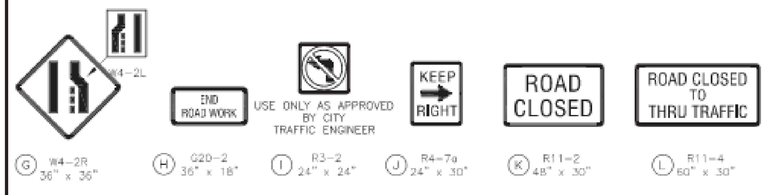
MAXIMUM CHANNELIZER SPACING		
SPEED LIMIT (MPH)	WITHIN TAPER (FEET)	OUTSIDE TAPER (FEET)
25	25	50
30	30	60
35	35	70
40	40	80
45	45	90

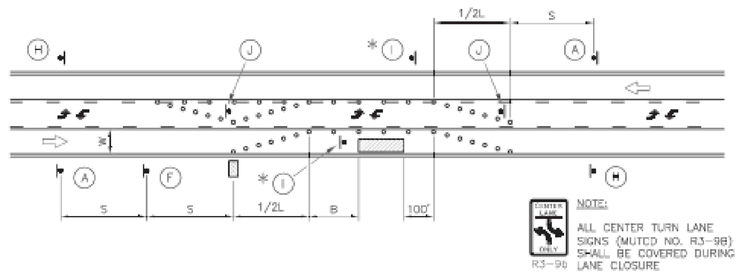
TAPER DIMENSIONS (FEET)				
SPEED LIMIT (MPH)	MINIMUM TAPER LENGTH "L", PER LANE WIDTH "W"			MINIMUM NUMBER OF CHANNELIZERS
	10	11	12	
25	105	115	125	6
30	150	165	180	7
35	205	225	245	8
40	270	295	320	9
45	450	495	540	13

SIGN SPACING "S"	
SPEED LIMIT (MPH)	SPACING (FEET)
25	100
30–35	250
40	350

SIGN LEGEND



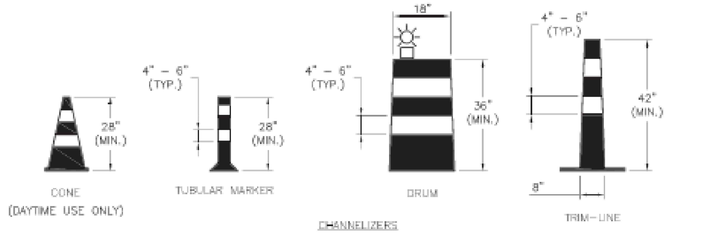




NOTE:
ALL CENTER TURN LANE SIGNS (MUTCD NO. R3-9B) SHALL BE COVERED DURING LANE CLOSURE

LANE CLOSURE – THREE LANE STREET

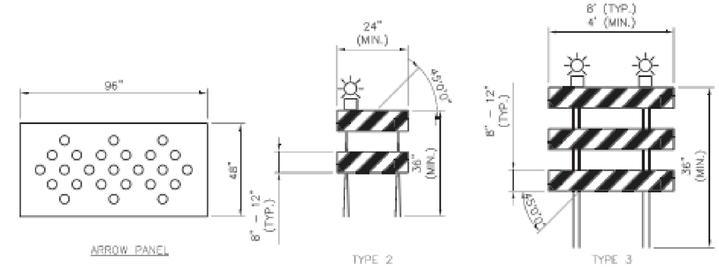
*INSTALL SIGNS EVERY 200 FEET THROUGHOUT THE CLOSED LANE OR AS NEEDED



CONE (DAYTIME USE ONLY) — TUBULAR MARKER — DRUM — TRIM-LINE

CHANNELIZERS

NOTE:
WHITE BANDS ON BARRICADES AND CHANNELIZERS SHALL BE MADE FROM HIGH INTENSITY SHEETING MATERIAL.



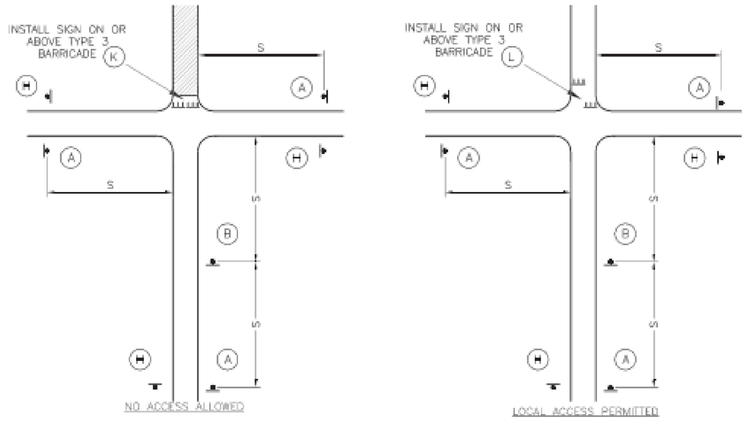
ARROW PANEL — TYPE 2 — TYPE 3

(OPTIONAL ON TWO LANE AND THREE LANE STREETS WITH SPEEDS LESS THAN 35 MPH)

BARRICADES

GENERAL NOTES:

1. ALL SIGNS, BARRICADES, CHANNELIZERS, MARKINGS AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. ALL TRAFFIC CONTROL DEVICES SHALL BE STANDARD IN SIZE, SHAPE, COLOR, AND MESSAGE, IN GOOD CONDITION, AND RETRO-REFLECTORIZED. ALL SIGNS SHALL BE SECURELY MOUNTED WITH HEIGHT AND LATERAL LOCATION AS DESCRIBED IN THE MUTCD.
3. WARNING LIGHTS SHALL BE USED ON BARRICADES IN PLACE AT NIGHT AND ON WARNING SIGNS WHICH ALERT DRIVERS ABOUT A CHANGE IN ALIGNMENT, TRAFFIC CONTROL, LANE CLOSURE, OR ROAD CLOSURE.
4. FLAGGERS SHALL BE USED WHERE INDICATED ON THE PLANS, WHERE CONSTRUCTION VEHICLES INTERACT WITH NORMAL TRAFFIC, OR WHERE CONSTRUCTION ACTIVITIES IMPOSE A RESTRICTION ON TRAFFIC, AS DIRECTED BY THE CITY TRAFFIC ENGINEER. WHERE FLAGGERS ARE USED, ADVANCE SIGNING SHALL BE ERECTED AS SHOWN IN THE DETAILS OR AS SPECIFIED IN THE MUTCD. FLAGGERS SHALL MEET THE REQUIREMENTS IN THE MUTCD IN REGARD TO CHARACTER, TRAINING, ATTIRE, AND BEHAVIOR.
5. TRIM-LINES ARE THE CITY'S PREFERRED CHANNELIZING DEVICE. CONES MAY NOT BE USED AT NIGHTTIME.
6. TRAFFIC CONTROL DEVICES NOT IN USE OR NOT APPLICABLE SHALL BE EITHER COVERED OR REMOVED FROM THE WORK AREA.
7. THE CONTRACTOR SHALL USE BARRICADES, STREET PLATES, OR FENCING AS NEEDED TO EFFECTIVELY SHIELD PEDESTRIAN AND VEHICULAR TRAFFIC FROM EXPOSED OBJECTS, EXCAVATIONS, AND CONSTRUCTION ACTIVITIES.
8. ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS AND SIDE STREETS UNLESS NOTED OTHERWISE ON THE PLANS.
9. NO STREET SHALL BE CLOSED WITHOUT THE APPROVAL OF THE CITY TRAFFIC ENGINEER. THE CONTRACTOR SHALL NOTIFY THE CITY TRAFFIC ENGINEER AT LEAST 7 DAYS IN ADVANCE OF ANY STREET CLOSURE. IF A DETOUR ROUTE AROUND THE CLOSURE IS TO BE PROVIDED, ALL DETOUR SIGNING SHALL BE AS SHOWN ON A PLAN APPROVED BY THE CITY TRAFFIC ENGINEER.
10. CONSTRUCTION VEHICLES PARKED ALONG STREETS SHALL BE LOCATED WITHIN THE WORK AREA (TRAFFIC CONTROL) OR WHERE OTHERWISE NORMALLY PERMITTED. CONSTRUCTION MATERIALS, INCLUDING TRAFFIC CONTROL AND VEHICLES SHALL NOT RESTRICT SIGHT DISTANCE FOR VEHICLES EXITING AT STREETS OR DRIVES.
11. CONSTRUCTION MATERIALS SHALL BE KEPT OFF OF SIDEWALKS, CONSOLIDATED IN ONE LOCATION WITHIN CITY RIGHT-OF-WAY, AND REMOVED DAILY UNLESS OTHERWISE APPROVED BY THE INSPECTOR. DIRT, MUD, AND OTHER CONSTRUCTION DEBRIS ON STREETS AND SIDEWALKS SHALL BE REMOVED IMMEDIATELY.
12. THE CONTRACTOR SHALL NOT PERFORM ANY WORK THAT WILL RESTRICT VEHICULAR TRAFFIC IN ANY WAY BETWEEN THE HOURS OF 7:00 A.M. AND 9:00 A.M. OR 4:00 P.M. AND 6:00 P.M. MONDAY THROUGH FRIDAY UNLESS OTHERWISE INDICATED IN THE SPECIFICATIONS.
13. ALL TRAVEL LANES SHOULD BE AT LEAST 11 FEET WIDE UNLESS OTHERWISE AUTHORIZED BY THE CITY TRAFFIC ENGINEER. A "NARROW LANES" SIGN SHALL BE INSTALLED IN ADVANCE OF A LANE WIDTH REDUCTION TO LESS THAN 11 FEET.
14. ALL EDGE DROP-OFFS OF MORE THAN 2 INCHES AND LESS THAN 4 INCHES SHOULD BE PROTECTED BY A WEDGE OR BARRIER AND ALL EDGE DROP-OFFS GREATER THAN 4 INCHES SHALL HAVE EDGE PROTECTION (SEE TRAFFIC CONTROL SPECIFICATIONS FOR EDGE TREATMENT REQUIREMENTS).
15. THE "WORKERS" SYMBOLIC SIGN (MUTCD NO. W21-1A) MAY BE USED INSTEAD OF THE "ROAD WORK AHEAD" SIGN FOR WORK WITH A DURATION OF 12 HOURS OR LESS. THE "END ROAD WORK" SIGN IS NOT REQUIRED TO BE INSTALLED AFTER THE "WORKERS" SIGN.
16. NO TRAFFIC SIGNAL SHALL BE ALTERED OR MODIFIED IN ANY WAY WITHOUT A PLAN APPROVED BY THE CITY TRAFFIC ENGINEER.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TRAFFIC CONTROL DEVICES ON AN AROUND-THE-CLOCK BASIS, WHETHER OR NOT WORK IS ACTIVELY BEING PURSUED AND ANY DEFICIENCIES NOTED SHALL BE CORRECTED IMMEDIATELY.
18. THE TRAFFIC CONTROL REQUIREMENTS SHOWN ON THESE PLANS ARE MINIMUM REQUIREMENTS ONLY AND DO NOT ATTEMPT TO ADDRESS IN DEPTH THE VARIETY OF SITUATIONS THAT MAY OCCUR ONCE CONSTRUCTION HAS STARTED. IN NO WAY DO THE REQUIREMENTS SHOWN ON THESE PLANS RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY FOR SELECTING THE PROPER TRAFFIC CONTROL DEVICES AND IMPLEMENTATION PROCEDURES THAT WILL ASSURE THE SAFETY OF DRIVERS, PEDESTRIANS, AND WORKERS AT ALL TIMES.
19. SHOULD THE CONTRACTOR FAIL TO ENFORCE THE TRAFFIC CONTROL PLAN OR FAIL TO CLEAN, REPLACE OR OTHERWISE MAINTAIN THE TRAFFIC CONTROL DEVICES WHEN DIRECTED TO DO SO BY THE CITY TRAFFIC ENGINEER OR REPRESENTATIVE, THE CITY MAY TAKE ONE OR MORE OF THE FOLLOWING ACTIONS:
    A. EMPLOY ANOTHER AGENCY TO CORRECT DEFICIENCIES IN TRAFFIC CONTROL DEVICES AND DEDUCT THE COST FROM THE CONTRACTOR'S PAY ESTIMATE.
    B. STOP THE WORK UNTIL DEFICIENCIES ARE CORRECTED.
    C. SUSPEND ALL PAY ESTIMATES UNTIL DEFICIENCIES ARE CORRECTED, OR
    D. PLACE THE CONTRACTOR IN DEFAULT.



NO ACCESS ALLOWED — LOCAL ACCESS PERMITTED

TYPICAL STREET CLOSURE

CMT
1627 MAIN STREET, SUITE 600
KANSAS CITY, MO 64108

WELLNER ARCHITECTS + engineers
1627 MAIN STREET, SUITE 100
KANSAS CITY, MO 64108

PEC
1100 MAIN ST, STE 1800
KANSAS CITY, MO 64105

olsson
1301 BURLINGTON
NORTH KANSAS CITY, MO 64116

KC - LEE'S SUMMIT REGIONAL
LEE'S SUMMIT, MISSOURI

TM AVIATION HANGAR
CITY PROJECT NO. - XXXXXXXX

STATE OF MISSOURI
GERALD BOLLINGER
Gerald T Bollinger
NUMBER PE-2021009173
PROFESSIONAL ENGINEER
March 21, 2025

MARK	DATE	DESCRIPTION
PROJECT NO:		PERMIT SET
PROJECT NO:		Project Number
CAD FILE:		FILE NAME
DESIGNED BY:		
DRAWN BY:		
CHECKED BY:		
APPROVED BY:		
COPYRIGHT 2025		
SHEET TITLE		

TRAFFIC CONTROL DETAILS

G-004

SHEET 5 OF 39

Jan 01, 2010 10:32:00 AM

CODE INFORMATION

FACILITY NAME: TMA HANGER

ADDRESS: 2751 NORTHEAST DOUGLAS ST LEE'S SUMMIT MISSOURI 64064
OWNER: TM AVIATION

PROJECT SCOPE
NEW APPROXIMATELY 12,088 SF FOOTPRINT, WITH 10,101 SF FOR AIRPLANE STORAGE, 2,076 SF FOR OFFICE, AND 529 SF FOR EQUIPMENT STORAGE.

ADOPTED CODES
- 2018 INTERNATIONAL BUILDING CODE
- 2018 INTERNATIONAL MECHANICAL CODE
- 2018 INTERNATIONAL PLUMBING CODE
- 2017 NATIONAL ELECTRICAL CODE
- 2018 INTERNATIONAL FIRE CODE
- 2018 INTERNATIONAL ENERGY CODE
- 2021 LIFE NFPA SAFETY CODE
- ICC/ANSI A117.1-2009
- NFPA 409 (2016 BY REFERENCE BUT BY ACCEPTANCE NEWER 2022 VERSION IS BASIS OF DESIGN)
- ORDINANCES OF THE UNITED GOVERNMENT OF LEE'S SUMMIT, MISSOURI

BUILDING OCCUPANCY, HEIGHT, AND AREA
MIXED USE OCCUPANCY, TYPE II-B NONCOMBUSTIBLE, UNPROTECTED, FULLY SPRINKLED CONSTRUCTION. EDUCATIONAL ASSEMBLY WILL BE LESS THAN 50 PEOPLE AND CONSIDERED AS BUSINESS OCCUPANCY.

S-1 OCCUPANCY HANGAR: ALLOWABLE: 40,000 SF PER NFPA, 3 STORIES, 75 FEET
ACTUAL: 33,416 SF INTERIOR 1 STORY, 45 FEET
B OCCUPANCY FOB: ALLOWABLE: 92,000 SF, 4 STORIES
ACTUAL: 8,640 SF, 2 STORY

EXITING

1004.2 OCCUPANT LOAD			
HANGAR	500 GROSS	10,177 SF	21
BUSINESS	150 GROSS	2,076 SF	14
ACCESSORY STORAGE/MECHANICAL	300 GROSS	529 SF	2
TOTAL OCCUPANT LOAD			41

EXIT ACCESS - COMMON PATH OF EGRESS TRAVEL PER TABLE 1006.2.1
B & S OCCUPANCY WITH SPRINKLER SYSTEM
B OCCUPANTS = 100'
S OCCUPANTS = 100'

EXIT AND EXIT ACCESS DOORWAYS
B OCCUPANCY: MORE THAN ONE EXIT REQUIRED WHEN OCCUPANT LOAD EXCEEDS 49
S OCCUPANCY: MORE THAN ONE EXIT REQUIRED WHEN OCCUPANT LOAD EXCEEDS 29
EXIT ARRANGEMENT WITH SPRINKLER: NOT LESS THE ONE-THIRD THE LENGTH OF THE MAXIMUM OVERALL DIAGONAL DIMENSION OF AREA TO BE SERVED

EXIT ACCESS TRAVEL DISTANCE WITH SPRINKLER SYSTEM PER TABLE 1017.2
B OCCUPANCY: 300'
S-1 OCCUPANCY: 250'

MINIMUM CORRIDOR WIDTH:
REQUIRED OCCUPANCY CAPACITY < 50 = 36"
REQUIRED OCCUPANCY CAPACITY ≥ 50 = 44"

TYPES OF CONSTRUCTION
FIRE-RESISTANCE RATING REQUIREMENTS OF II-B CONSTRUCTION FOR BUILDING ELEMENTS

BUILDING ELEMENT	FR RATING (HOURS)
PRIMARY STRUCTURAL FRAME	0
EXTERIOR WALLS WITH FIRE SEPARATION DISTANCE > 10'	0
INTERIOR BEARING WALLS	0
NONBEARING WALLS & PARTITIONS	0
FLOOR CONSTRUCTION & ASSOCIATED SECONDARY MEMBERS	0
ROOF CONSTRUCTION & ASSOCIATED SECONDARY MEMBERS	0

NFPA 409 FOR THE STORAGE OF AIRCRAFT
SECTION 4.1.3 GROUP III AIRCRAFT HANGAR: HANGAR SHALL HAVE AN AIRCRAFT ACCESS DOOR HEIGHT OF 28 FT MAXIMUM AND A SINGLE FIRE AREA OF MAXIMUM 12,000 SQFT FOR TYPE III CONSTRUCTION PER TABLE 4.1.3.

CONSTRUCTION OF GROUP III AIRCRAFT HANGARS CHAPTER 8
SECTION 8.2.2 PARTITIONS AND CEILINGS SEPARATING AIRCRAFT STORAGE AND SERVICING AREAS FROM ALL OTHER AREAS, SHOPS, OFFICES, AND PARTS STORAGE AREAS SHALL HAVE AT LEAST A 1-HOUR FIRE RESISTANCE RATING WITH OPENINGS PROTECTED BY LISTED FIRE DOORS OR SHUTTERS HAVING A MINIMUM FIRE RESISTANCE RATING OF 45 MINUTES.

FIRE PROTECTION FOR GROUP III AIRCRAFT HANGARS CHAPTER 8
8.8.1.1* FIXED FIRE PROTECTION SYSTEMS SHALL BE INSTALLED WHERE REQUIRED BY AND IN ACCORDANCE WITH LOCALLY ADOPTED BUILDING CODES (2018 IBC).

IBC 2018 SPRINKLER SYSTEM WOULD BE REQUIRED PER 412.4.6.1 - 6 "TOTAL FUEL CAPACITY OF ALL AIRCRAFT WITHIN THE UN-SPRINKLERED SINGLE FIRE AREA IN EXCESS OF 1,600 GALLONS (6057 L)" THE ANTICIPATED AIRCRAFT FUEL CAPACITY WILL EXCEED THE MAXIMUM 1,600 GALLONS ALLOW.

FIRE PROTECTION AND LIFE SAFETY SYSTEMS
AUTOMATIC SPRINKLER SYSTEM SHALL BE INSTALLED THROUGHOUT IN ACCORDANCE WITH NFPA 13 FOR BUSINESS. NFPA 409 FOR THE STORAGE (HANGAR)
NOTE: SPRINKLER SYSTEM IS TO BE DESIGN BUILD BY G.C. - DEFERRED SUBMITTAL
ALARM SYSTEM IS TO BE DESIGN BUILD BY GC IF REQUIRED - DEFERRED SUBMITTAL
-G.C.SHALL PROVIDE CUT SHEETS FOR IMPACT RESISTANT DOORS, WINDOWS, ETC TO THE CITY AS REQUIRED, DEFERRED SUBMITTAL

PORTABLE FIRE EXTINGUISHERS SHALL BE PROVIDED AND DISTRIBUTED IN ACCORDANCE WITH NFPA 10 PER 8.8.2 AND 8.8.2.2

PLUMBING FIXTURES: (SECTION 29 TABLE 2902.1)

PLUMBING FIXTURE CALCULATIONS:

	WATER CLOSETS		URINALS	LAVATORIES	
	REQUIRED	PROVIDED	PROVIDED	REQUIRED	PROVIDED
HANGAR	1	1	0	1	1
BUSINESS	1	1	1	1	1
TOTAL	2	2	1	2	2

	DRINKING FOUNTAIN		SERVICE SINK	
	REQUIRED	PROVIDED:	REQUIRED	PROVIDED:
HANGAR	1	0	1	0
BUSINESS	1	1	1	1
TOTAL	2	1VB	2	1

SERVICE SINKS
THE BUSINESS IS CONSIDERED ACCESSORY TO THE HANGER USE AND THE SERVICE SINKS IN THE HANGER WILL BE USED FOR THESE TWO SPACES AND THE DRINKING FOUNTAIN WILL BE IN THE BUSINESS SPACE.

ICC/ANSI A117.1-2009
TABLE C402.1.3 OPAQUE THERMAL ENVELOPE INSULATION COMPONENT MINIMUM REQUIREMENTS
CLIMATE ZONE 4
METAL BUILDING ROOFS R-19 LINER SYSTEM MINIMUM
METAL BUILDING WALLS R-11 MINIMUM
SLAB-ON-GRADE FLOORS, UNHEATED SLABS R-10 FOR MINIMUM 24" BELOW GRADE (BECAUSE THE INSULATION WILL ALSO ACT AS PROTECTION BOARD, IT WILL EXTEND DOWN TO THE TOP OF THE FOOTING.)

LINER SYSTEM DEFINED AS: A SYSTEM THAT INCLUDES THE FOLLOWING:
1. A CONTINUOUS VAPOR BARRIER LINER MEMBRANE THAT IS INSTALLED BELOW THE PURLINS/GIRTS AND THAT IS UNINTERRUPTED BY FRAMING MEMBERS.
2. AN UNCOMPRESSED, UNFACED INSULATION RESTING ON TOP OF THE LINER MEMBRANE AND LOCATED BETWEEN THE PURLINS/GIRTS. FOR MULTILAYER INSTALLATIONS, THE LAST RATED R-VALUE OF INSULATION IS FOR UNFACED INSULATION DRAPED OVER PURLINS/GIRT AND THEN COMPRESS WHEN THE METAL PANELS ARE ATTACHED.

CODE PLANS LEGEND

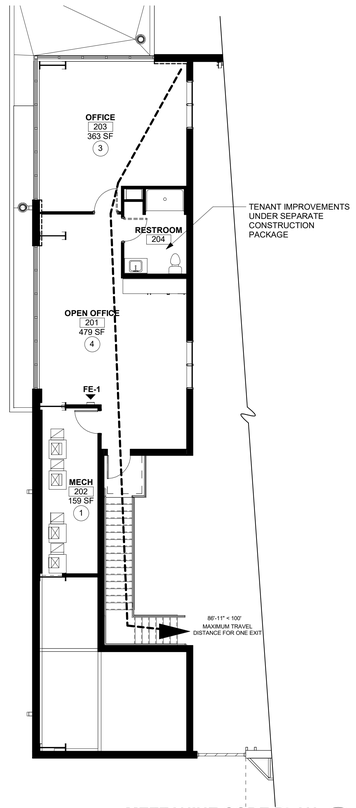
- START LOCATION OF MAXIMUM TRAVEL DISTANCE
- TRAVEL PATH
- EXIT
- EXIT LOAD (PERSON)
- 1 HR RATED
- 2 HR RATED

FE-1 SEMI RECESSED MOUNTED 2-A:20-B:C FIRE EXTINGUISHER
FE-2 SURFACE MOUNTED 2-A:20-B:C FIRE EXTINGUISHER

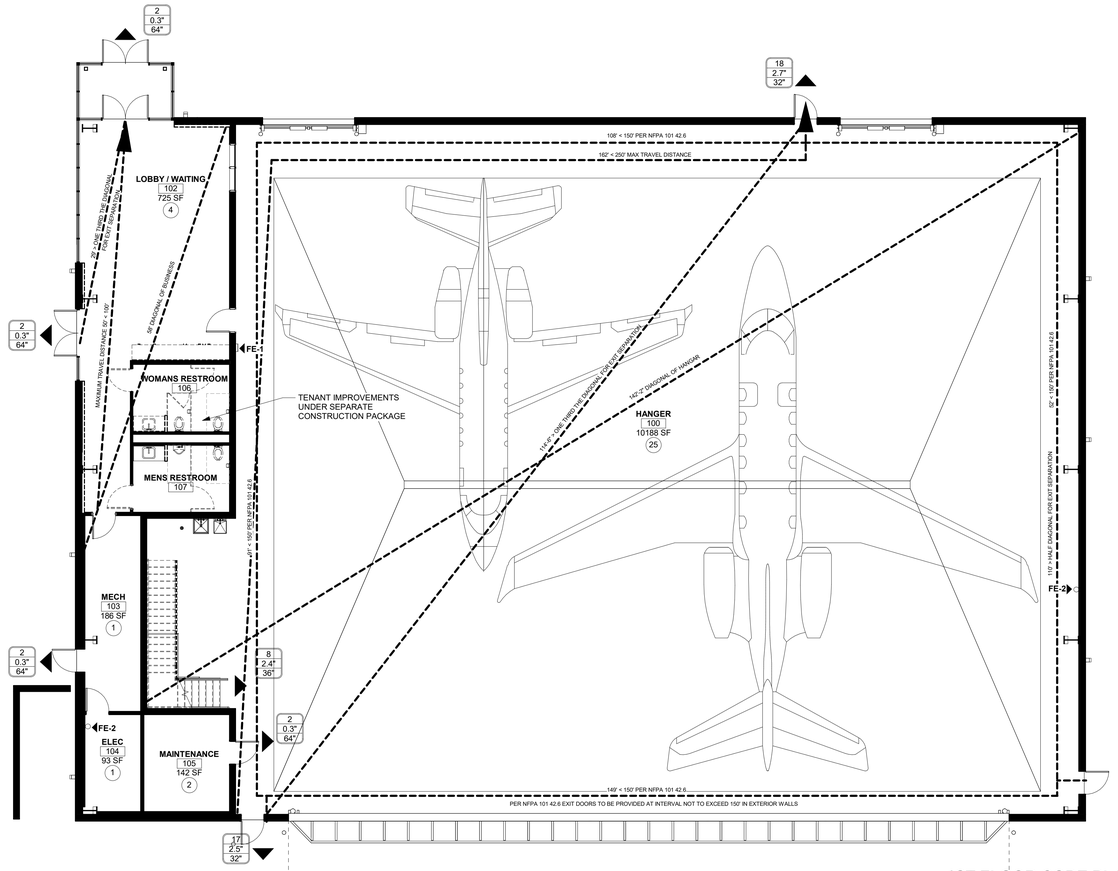
FIRE EXTINGUISHER AND CABINET TYPE DESIGNATION. PORTABLE FIRE EXTINGUISHERS ARE REQUIRED TO BE INSTALLED IN ACCORDANCE WITH SECTION 906.

NOTE: FOR PROPERTY LINE LOCATIONS RE:CIVIL

ROOM NAME — XXXXXX
ROOM NUMBER — XXX
SQUARE FEET — XXX SF
NUMBER OF OCCUPANTS — X
OCCUPANT EGRESS — XXXX
EGRESS WIDTH REQUIRED — XXXX
EGRESS WIDTH PROVIDED — XXXX



MEZZANINE CODE PLAN 2
REFERENCED FROM 1 / A-201 1/8" = 1'-0"



1ST FLOOR CODE PLAN 1
REFERENCED FROM 1 / A-201 1/8" = 1'-0"

PROJECT TEAM

ARCHITECTURAL, MECHANICAL, ELECTRICAL, & PLUMBING, FIRE ALARM, AUDIO/VISUAL
Wellner Architects + Engineers
1627 Main Street #100
Kansas City, MO 64108
816.221.0017

STRUCTURAL
OWN Engineering
8455 College Blvd
Overland Park, KS 66210
816.777.0400

CIVIL
CMT Engineering
1627 Main Street, Suite 600
Kansas City, MO 64108
816.272.8318

STATE OF MISSOURI
JASON SCOTT BARKER
NUMBER A-2005001198
REGISTERED ARCHITECT

03/21/2025
Jason Scott Barker - MO #A-2005001198
Certificate of Authority - MO #000767

TM Aviation

TM AVIATION HANGER
AT LXT

No.	Date	Description
Issue:	PERMIT SET	
Date:	MAR 21, 2025	
Drawn By	Author	Checked By Checker

KEY PLAN
NORTH

SHEET NAME
CODE PLAN

SHEET NUMBER
G-005

PROJECT NUMBER
2404

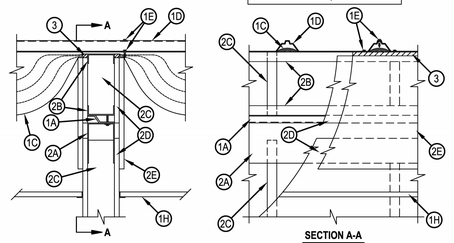
3/24/2025 1:09:06 PM

HWD 0528

System No. HW-D-0528

Classified by Underwriters Laboratories, Inc. to UL 2079 and CAN/ULC-S115

ANSI/UL2079	CAN/ULC S115
Assembly Rating — 1 Hr (See Item 2)	F Rating — 1 Hr
Nominal Joint Width - 2 In.	FT Rating — 1 Hr
Class II Movement Capabilities - 100% Compression or Extension	FH Rating — 1 Hr
	FTH Rating — 1 Hr
	Nominal Joint Width - 2 In.
	Class II and III Movement Capabilities — 100% Compression or Extension



SECTION A-A

1. Roof-Ceiling Assembly — The fire rated roof-ceiling assembly shall be constructed of the materials and in the manner described in the individual P200 or P500 Series Roof-Ceiling Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Purlin — Min 16 ga coated steel. Max spacing as specified in the individual Roof-Ceiling Design.
   B. Lateral Bracing — (Not Shown) - As required.
   C. Batts and Blankets* - Insulation — Any faced compressible glass-fiber blanket insulation having a min 6 in. (152 mm) thickness before compression and a min density of 0.6 pcf (9.6 kg/m3). Insulation draped over purlins prior to installation of panel clips (Item 1F) and/or metal roof deck panels (Item 1D). Side edges of the batts shall be butted or overlapped a max of 3 in. (76 mm).
   See Batts and Blankets (BZJZ) category in the UL Fire Resistance Directory or Batts and Blankets (BKNV) category in the UL Building Materials Directory for names of manufacturers.
   D. Metal Roof Deck Panels* — Min 26 ga coated steel. Panels continuous over two or more spans. Roof panel end laps, if required, centered over purlins with min 3 in. (76 mm) panel overlap as specified in the individual Roof-Ceiling Design. A line of tube sealant or tape sealant may be used at panel end and side laps.
   See Metal Roof Deck Panels (TJPV) category in the UL Roofing Materials and Systems Directory for names of manufacturers.
   E. Fasteners — Fasteners used for panel-to-purlin and panel-to-panel connections to be self-tapping, hex-head, plated steel or stainless steel screws with either an integral or a separate steel washer fitted with a compressible sealing washer. Fastener type, length, pilot hole diam and spacing to be as specified in the individual Roof-Ceiling Design.

Hilti Firestop Systems

HWD 0528

System No. HW-D-0528

F. Roof Deck Fasteners* - Panel Clips — (Not Shown) - Panel clips used for panel-to-purlin connections to be secured to purlin through insulation as specified in the individual Roof-Ceiling Design.
See Roof Deck Fasteners (TLSX) category in the UL Roofing Materials and Systems Directory for names of manufacturers.
G. Thermal Spacer Blocks — (Not Shown) - Expanded polystyrene strips cut to fit between panel clips (Item 1F) as specified in the individual Roof-Ceiling Design. Thermal spacer blocks, when used, are to be installed between insulation (Item 1C) and metal roof deck panels (Item 1D) over purlins.
H. Ceiling Membrane — The Steel Framing Members*, Acoustical Material*, Gypsum Board* and other ceiling membrane components shall be as specified in the individual Roof-Ceiling Design.

2. Wall Assembly — The 1 h fire-rated gypsum board/steel stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. Ceiling Deflection Channel — U-shaped channel formed from min 16 ga steel sized to accommodate steel studs (Item 2C) and provided with 5 in. (127 mm) flanges. Deflection channel installed parallel with and aligned with web of purlin and secured to bottom flange of purlin with min No. 14 self-tapping, hex-head, plated steel or stainless steel screws spaced max 24 in. (610 mm) OC.
   B. Steel Floor and Ceiling Runners — Floor runner of the wall assembly and the floor and ceiling runners of the cripple wall above the wall assembly shall consist of min 1-1/4 in. (32 mm) deep min 25 ga galv steel channels sized to accommodate steel studs (Item 2C). Floor runner of cripple wall aligned with and resting atop flange of purlin. Ceiling runner of cripple wall installed to compress insulation (Item 1C) to min thickness of 3/8 in. (10 mm) by wedging lengths of stud (Item 2C) between the runners. Steel studs of cripple wall attached to web of purlin with steel screws driven through opposite side of purlin web.
   C. Studs — Steel studs to be min 3-1/2 in. (89 mm) wide. Studs cut max 2 in. (51 mm) less in length than assembly height with bottom nesting in and resting on the floor runner and with top nesting in ceiling deflection channel without attachment. Width of stud to be equal to or greater than width of purlin flange. Stud spacing not to exceed 24 in. (610 mm) O.C. Studs of cripple wall cut to length as required to compress insulation (Item 1C) to min thickness of 3/8 in. (10 mm) and spaced max 24 in. (610 mm) OC.
   D. Gypsum Board* — Min 5/8 in. (16 mm) thick gypsum board sheets installed on each side of wall. Wall to be constructed as specified in the individual U400 or V400 Series Design in the UL Fire Resistance Directory except that a max 2 in. wide gap shall be maintained between the gypsum board of the wall assembly below the purlin and the gypsum board of the cripple wall. Top edge of gypsum board of wall assembly to be max 2 in. (51 mm) below top of ceiling deflection channel. Bottom edge of gypsum board of cripple wall to be flush with top of ceiling deflection channel. Screws securing gypsum board to steel studs of wall assembly to be located 2-1/4 in. to 2-1/2 in. (57 to 64 mm) below flange of ceiling deflection channel. Screws securing gypsum board of cripple wall to be driven into web of purlin and into studs and runners of cripple wall. No screws are to be driven into flanges of ceiling deflection channel.
   E. Gypsum Board* — Min 5/8 in. (16 mm) thick *rip strip* of gypsum board installed to cover first layer of gypsum board on cripple wall and to lap min 3 in. (76 mm) onto gypsum board of wall assembly on each side of wall. The *rip strip* of gypsum board is to be the same material used for the wall assembly and is to be secured to the web of purlin and into studs and runners of the cripple wall. No screws are to be driven into flanges of ceiling deflection channel. Joints of *rip strip* to be offset from joints of gypsum board on wall assembly.
   Max separation between top of wall assembly gypsum board and bottom of cripple wall gypsum board (at time of installation of joint system) is 2 in. (51 mm). The joint system is designed to accommodate a max 100 percent compression or extension from its installed width.
3. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. (16 mm) thickness of fill material installed to fill any gap between top of cripple wall gypsum board and insulation (Item 1C) or purlin flange on each side of the wall.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP601S, CFS-S SIL GG, CP606, FS-ONE Sealant or FS-ONE MAX Intumescent Sealant.

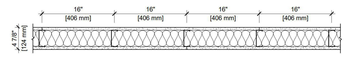
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Hilti Firestop Systems

RATED DETAILS

DESIGN NO. UL U419

FIRE RATING:	1 HOUR
STC RATING:	44
SOUND TEST:	USG-150919
SYSTEM THICKNESS:	4-7/8" [124 MM]
LOCATION:	INTERIOR
FRAMING TYPE:	STEEL STUD (NONLOAD-BEARING)

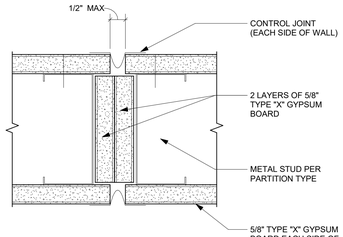


ASSEMBLY REQUIREMENTS:

GYPSUM PANELS:	ONE LAYER 5/8" [15.9 MM] SHEETROCK® ECOSMART GYPSUM PANELS (1) TYPE ULIX™)
STEEL STUDS:	3-5/8" [92 MM] STEEL STUDS, EQ2D (0.018"), 16" [406 MM] O.C.
INSULATION:	3 1/2" [89 MM] KNAUF ECOBATT® INSULATION
GYPSUM PANELS:	ONE LAYER 5/8" [15.9 MM] SHEETROCK® ECOSMART GYPSUM PA(1) TYPE ULIX™)

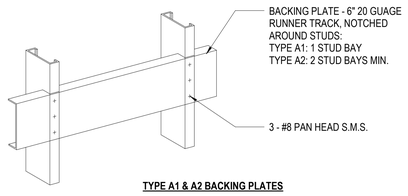
RATED DETAIL U905 4

REFERENCED FROM / 3/8" = 1'-0"



MTL STUD-PLAN DTL-CONTROL JOINT-1HR 11

6" = 1'-0"



TYPE A1 & A2 BACKING PLATES

NOTES:
1. TYPE A1 BACKING PLATE IS FOR SMALL ITEMS WHICH WEIGH OR SUPPORT WEIGHTS OF LESS THAN 25 POUNDS.
2. TYPE A2 BACKING PLATE IS FOR HANDRAILS, GUARDRAILS & WALL MOUNTED EQUIPMENT UP TO 100 POUNDS PER L.F. USE #12 SELF TAPPING SHEET METAL SCREWS WHEN ATTACHING ITEMS TO TYPE A2 BACKING PLATE.
3. STUD FLANGES ARE CONTINUOUS. CONFIRM LENGTH, HEIGHT & LOCATION OF BACKING PLATE AND NUMBER REQUIRED WITH ITEM TO BE MOUNTED.

TYPICAL WALL BLOCKING DETAIL 3

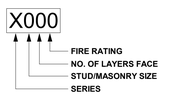
1 1/2" = 1'-0"

HW-D-0528 ASSEMBLY 14

REFERENCED FROM / 1 1/2" = 1'-0"

1. REFER TO PART PLANS AND ENLARGED PLANS FOR PARTITION TYPES AND REQUIRED MINIMUM FIRE RATINGS. FOLLOW THE TERMINOLOGY OF PARTITIONS TO DEVELOP FULLY COMPLIANT ASSEMBLY
2. UTILIZE 3 5/8" METAL STUDS @ 16" O.C. TO AN UNBRACED HEIGHT OF 13'- 8", AT HEIGHTS TO 26' USE 6" 20 GA. STUDS @ 16" O.C, AT HEIGHTS TO 33' USE 8" 20 GA. STUDS @ 16" O.C. - ADJUST STUD SIZE & SPACING AS REQUIRED. FOR ALLOWABLE L/240 DEFLECTION FOR 5 PSF WIND LOAD. VERIFY STUD GAUGE WITH SUPPLIER.
3. ALL GYPSUM BOARD IS 5/8" TYP., UNO.
4. ALL FIRE RATED PARTITIONS TO BE TYPE "X" GYPSUM BOARD"
5. USE WATER-RESISTANT GYPSUM BOARD ON PARTITIONS SCHEDULED TO RECEIVE CERAMIC TILE AND ALL WET AREAS; EXCEPTION: USE CEMENTITIOUS BACKER BOARD IN SHOWERS.
6. USE MINIMUM 20 GAUGE 3 5/8" WIDE STUDS @ 16" O.C. FOR ALL WALLS TO RECEIVE CERAMIC TILE FINISH AS INDICATED ON INTERIOR ELEVATIONS OR FINISH SCHEDULE.
7. ALL LIMITING HEIGHTS TO BE CONFIRMED BY THE SELECTED MANUFACTURER.
8. PROVIDE CONTINUOUS ACOUSTICAL SEALANT AT SILL AND HEAD PARTITIONS WHERE AN STC RATING IS REQUIRED.
9. PROVIDE SOUND ATTENUATION BLANKET (SAB) TO ACHIEVE STC RATINGS AS REQUIRED.
10. PROVIDE SOUND ATTENUATION FIRE BLANKET (SAFB) TO ACHIEVE FIRE RATINGS AND STC RATINGS AS REQUIRED.
11. TAPE, BED, FLOAT AND FINISH ALL GYPSUM BOARD CORNERS AND JOINTS READY FOR FINISH.
12. PROVIDE CONTINUOUS CAULKING AT ALL DUCT PIPE AND CONDUIT PENETRATIONS THROUGH WALLS REQUIRING FIRE RATING AND ACOUSTICAL SEPARATION.
13. ALL FIRE RATED PARTITIONS SHALL COMPLY WITH APPLICABLE CODE.
14. WALLS, DOORS AND PENETRATIONS AT MDFS TO BE SEALED TO MEET THE REQUIREMENTS OF THE CLEAN AGENT FP SYSTEM
15. STUD TYPE PARTITIONS IN MER ROOMS TO RECEIVE PLYWOOD FINISH FACE INSIDE OF ROOM
16. EXPANSION JOINTS SHALL BE INSTALLED AT A MAX. OF 30'-0". JOINTS SHALL ALSO BE LOCATED TO COORDINATE WITH ANTICIPATED BUILDING MOVEMENT, STRUCTURAL ELEMENTS, AND SUBSTRATE TRANSITIONS.

GENERAL NOTES WALL TYPE

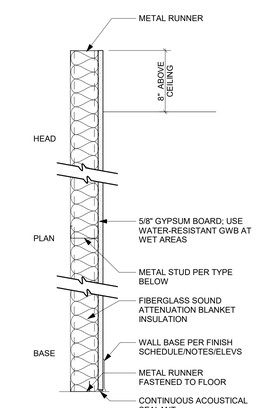


SERIES NAMES:

F = FURRING
S = STUD
T = STUD ONLY NO FINISH

STUD /MASONRY SIZE:	FIRE RATING:
0 = 7/8" STL FUR.	1= 1 HOUR
1 = 1 5/8" STL STUD	2= 2 HOUR
2 = 2 1/2" STL. STUD	3= 3 HOUR
3 = 3 5/8" STL STUD	4= 4 HOUR
4 = 4" STL STUD	
6 = 6" STL STUD	

NOTE: REFER TO INTERIOR ELEVATIONS FOR ADDITIONAL INFORMATION ON ATTRIBUTES.

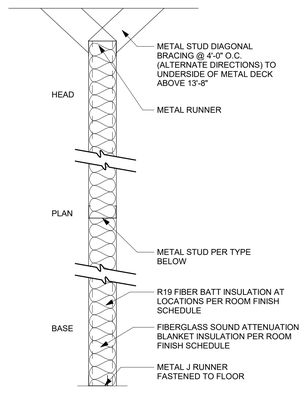


TYPE F310 NO FIRE RATING 3 5/8" MTL STUD & GYP BD. TO 8" ABOVE FINISH CEILING. 5/8" GYP BD ON ONE SIDE

TYPE S310A NO FIRE RATING 3 5/8" MTL STUD & GYP BD. TO 8" ABOVE FINISH CEILING. 5/8" GYP BD ON ONE SIDE WITH FIBERGLASS SOUND ATTENUATION BLANKET INSULATION

PARTITION TYPE S - PARTIAL HT 13

1 1/2" = 1'-0"



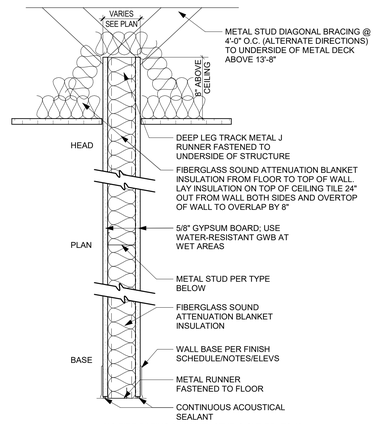
TYPE T300 NO FIRE RATING 3 5/8" MTL STUD TO STRUCTURE ABOVE.

TYPE T320A NO FIRE RATING 3 5/8" MTL STUD TO 14'-6" ABOVE FINISH FLOOR. WITH FIBERGLASS BLANKET INSULATION R11

TYPE T200 NO FIRE RATING 2 1/2" MTL STUD TO STRUCTURE ABOVE.

PARTITION TYPE T - NON RATED 9

1 1/2" = 1'-0"



TYPE S320 NO FIRE RATING 3 5/8" MTL STUD & GYP BD. TO 8" ABOVE FINISH CEILING. 5/8" GYP BD ON BOTH SIDE

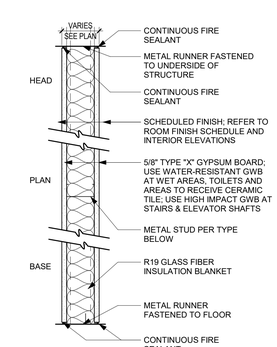
TYPE S320A NO FIRE RATING 3 5/8" MTL STUD & GYP BD. TO 8" ABOVE FINISH CEILING. 5/8" GYP BD ON BOTH SIDE WITH FIBERGLASS SOUND ATTENUATION BLANKET INSULATION

TYPE S620 NO FIRE RATING 6" MTL STUD & GYP BD. TO 8" ABOVE FINISH CEILING. 5/8" GYP BD ON BOTH SIDE

TYPE S620A NO FIRE RATING 6" MTL STUD & GYP BD. TO 8" ABOVE FINISH CEILING. 5/8" GYP BD ON BOTH SIDE WITH FIBERGLASS SOUND ATTENUATION BLANKET INSULATION

PARTITION TYPE S - PARTIAL HT 5

1 1/2" = 1'-0"



TYPE S821 UL 419 1HR RATED WALL 8" WITH FLOOR RUNNERS AND DEFLECTION TRACK AT DECK ABOVE. INSTALL 1 LAYER 5/8" GYP BD TYPE X GYP EACH SIDE. EXTEND FRAMING & GYP BD TO UNDERSIDE OF DECK AND AROUND BEAMS. WITH R19 GLASS FIBER INSULATION BLANKET FULL HEIGHT. TOP OF WALL TO BE HILTI HW-D-0528 1R ASSEMBLY

PARTITION TYPE S - 1 HOU 1

1 1/2" = 1'-0"

PROJECT TEAM

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Overland Park, KS 66210
816.777.0400

CIVIL
CMT Engineering
1627 Main Street, Suite 600
Kansas City, MO 64108
816.272.8318

STATE OF MISSOURI JASON SCOTT BARKER NUMBER A-2005001198 REGISTERED ARCHITECT

03/21/2025

Jason Scott Barker - MO #A-2005001198
Certificate of Authority - MO #000767

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TM Aviation

TM AVATION HANGER
AT LXT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **Author** Checked By **Checker**

KEY PLAN

NORTH

SHEET NAME

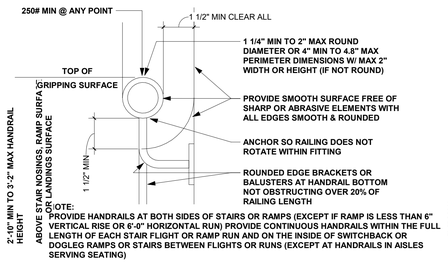
WALL TYPES

SHEET NUMBER

G-006

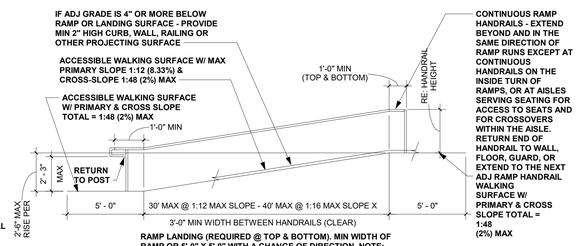
PROJECT NUMBER 2404

3/24/2025 1:09:07 PM



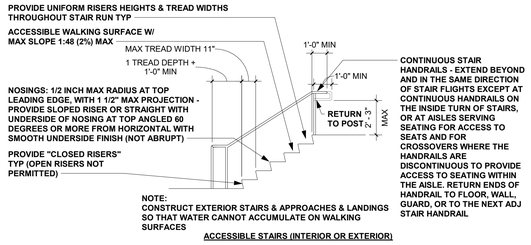
NOTE:
PROVIDE HANDRAILS AT BOTH SIDES OF STAIRS OR RAMPS (EXCEPT IF RAMP IS LESS THAN 6" VERTICAL RISE OR 6'-0" HORIZONTAL RUN) PROVIDE CONTINUOUS HANDRAILS WITHIN THE FULL LENGTH OF EACH STAIR FLIGHT OR RAMP RUN AND ON THE INSIDE OF SWITCHBACK OR DOGLEG RAMPS OR STAIRS BETWEEN FLIGHTS OR RUNS (EXCEPT AT HANDRAILS IN AISLES SERVING SEATING)

RAMP & STAIR HANDRAILS (INTERIOR OR EXTERIOR)



RAMP LANDING (REQUIRED @ TOP & BOTTOM). MIN WIDTH OF RAMP OR 5'-0" X 5'-0" WITH A CHANGE OF DIRECTION. NOTE: DOOR CLEARANCES MAY OVERLAP LANDING

ACCESSIBLE RAMPS (INTERIOR OR EXTERIOR)

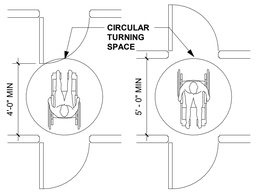


NOTE:
CONSTRUCT EXTERIOR STAIRS & APPROACHES & LANDINGS SO THAT WATER CANNOT ACCUMULATE ON WALKING SURFACES

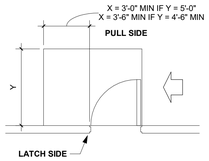
ACCESSIBLE STAIRS (INTERIOR OR EXTERIOR)

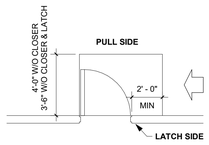
ACCESSIBLE STAIRS/RAMPS & HANDRAIL DETAILS

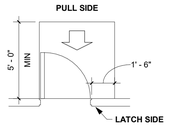
NOTE:
PROVIDE CLEAR FLOOR SPACE (CFS) WITH 1:48 MAX SLOPE @ ALL DOORS OR GATES TYP.

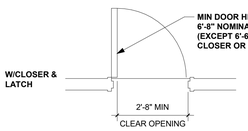


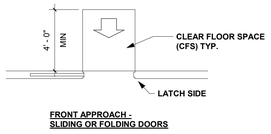
DOORS/GATES IN SERIES



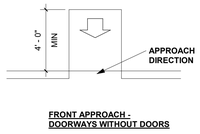




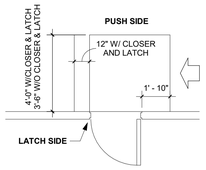




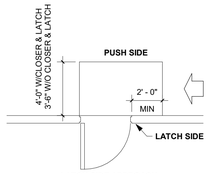
FRONT APPROACH - SLIDING OR FOLDING DOORS



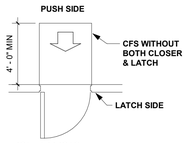
FRONT APPROACH - DOORWAYS WITHOUT DOORS



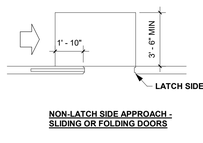
HINGE SIDE APPROACH - SWINGING DOOR OR GATE



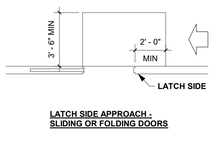
LATCH SIDE APPROACH SWINGING DOOR OR GATE



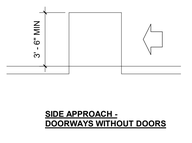
FRONT APPROACH - SWINGING DOOR OR GATE



NON-LATCH SIDE APPROACH - SLIDING OR FOLDING DOORS



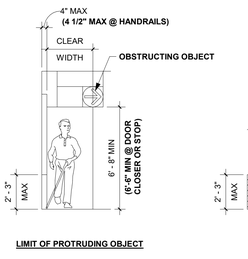
LATCH SIDE APPROACH - SLIDING OR FOLDING DOORS



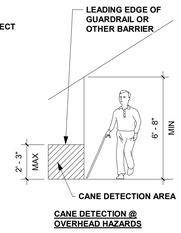
SIDE APPROACH - DOORWAYS WITHOUT DOORS

DOOR OR GATE CLEARANCES

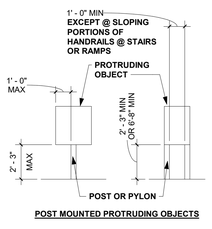
RE: CLEAR SPACE REQUIREMENTS FOR MIN DOOR OPENINGS WIDTHS
RE: CLEAR SPACE REQUIREMENTS FOR INTERIOR SIGNAGE



LIMIT OF PROTRUDING OBJECT

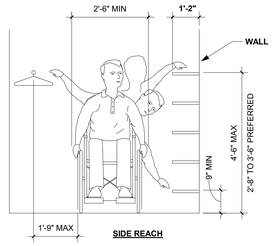


CANE DETECTION @ OVERHEAD HAZARDS

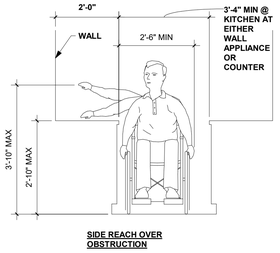


POST MOUNTED PROTRUDING OBJECTS

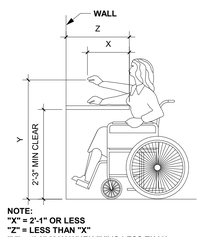
PROTRUDING OBJECTS



SIDE REACH

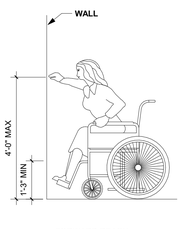


SIDE REACH OVER OBSTRUCTION



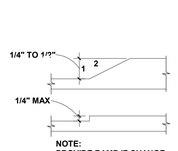
NOTE:
"X" = 2'-1" OR LESS
"Z" = LESS THAN "X"
"Y" = 4'-0" MAX WHEN "X" IS LESS THAN 1'-8"
OR "Y" = 3'-0" MAX WHEN "X" IS 1'-8" TO 2'-1"

FORWARD REACH OVER OBSTRUCTION



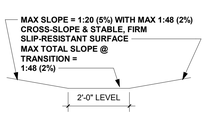
FORWARD REACH

REACH RANGES

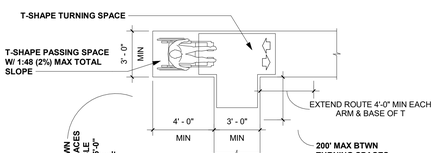


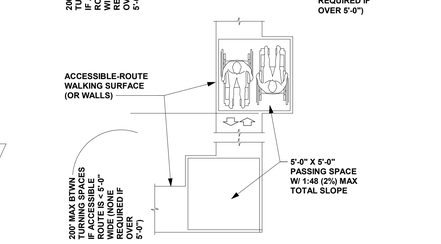
NOTE:
PROVIDE RAMP IF CHANGE IS OVER 1/2" IN HEIGHT

ALLOWABLE CHANGE IN LEVEL



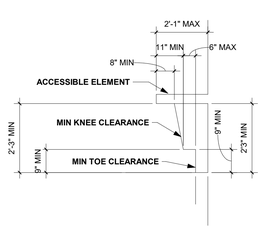
MAX SLOPE OF WALKING SURFACE @ ACCESSIBLE ROUTE



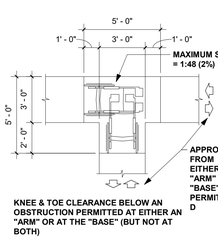


PASSING SPACES @ ACCESSIBLE-ROUTE

ACCESSIBLE ROUTES REQUIREMENTS

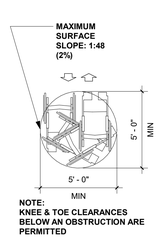


KNEE AND TOE CLEARANCES



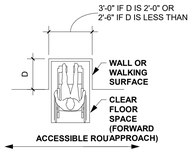
KNEE & TOE CLEARANCE BELOW AN OBSTRUCTION PERMITTED AT EITHER AN "ARM" OR AT THE "BASE" (BUT NOT AT BOTH)

T-SHAPED TURNING SPACE

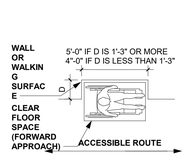


NOTE:
KNEE & TOE CLEARANCES BELOW AN OBSTRUCTION ARE PERMITTED

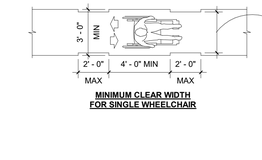
CIRCULAR TURNING SPACE



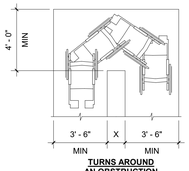
FORWARD APPROACHING ALCOVE



SIDE APPROACH IN ALCOVE



MINIMUM CLEAR WIDTH FOR SINGLE WHEELCHAIR



TURNS AROUND AN OBSTRUCTION

NOTE:
ONE (MIN) FULL UNOBSTRUCTED SIDE MUST ADJOIN OR OVERLAP AN ACCESSIBLE ROUTE OR ANOTHER CLEAR FLOOR SPACE

CLEAR FLOOR SPACE (CFS) REQUIREMENTS

CLEAR SPACE REQUIREMENTS

THE INFORMATION ON THESE ACCESSIBILITY DRAWINGS IS PROVIDED AS A GUIDE TO THE CONTRACTOR AND TO ANY OTHER ENTITIES INSTALLING BUILDING EQUIPMENT OR FIXTURES. THESE DRAWINGS ARE ABBREVIATED AND DO NOT INDICATE ALL CONDITIONS THAT MAY BE ENCOUNTERED AND THEY DO NOT INCLUDE ALL REQUIREMENTS OF EITHER THE ADA OR ICC/ANSI A117.1 IN THEIR ENTIRETY.

THE AMERICANS WITH DISABILITIES ACT (ADA) IS A CIVIL-RIGHTS LAW (NOT A BUILDING CODE) AND IS THEREFORE NOT NECESSARILY ENFORCEABLE BY AUTHORITIES HAVING JURISDICTION. EXCEPT IN CERTAIN STATES WITH THEIR OWN ACCESSIBILITY REQUIREMENTS (INCLUDING BUT NOT LIMITED TO CALIFORNIA, TEXAS & ILLINOIS), THE ACCESSIBILITY REQUIREMENTS OF ICC/ANSI A117.1 ARE TYPICALLY REQUIRED THROUGH THE BUILDING CODE.

COMPLY WITH REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT (ADA) EVEN IF NOT REQUIRED BY BUILDING CODES, REGULATIONS OR ORDINANCES (ADA IS A FEDERAL LAW), AND AS INDICATED ON THESE DRAWINGS:

ACCESSIBLE ROUTE:

PROVIDE AN ACCESSIBLE ROUTE CONNECTING ALL ACCESSIBLE SPACES AND ELEMENTS, INCLUDING WALKING SURFACES, RAMPS & CURB-RAMPS (EXCLUDING THE FLARED SIDES), DOORS & DOORWAYS, AND/OR ELEVATORS & PLATFORM LIFTS. AN ACCESSIBLE ROUTE MAY BE LOCATED AT EXTERIOR WALKS, AISLES, HALLS, CORRIDORS, SKYWALKS OR TUNNELS

ACCESSIBLE WALKING SURFACES: PROVIDE STABLE, FIRM, & SLIP-RESISTANT SURFACE FINISHES W/ SURFACE OPENINGS (GRATINGS) NOT TO PERMIT PASSAGE OF A 1/2" DIAMETER SPHERE - WITH LONGEST DIMENSION PERPENDICULAR TO DIRECTION OF TRAVEL

MINIMUM WHEELCHAIR TURNING SPACE CAN INCLUDE ALLOWABLE FIXTURE KNEE & TOE CLEARANCES UNO. DOOR SWINGS ARE PERMITTED TO OVERLAP TURNING SPACE UNO.

ACCESSIBLE BUILDING ENTRANCES:

PROVIDE 60% (MIN) OF ALL PUBLIC BUILDING ENTRANCES (EXCLUDING THOSE FOR LOADING OR SERVICE USE) ACCESSIBLE FROM: ACCESSIBLE PARKING, A PUBLIC TRANSPORTATION STOP, OR FROM A PASSENGER LOADING ZONE (AS APPLICABLE) WITHOUT STEPS OR ABRUPT CHANGES IN LEVEL.

PROVIDE ONE (1 - MIN) ACCESSIBLE BUILDING ENTRANCE AT THE GROUND FLOOR LEVEL AND ONE (1 - MIN) ACCESSIBLE ENTRANCE TO EACH PROPOSED TENANT SPACE IN A MULTIPLE-TENANT BUILDING.

PROVIDE ACCESSIBLE ENTRANCE AT SERVICE OR LOADING ENTRIES (NOT INTENDED FOR ENTRANCE BY THE PUBLIC) IF THAT IS THE ONLY ENTRANCE TO A SPACE OR BUILDING.

MULTI-LEVEL BUILDINGS: PROVIDE ONE (1 - MIN) ACCESSIBLE ROUTE (INCLUDING AN ELEVATOR TO CONNECT EACH BUILDING LEVEL ABOVE OR BELOW ACCESSIBLE LEVELS INCLUDING MEZZANINES) UNLESS THE FLOOR-AREA IS LESS THAN 3,000 SF AND DOES NOT INCLUDE FIVE (5) OR MORE MULTIPLE MERCANTILE (GROUP M) TENANTS, OR THE OFFICES OF HEALTH CARE PROVIDERS.

OPERABLE PARTS:

ACCESSIBLE OPERABLE PARTS INCLUDE CONTROLS AND OPERATING MECHANISMS (DOOR HARDWARE, WINDOW OPERATORS, DISPENSERS, LIGHT SWITCHES, CONVENIENCE OUTLETS, THERMOSTATS, ALARM CONTROLS, AND SIMILAR ELEMENTS).

PROVIDE AN ACCESSIBLE CLEAR-FLOOR SPACE AT ALL OPERATIONAL PARTS

OPERATION: BY USE OF ONE (1) HAND WITH A SINGLE EFFORT WITHOUT TIGHT GRASPING, PINCHING, OR TWISTING OF THE WRIST - WITH FIVE (5.0) POUNDS MAXIMUM OPERATIONAL FORCE. COMPLY WITH ALLOWABLE REACH RANGES FOR HEIGHT OF OPERABLE PARTS.

ACCESSIBLE DOOR & GATE REQUIREMENTS:

REVOLVING DOORS OR GATES ARE NOT ACCESSIBLE.

SECURITY & MAINTENANCE DOORS (INCLUDING SERVICE-ACCESS DOORS) DO NOT NEED TO COMPLY WITH ACCESSIBILITY REQUIREMENTS.

DOUBLE-LEAF DOORS OR GATES: ONLY ONE LEAF (MIN) MUST COMPLY WITH ACCESSIBILITY REQUIREMENTS

RECESSED DOORS: PROVIDE FORWARD APPROACH CLEARANCE WITH ANY OBSTRUCTION WITHIN 18 INCH OF LATCH SIDE OF DOORWAY PROJECTING MORE THAN 8 INCHES BEYOND THE FACE OF DOOR MEASURED PERPENDICULAR TO FACE OF DOOR.

DOOR SURFACES: PROVIDE SMOOTH SURFACE WITHIN TEN (10) INCH AFF ON PUSH-SIDE EXTENDING FULL WIDTH WITH MAX 1/16 INCH BETWEEN SURFACE PLANE AND ANY PARTS (KICKPLATE). CAP CAVITIES FORMED BY KICKPLATES EXCEPT AT SLIDING DOORS. TEMPERED GLASS DOORS WITHOUT SIDE STILES WITH A BOTTOM RAIL WITH ITS TOP EDGE SLOPED 60 DEGREES FROM HORIZONTAL OR MORE, OR AT DOORS NOT EXTENDING TO 10 INCHES AFF

SIDELITES OR VISION LITES: AT DOORS AND SIDELITES ADJACENT TO DOORS WITH ONE OR MORE GLAZING PANELS PERMITTING VIEWING, PROVIDE BOTTOM EDGE OF AT LEAST ONE PANEL ON EITHER THE DOOR OR THE ADJACENT SIDELITE AT 43 INCHES MAXIMUM AFF, EXCEPT AT VISION LITES (ONLY) WITH THE LOWEST PART MORE THAN 66 INCHES AFF.

ACCESSIBLE DOOR & GATE HARDWARE:

PROVIDE ACCESSIBLE HARDWARE WITH AN EASY-TO-GRASP SHAPE COMPLYING WITH OPERABLE PARTS REQUIREMENTS (LEVERS PUSH/PULLS, OR PANIC DEVICES ARE ACCEPTABLE), MOUNTED BETWEEN 2'-10" AND 4'-0" AFF, WITH MAX PROJECTION (INTO REQUIRED MIN CLEARANCES) OF 4 INCH BTWN 34 - 80 INCH AFF

SLIDING DOOR/GATE HARDWARE: OPERABLE PARTS MUST BE EXPOSED AND USABLE FROM BOTH SIDES WHEN DOOR IS FULLY OPEN

DOOR/GATE CLOSERS: ADJUST UNITS TO PROVIDE FIVE (5) SECOND (MIN) TIME TO MOVE DOOR/GATE FROM 90-DEGREE OPEN-POSITION TO 12-DEGREE OPEN-POSITION.

DOOR/GATE SPRING-HINGES: ADJUST TO PROVIDE 1-1/2 SECOND MINIMUM TIME TO MOVE DOOR/GATE FROM 70-DEGREE OPEN-POSITION TO CLOSED-POSITION

OPENING-FORCE OF CLOSERS OR SPRING-HINGES: 5.0 LBS MAX @ INTERIOR HINGED, SLIDING OR FOLDING DOORS OR GATES (NOT APPLICABLE TO LATCH-BOLT RETRACTION FORCE AND NOT APPLICABLE TO OPENING FORCE AT FIRE-DOORS - TO BE AS REQD BY AJH)

AUTOMATIC DOORS OR GATES:

REFERENCED STANDARDS: COMPLY WITH ANSI/BHMA A156.10. AND FOR POWER-ASSIST AND LOW-ENERGY DOORS, COMPLY WITH ANSI/BHMA A156.19 (UNLESS DOORS OR GATES ARE DESIGNED TO BE OPERATED ONLY BY SECURITY PERSONNEL)

COMPLY WITH ACCESSIBLE CLEAR-FLOOR SPACE, THRESHOLD / FLOOR-SURFACE, AND DOORS-IN- SERIES REQUIREMENTS.

MANUAL CONTROLS: COMPLY WITH "OPERABLE PARTS" REQMTS WITH THE CLEAR FLOOR SPACE ADJACENT TO THE CONTROL SWITCH LOCATED BEYOND THE DOOR/GATE SWING.

ACCESSIBLE WINDOWS:

PROVIDE OPERATIONAL PARTS LOCATED PER "OPERABLE PARTS" REQMTS W/ MIN ACCESSIBLE CLEAR-FLOOR SPACE ADJACENT TO THE WINDOW.

SPECIAL ACCESS (PLATFORM) LIFTS (INTERIOR OR EXTERIOR):

COMPLY WITH ASME A17.1 SAFETY CODE FOR ELEVATORS AND ESCALATORS, SECTION XX (WITH ACCESSIBLE KEY-CONTROLS IF LIFT TRAVEL AREA IS NOT ENCLOSED) AND AS FOLLOWS:
- MAXIMUM TRAVEL HEIGHT: 60 INCHES
- MINIMUM CAPACITY: 400 POUNDS
- MINIMUM PLATFORM SIZE: 30 X 48 INCH
- MAXIMUM SPEED: 20 FPM

PROJECT TEAM

ARCHITECTURAL, MECHANICAL, ELECTRICAL, & PLUMBING, FIRE ALARM, AUDIO/VISUAL
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Kansas City, MO 64108
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STATE OF MISSOURI
JASON SCOTT BARKER
NUMBER A-2005001198
REGISTERED ARCHITECT

03/21/2025
Jason Scott Barker - MO #A-2005001198
Certificate of Authority - MO #000767

TM Aviation

TM AVATION HANGER
AT LXT

No.	Date	Description

Issue: PERMIT SET
Date: MAR 21, 2025
Drawn By: Author | Checked By: Checker

KEY PLAN

NORTH

SHEET NAME
GENERAL ACCESSIBILITY

SHEET NUMBER
G-007

PROJECT NUMBER
2404

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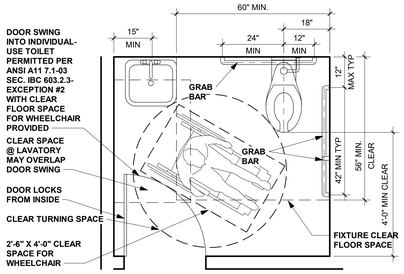
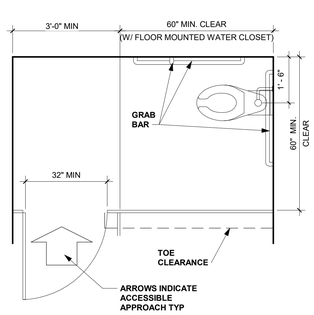
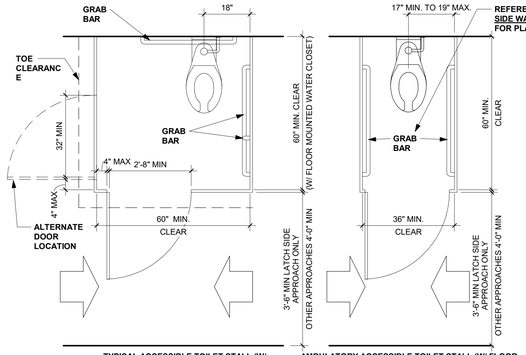


INDIVIDUAL-USE OR UNI-SEX TOILET ROOM



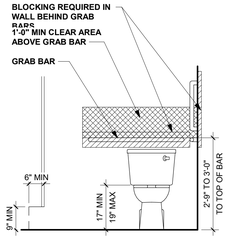
END OF ROW ACCESSIBLE TOILET STALL



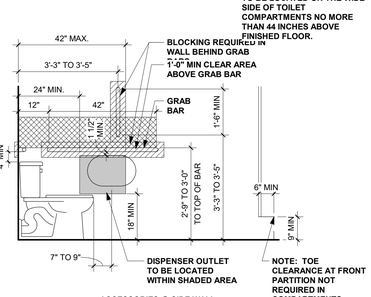
TYPICAL ACCESSIBLE TOILET STALL (W/ FLOOR MOUNTED WATER CLOSET)

AMBULATORY ACCESSIBLE TOILET STALL (W/ FLOOR MOUNTED WATER CLOSET)

TOILET APPROACHES FOR PUBLIC RESTROOMS



GRAB BAR AT BACK OF WATER CLOSET

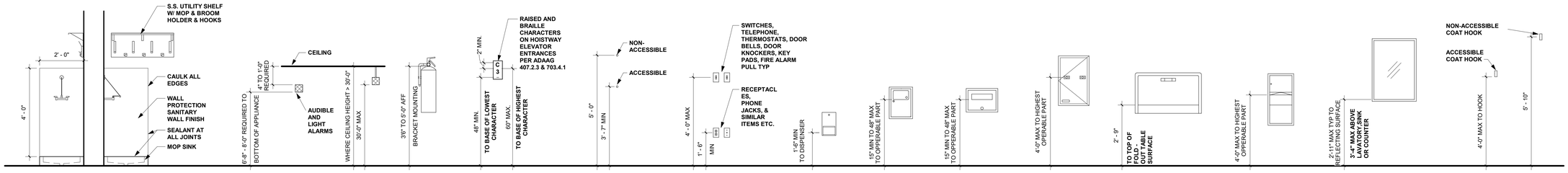


ACCESSORIES @ SIDE WALL OF WATER CLOSET

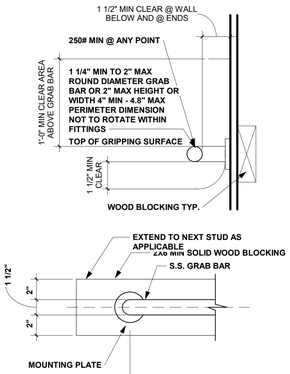
NOTE: FLUSH CONTROLS FOR ACCESSIBLE WATER CLOSETS TO BE LOCATED ON THE WIDE SIDE OF TOILET COMPARTMENTS NO MORE THAN 44 INCHES ABOVE FINISHED FLOOR.

NOTE: TOE CLEARANCE AT FRONT PARTITION NOT REQUIRED IN COMPARTMENTS GREATER THAN 62" DEEP W/ WALL-HUNG WC OR 65" W/ FLOOR MOUNTED WC. TOE CLEARANCES AT THE SIDE PARTITION IS NOT REQUIRED IN A COMPARTMENT GREATER THAN 66" WIDE.

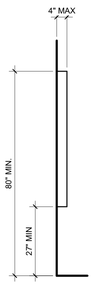
ACCESSIBLE TOILETS



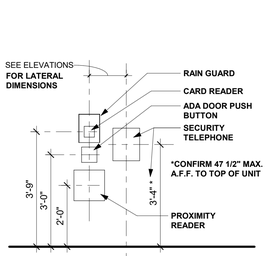
FIXTURE MOUNTING HEIGHTS



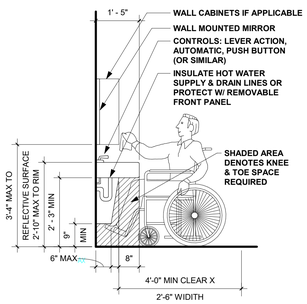
GRAB BAR DETAIL



PROTRUDING OBJECTS



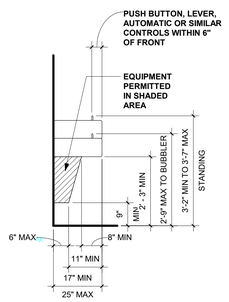
SECURITY DEVICE MOUNTING DIAGRAM



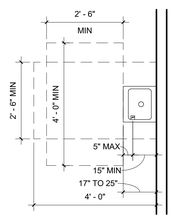
ACCESSIBLE LAVATORY OR SINK SIDE VIEW

ACCESSIBLE LAVATORY OR SINK PLAN VIEW

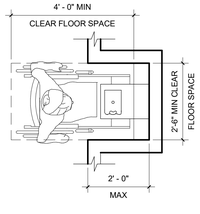
ACCESSIBLE LAVATORY OR SINK



DRINKING FOUNTAIN - SIDE VIEW

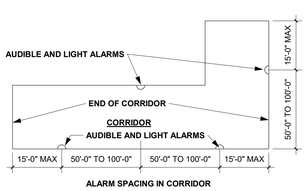


FREE STANDING FOUNTAIN OR COOLER



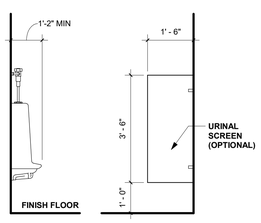
DRINKING FOUNTAIN - CLEAR FLOOR SPACE

DRINKING FOUNTAINS



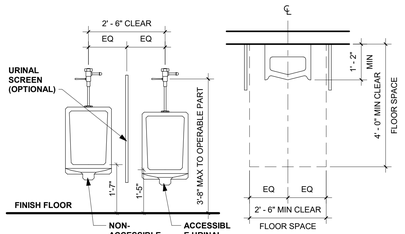
ALARM SPACING IN CORRIDOR

ALARM SPACING IN CORRIDOR



URINAL - SIDE VIEW

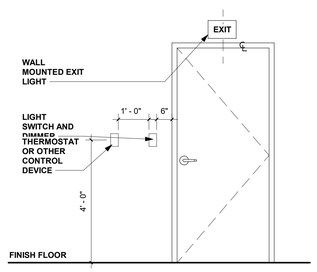
URINAL - PARTITION SIDE VIEW



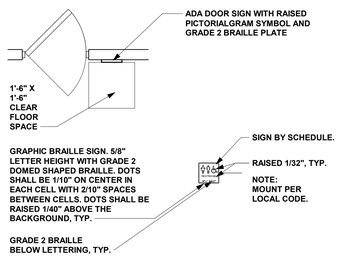
URINAL - FRONT VIEW

URINAL - CLEAR FLOOR SPACE PLAN VIEW

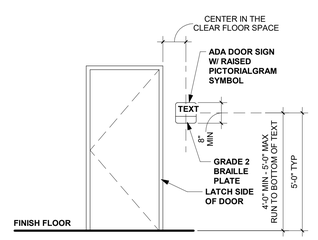
URINALS AND URINAL PARTITION



MISC APPLIANCE HEIGHTS



WALL MOUNTED SIGNS



ACCESSIBLE SIGNAGE

INTERIOR SIGNAGE

PROJECT TEAM

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STATE OF MISSOURI
JASON SCOTT BARKER
NUMBER A-2005001198
REGISTERED ARCHITECT

03/21/2025
Jason Scott Barker - MO #A-2005001198
Certificate of Authority - MO #000767

TM Aviation

TM AVATION HANGER
AT LXT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **Author** | Checked By **Checker**

KEY PLAN
NORTH

SHEET NAME
INTERIOR ACCESSIBILITY

SHEET NUMBER
G-008

PROJECT NUMBER
2404

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N

0 20 40 FEET

LEGEND

X X	EXISTING FENCE
OHE OHE	EXISTING OVERHEAD ELECTRIC
E E	EXISTING ELECTRICAL CIRCUIT
	COUNTERPOISE CIRCUIT
UTV	EXISTING UNDERGROUND TELEPHONE LINE
945	EXISTING CONTOURS
W W W	EXISTING WATER MAIN
UFO	EXISTING UNDERGROUND FIBER OPTIC
G G	EXISTING GAS MAIN
SS	EXISTING SANITARY SEWER
EM	EXISTING ELECTRICAL METER
EB	EXISTING ELECTRICAL BOX
H	EXISTING UTILITY HANDHOLE
PP	EXISTING POWER POLE
PA	EXISTING POWER POLE ANCHOR
FH	EXISTING FIRE HYDRANT AND WATER VALVE
LP	EXISTING LIGHT POLE
	ACCESS ROAD DEMOLITION AREA

EAST APRON

REMOVE EXISTING PARKING STALLS AND TIE DOWNS

REMOVE EXISTING EDGE LIGHT AND CONDUITS SPLICE CONDUITS AT ADJACENT CANS

LIGHT

PROPOSED TERMINAL (UNDER CONSTRUCTION IN SEPARATE PROJECT)

PROPOSED TERMINAL PARKING LOT (UNDER CONSTRUCTION IN SEPARATE PROJECT)

EXISTING AOA FENCE

REMOVE 167' EXISTING AOA FENCE

EXISTING SECTION OF AOA FENCE

REMOVE ACCESS ROAD 25' FROM PROJECT LIMITS TO EAST APRON

PROPOSED IMPROVEMENTS

UTILITY DISCLAIMER

THE LOCATION OF UNDERGROUND UTILITIES AS INDICATED ON THE PLANS HAS BEEN OBTAINED FROM EXISTING RECORDS. NEITHER THE OWNER NOR THE ENGINEER ASSUMES ANY RESPONSIBILITY WHATEVER IN RESPECT TO THE ACCURACY, COMPLETENESS, OR SUFFICIENCY OF THE INFORMATION. THERE IS NO GUARANTEE, EITHER EXPRESSED OR IMPLIED, THAT THE LOCATIONS, SIZE AND TYPE OF MATERIAL OF EXISTING UNDERGROUND UTILITIES INDICATED ARE REPRESENTATIVE OF THOSE TO BE ENCOUNTERED IN THE CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE ACTUAL LOCATION OF ALL SUCH FACILITIES, INCLUDING SERVICE CONNECTIONS TO UNDERGROUND UTILITIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANY OF HIS OPERATIONAL PLANS. THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR DETAILED INFORMATION AND ASSISTANCE IN LOCATING UTILITIES. IN THE EVENT AN UNEXPECTED UTILITY INTERFERENCE IS ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE UTILITY COMPANY, THE OWNER AND THE ENGINEER. ANY SUCH MAINS AND/OR SERVICES DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED IMMEDIATELY AT HIS EXPENSE.

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KANSAS CITY, MO 64108

WELLNER ARCHITECTS + engineers
1627 MAIN STREET, SUITE 100
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olsson
1301 BURLINGTON
NORTH KANSAS CITY, MO 64116

KC - LEE'S SUMMIT REGIONAL
LEE'S SUMMIT, MISSOURI

TM AVIATION HANGAR
CITY PROJECT NO. - XXXXXXXX

STATE OF MISSOURI
GERALD BOLLINGER
Gerald T Bollinger
NUMBER PE-2021009173
PROFESSIONAL ENGINEER

March 21, 2025

MARK	DATE	DESCRIPTION

PROJECT NO:	PERMIT SET
PROJECT NO:	Project Number
CAD FILE:	FILE NAME
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
COPYRIGHT 2025	
SHEET TITLE	

EXISTING CONDITIONS AND DEMOLITION PLAN

C-101

SHEET 6 OF 39

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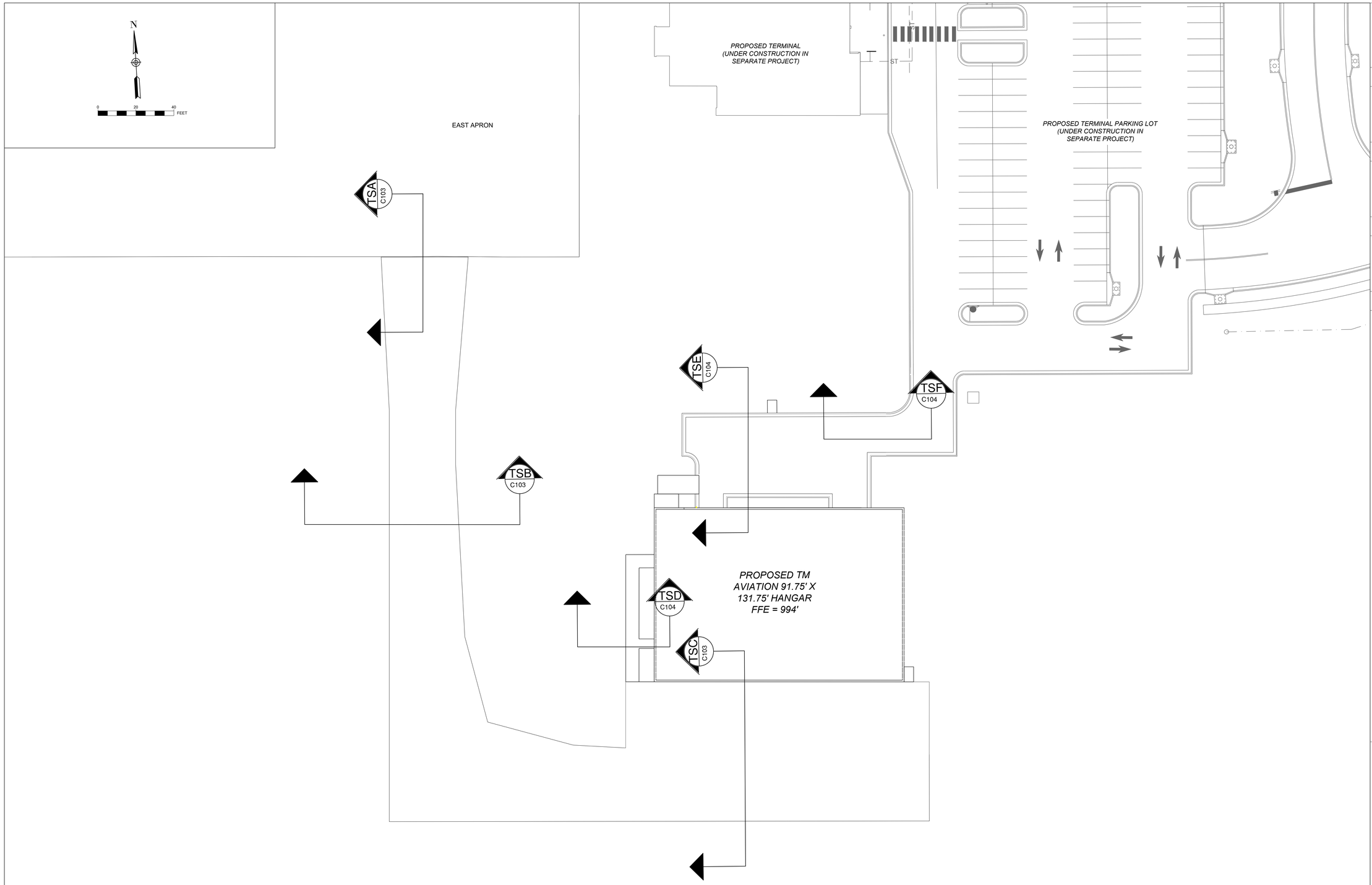

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KC - LEE'S SUMMIT REGIONAL
LEE'S SUMMIT, MISSOURI

TM AVIATION HANGAR
CITY PROJECT NO. - XXXXXXXX

STATE OF MISSOURI
GERALD BOLLINGER
Gerald T. Bollinger
NUMBER
PE-2021009173
PROFESSIONAL ENGINEER

March 21, 2025

MARK	DATE	DESCRIPTION

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TYPICAL SECTION PLAN VIEW

C-102

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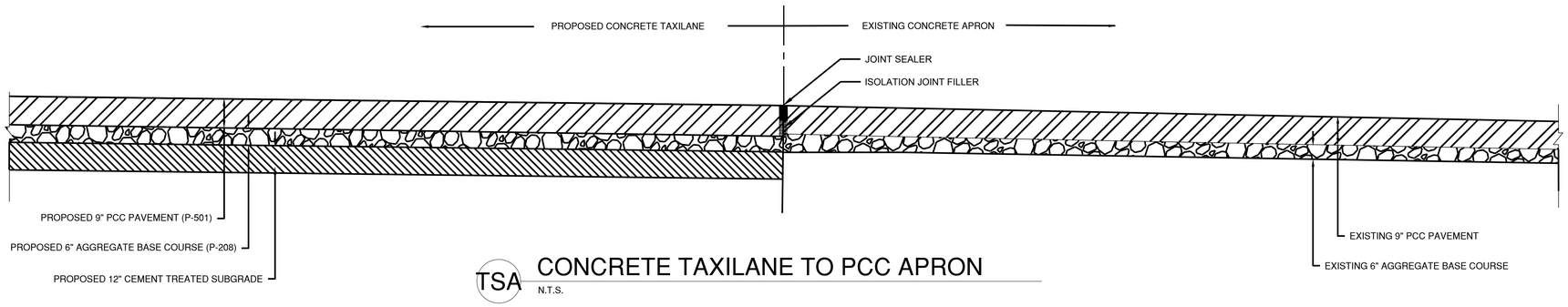
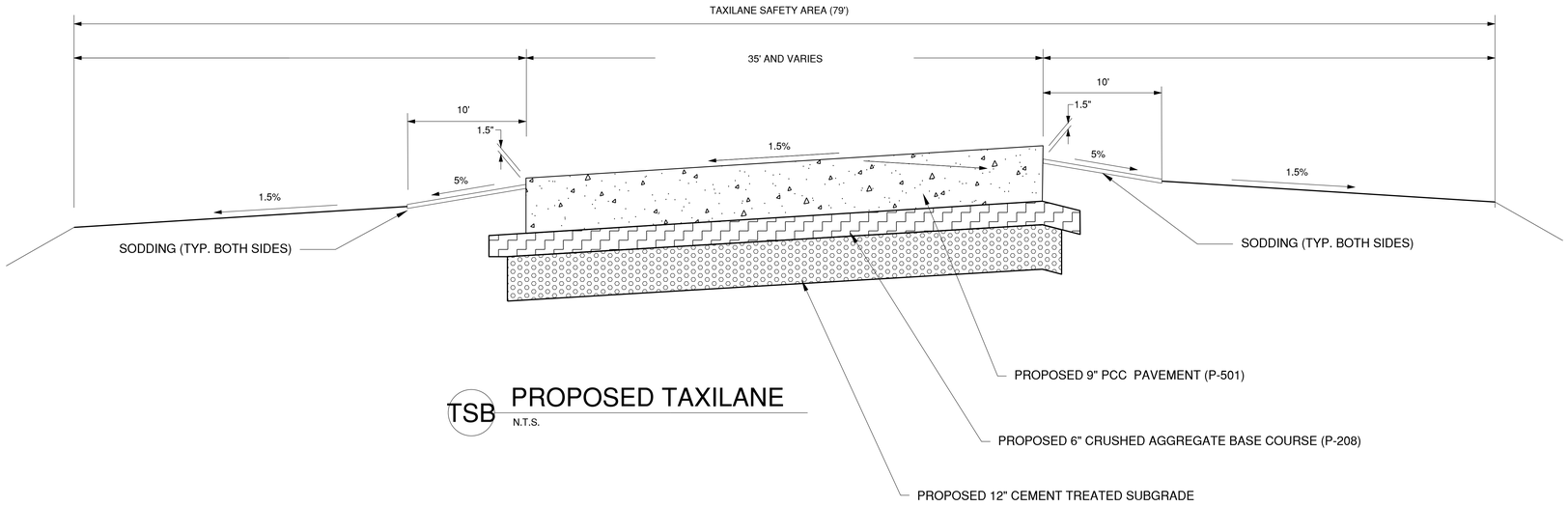
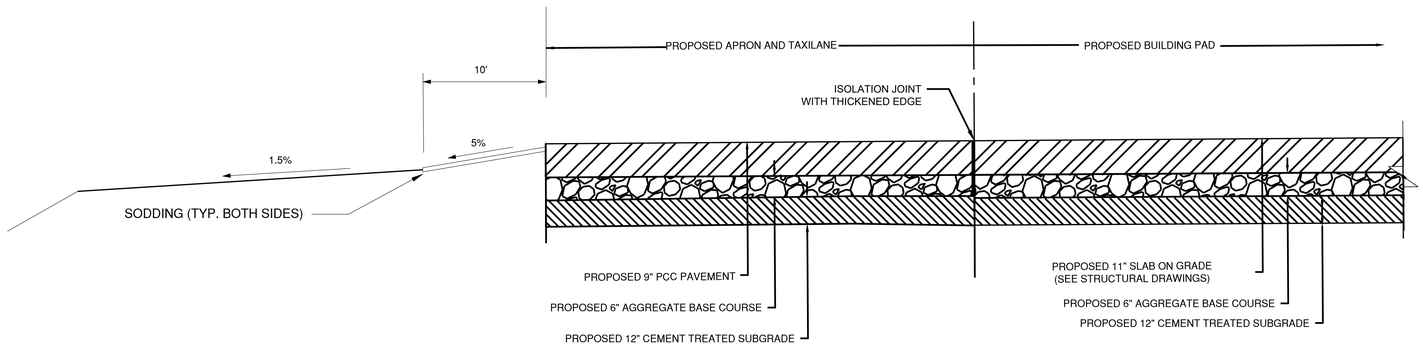


TSA CONCRETE TAXILANE TO PCC APRON
N.T.S.



TSB PROPOSED TAXILANE
N.T.S.



TSC PROPOSED APRON TO PROPOSED BUILDING PAD
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TYPICAL SECTIONS
SHEET 1 OF 2

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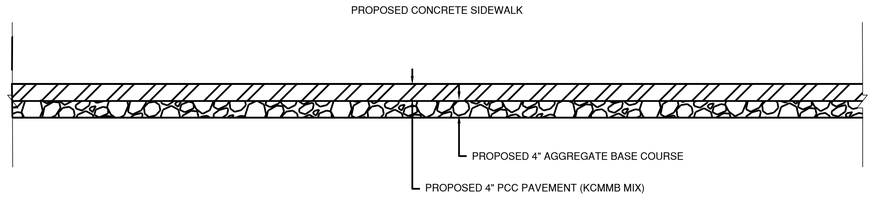
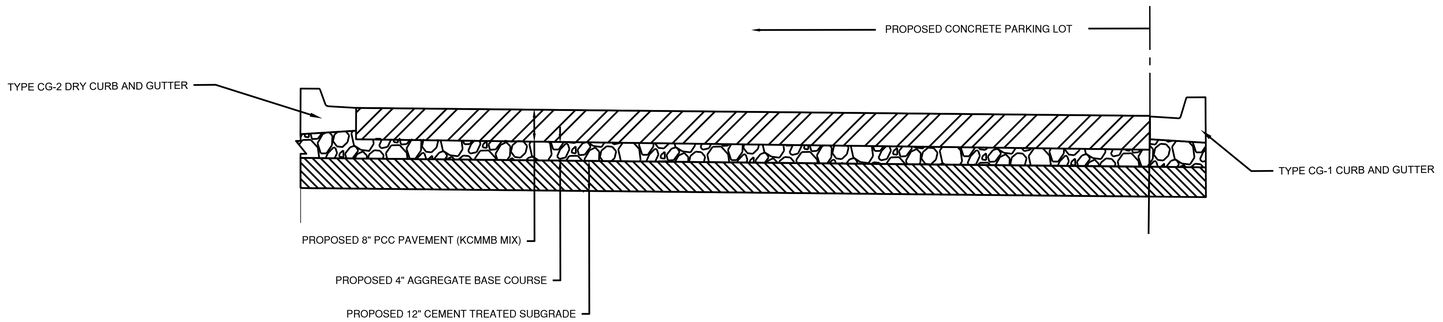


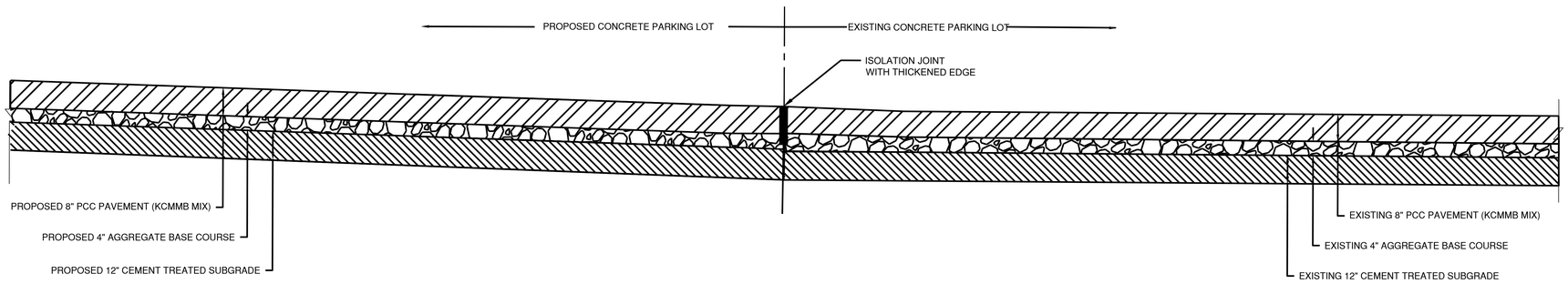
TSD PROPOSED CONCRETE SIDEWALK

N.T.S.



TSE PROPOSED CONCRETE PARKING LOT TO EXISTING CONCRETE PARKING LOT

N.T.S.



TSF PROPOSED CONCRETE PARKING LOT TO EXISTING CONCRETE PARKING LOT

N.T.S.

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TYPICAL SECTIONS
SHEET 2 OF 2

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SHEET 9 OF 39

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N

0 20 40 FEET

PARKING SUMMARY	
STANDARD SPACES	5 SPACES
ADA SPACES	1 SPACE
TOTAL SPACES	6 SPACES

LEGEND

- (A) PROPOSED TAXILANE PAVEMENT
- (B) PROPOSED BUILDING
- (C) PCC SIDEWALK
- (D) PCC APRON PAVEMENT
- (E) PCC PARKING LOT PAVEMENT
- (F) ADA SIDEWALK RAMP AND FLUSH CURB WITH 2'x10' ADA TRUNCATED DOME
- (G) ADA VAN STALL AND BOLLARD MOUNTED SIGNAGE
- (H) CONCRETE CURB AND GUTTER

EAST APRON

TIE INTO EXISTING PAVEMENT

TAXILANE CENTERLINE

LEASE LIMIT

PROPOSED TERMINAL (UNDER CONSTRUCTION IN SEPARATE PROJECT)

PROPOSED TERMINAL PARKING LOT (UNDER CONSTRUCTION IN SEPARATE PROJECT)

FUTURE RESTAURANT

FUTURE RESTAURANT PARKING

O LIGHT

PROPOSED TM AVIATION 91.75' X 131.75' HANGAR FFE = 994'

REMOVE EXISTING GRAVEL ROAD

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SITE PLAN

C-105

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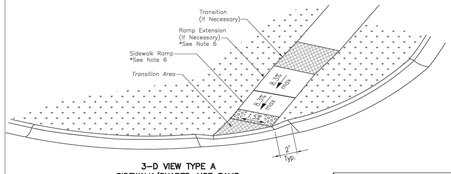
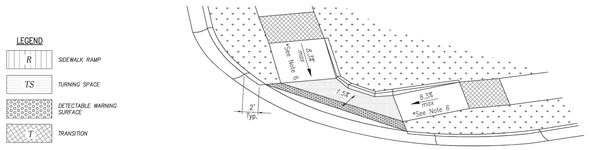
ADA RAMP TYPE A&B DETAIL D12
N.T.S.

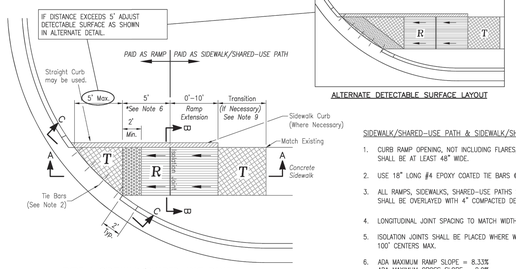


3-D VIEW TYPE A
SIDEWALK/SHARED-USE RAMP

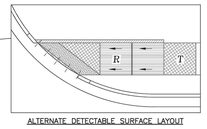


3-D VIEW TYPE B
SIDEWALK/SHARED-USE RAMP

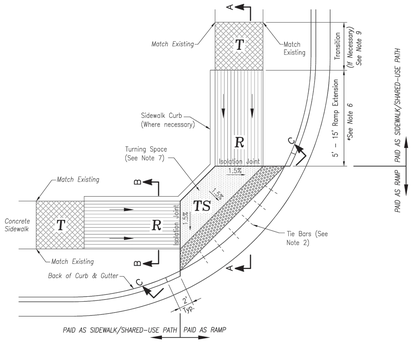
LEGEND
- R — SIDEWALK RAMP
- TS — TURNING SPACE
- DETECTABLE WARNING SURFACE
- T — TRANSITION



TYPE A SIDEWALK/SHARED-USE RAMP
Not to Scale



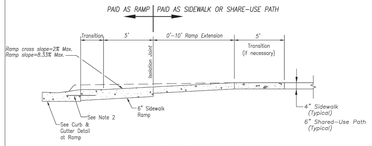
ALTERNATE DETECTABLE SURFACE LAYOUT



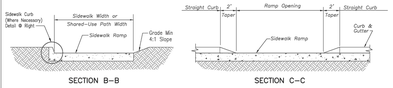
TYPE B SIDEWALK/SHARED-USE RAMP
Not to Scale

SIDEWALK/SHARED-USE PATH & SIDEWALK/SHARED-USE RAMP NOTES:

1. CURB RAMP OPENING, NOT INCLUDING FLARES, SHALL MATCH EXISTING SIDEWALK WIDTH AND OPENING SHALL BE AT LEAST 48" WIDE.
2. USE 18" LONG #4 EPOXY COATED TIE BARS @ 24" O.C. EMBED TIE BARS 9" IN EACH DIRECTION.
3. ALL RAMPS, SIDEWALKS, SHARED-USE PATHS SUBGRADE MUST BE OF STABLE, COMPACTED EARTH AND SHALL BE OVERLAYED WITH 4" COMPACTED DENSE GRADED AGGREGATE BASE.
4. LONGITUDINAL JOINT SPACING TO MATCH WIDTH OF SIDEWALK.
5. ISOLATION JOINTS SHALL BE PLACED WHERE WALK ABUTS DRIVEWAYS AND SIMILAR STRUCTURES, AND 100' CENTERS MAX.
6. ADA MAXIMUM RAMP SLOPE = 8.33%
   ADA MAXIMUM CROSS SLOPE = 2.0%
   ***ROADWAY EXCEPTION:** WHERE EXISTING ROAD PROFILE GRADE DOES NOT ALLOW RAMP TO MEET RAMP SLOPE REQUIREMENT OF 8.33% OR LESS, THE RAMP SHALL BE EXTENDED TO A LENGTH OF 15 FEET TO MATCH EXISTING SIDEWALK. CROSS SLOPE OF RAMP SHALL BE 1.5%, ±0.5%.
7. TURNING SPACES SHALL BE 1.5%, ±0.5%, SLOPE IN ANY DIRECTION. TURNING SPACES SHALL HAVE A MINIMUM 4'x4' TURNING AREA. TURNING SPACES, WITH A SIDEWALK CURB, SHALL HAVE A 5' TURNING AREA PERPENDICULAR TO THE SIDEWALK CURB.
8. FOR RETROFIT WORK, SLOPES TO BE DETERMINED IN FIELD BY CONTRACTOR AND APPROVED BY CITY INSPECTOR
9. RAMP EXTENSION AREA SHALL NOT BE USED AS TRANSITION TO EXISTING SIDEWALK. ANY TRANSITIONS REQUIRED TO MATCH RAMPS TO EXISTING SIDEWALK SHALL REQUIRE REMOVAL AND REPLACEMENT OF ADDITIONAL SIDEWALK BEYOND THE RAMP AREA. SIDEWALK TRANSITION LENGTH SHALL BE EQUAL TO OR GREATER THAN THE WIDTH OF THE EXISTING SIDEWALK. RAMP EXTENSIONS SHALL BE A CONTINUOUS SLOPE.
10. ALL SIDEWALK AND RAMP CONSTRUCTION SHALL MEET CURRENT PUBLIC RIGHT OF WAY ACCESSIBILITY GUIDELINES (PROWAG).



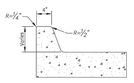
SECTION A–A



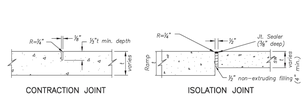
SECTION B–B

SECTION C–C

TYPE A & B SIDEWALK RAMP
Not to Scale

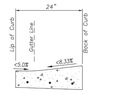


SIDEWALK CURB DETAIL
Not to Scale



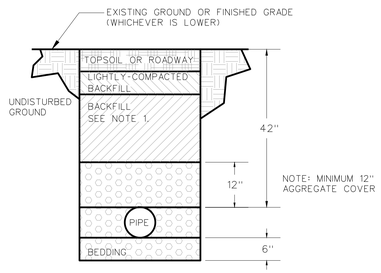
CONTRACTION JOINT ISOLATION JOINT

JOINT DETAILS
Not to Scale



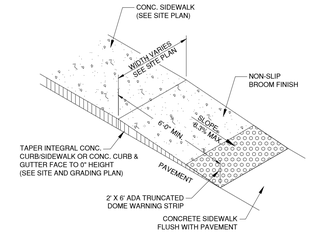
CURB & GUTTER DETAIL AT RAMP
Not to Scale

TRENCHING AND BACKFILL DETAIL D8
N.T.S.



NOTES:

1. BACKFILL OF ALL PIPES UNDER ROADWAYS, CURB AND GUTTER AND ALL OTHER PAVED AREAS WITHIN THE RIGHT OF WAY SHALL CONSIST OF FLOWABLE BACKFILL AS SPECIFIED IN SECTION 2602.2.H MIX DESIGN TYPE A. THE FLOWABLE FILL SHALL EXTEND TO 2 FEET FROM BACK OF CURB TO 2 FEET BACK OF CURB, UP TO 18 INCHES BELOW FINISHED GRADE. FOR EXISTING ROADWAYS FLOWABLE SHALL BE EXTEND UP TO THE BASE OF PAVEMENT.



ADA SIDEWALK RAMP DETAIL D13
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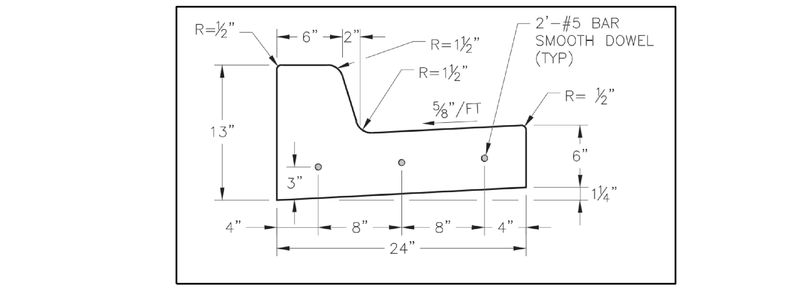

NOTES:

1. ½" EXPANSION JOINTS WITH 2' DOWELS SHALL BE PLACED AT RADIUS POINTS AND AT 150' INTERVALS. THESE DOWELS SHALL BE GREASED AND WRAPPED ON ONE END WITH EXPANSION TUBES.
2. 1" DEEP CONTRACTION JOINTS SHALL BE INSTALLED TO MATCH TRANSVERSE JOINTS OF THE ADJACENT PAVEMENT. THESE JOINTS SHALL PASS ACROSS THE ENTIRE CURB SECTION.
3. FIX DOWELS WITH BAR SUPPORTS
4. CONCRETE SHALL CONFORM TO KCMMB 4K UNLESS OTHERWISE SPECIFIED IN THE PLANS AND PROJECT MANUAL. SEE SECTION 02290 - CURBING.
5. AT CENTER MARKS - USE ⅝" Ø X 2' SMOOTH DOWELS AT LOCATIONS SHOWN ON EACH TYPICAL SECTION.
6. DEPTH OF CURB SHALL BE MINIMUM OF 8" THRU THE HANDICAP ACCESS RAMP.
7. JOINT NOT NEEDED IF CURB & GUTTER IS MONOLITHICALLY POURED

* DRAWING COURTESY OF KANSAS CITY, MO PUBLIC WORKS DEPARTMENT, ENGINEERING DIVISION: STANDARD DRAWING NUMBER C

WET CURB TYPE CG-1

STRAIGHT BACK CURB AND GUTTER (TYPE CG-2) D12
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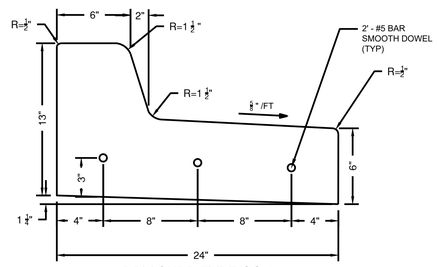
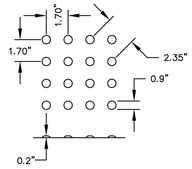
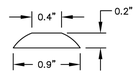


DRY CURB TYPE CG-2



DOME SPACING



DOME SECTION

TRUNCATED DOME DETAIL D14
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SITE DETAILS

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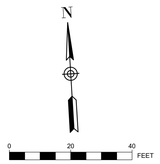
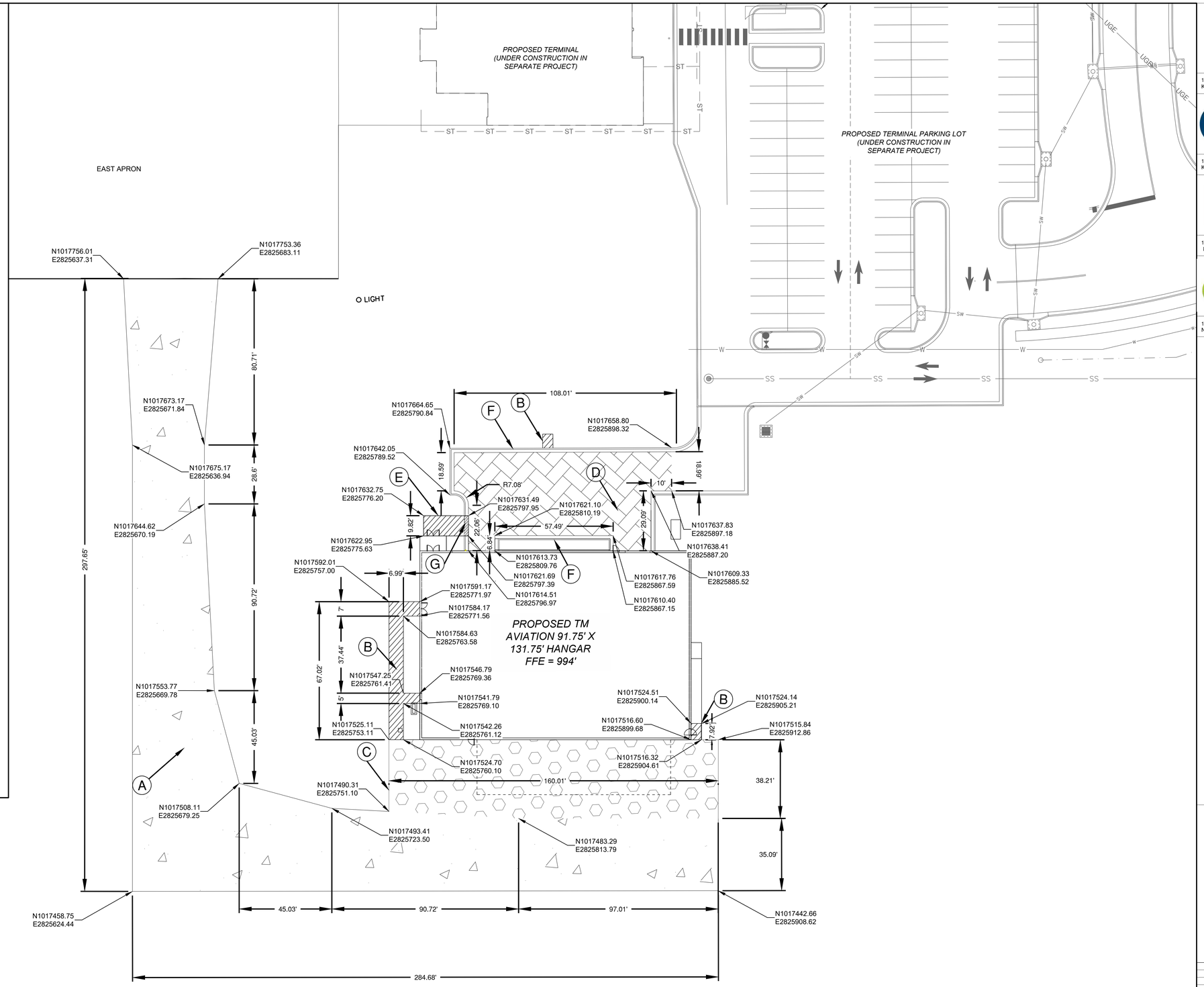


LEGEND

- (A) PROPOSED 9" TAXILANE PAVEMENT
- (B) PCC 4 "SIDEWALK
- (C) PCC 9" APRON PAVEMENT
- (D) PCC 8" PARKING LOT PAVEMENT
- (E) ADA SIDEWALK RAMP AND FLUSH CURB WITH 2' ADA TRUNCATED DOME WARNING STRIP (TYP)
- (F) TYPE CG-1 CONCRETE CURB AND GUTTER
- (G) TRUNCATED DOME

PAVING PLAN GENERAL NOTES:

1. ALL DIMENSIONS ARE TO THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
2. ALL WORK AND MATERIALS SHALL COMPLY WITH ALL CITY / STATE / FEDERAL / COUNTY REGULATIONS, CODES AND O.S.H.A. REGULATIONS.
3. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THIS DRAWING WITH OTHER DRAWINGS THAT CONTAIN DIMENSIONS TO ENSURE THAT THE PLAN DIMENSIONS ARE CONSISTENT WITH THE COORDINATES PRESENTED ON THE PLAN. FOLLOWING STAKE-OUT OF ANY FACILITY BY COORDINATES, THE CONTRACTOR SHALL CHECK THAT PLAN DIMENSIONS ARE ACHIEVED PRIOR TO CONSTRUCTION.
4. CONTRACTOR SHALL PROVIDE FULL-DEPTH SAWCUT AT ALL REMOVAL LIMITS AS REQUIRED TO PROVIDE A CLEAN, NEAT EDGE TO EXISTING PAVEMENT, CURB & GUTTER, SIDEWALKS, ETC. THAT WILL REMAIN.
5. CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS DOORS AND ENCLOSURES.
6. CONTRACTOR SHALL COORDINATE AND SCHEDULE ALL WORK WITH WORK BY OTHERS INCLUDING UTILITY COMPANIES.



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PAVING PLAN

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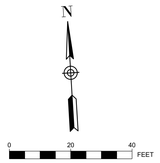
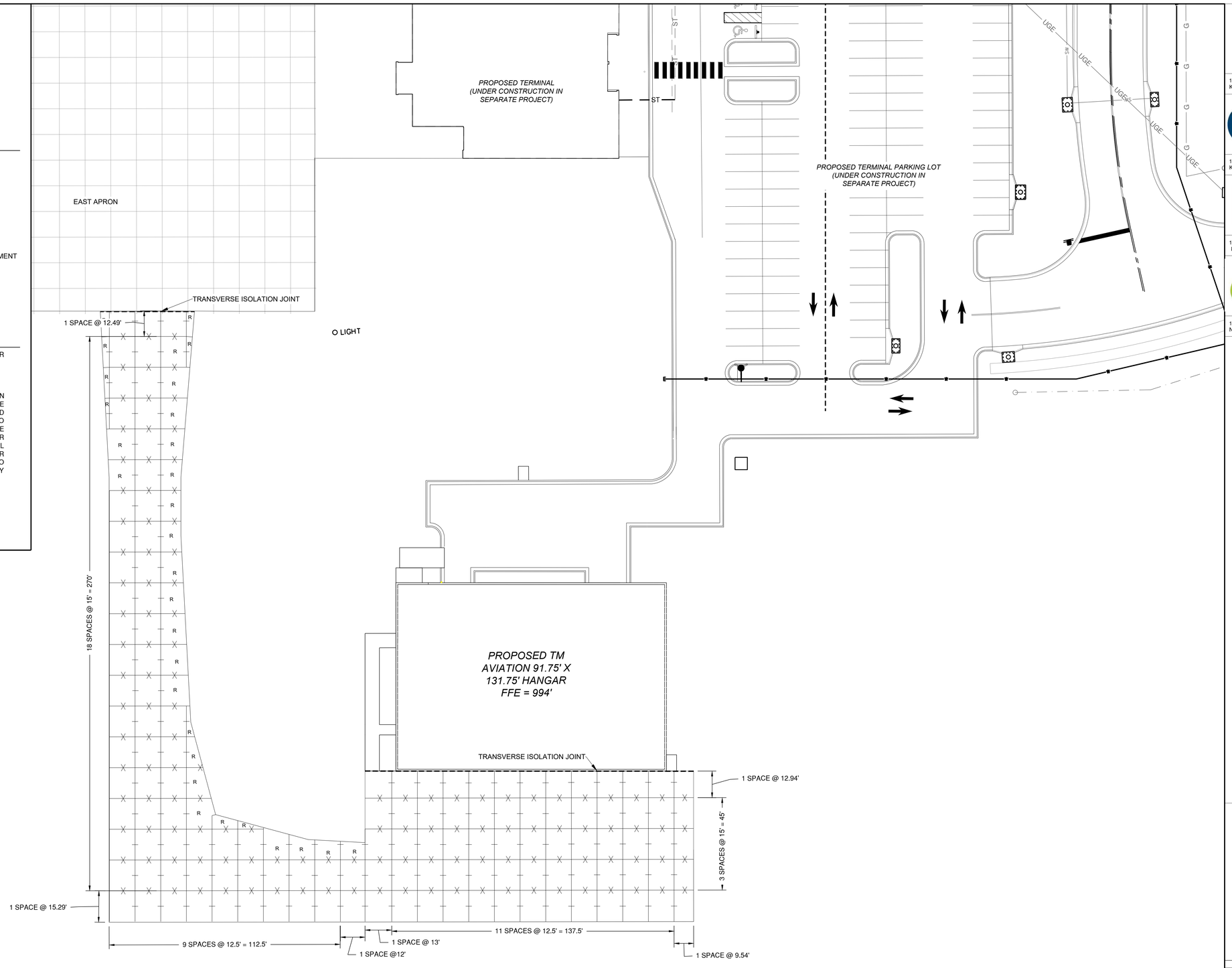


LEGEND

- TRANSVERSE ISOLATION JOINT
- TRANSVERSE CONSTRUCTION JOINT
- LONGITUDINAL CONSTRUCTION JOINT
- EXISTING JOINT
- PANEL WITH THICKENED EDGE
- R — ODD-SHAPED PANEL WITH MESH REINFORCEMENT

JOINTING NOTES

1. DRILL AND BOND DOWEL BARS INTO EXISTING PAVEMENT PRIOR TO PLACEMENT OF NEW PCC. MATCH EXISTING JOINTING.
2. L-SHAPED BARS ARE ACCEPTABLE FOR CONSTRUCTION JOINTS.
3. JOINTS ARE PRESENTED BASED ON AN EXPECTED PAVING PLAN FOR THIS PROJECT. CONTRACTOR MAY ELECT TO PAVE THE SITE DIFFERENTLY, HOWEVER, CONTRACTOR MUST PREPARE AND SUBMIT PAVING PLAN WITH AN ALTERNATIVE JOINTING PLAN TO ENGINEER FOR REVIEW. PAVING PLAN AND ALTERNATIVE JOINTING PLAN SHALL BE SUBMITTED AT LEAST 10 CALENDAR DAYS IN ADVANCE OF ANY SCHEDULED PAVES. NO ADDITIONAL COSTS TO THE CONTRACT SHALL BE INCURRED BY THE OWNER FOR THE PREPARATION OF AN ALTERNATIVE JOINTING PLAN. NO ADDITIONAL COSTS TO THE CONTRACT SHALL BE INCURRED BY THE OWNER IF AN ALTERNATIVE JOINTING PLAN IS ACCEPTED.
4. SEE SHEETS C109 FOR JOINTING DETAILS



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TM AVIATION HANGAR
CITY PROJECT NO. - XXXXXXXX

STATE OF MISSOURI
GERALD BOLLINGER
Gerald T. Bollinger
NUMBER PE-2021009173
PROFESSIONAL ENGINEER

March 21, 2025

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AIRFIELD JOINTING PLAN

C108

SHEET 13 OF 39

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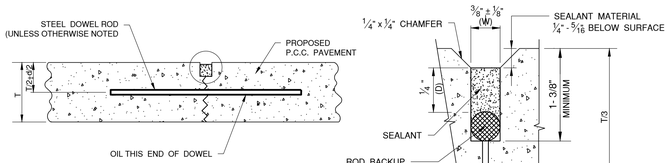
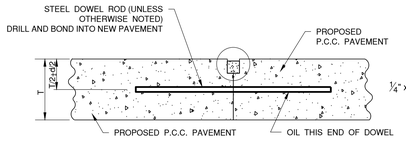
CONTRACTION JOINTS



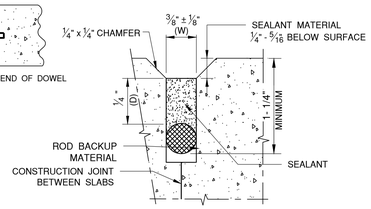
TYPE C DOWELED

SYMBOL

CONSTRUCTION JOINTS



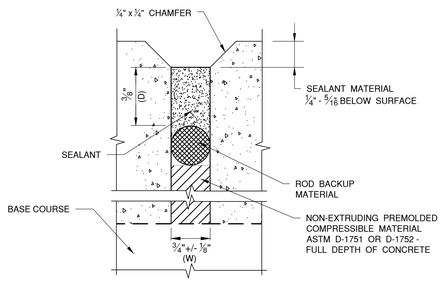
NOTE:
WHEN ABUTTING TO EXISTING CONCRETE,
INSERT DOWEL INTO EXISTING SLAB AND EPOXY.

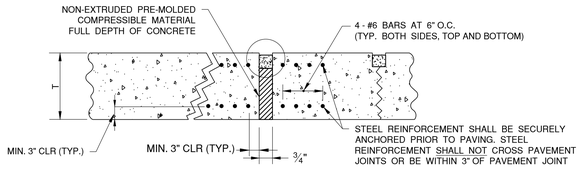


TYPE E DOWELED

SYMBOL

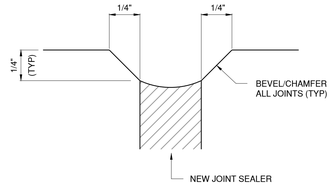
EXPANSION JOINTS





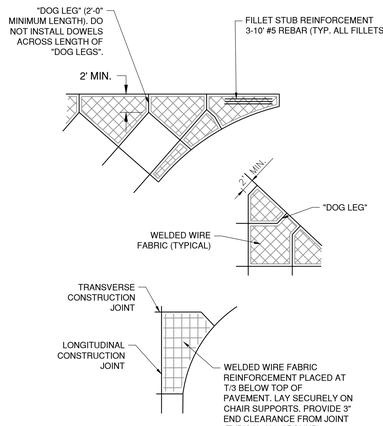
TYPE A ISOLATION

SYMBOL



CHAMFER/BEVEL JOINT DETAIL

NOT TO SCALE



TYPICAL FILLET AND
REINFORCEMENT DETAILS

NOT TO SCALE

DIMENSION TABLES

TABLE 1

PAVEMENT THICKNESS T – INCHES	DEPTH OF CONTRACTION JOINT INITIAL SAW CUT T, INCHES T=(T/3) ±1/4"
4"	T=1.33" ±1/4"
8"	T=2.67" ±1/4"

TABLE 2

PAVEMENT THICKNESS T – INCHES	DOWEL BAR DETAILS			TIE BAR DETAILS		
	DIA. (d)	LENGTH	SPACING	BAR SIZE	LENGTH	SPACING
6"–7"	3/4"	18"	12"	#5	30"	30"
7.5"–12"	1"	18"	12"	#5	30"	30"
12.5"–16"	1 1/4"	20"	15"	#5	30"	30"
16.5"–20"	1 1/2"	20"	18"	#5	30"	30"
20.5"–24"	2"	24"	18"	#5	30"	30"

NOTES:

1. ALL EDGES OF NEW SLABS, FREE STANDING OR CLOSURE, SHALL BE EDGED WITH AN APPROVED TOOL HAVING A RADIUS OF 1/8" TO 1/4" TO FACILITATE SAWING OF THE SEALANT RESERVOIR. A RADIUS > 1/4" WILL NOT BE ACCEPTABLE.
2. THE INITIAL SAWCUT FOR ALL LONGITUDINAL AND TRANSVERSE CONTRACTION JOINTS SHALL BE SAWED AS SOON AS POSSIBLE AFTER PLACEMENT OF THE PAVEMENT. SAWING OF LONGITUDINAL CONTRACTION JOINTS ADJACENT TO THICKENED EDGES SHALL BE GIVEN PRIORITY OVER OTHER LONGITUDINAL JOINT SAWING.
3. ALL DOWEL BARS SHALL BE SECURELY HELD IN PLACE BY MEANS OF A DOWEL BAR ASSEMBLY WHICH WILL ENSURE THAT THEY WILL REMAIN PARALLEL TO THE PAVEMENT LANES. THE DOWEL BAR ASSEMBLIES SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. ALTERNATE METHODS OF PLACEMENT OF DOWEL BARS MAY BE PROPOSED BY THE CONTRACTOR, TO BE APPROVED BY THE ENGINEER. TRANSVERSE DOWEL BAR IMPLANTING WILL NOT BE ALLOWED.
4. ALL TIE BARS AND MESH SHALL BE SECURELY HELD IN PLACE BY SUPPORT PINS OR PLACED BY OTHER APPROVED METHODS TO PREVENT SHIFTING DURING AND AFTER CONCRETE PLACEMENT.
5. TIE BARS SHALL BE DEFORMED BARS IN CONFORMANCE WITH ASTM A706, EXCEPT THAT RAIL STEEL BARS, GRADE 50 OR 60 SHALL NOT BE USED FOR THE BARS THAT ARE TO BE BENT OR RE-STRAIGHTEND DURING CONSTRUCTION. TIE BARS DESIGNATED AS GRADE 40 IN ASTM A706 CAN BE USED FOR CONSTRUCTION REQUIRING BENT BARS.
6. THE INITIAL SAWCUT SHALL BE MADE TO THE 1/8" WIDTH INDICATED. INITIAL SAWING TO THE DIMENSION OF THE SECOND SAWCUT WILL NOT BE ALLOWED.
7. JOINTS SHALL BE CLEAN AND DRY BEFORE SEALING OPERATIONS BEGIN.
8. SHOULD THE POURING OPERATIONS REQUIRE THE INSERTION OF AN INTERMEDIATE HEADER, A DOWEL BASKET ASSEMBLY OR OTHER APPROVED METHOD OF DOWEL BAR PLACEMENT SHALL BE REQUIRED.
9. EPOXY-COATED DOWEL BASKET ASSEMBLIES MAY BE PROPOSED BY THE CONTRACTOR TO BE APPROVED BY THE DESIGN PROFESSIONAL. DOWELS IN THE APPROVED BASKET ASSEMBLIES SHALL CONFORM TO TABLE 2.
10. CONTRACTOR SHALL CONSTRUCT A 1/4" CHAMFER ON ALL CONCRETE JOINTS PER THE DETAIL ON THIS SHEET.

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GERALD BOLLINGER
Gerald T. Bollinger
NUMBER PE-2021009173
PROFESSIONAL ENGINEER

March 21, 2025

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AIRFIELD JOINTING DETAILS

C109

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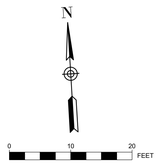
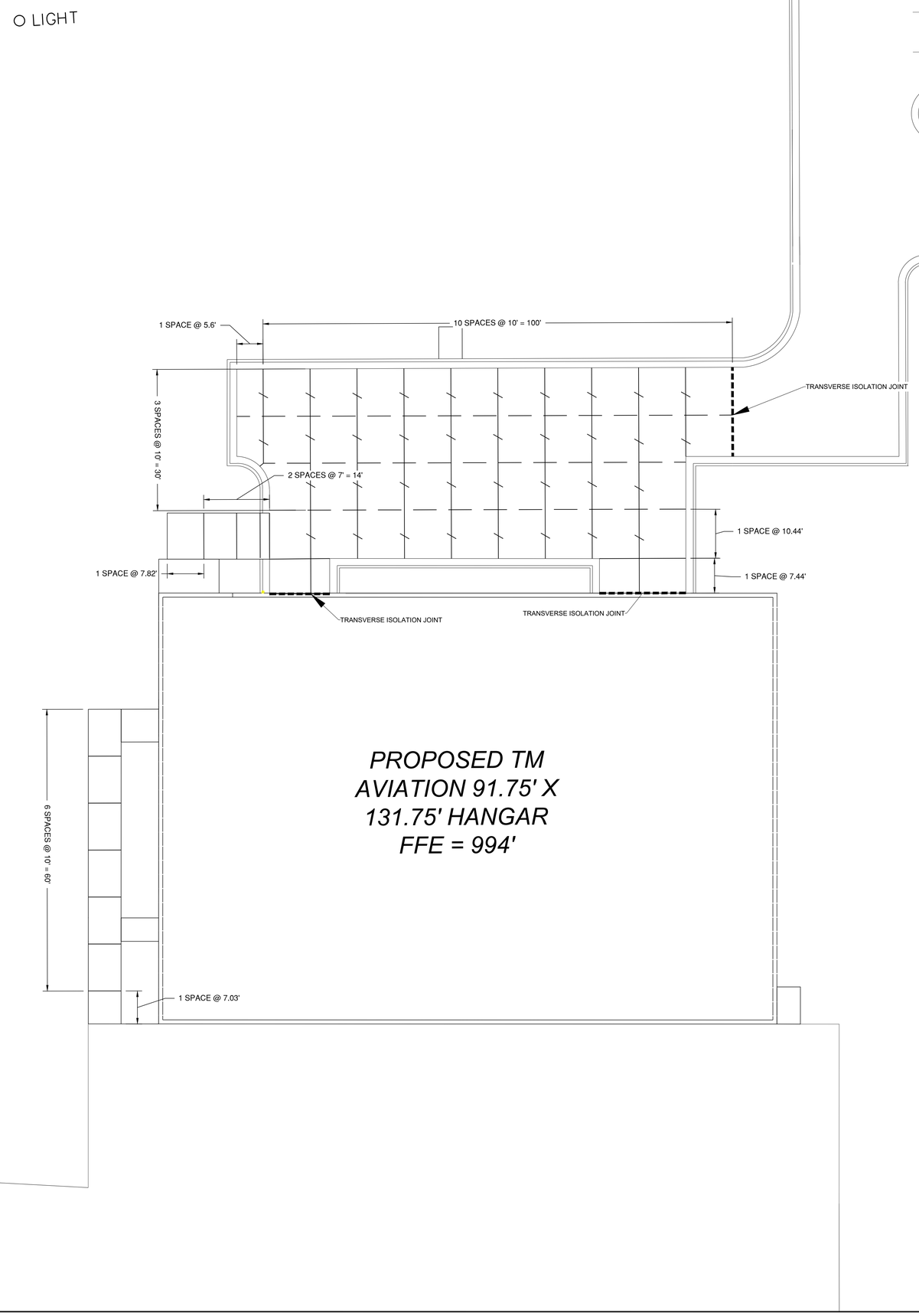


LEGEND

- TRANSVERSE ISOLATION JOINT
- DUMMY CONTRACTION JOINT
- LONGITUDINAL CONTRACTION/CONSTRUCTION JOINT

JOINTING NOTES

1. DRILL AND BOND DOWEL BARS INTO EXISTING PAVEMENT PRIOR TO PLACEMENT OF NEW PCC. MATCH EXISTING JOINTING.
2. LONGITUDINAL CONSTRUCTION JOINT NOT NEEDED IF CURB AND GUTTER IS MONOLITHICALLY POURED.
3. L-SHAPED BARS ARE ACCEPTABLE FOR CONSTRUCTION JOINTS.
4. JOINTS ARE PRESENTED BASED ON AN EXPECTED PAVING PLAN FOR THIS PROJECT. CONTRACTOR MAY ELECT TO PAVE THE SITE DIFFERENTLY, HOWEVER, CONTRACTOR MUST PREPARE AND SUBMIT PAVING PLAN WITH AN ALTERNATIVE JOINTING PLAN TO ENGINEER FOR REVIEW. PAVING PLAN AND ALTERNATIVE JOINTING PLAN SHALL BE SUBMITTED AT LEAST 10 CALENDAR DAYS IN ADVANCE OF ANY SCHEDULED PAVES. NO ADDITIONAL COSTS TO THE CONTRACT SHALL BE INCURRED BY THE OWNER FOR THE PREPARATION OF AN ALTERNATIVE JOINTING PLAN. NO ADDITIONAL COSTS TO THE CONTRACT SHALL BE INCURRED BY THE OWNER IF AN ALTERNATIVE JOINTING PLAN IS ACCEPTED.
5. SEE SHEETS C111-C112 FOR JOINTING DETAILS



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Gerald T. Bollinger
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PROFESSIONAL ENGINEER

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PARKING LOT JOINTING PLAN

C110

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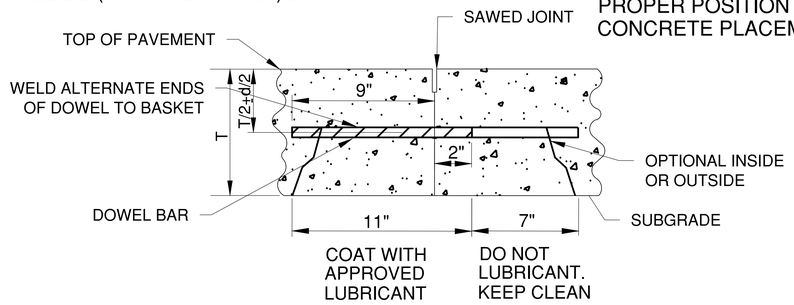
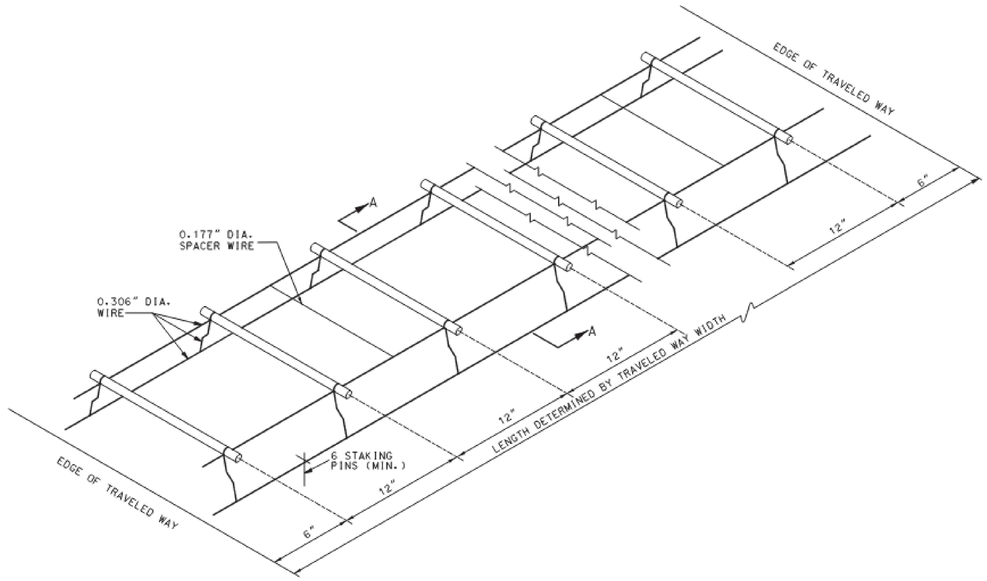
FOR PAVEMENT HAVING THICKNESS IN 1/2" INCREMENT, DOWEL BASKET SHALL BE (THICKNESS - 1/2")/2



SECTION A - A

DIFFERENT LEG SHAPES MAY BE USED PROVIDED THE DOWEL BARS ARE MAINTAINED AT THE PROPER POSITION DURING CONCRETE PLACEMENT



DOWEL BAR ASSEMBLY

NOTES:

1. THE DOWEL SUPPORTING UNITS SHALL BE FACTORY ASSEMBLED AND CAPABLE OF HOLDING THE DOWELS IN THEIR REQUIRED POSITIONS. IN THE COMPLETED JOINT INSTALLATION, DOWELS SHALL BE POSITIONED WITHIN $\frac{1}{2}$" OF THE VERTICAL AND HORIZONTAL PLANE AND IN THE LONGITUDINAL DIRECTION. THE SKEW TOLERANCE SHALL BE $\frac{1}{4}$".
2. THE FREE END OF EACH EPOXY COATED DOWEL SHALL BE MARKED WITH A SPOT OF PAINT AT LEAST ONE INCH IN DIAMETER AND CONTRASTING IN COLOR WITH THE EPOXY COATING.
3. WIRE SIZES SHOWN ARE MINIMUM REQUIRED.
4. WIRES, BARS, OR CLIPS SHALL BE USED AS NECESSARY TO STRENGTHEN ASSEMBLIES.
5. THE DIAMETER OF THE SPACER WIRE SHALL NOT EXCEED 0.200".
6. SPACER WIRE MAY BE CUT OR LEFT INTACT.
7. STAKING PINS SHALL BE FABRICATED FROM 0.306" DIAMETER WIRE SHALL BE MINIMUM WITH A SUITABLE HOOK. STAKING PINS SHALL HAVE A MINIMUM LENGTH OF 12" FOR DOWEL ASSEMBLIES UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
8. MINOR VARIATIONS IN THE CONFIGURATION OF THE SUPPORT UNITS WILL BE ALLOWED.

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PAVEMENT JOINTING DETAILS 1 OF 2

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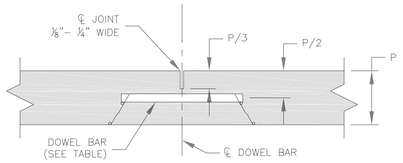
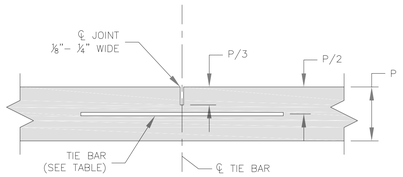


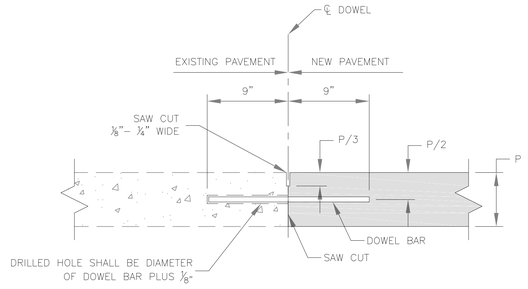
NOTE:

TRANSVERSE CONTRACTION JOINTS FOR CONCRETE PAVEMENT OR BASE WIDENING SHALL MATCH EXISTING JOINTS.

1 TRANSVERSE CONTRACTION JOINT



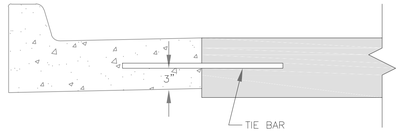
2 LONG. CONTRACTION/CONSTRUCTION JOINT



NOTES:

- DOWEL BARS SHALL BE SMOOTH REINFORCING BARS.
- DOWEL BARS SHALL BE BONDED INTO THE EXISTING PAVEMENT.
- BONDING FOR DOWEL BARS SHALL BE EPOXY OR POLYESTER BONDING AGENTS.
- THE PORTION OF THE DOWEL OUTSIDE THE HOLE SHALL BE COATED WITH AN APPROVED LUBRICANT.

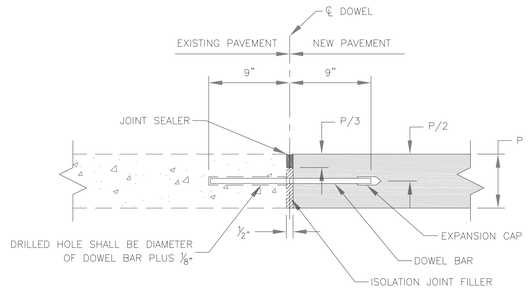
3 TRANSVERSE CONSTRUCTION JOINT



NOTE:

- JOINT NOT NEEDED IF CURB & GUTTER IS MONOLITHICALLY POURED.

5 LONG. CONSTRUCTION JOINT (CURB & GUTTER)



NOTES:

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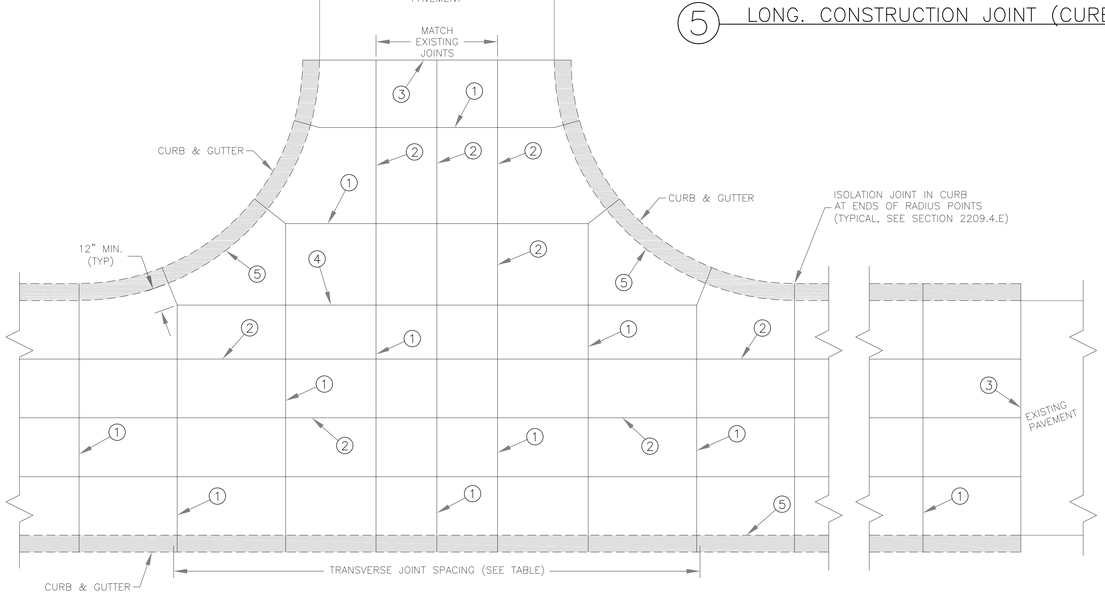
- DOWEL BARS SHALL BE BONDED INTO THE EXISTING PAVEMENT.
- BONDING FOR DOWEL BARS SHALL BE EPOXY OR POLYESTER BONDING AGENTS.
- THE PORTION OF THE DOWEL OUTSIDE THE HOLE SHALL BE COATED WITH AN APPROVED LUBRICANT.

4 TRANSVERSE ISOLATION JOINT

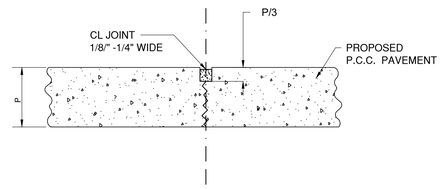


JOINT SPACING/INTERSECTION DETAIL

TABLE						
PCCP THICKNESS (P)	DOWEL SIZE	TIE BAR SIZE	DOWEL SPACING	TIE BAR SPACING	MAX. TRAN. SPACING	MAX. LONG. SPACING
6"	N/A	#5 x 30"	N/A	30" CTRS.	12'	12'
7"	1" x 18"	#5 x 30"	12" CTRS.	30" CTRS.	14'	14'
8"	1 ¼" x 18"	#5 x 30"	12" CTRS.	30" CTRS.	15'	14'
≥9"	1 ½" x 18"	#5 x 30"	12" CTRS.	30" CTRS.	15'	15'

GENERAL NOTES:

- THE FINAL POSITION OF ALL DOWELS AND TIE BARS SHALL BE PERPENDICULAR TO THE PLANE OF THE JOINT AND PARALLEL TO THE SURFACE OF THE PAVEMENT AND PARALLEL TO EACH OTHER.
- ALL DOWELS & TIE BARS SHALL BE EPOXY COATED.
- DOWEL BARS SHALL BE PLACED AT 9 INCHES FROM LONGITUDINAL JOINTS.
- TIE BARS SHALL BE PLACED AT 12 INCHES FROM TRANSVERSE JOINTS.
- PANEL LENGTH TO WIDTH RATIO SHALL NOT EXCEED 1.25 TO 1.
- DOWEL BASKET SHIPPING WIRE SHALL NOT BE CUT.
- CONTRACTOR SHALL SUBMIT PROJECT SPECIFIC JOINTING PLAN AT LEAST TWO WEEKS BEFORE PAVING OPERATIONS.
  IN ACCORDANCE WITH 2208.4.D, ALL JOINTS SHALL BE SEALED, INCLUDING CUPB & GUTTER



DUMMY CONTRACTION JOINT

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Project: STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO

Sheet Name: TYPICAL PAVEMENT JOINT DETAILS

STATE OF MISSOURI
GERALD BOLLINGER
Gerald T Bollinger
NUMBER PE-2021009173
PROFESSIONAL ENGINEER
March 21, 2025

Drawn By: MJF
Checked By: GMB
Date: 08/2023
Proj. #:

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PAVEMENT JOINTING DETAILS 2 OF 2

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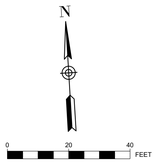
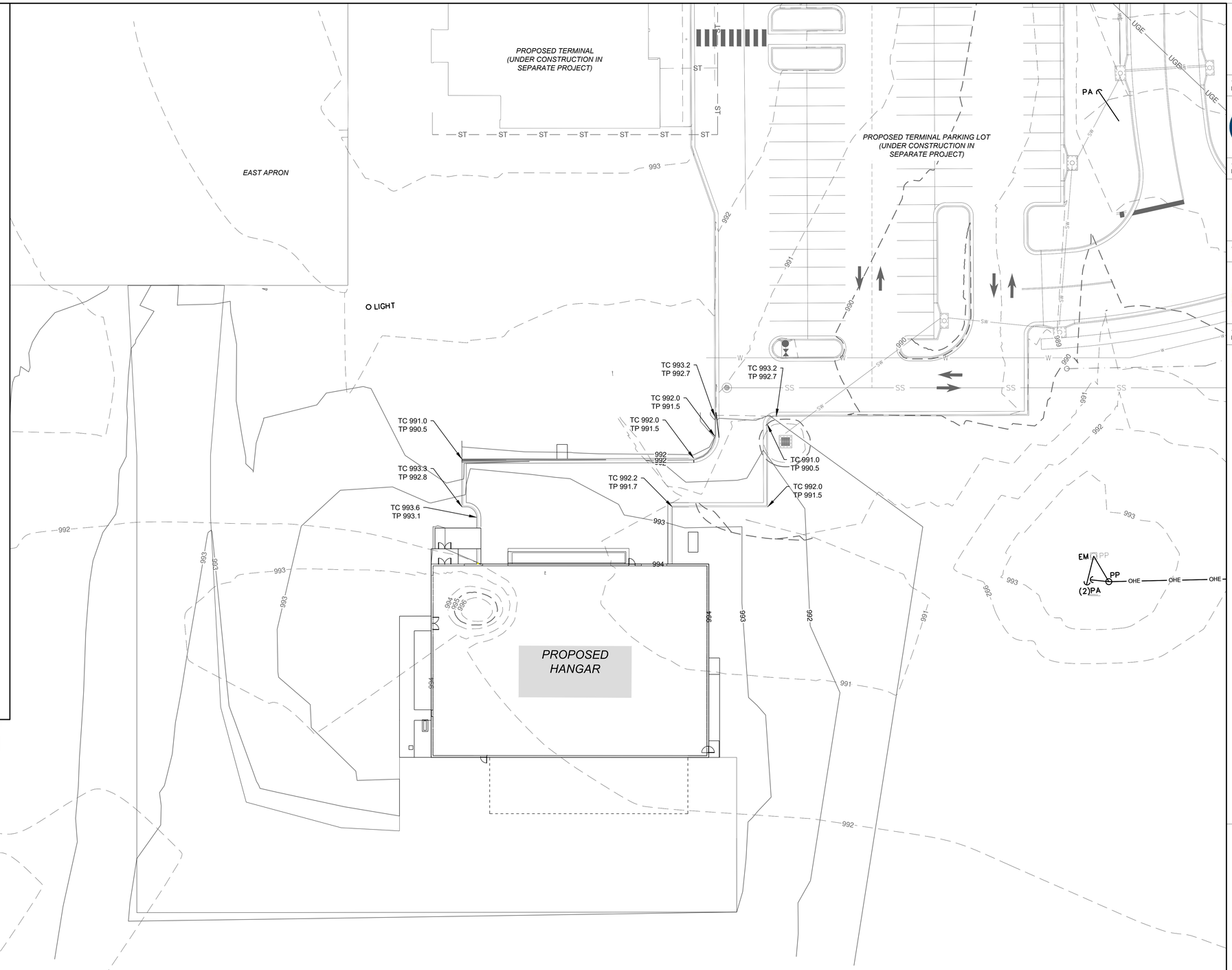


LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING STORM STRUCTURE

GENERAL NOTES:

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED UPON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS OR CONTACT THE RESPECTIVE UTILITY OWNER TO REQUEST SUCH RELOCATION.
2. IF ANY EXISTING STRUCTURES TO REMAIN ARE DAMAGED DURING CONSTRUCTION, IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO REPAIR AND/OR REPLACE THE EXISTING STRUCTURE AS NECESSARY TO RETURN IT TO EXISTING CONDITIONS OR BETTER.
3. CONTRACTOR SHALL STRIP TOPSOIL AND STOCKPILE ON-SITE OR AT A NEARBY LOCATION AS DIRECTED BY THE OWNER FOR USE AS FINAL GRADING AT THE END OF THE PROJECT. ALL EXCESS TOPSOIL AND STRUCTURAL FILL SHALL BE COMPLETELY REMOVED FROM THE OWNER'S PROPERTY AND PROPERLY DISPOSED OF.
4. ALL DISTURBED TURF AREAS SHALL RECEIVE A MINIMUM OF 6" OF TOPSOIL AND SHALL BE SEEDED / FERTILIZED IN ACCORDANCE WITH THE PLANS & SPECIFICATIONS.
5. ALL STORM PIPE ENTERING STRUCTURES SHALL BE GROUTED TO ASSURE CONNECTION IS WATERTIGHT.
6. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES FOR INSTALLATION REQUIREMENTS AND SPECIFICATIONS.
7. CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE AWAY FROM BUILDINGS FOR ALL NATURAL AND PAVED AREAS.
8. ALL FILL MATERIAL IS TO BE IN PLACE AND COMPACTED BEFORE INSTALLATION OF PROPOSED UTILITIES.
9. LINES UNDERGROUND SHALL BE INSTALLED, INSPECTED AND APPROVED BEFORE BACKFILLING.



UTILITY DISCLAIMER

INFORMATION SHOWN ON THIS DRAWING CONCERNING TYPE AND LOCATION OF UNDERGROUND AND OTHER UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. CONTRACTORS ARE RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. INFORMATION SHOWN IS FROM MAPS PROVIDED OR DISCOVERED FROM UTILITY PROVIDERS.

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olsson
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NORTH KANSAS CITY, MO 64116

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LEE'S SUMMIT, MISSOURI

TM AVIATION HANGAR
CITY PROJECT NO. - XXXXXXXX

STATE OF MISSOURI
GERALD BOLLINGER
Gerald T. Bollinger
NUMBER PE-2021009173
PROFESSIONAL ENGINEER

March 21, 2025

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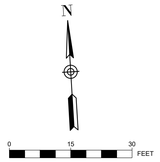
GRADING PLAN

C113

SHEET 18 OF 39



LEGEND

740.35 / 741.20 — PROPOSED ELEV. / EXISTING ELEV

JOINTING NOTES

1. PAVEMENT ELEVATIONS ARE SHOWN ON EACH LONGITUDINAL JOINT UNLESS SPACE WAS UNAVAILABLE.
2. WHERE TYING INTO EXISTING PAVEMENTS, MATCH EXISTING PAVEMENT ELEVATION AS SHOWN.
3. CONTRACTOR SHALL VERIFY EXISTING GRADES PRIOR TO START OF WORK. IF DEVIATIONS ARE DISCOVERED CONTRACTOR SHALL NOTIFY ENGINEER

EAST APRON

PROPOSED TM AVIATION 91.75' X 131.75' HANGAR FFE = 994'

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NUMBER PE-2021009173
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March 21, 2025

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STAKING PLAN

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N

0 20 40 FEET

LEGEND

UGE UGE	EXISTING UNDERGROUND ELECTRIC
	EXISTING SANITARY SEWER
W W	EXISTING WATER MAIN
W W	PROPOSED WATER SERVICE
SS	PROPOSED SANITARY SEWER
FO FO	PROPOSED FIBER OPTIC
G G	PROPOSED NATURAL GAS SERVICE
UGE UGE	PROPOSED UNDERGROUND ELECTRIC
	EXISTING STORM INLET
	EXISTING SANITARY SEWER MANHOLE
	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED FIRE HYDRANT
	PROPOSED GATE VALVE
	PROPOSED BACKING BLOCK
W	PROPOSED WATER METER

UTILITY NOTES

1. CONTRACTOR SHALL COORDINATE ALL ELECTRIC SERVICE INSTALLATION WORK WITH EVERGY.

2. CONTRACTOR TO INSTALL PRIMARY CONDUITS WITH PULL STRING FOR NEW ELECTRIC SERVICE. EVERGY TO INSTALL PRIMARY CONDUCTORS AND TERMINATE AT NEW PAD-MOUNTED TRANSFORMER.

3. TO FEDERAL, STATE, AND LOCAL STATUTES, NOTIFY MISSOURI ONE-CALL SYSTEM,INC. AT LEAST 48 HOURS PRIOR TO ANY DIGGING, TRENCHING, EXCAVATION, ETC.

4. FIELD VERIFY LOCATION OF ALL UTILITIES PRIOR TO BEGINNING WORK. ANY INTERFERENCE SHALL BE BROUGHT TO ATTENTION OF THE ARCHITECT AND ENGINEER FOR DIRECTION.

EAST APRON

PROPOSED TERMINAL (UNDER CONSTRUCTION IN SEPARATE PROJECT)

PROPOSED TERMINAL PARKING LOT (UNDER CONSTRUCTION IN SEPARATE PROJECT)

O LIGHT

PROPOSED 6" X 10" TEE WITH 6" GATE VALVE

PROPOSED RESTRAINED 10" PVC PUBLIC WATERLINE

LINE W-3

PROPOSED 4' MANHOLE

SEWER LATERAL CONNECTION 8" X 6" WYE 4" 45° BEND

PROPOSED 10" PLUG WITH BACKING BLOCK

2" DOM WATER METER VAULT

PROPOSED 6" X 6" TEE WITH 6" GATE VALVE

PROPOSED 2" C900 DR18 WATERLINE

PROPOSED SANITARY SEWER CONNECTION TO BUILDING

PROPOSED 6" C900 DR18 PRIVATE FIRE SPRINKLER WATERLINE

PROPOSED GAS CONNECTION TO BUILDING

PROPOSED DOMESTIC WATER CONNECTION TO BUILDING

PROPOSED UNDERGROUND FIBER LINE TO BUILDING 1" PVC CONDUIT INSTALLED 3' BELOW FINISHED GRADE

LINE SAN-01

PROPOSED 6" PRIVATE PVC SAN SEWER

PROPOSED HYDRANT

PROPOSED OIL/SAND INTERCEPTOR

FDC ON BUILDING

LINE W-2

LINE W-1

PROPOSED 3" SANITARY SEWER LINES

PROPOSED FIRE SPRINKLER CONNECTION TO BUILDING

PROPOSED TM AVIATION 91.75' X 131.75' HANGAR FFE = 994'

LINE SAN-02

LINE SAN-03

PROPOSED 8" PUBLIC (SDR 28 MIN.) SAN SEWER

PROPOSED 8" PUBLIC PVC SAN SEWER

EXISTING 10" WATERLINE

EXISTING 8" PUBLIC SANITARY SEWER

EXISTING INLET

PULL BOX

PROPOSED 4' MANHOLE

(2) 4" PRIMARY CONDUITS WITH PULL WIRE

PROPOSED UNDERGROUND ELECTRIC TO BUILDING

SPIRE NATURAL GAS SERVICE (BY OTHERS)

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TM AVIATION HANGAR
CITY PROJECT NO. - XXXXXXXX

STATE OF MISSOURI
GERALD BOLLINGER
NUMBER PE-2021009173
PROFESSIONAL ENGINEER

March 21, 2025

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UTILITY PLAN

C-115

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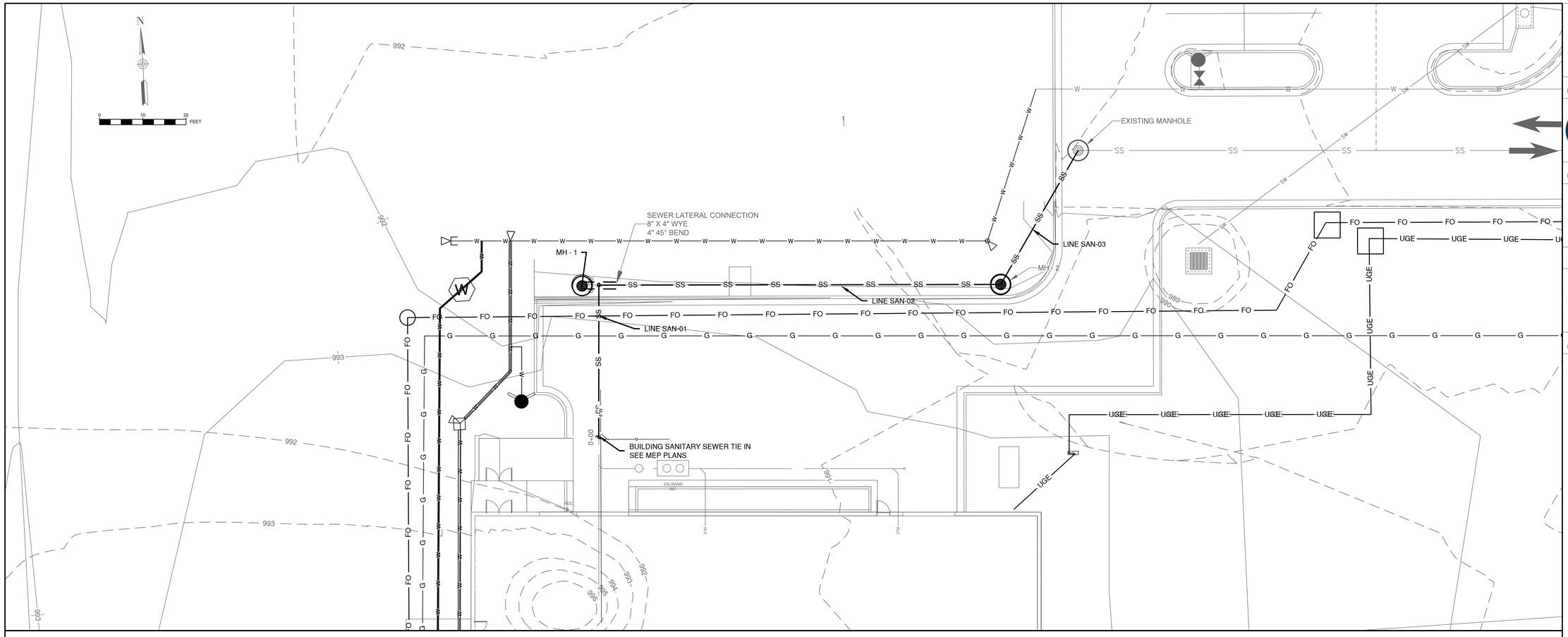
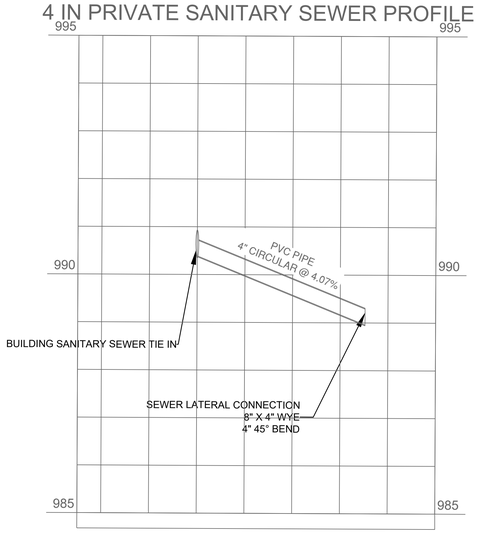
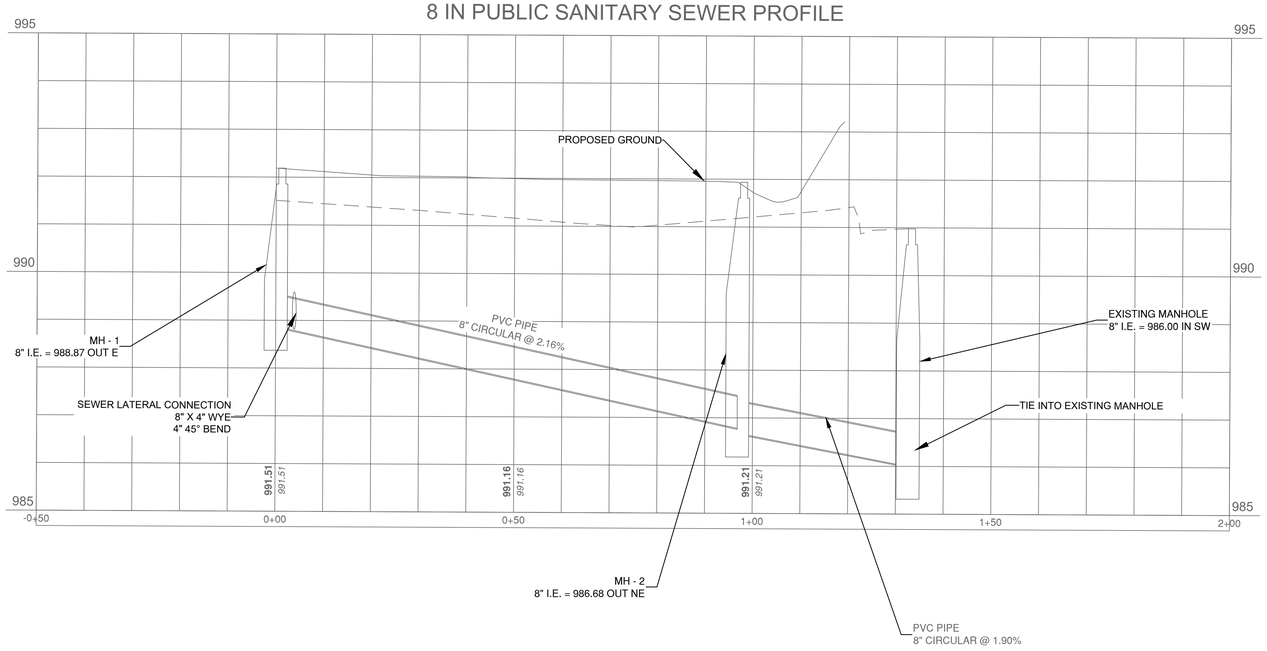


4 IN PRIVATE SANITARY SEWER PROFILE



8 IN PUBLIC SANITARY SEWER PROFILE



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CITY PROJECT NO. - XXXXXXXX

STATE OF MISSOURI
GERALD BOLLINGER
NUMBER PE-2021009173
PROFESSIONAL ENGINEER

March 21, 2025

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SANITARY SEWER PROFILE

C-116

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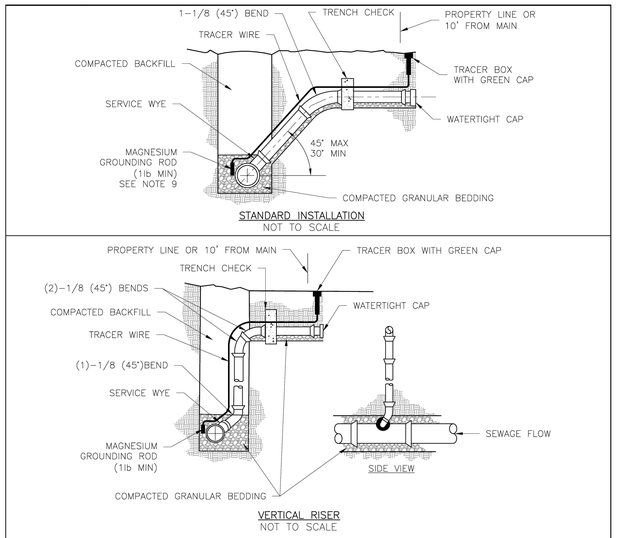

STANDARD INSTALLATION
NOT TO SCALE

VERTICAL RISER
NOT TO SCALE

NOTES:
1. ALL SEWER STUBS SHALL BE CONSTRUCTED TO PROPERTY LINE OR 10' MINIMUM FROM THE MAIN, WHICHEVER IS GREATER. WHERE SIDEWALKS ARE PRESENT, CONTRACTOR SHALL EXTEND SERVICE LINE UNDER EXISTING SIDEWALK TO TWO FEET BEYOND.
2. IMPERVIOUS TRENCH CHECKS SHALL BE PLACED ON BUILDING SEWER STUBS (AT LEAST 5' AWAY FROM THE SANITARY SEWER MAIN).
3. 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.
4. SEE SPECIFICATION SECTION 2100 FOR SEWER MAIN BEDDING AND BACKFILL.
5. TRACER WIRE SHALL BE INSTALLED PER SPECIFICATION SECTION 3500. TRACER WIRE TERMINAL BOXES SHALL BE INSTALLED DIRECTLY ABOVE THE SEWER SERVICE OR AS DETERMINED BY THE ENGINEER.
6. 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.
7. TRACER WIRE BOX SHALL BE INSTALLED WITHIN 1.0' OF PROPERTY LINE.
8. THE TRACER WIRE SHALL REMAIN CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. SPLICES IN THE TRACER WIRE SHOULD BE MADE WITH LOCKING SPLICE CONNECTOR MANUFACTURED WITH A WATERPROOF DIELECTRIC SEALANT.

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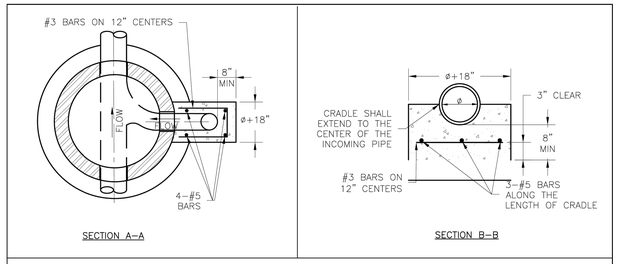
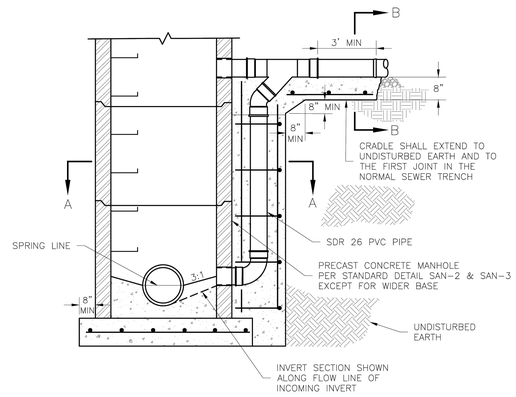
SANITARY SEWER STUB DETAIL — SAN-1

Date: 08/2023
Drawn By: MJF
Checked By: AB



SECTION A–A

SECTION B–B



NOTE:
REFER TO DRAWING SAN–2 FOR MANHOLE DETAILS NOT SHOWN.

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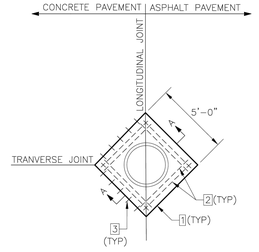
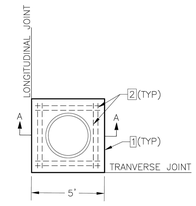
STANDARD OUTSIDE DROP MANHOLE — SAN-4

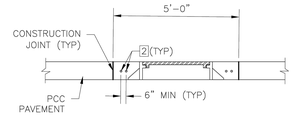
Date: 08/2023
Drawn By: MJF
Checked By: AB



MANHOLE BOXOUT TYPE 1
NOT TO SCALE



MANHOLE BOXOUT TYPE 2
NOT TO SCALE



SECTION A–A
NOT TO SCALE

NOTES:
– MINIMUM 2" CLEAR ON REINFORCEMENT. CENTER CASTING WITHIN BOXOUT AREA.
– CONCRETE SHALL BE KCMMB 4K MIX.
– ALL STEEL SHALL BE EPOXY COATED.
– FOR CONSTRUCTION JOINT DETAIL, SEE DETAIL 2 ON SHEET GEN–10, TYPICAL PAVEMENT JOINT DETAILS.

1 CONSTRUCTION JOINT.
2 4'–8"(TYP) #4 BAR. PLACE AT MID–SLAB.
3 #4 DOWELS @ 12" O.C. INTO CONCRETE PAVEMENT MIN. LENGTH 12".

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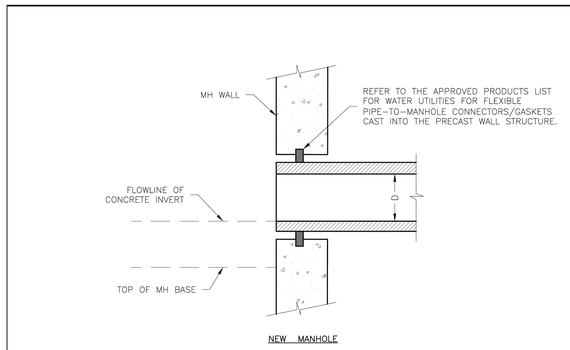
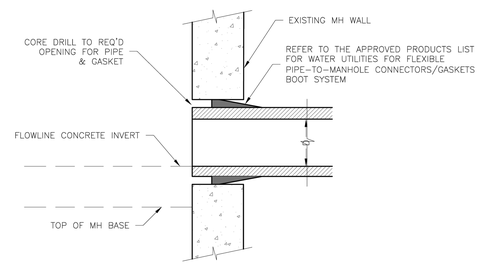
MANHOLE BOXOUT IN PAVEMENT DETAIL — SAN-9

Date: 08/2023
Drawn By: MJF
Checked By: AB



NEW MANHOLE



EXISTING MANHOLE

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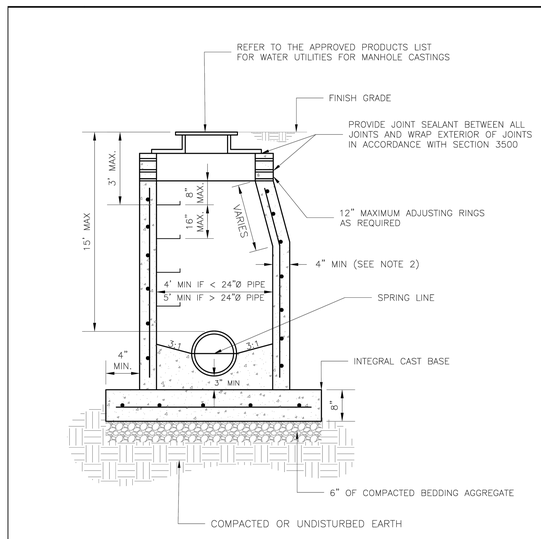
MANHOLE WALL CONNECTION — SAN-5

Date: 08/2023
Drawn By: MJF
Checked By: AB



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.

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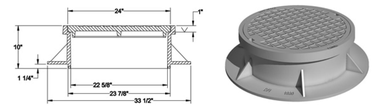
STANDARD SANITARY PRECAST MANHOLE — SAN-2

Date: 08/2023
Drawn By: MF
Checked By: AB

Deeter FOUNDRY

1320
MANHOLE RING & SOLID COVER

Catalog Number	Frame Type	A	B	C	E	F	Duty
1320	A	24	1 1/2	22 5/8	33 1/2	9	Heavy



All dimensions are listed in inches unless otherwise noted.

NOTE:
1. PER CITY REQUIREMENTS MANHOLE FRAME AND COVER SHALL BE DEETER 1320, CLAY & BAILEY 2007, EJ 1502, R.B. AGARWALLA & CO 2007-01-6000 OR AN APPROVED EQUAL.

MANHOLE FRAME & COVER
N.T.S.
D1

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LEE'S SUMMIT, MISSOURI
CITY PROJECT NO. - XXXXXXXX

STATE OF MISSOURI
GERALD BOLLINGER
Gerald T Bollinger
NUMBER PE-2021009173
PROFESSIONAL ENGINEER
March 21, 2025

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SANITARY SEWER DETAILS

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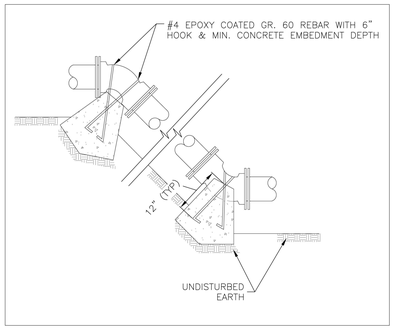
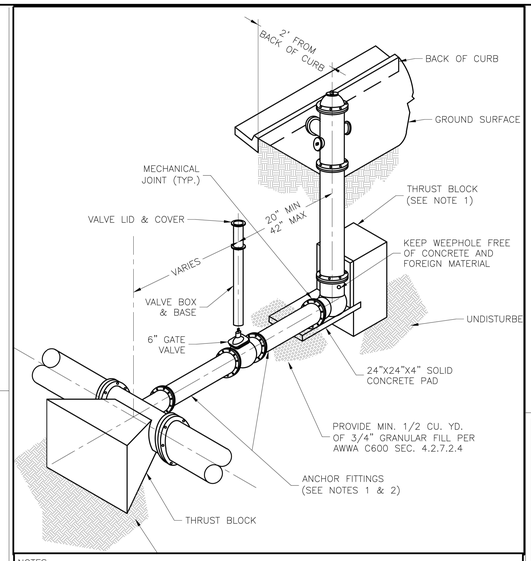


NOTES:
1. ALL BENDS WITHOUT RESTRAINED JOINTS SHALL HAVE CONCRETE THRUST BLOCKS INSTALLED FOR RESTRAINT.
2. MEGA LUGS MAY BE USED ONLY IN CONJUNCTION WITH CONCRETE THRUST BLOCKING.
3. BEARING MUST BE AGAINST UNDISTURBED SOIL.
4. DO NOT COVER JOINTS OR BOLTS (WHERE APPLICABLE) WITH CONCRETE.

REQUIRED CONCRETE VOLUME (CUBIC FEET – CF)

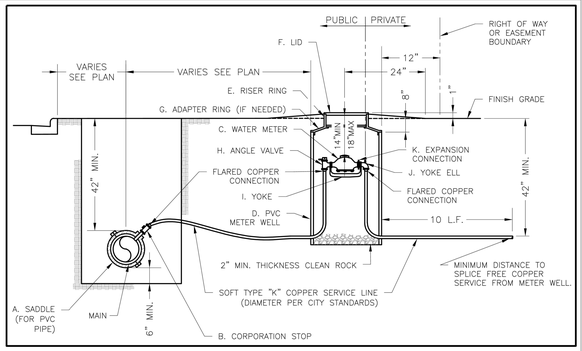
NOM. DIA. (INCHES)	180 TEE, PLUG	90 BEND	45 BEND	22.5 BEND	11.25 BEND
6	50.5	71.4	38.6	19.7	9.9
8	89.8	126.9	68.7	35.0	17.6
10	140.2	198.3	107.3	54.7	27.5
12	202.0	REST. JT.	154.6	78.8	39.6
14	REST. JT.	REST. JT.	210.4	107.3	53.9
16	REST. JT.	REST. JT.	REST. JT.	140.1	70.4
18	REST. JT.	REST. JT.	REST. JT.	177.3	89.1
20	REST. JT.	REST. JT.	REST. JT.	REST. JT.	110.0
24	REST. JT.	REST. JT.	REST. JT.	REST. JT.	158.4

VERTICAL THRUST BLOCK
N.T.S.
WAT-2



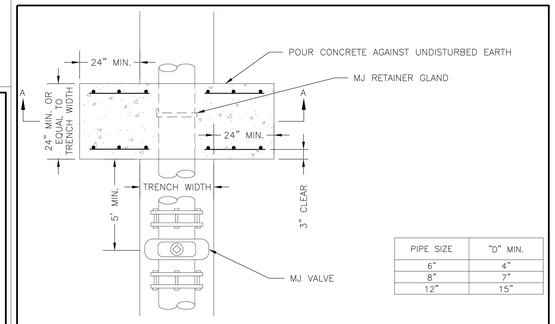
NOTES:
1. WHEN RETAINER GLANDS ARE USED IN LIEU OF ANCHOR FITTINGS, HORIZONTAL THRUST BLOCKS ARE REQUIRED.
2. GATE VALVE MAY BE BOLTED DIRECTLY TO ANCHOR TEE.
3. SEE APPROVED PRODUCTS LIST FOR WATER UTILITIES FOR FIRE HYDRANT, VALVES, VALVE BOX LID, AND COVER.
4. BOTTOM HYDRANT FLANGE SHALL BE 2" TO 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.

FIRE HYDRANT ASSEMBLY DETAIL
N.T.S.
WAT-7



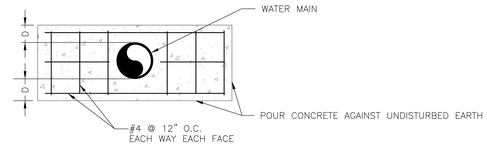
NOTES:
1. METER INSTALLATION SHALL NOT BE LOCATED IN AREAS SUBJECT TO VEHICULAR TRAFFIC OR IN CONCRETE PAVEMENT WITHOUT CITY APPROVAL.
2. IF METER IS TO BE LOCATED OTHER THAN IN FRONT OF PROPERTY LINE, CITY APPROVAL SHALL BE OBTAINED.
3. CITY TO FURNISH ITEMS A–K.
4. NO OTHER EQUIPMENT SHALL BE INSTALLED IN THIS PIT.
5. 42" MINIMUM BURY DEPTH FOR ALL SERVICE LINES.
6. EXCAVATION FOR TAP TO EXPOSE 4 LINEAR FEET OF MAIN.
7. NO SPLICES ALLOWED BETWEEN METER AND MAIN.
8. SERVICE CONNECTION TAP AT APPROXIMATELY 45 DEGREES.
9. LID AND RISER RING SHALL BE SET SO THAT GROUND WATER WILL DRAIN AWAY FROM THE WELL.
10. CONTACT WATER UTILITIES, 816–969–1900, FOR REQUIREMENTS OF A METER LARGER THAN 2"

SERVICE CONNECTION WITH METER WELL
N.T.S.
WAT-11



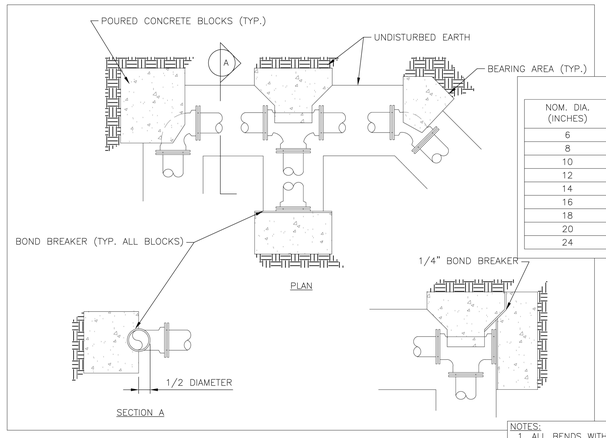
PIPE SIZE	"D" MIN.
6"	4"
8"	7"
12"	15"

TOP VIEW



SECTION A–A

STRADDLE BLOCK DETAIL
N.T.S.
WAT-3

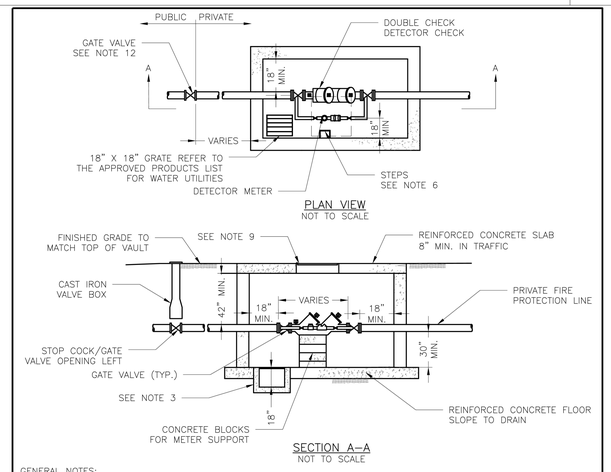


REQUIRED CONCRETE BEARING AREA (SQUARE FEET – SF)

NOM. DIA. (INCHES)	180 TEE, PLUG	90 BEND	45 BEND	22.5 BEND	11.25 BEND
6	4.7	6.7	4.0	4.0	4.0
8	8.4	11.8	6.4	4.0	4.0
10	13.1	18.5	10.0	5.1	4.0
12	18.8	26.7	14.4	7.4	4.0
14	25.7	36.3	19.6	10.0	5.0
16	33.5	47.4	25.6	13.1	6.6
18	42.4	REST. JT.	32.5	16.5	8.3
20	REST. JT.	REST. JT.	40.1	20.4	10.3
24	REST. JT.	REST. JT.	REST. JT.	29.4	14.8

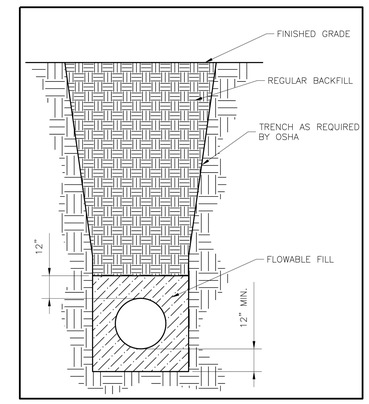
NOTES:
1. ALL BENDS WITHOUT RESTRAINED JOINTS SHALL HAVE CONCRETE THRUST BLOCKS INSTALLED FOR RESTRAINT.
2. MEGA LUGS MAY BE USED ONLY IN CONJUNCTION WITH CONCRETE THRUST BLOCKING.
3. BEARING AREA MUST BE AGAINST UNDISTURBED SOIL.
4. DO NOT COVER JOINTS OR BOLTS (WHERE APPLICABLE) WITH CONCRETE.

HORIZONTAL THRUST BLOCK
N.T.S.
WAT-1



GENERAL NOTES:
1. METER VAULT WALLS TO BE POURED OR PRECAST CONCRETE.
2. METER VAULT ROOF TO BE REINFORCED CONCRETE OPENING CENTERED OVER DETECTOR METER.
3. METER VAULT TO BE LOCATED, WHEN POSSIBLE, OUTSIDE TRAFFIC AREA WHERE SURFACE WATER WILL NOT DRAIN INTO IT. VAULT MUST BE KEPT FREE OF WATER. PROVIDE CONCRETE SUMP AS A MINIMUM. WHERE PRACTICAL, PROVIDE A 2" PIPE DRAIN WITH AN ABOVE–GROUND DISCHARGE POINT. PROJECT OWNER MAY DESIRE A PERMANENTLY INSTALLED SUMP PUMP.
4. ALL PIPE SHALL BE DUCTILE IRON CLASS 50. ALL PIPE FITTINGS FROM THE CITY WATER MAIN THROUGH THE VAULT SHALL BE PROVIDED WITH RESTRAINED JOINT FITTINGS.
5. ALL FITTINGS TO BE BRASS.
6. STEPS SHALL BE IN ACCORDANCE WITH THE APPROVED PRODUCTS LIST FOR WATER UTILITIES AND SHALL BE ON 16" CENTERS.
7. A DEPARTMENT OF NATURAL RESOURCES APPROVED DOUBLE CHECK DETECTOR CHECK BACKFLOW PREVENTER MUST BE USED. FOR A COPY OF THE MISSOURI DEPARTMENT OF NATURAL RESOURCES APPROVED BACKFLOW PREVENTION ASSEMBLIES, CONTACT THE WATER UTILITIES OPERATIONS DIVISION AT 816–969–1940. AS OF JANUARY 1, 1987, THE DNR REQUIRES FIRE SPRINKLER SYSTEMS USING CHEMICALS TO HAVE A DNR APPROVED PRESSURE BACKFLOW PREVENTER INSTALLED, PRIOR TO THE MIXING POINT.
8. ALL VALVES SHALL HAVE RISING STEMS.
9. FOR MANHOLE COVERS, SELECT A MANHOLE FOUND ON THE APPROVED PRODUCTS LIST FOR WATER UTILITIES SUITABLE FOR EITHER TRAFFIC OR NON–TRAFFIC CONDITIONS.
10. A MINIMUM OF 18" CLEARANCE SHALL BE PROVIDED AROUND ALL PIPING, VALVES, APPURTENANCES, ETC.
11. METER SHALL BE OWNED AND MAINTAINED BY THE WATER UTILITIES DEPARTMENT.
12. IF PUBLIC WATER IS LOCATED ON THE OPPOSITE SIDE OF THE STREET, THEN THE PUBLIC WATER MAIN RESPONSIBILITY OF THE WATER UTILITIES DEPARTMENT ENDS AT THE GATE VALVE NEAREST THE VAULT.

BACKFLOW PREVENTENTION VAULT
N.T.S.
WAT-12



WATER TRENCH CHECK DETAIL
N.T.S.
WAT-6

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KC - LEE'S SUMMIT REGIONAL
LEE'S SUMMIT, MISSOURI

TM AVIATION HANGAR
CITY PROJECT NO. - XXXXXXXX

STATE OF MISSOURI
GERALD BOLLINGER
Gerald T. Bollinger
NUMBER PE-2021009173
PROFESSIONAL ENGINEER
March 21, 2025

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WATERLINE DETAILS

C-118

SHEET 23 OF 39

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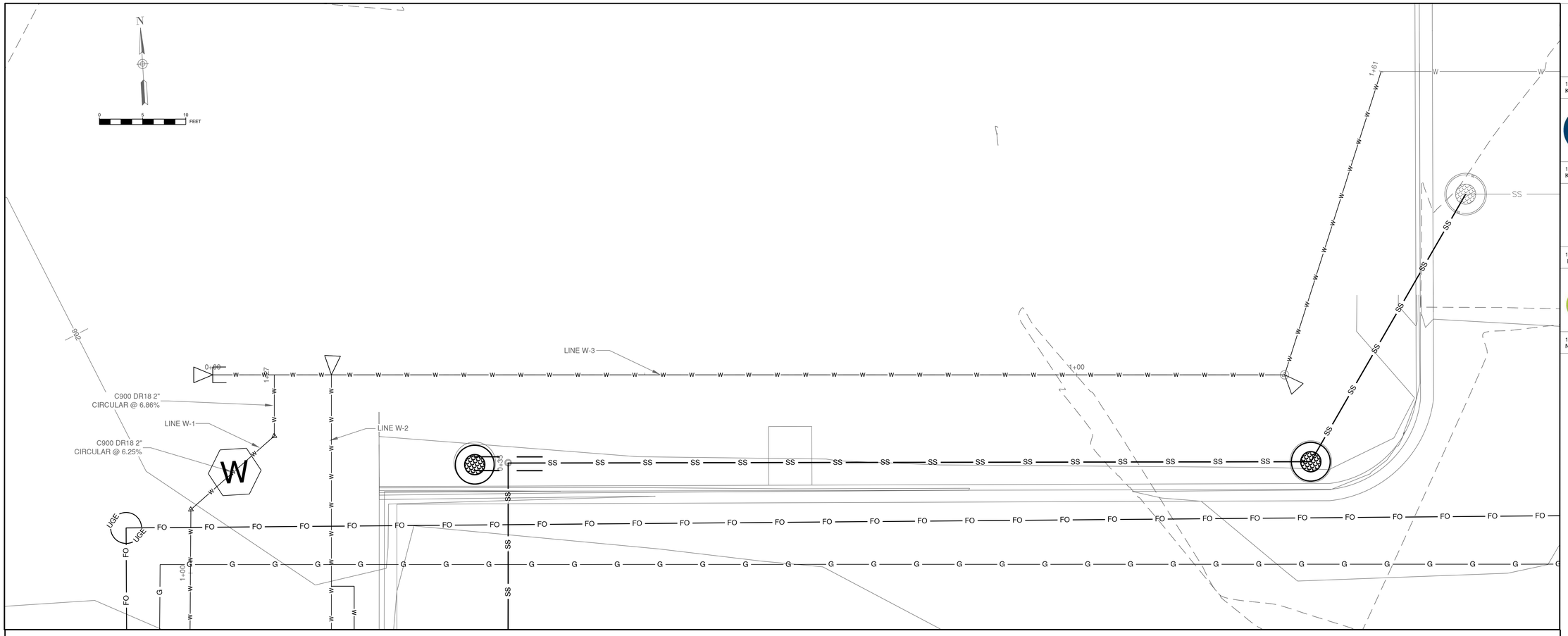
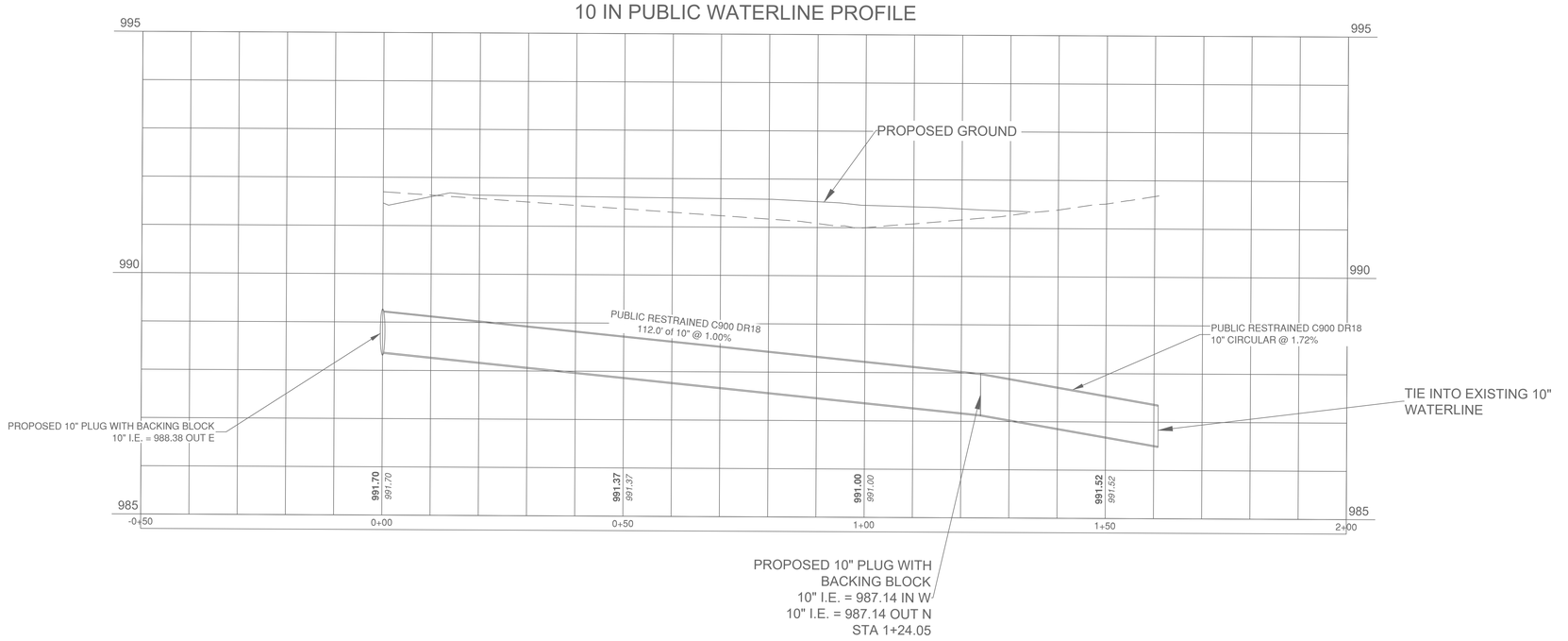


10 IN PUBLIC WATERLINE PROFILE



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WATERLINE PROFILE
SHEET 1 OF 2

C-119

SHEET 24 OF 39

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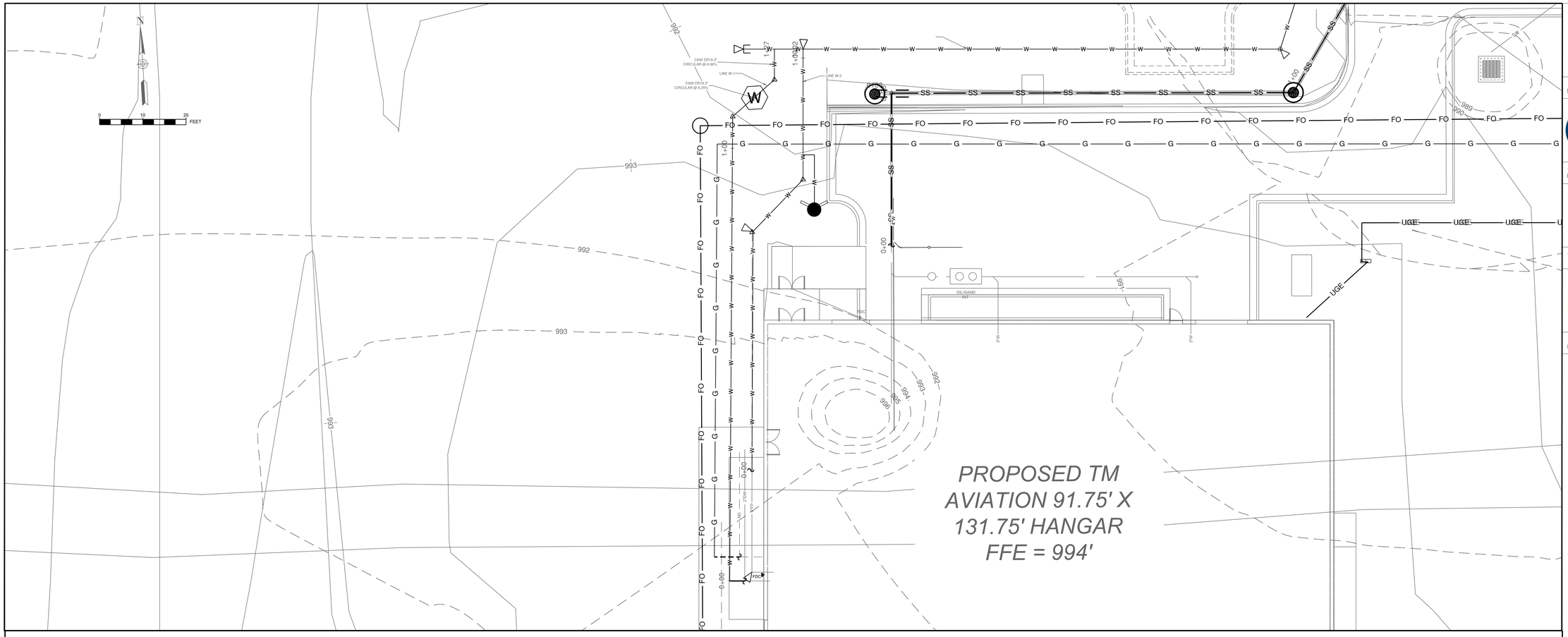
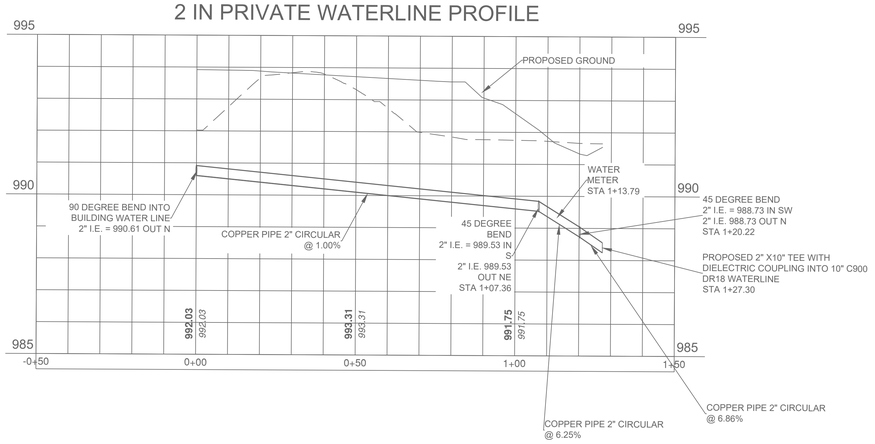
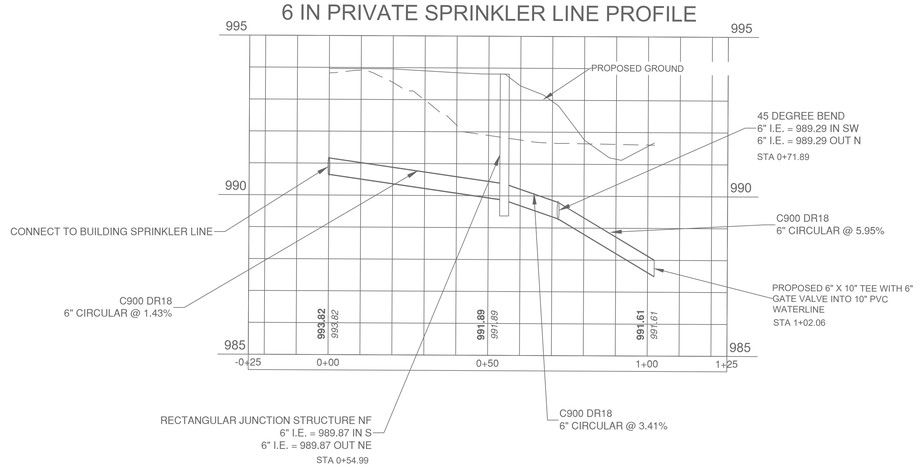


2 IN PRIVATE WATERLINE PROFILE



6 IN PRIVATE SPRINKLER LINE PROFILE



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WATERLINE PROFILE
SHEET 2 OF 2

C-120

SHEET 25 OF 39

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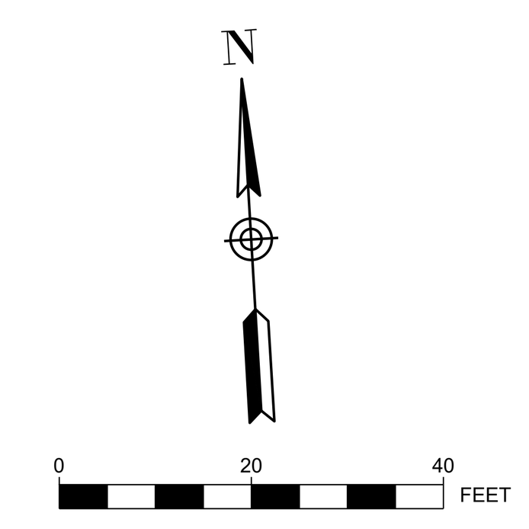
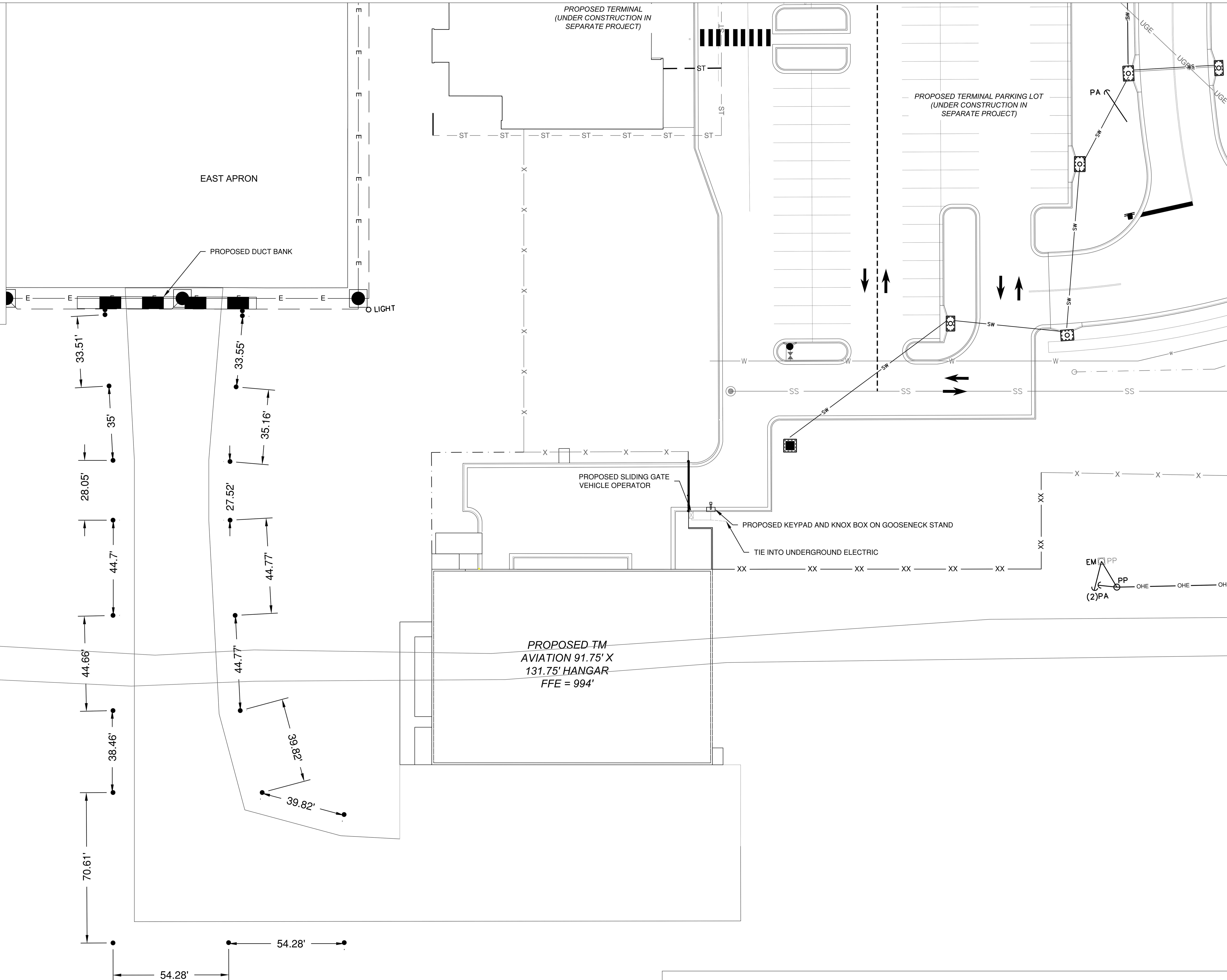
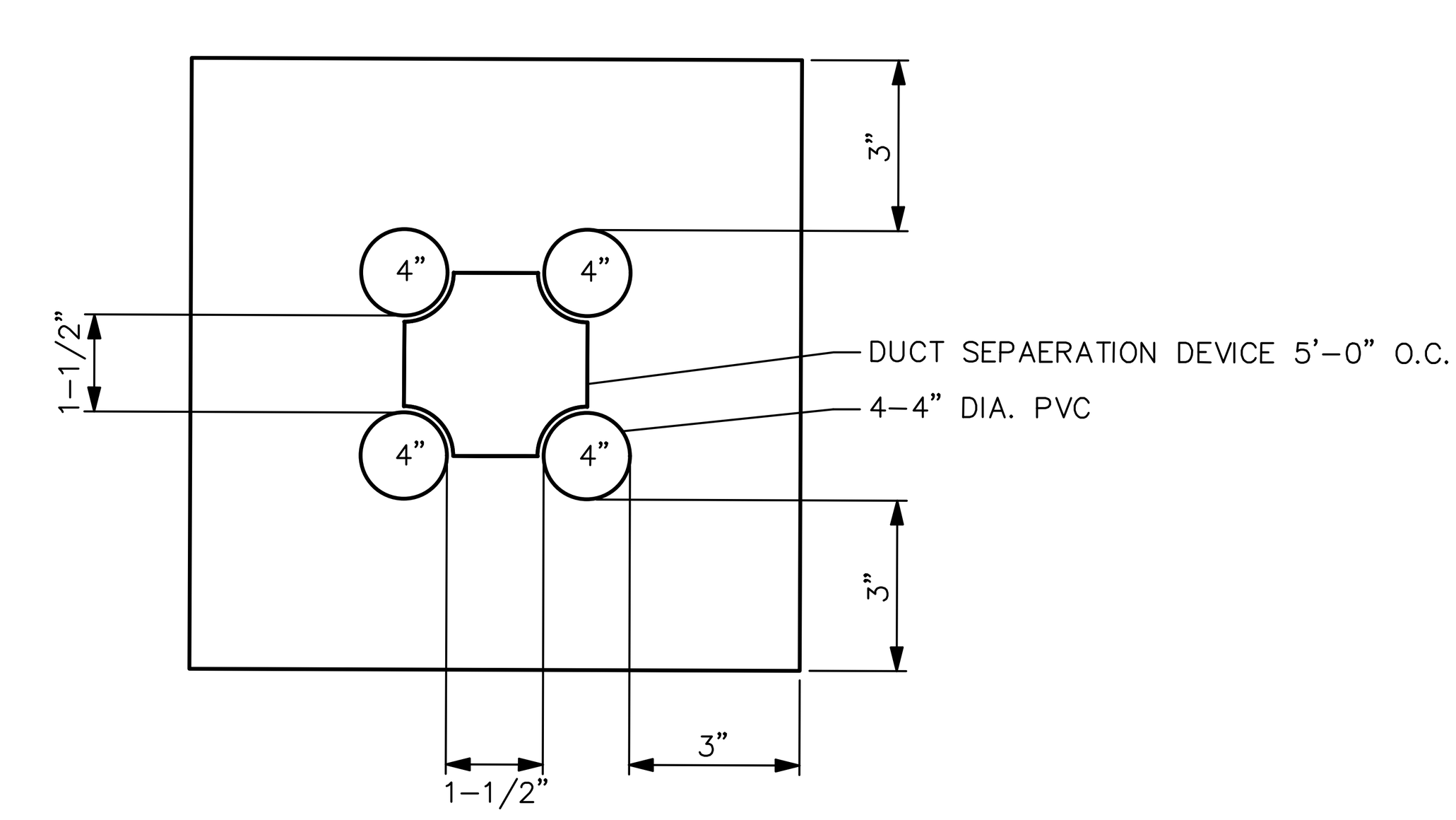


LEGEND

- TAXILANE REFLECTOR
- COUNTERPOISE CIRCUIT
- EXISTING ELECTRICAL
- DUCT BANK





CONCRETE ENCASEMENT DETAIL

N.T.S.

DUCT BANK NOTES

1. DIMENSIONS SHOWN ARE MINIMUM
2. TOP OF CONCRETE ENCASEMENT TO BE NOT LESS THAN 24" BELOW FINISHED SUBGRADE. CONTRACTOR SHALL ADJUST ELEVATION OF CONCRETE ENCASED DUCTS TO AVOID CONFLICT WITH UNDERDRAINS.
3. DUCT CONCRETE SHALL BE P-610 STRUCTURAL P.C. CONCRETE
4. CONDUITS FOR CONCRETE ENCASEMENT SHALL BE POLYVINYL CHLORIDE (PVC) PIPE, SCHEDULE 40, TYPE 1.
5. ALL DUCT SHALL BE 4" INSIDE DIA.
6. WHERE EDGE DRAINS ARE USED, THE LENGTH OF THE DUCT SHALL BE SUCH THAT THE ENDS OF THE DUCTS WILL NOT BE LESS THAN TWO FEET FROM THE OUTSIDE EDGE OF ANY POROUS GRANULAR BACKFILL MATERIAL
7. WHERE EDGE DRAINS ARE NOT USED, THE LENGTH OF THE DUCT SHALL BE SUCH THAT THE ENDS OF THE DUCTS WILL NOT BE LESS THAN THREE FEET FROM THE EDGE OF ANY PAVED SURFACE

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ELECTRICAL PLAN

C-121

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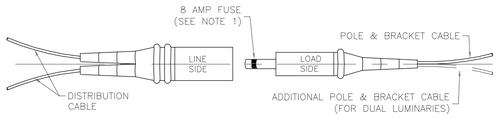
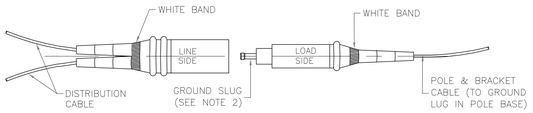


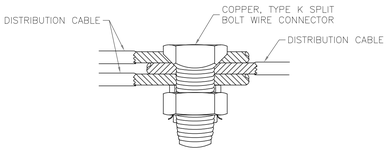
BREAK–AWAY FUSED ELECTRICAL CONNECTORS



BREAK–AWAY NON FUSED ELECTRICAL CONNECTOR

NOTES:

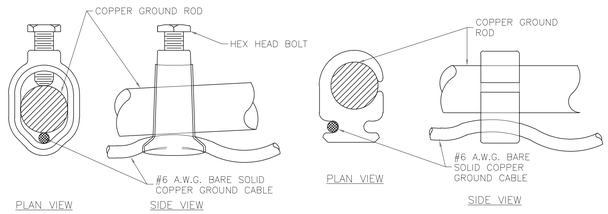
1. FUSE REMAINS IN "LOAD SIDE" AFTER BREAK–AWAY.
2. GROUND "SLUG" REMAINS IN "LOAD SIDE" AFTER BREAK–AWAY.
3. CONNECTORS SHALL HAVE SET SCREW TYPE TERMINALS TO ATTACH CABLES.



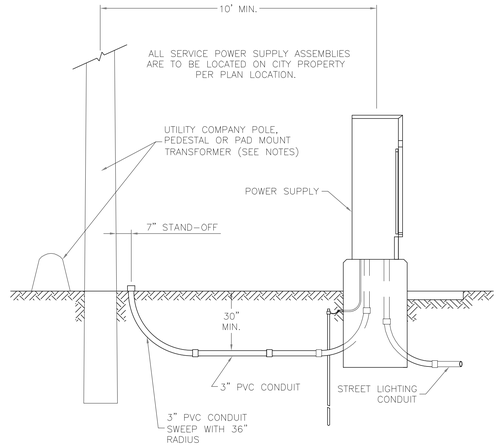
SPLICE KIT DETAILS

NOTES:

1. TO BE USED ONLY IN JUNCTION OR PULL BOXES WHERE CIRCUITS BRANCH OR "TEE".
2. ALL SPLICES SHALL BE PROTECTED WITH A RESIN SPLICE KIT (NOT SHOWN) INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.



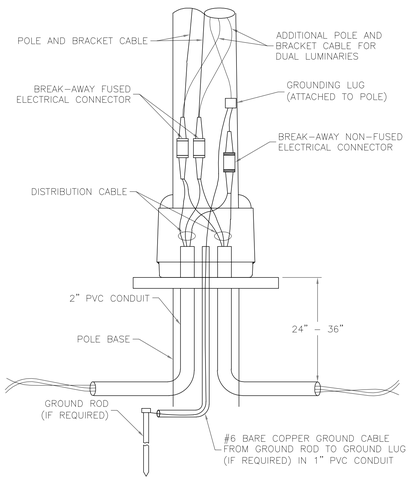
GROUND ROD CONNECTION DETAILS



SECONDARY SERVICE CONNECTION DETAILS

NOTES:

1. CONTRACTOR SHALL INSTALL A CONDUIT STUB 24" TO 6" ABOVE GROUND AT UTILITY POLES. CONDUIT SHALL BE STUBBED TO THE SIDE OF THE POLE THAT WILL ALLOW A DIRECT RUN UP THE POLE TO THE TRANSFORMER WITHOUT CROSSING OTHER UTILITY LINES OR CABLES. THE END OF THE CONDUIT SHALL BE CAPPED.
2. CONTRACTOR SHALL INSTALL CONDUIT IN A TRENCH TO WITHIN 24" OF PEDESTALS OR PAD MOUNT TRANSFORMERS AND LEAVE A 36" X 36" X 36" ACCESS HOLE IN THE GROUND. CONTRACTOR SHALL KEEP OPEN TRENCH COVERED AND PROMPTLY BACKFILL ACCESS HOLE WHEN SERVICE IS COMPLETED.



POLE WIRING DETAILS

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

Project: POLE AND LUMINAIRE DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO

Sheet Name: ELECTRICAL DETAILS

Drawn By: BWC
Checked By: MP
Date: 01/2020
Proj. #:

SL-5

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LEE'S SUMMIT, MISSOURI

TM AVIATION HANGAR
CITY PROJECT NO. - XXXXXXXX

STATE OF MISSOURI
GERALD BOLLINGER
Gerald T Bollinger
NUMBER PE-2021009173
PROFESSIONAL ENGINEER

March 21, 2025

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ELECTRICAL DETAILS

C-122

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N

0 20 40 FEET

LEGEND

——— X ———	EXISTING CHAIN-LINK FENCE
——— XX ———	PROPOSED CHAIN-LINK FENCE
— · — · — · —	PROPOSED AMERISTAR MONTAGE COMMERCIAL CLASSIC 8' 4-RAIL PANELS

PLAN KEYNOTES

(A) EXISTING PERIMETER FENCE

(B) REMOVAL OF EXISTING PERIMETER FENCE

(C) PROPOSED AMERISTAR MONTAGE COMMERCIAL CLASSIC 8' 4-RAIL PANELS

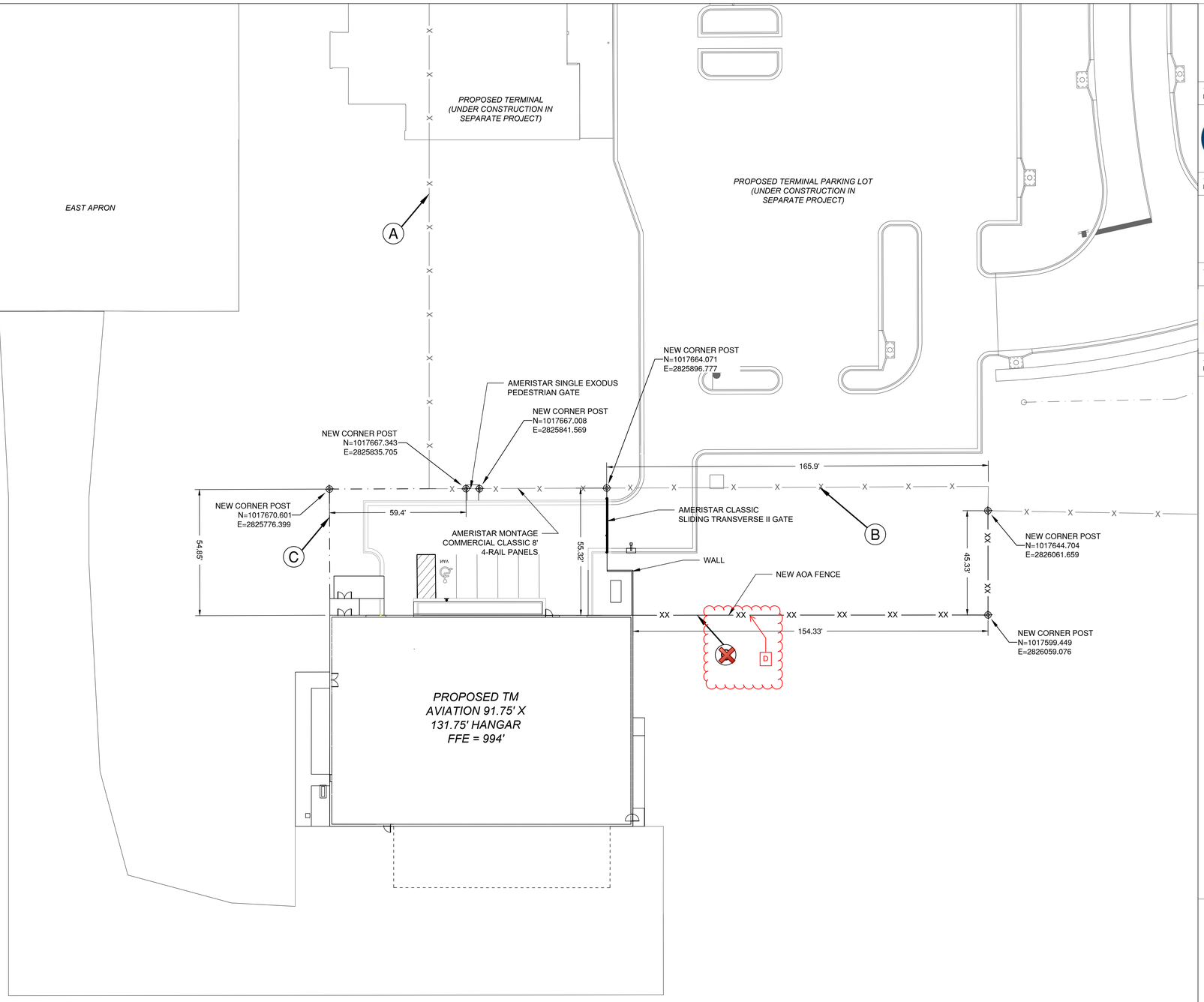
(D) 8' tall Black chain link fence with three strands on barbed wire. refer to C-124 for details

FENCING NOTES:

1. THE EXISTING CHAIN-LINK FABRIC, BARBED WIRE, POSTS AND OTHER MISCELLANEOUS COMPONENTS OF THE FENCING THAT IS REMOVED SHALL BE OFFERED TO THE AIRPORT AND THE AIRPORT SHALL HAVE THE RIGHT TO RETAIN ANY REMOVED MATERIAL AT NO ADDITIONAL COST TO THE CONTRACT. THE CONTRACTOR SHALL TAKE CARE TO PRESERVE THE INTEGRITY OF THE EXISTING FENCE TO BE REMOVED TO THE GREATEST EXTENT POSSIBLE IN THE REMOVAL PROCESS. ANY MATERIAL DESIRED BY THE AIRPORT SHALL BE STOCKPILED BY THE CONTRACTOR IN A LOCATION AT THE AIRPORT TO BE DETERMINED BY THE ENGINEER. ANY FENCING OR FENCING COMPONENTS THAT ARE NOT DESIRED BY THE AIRPORT SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND DISPOSED OF OFF AIRPORT PROPERTY IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL LAWS. STOCKPILING OF THE MATERIALS AND/OR DISPOSAL OF THE MATERIALS OFF AIRPORT PROPERTY SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE FENCE REMOVAL.

2. THE CONTRACTOR SHALL SEQUENCE THE CONSTRUCTION OF THE NEW FENCE AND THE REMOVAL OF THE OLD FENCE IN A MANNER TO MAINTAIN A SECURED AIRPORT PERIMETER AT ALL TIMES. THE NEW FENCE SHALL BE CONSTRUCTED AND TIED INTO THE EXISTING FENCE PRIOR TO REMOVAL OF THE OLD FENCE.

3. CONTRACTOR IS RESPONSIBLE FOR LOCATING UTILITIES PRIOR TO PERFORMING ANY WORK ON SITE. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED BY THE CONTRACTOR AT THE EXPENSE OF THE CONTRACTOR.



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FENCING PLAN

C-123

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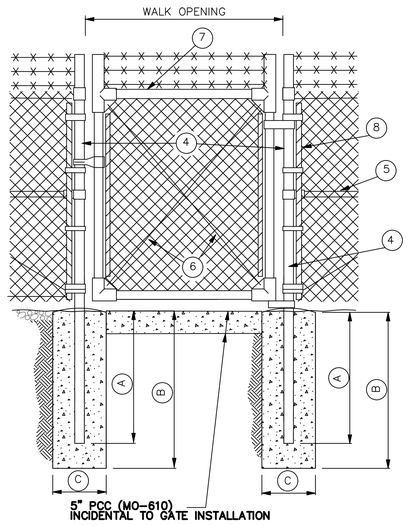
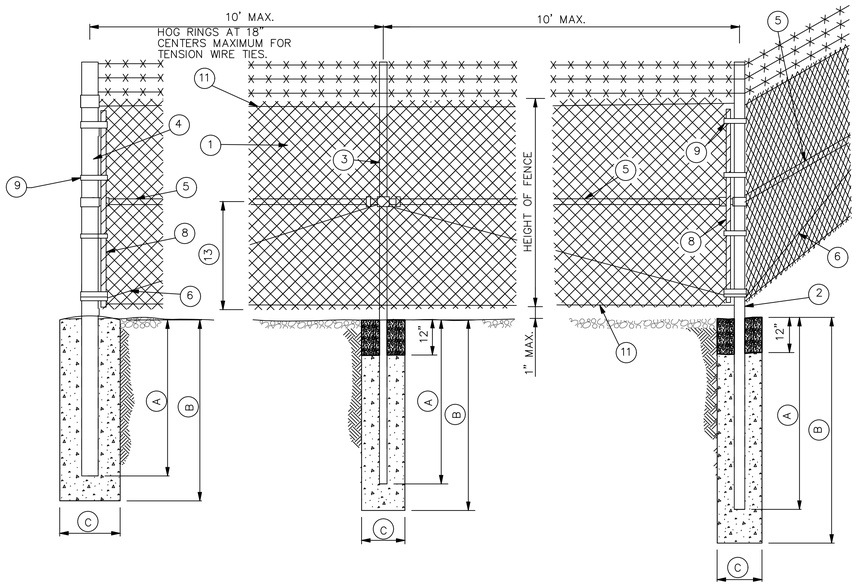
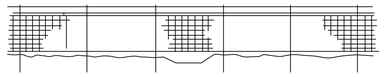
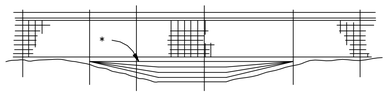


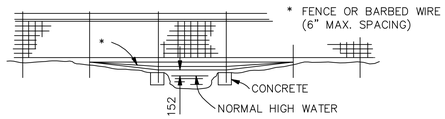




ROADWAY DITCHES OR SMALL SHALLOW CHANNELS
(SPAN WITH NORMAL LINE POST SPACING)

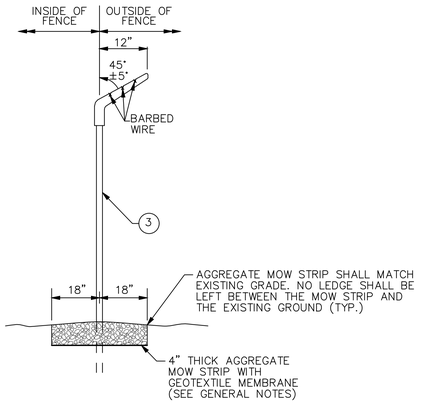


POORLY DEFINED CHANNELS (SMALL DRAINAGE AREAS)

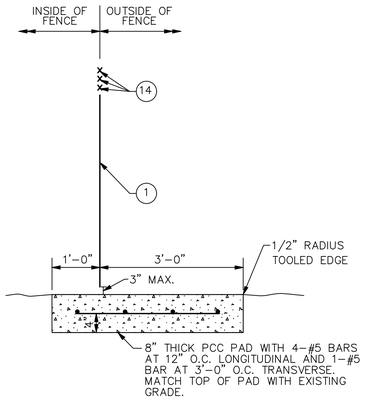


WELL DEFINED CHANNELS (LARGE DRAINAGE AREAS)

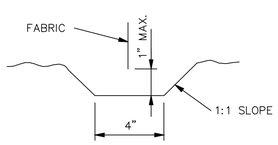
TYPICAL FENCING AT CHANNEL CROSSING



BARBED WIRE EXTENSION BRACKET AND MOW STRIP



CONCRETE PAD AT GATES



TYPICAL TRENCH DETAILS

WIRE SIZE AND HEIGHT OF FABRIC			
SPECIFIED DIAMETER			HEIGHT OF FABRIC
INCHES	MIN. GAGE	MESH INCHES	INCHES
0.120	11	2	36 – 42
0.148	9	2	48 – 96

MINIMUM SIZE FOR FENCE HARDWARE

	WIDTH	SIZE (IN.)	LBS/FT.
(2) END CORNER OR PULL POST	N/A	31/2 DIA.	9.10
(3) LINE POST	N/A	2" DIA.	3.65
(4) GATE POST (SINGLE GATE OR 1 LEAF OF DOUBLE)	' 6'	21/2 DIA.	5.79
	' 13'	31/2 DIA.	9.10
	' 18'	6 DIA.	18.97
	Ç 18'	8 DIA.	24.70
(5) BRACE	N/A	11/4 DIA.	2.27
(6) TRUSS ROD	N/A	3/8	–
(7) GATE FRAME	N/A	11/2 DIA.	2.72

LEGEND

(1) FABRIC
(2) END, CORNER OR PULL POST
(3) LINE POST
(4) GATE POST
(5) BRACE
(6) TRUSS ROD
(7) GATE FRAME
(8) STRETCHER BAR
1/4" X 3/4" PLATE
(9) STRETCHER BAR BAND
(10) END OR CORNER CLAMP
(11) TENSION WIRE
(12) FABRIC TIES
(13) ONE-HALF FABRIC HEIGHT OR AS RECOMMENDED BY MANUFACTURER
(14) BARBED WIRE

GENERAL NOTES:

1. WEIGHTS OF MATERIALS SHOWN IN TABLE ARE FOR ASTM F 1043, GROUP IA. SIZES SHOWN ARE FOR STEEL AND ALUMINUM. EQUIVALENT ASTM F 1043 ALTERNATIVES MAY BE USED.
2. PULL POSTS SHALL BE USED AT SHARP BREAKS IN VERTICAL GRADE OR AT APPROXIMATE 300' CENTERS ON STRAIGHT RUNS OR AS DIRECTED BY THE ENGINEER.
3. DRILLED HOLES C IN SOLID ROCK SHALL PROVIDE A DIAMETER OF NOT LESS THAN 2" GREATER THAN THE MAXIMUM TRANSVERSE DIMENSION OF THE POST SECTION.
4. ALL POSTS SHALL HAVE PROVISIONS TO SECURELY HOLD THE TOP TENSION WIRE IN POSITION AND ALLOW FOR REMOVAL AND REPLACEMENT OF A POST WITHOUT DAMAGING THE TOP TENSION WIRE.
5. THE MESH SIZE SHALL BE 2 INCHES ± 1/8 IN. MEASURED IN EITHER DIRECTION AS THE MINIMUM CLEAR DISTANCE BETWEEN THE WIRES FORMING THE PARALLEL SIDES OF THE MESH.
6. THE AGGREGATE MOW STRIP SHALL RUN THE ENTIRE LENGTH OF THE FENCELINE AND SHALL BE SURFACED WITH 4" OF WELL-GRADED CRUSHED ROCK AGGREGATE. GEOTEXTILE MEMBRANE SHALL BE INSTALLED UNDER THE AGGREGATE. MEMBRANE SHALL BE NON-WOVEN POLYPROPYLENE FIBERS TO A MINIMUM DENSITY OF 8oz PER SY. TOP OF ROCK SHALL BE BETWEEN 0" TO 1" FROM THE BOTTOM OF THE CHAIN-LINK FABRIC. THIS WORK SHALL BE INCIDENTAL TO THE FENCE PAY ITEM.
7. ALL POSTS SHALL BE ROUND AND SHALL BE SET IN CONCRETE WITH 1 FOOT OF COMPACTED SOIL ABOVE THE CONCRETE.
8. THE MAXIMUM GAP ALLOWED WHERE THE FENCE ABUTS BUILDINGS, AT GATE AND HINGE CLOSURE POSTS, AT CENTER OF DOUBLE GATES, AND AT THE BOTTOM OF GATES SHALL BE 3" OR LESS.
9. THE PCC PAD AT GATES SHALL BE INCIDENTAL TO THE GATE PAY ITEM.
10. FENCE/GATE SOUTH OF THE HANGAR SHALL BE 8' 4-RAIL PANELS WITH THE CLASSIC SLIDING TRANSPORT TRANSVERSE II GATE. A SINGLE EXODUS PEDESTRIAN GATE SHALL BE USED ON THE HANGAR SIDE OF THE SIDEWALK.

NOTE:
CONCRETE PAD TO BE INSTALLED AT ALL GATE LOCATIONS WHERE PORTLAND CEMENT CONCRETE OR BITUMINOUS CONCRETE DOES NOT ALREADY EXIST.

MINIMUM DEPTH FOR SETTING POSTS

DESCRIPTION		HEIGHT OF FENCE 48" SIZE (IN.)	60" SIZE (IN.)	72" SIZE (IN.)	96" SIZE (IN.)
(2) END CORNER & PULLPOST	(A)	30"	36"	36"	54"
	(B)	36"	42"	42"	60"
	(C)	10"	12"	12"	14"
(3) LINE POST	(A)	24"	27"	36"	48"
	(B)	30"	36"	42"	54"
	(C)	10"	12"	12"	12"
(4) GATE POST	(A)	30"	36"	36"	42"
	(B)	36"	42"	42"	48"
	(C)	10"	12"	12"	14"

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

CHAIN-LINK FENCE

REVISED BY CMT:
DATE: 03-27-2015 EFFECTIVE: 02-01-2007

607.10V

1/1

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TM AVIATION HANGAR
CITY PROJECT NO. - XXXXXXXX

STATE OF MISSOURI
GERALD BOLLINGER
NUMBER PE-2021009173
PROFESSIONAL ENGINEER
March 21, 2025

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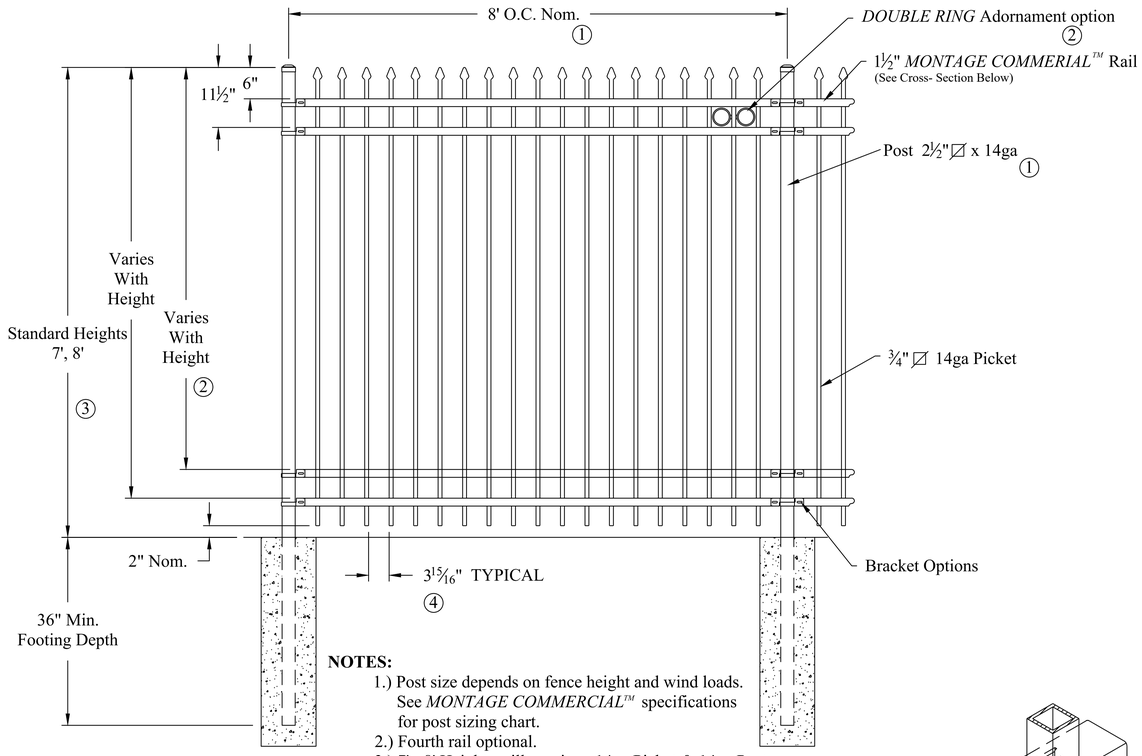
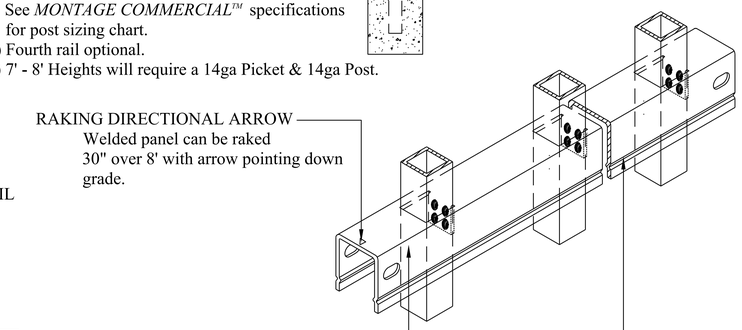
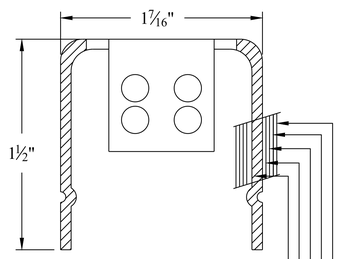


NOTES:

1.) Post size depends on fence height and wind loads. See *MONTAGE COMMERCIAL™* specifications for post sizing chart.
2.) Fourth rail optional.
3.) 7' - 8' Heights will require a 14ga Picket & 14ga Post.

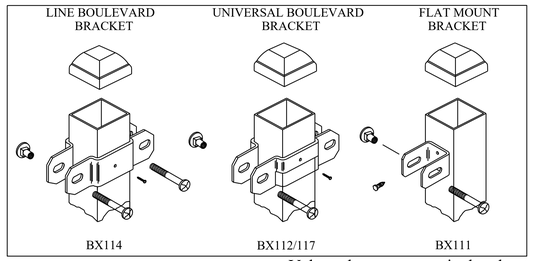


MONTAGE COMMERCIAL™ RAIL



E-COAT COATING SYSTEM

- Base Material
- Uniform Zinc Coating (Hot Dip)
- Zinc Phosphate Coating
- Epoxy Primer
- Acrylic Topcoat



Values shown are nominal and not to be used for installation purposes. See product specification for installation requirements.

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Gerald T. Bollinger
NUMBER PE-2021009173
PROFESSIONAL ENGINEER

March 21, 2025

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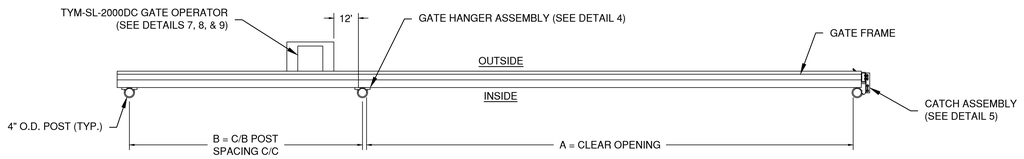
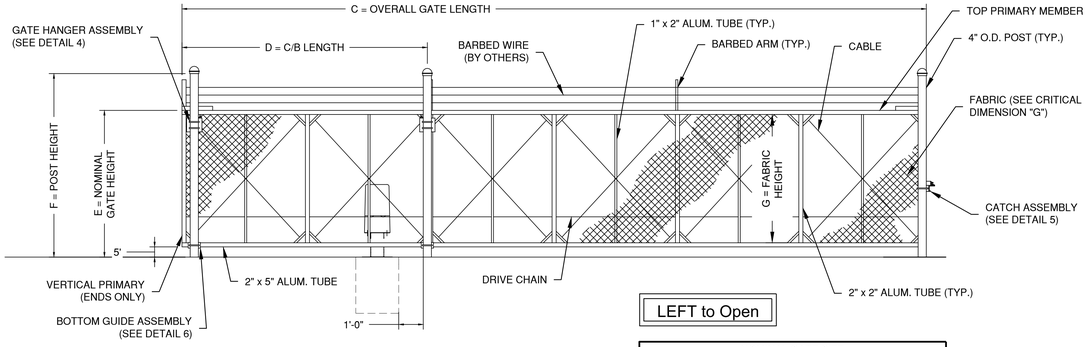


DETAIL 1: PLAN VIEW
NTS

LEFT to Open



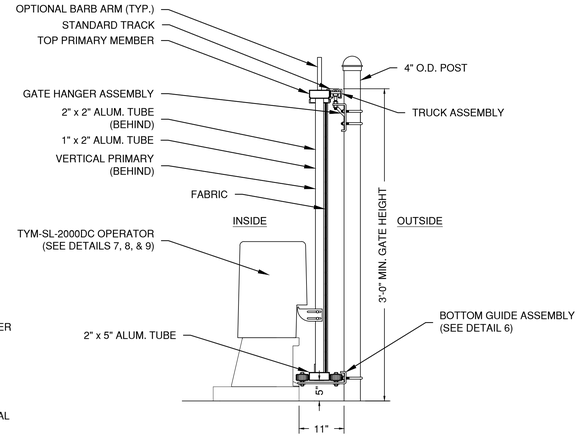
DETAIL 2: ELEVATION VIEW
NTS

LEFT to Open

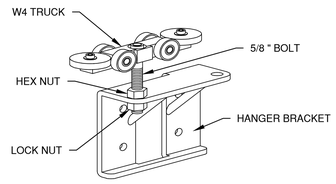
NOTES:
1. ALL FITTINGS PROVIDED FOR 4" O.D. POSTS. OTHER SIZES ARE AVAILABLE UPON REQUEST.
2. GATE ELEVATION IS VIEWED FROM OUTSIDE OF THE SECURE AREA LOOKING IN.
3. BARB ARMS ARE OPTIONAL.
4. THIS GENERIC DRAWING SHOWS A TYPICAL GATE. GATE MANUFACTURED MAY NOT BE EXACTLY AS SHOWN.
5. GATE TO HAVE MILL FINISH.
6. FOR GATES THAT REQUIRE TWO PIECE FABRICATION, A 5" ALUMINUM CHANNEL WILL BE SUBSTITUTED FOR THE 2" x 5" ALUMINUM TUBE.

7. KNOX BOX TO BE INSTALLED AT ALL OPERABLE GATES, COORDINATE SIZE AND LOCATION WITH AHJ AND OWNER

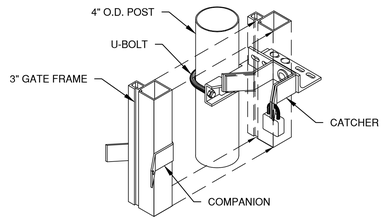
NOMINAL GATE SIZE		
18'W x 8'+1'h		
CRITICAL DIMENSION CHART		
A	CLEAR OPENING	18'-0"
B	COUNTERBALANCE POST SPACING C/C	8'-1"
C	OVERALL GATE LENGTH	27'-0"
D	COUNTERBALANCE LENGTH	9'-0"
E	NOMINAL GATE HEIGHT	8'-0"
F	POST HEIGHT	9'-6"
G	FABRIC HEIGHT	7'-0"



DETAIL 3: ASSEMBLY SECTION
NTS



DETAIL 4: GATE HANGER
NTS



DETAIL 5: CATCH ASSEMBLY
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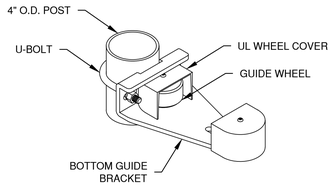
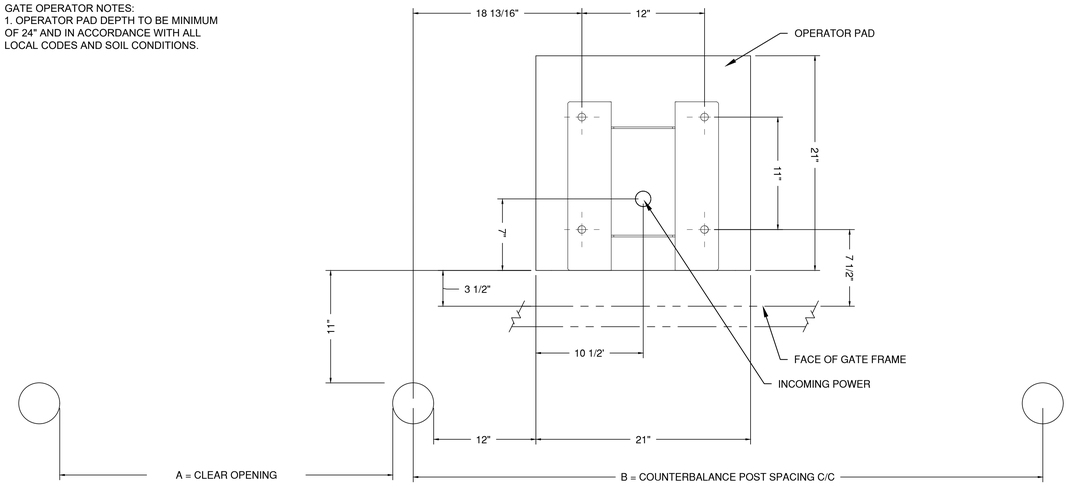
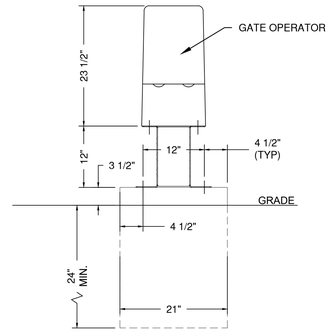


DETAIL 6: BOTTOM GUIDE
NTS

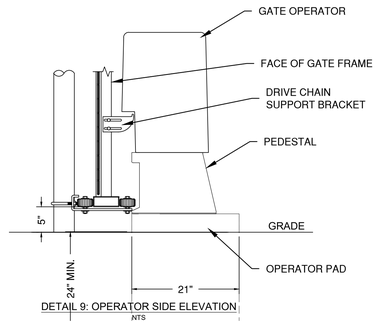
GATE OPERATOR NOTES:
1. OPERATOR PAD DEPTH TO BE MINIMUM OF 24" AND IN ACCORDANCE WITH ALL LOCAL CODES AND SOIL CONDITIONS.



DETAIL 7:OPERATOR PAD LAYOUT PLAN
NTS



DETAIL 8: OPERATOR FRONT ELEVATION
NTS



DETAIL 9: OPERATOR SIDE ELEVATION
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PROFESSIONAL ENGINEER

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SLIDING GATE DETAILS
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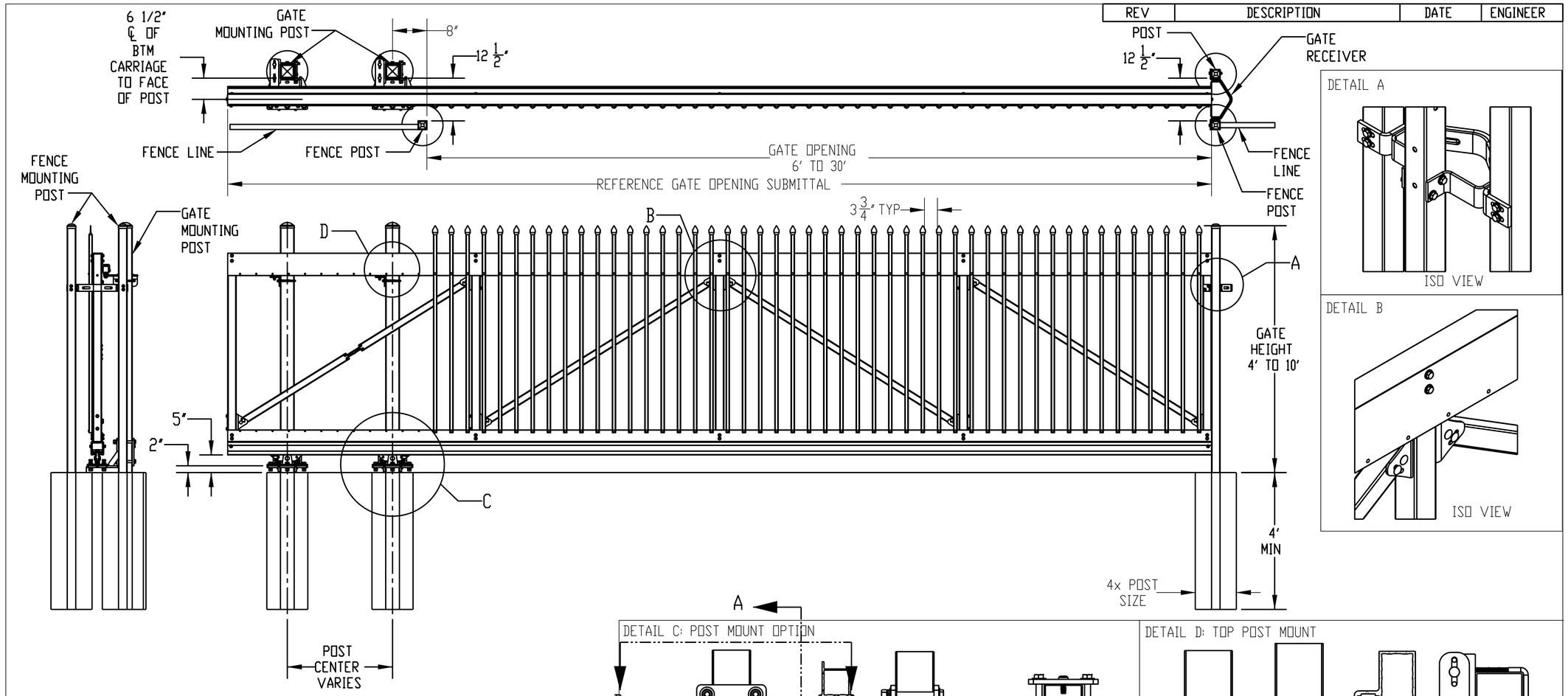
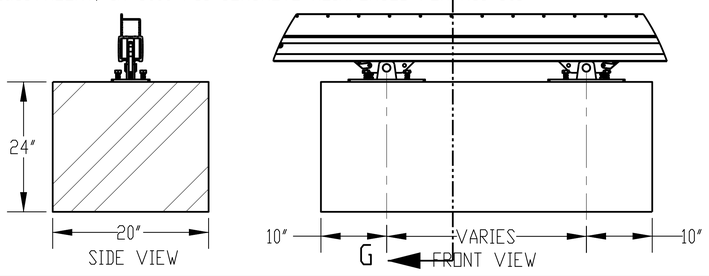


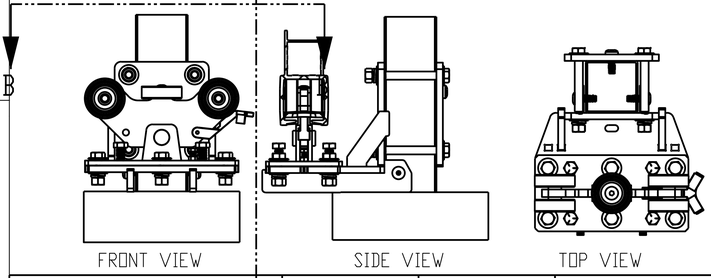
DETAIL A

DETAIL B

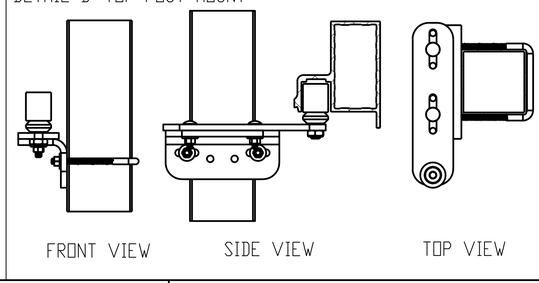
SLAB MOUNT OPTION (SLAB SIZE VARIES)
FOR THE SLAB MOUNTED TRUCK ASSEMBLIES, RECOMMENDED ANCHORS: 1/2" X 15" J-BOLTS GALVANIZED, ACCEPTABLE ANCHORS: 1/2" DIAMETER HILTI HIT-HY 200 + HAS W/ 6" MIN. EMBED OR EQUIVALENT, IN 3000 PSI CONCRETE REINFORCED PER: ACI 301



DETAIL C: POST MOUNT OPTION



DETAIL D: TOP POST MOUNT



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ANGLES ± 0.5°
FRACTIONS ± 1/8
SURFACE FINISH 63

DRAWING COMPLIES WITH ASME Y14.5M - 1994
INCH
MM
THIRD ANGLE PROJECTION

ASSA ABLOY
Ameristar Perimeter Security USA Inc
Tulsa

MATERIAL: SEE BOM
HEAT TREATMENT
SURFACE/FINISH
MASS | VOLUME | SURFACE AREA

TT-II CNT CLS 2R FLB 4" GAP ARCHITECTURAL DRAWING

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DRAWN BY: nathan
DESIGNED BY: nathan
DOCUMENT ID
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PROFESSIONAL ENGINEER
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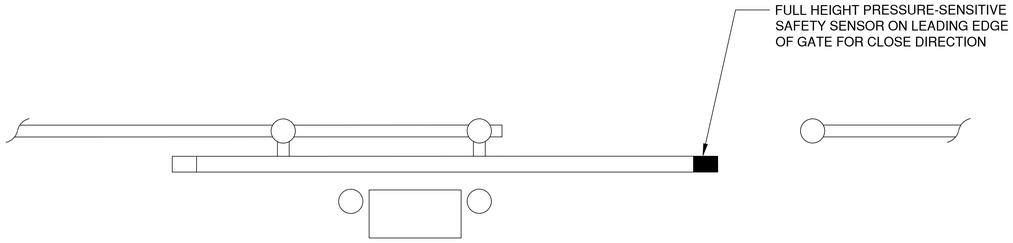

GATE OPERATOR CONTACT SENSOR

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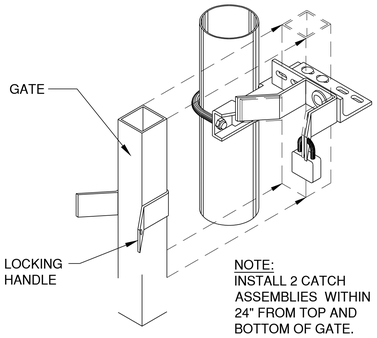

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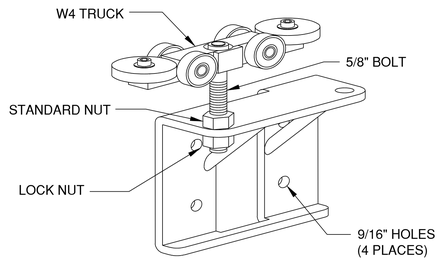

GATE HANGER ASSEMBLY

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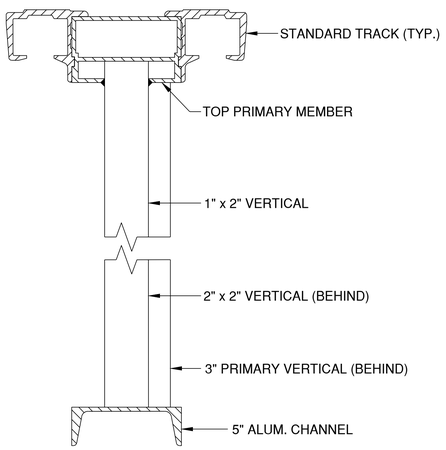

GATE FRAME SECTION

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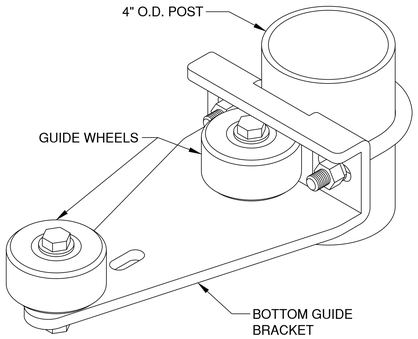

BOTTOM GUIDE

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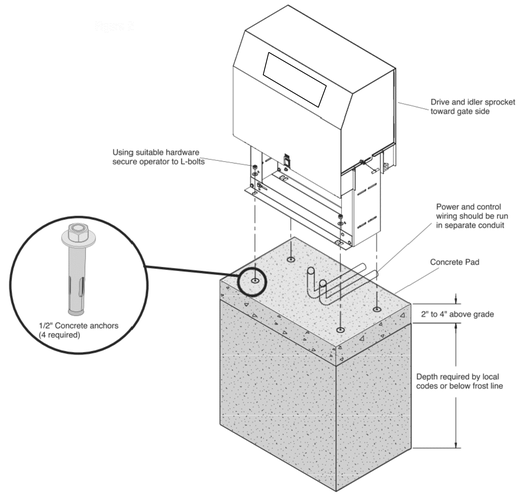
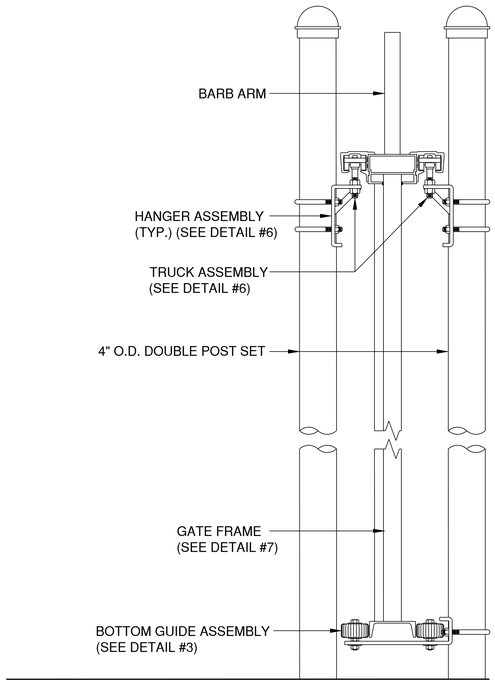


GATE OPERATOR FOUNDATION



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CITY PROJECT NO. - XXXXXXX

STATE OF MISSOURI
GERALD BOLLINGER
NUMBER PE-2021009173
PROFESSIONAL ENGINEER

March 21, 2025

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SLIDING GATE DETAILS
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NOTES

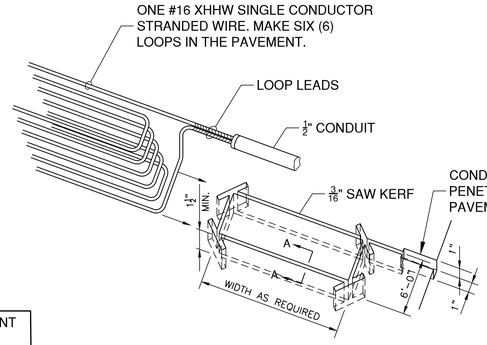
1. CANTILEVERED GATE SHALL BE SUFFICIENTLY RIGID TO WITHSTAND FLEXING OR BENDING DURING WINDY CONDITIONS. CONTRACTOR SHALL PROVIDE STIFFENERS, STRUCTURAL SHAPES IN EXCESS OF THE MINIMUM SPECIFIED DIMENSIONS OR ADDITIONAL ROLLERS AND POSTS SUFFICIENT TO PREVENT DISPLACEMENT OF THE GATE BY WIND OR BY UNAUTHORIZED PERSONNEL.
2. CONTRACTOR SHALL PROVIDE AND INSTALL GATE AND GATE OPERATOR. THE GATE WORK SHALL INCLUDE, BUT NOT BE LIMITED TO: GATE (SINGLE GATE), OPERATOR (SINGLE OPERATOR), POWER CABLES, CONDUIT, TRENCHING, CIRCUIT BREAKERS, AND ALL CONNECTIONS, LABOR AND MATERIALS NECESSARY.
3. LOCATION OF THE GATE OPERATORS SHALL BE AS RECOMMENDED BY THE MANUFACTURER.
4. PIPE BOLLARDS SHALL BE INSTALLED AT LOCATIONS SHOWN IN PLAN VIEW.
5. THE FABRIC TYPE SHALL BE BLACK VINYL COATED CHAINLINK WITH FINISH OF THE GATE TO MATCH, OR AS DIRECTED BY THE DESIGN PROFESSIONAL.
6. ALL SLIDING GATES SHALL HAVE ALL ROLLERS ENCLOSED IN STEEL OR PLASTIC SHROUDS TO PREVENT ACCIDENTAL INJURY.
7. THE PROVIDED DIMENSIONS ARE FOR ILLUSTRATIVE PURPOSES ONLY. SHOP DRAWING SUBMITTALS SHALL SPECIFY ALL GATE DIMENSIONS AS RECOMMENDED BY THE MANUFACTURER.

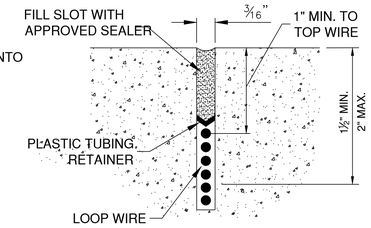
UL 235 COMPLIANCE NOTES

GATE INSTALLATION SHALL COMPLY WITH ALL REQUIREMENTS OF UL 235, INCLUDING, BUT NOT LIMITED TO:

1. ALL OPENINGS OF THE SLIDE GATE ARE TO BE GUARDED OR SCREENED FROM THE BOTTOM OF THE GATE TO A MINIMUM OF 4 FEET ABOVE GROUND TO PREVENT A 2-1/4" DIAMETER SPHERE FROM PASSING THROUGH THE OPENINGS ANYWHERE IN THE GATE, AND IN THAT PORTION OF THE ADJACENT FENCE THAT THE GATE COVERS IN THE OPEN POSITION.
2. ALL EXPOSED PINCH POINTS ARE TO BE ELIMINATED OR GUARDED AND GUARDING SHALL BE SUPPLIED FOR ALL EXPOSED ROLLERS.
3. FOR ADDITIONAL UL 235 REQUIREMENTS FOR THIS GATE INSTALLATION, SEE GATE OPERATOR DETAILS.

WARNING SIGN DETAIL





SECTION A-A

LOCATIONS, DETAILS AND CHARACTER OF EQUIPMENT SHOWN ON THIS SHEET ARE GENERIC. EQUIPMENT LOCATION SHALL BE AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.

CAUTION:

- DO NOT SPLICE WIRE.
- DO NOT FRACTURE WIRE INSULATION. LOOPS SHORTED TO GROUND WILL CAUSE DETECTOR MALFUNCTION. WHEN PLACING WIRE IN THE SLOT. DO NOT USE SCREWDRIVER OR OTHER SHARP TOOLS.

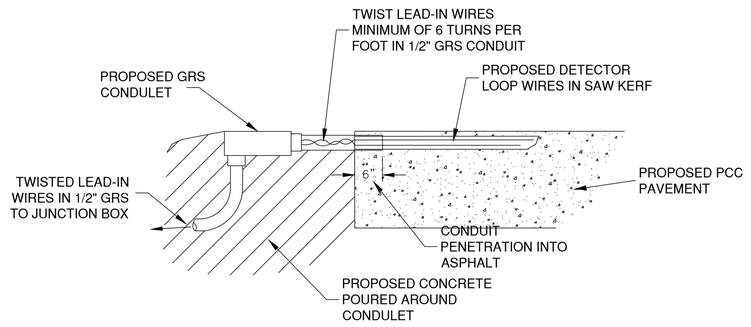
TYPICAL LAYOUT FOR LOOP:

- SAW SLOT 3/16" WIDE x 1-1/2" MIN. DEEP. MAKE RECTANGULAR SHAPE TO SPECIFIED LOOP DIMENSIONS PLUS SLOT FOR LEAD CONDUIT.
- GROUT WITH NO. 202 WEATHERBAN SEALANT (A PRODUCT OF 3M CO.) OR APPROVED EQUIVALENT ... (EXAMPLE: DE WITTS NO. 99 BLACK MASTIC CAULK).

NOTES

1. LOOP LEADS ARE LIMITED TO 100 FEET.
2. LOOP LEADS MUST HAVE SIX (6) TWISTS PER FOOT.
3. LOOP AND LOOP LEADS MUST BE LOCATED AT LEAST 18" FROM ANY ELECTRICAL POWER SERVICE OR STEEL REINFORCEMENT.
4. LOOP LEADS MUST BE IN SEPARATE CONDUIT BETWEEN LOOP AND DETECTOR. THEY MUST NOT SHARE CONDUIT WITH OTHER WIRING OR LEADS FROM OTHER LOOPS.
5. WIRE SHALL BE #16 XHHW 600V SINGLE CONDUCTOR STRANDED WIRE.
6. ALL WIRE SHALL BE CONTINUOUS WITHOUT SPLICING.

DETECTOR LOOP DETAILS
N.T.S.



1 EXIT JUNCTION DETAIL
N.T.S.

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WELLNER ARCHITECTS + engineers
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PEC
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KANSAS CITY, MO 64105

olsson
1301 BURLINGTON
NORTH KANSAS CITY, MO 64116

KC - LEE'S SUMMIT REGIONAL AIRPORT
LEE'S SUMMIT, MISSOURI

TM AVIATION HANGAR
CITY PROJECT NO. - XXXXXXXX

STATE OF MISSOURI
GERALD BOLLINGER
Gerald T. Bollinger
NUMBER PE-2021009173
PROFESSIONAL ENGINEER

March 21, 2025

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SLIDING GATE DETAILS
SHEET 4 OF 5

C-129

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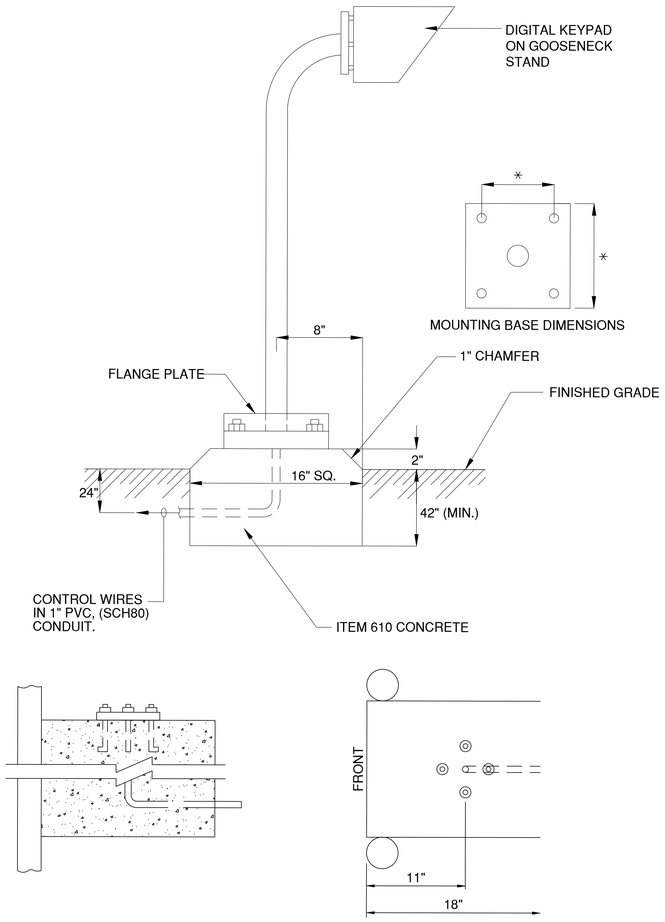
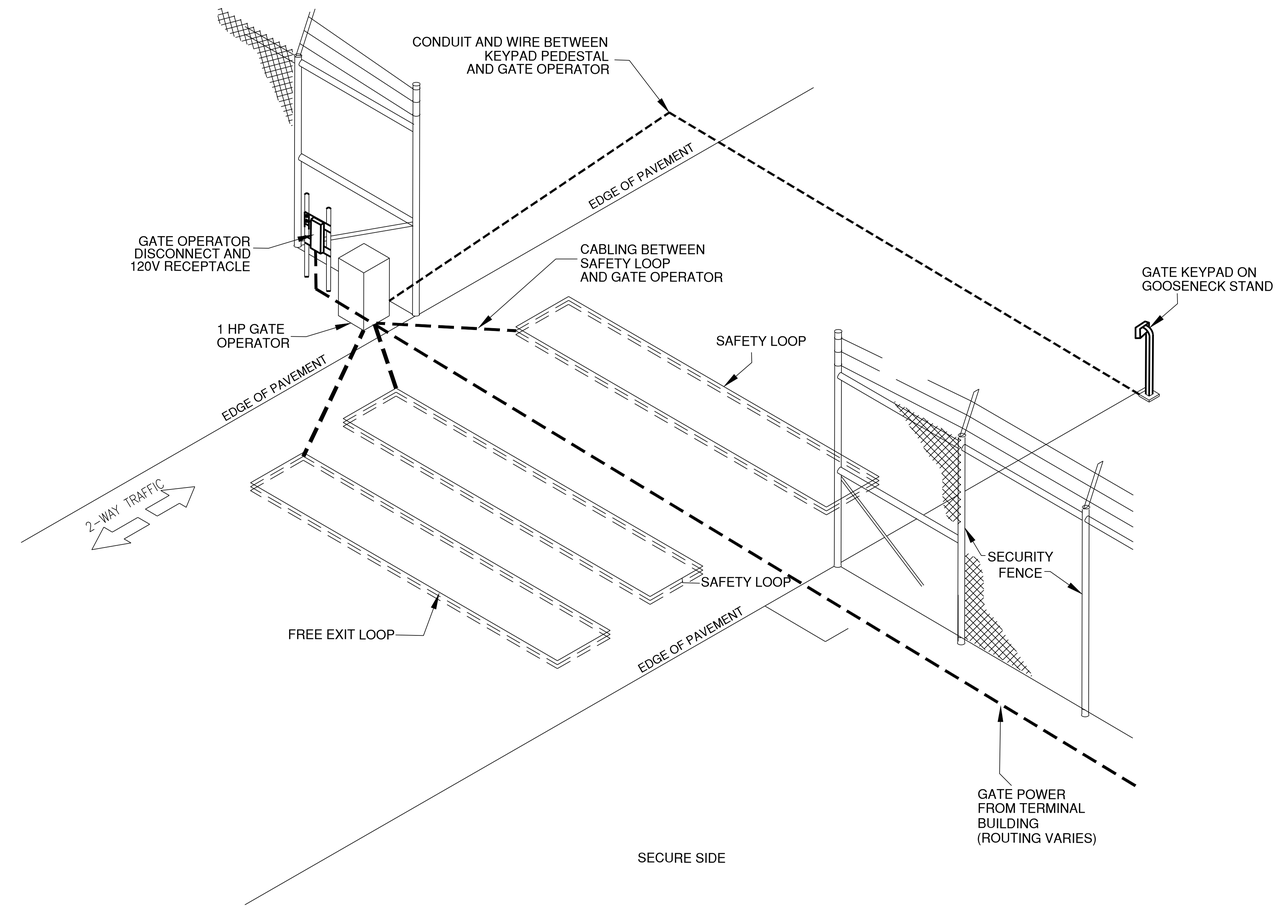


KEYPAD ON GOOSENECK STAND DETAIL

N.T.S.

NOTES:

1. DIMENSIONS OF CONDUIT KEY CONTROL AND ANCHOR BOLTS MAY BE CHANGED TO MEET MANUFACTURERS SPECIFICATIONS AND DIMENSIONS.
2. KEYPAD UTILIZED SHALL BE COMPATIBLE FOR COMMUNICATION WITH SUBMITTED GATE OPERATOR.
3. GOOSENECK STAND AND KEYPAD SHALL BE POSITIONED FOR EASE OF ACCESS BY VEHICLE DRIVERS.



VEHICLE GATE

N.T.S.

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SLIDING GATE DETAILS
SHEET 5 OF 5

C-130

SHEET 35 OF 39

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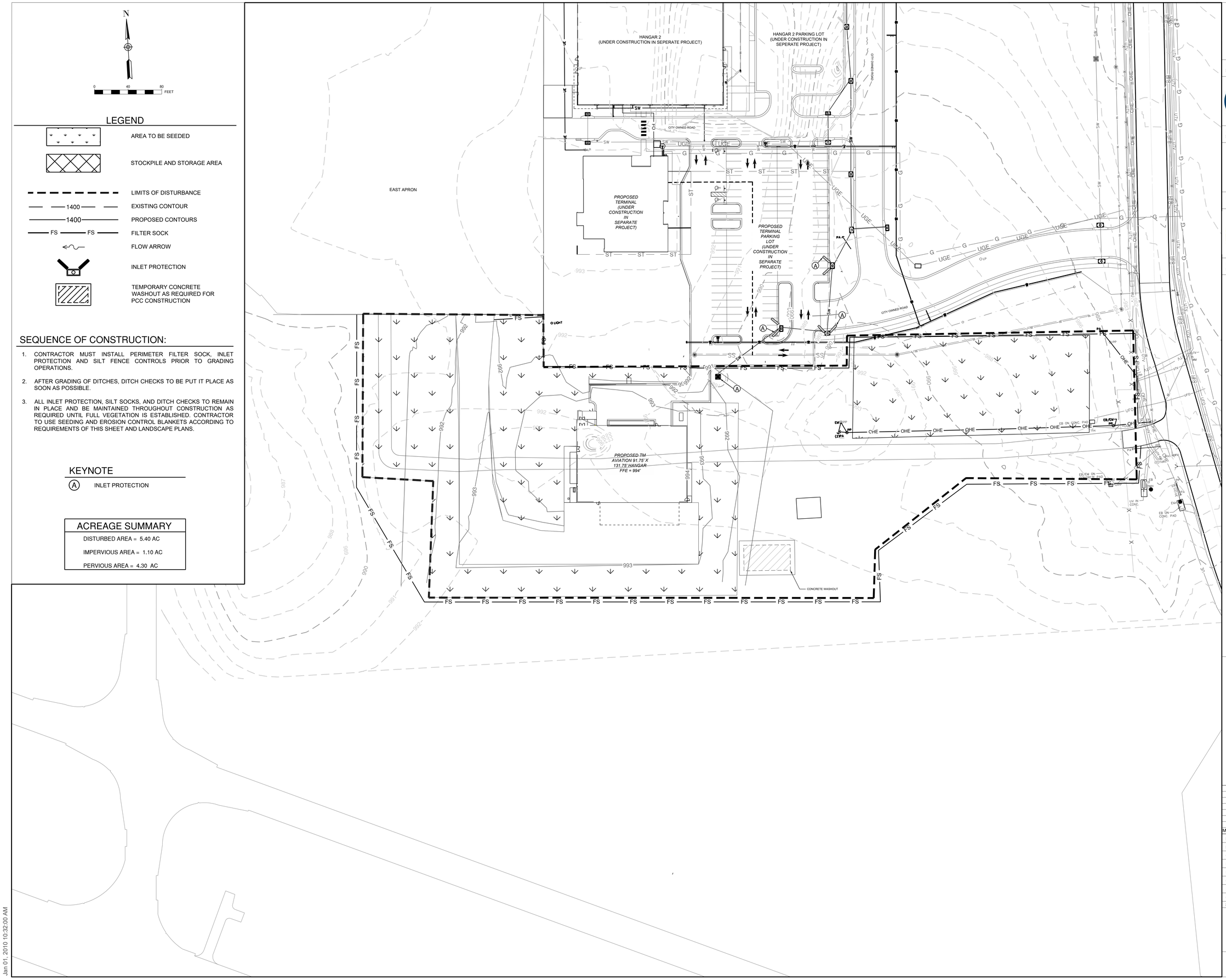

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EROSION CONTROL PLAN

C-131

SHEET 36 OF 39

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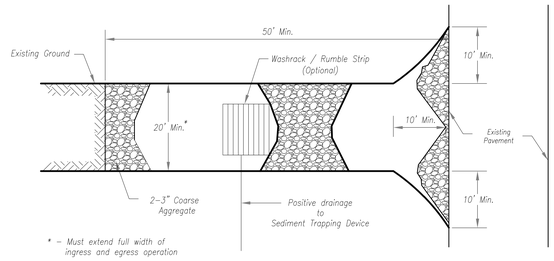
Maintenance for Construction Entrance:

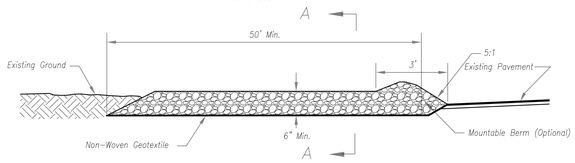
1. *Reshape entrance as needed to maintain function and integrity of installation. Top dress with clean aggregate as needed.*

Notes for Construction Entrance:

1. *Avoid locating on steep slopes, at curves on public roads, or downhill of disturbed area.*
2. *Remove all vegetation and other unsuitable material from the foundation area, grade, and crown for positive drainage*
3. *If slope towards the public road exceeds 2%, construct a 6– to 8–inch high ridge with 3H:1V side slopes across the foundation approximately 15 feet from the edge of the public road to divert runoff from it.*
4. *Install pipe under the entrance if needed to maintain drainage ditches along public roads.*
5. *Place stone to dimensions and grade as shown on plans. Leave surface sloped for drainage.*
6. *Divert all surface runoff and drainage from the entrance to a sediment control device.*
7. *If conditions warrant, place geotextile fabric on the graded foundation to improve stability.*



Plan View
Not to Scale



Side Elevation
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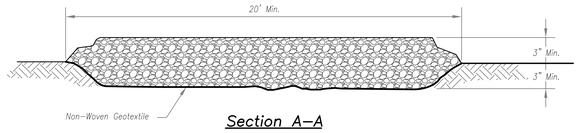


Section A–A
Not to Scale

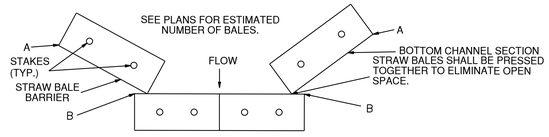
CONSTRUCTION ENTRANCE

STABILIZED CONSTRUCTION ENTRANCE E1
N.T.S.

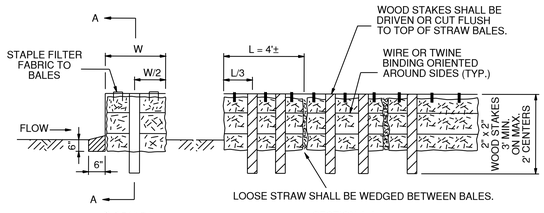
NOTE:

CORNERS 'A' SHALL BE HIGHER THAN CORNERS 'B' TO INSURE FLOW THROUGH OR OVER BARRIER, NOT AROUND IT.

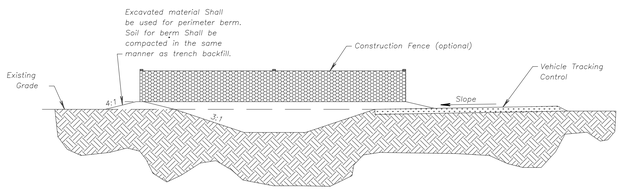
FILTER FABRIC MAY BE ELIMINATED FOR GRADES 2% OR LESS ON STRAW BALES IF APPROVED BY ENGINEER.



TOP VIEW



STRAW BALE DITCH CHECK E2
N.T.S.



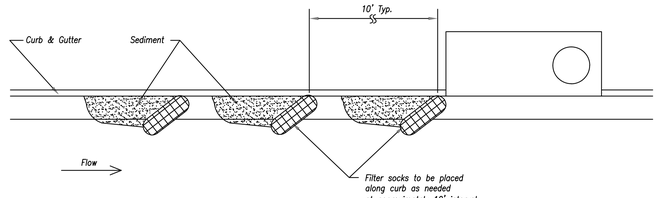
CONCRETE WASHOUT E3
N.T.S.

Notes for Concrete Washout:

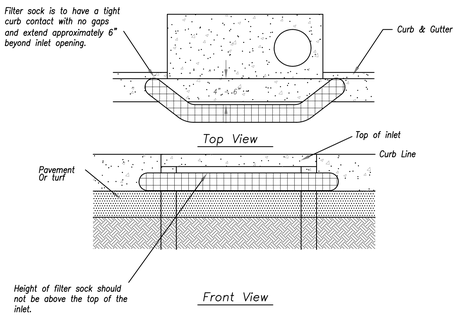
1. *Concrete washout areas shall be installed prior to any concrete placement on site.*
2. *Concrete washout area shall include a flat subsurface pit sized relative to the amount of concrete to be placed on site. The slopes leading out of the subsurface pit shall be 3:1. The vehicle tracking pad shall be sloped towards the concrete washout area.*
3. *Vehicle tracking control is required at the access point to all concrete washout areas.*
4. *Signs shall be placed at the construction site entrance, washout area and elsewhere as necessary to clearly indicate the location(s) of the concrete washout area(s) to operators of concrete truck and pump rigs.*
5. *A one–piece impervious liner may be required along the bottom and sides of the subsurface pit in sandy or gravelly soils.*

Maintenance for Concrete Washout:

1. *Concrete washout materials shall be removed once the materials have filled the washout to approximately 75% full.*
2. *Concrete washout areas shall be enlarged as necessary to maintain capacity for wasted concrete.*
3. *Concrete washout water, wasted pieces of concrete and all other debris in the subsurface pit shall be transported from the job site in a water–tight container and disposed of properly.*
4. *Concrete washout areas shall remain in place until all concrete for the project is placed.*
5. *When concrete washout areas are removed, excavations shall be filled with suitable compacted backfill and topsoil, any disturbed areas associated with the installation, maintenance, and/or removal of the concrete washout areas shall be stabilized.*

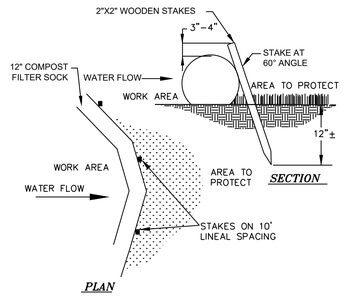


On Grade Curb Inlet Protection



Sump Inlet Sediment Filter

CURB INLET PROTECTION E4
N.T.S.



12" FILTER SOCK E5
N.T.S.

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GERALD BOLLINGER
Gerald T Bollinger
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PROFESSIONAL ENGINEER

March 21, 2025

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EROSION CONTROL DETAILS

C-132

SHEET 37 OF 39

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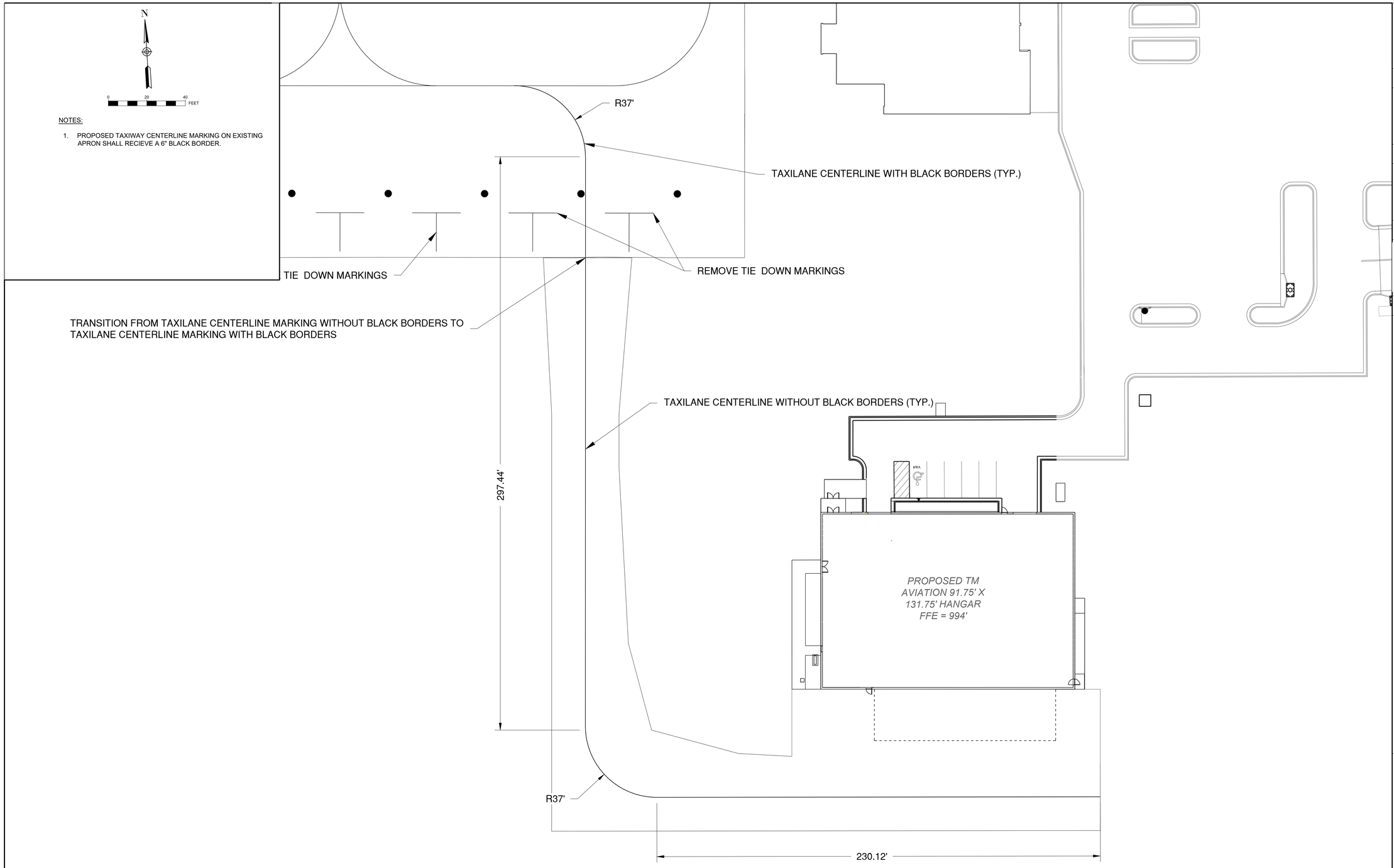

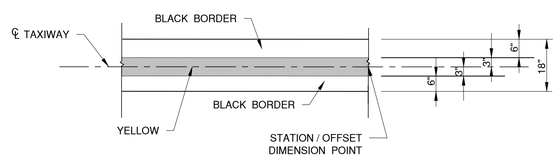

1 TAXIWAY CENTERLINE MARKING WITH BLACK BORDERS
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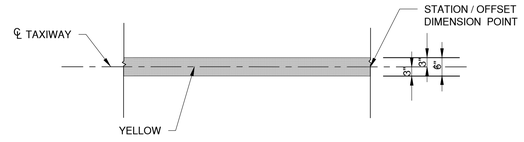

2 TAXIWAY CENTERLINE MARKING WITHOUT BLACK BORDERS
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AIRFIELD MARKING PLAN

C-133

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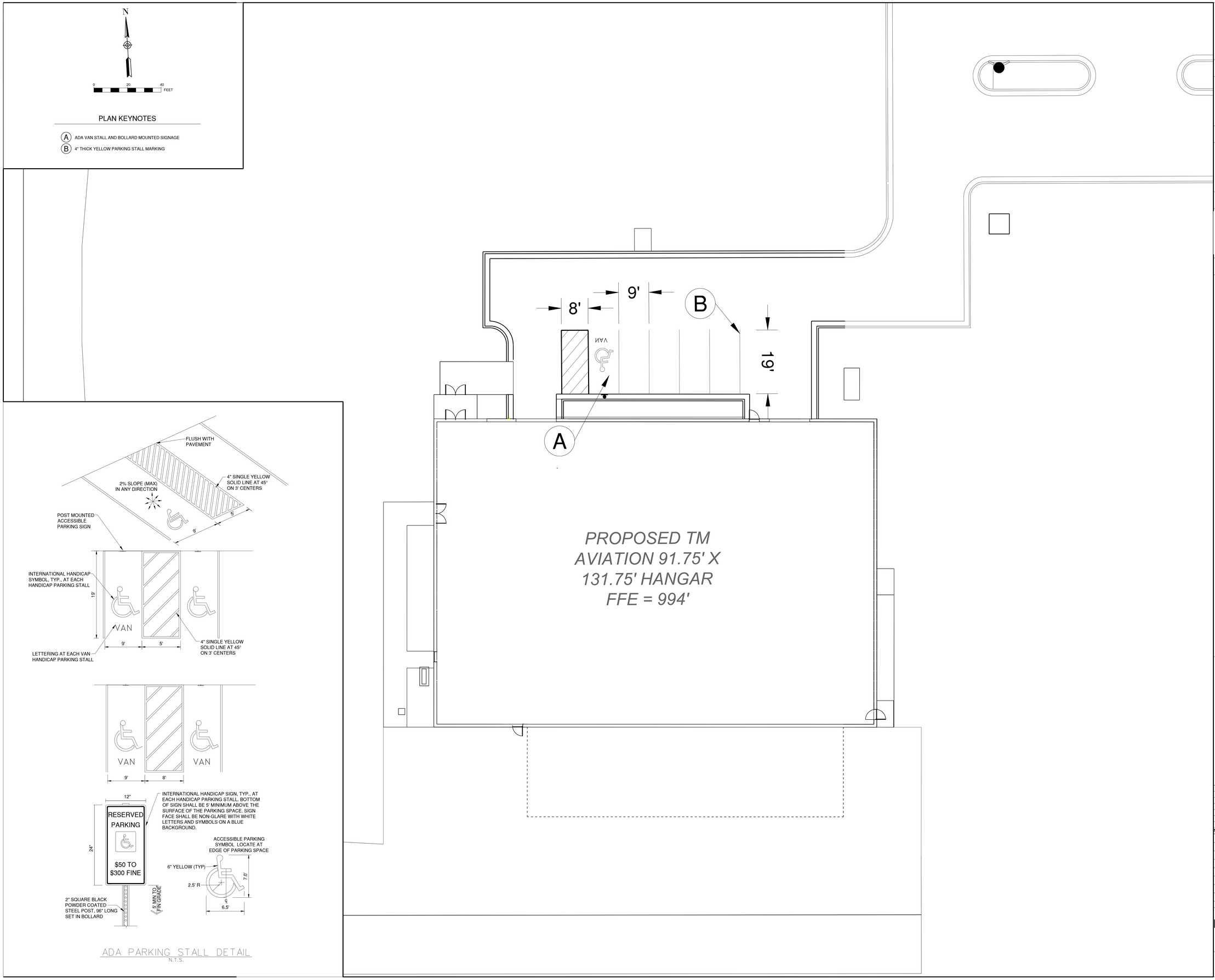

ADA PARKING STALL DETAIL
N.T.S.

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PARKING LOT MARKING PLAN

C-134

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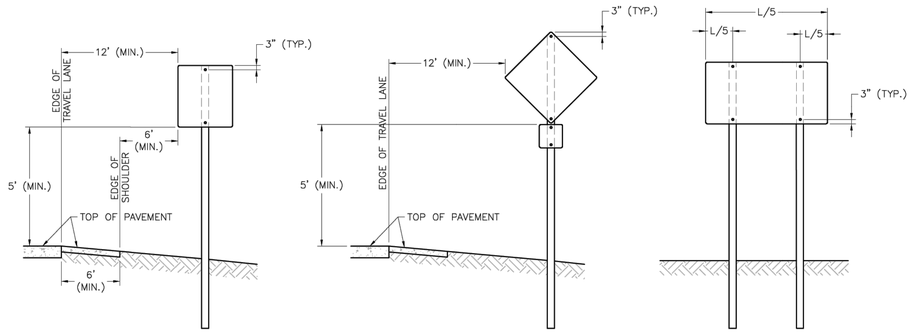
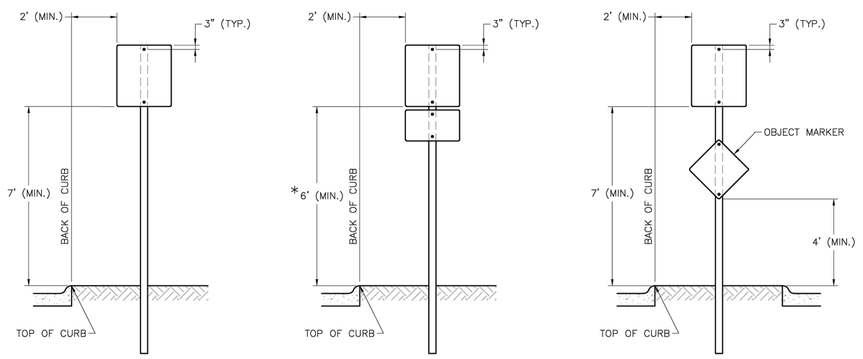


SIGN INSTALLATION FOR NON-CURBED STREET

SIGN INSTALLATION WITH AUXILIARY SIGN FOR NON-CURBED STREET

SIGN INSTALLATION WITH TWO SIGN POSTS



SIGN INSTALLATION FOR CURBED STREET

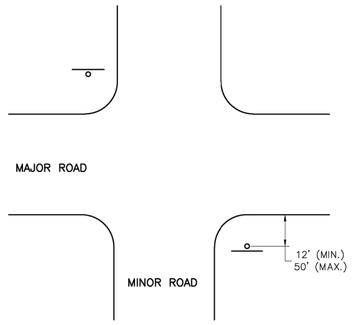
SIGN INSTALLATION WITH AUXILIARY SIGN FOR CURBED STREET

SIGN INSTALLATION FOR RAISED MEDIANS

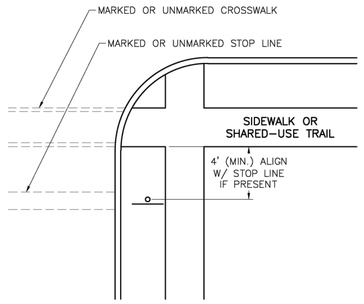
SIGN MOUNTING DETAILS

NOTES:

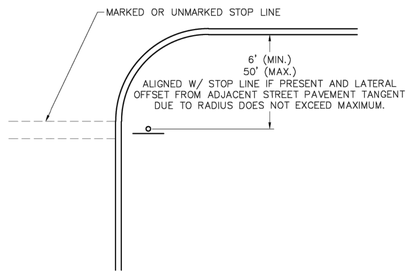
1. GENERALLY, THE SIGN MOUNTING HEIGHT SHOULD NOT BE MORE THAN 1' GREATER THAN THE MINIMUM MOUNTING HEIGHT.
2. *THE HEIGHT TO THE BOTTOM OF A SIGN WHEN IT IS LOCATED IN A PEDESTRIAN WALKWAY OR EXTENDS INTO A WALKWAY SHALL BE A MINIMUM OF 80 INCHES ABOVE THE WALKWAY.



NON-CURBED INTERSECTION INSTALLATION

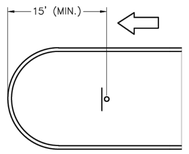


INTERSECTION WITH SIDEWALK/SHARED-USE TRAIL INSTALLATION



CURBED INTERSECTION INSTALLATION

CONTROL SIGN LOCATION



TYPICAL MEDIAN SIGN LOCATION

MEDIAN SIGN LOCATION

NOTES:

1. A 4" P.V.C. SLEEVE SHALL BE INSTALLED IN NEW CONCRETE MEDIANS AT EACH LOCATION WHERE A SIGN IS TO BE INSTALLED.
2. FOR EXISTING CONCRETE MEDIANS, A 4" HOLE SHALL BE CORED INTO THE CONCRETE.

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

Project: STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO

Sheet Name: SIGN MOUNTING DETAILS

Drawn By: BWC
Checked By: MP
Date: 01/2020
Proj. #:

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GENERAL AVIATION TERMINAL
CITY PORJECT NO. - 17932172

STATE OF MISSOURI
GERALD BOLLINGER
Gerald T. Bollinger
NUMBER PE-2021009173
PROFESSIONAL ENGINEER

March 21, 2025

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MARKING AND SIGNAGE DETAIL 1 OF 2

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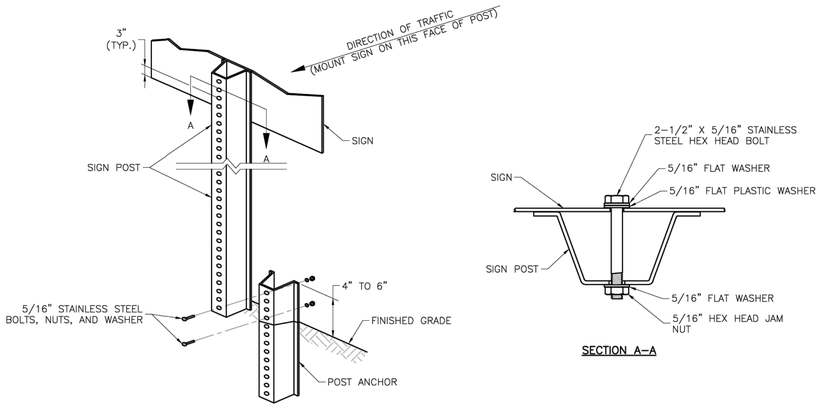


SECTION A–A

U–STEEL POST DETAILS

NOTES:

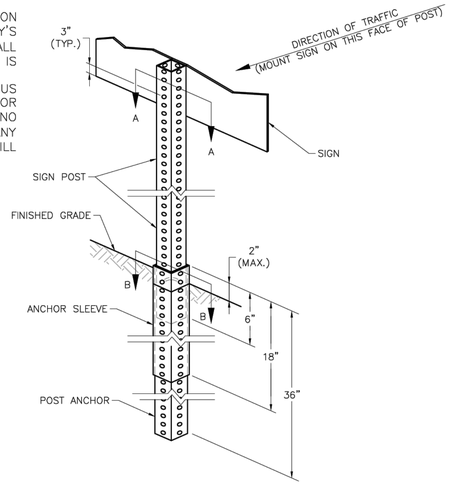
1. SPLICE SHALL BE POSITIONED ENTIRELY BETWEEN FINISHED GRADE LINE AND 18" ABOVE FINISHED GRADE LINE. ONLY ONE SPLICE WILL BE ALLOWED PER POST.
2. U–STEEL POST SHALL BE 3 LB./FT., GALVANIZED ACCORDING TO ASTM A123.
3. U–STEEL POST CAN BE USED FOR INSTALLATION OF SIGNS WITH AN AREA OF LESS THAN 2.5 SQUARE FEET.
4. ALL POSTS SHALL BE EMBEDDED A MINIMUM OF 3 FEET.

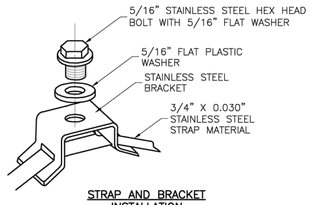
PERMANENT SIGNING GENERAL NOTES:

1. ALL SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. THE CONTRACTOR IS RESPONSIBLE FOR AVOIDING ANY AND ALL UTILITIES WHEN INSTALLING SIGN POSTS, WHETHER THE UTILITY IS INDICATED ON THE PLANS OR NOT.
3. ALL WORKMANSHIP AND MATERIALS SHALL BE SUBJECT TO THE INSPECTION AND APPROVAL OF THE PUBLIC WORKS DEPARTMENT OF THE CITY OF LEE'S SUMMIT.
4. THE CONTRACTOR SHALL STAKE THE LOCATION OF ALL SIGN POSTS TO BE INSTALLED. THE CITY INSPECTOR SHALL INSPECT THE STAKING PRIOR TO INSTALLATION. MINOR RELOCATION TO AVOID CONFLICTS MAY BE ALLOWED WITH THE APPROVAL OF THE CITY TRAFFIC ENGINEER.
5. SIGNS SHOWN TO BE INSTALLED ON THE SIDE OF METAL POLES SHALL BE MOUNTED WITH STAINLESS STEEL STRAPS OR WING BRACKETS AS DETAILED. NO SIGNS ARE TO BE INSTALLED ON WOOD POLES. SEE TRAFFIC SIGNAL STANDARD DRAWINGS FOR THE INSTALLATION OF SIGNS ON MAST ARMS.
6. ALL POST MOUNTED SIGNS SHALL BE INSTALLED WITH BREAKAWAY ANCHORS ACCORDING TO THE STANDARD DRAWINGS.
7. ALL EXISTING SIGNS WILL BE USED IN PLACE DURING CONSTRUCTION AND PROTECTED FROM DAMAGE UNLESS OTHERWISE INDICATED IN THE PLANS. IF THE CONTRACTOR DAMAGES ANY EXISTING SIGN OR POSTS DURING CONSTRUCTION, THE CONTRACTOR WILL BE REQUIRED TO REPLACE THE DAMAGED MATERIALS WITH NEW SIGNS OR POSTS AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND STORING ANY SIGNS THAT ARE TO BE REINSTALLED ON THE PROJECT. ALL EQUIPMENT SHALL BE REINSTALLED IN GOOD CONDITION.
8. EXISTING PERMANENT SIGNS AND POSTS REMOVED BY THE CONTRACTOR FOR CONSTRUCTION PURPOSES WHICH ARE NOT TO BE REINSTALLED SHALL BE DELIVERED TO THE CITY'S PUBLIC WORKS MAINTENANCE FACILITY (1971 SE HAMBLEN ROAD). THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND STORING EQUIPMENT IN GOOD CONDITION AND IS FULLY RESPONSIBLE FOR THE EQUIPMENT UNTIL IT IS DELIVERED.
9. ALL STOP, YIELD, OR STREET NAME SIGNS SHALL BE MAINTAINED IN A CONSPICUOUS LOCATION FOR THE DRIVING PUBLIC. ALL STOP AND YIELD SIGNS REMOVED FOR CONSTRUCTION PURPOSES CAN BE TEMPORARILY ERECTED IN REFLECTORIZED DRUMS (NO LESS THAN 7 FEET ABOVE THE PAVEMENT SURFACE) UNTIL THEY CAN BE REINSTALLED. ANY TEMPORARY STOP OR YIELD SIGN INSTALLATION TO BE LEFT IN PLACE OVERNIGHT WILL REQUIRE PRIOR APPROVAL FROM THE CITY INSPECTOR.

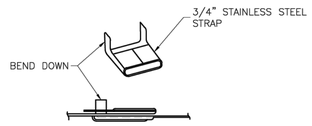
SQUARE STEEL POST INSTALLATION SEQUENCE:

1. SIGN POST ANCHOR DRIVEN PARTIALLY INTO THE GROUND USING A DRIVE CAP WITH A SLEDGE OR POWER EQUIPMENT.
2. ANCHOR SLEEVE SLIPPED OVER ANCHOR AND DRIVE INTO THE GROUND TOGETHER WITH THE SIGN POST ANCHOR.
3. INSERT SIGN POST INTO THE POST ANCHOR AND BOLT IN PLACE.





STRAP AND BRACKET INSTALLATION

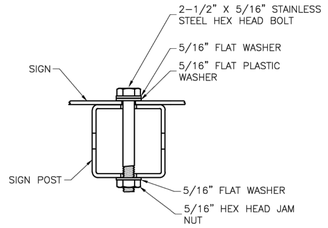


ENDS OF STRAP CLAMPED IN SEAL

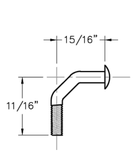
STRAP TYPE SIGN SUPPORT DETAILS

NOTES:

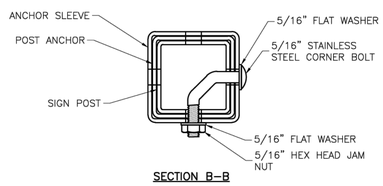
1. SIGNS ON METAL POLES SHALL BE ATTACHED WITH TWO BRACKETS AND STAINLESS STEEL BANDS.
2. HOLES IN SIGN FOR ATTACHMENT TO THE MOUNTING BRACKETS SHALL BE OFFSET A MINIMUM OF 2 INCHES FROM THE EDGE OF THE SIGN.
3. HOLES IN SIGN SHALL BE LOCATED SUCH THAT THE SIGN IS LEVEL.
4. ALL STRAP, BRACKET, AND SEAL MATERIALS SHOULD BE TYPE 201 STAINLESS STEEL.



SECTION A–A



CORNER BOLT



SECTION B–B

SQUARE STEEL POST DETAILS

NOTES:

1. SQUARE STEEL SIGN POSTS AND BREAK–AWAY ANCHOR SHALL CONSIST OF THE FOLLOWING MATERIALS:
   SIGN POST – 14 GA. 2" X 2" SQUARE STEEL POST
   POST ANCHOR – 12 GA. 2 ¼" X 2 ¼" X 36" SQUARE STEEL POST
   ANCHOR SLEEVE – 12 GA. 2 ½" X 2 ½" X 18" SQUARE STEEL POST
2. 14 GA. POSTS MUST MEET A CERTIFIED MINIMUM YIELD STRENGTH OF 60,000 PSI.
3. IN ALL INSTALLATIONS THE FIRST HOLE ABOVE THE FINISHED GRADE LINE ON THE SIGN POST, ANCHOR, AND ANCHOR SLEEVE MUST BE IN LINE FOR THE INSERTION OF THE CORNER BOLT.
4. THE MAXIMUM AREA FOR ONE SIGN POST IS 9.0 SQUARE FEET. A SIGN OR COMBINATION OF SIGNS WITH AN AREA GREATER THAN 9.0 SQUARE FEET WILL REQUIRE TWO POSTS. ALSO, SIGNS WITH A WIDTH GREATER THAN OR EQUAL TO 48" (NOT INCLUDING 36" X 36" DIAMOND SHAPED SIGNS) WILL REQUIRE TWO POSTS.

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

Project:
STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO

Sheet Name:
POST DETAILS

Drawn By: BWC
Checked By: MP
Date: 01/2020
Proj. #:

SN-2

CMT
1627 MAIN STREET, SUITE 600
KANSAS CITY, MO 64108

WELLNER ARCHITECTS + engineers
1627 MAIN STREET, SUITE 100
KANSAS CITY, MO 64108

PEC
1100 MAIN ST, STE 1800
KANSAS CITY, MO 64105

olsson
1301 BURLINGTON
NORTH KANSAS CITY, MO 64116

KC - LEE'S SUMMIT REGIONAL AIRPORT
LEE'S SUMMIT, MISSOURI

GENERAL AVIATION TERMINAL
CITY PORJECT NO. - 17932172

STATE OF MISSOURI
GERALD BOLLINGER
Gerald T. Bollinger
NUMBER PE-2021009173
PROFESSIONAL ENGINEER

March 21, 2025

MARK	DATE	DESCRIPTION
PROJECT NO:		PERMIT SET
PROJECT NO:		Project Number
CAD FILE:		FILE NAME
DESIGNED BY:		
DRAWN BY:		
CHECKED BY:		
APPROVED BY:		
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SHEET TITLE		

MARKING AND SIGNAGE DETAIL 2 OF 2

C-136

SHEET 40 OF 40

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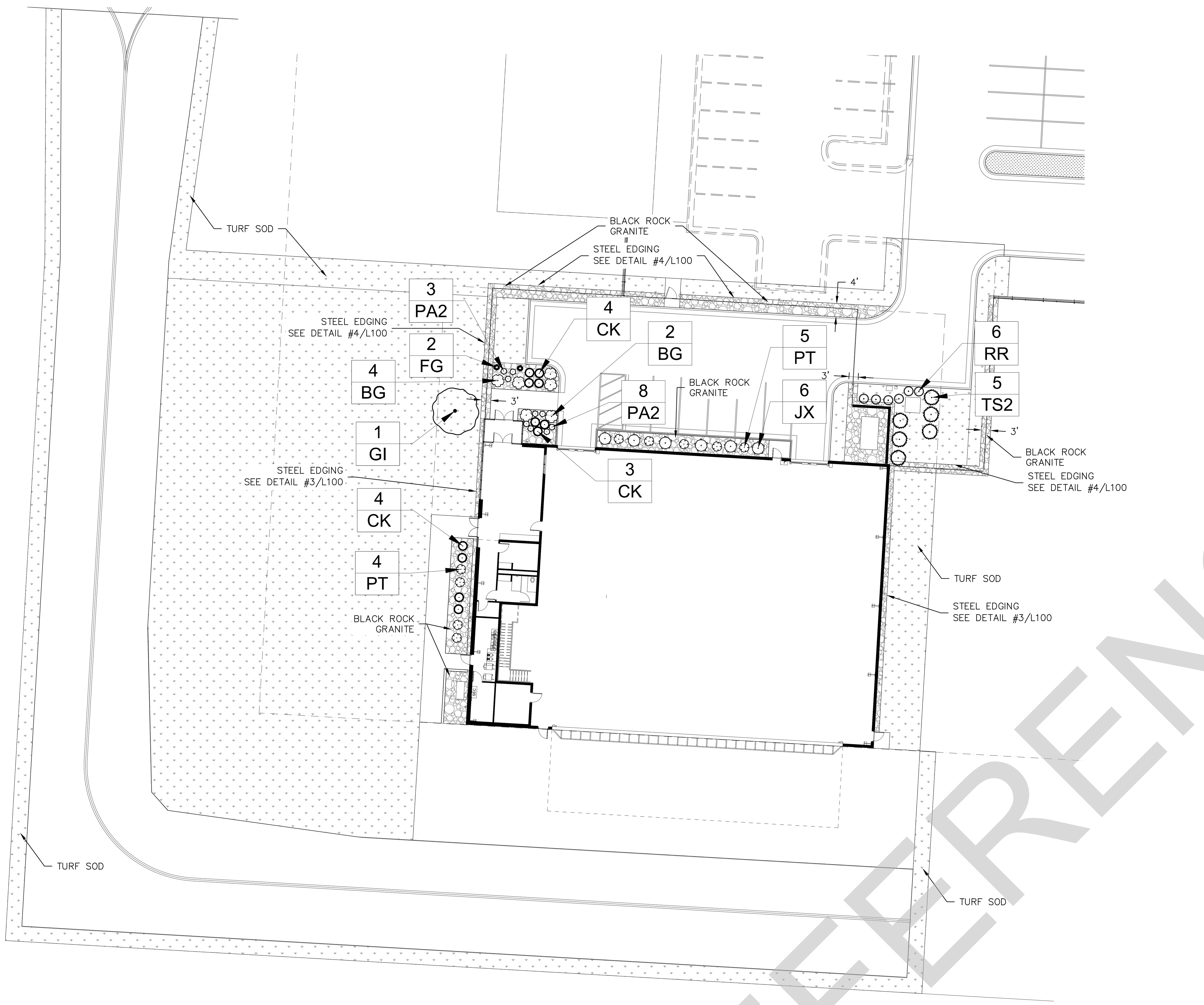


PLANT SCHEDULE

SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	SIZE	CONT.
TREES					
	GI	1	GLEDITSIA TRIACANTHOS INERMIS 'SKYCOLE' SKYLINE® HONEY LOCUST	2" CAL.	
	TS2	6	THUJA OCCIDENTALIS `SMARAGD` EMERALD GREEN ARBORVITAE	5-6' HT	
SHRUBS					
	BG	6	BUXUS X 'GREEN VELVET' GREEN VELVET BOXWOOD	3 GAL	
	JX	6	JUNIPERUS X 'GREY OWL' GREY OWL JUNIPER	3 GAL	
	PT	9	PHYSOCARPUS OPULIFOLIUS 'SMPOTW' TINY WINE® NINEBARK	3 GAL	
	RR	6	RHAMNUS FRANGULA 'RON WILLIAMS' FINE LINE® ALDER BUCKTHORN	3 GAL	
GRASSES					
	CK	11	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER' KARL FOERSTER FEATHER REED GRASS	1 GAL	
	FG	2	FESTUCA GLAUCA BLUE FESCUE	1 GAL	
	PA2	9	PENNISETUM ALOPECUROIDES FOUNTAIN GRASS	1 GAL	
GROUND COVERS					
	BR	2,303 SF	2" BLACK ROCK GRANITE	SF.	
	TS	24,159 SF	TURF SOD DROUGHT TOLERANT FESCUE BLEND	SF.	SOD

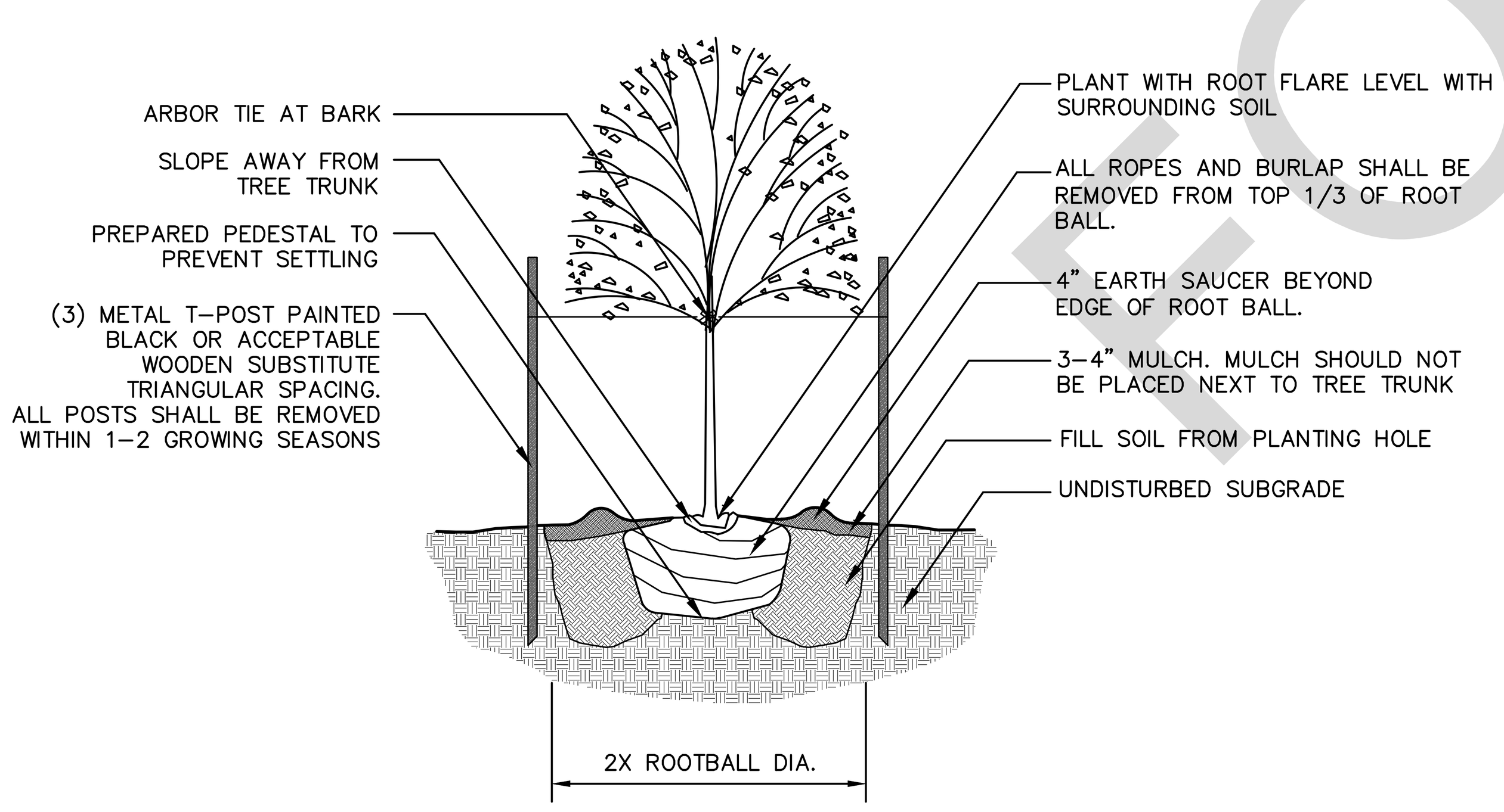
NOTES:
1. ALL DISTURBED AREA NOT OTHERWISE SPECIFIED WITH GROUNDCOVER SHALL BE PLANTED WITH TURF SEED - DROUGHT TOLERANT DWARF FESCUE BLEND.
2. PLANTING BEDS AND TREE PLANTING AREAS SHALL RECEIVE BLACK ROCK GRANITE AT A DEPTH OF 4" WITH SHOVEL-CUT EDGE OR STEEL EDGING AS CALLED OUT ON PLAN.
3. AREAS OF TURF SEED PLANTED ON SLOPES EXCEEDING 4:1 (SEE GRADING PLANS) SHALL BE INSTALLED WITH AN EROSION CONTROL MEASURERS PER MANUFACTURER'S SPECIFICATIONS.
4. QUANTITIES LISTED IN THE PLANT LIST SCHEDULE ARE FOR ESTIMATES ONLY. TREES, SHRUBS, AND GROUND COVER OF CONTRACT QUANTITIES SHALL BE THE NUMBER OF ITEMS SHOWN ON THE DRAWINGS.
5. LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL QUANTITIES SHOWN ON THESE PLANS BEFORE PRICING THE WORK. ANY DIFFERENCE IN QUANTITIES SHOULD BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR CLARIFICATION.
6. CONTRACTOR SHALL REFER TO ENGINEERING DRAWINGS FOR ANY AND ALL EXISTING AND/OR PROPOSED UTILITIES. IF THERE ARE ANY DISCREPANCIES, CONFLICTS AND/OR DEVIATIONS BETWEEN THE LANDSCAPE DRAWINGS AND THE EXISTING OR PROPOSED CONDITIONS, THE CONTRACTOR IS TO CONTACT THE LANDSCAPE ARCHITECT IMMEDIATELY.
7. ALL UNDERGROUND UTILITIES ARE TO BE FIELD-VERIFIED PRIOR TO COMMENCEMENT OF WORK.
8. LANDSCAPE CONTRACTOR SHALL SUBMIT SPECIFICATIONS OF SEED, SOIL, AND MULCH, AND REPRESENTATIVE PHOTOS OF TREES AND SHRUBS, TO LANDSCAPE ARCHITECT FOR REVIEW AND ACCEPTANCE PRIOR TO COMMENCEMENT OF WORK. SUBSTITUTIONS MUST BE APPROVED BY LANDSCAPE ARCHITECT.
9. INSTALLATION OF LANDSCAPING SHALL TAKE PLACE DURING EITHER THE SPRING (MARCH 15 - JUNE 15) OR FALL (SEPTEMBER 15-DECEMBER 1) PLANTING SEASON AND WITH WATER AVAILABLE FOR IRRIGATION PURPOSES.
10. IF UNDERGROUND OBSTRUCTIONS ARE ENCOUNTERED IN EXCAVATION FOR PLANTING OF TREES OR SHRUBS, NOTIFY LANDSCAPE ARCHITECT IMMEDIATELY. NEW LOCATIONS MAY BE SELECTED BY LANDSCAPE ARCHITECT OR INSTRUCTIONS MAY BE ISSUED TO DIRECT REMOVAL OF OBSTRUCTIONS. PROCEED WITH WORK ONLY AFTER APPROVAL OF LANDSCAPE ARCHITECT.
11. LANDSCAPE CONTRACTOR SHALL REMOVE ALL CONSTRUCTION DEBRIS AND MATERIALS INJURIOUS TO PLANT GROWTH FROM PLANTING PITS AND BEDS PRIOR TO BACKFILLING WITH PLANTING MIX.
12. A PRE-EMERGENT HERBICIDE SHALL BE APPLIED TO ALL PLANTING BEDS PRIOR TO THE INSTALLATION OF ANY PLANT MATERIAL.
13. AMEND SOIL IN PLANTING BEDS TO A DEPTH OF 12 INCHES USING A 1:1 MIX OF ON-SITE SOIL AND ORGANIC-RICH COMPOST. ENSURE THOROUGH MIXING FOR OPTIMAL NUTRIENT DISTRIBUTION AND SOIL STRUCTURE IMPROVEMENT.
14. LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR WATERING AND GENERAL HEALTH OF ALL PLANT MATERIALS UNTIL FINAL ACCEPTANCE. ANY MATERIAL WHICH DIES PRIOR TO ACCEPTANCE OF WORK SHALL BE PROMPTLY REMOVED AND REPLACED.
15. LANDSCAPE BEDS SHALL BE FREE OF WEEDS AND VOLUNTEER PLANT MATERIAL.
16. LANDSCAPE CONTRACTOR SHALL COMPLETELY GUARANTEE ALL WORK FOR A PERIOD OF ONE YEAR BEGINNING AT THE DATE OF ACCEPTANCE. CONTRACTOR WILL MAKE ALL REPLACEMENTS PROMPTLY UNDER THIS GUARANTEE (AS PER DIRECTION OF OWNER).

TMA - LANDSCAPE CALCULATIONS

BUILDING COVERAGE (SF)	PARKING SPACES	LANDSCAPE ISLANDS AREA (SF)	PARKING LOT AREA (SF)	PARKING AREA LANDSCAPE ISLAND % (5% MIN.)	R/W LENGTH (LF)		(1) LANDSCAPE STRIP BETWEEN PARKING/LOADING AREA AND R/W	(1) STREET FRONTAGE TREES	(2) STREET FRONTAGE SHRUBS	(3) OPEN YARD AREA PROVIDED (SF)	(3A) OPEN YARD AREA TREES	(3B) OPEN YARD AREA SHRUBS	(4A) BUFFER TREES: DECIDUOUS / ORNAMENTAL / EVERGREEN	(4B) BUFFER SHRUBS	(5) PARKING LOT SCREENING SHRUBS
12,000	6	745	4,860	15.33%	N/A	REQUIRE	N/A	N/A	N/A	70,988	14	30	N/A	N/A	N/A
						PROVIDE	N/A	N/A	N/A		14	30 +	N/A	N/A	N/A

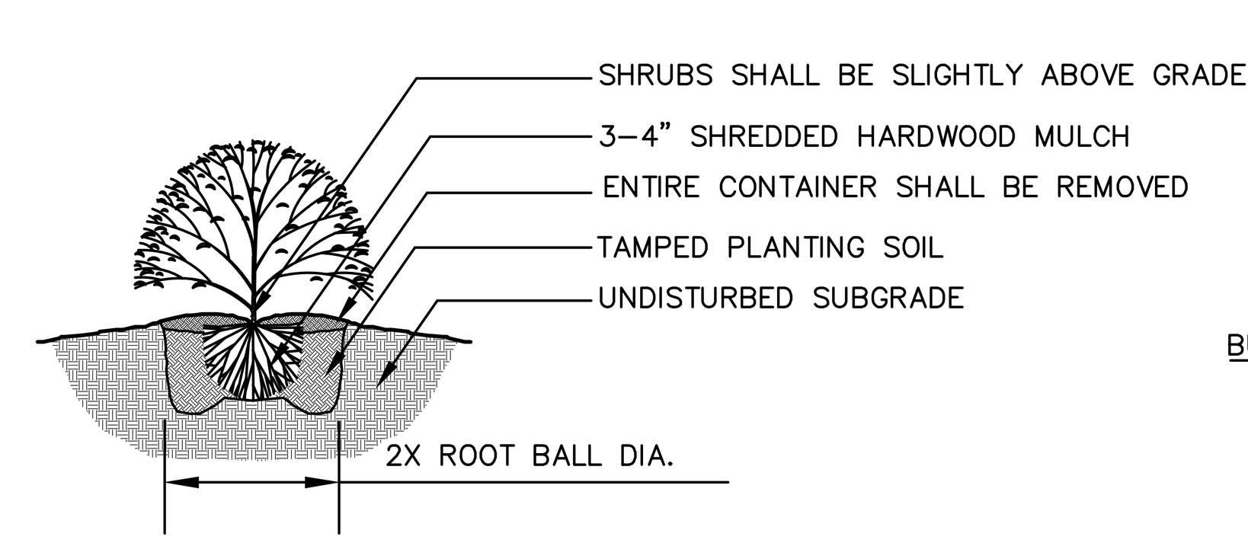
LANDSCAPE REQUIREMENTS DESCRIPTIONS
(1) ANY PARKING OR LOADING AREA VISIBLE FROM A STREET SHALL BE SEPARATED FROM THE STREET RIGHT-OF-WAY WITH A LANDSCAPE STRIP AT LEAST 20' WIDE, PLANTED WITH 1 TREE PER 30 LF OF STREET
(2) ANY PARKING OF LOADING AREA LANDSCAPE STRIP SHALLL BE PLANTED WITH ONE (1) SHRUB FOR EVERY 20 LF OF STREET FRONTAGE.
(3A) IN ADDITION TO STREET FRONTAGE TREES, ONE (1) TREE SHALL BE PROVIDED FOR EVERY 5,000 SF OF OPEN YARD AREA
(3B) OPEN YARD AREAS SHALL BE LANDSCAPED WITH TWO (2) SHRUBS PER 5,000 SF OF TOTAL LOT AREA.
(4) A 20' WIDE BUFFER SCREEN SHALL BE PROVIDED PER PLAN, IN THE FORM OF (4A) 1 SHADE TREE PER 1,000 SF; 1 ORNAMENTAL TREE PER 500 SF; 1 EVERGREEN TREE PER 500; AND (4B) 1 SHRUB PER 500 SF
(5) A HEDGE CONSISTING OF AT LEAST 12 SHRUBS PER 40 LINEAR FEET

LANDSCAPE DETAILS



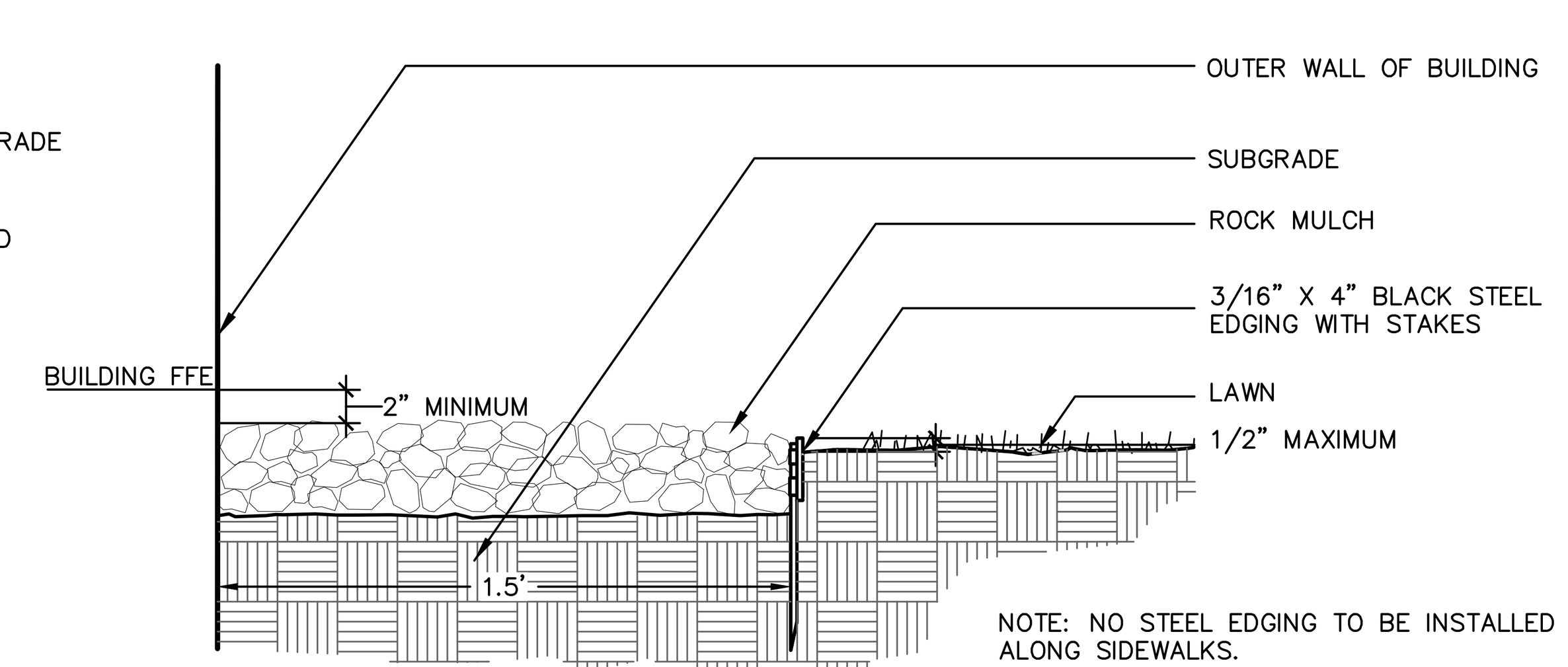
NOTES:
1. DO NOT ALLOW AIR POCKETS TO FORM WHEN BACKFILLING
2. IN AREAS OF TURF, SURROUND BED WITH 6' DIAMETER OF MULCH

1 Deciduous Tree Planting Detail
not to scale



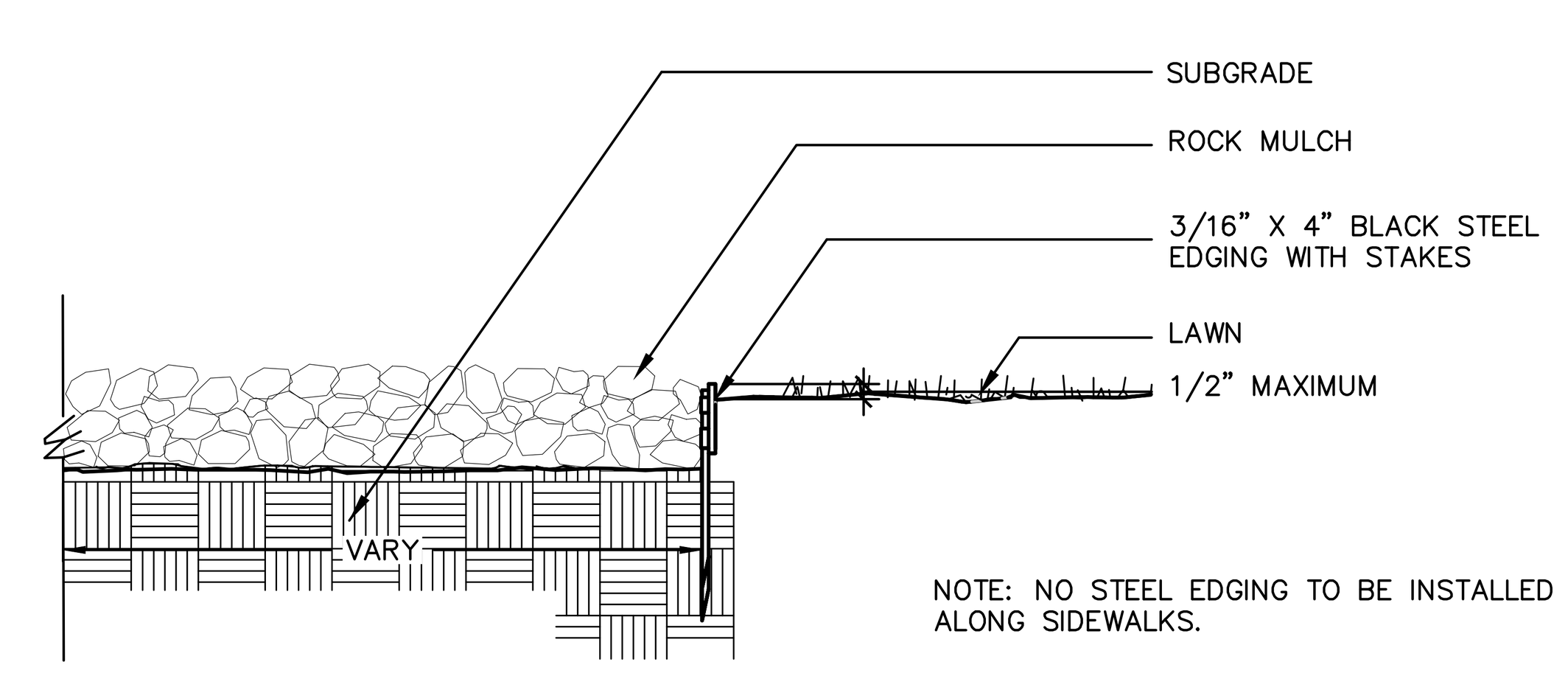
NOTES:
1. MINIMUM ROOT SPREAD TO BE IN ACCORDANCE WITH ANLA STANDARDS
2. PRUNE DAMAGED LIMBS OR ROOTS AFTER INSTALLATION
3. MAKE SURE ROOTS DO NOT DRY OUT DURING INSTALLATION
4. SOAK GENEROUSLY TO COMPACT AND SETTLE

2 Shrub Planting Detail
not to scale



NOTE: NO STEEL EDGING TO BE INSTALLED ALONG SIDEWALKS.

3 Steel Edging @ Rock Mow Strip
not to scale



NOTE: NO STEEL EDGING TO BE INSTALLED ALONG SIDEWALKS.

4 Steel Edging Detail
not to scale

N
0' 10' 20' 40'
SCALE IN FEET

CMT
1627 MAIN STREET, SUITE 600
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WELLNER ARCHITECTS + engineers
1627 MAIN STREET, SUITE 100
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1100 MAIN ST, STE 1800
KANSAS CITY, MO 64105

olsson
1301 BURLINGTON
NORTH KANSAS CITY, MO 64116

TM AVIATION HANGER AT LXT
LEE'S SUMMIT, MISSOURI

STATE OF MISSOURI — JACOB HODSON — NUMBER PLA-2023000 — PROFESSIONAL LANDSCAPE ARCHITECT — 03/21/25

March 21, 2025

MARK	DATE	DESCRIPTION

PROJECT NO:	PERMIT SET
PROJECT NO:	A2405133
CAD FILE:	
DESIGNED BY:	QEM
DRAWN BY:	QEM
CHECKED BY:	JIH
APPROVED BY:	APR
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SHEET TITLE	

LANDSCAPE PLAN

L100
SHEET OF

DESIGN CRITERIA

1. BUILDING CODE: INTERNATIONAL BUILDING CODE (IBC), 2018 EDITION, INCLUDING LOCAL SUPPLEMENTS. THE STRUCTURE IS CLASSIFIED AS A RISK CATEGORY II FACILITY.

2. DEAD AND LIVE LOADS:

LOCATION	UNIFORM LIVE LOAD	CONCENTRATED LIVE LOAD	TOTAL DEAD LOAD*
ROOF	20 PSF	----------	15 PSF
SLAB ON GRADE	100 PSF	11,000 LB	----------
MEZZANINE	80 PSF	----------	60 PSF
STAIRS	100 PSF	300 LB **	35 PSF

*TOTAL DEAD LOAD INCLUDES WEIGHT OF STRUCTURAL ELEMENTS.
** CONCENTRATED LOAD ON STAIR TREAD SHALL BE ON AN AREA OF 2"X2".

3. SNOW LOADS

GROUND SNOW LOAD, P_g:	20 PSF
FLAT ROOF SNOW LOAD, P_f:	15.4 PSF
SNOW EXPOSURE FACTOR, C_e:	1.0
SNOW IMPORTANCE FACTOR, I_s:	1.0
THERMAL FACTOR, C_t	1.1
ROOF SLOPE FACTOR, C_s	1.0

UNBALANCED SNOW SHALL BE IN ACCORDANCE WITH THE CODE.

4. WIND:

BASIC WIND SPEED, V:	109 MPH (3 SECOND GUST)
ALLOWABLE STRESS DESIGN WIND SPEED, V_{asd}:	85 MPH (3 SECOND GUST)
WIND EXPOSURE:	C
INTERNAL PRESSURE COEF.:	+/-0.18

COMPONENTS AND CLADDING PRESSURE SHALL BE USED FOR DESIGN OF EXTERIOR WALLS, WINDOWS, DOORS, AND MISCELLANEOUS MATERIALS NOT SPECIFICALLY SHOWN ON THE PLANS.
FOR COMPONENTS AND CLADDING DESIGN WIND PRESSURES, REFERENCE COMPONENT AND CLADDING TABLE.

5. SEISMIC:

SITE CLASS:	D
SEISMIC DESIGN CATEGORY:	B
SEISMIC IMPORTANCE FACTOR:	1.0
S_S:	0.099
S_1:	0.068
S_{DS}:	0.106
S_{D1}:	0.108
SEISMIC FORCE RESISTING SYSTEM:	STEEL SYSTEMS NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE
RESPONSE MODIFICATION COEF., R	3
METHOD OF ANALYSIS:	EQUIVALENT LATERAL FORCE
C_S:	0.035

6. RAIN INTENSITY (DURATION/100 YEAR MEAN RECURRENCE):

15 MINUTE: 7.48 INCHES PER HOUR
60 MINUTE: 3.53 INCHES PER HOUR

PLAN MARKS

- GB# — GRADE BEAM MARK, REF. GRADE BEAM SCHEDULE
- WF# — WALL FOOTING MARK, REF. WALL FOOTING SCHEDULE
- F# — SPREAD FOOTING MARK, REF. SPREAD FOOTING SCHEDULE
- HSS6X6X1/4 / BP-1, P-1 — COLUMN SIZE; PILASTER TYPE, REF. PILASTER DETAILS; BASE PLATE TYPE, REF. BASE PLATE DETAILS
- BRACED FRAME ABOVE, REF. FRAMING ELEVATIONS & BRACED FRAME SCHEDULE
- BRACED FRAME BELOW, REF. FRAMING ELEVATIONS & BRACE FRAME SCHEDULE
- MOMENT CONN., REF. FRAMING ELEVATIONS & MOMENT CONN. SCHEDULE
- W16X26 (20) <3/4"> — CAMBER; # OF HEADED SHEAR CONNECTORS (3/4" DIA. U.N.O.); BEAM SIZE
- J# — JOIST MARK, REF. JOIST SCHEDULE
- L# — LINTEL MARK AND SYMBOL, REF. LINTEL SCHEDULE
- 1 / 8' - 0" — SHEAR WALL MARK, REF. SHEAR WALL SCHEDULE (POINTS TO SHEATHED SIDE); SHEAR WALL LENGTH
- H# — HEADER MARK, REF. HEADER SCHEDULE
- STEP IN SURFACE ELEVATION
- SLOPE IN SURFACE ELEVATION

MATERIAL LEGEND

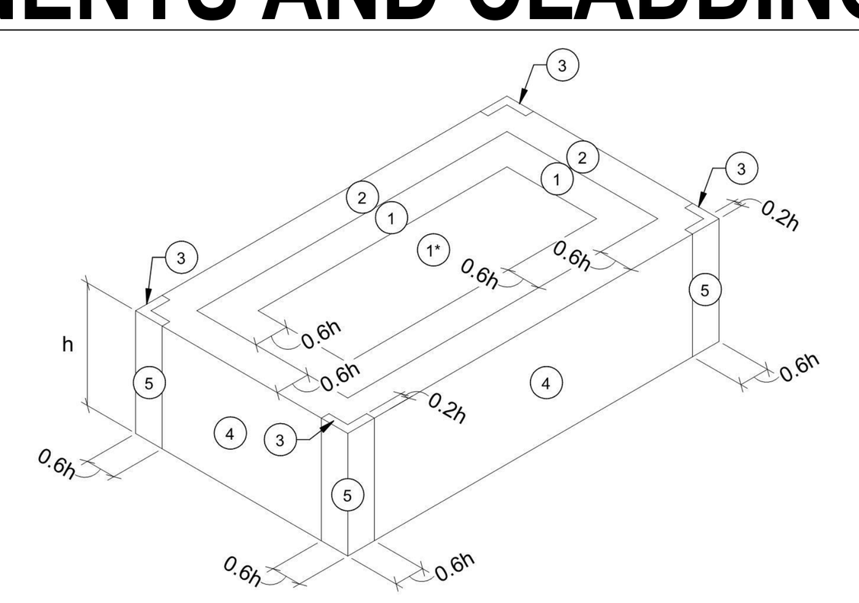
- LOAD BEARING CMU (NON-LOAD BEARING CMU HALFTONED)
- EARTH
- EXISTING
- GROUT/SAND/GRANULAR FILL
- PRECAST CONCRETE
- CONCRETE
- NOT IN SCOPE (E.G. VENEER, PAVING, ETC.)
- STEEL (IN SECTION)
- GRATING

ABBREVIATIONS

#	NUMBER OR POUNDS	I.J.	ISOLATION JOINT
(E)	EXISTING	IN	INCH(ES)
@	AT	INT.	INTERIOR
ADD'L	ADDITIONAL	K	KIPS
ALT.	ALTERNATE	L(L)	LIVE (LOAD)
APPROX.	APPROXIMATE	LBS	POUNDS
ARCH.	ARCHITECTURAL	LLH	LONG LEG HORIZONTAL
B.O.	BOTTOM OF	LLV	LONG LEG VERTICAL
BLDG.	BUILDING	LOC.	LOCATION
BOT.	BOTTOM	MANUF.	MANUFACTURER
BRG.	BEARING	MAX.	MAXIMUM
C.J.	CONTROL JOINT	MECH.	MECHANICAL
CFS	COLD-FORMED STEEL	MIN.	MINIMUM
CL	CENTERLINE	MISC.	MISCELLANEOUS
CLR.	CLEAR	MTL.	METAL
CMU	CONCRETE MASONRY UNIT	N.A.	NOT APPLICABLE
COL.	COLUMN	N.S.	NEAR SIDE
COMP.	COMPOSITE	N.T.S.	NOT TO SCALE
CONC.	CONCRETE	O.C.	ON CENTER
CONN.	CONNECTION	O.D.	OUTSIDE DIAMETER
CONST.	CONSTRUCTION	O.H.	OVERHEAD
CONT.	CONTINUOUS	OPP.	OPPOSITE
COORD.	COORDINATE	P.A.F.	POWDER ACTUATED FASTENER
CTR.	CENTER	PCF	POUNDS PER CUBIC FOOT
D(L)	DEAD (LOAD)	PEMB	PRE-ENGINEERED METAL BUILDING
DBA	DEFORMED BAR ANCHOR	PERP.	PERPENDICULAR
DEMO.	DEMOLITION / DEMOLISH	PL.	PLATE
DIA.	DIAMETER	PLF	POUNDS PER LINEAR FOOT
DIM.	DIMENSION	PSF	POUNDS PER SQUARE FOOT
DWG.	DRAWING	PSI	POUNDS PER SQUARE INCH
DWL.	DOWEL	QTY.	QUANTITY
E(L)	EARTHQUAKE/SEISMIC (LOAD)	RAD.	RADIUS
E.G.	FOR EXAMPLE	REF.	REFERENCE
E.J.	EXPANSION JOINT	REINF.	REINFORCING
E.O.R.	ENGINEER OF RECORD	REQ'D	REQUIRED
EA.	EACH	REV.	REVISION/REVISED
EL.	ELEVATION	S.J.	SAWN JOINT
ELEC.	ELECTRICAL	S.S.	STAINLESS STEEL
ELEV.	ELEVATOR	SCHED.	SCHEDULE
EQ.	EQUAL	SF	SQUARE FEET/FOOT
EQUIP.	EQUIPMENT	SIM.	SIMILAR
ETC.	ET CETERA	SPA.	SPACE(S)
EXIST.	EXISTING	SQ.	SQUARE
EXP.	EXPANSION	SSE	SPECIALTY STRUCTURAL ENGINEER
EXT.	EXTERIOR	STD.	STANDARD
F.S.	FAR SIDE	STIFF.	STIFFENER
F.V.	FIELD VERIFY	STRUCT.	STRUCTURAL
FDN.	FOUNDATION	T.O.	TOP OF
FT	FEET / FOOT	T/C	TENSION/COMPRESSION
FTG.	FOOTING	TEMP.	TEMPORARY
G.C.	GENERAL CONTRACTOR	TYP.	TYPICAL
GA.	GAUGE	U.N.O.	UNLESS NOTED OTHERWISE
GALV.	GALVANIZED	VERT.	VERTICAL
GEN.	GENERAL	W(L)	WIND (LOAD
H.D.G.	HOT-DIP GALVANIZED	W/	WITH
HD. ST.	HEADED STUD	W/C	WATER / CEMENT RATIO
HORIZ.	HORIZONTAL	WP	WORKING POINT
I.D.	INSIDE DIAMETER	WT.	WEIGHT
I.E.	INVERT ELEVATION	WWF	WELDED WIRE FABRIC

STRUCTURAL SHEET INDEX

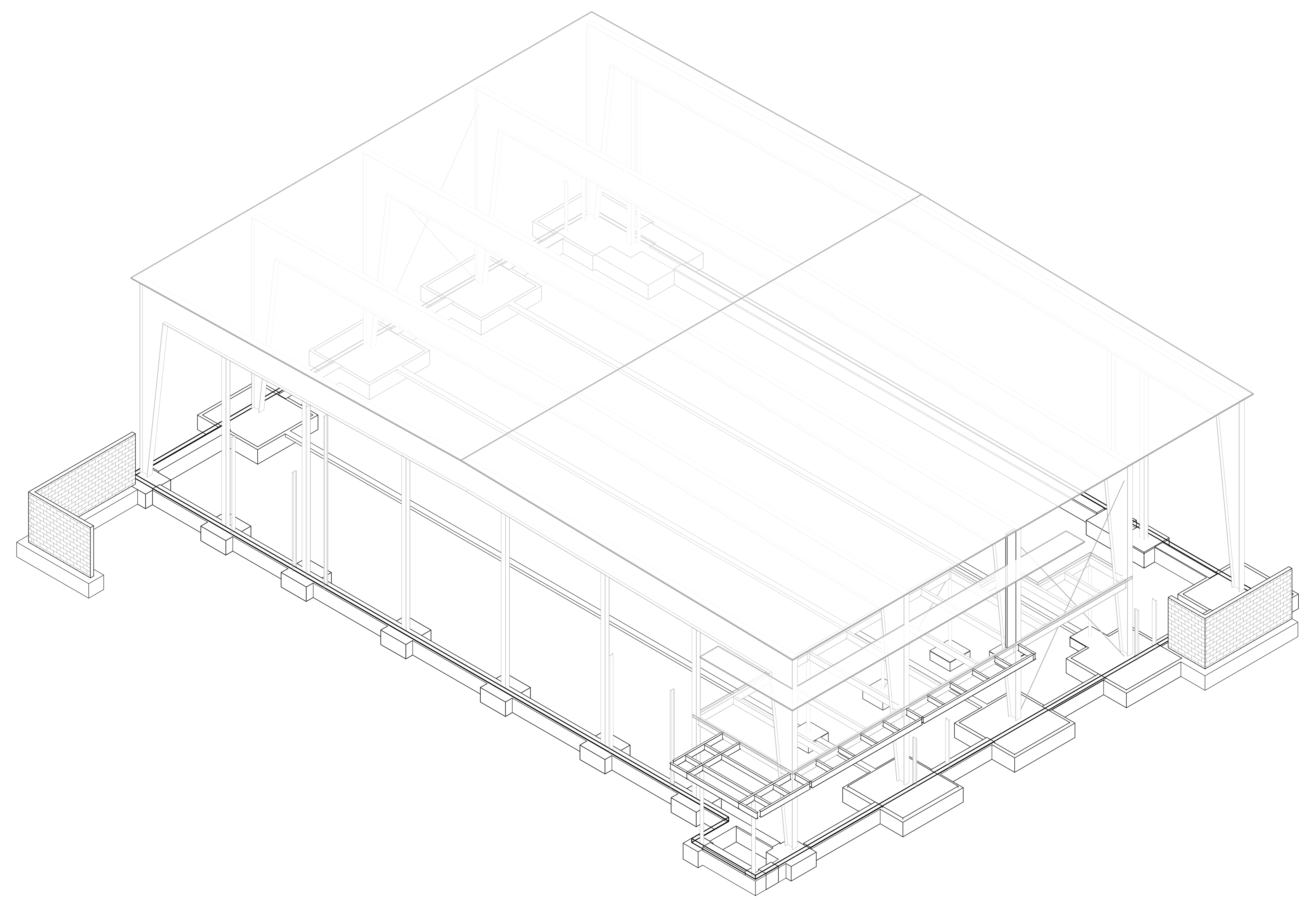
COMPONENTS AND CLADDING TABLE



NOTES:

1. ALL WIND PRESSURES AND LOAD COMBINATIONS SHALL BE PROVIDED AND APPLIED PER ASCE 7-16.
2. PRESSURES SHOWN ARE APPLIED NORMAL TO THE SURFACE.
3. PLUS AND MINUS SIGNS SIGNIFY PRESSURES ACTING TOWARD AND AWAY FROM THE SURFACES, RESPECTIVELY.
4. FOR EFFECTIVE WIND AREAS BETWEEN THOSE GIVEN, STRAIGHT LINE INTERPOLATION MAY BE USED; OTHERWISE, USE THE VALUE ASSOCIATED WITH...
5. IF OVERHANGS EXIST, THE LESSER HORIZONTAL DIMENSION OF THE BUILDING SHALL NOT INCLUDE ANY OVERHANG DIMENSION, BUT THE EDGE DISTANCE, 'a', SHALL BE MEASURED FROM THE OUTSIDE EDGE OF THE OVERHANG.
6. h = MEAN ROOF HEIGHT IN FT., EXCEPT THAT EAVE HEIGHT SHALL BE USED FOR ROOF ANGLES < 10°.
7. A NET ROOF DEAD LOAD OF 15 PSF MAY BE ASSUMED TO RESIST JOIST UPLIFT FORCES.
8. C&C LOADS SHALL BE USED BY THE STEEL JOIST SUPPLIER AND ANY OTHER MANUFACTURER TO DETERMINE WALL DESIGNS, ROOF DESIGNS,...

PRESSURE (PSF)	WALL AND ROOF C&C PRESSURE											
	KEY AREA 1		KEY AREA 1*		KEY AREA 2		KEY AREA 3		KEY AREA 4		KEY AREA 5	
	< 10 SF	> 100 SF	< 10 SF	> 100 SF	< 10 SF	> 100 SF	< 10 SF	> 100 SF	< 10 SF	> 100 SF	< 10 SF	> 100 SF
POSITIVE	16	16	16	16	16	16	16	16	28.2	24.1	28.2	24.1
NEGATIVE	-49.1	-38.4	-28.2	-28.2	-64.8	-51	-88.3	-60.6	-30.6	-26.4	-37.6	-29.3



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AT LXT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **ZMJ** Checked By **WTL**

KEY PLAN

NORTH

SHEET NAME

STRUCTURAL COVER SHEET

SHEET NUMBER

S-000

PROJECT NUMBER

2404

CONSTRUCTION DETAILS FOR STRUCTURAL MOVEMENT

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ACCOMMODATIONS IN GLAZING, ARCHITECTURAL FINISHES, PLUMBING, HVAC, AND ELECTRICAL ELEMENTS TO PREVENT DAMAGE DUE TO DEFLECTION OF ROOF, WALL AND FLOOR MEMBERS.

2. VERTICAL DEFLECTIONS DUE TO GRAVITY LOADS:

	LIVE/SNOW/WIND	TOTAL
PREFAB METAL BUILDING GIRDERS (RIGID FRAMES)	L/180	L/120
PREFAB METAL BUILDING PURLINS	L/180	L/120
PREFAB METAL BUILDING MEZZANINE FRAMING	L/360	L/240

*AFTER THE FLOOR CONCRETE IS POURED. DO NOT ATTACH ANY ELEMENT TO A FLOOR SYSTEM BEFORE THE FLOOR SLAB IS POURED AND SHORING IS REMOVED.

3. HORIZONTAL DEFLECTIONS OF INDIVIDUAL MEMBERS:

   A. EXTERIOR WALLS — WIND* OR SEISMIC

WITH METAL PANEL FINISHES	L/180
WITH GLASS FINISHES	L/175 (MAX 3/4")

   B. INTERIOR WALLS

WITH PLASTER OR STUCCO FINISHES	L/360
ALL OTHERS	L/240

4. DEFLECTION LIMITS OF WHOLE BUILDING FRAME DUE TO WIND* (W) OR SEISMIC (E):

   A. THE BUILDING HAS BEEN DESIGNED FOR A LIMITED DRIFT FOR WIND

   PREFAB METAL BUILDING FRAME H/240

5. VIBRATION

   A. THIS STRUCTURE HAS NOT BEEN ANALYZED FOR VIBRATION CAUSED BY FOOTFALL, EQUIPMENT, ETC.

DELEGATED ENGINEERING OF STRUCTURAL COMPONENTS & SYSTEMS

1. ALL STRUCTURAL COMPONENTS & SYSTEMS SPECIFIED TO BE DELEGATED SHALL BE DESIGNED AND SEALED BY A SPECIALTY STRUCTURAL ENGINEER (SSE) AND SHALL MEET THE GUIDELINES PUBLISHED BY THE COUNCIL OF AMERICAN STRUCTURAL ENGINEERS (CASE) FOR DELEGATED SPECIALTY STRUCTURAL ENGINEERING.
2. REFERENCE THE GENERAL NOTES & DRAWINGS FOR BUILDING CODE, SERVICE CRITERIA, AND DESIGN LOADS.
3. SUBMITTALS FOR DELEGATED COMPONENTS & SYSTEMS SHALL INCLUDE THE FOLLOWING:
   - A. A FULL DESIGN ANALYSIS, INCLUDING CALCULATIONS FOR GRAVITY AND LATERAL LOADS, WITH A SEALED COVER SHEET IDENTIFYING THE PROJECT NAME AND ADDRESS.
   - B. THE SSE THAT SEALED THE CALCULATIONS SHALL ALSO SEAL THE FABRICATION, PLACING, AND ERECTION PLANS. EACH PLAN SHALL IDENTIFY THE PROJECT NAME AND ADDRESS.
   - C. IF THE SSE THAT SEALED THE CALCULATIONS AND PLANS IS AN EMPLOYEE OF A COMPANY, THE COMPANY'S CERTIFICATE OF AUTHORIZATION NUMBER SHALL BE INCLUDED ON THE SUBMITTALS. BOTH THE SSE SEAL AND THE CERTIFICATE OF AUTHORIZATION SHALL BE ISSUED BY THE STATE IN WHICH THE PROJECT IS LOCATED, INCLUDING PROJECTS ON FEDERAL LAND.
4. THE CONTRACTOR SHALL REVIEW THE SUBMITTAL FOR QUANTITIES AND DIMENSIONS AND VERIFY THAT THE ABOVE INFORMATION HAS BEEN INCLUDED IN THE SUBMITTAL.
5. NO SUBMITTAL WILL BE REVIEWED UNLESS ALL OF THE ABOVE INFORMATION IS INCLUDED. THE ENGINEER OF RECORD SHALL NOT BE RESPONSIBLE FOR DELAYS CAUSED BY INCOMPLETE SUBMITTALS.
6. PRE-FABRICATED METAL BUILDING
   - A. THE PRELIMINARY FOUNDATION DESIGN LOADS ARE SHOWN ON THE PLANS. IF THE FINAL CERTIFIED LOADS ARE MORE THAT THE PRELIMINARY LOADS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REDESIGN COST AND THE COST FOR CHANGES TO THE FOUNDATION.
   - B. COLLATERAL DEAD LOAD IS APPLIED ON ALL ROOF MEMBERS INCLUDING PURLINS AND FRAMES. COLLATERAL LOADS SHALL NOT BE USED TO REDUCE WIND LOAD UPLIFT.
   - C. COLUMN BASE PLATES SHALL BE DESIGNED AS "PINNED" TO PROVIDE UNIFORM CONCRETE CONTACT PRESSURE IN ACCORDANCE WITH AISC DESIGN CRITERIA. MINIMUM COLUMN BASE PLATE THICKNESS IS 0.75 INCHES.
   - D. RIGID FRAME MEMBERS SHALL HAVE SOLID FLAT WEBS (CORRUGATED WEBS ARE PROHIBITED) WITH A MINIMUM THICKNESS OF 0.1875" AND SOLID FLAT FLANGES WITH A MINIMUM THICKNESS OF 0.375" AND A MINIMUM WIDTH OF 5.0". END PLATE CONNECTIONS SHALL HAVE A MINIMUM THICKNESS OF 0.75" AND THE BOLTS CONNECTING THE MEMBERS SHALL BE ASTM A325 AND TENSION INDICATING.
   - E. BRACING FOR WIND OR SEISMIC SHALL BE SOLID RODS (CABLE IS NOT ALLOWED).
7. THE PRE-FABRICATED METAL BUILDING SYSTEM SHALL MEET ANY ADDITIONAL OWNER INSURANCE REQUIREMENTS (SUCH AS FM GLOBAL).
8. STEEL STAIRS, HANDRAILS/GUARDRAILS
   - A. STAIR SUPPLIER SHALL DESIGN, DETAIL, AND ERECT STAIRS AND HANDRAILS/GUARDRAILS IN ACCORDANCE WITH IBC.
   - B. COORDINATE STAIR ASSEMBLY AND ATTACHMENTS WITH ADJACENT FRAMING ELEMENTS SHOWN IN THE STRUCTURAL AND ARCHITECTURAL DRAWINGS.
   - C. ATTACHMENTS TO THE PRIMARY STRUCTURE SHALL BE DESIGNED WITH PINNED CONNECTIONS.
   - D. STAIR STRINGERS SHALL BE C12X20.7 MINIMUM UNLESS NOTED OTHERWISE. THE USE OF PLATE STRINGERS IS NOT PERMITTED.
   - E. INTERIOR STAIR TREADS SHALL BE CONCRETE FILLED PANS W/ CLOSED RISERS.
9. IN ADDITION TO THE STRUCTURAL AND MISCELLANEOUS STEEL SHOWN ON THE DRAWINGS, THE CONTRACTOR SHALL INCLUDE IN THE BID THE COST OF MATERIALS, LABOR, OVERHEAD, PROFIT AND ALL INCIDENTALS NECESSARY FOR AN ADDITIONAL 2,000 LBS. OF MISCELLANEOUS STRUCTURAL STEEL BEYOND THAT SHOWN ON THE DRAWINGS TO BE FIELD FABRICATED AND INSTALLED AS DIRECTED BY THE ARCHITECT/ENGINEER.

SOIL PREPARATION AND FOUNDATIONS

1. THE FOUNDATION SYSTEM IS DESIGNED AS RECOMMENDED IN THE GEOTECHNICAL INVESTIGATION PREPARED BY KRUGER TECHNOLIGES, INC., JOB NO.224158G. A COPY IS IN THE SPECIFICATIONS OR IS AVAILABLE FOR INSPECTION AT THE ARCHITECT'S PLACE OF BUSINESS.
2. REMOVE TOP SOIL CONTAINING ORGANIC MATERIAL AND PREPARE THE BUILDING PAD IN ACCORDANCE WITH THE CIVIL ENGINEERING PLANS, SPECIFICATIONS, AND GEOTECHNICAL INVESTIGATION.
3. REMOVE SOIL AS REQUIRED TO ALLOW FOR A LOW VOLUME CHANGE ZONE 18" THICK UNDER THE FLOOR SLAB AND DRAINAGE MATERIAL. FILL TO SUBGRADE ELEVATION SHOWN ON THE DRAWINGS WITH NON-EXPANSIVE FILL OR STABILIZED SOIL PER SPECIFICATION.
4. DO NOT BACKFILL FOUNDATIONS/BASEMENT WALLS UNTIL THE RESTRAINING SLABS OR ADEQUATE BRACING ARE IN PLACE. ALL BACKFILL SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH THE SPECIFICATION.
5. SOIL SUPPORTED FOUNDATIONS:
   - A. DESIGN BEARING PRESSURE (NET) IS 3000 PSF FOR FOUNDATIONS BEARING ON UNDISTURBED SOIL OR APPROVED ENGINEERED FILL MATERIAL. BEARING MATERIALS SHALL BE VERIFIED BY A LICENSED GEOTECHNICAL ENGINEER.
   - B. ALL FOUNDATIONS ARE DESIGNED WITH EARTH FORMED SIDES; THE TOP 7-1/4" OF THE FOUNDATION SHALL BE FORMED TO THE DESIGN DIMENSION WHEN VISIBLE AFTER CONSTRUCTION IS COMPLETE. THE CONSTRUCTED FOUNDATION DIMENSION SHALL BE NO LESS THAN THE DESIGN DIMENSION, AND NO MORE THAT 6" GREATER THAN THE DESIGN DIMENSION.
   - C. ALL FOOTINGS MUST EXTEND TO A MINIMUM DEPTH OF 36 INCHES BELOW FINISHED GRADE TO REDUCE THE POTENTIAL FOR ADVERSE EFFECTS DUE TO MOISTURE VARIATIONS OF THE NEAR SURFACE SOILS AND/OR FROST. ENSURE PROPER GRADING AND DRAINAGE TO DIRECT WATER AWAY FROM THE FOUNDATION. NOTIFY THE ENGINEER OF RECORD IF SITE CONDITIONS PREVENT COMPLIANCE WITH THESE REQUIREMENTS.

CONCRETE

1. ALL CONCRETE HAS BEEN DESIGNED IN ACCORDANCE WITH ACI 318 AND THE BUILDING CODE, AND IN CONFORMANCE WITH THE CURRENT "ACI MANUAL OF CONCRETE PRACTICE."
2. THE CONCRETE REQUIREMENTS ARE:
   - A. FINE AGGREGATE FOR NORMAL WEIGHT CONCRETE SHALL MEET ASTM C33.
   - B. COARSE AGGREGATES FOR NORMAL WEIGHT CONCRETE SHALL CONFORM TO ASTM C33. COARSE AGGREGATES SHALL BE NO LESS THAN 50% OF THE TOTAL AGGREGATE BY WEIGHT, UNLESS APPROVED BY THE ENGINEER PRIOR TO MIX DESIGN SUBMITTAL.
   - C. THE CONTRACTOR OR MIX DESIGNER SHALL SPECICFY AN APPROPRIATE SLUMP PER ACI 117 FOR THE APPLICATION AS NEEDED FROM PUMPING, WORKABILITY, AND FINISHING. IF CONCRETE IS PLACED THROUGH A FUNNEL HOPPER AT THE TOP OF A DEEP FOUNDATION ELEMENT, THE MIX SHALL HAVE A SLUMP BETWEEN 4" AND 8".
   - D. THE CONCRETE COMPRESSIVE STRENGTH, f'_c, SHALL BE BASED ON 28-DAY TESTS UNLESS NOTED OTHERWISE.
   - E. REFER TO CONCRETE MIX DESIGN REQUIREMENTS TABLE FOR MIX DESIGN.

CONCRETE MIX DESIGN REQUIREMENTS

LOCATION	COMPRESSIVE STRENGTH, f'c (PSI)	TARGET AIR CONTENT	EXPOSURE CLASSES				NOTES
			F	C	S	W	
SPREAD FOOTINGS	4500	6%	F2	C1	S0	W1	
GRADE BEAMS/STEM WALLS	4500	6%	F2	C1	S0	W1	
INTERIOR SLAB ON GRADE	4000	NR	F0	C0	S0	W0	FLEXURAL STRENGTH OF 650 PSI WHERE SUBJECT TO VEHICLE TRAFFIC.
SLAB ON DECK	4000	NR	F0	C0	S0	W0	

3. ADMIXTURES, HARDENERS, & CURING COMPOUNDS
   - A. ALL CONCRETE ADMIXTURES SHALL, WHEN MIXED INTO CONCRETE, BE NON-CHLORIDE AND NON-CHLORIDE FORMING.
   - B. ALL ADMIXTURES MUST CONFORM TO ASTM C 494 AND C 260.
   - C. CONCRETE CURING COMPOUND AND SEALERS SHALL MEET ASTM C 309 TYPE 1 OR 1D.
   - D. USE OF "SELF CONSOLIDATING" CONCRETE MUST BE SUBMITTED FOR APPROVAL WITH THE CONCRETE MIX DESIGN.
   - E. CONCRETE PENETRATING HARDENER SEALERS SHALL BE USED ON ALL EXPOSED CONCRETE FLOORS UNLESS OTHER COATINGS ARE REQUIRED BY THE ARCHITECT.
4. MISCELLANEOUS CONCRETE DETAILS:
   - A. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" INSIDE THE FORMS OR TOOLED TO 3/4" RADIUS UNLESS NOTED OTHERWISE.
   - B. SLABS ON GRADE SHALL HAVE CONSTRUCTION JOINTS AND/OR CONTROL JOINTS (SAWN JOINTS) TO DIVIDE THE SLAB INTO PANELS, NOT TO EXCEED 144 SQUARE FEET. THE LONG DIMENSION SHALL NOT EXCEED THE SHORT DIMENSION BY MORE THAN 20%. CONTRACTOR TO SUBMIT PROPOSED LOCATIONS FOR APPROVAL.
   - C. VERTICAL CONSTRUCTION JOINTS IN ELEVATED SLABS, IF REQUIRED SHALL BE LOCATED AT MIDSPAN. ALL JOINTS SHALL BE THOROUGHLY CLEANED AND PURPOSELY ROUGHENED TO 1/4" AMPLITUDE PRIOR TO PLACING ADJACENT CONCRETE.
   - D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF ALL FORMING AND SHORING. SHORING FOR ELEVATED SLABS SHALL BE SET SO THAT ANY LOAD DUE TO THE CONCRETE OPERATIONS DOES NOT CAUSE THE FORMS TO SETTLE (SLACK, TAKE-UP, ETC.). ELEVATED SLABS THAT SPAN OVER TWENTY FIVE FEET SHALL HAVE AN ADDITIONAL SLIGHT CAMBER SET INTO THE FORMS FOR THE DEAD LOAD DEFLECTION OF THE SLAB (APPROXIMATELY L/480). SCREEDS SHALL ALSO INCORPORATE THIS CAMBER TO CREATE A FINISHED SLAB OF UNIFORM THICKNESS. ELEVATED SLABS SHALL NOT HAVE THE FORMS REMOVED WITHOUT PLACING RESHORES. IF ADDITIONAL ELEVATED SLABS WILL BE SHORED ON TOP OF PREVIOUSLY CAST ELEVATED SLABS, THE SLABS SHALL BE RESHORED IN ACCORDANCE WITH ACI.
   - E. NO ALUMINUM SHALL BE EMBEDDED IN CONCRETE. CONDUITS AND PIPING EMBEDDED IN CONCRETE WALLS, SLABS, OR BEAMS SHALL BE SPACED A MINIMUM OF FOUR DIAMETERS AND THE OUTSIDE DIAMETER SHALL BE LESS THAN 30% OF THE MEMBER THICKNESS AND PLACED BETWEEN LAYERS OF REINFORCING.
   - F. NO CONDUIT MAY BE EMBEDDED IN SLABS ON METAL DECK OR TOPPING SLABS ON PRECAST CONCRETE UNLESS SPECIFICALLY DETAILED OR NOTED OTHERWISE ON STRUCTURAL PLANS.
5. WHEN THE CONCRETE WILL HAVE MOISTURE SENSITIVE FLOOR COVERING, THE CONTRACTOR SHALL COORDINATE THE CURING TIME TO ALLOW THE MOISTURE VAPOR TRANSMISSION TO REDUCE THE LEVEL THAT THE ADHESIVE MANUFACTURER WILL GUARANTEE THE INSTALLATION. THE CONTRACTOR SHALL HAVE THE FLOOR COVERING INSTALLER TEST THE MOISTURE VAPOR TRANSMISSION OR USE AN ADHESIVE DESIGNED FOR THE RATE OF VAPOR TRANSMISSION OCCURRING AT THE TIME OF INSTALLATION.
6. IN ADDITION TO THE CONCRETE SHOWN ON THE DRAWINGS THE CONTRACTOR SHALL INCLUDE IN THE BID THE ADDITIONAL COST OF MATERIALS, LABOR, OVERHEAD, PROFIT AND ALL INCIDENTALS TO INCLUDE TRENCHING OR FORMING AS NECESSARY FOR THE PURCHASE AND INSTALLATION OF AN ADDITIONAL 4 CUBIC YARDS OF CONCRETE BEYOND THAT SHOWN ON THE DRAWINGS TO BE INSTALLED AS DIRECTED BY THE ARCHITECT/ENGINEER.

CONCRETE REINFORCING

1. MATERIALS

MATERIALS	ASTM	GRADE
REINFORCING STEEL:	A615	60
WELDED WIRE FABRIC (WWF):	A185	60 (MIN.)

2. DETAILS:
   - A. WELDING OF REINFORCING STEEL IS PROHIBITED UNLESS NOTED OTHERWISE. WHEN WELDING IS APPROVED, WELDING SHALL BE IN ACCORDANCE WITH AWS D1.4 "WELDING REINFORCING STEEL, ETC."
   - B. WELDED WIRE FABRIC SHALL BE FURNISHED IN FLAT SHEETS.
   - C. SHOP DRAWINGS SHALL BE SUBMITTED WITH REINFORCING STEEL IN ACCORDANCE WITH ACI 315.
   - D. WHEN MECHANICAL SPLICES ARE INDICATED ON THE PLANS, THE SPLICE SHALL DEVELOP 125% OF THE SPECIFIED YIELD STRENGTH OF THE REINFORCING STEEL. REQUESTS BY THE CONTRACTOR FOR MECHANICAL SPLICES MUST BE SUBMITTED IN WRITING.
3. PLACEMENT:
   - A. ALL REINFORCING AND EMBEDMENTS SHALL BE SUPPORTED ON CHAIRS/BOLSTERS TO THE DESIGN DIMENSIONS. SPACING SHALL BE SUFFICIENTLY CLOSE TO PREVENT DISPLACEMENT OR PERMANENT DEFORMATION DUE TO CONCRETE PLACEMENT, FOOT TRAFFIC, OR VIBRATION. "PUDDLING IN" OR "PULLING UP" REINFORCING IS NOT AN ACCEPTABLE METHOD FOR PLACING REINFORCING. CHAIRS/BOLSTERS SHALL HAVE PLASTIC COATED FEET OR BE MADE OF STAINLESS STEEL. CHAIRS/BOLSTERS IN CONTACT WITH EARTH SHALL HAVE BOTTOM PLATES AND BE COATED TO PREVENT CORROSION. ANCHOR RODS SHALL BE HELD IN PLACE WITH TEMPLATES SUFFICIENTLY STRONG TO PREVENT DISPLACEMENT OR TILTING.
   - B. MAINTAIN ACI CLEAR COVER ON REINFORCING AS LISTED BELOW UNLESS NOTED OTHERWISE.

CAST AGAINST EARTH (BOTTOM OR SIDES):	3"
FORMED - EXPOSED TO SOIL, WEATHER OR LIQUIDS:	2"
FORMED SLABS - INTERIOR:	1"
SLABS ON GRADE (FROM TOP OF SLAB):	1.5"

   - C. PROVIDE CORNER BARS OF THE SAME SIZE AND SPACING AS ADJACENT REINFORCING.
   - D. OPENINGS IN SLABS SHALL BE REINFORCED PER TYPICAL DETAIL
   - E. REINFORCING STEEL SHALL BE LAPPED PER CONCRETE REINFORCEMENT LAP TABLE.
   - F. WELDED WIRE FABRIC SHALL BE LAPPED ONE FULL SQUARE PLUS 2".
4. IN ADDITION TO THE REINFORCING STEEL SHOWN ON THE DRAWINGS THE CONTRACTOR SHALL INCLUDE IN THE BID THE ADDITIONAL COST OF ½ TON OF REINFORCING STEEL (WWF OR BARS), TO INCLUDE MATERIALS, PLACEMENT, OVERHEAD AND PROFIT, AND ALL INCIDENTALS ASSOCIATED WITH THE PURCHASING AND INSTALLATION OF SUCH ADDITIONAL REINFORCING STEEL AS DIRECTED BY THE ARCHITECT/ENGINEER.

MASONRY

1. MASONRY HAS BEEN DESIGNED IN ACCORDANCE WITH THE TMS 402/602 AND THE BUILDING CODE.
2. MATERIALS:
   - A. ALL CONCRETE MASONRY UNITS (CMU) SHALL BE TWO-CELL, LIGHTWEIGHT AGGREGATE UNITS WITH A SPECIFIED MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI ON NET AREA AT 28 DAYS CONFORMING TO ASTM C90.
   - B. ALL MORTAR SHALL BE TYPE "S" CONFORMING TO ASTM C270.
   - C. THE MINIMUM COMPRESSIVE STRENGTH (f'_m) OF A PRISM ASSEMBLED OF CMU AND FULL MORTAR BEDDING SHALL BE 2000 PSI AT 28 DAYS ON THE NET AREA.
   - D. ALL GROUT SHALL CONFORM TO ASTM C476 WITH A MINIMUM GROUT COMPRESSIVE STRENGTH (f'_c) OF 2500 PSI.
   - E. REINFORCING STEEL SHALL MEET THE REQUIREMENTS OF ASTM A615, GR. 60.
   - F. CMU LOCATED BELOW GRADE SHALL BE NORMAL-WEIGHT AGGREGATE UNITS WITH ALL CELLS GROUTED SOLID.
   - G. ALL CMU SHALL BE IN RUNNING BOND.
3. HORIZONTAL WALL REINFORCING:
   - A. PROVIDE CONTINUOUS HORIZONTAL REINFORCING AT THE TOP OF THE WALL AND AT A MAXIMUM OF 4'-0" ON CENTER IN KNOCK-OUT BOND BEAMS UNLESS NOTED OTHERWISE. REINFORCING STEEL SHALL BE LAPPED PER THE CMU REINFORCING LAP TABLE.
   - B. PROVIDE HORIZONTAL REINFORCING AT THE HEAD OF ALL OPENINGS IN A "U" SHAPED SOLID BOTTOM LINTEL BLOCK. CUT OFF THE BOTTOM SHELL OF THE LINTEL BLOCKS AT VERTICAL REINFORCING LOCATION FOR JAMBS. PROVIDE HORIZONTAL REINFORCING AT THE SILL OF ALL OPENINGS IN A KNOCK-OUT BOND BEAM. REINFORCING STEEL SHALL EXTEND BEYOND OPENING PER TYPICAL DETAILS.
   - C. MINIMUM HORIZONTAL REINFORCING IN ALL LINTELS AND BOND BEAMS SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE:

THICKNESS	REINFORCING
8"	(2) #4

4. VERTICAL REINFORCING:
   - A. PROVIDE VERTICAL REINFORCING (NORMAL REINFORCING) IN FULLY GROUTED CELLS, CENTERED AND HELD IN PLACE BY REINFORCING STEEL GUIDES IN ALL WALLS AS FOLLOWS, UNLESS NOTED OTHERWISE:

THICKNESS	INTERIOR NON-LOAD BRG. WALLS	EXTERIOR & LOAD BRG. WALLS
8"	#5 AT 48" O.C.	#5 AT 48" O.C.

   - B. PROVIDE VERTICAL FULLY GROUTED REINFORCED CELLS AT EACH SIDE OF AN ISOLATION JOINT, AT INTERSECTIONS OF WALLS, EACH SIDE OF A WALL OPENING, AT EACH BEAM BEARING, AND AT THE END OF A WALL.
   - C. VERTICAL REINFORCING SHALL EXTEND CONTINUOUSLY FROM THE TOP OF THE SUPPORTING MEMBER TO THE TOP BOND BEAM. THERE SHALL BE A DOWEL, CAST INTEGRAL WITH THE SUPPORTING MEMBER, FOR EACH VERTICAL REINFORCING BAR EXCEPT AS NOTED. ALL VERTICAL REINFORCING STEEL SHALL BE HOOKED INTO TOP BOND BEAM. ALL HOOKS, STRAIGHT EMBEDMENTS AND LAPS SHALL BE PER TABLE.
5. LOCATION AND DETAILS OF CONTROL AND ISOLATION JOINTS IN MASONRY WALLS SHALL BE PER THE ARCHITECTURAL DRAWINGS. IF NOT SHOWN OR NOTED ON THE ARCHITECTURAL DRAWINGS, THE MAXIMUM SPACING OF CONTROL OR ISOLATION JOINTS SHALL BE AT A LENGTH TO HEIGHT RATIO OF 2:1 OR 30'-0" O.C., WHICHEVER IS LESS. REINFORCING IN ALL BOND BEAMS, INCLUDING THE TOP BOND BEAM, SHALL BE DISCONTINUOUS AT CONTROL AND ISOLATION JOINTS. CONTRACTOR SHALL SUBMIT A JOINT LAYOUT PLAN FOR APPROVAL PRIOR TO CONSTRUCTION.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING WALL ELEVATIONS AS PART OF THE SUBMITTAL. WALL ELEVATIONS SHALL INCLUDE HORIZONTAL AND VERTICAL REINFORCING, EMBEDS, CONTROL JOINTS, OPENINGS, ETC. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS FOR ALL OPENING LOCATION.
7. EMBEDDED CONDUIT, PIPES OR SLEEVES SHALL BE NO CLOSER THAN 3 DIAMETER ON CENTER OR DISPLACE MORE THAN 2% OF THE NET AREA.
8. LINTELS SUPPORTING CMU WALLS OVER OPENINGS, UNLESS NOTED OTHERWISE, SHALL BE:

OPENING WIDTH	LINTEL
< 4'-0"	8"X8" CMU "U" SHAPED BOND BEAM W/ (2) #5
	12"X8" CMU "U" SHAPED BOND BEAM W/ (2) #6
> 4'-0"	REF. PLANS

ALL LINTELS SHALL BEAR A MINIMUM OF 8" ON EACH END. EXTERIOR LINTELS SHALL BE GALVANIZED UNLESS NOTED OTHERWISE BY ARCHITECT.

STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL MEET THE LATEST "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGE," AND HAS BEEN DESIGNED IN ACCORDANCE WITH THE BUILDING CODE AND THE LATEST EDITION OF AISC "MANUAL OF STEEL CONSTRUCTION".
2. STRUCTURAL STEEL SHALL BE NEW AND MEET THE FOLLOWING REQUIREMENTS UNLESS NOTED OTHERWISE ON THE DRAWINGS:

TYPE	ASTM	GRADE
W SHAPES	A992	------
PLATES, CHANNELS, & ANGLES	A36	------
RECTANGULAR HSS SECTIONS	A500	C (F_Y=50 KSI)
STRUCTURAL BOLTS	A325	------ (ASTM F1852)

3. ALL BOLTED CONNECTIONS SHALL BE STANDARD AISC BEARING TYPE FRAMING CONNECTIONS. BOLTS SHALL BE TENSION-INDICATING FOR INSPECTION PURPOSES.
4. ALL CONNECTIONS NOT DETAILED OR OTHERWISE NOTED SHALL BE PROVIDED BY THE FABRICATOR AND HIGHLIGHTED FOR THE ENGINEER OF RECORD'S REVIEW.
   - A. SLIP CRITICAL (SC) CONNECTIONS SHALL HAVE UNCOATED CLASS A FAYING SURFACES.
5. ALL WELDING SHALL BE IN ACCORDANCE WITH LATEST AWS CODE, SECTION D1.1. ALL WELD MATERIAL SHALL BE 70 KSI TENSILE STRENGTH.
6. STEEL FRAMING MEMBERS SHALL NOT BE SPLICED.
7. OPENINGS SHALL NOT BE FIELD-CUT IN THE FLANGE OR WEBS OF STEEL MEMBERS.
8. PACK GROUT SOLIDLY BETWEEN BEARING SURFACES AND BASE PLATES WITH FACTORY-PACKAGED, NON-METALLIC, NON-SHRINK, NON-CORROSIVE GROUT COMPLYING WITH ASTM C1107. GROUT TO HAVE A MINIMUM COMPRESSIVE 28 DAY STRENGTH OF 7,500 PSI.
9. GALVANIZED STRUCTURAL STEEL SHALL CONFORM TO ASTM A123 FOR MEMBERS AND ASTM A153 FOR CONNECTION ELEMENTS. REPAIR ANY DAMAGED GALVANIZING COATING IN ACCORDANCE WITH ASTM A780.

POST INSTALLED ANCHORING SYSTEMS

1. SUBSTITUTION OF POST INSTALLED ANCHORS FOR EMBEDDED ANCHORS SHOWN ON THE DRAWINGS WILL NOT BE PERMITTED UNLESS APPROVED BY THE ENGINEER OF RECORD IN ADVANCE.
2. ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII) AND THE EVALUATION REPORT (ER/ESR) SPECIFIED INCLUDING HOLE PREPARATION, TEMPERATURE AND MOISTURE CONDITIONS.
3. ADHESIVE ANCHORS:
   - A. THE CONTRACTOR SHALL ARRANGE AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL ANCHOR PRODUCTS SPECIFIED. THE CONTRACTOR MUST MAINTAIN TRAINING RECORDS OF ALL CONTRACTOR PERSONNEL INSTALLING ANCHORS AND SUBMIT TO THE ENGINEER OF RECORD PRIOR TO INSTALLING ANCHORS UPON REQUEST.
   - B. ADHESIVE ANCHORS SHALL BE USED IN CONJUNCTION WITH THE APPROPRIATE ADHESIVE SYSTEM. STANDARD REINFORCING STEEL REBAR ANCHORED IN CONCRETE SHALL BE IN ACCORDANCE WITH ASTM A615 GRADE 60 UNLESS NOTED OTHERWISE. ALL THREADED ANCHORS SHALL BE IN ACCORDANCE TO ASTM F1554 GRADE 36 (OR BETTER) OR STAINLESS STEEL 304/316.
   - C. APPROVED ADHESIVES FOR PREVIOUSLY CAST CONCRETE:

MANUFACTURER/PRODUCT	EVALUATION REPORT
HILTI HIT-HY200	ICC-ES ESR-3963
HILTI HIT-HY270 SAFE SET INSTALLATION	ICC-ES ESR-3187
HILTI HIT-RE 500 V3 SAFE SET INSTALLATION	ICC-ES ESR-2322/3814
SIMPSON STRONG-TIE SPEED CLEAN SET-3G	ICC-ES ESR-4057
SIMPSON STRONG-TIE SPEED CLEAN AT-3G	ICC-ES ESR-5026

CONTRACT/CONSTRUCTION DOCUMENTS

1. THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN A FULL SET OF THE MOST RECENT REVISIONS OF EACH DOCUMENT INCLUDING ALL PLANS, SPECIFICATIONS, ADDENDA, AND SUPPLEMENTAL INSTRUCTIONS.
2. THE CONTRACTOR SHALL REVIEW THE DOCUMENTS PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY MATERIALS FOR CONFLICTS. IF CONFLICTS OCCUR THE CONTRACTOR SHALL USE THE MOST STRINGENT REQUIREMENT OR REQUEST A CLARIFICATION THROUGH A REQUEST FOR INFORMATION (RFI).
3. THE DOCUMENTS MAY NOT BE REPRODUCED IN WHOLE OR IN PART FOR USE ON PROJECTS OTHER THAN IDENTIFIED IN THE TITLE BLOCK. SHOULD THE CONTRACTOR USE THE DOCUMENTS AS A PORTION OF A SHOP DRAWING SUBMITTAL, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY CONSEQUENCES RESULTING FROM ERRORS IN THE REPRODUCED DOCUMENTS.
4. DETAILS LABELED TYPICAL ARE INTENDED TO REPRESENT A CONDITION THAT OCCURS AT SEVERAL LOCATIONS IN THE PLANS WHETHER OR NOT THE DETAIL IS REFERENCED.
5. DO NOT SCALE THE PLANS AND DETAILS FOR THE PURPOSE OF ESTABLISHING DIMENSIONS.

CONTRACTOR'S RESPONSIBILITY

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING ALL SUB-CONTRACTOR SUBMITTALS AND NOTING ALL DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS PRIOR TO SUBMITTING TO THE ENGINEER FOR REVIEW.
2. SUBSTITUTION REQUESTS SHALL BE SUBMITTED IN WRITING WITH THE COST REDUCTION AMOUNT AND THE SCHEDULE IMPACT FOR THE OWNER (SUBMITTALS WITHOUT THE COST AND SCHEDULE IMPACT WILL NOT BE REVIEWED). A COMPARISON OF THE DATA WITH THE MATERIAL SPECIFIED INCLUDING CODE APPROVALS SHALL BE PROVIDED.
3. REQUESTS FOR INFORMATION (RFI) SHALL BE SUBMITTED IN WRITING WITH COST, SCHEDULE IMPACT, AND SUGGESTED SOLUTION INCLUDED. AN RFI THAT DOES NOT INCLUDE THE COST AND SCHEDULE IMPACT WILL NOT BE REVIEWED.
4. DEFECTIVE WORK REPORT (DWR) SHALL BE SUBMITTED TO THE ENGINEER. THE DWR SHALL REPORT THE DEFECT AND PROPOSE A REMEDIATION OF THE DEFECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE REMEDIATION OF THE DEFECT INCLUDING ENGINEERING COSTS, IF ANY.
5. WHEN THE CONTRACTOR BECOMES AWARE OF WHAT MAY BE AN UNFORESEEN CONDITION THAT COULD AFFECT COST OR SCHEDULE, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING. AFTER REVIEW AND ENGINEER'S DETERMINATION THAT AN UNFORESEEN CONDITION EXISTS; THE CONTRACTOR SHALL SUBMIT A CHANGE ORDER REQUEST FOR APPROVAL WITH BOTH COST AND SCHEDULE IMPACT ATTACHED.
6. THE CONTRACTOR'S SCHEDULE MUST PROVIDE A REASONABLE TIME ALLOWANCE FOR THE ENGINEERING REVIEW AND APPROVAL.
7. THE CONTRACTOR WILL BE SOLELY RESPONSIBLE FOR SITE SAFETY. THE ENGINEER IS RESPONSIBLE FOR FOLLOWING THE CONTRACTOR'S CONSTRUCTION SITE SAFETY INSTRUCTIONS PROVIDED IN WRITING. ALTERNATELY, THE CONTRACTOR SHALL ASSIGN AN ESCORT TO ADVISE THE ENGINEER OF SITE SAFETY ISSUES DURING SITE VISITS. THE ENGINEER'S PURPOSE OF A SITE VISIT IS SOLELY TO BECOME FAMILIAR WITH THE GENERAL PROGRESS AND QUALITY OF THE PROJECT. THE ENGINEER'S SITE VISIT IS NOT A QUALITY CONTROL FUNCTION.

CONSTRUCTION MEANS AND METHODS ISSUES

1. SLAB ON GRADE AND ELEVATED SLABS ARE NOT DESIGNED TO SUPPORT CRANES, FORKLIFTS, TRUCKS, MANLIFTS, OR OTHER CONSTRUCTION RELATED EQUIPMENT UNLESS NOTED AS SUCH. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE IF CONSTRUCTION EQUIPMENT CAN BE SAFELY OPERATED ON THESE SLABS AND TO REPAIR ANY DAMAGE THE EQUIPMENT MAY CAUSE.
2. THE CONSTRUCTION DOCUMENTS REPRESENT A STABLE STRUCTURE IN THE COMPLETED FORM. THE CONTRACTOR SHALL PROVIDE ANY TEMPORARY BRACING AND/OR SHORES TO SAFELY CONSTRUCT THE BUILDING AND PREVENT DAMAGE DURING CONSTRUCTION.
3. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS OF EXISTING CONSTRUCTION THAT MAY AFFECT THE PROJECT AND REPORT DISCREPANCIES TO THE ENGINEER. ANY DIMENSIONS FOR ELEVATIONS THAT IMPACT NEW WORK SHALL BE VERIFIED PRIOR TO FABRICATION OF ANY MATERIAL. EXISTING BUILDING ELEMENTS THAT ARE TO BE ABANDONED THAT INTERFERE WITH NEW CONSTRUCTION SHALL BE REMOVED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STRUCTURAL DESIGN AND MATERIALS FOR ATTACHING NON-STRUCTURAL ELEMENTS TO ANY PORTION OF THE STRUCTURE TO RESIST ALL LOADS, INCLUDING SEISMIC, IN A WAY THAT DOES NOT OVERSTRESS STRUCTURAL MEMBERS. NON-STRUCTURAL ELEMENTS CAN BE FOUND IN EACH OF THE OTHER DISCIPLINES (ARCHITECTURAL, MECHANICAL, ELECTRICAL, ETC.).
5. IN ADDITION TO THE STRUCTURAL AND MISCELLANEOUS STEEL SHOWN ON THE DRAWINGS, THE CONTRACTOR SHALL INCLUDE IN THE BID THE COST OF MATERIALS, LABOR, OVERHAED, PROFIT AND ALL INCIDENTALS NECESSARY FOR AN ADDITIOANL 2,000 LBS. OF MISCELLANEOUS STRUCTURAL STEEL BEYOND THAT SHOWN ON THE DRAWINGS TO BE FIELD FABRICATED AND INSTALLED AS DIRECTED BY THE ARCHITECT/ENGINEER.
6. IN ADDITION TO THE REINFORCING STEEL SHOWN ON THE DRAWINGS THE CONTRACTOR SHALL INCLUDE IN THE BID THE ADDITIOANL COST OF ½ TON OF REINFORCING STEEL (WWF OR BARS), TO INCLUDE MATERIALS, PLACEMENT, OVERHEAD AND PROFIT, AND ALL INCIDENTALS ASSOCIATED WITH THE PURCHASING AND INSTALLATION OF SUCH ADDITIONAL REINFORCING STEEL AS DIRECTED BY THE ARCHITECT/ENGINEER.
7. IN ADDITION TO THE CONCRETE SHOWN ON THE DRAWINGS THE CONTRACTOR SHALL INCLUDE IN THE BID THE ADDITIONAL COST OF MATERIALS, LABOR, OVERHAED, PROFIT AND ALL INCIDENTALS TO INCLUDE TRENCHING OR FORMING AS NECESSARY FOR THE PURCHASE AND INSTALLATION OF AN ADDITIONAL 4 CUBIC YARDS OF CONCRETE BEYOND THAT SHOWN ON THE DRAWINGS TO BE INSTALLED AS DIRECTED BY THE ARCHITECT/ENGINEER.

STRUCTURAL TESTS, INSPECTIONS, AND QUALITY ASSURANCE

1. ALL STRUCTURAL TESTS AND INSPECTIONS SHALL BE PERFORMED PER CHAPTER 17 OF THE BUILDING CODE WITH LOCAL SUPPLEMENTS, UNLESS MORE STRINGENT REQUIREMENTS ARE SPECIFIED.

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PEC PROJECT NUMBER: 250076-000

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SHELBY FORD
03/21/2025

TM Aviation

TM AVIATION HANGAR
AT LXT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **ZMJ** Checked By **WTL**

KEY PLAN
NORTH

SHEET NAME
GENERAL NOTES

SHEET NUMBER
S-001

PROJECT NUMBER 2404

3/21/2025 11:38:01 AM

REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION

TYPE	FREQUENCY	REFERENCED STANDARD	IBC REFERENCE
1. Inspect reinforcement, including prestressing tendons, and verify placement.	Periodic	ACI 318 Ch. 20, 25.2, 25.3, 26.6.1-26.6.3	1908.4
2. Reinforcing bar welding: a. Verify weldability of reinforcing bars other than ASTM A706 b. Inspect single-pass fillet welds, maximum 5/16"; and c. Inspect all other welds.	Periodic Periodic Continuous	AWS D1.4 ACI 318: 26.6.4	
3. Inspect anchors cast in concrete.	Periodic	ACI 318: 17.8.2	
4. Inspection of anchors post installed in hardened concrete members.[b] a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads. b. Mechanical anchors and adhesive anchors not defined in 4.a.	Continuous Periodic	ACI 318: 17.8.2.4 ACI 318: 17.8.2	
5. Verify use of required design mix.	Periodic	ACI318: Ch.19, 26.4.3, 26.4.4	1904.1, 1904.2 1908.2, 1908.3
6. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	Continuous	ASTM C172, ASTM C31, ACI 318: 26.5, 26.12	1908.10
7. Inspection of concrete and shotcrete placement for proper application techniques.	Continuous	ACI 318: 26.5	1908.6, 1908.7, 1908.8
8. Verify maintenance of specified curing temperature and techniques.	Periodic	ACI 318: 26.5.3-26.5.5	1908.9
9. Inspection of prestressed concrete for: a. Application of prestressing forces; and b. Grouting of bonded prestressing tendons.	Continuous Continuous	ACI 318: 26.10 ACI 318: 26.10	
10. Inspect erection of precast concrete members.	Periodic	ACI 318: Ch. 26.9	
11. Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	Periodic	ACI 318: 26.11.2	
12. Inspect formwork for shape, location and dimensions of the concrete member being formed.	Periodic	ACI 318: 26.11.1.2(b)	

(a) Where applicable, see Section 1705.12, Special inspections for seismic resistance.
(b) Specific requirements for special inspection shall be included in the research report for the anchor issued by an approved source in accordance with 17.8.2 in ACI 318, or other qualification procedures. Where specific requirements are not provided, special inspection requirements shall be specified by the registered design professional and shall be approved by the building official prior to the commencement of the work.

REQUIRED SPECIAL INSPECTIONS AND TESTS OF STRUCTURAL STEEL FOR WELDING PROCESS

Inspection Tasks Prior to Welding	QUALITY CONTROL	QUALITY ASSURANCE
Welding procedure specifications (WPSs) available	P	P
Manufacturer certifications for welding consumables available	P	P
Material identification (type/grade)	O	O
Welder identification system[1]	O	O
Fit-up of groove welds (including joint geometry) • Joint preparation • Dimensions (alignment, root opening, root face, bevel) • Cleanliness (condition of steel surfaces) • Tacking (tack weld quality and location) • Backing type and fit (if applicable)	O	O
Configuration and finish of access holes	O	O
Fit-up of fillet welds • Dimensions (alignment, gaps at root) • Cleanliness (condition of steel surfaces) • Tacking (tack weld quality and location)	O	O
Check welding equipment	O	--
Inspection Tasks During Welding	**QUALITY CONTROL**	**QUALITY ASSURANCE**
Use of qualified welders	O	O
Control and handling of welding consumables • Packaging • Exposure Control	O	O
No welding over cracked tack welds	O	O
Environmental conditions • Wind speed within limits • Precipitation and temperature	O	O
WPS followed • Settings on welding equipment • Travel speed • Selected welding materials • Shielding gas type/flow rate • Preheat applied • Interpass temperature maintained (min/max) • Proper position (F, V, H, OH)	O	O
Welding Techniques • Interpass and final cleaning • Each pass within profile limitations • Each pass meets quality requirements	O	O
Inspection Tasks After Welding	**QUALITY CONTROL**	**QUALITY ASSURANCE**
Welds cleaned	O	O
Size, length and location of welds	P	P
Welds meet visual acceptance criteria • Crack prohibition • Weld/base-metal fusion • Crater cross section • Weld profiles • Weld size • Undercut • Porosity	P	P
Arc strikes	P	P
k-area[2]	P	P
Backing removed and weld tabs removed (if required)	P	P
Repair activities	P	P
Document acceptance or rejection of welded joint or member	P	P

Quality Control - Requirements on the part of the steel fabricator and erector.
Quality Assurance - Requirements on the part of the project owner's representative.
P Perform these tasks for each weld joint or member.
O Observe these items on a random basis. Operations need not be delayed pending these inspections
1 The fabricator or erector, as applicable, shall maintain a system by which a welder who has welded a joint or member can be identified. Stamps, if used, shall be the low-stress type.
2 When welding of doubler plates, continuity plates or stiffeners has been performed in the k-area, visually inspect the web k-area for cracks within 3 inches (75 mm) of the weld.

REQUIRED SPECIAL INSPECTIONS AND TESTS OF STRUCTURAL STEEL FOR BOLTING PROCESS

Inspection Tasks Prior to Bolting	QUALITY CONTROL	QUALITY ASSURANCE
Manufacturer certifications available for fastener materials	O	P
Fasteners marked in accordance with ASTM requirements	O	O
Proper fasteners selected for the joint detail (grade, type, bolt length if threads are to be excluded from shear plane)	O	O
Proper bolting procedure selected for joint detail	O	O
Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements	O	O
Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used	P	O
Proper storage provided for bolts, nuts, washers and other components	O	O
Inspection Tasks During Bolting	**QUALITY CONTROL**	**QUALITY ASSURANCE**
Fastener assemblies, of suitable condition, placed in all holes and washers (if required) are positioned as required	O	O
Joint brought to the snug-tight condition prior to the pretensioning operation	O	O
Fastener component not turned by the wrench prevented from rotating	O	O
Fasteners are pretentioned in accordance with the RCSC Specification, progressing systematically from the most rigid point toward the free edges	O	O
Inspection Tasks After Bolting	**QUALITY CONTROL**	**QUALITY ASSURANCE**
Document acceptance or rejection of bolted connections	P	P

Quality Control - Requirements on the part of the steel fabricator and erector.
Quality Assurance - Requirements on the part of the project owner's representative.
P Perform these tasks for each weld joint or member.
O Observe these items on a random basis. Operations need not be delayed pending these inspections

REQUIRED SPECIAL INSPECTIONS OF STEEL CONSTRUCTION OTHER THAN STRUCT STEEL

TYPE	FREQUENCY	REFERENCED STANDARD
1. Material verification of cold-formed steel deck:		
a. Identification markings to conform to ASTM standards specified in the approved construction documents.	Periodic	ASTM standards
b. Manufacturer's certified test reports.	Periodic	
2. Inspection of welding:		
a. Cold-formed steel deck:		
1. Floor and roof deck welds.	Periodic	AWS D1.3

REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS

TYPE	FREQUENCY
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	Periodic
2. Verify excavations are extended to proper depth and have reached proper material.	Periodic
3. Perform classification and testing of compacted fill materials.	Periodic
4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.	Continuous
5. Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly.	Periodic

Special Inspection Additional Requirements:

- Additional items that need special inspection, in the opinion of the building official, shall be inspected.
- Coordination of Special Inspections with construction of the inspected items shall be the responsibility of the contractor.
- If Special Inspection is waived by the Authority having Jurisdiction, the general contractor shall provide the designer of record with a copy of the written exemption for each item that has been waived.
- The building official may perform inspections in addition to and/or concurrently with the Special Inspection's outlined in the tables.
- The general contractor is responsible for implementing a quality control program. The quality control program is in addition to the Special Inspection requirements and must meet or exceed those responsibilities required as part of the contract drawings and specifications.

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STATE OF MISSOURI
SHELBY FORD
NUMBER PE-2024034138
PROFESSIONAL ENGINEER
03/21/2025

TM Aviation

TM AVIATION HANGAR

AT LXT

No.	Date	Description

Issue: PERMIT SET
Date: MAR 21, 2025
Drawn By ZMJ | Checked By WTL

KEY PLAN

NORTH

SHEET NAME

IBC INSPECTION TABLES

SHEET NUMBER

S-002

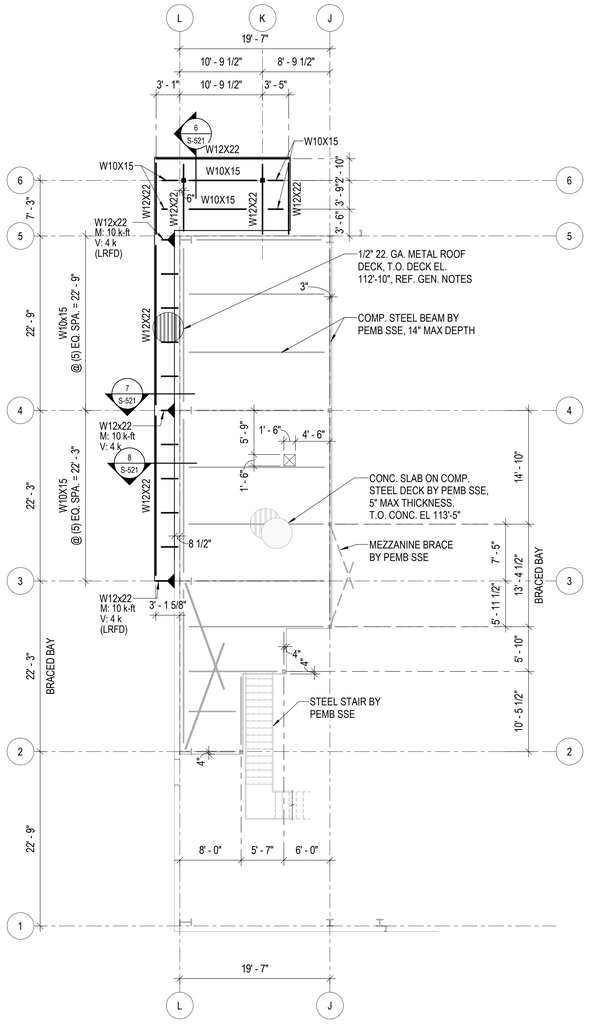
PROJECT NUMBER 2404

ASSUMED PEMB COLUMN REACTIONS

NOTES:

1. REACTIONS LISTED BELOW UTILIZE ALLOWABLE (ASD) LOAD COMBINATIONS.
2. IF FINAL PEMB REACTIONS DIFFER FROM THE REACTIONS LISTED BELOW, G.C. TO NOTIFY E.O.R. AS THE FOUNDATION DESIGN MAY NEED RE-EVALUATED.

MARK	VERTICAL LOAD (KIPS)	UPLIFT LOAD (KIPS)	SHEAR LOAD (KIPS)	NOTES
F1	80.0	-48.0	±30.0	
F2	25.0	-10.0	±4.0	
F3	11.0	-13.0	±1.0	



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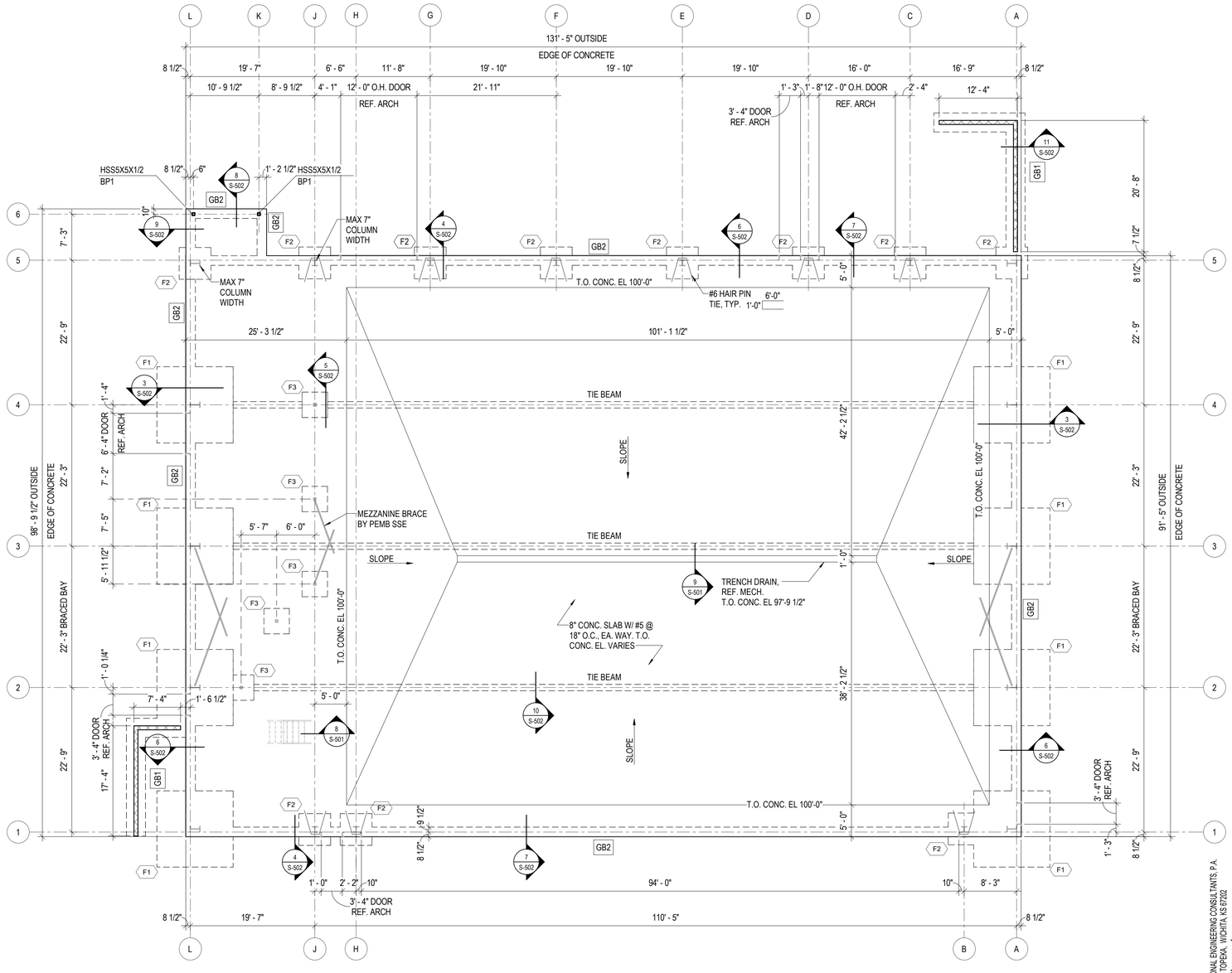
2 MEZZANINE FRAMING LEVEL

0' 4' 8' 12' 1/8" = 1'-0"



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1 FOUNDATION PLAN

0' 4' 8' 12' 1/8" = 1'-0"

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TM AVIATION HANGAR

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No.	Date	Description
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Drawn By	ZMJ	Checked By WTL

KEY PLAN

NORTH

SHEET NAME

FOUNDATION PLAN

SHEET NUMBER

S-101

PROJECT NUMBER 2404

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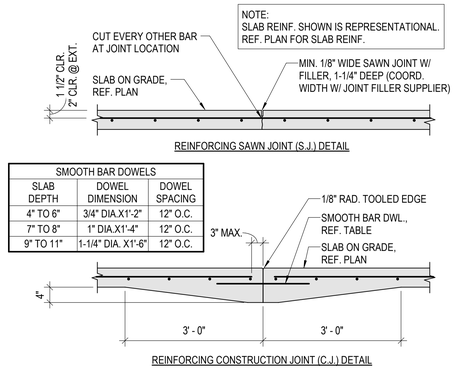
CONCRETE REINFORCEMENT LAP, EMBEDMENT, AND HOOK LENGTHS

fy = 60,000 PSI **f'c = 4,000 PSI**

NOTES:

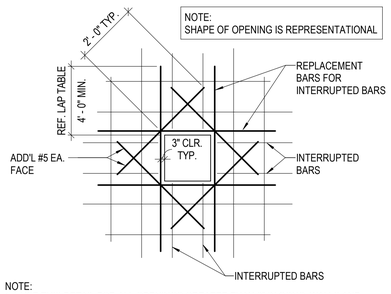
1. LENGTHS SHOWN CONFORM WITH NON-SEISMIC PROVISIONS OF ACI 318 FOR UNCOATED BARS.
2. BAR CLEAR SPACING IS THE CENTER TO CENTER BAR SPACING MINUS ONE BAR DIAMETER.
3. CLASS A LAP LENGTHS APPLY WHEN BAR LAPS ARE STAGGERED TO LAP HALF THE BARS AT THE SAME LOCATION. USE CLASS B LAP FOR ALL OTHER CASES.
4. TOP BARS ARE HORIZONTAL REINFORCEMENT PLACED SO THAT MORE THAN 12 INCHES OF CONCRETE IS CAST BELOW THE REINFORCEMENT.
5. MULTIPLY LENGTHS GIVEN BY 2.0 FOR BARS WITH CLEAR SPACING OF TWO BAR DIAMETERS OR LESS, OR CONCRETE COVER OF ONE BAR DIAMETER OR LESS.

BAR SIZE	CLEAR SPACING (S) (IN)			EMBEDMENT & CLASS A LAP (IN)						CLASS B LAP (IN)						HOOK EMBED (IN)
				TOP BAR			OTHER BARS			TOP BAR			OTHER BARS			
	2d	3d	5d	2d≤s<3d	S>3d	S>5d	2d≤s<3d	S>3d	S>5d	2d≤s<3d	S>3d	S>5d	2d≤s<3d	S>3d	S>5d	
3	3/4	1-1/8	1-7/8	28	18	12	21	14	12	36	24	14	28	18	12	8
4	1	1-1/2	2-1/2	37	25	15	28	19	12	48	32	19	37	25	15	10
5	1-1/4	1-7/8	3-1/8	46	31	18	36	24	14	60	40	24	46	31	18	12
6	1-1/2	2-1/4	3-3/4	55	37	22	43	28	17	72	48	29	55	37	22	15
7	1-3/4	2-5/8	4-3/8	81	54	32	62	42	25	105	70	42	81	54	32	18
8	2	3	5	92	62	37	71	47	28	120	80	48	92	62	37	20
9	2-1/4	3-3/8	5-5/8	104	70	42	80	54	32	136	90	54	104	70	42	22
10	2-1/2	3-3/4	6-3/8	117	78	47	90	60	36	153	102	61	117	78	47	25
11	2-7/8	4-1/4	7	130	87	52	100	67	40	170	113	68	130	87	52	27



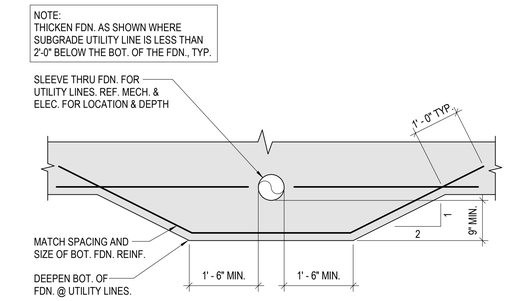
1 TYP. SLAB ON GRADE JOINT

NO SCALE



2 TYP. CONC. OPENING REINF.

NO SCALE



3 TYP. UTILITY THRU FTG.

NO SCALE

4 UTILITY ENCASEMENT UNDER FTG.

NO SCALE

5 TYP. CORNER/INTERSECTION

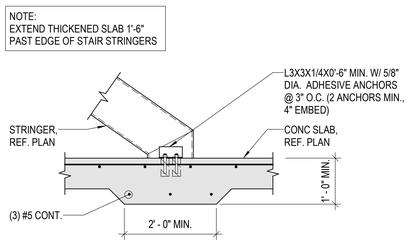
NO SCALE

6 TYP. COL. ISOLATION JOINT

NO SCALE

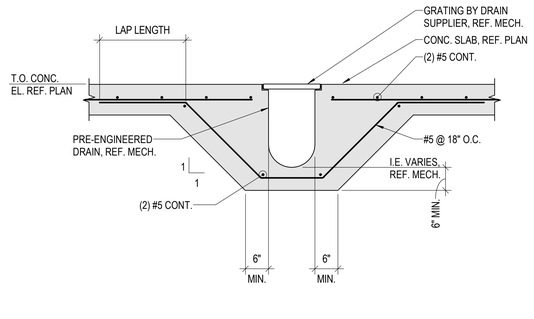
7 TYP. SLAB JOINT DETAIL

NO SCALE



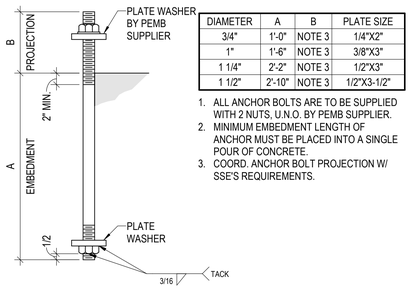
8 THICKENED SLAB AT STRINGER

NO SCALE



9 PRE-FAB TRENCH DRAIN

3/4" = 1'-0"



DIAMETER	A	B	PLATE SIZE
3/4"	1'-0"	NOTE 3	1/4"X2"
1"	1'-6"	NOTE 3	3/8"X3"
1 1/4"	2'-2"	NOTE 3	1/2"X3"
1 1/2"	2'-10"	NOTE 3	1/2"X3-1/2"

1. ALL ANCHOR BOLTS ARE TO BE SUPPLIED WITH 2 NUTS, U.N.O. BY PEMB SUPPLIER.
2. MINIMUM EMBEDMENT LENGTH OF ANCHOR MUST BE PLACED INTO A SINGLE POUR OF CONCRETE.
3. COORD. ANCHOR BOLT PROJECTION W/ SSE'S REQUIREMENTS.

10 TYP. PEMB ANCHOR BOLT

NO SCALE

3/21/2025 11:38:03 AM

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
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316-262-2691 www.pec1.com
PEC AUTHORITY NUMBER: EGC-0004656
PEC PROJECT NUMBER 250076-000

PROJECT TEAM

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STATE OF MISSOURI
SHELBY FORM
NUMBER
PE-2024034138
06/12/2025
PROFESSIONAL ENGINEER

TM Aviation

TM AVIATION HANGAR
AT LXT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **ZMJ** Checked By **WTL**

KEY PLAN
NORTH

SHEET NAME
TYPICAL FOUNDATION DETAILS

SHEET NUMBER
S-501

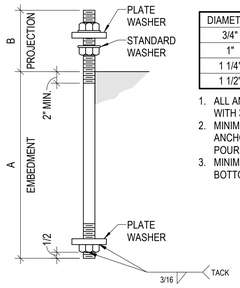
PROJECT NUMBER
2404

FOOTING SCHEDULE

MARK	WIDTH	LENGTH	THICKNESS	ELEVATION	REINFORCING	NOTES
F1	12' - 0"	12' - 0"	2' - 6"	99' - 0"	#6 @ 8" O.C. TOP & BOT. EA. WAY	
F2	5' - 0"	5' - 0"	2' - 6"	99' - 0"	#6 @ 8" O.C. TOP & BOT. EA. WAY	
F3	4' - 0"	4' - 0"	1' - 6"	99' - 0"	#5 @ 12" O.C. TOP & BOT. EA. WAY	

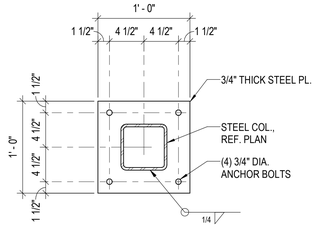
GRADE BEAM SCHEDULE

MARK	WIDTH	HEIGHT	ELEVATION	REINFORCING	NOTES
GB1	3' - 0"	2' - 6"	99' - 0"	(5) #5 TOP & BOT. W/ #4 STIRRUPS @ 12" O.C.	
GB2	1' - 6"	2' - 6"	99' - 0"	(3) #5 TOP & BOT. W/ #4 STIRRUPS @ 12" O.C.	
TIE BEAM	1' - 0"	0' - 6"	99' - 0"	(2) #5 CONT.	



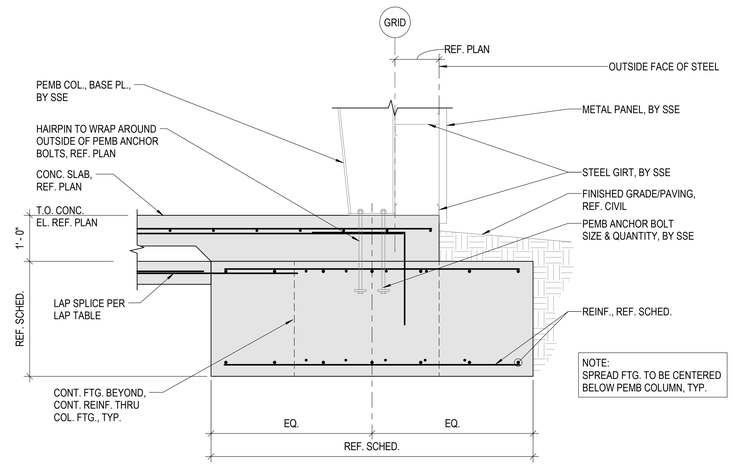
DIAMETER	A	B	PLATE SIZE
3/4"	1'-0"	6"	1/4"X2"
1"	1'-6"	6"	3/8"X3"
1 1/4"	2'-2"	8"	1/2"X3 1/2"
1 1/2"	2'-10"	8"	1/2"X4"

1. ALL ANCHOR BOLTS ARE TO BE SUPPLIED WITH 3 NUTS.
2. MINIMUM EMBEDMENT LENGTH OF ANCHOR MUST BE PLACED INTO A SINGLE POUR OF CONCRETE.
3. MINIMUM OF 3" CLEAR COVER TO BOTTOM OF FOUNDATION.



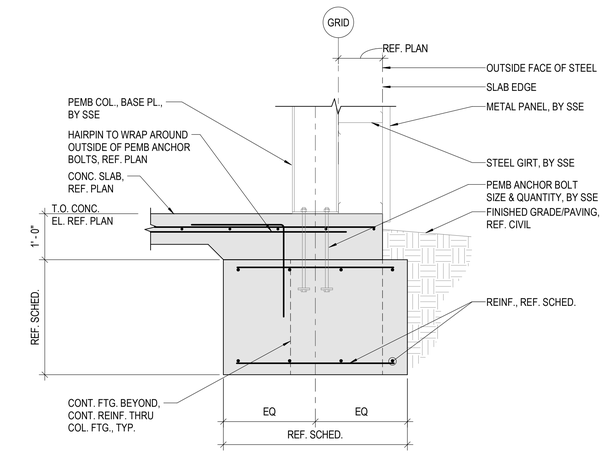
1 TYPICAL ANCHOR BOLT DETAIL
3/4" = 1'-0"

2 BP-1
1 1/2" = 1'-0"

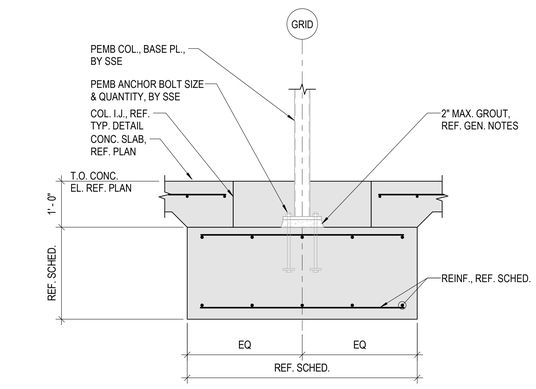


NOTE:
SPREAD FTG. TO BE CENTERED BELOW PEMB COLUMN, TYP.

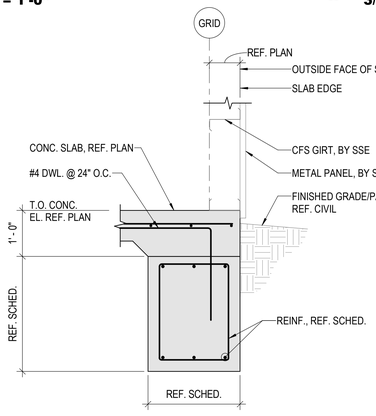
3 PEMB FRAME COL. FTG.
3/4" = 1'-0"



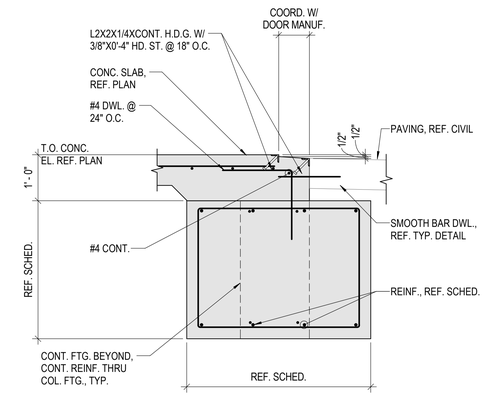
4 PEMB END WALL COL. FTG.
3/4" = 1'-0"



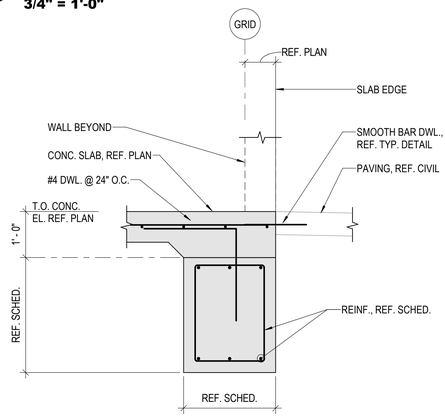
5 PEMB INT. COL. FTG.
3/4" = 1'-0"



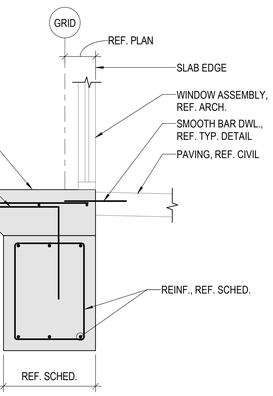
6 PEMB CONT. FTG., OUTSET GIRT
3/4" = 1'-0"



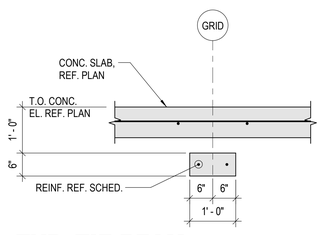
7 PEMB FTG. AT O.H. DOOR
3/4" = 1'-0"



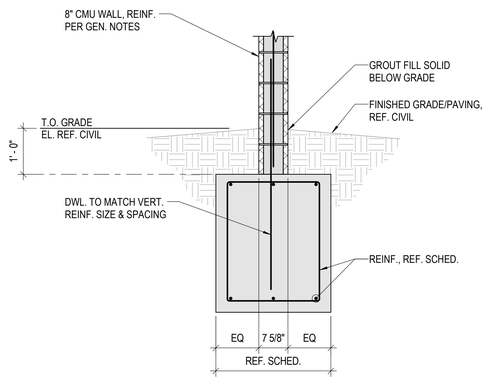
8 CONT. FTG. AT WALL OPENING
3/4" = 1'-0"



9 CONT. FTG. AT GLAZING
3/4" = 1'-0"



10 TYP. TIE BEAM
3/4" = 1'-0"



11 CONT. FTG. AT 8" CMU WALL
3/4" = 1'-0"

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PROJECT TEAM

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STATE OF MISSOURI
SHELBY FORD JOHNSON
NUMBER PE-2024034138
06/12/2025
PROFESSIONAL ENGINEER

TM Aviation

TM AVIATION HANGAR
AT LXT

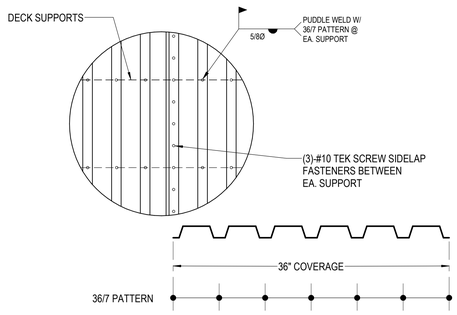
No.	Date	Description
Issue:	PERMIT SET	
Date:	MAR 21, 2025	
Drawn By	ZMJ	Checked By WTL

KEY PLAN
NORTH

SHEET NAME
FOUNDATION DETAILS

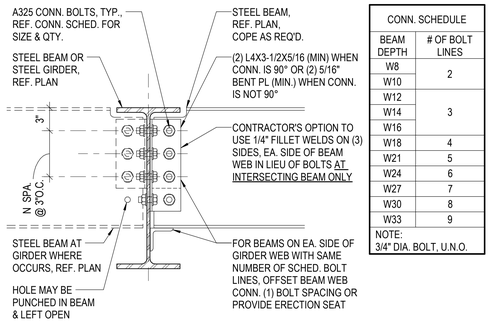
SHEET NUMBER
S-502

PROJECT NUMBER
2404



1 1 1/2" STEEL ROOF DECK ATTACH.

NO SCALE



CONN. SCHEDULE	
BEAM DEPTH	# OF BOLT LINES
W8	2
W10	
W12	3
W14	
W16	
W18	4
W21	5
W24	6
W27	7
W30	8
W33	9

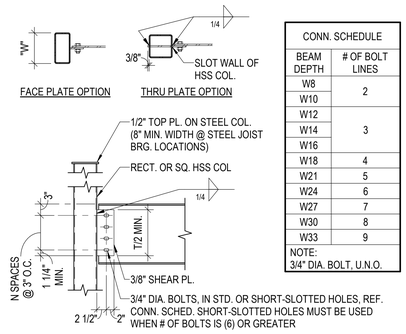
NOTE: 3/4" DIA. BOLT, U.N.O.

2 TYP. DOUBLE ANGLE CONN.

NO SCALE

RECT. OR SQ. HSS	
W	MIN. WALL THICKNESS
3"	3/16"
4"	3/16"
5"	3/16"
6"	3/16"
7"	1/4"
8"	1/4"
9"	5/16"
10"	5/16"
12"	3/8"
14"	1/2"
16"	1/2"

WHERE WALL THICKNESS IS LESS THAN MIN., PROVIDE THRU PLATE CONN., AS SHOWN.

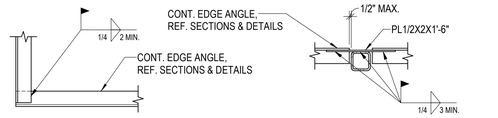


CONN. SCHEDULE	
BEAM DEPTH	# OF BOLT LINES
W8	2
W10	
W12	3
W14	
W16	
W18	4
W21	5
W24	6
W27	7
W30	8
W33	9

NOTE: 3/4" DIA. BOLT, U.N.O.

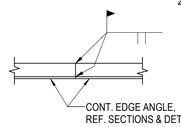
3 TYP. BEAM TO HSS COLUMN CONN.

NO SCALE

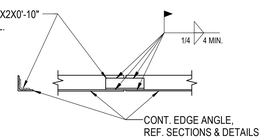


TYP. CORNER SPLICE

TYP. SPLICE @ COL.



CONT. SPLICE OPTION #1

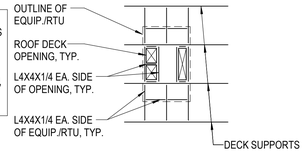


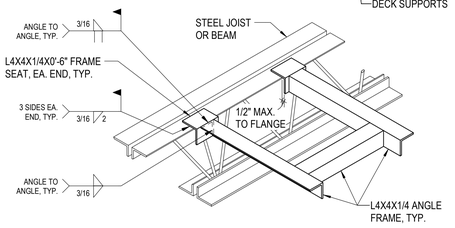
CONT. SPLICE OPTION #2

4 TYP. EDGE ANGLE SPLICE

NO SCALE

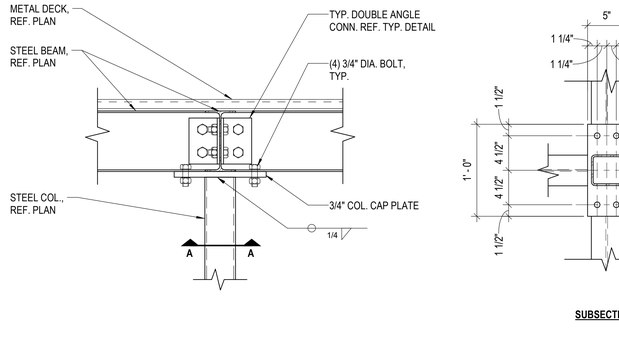
NOTE:
ANGLES ARE REQ'D @ ALL EDGES/CURBS OF EQUIP./RTU AND @ THE EDGE OF DUCT OPENINGS IF THE ROOF DECK PROJECTS MORE THAN 4" BEYOND SUPPORTS IN THE SPANNING DIRECTION, FASTEN DECK TO ALL OPENING ANGLES PER GEN. NOTES AND DETAILS

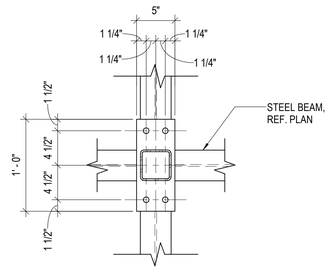




5 TYP. STEEL ROOF DECK OPENING

NO SCALE

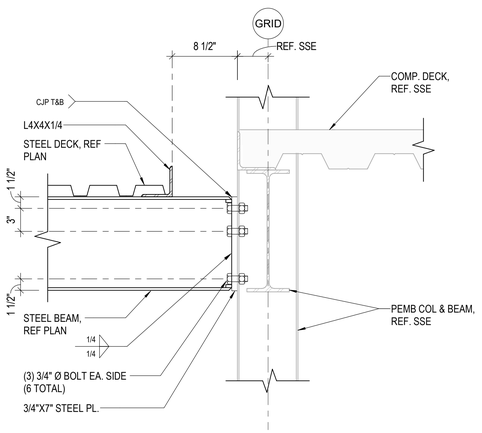




SUBSECTION A-A

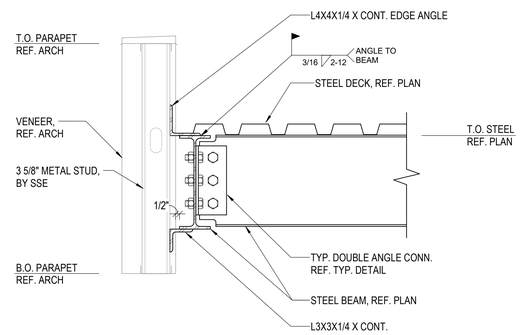
6 CONT. BEAM OVER COLUMN DETAIL

1 1/2" = 1'-0"



7 CANOPY CONN.

NO SCALE



8 TYP. CANOPY EDGE

1 1/2" = 1'-0"

PROJECT TEAM

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STATE OF MISSOURI
SHELBY FORD LANGDON
NUMBER PE-2024034138
06/12/2025
PROFESSIONAL ENGINEER

TM Aviation

TM AVIATION HANGAR

AT LXT

No.	Date	Description
Issue:	PERMIT SET	
Date:	MAR 21, 2025	
Drawn By	ZMJ	Checked By WTL

KEY PLAN

NORTH

SHEET NAME

FRAMING DETAILS

SHEET NUMBER

S-521

PROJECT NUMBER 2404

PEC
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
303 SOUTH TOPEKA, WICHITA, KS 67202
316-262-2691 www.pec1.com
PEC AUTHORITY NUMBER: EGC-0004656
PEC PROJECT NUMBER: 250076-000

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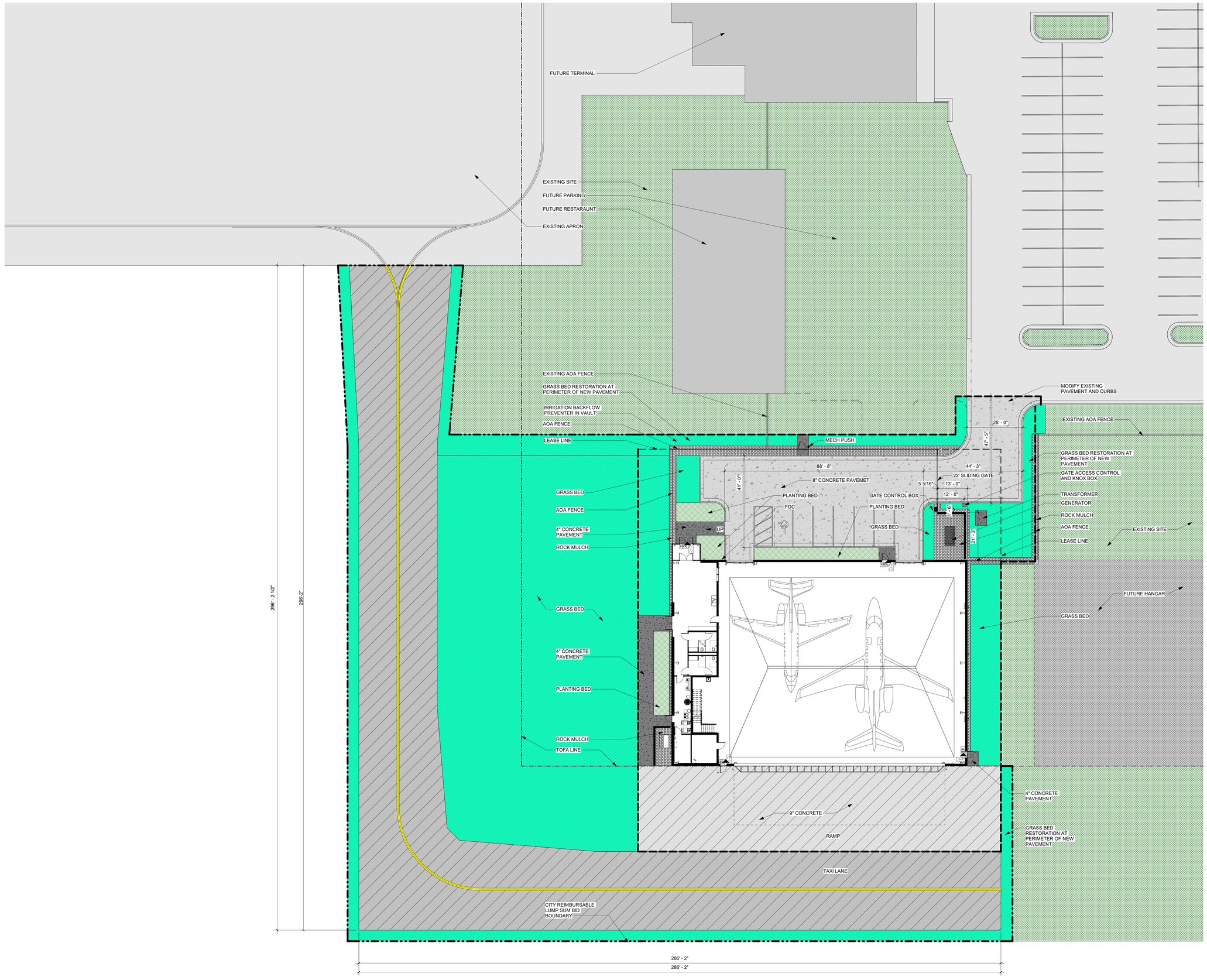

ARCHITECTURAL SITE PLAN

REFERENCED FROM 1 / A-201 1/16" = 1'-0" 1

3/24/2025 1:09:12 PM

PROJECT TEAM

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STATE OF MISSOURI
JASON SCOTT BARKER
NUMBER A-2005001198
REGISTERED ARCHITECT

03/21/2025
Jason Scott Barker - MO #A-2005001198
Certificate of Authority - MO #000767

TM Aviation

TM AVATION HANGER

AT LXT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **Author** Checked By **Checker**

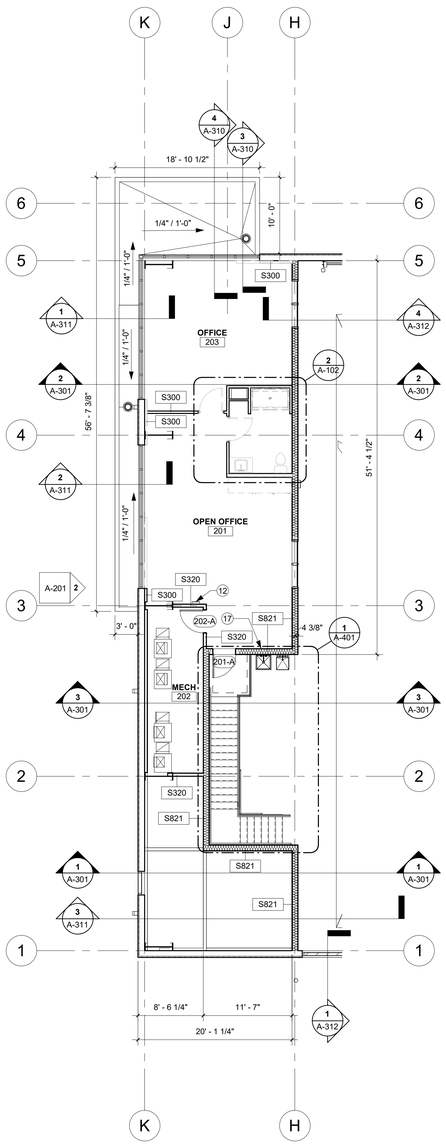
KEY PLAN

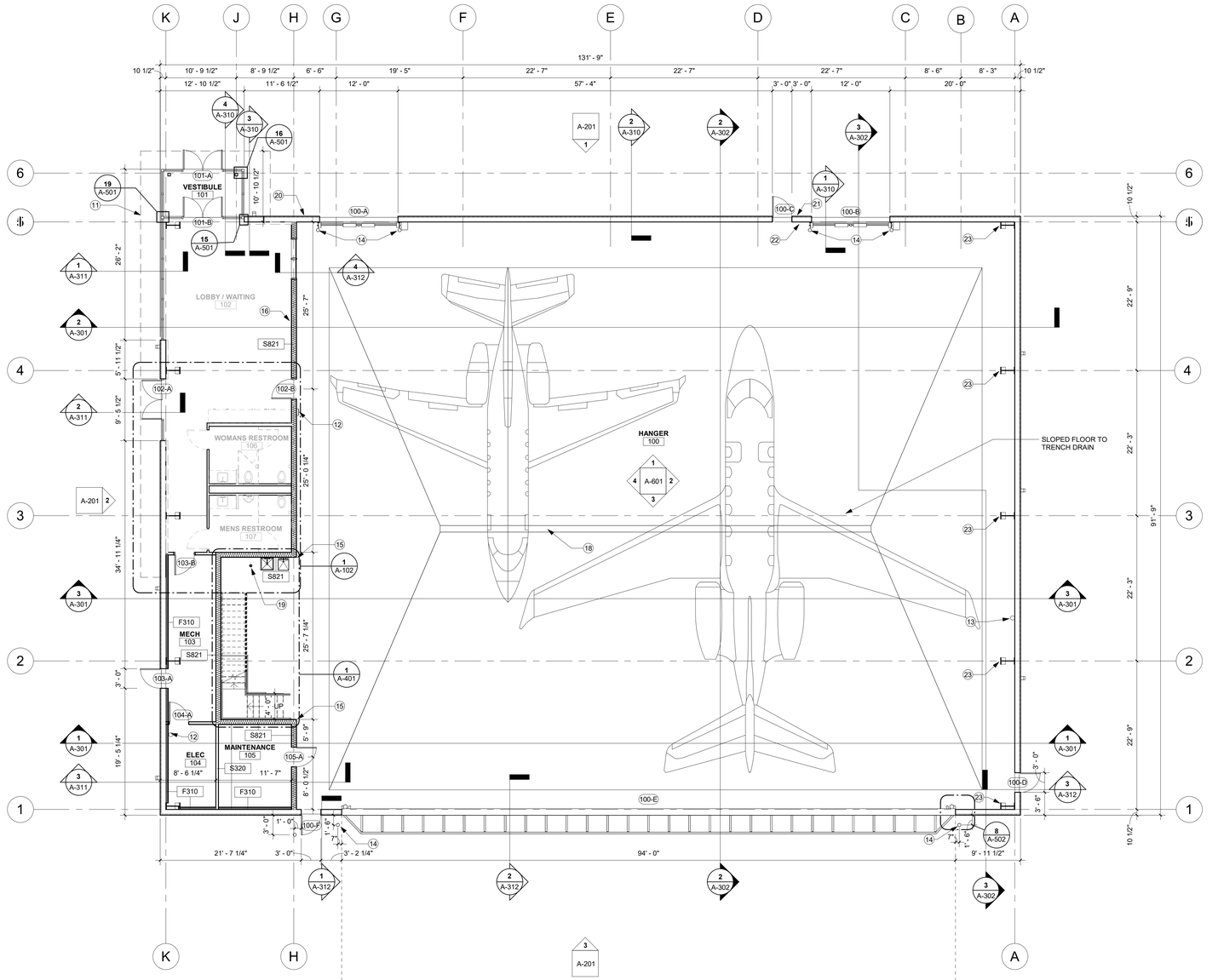
NORTH

SHEET NAME
ARCHITECTURAL SITE PLAN

SHEET NUMBER
AS100

PROJECT NUMBER 2404





MEZZANINE FLOOR PLAN 2
REFERENCED FROM 1 / A-201 1/8" = 1'-0"

1st FLOOR 1
REFERENCED FROM 1 / A-201 1/8" = 1'-0"

FLOOR PLAN NOTES (NOT ALL NOTES APPEAR ON EACH FLOOR PLAN)

1	FINISHES BY OWNER
2	CEILING BY OWNER
4	DOOR BY OWNER
5	WALL HUNG TOILET BY OWNER
6	URNIAL BY OWNER
7	SINK BY OWNER
8	CASEWORK BY OWNER
9	TOLIET ACCESORIES BY OWNER
10	TOILET PARTITIONS BY OWNER
11	LINE OF ROOF/CANOPIES ABOVE
12	SEMI RECESSED FIRE EXTINGUISHER CABINET. VERIFY FINAL QUANTITY AND LOCATION WITH FIRE MARSHAL AND CONFIRM WITH ARCHITECT
13	SURFACE MOUNTED FIRE EXTINGUISHER VERIFY FINAL QUANTITY AND LOCATION WITH FIRE MARSHAL AND CONFIRM WITH ARCHITECT
14	6" DIAMETER CONCRETE FILLED GALVANIZED PIPE BOLLARDS PER DETAIL - PAINTED RAL COLOR 2008 - BRIGHT RED ORANGE
15	FURNISH AND INSTALL 2" X 2" X 48" STAINLESS STEEL CORNER GUARDS AT 6'-0" A.F.F.
16	FURNISH AND INSTALL BLOCKING FOR OWNER PROVIDED FLAT SCREEN TV'S. FINAL LOCATIONS AND MOUNTING HEIGHT TO BE VERIFIED WITH OWNER
17	FURNISH AND INSTALL BLOCKING FOR OWNER PROVIDED FURNITURE FINAL LOCATIONS AND MOUNTING HEIGHT TO BE VERIFIED WITH OWNER
18	TRENCH DRAINS WITH OIL / SAND INTERCEPTOR, SLOPE FLOOR TO TRENCH AND FLOOR DRAIN SYSTEMS, REFER TO PLUMBING
19	SANITARY LAVATORY FLOOR DRAIN FOR AIRPLANE WASTE DISPOSAL, REFER TO PLUMBING
20	FIRE DEPARTMENT CONNECTION (FDC)
21	KNOX BOX AT DOOR COORDINATE SIZE/LOCATION WITH AHJ AND OWNER
22	REMOTE FIRE ALARM ANUCINATOR PANEL
23	PAINT FRONT FACE OF PEMB COLUMNS TO 28'-0" AFF PNT-4

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Certificate of Authority - MO #000767

TM Aviation

TM AVIATION HANGER

AT LXT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **DRW** Checked By **CHK**

KEY PLAN

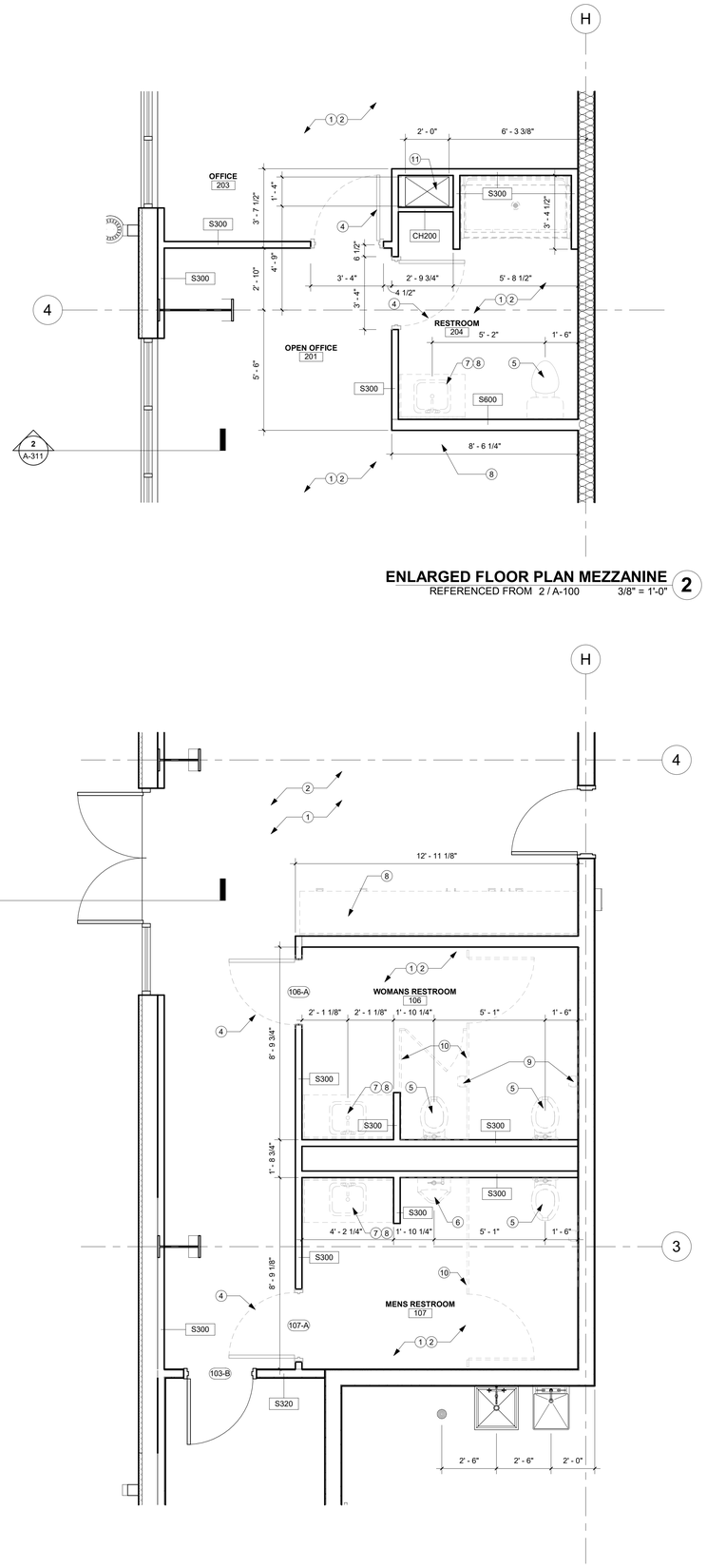
NORTH

SHEET NAME
FLOOR PLANS

SHEET NUMBER
A-100

PROJECT NUMBER 2404

3/24/2025 1:09:15 PM



ENLARGED FLOOR PLAN MEZZANINE 2
REFERENCED FROM 2 / A-100 3/8" = 1'-0"

ENLARGED FLOOR PLAN - 1ST FLOOR 1
REFERENCED FROM 1 / A-100 3/8" = 1'-0"

FLOOR PLAN NOTES (NOT ALL NOTES APPEAR ON EACH FLOOR PLAN)

1	FINISHES BY OWNER
2	CEILING BY OWNER
4	DOOR BY OWNER
5	WALL HUNG TOILET BY OWNER
6	URNIAL BY OWNER
7	SINK BY OWNER
8	CASEWORK BY OWNER
9	TOLIET ACCESORIES BY OWNER
10	TOILET PARTITIONS BY OWNER
11	LINE OF ROOF/CANOPIES ABOVE
12	SEMI RECESSED FIRE EXTINGUISHER CABINET. VERIFY FINAL QUANTITY AND LOCATION WITH FIRE MARSHAL AND CONFIRM WITH ARCHITECT
13	SURFACE MOUNTED FIRE EXTINGUISHER VERIFY FINAL QUANTITY AND LOCATION WITH FIRE MARSHAL AND CONFIRM WITH ARCHITECT
14	6" DIAMETER CONCRETE FILLED GALVANIZED PIPE BOLLARDS PER DETAIL - PAINTED RAL COLOR 2008 - BRIGHT RED ORANGE
15	FURNISH AND INSTALL 2" X 2" X 48" STAINLESS STEEL CORNER GUARDS AT 6'-0" A.F.F.
16	FURNISH AND INSTALL BLOCKING FOR OWNER PROVIDED FLAT SCREEN TV'S. FINAL LOCATIONS AND MOUNTING HEIGHT TO BE VERIFIED WITH OWNER
17	FURNISH AND INSTALL BLOCKING FOR OWNER PROVIDED FURNITURE FINAL LOCATIONS AND MOUNTING HEIGHT TO BE VERIFIED WITH OWNER
18	TRENCH DRAINS WITH OIL / SAND INTERCEPTOR, SLOPE FLOOR TO TRENCH AND FLOOR DRAIN SYSTEMS, REFER TO PLUMBING
19	SANITARY LAVATORY FLOOR DRAIN FOR AIRPLANE WASTE DISPOSAL, REFER TO PLUMBING
20	FIRE DEPARTMENT CONNECTION (FDC)
21	KNOX BOX AT DOOR COORDINATE SIZE/LOCATION WITH AHJ AND OWNER
22	REMOTE FIRE ALARM ANUCINATOR PANEL
23	PAINT FRONT FACE OF PEMB COLUMNS TO 28'-0" AFF PNT-4

PROJECT TEAM

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03/21/2025
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TM Aviation

TM AVIATION HANGER

AT LXT

No.	Date	Description
Issue:	PERMIT SET	
Date:	MAR 21, 2025	
Drawn By	Author	Checked By Checker

KEY PLAN
NORTH

SHEET NAME
ENLARGED PLAN

SHEET NUMBER
A-102

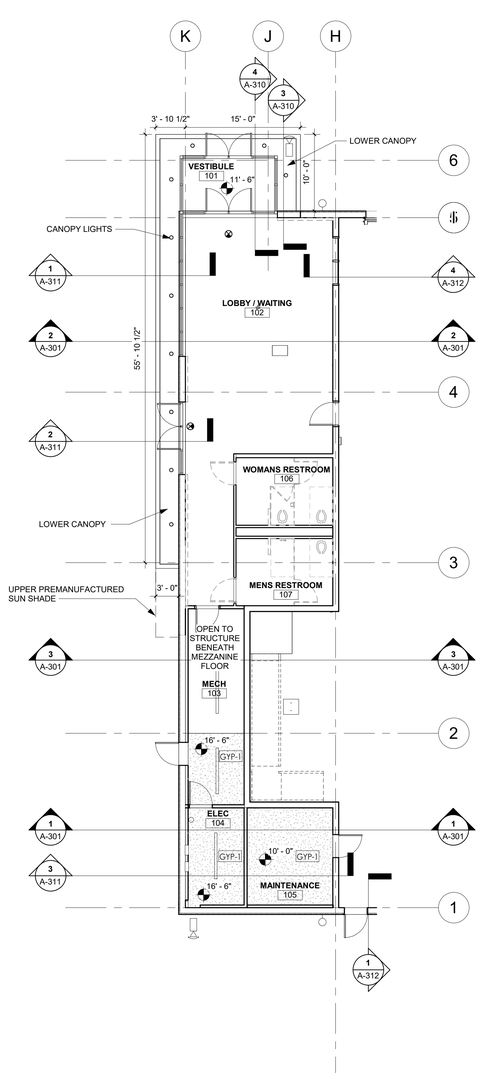
PROJECT NUMBER 2404

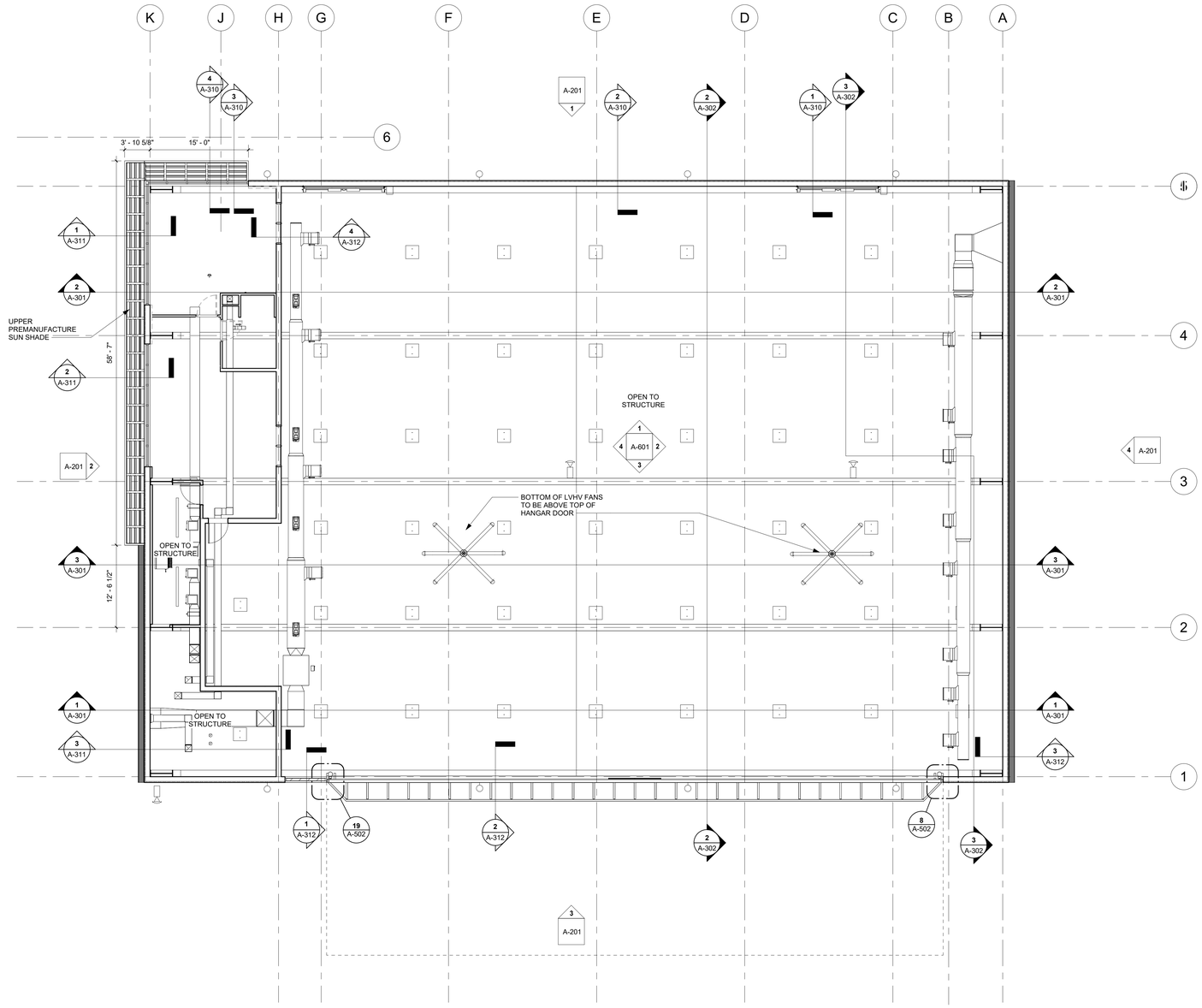
3/24/2025 1:09:16 PM

RCP GENERAL NOTES & LEGEND

1. PAINT ALL NEW AND EXISTING PLASTER/GYPSUM BOARD CEILINGS.
2. PATCH AND REPAIR ANY EXISTING TO REMAIN FINISHES THAT DO NOT HAVE A LIKE-NEW APPEARANCE.
3. ALL EXISTING DIMENSIONS AND ELEVATIONS ARE FOR GENERAL GUIDANCE AND ARE TO BE FIELD VERIFIED. NOTIFY ARCHITECT OF DISCREPANCIES BETWEEN FIELD CONDITIONS AND CONTRACT DOCUMENTS. WHERE NEW WORK IS SHOWN ADJACENT TO EXISTING WORK, NEW WORK TO BE IN LINE WITH EXISTING VERTICALLY/HORIZONTALLY.

GWB
5/8" TYPE "X" GYPSUM BOARD ON METAL FRAMING





1ST FLOOR REFLECTED CEILING PLAN 2
REFERENCED FROM 1 / A-201 1/8" = 1'-0"

OVERALL/SECOND FLOOR REFLECTED CEILING PLAN 1
REFERENCED FROM 1 / A-201 1/8" = 1'-0"

3/24/2025 1:09:17 PM

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TM Aviation

TM AVATION HANGER

AT LXT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **Author** Checked By **Checker**

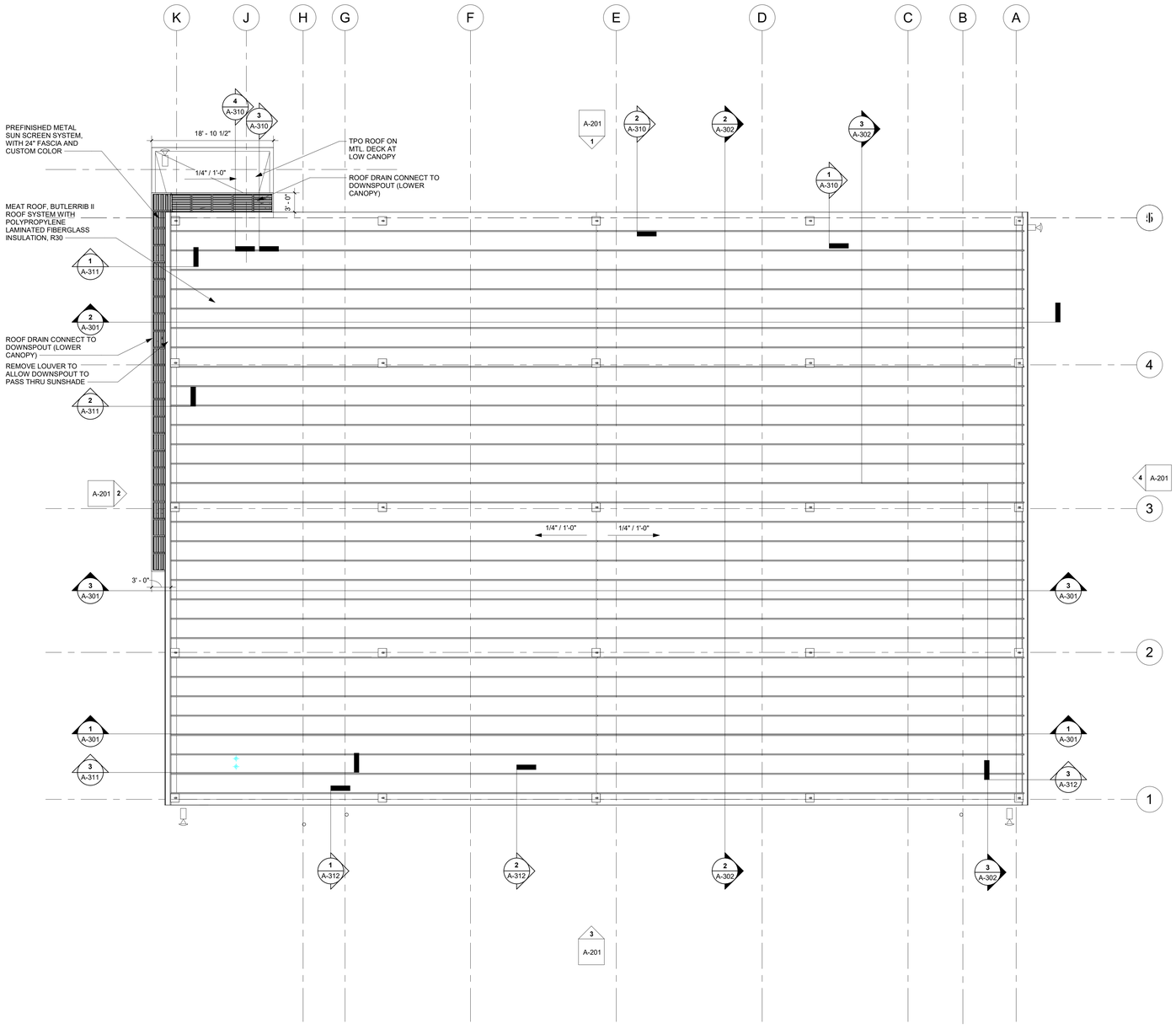
KEY PLAN

NORTH

SHEET NAME
OVERALL REFLECTED CEILING PLAN

SHEET NUMBER
A-103

PROJECT NUMBER
2404



ROOF
REFERENCED FROM 1 / A-201 1/8" = 1'-0" 1

3/24/2025 1:09:18 PM

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TM AVATION HANGER

AT LXT

No.	Date	Description

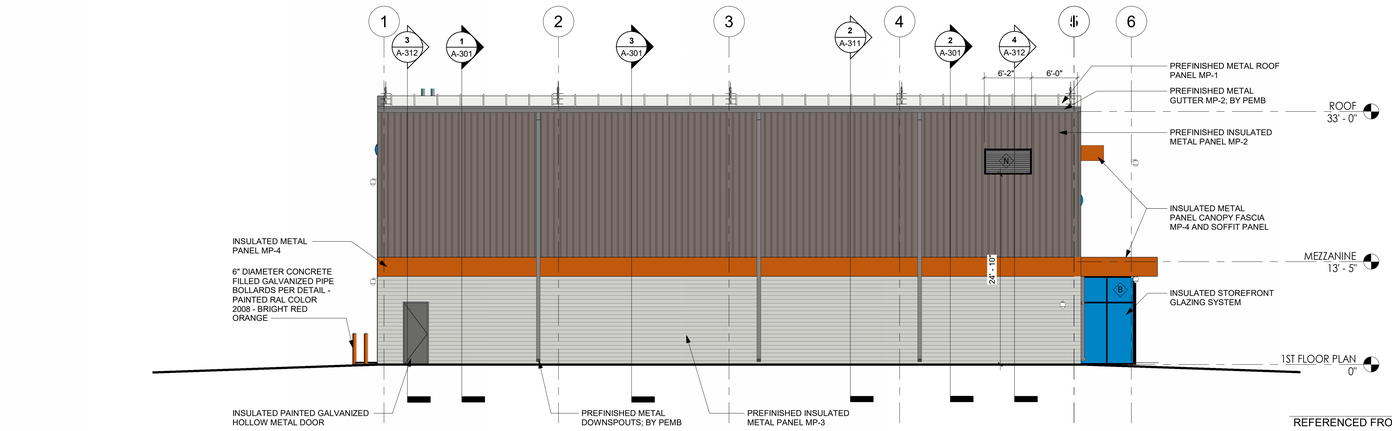
Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **Author** Checked By **Checker**

KEY PLAN
NORTH

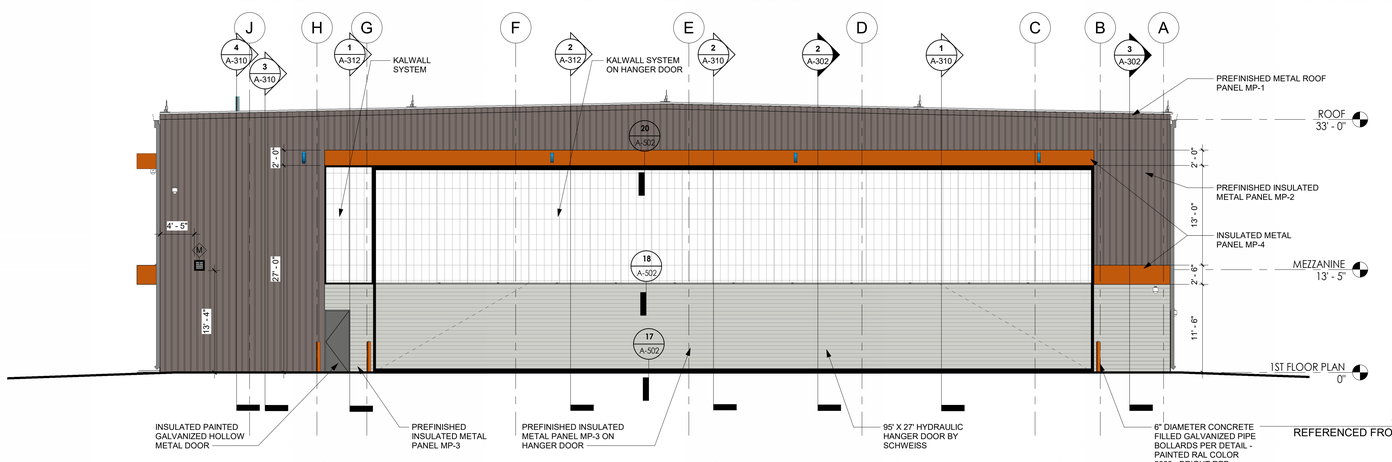
SHEET NAME
ROOF PLAN

SHEET NUMBER
A-104

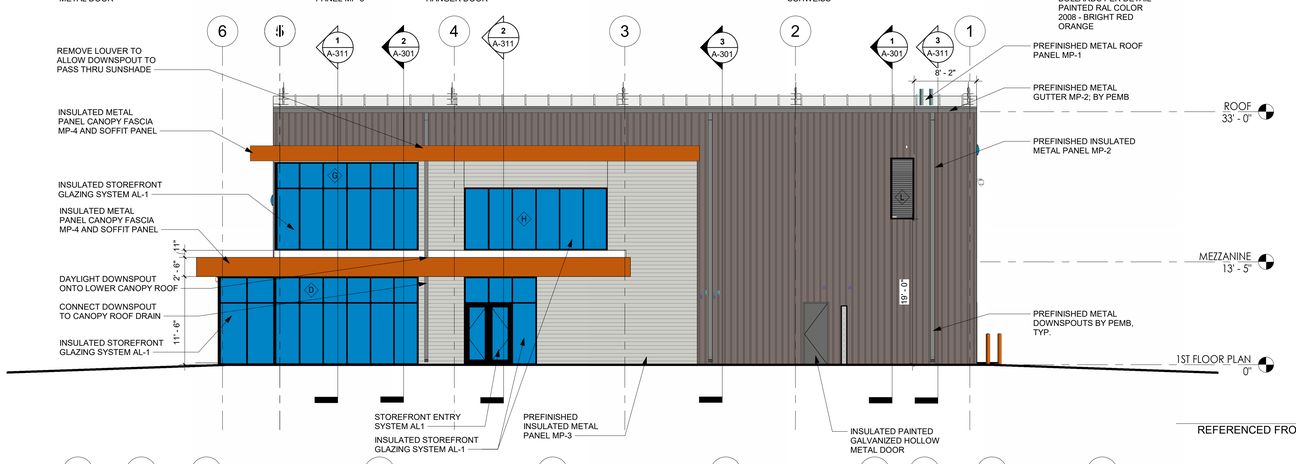
PROJECT NUMBER 2404



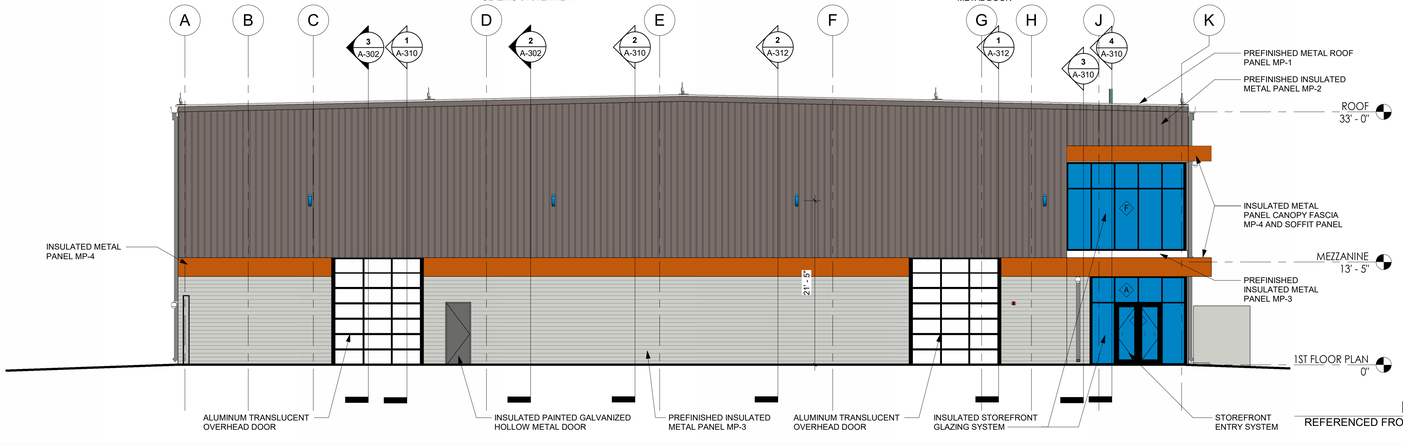
EAST ELEVATION 4
REFERENCED FROM 1 / A-103 1/8" = 1'-0"



SOUTH ELEVATION 3
REFERENCED FROM 1 / A-100 1/8" = 1'-0"



WEST ELEVATION 2
REFERENCED FROM 1 / A-100 1/8" = 1'-0"



NORTH ELEVATION 1
REFERENCED FROM 1 / A-100 1/8" = 1'-0"

ELEVATION NOTES

PREFINISHED EXTERIOR METAL PANELS:

MP1 - ROOF PANEL - BUTLER MR24 ROOF SYSTEM, COOL SOLAR WHITE

MP2 - VERTICAL PANEL - AWIP HR5-W INSULATED PANEL, GRIZZLE GRAY

MP3 - HORIZONTAL PANEL - AWIP MV40 INSULATED PANEL, POLAR WHITE

MP4 - HORIZONTAL PANELS - AWIP FL40 INSULATED PANEL - RAL COLOR 2008 - BRIGHT RED ORANGE

TRANSLUCENT WALL PANELS:
KALWALL 4" THICK LIGHT-TRANSMITTING WALL PANELS

CANOPY:
PREFINISHED EXTERIOR METAL PANELS - CUSTOM COLOR TO MATCH RAL COLOR 2008 - BRIGHT RED ORANGE

GLASS:
1" INSULATED SOLARBAN 60 (2) SOLARGRAY + CLEAR, LOW E GLASS WITH ARGON FILL - (TO MEET U-VALUE OF .29 OR BETTER AND SHGC OF .25 OR BETTER)

STOREFRONT SYSTEM:
AL-1 - ANODIZED ALUMINUM FRAMES, BLACK FINISH

HOLLOW METAL DOORS:
GALVANIZED INSULATED, PAINTED TO MATCH ADJACENT WALLS. U.N.O.

OVERHEAD DOORS:
ALUMINUM GLASS PREFINISHED TO MATCH STOREFRONT, BLACK

LOUVERS:
PREFINISHED TO MATCH STOREFRONT SYSTEM

FLASHING:
PREFINISHED METAL FLASHING TO MATCH ADJACENT WALL COLORS

DOWNSPOUTS / GUTTERS:
PREFINISHED METAL TO MATCH AWIP GRIZZLE GRAY

BOLLARDS:
PAINTED IN CONTRASTING COLOR MATCHING BUILDING FINISHES

CAULK:
TO MATCH ADJACENT WALL FINISHES

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03/21/2025
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TM AVIATION HANGER
AT LXT

No.	Date	Description
1	04/03/25	Addendum 02

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **Author** | Checked By **Checker**

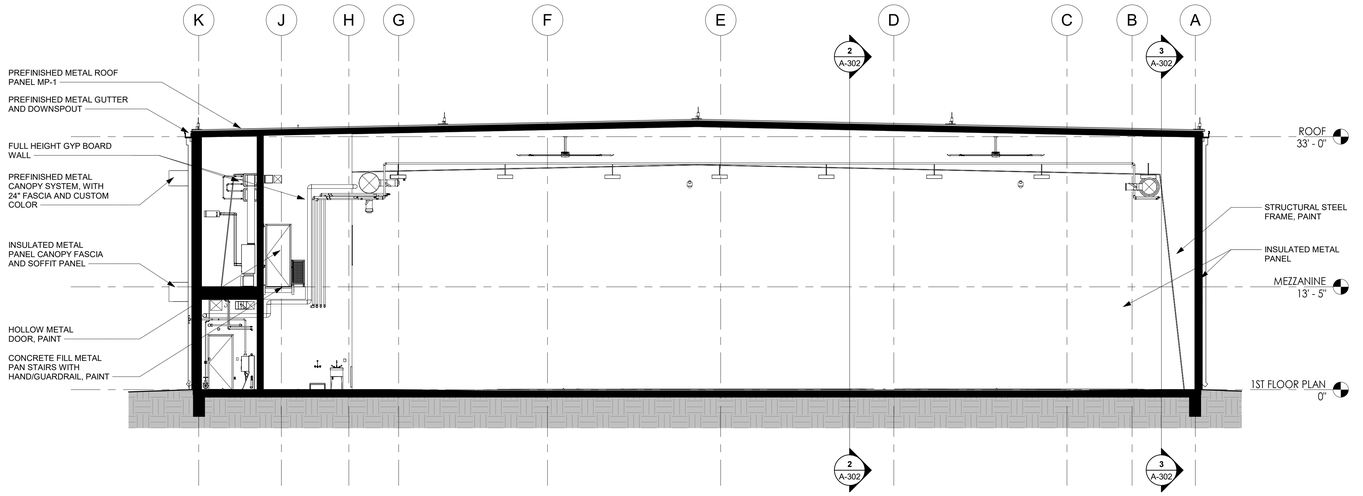
KEY PLAN
NORTH

SHEET NAME
EXTERIOR ELEVATIONS

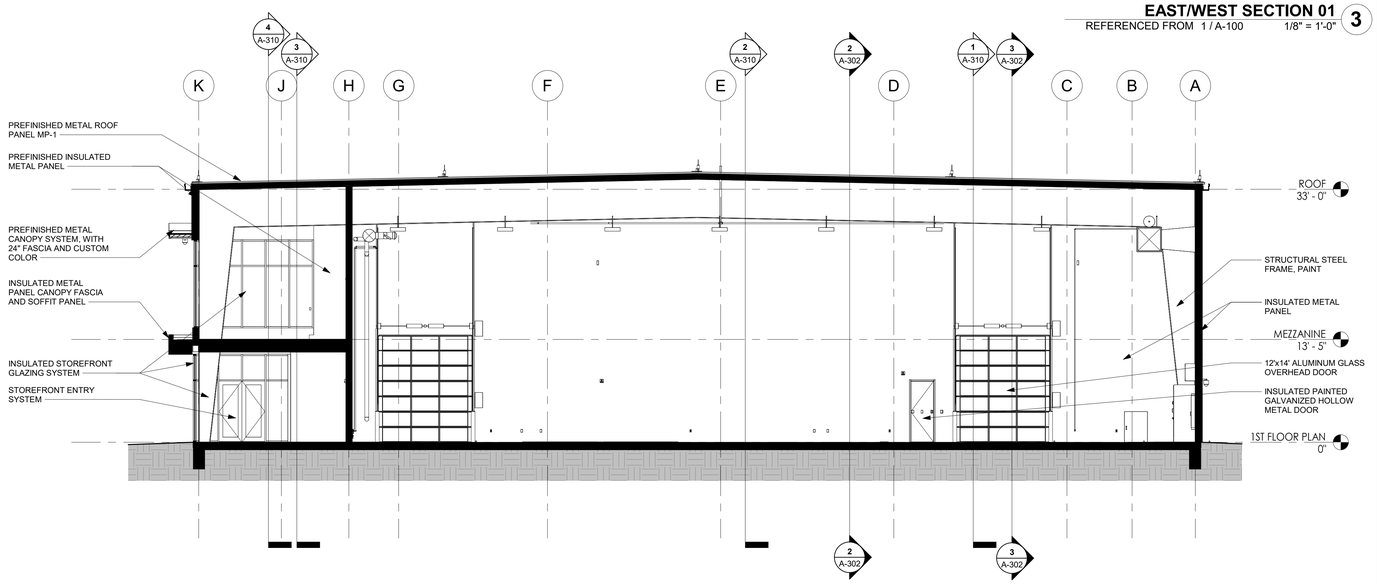
SHEET NUMBER
A-201

PROJECT NUMBER
2404

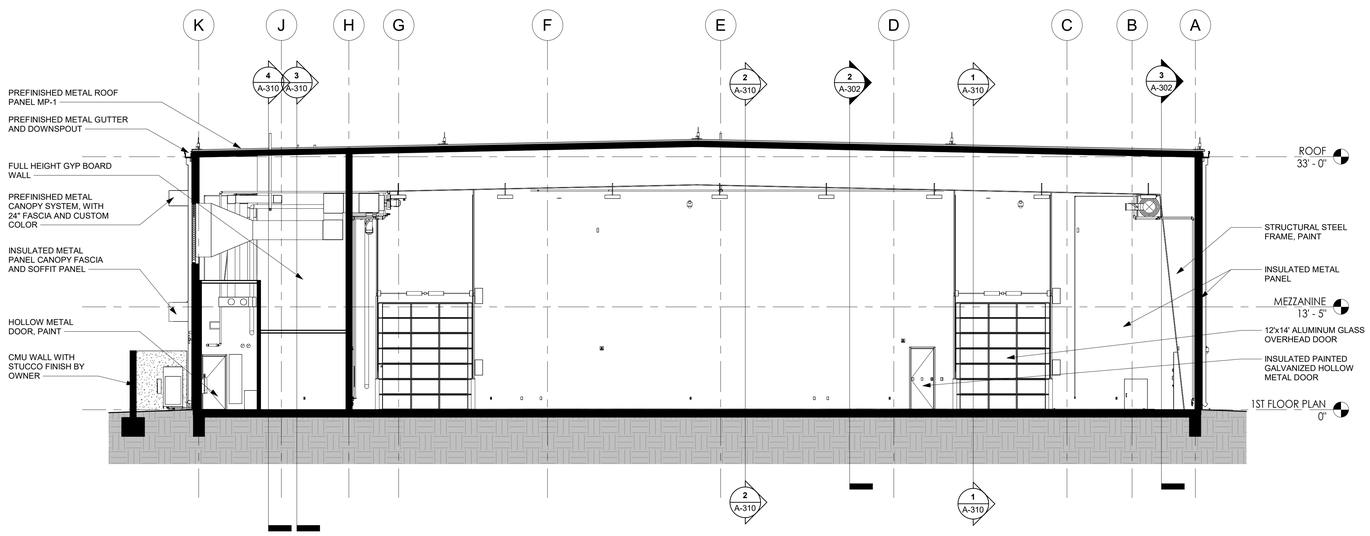
4/9/2025 3:44:49 PM



EAST/WEST SECTION 01 3
REFERENCED FROM 1 / A-100 1/8" = 1'-0"



EAST/WEST SECTION 02 2
REFERENCED FROM 1 / A-100 1/8" = 1'-0"



EAST/WEST SECTION 03 1
REFERENCED FROM 1 / A-100 1/8" = 1'-0"

3/24/2025 1:09:27 PM

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TM AVATION HANGER

AT LXT

No.	Date	Description
Issue:	PERMIT SET	
Date:	MAR 21, 2025	
Drawn By	Author	Checked By Checker

KEY PLAN

NORTH

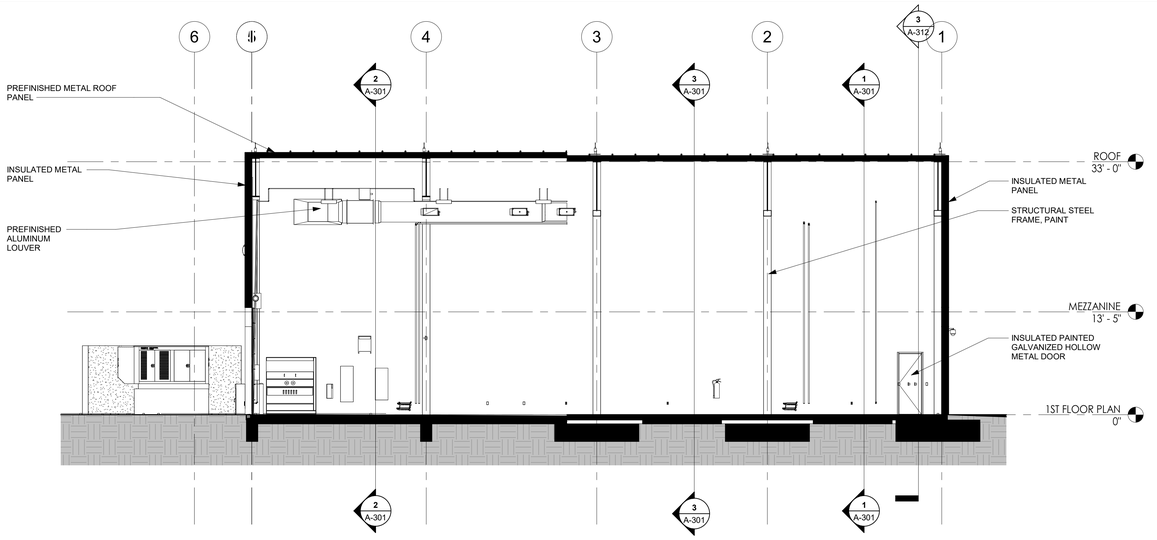
SHEET NAME

BUILDING SECTIONS

SHEET NUMBER

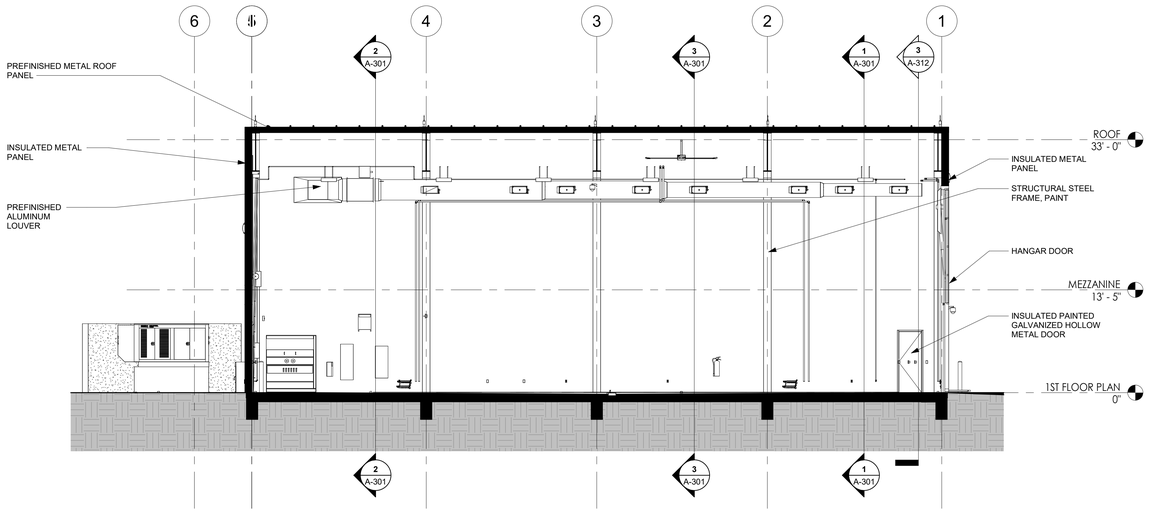
A-301

PROJECT NUMBER 2404



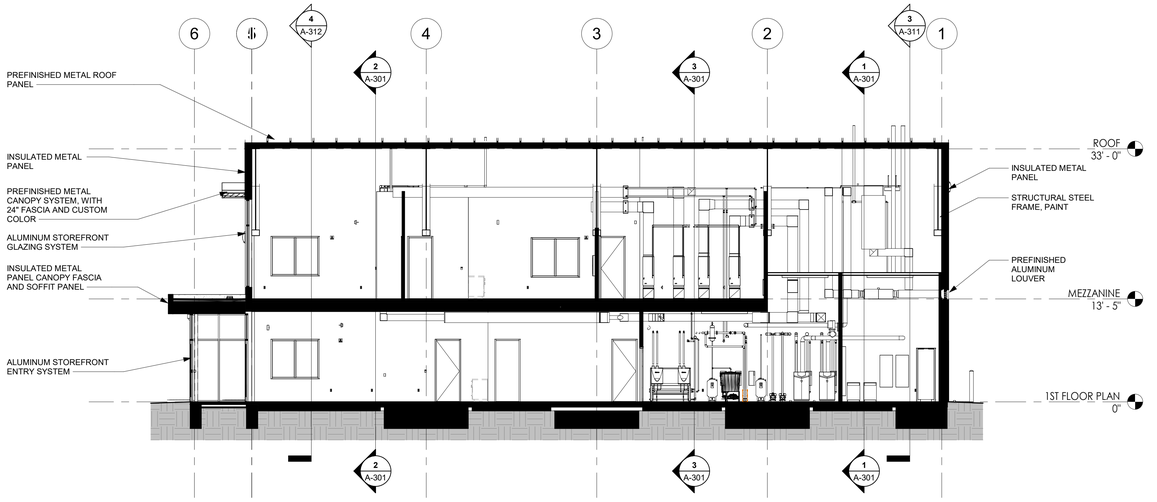
NORTH/SOUTH SECTION 03 — 3

REFERENCED FROM 1 / A-100 — 1/8" = 1'-0"



NORTH/SOUTH SECTION 02 — 2

REFERENCED FROM 1 / A-100 — 1/8" = 1'-0"



NORTH/SOUTH SECTION @ OFFICE 01 — 1

REFERENCED FROM / — 1/8" = 1'-0"

3/24/2025 1:09:32 PM

PROJECT TEAM

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AT LXT

No.	Date	Description

Issue: **PERMIT SET**

Date: **MAR 21, 2025**

Drawn By **Author** | Checked By **Checker**

KEY PLAN

NORTH

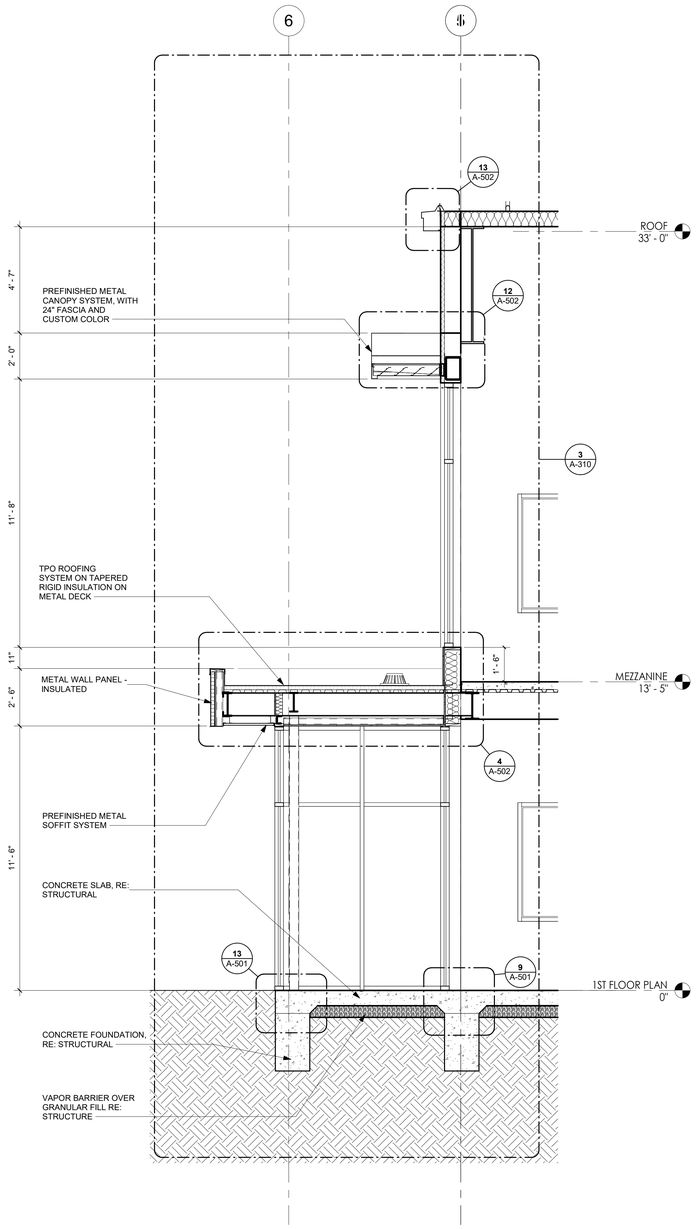
SHEET NAME

BUILDING SECTIONS

SHEET NUMBER

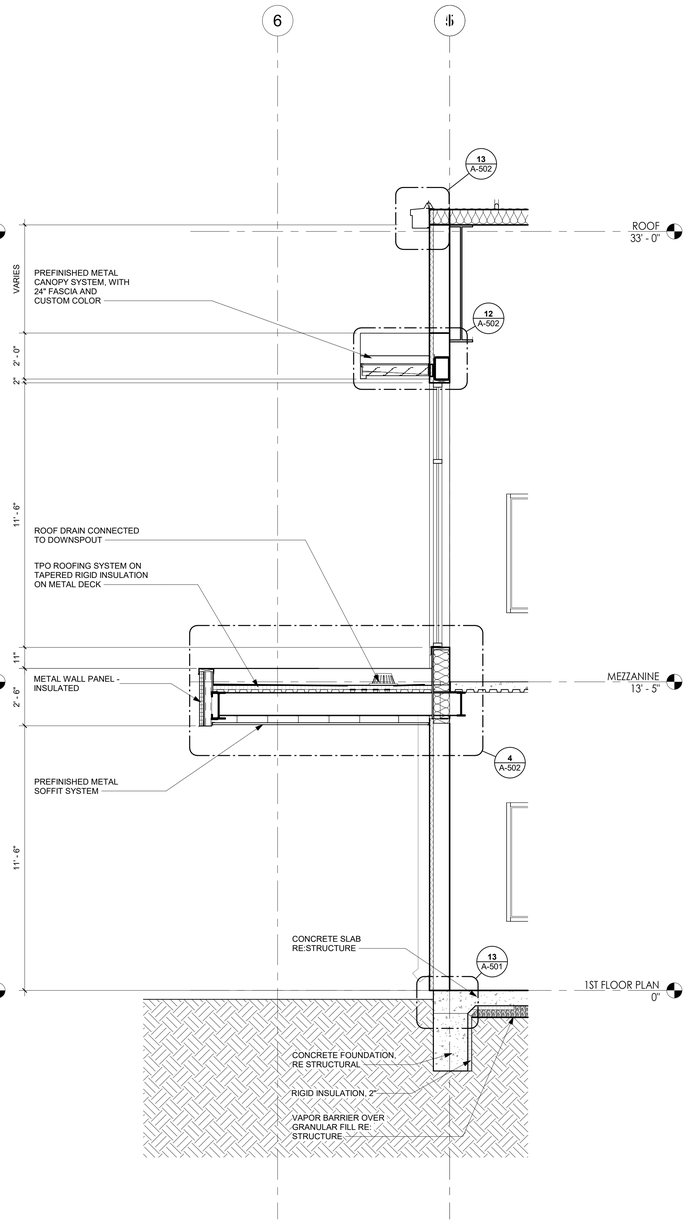
A-302

PROJECT NUMBER 2404



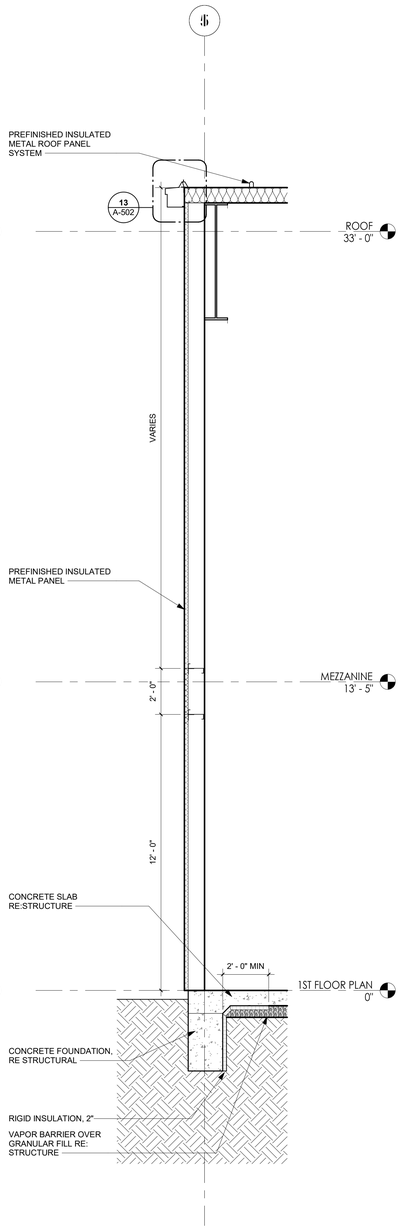
ENTRANCE VESTIBULE & STOREFRONT 4

REFERENCED FROM 1 / A-100 3/8" = 1'-0"



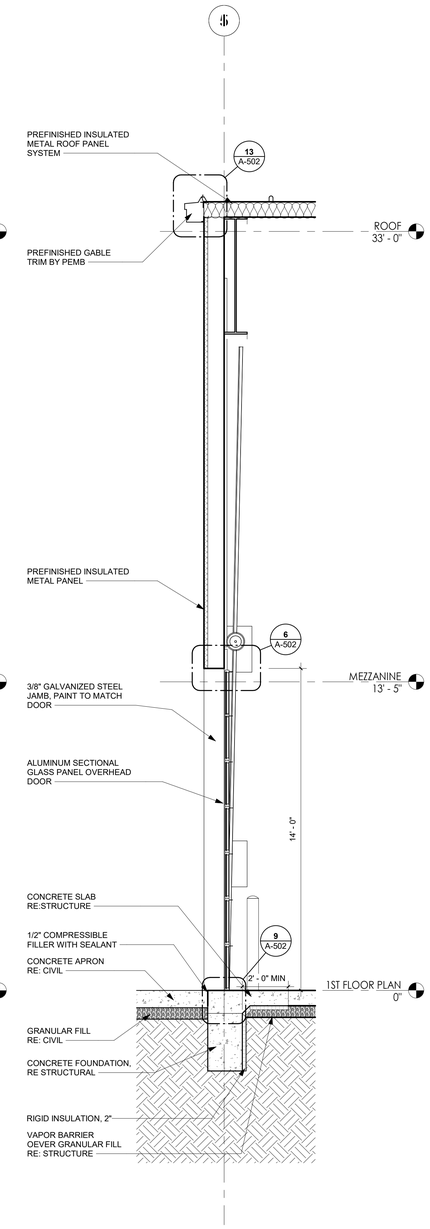
ENTRANCE CANOPY 3

REFERENCED FROM 1 / A-100 3/8" = 1'-0"



TYPICAL ENDWALL 2

REFERENCED FROM 1 / A-100 3/8" = 1'-0"



OVERHEAD DOOR 1

REFERENCED FROM 1 / A-100 3/8" = 1'-0"

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TM AVATION HANGER

AT LXT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **Author** Checked By **Checker**

KEY PLAN

NORTH

SHEET NAME

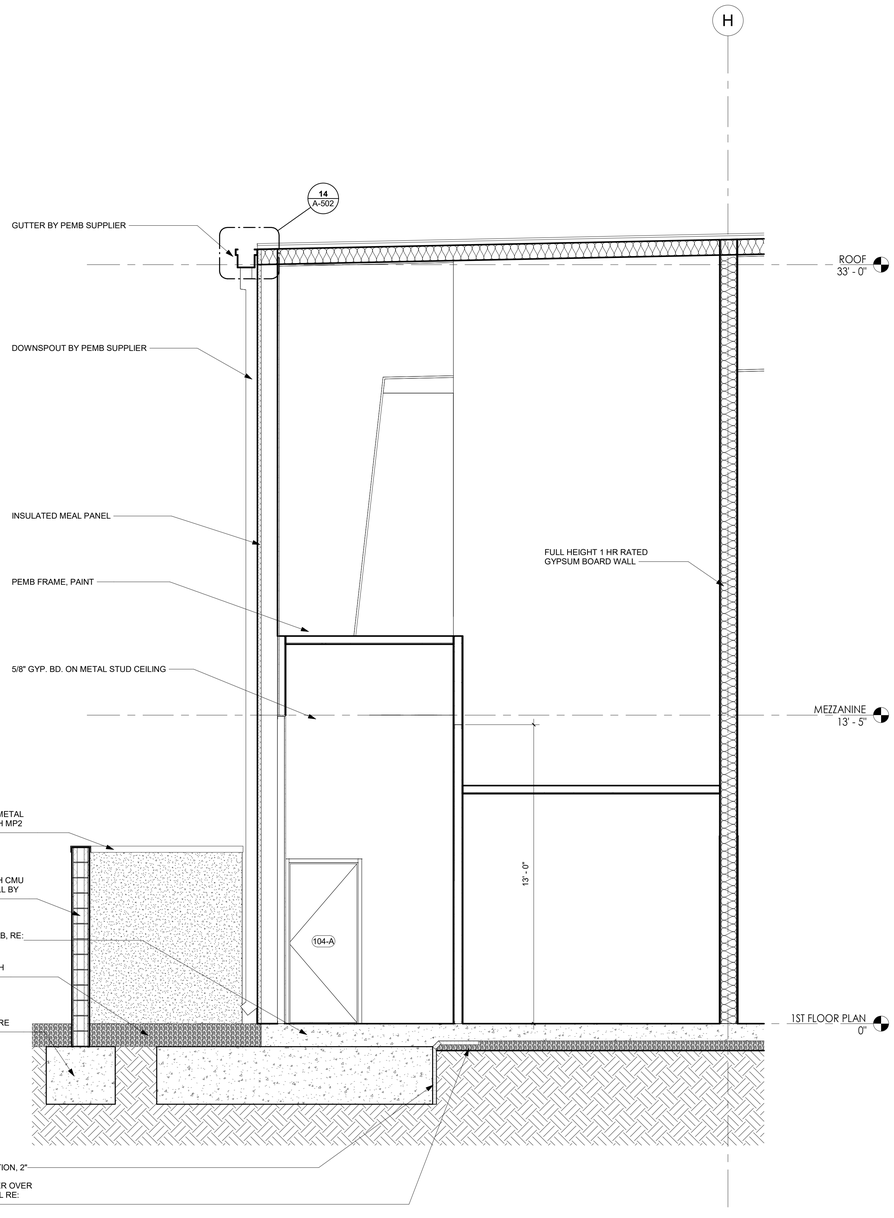
WALL SECTIONS

SHEET NUMBER

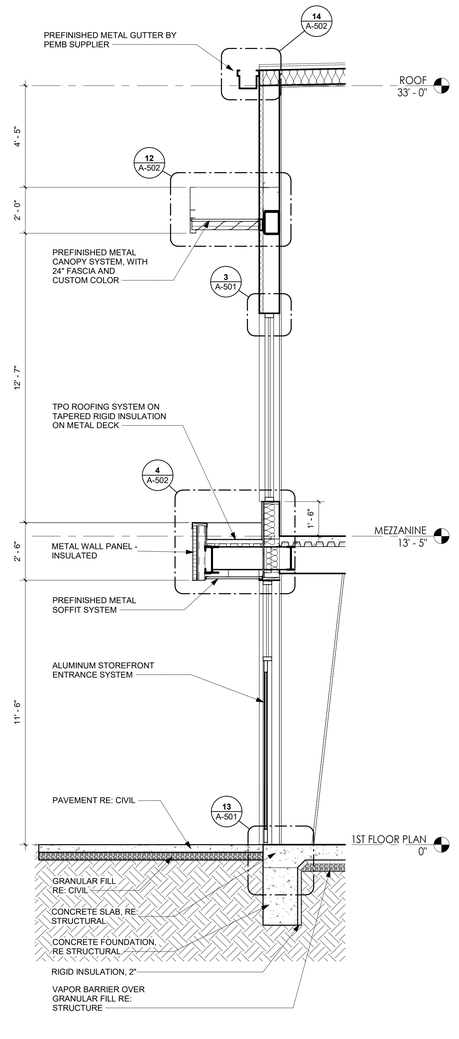
A-310

PROJECT NUMBER 2404

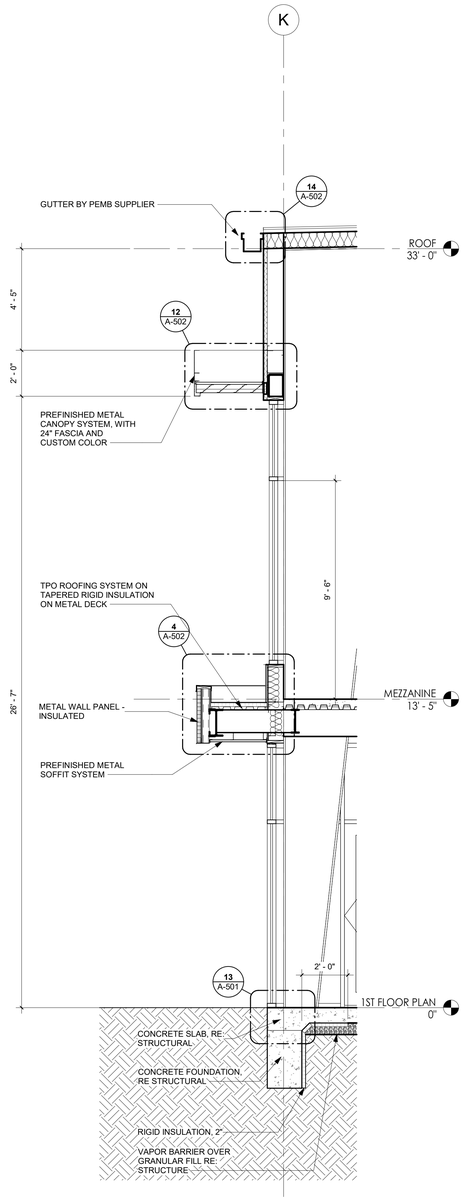
3/24/2025 1:09:33 PM



FULL HEIGHT WALL 3
REFERENCED FROM 1 / A-100 3/8" = 1'-0"



SIDEWALL AT ENTRANCE 2
REFERENCED FROM 1 / A-100 3/8" = 1'-0"



CANOPY AND STOREFRONT AT SIDEWALL 1
REFERENCED FROM 1 / A-100 3/8" = 1'-0"

3/24/2025 1:09:34 PM

PROJECT TEAM

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TM AVATION HANGER

TM Aviation
AT LXT

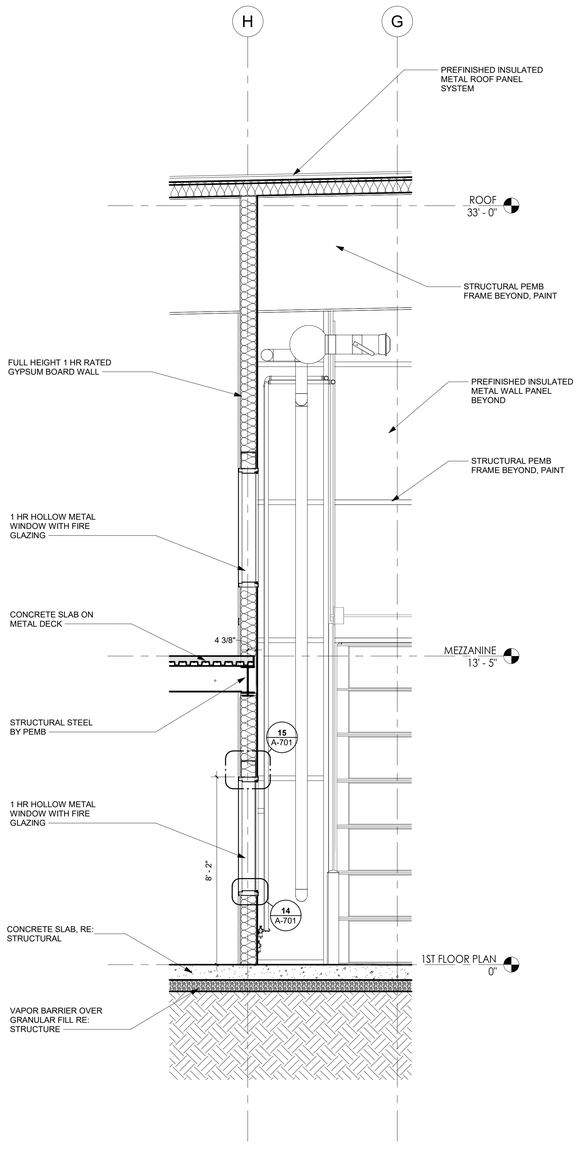
No.	Date	Description
Issue:	PERMIT SET	
Date:	MAR 21, 2025	
Drawn By	Author	Checked By Checker

KEY PLAN
NORTH

SHEET NAME
WALL SECTIONS

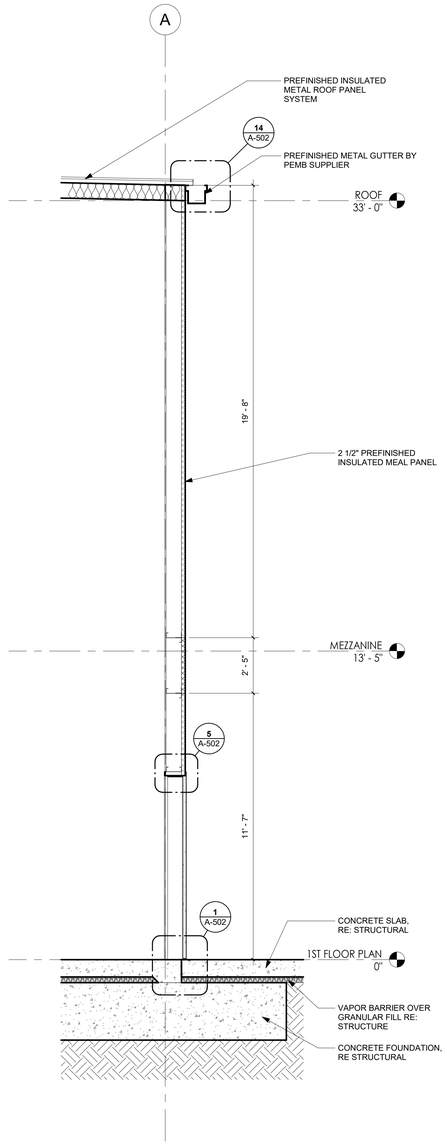
SHEET NUMBER
A-311

PROJECT NUMBER
2404



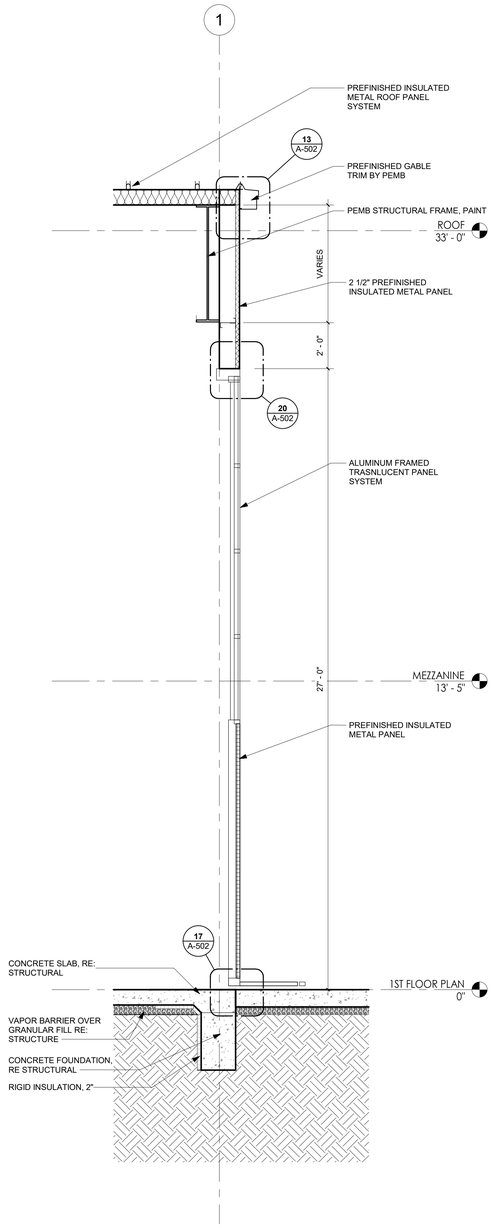
HANGER SEPERATION WALL 4

REFERENCED FROM 1 / A-100 3/8" = 1'-0"



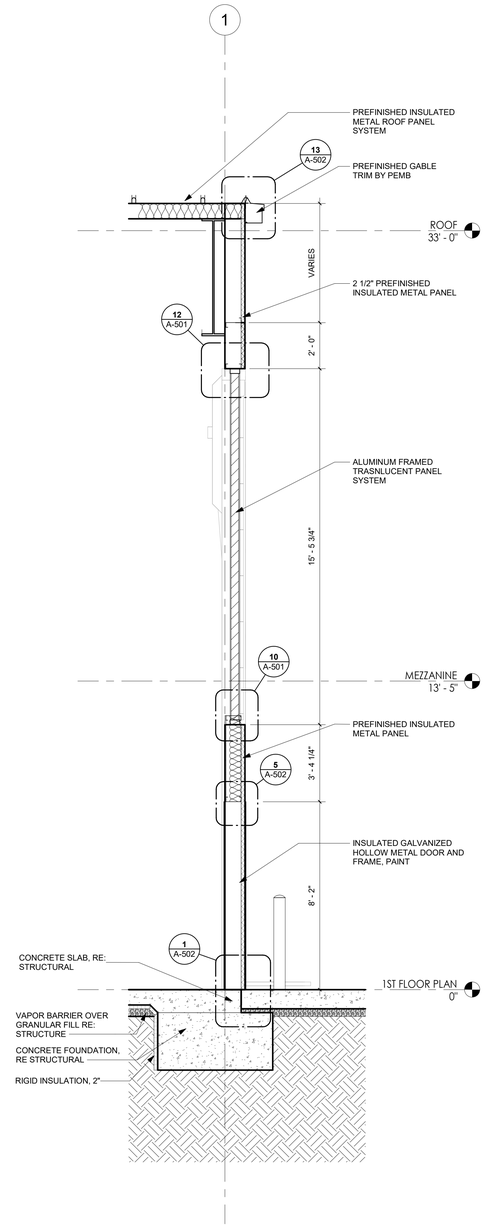
TYPICAL SIDEWALL 3

REFERENCED FROM 1 / A-100 3/8" = 1'-0"



HANGER DOOR 2

REFERENCED FROM 1 / A-100 3/8" = 1'-0"



AIR SIDE TRANSLUCENT PANELS 1

REFERENCED FROM 1 / A-100 3/8" = 1'-0"

3/24/2025 1:09:36 PM

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TM Aviation

TM AVATION HANGER

AT LXT

No.	Date	Description
Issue:	PERMIT SET	
Date:	MAR 21, 2025	
Drawn By	Author	Checked By Checker

KEY PLAN

NORTH

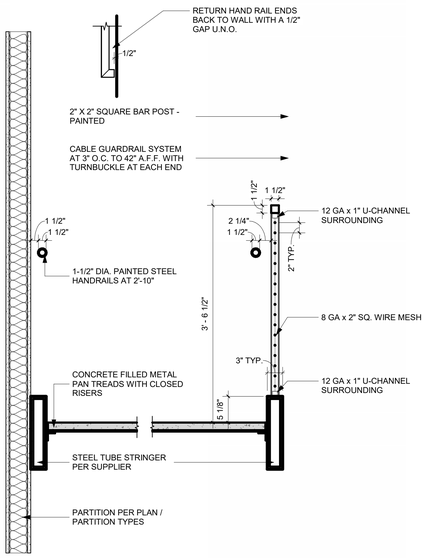
SHEET NAME

WALL SECTIONS

SHEET NUMBER

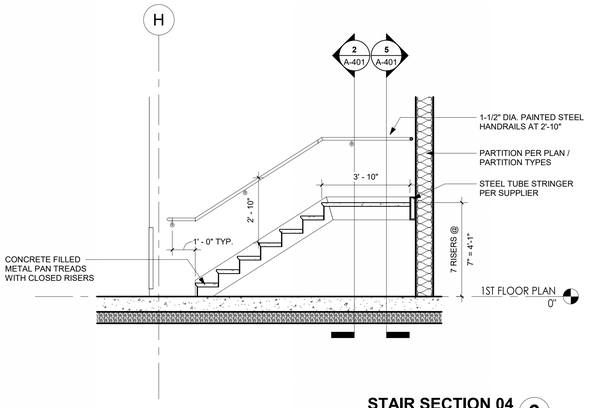
A-312

PROJECT NUMBER 2404



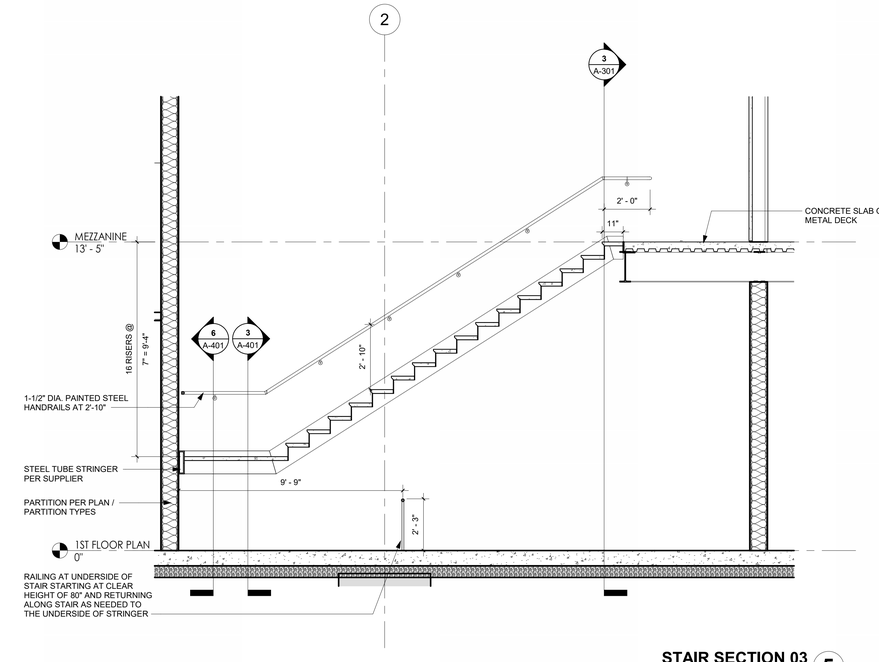
DETAIL - STAIRS 7

REFERENCED FROM / 1" = 1'-0"



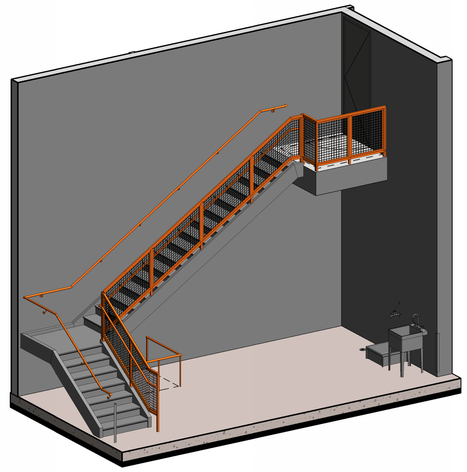
STAIR SECTION 04

REFERENCED FROM 2 / A-401 3/8" = 1'-0" 6

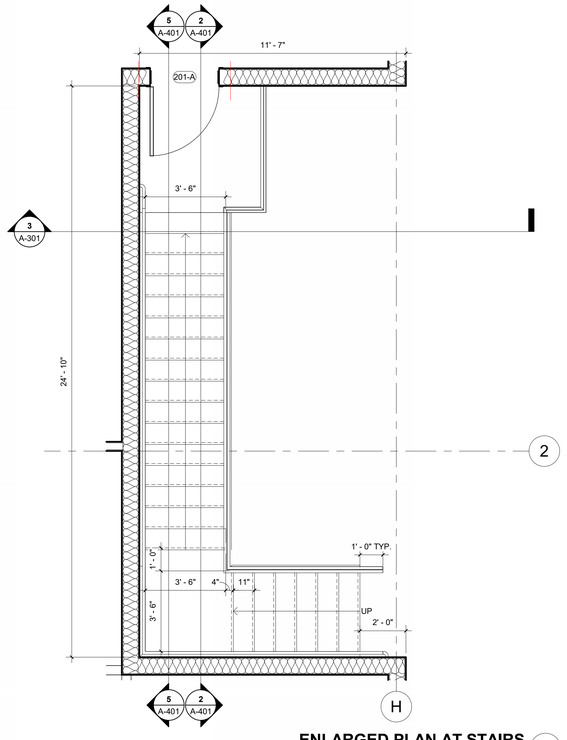


STAIR SECTION 03

REFERENCED FROM 1 / A-401 3/8" = 1'-0" 5

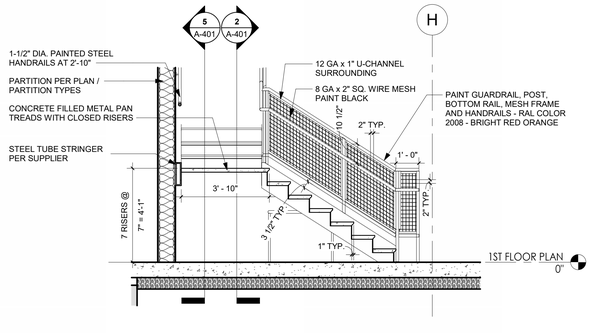


STAIR - 3D 4



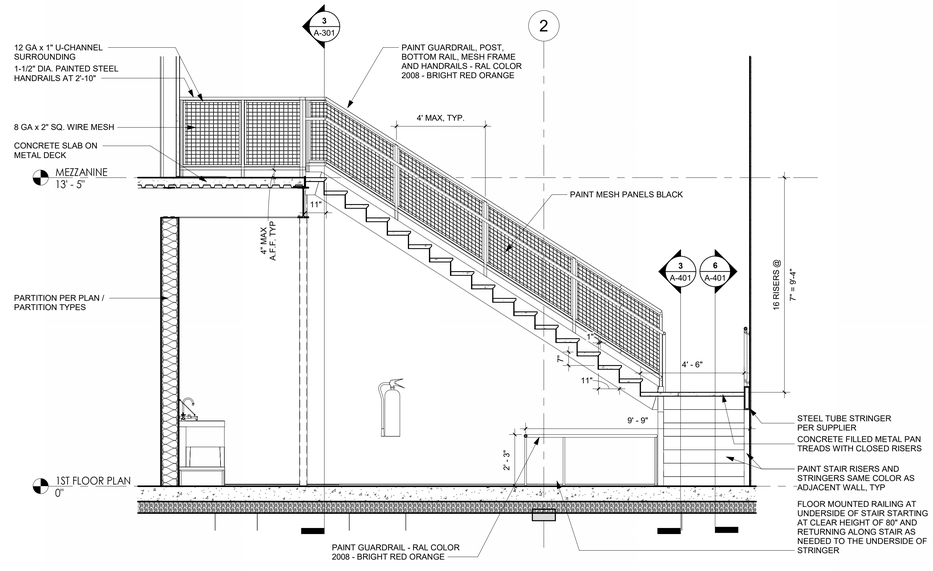
ENLARGED PLAN AT STAIRS 1

REFERENCED FROM 1 / A-100 3/8" = 1'-0"



STAIR SECTION 02

REFERENCED FROM 2 / A-401 3/8" = 1'-0" 3



STAIR SECTION 01

REFERENCED FROM 1 / A-401 3/8" = 1'-0" 2

STAIR / RAILING / GUARDRAIL NOTES:

- MINIMUM GUARDRAIL HEIGHT IS 42" AS MEASURED FROM ADJACENT WALKING SURFACES, ON STAIRS FROM THE LINE OF THE CONNECTING LEADING EDGES OF THE TREAD NOSING, AND ON RAMPS FROM THE RAMP SURFACE.
- FROM FLOOR / TREAD HEIGHT UP TO 34" - GUARDRAIL CONSTRUCTION TO NOT ALLOW PASSAGE OF 4" SPHERE.
- FROM HEIGHT OF 34" TO 42", GUARDRAIL CONSTRUCTION TO NOT ALLOW THE PASSAGE OF 4 3/8" SPHERE.
- HANDRAILS ARE TO BE GRASPABLE A MINIMUM DIAMETER OF 1-1/4" AND MAX. OF 2".
- MAXIMUM RISER HEIGHT TO BE 7"
- MINIMUM TREAD DEPTH TO BE 11"
- ALL WELDS EXPOSED TO VIEW TO BE GROUND SMOOTH.
- ALL STAIRS TO HAVE CLOSED RISER CONSTRUCTION.
- THE GREATEST RISER HEIGHT WITHIN ANY FLIGHT OF STAIRS SHALL NOT EXCEED THE SMALLEST BY 0.375 INCH.
- THE GREATEST TREAD DEPTH WITHIN ANY FLIGHT OF STAIRS SHALL NOT EXCEED THE SMALLEST BY 0.375 INCH.
- STEEL STRINGER SHALL RUN CONTINUOUS AT LANDINGS AND TRANSITIONS OF SLOPE - STEEL FILLERS SHALL BE WELDED AND GROUND SMOOTH FOR SEAMLESS APPEARANCE.
- STRUCTURAL DESIGN OF STAIRS AND STAIR COMPONENTS PER SUPPLIER.
- STAIR STRUCTURE TO BE COORDINATED TO FIT WITHIN WALL FRAMING WHERE POSSIBLE.
- PROVIDE PROTECTIVE RAILING UNDER STAIRS TO THE MINIMUM CLEAR HEAD HEIGHT OF 80".
- GUARDRAILS TO MEET HORIZONTAL FORCE REQUIREMENTS PER CODE.
- ALL EXPOSED STEEL TO BE PAINT. U.N.O.

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STATE OF MISSOURI
JASON SCOTT BARKER
NUMBER A-2005001198
REGISTERED ARCHITECT

03/21/2025
Jason Scott Barker - MO #A-2005001198
Certificate of Authority - MO #000767

TM AVIATION HANGER
TM Aviation
AT LXT

No.	Date	Description
Issue:	PERMIT SET	
Date:	MAR 21, 2025	
Drawn By	Author	Checked By Checker

KEY PLAN

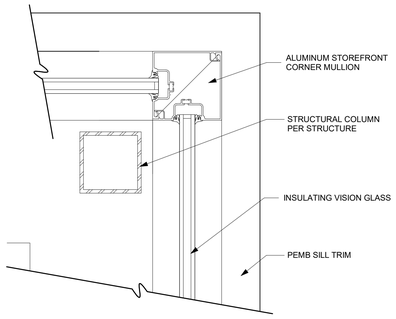
NORTH

SHEET NAME
VERTICAL CIRCULATION STAIRS

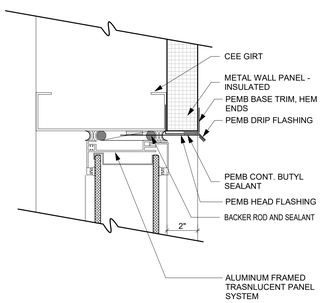
SHEET NUMBER
A-401

PROJECT NUMBER
2404

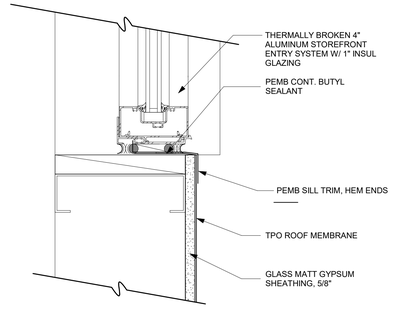
3/24/2025 1:09:41 PM



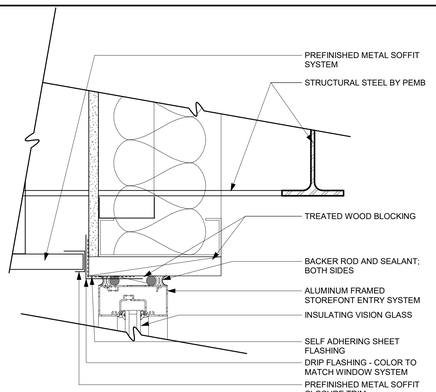
DETAIL - STOREFRONT OUTSIDE CORNER 16
REFERENCED FROM 1 / A-100 3" = 1'-0"



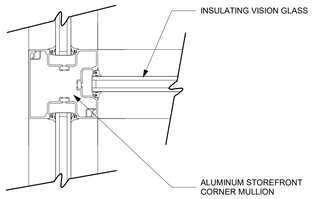
DETAIL - TRANSLUCENT PANEL HEAD 12
REFERENCED FROM 1 / A-312 3" = 1'-0"



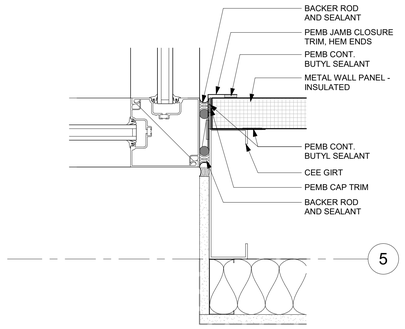
DETAIL - STOREFRONT SILL 2ND FLOOR 8
REFERENCED FROM 6 / A-702 3" = 1'-0"



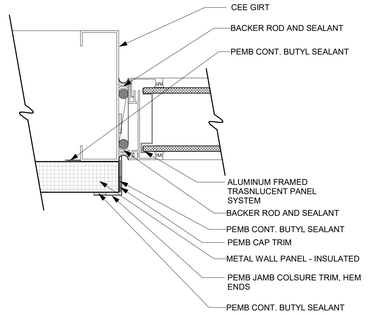
DETAIL - STOREFRONT HEAD AT CANOPY 4
REFERENCED FROM 3 / A-502 3" = 1'-0"



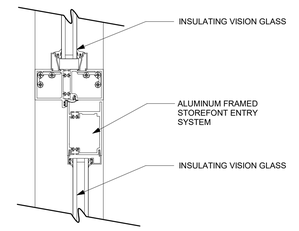
DETAIL - STOREFRONT CORNER 3 POCKET 19
REFERENCED FROM 1 / A-100 3" = 1'-0"



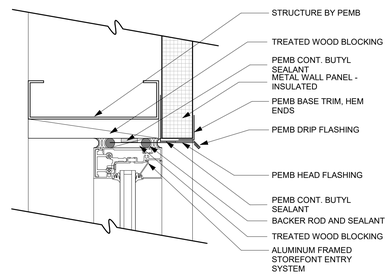
DETAIL - STOREFRONT CORNER 15
REFERENCED FROM 1 / A-100 3" = 1'-0"



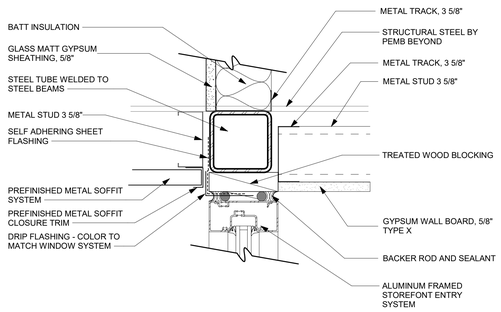
DETAIL - TRANSLUCENT PANEL JAMB 11
REFERENCED FROM 9 / A-702 3" = 1'-0"



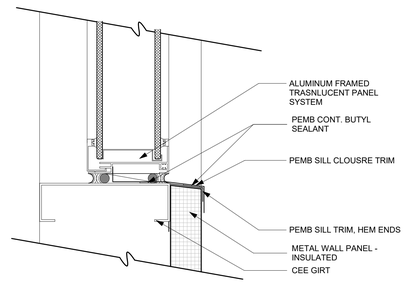
DETAIL - STOREFRONT HEAD ENTRY 7
REFERENCED FROM 1 / A-702 3" = 1'-0"



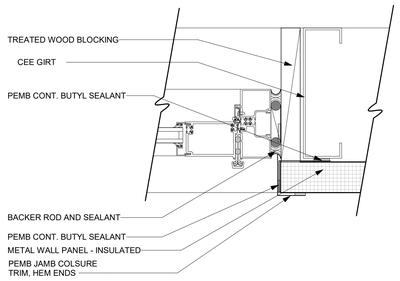
DETAIL - STOREFRONT HEAD 3
REFERENCED FROM 2 / A-311 3" = 1'-0"



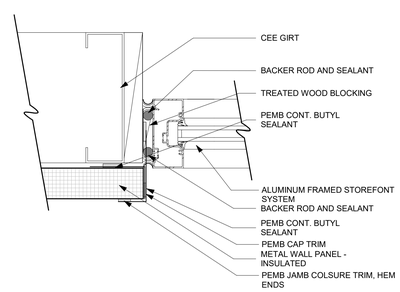
DETAIL - STOREFRONT HEAD AT VESTIBULE 14
REFERENCED FROM 3 / A-502 3" = 1'-0"



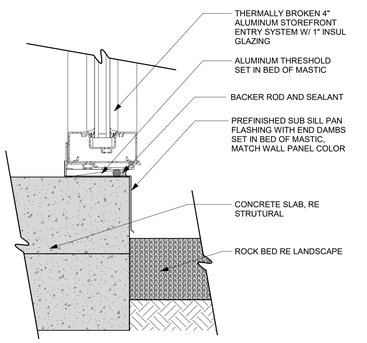
DETAIL - TRANSLUCENT PANEL SILL AT PEBM 10
REFERENCED FROM 1 / A-312 3" = 1'-0"



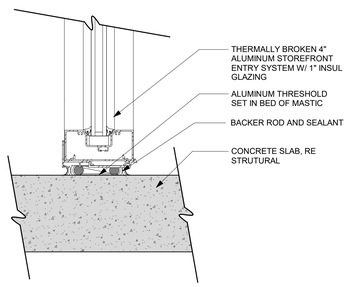
DETAIL - STOREFRONT JAMB AT DOOR 6
REFERENCED FROM / 3" = 1'-0"



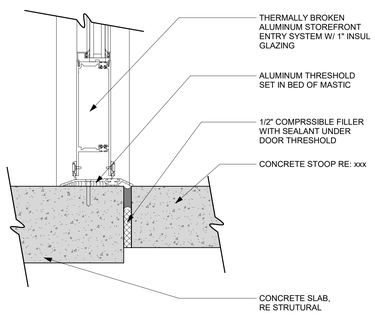
DETAIL - STOREFRONT JAMB 2
REFERENCED FROM 4 / A-702 3" = 1'-0"



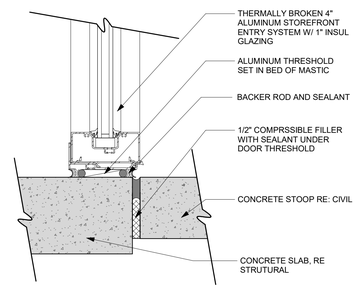
DETAIL - STOREFRONT SILL 13
REFERENCED FROM 3 / A-310 3" = 1'-0"



DETAIL - STOREFRONT SILL AT VEST. SLAB 9
REFERENCED FROM 4 / A-310 3" = 1'-0"



DETAIL - STOREFRONT SILL DOOR 5
REFERENCED FROM 1 / A-702 3" = 1'-0"



DETAIL - STOREFRONT SILL AT SLAB 1
REFERENCED FROM 2 / A-702 3" = 1'-0"

3/24/2025 1:09:43 PM

PROJECT TEAM

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STATE OF MISSOURI
JASON SCOTT BARKER
NUMBER A-2005001198
REGISTERED ARCHITECT

03/21/2025
Jason Scott Barker - MO #A-2005001198
Certificate of Authority - MO #000767

TM Aviation

TM AVATION HANGER
AT LXT

No.	Date	Description

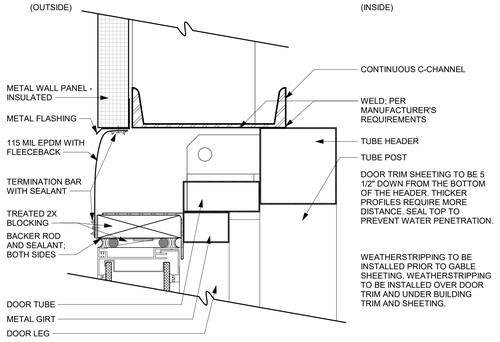
Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **Author** Checked By **Checker**

KEY PLAN
NORTH

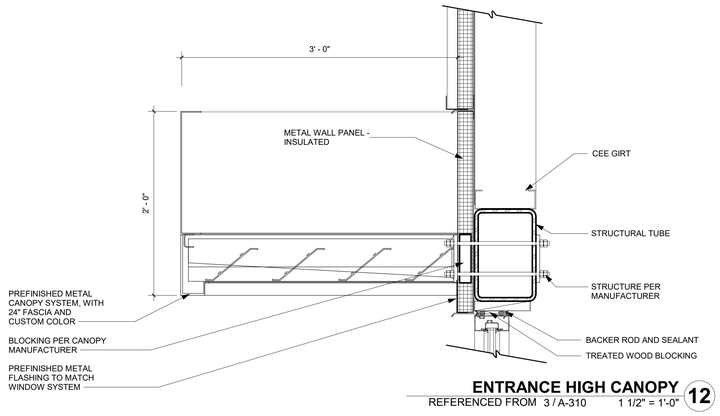
SHEET NAME
DETAILS

SHEET NUMBER
A-501

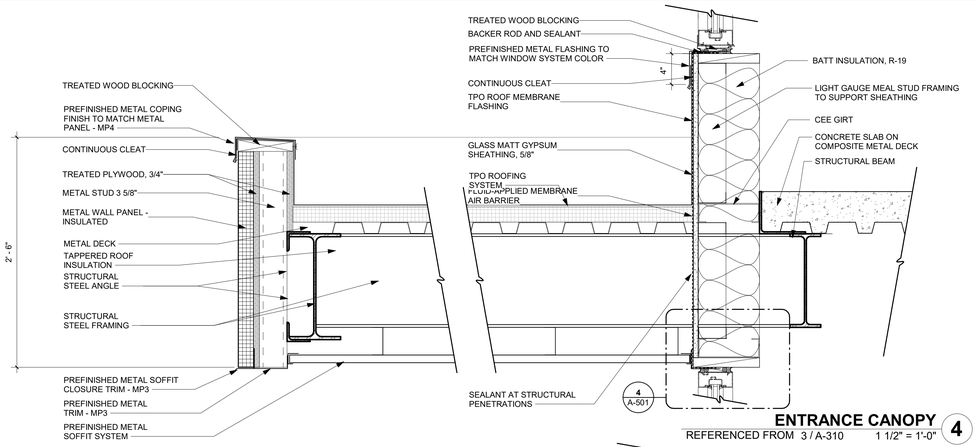
PROJECT NUMBER
2404



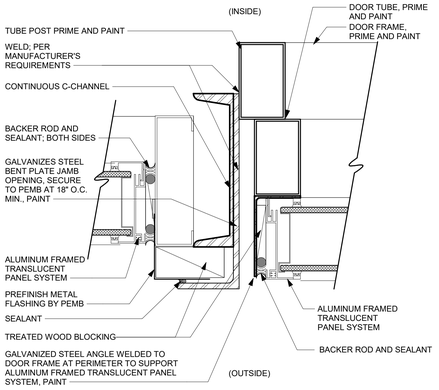
DETAIL - HANGAR DOOR HEAD 20
REFERENCED FROM 3 / A-201 3" = 1'-0"



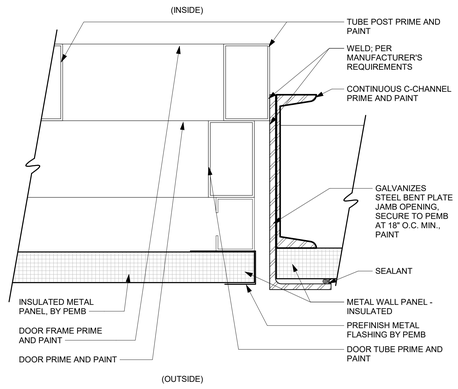
ENTRANCE HIGH CANOPY 12
REFERENCED FROM 3 / A-310 1 1/2" = 1'-0"



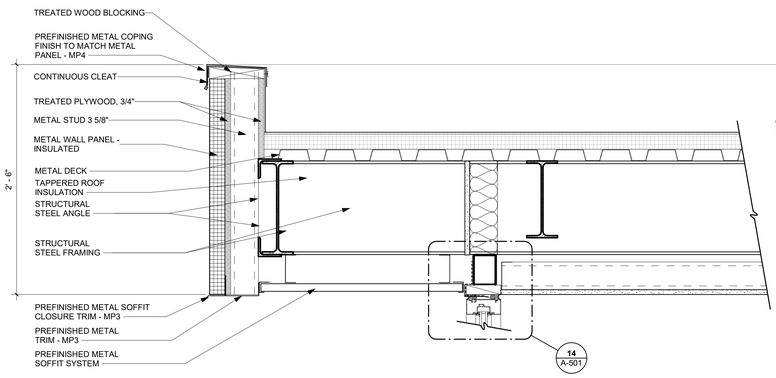
ENTRANCE CANOPY 4
REFERENCED FROM 3 / A-310 1 1/2" = 1'-0"



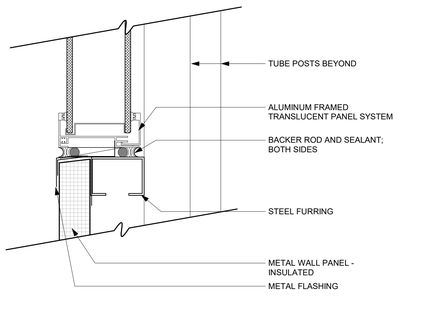
HANGAR DOOR JAMB @ TRANSLUCENT PANEL 19
REFERENCED FROM 1 / A-103 3" = 1'-0"



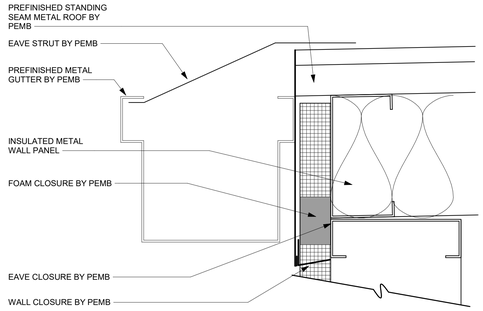
HANGAR DOOR JAMB @ METAL PANEL 8
REFERENCED FROM 1 / A-100 3" = 1'-0"



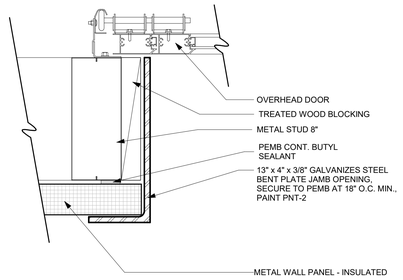
ENTRANCE CANOPY @ VESTIBULE 3
REFERENCED FROM / 1 1/2" = 1'-0"



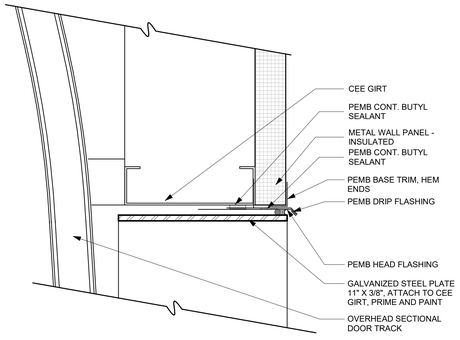
DETAIL - HANGAR DOOR @ KALWALL/MTL PANEL 18
REFERENCED FROM 3 / A-201 3" = 1'-0"



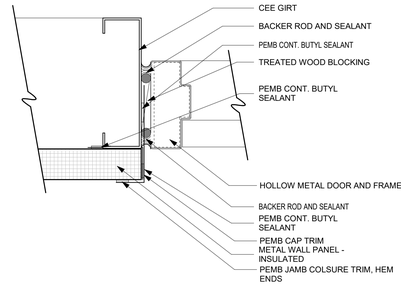
DETAIL - GUTTER 14
REFERENCED FROM 1 / A-311 3" = 1'-0"



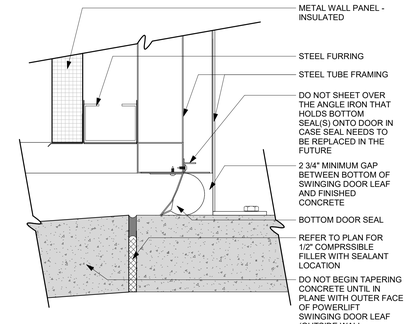
DETAIL - OVERHEAD DOOR JAMB 10
REFERENCED FROM / 3" = 1'-0"



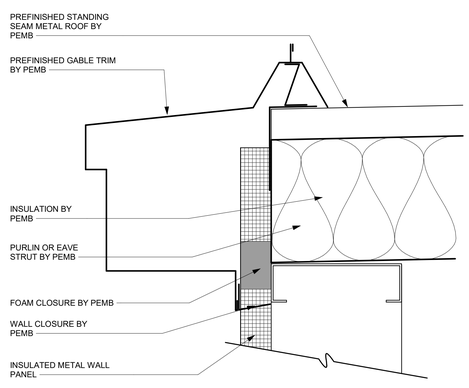
DOOR HEAD AT STORAGE OH SECTIONAL DOOR 6
REFERENCED FROM 1 / A-310 3" = 1'-0"



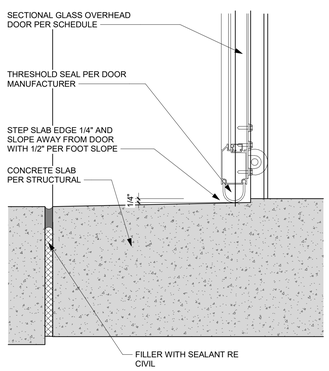
DETAIL - HM JAMB MTL PANEL 2
REFERENCED FROM / 3" = 1'-0"



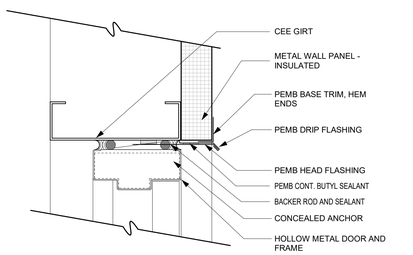
DETAIL - HANGAR DOOR SILL 17
REFERENCED FROM 3 / A-201 3" = 1'-0"



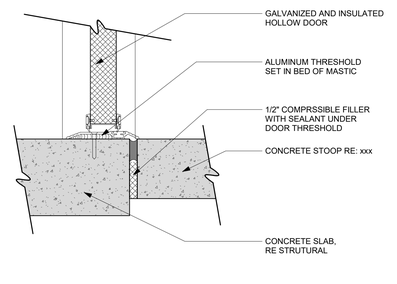
DETAIL - GABLE 13
REFERENCED FROM 1 / A-310 3" = 1'-0"



DETAIL - OVERHEAD DOOR SILL 9
REFERENCED FROM 1 / A-310 3" = 1'-0"



DETAIL - HM HEAD AT MTL PANEL 5
REFERENCED FROM 1 / A-312 3" = 1'-0"



DETAIL - HOLLOW METAL DOOR SILL 1
REFERENCED FROM 1 / A-312 3" = 1'-0"

PROJECT TEAM

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TM Aviation

TM AVATION HANGER
AT LXT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **Author** Checked By **Checker**

KEY PLAN
NORTH

SHEET NAME
DETAILS

SHEET NUMBER
A-502

PROJECT NUMBER 2404

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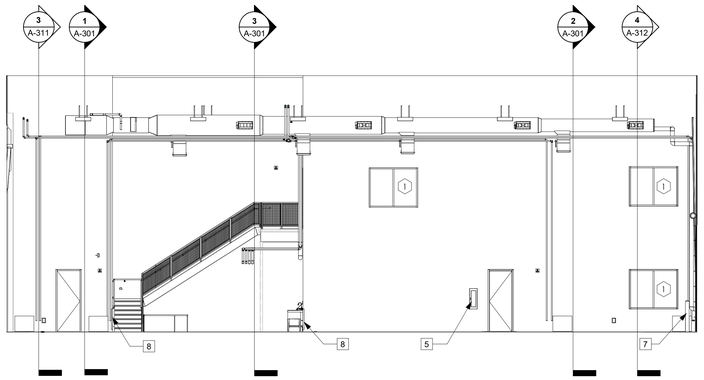
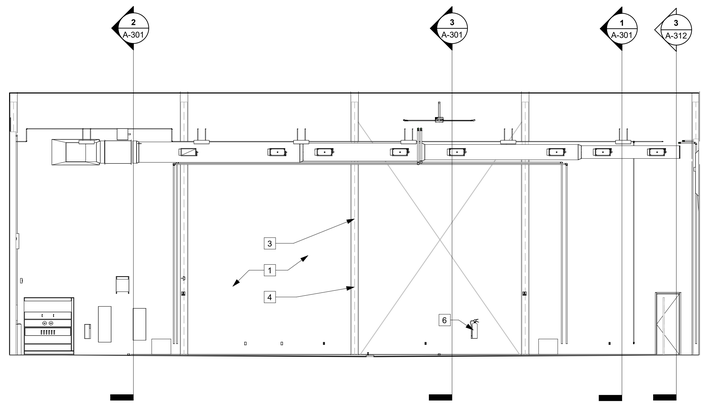


ELEVATION HANGAR WEST 4
REFERENCED FROM 1 / A-100 1/8" = 1'-0"



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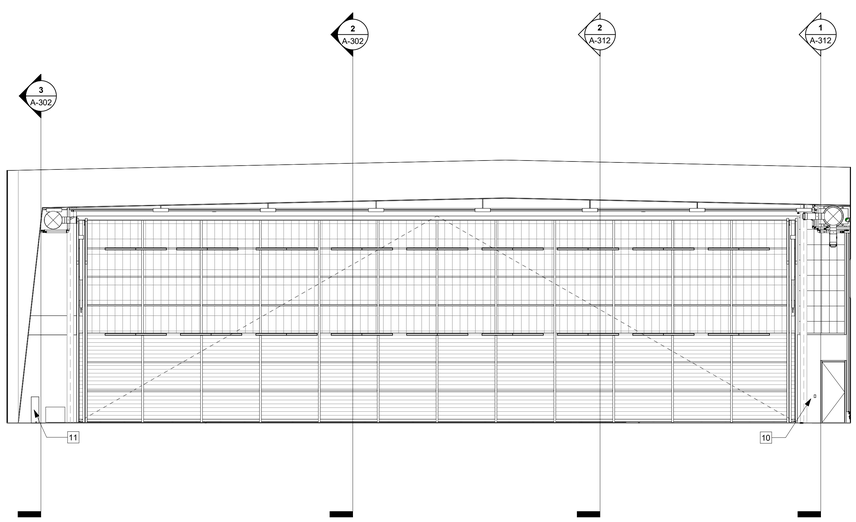
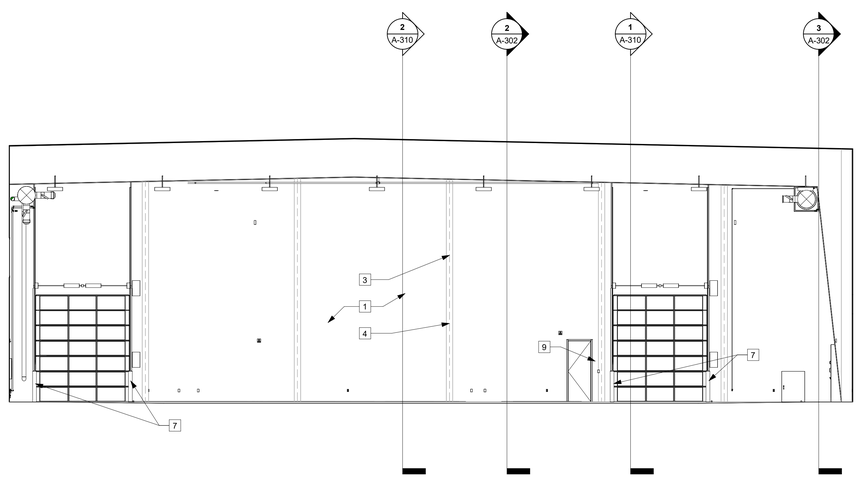
REFERENCED FROM 1 / A-100 1/8" = 1'-0"



ELEVATION HANGAR SOUTH 3
REFERENCED FROM 1 / A-100 1/8" = 1'-0"



ELEVATION HANGAR NORTH 1
REFERENCED FROM 1 / A-100 1/8" = 1'-0"

ELEVATION NOTES

1	PREFINISHED INSULATED METAL PANEL
2	PREFINISHED MEATL LINER PANEL AT HANGAR DOOR FROM FLOOR TO BOTTOM OF TRANSLUCENT PANEL
3	PAINT COLUMNS, GIRTS AND OTHER PEMB WALL ELEMENTS PT-3, DO NOT PAINT INTERIOR FACE OF INSULATED WALL PANELS
4	PAINT FRONT FACE OF PEMB COLUMNS TO 28'-0" AFF PNT-4
5	SEMI RECESSED FIRE EXTINGUISHER CABINET, VERIFY FINAL QUANTITY AND LOCATION WITH FIRE MARSHAL AND CONFIRM WITH ARCHITECT
6	SURFACE MOUNTED FIRE EXTINGUISHER VERIFY FINAL QUANTITY AND LOCATION WITH FIRE MARSHAL AND CONFIRM WITH ARCHITECT
7	6" DIAMETER CONCRETE FILLED GALVANIZED PIPE BOLLARDS PER DETAIL - PAINTED RAL COLOR 2008 - BRIGHT RED ORANGE
8	FURNISH AND INSTALL 2" X 2" X 48" STAINLESS STEEL CORNER GUARDS AT 6'-0" A.F.F.
9	REMOTE FIRE ALARM ANUCINATOR PANEL
10	HANGAR DOOR CONTROLS
11	HANGAR DOOR POWER UNIT

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STATE OF MISSOURI
JASON SCOTT BARKER
NUMBER A-2005001198
REGISTERED ARCHITECT

03/21/2025
Jason Scott Barker - MO #A-2005001198
Certificate of Authority - MO #000767

TM Aviation

TM AVATION HANGER

AT LXT

No.	Date	Description
Issue:	PERMIT SET	
Date:	MAR 21, 2025	
Drawn By	Author	Checked By Checker

KEY PLAN
NORTH

SHEET NAME
INTERIOR ELEVATIONS

SHEET NUMBER
A-601

PROJECT NUMBER
2404

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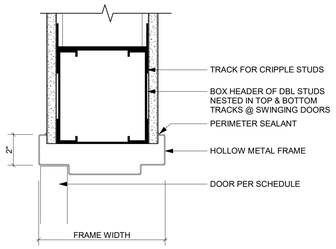
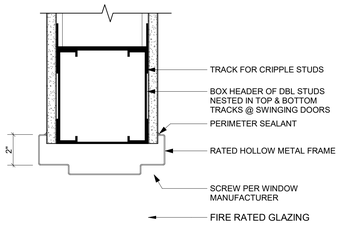
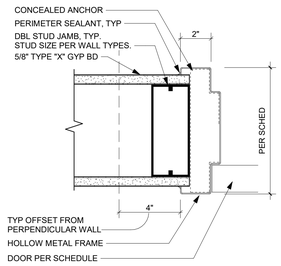
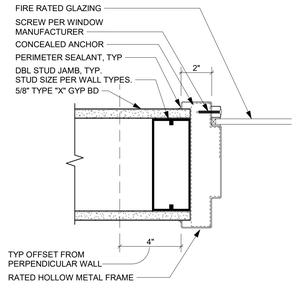




DOOR HEAD AT GYP BD 20
REFERENCED FROM / 3" = 1'-0"

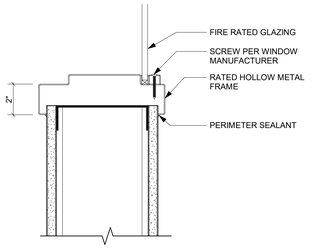


HM WINDOW HEAD AT GYP BD 16
REFERENCED FROM 6 / A-701 3" = 1'-0"



DOOR JAMB AT GYP BD 19
REFERENCED FROM / 3" = 1'-0"

HM WINDOW JAMB AT GYP BD 15
REFERENCED FROM 4 / A-312 3" = 1'-0"



HM WINDOW SILL AT GYP BD 14
REFERENCED FROM 4 / A-312 3" = 1'-0"

Room Finish Schedule

ROOM #	ROOM NAME	Floor Finish	Base Finish	Wall Finishes				Ceiling Finish	Notes
				North	East	South	West		
100	HANGER	PNT-6	NA	PNT-3	PNT-3	PNT-3	PNT-3	PNT-1	1,2,3,5
101	VESTIBULE	WOT-1	NA	NA	NA	NA	NA	PNT-1	
102	LOBBY / WAITING	-	-	-	-	-	-	-	4
103	MECH	SC-1	RES-1	PNT-3	PNT-3	PNT-3	PNT-3	PNT-1	
104	ELEC	SC-1	RES-1	PNT-3	PNT-3	PNT-3	PNT-3	PNT-1	
105	MAINTENANCE	PNT-6	RES-1	PNT-3	PNT-3	PNT-3	PNT-3	PNT-1	
106	WOMANS RESTROOM	-	-	-	-	-	-	-	4
107	MENS RESTROOM	-	-	-	-	-	-	-	4
108	CLOSET	-	-	-	-	-	-	-	4
201	OPEN OFFICE	-	-	-	-	-	-	-	4
202	MECH	SC-1	RES-1	PNT-2	PNT-2	PNT-2	PNT-2	PNT-1	
203	OFFICE	-	-	-	-	-	-	-	4
204	RESTROOM	-	-	-	-	-	-	-	4

NOTES:
1. PAINT COLUMNS, GIRTS AND OTHER PEMB WALL ELEMENTS PT-3, DO NOT PAINT INTERIOR FACE OF INSULATED WALL PANELS
2. PAINT HORIZONTAL PORTION OF PEMB FRAME PNT-1 STARTING AT TRANSITION FROM VERTICAL TO HORIZONTAL
3. PAINT FRONT FACE OF PEMB COLUMNS TO 28'-0" AFF PNT-4
4. ROOM FINISH NOT IN CONTRACT
5. SEALED CONCRETE ON STAIR TREADS

FINISH LEGEND

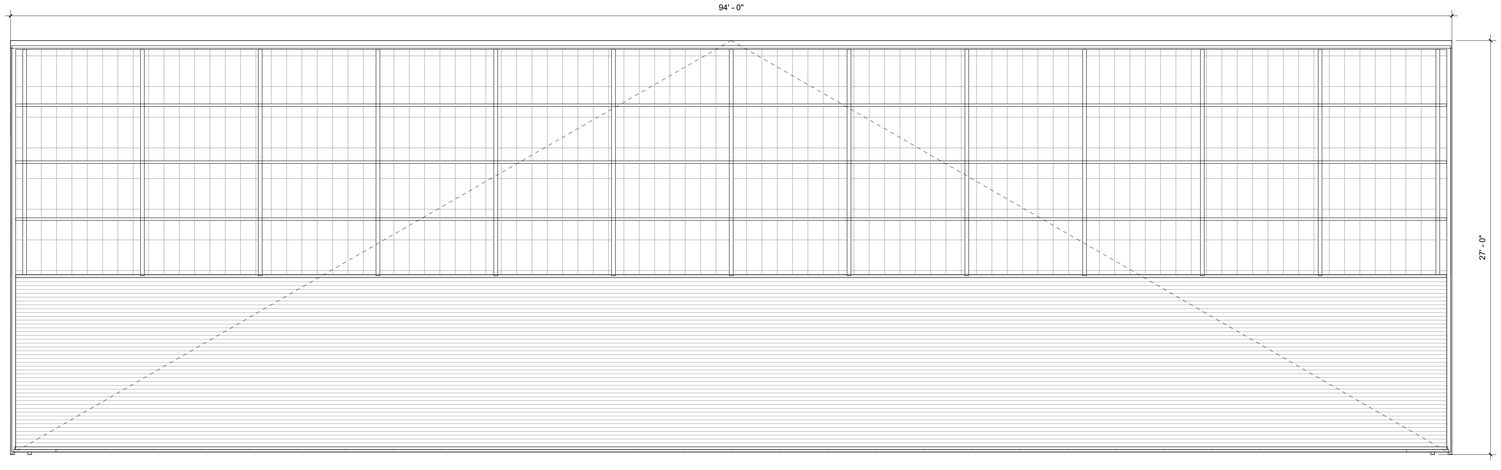
Item	Symbol	Manufacturer	Series/Pattern	Number	Color	Remarks
Ceilings						
Ceilings	CLG-1	GTPSUM WALL BD		PAINT PER FINISH SCHED		HARD LID CEILINGS
Fiberglass Panel						
Fiberglass Panel	FRP-1	Marlite		P 151	LIGHT GRAY	AT MOP SINK WALL
Interiror Doors and Frames						
Interiror Doors and Frames	IDF-1	Sherwin Williams		SW 7068	GRIZZLE GRAY	
Paint						
Paint	PNT-1	Sherwin Williams	Dryfall	SW 7757	HIGH REFLECTIVE WHITE	CEILINGS
Paint	PNT-2	Sherwin Williams	Semi Gloss	SW 7068	GRIZZLE GRAY	To Match MP-2
Paint	PNT-3	Sherwin Williams	Eggshell	SW 223	POLAR WHITE	To Match MP-3
Paint	PNT-4	Sherwin Williams	Epoxy Paint	RAL 2008	BRIGHT RED ORANGE	To Match MP-4
Paint	PNT-5	Sherwin Williams	Epoxy Paint	SW 6990	CAVIAR	
Paint	PNT-6	SikaFloor Multidur HS	Epoxy	-	WHITE	HANGAR FLOOR
Resilient Base						
Resilient Base	RES-1	Johnsonite	4" MANDALAY	TA4	GATEWAY WG	
Walk Off Tile						
Walk Off Tile	WOT-1	Shaw Commercial	Swift/All Access	5T414	STEP	24" X 24"

DOOR SCHEDULE

MARK	PANEL WIDTH LEAF 1	PANEL WIDTH LEAF 2	PANEL HEIGHT	PANEL TYPE	FRAME TYPE	FRAME HEAD HEIGHT	FIRE RATING	HARDWARE SET	DETAILS HEAD	DETAILS JAMB	DETAILS SILL	COMMENTS
001-A	4' - 0"		8' - 0"	PG	NF	0"		6				4
100-A	12' - 0"		14' - 0"	P65AL	F00STL			6	6/A502	10/A502	9/A502	1, 2
100-B	12' - 0"		14' - 0"	P65AL	F00STL				6/A502	10/A502	9/A502	1, 2
100-C	3' - 0"		8' - 0"	P00HM	F00HM	2"		5	5/A502	2/A502	1/A502	
100-D	3' - 0"		8' - 0"	P00HM	F00HM	2"		5	5/A502	2/A502	1/A502	
100-E	99' - 0"		27' - 0"	P90					20/A002	15 & 19 / A002	17/A002	3
100-F	3' - 0"		8' - 0"	P00HM	F00HM	2"		5	5/A502	2/A502	1/A502	
101-A	3' - 0"	3' - 0"	8' - 0"	P30AL	FCW30AL	0"		1	7/A501		5/A501	
101-B	3' - 0"	3' - 0"	8' - 0"	P30AL	FCW30AL	0"		2	7/A501		5/A501	
102-A	3' - 0"	3' - 0"	8' - 0"	P30AL	FCW30AL	0"		1	7/A501	6/A501	5/A501	
102-B	3' - 0"		8' - 0"	P00HM	F00HM	2"	1 HR	3	20/A701	19/A701		
103-A	3' - 0"		8' - 0"	P00HM	F00HM	2"		4	5/A002	2/A002	1/A002	
103-B	3' - 0"		7' - 0"	P00WD	F00HM	2"		7	20/A701	19/A701		
104-A	3' - 0"		7' - 0"	P00HM	F00HM	2"		7	20/A701	19/A701		
105-A	3' - 0"		8' - 0"	P00HM	F00HM	2"	1 HR	8	20/A701	19/A701		
201-A	3' - 0"		8' - 0"	P00HM	F00HM	2"	1 HR	9	20/A701	19/A701		
202-A	3' - 0"		8' - 0"	P00HM	F00HM	2"		7	20/A701	19/A701		

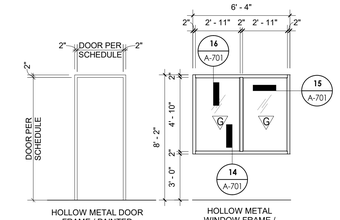
GENERAL NOTES:
1. REFER TO SPECIFICATIONS FOR HARDWARE SETS LISTED IN SPECIFICATIONS 087100
2. ALL EXTERIOR FRAMES AND DOORS TO BE PAINTED PNT-2 TO MATCH MP-2

NOTES:
1. OVERHEAD DOOR AND ALL ASSOCIATED HARDWARE BY OVERHEAD DOOR MANUFACTURE
2. INSULATED GLAZE SECTION DOOR 335 ALUM. BLACK FINISH WITH BOTTOM INFILL PANEL TO MATCH FRAME
3. HYDRAULIC DOOR AND ALL ASSOCIATED HARDWARE BY HANGAR DOOR MANUFACTURE
4. PEDESTRIAN SITE GATE.



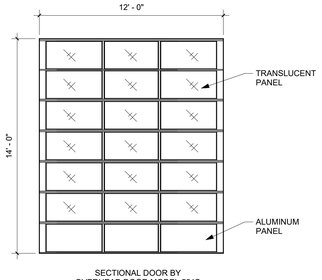
HYDRAULIC HANGER DOOR

P90STL



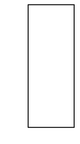
G 1/2" GLAZING IN PAINTED HOLLOW METAL FRAMES, ALL INTERIOR GLAZING IS TO BE TEMPERED, GLAZING TO BE FIRE RATED

FRAME TYPES



SECTIONAL DOOR BY OVERHEAD DOOR MODEL 521S

P65AL



HOLLOW METAL

P00HM

ANOD. ALUMINUM WIDE STILE

P30AL

DOOR TYPES

PROJECT TEAM

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STATE OF MISSOURI
JASON SCOTT BARKER
NUMBER A-2005001198
REGISTERED ARCHITECT

03/21/2025
Jason Scott Barker - MO #A-2005001198
Certificate of Authority - MO #000767

TM Aviation

TM AVATION HANGER
AT LXT

No.	Date	Description
Issue:	PERMIT SET	
Date:	MAR 21, 2025	
Drawn By	Author	Checked By Checker

KEY PLAN
NORTH

SHEET NAME
DOOR SCHEDULE & LEGEND

SHEET NUMBER
A-701

PROJECT NUMBER
2404

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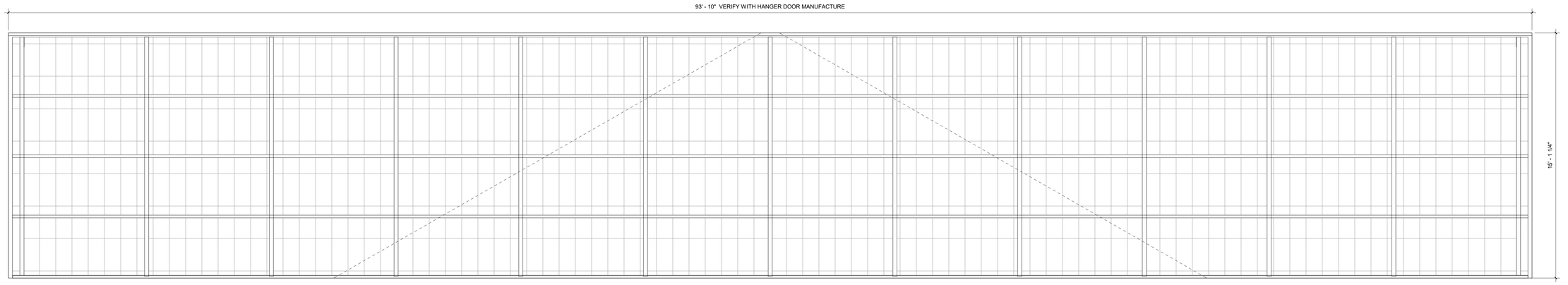
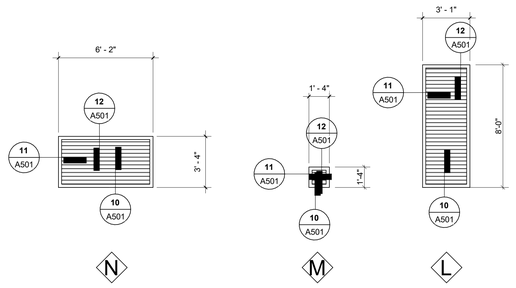
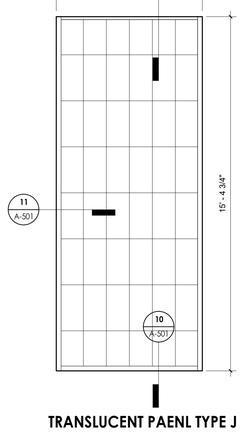


TRANSLUCENT PANEL TYPE K



LOUVER TYPES



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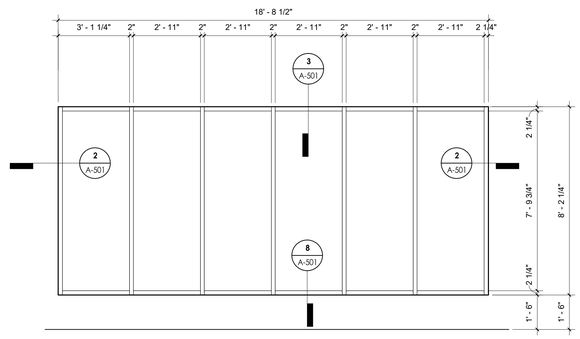

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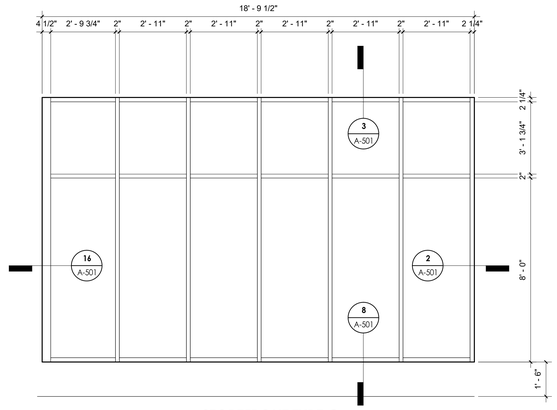

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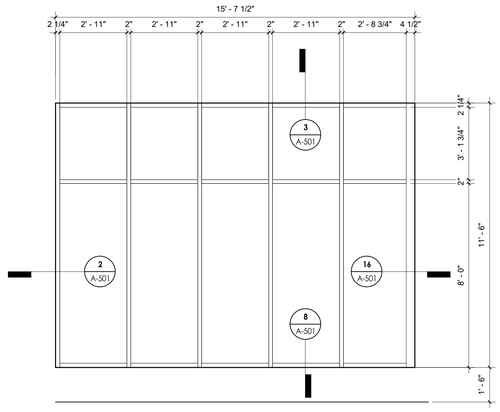
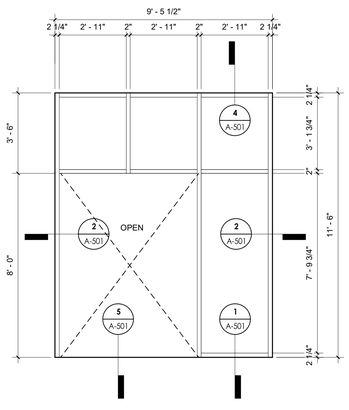


3
A-310

STOREFRONT TYPE F



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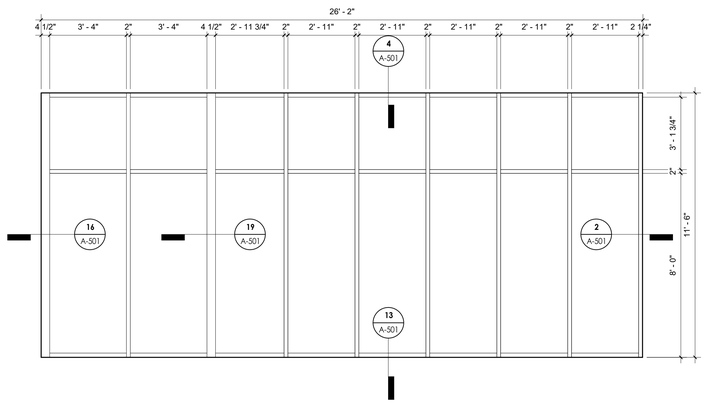

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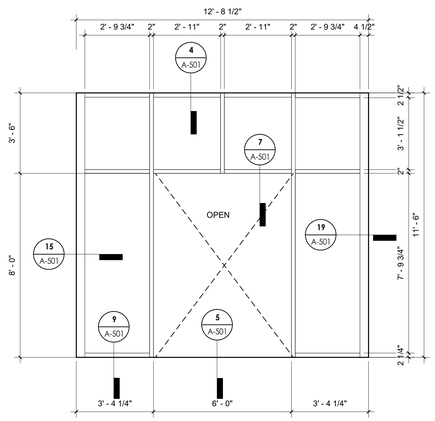

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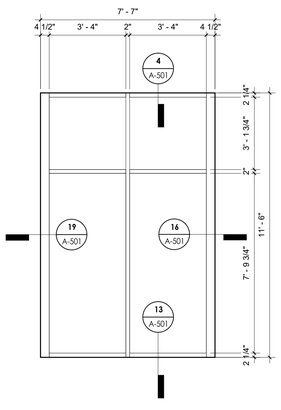

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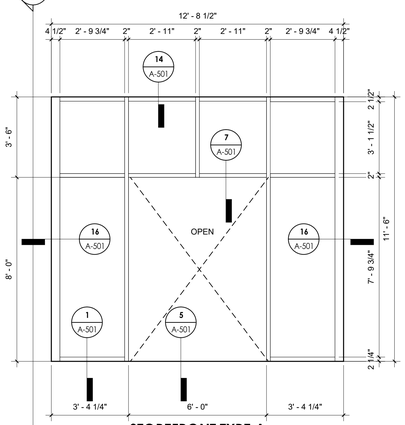

STOREFRONT TYPE A

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TM Aviation

TM AVATION HANGER

AT LXT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **Author** Checked By **Checker**

KEY PLAN

NORTH

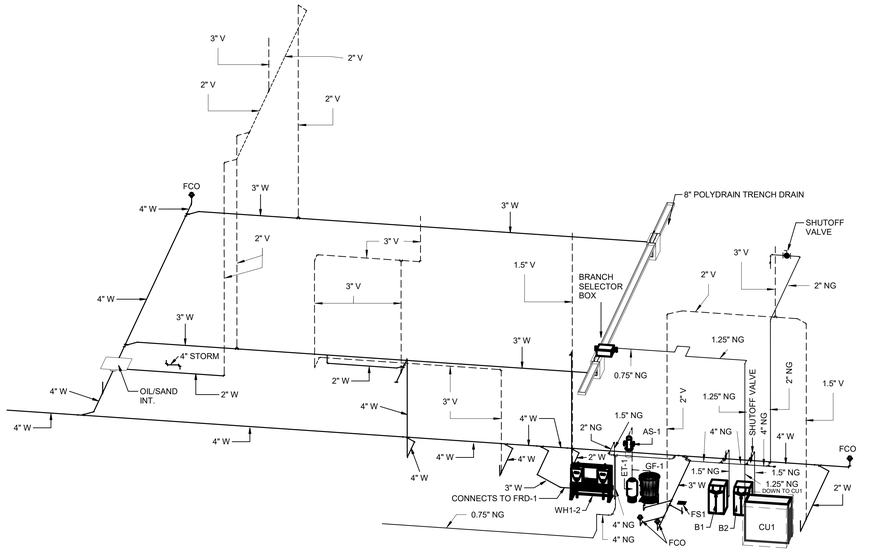
SHEET NAME

STOREFRONT ELEVATIONS

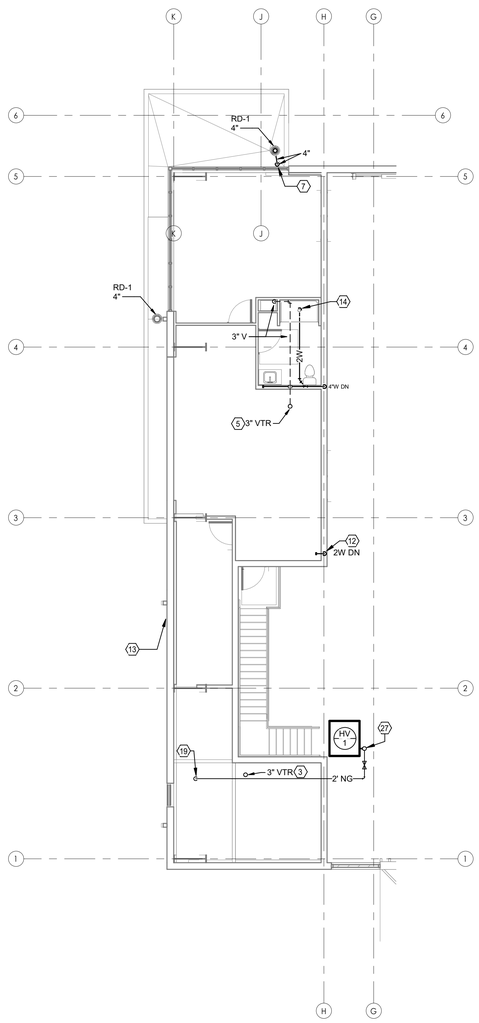
SHEET NUMBER

A-702

PROJECT NUMBER 2404

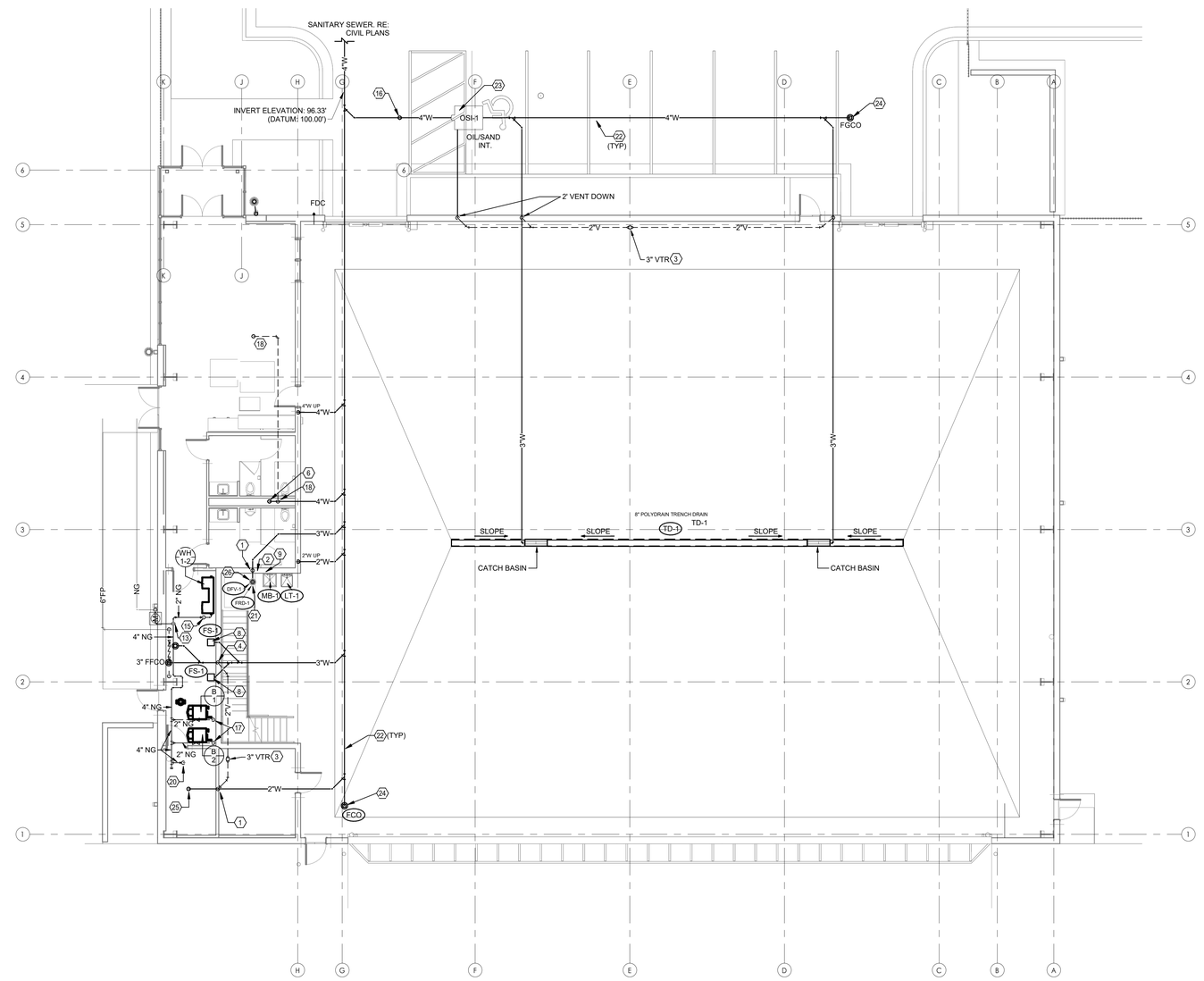


SANITARY SEWER VENT GAS ISOMETRIC 3



MEZZANINE PLUMBING PLAN 2

1/8" = 1'-0"



1ST FLOOR PLUMBING PLAN 1

1/8" = 1'-0"

PLUMBING PLAN NOTES

1. 1.5" VENT UP/DOWN.
2. 0.5" HOT/COLD DOWN TO WATER SUPPLY BOX FOR FLUSHING RIM DRAIN.
3. CONNECT 2" VENT UP TO 3" VENT UP THRU ROOF (VTR).
4. 2" CIRCUIT VENT UP/DOWN.
5. 3" VENT UP TO 4" VENT THRU ROOF (VTR).
6. STUB 4" UP IN FUTURE WET WALL CHASE FOR FUTURE RESTROOM BUILD-OUT.
7. 4" ROUND STORM TRANSITIONED TO 3x5 GUTTER DOWNSPOUT PER ARCH PLANS.
8. 3" WASTE UP TO FLOOR SINK.
9. ROUTE 1.5" VENT, 1/2" COLD AND 1/2" HOT WATER DOWN TO MOP SINK.
10. NEW WALL MOUNTED INSTANEOUS WATER HEATER. REFER TO DETAIL FOR PIPING CONNECTIONS. INSTALL 1" COLD WATER MAIN AND 1" HOT WATER MAIN FROM MANIFOLD.
11. PRESLOPED ABT POLYDRAIN OR WATTS DEAD LEVEL POLY DRAIN WITH HEAVY DUTY CLASS E DUCTILE IRON GRATE. INSTALL CATCH BASINS AT WASTE CONNECTION AND SLOPE EACH DIRECTION WITH PROPER CHANNELS.
12. 2" WASTE UP TO FUTURE SINK LOCATION. TURN TAILPIECE INTO WALL AT 18" AFF.
13. 4" GAS PIPING DOWN TO METER OUTSIDE.
14. 2" TRAPPED WASTE UP TO SHOWER DRAIN.
15. 1.5" GAS PIPING DOWN TO WATER HEATER (2 CONNECTION POINTS). INSTALL DIRT LEG, UNION, SHUTOFF VALVE, AND TRANSITION TO MATCH CONNECTION SIZE.
16. 4" SAMPLING PORT.
17. 2" GAS PIPING DOWN TO EACH BOILER. INSTALL DIRT LEG, UNION, SHUTOFF VALVE, AND TRANSITION TO MATCH CONNECTION SIZE AT EACH.
18. NEW 3" VENT UP, ROUTE OVER TO SHOWER CHASE UP TO SECOND FLOOR.
19. 2' GAS PIPING DOWN TO LOWER LEVEL.
20. 2' GAS PIPING UP TO MEZZANINE.
21. 3" TRAPPED WASTE UP TO JANITOR BASIN.
22. INSTALL ALL SANITARY PIPING AT 1/8" SLOPE. UPON COMPLETE INSTALLATION OF NEW BELOW GRADE PIPING, CONTRACTOR SHALL TEST PIPING AT 10 FT HEAD BEFORE MAKING CONNECTION TO EXISTING SAN SEWER.
23. 4" WASTE TO OIL INTERCEPTOR. INSTALL SAMPLING CLEANOUT PORT ON SECONDARY SIDE..
24. 4" WASTE UP TO FINISH FLOOR CLEANOUT.
25. 2" TRAPPED WASTE FROM BELOW GRADE TO FLOOR DRAIN/SINK. PROVIDE FLOOR DRAIN WITH PROSET TRAP-GUARD INSERT (RE: DETAIL).
26. 3" WASTE TO TRAPPED FLUSHING RIM DRAIN WITH HINGED COVER. CONNECT WATER LINES BELOW SLAB.
27. 2" NATURAL GAS PIPING DOWN TO HV-1. PROVIDE DIRT LEG, SHUT-OFF VALVE, UNION, AND TRANSITION TO UNIT CONNECTION SIZE.

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CORY WILSON — STATE OF MISSOURI — NUMBER PE-2010000838 — PROFESSIONAL ENGINEER — 03.21.2025

TM Aviation

TMA HANGER
LEE'S SUMMIT AIRPORT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **MR** Checked By **CW**

KEY PLAN

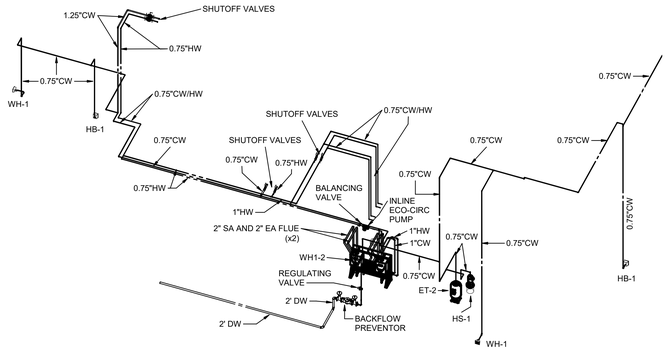
NORTH

SHEET NAME
PLUMBING PLANS

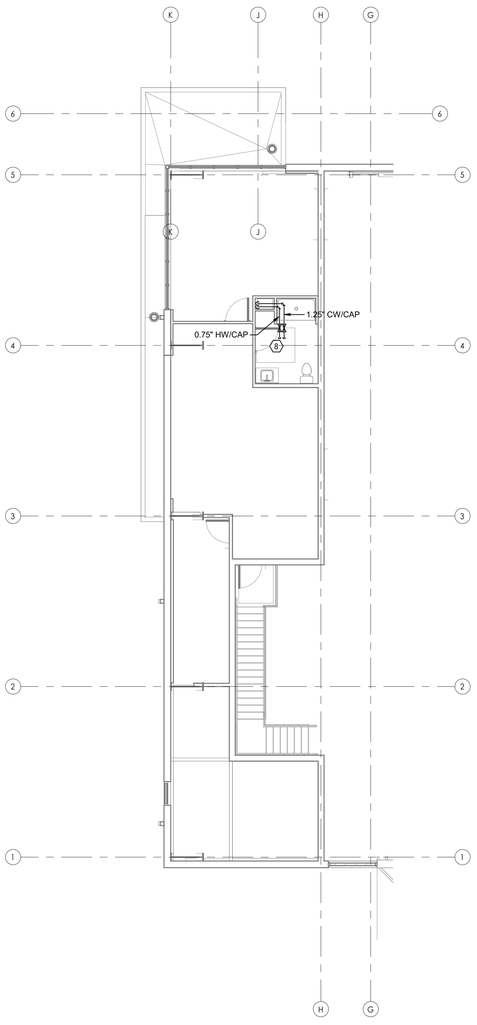
SHEET NUMBER
P-100

PROJECT NUMBER
2404

3/24/2025 7:45:28 PM

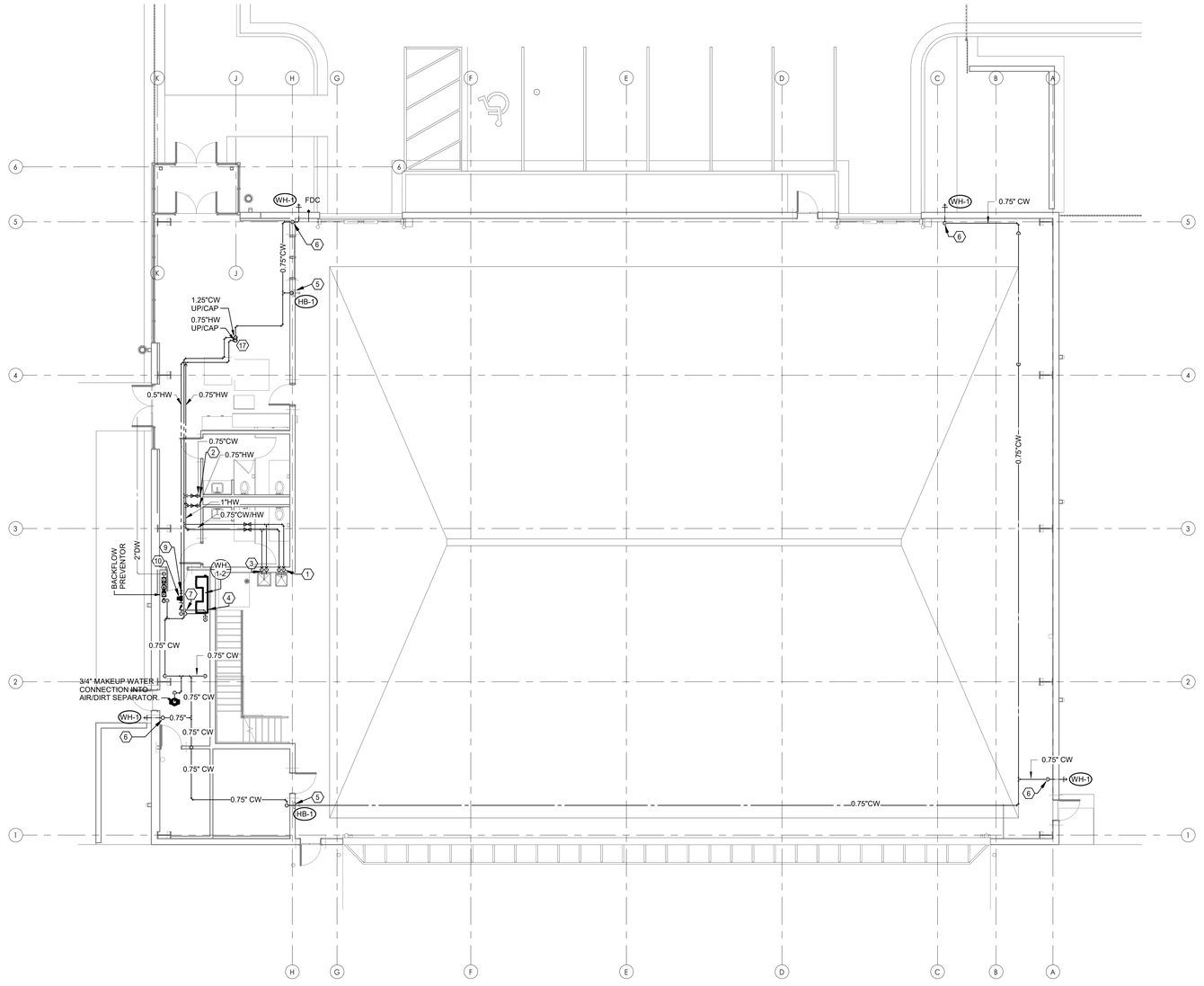


DOMESTIC WATER ISOMETRIC 3



MEZZANINE WATER PLUMBING PLAN 2

1/8" = 1'-0"



1ST FLOOR WATER PLUMBING PLAN 1

1/8" = 1'-0"

PLUMBING PLAN NOTES

1. 0.5" HOT/COLD DOWN TO WATER SUPPLY BOX FOR FLUSHING RIM DRAIN.
2. STUB LINES IN AREA OF RESTROOM FOR FUTURE BUILD-OUT, LEAVE HOT/COLD WITH SHUTOFF VALVE.
3. ROUTE 1.5" VENT, 1/2" COLD AND 1/2" HOT WATER DOWN TO MOP SINK.
4. NEW WALL MOUNTED INSTANEOUS WATER HEATER. REFER TO DETAIL FOR PIPING CONNECTIONS. INSTALL 1" COLD WATER MAIN AND 1" HOT WATER MAIN FROM MANIFOLD.
5. 0.75" COLD WATER DOWN TO WOODFORD B24 HOSE BIBB.
6. 0.75" COLD WATER DOWN TO NEW WALL HYDRANT. MAINTAIN FREEZELESS CONNECTION PER DETAIL. HOSE BIBB EQUAL TO WOODFORD WITH RECESSED BOX AND LOOSE TEE KEY.
7. NEW 1" HOT AND COLD WATER, 0.5" RECIRC DOWN TO WATER HEATER PER DETAILS.
8. NEW 0.75" HOT/COLD WATER STUBBED UP AT FUTURE SECOND STORY RESTROOM. TERMINATE WITH SHUTOFF VALVES.
9. AUTOMATIC FLOW VALVE SET TO 1 GPM.
10. INLINE ECO-CIRC PUMP PER DETAIL.

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03.21.2025
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TMA HANGER
LEE'S SUMMIT AIRPORT

No.	Date	Description
Issue:	PERMIT SET	
Date:	MAR 21, 2025	
Drawn By	MR	Checked By CW

KEY PLAN

NORTH

SHEET NAME

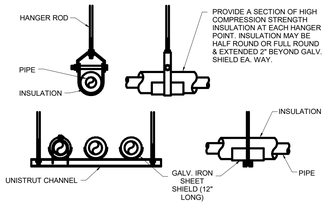
WATER PLUMBING PLANS

SHEET NUMBER

P-110

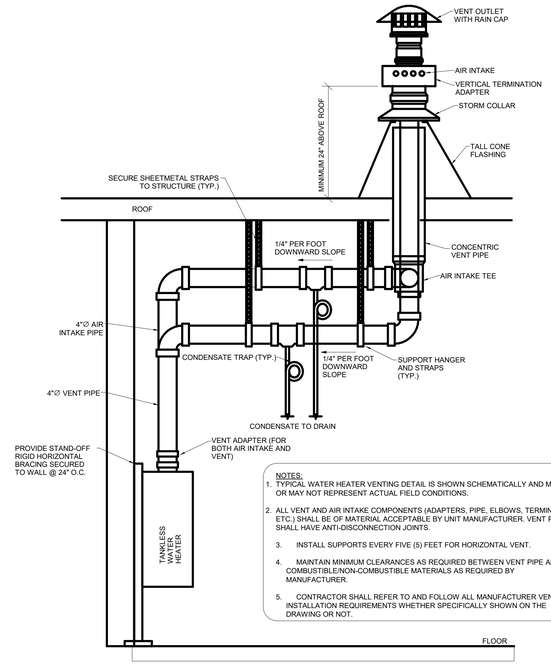
PROJECT NUMBER 2404

3/24/2025 7:45:30 PM



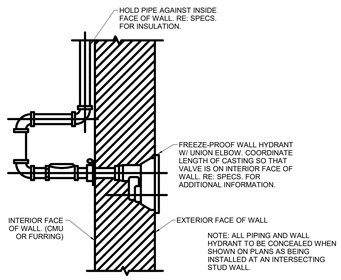
NOTES:
1. ATTACH SUPPORTS FOR ALL PIPING SUSPENDED FROM THE STEEL STRUCTURE TO THE TOP CORD OF JOISTS OR BEAMS.
2. PROVIDE COPPER OR PLASTIC COATED HANGERS FOR NON-INSULATED COPPER PIPE.

10 PIPE INSULATION DETAIL
SCALE: NONE

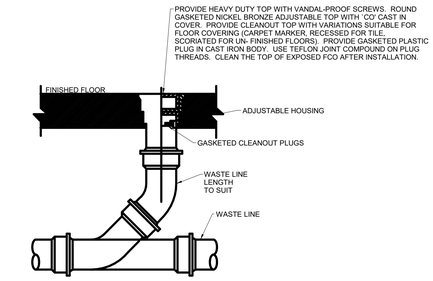


NOTES:
1. TYPICAL WATER HEATER VENTING DETAIL IS SHOWN SCHEMATICALLY AND MAY OR MAY NOT REPRESENT ACTUAL FIELD CONDITIONS.
2. ALL VENT AND AIR INTAKE COMPONENTS (ADAPTERS, PIPE, ELBOWS, TERMINALS, ETC.) SHALL BE OF MATERIAL ACCEPTABLE BY UNIT MANUFACTURER. VENT PIPING SHALL HAVE ANTI-DISCONNECTION JOINTS.
3. INSTALL SUPPORTS EVERY FIVE (5) FEET FOR HORIZONTAL VENT.
4. MAINTAIN MINIMUM CLEARANCES AS REQUIRED BETWEEN VENT PIPE AND COMBUSTIBLE/NON-COMBUSTIBLE MATERIALS AS REQUIRED BY MANUFACTURER.
5. CONTRACTOR SHALL REFER TO AND FOLLOW ALL MANUFACTURER VENTING INSTALLATION REQUIREMENTS WHETHER SPECIFICALLY SHOWN ON THE DRAWING OR NOT.

7 TANKLESS WATER HEATER VENTING DETAIL
SCALE: NONE

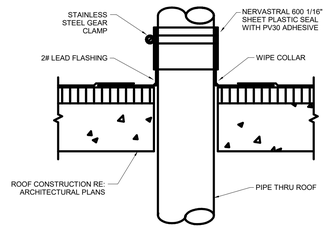


4 WALL HYDRANT DETAIL
SCALE: NONE

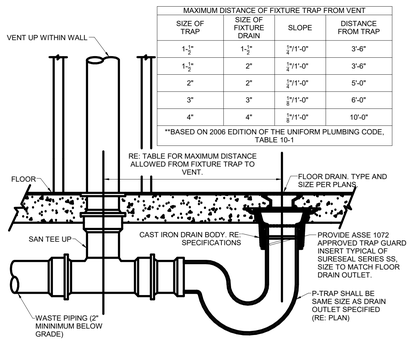


LOCATE AT BUILDING EXIT, AT ENDS OF RUNS, AT TURNS OF PIPE GREATER THAN 45 DEGREES, AT 50'-0" INTERVALS ON STRAIGHT RUNS, AND/OR WHERE SHOWN ON PLANS. PROVIDE BACKFILL PER ARCHITECTURAL SPECIFICATIONS. LOCATE CLEANOUTS WHERE THERE IS 1'-6" CLEAR AROUND. CONSULT LOCAL CODES FOR OTHER FCO REQUIREMENTS.

3 FLOOR CLEANOUT DETAIL
SCALE: NONE



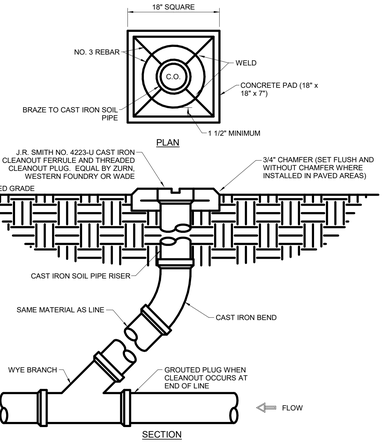
9 VENT THRU ROOF DETAIL
SCALE: NONE



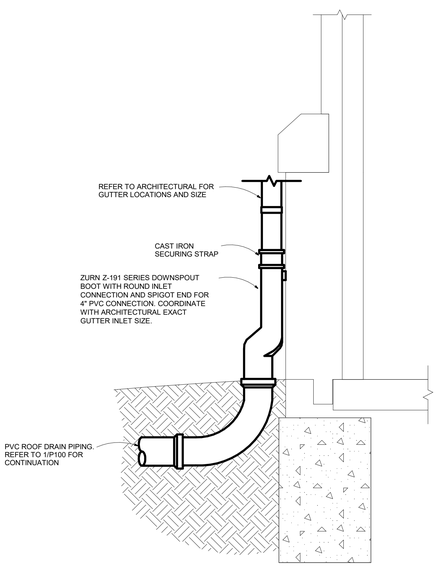
MAXIMUM DISTANCE OF FIXTURE TRAP FROM VENT			
SIZE OF TRAP	SIZE OF FIXTURE DRAIN	SLOPE	DISTANCE FROM TRAP
1-1/2"	1-1/2"	1/4"/1'-0"	3'-6"
1-1/2"	2"	1/4"/1'-0"	3'-6"
2"	2"	1/4"/1'-0"	5'-0"
3"	3"	1/4"/1'-0"	6'-0"
4"	4"	1/4"/1'-0"	10'-0"

**BASED ON 2006 EDITION OF THE UNIFORM PLUMBING CODE, TABLE 10-1

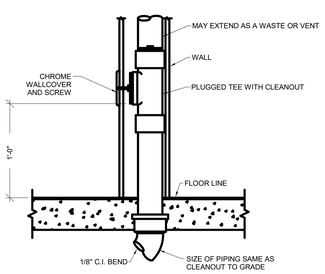
6 FLOOR DRAIN DETAIL
SCALE: NONE



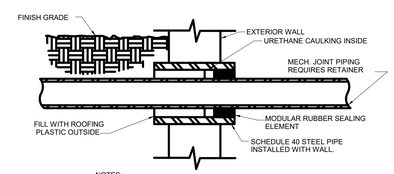
2 FINISHED GRADE CLEANOUT DETAIL
SCALE: NONE



8 DOWNSPOUT BOOT DETAIL
SCALE: NONE

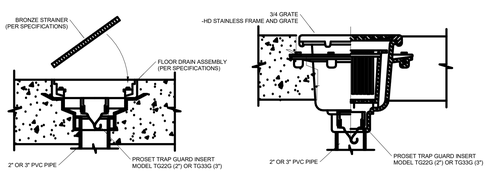


5 WALL CLEANOUT DETAIL
SCALE: NONE



NOTES:
1. IF PIPING PASSES THROUGH WALL ABOVE GRADE. SLEEVE SHALL BE FLUSH WITH EXTERIOR SIDE OF WALL

1 PIPE SLEEVE THRU EXTERIOR WALL
SCALE: NONE



1. THIS INSERT CAN BE INSTALLED INTO ANY GASKETED OPEN ENDED PIPE TO PREVENT SEWER GAS EMISSION.
2. TRAP GUARD SHALL BE INSERTED INTO A GASKETED OPEN END PIPE THAT CONNECTS LARGER TOP FLOOR DRAIN.
3. TRAP GUARD SHALL BE INSERTED INTO GASKETED OPEN ENDED PIPE THAT CONNECTS FLOOR SINKS (3").
4. TO MAKE A WATERTIGHT SEAL, USE AN ADHESIVE TYPE CAULK UNDER THE TOP FLANGE AND THE GASKET MATERIAL.
5. LOCATIONS USED: FOUR (4) 2" FLOOR DRAINS, (1) DISHWASHER FLOOR SINK. DO NOT INSTALL WHERE SOLIDS EXIST.

FLOOR SINK AND FLOOR DRAIN DETAIL 10
SCALE: NONE

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03.21.2025
NUMBER PE-2010008838
PROFESSIONAL ENGINEER

TM Aviation

TMA HANGER
LEE'S SUMMIT AIRPORT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **MR** | Checked By **CW**

KEY PLAN
NORTH

SHEET NAME
PLUMBING DETAILS

SHEET NUMBER
P-400

PROJECT NUMBER
2404

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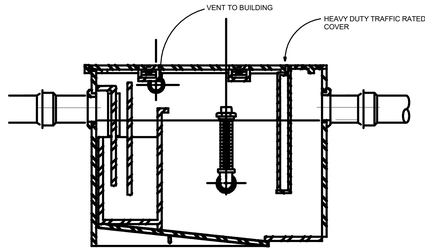
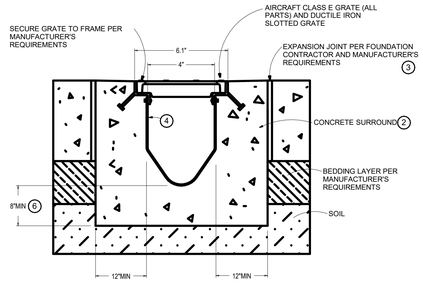


4 OIL-SAND INTERCEPTOR
SCALE: NONE

GENERAL NOTES:

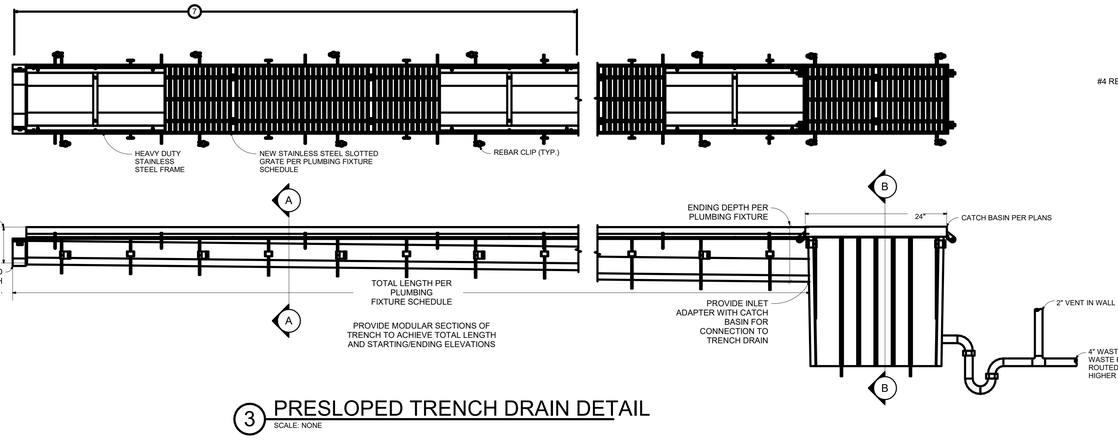
1. TRENCH DRAIN SHALL BE EQUAL TO ABT, INC. POLYDRAIN TRENCH FORMING SYSTEM, WITH POLYWALL I VERTICAL EXTENSIONS, AND ALL OTHER PARTS AS INDICATED IN DETAIL.
2. INSTALL TRENCH SYSTEM PER MANUFACTURER'S SPECIFICATIONS.
3. ALWAYS BEGIN INSTALLATION AT THE APPROPRIATE OUTLET CHANNEL, WORKING TOWARDS SHALLOW END.
4. ALL SURROUNDING CONCRETE/SLAB SHALL HAVE THICKNESS AND REINFORCING PER STRUCTURAL ENGINEER.
5. PROVIDE TRENCH SYSTEM WITH STAINLESS STEEL FRAME AND GRATE TYPICAL OF 2468.SSHD.
6. WASTE PIPING LAYOUT ON PLANS IS DICTATED BY RUN VARIATIONS AS SHOWN IN ELEVATIONS. ANY DEVIATION OF THIS WILL REVISE WASTE LAYOUT AND SHALL REQUIRE ENGINEER'S APPROVAL.



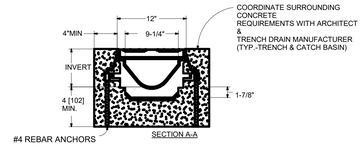
SECTION A-A

NOTES:

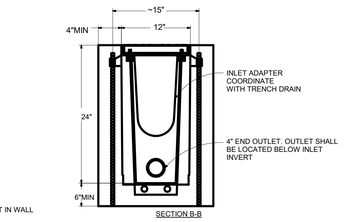
1. COORDINATE DIMENSIONS FOUNDATION CONTRACTOR PRIOR TO CONCRETE POUR.
2. MINIMUM CONCRETE STRENGTH = 3000 PSI. CONCRETE SHALL BE VIBRATED TO ELIMINATE AIR POCKETS.
3. COORDINATE EXPANSION AND CRACK JOINTS WITH FOUNDATION CONTRACTOR TO PROTECT THE CHANNEL AND CONCRETE SURROUND.
4. PROVIDE WITH POLYWALL SYSTEM TO ACHIEVE INVERT DEPTHS AS NOTED IN SCHEDULE.
5. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR ANY REQUIREMENTS NOT LISTED.
6. CONCRETE BASE THICKNESS SHALL MATCH SLAB THICKNESS.
7. OVERALL LENGTH PER PLUMBING FIXTURE SCHEDULE. CHANNEL PART NOs. SHALL BE BASED UPON OVERALL LENGTH AND STARTING/ENDING INVERT DEPTHS AS NOTED ON PLUMBING FIXTURE SCHEDULE.



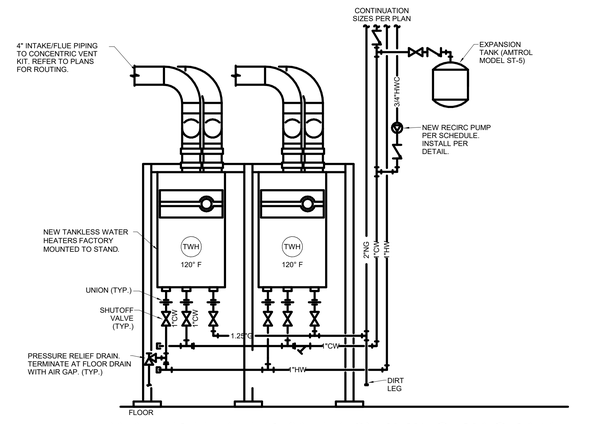
3 PRESLOPED TRENCH DRAIN DETAIL
SCALE: NONE



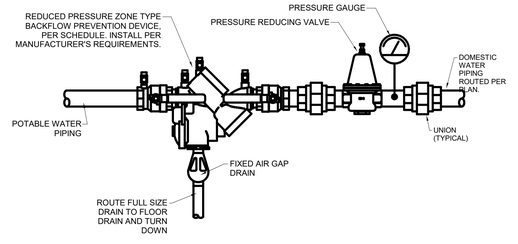
SECTION A-A



SECTION B-B



2 WATER HEATER (WH-1-2) PIPING DIAGRAM
SCALE: NONE



1 BACKFLOW PREVENTOR DETAIL
SCALE: NONE

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03.21.2025
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PROFESSIONAL ENGINEER

TM Aviation

TMA HANGER
LEE'S SUMMIT AIRPORT

No.	Date	Description

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Date: **MAR 21, 2025**
Drawn By **MR** Checked By **CW**

KEY PLAN
NORTH

SHEET NAME
PLUMBING DETAILS

SHEET NUMBER
P-410

PROJECT NUMBER 2404

3/24/2025 7:45:31 PM

PLUMBING FIXTURE SCHEDULE - DRAINAGE

TAG	TYPE	MANUFACTURER[3]	MODEL	DESCRIPTION	ACCESSORIES	CONNECTIONS[1,2] WASTE	VENT	CW	HW
MS-1	24"x24" JANITORS SINK	FIAT	TSB100	ONE PIECE PRECAST TERRAZO MOP SERVICE BASIN, 12" CONTINUOUS DEPTH. TERRAZO SHALL BE CONSTRUCTED TO A COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI, WITH POLISHED AND SEALED FINISH. BASIN TO BE INSTALLED ON MINIMUM 1/2" LAYER OF MORTAR FOR LEVELING, REFER TO MANUFACTURERS INSTALLATION INSTRUCTIONS.	PROVIDE WITH STAINLESS STEEL STRAINER (#1453BB), QUICK DRAIN CONNECTORS, INTEGRAL TILING FLANGES, STAINLESS STEEL CAPS ON ALL SHOULDERS, WALL MOUNTED MOP SERVICE SINK WITH PAIL HOOK (830AA), HOSE AND HOSE BRACKET (832AA), SILICONE SEALANT (833AA) AND HEAVY GAUGE STAINLESS STEEL WALL GUARDS (MSG).	3"	1-1/2"	1/2"	1/2"
FD-1	FLOOR DRAIN (GENERAL SERVICE)	ZURN	Z-415	DURA-COATED CAST IRON BODY WITH BOTTOM OUTLET, COMBINATION INVERTIBLE MEMBRANE CLAMP AND ADJUSTABLE COLLAR WITH SEEPAGE SLOTS AND TYPE 'B' POLISHED NICKEL BRONZE, LIGHT-DUTY STRAINER.	PROVIDE WITH 6" DIAMETER STRAINER. PROVIDE TY SEALS FOR FLOOR DRAINS MOUNTED IN FLOORS ABOVE GRADE, VERIFY PIPE SIZES ON PLANS. PROVIDE WITH ASSE 1072 APPROVED TRAP SEALING INSERT TYPICAL OF SURESEAL SERIES SS - SIZE PER FLOOR DRAIN OUTLET.	OUTLET SIZE PER PLAN	-	-	-
FD-2	FLOOR DRAIN (MECHANICAL AREAS)	ZURN	Z-415	DURA-COATED CAST IRON BODY WITH BOTTOM OUTLET, COMBINATION INVERTIBLE MEMBRANE CLAMP AND ADJUSTABLE COLLAR WITH SEEPAGE SLOTS AND HEAVY DUTY STRAINER.	PROVIDE WITH 8" DIAMETER STRAINER AND ALL ACID RESISTING EPOXY COATING. PROVIDE TY SEALS FOR FLOOR DRAINS MOUNTED IN FLOORS ABOVE GRADE, VERIFY PIPE SIZES ON PLANS. PROVIDE WITH TRAP PRIMER INLET CONNECTION.	OUTLET SIZE PER PLAN	-	1/2"	-
FD-3	FLOOR DRAIN (INDIRECT WASTE RECEPTOR)	ZURN	Z-415	DURA-COATED CAST IRON BODY WITH BOTTOM OUTLET, COMBINATION INVERTIBLE MEMBRANE CLAMP AND ADJUSTABLE COLLAR WITH SEEPAGE SLOTS AND TYPE 'B' POLISHED NICKEL BRONZE, LIGHT-DUTY STRAINER.	PROVIDE WITH 6" DIAMETER STRAINER WITH 4" DIAMETER FUNNEL. PROVIDE TY SEALS FOR FLOOR DRAINS MOUNTED IN FLOORS ABOVE GRADE, VERIFY PIPE SIZES ON PLANS. PROVIDE WITH ASSE 1072 APPROVED TRAP SEALING INSERT TYPICAL OF SURESEAL SERIES SS - SIZE PER FLOOR DRAIN OUTLET.	OUTLET SIZE PER PLAN	-	-	-
FD-4	FLOOR DRAIN (CRITICAL AREAS)	ZURN	Z-415	DURA-COATED CAST IRON BODY WITH BOTTOM OUTLET, COMBINATION INVERTIBLE MEMBRANE CLAMP AND ADJUSTABLE COLLAR WITH SEEPAGE SLOTS AND TYPE 'B' POLISHED NICKEL BRONZE, LIGHT-DUTY STRAINER.	PROVIDE WITH 6" STRAINER AND ALL ACID RESISTING EPOXY COATING. PROVIDE TY SEALS FOR FLOOR DRAINS MOUNTED IN FLOORS ABOVE GRADE, VERIFY PIPE SIZES ON PLANS. PROVIDE WITH TRAP PRIMER INLET CONNECTION AND BACKWATER VALVE.	OUTLET SIZE PER PLAN	-	1/2"	-
FD-5	FLOOR DRAIN (SHOWER)	ZURN	Z-415	DURA-COATED CAST IRON BODY WITH BOTTOM OUTLET, COMBINATION INVERTIBLE MEMBRANE CLAMP AND ADJUSTABLE COLLAR WITH SEEPAGE SLOTS AND TYPE 'S' DECORATIVE POLISHED STRAINER.	PROVIDE WITH 6"x6" SQUARE HEEL-PROOF STRAINER. PROVIDE TY SEALS FOR FLOOR DRAINS MOUNTED IN FLOORS ABOVE GRADE, VERIFY PIPE SIZES ON PLANS. PROVIDE WITH ASSE 1072 APPROVED TRAP SEALING INSERT TYPICAL OF SURESEAL SERIES SS - SIZE PER FLOOR DRAIN OUTLET.	OUTLET SIZE PER PLAN	-	-	-
FS-1	FLOOR SINK 12"x12" BODY (FULL GRATE)	ZURN	Z-1901	12"x12"x8" FLOOR RECEPTOR WITH DEEP CAST IRON BODY AND SQUARE, LIGHT-DUTY GRATE WITH 1/2" SLOTTED OPENINGS. WHITE ACID-RESISTING PORCELAIN ENAMEL INTERIOR AND TOP, AND WITH WHITE ABS ANTI-SPLASH INTERIOR BOTTOM DOME STRAINER.	PROVIDE WITH FULL SIZE GRATE, OUTLET SIZE TO MATCH CONNECTION SIZE NOTED ON PLAN, AND TRAP PRIMER CONNECTION.	OUTLET SIZE PER PLAN	-	1/2"	-
FS-2	FLOOR SINK 12"x12" BODY (3/4 GRATE)	ZURN	Z-1901	12"x12"x8" FLOOR RECEPTOR WITH DEEP CAST IRON BODY AND SQUARE, LIGHT-DUTY GRATE WITH 1/2" SLOTTED OPENINGS. WHITE ACID-RESISTING PORCELAIN ENAMEL INTERIOR AND TOP, AND WITH WHITE ABS ANTI-SPLASH INTERIOR BOTTOM DOME STRAINER.	PROVIDE WITH 3/4 GRATE, OUTLET SIZE TO MATCH CONNECTION SIZE NOTED ON PLAN, AND TRAP PRIMER CONNECTION.	OUTLET SIZE PER PLAN	-	1/2"	-
TD-1	TRENCH DRAIN	ZURN	Z882-HDG	MODULAR TRENCH DRAIN CHANNELS CONSTRUCTED OF 72" LONG x 12" WIDE REVEAL WITH 9-1/4" THROAT. MODULAR CHANNEL SECTIONS SHALL BE MADE OF 0% WATER ABSORBENT HIGH DENSITY POLYETHYLENE (HDPE). CHANNELS SHALL BE PRE-SLOPED. PROVIDE END PIPING CONNECTION.	PROVIDE WITH HEAVY DUTY LOAD CLASS E DUCTILE IRON SLOTTED GRATE, COMPLIANT WITH ASTM A536-84, AND LOCKABLE TO TRENCH. PROVIDE WITH REBAR CLIPS AND ASTM A123 COMPLIANT CONCRETE ANCHORS. PROVIDE WITH END OUTLET, SIZE AS NOTED ON PLAN, WITH STRAINER ON OUTLET.	OUTLET SIZE PER PLAN	-	-	-
FRD-1	FLUSHING RIM DRAIN	ZURN	Z-300-3"-ZN-ST-WB	THOROFLUSH DRAIN WITH INTEGRAL DOUBLE TRAP, CAST IRON BODY, ACID RESISTANT EPOXY COATED EXTERIOR/INTERIOR, SIDE OUTLET, SEEPAGE PAN, NICKL BRONZE TOP WITH FLIP OPEN LID, SLOTTED HINGE, 1/2" TRAP WATER CONNECION, WATER BOX	PROVIDE WITH 8" DIAMETER STRAINER AND ALL ACID RESISTING EPOXY COATING. HINGED SOLID TOP LID, VERIFY PIPE SIZES ON PLANS,, WATER SUPPLY ZURN BOX PER NEXT LINE.	3"	-	1/2"	-
DFV-1	WITH FLUSHING DRAIN ABOVE	-	ZURN ZS1464	RECESSED WATER SUPPLY BOX WITH HINGED DOOR COVER, 1/2" VALVE, HOT-COLD WATER IN/OUT,304 SS, CYLINDER LOCK AND HINGED COVER, BRONZE CONTROL VALVES, VACUUM BREAKER.	PROVIDE WITH OUTLET SIZE AS NOTED ON PLAN. OUTLET SIZE TO DETERMINE OVERALL DIAMETER OF DOME STRAINER. 3" AND 4" OUTLETS TO HAVE A 14" DIAMETER DOME STRAINER, 5" AND 6" OUTLETS TO HAVE A 18" DIAMETER DOME STRAINER. ROOF DRAIN SHALL HAVE A 25 YEAR WARRANTY.			1/2"	-
SD	SIDEWALL SCUPPER DRAIN	ZURN	Z-187	DURA-COATED CAST IRON BODY WITH OBLIQUE ALUMINUM GRATE WITH 90 DEG COMBINATION FRAME AND MEMBRANE FLASHING CLAMP, AND SIDE OUTLET PIPE SIZE PER PLANS (3").	PROVIDE WITH OUTLET SIZE AS NOTED ON PLAN. OUTLET SIZE TO DETERMINE SIZE OF OBLIQUE STRAINER.ROOF DRAIN SHALL HAVE A 25 YEAR WARRANTY.	OUTLET AS NOTED ON PLAN			
DB	DOWNSPOUT BOOT	ZURN	Z-191-RD	DURA-COATED CAST IRON BODY WITH ROUND INLET AND OUTLET AND STRAP WITH 1/4" DIA. CAST HOLES FOR FLAT HEAD BOLTS, AND INLET/OUTLET PIPE SIZE PER PLANS (3" or 4").	PROVIDE WITH INLET/OUTLET SIZE AS NOTED ON PLAN (4"). OVERALL HEIGHT OF BOOT 18" DRAIN SHALL HAVE A 25 YEAR WARRANTY. FURNISH WITH CLEANOUT ACCESS WITH PLUG AND NO-HUB CONNECTIONS.	OUTLET AS NOTED ON PLAN			
FGCO	FINISHED GRADE CLEANOUT	ZURN	Z-1400-HD	ADJUSTABLE FLOOR CLEANOUT, CAST IRON BODY, WITH GAS AND WATER-TIGHT ABS TAPERED THREAD PLUG AND ROUND SCORIATED SECURED HEAVY DUTY TOP, ADJUSTABLE TO FINISH FLOOR. CAST IN CONCRETE PER DETAIL.	CLEANOUT SHALL BE THE SAME SIZE AS PIPING UP TO 4". 4" AND LARGER PIPING SHALL BE A 4" CLEANOUT.	-	-	-	-
FCO	FINISHED FLOOR CLEANOUT	ZURN	Z-1400	ADJUSTABLE FLOOR CLEANOUT, CAST IRON BODY, WITH GAS AND WATER-TIGHT ABS TAPERED THREAD PLUG AND ROUND SCORIATED SECURED HEAVY DUTY TOP, ADJUSTABLE TO FINISH FLOOR.	CLEANOUT SHALL BE THE SAME SIZE AS PIPING UP TO 4". 4" AND LARGER PIPING SHALL BE A 4" CLEANOUT.	-	-	-	-
WCO	WALL CLEANOUT	ZURN	Z-1446	CLEANOUT TEE, DURA COATED CAST IRON BODY, GAS AND WATERTIGHT, ABS TAPERED THREAD PLUG AND ROUND, SMOOTH STAINLESS STEEL WALL ACCESS COVER WITH SECURING SCREW.	CLEANOUT SHALL BE THE SAME SIZE AS PIPING UP TO 4". 4" AND LARGER PIPING SHALL BE A 4" CLEANOUT.	-	-	-	-
DSN	DOWNSPOUT NOZZLE	ZURN	ZANB-199	ALL NICKLE BRONZE BODY DOWNSPOUT NOZZLE, WITH OPTIONAL THREADED OR NO-HUB INLET AND DECORATIVE FACE OF WALL FLANGE AND OUTLET NOZZLE.	-	SIZE TO MATCH ROOF DRAIN PIPING NOTED ON PLAN			
JS-1	24"x24" JANITORS SINK	FIAT	TSB100	ONE PIECE PRECAST TERRAZO MOP SERVICE BASIN, 12" CONTINUOUS DEPTH. TERRAZO SHALL BE CONSTRUCTED TO A COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI, WITH POLISHED AND SEALED FINISH. BASIN TO BE INSTALLED ON MINIMUM 1/2" LAYER OF MORTAR FOR LEVELING, REFER TO MANUFACTURERS INSTALLATION INSTRUCTIONS.	PROVIDE WITH STAINLESS STEEL STRAINER (#1453BB), QUICK DRAIN CONNECTORS, INTEGRAL TILING FLANGES, STAINLESS STEEL CAPS ON ALL SHOULDERS, WALL MOUNTED MOP SERVICE SINK WITH PAIL HOOK (830AA), HOSE AND HOSE BRACKET (832AA), SILICONE SEALANT (833AA) AND HEAVY GAUGE STAINLESS STEEL WALL GUARDS (MSG).	3"	1-1/2"	1/2"	1/2"
LT-1	WALL MOUNTED SCRUB SINK	ELKAY	EWS2520FC	WALL MOUNTED SINK WITH DOUBLE PEDAL CONTROL, #14 GAUGE TYP 304 (18-8) STAINLESS STEEL SCRUB-UP SINK WITH 1-1/2" ROLLED RIM, 6" HIGH BACKSPLASH, WALL HANGER AND STAINLESS STEEL SUPPORT BRACKETS.	PROVIDE WITH ELKAY MODEL LK398C CHROME PLATED WALL HUNG DOUBLE PEDAL VALVE WITH MOUNTING PACKAGE, LK395A CHROME PLATED GOOSENECK SPOUT WITH AE19A VANDAL RESISTANT ANTI-HOSE AERATOR, AND LK18B STAINLESS STEEL PERFORATED 1-1/2" STRAINER GRID.	2"	1-1/2"	1/2"	1/2"
RD-1	ROOF DRAIN	ZURN	Z103-45	DIAMETER DUAL OUTLET ROOF DRAIN WITH 45° PRIMARY OUTLET CONNECTION. CAST IRON BODY ROOF DRAIN, VARIABLE DIAMETER BASED UPON OUTLET SIZE. PROVIDE WITH DECK CLAMP AND MINIMUM 5" HIGH DOME STRAINER. ROOF DRAIN SHALL BE COMPLIANT WITH ASME A112.6.4.	PROVIDE WITH OUTLET SIZE AS NOTED ON PLAN. OUTLET SIZE TO DETERMINE OVERALL DIAMETER OF DOME STRAINER. 3" AND 4" OUTLETS TO HAVE A 14" DIAMETER DOME STRAINER, 5" AND 6" OUTLETS TO HAVE A 18" DIAMETER DOME STRAINER. ROOF DRAIN SHALL HAVE A 25 YEAR WARRANTY.	OUTLET SIZE PER PLAN			

REMARKS:
1. VERIFY ALL CONNECTIONS & MOUNTING HEIGHTS WITH CODES, MANUFACTURERS, AND PLANS.
2. SIZES LISTED INDICATE MIN. SIZE ONLY, SEE PLUMBING RISERS AND FLOOR PLANS FOR LARGER SIZES.
3. ACCEPTABLE ALTERNATE MANUFACTURERS INCLUDE HAWS, CHICAGO FAUCET, HALSEY TAYLOR, JOSAM, JR SMITH, WADE, ROCKFORD, TOTO, AND OASIS

TANKLESS WATER HEATER SCHEDULE (RACK SYSTEM)

MARK	MFR	MODEL	LOCATION	ENERGY FACTOR	TYPE	MIN. NG PRESS. ("W.C.)	MAX. NG PRESS. ("W.C.)	MIN. INPUT (mbh)	MAX. INPUT (mbh)	TEMP SETTING (°F)	GPM @ 70°F RISE	VOLT/PH/HZ	ACCESSORIES
WH-1/2	AO SMITH	ACI-CRS-23WM-N	MECH RM	0.95	NAT. GAS	5.0	10.5	15,000	398,000	120	10.8	120/1/60	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15

ACCESSORIES:
1. CONCENTRIC VENT TERMINATION KIT.
2. GAS SHUTOFF VALVE.
3. INTERNAL TEMPERATURE CONTROLLER WITH ON-BOARD DIAGNOSTICS.
4. 120V POWER CORD (MIN. 10 FT LENGTH).
5. ISOLATION VALVE KIT.
6. WATER FILTER.
7. SUITABLE FOR COMMERCIAL USAGE.
8. HRS35 PRIMARY HEAT EXCHANGER, 316L STAINLESS SECONDARY HEAT EXCHANGER.
9. ELECTRONIC IGNITION.
10. AFR SENSOR, EXHAUST & WATER TEMP SAFETY CONTROL, AND OVERHEAT SHUTOFF FUSE.
11. NEUTRALIZER KIT.
12. SUITABLE FOR PVC/CPVC VENTING.
13. 10 YEAR HEAT EXCHANGER WARRANTY, 5 YEAR WARRANTY ON ALL OTHER COMPONENTS.
14. ANSI Z21.22 COMPLIANT PRESSURE RELIEF VALVE, RATED FOR A MAXIMUM OF 150 PSI.
15. AT CONTRACTOR'S OPTION, COMMON VENTING MAY BE INSTALLED, GIVEN EACH WATER HEATER IS PROVIDED WITH A NON-RETURN VALVE. COMMON VENTING SHALL BE SIZED AND INSTALLED PER UNIT MANUFACTURER'S REQUIREMENTS.

PIPING MATERIAL SCHEDULE

PIPING SYSTEM	SIZE	TYPE	SCH	GRD	ASTM	MATERIAL	FITTINGS MAT.	FITTINGS TYPE	MAX. WORKING PRESS (PSI)	MAX. WORKING TEMP (°F)	FIELD TEST PRESS (PSI)	FIELD TEST TIME
DOMESTIC WATER ABOVE GRADE	ALL	L	--	--	B88	CP	CP	SJ	120	40-180	150	1 HR
DOMESTIC WATER BELOW GRADE	ALL	K	--	--	B88	CP	CP	SJ	120	40-180	150	1 HR
CONDENSATE DRAIN ABOVE GRADE	ALL	M	--	--	B88	CP	CP	DR\S	10FT	40-70	10FT	1 HR
FIRE PROTECTION	ALL				PER	NFPA	13	AND	14		200	2 HR
FIRE SERVICE BELOW GRADE	ALL	CL150	--	--	C900	PVC	DI	MJ	120	40-80	200	2 HR
REFRIGERANT PIPING	ALL	ACR	--	--	B280	CP	CP	S	150	40-140	200	4 HR
ROOF DRAIN BELOW GRADE	ALL	DMV	40	--	2665	PVC	PVC	DR\SW	10 FT	40-80	10 FT	1 HR
ROOF DRAIN ABOVE GRADE	ALL	NH	SS	--	A74	CI	CI	DR\NH	10 FT	40-180	10 FT	1 HR
TEMPERATURE & PRESSURE RELIEF DRAIN	ALL	M	--	--	B88	CP	CP	DR\S	10FT	40-70	10FT	1 HR
NATURAL GAS ABOVE GRADE	0.5"-2.5"	SL/CW	40	A	A53	CS/BLK	CS	THRD	1	-	100	1 HR
NATURAL GAS ABOVE GRADE	ABOVE 3"	SL/CW	40	A	A53	CS/BLK	CS	THRD	1	-	100	1 HR
NATURAL GAS BELOW GRADE	ALL	REFER TO NOTE 1 BELOW										
WASTE BELOW GRADE	ALL	DWV	40	--	2665	PVC	PVC	DR\SW	10 FT	40-80	10 FT	1 HR
WASTE & VENT ABOVE GRADE	ALL	NH	SS	--	A74	CI	CI	DR\NH	10 FT	40-180	10 FT	1 HR

NOTES:
1. BURIED GAS PIPING SHALL BE DRISCOPLEX 6500 PE2406, SDR11, POLYETHYLENE WITH #12 COPPER TRACER WIRE AND ANODELESS RISERS WHERE RISING ABOVE GRADE.

ATP - ARMCO TRUSS PIPE
BLK - BLACK
BS - BELL & SPIGOT
CI - CAST IRON
CP - COPPER
CS - CARBON STEEL
CTD - PIPE LINE SERVICE COMPANY X-TRU-COAT HIGH DENSITY POLYETHYLENE COATING EXTRUDED OVER PIPE
CW - CONTINUOUS WELD
DI - DUCTILE IRON
DR - DRAINAGE FITTING
GLV - GALVANIZED
LC - LEAD CAULKING
MI - MALLEABLE IRON
MJ - MECHANICAL JOINT
NG - NEOPRENE GASKET
NH - NO-HUB
PE - POLYETHYLENE
PVC - POLYVINYL CHLORIDE
S - BRAZED JOINT - SILVER BRAZING ALLOY
SJ - SOLDER JOINT 95-5 TIN-ANTIMONY
SL - SEAMLESS STEEL
SS - STANDARD STRENGTH - SERVICE WEIGHT
SW - SOLVENT WELD
TS - TY-SEAL
THRD - THREADED
VCP - VITRIFIED CLAY PIPE
WELD - WELDED
XH - EXTRA HEAVY

OIL SAND INTERCEPTOR

MARK	LOCATION	SERVES	GPM	INLET/ OUTLET (IN)	DIMENSIONS	VENT/CO	MANUFACTURER	SERIES	MODEL	REMARKS
OSI-1	EXTERIOR	HANGER	150	4"	56"Lx31"Hx41"W	2"	ZURN	OIL / SOLIDS	Z1188	1-5

REMARKS:
1. GRAVITY DRAW OFF WITH PLUGS
2. HEAVY DUTY COVER FOR TRAFFIC
3. SEDIMENT BUCK
4. GRAVITY DRAW OFF WITH PLUGS
5. BODY EXTENSIONS FOR INVERT DEPTH

RECIRCULATION PUMPS

MARK	LOCATION	SERVES	GPM	HEAD (FT)	HP	EFF. %	VOLT	RPM	TYPE	MANUFACTURER	SERIES	MODEL	REMARKS
RP-1	MECH RM	WH-1&2	2.0	20	1/6	N/A	120/1	3300	INLINE	BELL & GOSSETT	ECOCIRC	-	-

REMARKS:
1.

BACKFLOW PREVENTOR SCHEDULE

MARK	LOCATION	MFG	MODEL	TYPE	SERVES	BFP SIZE	DRAIN SIZE	LINE SIZE	REMARKS
BFP-1	MAIN MECH ROOM	WATTS	707DCDA	DOUBLE CHECK DETECTOR	FIRE SERVICE	6"	N/A	6"	3,4,5
BFP-2	MECHANICAL ROOM 109	WATTS	009	REDUCED PRESSURE ZONE	WATER SERVICE	2"	2"	2"	1,3,4,5

REMARKS:
1. PROVIDE WITH MANUFACTURER REQUIRED AIRGAP, EXTEND FULL SIZE DRAIN PIPING TO TERMINATE AT NEAREST FLOOR DRAIN.
2. COORDINATE CONFIGURATION WITH SPACE LIMITATIONS PRIOR TO ORDERING.
3. PROVIDE WITH "Y" TYPE STRAINER.
4. PROVIDE WITH UNION END BALL VALVES ON ASSEMBLY.
5. PROVIDE AND INSTALL PER DETAIL.

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TM Aviation

TMA HANGER
LEE'S SUMMIT AIRPORT

No.	Date	Description

Issue: PERMIT SET
Date: MAR 21, 2025
Drawn By: MR | Checked By: CW

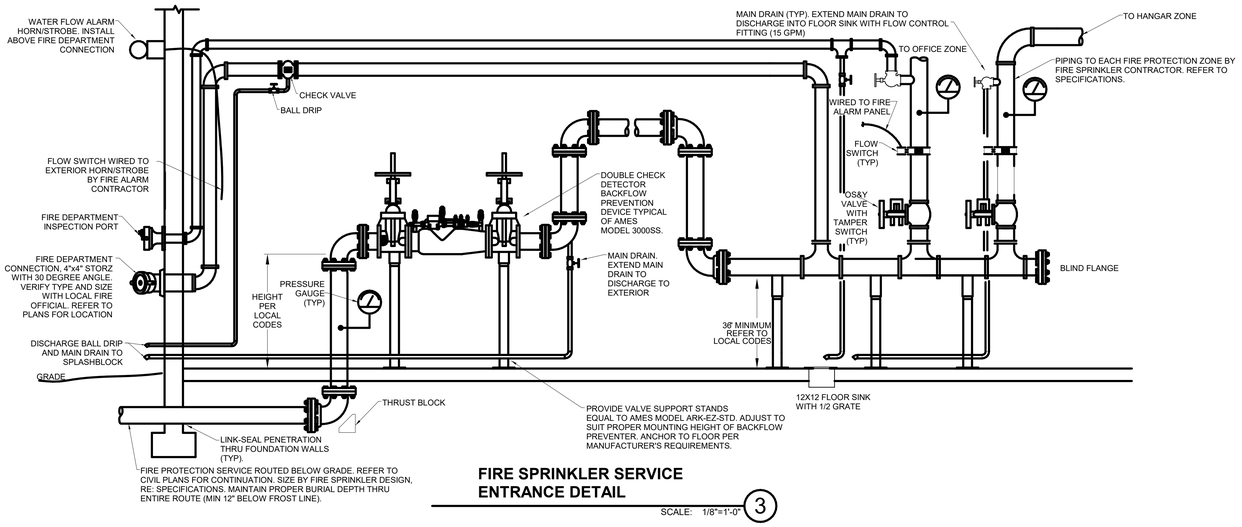
KEY PLAN

NORTH

SHEET NAME
PLUMBING SCHEDULES

SHEET NUMBER
P-500

PROJECT NUMBER
2404



FIRE SPRINKLER SERVICE ENTRANCE DETAIL

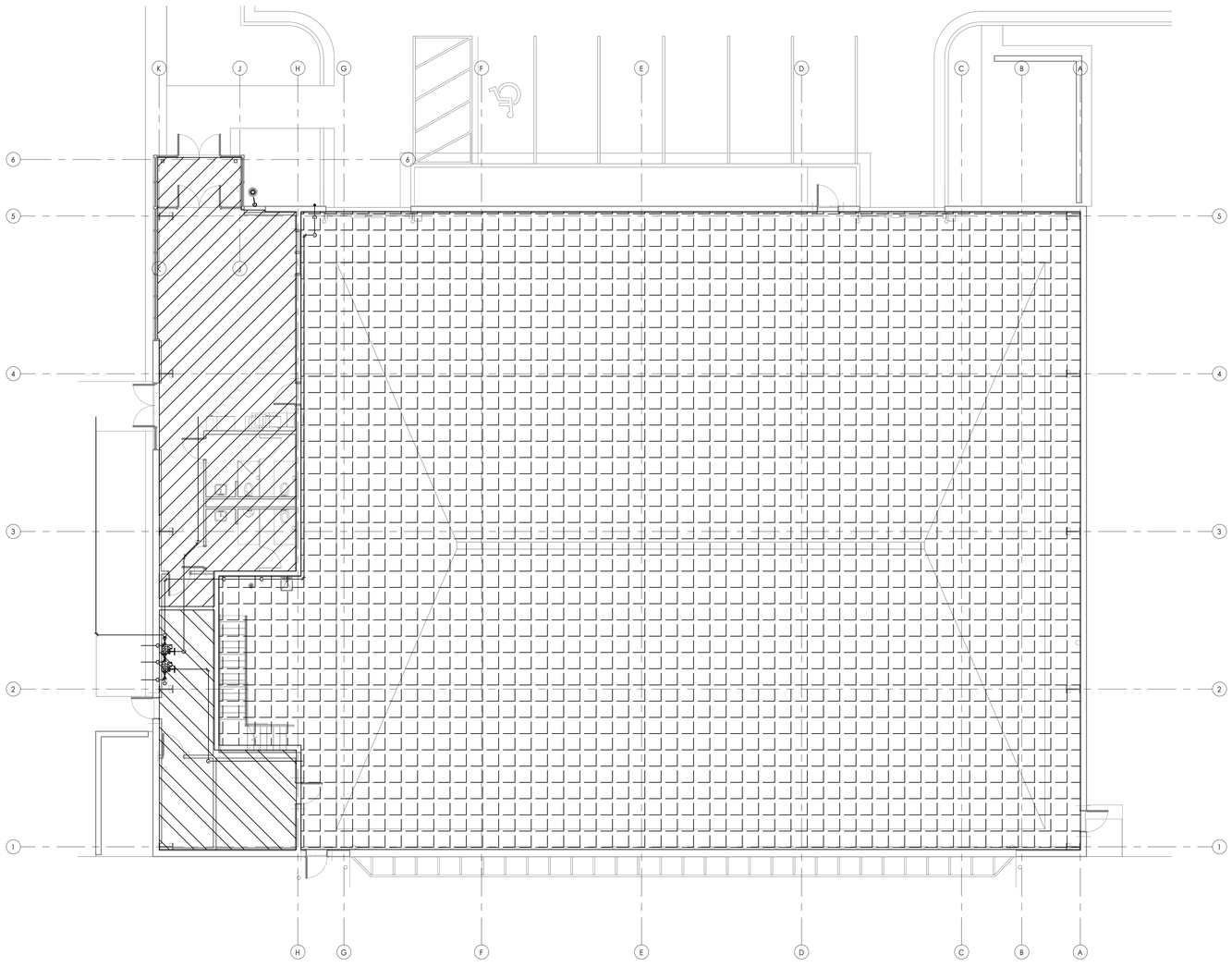
SCALE: 1/8"=1'-0" (3)

HATCH KEY

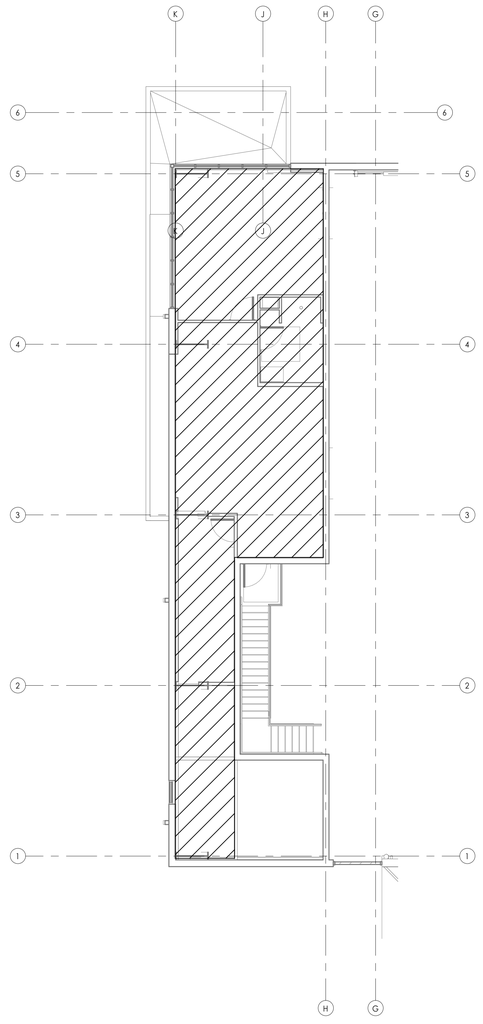
- DENOTES AREA WHICH IS TO BE PROVIDED WITH NEW "LIGHT HAZARD" FIRE SPRINKLER COVERAGE PER NFPA 13 AND SPECIFICATION DIVISION 21
- DENOTES AREA WHICH IS TO BE PROVIDED WITH NEW "ORDINARY HAZARD" FIRE SPRINKLER COVERAGE PER NFPA 13 AND SPECIFICATION DIVISION 21
- DENOTES AREA WHICH IS TO BE PROVIDED WITH NEW "ORDINARY HAZARD" FIRE SPRINKLER COVERAGE PER NFPA 409 AND SPECIFICATION DIVISION 21
- DENOTES AREA WHICH IS TO BE PROVIDED WITH NEW DRY TYPE SPRINKLER SYSTEM WHERE FREEZING COULD OCCUR FIRE SPRINKLER COVERAGE PER SPECIFICATION DIVISION 21. FURNISH ZONE WITH DRY TYPE VALVE, AIR TANK, CONTROLS, ETC.

GENERAL NOTES

1. SPRINKLER CONTRACTOR IS RESPONSIBLE FOR VERIFYING HYDRANT FLOWS PRIOR TO ANY DESIGN CALCULATIONS AND LAYOUTS. WHAT IS SHOWN ON THESE PLANS IS SCHEMATIC AND IS BASED UPON REDUCING PIPING FRICTION LOSS WITHOUT THE NEED OF A FIRE PUMP. FIRE SPRINKLER CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND FOLLOWING SAME PROCEDURES.
2. THE PRESSURES GIVEN WERE APPROXIMATELY THE FOLLOWING:
   2.1. 82 PSI AT STROTHER AND NE HAGAN ROAD.
   2.2. OBTAIN FROM WATER SERVICES RECENT FLOW/PRESSURE DATA.
3. SPRINKLER CONTRACTOR IS RESPONSIBLE FOR VERIFYING OCCUPANCY HAZARD CLASSIFICATION FOR AREAS TO BE PROVIDED WITH NEW SPRINKLER COVERAGE AS INDICATED ON PLANS.
4. THE ENTIRE DESIGN SHALL BE A WET SYSTEM FOLLOWING NFPA 13 FOR ENTIRE BUILDING EXCEPT FOR HANGER WHICH IS TO FOLLOW NFPA 409. THIS AREA SHALL BE PROTECTED WITH A WET SYSTEM ONLY, NO HIGH EXPANSIVE FOAM.
5. SPRINKLER CONTRACTOR SHALL PERFORM WORK IN ACCORDANCE WITH THE REQUIREMENTS OF ALL APPLICABLE STATE AND LOCAL LAWS, CODES AND ORDINANCES, NATIONAL FIRE PROTECTION ASSOCIATION, AND THE AUTHORITY HAVING JURISDICTION.
6. CONTRACTOR SHALL COORDINATE ALL SCHEDULING, ELEVATIONS, SIZES, QUANTITIES, AND ROUTING OF WORK WITH OTHER TRADES. COORDINATE AND FIELD VERIFY SIZE, LOCATION, ELEVATION AND QUANTITY OF ALL ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PIPING EQUIPMENT AND COMPONENTS THAT MAY IMPACT IMPLEMENTATION OF THIS WORK.
7. UNLESS OTHERWISE INDICATED, ALL AREAS OF THE BUILDING SHALL BE "WET-PIPE" FIRE PROTECTION SYSTEM AS SHOWN ON PLANS.
8. PROVIDE NEW QUICK-RESPONSE SPRINKLER HEADS FOR ALL AREAS INDICATED ON PLANS. FOR AREAS WITH LAY-IN OR HARD CEILINGS, PROVIDE SEMI-RECESSED PENDANT HEADS WITH ESCUTCHEON PLATES INSTALLED IN CEILING (ALL PARTS SHALL BE POLISHED CHROME), UNLESS OTHERWISE NOTED. AREAS WITHOUT A CEILING (OR ANY UNFINISHED AREA) SHALL BE PROVIDED WITH BRASS, UN-PLATED, UPRIGHT PENDANT HEADS.
9. REFER TO SPECIFICATIONS FOR FURTHER FIRE PROTECTION SYSTEM REQUIREMENTS NOT STATED ON PLANS.
10. FIRE PROTECTION WORK SHALL BE INSTALLED BY A QUALIFIED CONTRACTOR (SPRINKLER FITTER OR PER JURISDICTIONAL REQUIREMENTS) WITH A MINIMUM 3 YEARS OF INSTALLATION EXPERIENCE ON PROJECTS WITH FIRE PROTECTION WORK SIMILAR TO THAT REQUIRED FOR THE PROJECT.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL FLOW INFORMATION FOR DESIGN FROM UTILITY COMPANY. VERIFY EXACT READINGS AT CLOSEST LOCATION TO BUILDING.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING HYDRAULIC CALCULATIONS FOR ENTIRE FIRE PROTECTION SYSTEM. PRIOR TO BEGINNING WORK, FIRE PROTECTION PLANS SHOWING SPRINKLER HEAD LOCATIONS, HYDRAULIC CALCULATION, AND ALL NECESSARY INFORMATION SHALL BE SUBMITTED FOR APPROVAL AUTHORITY HAVING JURISDICTION. PLANS SHALL BEAR THE SEAL OF A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MISSOURI.



SCHEMATIC FIRE PROTECTION PLAN - 1ST FLOOR
1/8" = 1'-0" (1)



SCHEMATIC FIRE PROTECTION PLAN - 2ND FLOOR
1/8" = 1'-0" (2)

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STATE OF MISSOURI
03.21.2025
NUMBER PE-2010008018
PROFESSIONAL ENGINEER

TM Aviation

TMA HANGER

LEE'S SUMMIT AIRPORT

No.	Date	Description

Issue: PERMIT SET
Date: MAR 21, 2025
Drawn By MR | Checked By CW

KEY PLAN

NORTH

SHEET NAME

FIRE PROTECTION PLANS

SHEET NUMBER

FP100

PROJECT NUMBER 2404

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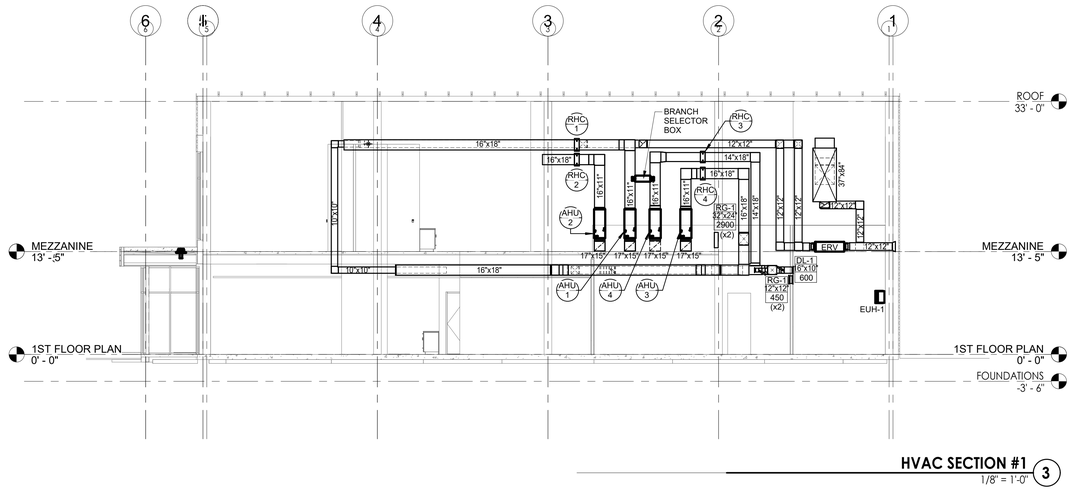
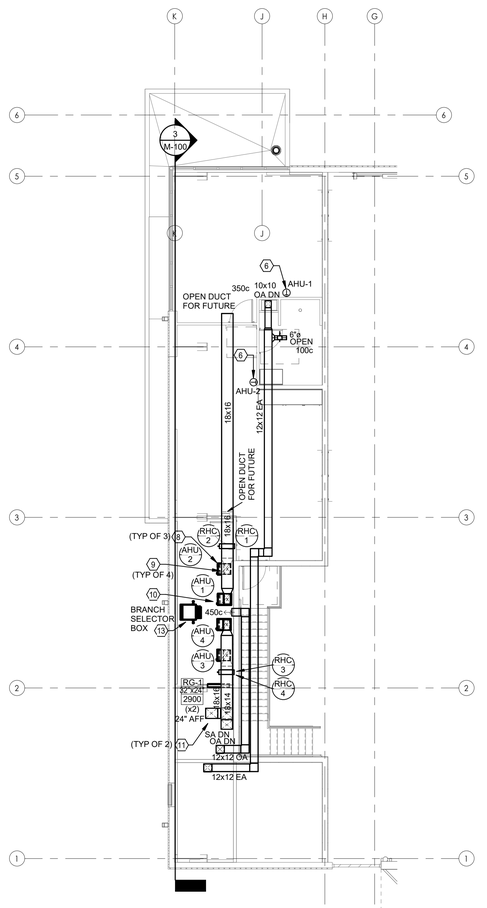
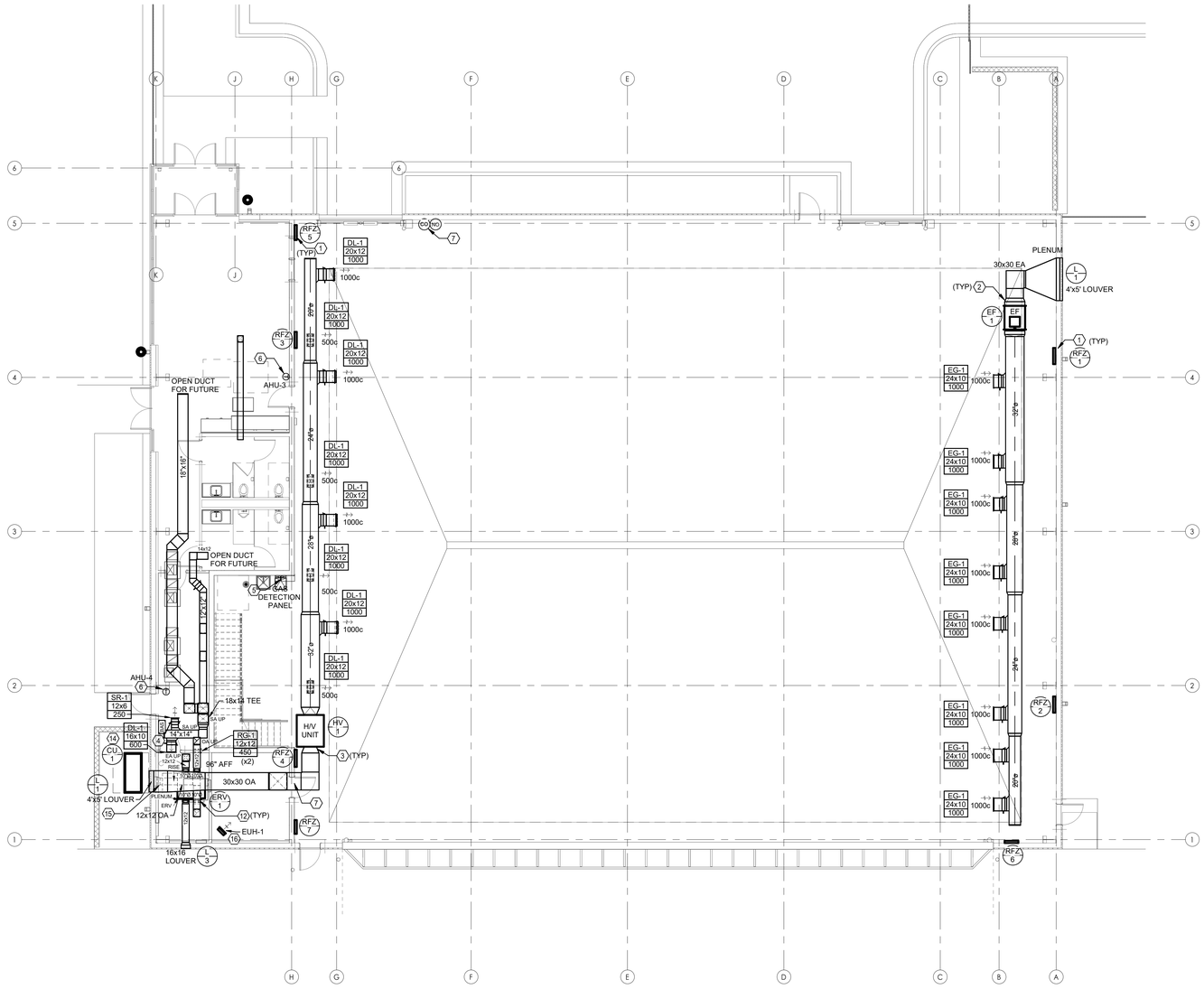


HVAC SECTION #1
1/8" = 1'-0" (3)



SCHEMATIC 2ND FLOOR MECHANICAL PLAN
1/8" = 1'-0" (2)



SCHEMATIC 1ST FLOOR MECHANICAL PLAN
1/8" = 1'-0" (1)

MECHANICAL PLAN NOTES

1. NEW RADIANT FLOOR HEAT ZONE MANIFOLD BOX.
2. 30"x30" EXHAUST AIR DUCT TRANSITIONED FROM EXHAUST FAN "EF-1" TO LOUVER IN WALL. TRANSITION TO MATCH CONNECTION SIZE AND PROVIDE WITH FLEXIBLE CONNECTION AT FAN. AT LOUVER PROVIDE FULL SIZE PLENUM, CONNECT DUCTWORK INTO PLENUM.
3. 30"x30" SUPPLY AIR DUCTWORK FROM HEATING/VENTILATION UNIT "HV-1" TO LOUVER. TRANSITION TO MATCH CONNECTION SIZE AND PROVIDE WITH FLEXIBLE CONNECTION AT MAU. AT LOUVER PROVIDE FULL SIZE PLENUM, CONNECT DUCTWORK INTO PLENUM.
4. NEW DDC CONTROL PANEL.
5. NEW GAS DETECTION SYSTEM TO MONITOR VEHICLE EMISSION (NO2) LEVELS. EXHAUST GAS SENSORS, SHOWN WITHIN SPACE, SHALL BE CONNECTED TO GAS DETECTION SYSTEM TO CONTROL THE OPERATION OF NEW EXHAUST FAN "EF-1" AND MAKEUP AIR UNIT.
6. NEW VRF DIGITAL TEMPERATURE SENSOR WITH DIGITAL LCD SCREEN, FAN/SETPOINT CONTROL, TIME OF DAY PROGRAMMING.
7. NEW CO/NO SENSOR MOUNTED ON WALL AT 48" AFF. SEE GAS DETECTION SYSTEM CONTROL DIAGRAMS.
8. 18x16 SUPPLY AIR DUCTWORK DOWN TO AIR HANDLING UNIT.
9. FULL SIZE RETURN AIR OPENING IN BOTTOM OF UNIT WITH ELBOW OPEN TO ROOM. ENSURE INSTALLATION OF FILTER RACK AND LEAVE DUCTWORK OPEN THRU UNIT STAND. PROVIDE RETURN AIR SCREEN AT INLET.
10. 18x14 SUPPLY AIR DUCTWORK DOWN TO AIR HANDLING UNIT.
11. ROUTE DUCTWORK DOWN INTO LOWER CEILING PLENUM SPACE.
12. 12"x12" DIAMETER SUPPLY/EXHAUST DUCTWORK TRANSITIONED TO 10" DIAMETER AT ENERGY RECOVERY VENTILATOR.
13. VRF BRANCH SELECTOR BOX WITH TWO PIPE REFRIGERANT PIPING TO EACH AIR HANDLING UNIT VRF COIL. SEE DIAGRAMS. ALL REFRIGERANT PIPING SHALL BE COPPER ACR WITH BRAZED CONNECTIONS, USE ALL REQUIRED ACCESSORIES FURNISHED BY DIAKIN.
14. 3-PIPE REFRIGERANT PIPING FROM BRANCH SELECTOR BOX TO OUTDOOR HEAT PUMP "CU-1". SEE DIAGRAMS. ALL REFRIGERANT PIPING SHALL BE COPPER ACR WITH BRAZED CONNECTIONS, USE ALL REQUIRED ACCESSORIES FURNISHED BY DIAKIN.
15. CONNECT 12x12 DUCTWORK INTO PLENUM ON BACKSIDE OF LOUVER/DAMPER.
16. REFER TO E-400 AND E-500 FOR EUH-1 SCHEDULE AND DETAIL.

GENERAL MECHANICAL NOTES

1. ALL MECHANICAL WORK SHALL BE IN ACCORDANCE WITH THE 201 EDITION OF THE MECHANICAL CODE AS ADOPTED BY THE CITY OF LEE'S SUMMIT, MISSOURI.
2. COORDINATE CLOSELY WITH ALL OTHER TRADES TO EXPEDITE CONSTRUCTION AND AVOID INTERFERENCES AND CONFLICTS. BEFORE ANY PIPING, DUCTWORK CONDUIT, ETC IS INSTALLED, IT SHALL BE COORDINATED CAREFULLY BETWEEN ALL TRADES.
3. CONTRACTOR SHALL GUARANTEE ALL EQUIPMENT, ACCESSORIES, AND MATERIAL FURNISHED BY HIM FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE AGAINST ALL DEFECTS.
4. ALL RECTANGULAR TAKE-OFFS FROM SUPPLY RISERS SHALL BE MADE WITH 45 DEGREE HIGH EFFICIENCY BRANCH FITTINGS. REFER TO SPECIFICATIONS.
5. CONTRACTOR SHALL SUBMIT HVAC SHEET METAL PLANS WITH ACTUAL FITTINGS AND LAYOUT PER THE SHOP FABRICATION.
6. REFER TO STRUCTURAL PLANS FOR THE LOCATION OF ALL STRUCTURAL MEMBERS. NEW ROOF PENETRATIONS AND ROOF CURBS FOR EQUIPMENT ON ROOF ARE SHOWN SCHEMATICALLY AND SHALL BE COORDINATED WITH EXISTING STRUCTURAL MEMBERS.
7. PROVIDE FLEXIBLE CONNECTION AND DUCT TRANSITIONS AT CONNECTIONS TO ALL DUCTED MECHANICAL EQUIPMENT.
8. COORDINATE ROUTING OF DUCTWORK WITH ALL OTHER TRADES TO AVOID INTERFERENCES IN CEILING.
9. MAINTAIN ALL MANUFACTURER'S REQUIRED CLEARANCES FOR ALL HVAC EQUIPMENT.
10. MAINTAIN MANDATORY 10'-0" SEPERATION FROM ALL VENTS/EXHAUST AND OUTSIDE AIR INTAKES.
11. WHERE PIPING, DUCTWORK, CONDUITS, ETC PENETRATE THE ROOF, PROVIDE PIPE CURB AND WEATHERTIGHT SEAL. PATCH EXISTING ROOF SYSTEM AS REQUIRED AND MAINTAIN ANY WARRANTIES. COORDINATE ROOF PATCH WORK WITH ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.
12. COORDINATE ALL DIFFUSER, REGISTER, AND GRILLE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS AND ELECTRICAL LIGHTING PLANS.
13. ROUND BRANCH TAKE-OFF FITTINGS TO DIFFUSERS SHALL BE BELLMOUTH TYPE EXCEPT LOCATIONS WHERE LISTED DUCT HEIGHT DOES NOT ACCOMODATE. IN THIS CASE PROVIDE HIGH EFFICIENCY 45 DEGREE RECTANGULAR TO ROUND (HETO) FITTING. BOTH OF THESE FITTINGS ARE REQUIRED IN ALL CIRCUMSTANCES. ALL ROUND BRANCH TAKE-OFF FITTINGS TO DIFFUSERS SHALL INCLUDE AN INTEGRAL MANUAL VOLUME DAMPER.
14. INSTALL TEMPERATURE SENSORS/THERMOSTATS/CO2 SENSORS AT 48" AFF. COORDINATE LOCATIONS WITH LIGHT SWITCHES. THERMOSTAT BOXES AND CONDUITS TO ABOVE CEILING ARE TO BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
15. CONTRACTOR SHALL REPAIR OR REPLACE LAY-IN OR GYPBOARD CEILINGS AS NECESSARY TO INSTALL NEW DUCTWORK, PIPING AND ELECTRICAL CONDUITS.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR HYDRONIC SYSTEMS INITIAL TREATMENT AND FLUSHING. UPON COMPLETION OF HYDRONIC SYSTEMS WORK, CONTRACTOR SHALL BE RESPONSIBLE FOR SYSTEM FILL AND ANY REQUIRED CHEMICAL TREATMENT.

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STATE OF MISSOURI
CORY WILSON
03.21.2025
NUMBER PE-2010000838
PROFESSIONAL ENGINEER

TM Aviation

TMA HANGER
LEE'S SUMMIT AIRPORT

No.	Date	Description
1	04/03/25	Addendum 02

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **MR** Checked By **CW**

KEY PLAN
NORTH

SHEET NAME
MECHANICAL PLANS

SHEET NUMBER
M-100

PROJECT NUMBER
2404

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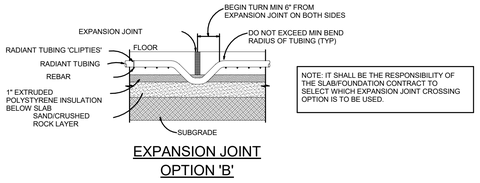
RADIANT FLOOR HEATING ZONE MANIFOLD SCHEDULE

TAG	SYSTEM	MFR.	MODEL	ZONE #	PIPING SIZES		PRIMARY SPACING	SUPPLY FLUID TEMP.	DELTA T (°F)	GPM MANIFOLD	SYSTEM MBH	GPM PER CIRCUIT	HEAD LOSS (TUBING)	NO. OF ACTIVE CIRCUITS	CIRCUIT LENGTH	ENCLOSURE		NOTE
					PRIMARY	SECONDARY										MFR	MODEL	
RFZ-1	HANGAR RADIANT FLOOR HHW	WATTS RADIANT	ZBN-8	1	1-1/2"	5/8-3/4"	12"	180	20	21	200	3.0	15 FT	7	350-375'	WATTS	SURFACE	1-3
RFZ-2	HANGAR RADIANT FLOOR HHW	WATTS RADIANT	ZBN-8	2	1-1/2"	5/8-3/4"	12"	180	20	21	200	3.0	15 FT	7	350-375'	WATTS	SURFACE	1-3
RFZ-3	HANGAR RADIANT FLOOR HHW	**WATTS RADIANT**	ZBN-8	3	1-1/2"	5/8-3/4"	12"	180	20	21	200	3.0	15 FT	7	350-375'	WATTS	RECESSED	1-3
RFZ-4	HANGAR RADIANT FLOOR HHW	**WATTS RADIANT**	ZBN-10	4	1-1/2"	5/8-3/4"	12"	180	20	24	225	3.0	15 FT	8	350-375'	WATTS	RECESSED	1-3
RFZ-5	SNOWMELT 50% PG	**WATTS RADIANT**	ZBN-6	5	1-1/2"	5/8-3/4"	9"	172	20	15	150	2.5	12 FT	6	225-250'	WATTS	RECESSED	1-3
RFZ-6	SNOWMELT 50% PG	**WATTS RADIANT**	ZBN-6	6	1-1/2"	5/8-3/4"	9"	172	20	15	150	3.0	10 FT	5	225-250'	WATTS	RECESSED	1-3
RFZ-7	SNOWMELT 50% PG	**WATTS RADIANT**	ZBN-6	6	1-1/2"	5/8-3/4"	9"	172	20	15	150	3.0	10 FT	5	225-250'	WATTS	RECESSED	1-3

NOTES/ACCESSORIES:
1. MANIFOLDS SHALL BE STAINLESS STEEL.
2. FURNISH STEEL MANIFOLD ENCLOSURE WITH PAINTED WHITE FRONT PANEL, LEG SUPPORTS, LARGE IN SIZE.
3. ALL TUBING SHALL BE 5/8" WATTS RADIANT / UPONOR PEX OR WATTS ONIX. REFER TO SPECIFICATION.

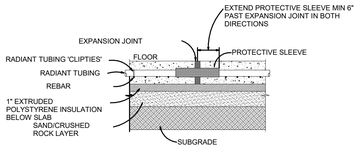
PLAN NOTES

1. NEW RADIANT FLOOR HEAT ZONE SUPPLY/RETURN TUBING UP TO NEW ZONE DISTRIBUTION MANIFOLD - TYPICAL OF 7 SETS OF SUPPLY/RETURN TUBING.
2. NEW RADIANT FLOOR HEAT ZONE SUPPLY/RETURN PIPING UP TO NEW ZONE DISTRIBUTION MANIFOLD - TYPICAL OF 8 SETS OF SUPPLY/RETURN PIPING.
3. NEW RADIANT GLYCOL SNOWMELT ZONE SUPPLY/RETURN PIPING UP TO NEW ZONE DISTRIBUTION MANIFOLD - TYPICAL OF 6 SETS OF SUPPLY/RETURN PIPING.
4. NEW RADIANT GLYCOL SNOWMELT ZONE SUPPLY/RETURN PIPING UP TO NEW ZONE DISTRIBUTION MANIFOLD - TYPICAL OF 5 SETS OF SUPPLY/RETURN PIPING.
5. RADIANT FLOOR TUBING BELOW GRADE SHALL BE TYPICAL OF 5/8" WATTS RADIANT 'ONIX' SERIES TUBING OR UPONOR PEX SERIES, SIZE PER MANUFACTURER'S REQUIREMENTS. EACH ZONE TUBING CIRCUIT BURIED BELOW GRADE SHALL BE ROUTED WITH CONTINUOUS TUBING (NO JOINTS), WITH A MAXIMUM BEND RADIUS AS DICTATED BY MANUFACTURER'S INSTALLATION INSTRUCTIONS. COORDINATE INSTALLATION OF NEW RADIANT FLOOR TUBING WITH FOUNDATION/SLAB CONTRACTOR.
6. ALL ZONE MANIFOLD BOXES SHALL BE SURFACE MOUNTED ON A STAND (EAST ZONES) OR RECESSED IN CABINET, FURNISHED BY WATTS OR UPONOR.



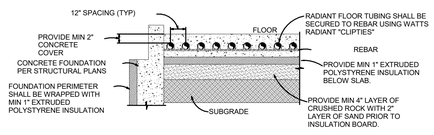
NOTE: IT SHALL BE THE RESPONSIBILITY OF THE SLAB/FOUNDATION CONTRACT TO SELECT WHICH EXPANSION JOINT CROSSING OPTION IS TO BE USED.

EXPANSION JOINT OPTION 'B'



EXPANSION JOINT OPTION 'A'

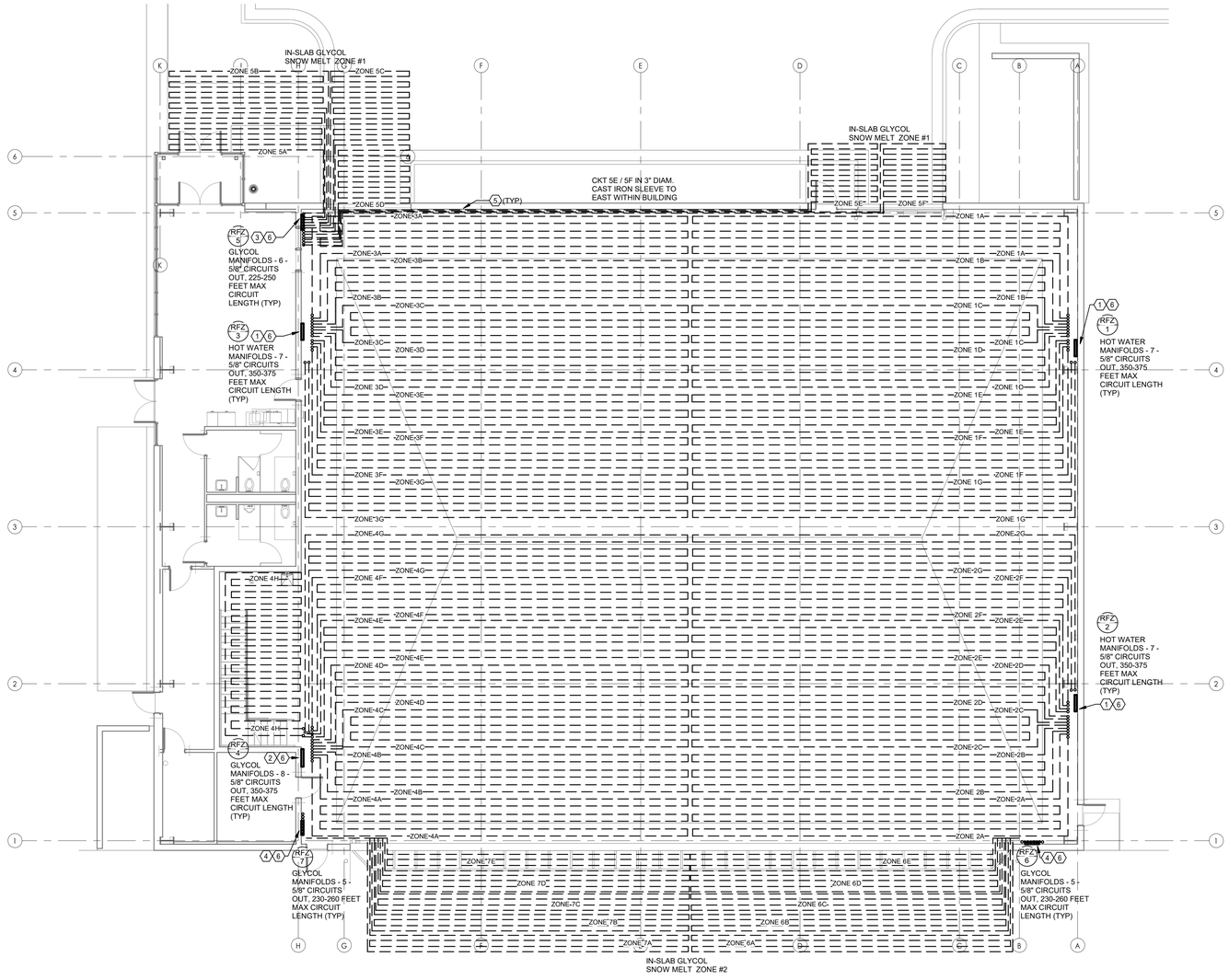
NOTE: RADIANT TUBING SHALL BE SECURED TO REBAR AND PRESSURIZED PRIOR TO POURING CONCRETE TO PREVENT DAMAGE TO PIPING DURING POURING/CURING.



GENERAL ASSEMBLY

3 BELOW GRADE RADIANT TUBING DETAILS
SCALE: NTS

2 TYPICAL RADIANT MANIFOLD
SCALE: NTS



SCHEMATIC UNDERSLAB RADIANT FLOOR HEATING PLAN 1
1/8" = 1'-0"

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STATE OF MISSOURI CORY WILSON NUMBER PE-2010000838 PROFESSIONAL ENGINEER 03.21.2025

TM Aviation

TMA HANGER

LEE'S SUMMIT AIRPORT

No.	Date	Description
Issue:	PERMIT SET	
Date:	MAR 21, 2025	
Drawn By	MR	Checked By CW

KEY PLAN

NORTH

SHEET NAME
RADIANT FLOOR MECHANICAL PLANS

SHEET NUMBER
M-110

PROJECT NUMBER 2404

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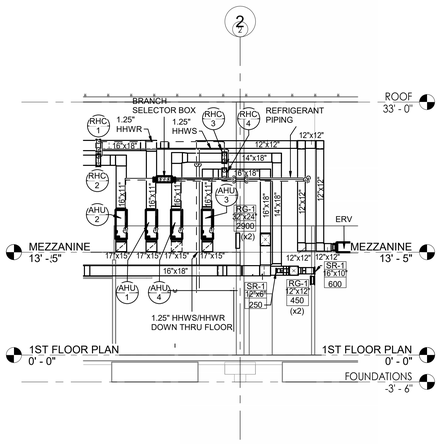


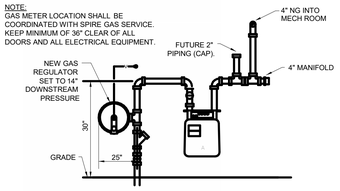
HYDRONIC PIPING SECTION #1 (4)

1/8" = 1'-0"

ESTIMATED GAS HEATING LOAD @ LOW PRESSURE (14"wc)

METER	CFH	SIZE	BLDG SIZE
A	2848	3"	4"

NOTE:
GAS METER LOCATION SHALL BE COORDINATED WITH SPIRE GAS SERVICE. KEEP MINIMUM OF 36" CLEAR OF ALL DOORS AND ALL ELECTRICAL EQUIPMENT.



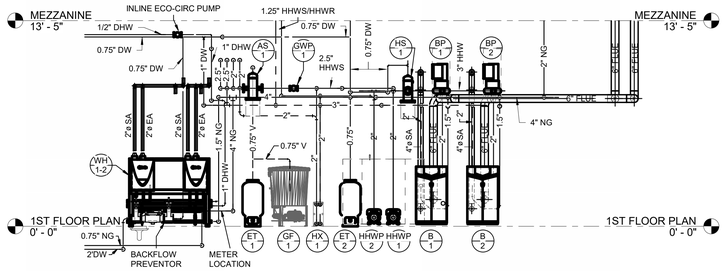
GAS METER ELEVATION (2)

SCALE: NONE

GAS CONNECTED LOAD TABLE

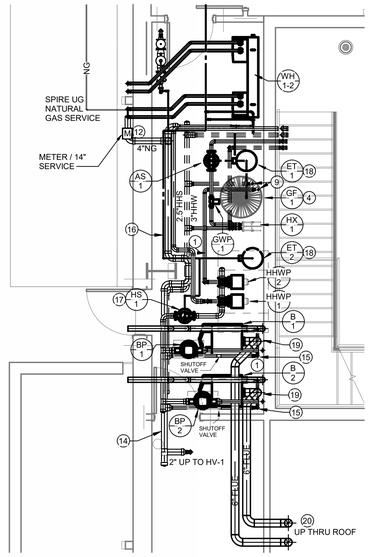
EQUIPMENT:	BTUH
TANKLESS WATER HEATERS (2)	398,000
NEW MAU-1	750,000
BOILER B-1	850,000
BOILER B-1	850,000
TOTAL BUILDING LOAD	2,848,000

CONTRACTOR SHALL CONTACT XXXX WITH SPIRE GAS SERVICE (785-XXX-XXXX) AND COORDINATE REQUIREMENTS OF NATURAL GAS SERVICE. SUPPLIED AT LOW PRESSURE (1/2-PSI), AS SHOWN ON PLANS. PROVIDE ALL NECESSARY MATERIALS FOR A COMPLETE INSTALLATION, INCLUDING NEW METER, NEW REGULATOR, ETC.



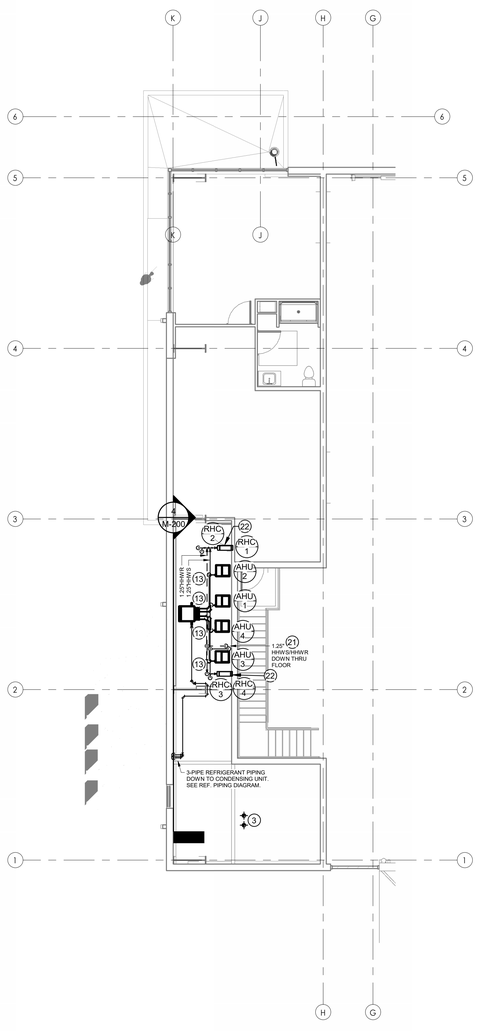
MECHANICAL ROOM Section #1 (6)

1/4" = 1'-0"



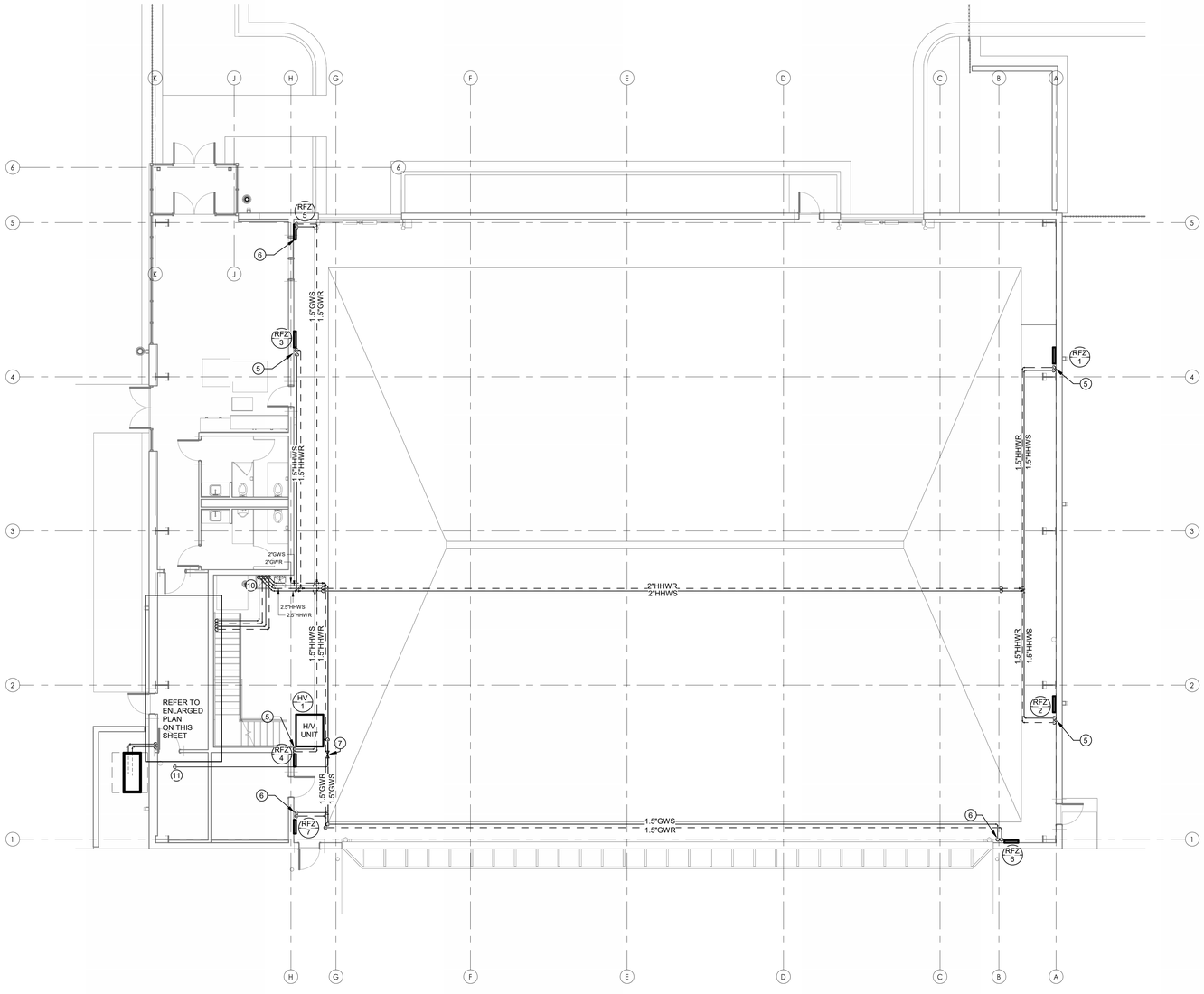
ENLARGED MECHANICAL ROOM PLAN (5)

1/4" = 1'-0"



2ND FLOOR MECHANICAL PIPING PLAN (2)

1/8" = 1'-0"



1ST FLOOR MECHANICAL PIPING PLAN (1)

1/8" = 1'-0"

PLAN NOTES

1. CONCRETE HOUSEKEEPING PAD PER ARCHITECTURAL PLANS.
2. SLEEVE PIPING THRU PENETRATION OF EXTERIOR WALL.
3. TERMINATE BOILER FLUES WITH CATEGORY IV CHIMNEY CAP. PROVIDE FLASHING CONE AND WATERTITE OPENING IN STANDING SEAM.
4. PROVIDE HOSE BIBB ADJACENT TO GLYCOL FEEDER TO MIX FOR WATER TREATMENT SYSTEM.
5. 1.5" HHWS/HHWR DOWN TO RADIANT FLOOR MANIFOLD.
6. 1.5" GWS/GWR DOWN TO SNOWMELT MANIFOLD. SEE CABINET ELEVATION FOR SUPPLY/RETURN CONFIGURATION.
7. 2" GAS PIPING DOWN TO "HV-1". PROVIDE DIRT LEG, UNION, AND TRANSITION TO MATCH CONNECTION.
8. 1.5" GAS PIPING DOWN TO WATER HEATERS. SEE INSTALLATION DETAIL FOR TEEING TO BOTH HEATERS. ROUTE ALL FLUES OUT THE SIDE WALL WITH 2" CPVC VENT/INTAKE PIPING.
9. 1.25" HEATING HOT WATER SUPPLY AND RETURN PIPING UP TO REHEAT COILS. REFER TO SECOND FLOOR PLAN FOR CONTINUATION.
10. GLYCOL / HEATING HOT WATER SUPPLY AND RETURN PIPING UP DOWN ON WALL TO HIGHER CEILING.
11. 2" GAS DOWN FROM HIGHER CEILING TO FIRST FLOOR. REFER TO RESPECTIVE PLAN FOR CONTINUATION.
12. NATURAL GAS REGULATOR SET TO DELIVER 14" W.C. DOWNSTREAM PRESSURE, SIZED FOR 2900 CFH LOAD. REGULATOR SHALL BE VENTED TO ATMOSPHERE. ROUTE 4" NATURAL GAS PIPING FROM REGULATOR INTO BUILDING.
13. 2-PIPE REFRIGERANT (BRAZED ACR) DOWN TO TYPICAL AHU VRF COIL. SEE DIAKIN REFRIGERATION DIAGRAMS.
14. 4" NATURAL GAS HEADER ROUTED OVERHEAD TO BOILERS, WITH INDIVIDUAL CONNECTIONS TO SERVE EACH BOILER AND TO HV-1.
15. 1-1/2" NATURAL GAS PIPING DOWN TO SERVE BOILER. PROVIDE CONNECTION WITH ISOLATION VALVE, UNION, AND 8" DIRT LEG. PROVIDE ALL CONNECTIONS PER EQUIPMENT MANUFACTURER'S REQUIREMENTS.
16. DOMESTIC WATER PIPING. REFER TO PLUMBING PLANS FOR CONTINUATION.
17. PROVIDE 3/4" MAKEUP WATER CONNECTION INTO AIR/DIRT SEPARATOR. PROVIDE WITH AIR VENT.
18. CONNECT 3/4" MAKEUP WATER TO EXPANSION TANK. SUSPEND EXPANSION TANK FROM STRUCTURE HIGH AS POSSIBLE.
19. 6" CPVC BOILER FLUE PIPING DOWN TO BOILER FLUE CONNECTION. PROVIDE MODULATING DAMPER IN VERTICAL PRIOR TO TRANSITIONING PIPE TO MATCH BOILER CONNECTION. FLUE PIPING SHALL BE INSTALLED PER MANUFACTURERS' REQUIREMENTS.
20. 6" CPVC BOILER FLUE PIPING RISER UP. REFER TO SHEET MP2.24.
21. 1.25" HHWS/HHWR DOWN TO FIRST LEVEL.
22. 1" HHWS/HHWR TO REHEAT COIL. SEE COIL CONNECTION DETAIL.

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CORY WILSON — STATE OF MISSOURI — 03.21.2025 — NUMBER PE-2010000636 — PROFESSIONAL ENGINEER

TM Aviation

TMA HANGER

LEE'S SUMMIT AIRPORT

No.	Date	Description
Issue:	PERMIT SET	
Date:	MAR 21, 2025	
Drawn By	MR	Checked By CW

KEY PLAN

NORTH

SHEET NAME

MECHANICAL PIPING PLANS

SHEET NUMBER

M-200

PROJECT NUMBER 2404

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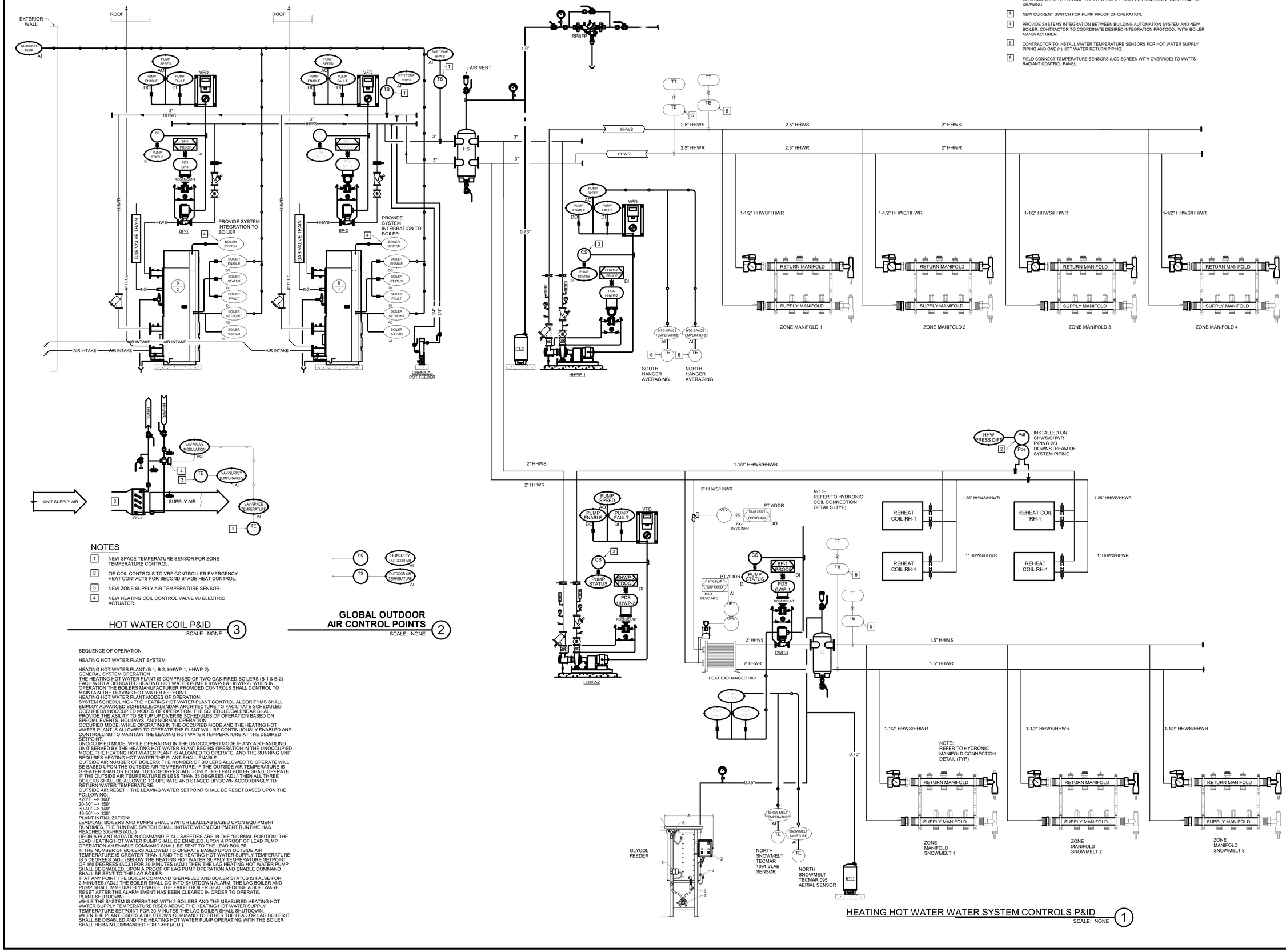

NOTES

1. NEW SPACE TEMPERATURE SENSOR FOR ZONE TEMPERATURE CONTROL.
2. TIE COIL CONTROLS TO VRF CONTROLLER EMERGENCY HEAT CONTACTS FOR SECOND STAGE HEAT CONTROL.
3. NEW ZONE SUPPLY AIR TEMPERATURE SENSOR.
4. NEW HEATING COIL CONTROL VALVE W/ ELECTRIC ACTUATOR.

HOT WATER COIL P&ID

SCALE: NONE 3

GLOBAL OUTDOOR AIR CONTROL POINTS

SCALE: NONE 2

SEQUENCE OF OPERATION:

HEATING HOT WATER PLANT SYSTEM:

HEATING HOT WATER PLANT (B-1, B-2, HHWP-1, HHWP-2)
GENERAL SYSTEM OPERATION
THE HEATING HOT WATER PLANT IS COMPRISED OF TWO GAS-FIRED BOILERS (B-1 & B-2) EACH WITH A DEDICATED HEATING HOT WATER PUMP (HHWP-1 & HHWP-2). WHEN IN OPERATION THE BOILERS MANUFACTURER PROVIDED CONTROLS SHALL CONTROL TO MAINTAIN THE LEAVING HOT WATER SETPOINT.
HEATING HOT WATER PLANT MODES OF OPERATION:
SYSTEM SCHEDULING - THE HEATING HOT WATER PLANT CONTROL ALGORITHMS SHALL EMPLOY ADVANCED SCHEDULE/CALENDAR ARCHITECTURE TO FACILITATE SCHEDULED OCCUPIED/UNOCCUPIED MODES OF OPERATION. THE SCHEDULE/CALENDAR SHALL PROVIDE THE ABILITY TO SETUP UP DIVERSE SCHEDULES OF OPERATION BASED ON SPECIAL EVENTS, HOLIDAYS, AND NORMAL OPERATION.
OCCUPIED MODE: WHILE OPERATING IN THE OCCUPIED MODE AND THE HEATING HOT WATER PLANT IS ALLOWED TO OPERATE THE PLANT WILL BE CONTINUOUSLY ENABLED AND CONTROLLING TO MAINTAIN THE LEAVING HOT WATER TEMPERATURE AT THE DESIRED SETPOINT.
UNOCCUPIED MODE: WHILE OPERATING IN THE UNOCCUPIED MODE IF ANY AIR HANDLING UNIT SERVED BY THE HEATING HOT WATER PLANT BEGINS OPERATION IN THE UNOCCUPIED MODE. THE HEATING HOT WATER PLANT IS ALLOWED TO OPERATE, AND THE RUNNING UNIT REQUIRES HEATING HOT WATER THE PLANT SHALL ENABLE.
OUTSIDE AIR NUMBER OF BOILERS: THE NUMBER OF BOILERS ALLOWED TO OPERATE WILL BE BASED UPON THE OUTSIDE AIR TEMPERATURE. IF THE OUTSIDE AIR TEMPERATURE IS GREATER THAN OR EQUAL TO 35 DEGREES (ADJ.) ONLY THE LEAD BOILER SHALL OPERATE. IF THE OUTSIDE AIR TEMPERATURE IS LESS THAN 35 DEGREES (ADJ.) THEN ALL THREE BOILERS SHALL BE ALLOWED TO OPERATE AND STAGED UP/DOWN ACCORDINGLY TO RETURN WATER TEMPERATURE.
OUTSIDE AIR RESET : THE LEAVING WATER SETPOINT SHALL BE RESET BASED UPON THE FOLLOWING:
<20°F --> 160°
20-30° --> 150°
30-40° --> 140°
40-50° --> 130°
PLANT INITIALIZATION:
LEAD/LAG BOILERS AND PUMPS SHALL SWITCH LEAD/LAG BASED UPON EQUIPMENT RUNTIMES. THE RUNTIME SWITCH SHALL INITIATE WHEN EQUIPMENT RUNTIME HAS REACHED 300-HRS (ADJ.).
UPON A PLANT INITIATION COMMAND IF ALL SAFETIES ARE IN THE "NORMAL POSITION" THE LEAD HEATING HOT WATER PUMP SHALL BE ENABLED. UPON A PROOF OF LEAD PUMP OPERATION AN ENABLE COMMAND SHALL BE SENT TO THE LEAD BOILER.
IF THE NUMBER OF BOILERS ALLOWED TO OPERATE BASED UPON OUTSIDE AIR TEMPERATURE IS GREATER THAN 1 AND THE HEATING HOT WATER SUPPLY TEMPERATURE IS 5 DEGREES (ADJ.) BELOW THE HEATING HOT WATER SUPPLY TEMPERATURE SETPOINT OF 160 DEGREES (ADJ.) FOR 30-MINUTES (ADJ.) THEN THE LAG HEATING HOT WATER PUMP SHALL BE ENABLED. UPON A PROOF OF LAG PUMP OPERATION AND ENABLE COMMAND SHALL BE SENT TO THE LAG BOILER.
IF AT ANY POINT THE BOILER COMMAND IS ENABLED AND BOILER STATUS IS FALSE FOR 2-MINUTES (ADJ.) THE BOILER SHALL GO INTO SHUTDOWN ALARM. THE LAG BOILER AND PUMP SHALL IMMEDIATELY ENABLE. THE FAILED BOILER SHALL REQUIRE A SOFTWARE RESET AFTER THE ALARM EVENT HAS BEEN CLEARED IN ORDER TO OPERATE.
PLANT SHUTDOWN:
WHILE THE SYSTEM IS OPERATING WITH 2-BOILERS AND THE MEASURED HEATING HOT WATER SUPPLY TEMPERATURE RISES ABOVE THE HEATING HOT WATER SUPPLY TEMPERATURE SETPOINT FOR 30-MINUTES THE LAG BOILER SHALL SHUTDOWN.
WHEN THE PLANT ISSUES A SHUTDOWN COMMAND TO EITHER THE LEAD OR LAG BOILER IT SHALL BE DISABLED AND THE HEATING HOT WATER PUMP OPERATING WITH THE BOILER SHALL REMAIN COMMANDED FOR 1-HR (ADJ.).

NOTES

1. NEW TEMPERATURE SENSOR AND IMMERSION WELL.
2. NEW DIFFERENTIAL PRESSURE TRANSMITTER. PROVIDE 5-VALVE BYPASS ASSEMBLY FOR EASE OF MAINTENANCE. IF BYPASS VALVE ASSEMBLY DOES NOT INCLUDE TEST PORTS CONTRACTOR IS TO PROVIDE THE PORTS IN THE COPPER PIPING AS DETAILED ON THE DRAWING.
3. NEW CURRENT SWITCH FOR PUMP PROOF OF OPERATION.
4. PROVIDE SYSTEMS INTEGRATION BETWEEN BUILDING AUTOMATION SYSTEM AND NEW BOILER. CONTRACTOR TO COORDINATE DESIRED INTEGRATION PROTOCOL WITH BOILER MANUFACTURER.
5. CONTRACTOR TO INSTALL WATER TEMPERATURE SENSORS FOR HOT WATER SUPPLY PIPING AND ONE (1) HOT WATER RETURN PIPING.
6. FIELD CONNECT TEMPERATURE SENSORS (LCD SCREEN WITH OVERRIDE) TO WATTS RADIANT CONTROL PANEL.

HEATING HOT WATER WATER SYSTEM CONTROLS P&ID

SCALE: NONE 1

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CORY WILSON — STATE OF MISSOURI — 03.21.2025 — NUMBER PE-2010009078 — PROFESSIONAL ENGINEER

TM Aviation

TMA HANGER

LEE'S SUMMIT AIRPORT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **MR** Checked By **CW**

KEY PLAN — NORTH

SHEET NAME
MECHANICAL DIAGRAMS

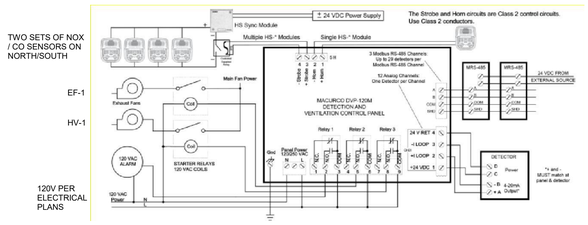
SHEET NUMBER
M-300

PROJECT NUMBER 2404

3/24/2025 7:45:16 PM

PLAN NOTES:

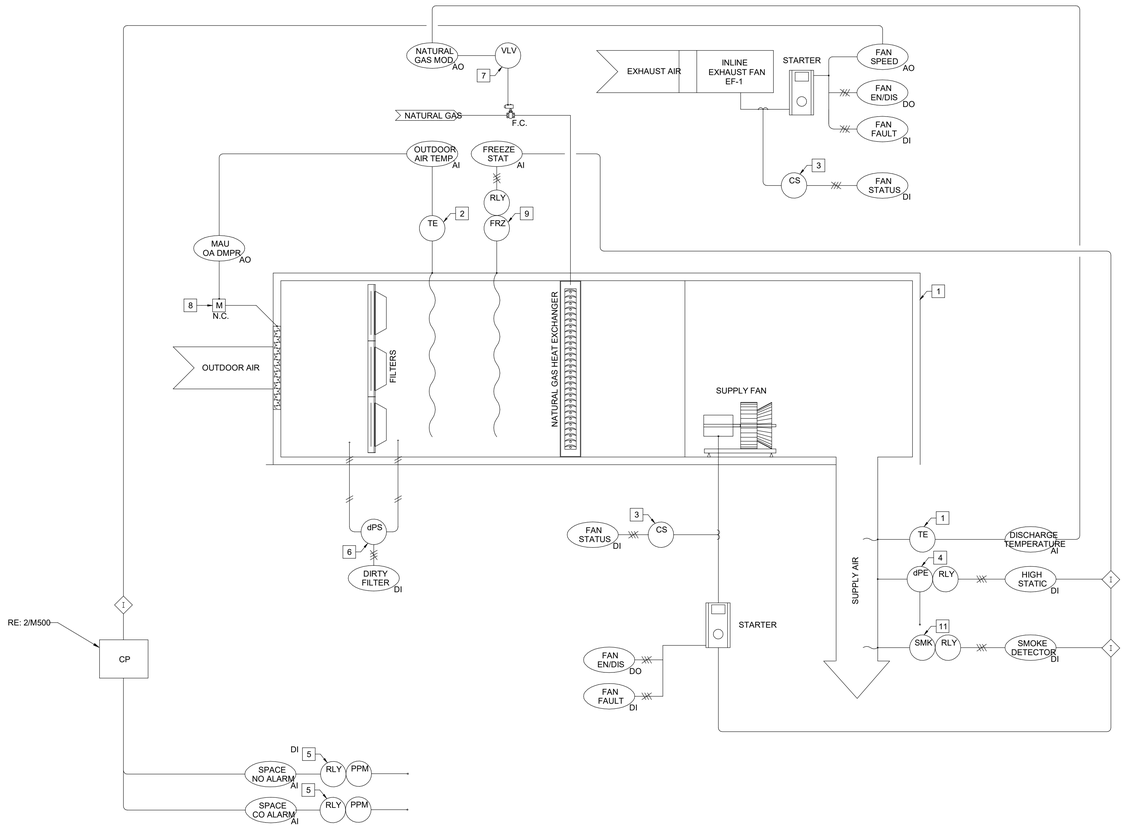
1. NEW DUCT MOUNTED TEMPERATURE SENSOR.
2. NEW UNIT MOUNTED AVERAGING TYPE TEMPERATURE SENSOR.
3. NEW CURRENT SWITCH FOR FAN PROOF OF OPERATION.
4. NEW DIFFERENTIAL PRESSURE SWITCH WITH MANUAL RESET FOR HIGH PRESSURE ALARM AND FAN SHUTDOWN. HIGH PRESSURE SWITCH TO BE HARD WIRE INTERLOCKED WITH FAN SAFETY CIRCUIT.
5. NEW CARBON CO AND NO SENSORS FOR HANGAR ALARM NOTIFICATION. GAS DETECTION PANEL TO BE HARD WIRE INTERLOCKED WITH GARAGE EXHAUST FAN AND NEW MAKE-UP AIR UNIT. UPON RISE ABOVE 30 PPM, SENSORS SHALL MODULATE EA/SA FAN SPEED UNTIL LEVELS DROP BELOW 30 PPM. MINIMUM AIRFLOW AT CONSTANT SPEED FOR EXHAUST FAN / AHU SHALL BE 25% IN WINTER (WHEN BELOW 30 PPM) AND 100% WHEN OA TEMPERATURE IS ABOVE 55 DEG F (ADJ).
6. NEW DIFFERENTIAL PRESSURE SWITCH FOR DIRTY FILTER ALARM.
7. NEW MODULATING GAS VALVE PER UNIT MANUFACTURER.
8. NEW MODULATING OUTSIDE AIR DAMPER INCLUDED WITH AHU. PROVIDE NEW MODULATING ELECTRIC ACTUATOR.
9. NEW FREEZE STAT WITH MANUAL RESET FOR FREEZE ALARM AND FAN SHUTDOWN. FREEZE STAT TO BE HARD WIRE INTERLOCKED WITH FAN SAFETY CIRCUIT AND CONTROL VALVE. UPON DETECTION, CONTROL VALVE SHALL OPEN AND FAN SPEED SHALL MODULATE FOR SAT.
10. NEW HEATING MAKE-UP AIR UNIT.
11. NEW SUPPLY AIR SMOKE DETECTOR. SMOKE DETECTOR TO BE HARD WIRE INTERLOCKED WITH FAN SAFETY CIRCUIT.
12. NEW TWO POSITION DAMPER WITH ELECTRONIC SPRING RETURN ACTUATOR. DAMPER TO BE CONFIGURED TO FAIL CLOSED.



#12 CONTROL WIRING

HANGAR CONTROLS DETAIL

SCALE: NONE (2)



HANGAR VENTILATION P&ID

SCALE: NONE (1)

(1) M-310 VIEWS

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

3/24/2025 7:45:17 PM

PROJECT TEAM

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CORY WILSON — STATE OF MISSOURI — 03.21.2025 — NUMBER PE-2010000678 — PROFESSIONAL ENGINEER

TM Aviation

TMA HANGER

LEE'S SUMMIT AIRPORT

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Drawn By **PMH** | Checked By **MAM**

KEY PLAN

NORTH

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SHEET NUMBER

M-310

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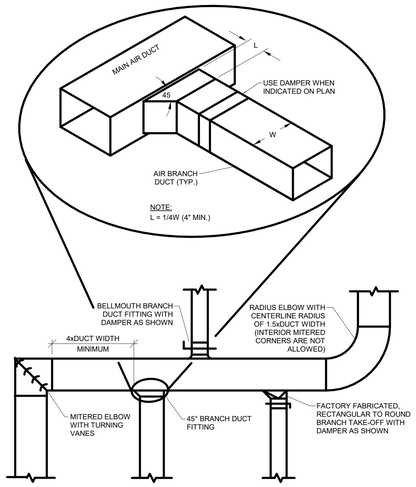
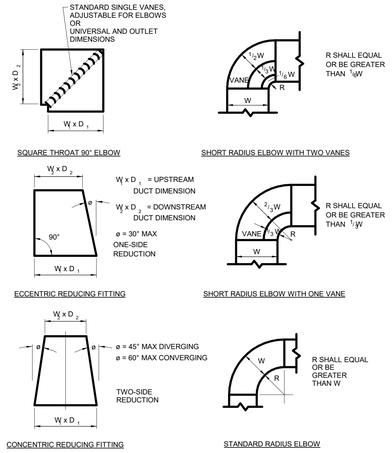


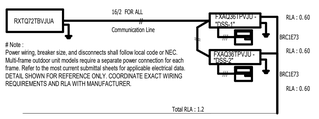
DUCTWORK CONSTRUCTION DETAIL

SCALE: NONE (1)

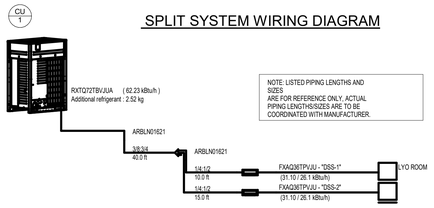


SHEET METAL FITTINGS

SCALE: NONE (2)



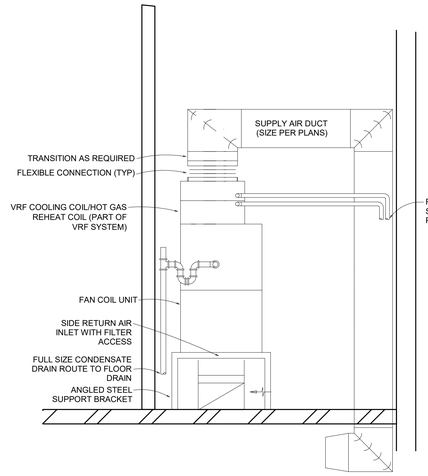
SPLIT SYSTEM WIRING DIAGRAM



SPLIT SYSTEM PIPING DIAGRAM

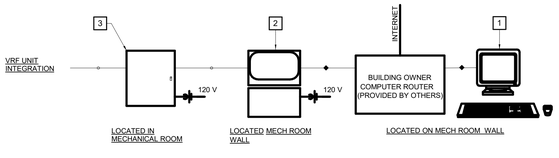
VRV HVAC TYPICAL EQUIPMENT DETAILS

SCALE: NONE (6)



TYPICAL AHU DETAIL

SCALE: NONE (5)



NOTES

1. BAS NETWORK PC STATION PROVIDED BY TEMPERATURE CONTROLS CONTRACTOR. REFER TO SPECIFICATIONS FOR ALL REQUIREMENTS INCLUDING SOFTWARE.
2. BAS NETWORK INTERFACE PANEL.
3. CONTROL CABINET.
4. PROVIDE EACH CRAC UNIT WITH BACNET/IP INTEGRATION CARD IN THE LIEBERT INTELLISLOT PLUG-IN SLOT.
5. PROVIDE (2) #14 AWG FROM BAS PANEL FOR UNIT COMMON ALARM MONITORING.
6. PROVIDE A CURRENT SWITCH FOR CRAC UNIT PROOF OF OPERATION. ROUTE (2) #14 AWG FROM CURRENT SWITCH TO BAS PANEL.

GREENHECK DGX INLINE/INDOOR UNIT, 700 MBH , 3 HP, 8000 CFM

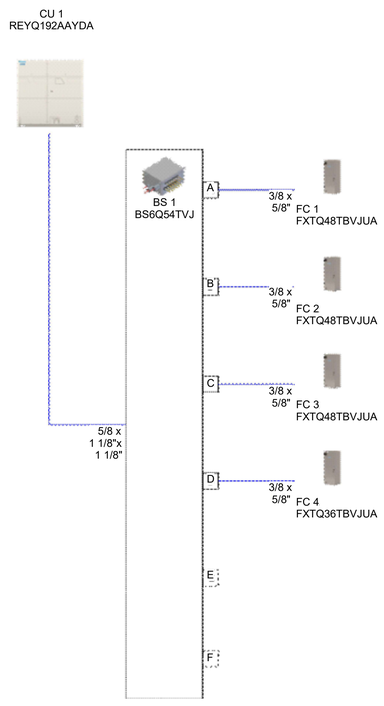
HANGAR MAKE-UP AIR UNIT

SCALE: NTS (4)

CENTRIFUGAL INLINE EXHAUST FAN - COOK SQI-B-245, 3 HP, 8000 CFM

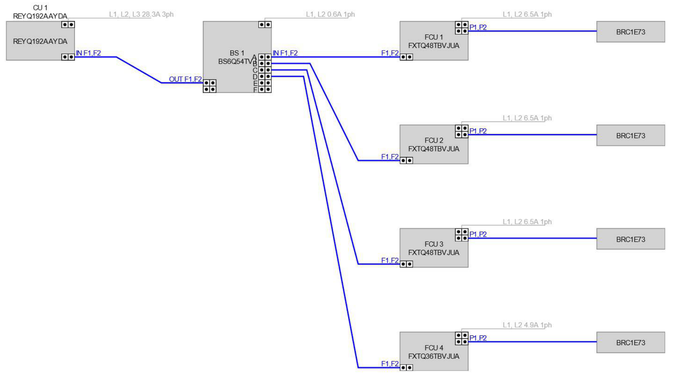
HANGAR EXHAUST FAN

SCALE: NTS (3)



SCHEMATIC VRF SYSTEM DIAGRAM

SCALE: NTS (2)



DDC SYSTEM NETWORK ARCHITECTURE

SCALE: NONE (5)

LEGEND

- BACnet MSTP OR ARCNET
- ETHERNET CONNECTION

AIR HANDLING UNIT (2) - DAIKIN FXTQ48TBVJUA

AIR HANDLING UNIT(2)- DAIKIN FXTQ36TBVJUA

ROOM CONTROLLLER(4) - DAIKIN BRC1E73

BRANCH SELECTOR BOX(1)- DAIKIN BS6Q54TVJ

15-TON HEAT PUMP (1)- DAIKIN REYQ192AAYDA

SCHEMATIC VRF SYSTEM COMPONENTS

SCALE: NTS (1)

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STATE OF MISSOURI
CORY WILSON
03.21.2025
NUMBER PE-2010000678
PROFESSIONAL ENGINEER

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Date:	MAR 21, 2025	
Drawn By	MJR	Checked By CW

KEY PLAN

NORTH

SHEET NAME

MECHANICAL DETAILS

SHEET NUMBER

M-400

PROJECT NUMBER 2404

TM Aviation

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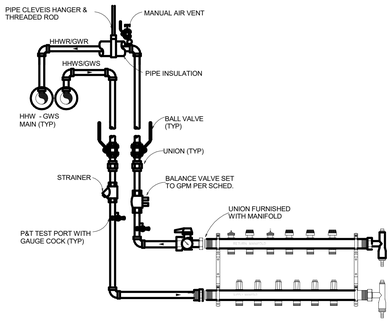
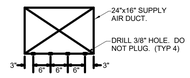
3/24/2025 7:45:17 PM



TYPICAL HYDRONIC HEATING MANIFOLD DETAIL

SCALE: NONE (17)

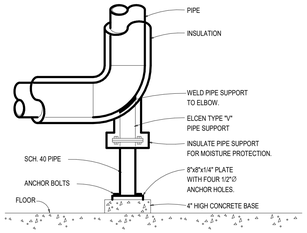
ROUND DUCT



24"x16" DUCT

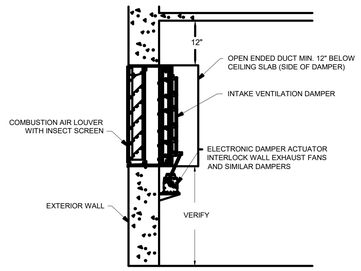
DUCT TRAVERSE DETAIL

SCALE: NONE (16)



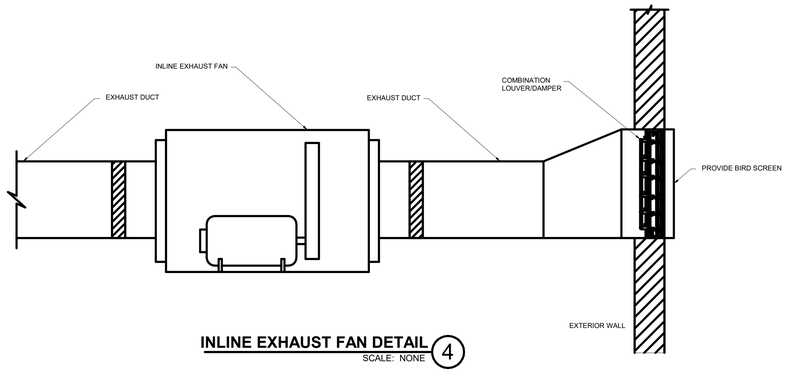
PIPE SUPPORT DETAIL

(12) SCALE: NONE



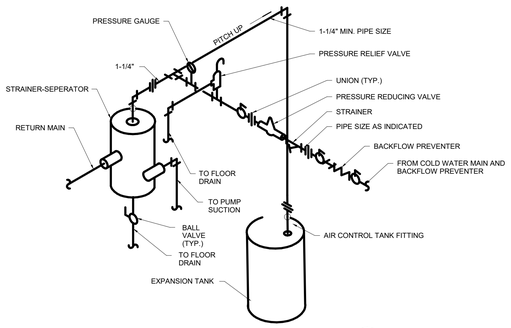
LOUVER/DAMPER DETAIL

SCALE: NONE (8)



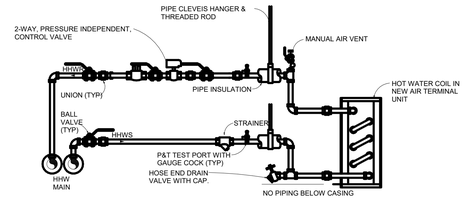
INLINE EXHAUST FAN DETAIL

SCALE: NONE (4)



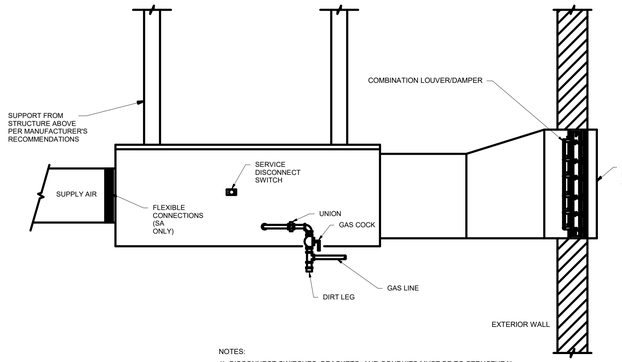
EXPANSION TANK DETAIL

SCALE: NONE (11)



EMERGENCY HYDRONIC HEAT CASED DUCTED COILS

SCALE: NTS (7)

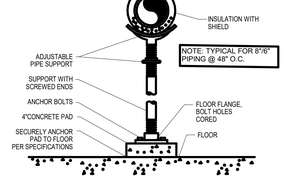


NOTES:

1) DISCONNECT SWITCHES, BRACKETS, AND CONDUITS MUST BE TO STRUCTURAL MEMBERS OF UNIT.
2) UNIT CONFIGURATION AND CONNECTIONS VARIES BY MANUFACTURER

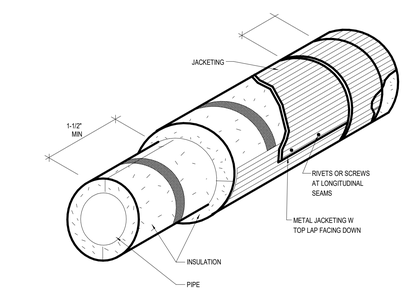
SUSPENDED MAKE-UP AIR UNIT DETAIL

SCALE: NONE (3)



HORIZONTAL PIPE SUPPORT DETAIL

(15) SCALE: NONE

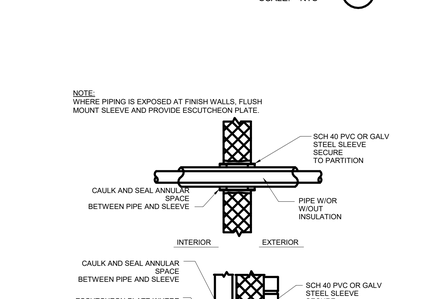


NOTES

1. STAGGER LONGITUDINAL AND CIRCUMFERENTIAL INSULATION JOINTS FOR EFFECTIVE SEAL
2. STAGGER JACKETING AND OUTER INSULATION JOINTS FOR EFFECTIVE SEAL
3. LONGITUDINAL JACKETING SEAMS POSITIONED AT 3 OR 9 O'CLOCK ONLY W/TOP LAP FACING DOWN FOR WEATHER PROOFING.
4. OVERLAP CIRCUMFERENTIAL JACKETING JOINT 1-1/2" MIN

PERFORMED MULTI-LAYER METAL JACKETED PIPE INSULATION

SCALE: NONE (10)



NOTES:

1.) TYP FOR NON-INSULATED PIPE AND CONDUIT.

2.) TYP FOR MASONRY OR CONCRETE WALL. FIRE RATED WALLS MUST BE SEALED W/

3.) APPROPRIATE FIRE RETARDED CAULKING.

4.) ESCUTCHEONS ARE MADE TO FIT PIPE ONLY.

NOTES:

1.) CUT TO TIGHTLY FIT EACH PIPE.

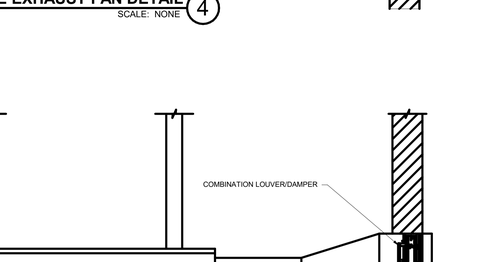
2.) SIZED AS REQD; SEAL W/ PAINT ALL SIDES

3.) FINISH PAINT TO MATCH ADJACENT WALL AREAS

4.) FASTEN TO WALL W FLATHEAD SCREWS

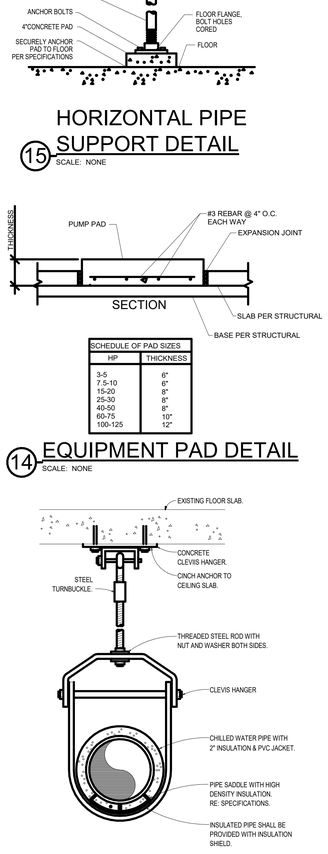
PIPING PENETRATIONS THRU WALL

SCALE: NONE (6)



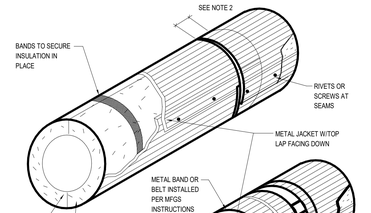
HANGAR SUPPLY DUCTWORK DETAIL

SCALE: NONE (2)



EQUIPMENT PAD DETAIL

(14) SCALE: NONE

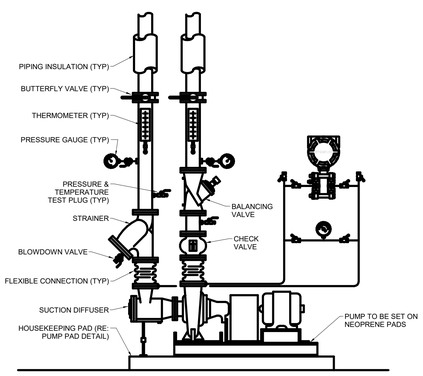


NOTES

1. LONGITUDINAL JACKETING SEAMS POSITIONED AT 3 OR 9 O'CLOCK ONLY W/TOP LAP FACING DOWN FOR WEATHER PROOFING.
2. OVERLAP JACKETING A MIN OF 1-1/2"

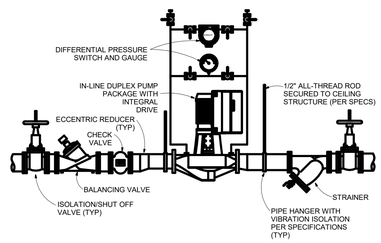
FIELD APPLIED METAL JACKETING OVER PIP INSULATION

SCALE: NONE (9)



BASE MOUNTED PUMP DETAIL

SCALE: NONE (5)



INLINE PUMP CONNECTION DETAIL

SCALE: NONE (1)

SCHEDULE OF PAD SIZES	
HP	THICKNESS
3-5	6"
7.5-10	6"
15-20	8"
25-30	8"
40-50	8"
60-75	10"
100-125	12"

EQUIPMENT PAD DETAIL

(14) SCALE: NONE

CLEVIS HANGER DETAIL

(13) SCALE: NONE

PROJECT TEAM

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TM Aviation

TMA HANGER
LEE'S SUMMIT AIRPORT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **PMH** Checked By **MAM**

KEY PLAN — NORTH

SHEET NAME
MECHANICAL DETAILS

SHEET NUMBER
M-410

PROJECT NUMBER 2404

3/24/2025 7:45:18 PM

AIR DISTRIBUTION DEVICES

MARK	SERVES	COLOR	DAMPER	PATTERN	SIZE	MAX NC	MAX PD IN WC	MANUFACTURER & MODEL	REMARKS
DL-1	SUPPLY HANGER	GALVANIZED	YES	2WAY	20x12	30	0.1	TITUS DL-SV-01-AG-15-HD	1-6
SR-1	SUPPLY	WHITE	OBD	DOUBLE DEFLECTION	VARIES	30	0.1	TITUS 300RL-1-XX	1-5,7
RG-1	RETURN	WHITE	-	FIXED	VARIES	25	0.1	TITUS 350-1-XX	1-3
EG-1	EXHAUST	GALVANIZED	YES	FIXED	24x10	25	0.1	TITUS 8F	1-2

REMARKS:
1. VERIFY BORDER TYPE REQUIRED (TYPE 1 GYP CEILING / FLANGE, TYPE 3 LAY-IN).
2. NECK SIZE INDICATED ON PLANS.
3. STEEL CONSTRUCTION, WHITE IN COLOR.
4. FRONT BLADES PARALLEL WITH LONG DIMENSION.
5. SIZE INDICATED ON PLANS.
6. PERFORATED FACE TO BE FLUSH WITH CEILING.
7. PROVIDE WITH INTERNAL BALANCE DAMPER
8. INSULATED PLENUM WITH OVAL DUCT COLLAR FOR SLOT DIFFUSER
9. PERFORATED FACE AND ASSOCIATED BORDER (LAY-IN), BOOT PER PLANS
10. TITUS FLOW BAR CONTINUOUS DIFFUSER, SINGLE 2" SLOT. INSTALL INSULATED PLENUMS IN 48" LENGTHS BEHIND DIFFUSER WITH SIZE AS INDICATED.

GENERAL NOTES:
1. DIFFUSERS ARE FOUR WAY THROW, UNLESS NOTED DIFFERENT ON DRAWINGS
2. EQUIVALENT SUBSTITUTION BY PRICE, NAILOR, KRUEGER

REMARKS:
11. STAINLESS STEEL 304 FACE WITH ALUMINUM BODY

AIR HANDLING UNIT SCHEDULE

LABEL	MANUFACTURER	MODEL NO	MAX CFM	MIN CFM	ESP	TSP	MIN OA CFM	HP	BHP	VFD (Y/N)	HEATING MODE				VRF COOLING COIL					ELECTRICAL		MAIN FILTERS		UNIT WEIGHT (LBS)	NOTES
											MIN. MBH	EA DB	LA DB	STAGES	EA DB/WB	LA DB/WB	MBH TOTAL	MBH SENS	MAX APD	MAX VELOCITY	VOLTS	PH	MERV	SP LOSS		
AHU-1	DAIKIN	FXTQ48TBVJUA	1,700	1,200	1.0"	-	-	3/4	-	Y	56.0	65	95	2ND HW REHEAT	81.0/66.0	58.0/57.8	48.3	42.5	0.15"	500 FPM	208	1	7	0.35	150	1, 2, 3, 4, 5
AHU-2	DAIKIN	FXTQ48TBVJUA	1,700	1,200	1.0"	-	-	3/4	-	Y	56.0	65	95	2ND HW REHEAT	81.0/66.0	58.0/57.8	48.3	42.5	0.15"	500 FPM	208	1	7	0.35	150	1, 2, 3, 4, 5
AHU-3	DAIKIN	FXTQ48TBVJUA	1,700	1,200	1.0"	-	-	3/4	-	Y	56.0	65	95	2ND HW REHEAT	81.0/66.0	58.0/57.8	48.3	42.5	0.15"	500 FPM	208	1	7	0.35	150	1, 2, 3, 4, 5
AHU-4	DAIKIN	FXTQ36TBVJUA	1,300	900	1.0"	-	-	3/4	-	Y	42.0	65	95	2ND HW REHEAT	81.0/66.0	58.0/57.8	35.0	31.0	0.15"	500 FPM	208	1	7	0.35	150	1, 2, 3, 4, 5

NOTES:
1. PROVIDE WITH DIRECT DRIVE ECM MOTOR FAN.
2. PROVIDE WITH UNIT STAND, UPFLOW CONFIGURATION, RETURN AIR THRU BOTTOM. .
3. PROVIDE SMOKE DETECTOR IN RETURN AIR DUCT.
4. REFER TO CONTROLS DRAWINGS FOR CONTROL REQUIREMENTS.
5. PROVIDE WITH SINGLE POINT POWER SUPPLY ON FAN COIL UNIT.

PLATE FRAME HEAT EXCHANGERS

MARK	MANUFACTURER	MODEL	SERVICE	HOT WATER						SNOW MELT 50% GLYCOL						REMARKS
				FLUID	GPM	EWT (°F)	LWT (°F)	WPD (FT)	PASSES	FLUID	GPM	EWT (°F)	LWT (°F)	WPD (FT)	PASSES	
HX-1	TACO	TBD120T	SNOWMELT	WATER	40	180	160	3.60	1	P.G.-50%	45	155	175	10.37	1	1,2,3,4,5,6,7

REMARKS:
1. PROVIDE WITH FLANGED TYPE 316 STAINLESS STEEL CONNECTIONS RATED FOR 150 psi.
2. SUPPORT FROM FLOOR WITH ANGLE IRON BASE.
3. TYPE 316 STAINLESS STEEL PLATES, COPPER BRAZED TUBING.
4. MECHANICALLY FIXED TYPE NBR GASKETS.
5. ALUMINUM SHROUD.
6. CARBON STEEL FRAME AND PRESSURE PLATE.
7. ZINC COATED STEEL CARRY AND GUIDE BAR.

VRF CONDENSING UNIT SCHEDULE

LABEL	MANUFACTURER	MODEL NO	TYPE	MBH COOLING	MBH HEATING	AMBIENT °F	EER	ELECTRICAL				UNIT WEIGHT (LBS)	NOTES
								VOLTS	PH	MCA	MOCP		
VCU-1	DAIKIN	REYQ192AAYDA	HEAT PUMP	184.2	180.9	100	11.5	480	3	27.3	35	972	1-4

NOTES:
1. PROVIDE UNIT WITH COMPRESSOR HIGH AND LOW PRESSURE SWITCHES, HAILGAURDS, COMPRESSOR SERVICE VALVES, MINIMUM 3 MINUTE TIME DELAY ON COMPRESSOR RE-START, LOW AMBIENT TEMPERATURE CONTROLS (OPERATION DOWN TO 0°F AMBIENT TEMPERATURE). DISCONNECT SHALL BE BY DIVISION 26 CONTRACTOR.
2. PROVIDE REFRIGERANT LINE KIT SIZED PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL REFRIGERANT SPECIALTIES REQUIRED FOR A COMPLETE OPERATING SYSTEM, INCLUDING FILTER DRIER, SIGHT GLASS, ETC.
3. PROVIDE WITH AHU VALVE INTEGRATION KIT AND AHU CONTROL KITS FOR CONNECTION TO AHU DX COILS. COORDINATE WITH AHU MANUFACTURER.
4. HEATING CAPACITY SHALL BE SIZED AT 15°F AMBIENT TEMPERATURE. COOLING CAPACITY SHALL BE SIZED AT 105°F AMBIENT TEMPERATURE.

PUMPS

MARK	LOCATION	SERVES	TYPE	GPM	HEAD (FT)	HP	EFF. %	IMPLR DIA. (in)	NPSHr	VOLT/PH/HZ	RPM	TYPE	MANUFACTURER	SERIES & MODEL	REMARKS
BP-1	MECH ROOM	HEATING HOT WATER	INLINE W/ECO	80	35	1.5	68.0%	3.0	10.2	480/3/60	4160	BMES	GRUNDFOS	TPE3 40-200 S-A-G-I-BQQE-GYC	2-7
BP-2	MECH ROOM	HEATING HOT WATER	INLINE W/ECO	80	35	1.5	68.0%	3.0	10.2	480/3/60	4160	BMES	GRUNDFOS	TPE3 40-200 S-A-G-I-BQQE-GYC	2-7
HHWP-1	MECH ROOM	HEATING HOT WATER	BMES W/ECO	80	45	2	65.0%	7.0	3.8	480/3/60	1808	BMES	GRUNDFOS	NBE 012-070/6.97-AAG8S2ESBQQEGCA	1-3,4-7
HHWP-2	MECH ROOM	HEATING HOT WATER	BMES W/ECO	70	50	5	66.0%	7.0	3.2	480/3/60	1846	BMES	GRUNDFOS	NBE 012-070/6.97-AAG8S2ESBQQEGCA	1-3,4-7
GWP-1	MECH ROOM	GLYCOL SNOW MELT	INLINE W/ECO	45	45	1.5	68.0%	3.0	4.0	480/3/60	4200	BMES	GRUNDFOS	TPE3 40-200 S-A-G-I-BQQE-GYC	2-7

REMARKS:
1. CONCRETE BASE
2. PROVIDE WITH ALL CONNECTIONS PER APPLICABLE DETAIL.
3. NEMA 1 ENCLOSURE.
4. PROVIDE WITH SUSPENDED ALL-THREAD VIBRATION ISOLATION SUPPORTS (INLINE).
5. PROVIDE WITH APPLICABLE SUCTION GUIDE WITH REMOVABLE STARTUP STRAINER.
6. PROVIDE WITH INDIVIDUAL BALANCE, CHECK, AND ISOLATION (TRIPLY DUTY NOT ALLOWED)
7. FACTORY INSTALLED FREQUENCY DRIVE TO MOTOR HOUSING.

HOT WATER REHEAT COIL SCHEDULE

RH NO.	MANUF.	MODEL	COIL TYPE	WATER COIL DATA								NOTES
				CFM	MAXIMUM FACE VEL. (fpm)	AIR PRESS. DROP ("w.c.")	E.D.B. (°F)	L.D.B. (°F)	E.W.T. (°F)	L.W.T. (°F)	HEAT (MBH)	WATER FLOW (GPM)	WATER PRESS.DROP (FT. HEAD)	COIL DIMENS. (HT x LENGTH)	
RHC-1	DIAKIN	CASED 2-ROW	RE-HEAT	1600	800	0.15"	60	90	180	160	50	5.5	MAX 7.5	18"x18"	1,2,3
RHC-2	DIAKIN	CASED 2-ROW	RE-HEAT	1250	800	0.15"	60	90	180	160	40	4.0	MAX 7.5	18"x14"	1,2,3
RHC-3	DIAKIN	CASED 2-ROW	RE-HEAT	1600	800	0.15"	60	90	180	160	50	5.5	MAX 7.5	18"x18"	1,2,3
RHC-4	DIAKIN	CASED 2-ROW	RE-HEAT	1250	800	0.15"	60	90	180	160	40	4.0	MAX 7.5	18"x14"	1,2,3

NOTES
1. COIL TYPE SHALL BE CASED. COILS SHALL BE GALVANIZED STEEL WITH 1/2" COPPER TUBING, ALUMINUM FINS.
2. COIL AREA IS FIELD MEASURED FOR COIL INSERTION (NOT COIL FACE AREA). CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD MEASURING FOR EXACT DIMENSIONS.
3. INSTALL VALVE PACKAGE PER DETAILS.

HYDRONIC SPECIALTIES SCHEDULE

SYSTEM	BOILER HTG HOT WATER	NOTES
SYSTEM OPERATING TEMP.	180°	
WORKING PRESSURE (psi)	150	
HYDRAULIC SEPARATOR	HS-1	
MANUFACTURER	FLAMCO GROUP	
MODEL NO./QUANTITY	FMHS-300A	
GPM/WPD (FT.)	140/7.5'	
SIZE	3"	(2) 3" HIGH / (2) 3" LOW
AIR SEPARATOR(S)	AS-1	
MANUFACTURER	ARMSTRONG	
MODEL NO./QUANTITY	DAS-4-R	
GPM/WPD (FT.)	45/3'	
SIZE	2.5"	
EXPANSION TANK(S)	ET-1	
MANUFACTURER	AMTROL	
MODEL NO./QUANTITY	AX-40V	
MIN. TANK VOLUME	22.4 GAL	
MAX ACCEPTANCE VOL.	11.6 GAL	
SHOT FEEDER		
MANUFACTURER	VECTOR	
MODEL NO.	ECX-2TC (LEGS)	
CAPACITY (GAL)	2.5	
GLYCOL FEEDER		
MANUFACTURER	JR WINGERT	
MODEL NO.	GL30-H1-1+B+C+HC	
CAPACITY (GAL)	30	
SUCTION DIFFUSER	#1	#2
MANUFACTURER	ARMSTRONG	ARMSTRONG
MODEL NO.	SG-33	SG-33
GPM/WPD (FT.)	60/1.7'	80/3.0'
SIZE	2"x2"	2x2"
BUFFER TANK(S)	N/A	
MANUFACTURER	--	
MODEL NO./QUANTITY	--	
MIN. TANK VOLUME	--	
INSULATED	--	
MAX DESIGN PRESSURE	--	

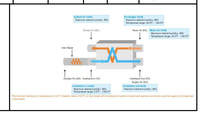
ENERGY RECOVERY VENTILATOR

MARK	MANUFACTURER	MODEL	SA CFM	EA CFM	SA/EA E.S.P.	HEAT EXCHANGER						SIZE WxHxD	VOLTS/ PHASE	MCA	MOCP	REMARKS
						EA CLG DB/WB	OA CLG DB/WB	EA HTG DB	OA HTG DB	SA CLG DB/WB	SA HTG DB/RH					
ERV-1	DIAKIN	VAM600GVJU	450	400	0.6"/0.6"	75/62	97/76	68	-10	81/69	52/20%	43x15x47	208/1	4.2	15	1-5,7
																1-3
																1-3

REMARKS:
1. ALL-THREAD HANGER BARS AND SUPPORTS FROM CEILING
2. SINGLE POINT DISCONNECT SWITCH
3. PREHEAT ELECTRIC HEAT IN WINTER MODE
4. CONTROL PANEL / 24-120V CONTROL POWER XFMR
5. FACTORY INSTALLED TEMPERATURE SENSORS ON OA/SA
6. INSULATED CASING
7. PROVIDE WITH EC SUPPLY/EXHAUST FANS

CONTROLS NOTE:
IMC 2018 / ASHRAE 62.1 CALCULATIONS:

ROOM	AREA	RATE	OCCUP.	RATE	TOTAL
UTILITY/MECH	375	0.12	2	5	55
RESTROOMS	390	0.12	4	7.5	53
OFFICES	1162	0.06	30	5	220
PRIVATE	430	0.12	4	7.5	81
SUMMARY:					410
FURNISHED					450



BOILERS

MARK	SERVICE	FUEL TYPE	FLOW (GPM)	PD (FT.HD)	MBH INPUT	MBH OUTPUT	EWT (°F)	LWT (°F)	WORKING PRESS. (PSIG)	TURNDOWN	VOLT/PH/HZ	MANUFACTURER & MODEL	ACCESSORIES
B-1	HTG HOT WATER	NAT GAS	35	5	850	829	160	180	160	12:1	120/1/60	WEIL-MCLAIN SVF850	ALL
B-2	HTG HOT WATER	NAT GAS	35	5	850	829	160	180	160	12:1	120/1/60	WEIL-MCLAIN SVF850	ALL

ACCESSORIES:
1. VIBRATION SPRING ISOLATORS MOUNTS
2. CONDENSATE DRAIN TRAP WITH CONDENSATE NEUTRALIZATION KIT (SINGLE OR MULTIPLE BOILERS AS APPLICABLE)
3. SAFETY RELIEF VALVE SIZED IN ACCORDANCE WITH ASME REQUIREMENTS (60 PSI)
4. MOTORIZED GAS VALVE
5. GAS PRESSURE REGULATOR (LOCK-UP STYLE)
6. CSD-1 CONTROLS AND FUEL TRAIN
7. DIRECT SPARK IGNITION
8. INTEGRAL CONTROL PANEL. RE: CONTROLS DIAGRAM
9. HI-TEMP AND LO-WATER CUTOFFS WITH MANUAL RESET
10. ASME PRESSURE VESSEL
11. COMBUSTION AIR INTAKE FILTER
12. STAINLESS STEEL HEAT EXCHANGER
13. ELECTRIC MOTORIZED BUTTERFLY VALVE WITH NEMA 4X HOUSING

EXHAUST FAN SCHEDULE

TAG	CFM	SP (IN. W.C.)	MOTOR HP/WATTS	RPM	DRIVE TYPE	SERVICE/MOUNTING	ELECTRICAL	MANUFACTURER MODEL NUMBER	ACCESSORIES	DIMENSIONS
EF-1	8000	0.5	3 PH	1625	BELT	HANGER	480/3	COOK SQI-245	DM,GBD,HB,VFD	-
										-

ABBREVIATIONS:
RC - ROOF CURB
DM - DISCONNECTING MEANS
GBD - GRAVITY BACKDRAFT DAMPER
WC - WALL COLLAR
DM - DISCONNECT MEANS
GBD - GRAVITY BACKDRAFT DAMPER
MBD - MOTORIZED BACKDRAFT DAMPER
SC - SPEED CONTROLLER
AS - HEAVY DUTY MOTORIZED ALUMINUM SHUTTER
WG - WIRE GUARD
IG - SQUARE INLET GRILLE SG-10 WITH DAMPER
BD-10
T - LINE VOLTAGE THERMOSTAT EQUIVALENT TO WHITE ROGERS MODEL 1A10-651

RJ - COOK MODEL RJR100
WCA - COOK MODEL
WCR6 - ALUM WALL CAP WITH BACKDRAFT DAMPER
WS - COOK MODEL GSS STANDARD DUTY ALUMINUM GRAVITY SHUTTER
WH - COOK WEATHER HOOD
HB - HANGAR BRACKETS WITH VIBRATION ISOLATORS
VFD - VFD CONTROL

CONTRACTOR NOTE (ET):
FURNISH INTERMATIC ASCEND STW700W 7-DAY PROGRAMMABLE WALL MOUNTED ELECTRONIC TIMER (DECORA STYLE) PROGRAM FOR 6AM-3PM FAN OPERATION

LOUVERS

MARK	TYPE	MANUF.	MODEL	MATERIAL	CFM	MAX ESP (in. wc)	SIZE			MAX VELOCITY (fpm)	FINISH	REMARKS
							W	H	F.A. (SqFt.)			
L-1	INTAKE	RUSKIN	ELF6375DX	EXT ALUMINUM	8450	0.10	48	60	9.4	800	BY ARCH	1-4
L-2	EXHAUST	RUSKIN	ELF6375DX	EXT ALUMINUM	8000	0.15	48	54	7.8	1050	BY ARCH	1-3
L-3	EXHAUST	RUSKIN	ELF6375DX	EXT ALUMINUM	450	0.15	16	16	0.6	800	BY ARCH	1-3

REMARKS:
1. PROVIDE MOTORIZED DAMPER AND INTERLOCK WITH GARAGE EXHAUST FANS. WHEN THE FAN IS ENERGIZED THE DAMPER SHALL OPEN.
2. EXTEND SILL.
3. PROVIDE BIRD SCREEN.
4. LARGE DAMPER FOR TWO DUCTWORK CONNECTIONS (INTAKE). BLANK OFF ANY USED SECTION OF LOUVER.

INDOOR HEATING/VENTILATING UNIT SCHEDULE

MARK	MFG.	MODEL #	CFM	EST. ESP (in w.g.)	FAN HP	HEATING DATA (NAT GAS)						ELECTRICAL DATA			ACCESSORIES	WEIGHT (LBS)
						INPUT (MBH)	OUTPUT (MBH)	STAGES	% EFF	EAT (°F)	LAT (°F)	VOLTS/ PHASE	FLA/MCA (AMPS)	MOCP (AMPS)		
HV-1	ABSOLUT AIRE	AA3HMX	8000	1.0"	7.5 HP	750	605	MODULATING	81	0	70	480/3	11/14	30	ALL BELOW	1300

ABBREVIATIONS:
DW - DOUBLE-WALL CONSTRUCTION
DG - DOUBLE LAYER OF GASKETING ON ROOF CURB (APPROX 1" THICK)
HB - ALL-THREAD HANGER BRACKETS WITH VIBRATION ISOLATION
M - MOTORIZED OUTSIDE AIR DAMPERS
T - THERMOSTAT / CONTROL PANEL
DDG DDC MICROPROCESSOR CONTROLS, RE: CONTROLS DIAGRAMS

DM - FACTORY INSTALLED DISCONNECT MEANS W/SINGLE POINT POWER SUPPLY
EL - THRU THE BASE ELECTRICAL
DD - DUCT DETECTOR PROVIDED WITH FIRE ALARM SYSTEM. INSTALLED IN SUPPLY AIR DUCTWORK BY FIRE ALARM CONTRACTOR, WITH ASSOCIATED FAN SHUTDOWN RELAY TO SHUTDOWN UNIT UPON SMOKE DETECTION
F - FILTER RACK WITH 2" FLAT FILTERS (MERV 7)
SS - STAINLESS STEEL BURNER

DUCT PRESSURE CLASS

SYSTEM/FAN	LOCATION/DUCT INVOLVED	POSITIVE OR NEGATIVE PRESSURE	PRESSURE CLASS (IN W.G.)	DUCTWORK TYPE	INSULATION TYPE/THICKNESS (IN)
AHU-1-4	RECTANGULAR SUPPLY/RETURN	POS/NEG	2"	S & DRIVE	1" THICK 1.5 LB/FT^3 1" THICK
AHU-1-4	ROUND SUPPLY/RETURN	POS/NEG	2"	SPIRAL	1" THICK 1.5 LB/FT^3 1" THICK
MAU-1	RECTANGULAR SUPPLY	POS/NEG	2"	SPIRAL DOUBLE WALL LINED	1" THICK 1.5 LB/FT^3 1" THICK
EF-1	RECTANGULAR SUPPLY	POS/NEG	2"	SPIRAL	

NOTES:
1. WHERE NOTED AS DUCTWORK WRAP, REFER TO SPECIFICATIONS FOR MAKE, DENSITY, R-VALUE
2. THIS SCHEDULE REFERS TO NEW DUCT ONLY.

DUCT PRESSURE CLASS

			SMACNA LEAKAGE CLASS	
1" OR 2" PRESSURE CLASS	SEAL CLASS "C"	TRAVERSE JOINTS ONLY APPLICABLE SEALING	RECT - 24	ROUND - 12
3" PRESSURE CLASS	SEAL CLASS "B"	TRAVERSE JOINTS AND SEAMS APPLICABLE SEALING	RECT - 12	ROUND - 6
4", 6" OR 10" PRESSURE CLASS	SEAL CLASS "A"	TRAVERSE JOINTS, SEAMS, AND ALL WALL PENETRATIONS	RECT - 6	ROUND - 3

APPLICATION / INSULATION

SYSTEM	DESCRIPTION
AHU-1-4	DUCT WRAP
AHU-1-4 RETURN	UNISULATED
MAU-1	UNITED MCGILL DOUBLEWALL DUCTWORK

PROJECT DESIGN CONDITIONS

BUILDING OPERATING HOURS:

BAS CONTRACTOR SHALL PROVIDE CAPABILITY FOR 10 DISTINCT BUILDING SCHEDULES TO BE DETERMINED BY THE OWNER.

SPACE / UNIT DESCRIPTIONS	SET POINTS								NOTES
	COOLING - DE-HUMIDIFICATION				HEATING		ZONE VENTILATION RESET		
	OCC °F	UNOCC °F	MAX RH %	MIN RH %	OCC °F	UNOCC ° F	CONTROL METHOD	COMPARATIVE CO2 (ABOVE OUTDOOR LEVEL)	
CONFERENCE / MEETING	74	80	60%	N/A	70	55	CO2	600 PPM	A-C
ELECTRICAL ROOM	78	80	N/A	N/A	N/A	N/A	N/A	N/A	B-C
OFFICE / CORRIDOR	74	80	60%	N/A	70	55	CO2	N/A	B-C
RETAIL	74	80	60%	N/A	70	55	CO2	N/A	B-C
STORAGE / MEP	76	80	N/A	N/A	65	55	N/A	N/A	B-C
STORAGE / HANGAR	N/A	N/A	N/A	N/A	65-68	55	N/A	N/A	D

NOTES:
A. ZONE LEVEL VENTILATION RESET / DEMAND CONTROL VENTILATION (DCV) CONTROL METHOD: CARBON DIOXIDE SENSOR (CO2), TIME OF DAY (TOD), OCCUPANCY (OCC), NOT APPLICABLE (N/A).
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 CONTROLS SHALL BE CAPABLE OF OPERATING WITH INDEPENDENT OCCUPANCY SCHEDULES.
D. VENTILATION CONTROLLED FROM GAS DETECTION SYSTEM (CO/NOX)

HVAC PIPING MATERIAL SCHEDULE

SYSTEM	PIPING						FITTINGS		MAX. WORKING		FIELD TEST	
	SIZE	TYPE	SCH	GRD	ASTM	MATERIAL	MAT.	TYPE	PRESS (PSI)	TEMP (°F)	PRESS (PSI)	TIME
CHILLED/HOT WATER SUPPLY & RETURN	0.5"-3"*	L	--	--	B88	CP	CP	SJ	125	45-80	150	1 HR
CHILLED/HOT WATER SUPPLY & RETURN	3" & UP*	SL/CW	40	A	A120	CS/BLK	CS	WELD	125	45-80	150	1 HR
TEMPERATURE & PRESSURE RELIEF DRAIN	ALL	M	--	--	B88	CP	CP	DR\S	10FT	40-70	10FT	1 HR
REFRIGERANT PIPING	ALL	ACR	--	--	B280	CP	CP	SJ	150	40-140	200	4 HR

ATP - ARMCO TRUSS PIPE
BLK - BLACK
BS - BELL & SPIGOT
CI - CAST IRON
CP - COPPER
CS - CARBON STEEL
CW - CONTINUOUS WELD
DI - DUCTILE IRON
DR - DRAINAGE FITTING
GLV - GALVANIZED
LC - LEAD CAULKING
MI - MALLEABLE IRON
MJ - MECHANICAL JOINT
NG - NEOPRENE GASKET
NH - NO-HUB
PE - POLYETHYLENE
PVC - POLYVINYL CHLORIDE
S - BRAZED JOINT - SILVER BRAZING ALLOY
SJ - SOLDER JOINT 95-5 TIN-ANTIMONY
SL - SEAMLESS STEEL
SS - STANDARD STRENGTH - SERVICE WEIGHT
SW - SOLVENT WELD
THRD - THREADED
WELD - WELDED

NOTE: NO "PULLED TEES" ALLOWED ON COPPER PIPING.

*NOTE: AT CONTRACTOR'S OPTION, GROOVED OR VICTAULIC FITTINGS MAY BE SUBSTITUTED FOR WELDED FITTINGS ON CHILLED AND HEATING HOT WATER PIPING SYSTEMS.

3/24/2025 7:45:20 PM

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CORY WILSON
STATE OF MISSOURI
03.21.2025
NUMBER PE-2010008836
PROFESSIONAL ENGINEER

TM Aviation

TMA HANGER

LEE'S SUMMIT AIRPORT

No.	Date	Description

Issue: PERMIT SET
Date: MAR 21, 2025
Drawn By PMH Checked By MAM

KEY PLAN
NORTH

SHEET NAME
MECHANICAL SCHEDULES

SHEET NUMBER
M-500

PROJECT NUMBER 2404

DUCTWORK

SYMBOLS

- EXISTING DUCTWORK
- DUCTWORK TO BE REMOVED
- NEW DUCTWORK SIZE AS INDICATED
- 90° ELBOW DOWN
- 90° ELBOW UP
- SOUND ATTENUATOR, SIZE AS INDICATED
- FLEXIBLE CONNECTION
- LINED DUCTWORK
- FLEXIBLE DUCTWORK
- RECTANGULAR ECCENTRIC DUCT TRANSITION
- RECTANGULAR CONCENTRIC DUCT TRANSITION
- SQUARE TO ROUND DUCT TRANSITION
- SUPPLY AIR
- RETURN AIR
- TURNING VANES
- CD CONTROL DAMPER
- BD BACKDRAFT DAMPER
- FD FIRE DAMPER
- FSD COMBINATION FIRE/SMOKE DAMPER
- MVD MANUAL VOLUME DAMPER
- MD MOTOR OPERATED DAMPER
- ? DEVICE
- ? WALL MOUNTED DEVICE
- S DUCT MOUNTED SMOKE DETECTOR
- AD ACCESS DOOR, SIZE AS INDICATED
- DEVICE TYPE / INLET SIZE / FLOW — SUPPLY/EXHAUST AIR DEVICE DESIGNATION
- DEVICE TYPE / DEVICE SIZE — RETURN AIR DEVICE DESIGNATION
- T THERMOSTAT

GENERAL

- ## NOTE DESIGNATION - DEMOLITION (ALL)
- ## NOTE DESIGNATION - MECHANICAL NEW WORK
- ## NOTE DESIGNATION - ELECTRICAL NEW WORK
- ## NOTE DESIGNATION - PIPING/PLUMBING NEW WORK
- ## REVISION FROM ORIGINAL DOCUMENT
- EQUIPMENT / LOCATION &OR NUMBER — EQUIPMENT TAG DESIGNATION
- DRAWING NUMBER / SHEET NUMBER — SECTION CUT DESIGNATION
- DRAWING NUMBER (RE: 3/M2) / SHEET NUMBER — REFERENCE DESIGNATION
- CONNECT TO EXISTING
- SPEC1 SPEC2 — PIPE SPECIFICATION CHANGE
- DOUBLE CONTAINMENT PIPE
- INSULATED EQUIPMENT # = THICKNESS XX = TYPE
- INSULATED PIPE # = THICKNESS XX = TYPE
- INSULATED PIPE WITH ELECTRIC HEAT TRACING # = THICKNESS XX = TYPE
- PIPE SLEEVE/PIPE PENETRATION THRU WALL
- CONNECT TO EXISTING, OPTIONAL NUMBER DESIGNATION
- FLOW ARROW
- SLOPE — DIRECTION OF DOWNWARD SLOPE
- GPM OR CFM — LIQUID OR AIR FLOW RATE

LINE TYPES

- MAIN PROCESS OR UTILITY LINE
- FUTURE LINEWORK
- ASSEMBLY BOUNDARY
- SKID OR PACKAGE BOUNDARY
- SOFTWARE
- DEMOLITION
- MATCHLINE

PIPING/PLUMBING

VALVES

- ANGLE VALVE
- BACKFLOW PREVENTER
- BALL VALVE
- BALANCING VALVE (2-1/2" & SMALLER)
- BALANCING VALVE (3" & LARGER)
- BUTTERFLY VALVE
- CHECK VALVE (2-1/2" & SMALLER)
- CHECK VALVE (3" & LARGER)
- CONTROL VALVE (THREE-WAY, PNEUMATIC)
- CONTROL VALVE (TWO-WAY, PNEUMATIC)
- CONTROL VALVE (TWO-WAY, MOTORIZED)
- CONTROL VALVE (THREE-WAY, MOTORIZED)
- FLEXIBLE CONNECTION (BELLOWS TYPE)
- FLEXIBLE CONNECTION (CONVOLUTE TYPE)
- FLEXIBLE CONNECTION (BRAIDED SS TYPE)
- GAS COCK
- GATE VALVE (2-1/2" & SMALLER)
- GATE VALVE (3" & LARGER)
- GLOBE VALVE (2-1/2" & SMALLER)
- GLOBE VALVE (3" & LARGER)
- PLUG VALVE
- PRESSURE REDUCING VALVE (WATER)
- PRESSURE RELIEF VALVE
- SOLENOID VALVE
- STRAINER (2-1/2" & SMALLER)
- STRAINER (3" & LARGER)
- TRIPLE DUTY VALVE
- STEAM TRAP (INVERTED BUCKET)
- STEAM TRAP (FLOAT & THERMOSTATIC)
- PRESSURE REDUCING VALVE (STEAM)
- BALANCING VALVE
- TRIPLE DUTY BALANCING VALVE
- BALL VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- DIAPHRAGM VALVE
- GATE VALVE
- GAUGE COCK
- GLOBE VALVE
- NEEDLE VALVE
- PLUG VALVE
- 3-WAY VALVE
- PRESSURE/TEMPERATURE RELIEF VALVE
- ANGLE VALVE
- RUPTURE DISC FOR PRESSURE/VACUUM RELIEF
- BFP BACKFLOW PREVENTER WITH DRAIN
- AV AUTOMATIC AIR VENT
- MV MANUAL AIR VENT
- VB VACUUM BREAKER

CONTROL VALVES

- PRESSURE REGULATOR
- PRESSURE REDUCING VALVE
- S SOLENOID ACTUATOR
- M MOTORIZED ACTUATOR
- PNEUMATIC OPERATED ACTUATOR (CYLINDER/PISTON TYPE)
- PNEUMATIC OPERATED ACTUATOR (DIAPHRAGM TYPE)
- DIAPHRAGM VALVE PNEUMATIC OPERATED ACTUATOR
- WYE PNEUMATIC OPERATED ACTUATOR (DIAPHRAGM TYPE)
- S PANEL MOUNTED SOLENOID VALVE
- TV REFER TO INSTRUMENT LOGIC SYMBOLS FOR TRANSDUCER TYPE

FITTINGS & ACCESSORIES

- FLANGED CONNECTION/BLIND FLANGE
- FLUSH SANITARY FITTING
- PIPE CAP
- PIPE DROP/PIPE RISE
- BOTTOM OUTLET TEE
- TOP OUTLET TEE
- UNION
- SANITARY CLAMP
- HIGH PRESSURE SANITARY CLAMP
- SCREWED CONNECTION
- RESTRICTIVE ORIFICE PLATE
- QUICK CONNECT/DISCONNECT
- COMPRESSION FITTING
- INGOLD FITTING
- BEVEL SEAT FITTING
- HOSE BARB FITTING
- FLEXIBLE CONNECTOR
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- SPRAY BALL
- SIGHT GLASS
- STRAINER ("Y" TYPE)
- STRAINER ("Y" TYPE) WITH BLOWDOWN
- MUFFLER/SILENCER
- TI 000 — THERMOMETER
- SANITARY THERMOWELL
- XX 000 — LOCALLY MOUNTED PRESSURE (PI) OR TEMPERATURE (TI) GAUGE
- SANITARY STEAM TRAP
- THERMOSTATIC STEAM TRAP
- FLOAT & THERMOSTATIC STEAM TRAP
- INVERTED BUCKET STEAM TRAP
- PUMPED PRESSURE POWERED PUMP
- FILTER

ELECTRICAL

WIRING

- GROUND / NEUTRAL / HOT / "LP1" 2 — HOMERUN TO PANELBOARD. 3/4" CONDUIT. NUMBER OF ARROWS INDICATES NUMBER OF CIRCUITS. "LP1" INDICATES PANEL DESIGNATION; 2 INDICATES PANEL CIRCUIT. TICK MARKS INDICATE #12 WIRING.
- "LP1" 2,4 OR 2/4 — 2,4 INDICATES TWO SEPARATE CIRCUITS. 2/4 INDICATES A SINGLE 2-POLE CIRCUIT. HOMERUN WITHOUT TICK MARKS INDICATES (2)#12 & (1)#12G IN 0.75"C.
- CONCEALED CONDUIT (BELOW FLOOR). CONTINUOUS LINE IS INDICATIVE OF CONDUIT TO BE RUN OVERHEAD.
- "J" HOOK RACEWAY
- CABLE TRAY AS DESCRIBED ON DRAWINGS
- CONDUIT UP
- CONDUIT DOWN

POWER

- 60/3 — NON-FUSED DISCONNECT SWITCH. ### INDICATES AMPACITY AND # OF POLES. PHYSICAL SIZE AS SHOWN ON PLAN.
- 60/40/3 — FUSED DISCONNECT SWITCH. 60/40/3 INDICATES FRAME AMPACITY/FUSE AMPACITY/# POLES. PHYSICAL SIZE AS SHOWN ON PLAN.
- MAGNETIC MOTOR STARTER. 1 INDICATES NEMA STARTER RATING.
- COMBINATION DISCONNECT SWITCH AND MOTOR STARTER. 1 INDICATES NEMA STARTER RATING.
- DUPLEX GROUNDING TYPE RECEPTACLE OUTLET - RATED 20-AMP.
- DOUBLE DUPLEX GROUNDING TYPE RECEPTACLE OUTLET
- DEVICE MOUNTED 6" ABOVE COUNTER (TYPICAL SYMBOL FOR FOR ALL RECEPTACLE SYMBOLS)
- WP — DUPLEX GROUNDING TYPE RECEPTACLE OUTLET WITH WEATHERPROOF COVER.
- GFCI — DUPLEX GROUND FAULT INTERRUPTER CIRCUIT TYPE RECEPTACLE OUTLET
- C — DUPLEX RECEPTACLE OUTLET - "C" INDICATES CEILING MOUNTED
- TV — DUPLEX RECEPTACLE OUTLET FOR TELEVISION. MOUNTING HEIGHT AS NOTED ON PLANS.
- SIMPLEX 125-V., 2-POLE, 3-WIRE RECEPTACLE OUTLET - WALL OR FLOOR MOUNTED
- XP — SAME AS ABOVE - EXPLOSION PROOF
- SPECIAL-PURPOSE RECEPTACLE. AMPERAGE AND VOLTAGE AS INDICATED ON PLANS. VERIFY NEMA CONFIGURATION WITH EQUIPMENT MANUFACTURER.
- SURFACE RACEWAY WITH OUTLETS AND MOUNTING AS INDICATED ON PLANS.
- JUNCTION BOX.
- J FLOOR OR CEILING MOUNTED JUNCTION BOX.
- B OUTLET BOX WITH BLANK COVER PLATE
- T THERMOSTAT ROUGH-IN JUNCTION BOX
- MOTOR
- NEW PANELBOARD
- EXISTING PANELBOARD
- NEW TRANSFORMER. SIZE AS INDICATED ON PLANS.
- EXISTING TRANSFORMER. SIZE AS INDICATED ON PLANS.
- P D — POKE THROUGH DEVICE. "P" INDICATES POWER, "D" INDICATES DATA. "T" INDICATES TELEPHONE. INSTALL AS DESCRIBED ON PLANS.
- VARIABLE FREQUENCY DRIVE
- WALL MOUNTED CLOCK

LIGHTING

- A — 2'x4' FLUORESCENT LIGHTING FIXTURE, 'A' INDICATES FIXTURE TYPE
- EMERGENCY FIXTURE - TYPICAL OF ALL CROSSHATCHED FIXTURES
- A — 1'x4' FLUORESCENT LIGHTING FIXTURE, 'A' INDICATES FIXTURE TYPE
- A — 2'x2' FLUORESCENT LIGHTING FIXTURE, 'A' INDICATES FIXTURE TYPE
- 6"x48" FLUORESCENT LINEAR
- A — RECESSED DOWNLIGHT
- A — WALL WASH FIXTURE
- OR — WALL MOUNTED FIXTURE
- A — FLUORESCENT STRIP LIGHT FIXTURE, 'A' INDICATES FIXTURE TYPE
- OR — PENDANT FIXTURE, CHAIN OR STEM MOUNTED
- EMERGENCY BUGEYE FIXTURE
- CEILING MOUNTED EXIT LIGHT (EMERGENCY POWER)
- WALL MOUNTED EXIT LIGHT (EMERGENCY POWER)

FIRE DETECTION/PROTECTION

- MAGNETIC DOOR HOLDER
- 2 — SMOKE DETECTOR (ION, P, EL)
- D — DUCT SMOKE DETECTOR
- F — FIRE ALARM PULL STATION
- F — FIRE AUDIBLE DEVICE
- 75 — FIRE AUDIBLE/VISUAL COMBINATION
- CANDELA NUMBER DESIGNATION (TYP. FOR ALL STROBES)
- 15 — FIRE ALARM VISUAL DEVICE
- 15 — CEILING MOUNTED STROBE
- F — CEILING MOUNTED HORN
- FIRE ALARM CONTROL PANEL
- REMOTE ANNUNCIATOR PANEL

SPECIAL SYSTEMS

- WALL MOUNTED TELEPHONE OUTLET
- COMBINATION TELEPHONE/DATA DEVICE
- DATA JACK
- DEVICE MOUNTED 6" ABOVE COUNTER
- WAP — WIRELESS ACCESS POINT
- TELEVISION OUTLET - COAX JACK AND DUPLEX RECEPTACLE
- CEILING MOUNTED SPEAKER
- WALL MOUNTED SPEAKER
- INTERCOM STATION. "M" INDICATES MASTER.
- COAXIAL TV JACK WITH J-BOX, FACEPLATE AND CABLING
- CEILING MOUNTED PROJECTOR WITH DUPLEX RECEPTACLE, A/V J-BOX, WITH FACEPLATE

SPECIAL SYSTEMS INSTALLATION REQUIREMENTS

1. WALL MOUNTED TELEPHONE OUTLET. TELEPHONE OUTLET FURNISHED AND INSTALLED BY OWNER. FOR WALL INSTALLATION, PROVIDE AND INSTALL A FLUSH DEVICE BOX, AND PULLSTRING IN WALL STUD SPACE TO ABOVE CEILING. MOUNT DEVICE BOX CENTERLINE AT ELEVATION NOTED ON THE PLANS.

ONE-LINE/DETAIL

- MOLDED CASE OR INSULTAED CASE CIRCUIT BREAKER
- SURGE PROTECTIVE DEVICE
- INTEGRAL DISCONNECT SWITCH
- FUSE
- DISTRIBUTION TRANSFORMER
- SHIELDED DISTRIBUTION TRANSFORMER
- VFD
- COMBINATION MOTOR STARTER/DISCONNECT
- DISCONNECT SWITCH
- FUSED DISCONNECT SWITCH
- MOTOR STARTER DISCONNECT SWITCH
- MOTOR STARTER
- MOTOR
- TRANSIENT VOLTAGE SURGE SUPPRESSOR
- GROUND
- DELTA
- WYE

SECURITY

- CARD READER
- KEYPAD
- DOOR CONTACT
- MAGNETIC LOCK
- ELECTRIC STRIKE
- EXIT REQUEST
- BIOMETRIC READER
- CEILING MOUNTED DOME STYLE SECURITY CAMERA
- CEILING MOUNTED AISLE STYLE SECURITY CAMERA
- MOTION SENSOR
- EMERGENCY CALL STATION
- COMBINATION CAMERA / INTERCOM

SWITCHES

- S — SINGLE-POLE, SINGLE-THROW WALL SWITCH
- S2 — DOUBLE-POLE, SINGLE-THROW WALL SWITCH
- S3 — THREE-WAY WALL SWITCH
- S4 — FOUR-WAY WALL SWITCH
- SP — SINGLE-POLE SWITCH WITH PILOT LIGHT
- SLV — LOW VOLTAGE SCENE SWITCH
- SLV1 — LOW VOLTAGE 1 BUTTON DIMMING SWITCH
- SLV1 — LOW VOLTAGE 1 BUTTON SWITCH
- SLVX — LOW VOLTAGE SWITCH WHERE X INDICATES # OF BUTTONS
- SM — MOTOR SWITCH WITH THERMAL OVERLOAD PROTECTION
- SK — SINGLE-POLE KEYED SWITCH
- SPS/SU — PROJECTOR SCREEN RAISE/LOWER SWITCH
- SOC — OCCUPANCY SENSOR SWITCH
- PC — PHOTO CELL
- OC — CEILING MOUNTED OCCUPANCY SENSOR
- LC — LIGHTING RELAY ROOM CONTROLLER
- DC — DIMMING LIGHTING RELAY ROOM CONTROLLER

ANNOTATION

BUILDING SYSTEMS

CA	COMPRESSED AIR PIPING	HPC	HIGH PRESSURE CONDENSATE
CHWS	CHILLED WATER SUPPLY PIPING	HHWS	HEATING HOT WATER SUPPLY
CHWR	CHILLED WATER RETURN PIPING	HHWR	HEATING HOT WATER RETURN
CWFT	CONDENSER WATER FROM TOWER	HPS	HIGH PRESSURE STEAM
CWTT	CONDENSER WATER TO TOWER	HPC	HIGH PRESSURE CONDENSATE
CR	CONDENSATE DRAIN PIPING	LPS	LOW PRESSURE STEAM
D	DRAIN	LPC	LOW PRESSURE CONDENSATE
PCHWS	PROCESS CHILLED WATER SUPPLY	MPS	MEDIUM PRESSURE STEAM
PCHWR	PROCESS CHILLED WATER RETURN	MPC	MEDIUM PRESSURE CONDENSATE
GCHWS	GLYCOL CHILLLED WATER SUPPLY	NG	NATURAL GAS
GCHWR	GLYCOL CHILLLED WATER RETURN	PC	PUMPED CONDENSATE
HPS	HIGH PRESSURE STEAM	RV	REFRIGERANT VENT

PLUMBING

CW	COLD WATER PIPING
ICW	INDUSTRIAL COLD WATER
IW	INDIRECT WASTE OR IRRIGATION WATER
NPW	NON-POTABLE WATER
HW	HOT WATER PIPING
HWC	HOT WATER CIRCULATING PIPING
SFT	SOFT WATER
SW	STORM WATER
TWS	TEMPERED WATER SUPPLY
TWR	TEMPERED WATER RETURN
VAC	VACUUM
V	VENT
W	WASTE

PROCESS

AC	ACETYLENE
AW	ACID WASTE
AR	ARGON
CIPS	CLEAN IN PLACE SUPPLY PIPING
CIPR	CLEAN IN PLACE RETURN PIPING
CS	CLEAN STEAM
STM(F)	FILTERED STEAM
DI	DE-IONIZED WATER
DS	DISTILLED WATER
GN	GASEOUS NITROGEN
HE	HELIUM
HY	HYDROGEN
LN	LIQUID NITROGEN

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CORY WILSON — STATE OF MISSOURI — 03.21.2025 — NUMBER PE-2010008036 — PROFESSIONAL ENGINEER

TM Aviation

TMA HANGER
LEE'S SUMMIT AIRPORT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **MR** | Checked By **CW**

KEY PLAN

NORTH

SHEET NAME
MECHANICAL/ELECTRICAL SYMBOLS LEGEND

SHEET NUMBER
ME000

PROJECT NUMBER
2404

GENERAL ABBREVIATIONS

GENERAL ABBREVIATIONS:

A/C	AIR CONDITIONING(ER)
ADDN	ADDITION OR ADDITIONAL
ADJ	ADJUSTABLE
ADJT	ADJACENT
ADMIN	ADMINISTRATION
A.F.F.	ABOVE FINISHED FLOOR
A.F.G.	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
ALT	ALTERNATE
ALUM	ALUMINUM
AMB	AMBIENT
APPROX	APPROXIMATE
AUTO	AUTOMATIC
BHP	BREAK HORSE POWER
BLDG	BUILDING
BLK	BLOCK
BMS	BUILDING MANAGEMENT SYSTEM
BOF	BOTTOM OF FOOTING
BSMT	BASEMENT
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CI	CAST IRON
CIRC	CIRCULATING
CLG	CEILING
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
CO2	CARBON DIOXIDE
COL	COLUMN
CONC	CONCRETE
CONF	CONFERENCE
CONFIG	CONFIGURATION
CONST	CONSTRUCTION
CORR	CORRIDOR
CT	CURRENT TRANSFORMER
CU	COPPER
CU	CONDENSING UNTI
CUH	CABINET UNIT HEATER
CW	COLD WATER
DB	DRY BULB
DBA	DECIBEL A-SOUND LEVELS
DD	DIRECT DIGITAL
DEG	DEGREE
DEPT	DEPARTMENT
DI	DUCTILE IRON
DIA	DIAMETER
DIM	DIMENSION
DISC	DISCONNECT
DISCH	DISCHARGE
DISTR	DISTRIBUTION
DN	DOWN
DTL	DETAIL
DWG	DRAWING
EA	EACH
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EEW	EMERGENCY EYEWASH
EWWS	EMERGENCY EYEWASH/SHOWER
EF	EXHAUST FAN
EFF	EFFICIENCY
EL	ELEVATION
ELEC	ELECTRIC(AL)
ELEV	ELEVATOR
ENCL	ENCLOSURE
EQUIP	EQUIPMENT
ESP	EXTERNAL STATIC PRESSURE
EST	ESTIMATE
EWT	ENTERING WATER TEMPERATURE
EXPL	EXPLOSION
EXT	EXTERIOR
F	FAHRENHEIT
FA	FRESH AIR
FD	FIRE DAMPER
FCO	FLOOR CLEANOUT
FCU	FAN COIL UNIT
FDC	FIRE DEPARTMENT CONNECTION
FIG	FIGURE
FL	FLOOR
FM	FACTORY MUTUAL
FPM	FEET PER MINUTE
FT	FEET (FOOT)
FTG	FOOTING
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GCO	GRADE CLEANOUT
GOVT	GOVERNMENT
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HOA	HANDS-OFF-AUTOMATIC
HP	HORSEPOWER
HR	HOUR
HTG	HEATING
HTR	HEATER
HVAC	HEATING, VENTILATING, & AIR CONDITIONING
HW	DOMESTIC HOT WATER
HWC	DOMESTIC HOT WATER CIRCULATING
HX	HEAT EXCHANGER
HZ	HERTZ
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IMC	INNTERNATIONAL MECHANICAL CODE
IN	INCH
INC	INCLUDE(ING)
IPC	INTERNATIONAL PLUMBING CODE
JAN	JANITOR
JST	JOIST
KVA	KILOVOLT AMPERES
KW	KILOWATT
KWH	KILOWATT-HOUR
LAB	LABORATORY
LAT	LEAVING AIR TEMPERATURE
LB	POUND
LBS	POUNDS
LF	LINEAR FOOT (FEET)
LTG	LIGHTING
LWT	LEAVING WATER TEMPERATURE
MA	MIXED AIR
MATL	MATERIAL
MAU	MAKE-UP AIR UNIT
MAX	MAXIUM
MBH	THOUSAND BTU PER HOUR
MBTUH	THOUSAND BTU PER HOUR
MCA	MINIMUM CIRCUIT AMPS
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MEZZ	MEZZANINE
MFR	MANUFACTURER
MFRG	MANUFACTURING
MIN	MINIMUM
MISC	MISCELLANEOUS
N/A	NON APPLICABLE
NC	NORMALLY CLOSED
NC	NOISE CRITERIA
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECT MANUFACTURER'S ASSN
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OC	ON CENTER
OD	OUTSIDE DIAMETER
OPP	OPPOSITE
OS&Y	OUTSIDE SCREW & YOKE
P/T	PRESSURE/TEMPERATURE TEST PORT
PCF	POUNDS PER CUBIC FOOT
PF	PRESSURE DROP
PERF	PERFORATED
PERP	PERPENDICULAR
PH	PHASE
PIC	PRESSURE INDEPENDENT CONTROL
PIV	POST INDICATOR VALVE
PLBG	PLUMBING
PNEU	PNEUMATIC
PREFAB	PREFABRICATED
PRV	PRESSURE REDUCING VALVE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
RA	RETURN AIR
RCP	REFLECTED CEILING PLAN
REF	REFERENCE
RH	RELATIVE HUMIDITY
RHP	RADIANT HEATING PANEL
RM	ROOM
RPM	ROVOLUTIONS PER MINUTE
RTU	ROOFTOP UNIT
SA	SUPPLY AIR
SAN	SANITARY WASTE
SCW	SOFT COLD WATER
SD	SMOKE DAMPER
SD	SMOKE DETECTOR
SECT	SECTION
SENS	SENSIBLE
SF	SQUARE FOOT (FEET)
SP	STATIC PRESSURE
SPEC	SPECIFICATIONS
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STOR	STORAGE
SWP	STEAM WORKING PRESSURE
T	THERMOSTAT
TA	TRANSFER AIR
TDH	TOTAL DYNAMIC HEAD
TEMP	TEMPORARY
TEMP	TEMPERATURE
THK	THICK(NESS)
TOC	TOP OF CONCRETE
TOF	TOP OF FOOTING
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UBC	UNIFORM BUILDING CODE
UG	UNDERGROUND
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
UTIL	UTILITY
V	VOLT
VAV	VARIABLE AIR VOLUME
VCT	VINYL COMPOSITION TILE
VD	VOLUME DAMPER - MANUAL
VEL	VELOCITY
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VOL	VOLUME
VTR	VENT THROUGH ROOF
W	WIDE, WIDTH
W	WATT
W/	WITH
W/O	WITHOUT
WB	WET BULB
WC	WATER COLUMN
WCO	WALL CLEAN OUT
WH	WALL HYDRANT
WT	WEIGHT
XFMR	TRANSFORMER
YH	YARD HYDRANT
&	AND
@	AT
i.e.	THAT IS
#	NUMBER

ELECTRICAL ABBREVIATIONS:

A OR AMP	AMPER(S)
AC	ALTERNATING CURRENT
A.F.F.	ABOVE FINIS
APPROX.	APPROXIMATELY
ARCH.	ARCHITECT
AWG	AMERICAN WIRE GAUGE
BKR.	BREAKER
C	CONDUIT
COMM.	COMMUNICATIONS
D	DEEP
DISC	DISCONNECT SWITCH
DWGS.	DRAWINGS
ELECT.	ELECTRICAL
EMCS	ENERGY MANAGEMENT SYSTEM
EMS	ENERGY MANAGEMENT SYSTEM
EMT	ELECTRICAL METALLIC TUBING
EQUIP.	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EX	EXISTING
FLEX	FLEXIBLE METALLIC CONDUIT
GA	GAUGE
GFI	GROUND FAULT INTERRUPTER
GRS	GALVANIZED RIGID STEEL
HZ	HERTZ
INC	INCANDESCENT
ION	IONIZATION SMOKE DETECTOR
JB	JUNCTION BOX (J-BOX)
MCC	MOTOR CONTROL CENTER
N/A	NOT APPLICABLE
N.A.	NON-FUSIBLE
NL	NIGHT LIGHT
PC	PLENUM CABLE
PH	PHASE
P	PHOTOELECTRIC SMOKE DETECTOR
PNL	PANEL
PVC	POLYVINYL CHLORIDE
RM.	ROOM
SYMM.	SYMMETRICAL
SYS.	SYSTEM
TV	TELEVISION
TYP	TYPICAL
V	VOLT
VA	VOLT AMPS
W	WATTS
WP	WEATHER PROOF
XFMR.	TRANSFORMER
XP	EXPLOSION PROOF
Ø	PHASE
RE: 3/E1	RE: = REFER TO 3 = DETAIL NUMBER E1 = SHEET NUMBER

GENERAL NOTES

ELECTRICAL GENERAL NOTES

1. ELECTRICAL WORK SHALL BE IN COMPLIANCE WITH 2018 NATIONAL ELECTRIC CODE (NEC).
2. INSTALL ALL WIRING IN RACEWAYS. OPEN WIRING IS PROHIBITED.
3. WHERE SURFACE WIRING IS REQUIRED, SURFACE MOUNTED RACEWAY (WIREMOLD OR APPROVED EQUAL) SHALL BE USED AND PAINTED TO MATCH ADJACENT SURFACES (UNLESS SPECIFIED COLOR WAS PROVIDED). COORDINATE ALL SURFACE MOUNTED CONDUIT AND RACEWAY ROUTING WITH OWNER AND ENGINEER.
4. ALL RACEWAYS SHALL CONTAIN AN EQUIPMENT GROUNDING CONDUCTOR.
5. PROVIDE ALL MOTORS WITH A LOCAL DISCONNECT SWITCH (UNFUSED UNLESS OTHERWISE NOTED) LOCATED AT THE MOTOR OR A MAXIMUM OF 5FT AWAY, WITHIN SIGHT.
6. NO MORE THAN SIX RECEPTACLES SHALL BE INSTALLED ON A SINGLE BRANCH CIRCUIT FOR GENERAL USE. GFCI RECEPTACLES SHALL NOT SERVE OTHER RECEPTACLES FROM THEIR LOADSIDE TERMINALS.
7. TELECOMMUNICATION OUTLET BOXES SHALL BE MINIMUM SIZE AS NEC STANDARD 6"x6"x2.5" THAT COULD CONTAIN DUAL DUPLEX ELECTRICAL OUTLETS, RECESSED TO ALLOW EMT OR FLEXIBLE CONDUIT TO TERMINATE ON THEM.
8. WALL MOUNTED JUNCTION BOXES SHALL BE EQUIPPED WITH FULL COVERED STAINLESS STEEL WALL FACEPLATES THAT SHALL COVER THE ENTIRE BOX WITHOUT TRIM RINGS ADDED.
9. TELECOM J-BOXES SHALL EMPLOY TWO EACH MODULAR CAT 6 (OR BETTER) RJ-45 JACKS FOR VOICE/DATA. VERIFY STANDARD CABLING WITH OWNER PRIOR TO BID.
10. CONTRACTOR SHALL FIELD VERIFY LOCATIONS, SIZES, AND ELEVATIONS OF MECHANICAL, ELECTRICAL, AND PLUMBING COMPONENTS THAT MAY IMPACT IMPLEMENTATION OF THIS WORK PRIOR TO MAKING BIDS.
11. CONTRACTOR SHALL COORDINATE AND EXPEDITE ALL WORK WITH OTHER TRADES AND OWNER.
12. ALL OVERCURRENT PROTECTIVE DEVICES INSTALLED UNDER THIS CONTRACT SHALL MEET THE INTERRUPTING CAPABILITY OF THE SCHEDULES. "SERIES RATING" SHALL BE ALLOWED.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR ARC FLASH STUDY AND LABELS PER NEC.
14. ALL WIRING TO BE CONTINUOUS WITHOUT SPLICES UNLESS OTHERWISE NOTED.
15. NO POWER AND CONTROL WIRING SHALL BE RUN IN SAME CONDUIT.
16. FINAL ROUTING OF CONDUITS IS TO BE DETERMINED BY THE CONTRACTOR. INFORM ENGINEER OF RECORD OF ANY MAJOR DISCREPANCY PRIOR TO PROCEEDING WITH INSTALLATION.
17. PROVIDE TYPED PANEL SCHEDULES POLE AND LOAD SERVED.
18. PRIOR TO BID SUBMISSION, THE CONTRACTOR SHALL VISIT THE SITE AND AREA OF WORK TO FAMILIARIZE HIM OR HERSELF WITH THE EXISTING CONDITIONS.

LIGHTING GENERAL NOTES

1. PLANS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS.
2. COORDINATE ALL SCHEDULING, ELEVATIONS, SIZES, QUANTITIES, AND ROUTING OF WORK WITH OWNER AND OTHER TRADES.
3. FIELD VERIFY SIZE, LOCATION, ELEVATION AND QUANTITY OF ALL ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PIPING EQUIPMENT AND COMPONENTS THAT MAY IMPACT IMPLEMENTATION OF THIS WORK.
4. REPAIR OR REPLACE ARCHITECTURAL, MECHANICAL, ELECTRICAL, OR PLUMBING EQUIPMENT OR COMPONENTS DAMAGED WHILE EXECUTING THIS WORK. SUCH REPAIRS OR REPLACEMENTS SHALL MATCH OR EXCEED EXISTING EQUIPMENT OR COMPONENT FINISH AND QUALITY.
5. ALL ELECTRICAL BOXES SHALL BE GALVANIZED STEEL. BACK BOXES MOUNTED ON GALVANIZED STUDS SHALL HAVE BETWEEN STUD MOUNTING BRACKETS EQUAL TO 'CADDY' #RBS16 OR #RBS24. PROVIDE 3/4" MUD RINGS WHERE LOCATED IN WALLS WITH 5/8" THICK GYPSUM WALLBOARDS.
6. PROVIDE DEVICE AND EQUIPMENT LABELING PER THE SPECIFICATIONS. ALL PANELBOARDS SHALL BE PROVIDED WITH AN UPDATED TYPED CIRCUIT DIRECTORY WITH CIRCUIT NUMBERS AND EQUIPMENT SERVED.
7. ALL POWER CIRCUITS SHALL HAVE A GROUNDING CONDUCTOR.
8. CONFIRM THAT NO WIRING CIRCUIT EXCEEDS 1920VA (120V).
9. ALL WALL OCCUPANCY SENSORS AND COVERPLATES SHALL BE GREY IN COLOR. ALL STANDARD TOGGLE SWITCHES SHALL BE GREY IN COLOR AN COVERPLATES SHALL BE STAINLESS STEEL. REFERENCE ELECTRICAL PAN SPECIFICATIONS.
10. FOR ANY EMERGENCY OR NIGHT LIGHT FIXTURE, A CONSTANT HOT CONDUCTOR SHALL BE ROUTED TO FIXTURE WHETHER IT IS SHOWN OR NOT.
11. EXIT LIGHT FIXTURES MOUNTED ON WALLS SHALL BE AT LEAST 8" ABOVE DOOR HEADER OR PER DRAWING ELEVATIONS.
12. REFERENCE LIGHTING FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION ON FIXTURE TYPE AND CONTROLS.

MECHANICAL GENERAL NOTES

1. ALL MECHANICAL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE INTERNATIONAL MECHANICAL CODE (IMC).
2. COORDINATE CLOSELY WITH ALL OTHER TRADES TO EXPEDITE CONSTRUCTION AND AVOID INTERFERENCES AND CONFLICTS. BEFORE ANY PIPING, DUCTWORK CONDUIT, ETC. IS INSTALLED, IT SHALL BE COORDINATED CAREFULLY BETWEEN ALL TRADES.
3. CONTRACTOR SHALL SUBMIT HVAC SHEET METAL PLANS WITH ACTUAL FITTINGS AND LAYOUT PER THE SHOP FABRICATION.
4. REFER TO EXISTING STRUCTURAL PLANS, OR VERIFY IN FIELD, THE LOCATION OF ALL STRUCTURAL MEMBERS. NEW ROOF PENETRATIONS AND ROOF CURBS FOR EQUIPMENT ON ROOF ARE SHOWN SCHEMATICALLY AND SHALL BE COORDINATED WITH EXISTING STRUCTURAL MEMBERS.
5. PROVIDE FLEXIBLE CONNECTION AND DUCT TRANSITIONS AT CONNECTIONS TO ALL DUCTED MECHANICAL EQUIPMENT.
6. COORDINATE ROUTING OF DUCTWORK WITH ALL OTHER TRADES TO AVOID INTERFERENCES IN CEILING PLENUM.
7. MAINTAIN ALL MANUFACTURER'S REQUIRED CLEARANCES FOR ALL HVAC EQUIPMENT.
8. COORDINATE ALL CEILING INSTALLED EQUIPMENT AND DIFFUSER, REGISTER, AND GRILLE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS AND ELECTRICAL LIGHTING PLANS.
9. ROUND BRANCH TAKE-OFF FITTINGS TO DIFFUSERS SHALL BE BELLMOUTH TYPE EXCEPT LOCATIONS WHERE LISTED DUCT HEIGHT DOES NOT ACCOMODATE. IN THIS CASE PROVIDE HIGH EFFICIENCY 45 DEGREE RECTANGULAR TO ROUND (HETO) FITTING. BOTH OF THESE FITTINGS ARE REQUIRED IN ALL CIRCUMSTANCES. ALL ROUND BRANCH TAKE-OFF FITTINGS TO DIFFUSERS SHALL INCLUDE AN INTEGRAL MANUAL VOLUME DAMPER.
10. BRANCH DUCTS TO DIFFUSERS SHALL BE THE SAME SIZE AS THE DIFFUSER NECK UNLESS NOTED OTHERWISE. MAXIMUM LENGTH OF FLEXIBLE DUCT ROUTING TO BE 5'-0" (NO EXCEPTIONS).
11. INSTALL TEMPERATURE SENSORS/THERMOSTATS/CO2 SENSORS AT 48" AFF. COORDINATE LOCATIONS WITH LIGHT SWITCHES. THERMOSTAT BOXES AND CONDUITS TO ABOVE CEILING ARE TO BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
12. CONTRACTOR SHALL REPAIR OR REPLACE LAY-IN OR GYPBOARD CEILINGS AS NECESSARY TO INSTALL NEW DUCTWORK, PIPING AND ELECTRICAL CONDUITS.
13. ALL EXISTING PLUMBING WASTE, WATER, AND VENT PIPING LOCATION AND ROUTING SHALL BE FIELD VERIFIED.
14. FIRE DAMPERS SHALL BE PROVIDED WHERE DUCTWORK PENETRATES ANY RATED ASSEMBLY. REFER TO ARCHITECTURAL CODE PLAN FOR FURTHER DETAILS.

PLUMBING GENERAL NOTES

1. ALL PLUMBING WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE INTERNATIONAL PLUMBING CODE (IPC).
2. COORDINATE CLOSELY WITH ALL OTHER TRADES TO EXPEDITE CONSTRUCTION AND AVOID INTERFERENCES AND CONFLICTS. BEFORE ANY PIPING, DUCTWORK CONDUIT, ETC. IS INSTALLED, IT SHALL BE COORDINATED CAREFULLY BETWEEN ALL TRADES.
3. MAINTAIN MANDATORY 10'-0" SEPARATION FROM ALL VENTS/EXHAUST AND OUTSIDE AIR INTAKES. REFER TO MECHANICAL PLANS PRIOR TO ROUGH-IN.
4. ALL DOMESTIC WATER, WASTE, AND VENT PIPING SHALL BE ROUTED TIGHT TO STRUCTURE. COORDINATE ROUTING WITH ALL TRADES.
5. PLANS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS. IF ANY DISCREPANCIES OCCUR FROM THESE PLANS, CONTACT A/E IMMEDIATELY.
6. UNLESS NOTED OTHERWISE, MAINTAIN MINIMUM 1/8" PER 1'-0" SLOPE ON ALL DRAINAGE PIPING.
7. ALL PLUMBING PIPING SHALL BE INSULATED / JACKETED PER SPECIFICATIONS.
8. ALL PLUMBING MATERIALS SHALL BE PER SPECIFICATIONS AND SCHEDULES.

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CORY WILSON — STATE OF MISSOURI — 03.21.2025 — NUMBER PE-2010009018 — PROFESSIONAL ENGINEER

TM Aviation

TMA HANGER
LEE'S SUMMIT AIRPORT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **MR** | Checked By **CW**

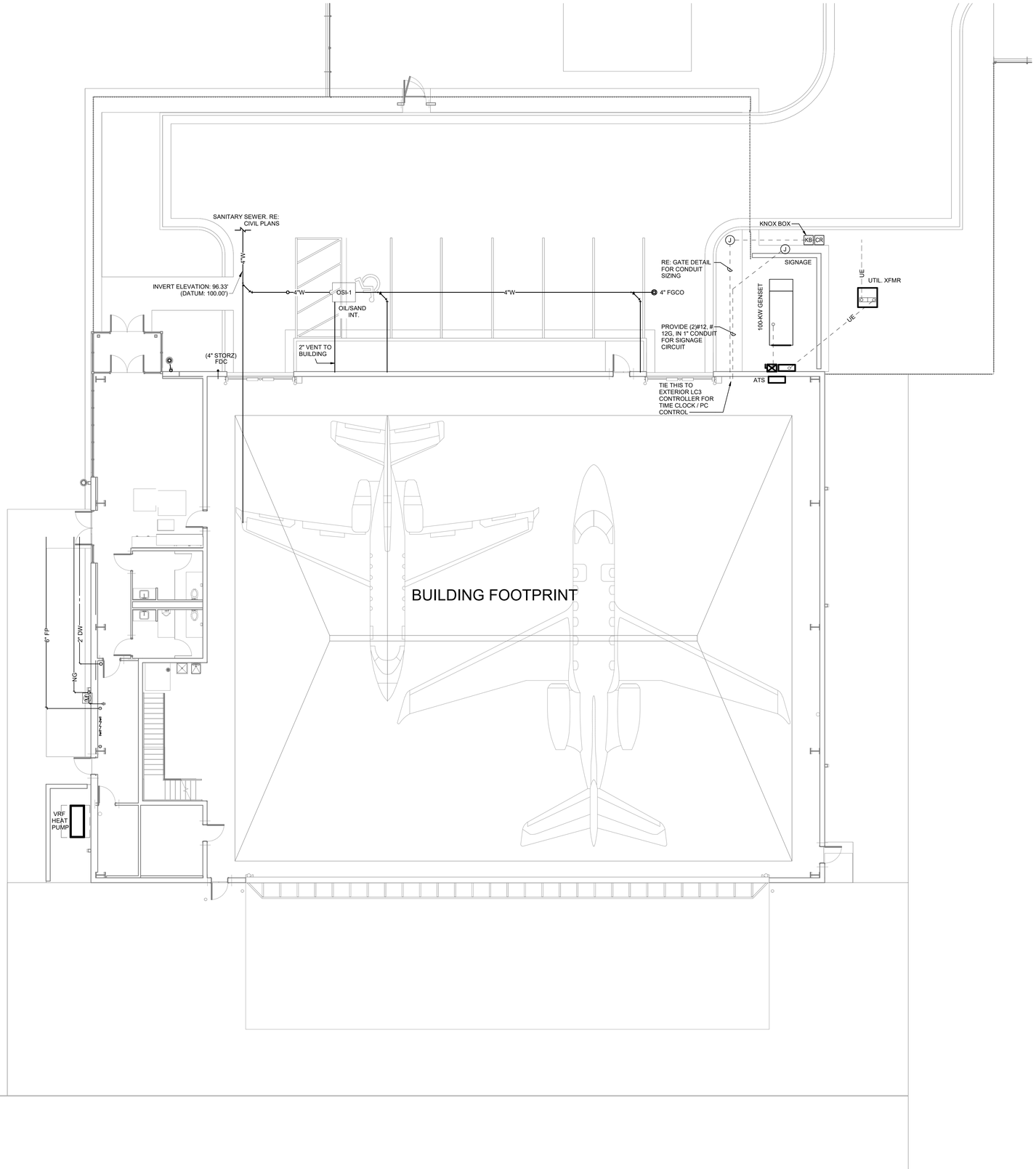
KEY PLAN
NORTH

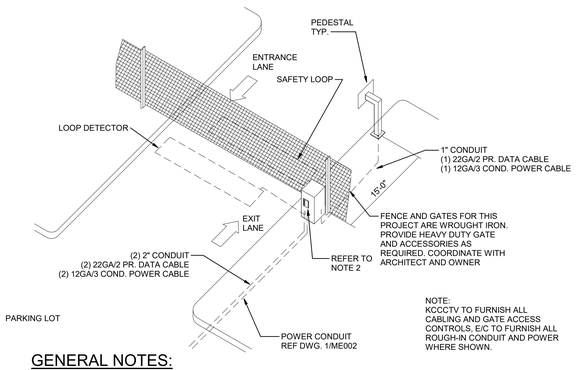
SHEET NAME
MECHANICAL / ELECTRICAL GENERAL NOTES

SHEET NUMBER
ME001

PROJECT NUMBER 2404

3/24/2025 7:45:22 PM





NOTE:
KCCCTV TO FURNISH ALL CABLING AND GATE ACCESS CONTROLS, E/C TO FURNISH ALL ROUGH-IN CONDUIT AND POWER WHERE SHOWN.

GENERAL NOTES:

1. KCCCTV TO FURNISH ALL CABLING AND GATE ACCESS CONTROLS, E/C TO FURNISH ALL ROUGH-IN CONDUIT AND POWER WHERE SHOWN.
2. PROVIDE CONDUIT WITH ACCESS BOXES AS REQUIRED BY CODE.
3. PROVIDE DUPLEX OUTLETS FOR PLUG-IN TRANSFORMERS. (MAY REQUIRE ADDITIONAL WEATHERPROOF ENCLOSURE).
4. PROVIDE MINIMUM 12" SEPARATION BETWEEN HIGH VOLTAGE AND LOW VOLTAGE CONDUIT RUNS FROM BUILDING TO GATE CONTROLLER.
5. SAFETY LOOP/LOOP DETECTOR BY FENCE SUPPLIER.
6. PEDESTALS SHALL BE EQUAL TO AMERICAN ACCESS SYSTEMS 18-001(BY FENCE SUPPLIER). PROVIDE NON-METALLIC WEATHER PROOF ENCLOSURE FOR PROXIMITY CARD READER AND INTERCOM. CARD READER AND INTERCOM BY STG. PROVIDE 10"\0 BY 36"D CONC. BASE FOR PEDESTALS. TYPICAL OF 2.
7. EXTEND SECURITY CIRCUITRY BACK TO OFFICE BLDG. COMPUTER ROOM AND POWER CIRCUITRY BACK TO WAREHOUSE POWER PANEL.
8. CONTRACTOR TO PROVIDE 480V POWER FOR GATE CONTROL SYSTEMS (2), TRANSFORMER AND LOAD CENTER FOR 120/208/240V SYSTEMS WITHIN ACCESS CONTROL AND GATE OPERATOR SYSTEMS. PROVIDE ALL EQUIPMENT AND MATERIALS FOR COMPLETE AND PROPERLY OPERATING ACCESS CONTROL AND ROLLING GATE POWER AND CONTROL SYSTEMS.
9. BOLT PEDESTALS TO CONCRETE FOUNDATION PER MANUFACTURER INSTRUCTIONS.

GATE DETAIL 2
N.T.S

SITE MEP PLAN 1
1/8" = 1'-0"

3/24/2025 7:45:23 PM

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CORY WILSON
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NUMBER PE-2010000878
PROFESSIONAL ENGINEER

TM Aviation

TMA HANGER
LEE'S SUMMIT AIRPORT

No.	Date	Description

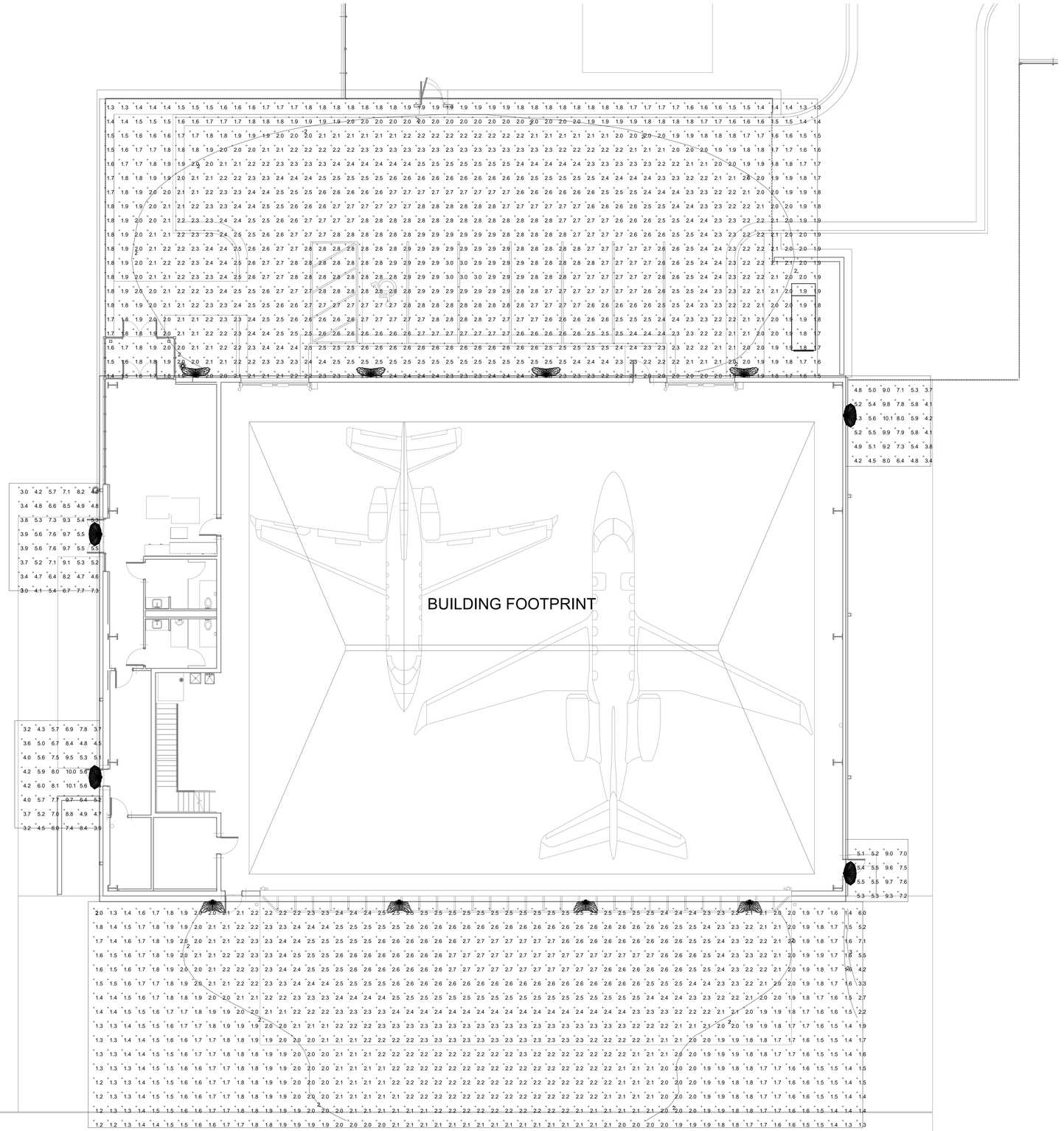
Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **MR** Checked By **CW**

KEY PLAN
NORTH

SHEET NAME
MEP SITE PLAN

SHEET NUMBER
ME002

PROJECT NUMBER 2404



SITE LIGHTING PHOTOMETRIC 1
1/8" = 1'-0"

EXTERIOR LIGHT FIXTURE PHOTOMETRIC SCHEDULE

Symbol	Label	Image	QTY	Manufacturer	Catalog	Description	Number Lamps	Lamp Output	LLF	Input Power	Polar Plot
	SA3		4	Lithonia Lighting	DSXW1 P7 40K 80CRI T3M	10000 4000K 80CRI Type 3 Medium	1	9229	1	72.52	
	SA4		4	Lithonia Lighting	DSXW1 P7 40K 80CRI T4M	10000 4000K 80CRI Type 4 Medium	1	9418	1	72.52	
	SB		4	Lithonia Lighting	WPX2 LED 40K MVolt	WPX2 LED wallpack 6000lm 4000K color temp 120-277 Volt	1	5896	1	47.77	

STATISTICS

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Parking Lot	+	2.3 fc	3.0 fc	1.3 fc	2.3:1	1.8:1
Airside Taxiway	+	2.1 fc	7.1 fc	1.2 fc	5.9:1	1.8:1
West Entrance / Mech door	+	5.9 fc	10.1 fc	3.2 fc	3.2:1	1.8:1
Typical East Doors	+	5.8 fc	9.7 fc	3.0 fc	3.2:1	1.9:1

d-series

D-Series Size 1
LED Wall Luminaire

BAA BABA

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PROFESSIONAL ENGINEER

TM Aviation

TMA HANGER
LEE'S SUMMIT AIRPORT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **MR** Checked By **CW**

KEY PLAN

NORTH

SHEET NAME
SITE LIGHTING PHOTOMETRIC PLAN

SHEET NUMBER
ME003

PROJECT NUMBER
2404

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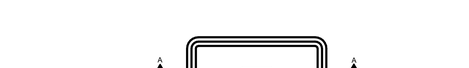
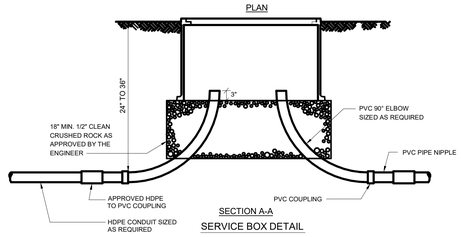
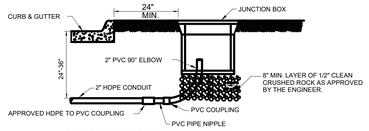


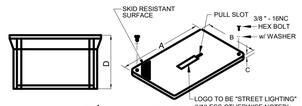


SECTION A-A

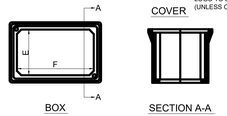
SERVICE BOX DETAIL



JUNCTION BOX INSTALLATION DETAIL



COVER



BOX

SECTION A-A

1. TYPE I JUNCTION BOXES SHALL BE RATED FOR NO LESS THAN 15,000 lbs. VERTICAL TEST LOAD AND NO LESS THAN 8000 lbs. COVER LOAD OVER A 10"x10" AREA.
2. TYPE II JUNCTION BOXES SHALL BE RATED FOR NO LESS THAN 22,500 lbs. VERTICAL TEST LOAD AND NO LESS THAN 8000 lbs. COVER LOAD OVER A 10"X10" AREA.
3. TYPE I SERVICE BOXES SHALL BE RATED FOR NO LESS THAN 22,500 lbs. VERTICAL TEST LOAD AND NO LESS THAN 8000 lbs. COVER LOAD OVER A 10"x10" AREA.
4. MATERIAL TO BE AN AGGREGATE CONSISTING OF SAND AND GRAVEL BOUND TOGETHER WITH A POLYMER AND REINFORCED WITH CONTINUOUS WOVEN GLASS STRANDS. IT SHALL HAVE THE FOLLOWING PROPERTIES.

   COMPRESSIVE STRENGTH-11,000 psi ASTM C-109

   TENSILE STRENGTH-1,700 psi ASTM C-496

   FLEXURAL STRENGTH-7,500 psi ASTM D-790
5. ATTACH 1c #10 THHN/THWN STRANDED COPPER SYSTEM GROUND TO 1/2" x 8'-0" GROUND ROD IN SERVICE BOX. MULTIPLE #10 GROUND CABLES INTRODUCED AT SIGNAL POLES SHALL BE TERMINATED AT GROUND ROD WITH AN ADDITIONAL CLAMP.

TYPE	DIMENSION (IN.)						
	A	B	C	D	E	F
I-JUNCTION	12 3/8	12 3/8	3/4	12 3/4	9 3/4 - 10 1/2	9 3/4- 10 3/8
II-JUNCTION	18 - 18 1/2	11 1/4 - 11 1/2	3/4 - 2	12	9 1/2- 10 3/8	16 1/2 - 17 3/8
I-SERVICE	35 3/8"	24"	3"	24"	22 3/8"	33 3/8"
II-SERVICE	* 47 3/8"	30 3/8"	3"	24"	28 3/8"	45 3/8"

*NOTE: THE TYPE II SERVICE BOX SHALL HAVE A TWO-PIECE OVERLAPPING COVER.

1 FIBERGLASS REINFORCED POLYMER CONCRETE JUNCTION & SERVICE BOX DETAILS

NOT TO SCALE

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CORY WILSON
NUMBER PE-2010000878
STATE OF MISSOURI
PROFESSIONAL ENGINEER
03.21.2025

TM Aviation

TMA HANGER
LEE'S SUMMIT AIRPORT

No.	Date	Description

Issue: **PERMIT SET**

Date: **MAR 21, 2025**

Drawn By **MR** Checked By **CW**

KEY PLAN

NORTH

SHEET NAME

SITE WORK MEP DETAILS

SHEET NUMBER

ME004

PROJECT NUMBER 2404

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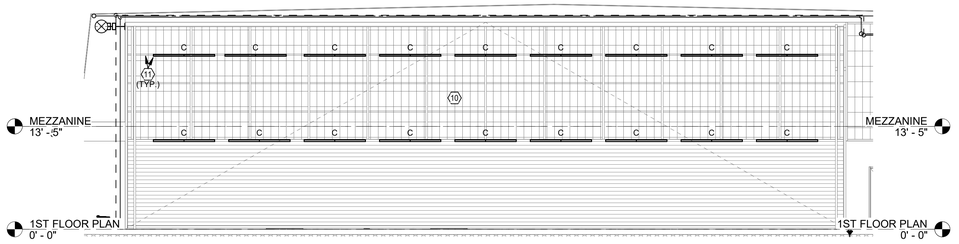
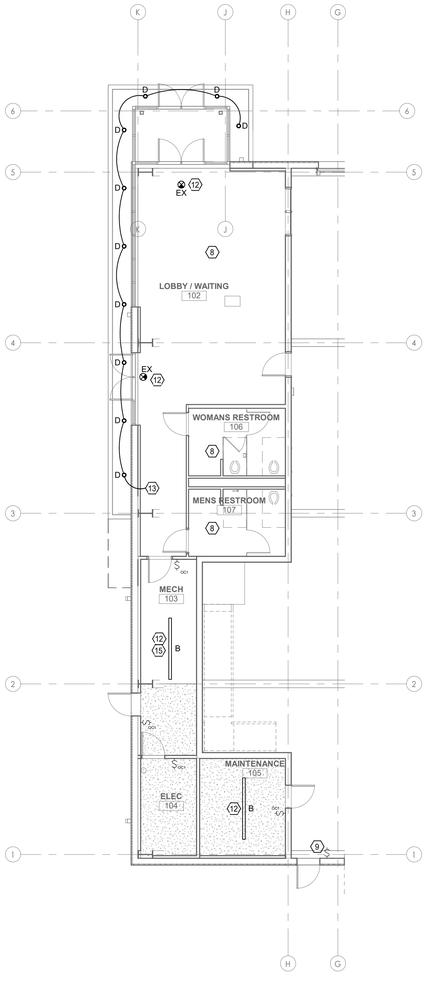
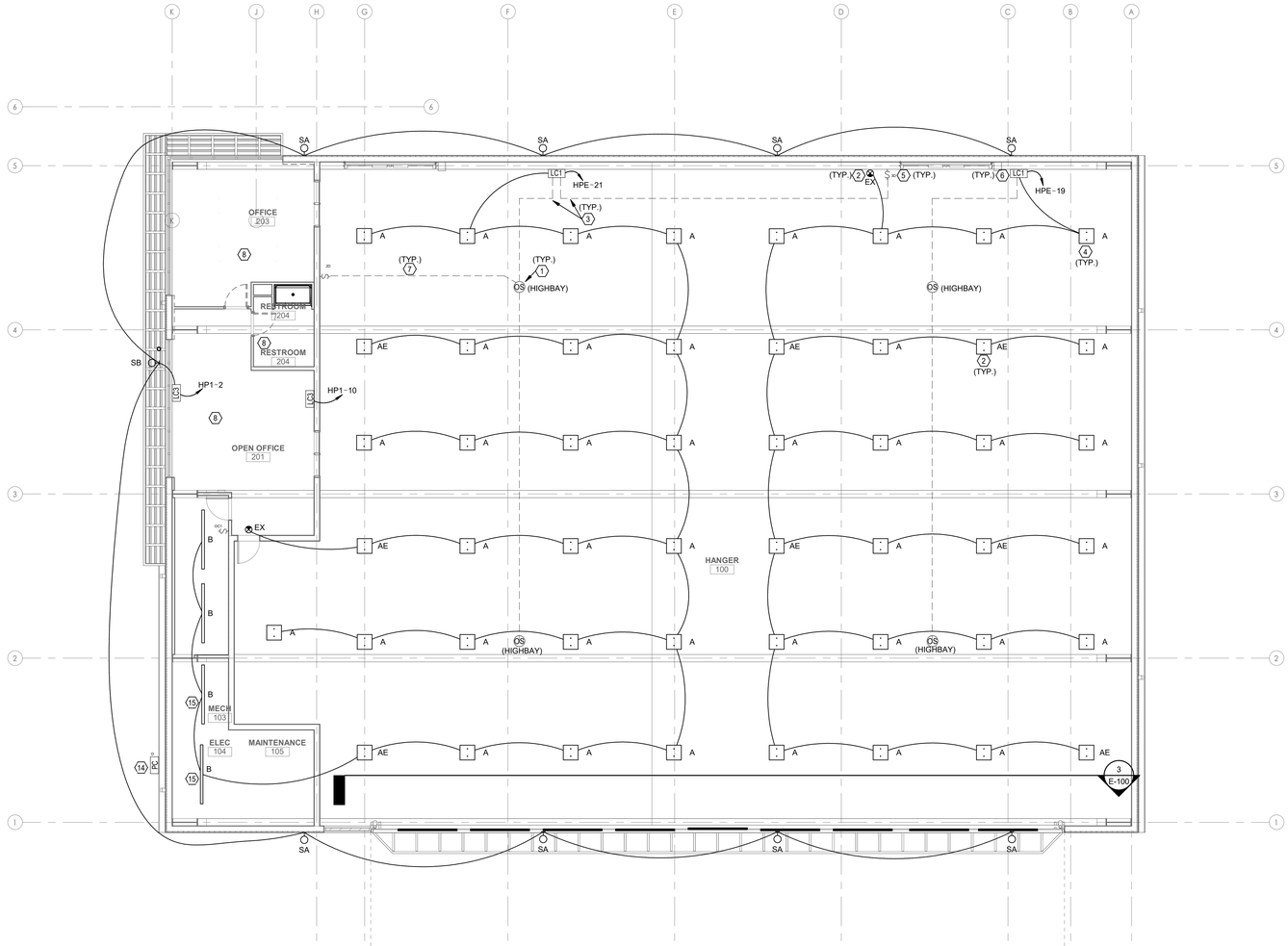


HANGAR DOOR LIGHTING PLAN 3
1/8" = 1'-0"



FIRST FLOOR LIGHTING PLAN 1
1/8" = 1'-0"



MEZZANINE LIGHTING PLAN 2
1/8" = 1'-0"

LIGHTING PLAN NOTES

1. DUAL TECHNOLOGY HIGHBAY (PIR/US) LOW VOLTAGE CEILING OCCUPANCY SENSOR FURNISHED AS PART OF DIGITAL LIGHTING CONTROL SYSTEM. ROUTE COMMUNICATION CABLING TO CONTROLLER.
2. INCLUDE 'HOT' UNSWITCHED CONDUCTOR WITH CIRCUITS THAT POWER EMERGENCY BATTERY PACK.
3. ROUTE CAT-6 CABLING FOR ALL CONTROL DEVICES TO CONTROLLER.
4. REFER TO LIGHTING SCHEDULE TO MOUNTING HEIGHT. FURNISH SWAY CLIPS TO STRUCTURE (TYP.)
5. TYPICAL DUAL TECHNOLOGY (PIR/US) WALL SWITCH OCCUPANCY SENSOR WITH OVERRIDE OFF AND PUSH TO DIM FURNISHED AS PART OF DIGITAL LIGHTING CONTROL SYSTEM. ROUTE COMMUNICATION CABLING TO CONTROLLER.
6. DIGITAL LIGHTING CONTROLLER (1-4 CIRCUIT) MOUNTED ABOVE CEILING ON WALL 12" ABOVE GRID (LD FOR DIMMING, LC FOR GROUP CONTROL.)
7. ALL DIMMING CIRCUITS SHALL BE 0-10V DIMMING. ROUTE CAT-6/BELDON CABLING FROM ROOM CONTROLLER DAISY CHAINING TO ALL CONTROL DEVICES.
8. CEILING NOT IN CONSTRUCTION, BY TENANT. NO LIGHT FIXTURES REQUIRED.
9. TOGGLE SWITCH FOR HANGAR DOOR LIGHTS. RE: DETAIL 3 THIS SHEET FOR FIXTURES CONTROLLED BY SWITCH.
10. CIRCUIT ALL 'C' LIGHT FIXTURES TO "HPE-23". CONTROL LIGHT FIXTURES VIA DIGITAL PUSH BUTTON, TAKE TO ONE ZONE ON LD3. RE: DETAIL 2 THIS SHEET.
11. SURFACE MOUNT LIGHT FIXTURE TO HANGAR DOOR FRAMING.
12. CIRCUIT LIGHT FIXTURE WITH OTHER LIGHT FIXTURES ON CIRCUIT HPE-21.
13. CIRCUIT LIGHT FIXTURES THROUGH LC3 VIA CIRCUIT HP1-2.
14. DIGITAL PHOTOCELL AND CAT6 CABLING PER DETAIL, MOUNT AT 108" AFF.
15. CHAIN HANG LIGHT FIXTURE AT 10'-0" AFF.

LIGHTING GENERAL NOTES

A. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE LOCAL VERSION OF THE NATIONAL ELECTRIC CODE AND NFPA AS ADOPTED BY THE AUTHORITY HAVING JURISDICTION.

B. COORDINATE CLOSELY WITH ALL OTHER TRADES TO EXPEDITE CONSTRUCTION AND AVOID INTERFERENCES AND CONFLICTS BEFORE ANY PIPING, DUCTWORK, CONDUIT, ECT. IS INSTALLED, IT SHALL BE COORDINATED CAREFULLY BETWEEN ALL TRADES.

C. CONTRACTOR SHALL GUARANTEE ALL EQUIPMENT, ACCESSORIES, AND MATERIAL FURNISHED BY THEM FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE AGAINST ALL DEFECTORS.

D. VERIFY IN FIELD, THE LOCATION OF ALL STRUCTURAL MEMBERS. CEILINGS ARE SHOWN SCHEMATICALLY FROM ARCHITECTURAL PLANS.

E. ROUTE ALL CONDUIT TIGHT TO STRUCTURE.

F. LIGHT FIXTURES DESIGNATED WITH THE LETTER "E" (I.E "DE", "BE", ETC.) SHALL BE CONNECTED TO CIRCUIT SHOWN THAT SHALL AUTOMATICALLY SWITCH TO EMERGENCY POWER IN THE EVENT OF A NORMAL POWER LOSS.

G. PROVIDE ALL LED DIMMABLE FIXTURES WITH 0-10V DIMMABLE DRIVERS.

H. REFER TO SHEET E-400 FOR DIMMING SWITCH BANKS.

I. EXIT LIGHTS SHALL BE CIRCUITED TO UNSWITCHED HOT, TYPICAL ALL EXITS THROUGHOUT.

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STATE OF MISSOURI
CORY WILSON
03.21.2025
NUMBER PE-2010008018
PROFESSIONAL ENGINEER

No.	Date	Description
1	04/03/25	Addendum 02

Issue: PERMIT SET
Date: MAR 21, 2025
Drawn By CW | Checked By CW

KEY PLAN
NORTH

TM Aviation
TMA HANGER
LEE'S SUMMIT AIRPORT

SHEET NAME
LIGHTING PLAN

SHEET NUMBER
E-100

PROJECT NUMBER
2404

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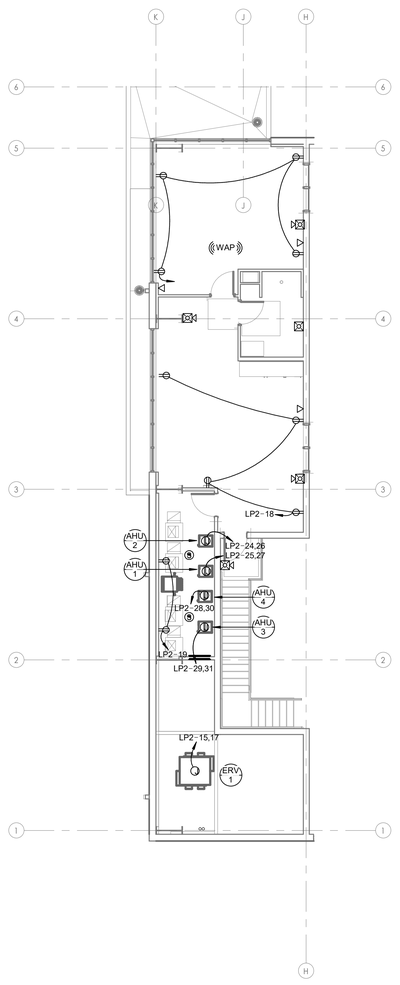
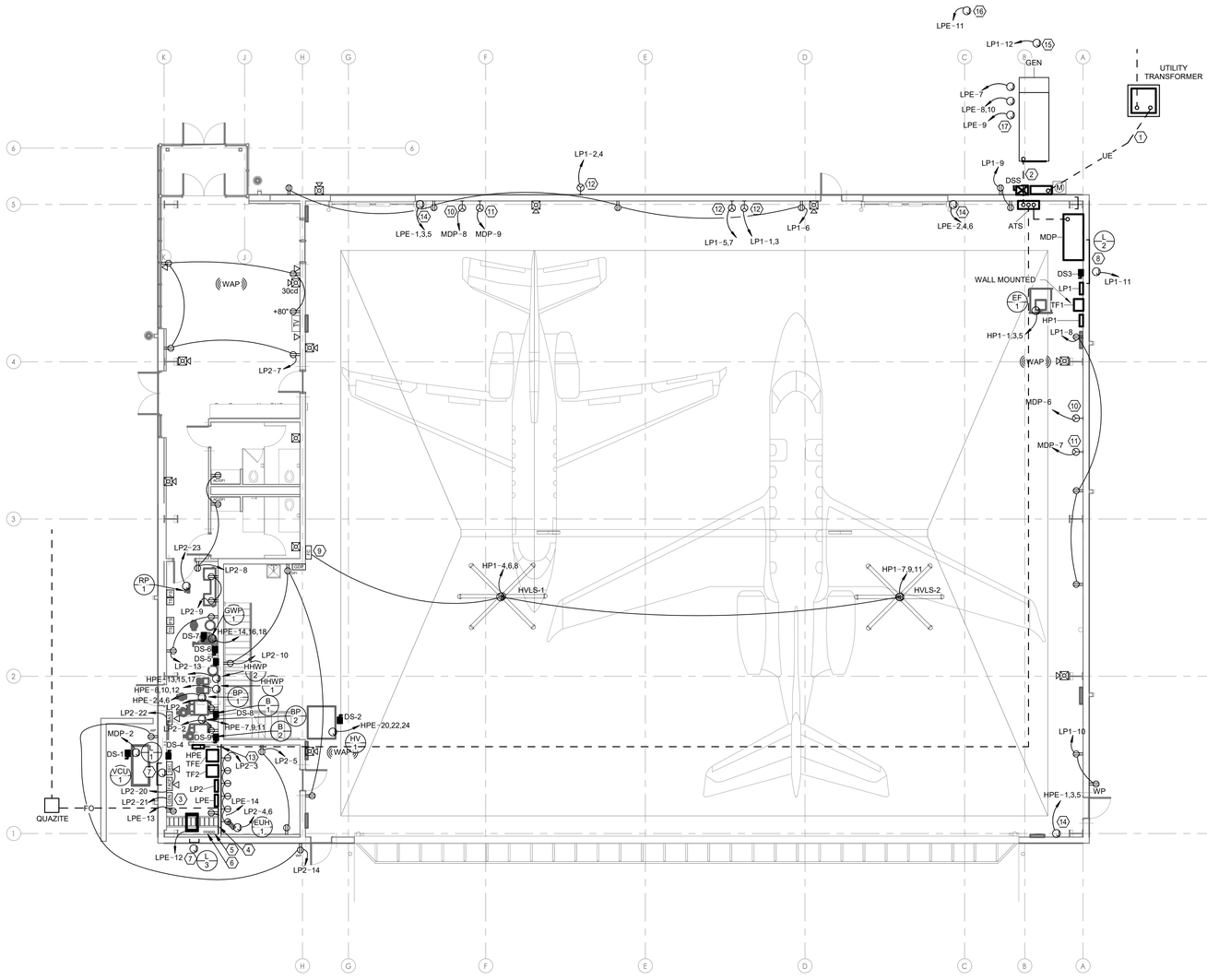


MEZZANINE POWER PLAN 2
1/8" = 1'-0"



FIRST FLOOR POWER PLAN 1
1/8" = 1'-0"

ELECTRICAL PLAN NOTES

1. CONDUIT FROM UTILITY TRANSFORMER TO CT CABINET TO BE BELOW FOUNDATION FOR THE SCREEN WALL BY OWNER.
2. CONDUIT FROM GENERATOR TO ATS TO BE BELOW FOUNDATION FOR THE SCREEN WALL WAY BY OWNER.
3. LOCATION OF GENERATOR ANNUNCIATOR PANEL ON WALL. REFER TO GENERATOR DETAILS FOR WIRING AND CONDUIT TO GENERATOR CONTROL PANEL WITHIN.
4. INSTALL 3/4" THICK, FIRE RATED TYPE X PLYWOOD TERMINATION BOARD ON WALL. PAINT TO MATCH WALL COLOR.
5. PROVIDE (2) 2" EMPTY CONDUITS WITH PULL STRING TO NORTH HANGAR WALL FOR OWNER EQUIPMENT.
6. PROVIDE (2) 2" EMPTY CONDUITS WITH PULL STRING TO MEZZANINE MECHANICAL ROOM.
7. MOTORIZED LOUVER L-1 AND L-3 SHALL UTILIZE SAME CIRCUIT, LP2-32. RE: MECHANICAL DRAWINGS AND SCHEDULES FOR MORE INFORMATION.
8. MOTORIZED LOUVER L-2 SHALL CIRCUITED AS SHOWN ON PLAN. RE: MECHANICAL DRAWINGS AND SCHEDULES FOR MORE INFORMATION.
9. PROVIDE DIGITAL FAN CONTROLLER FOR BOTH INDEPENDENT AND SIMULTANEOUS CONTROL OF BOTH EAST AND WEST HANGAR FANS.
10. GPU OUTLET REFER TO EQUIPMENT ELECTRICAL INFORMATION FEEDER SCHEDULE FOR MORE INFORMATION.
11. TUG CHARGING STATION REFER TO EQUIPMENT ELECTRICAL INFORMATION FEEDER SCHEDULE FOR MORE INFORMATION.
12. EV/RV OUTLET REFER TO EQUIPMENT ELECTRICAL INFORMATION FEEDER SCHEDULE FOR MORE INFORMATION.
13. PROVIDE WIREMOLD 2000 SERIES RACEWAY WITH (6) SIMPLEX RECEPTACLES EVENLY SPACED ALONG RACEWAY. MOUNTED AT 44" AFF.
14. PROVIDE POWER FOR OVERHEAD DOOR INTEGRATED DRIVE ASSEMBLY.
15. PROVIDE 120V POWER TO EXTERIOR SIGNAGE. RE: MEP SITE PLAN FOR MORE INFORMATION.
16. PROVIDE 120V POWER TO EXTERIOR GATE CONTROLLER. RE: MEP SITE PLAN AND GATE DETAIL FOR MORE INFORMATION.
17. RE: GENERATOR YARD DETAIL FOR MORE INFORMATION.

ELECTRICAL GENERAL NOTES

A. CONTRACTOR SHALL COORDINATE ALL SCHEDULING, ELEVATIONS, SIZES, QUANTITIES, AND ROUTING OF WORK WITH OWNER AND OTHER TRADES.

B. FIELD VERIFY SIZE, LOCATION, ELEVATION AND QUANTITY OF ALL ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PIPING EQUIPMENT AND COMPONENTS THAT MAY IMPACT IMPLEMENTATION OF THIS WORK.

C. CONTRACTOR SHALL COORDINATE ALL SCHEDULING, ELEVATIONS, SIZES, QUANTITIES, AND ROUTING OF WORK WITH OWNER AND OTHER TRADES.

D. REPAIR OR REPLACE ARCHITECTURAL, MECHANICAL, ELECTRICAL, OR PLUMBING EQUIPMENT OR COMPONENTS DAMAGED WHILE EXECUTING THIS WORK. SUCH REPAIRS OR REPLACEMENTS SHALL MATCH OR EXCEED EXISTING EQUIPMENT OR COMPONENT FINISH AND QUALITY.

E. PRIOR TO INSTALLATION, CONTRACTOR SHALL CONFIRM ELECTRICAL REQUIREMENTS FOR OWNER-FURNISHED EQUIPMENT. CONFIRM EXACT LOCATION AND MOUNTING HEIGHT OF NEW ELECTRICAL DEVICES WITH OWNER PRIOR TO ROUGH-IN.

F. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONSTRUCTION PRIOR TO SUBMITTING THEIR BID. NO EXTRAS WILL BE PAID DUE TO UNANTICIPATED CONDITIONS.

G. ALL WIRING SHALL BE IN CONDUIT AND SHALL BE CONCEALED.

H. CONDUIT CONNECTORS AND COUPLINGS SHALL BE COMPRESSION TYPE. SET SCREW TYPE CONDUIT FITTINGS SHALL NOT BE ALLOWED.

I. ALL POWER AND LIGHTING CIRCUITS SHALL HAVE A GROUNDING CONDUCTOR.

J. THE COVERS OF ALL BOXES SHALL BE LABELED WITH PERMANENT MARKER INDICATING THE PANELBOARD NAME AND CIRCUIT NUMBER(S) OF ALL INTERNAL WIRING.

K. ALL CONDUIT STUBS SHALL BE TERMINATED WITH BUSHINGS.

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STATE OF MISSOURI
CORY WILSON
03.21.2025
NUMBER PE-2010000618
PROFESSIONAL ENGINEER

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **CW** Checked By **CW**

KEY PLAN

NORTH

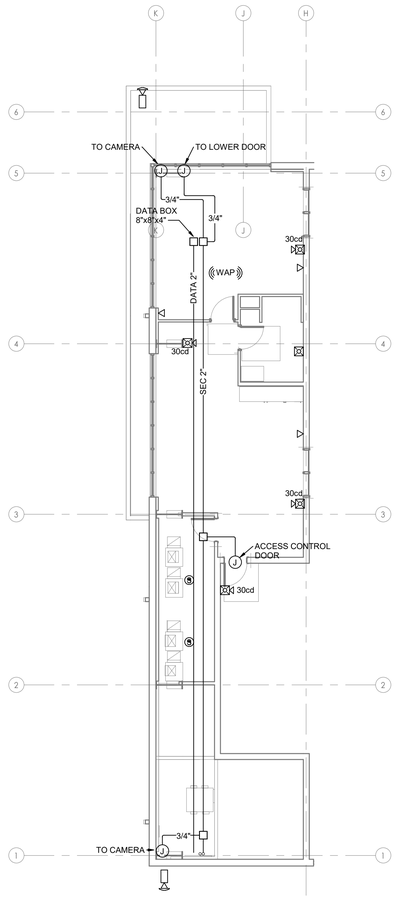
SHEET NAME
POWER PLAN

SHEET NUMBER
E-110

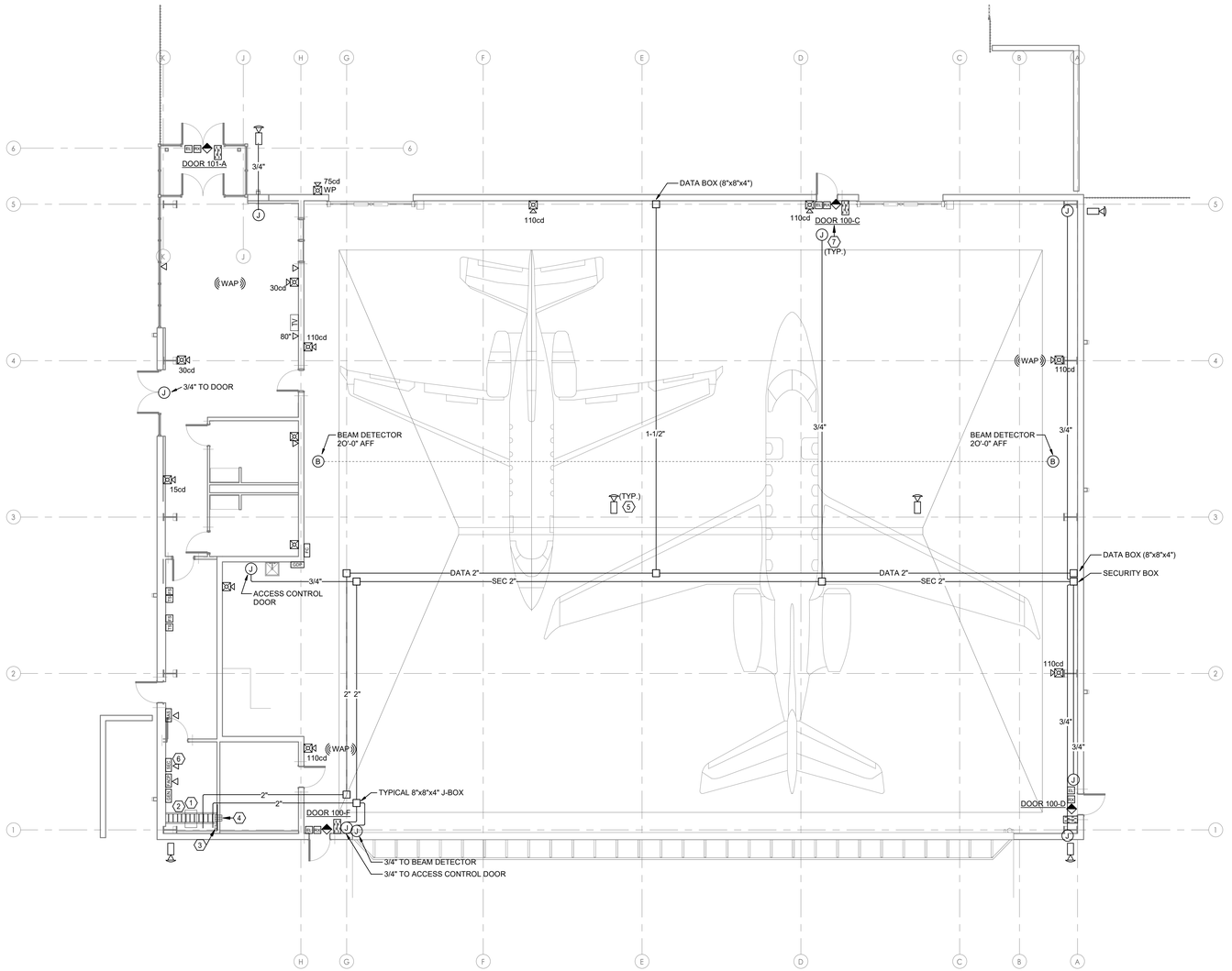
PROJECT NUMBER 2404

TM Aviation
TMA HANGER
LEE'S SUMMIT AIRPORT

3/24/2025 11:20:16 AM



MEZZANINE SPECIAL SYSTEMS PLAN 2
1/8" = 1'-0"



FIRST FLOOR SPECIAL SYSTEMS PLAN 1
1/8" = 1'-0"

ELECTRICAL PLAN NOTES

1. 48-RU, BLACK, PANDUIT MODEL 2-POST TELECOMMUNICATIONS RACK WITH 6" DUAL-SIDED (FRONT/BACK) VERTICAL CABLE MANAGER BOLTED TO FLOOR.
2. PROVIDE BLACK LADDER TYPE CABLE RUNWAY 16" WIDE. CABLE TRAY SHALL BE MOUNTED 12" ABOVE THE EQUIPMENT RACKS UTILIZING RACK STAND-OFF KITS. PROVIDE RADIUS DROP-OUT KITS AT RACK VERTICAL CABLE MANAGER LOCATION. PROVIDE ALL REQUIRED SUPPORTS AND ACCESSORIES AS NEED FOR A COMPLETE SYSTEM.
3. TELECOM GROUND BAR MOUNTED ON 3/4 TYPE X PLYWOOD.
4. INSTALL WIREMOLD EXPASS PASS-THRU BOX PER DETAIL (CAT6)
5. TYPICAL POE CAMERA FURNISHED BY OWNER SECURITY CONTRACTOR.
6. ACCESS CONTROL SYSTEM CONTROL PANEL. POWER (120V) FURNISHED BY E/C. REFER TO DOOR WIRING DIAGRAMS.
7. TYPICAL ACCESS CONTROL DOOR. INCLUDE ROUGH-IN AND WIRING TO ELECTRIC STRIKE, REQUEST TO EXIT, DOOR CONTRACTS, CONTROLLER.

ELECTRICAL GENERAL NOTES

A. HORIZONTAL CABLING FOR SECURITY CAMERAS AND/OR OTHER SECURITY EQUIPMENT SHALL BE WIRED TO TELCO RACK.

B. REFER TO OVERALL FLOOR PLANS FOR CABLE TRAY ROUTING. ALL TRAY INSTALLED BY E/C.

C. COORDINATE ALL DOOR HARDWARE ROUGH-IN REQUIREMENTS WITH ELECTRICAL CONTRACTOR PRIOR TO ROUGH-IN.

D. COORDINATE ROUGH-IN REQUIREMENTS WITH ALL SECURITY CAMERAS WITH ELECTRICAL CONTRACTOR.

PROJECT TEAM

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CORY WILSON
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TM Aviation

TMA HANGER

LEE'S SUMMIT AIRPORT

No.	Date	Description
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Drawn By	Author	Checked By Checker

KEY PLAN

NORTH

SHEET NAME

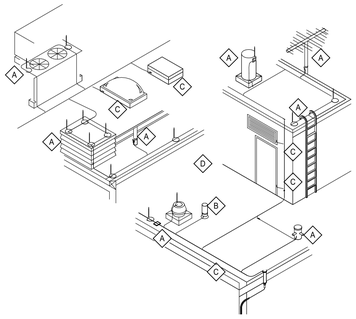
SPECIAL SYSTEMS PLAN

SHEET NUMBER

E-120

PROJECT NUMBER 2404

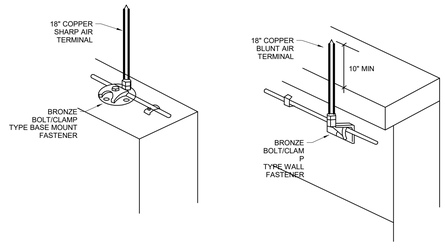
3/24/2025 11:20:17 AM



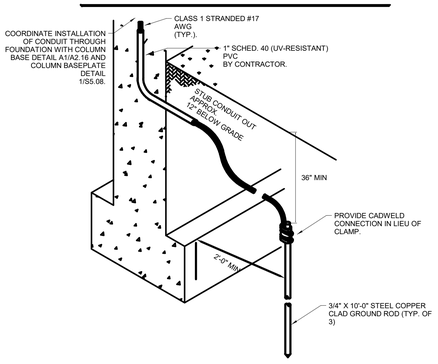
DETAIL NOTES

- A — TYPICAL BODIES OF CONDUCTANCE AS NOTED BELOW. USE FULL SIZE CONDUCTOR AND APPROPRIATE FITTING SHOWN FOR CONNECTION.
- B — (PLUMBING STACK) REQUIRES BONDING WITH MAIN SIZE CABLE ONLY IF WITHIN 6'-0" (1,828mm) OF LIGHTNING PROTECTION SYSTEM.
- C — TYPICAL BODIES OF INDUCTANCE AS NOTED BELOW. USE SECONDARY SIZE (SMALLER) CONDUCTOR AND APPROPRIATE FITTING SHOWN FOR CONNECTION
- D — BONDING CONNECTIONS AND FITTINGS SHOWN ARE TYPICAL EXAMPLES. MAKE ALL CONNECTIONS REQUIRED TO MEET CODES AS NOTED BELOW. ADJUST FITTING TYPE AS REQUIRED TO SUIT FIELD CONDITIONS.

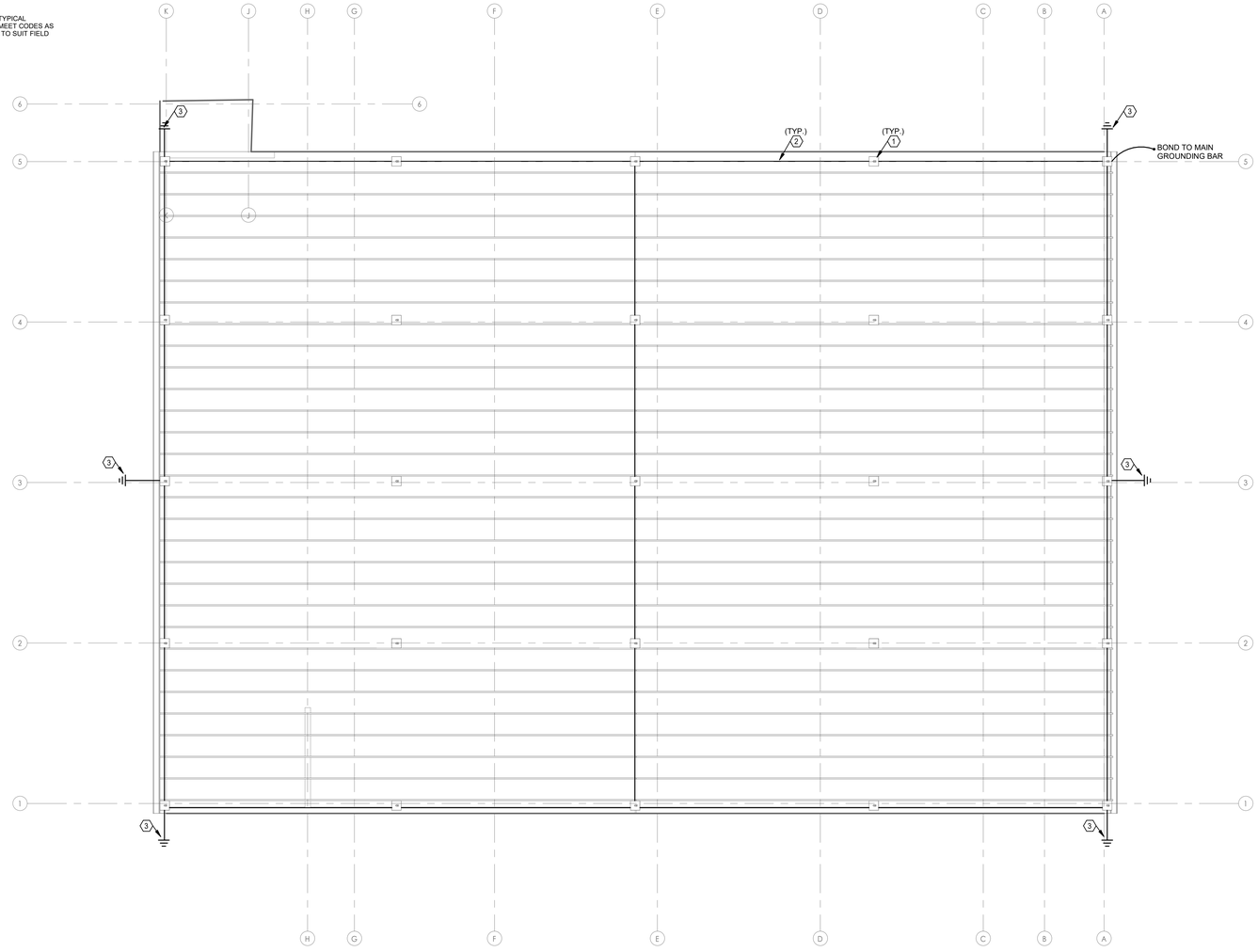
LIGHTNING PROTECTION AIR TERMINAL BONDING DETAIL 4
N.T.S



LIGHTNING PROTECTION AIR TERMINAL DETAIL 3
N.T.S



LIGHTNING PROTECTION GROUND ROD DETAIL 2
N.T.S



LIGHTNING PROTECTION ROOF PLAN 1
1/8" = 1'-0"

ELECTRICAL ROOF PLAN NOTES

1. FURNISH AND INSTALL 3/8" DIAMETER COPPER LIGHTNING AIR TERMINAL 18" LONG WITH SHARP BARE COPPER POINT (TYPICAL). AIR TERMINAL SHALL EXTEND A MINIMUM OF 10" ABOVE SURROUND OBJECT (WALLS). SPACE TERMINALS AT 20'-0".
2. INSTALL CLASS 2 STRANDED COPPER CONDUCTOR WITH # 17 AWG STRANDS FOR MAIN/BONDING CONDUCTOR THROUGHOUT LIGHTNING PROTECTION SYSTEM. FASTEN TO STRUCTURE EVERY 3'-0" MINIMUM.
3. ROUTE DOWN CONDUCTOR DOWN THROUGH BUILDING AND CAD WELD TO A 10'X3/4" COPPER CLAD STEEL GROUND ROD AT THE BASE OF THE BUILDING. INSTALL TEST STATION PER DETAIL. FASTEN THE CONDUCTOR SECURELY TO STRUCTURE AT EVERY 3'-0" THROUGHOUT. AT FOUNDATION COORDINATE DOWN CONDUCTOR INSTALLATION THROUGH FOUNDATION WALL WITH ARCHITECTURAL COLUMN BASE DETAIL AND STRUCTURAL DETAIL INSTALL 1" SCHEDULE 40 CONDUIT (PER DETAIL) THROUGH FOUNDATION SO THAT DOWN CONDUCTOR WILL ROUTE AROUND BASEPLATE AND BE CONCEALED WITHIN COLUMN/FOUNDATION WALL THROUGHOUT.

GENERAL NOTES

A. LIGHTNING PROTECTION SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 780. SHOP DRAWINGS SHALL BE PROVIDED THAT INCLUDE ALL APPROPRIATE WIRE, TERMINALS, CONNECTION INFORMATION, DETAILED DIMENSIONS OF ALL EQUIPMENT, ECT.

B. LIGHTNING PROTECTION SYSTEM GROUNDING SHALL BE TIED INTO ELECTRICAL/TELEPHONE SERVICE GROUNDING SYSTEMS. SIZE OF CONDUCTOR FOR INTERCONNECTION SHALL BE THE SAME AS THE MAIN-SIZE LIGHTNING CONDUCTORS.

C. LIGHTNING PROTECTION SYSTEM SHALL BE BONDED TO ALL STRUCTURAL, ARCHITECTURAL, ETC., METALLIC EQUIPMENT THAT IS PART OF THE STRUCTURE.

D. PROVIDE ALL NECESSARY BASES AND/OR FASTENERS TO INSTALL LIGHTNING PROTECTION SYSTEM AS INDICATED. REFERENCE DETAILS FOR FURTHER INFORMATION.

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No.	Date	Description

Issue: **PERMIT SET**
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KEY PLAN
NORTH

SHEET NAME
ROOF LIGHTNING PROTECTION PLAN

SHEET NUMBER
E-130

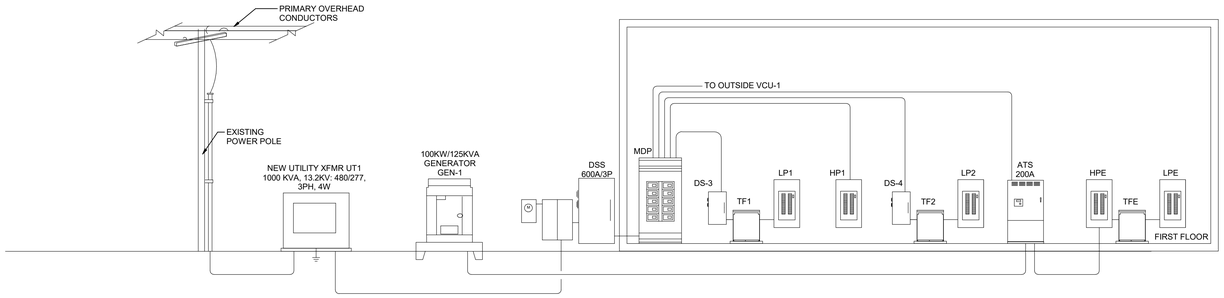
PROJECT NUMBER 2404

CONDUCTOR SCHEDULE

TAG	OCPD	SETS	3-P CONDUCTORS	NEUTRAL	3-PH AL CONDUCTORS	ALUMINUM NEUTRAL	GROUND	CONDUIT	NOTES
S600.4	600A	3	#3/0 AWG	#3/0 AWG			#1 AWG	2.5"	SCH 40 PVC, TYPE XHHW CONDUCTORS 90°C RATED
600.4	600A	3	#3/0 AWG	#3/0 AWG			#1 AWG	2.5"	RE: CONDUCTOR APPLICATION SCHEDULE
150.4	150A	1	#1/0 AWG	#1/0 AWG			#6 AWG	1.5"	RE: CONDUCTOR APPLICATION SCHEDULE
100.4	100A	1	#2 AWG	#2 AWG			#8 AWG	1.5"	RE: CONDUCTOR APPLICATION SCHEDULE
100.3	100A	1	#2 AWG				#8 AWG	1.25"	RE: CONDUCTOR APPLICATION SCHEDULE
90.3	90A	1	#3 AWG				#8 AWG	1.25"	RE: CONDUCTOR APPLICATION SCHEDULE
70.3	70A	1	#4 AWG				#8 AWG	1.25"	RE: CONDUCTOR APPLICATION SCHEDULE
60.4	60A	1	#6 AWG	#6 AWG			#10 AWG	1"	RE: CONDUCTOR APPLICATION SCHEDULE
50.3	50A	1	#8 AWG				#10 AWG	1"	RE: CONDUCTOR APPLICATION SCHEDULE
45.3	45A	1	#8 AWG				#10 AWG	1"	RE: CONDUCTOR APPLICATION SCHEDULE
30.3	30A	1	#10 AWG				#10 AWG	0.75"	RE: CONDUCTOR APPLICATION SCHEDULE

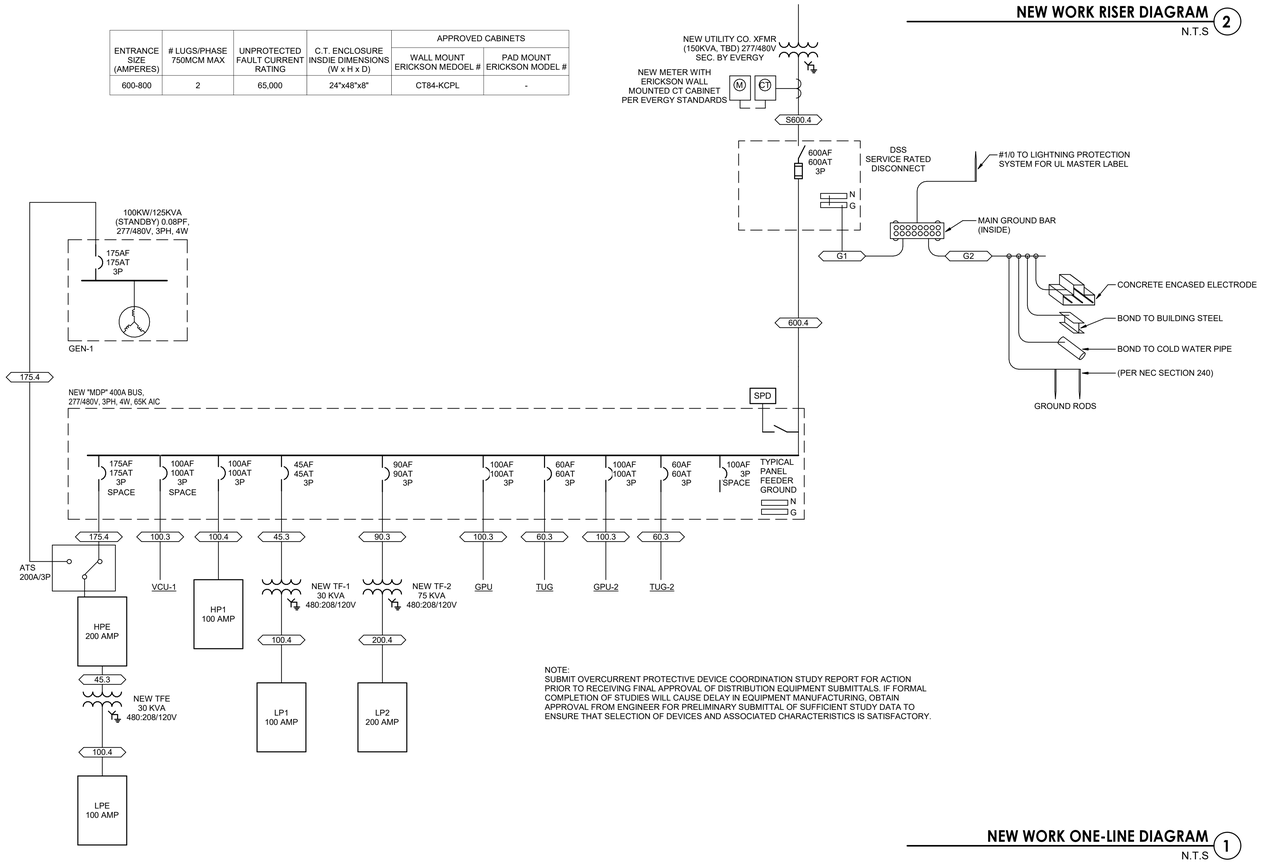
GROUNDING ELECTRODE CONDUCTOR REQUIRED SIZE

MARK	CONDUCTOR AMPACITY RATING (AMPS)	REQUIRED GROUNDING ELECTRODE CONDUCTOR
G1	-	#1/0-AWG (cu) - INSTALL PER NEC. BOND TO ALL GROUNDING ELECTRODES (DRIVEN GROUND ROD, WATER SERVICE, BUILDING STEEL, CONCRETE ENCLOSED REBAR)
G2	-	#1/0-AWG (cu) - INSTALL PER NEC. BOND TO ALL GROUNDING ELECTRODES (DRIVEN GROUND ROD, WATER SERVICE, BUILDING STEEL, CONCRETE ENCLOSED REBAR)



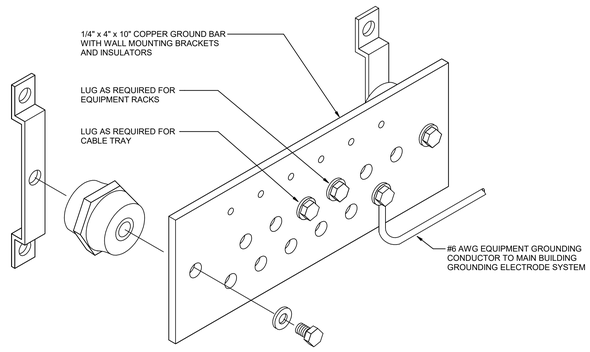
NEW WORK RISER DIAGRAM 2
N.T.S

ENTRANCE SIZE (AMPERES)	# LUGS/PHASE 750MCM MAX	UNPROTECTED FAULT CURRENT RATING	C.T. ENCLOSURE INSIDE DIMENSIONS (W x H x D)	APPROVED CABINETS	
				WALL MOUNT ERICKSON MEDOEL #	PAD MOUNT ERICKSON MODEL #
600-800	2	65,000	24"x48"x8"	CT84-KCPL	-



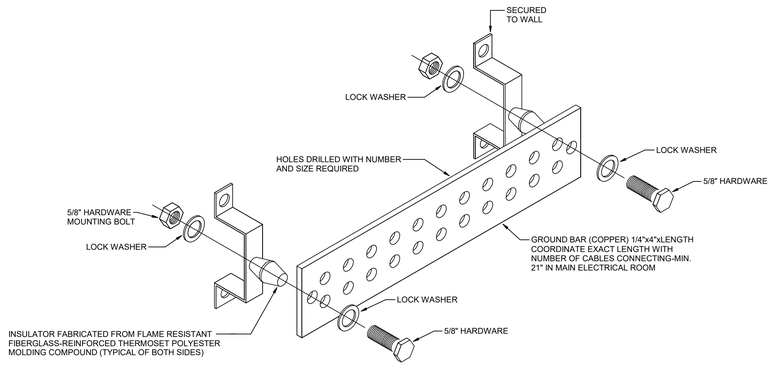
NOTE:
SUBMIT OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDY REPORT FOR ACTION PRIOR TO RECEIVING FINAL APPROVAL OF DISTRIBUTION EQUIPMENT SUBMITTALS. IF FORMAL COMPLETION OF STUDIES WILL CAUSE DELAY IN EQUIPMENT MANUFACTURING, OBTAIN APPROVAL FROM ENGINEER FOR PRELIMINARY SUBMITTAL OF SUFFICIENT STUDY DATA TO ENSURE THAT SELECTION OF DEVICES AND ASSOCIATED CHARACTERISTICS IS SATISFACTORY.

NEW WORK ONE-LINE DIAGRAM 1
N.T.S



GENERAL NOTES APPLICABLE TO THIS DETAIL:
A. NOT ALL PARTS AND PART NUMBERS ARE SHOWN IN THE DETAIL. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR A COMPLETE WORKING INSTALLATION, INCLUDING MISCELLANEOUS APPURTENANCE REQUIRED BY NOT SHOWN.
B. INSTALL A GROUND BAR IN EACH AND EVERY TELECOM ROOM AS SHOWN.

IT ROOM GROUND BAR DETAIL 4
N.T.S



MAIN GROUND BAR DETAIL 3
N.T.S

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CORY WILSON — STATE OF MISSOURI — 03.21.2025 — NUMBER PE-2010000878 — PROFESSIONAL ENGINEER

TM Aviation

TMA HANGER
LEE'S SUMMIT AIRPORT

No.	Date	Description

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KEY PLAN
NORTH

SHEET NAME
ELECTRICAL ONE-LINE DIAGRAM

SHEET NUMBER
E-300

PROJECT NUMBER 2404

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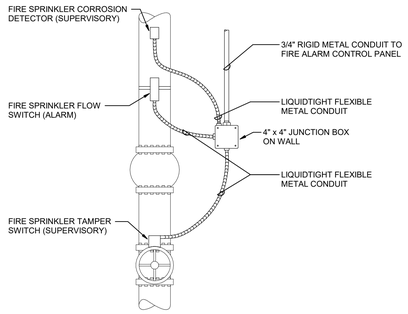
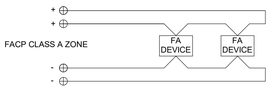


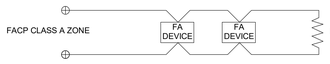
FIRE SPRINKLER CONNECTION DETAIL 6
N.T.S



NOTES:

1. PROVIDE A POSITIVE "PAIR" OF WIREES AND A NEGATIVE "PAIR" OR WIRES FROM FIRE ALARM CONTROL PANEL OUT EACH DEVICE
2. IF A BREAK OCCURS ANYWHERE IN THE CIRCUIT, EVERY DEVICE SHALL REMAIN ACTIVE. A TROUBLE ALARM SHALL BE ACTIVED AT THE FIRE ALARM CONTROL PANEL.

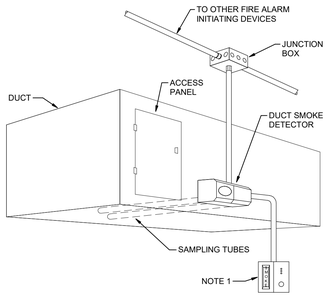
CLASS A FIRE ALARM WIRING 5
N.T.S



NOTES:

1. PROVIDE TWO (2) WIRES OUT TO EACH DEVICE AND AN END OF LINE RESISTOR AT THE END OF THE CIRCUIT.
2. FIRE ALARM CONTROL PANEL SHALL MEASURE THE CURRENT BEING CONSUMED IN THE CIRCUIT. IF THE PANEL DETECTS TOO LITTLE CURRENT - INDICATIVE OF AN "OPEN" CIRCUIT, A TROUBLE ALARM SHALL SOUND. IF THE PANEL DETECTS TOO HIGH CURRENT - INDICATIVE OF A "SHORT", AN ALARM CONDITION SHALL OCCUR.
3. IF A BREAK IN THE CIRCUIT OCCURS, DEVICES DOWNSTREAM OF THE BREAK WILL BE INOPERABLE UNTIL THE BREAK IN THE CIRCUIT IS REPAIRED.

CLASS B FIRE ALARM WIRING 4
N.T.S



GENERAL NOTES APPLICABLE TO THIS DETAIL:

A. CONNECT DUCT SMOKE DETECTOR TO FIRE ALARM CONTROL PANEL SUCH THAT DUCT SMOKE DETECTOR INITIATES A SUPERVISORY SIGNAL AT THE FIRE ALARM CONTROL PANEL UPON DUCT SMOKE DETECTOR SMOKE ACTIVATION. IF FIRE ALARM CONTROL PANEL DOES NOT EXIST, ACTIVATION OF THE DUCT SMOKE DETECTOR SHALL ACTIVATE AN AUDIBLE AND VISUAL SIGNAL AT A CONTINUOUSLY ATTENDED LOCATION.
B. INTERLOCK HVAC UNIT WITH DUCT SMOKE DETECTOR SUCH THAT HVAC UNIT SUPPLY FAN SHUTS DOWN IN ALARM CONDITION. PROVIDE ALL RELAYS REQUIRED TO ACCOMPLISH THE INTERLOCK.

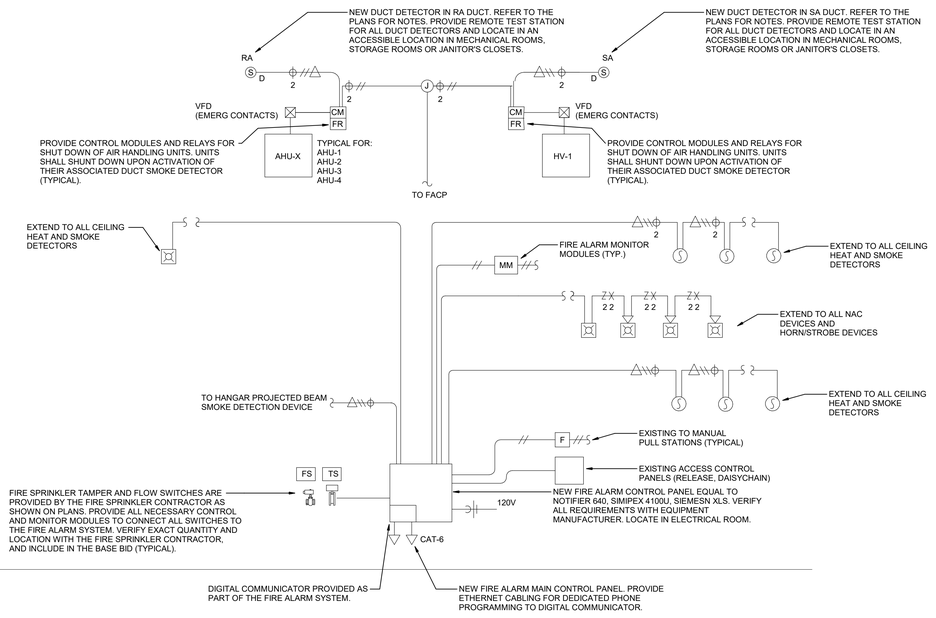
NOTES APPLICABLE TO THIS DETAIL:

1. PROVIDE A REMOTE KEYED TEST STATION WITH VISUAL STATUS ANNUNCIATOR WHEN THE DUCT SMOKE DETECTOR IS INSTALLED IN A CONCEALED LOCATION GREATER THAN 10'-0" ABOVE FINISHED FLOOR OR WHEN DUCT SMOKE DETECTOR'S STATUS INDICATORS ARE NOT READILY VISIBLE. COORDINATE LOCATION WITH THE AUTHORITY HAVING JURISDICTION AND THE OWNER PRIOR TO ROUGH-IN.

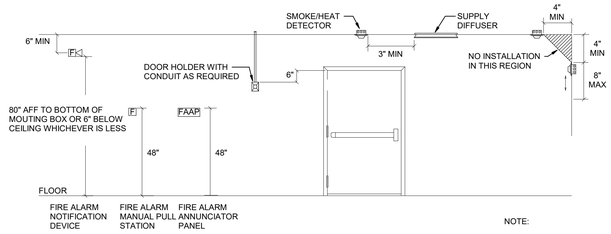
DUCT DETECTOR DETAIL 3
N.T.S

FIRE ALARM SYSTEM

SEQUENCE OF OPERATION		
ACTIVED DEVICE	LOCATION	ACTION
CEILING SMOKE DETECTOR	CORRIDORS/ LOBBIES	GENERAL BUILDING ALARM
DUCT SMOKE DETECTOR	MECH ROOM	GENERAL BUILDING ALARM
MANUAL PULL STATION	FIRST FLOOR EXITS	GENERAL BUILDING ALARM
DOOR HOLD OPEN	ALL FLOORS	GENERAL BUILDING ALARM DOORS CLOSE
HEAT DETECTOR	-	SUPERVISORY ALARM
SPRINKLER WATER FLOW SWITCH	ALL FLOORS	GENERAL BUILDING ALARM SHUT OFF ALL MECHANICAL HVAC EQUIPMENT VIA RELAY
NOTE 1. SEQUENCE OF OPERATION IS SUBJECT TO APPROVAL BY LOCAL FIRE MARSHALL AND CODE OFFICIAL. NOTE: 2. ALL INITIATING DEVICES SHALL BE ADDRESSABLE, MAPNET TYPE NOTE: 3. THE EXISTING FIRE ALARM SYSTEM DOES NOT HAVE A VOICE EVACUATION SYSTEM		



FIRE ALARM RISER DIAGRAM 1
N.T.S



NOTES:

1. TYPICAL MOUNTING HEIGHTS UNLESS OTHERWISE NOTED.

NOTE:

TYPICAL MOUNTING HEIGHTS UNLESS NOTED OTHERWISE.

ADJUST MOUNTING HEIGHT TO BLOCK COURSING WHERE APPLICABLE.

ELECTRICAL DEVICE MOUNTING HEIGHT DETAIL 2
N.T.S

FIRE ALARM WIRING LEGEND

- FIREFIGHTERS TELEPHONE CABLE
- STROBE CABLE
- SPEAKER CABLE
- ZAM POWER
- MAPNET CABLE
- SINGLE STATION SMOKE DETECTOR MONITOR CABLE
- DUCT DETECTOR POWER

GENERAL FIRE ALARM NOTES:

1. ALL NEW FIRE ALARM DEVICES SHALL BE SOLE SOURCED AND CONTRACTED SEPARATELY WITH KCCCTV.
2. ALL NEW DETECTORS, AND HORN/STROBES SHALL BE WHITE IN COLOR IN CORRIDOR SPACES, RED IN CEILINGS WITH DARK COLOR WITH CHANGEABLE CANDELA RATINGS. EXACT LAYOUT OF HORN/STROBES SHALL HAVE COVERAGES CONFIRMED BY VENDOR AND ADJUSTED IN FINAL SHOP DRAWINGS. MEET ALL LEGIBILITY REQUIREMENTS AND CANDELA RATINGS PER EXACT LAYOUT FURNISHED.
3. IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO COORDINATE ALL DEVICES WITH THE NEW FIRE ALARM SYSTEM. FIRE ALARM EQUIPMENT SHOPS, WIRING, AMPERAGE CALCULATIONS, AND LAYOUT SHALL BE SUBMITTED FOR REVIEW PRIOR TO FINAL ACCEPTANCE.
4. THIS FIRE ALARM RISER DIAGRAM IS FOR SCHEMATIC PURPOSES ONLY. REFER TO THE PLANS FOR DEVICE LOCATIONS AND QUANTITIES. THE E/C SHALL PROVIDE A COMPLETE RISER DIAGRAM WITH THE SHOP DRAWING SUBMITTAL WITH EACH DEVICE LOCATED ON THE PLANS (AND ITS ADDRESS) AND ALL WIRING REQUIREMENTS.
5. VERIFY ALL WIRING REQUIREMENTS WITH THE FIRE ALARM MANUFACTURER PRIOR TO ANY ROUGH-IN. INCLUDE ALL WIRING REQUIREMENTS IN THE BASE BID.

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TMA HANGER
LEE'S SUMMIT AIRPORT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **CW** Checked By **CW**
KEY PLAN
NORTH

SHEET NAME
FIRE ALARM RISER AND DETAILS

SHEET NUMBER
E-310

PROJECT NUMBER
2404

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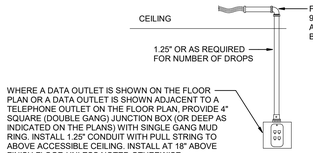


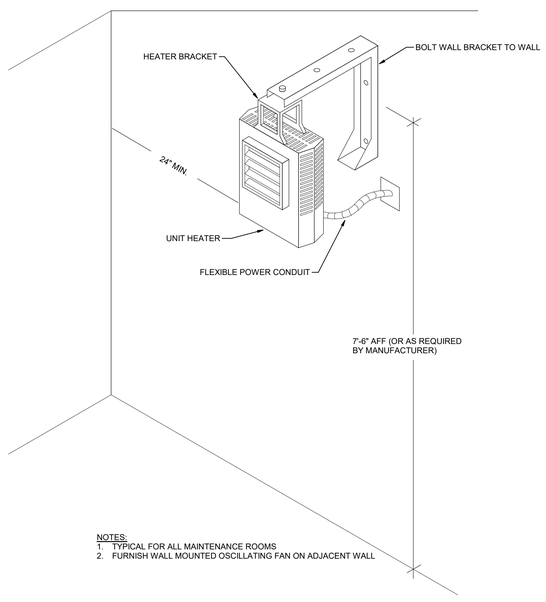
TYPICAL COMMUNICATION WALL BOX

TELECOMM CONDUIT FILL SCHEDULE								
TYPE	MAXIMUM AMOUNT OF CABLE FOR A 4-% FILL PER CONDUIT SIZE							
	0.75"	1"	1.25"	1.5"	2"	2.5"	3"	
CAT 6	3	6	9	14	24	38	55	

GENERAL NOTES

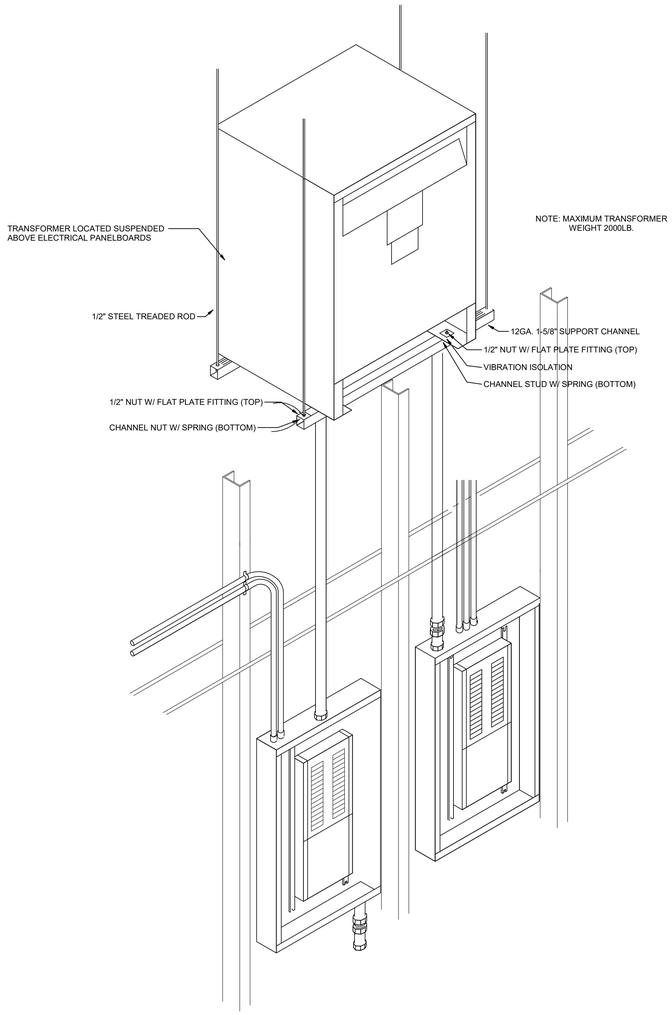
1. ALL DATA/TELEPHONE CABLING TO BE INSTALLED BY COMMUNICATIONS CONTRACTOR.

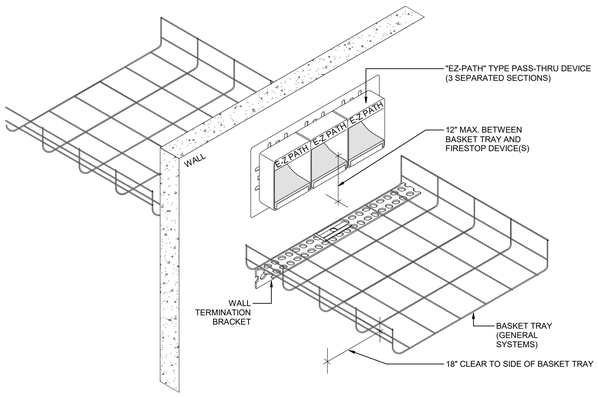
TELECOM CONDUIT FILL SCHEDULE 4
N.T.S



NOTES:
1. TYPICAL FOR ALL MAINTENANCE ROOMS
2. FURNISH WALL MOUNTED OSCILLATING FAN ON ADJACENT WALL

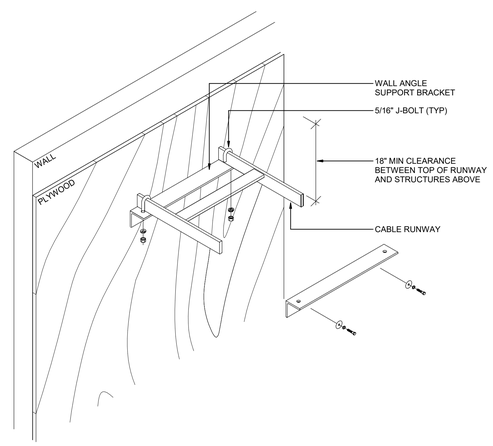
UNIT HEATER MOUNTING DETAIL 3
N.T.S





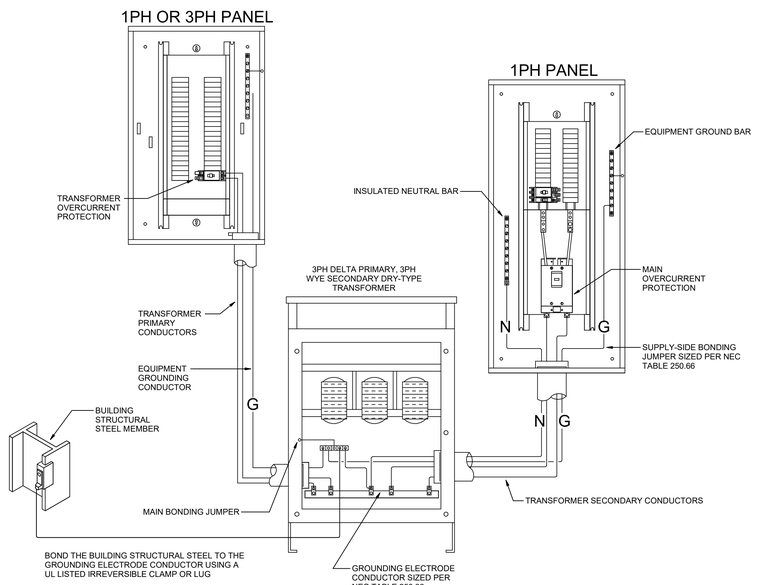
NOTES:
1. REFER TO OVERHEAD PLANS FOR BASKET TRAY SIZE AND ROUTE(S).
2. TERMINATION BRACKET MAY DIFFER BETWEEN MANUFACTURERS. SHOW HERE AS EXAMPLE.
3. REFER TO OVERHEAD PLANS FOR FIRESTOP DEVICE SIZE AND QUANTITY.
4. EZ-PATH TRANSITION THROUGH RATED WALL APPLIES ONLY TO THE GENERAL SYSTEMS CABLE TRAY AREA (NOT SECURE/SCIF WALLS)

CABLE PATHWAY BLOCK DIAGRAM 6
N.T.S

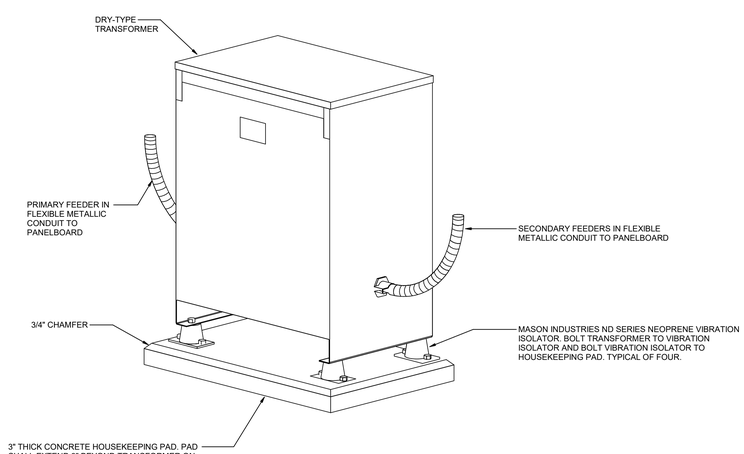


NOTES:
1. REFER TO ROOM PLANS AND DETAILS FOR CABLE RUNWAY SIZE AND INSTALLATION HEIGHTS.
2. SECURE WALL SUPPORT BRACKET TO PLYWOOD USING APPROPRIATE FASTENERS.
3. REFER TO ARCHITECTURAL DRAWINGS FOR WALL TYPE. SHOWN HERE FOR CLARITY ONLY.

RUNWAY TO WALL BRACING 5
N.T.S



TYPICAL DRY-TYPE TRANSFORMER GROUNDING DETAIL 2
N.T.S



TYPICAL TRANSFORMER MOUNTING DETAILS 1
N.T.S

3/24/2025 11:20:19 AM

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STATE OF MISSOURI
CORY WILSON
03.21.2025
NUMBER PE-2010000678
PROFESSIONAL ENGINEER

TM Aviation

TMA HANGER
LEE'S SUMMIT AIRPORT

No.	Date	Description

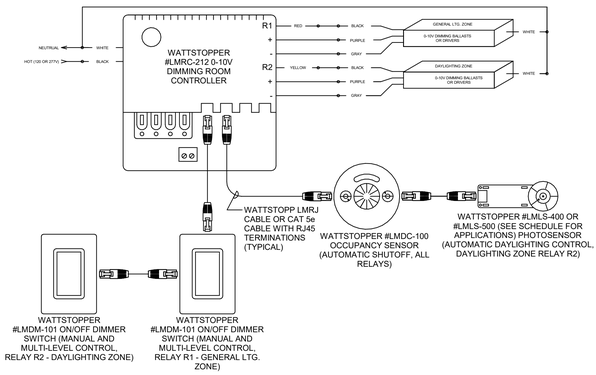
Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **CW** | Checked By **CW**

KEY PLAN
NORTH

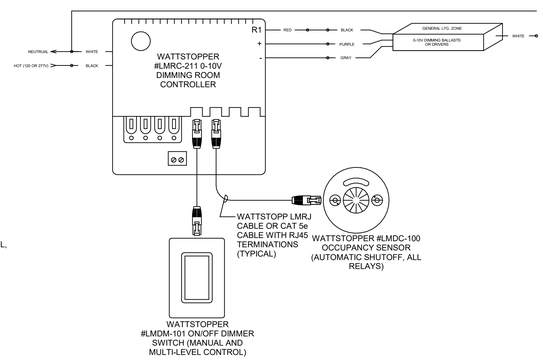
SHEET NAME
ELECTRICAL DETAILS

SHEET NUMBER
E-400

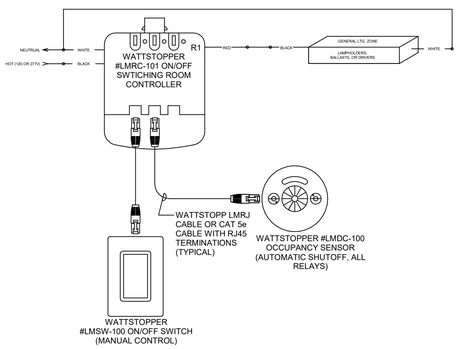
PROJECT NUMBER
2404



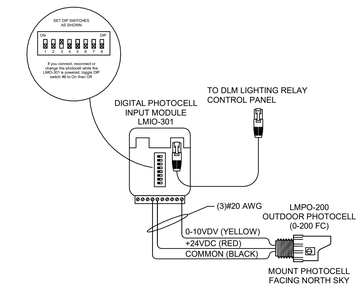
0-10V CONTINUOUS DIMMING, TWO SWITCH LEGS



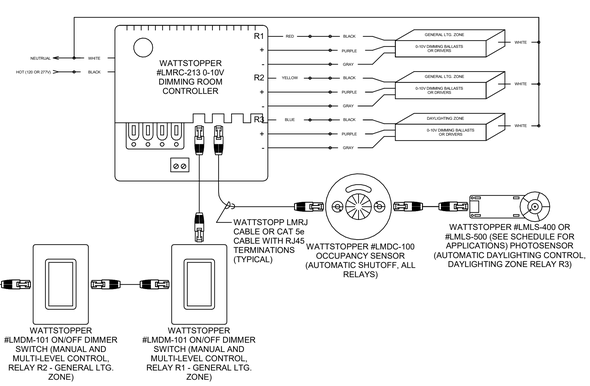
0-10V CONTINUOUS DIMMING, ONE SWITCH LEG



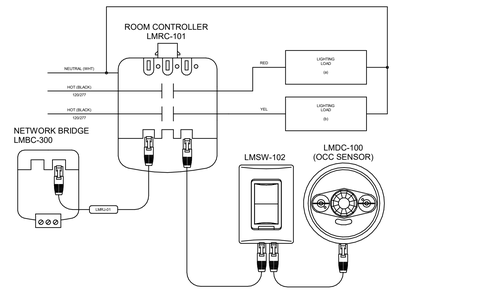
ON/OFF SWITCHING, ONE SWITCH LEG



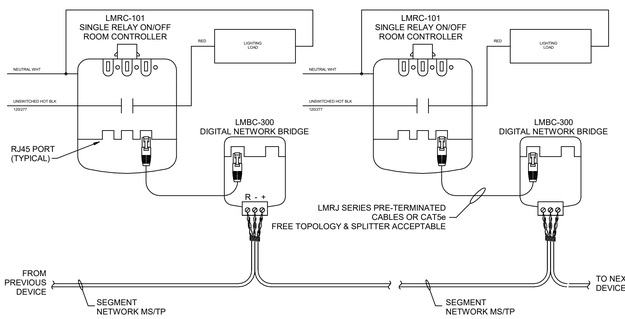
DLM PHOTOCELL WIRING DIAGRAM



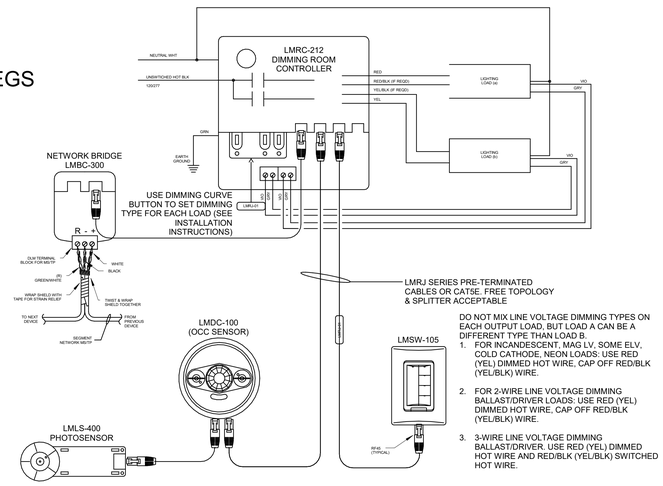
0-10V CONTINUOUS DIMMING, THREE SWITCH LEGS



ON/OFF SWITCHING, TWO SWITCH LEGS



DLM LIGHTING CONTROL NETWORK DIAGRAM



DO NOT MIX LINE VOLTAGE DIMMING TYPES ON EACH OUTPUT LOAD, BUT LOAD A CAN BE A DIFFERENT TYPE THAN LOAD B.

1. FOR INCANDESCENT, MAG LV, SOME ELV, COLD CATHODE, NEON LOADS: USE RED (YEL) DIMMED HOT WIRE, CAP OFF RED/BLK (YEL/BLK) WIRE.
2. FOR 2-WIRE LINE VOLTAGE DIMMING BALLAST/DRIVER LOADS: USE RED (YEL) DIMMED HOT WIRE, CAP OFF RED/BLK (YEL/BLK) WIRE.
3. 3-WIRE LINE VOLTAGE DIMMING BALLAST/DRIVER. USE RED (YEL) DIMMED HOT WIRE AND RED/BLK (YEL/BLK) SWITCHED HOT WIRE.

DIMMING CONTROL WIRING DIAGRAM W/ DAYLIGHT

WATTSTOPPER DLM CONTROLS (1)
N.T.S

PROJECT TEAM

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STATE OF MISSOURI
CORY WILSON
03.21.2025
NUMBER PE-2010006036
PROFESSIONAL ENGINEER

TM Aviation

TMA HANGER
LEE'S SUMMIT AIRPORT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **CW** Checked By **CW**

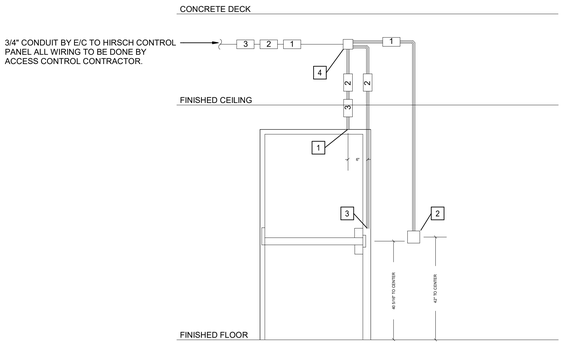
KEY PLAN
NORTH

SHEET NAME
ELECTRICAL DETAILS

SHEET NUMBER
E-410

PROJECT NUMBER
2404

3/24/2025 11:20:20 AM

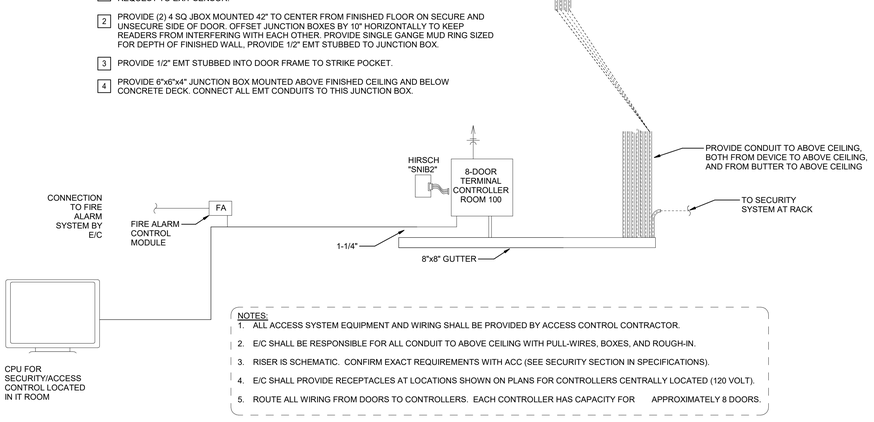


SINGLE DOOR WITH DOOR CONTACT, ELECTRONIC STRIKE, CARD READER, REQUEST TO EXIT

SECURITY EQUIPMENT WIRING LEGEND	
1	4 - #22 SHIELDED CARD READER CIRCUIT
2	2 - #18 REQUEST TO EXIT CIRCUIT
3	2 - #22 DOOR CONTACT CIRCUIT

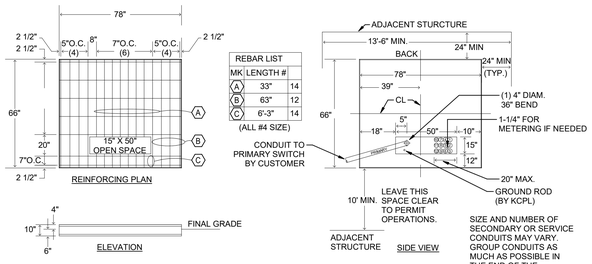
NOTE:
KCCCTV TO SOUL SOURCE SECUIRTY/ACCESS CONTROL SYSTEM, ELECTRICAL CONTRACTOR IS ONLY RESPONSIBLE FOR ROUGH-IN PER PLANS.

1. PROVIDE 1/2" EMT CONDUIT STUBBED INTO DOOR FRAME FOR DOOR CONTACT AND REQUEST TO EXIT SENSOR.
2. PROVIDE (2) 4 SQ JBOX MOUNTED 42" TO CENTER FROM FINISHED FLOOR ON SECURE AND UNSECURE SIDE OF DOOR. OFFSET JUNCTION BOXES BY 10" HORIZONTALLY TO KEEP READERS FROM INTERFERING WITH EACH OTHER. PROVIDE SINGLE GANGE MUD RING SIZED FOR DEPTH OF FINISHED WALL, PROVIDE 1/2" EMT STUBBED TO JUNCTION BOX.
3. PROVIDE 1/2" EMT STUBBED INTO DOOR FRAME TO STRIKE POCKET.
4. PROVIDE 6"x6"x4" JUNCTION BOX MOUNTED ABOVE FINISHED CEILING AND BELOW CONCRETE DECK. CONNECT ALL EMT CONDUITS TO THIS JUNCTION BOX.



NOTES:
1. ALL ACCESS SYSTEM EQUIPMENT AND WIRING SHALL BE PROVIDED BY ACCESS CONTROL CONTRACTOR.
2. E/C SHALL BE RESPONSIBLE FOR ALL CONDUIT TO ABOVE CEILING WITH PULL-WIRES, BOXES, AND ROUGH-IN.
3. RISER IS SCHEMATIC. CONFIRM EXACT REQUIREMENTS WITH ACC (SEE SECURITY SECTION IN SPECIFICATIONS).
4. E/C SHALL PROVIDE RECEPTACLES AT LOCATIONS SHOWN ON PLANS FOR CONTROLLERS CENTRALLY LOCATED (120 VOLT).
5. ROUTE ALL WIRING FROM DOORS TO CONTROLLERS. EACH CONTROLLER HAS CAPACITY FOR APPROXIMATELY 8 DOORS.

ACCESS SYSTEM DETAIL 8
N.T.S



REBAR LIST		
MK	LENGTH #	
A	33"	14
B	63"	12
C	6'-3"	14

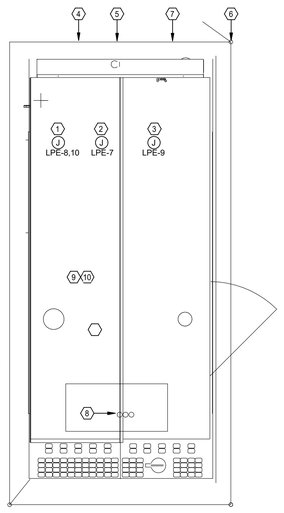
(ALL #4 SIZE)

SIZE AND NUMBER OF SECONDARY OR SERVICE CONDUITS MAY VARY. GROUP CONDUITS AS MUCH AS POSSIBLE IN THE END OF THE OPENING. INSTALL IN SEQUENCE AS SHOWN.

GENERAL NOTES

1. ALL CONCRETE SHALL BE AIR ENTRAINED AND TEST 3000 PSI (MIN.) IN 28 DAYS.
2. DIRECTION OF PRIMARY CONDUIT TO BE PROVIDED BY EVERGY.
3. A MINIMUM WIDTH OF 13'-6" WORKING SPACE BETWEEN STRUCTURES WILL BE REQUIRED FOR TRANSFORMER INSTALLATION AND MAINTENANCE. A 24" MINIMUM DIMENSION ON ONE SIDE OF BASE REQUIRES A 60" MINIMUM ON THE OTHER SIDE. BUT EITHER SIDE MAY BE 24".
4. THE SIZING OF THIS BASE IS BASED UPON AVERAGE UNDISTURBED EARTH. BACKFILL WITH COMPACT DIRT OR ABS ONLY (DO NOT USE GRAVEL) TO THE BOTTOM OF THE PAD. INSTALL CONDUITS LEVEL WITH THE TOP OF THE PAD AND COVER THE ENDS OF THE CONDUITS.
5. CENTER OF BASE MUST BE WITHIN 16' OF THE EDGE OF A PAVED AREA FOR CRANE ACCESS.
6. COORDINATE ALL REQUIREMENTS FOR TRANSFORMER PAD WITH KCP&L. KCPL SHALL INSPECT SLAB AND GIVE FINAL ACCEPTANCE OF WORK.

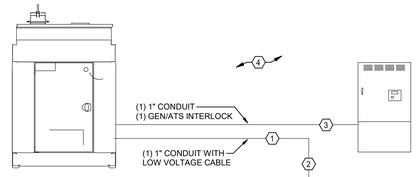
REINFORCED TRANSFORMER SLAB DETAIL 6
N.T.S



DIESEL 100 KW GENERATOR

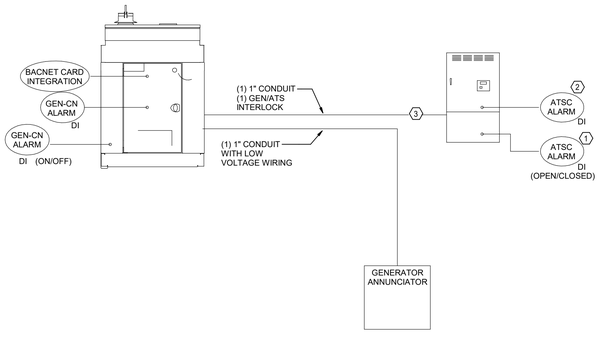
PLAN NOTES:
1. PROVIDE 208V CIRCUIT FOR GENERATOR WATER JACKET HEATER FROM PANEL.
2. PROVIDE 120V CIRCUIT FROM PANEL FOR GENERATOR BATTERY CHARGER.
3. PROVIDE 120V CIRCUIT FROM PANEL FOR GENERATOR LIGHTING AND RECEPTACLES.
4. PROPOSED LOCATION OF NEW 250KW GENERATOR AND HOUSEKEEPING PAD TO NORTH IN COURTYARD.
5. REFERENCE GENERATOR YARD PAD DETAIL ON THIS SHEET.
6. INSTALL NEW 10'x3/4", COPPER CLAD ROD IN ACCORDANCE WITH NEC SECTION 250.53. "GROUNDING ELECTRODE SYSTEM INSTALLATION".
7. PROVIDE GROUNDING SYSTEM TESTING PER SPECIFICATIONS. GROUNDING SYSTEMS AND ELECTRODES WILL BE TESTED ONLY WHEN EARTH IS DRY. MEASUREMENTS WILL INCLUDE THE EARTH RESISTIVITY AND RESISTANCE OF ELECTRODES AND GROUNDING SYSTEM. WHERE RESISTANCE OF GROUNDING SYSTEMS IS GREATER THAN 15 OHMS. CONTRACTOR SHALL INVESTIGATE AND CORRECT ANY INSTALLATION DEFICIENCIES WHICH WOULD CAUSE THE MEASUREMENTS TO BE POOR. THE CONTRACTOR SHALL RETEST THE SYSTEMS AT NO ADDITIONAL COST AND DELIVER REPORT TO ENGINEER.
8. CONDUITS SHALL BE STUBBED UP AND CAPPED AT THIS APPROXIMATE LOCATION. VERIFY EXACT LOCATION WITH FINAL GENERATOR SELECTIONS.
9. REFERENCE DETAIL FOR GENERATOR GROUNDING AND BELOW GRADE CONDUIT INFORMATION.
10. PROVIDE A 1.25" CONDUIT FROM THE GENERATOR CONTROL PANEL LOCATED ON THE GENSET UNDERGROUND TO THE AUTOMATIC TRANSFER SWITCH AND REMOTE ANNUNCIATOR IN ELECTRICAL ROOM.

GENERATOR YARD DETAIL 5
N.T.S



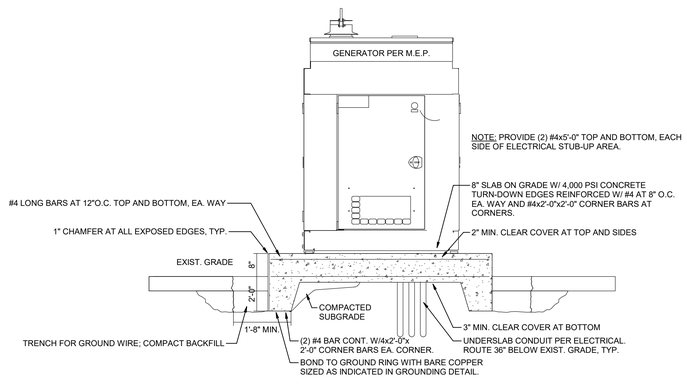
NOTES:
1. (2) #14 FROM GENERATOR TO REMOTE ANNUNCIATOR PANEL FOR ANNUNCIATOR DC POWER.
2. (1) TWISTED SHIELDED CABLE FOR RS485 COMMUNICATION FOR GENERATOR ALARMS
3. (2) #14 FROM GENERATOR TO ATS FOR GENERATOR START SIGNAL
4. COORDINATE ALL ADDITIONAL COMMUNICATION REQUIREMENTS WITH GENERATOR EQUIPMENT MANUFACTURER

GENERATOR CONTROLS DIAGRAM 3
N.T.S



NOTES:
1. HARDWIRED BAS WIRING TO CONTACTS BY TEMP CONTROL CONTRACTOR.
2. HARDWIRED BAS WIRING TO FORM C CONTACTS BY TEMP CONTROL CONTRACTOR.
3. LOW VOLTAGE #18 CABLING BETWEEN ATS AND GENERATOR. REFER TO MANUFACTURER WIRING DIAGRAMS FOR INTERLOCK OF GEN START AND ATS STATUS. CONFIRM WIRE SIZE, TYPE AND QUANTITY.

GENERATOR CONTROLS 4
N.T.S



GENERATOR PAD DETAIL 2
N.T.S

GENERAL NOTES

1. CONTRACTOR SHALL CONTACT EVERGY ELECTRIC AND ARRANGE FOR ELECTRIC SERVICE AS INDICATED ON DRAWINGS. INCLUDE ALL COSTS, CHARGES FEES, ETC. INCURRED BY UTILITY COMPANY INTO BID. PROVIDE ALL MATERIALS AS REQUIRED BY LOCAL AUTHORITIES FOR ELECTRIC SERVICE INSTALLATION. ALL WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF LOCAL AUTHORITIES.

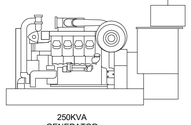
   EVERGY UTILITY CONTACT INFORMATION:
   STEPHEN JEFFERS
   PHONE - (816)-363-9437
   EMAIL - STEPHEN.JEFFERS@EVERGY.COM

2. E/C SHALL BE RESPONSIBLE FOR COORDINATION OF ANY DOWNTIME OR PHASING REQUIRED WITH OWNER. THIS INCLUDES ANY DOWNTIME REQUIRED TO PROVIDE NEW PRIMARY DROP TO NEW BUILDING.

EVERGY XFMR INSTALLATION DETAIL 7
N.T.S

POINT DESCRIPTION	POINT TYPE
COMMON ALARM	DI
LOW FUEL	DI
LOW ENGINE TEMP	DI
FAIL TO START	DI
OVERSPEED	DI
HIGH ENGINE TEMP	DI
LOW OIL PRESSURE	DI
PRE-HIGH ENGINE TEMP	DI
PRE-LOW OIL PRESSURE	DI
GENSET RUNNING	DI
SWITCH IN OFF	DI
SWITCH IN RUN	DI
CHARGER AC FAILURE	DI
LOW COOLANT LEVEL	DI
LOAD FREQUENCY	AI
LOAD TOTAL POWER FACTOR	AI
LOAD TOTAL kVA	AI
LOAD TOTAL kW	AI
LOAD VOLTS L1-L2	AI
LOAD VOLTS L2-L3	AI
LOAD VOLTS L3-L1	AI
LOAD AMPS L1	AI
LOAD AMPS L2	AI
LOAD AMPS L3	AI

(1)



250KVA GENERATOR

KEYNOTES:
1. MINIMUM POINTS FOR MONITORING AND ALARM TO BE PROVIDED AT GENERATOR.

GENERATOR MONITORING & ALARM 1
N.T.S

PROJECT TEAM

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CORY WILSON — STATE OF MISSOURI — 03.21.2025 — NUMBER PE-2010008678 — PROFESSIONAL ENGINEER

TM Aviation

TMA HANGER
LEE'S SUMMIT AIRPORT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **CW** | Checked By **CW**

KEY PLAN
NORTH

SHEET NAME
ELECTRICAL DETAILS

SHEET NUMBER
E-420

PROJECT NUMBER
2404

3/24/2025 11:20:22 AM

UNIT HEATERS - ELECTRIC

MARK	LOCATION	ELECTRIC COIL DATA				ELECTRICALDATA				MOUNTING HEIGHT	MANUFACTURER & MODEL	REMARKS
		CFM	KW	MBH	STAGE	VOLT	PH	HZ	MCA			
EUH-1	MAINTENANCE ROOM	400	3.3	11200	2	277	1	60	11.9	7.5' A.F.F.	RAYWALL G1G5103N	1,2,3,4,5,6

REMARKS:
1. INTEGRAL THERMOSTAT
2. CONTROL TRANSFORMER
3. INTEGRAL DISCONNECT
4. HEAT AND WALL MOUNTING BRACKET
5. ANEMOSTAT DIFFUSER
6. OVERHEAT PROTECTION

NOTE:
1. THIS IS TYPICAL FOR ALL INSTALLATION WITHIN MAINTENANCE ROOMS.

*EQUAL BY BERKO

EQUIPMENT ELECTRICAL INFORMATION - FEEDER SCHEDULE

MARK	DESCRIPTION	LOCATION	VFD/STARTER	DISCONNECT FURNISHED BY:	CONTROLS	CONTROL WIRE BY:	NOTES:	NOTES:	HTG COIL (ELECTRIC)					PANEL	FEEDER
									VOLT/PH	KW	FLA-MCA	MOCP			
HANGAR DOOR	ROOF TOP DOAS	BY DOOR	VFD (2)	MANUF.	3-BUTTON	E/C	REMOTE/WALL STATION		480/3		69.9	70/3	HPE	3 - #4 AND 1-#8G IN 1.5" C	
GPU	60 KVA GPU	WALL	-	E/C	-	-	KILLARK VR1041E5/VR1044E5		480/3		72.0	90/3	MDP	3 - #3 AND 1-#8G IN 1.5" C	
TUG CHARGER	CHARGING PLUG	WALL	-	E/C	-	-	KILLARK VR641E3/VR6044E		480/3		36.2	60/3	MDP	3 - #6 AND 1-#10G IN 1" C	
L-1/MBD	INTAKE LOUVE	WALL	ACTUATOR	E/C, TOGGLE	DDC	TCC	TEMP SENSOR CTRL, OPEN/CLOSE		120/1		3.5/5	20/1	LP2	2 - #12 AND 1-#12G IN 0.75" C	
EF-1	EXHAUST FAN	WAREHOUSE	ECM (0-10V)	MANUF.	DDC	TCC	DDC TIME OF DAY CONTROL	E	480/3	3 HP	3.5/5	20/3	HP1	3 - #12 AND 1-#12G IN 0.75" C	
ERV-1	ENERGY REC VENT	OFFICE	DCC CONTROL	MANUF.	DDC	TCC	DDC UNIT MTD CONTROLLER	E	208/1	100W	1.5 EA	20/2	LP2	2 - #12 AND 1-#12G IN 0.75" C	
HV-1	HEAT/VENT UNIT	WAREHOUSE	VFD	MANUF.	DDC	TCC	DDC ROOM TEMP CONTROL	E	480/3	7.5 HP	11/14	20/3	HPE	3 - #12 AND 1-#12G IN 0.75" C	
BCU-1 - BCU-4	TYP BLOWER COIL	MECH ROOM	ECM (0-10V)	MANUF.	DDC	TCC	DDC ROOM TEMP CONTROL	E	120/1	1/2 HP	4.7/5.5	20/1	LP1	2 - #10 AND 1-#10G IN 0.75" C	
VCU-1	VRV OUTDOOR	ROOF	-	E/C, D.S.	VRV CONTOL	MECH/TCC	VRV LOCATL CTRL, DDC VIEW		480/3		28.2	35/3	MDP	3 - #8 AND 1-#10G IN 0.75" C	
EUH-1	WALL HEATER	VESTIBULE	-	MANUF.	LOCAL/MANUF.	-			208/1	3.0	14.4	20/2	LP2	2 - #10 AND 1-#10G IN 0.75" C	
BOILER B1/B2	BOILER	MECH ROOM	-	MANUF.	DDC	TCC			120/1	7.0		20/1	LP2	2 - #12 AND 1-#12G IN 0.75" C	
HWP-1/HWP-2	HWP PUMP (TYP)	MECH ROOM	-	MANUF.	DDC	TCC			480/3	2 HP		20/3	HPE	3 - #12 AND 1-#12G IN 0.75" C	
GWP-1	SNOW MELT PUMP	MECH ROOM	-	MANUF.	DDC	TCC			480/3	1.5 HP	6.7	15/3	HPE	3 - #12 AND 1-#12G IN 0.75" C	
WH1/2	GAS WATER HEAT.	JANITOR 111	-	E/C, 5-20R	-	FACTORY			120/1		8.5/14	20/1	LP2	2 - #12 AND 1-#12G IN 0.75" C	
AHU-1 - AHU-4	AIR HANDLING UNIT	MEZZ	ECM (0-10V)	MANUF.	DDC	TCC			208/1	3/4 HP		15/1	LP2	2 - #12 AND 1-#12G IN 0.75" C	
EV/RV OUTLET	CHARGING PLUG	EXT/INT WALL	-	E/C	-	-	NEMA 6-50R		208/1		35	50/2	LP1	3 - #6 AND 1-#10G IN 1" C	

GENERAL NOTES:
1. FUSE SIZE INDICATED MUST BE USED IN COMBINATION WITH PROPERLY SIZED OVERLOAD RELAYS. UNLESS INDICATED OTHERWISE, FUSES SHALL BE BUSSMANN LPS-RK OR LPN-RK. CONFIRM ACTUAL NAMEPLATE DATA OF EQUIPMENT AND PROVIDE FUSES AS RECOMMENDED BY MANUFACTURER.
2. COORDINATE ELECTRICAL EQUIPMENT REQUIREMENTS WITH THE ACTUAL MECHANICAL EQUIPMENT SUPPLIED.
3. COORDINATE THE REQUIREMENTS WITH THE VFD SUPPLIED. OVERCURRENT PROTECTION, AND FEEDER SIZE SHALL MATCH THAT REQUIRED BY THE VFD NAMEPLATE DATA. ALL MOTOR CIRCUIT CONDUCTORS FOR VFD CIRCUITS SHALL BE STRANDED COPPER.
4. LOCATE DISCONNECT WITHIN SIGHT OF MOTOR. IF CONTROLLER IS WITHIN SIGHT OF MOTOR AND IS EQUIPPED WITH A DISCONNECTING MEANS, A SEPARATE DISCONNECT IS NOT REQUIRED. IF CONTROLLER IS A VFD, COORDINATE WITH MECHANICAL TEMPERATURE CONTROL TO PROVIDE A SAFETY INTERLOCK IN THE DISCONNECT TO INDICATE THE STATUS OF THE DISCONNECT. IF THE DISCONNECT IS OPEN, THE VFD SHALL BE DISABLED.
5. REFER TO PANEL SCHEDULES FOR EXACT CIRCUIT NUMBER.
6. ALL DISCONNECTS TO BE HEAVY DUTY RATED.
7. ALL DISCONNECT SWITCHES FED FROM VFD'S SHALL BE PROVIDED WITH AUXILIARY CONTACTS TO SHUT DOWN THE VFD WHEN DISCONNECT SWITCH IS IN THE OPEN POSITION. CONTRACTOR TO PROVIDE ALL NECESSARY WIRING.

ABBREVIATIONS:
TCC TEMPERATURE CONTROLS CONTRACTOR
DDC DIRECT DIGITAL CONTROLS
ASC APPLICATION SPECIFIC CONTROLLER (FACTORY MOUNTED)
OFOI OWNER FURNISHED CONTRACTOR, OWNER INSTALLED
OFCI OWNER FURNISHED, CONTRACTOR INSTALLED
E/C ELECTRICAL CONTRACTOR

*REFER TO MECHANICAL PLANS FOR LOCATIONS AND EXACT SIZES OF EQUIPMENT. EQUIP. MAY NOT BE IN EXACT LOCALE. EXACT LOCATION OF T-SENSORS PER MECH

NOTES:
A. PROVIDED WITH CONTROL PANEL
B. PROVIDE WITH 120V NEMA 5-20R GFCI RECEPT
C. REFER TO ONE LINE FOR FEEDER SIZE.
D. PROVIDE A 120V CIRCUIT FOR RECEPTACLE TO BE FACTORY INSTALLED WITH UNIT.
E. SWITCH SHALL BE A (1 OR 2HP) MOTOR RATED TOGGLE SWITCH WITH INTEGRAL OVERLOADS (EXHAUST FAN)
F. DISCONNECT SWITCH SHALL BE DOUBLE POLE (208V) TOGGLE IN RECESSED DOUBLE BOX. PROVIDE DOUBLE GANG FACEPLATE, ONE SIDE TO HAVE 0.75" GROMMET HOLE FOR WHIP TO UNIT HEATER.

HANGAR BUILDING ELECTRICAL LOAD SIZING TABLE

ITEM	EQUIPMENT SERVED TYPE	LOAD VA	DIVERSITY	SIZING LOAD	NOTES
1	HYDRAULIC HANGAR DOOR	22,500	1.0	22,500 VA	
2	RECEPTACLE - GENERAL	10,000	1.0	10,000 VA	FIRST 10KVA + (1/2 * REMAINING LOAD)
3	COMPUTER LOADS - GENERAL	2,000	1.0	2,000 VA	NON-LINEAR LOADS
4	SERVER / LAN ROOM LOADS	4,000	1.0	4,000 VA	NON-LINEAR LOADS
5	INTERIOR LIGHTING	6,900	1.0	6,900 VA	
6	EXTERIOR LIGHTING	2,000	1.0	2,000 VA	WALL PACKS
7	ENERGY RECOVERY UNIT	3,260	1.0	3,260 VA	ALL LESS THAN 1.5 HP EACH
8	AIRCRAFT GROUND POWER UNIT	120,000	1.0	120,000 VA	TOW (2) PLUGS, SIZED FOR ONE
9	TUGGER CHARGERS	60,000	0.75	45,000 VA	
10	BOILERS (2)	2,500	1.0	2,500 VA	N+1 REUNDANCY
11	HANGAR H/V UNIT, EXHAUST	13,120	1.0	13,120 VA	7.5 HP AND LESS
12	INDOOR GAS FURNACES	5,000	1.0	5,000 VA	VARIABLE SPEED, 3/4 HP OR LESS
13	VRF COOLING UNIT	22,700	1.0	22,700 VA	CENTRAL UNIT FOR (4) FURNANCES
14	DOMESTIC WATER HEATERS	1,500	1,1,0	1,500 VA	YEAR ROUND, (2) GAS-FIRED INSTANTANEOUS
15	BREAK ROOM APPLIANCES	6,000	1.0	6,000 VA	USED INTERMITTENTLY FOR KITCHEN PREP USE 3 TIMES OF DAY
16	FIRE ALARM, SECURITY, DDC, FIBER	10,300	0.75	7,725 VA	LOW VOLTAGE SYSTEMS
17	MISCELLANEOUS LOADS	7,500	1	7,500 VA	MISC EQUIPMENT, A/V, ETC.
18	EV/RV OUTLETS	68,680	0.5	34,340 VA	
19	AIR HANDLING UNITS	4,100	1.0	4,100 VA	YEAR ROUND CENTRAL AIR HANDLING UNITS
20	GENERATOR EQUIPMENT	4,500	1.0	4,500 VA	
	324,645 VA 390 AMPS AT 277/480-3PH VOLT		TOTAL	321,745 VA	387 AMPS AT 277/480-3PH VOLT
				1.25	DESIGN VARIANCE - FUTURE FACTOR (FOR SERVICE SIZING)
	402,181 VA 484 AMPS AT 277/480-3PH VOLT			402,181 VA	484 AMPS AT 277/480-3PH VOLT
			KW @ 0.90 PF	361,962 VA	

NOTES:
1. ALL LOAD SIZING IS IN ACCORDANCE WITH THE 2011 NEC.
2. SIZE OF UTILITY TRANSFORMER IS AT UTILITY COMPANIES DISCRETION AND DIVERSITIES. IT IS ASSUMED SWEPCO WILL HAVE A 1250-1500 KW PAD MOUNT.

EVERGY IS EXPECTED TO HAVE JUST SINGLE UTILITY ENTRANCE - 12.47 KV TO 480/277-PH,4W PAD MOUNTED TRANSFORMER. METERING WILL BE FROM EXTERIOR ERICKSON CT CABINET AND WILL HAVE 125A WITH CT RATIO METER ADJACENT.

HVLS FANS

MARK	MANUFACTURER	MODEL	BLADES	FAN SIZE (DIAMETER)	H/P	MAX RPM	HTG COIL (ELECTRIC)				NOTES
							VOLT/PH	KW	FLA-MCA	MOCP	
HVLS-1	BIG ASS FANS	POWER FOIL	6	12'	2	76	480/3	2.82	3.4	20/1	ALL
HVLS-2	BIG ASS FANS	POWER FOIL	6	12'	2	76	480/3	2.82	3.4	20/1	ALL

NOTES:
1. PROVIDE WITH CONTROL KEYPAD, FACTORY-INSTALLED VARIABLE FREQUENCY DRIVE, POWERFOIL BLADES, UNIVERSAL MOUNT, AND SAFETY RESTRAINT SYSTEM.
2. PROVIDE RELAY TO SHUTDOWN FAN ON SIGNAL FROM SPRINKLER FLOW SWITCH.
3. MOUNT FAN 2' MIN. BELOW ROOF DECK WITH MIN. 2' CLEAR ON EACH SIDE.

DISCONNECT SWITCH SCHEDULE

TAG NO.	LOAD		SWITCH			FUSE			ENCLOSURE NEMA TYPE	NOTES
	EQUIPMENT SERVED	VOLTS	DUTY	AMP	POLE	AMP	POLE	TYPE		
DSS	SERVICE DISCONNECT SWITCH	480	HD	600	3	600	3	JBL	NEMA 3R	L,GB
DS-1	VRV HEAT PUMP *CU-1*	480	HD	60	3	-	-	-	NEMA 3R	L,GB
DS-2	HEATING/VENTILATING UNIT *HV-1*	480	HD	30	3	-	-	-	NEMA 1	L,GB
DS-3	TF-1/LP1	480	HD	60	3	45	3	RRS-R	NEMA 1	L,GB
DS-4	TF-2/LP2	480	HD	100	3	70	3	RRS-R	NEMA 1	L,GB
DS-5	HHWP-1	480	HD	30	3	-	-	-	NEMA 1	L,GB
DS-6	HHWP-2	480	HD	30	3	-	-	-	NEMA 1	L,GB
DS-7	GWP-1	480	HD	30	3	-	-	-	NEMA 1	L,GB
DS-8	BP-1	480	HD	30	3	-	-	-	NEMA 1	L,GB
DS-9	BP-2	480	HD	30	3	-	-	-	NEMA 1	L,GB

ABBREVIATIONS
HD - HEAVY DUTY
GD - GENERAL DUTY
GB - GROUND BAR
SN - SOLID NEUTRAL
L - LOCKABLE
SS - STAINLESS STEEL, DUST TIGHT
EQUIVALENT MANUFACTURERS BY SQUARE D, GE, SIEMENS, EATON

*NOTE:
ALL EQUIPMENT SHALL BE LABELED PER SPECS WITH PLASTIC ENGRAVED TAGS

LIGHTING CONTROL SEQUENCE SCHEDULE

ROOM NAME	CONTROLS						SEQUENCE OF OPERATIONS	NOTES
	MANUAL ON	MANUAL OFF	DIMMING SWITCH	OVERRIDE SWITCH	OCCUPANCY SENSOR ON	OCCUPANCY SENSOR OFF		
TENANT LOBBY/WAITING				X	X	X	1	SEE SEQUENCE 3 BELOW
MECHANICAL	X	X					2	
ELECTRICAL	X	X					2	
MAINTENANCE	X	X					2	
HANGAR	X	X	X					SEE SEQUENCE 3 BELOW
OFFICE					X	X	4	SEE SEQUENCE 3 BELOW

NOTES:
A. OCCUPANCY ON SENSOR SHALL BE SET TO STAY ON FOR 20 MIN.

SEQUENCE OF OPERATIONS

1. LIGHTING FIXTURES SHALL BE CONTROLLED BY OCCUPANCY SENSOR. WHEN SPACE IS OCCUPIED LIGHTING SHALL TURN ON 100%. WHEN SPACE IS UNOCCUPIED LIGHTS SHALL TURN OFF. SPACE SHALL HAVE A MANUAL OVERRIDE SWITCH TO OVERRIDE OCCUPANCY SENSING.
2. LIGHTING FIXTURES SHALL BE CONTROLLED BY TOGGLE ON/OFF LIGHT SWITCH.
3. LIGHTING FIXTURES WHERE SHOWN TO BE EMERGENCY LIGHT FIXTURES SHALL HAVE UL924 DEVICE TO OVERRIDE CONTROLS IN SPACE AND BE CIRCUITED TO INVERTER. DURING LOSS OF POWER LIGHT FIXTURES SHOWN AS EMERGENCY SHALL TURN ON 100%. LIGHT FIXTURES SHOWN AS NIGHT LIGHTS SHALL HAVE AN UNSWITCHED HOT CONDUCTOR AND HALL BE TURNED ON 100% REGARDLESS OF LOCAL CONTROLS.
4. LIGHTING FIXTURES SHALL BE CONTROLLED BY OCCUPANCY SENSOR AND DIMMING SWITCH OVERRIDE. WHEN SPACVE IS OCCUPIED LIGHTS SHALL TURN ON 100%. WHEN SPACE IS UNOCCUPIED LIGHTS SHALL TURN OFF. DIMMING SWITCH SHALL DIM LIGHT FIXTURES TO OFF.

LIGHTING FIXTURE SCHEDULE

FIXTURE TYPE	MANUFACTURER	MODEL	DESCRIPTION	LAMP TYPE	LAMP CCT	VA	VOLTAGE	DIMMING	COMMENTS
A	LITHONIA	XIB-L24-18000LM-FRGL-MVOLT-GZ10-35K-80CRI	LED HIGH BAY	LED	3500 K	114	MVOLT	0-10V	MOUNT AT 27'-0" AFF
AE	LITHONIA	XIB-L24-18000LM-FRGL-MVOLT-GZ10-35K-80CRI-E15WMCP	LED HIGH BAY	LED	3500 K	114	MVOLT	0-10V	WITH BACK UP BATTERY PACK, MOUNT AT 27'-0" AFF
B	LITHONIA	CLXL96-8000LM-SEF-FDL	LED STRIP LIGHT	LED	3500 K	56	MVOLT	0-10V	
C	LITHONIA	TZL1F-L96-6000LM-MDD-MVOLT-3500-80CRI	LED STRIP LIGHT	LED	3500 K	69	MVOLT	0-10V	
D	GOTHAM	ICO-4/60-6AR-LSS-20D-277-EZ10-TRW	EXTERIOR DOWNLIGHT	LED	4000 K	61	277	0-10V	
EX	EVENLITE	CHY-1-AA-1B	EXIT SIGN	LED		5	MVOLT	-	
SA	LITHONIA	DSXW1-P7-40K-80CRI-T3M/T4M	EXTERIOR WALL PACK	LED	4000 K	75	MVOLT	0-10V	
SB	LITHONIA	WPX2 LED 40K MVOLT	EXTERIOR WALL PACK	LED	4000 K	48	MVOLT	-	

LIGHTING FIXTURE SCHEDULE NOTES:

1. EQUALS BY LITHONIA, HUBBEL, LSI, OR ACUITY.

NEW TRANSFORMER SCHEDULE

MARK	LOAD SERVED	LOCATION	RATING KVA	RATING PHASE	MOUNTING	TEMP RISE (°C)	PRIMARY VOLTAGE	PRIMARY CONNECTION	PRIMARY OCPD	PRIMARY FEEDER	SECONDARY VOLTAGE	SECONDARY CONNECTION	SECONDARY OCPD	SECONDARY FEEDER	GROUNDING ELECTRODE CONDUCTOR	ENCLOSURE RATING	ENCLOSURE DIMENSIONS
TF-1	PANEL "LP-1"	HANGAR	30	3	WALL	150	480	DELTA	45A	(3)#8 AND (1)#10 G IN 1" C	120/208	WYE	100A	(4)#1 AND (1)#8 G IN 1 1/2" C	#6	NEMA 1	24"W X 20"D X 30"H
TF-2	PANEL "LP2"	ELEC ROOM	75	3	SUSP	150	480	DELTA	90A	(3)#3 AND (1)#8 G IN 1" C	120/208	WYE	200A	(4)#2/0 AND (1)#6 G IN 1 1/2" C	#6	NEMA 1	24"W X 24"D X 30"H

NOTES:
1. REFER TO SPECIFICATIONS FOR ALL OTHER TRANSFORMER REQUIREMENTS.
2. MOUNT TRANSFORMER ON 4" HOUSEKEEPING PAD UNLESS SUSPENDED OR WALL BRACKETED.

* ALL ELECTRICAL DISTRIBUTION EQUIPMENT EQUALS BY SQUARE D, SIEMENS, EATON, GE

NEW GENERATOR SCHEDULE

MARK	MANUFACTURER	MODEL	LOCATION	RATING (STANDBY) KVA	RATING (STANDBY) KW	VOLTAGE	RATED SPEED (RPM)	OCPD	ACCESSORIES RATING	ACCESSORIES MATERIAL	ACCESSORIES
GEN-1	MTU	4R0120 DS100	EXTERIOR	125	100	277/480V	1800	175 AF 175 AT	LEVEL 2	STEEL	IC,SR,LTS,SS,GP,G

EQUAL BY MTU, CATEPILLAR, KOHLER, CUMMINGS

ACCESSORIES:
EFG - ELECTRONIC FUEL LEVEL SENSOR
IC - MODBUS INTEGRATION CARD
NC - NICAD BATTERIES / RACK
SP - SERVICE PLATFORM / SHIP LADDER
SR - INTERIOR SERVICE RECEPTACLE
LTS - INTERIOR SERVICE LIGHTS / SWITCH
SS - MUFFLER/EXHAUST SILENCER
GP - GENERATOR PAD PER DETAILS
G - GROUND RING / GROUNDING PER DETAIL

AUTOMATIC TRANSFER SWITCH

MARK	MANUFACTURER	MODEL	SERVICE RATED ^	RATING (AMPS)	TYPE	FEED CB'S	ENCLOSURE RATING	ENCLOSURE MOUNTING	ACCESSORIES	ALTERNATES
ATS1	ASCO	300 SERIES J-03ATS-B-3-0200-N-GX-M	NO	200A	OPEN TRANSISTION	175	NEMA 3R	WALL MOUNTED	IC,RA,AC,PL,AC2,MP,G	RUSS ELECTRIC, ZENITH, SQUARE D

ACCESSORIES:
HP - FREE-STANDING FRAME ON HOUSEKEEPING PAD
IC - MODBUS INTEGRATION CARD / COMM INTERFACE
RA - REMOTE ANNUNCAITOR
MB - MAINTENANCE BYPASS / RACK OUT
AC - AUX CONTACTS (BREAKER TRIP RELAYS)
PL - PILOT LIGHTS FOR STATUS/POSITION
AC2 - AUX CONTACTS (120V), TO TERMINAL STRIP
MP - MICROPROCESSOR CONTROLLER
G - SOLID GROUND BUS

CONDUIT APPLICATION SCHEDULE

APPLICATION	MATERIAL	FITTING BY (IF APPLICABLE)	NOTES
SERVICE ENTRANCE CONDUIT ABOVE GRADE ONLY	RIGID STEEL	-	-
FEEDERS ABOVE GRADE	EMT	COMPRESSION	-
ALL BRANCH CIRCUITS FOR LIGHTING AND POWER	EMT	COMPRESSION	-
ALL HVAC EQUIPMENT, SUPPLY/EXHAUST FANS AND MOTORS	EMT	COMPRESSION	-
LIGHT FIXTURE WHIPS LIMITED TO 5'-0" IN LENGTH	MC CABLE	-	CU ONLY
UNDERGROUND TELEPHONE SERVICE	PVC	-	-
UNDERGROUND CABLE TV / INTERNET	PVC	-	-
SERVICE ENTRANCE CONDUIT BELOW GRADE WHERE NOT BELOW PAVED AREA	SCH 40 PVC	-	2
BRANCH CIRCUITS BELOW GRADE	PVC	-	1
LINE VOLTAGE THERMOSTAT / CONTROL WIRING	EMT	COMPRESSION	-
T-STAT WIRING OR CONTROL WIRING IN WALLS AND IN AREAS WITHOUT CELINGS	EMT	COMPRESSION	-
FIRE ALARM CABLING (POWER-LIMITED, FIRE-PROTECTIVE, SIGNALING CIRCUIT CABLE)	EMT	COMPRESSION	-
DATA/TELEPHONE CABLING IN OPEN CEILING AND HANGAR AREA	EMT	-	3
INTERCOM/SECURITY SYSTEM	EMT	-	3

1. TRANSITION TO EMT SHALL BE MADE PRIOR TO COMING UP FROM BELOW GRADE
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN UTILITY COMPANY REQUIREMENTS FOR PRIMARY SERVICE AND ENCASING IN CONCRETE IF REQUIRED.
3. WHERE CEILING EXIST, WIRING CAN BE OPEN, PLENUM-RATED WIRING. IN AREAS WITHOUT A CEILING, EMT IS REQUIRED.

BRANCH CIRCUIT COPPER CONDUCTOR AND CONDUIT SIZE * * *

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

* = UNLESS NOTED OTHERWISE NOTED ON THE DRAWINGS.
* * = CONDUIT SIZE DOES NOT APPLY TO "MC" CABLE.

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CORY WILSON — STATE OF MISSOURI — 03.21.2025 — NUMBER PE-2010008878 — PROFESSIONAL ENGINEER

TM Aviation

TMA HANGER
LEE'S SUMMIT AIRPORT

No.	Date	Description
1	04/03/25	Addendum 02

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **CW** Checked By **CW**

KEY PLAN — NORTH

SHEET NAME
ELECTRICAL SCHEDULES

SHEET NUMBER
E-500

PROJECT NUMBER 2404

4/9/2025 4:48:22 PM

Switchboard: MDP

Location:	HANGAR	**Volts:**	480/277 Wye	**A.I.C. Rating:**	65,000
Supply From:	UTILITY TRANSFORMER	**Phases:**	3	**Mains Type:**	MLO
Mounting:	FLOOR	**Wires:**	4	**Mains Rating:**	600 A
Enclosure:	NEMA 1			**MCB Rating:**	600 A

CKT	Circuit Description	Load Classification	Frame	Trip	Poles	Phase A	Phase B	Phase C	Load	Notes
1	NEW PANEL HPE	Power; Lighting;...	200 A	200 A	3	26768 VA	24524 VA	23700 VA	74981 VA	
2	VCU-1	HVAC	35 A	35 A	3	7557 VA	7557 VA	7557 VA	22670 VA	
3	NEW PANEL HP1	Power; Lighting;...	100 A	100 A	3	3805 VA	3946 VA	3211 VA	10953 VA	
4	XFMR TF1 / NEW PANEL LP1	Power; Receptacle	45 A	45 A	3	10836 VA	7584 VA	4832 VA	23252 VA	
5	XFMR TF2 / NEW PANEL LP2	Power; HVAC;...	70 A	70 A	3	4855 VA	5777 VA	4850 VA	15482 VA	
6	GPU	Power	90 A	90 A	3	19929 VA	19929 VA	19929 VA	59788 VA	
7	TUG	Power	60 A	60 A	3	10020 VA	10020 VA	10020 VA	30060 VA	
8	GPU-2	Power	90 A	90 A	3	19929 VA	19929 VA	19929 VA	59788 VA	
9	TUG-2	Power	60 A	60 A	3	10020 VA	10020 VA	10020 VA	30060 VA	
10	SPACE	--	--	--	3	0 VA	0 VA	0 VA	--	
					Total Conn. Load:	113708 VA	109261 VA	104048 VA		
					Total Amps:	413 A	397 A	376 A		

Load Classification		Connected Load	Demand Factor	Estimated Demand	Panel Totals	
L	Lighting	8216 VA	100.00%	8216 VA		
C	Continuous				**Total Conn. Load:**	327014 VA
R	Receptacle	12094 VA	91.34%	11047 VA	**Total Est. Demand:**	325967 VA
M	Motor				**Total Conn.:**	393 A
LM	Largest Motor				**Total Est. Demand:**	392 A
H	HVAC	30609 VA	100.00%	30609 VA	**Future Factor:**	1.25
P	Power	276374 VA	100.00%	276374 VA	**Minimum Panel/Feeder Size**	490 A

Notes:

Branch Panel: LP1

Location:	HANGAR	**Volts:**	120/208 Wye	**A.I.C. Rating:**	10,000
Supply From:	TF1	**Phases:**	3	**Mains Type:**	MCB
Mounting:	Surface	**Wires:**	4	**Bus Rating:**	100 A
Enclosure:	Type 1			**MCB Rating:**	100 A

CKT	Circuit Description	Load Class	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Load Class	Circuit Description	CKT
1	INT EV OUTLET	Power	50 A	2	3432	3432					2	50 A	Power	EXT EV OUTLET	2
3							3432	3432							4
5	INT RV OUTLET	Power	50 A	2					3432	720	1	20 A	Receptacle	N HANGAR WALL RCPTS	6
7					3432	540					1	20 A	Power	E HANGAR WALL RCPTS	8
9	NE CORNER INT EXT RCPTS	Receptacle	20 A	1			360	360			1	20 A	Receptacle	SE CORNER INT EXT RCPTS	10
11	LOUVER L-2	Power	20 A	1					180	500	1	20 A	Receptacle	EXTERIOR SIGNAGE	12
13															14
15															16
17															18
19															20
21															22
23															24
25															26
27															28
29															30
31															32
33															34
35															36
37															38
39															40
41															42
				Total Load:	10836 VA		7584 VA		4832 VA						
				Total Amps:	94 A		67 A		40 A						
				Phase Balance	70 % A-B		64 % B-C		45 % C-A						

Load Classification		Connected Load	Demand Factor	Estimated Demand	Panel Totals	
L	Lighting					
C	Continuous				**Total Conn. Load:**	23252 VA
R	Receptacle	1940 VA	100.00%	1940 VA	**Total Est. Demand:**	23252 VA
M	Motor				**Total Conn.:**	65 A
LM	Largest Motor				**Total Est. Demand:**	65 A
H	HVAC				**Spare Capacity:**	35 A
P	Power	21312 VA	100.00%	21312 VA		

Notes:

Branch Panel: HP1

Location:	HANGAR	**Volts:**	480/277 Wye	**A.I.C. Rating:**	42,000
Supply From:	MDP	**Phases:**	3	**Mains Type:**	MLO
Mounting:	Surface	**Wires:**	4	**Bus Rating:**	200 A
Enclosure:	Type 1				

CKT	Circuit Description	Load Class	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Load Class	Circuit Description	CKT
1	EF-1	HVAC	15 A	3	1328	594					1	20 A	Lighting	EXT LIGHTING	2
3							1328	941			3	20 A	Power	HVLS-1	4
5									1328	941					6
7	HVLS-2	Power	20 A	3	941	941									8
9							941	800			1	20 A	Lighting	FUTURE LIGHTING	10
11									941	--	1	--	--	SPACE	12
13	SPACE	--	--	1	--	--					1	--	--	SPACE	14
15	SPACE	--	--	1			--	--			1	--	--	SPACE	16
17	SPACE	--	--	1					--	--	1	--	--	SPACE	18
19	SPACE	--	--	1	--	--					1	--	--	SPACE	20
21	SPACE	--	--	1			--	--			1	--	--	SPACE	22
23	SPACE	--	--	1					--	--	1	--	--	SPACE	24
25	SPACE	--	--	1	--	--					1	--	--	SPACE	26
27	SPACE	--	--	1			--	--			1	--	--	SPACE	28
29	SPACE	--	--	1					--	--	1	--	--	SPACE	30
				Total Load:	3805 VA		3946 VA		3211 VA						
				Total Amps:	14 A		15 A		12 A						
				Phase Balance	96 % A-B		81 % B-C		84 % C-A						

Load Classification		Connected Load	Demand Factor	Estimated Demand	Panel Totals	
L	Lighting					
C	Continuous				**Total Conn. Load:**	10953 VA
R	Receptacle				**Total Est. Demand:**	10953 VA
M	Motor				**Total Conn.:**	13 A
LM	Largest Motor				**Total Est. Demand:**	13 A
E	Equipment				**Spare Capacity:**	187 A
A	Appliance					

Notes:

Branch Panel: LP2

Location:	ELEC ROOM	**Volts:**	120/208 Wye	**A.I.C. Rating:**	10,000
Supply From:	TF2	**Phases:**	3	**Mains Type:**	MCB
Mounting:	Surface	**Wires:**	4	**Bus Rating:**	200 A
Enclosure:	Type 1			**MCB Rating:**	200 A

CKT	Circuit Description	Load Class	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Load Class	Circuit Description	CKT
1	B-1	Receptacle	20 A	1	400	400					1	20 A	Receptacle	B-2	2
3	MAINTENANCE ROOM...	Receptacle	20 A	1			1080	1650			2	20 A	Power	EUH-1	4
5	MAINTANCE RCPTS	Receptacle	20 A	1					360	1650					6
7	1ST FLR SHELL RCPTS	Receptacle	20 A	1	720	540					1	20 A	Receptacle	RESTROOM RCPTS	8
9	WH-1/WH-2	Receptacle	20 A	1			180	540			1	20 A	Receptacle	W HANGAR RCPTS	10
11															12
13	MECH ROOM RCPTS	Receptacle	20 A	1	360	360					1	20 A	Receptacle	W EXT RCPTS	14
15	ERV-1	HVAC	15 A	2			437	720			1	20 A	Receptacle	MEZZ N SHELL RCPTS	16
17									437	720	1	20 A	Receptacle	MEZZ C SHELL RCPTS	18
19	MEZZ S SHELL RCPTS	Receptacle	20 A	1	360	200					1	20 A	Power	FIRE ALARM CONTROL PANEL (1)	20
21	GENERATOR ANNUN PANEL	Power	20 A	1			200	200			1	20 A	Power	BUILDING AUTOMATION SYSTEM	22
23	RP-1	Power	20 A	1					528	385	2	20 A	HVAC	AHU-2	24
25	AHU-1	HVAC	20 A	2	385	385									26
27							385	385			2	20 A	HVAC	AHU-4	28
29	AHU-3	HVAC	20 A	2					385	385					30
31					385	360					1	20 A	Power	LOUVERS L1 & L3	32
33	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	34
35	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	36
37	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	38
39	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	40
41	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	42
				Total Load:	4855 VA		5777 VA		4850 VA						
				Total Amps:	40 A		48 A		40 A						
				Phase Balance	84 % A-B		84 % B-C		100 % C-A						

Load Classification		Connected Load	Demand Factor	Estimated Demand	Panel Totals	
L	Lighting					
C	Continuous				**Total Conn. Load:**	15482 VA
R	Receptacle	6740 VA	100.00%	6740 VA	**Total Est. Demand:**	15482 VA
M	Motor				**Total Conn.:**	43 A
LM	Largest Motor				**Total Est. Demand:**	43 A
H	HVAC	3954 VA	100.00%	3954 VA	**Spare Capacity:**	157 A
P	Power	4788 VA	100.00%	4788 VA		

Notes:
(1) LOCK-ON CLIP

Branch Panel: HPE

Location:	ELEC ROOM	**Volts:**	480/277 Wye	**A.I.C. Rating:**	42,000
Supply From:	MDP	**Phases:**	3	**Mains Type:**	MLO
Mounting:	Surface	**Wires:**	4	**Mains Rating:**	200 A
Enclosure:	Type 1			**MCB Rating:**	200 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	OVERHEAD DOOR (20HP)*	70 A	3	9200...	830 VA					3	15 A	BP-1	2
3						9200...	830 VA						4
5								9200...	830 VA				6
7	BP-2	15 A	3	830 VA	941 VA					3	15 A	HHWP-1	8
9						830 VA	941 VA						10
11								830 VA	941 VA				12
13	HHWP-2	15 A	3	2104...	830 VA					3	15 A	GWP-1	14
15						2104...	830 VA						16
17								2104...	830 VA				18
19	E HANGAR LTS	20 A	1	2739...	3045...					3	30 A	HV-1	20
21	W HANGAR LTS	20 A	1			3031...	3045...						22
23	HANGAR DOOR LTS	20 A	1					1134...	3045...				24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32
33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34
35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	36
37	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	38
39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	40
41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	42
	THIS SECTION TOTAL:		**Total Load:**	20401 VA		20682 VA		18915 VA					
			Total Amps:	74 A		75 A		68 A					
	TOTAL LOAD CONNECTED TO FEED THROUGH LUGS:		**Total Load:**	6371 VA		3846 VA		4785 VA					
			Total Amps:	24 A		14 A		18 A					
	PANEL GRAND TOTALS:		**Total Load:**	26768 VA		24524 VA		23700 VA					
			Total Amps:	97 A		89 A		86 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Receptacle	3414 VA	100.00%	3414 VA		
Power	64930 VA	100.00%	64930 VA	**Total Conn. Load:**	74981 VA
Lighting	6856 VA	100.00%	6856 VA	**Total Est. Demand:**	74981 VA
				Total Conn.:	90 A
				Total Est. Demand:	90 A
				Spare Capacity:	110 A

Notes:
* COORDINATE EXACT BREAKER REQUIREMENTS WITH DOOR MANUFACTURER

Branch Panel: LPE

Location:	ELEC ROOM	**Volts:**	120/208 Wye	**A.I.C. Rating:**	10,000 AIC
Supply From:	TFE	**Phases:**	3	**Mains Type:**	MCB
Mounting:	Surface	**Wires:**	4	**Bus Rating:**	100 A
Enclosure:	Type 1			**MCB Rating:**	100 A

CKT	Circuit Description	Load Class	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Load Class	Circuit Description	CKT
1	OVERHEAD DOOR #1	Power	20 A	3	935	935					3	20 A	Power	OVERHEAD DOOR #2	2
3							935	935							4
5									935	935					6
7	GEN BATTERY CHARGER	Power	20 A	1	1000	1500					2	20 A	Power	GEN JACKET HEATER	8
9	GEN LTS & RCPT	Power	20 A	1			475	1500							10
11	EXT GATE CONTROLLER	Receptacle	20 A	1					1414	1500	1	20 A	Power	IT RACK	12
13	W IT RACK RCPT	Receptacle	20 A	1	1000	1000					1	20 A	Receptacle	E IT RACK RCPT	14
15	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	16
17	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	18
19	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	20
21	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	22
23	SPACE	--	--	1					--	--	1	--	--	SPACE	24
25	SPACE	--	--	1	--	--					1	--	--	SPACE	26
27	SPACE	--	--	1			--	--			1	--	--	SPACE	28
29	SPACE	--	--	1					--	--	1	--	--	SPACE	30
31	SPACE	--	--	1	--	--					1	--	--	SPACE	32
33	SPACE	--	--	1			--	--			1	--	--	SPACE	34
35	SPACE	--	--	1					--	--	1	--	--	SPACE	36
37	SPACE	--	--	1	--	--					1	--	--	SPACE	38
39	SPACE	--	--	1			--	--			1	--	--	SPACE	40
41	SPACE	--	--	1					--	--	1	--	--	SPACE	42
				Total Load:	6371 VA		3846 VA		4785 VA						
				Total Amps:	54 A		32 A		41 A						
				Phase Balance	60 % A-B		80 % B-C		75 % C-A						

Load Classification		Connected Load	Demand Factor	Estimated Demand	Panel Totals	
L	Lighting					
C	Continuous				**Total Conn. Load:**	15001 VA
R	Receptacle	3414 VA	100.00%	3414 VA	**Total Est. Demand:**	15001 VA
M	Motor				**Total Conn.:**	42 A
LM	Largest Motor				**Total Est. Demand:**	42 A
H	HVAC				**Spare Capacity:**	58 A
P	Power	11587 VA	100.00%	11587 VA		

Notes:
(1) LOCK-ON CLIP

MDP LP1
HP1 LP2
HPE LPE

3/24/2025 11:20:24 AM

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STATE OF MISSOURI
CORY WILSON
03.21.2025
NUMBER
PROFESSIONAL ENGINEER

TM Aviation
TMA HANGER
LEE'S SUMMIT AIRPORT

No.	Date	Description

Issue: **PERMIT SET**
Date: **MAR 21, 2025**
Drawn By **CW** Checked By **CW**

KEY PLAN
NORTH

SHEET NAME
ELECTRICAL SCHEDULES

SHEET NUMBER
E-510

PROJECT NUMBER 2404