WILCO - FLEET SERVICES ADDITION

WILLIAMSON COUNTY FACILITIES

3151 SE INNER LOOP, GEORGETOWN, TX 78626

PROJECT TEAM

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LAKEWAY, TX 78734
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DAVID BACORN

BUILDING CODE ANALYSIS:

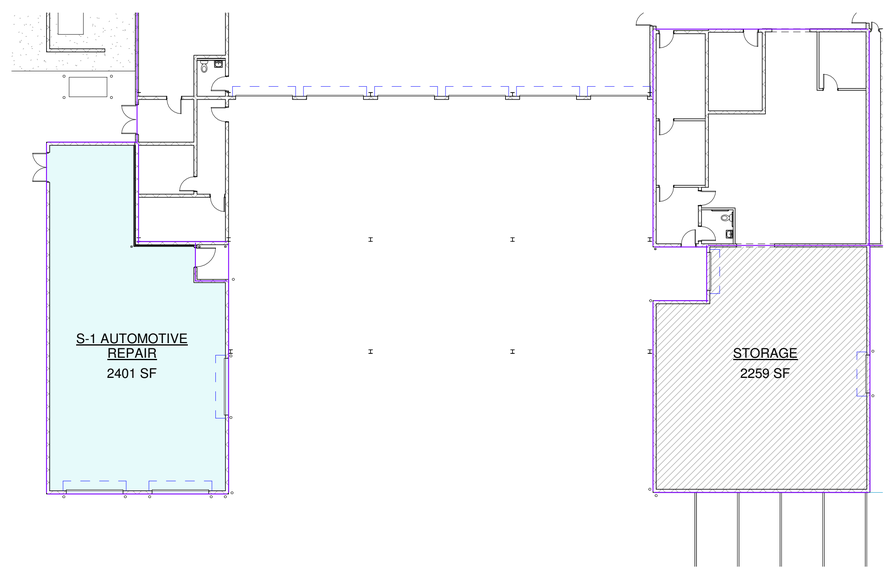
BUILDING CODE EDITIONS:
2021 INTERNATIONAL BUILDING CODE WITH LOCAL AMENDMENTS
2021 INTERNATIONAL ENERGY CODE WITH LOCAL AMENDMENTS
2021 INTERNATIONAL FIRE CODE WITH LOCAL AMENDMENTS
2021 INTERNATIONAL MECHANICAL CODE WITH LOCAL AMENDMENTS
2021 UNIFORM PLUMBING CODE WITH LOCAL AMENDMENTS
2023 NATIONAL ELECTRICAL CODE
2012 TEXAS ACCESSIBILITY STANDARDS

GENERAL OFFICE	IBC REGULATION		COMPLIANCE
USE AND OCCUPANCY CLASSIFICATION:	SECTION 303-312 S-1 STORAGE		
CONSTRUCTION TYPE:	SECTION 602 TYPE II-B		
OCCUPANT LOAD:	TABLE 1004.1.2 AUTOMOTIVE REPAIR STORAGE	 2401 SF @ 100 GROSS = 24 OCC 2259 SF @ 300 GROSS= 8 OCC	32 OCCUPANTS
ALLOWABLE AREA PER SEPARATED AREA: BASIC ALLOWABLE AREA	TABLE 506.2 B (EXISTING FIRE AREA 1) TYPE II-B NS = 17,500 SF B/S-1 (EXISTING FIRE AREA 2 + STORAGE ADDITION) TYPE II-B NS = 17,500 SF S-1 (EXISTING FIRE AREA 3 + REPAIR ADDITION) TYPE II-B NS = 17,500 SF		 13,486 SF < 17,600 SF 7,725 SF < 17,600 SF 9,369 SF < 17,600 SF
MAX. ALLOWABLE HEIGHT: BASIC ALLOWABLE HEIGHT	TABLE 504.3 S-1 TYPE II-B NS = 55'-0" / 2 STORIES		17'-6" /1 STORY < 55'-0" / 2 STORIES
FIRE RESISTANCE RATING:	TABLE 601 TYPE II-B = 0 HR		0 HR
FIRE PROTECTION:	SECTION 903.2.9	NON-SPRINKLERED	NON-SPRINKLERED
EXIT ACCESS:	TABLE 1006.2.1 2 EXITS WHEN OCCUPANT LOAD > 49		2 EXITS PROVIDED
EXIT ACCESS TRAVEL DISTANCE:	TABLE 1017.2 S-1: 200'-0" WITHOUT SPRINKLER SYSTEM		DISTANCE < 200'-0"

BUILDING AREA LEGEND

S-1 AUTOMOTIVE REPAIR

STORAGE



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A303	WALL SECTIONS
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A500	ARCHITECTURAL DETAILS
A600	DOOR SCHEDULE & DETAILS
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S401	CMU DETAILS
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M1.0	MECHANICAL FLOOR PLAN
M2.0	MECHANICAL SCHEDULES & DETAILS

ELECTRICAL ENGINEERING

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E0.1	ELECTRICAL SYMBOLS
E1.0	ELECTRICAL POWER PLAN
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E3.0	ELECTRICAL SCHEDULES & RISER

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REGISTERED ARCHITECT
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9/18/2024

WILCO - FLEET SERVICES ADDITION
WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

PROJECT PHASE
CONSTRUCTION DOCUMENTS

REVISIONS
1 PLAN REVIEW 10/9/24

PROJECT NUMBER
23138-00
DATE ISSUED
9/18/2024
SHEET TITLE
COVER SHEET

SHEET NUMBER
A000

GENERAL

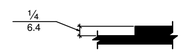


Figure 303.2 Vertical Change in Level

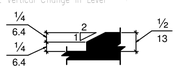


Figure 303.3 Beveled Change in Level

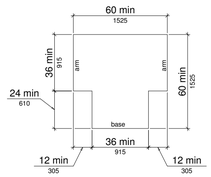


Figure 304.3.2 T-Shaped Turning Space

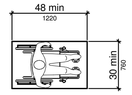


Figure 305.3 Clear Floor or Ground Space

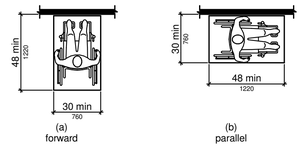


Figure 305.5 Position of Clear Floor or Ground Space

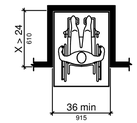


Figure 305.7.1 Maneuvering Clearance in an Alcove, Forward Approach

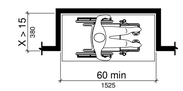


Figure 305.7.2 Maneuvering Clearance in an Alcove, Parallel Approach

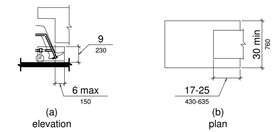


Figure 306.2 Toe Clearance

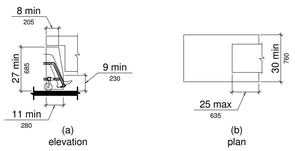


Figure 306.3 Knee Clearance

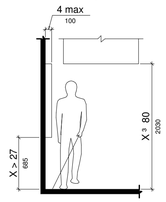


Figure 307.2 Limits of Protruding Objects

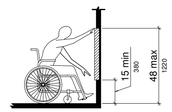


Figure 308.2.2 Obstructed High Forward Reach

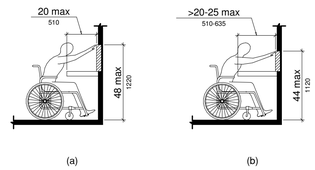


Figure 308.3.1 Unobstructed Side Reach

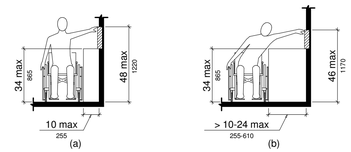


Figure 308.3.2 Obstructed High Side Reach

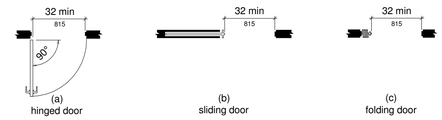


Figure 404.2.3 Clear Width of Doorways

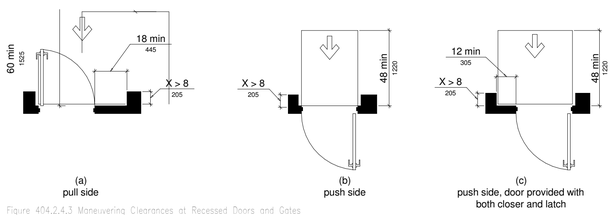


Figure 404.2.4.3 Maneuvering Clearances at Recessed Doors and Gates

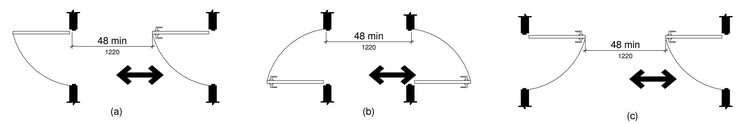


Figure 404.2.6 Doors in Series and Gates in Series

RAMPS AND STAIRS

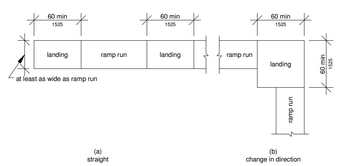


Figure 405.7 Ramp Landings

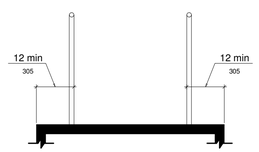


Figure 405.9.1 Extended Floor or Ground Surface Edge Protection

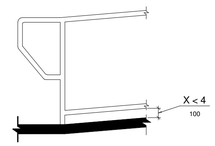


Figure 405.9.2 Curb or Barrier Edge Protection

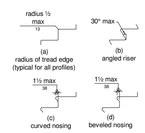
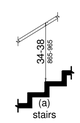
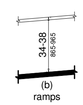


Figure 504.5 Stair Nosings





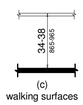


Figure 505.4 Handrail Height

Figure 505.5 Handrail Clearance

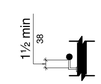


Figure 505.6 Horizontal Projections Below Gripping Surface

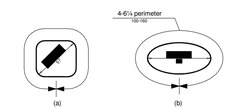


Figure 505.7.2 Handrail Non-Circular Cross Section

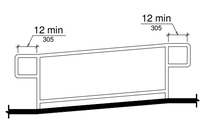


Figure 505.10.1 Top and Bottom Handrail Extension at Ramps

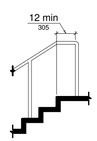


Figure 505.10.2 Top Handrail Extension at Stairs

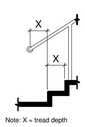


Figure 505.10.3 Bottom Handrail Extension at Stairs

TOILET AND BATHING ROOMS

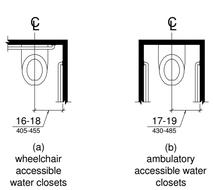


Figure 604.2 Water Closet Location

Figure 604.3.1 Size of Clearance at Water Closets

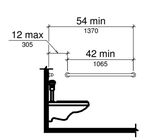


Figure 604.5.1 Side Wall Grab Bar at Water Closets

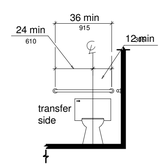


Figure 604.5.2 Rear Wall Grab Bar at Water Closets

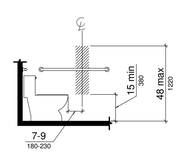


Figure 604.7 Dispenser Outlet Location

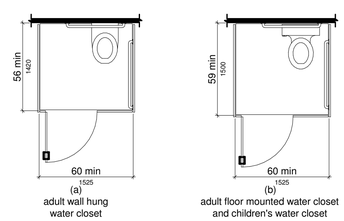


Figure 604.8.1.1 Size of Wheelchair Accessible Toilet Compartment

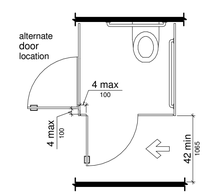


Figure 604.8.1.2 Wheelchair Accessible Toilet Compartment Doors

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REGISTERED ARCHITECT
RYAN HANSANUWAT
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STATE OF TEXAS
9/18/2024

WILCO - FLEET SERVICES ADDITION
WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

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23138-00
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SHEET TITLE
ACCESSIBILITY DIAGRAMS

SHEET NUMBER
A001

TOILET AND BATHING ROOMS (continued)

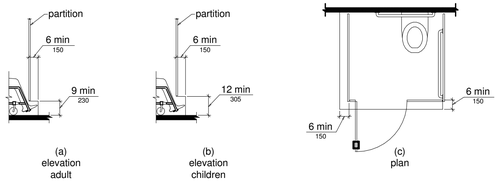


Figure 604.8.1.4 Wheelchair Accessible Toilet Compartment Toe Clearance

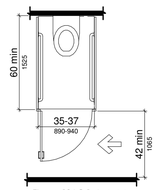


Figure 604.8.2 Ambulatory Accessible Toilet Compartment

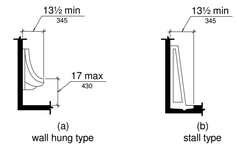


Figure 605.2 Height and Depth of Urinals

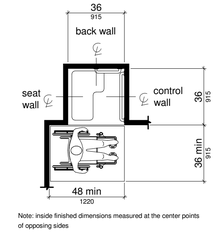


Figure 608.2.1 Transfer Type Shower Compartment Size and Clearance

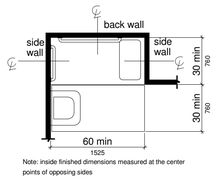


Figure 608.2.2 Standard Roll-In Type Shower Compartment Size and Clearance

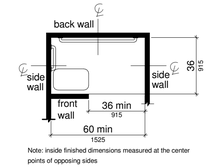


Figure 608.2.3 Alternate Roll-In Type Shower Compartment Size and Clearance

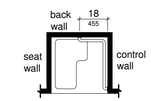
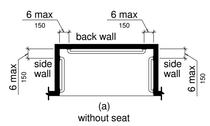


Figure 608.3.1 Grab Bars for Transfer Type Showers



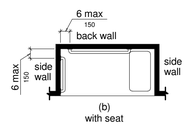


Figure 608.3.2 Grab Bars for Standard Roll-In Type Showers

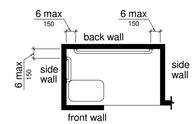


Figure 608.3.3 Grab Bars for Alternate Roll-In Type Showers

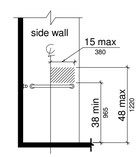


Figure 608.5.1 Transfer Type Shower Compartment Control Location

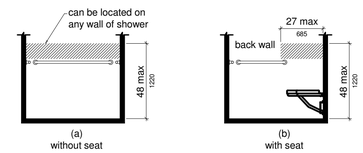


Figure 608.5.2 Standard Roll-In Type Shower Compartment Control Location

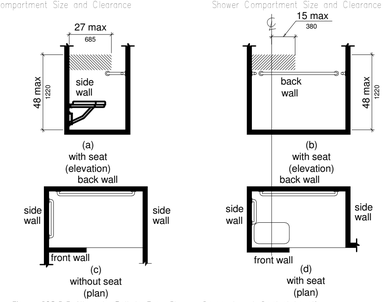


Figure 608.5.3 Alternate Roll-In Type Shower Compartment Control Location

SIGNAGE

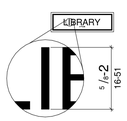


Figure 703.2.5 Height of Raised Characters

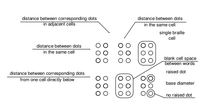


Figure 703.3.1 Braille Measurement

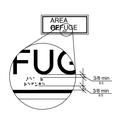


Figure 703.3.2 Position of Braille

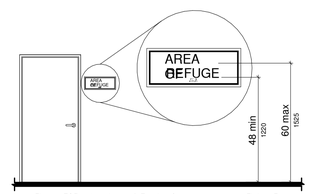


Figure 703.4.1 Height of Tactile Characters Above Finish Floor or Ground

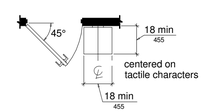


Figure 703.4.2 Location of Tactile Signs at Doors

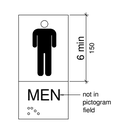


Figure 703.6.1 Pictogram Field

MISC.

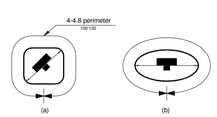
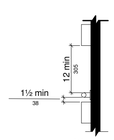
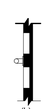


Figure 609.2.2 Grab Bar Non-Circular Cross Section

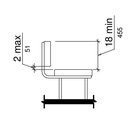


(a)
projecting objects



(b)
recessed objects

Figure 609.3 Spacing of Grab Bars



(a) (b)

Figure 903.4 Bench Back Support

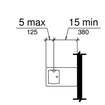


Figure 602.5 Drinking Fountain Spout Location

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WILCO - FLEET SERVICES ADDITION

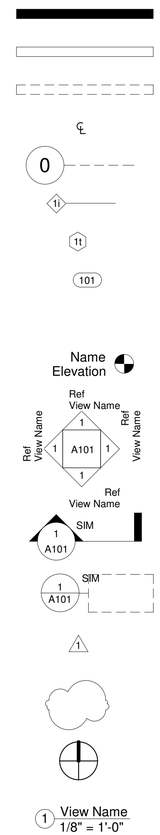
WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

PROJECT PHASE
CONSTRUCTION DOCUMENTS
REVISIONS

PROJECT NUMBER
23138-00
DATE ISSUED
9/18/2024
SHEET TITLE
ACCESSIBILITY DIAGRAMS

SHEET NUMBER
A002

FLOOR PLAN LEGEND



NEW WALL	
EXISTING WALL TO REMAIN	
ITEMS TO BE DEMOLISHED	
CENTERLINE	
COLUMN GRID	
PARTITION TYPE	
WINDOW TYPE	
DOOR NUMBER	
ROOM NAME AND NUMBER	
ELEVATION DATUM POINT	
ELEVATION VIEW	
SECTION/DETAIL	
ENLARGED PLAN	
REVISION KEY	
REVISION CLOUD	
NORTH ARROW	
VIEW TITLE	

ARCHITECTURE ABBREVIATIONS

A/C	AIR CONDITIONING
ACC	ACCESS
ACP	ACOUSTICAL CEILING PANEL
ADDL	ADDITIONAL
ADDM	ADDENDUM
ADH	ADHESIVE
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AGG	AGGRETATE
ALT	ALTERNATE
ALUM	ALUMINUM
APPROX	APPROXIMATELY
ARCH	ARCHITECT/ARCHITECTURAL
ASPH	ASPHALT
AUTO	AUTOMATIC
AV	AUDIO VISUAL
BD	BOARD
BL	BUILDING LINE
BLDG	BUILDING
BLVD	BOULEVARD
BM	BEAM
B.M.	BENCH MARK
BRK	BRICK
BRZ	BRONZE
BSMT	BASEMENT
BTU	BRITISH THERMAL UNIT
BVL	BEVEL/BEVELED
CAB	CABINET
CB	CATCH BASIN
C/C	CENTER TO CENTER
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CI	CAST IRON
CG	CORNER GUARD
CLG	CEILING
CLK	CAULK/CAULKING
CLO	CLOSET
CLR	CLEAR/CLEARANCE
CMU	CONCRETE MASONRY UNIT
CND	CONDUIT
COL	COLUMN
COMP	COMPOSITION/COMPOSITE
CONC	CONCRETE
CONF	CONFERENCE
CONN	CONNECTION
CONST	CONSTRUCTION
CSMT	CASEMENT
DEPT	DEPARTMENT
DH	DOUBLE HUNG
DIA	DIAMETER
DIM	DIMENSION
DN	DOWN
DS	DOWNSPOUT
DW	DISHWASHER
DWG	DRAWING
E	EAST
EA	EACH
EB	EXPANSION BOLT
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRIC/ELECTRICAL
ELEV	ELEVATION/ELEVATOR
EMER	EMERGENCY
ENC	ENCLOSURE
ENT	ENTRANCE
EQ	EQUAL
EQPT	EQUIPMENT
ESTM	ESTIMATE
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EXC	EXCAVATE
EXF	EXHAUST FAN
EXH	EXHAUST
EXT	EXTERIOR
FA	FIRE ALARM
FBD	FIBER BOARD
FBO	FURNISHED BY OWNER
FBRK	FIRE BRICK
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF	FINISH FLOOR
FFE	FINISHED FLOOR ELEVATION
FFL	FINISHED FLOOR LINE
FIN	FINISHED
FIXT	FIXTURE
FLOUR	FLOURESCENT
FLR	FLOOR
FNDN	FOUNDATION
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FP	FIREPROOF
FPL	FIREPLACE
FRC	FIRE RESISTANT COATING
FRT	FIRE RETARDANT
FT	FOOT/FEET
FTG	FOOTING
FURR	FURRED/FURRING
FURN	FURNISHED

GA	GUAGE
GALV	GALVANIZED
GB	GRAB BAR
GC	GENERAL CONTRACTOR
GD	GRADE
GEN	GENERAL
GL	GLASS/GLAZING
GLB	GLASS BLOCK
GTR	GUTTER
GVL	GRAVEL
GYP	GYPSUM
GYP BD	GYPSUM BOARD
HB	HOSE BIB
HC	HOLLOW CORE
HDP	HANDICAP
HDR	HEADER
HDWD	HARDWOOD
HDWR	HARDWARE
HM	HOLLOW METAL
HORZ	HORIZONTAL
HT	HEIGHT
HTG	HEATING
HVAC	HEATING VENTILATION AIR CONDITIONING
HW	HOT WATER
IBC	INTERNATIONAL BUILDING CODE
IN	INCH
INCL	INCLUDED
INSUL	INSULATION
INT	INTERIOR
JAN	JANITOR
JBOX	JUNCTION BOX
JCT	JUNCTION
JST	JOIST
JT	JOINT
KIT	KITCHEN
KPL	KICKPLATE
KO	KNOCK OUT
LAB	LABORATORY
LAM	LAMINATE
LAV	LAVATORY
LH	LEFT HAND
LL	LIVE LOAD
LT	LIGHT
LWT	LIGHTWEIGHT
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MECH	MECHANICAL
MEMB	MEMBRANE
MEZZ	MEZZANINE
MFR	MANUFACTURER
MH	MAN HOLE
MICRO	MICROWAVE
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
MLD	MOULDING
MLWK	MILLWORK
MO	MASONRY OPENING
MOD	MODULAR
MTD	MOUNTED
MTL	METAL
MULT	MULTIPLE
N	NORTH
NAT	NATURAL
NIC	NOT IN CONTRACT
NOM	NOMINAL
NTS	NOT TO SCALE
OBS	OBSCURE
OC	ON CENTER
OCEW	ON CENTER EACH WAY
OD	OUTSIDE DIAMETER
OH	OVERHEAD
OP	OPAQUE
OPNG	OPENING
OPP	OPPOSITE
OPP HD	OPPOSITE HAND
ORIG	ORIGINAL
OWJ	OPEN WEB JOIST
OZ	OUNCE
PAR	PARALLEL
PART	PARTITION
PART BD	PARTICLE BOARD
PC	PRECAST
PCF	POUNDS PER CUBIC FOOT
PED	PEDESTAL
PERIM	PERIMETER
PERM	PERMANENT
PERP	PERPENDICULAR
PFL	POUNDS PER LINEAL FOOT
PKG	PARKING
PL	PLATE
PL	PROPERTY LINE
PLAS	PLASTER

PLAM	PLASTIC LAMINATE
PLMB	PLUMBING
PLYWD	PLYWOOD
PNL	PANEL
PREFAB	PREFABRICATED
PREFIN	PREFINISHED
PRF	PREFORMED
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	PAINT
PVC	POLYVINYL CHLORIDE
R	RADIUS
RA	RETURN AIR
RD	ROOF DRAIN
RE BAR	REINFORCING BARS
RECP	RECEPTACLE
REF	REFERENCE
REFR	REFRIGERATOR
REG	REGISTER
REINF	REINFORCED
REQ'D	REQUIRED
RET	RETURN
RH	RIGHT HAND
RM	ROOM
RO	ROUGH OPENING
ROW	RIGHT OF WAY
RT	RUBBER TILE
S	SOUTH
SBC	STANDARD BUILDING CODE
SC	SOLID CORE
SCHED	SCHEDULE
SCN	SCREEN
SEAL	SEALANT
SHTH	SHEATHING
SHT	SHEET
SH	SHINGLE HUNG
SIM	SIMILAR
SLV	SLEEVE
SPEC	SPECIFICATIONS
SQ	SQUARE
SQ FT	SQUARE FEET
SST	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURAL
SUSP	SUSPENDED
SYM	SYMMETRICAL
SYN	SYNTHETIC
SYS	SYSTEM
TAN	TANGENT
TAS	TEXAS ACCESSIBILITY STANDARDS
TECH	TECHNICAL
TELE	TELEPHONE
T&G	TONGUE AND GROOVE
THK	THICK
THRES	THRESHOLD
TLT	TOILET
TOB	TOP OF BLOCK
TOC	TOP OF CURB
TOM	TOP OF MASONRY
TOP	TOP OF PARAPET
TOPL	TOP OF PLATE
TOS	TOP OF STEEL
TOSL	TOP OF SLAB
TOW	TOP OF WALL
TRANS	TRANSFORMER
TS	TUBE STEEL
TV	TELEVISION
TYP	TYPICAL
UBC	UNIFORM BUILDING CODE
UNFIN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
UR	URINAL
VB	VAPOR BARRIER
VAR	VARIES
VERT	VERTICAL
VENT	VENTILATION
VOL	VOLUME
WTW	WALL TO WALL
WC	WATER CLOSET
WH	WATER HEATER
WP	WATER PROOFING
W	WEST
W/	WITH
W/O	WITHOUT
WD	WOOD
WDW	WINDOW
WT	WEIGHT
WI	WROUGHT IRON
YD	YARD

INTERIOR FINISHES ABBREVIATIONS

ACP	ACOUSTICAL CEILING PANEL
CONC	CONCRETE
CPT	CARPET/CARPET TILE
CT	CERAMIC TILE
F	FURNITURE
FAB	FABRIC (FURNITURE)
FWC	FABRIC WALLCOVERING
GL	GLASS/GLAZING
GLB	GLASS BLOCK
MTL	METAL
PL	PLASTIC LAMINATE
PT	PAINT
QT	QUARRY TILE
RAF	RAISED FLOORING
RB	RESILIENT BASE
RES	RESINOUS FLOORING
RF	RESILIENT FLOORING
SP	SPECIALTY PRODUCTS
SS	SOLID SURFACE
ST	STONE/STONE FLOORING
STC	STAINED CONCRETE
TZ	TERRAZZO
VCT	VINYL COMPOSITION TILE
VT	VINYL TILE
VWC	VINYL WALL COVERING
WD	WOOD VENEER/WOOD BASE/ WOOD TRIM
WDFL	WOOD FLOORING
WT	WINDOW TREATMENT

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STATE OF TEXAS

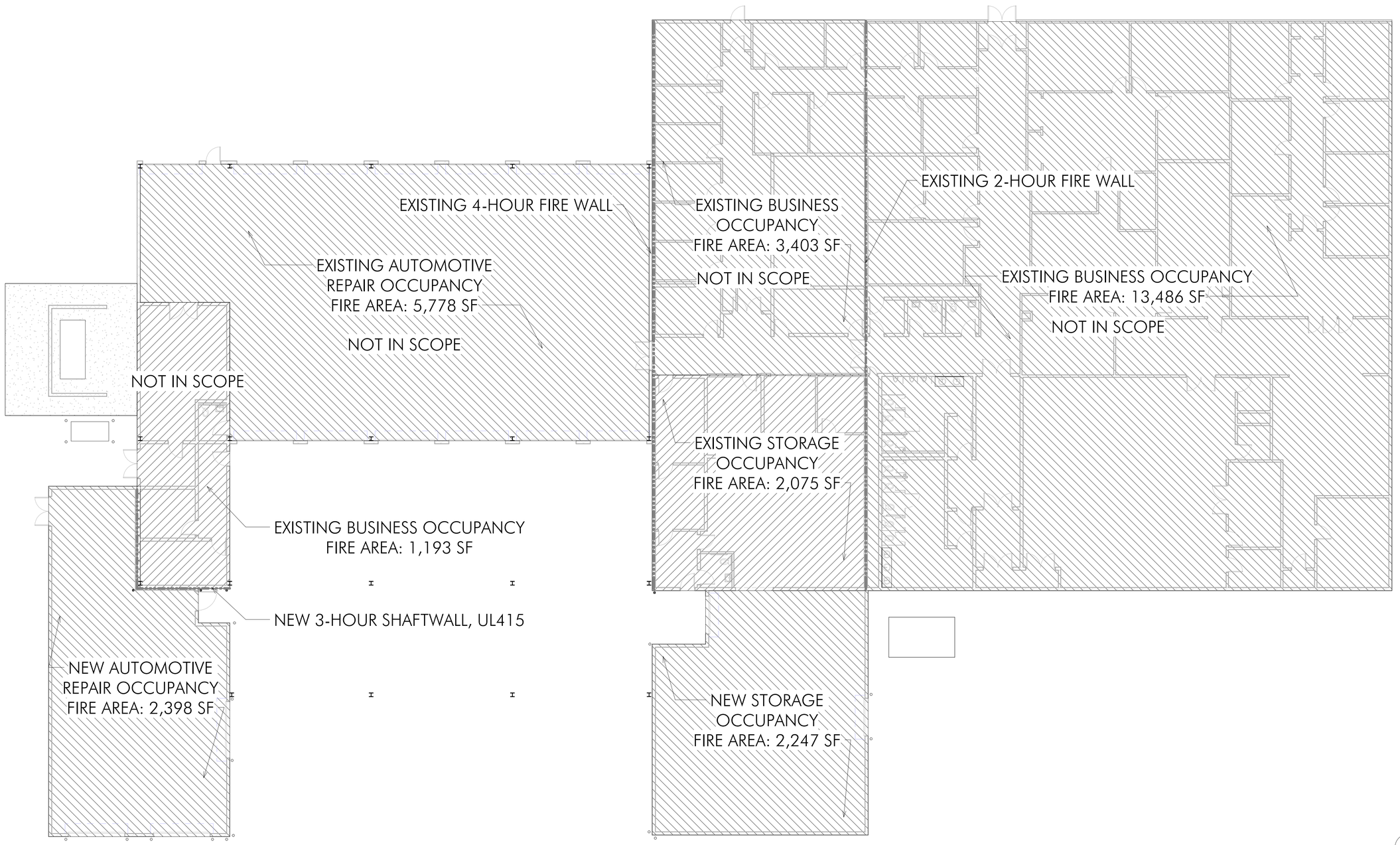
9/18/2024

WILCO - FLEET SERVICES ADDITION
WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

PROJECT PHASE
CONSTRUCTION DOCUMENTS
REVISIONS

PROJECT NUMBER
23138-00
DATE ISSUED
9/18/2024
SHEET TITLE
ABBREVIATIONS & NOTES

SHEET NUMBER
A003



1 FIRE RATING PLAN
3/32" = 1'-0"

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9/18/2024

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PROJECT PHASE
CONSTRUCTION DOCUMENTS
REVISIONS
1 PLAN REVIEW 10/9/24

PROJECT NUMBER
23138-00
DATE ISSUED
9/18/2024
SHEET TITLE
FIRE RATING PLAN

SHEET NUMBER
A004

GENERAL NOTES TO DEMOLITION PLAN:

1) FURNISH ALL LABOR AND MATERIALS AS REQUIRED TO COMPLETE DEMOLITION AND REMOVAL OF ALL ITEMS SHOWN OR NOTED ON DRAWINGS AS WELL AS ITEMS REQUIRED TO BE REMOVED TO FULFILL THE INTENT OF THE CONTRACT DOCUMENTS.

2) AT ALL TIMES PROTECT ADJACENT PROPERTY AND ITEMS NOT IN THE SCOPE OF WORK, INCLUDING BUT NOT LIMITED TO FLOORS, CEILINGS, DRYWALL SOFFITS, PUBLIC TOILETS, DOORS, AND FRAMES.

3) ERECT ALL NECESSARY DROP CLOTH PARTITIONS TO PROTECT ADJACENT BUILDING PROPERTY WHILE DEMOLITION AND CONSTRUCTION ARE IN PROGRESS.

4) ALL DEMOLITION WORK AND TRASH REMOVAL SHALL BE CONFINED TO THE TIMES AND HOURS ALLOWED AND COORDINATED WITH THE BUILDING OWNER.

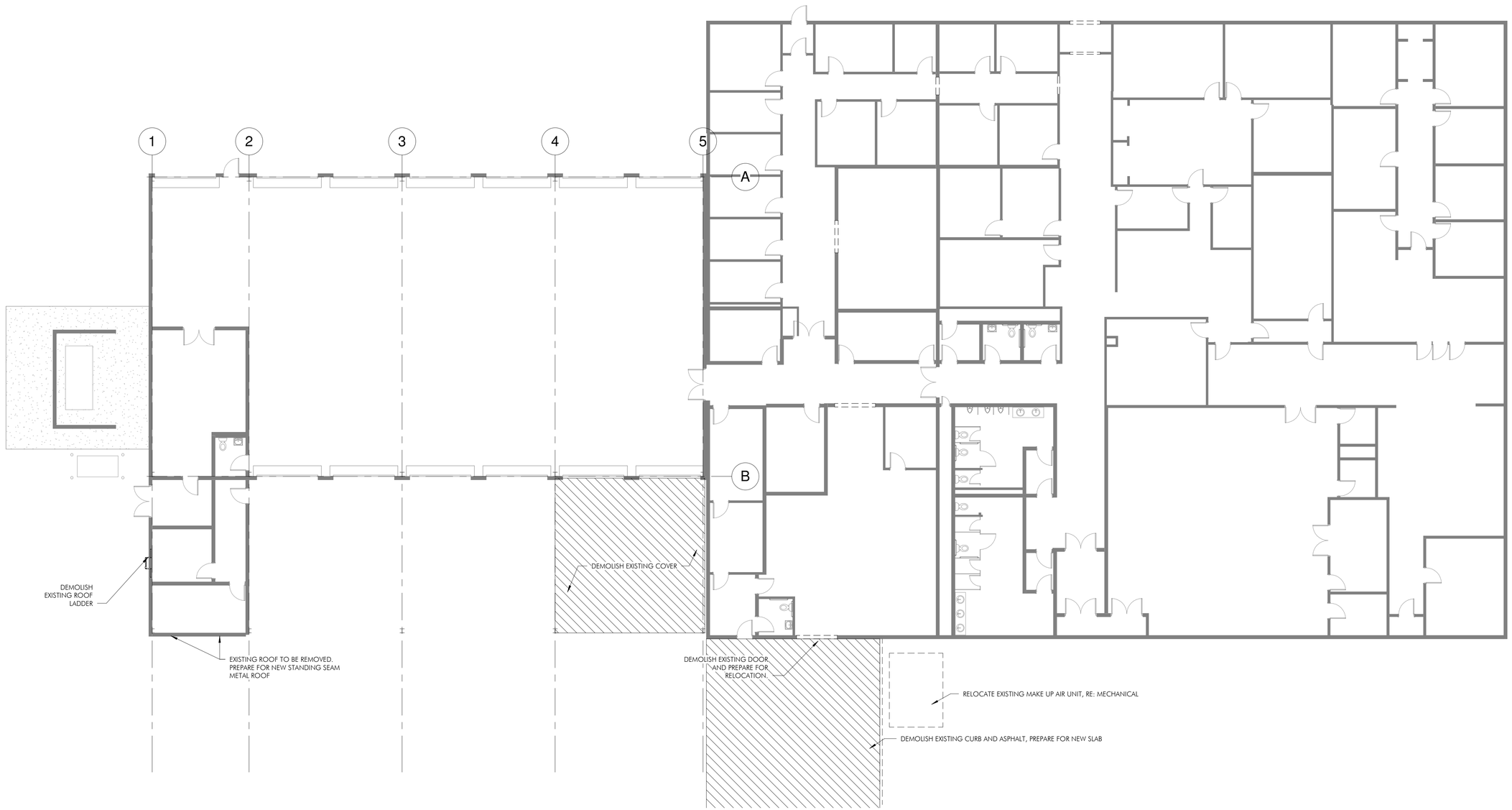
5) KEEP ALL EGRESS PATHS FREE AND CLEAR OF DEBRIS AND WORKING MATERIAL AT ALL TIMES.

6) FURNISH A SYSTEM OF TEMPORARY LIGHTS THROUGHOUT THE SPACE UNDER CONSTRUCTION IF REQUIRED.

7) CAP AND FLUSH OFF BEHIND WALL, FLOOR, OR CEILING SURFACES ALL PROJECTING MATERIALS, I.E. PLUMBING OR ELECTRICAL LINES TO JUNCTION BOX, AND ITEMS WHICH ARE TO BE ABANDONED OR ARE OTHERWISE EXTRANEOUS TO THE COMPLETED PROJECT.

8) CONTRACTOR SHALL PATCH AND REPAIR AND MATCH ALL EXISTING FINISHES AT ALL FLOORS AFFECTED BY NEW MECHANICAL OR OTHERWISE CONCEALED WORK.

9) DEMO EXISTING ACOUSTICAL CEILING TILE.



1 DEMO PLAN
3/32" = 1'-0"

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23138-00
DATE ISSUED
9/18/2024
SHEET TITLE
DEMO PLAN

SHEET NUMBER
A100

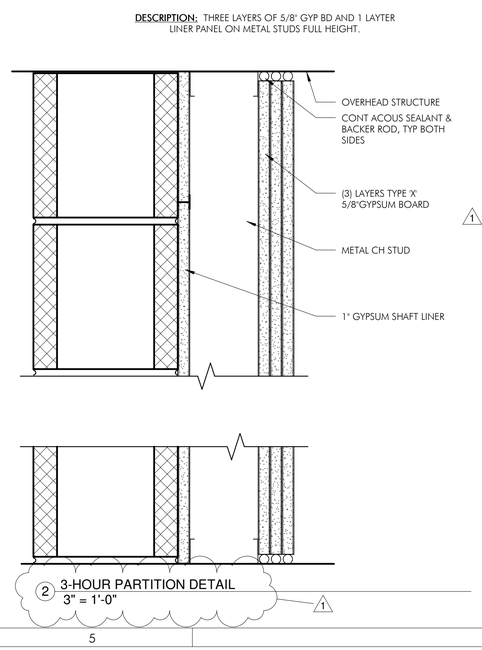
GENERAL NOTES TO FLOOR PLAN:

1) ALL PARTITIONS ARE TYPE 'A-6', UNLESS NOTED OTHERWISE (U.N.O.).

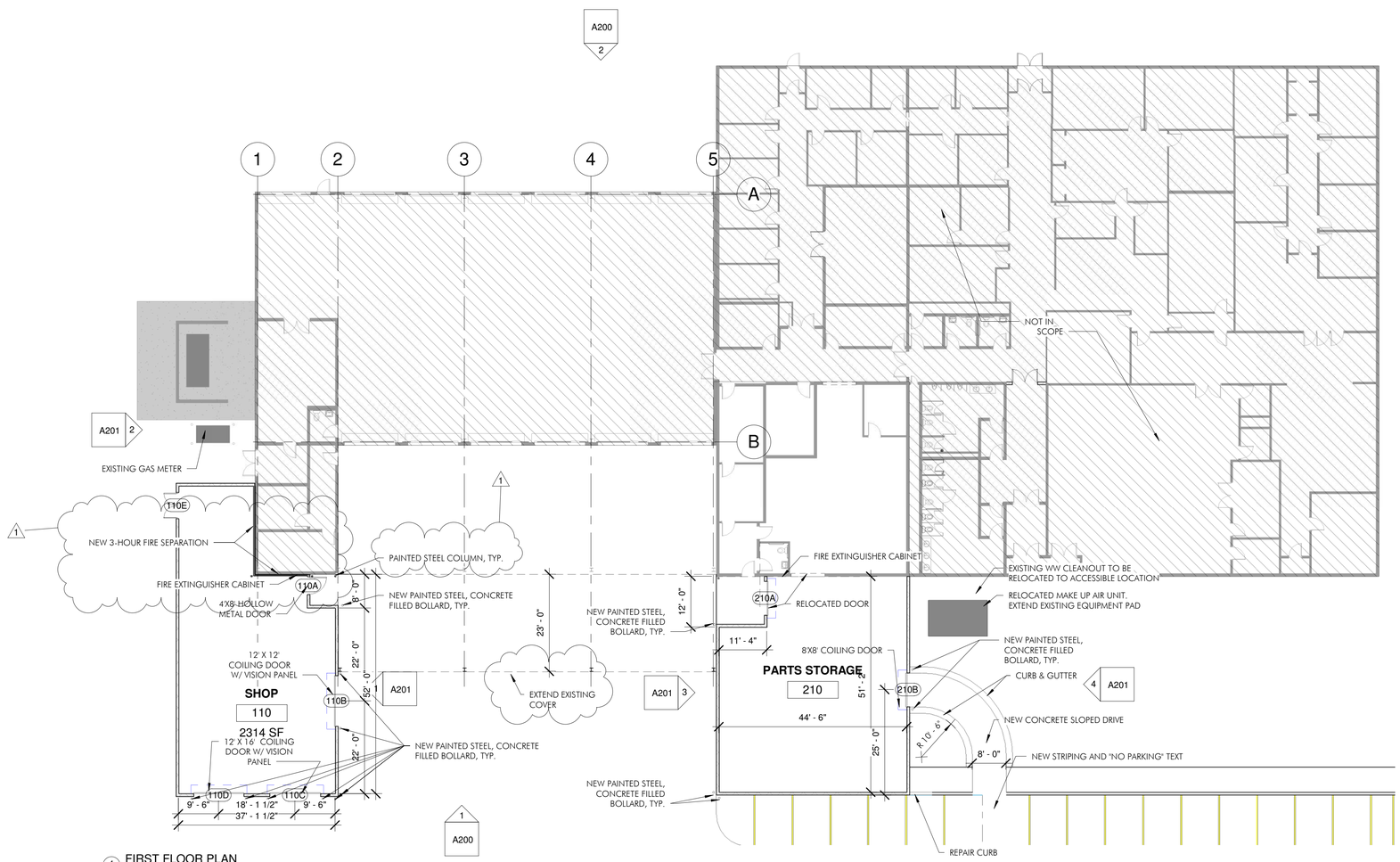
2) DIMENSIONS ARE FROM FACE OF STUD TO FACE OF STUD, U.N.O.

3) ANY CONFLICTS FOUND IN CONSTRUCTION DOCUMENTS SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION BEFORE ANY WORK BEGINS.

4) WHERE DOUBLE GYPSUM BOARD PARTITION ARE IN LINE AND ABUTTS AGAINST A SINGLE GYPSUM BOARD PARTITION, ALIGN SO AS TO HAVE A FLUSH FINISH.



2 3-HOUR PARTITION DETAIL
3" = 1'-0"



1 FIRST FLOOR PLAN
1/16" = 1'-0"

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103 woods lane
cedar park, tx 78613
ryan@modedc.us | www.modedc.us
+ 1 512 733 1150

REGISTERED ARCHITECT
RYAN HANSANUWAT
22732
STATE OF TEXAS

9/18/2024

WILCO - FLEET SERVICES ADDITION

WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

PROJECT PHASE
CONSTRUCTION DOCUMENTS

REVISIONS

1	PLAN REVIEW	10/9/24

PROJECT NUMBER
23138-00

DATE ISSUED
9/18/2024

SHEET TITLE
FIRST FLOOR PLAN

SHEET NUMBER
A101

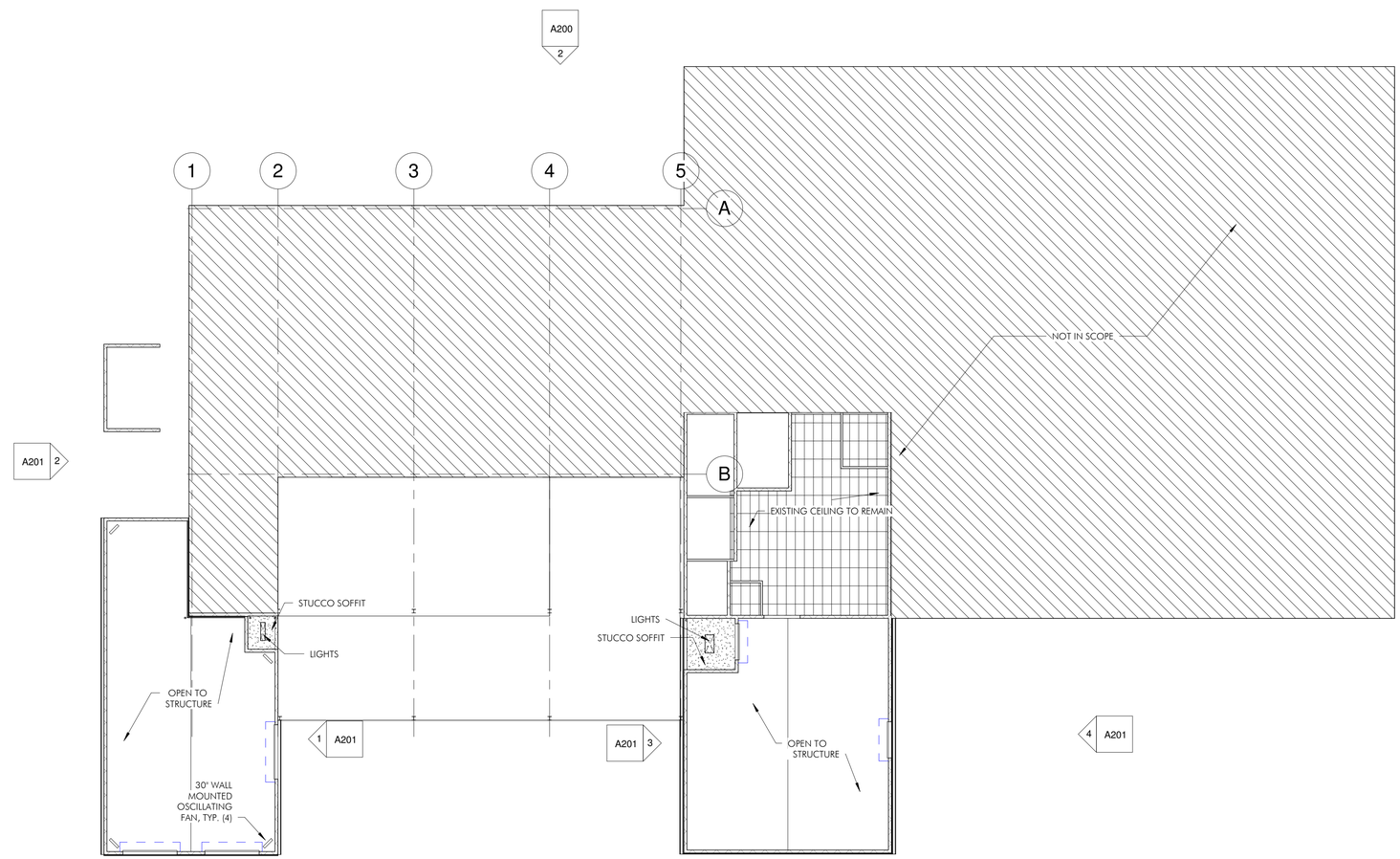
GENERAL NOTES TO REFLECTED CEILING PLAN:

1) CEILING HEIGHT IS 9'-4", U.N.O.

2) ALL LIGHT FIXTURES THROUGHOUT SPACE SHALL MATCH IN COLOR AND TEMPERATURE.

3) GENERAL CONTRACTOR TO USE MULTI-GANG BOXES IN ALL POSSIBLE LOCATIONS.

4) VERIFY ALL LIGHTING PLACEMENT WITH ARCHITECT BEFORE INSTALLATION IF DIFFERENT FROM ELECTRICAL DRAWINGS.



1 FIRST FLOOR CEILING PLAN
1/16" = 1'-0"

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REGISTERED ARCHITECT
RYAN HANSANUWAT
22732
STATE OF TEXAS

9/18/2024

WILCO - FLEET SERVICES ADDITION

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3151 SE INNER LOOP, GEORGETOWN, TX 78626

PROJECT PHASE
CONSTRUCTION DOCUMENTS
REVISIONS

PROJECT NUMBER
23138-00
DATE ISSUED
9/18/2024
SHEET TITLE
REFLECTED CEILING PLAN

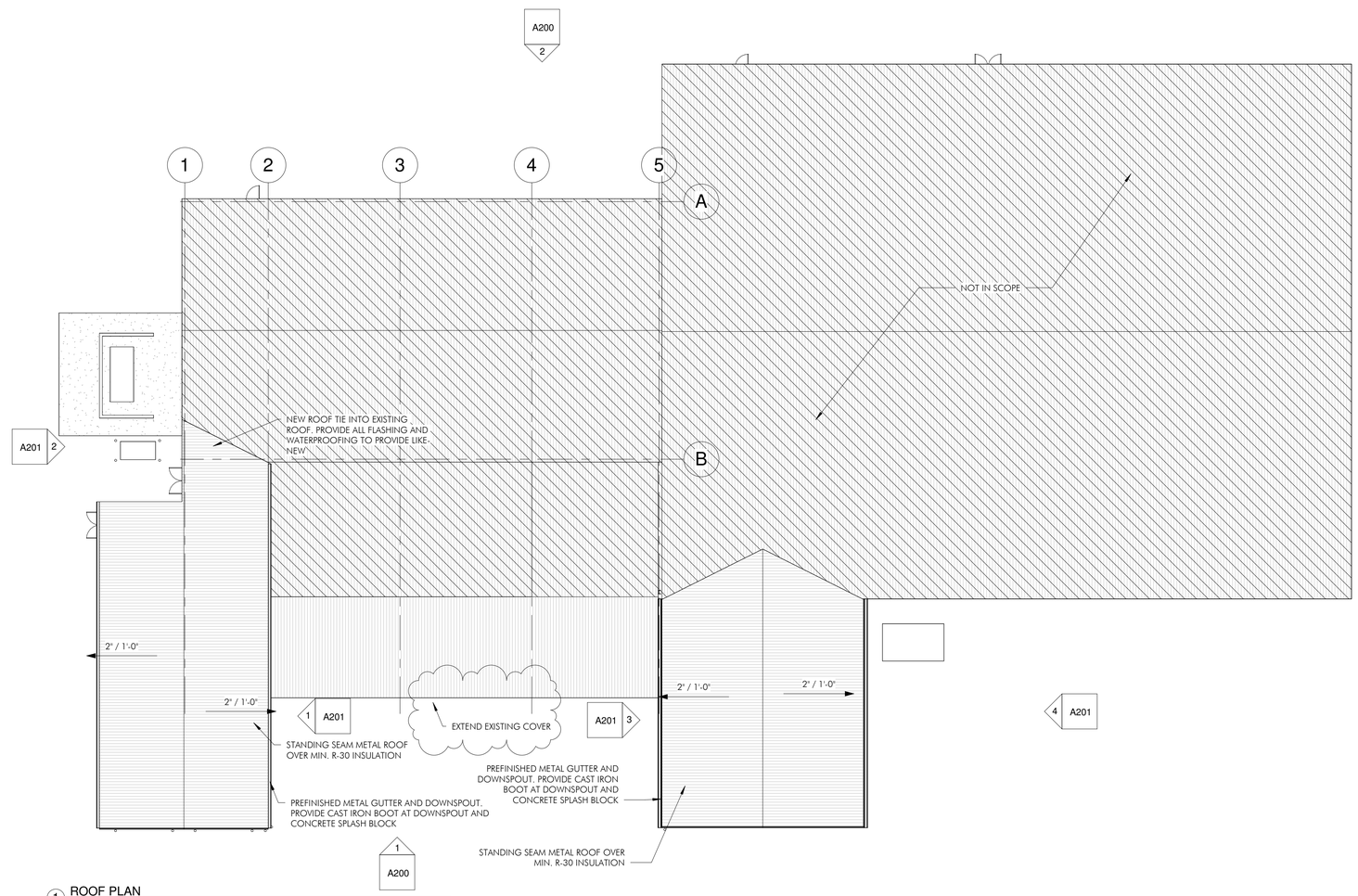
SHEET NUMBER
A102

GENERAL NOTES TO ROOF PLAN:

1) DIMENSIONS ARE FROM EDGE OF ROOF STRUCTURE TO FACE OF STUD, U.N.O.

2) ANY CONFLICTS FOUND IN CONSTRUCTION DOCUMENTS SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION BEFORE ANY WORK BEGINS.

3) ROOFING CONTRACTOR TO PROPERLY SIZE GUTTERS AND DOWNSPOUTS FOR GIVEN ROOF SLOPE AND AREAS AND RAINFALL INTENSITIES.



1 ROOF PLAN
1/16" = 1'-0"

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REGISTERED ARCHITECT
RYAN HANSANUWAT
22732
STATE OF TEXAS

9/18/2024

WILCO - FLEET SERVICES ADDITION

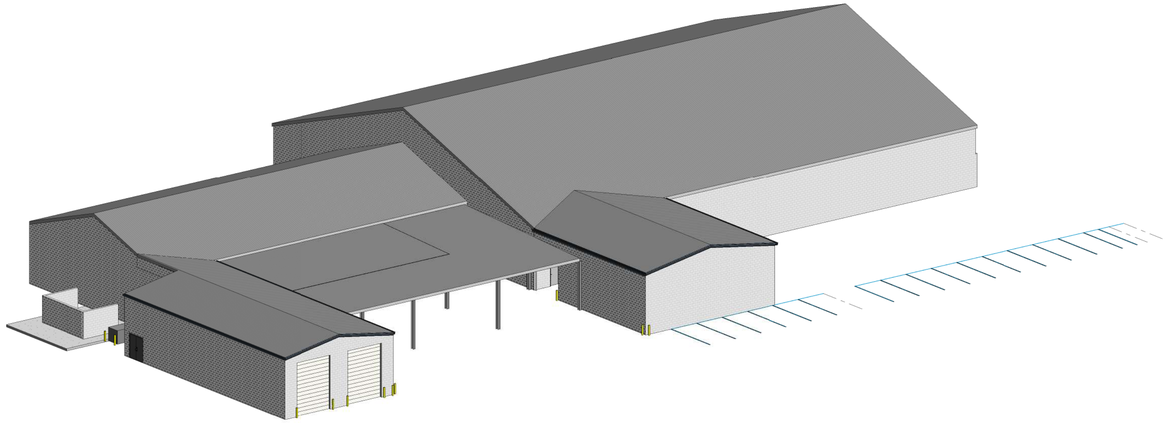
WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

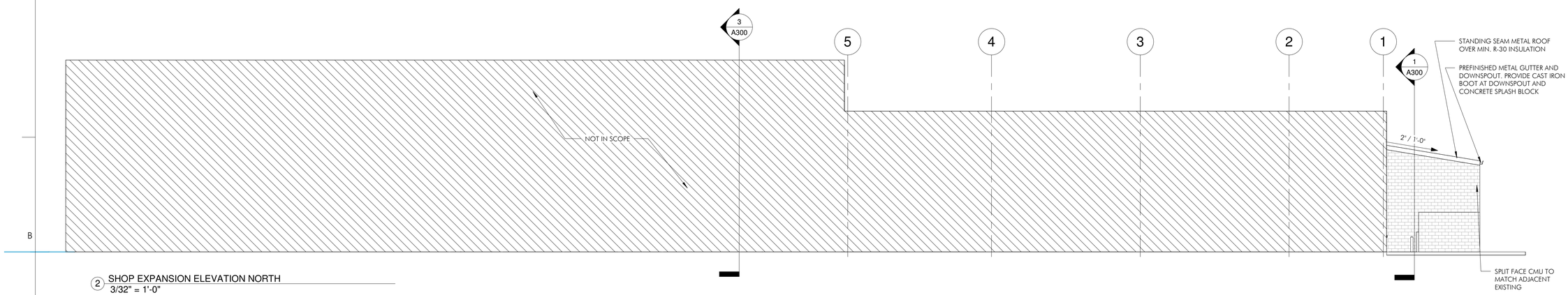
PROJECT PHASE
CONSTRUCTION DOCUMENTS

REVISIONS
1 PLAN REVIEW 10/9/24

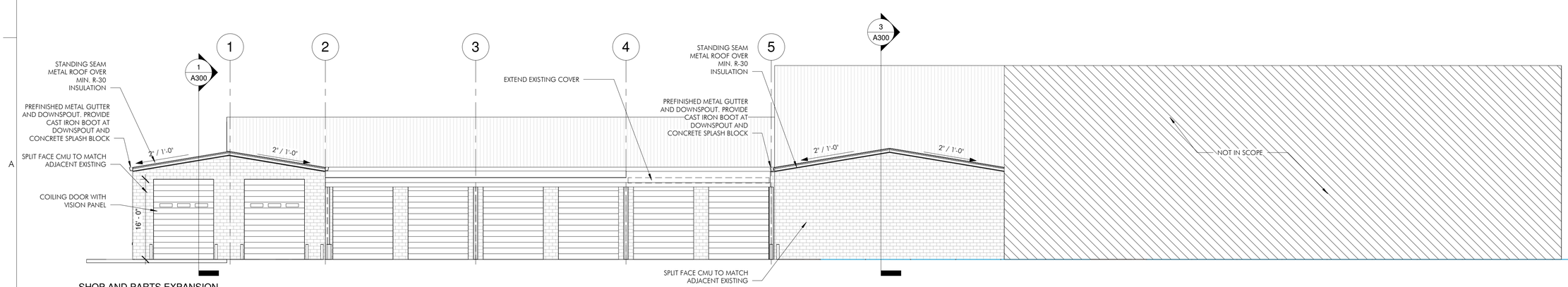
PROJECT NUMBER
23138-00
DATE ISSUED
9/18/2024
SHEET TITLE
ROOF PLAN

SHEET NUMBER
A103





2 SHOP EXPANSION ELEVATION NORTH
3/32" = 1'-0"



1 SHOP AND PARTS EXPANSION ELEVATION SOUTH
3/32" = 1'-0"

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REGISTERED ARCHITECT
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STATE OF TEXAS
9/18/2024

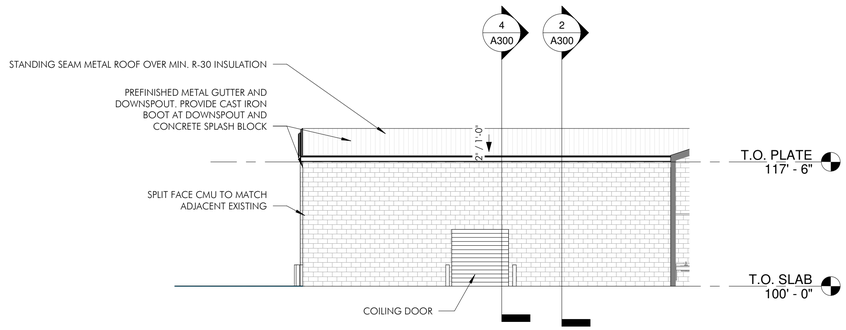
WILCO - FLEET SERVICES ADDITION

WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

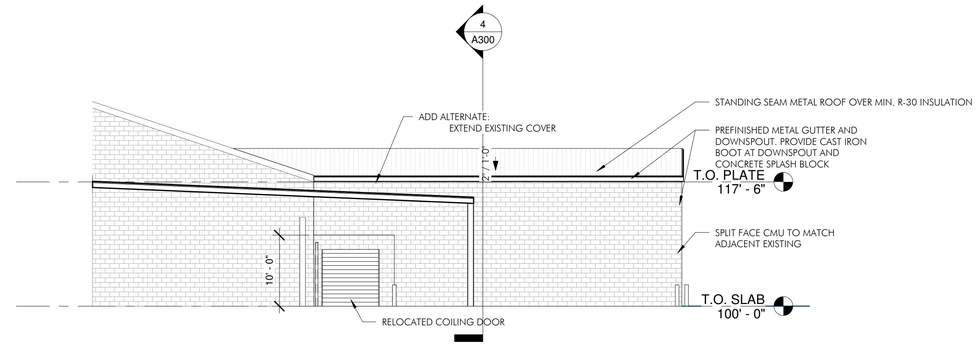
PROJECT PHASE
CONSTRUCTION DOCUMENTS
REVISIONS

PROJECT NUMBER
23138-00
DATE ISSUED
9/18/2024
SHEET TITLE
EXTERIOR ELEVATIONS

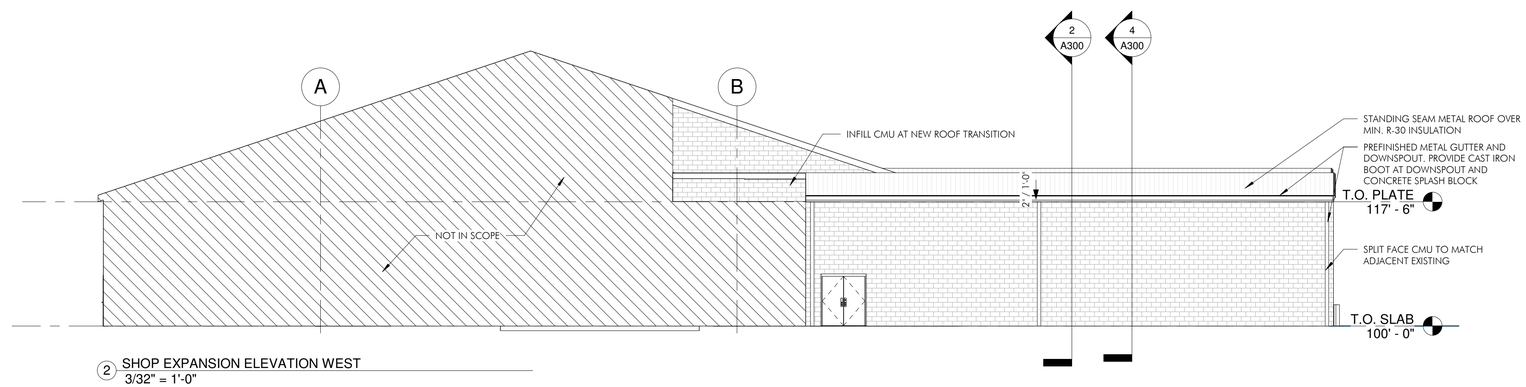
SHEET NUMBER
A200



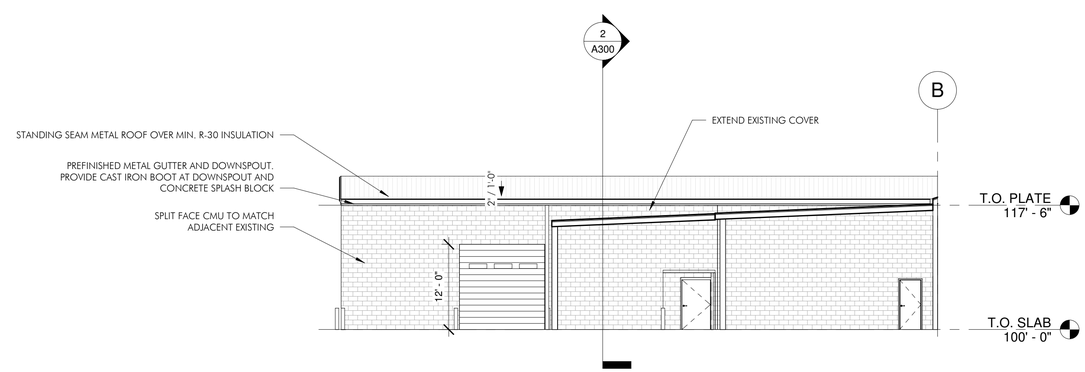
4 PARTS EXPANSION ELEVATION EAST
3/32" = 1'-0"



3 PARTS EXPANSION ELEVATION WEST
3/32" = 1'-0"



2 SHOP EXPANSION ELEVATION WEST
3/32" = 1'-0"



1 SHOP EXPANSION ELEVATION EAST
3/32" = 1'-0"

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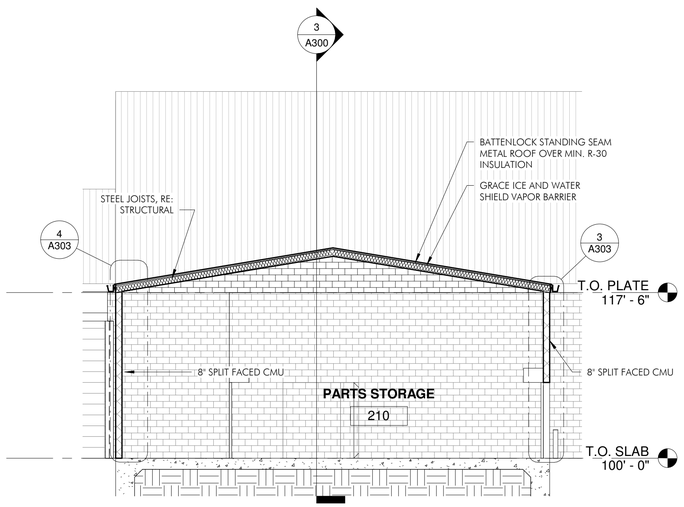
REGISTERED ARCHITECT
RYAN HANSANUWAT
22732
STATE OF TEXAS
9/18/2024

WILCO - FLEET SERVICES ADDITION
WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

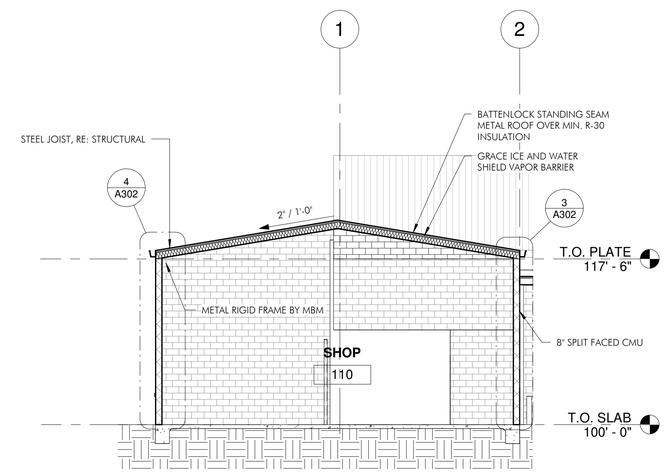
PROJECT PHASE
CONSTRUCTION DOCUMENTS
REVISIONS

PROJECT NUMBER
23138-00
DATE ISSUED
9/18/2024
SHEET TITLE
EXTERIOR ELEVATIONS

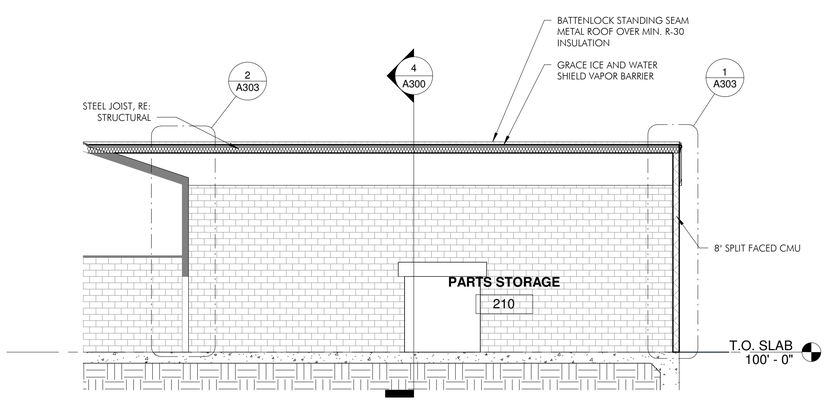
SHEET NUMBER
A201



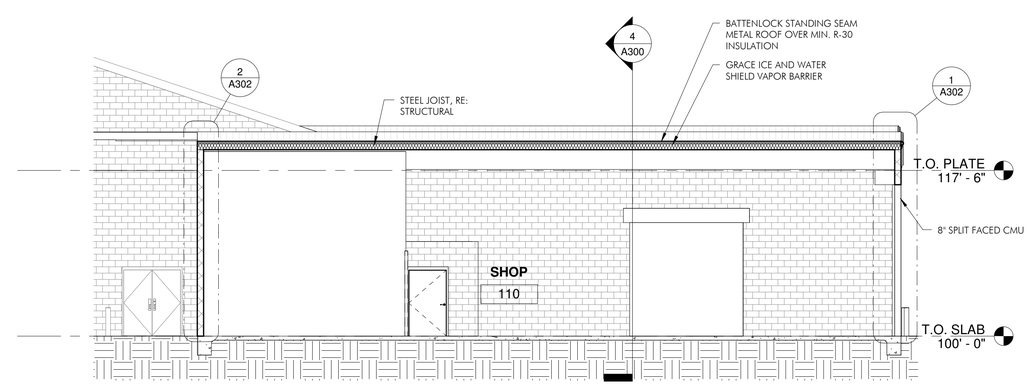
4 PARTS EXPANSION SECTION
1/8" = 1'-0"



2 SHOP EXPANSION SECTION
1/8" = 1'-0"



3 PARTS EXPANSION SECTION
1/8" = 1'-0"



1 SHOP EXPANSION SECTION
1/8" = 1'-0"

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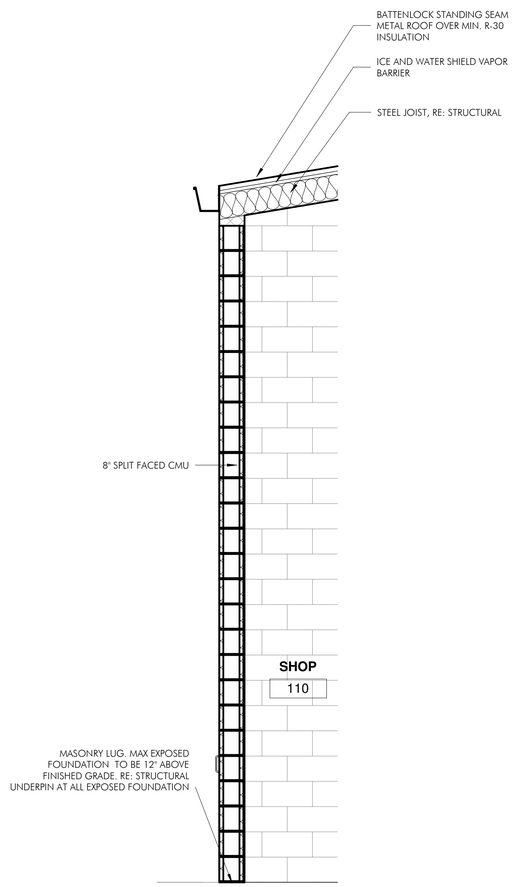
REGISTERED ARCHITECT
RYAN HANSANUWAT
22732
STATE OF TEXAS
9/18/2024

WILCO - FLEET SERVICES ADDITION
WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

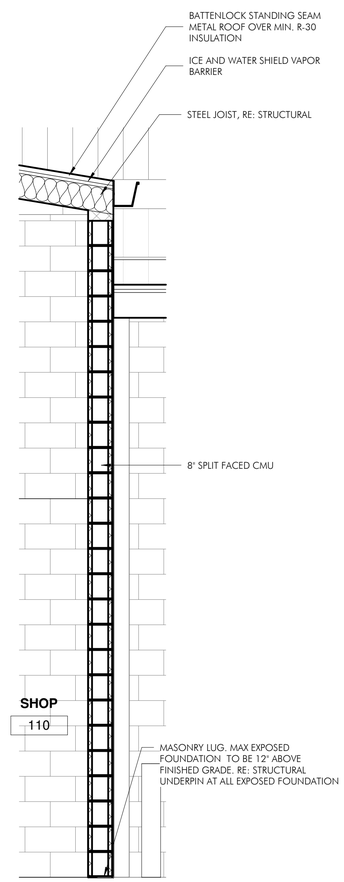
PROJECT PHASE
CONSTRUCTION DOCUMENTS
REVISIONS

PROJECT NUMBER
23138-00
DATE ISSUED
9/18/2024
SHEET TITLE
BUILDING SECTIONS

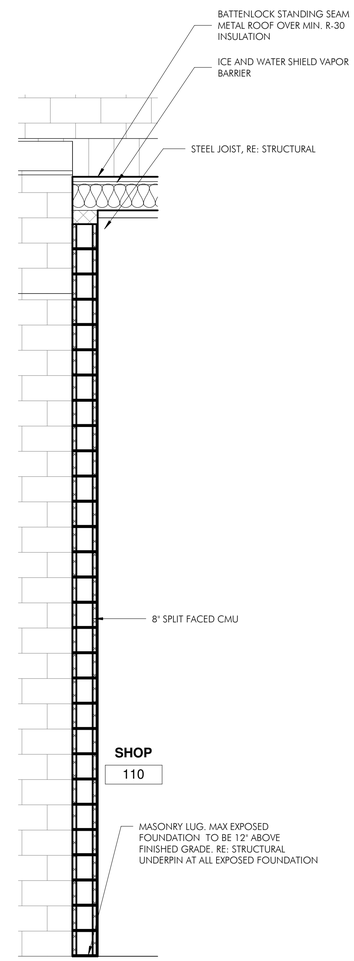
SHEET NUMBER
A300



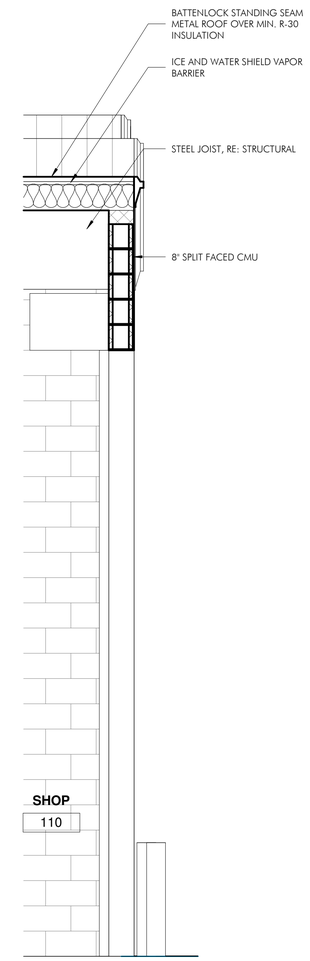
4 WALL SECTION
1/2" = 1'-0"



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



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



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

MODE design company
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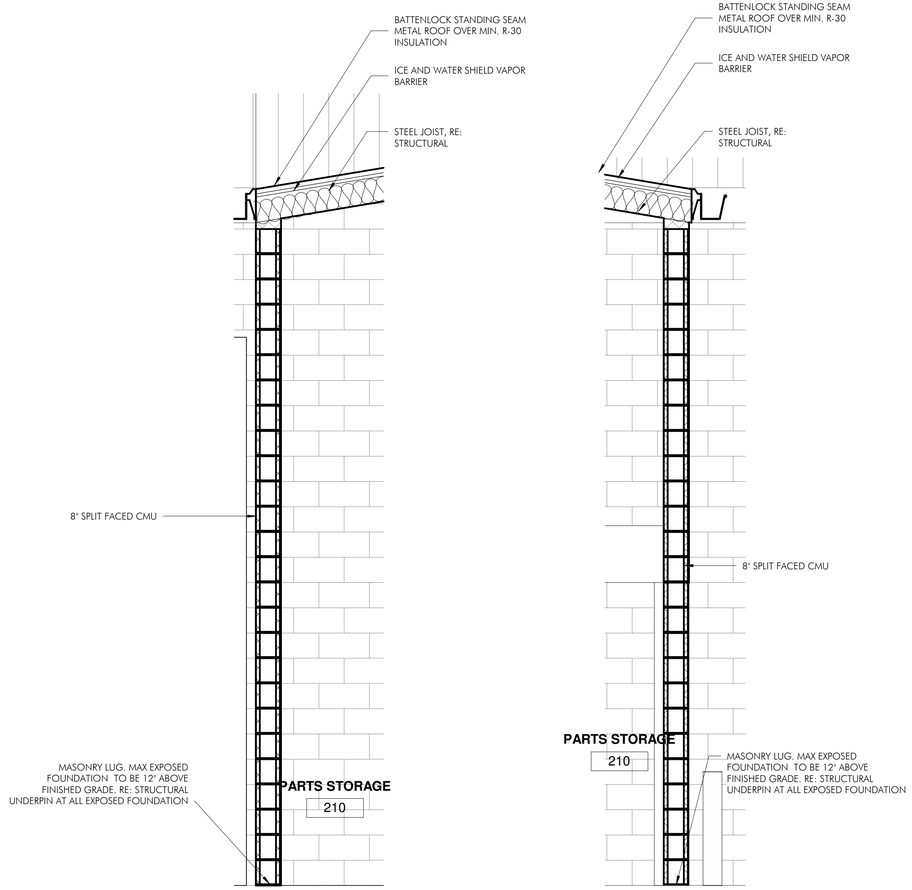
REGISTERED ARCHITECT
RYAN HANSANUWAT
22732
STATE OF TEXAS
9/18/2024

WILCO - FLEET SERVICES ADDITION
WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

PROJECT PHASE
CONSTRUCTION DOCUMENTS
REVISIONS

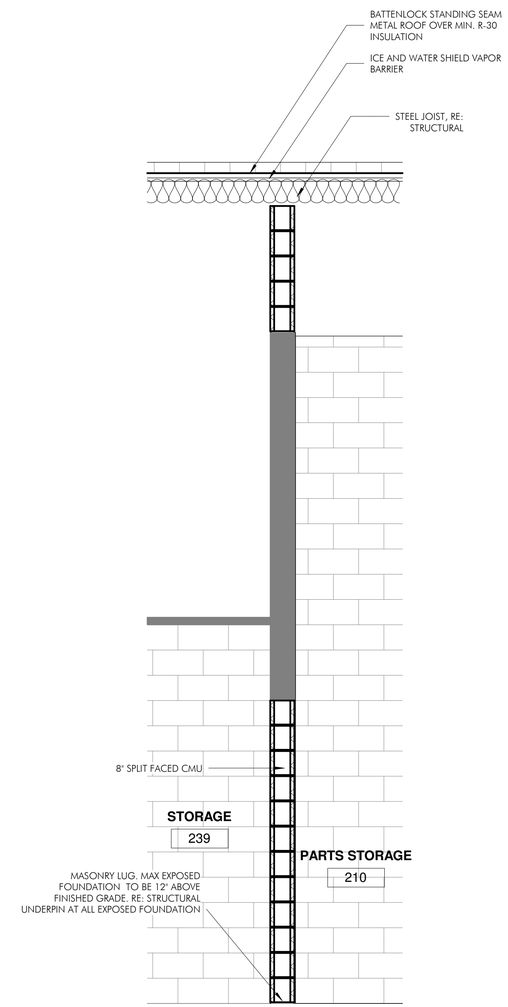
PROJECT NUMBER
23138-00
DATE ISSUED
9/18/2024
SHEET TITLE
WALL SECTIONS

SHEET NUMBER
A302

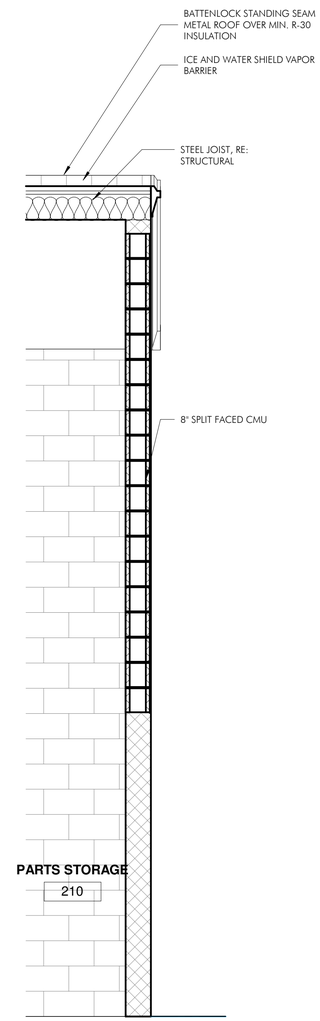


4 WALL SECTION
1/2" = 1'-0"

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



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



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

MODE design company
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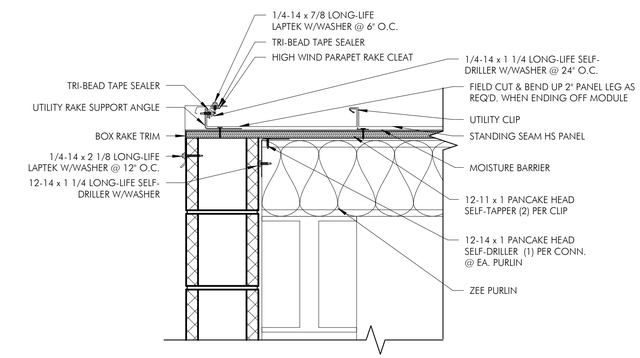
REGISTERED ARCHITECT
RYAN HANSANUWAT
22732
STATE OF TEXAS
9/18/2024

WILCO - FLEET SERVICES ADDITION
WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

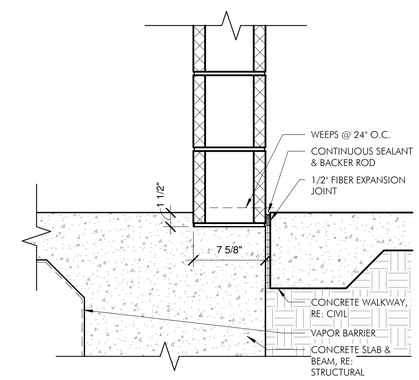
PROJECT PHASE
CONSTRUCTION DOCUMENTS
REVISIONS

PROJECT NUMBER
23138-00
DATE ISSUED
9/18/2024
SHEET TITLE
WALL SECTIONS

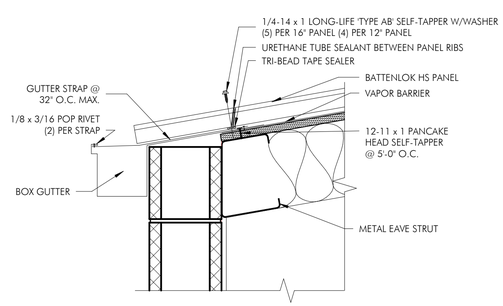
SHEET NUMBER
A303



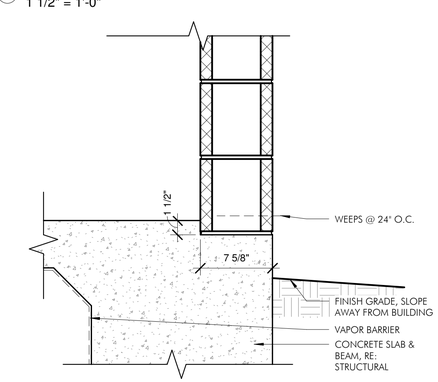
4 RAKE DETAIL
1 1/2" = 1'-0"



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



3 EAVE DETAIL - CMU
1 1/2" = 1'-0"



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

MODE design company
103 woods lane
cedar park, tx 78613
ryan@modedc.us | www.modedc.us
+ 1 512 733 1150

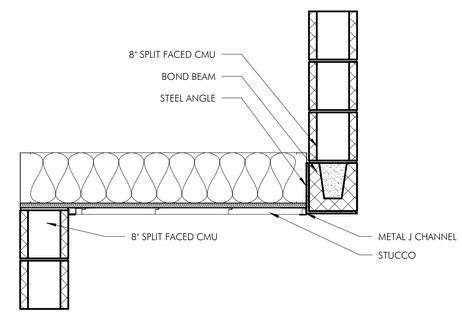
REGISTERED ARCHITECT
RYAN HANSANUWAT
22732
STATE OF TEXAS
9/18/2024

WILCO - FLEET SERVICES ADDITION
WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

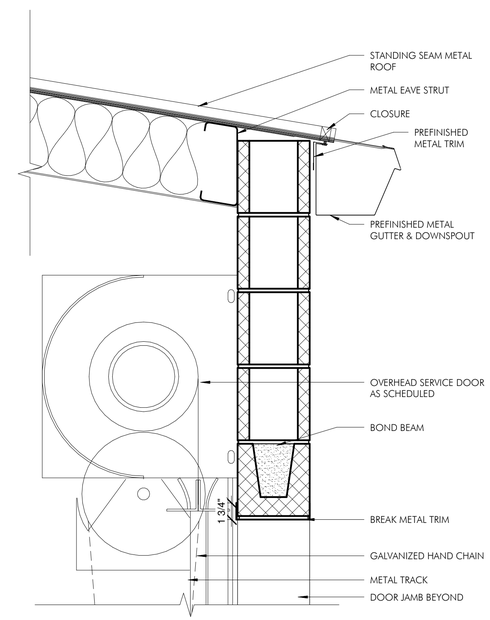
PROJECT PHASE
CONSTRUCTION DOCUMENTS
REVISIONS

PROJECT NUMBER
23138-00
DATE ISSUED
9/18/2024
SHEET TITLE
FOUNDATION, WALL, CEILING & ROOF DETAILS

SHEET NUMBER
A304



2 STUCCO SOFFIT AT RECESSED ENTRY
1" = 1'-0"



1 EAVE DETAIL @ OVERHEAD DOOR CMU WALL
1 1/2" = 1'-0"

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REGISTERED ARCHITECT
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22732
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9/18/2024

WILCO - FLEET SERVICES ADDITION
WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

PROJECT PHASE
CONSTRUCTION DOCUMENTS
REVISIONS

PROJECT NUMBER
23138-00
DATE ISSUED
9/18/2024
SHEET TITLE
ARCHITECTURAL DETAILS

SHEET NUMBER
A500

GENERAL NOTES TO DOOR SCHEDULE AND TYPES:

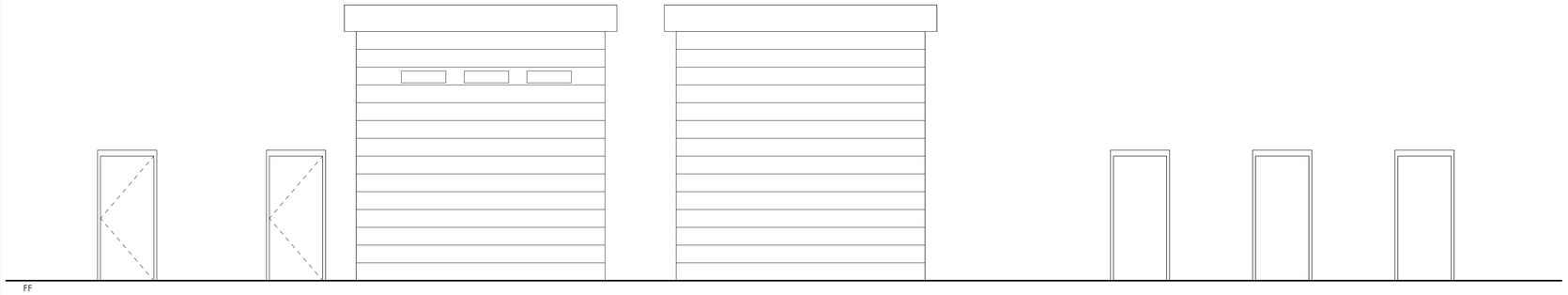
1) ALL EXTERIOR AND COMMON AREA DOORS TO HAVE HEAVY DUTY HINGES, DOOR STOPS, SILENCERS, AND AUTOMATIC CLOSERS.

2) CONTRACTOR TO COORDINATE ALL DOOR HARDWARE AND KEYING WITH COUNTY PRIOR TO PURCHASE

3) GLAZING TYPES-
- G1 = 1" LOW-E INSULATED GLASS
- G2 = 1/4" CLEAR TEMPERED GLASS
- G3 = 1/4" ONE WAY MIRRORED TEMPERED GLASS
- G4 = 1/4" CLEAR LAMINATED GLASS
- G5 = 1/4" CLEAR RATED TEMPERED GLASS

DOOR SCHEDULE

MARK	ROOM NAME	DOOR TYPE	DOOR WIDTH	DOOR HEIGHT	DOOR LEAVES	DOOR THICK	DOOR FINISH	DOOR GLAZING	FRAME TYPE	FRAME FINISH	RATING	DETAILS HEAD	DETAILS JAMB	DETAILS THRESHOLD	COMMENTS
110A	SHOP	B	4' - 0"	7' - 0"	1	1 3/4"	PAINT	-	3	PAINT	-	3/-	2/-	1/-	PROVIDE CARD READER AT DOOR
110B	SHOP	C	12' - 0"	12' - 0"		3"	MFR.	G2		MFR	-	6/-	5/-	4/-	
110C	SHOP	C	12' - 0"	16' - 0"		3"	MFR.	G2		MFR	-	6/-	5/-	4/-	
110D	SHOP	C	12' - 0"	16' - 0"		3"	MFR.	G2		MFR	-	6/-	5/-	4/-	
110E	SHOP	B	6' - 0"	7' - 0"	2	1 3/4"	PAINT	-	3	PAINT	-	3/-	2/-	1/-	PROVIDE CARD READER AT DOOR
210A	PARTS STORAGE	D	8' - 0"	8' - 0"		3"	MFR.	-		MFR	-	6/-	5/-	4/-	RELOCATED DOOR
210B	PARTS STORAGE	D	8' - 0"	8' - 0"		3"	MFR.	-		MFR	-	6/-	5/-	4/-	



TYPE A
STAINED SOLID CORE WOOD DOOR

TYPE B
PAINTED HOLLOW METAL DOOR

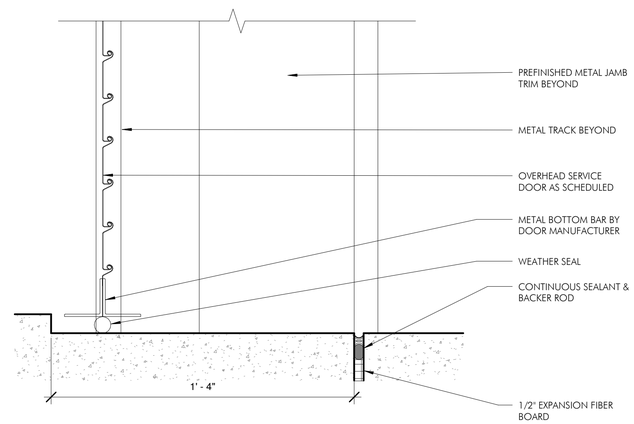
TYPE C
COILING DOOR WITH VISION PANEL. PROVIDE SIDE MOUNTED MOTOR WITH EYE SENSOR AND CHAIN OVERRIDE TO MATCH EXISTING. BASIS OF DESIGN: LIFTMASTER JHDC

TYPE D
COILING DOOR. PROVIDE SIDE MOUNTED MOTOR WITH EYE SENSOR AND CHAIN OVERRIDE TO MATCH EXISTING. BASIS OF DESIGN: LIFTMASTER JHDC

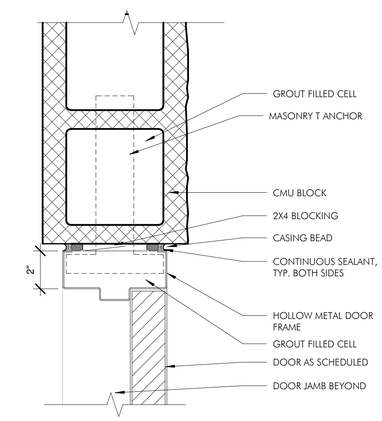
TYPE 1
ALUMINUM STOREFRONT FRAME

TYPE 2
ALUMINUM INTERIOR FRAME

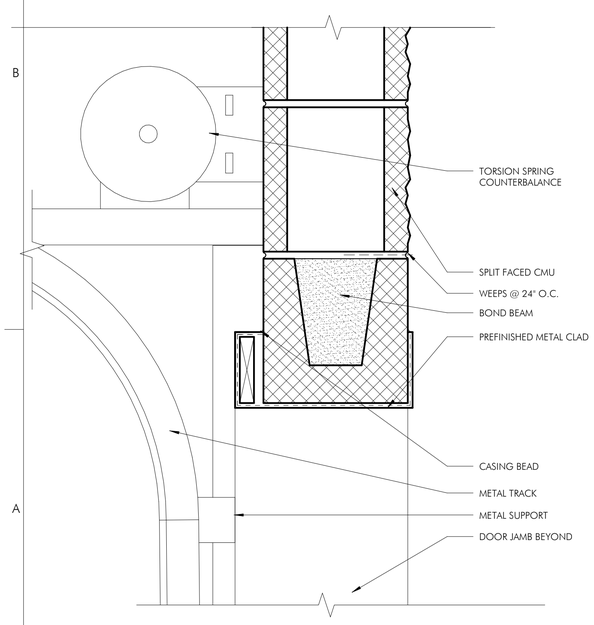
TYPE 3
HOLLOW METAL FRAME



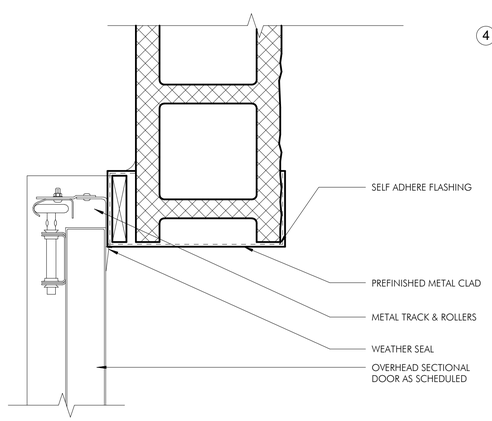
4 OVERHEAD DOOR SILL DETAIL
3" = 1'-0"



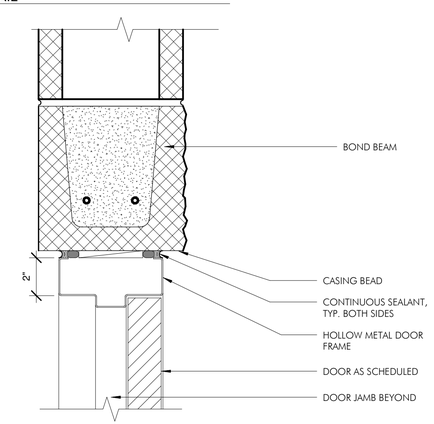
2 CMU JAMB DETAIL
3" = 1'-0"



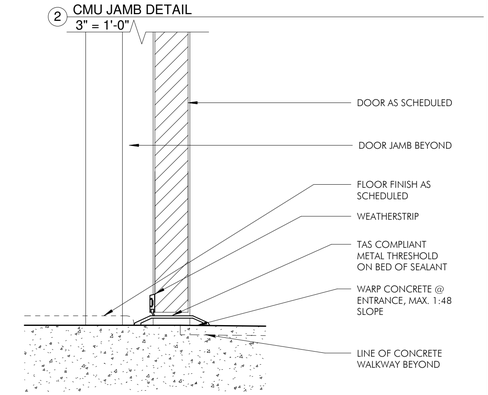
6 HEAD DETAIL
3" = 1'-0"



5 JAMB DETAIL
3" = 1'-0"



3 CMU HEAD DETAIL
3" = 1'-0"



1 THRESHOLD DETAIL
3" = 1'-0"

MODE design company
103 woods lane
cedar park, tx 78613
ryan@modedc.us | www.modedc.us
+ 1 512 733 1150

REGISTERED ARCHITECT
RYAN HANSANUWAT
22732
STATE OF TEXAS
9/18/2024

WILCO - FLEET SERVICES ADDITION
WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

PROJECT PHASE
CONSTRUCTION DOCUMENTS
REVISIONS

PROJECT NUMBER
23138-00
DATE ISSUED
9/18/2024
SHEET TITLE
DOOR SCHEDULE & DETAILS

SHEET NUMBER
A600

FINISH LEGEND

FLOOR:
SC-1 SEALED CONCRETE: BASIS OF DESIGN: W.R. MEADOWS DECRA-SEAL W/B

WALL:
EP-1 EPOXY WALL PAINT: CONFIRM FINAL COLOR SELECTION WITH ARCHITECT AND OWNER

CEILING:
ACT-1 ACOUSTIC CEILING TILE: 2X2, MATCH ADJACENT EXISTING
P-2 PAINT (CEILING): DRYFALL. CONFIRM FINAL COLOR SELECTION WITH ARCHITECT AND OWNER

GENERAL NOTES TO FINISH FLOOR PLAN:

1) NO SUBSTITUTIONS OF FINISHES ARE ALLOWED WITHOUT ARCHITECT AND OWNER APPROVAL.

2) REFER TO ELEVATIONS FOR ADDITIONAL FINISH INFORMATION.

3) CONTRACTOR TO SUBMIT (3) SAMPLES OF ALL FINISHES ON APPROPRIATE SUBSTRATE TO ARCHITECT FOR APPROVAL PRIOR TO ORDERING, EACH SUBMITTAL MUST BE 12" X 12".

4) ALL MATERIALS TO BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS TO ACCOMPLISH WARRANTY.

5) CONTRACTOR TO PREPARE SLAB FOR INSTALLATION OF NEW FLOOR FINISH.

6) ALL FLOOR FINISH TRANSITIONS SHALL OCCUR AT CENTER OF DOORWAYS, U.N.O.

7) ALL PAINTED WALLS AND COLUMNS TO RECEIVE ONE COAT OF PRIMER AND TWO COATS OF SPECIFIED PAINT, U.N.O.

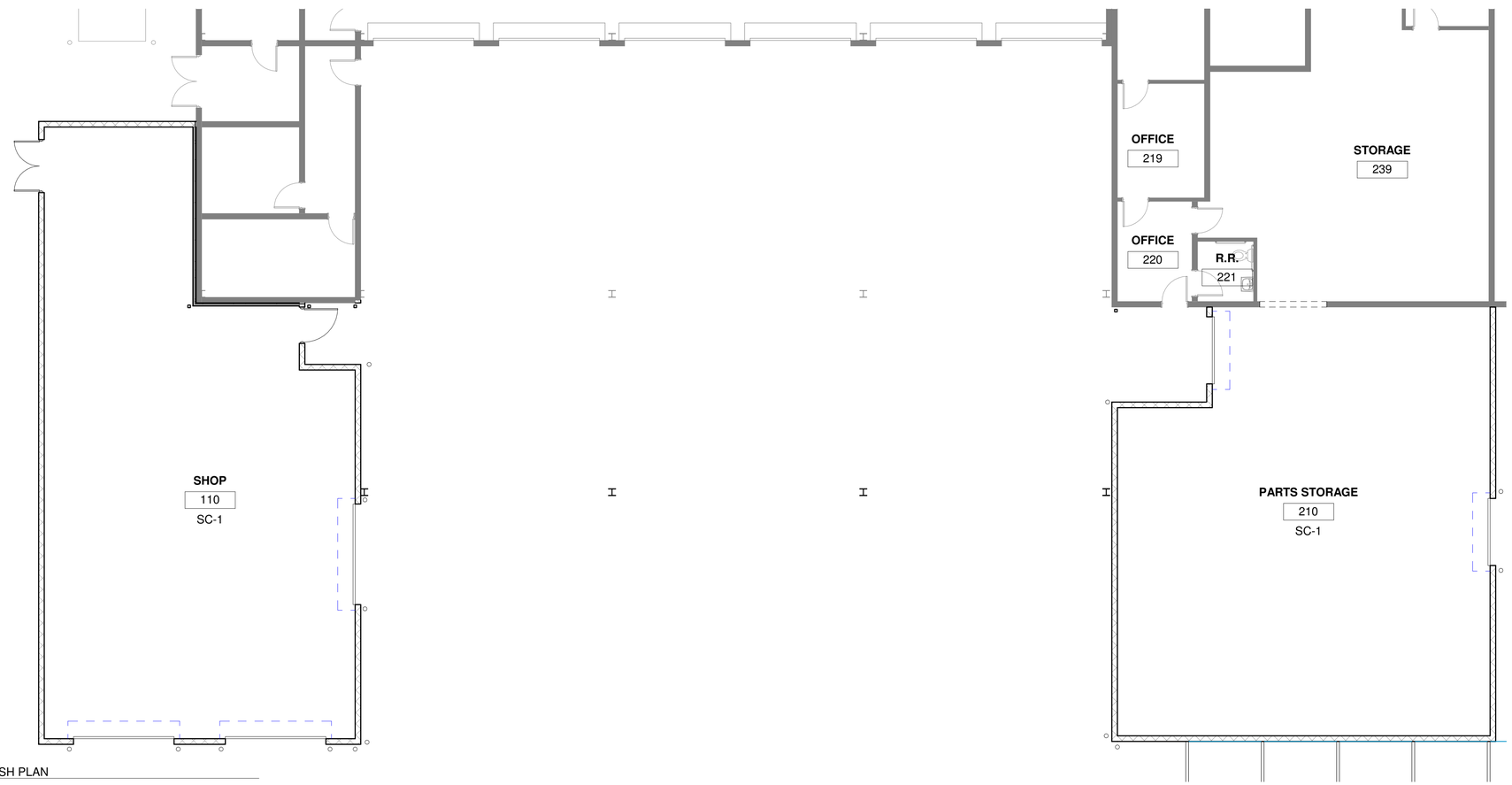
8) ALL PAINT BIDS SHALL INCLUDE A ONE TIME TOUCH UP AFTER THE WORK OF ALL TRADES HAS BEEN COMPLETED. WALLS WITH NOTICEABLE TOUCH UP MARKS SHALL BE FILLY PAINTED.

9) THE CONTRACTOR IS RESPONSIBLE FOR FINAL CLEANING OF ALL FINISHES IN ALL AREAS PRIOR TO FINAL OCCUPANCY.

10) CONTRACTOR TO PROVIDE MAINTENANCE INSTRUCTIONS FOR ALL INTERIOR/SPECIAL FINISHES.

FINISH SCHEDULE

ROOM NUMBER	ROOM NAME	FLOOR	BASE	WALL NORTH	WALL EAST	WALL SOUTH	WALL WEST	CEILING	COMMENTS
110	SHOP	SC-1	-	EP-1	EP-1	EP-1	EP-1	P-2	
210	PARTS STORAGE	SC-1	-	EP-1	EP-1	EP-1	EP-1	ACT-1	



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

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REGISTERED ARCHITECT
RYAN HANSANUWAT
22732
STATE OF TEXAS
9/18/2024

WILCO - FLEET SERVICES ADDITION
WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

PROJECT PHASE
CONSTRUCTION DOCUMENTS
REVISIONS

PROJECT NUMBER
23138-00
DATE ISSUED
9/18/2024
SHEET TITLE
FINISH SCHEDULE

SHEET NUMBER
A700

KSS ENGINEERS
280 WESTBURY LN
GEORGETOWN, TX 78633
512-401-3100
F-20710

COORDINATION

A. The contractor shall compare the architectural, structural, mechanical, electrical, plumbing, and other series drawings and report any discrepancies between each set of drawings and within each set of drawings prior to fabrication and installation of any structural members.

B. Only larger sleeve openings and framed openings in structural framing component members are indicated on the structural drawings. However, all sleeves, Inserts and openings, including frames and/or sleeves shall be provided for passage, provision and/or incorporation of the work of the contract, including but not limited to mechanical, electrical and plumbing work. This work shall include the coordination of sizes, alignment, dimensions, position, locations, elevations and grades as required to serve the intended purpose. Openings not indicated on the structural drawings, but required as noted above, shall be submitted to the engineer for review.

C. Refer to architectural, mechanical, electrical and plumbing drawings for floor elevations, slopes, drains and location of depressed and elevated floor areas.

D. Compatibility of the structure and provisions for building equipment supported on or from structural components shall be verified as to size, dimensions, clearances, accessibility, weights and reaction with the equipment for which the structure has been designed prior to submission of shop drawings and data for each piece of equipment and for structural components. Differences shall be noted on the submittals.

E. Shop drawings shall be prepared for all structural items and submitted for review by the engineer. Structural drawings shall not be reproduced and used as shop drawings. All items deviating from the structural drawings or from previously submitted shop drawings shall be clouded.

F. The details designated as "typical details" apply generally to the structural drawings in all areas where conditions are similar to those described in the details.

G. All dimensions and conditions of existing construction shall be verified at the job site prior to the preparation of shop drawings. Differences between existing construction and that shown on the structural drawings shall be referred to the architect. Differences shall also be clouded on the shop drawings.

H. Structural elements of the project have been designed by the engineer to resist the required code vertical and lateral forces that could occur in the final completed structure only. It is the responsibility of the contractor to provide all required bracing during construction to maintain the stability and safety of all structural elements during the construction process until the lateral-load resisting or stability-providing system is completely installed and the structure is completely tied together. Temporary supports shall not result in the overstress or damage of the elements to be braced nor any elements used as brace supports.

I. The contract structural drawings and specifications represent the finished structure, and except where specifically shown, do not indicate the means or methods of construction. The contractor and their sub-contractors shall supervise and direct the work and shall be solely responsible for all construction means, methods, procedures, techniques, sequences and safety measures including, but not limited to, adherences to all OSHA guidelines. The engineer shall not have control of, and shall not be responsible for construction means, methods, techniques, sequences or procedures, for safety precautions and programs in connection with the work, for the acts or omissions of the contractor, subcontractors, or any other person performing any of the work, or for the failure of any of these persons to carry out the work in accordance with the structural contract documents.

J. Where conflict exists among the various parts of the structural contract documents, structural drawings, general notes, and specifications, the strictest requirements, as indicated by the engineer, shall govern.

K. Site observations by KSS Engineers are solely for the purpose of determining if the work is proceeding in general conformance with the structural contract documents and are limited to informing the owner of apparent defects and deficiencies in the work of the contractor readily accessible to view. Site observations are not a substitute for special inspections and do not check the quality or quantity of the work.

SUBSTITUTIONS

A. All requests for substitutions of materials or details shown in the Structural Contract Documents shall be submitted for approval during the bidding period.

B. Once bids are accepted, proposed substitutions will be considered only when they are officially submitted with an identified savings or duration to be deducted from the contract and/or schedule impact. Submittals not satisfying the above criteria will not be considered.

MAINTENANCE STATEMENT

A. Structures require maintenance to protect structural members from adverse exposure to the environment. A planned program of maintenance shall be established by the building owner. This program shall include such items as but not limited to painting of structural steel, application of protective coating on concrete surfaces, sealants, caulked joints, expansion joints, control joints, repair of spalls and cracks in concrete, and pressure washing of exposed structural elements.

CODES & REFERENCED REPORTS

A. The General Building Code used as the basis for the structural design is as follows:
1. International Building Code, 2021 Edition
2. International Existing Building Code, 2021 Edition

B. Structural Concrete: Building Code Requirements for Reinforced Concrete, American Concrete Institute, ACI 318, as referenced by the General Building Code.

C. Concrete Masonry: Building Code Requirements for Concrete Masonry Structures, American Concrete Institute, ACI 530, as referenced by the General Building Code.

D. Structural Steel: Manual of Steel Construction, American Institute of Steel Construction Inc., ANSI/AISC 360, as referenced by the General Building Code.

E. Open Web Steel Joists: Code of Standard Practice for Steel Joists and Joist Girders, Steel Joist Institute, SJI COSP - 2015.

F. Pre-engineered Metal Buildings: Metal Building Systems Manual.

G. Light Gauge Steel: Specification for the Design of Cold-Formed Steel Structural Members, American Iron and Steel Institute, as referenced by the General Building Code.

H. Geotechnical Report: Foundation elements have been designed in accordance with information provided in the following geotechnical report:

Geotechnical engineer:	Balcones Geotechnical
Report Number:	0115-036
Date:	February 5, 2016

DESIGN LOADS

A. Dead Loads include the self-weight of the structural elements and the following superimposed loads:

1.	Ceiling and Mechanical at roof	10 psf
2.	Roofing and rigid insulation	8 psf
3.	Roof Overframing above Existing Shop Roof	See Plan
4.	Crane Loads	None

B. Live Loads

	OCCUPANCY OR USE	UNIFORM (psf)	CONCENTRATED (lb)
1.	Shop	250	8,000
2.	Parts Storage		
	a. Heavy	250	N/A
3.	Roof	20	

C. Live Load Reduction
1. Roof live load has been reduced using the formula 20 x R1 x R2 according to the General Building Code.

D. Snow loads
1. Ground snow load, Pg — 5 psf

E. Wind loads
1. Wind lateral load on structural frame is based on ASCE 7 using the following:
   a. Basic Wind Speed (Ultimate) — 108 mph
   b. Exposure — C
   c. Internal Pressure Coefficient, Gcpi — +/-0.18
   d. Risk Category — II
2. Components and cladding wind pressures:

Surface	(PSF)	Zone	Area At (SF)
Exterior walls	+26.0	Interior and edge	10 or less
	-28.0	Interior	10 or less
	-35.0	Edge	10 or less
	+19.0	Interior and edge	500 or greater
	-22.0	Interior	500 or greater
	-22.0	Edge	500 or greater
Roof	+21	Int, edges, corners, ridge	16 or less
	-52.0	int (1), edge eave (2e)	20 or less
	-79.0	edge gable (2n), ridge (2r), corners (3e)	10 or less
	-91.0	edge ridge (3r)	10 or less
	+16	Interior	20 or greater
	-16.0	Edges	100 or greater
	-28.0	Corners	250 or greater
	-48.0	Corners	100 or greater

- Pressures for Tributary Areas in between the listed values may be linearly interpolated.
- Negative value signifies pressure acting away from the surface (suction).
- Edge and Corner zone distances shall be determined in accordance with referenced standard.
- Pressures on parapets shall be determined by combining positive and negative wall pressures or wall and roof pressures listed above in accordance with the referenced standard.
- Pressures are for gross uplift conditions. Refer to roof plan(s) for net uplift values for design of joists, joist girders, and bridging.

F. Seismic Loads
1. The structure and structural components of the building have been designed in accordance with General Building Code with the following criteria:
   a. Seismic Importance Factor, IE — 1
   b. Risk Category — II
   c. Mapped Spectral Response Accelerations
      i. Ss (%g) — 5.50%
      ii. S1 (%g) — 3.50%
   d. Site Class — D
   e. Spectral Response Coefficients
      i. SDS — 0.059
      ii. SD1 — 0.056
   f. Seismic Design Category — A
   g. Basic Seismic-force-resisting system — Bearing Wall System; Ordinary Reinforced Masonry Shear Walls
   h. Design Base shear, V — 17.1
   i. Seismic Response Coefficient(s), Cs — 0.03
   j. Response Modification Factor(s), R — 2
   k. Equivalent Lateral Force Procedure Used

G. Stair Rails: The handrails and supporting structure shall be capable of withstanding a 200 pound load applied in any direction at any point on the rail.

H. Concentrated Load for Stair Treads and Ladder Rungs: The individual stair treads and ladder rungs shall be designed to support a 300 pound concentrated load placed in a position, which would cause maximum stress.

BUILDING MOVEMENTS

A. The building movements specified herein are anticipated to occur and shall be taken into account by the Contractor in the design, detailing, and installation of the building elements.

C. Interior roof deflections: Provisions shall be made in interior partitions and other elements supported by or attached to the floors or roofs for relative floor to roof vertical deflections of L/240.

D. Slab-on-grade movement: Provisions shall be made in the building cladding and interior partitions for relative deflections between the soil-supported slab on grade and the roof or floor level directly above. Design of soil supported building slabs is based on a potential vertical movement of 3/4" based on the recommendations of the project geotechnical report. Refer to Building Pad Preparation Notes for soil stabilization under soil-supported building slabs.

E. Lateral building drift: Provisions shall be made in building cladding and other architectural finishes for relative floor to floor lateral deflections of story height/400.

WARRANTIES

A. Manufacturer's standard warranties regarding workmanship and materials shall be submitted for the items listed below. Minimum duration of warranty shall be as shown. Warranties shall begin at substantial completion.
1. Sealants: 5 years
2. Penetrating sealers: 5 years
3. Expansion joint seals: 10 years

B. Warranties shall be submitted for review by the Architect and Engineer prior to commencement of material application.

SUBMITTALS

A. Shop drawings shall be prepared for all structural items and submitted for review by the Engineer. Structural Drawings shall not be reproduced and used as shop drawings. All items deviating from the Structural Drawings or from previously submitted shop drawings shall be clouded.

B. Contractor shall review shop drawings for compliance with the Structural Drawings and shall certify that they have done so by a stamp noting that the drawings have been "Approved" and which bears the signature (or initials) of an authorized representative of the Contractor and the date. Submittals which do not reflect the Contractor's approval, signature and date will be returned without review.

C. Contractor shall be responsible for delays caused by rejection of inadequate shop drawings.

D. Where review and return of shop drawings is required or requested, the Engineer will review each submittal and return to the architect for distribution.

E. Corrections or comments on shop drawings or manufacturer's data sheets do not relieve the Contractor from compliance with requirements of the plans and specifications. Engineer's review is for general conformance with the requirements of the Structural Drawings. Contractor is responsible for confirming and correcting all quantities and dimensions, selecting fabrication processes and techniques of construction, and coordinating the work with that of all other contractors.

F. Refer to individual sections for specific submittal requirements.

G. Submittals shall be submitted electronically. Engineer will review, comment and retain one copy of each submittal. Contractor will be responsible for providing and distributing Engineer's comments to their subcontractors.

EXCAVATION PROTECTION

A. Temporary retention or alternative protective systems shall be designed to resist the soil pressures stipulated in the referenced geotechnical report. In addition, the design shall consider surcharges created by construction equipment, excavation spoil, and other surface encumbrances.

B. Contractor shall comply with all Occupational Safety and Health Administration standards and all other regulatory agency standards regarding excavation safety.

BUILDING PAD PREPARATION

A. Structural fill material shall be crushed limestone derivative base material. Gradation of material shall be as follows:

1.	Retained on 2 1/2" screen	0%
2.	Retained on 7/8" screen	5% -- 50%
3.	Retained on 3/8" screen	25% -- 65%
4.	Retained on No. 4 mesh	35% -- 75%
5.	Retained on No. 40 mesh sieve	60% -- 90%

Material passing the No. 40 mesh seive shall meet the following plasticity requirements:

Passing No. 40 Sieve	Maximum Plasticity Index	Minimum Plasticity Index
25% to 40%	15	3
10% to 25%	20	4

B. Prior to placing fill material, remove all surficial vegetation, organic, other deleterious material and all dard brown FAT CLAY from the existing subgrade for a distance of 3'- 0" beyond building line, to an estimated depth of 5'-0" feet below final subgrade elevation. Remove additional material as required to place a minimum of 5'-0" uniform thickness select fill pad feet of structural fill beneath the building slab. All exposed surfaces shall then be scarified to a depth of 1'-0" and recompact to at least 95% of the maximum dry density as determined using the Texas Department of Transportation (TxDOT) Test Method TEX-114-E. Water contents shall be held to within -1% to +3% of optimum.

C. Structural fill shall be placed in 6 inch loose lifts to final subgrade elevation, watered as required and compacted to a minimum percent of the maximum dry density at a moisture content percentage of the optimum moisture content as specified by the Geotechnical Engineer.

D. Compaction and moisture content of subgrade and each lift of structural fill shall be inspected and approved by a qualified engineering technician, supervised by a Geotechnical Engineer.

E. Place a 4" minimum thickness capillary moisture barrier of free-draining, clean, crushed stone with sizes ranging mostly between 1/2" and 3/4" and no more than 5% passing the No. 200 sieve (durable, crushed stone aggregate, ASTM C-33 Size No. 5 or 67 gradation).

F. Beyond the limits of the exterior building structure, the select fill pad shall be capped with a site-generated clay cap 1'-0" minimum thickness, or by concrete paving or sidewalks. Extend clay cap the width of the select fill pad past the building perimeter in all directions. Clay cap shall be moisture conditioned and compacted to at least 95% of the maximum dry density as determined by test method TEX-114-E at a moisture content above optimum.

G. Provide a vapor retarder that conforms to ASTM E1745, Class A or better with a maximum water vapor permeane of 0.03 perms per ASTM E96. Vapor retarder shall be no less than 10 mills thick.

H. The above recommendations have been prepared in accordance with the referenced geotechnical report.

CONCRETE FOOTINGS

A. Concrete footing design is based on an allowable net bearing capacity of 2,500 psf in accordance with the referenced geotechnical report.

B. Bearing stratum shown on the footing details is 2'-6" of compacted SELECT FILL.

C. Footings not specifically located on the plan shall be located on centerline of pilaster or column above. Where no pilaster or column occurs, locate on centerline of wall or beam.

D. Provide dowels from footings into concrete above using same bar size and number as shown for pilaster or column above. Where no pilaster or column occurs, use 4 #7 dowels. Extend dowels 30 bar diameters into pier and wall, beam, pilaster or column, unless noted otherwise on the Structural Drawings.

E. Elevation of top of plinths/footings, unless noted otherwise on the Structural Drawings, is at the bottom of the deepest intersecting beam or wall supported by the footing.

F. Footing excavations shall be to neat lines and shall be free of loose or wet materials.

G. Footing reinforcing and concrete shall be placed immediately after excavations are complete; in no case shall a footing be excavated that cannot be placed by the end of the workday.

H. Reinforcing steel shop drawings shall include placing drawings for templates to set dowels in footings.

I. All footings shall be inspected by a representative of the Geotechnical Engineer in order to ensure that the proposed bearing material has been reached in accordance with the recommendations given in the referenced geotechnical report and that the footing has been constructed to specified size, with detailed reinforcing, and to specified tolerances.

DRILLED PIERS

A. Pier design is based on the following design criteria:
1. Allowable end bearing: 30 ksf

B. Pier design is in accordance with the recommendations in the referenced geotechnical report.

C. Bearing stratum shown on the pier details is Tan LIMESTONE.

D. Piers not specifically located on the plan shall be located on centerline of column above. Where no column occurs, locate on centerline of wall or beam.

E. Provide dowels from piers into concrete above using same bar size and number as shown for pilaster above. Where no pilaster occurs, use dowels of same size and number as pier reinforcing steel. Extend dowels 30 bar diameters into pier and beam, wall, pilaster or column, unless noted otherwise on the Structural Drawings.

F. Elevation of top of piers, unless noted otherwise on the Structural Drawings, is at the bottom of the deepest intersecting beam or wall supported by the pier.

G. Reinforcing cage shall be held securely away from earth at sides and bottom by sets of 3 spacers at a maximum spacing of 8 ft. along the length of the cage and 1'-0" from the bottom.

H. Pier reinforcing and concrete shall be placed immediately after drilling operations are complete; in no case shall a pier be drilled that cannot be placed by the end of the workday.

I. See plans for pier sizes, reinforcing and depth.

J. The contractor shall verify depths of piers before pier steel is cut. Pier steel may be delivered to the jobsite in standard lengths and cut as required. Provide 64 bar diameter laps in all vertical pier reinforcing.

K. Reinforcing steel shop drawings shall include placing drawings for templates to set dowels in piers.

L. Top of pier shall be of the specified diameter. Form top of pier if required to maintain the specified diameter. Any concrete extending beyond the specified diameter shall be removed.

M. Temporary steel casing may be required during pier drilling operations. Prior to the placement of concrete, any seepage water shall be removed from the pier holes. Special construction procedures in accordance with ACI 336.1 and ACI 336.3R and specifications shall be followed during extraction of the casing and during concrete placement.

N. Contractor shall include in bid documents, unit-costs for casing if required and unit-cost for greater and lesser depth of drilling for each pier size.

O. All piers shall be inspected by a representative of the Geotechnical Engineer in order to ensure that the proposed bearing material has been reached in accordance with the recommendations given in the geotechnical report.

P. The contractor shall make and maintain accurate records of the drilled pier depths, bearing stratum, depth of penetration into bearing stratum, diameter and location (including off center eccentricities), and shall submit this information to the Engineer.

CAST-IN-PLACE CONCRETE

A. CONCRETE MIX USAGE SCHEDULE:
All concrete shall conform to the requirements as specified in the table below, unless noted otherwise on the Structural Drawings:

Use	Strength psi	Agg. Type	Agg. Size	Slump Inches	Max w/c	Air Content
Drilled Piers	4000	NWT	3/4"	7-8	----	-----
Grade Beams, Slab-on-Grade, Footings	4000	NWT	1"	3-5	-----	-----
Topping Slab	4000	NWT	3/4"	3-5	-----	-----

1. "NWT" refers to normal concrete having air dry unit weight of approximately 145 PCF (ASTM C33 aggregate)
2. "Strength" is required compressive cylinder strength at an age of 28 days.

B. A maximum of 20% of the cementitious materials used in mix designs may be replaced with class C or F fly ash.

C. Fly ash shall not be used in architecturally exposed concrete.

D. Provide 5 percent plus or minus 1 1/2 percent of entrained air in concrete permanently exposed to the weather and elsewhere at the contractor's option.

E. Embedded conduits, pipes, and sleeves shall meet the requirements of ACI 318, Section 26.8, including the following:
1. Conduits and pipes embedded within a slab, wall, or beam (other than those passing through) shall not be larger in outside dimension than 1/3 the overall thickness of the slab, wall or beam in which they are embedded. Increase slab thickness as necessary to provide minimum one inch cover over conduit.
2. Conduits, pipes and sleeves shall not be spaced closer than three diameters or widths on center.

F. Concrete placements shall not exceed 10,000 square feet or 100 linear feet on each side without prior approval by the Architect for each placement.

G. Submittal: Submit proposed mix designs in accordance with ACI 301, chapter 4.2. Each proposed mix design shall be accompanied by a record of past performance based on at least 30 consecutive strength tests, or by three laboratory trial mixtures with confirmation tests.

H. Grade beams in contact with earth shall be formed both sides unless noted otherwise in details.

I. Concrete sampling for quality assurance: Concrete that is pumped shall be sampled at the point of discharge from the truck for information, including slump; and shall be sampled at the point of placement for acceptance of slump and air content.

CONCRETE SEALERS

A. Concrete sealer shall be a solvent-free concentrate of silane modified siloxane emulsion specifically formulated to seal cementitious surfaces.

B. All concrete surfaces shall be clean, dry and free of oil, grease, curing compound residues, and any other foreign matter that may prevent penetration of the sealer. Cleaning and preparation of the concrete surfaces shall be accomplished by high pressure waterblast or other approved mechanical means.

C. Mix and apply sealer in accordance with manufacturer's recommendations. Apply in two coats in a wet on wet fashion so as to completely saturate the surface. Minimum coverage rate shall be 125 square feet per gallon.

D. Concrete sealer shall be Sikagard 701W by Sika Corp. or accepted equivalent.

E. Submittals: Submit manufacturer's data sheets and application instructions for review.

CONCRETE REINFORCING

A. Concrete reinforcement for the project shall conform to the following:
1. All reinforcing steel shall be new billet steel in accordance ASTM A615, Grade 60, unless noted otherwise in the Structural Drawings or these notes.
2. Deformed Bar Anchors. ASTM A1064 minimum yield strength 70,000 psi as noted on the Structural Drawings. Reinforcing bars shall not be substituted for deformed bar anchors.

B. Detailing of reinforcing steel shall conform to the American Concrete Institute 315 Detailing Manual and all hooks and bends in reinforcing bars shall conform to ACI detailing standards, unless noted otherwise on the Structural Drawings.

F. In unscheduled grade beams, walls, and slabs, detail reinforcing as follows:
1. Class A lap beam top reinforcing bars at mid span.
2. Class A lap beam bottom reinforcing bars at the supports.
3. Provide Class B lap at other location pending Engineer's approval.
4. Provide standard hooks in top bars at cantilever and discontinuous ends of beams, walls and slabs.
5. Provide corner bars for all horizontal bars at the inside and outside faces of intersecting beams or walls. Corner bars are not required if horizontal bars are hooked.
6. Provide 2-#4 diagonal bars at all slab re-entrant corners placed under the top mat of steel.

G. Welding of reinforcing steel will not be permitted unless specifically shown on the Structural Drawings.

H. Heat shall not be used in the fabrication or installation of reinforcement.

I. Reinforcing steel clear cover shall be as follows:

1.	Drilled Piers	3"
2.	Earth-formed grade beams	1 1/2" top, 3" sides, 3" bottom
3.	Footings	3"
4.	Formed grade beams	1 1/2" top, 2" sides, 3" bottom
5.	Slab-on-grade	1 1/2" top, 3" bottom

K. Submittal: Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with ACI 315 "Details and Detailing of Concrete Reinforcement". Do not reproduce the Structural Drawings for use as shop drawings.

STRUCTURAL MASONRY

A. Minimum compressive strength of the masonry (f'm) shall be as noted below.

B. Mortar shall conform to ASTM C270, Type S. Masonry cement shall not be used.

C. Concrete masonry units shall be hollow load bearing units which conform to ASTM C90, with a minimum net compressive strength as follows:

f'm (psi)	Net area Compressive Strength of CMU Block (psi)
2000	2000

D. Chases shall be built in and not cut in. Chases shall be plumb and shall be minimum one□ unit length from jambs of openings. Anchors, wall plugs, accessories and other items to be built in shall be installed as the masonry work progresses. All cutting and fitting of masonry, including that required to accommodate the work of other sections shall be done by masons with masonry saws.

E. Coarse grout shall conform to ASTM C476, with a maximum aggregate size of 1/2" and a minimum compressive strength equal to the specified minimum compressive strength, f'm, but not less than 2000 psi. Course grout shall be placed in accordance with ACI 530.01 Section 3.5.

F. Reinforce concrete masonry unit joints with ladder type hot dip galvanized cold-drawn steel conforming to ANSI/ASTM A82, with W1.7 slide rods with W1.7 cross rods.

1. Space joint reinforcing at 16 inches o.c. unless noted otherwise.
2. Lap joint reinforcing 14 inches at splices.
3. Provide prefabricated joint reinforcing corner pieces at all wall corners and intersections.
4. Joint reinforcing shall be discontinuous at control and expansion joints.

G. Lap reinforcing bars in grouted masonry as noted below. Splices in reinforcing shall be staggered so that not more than 1/2 of all bars are spliced at the same location.

1.	Vertical bars:	
	#4, #5 rebar	60 bar diameters
	#6 rebar	70 bar diameters
	#7 or larger rebar	Mechanical splices only
2.	Bond beams:	40 bar diameters
3.	Lintels:	Do not splice

H. Z-ties shall be provided in all masonry surfaces used as a form for grout at 16 inches on center each way in vertical masonry surfaces and at 8 inches on center each way in horizontal masonry surfaces. The leg embedded in the masonry joint shall have its hook placed 3/4 inch from the outside face of the masonry.

I. Z-ties shall be manufactured from 3/16 inch diameter cold drawn wire. Ties shall be hot dip galvanized, 6 inches long with a 2 inches hook at each end, unless noted otherwise on the Structural Drawings.

J. Provide 1 inch clear cover between ties or longitudinal reinforcing and the inside face of masonry used as forms in grouted beams, pilasters and columns.

DESIGN BY OTHERS

A. In accordance with the Specifications the items listed below are not included in the Contract Documents. Design of these elements shall be the responsibility of the Contractor, and shall be designed and sealed by a registered professional engineer licensed in the state having jurisdiction at the project site.
1. Metal Stairs
2. Metal Ladders
3. Guardrail and Handrail Systems
4. Cold Formed Metal Framing
5. Pre-Engineered Metal Buildings
6. Open Web Steel Joists
7. Embedded assemblies and inserts, clamps, hangers, trapezes, unistrut, etc. for the support of MEP systems.
8. Embedded assemblies, inserts, and/or hangers for fire suppression systems.
9. Excavation Support and Protection

B. Design of the items listed above shall be in accordance with the General Building Code, and shall include all attachments to the structure.

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STATE OF TEXAS
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LICENSED
PROFESSIONAL ENGINEER

WILCO - FLEET SERVICES ADDITION

WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

PROJECT PHASE
CONSTRUCTION DOCUMENTS

REVISIONS

PROJECT NUMBER
2423
DATE ISSUED
07/29/2024
SHEET TITLE
GENERAL STRUCTURAL NOTES

SHEET NUMBER
S001

KSS ENGINEERS
280 WESTBURY LN
GEORGETOWN, TX 78633
512-401-3100
F-20710

POST-INSTALLED ANCHORS AND DOWELS

A. Expansion Anchors:
1. In Concrete: Expansion Anchors shall have been tested and qualified in accordance with ACI 355.2 and ICC-ES AC 193. Qualifying anchors shall be one of the following:
   a. Kwik Bolt TZ2 (ICC-ES ESR-4266), Hilti Inc.
   b. Strong Bolt 2 (ICC-ES ESR-3037), Simpson Strong-Tie Co., Inc.
2. In Grouted Masonry: Installation permitted in the face of wall only unless noted otherwise on the Structural Drawings. Installation shall not be allowed within 1 1/2 inches of a head (vertical) mortar joint. Expansion Anchors shall have been tested and qualified in accordance with ICC-ES AC 01. Qualifying anchors shall be one of the following products:
   a. Kwik Bolt 3 (ICC-ES ESR-1385), Hilti Inc.
   c. Strong-Bolt 2 (IAPMO-ES ER-240), Simpson Strong-Tie Co., Inc.

B. Screw Anchors:
1. In Concrete: Screw Anchors shall have been tested and qualified in accordance with ACI 355.2 and ICC-ES AC 193. Qualifying anchors shall be one of the following:
   a. Kwik HUS-EZ (ICC-ES ESR-3027), Hilti Inc.
   b. Titen HD (ICC-ES ESR-2713), Simpson Strong-Tie Co., Inc.
2. In Grouted Masonry: (Installation permitted in both the top and face of wall) Screw Anchors shall have been tested and qualified in accordance with ICC-ES AC 106. Qualifying anchors shall be one of the following products:
   a. Titen HD (ICC-ES ESR-1056), Simpson Strong-Tie Co., Inc.
   b. Kwik HUS-EZ (ICC-ES ESR-3056), Hilti Inc.

C. Adhesive Anchors with Threaded Rod:
1. In Concrete: Adhesive Anchors shall have been tested and qualified in accordance with ACI 355.4 and ICC-ES AC 308. Qualifying anchors shall be one of the following products:
   a. Epoxy: HIT-RE 500V3 SAFE SET (ICC-ES ESR-3814), Hilti Inc.
   b. Epoxy: SET-3G (ICC-ES ESR-4057), Simpson Strong-Tie Co., Inc.
   c. Acrylic: HIT-HY 200 V3 SAFE-SET (ICC-ES ESR-4868), Hilti Inc.
   d. Acrylic: AT-3G (ICC-ES ESR-5026), Simpson Strong-Tie Co., Inc.
2. In Grouted Concrete Masonry: (Installation permitted in both the top and face of wall) Adhesive Anchors shall have been tested and qualified in accordance with ICC-ES AC 58. Qualifying anchors shall be one of the following:
   a. Acrylic: HIT-HY 200 V3 (ICC-ES ESR-4878), Hilti Inc.
   b. Epoxy: SET-3G (ICC-ES ESR-4844), Simpson Strong-Tie Co., Inc.
3. In Ungrouted Concrete Masonry:
   a. Epoxy: SET-3G (ICC-ES ESR-4057), Simpson Strong-Tie Co., Inc.
   b. Acrylic: HIT HY-270 (ICC-ES ESR-4144), Hilti, Inc.
4. Threaded anchor rod shall be one of the following:
   a. Dry Interior Use: Steel meeting the requirements of ASTM F1554, grade 36.
   b. Exterior Use: Steel meeting the requirements of ASTM F1554, grade 36, hot dip galvanized.
   c. Anchor rod shall have a chamfered end on one end to accept a nut and washer; it may have a 45-degree chisel point on the other end.
   d. Nuts and washers shall have a proof load strength at least as strong as anchor rod. Stainless steel nuts and washers shall be provided with stainless steel rods.

D. Adhesive Rebar Dowelling
1. Adhesive dowels are not permitted to be substituted for cast-in dowels unless authorized in advance by KSS Engineers for each specific location.
2. Adhesive doweling systems in concrete shall have been tested and qualified in accordance with ACI 355.4 and ICC-ES AC 308. Qualifying anchors shall be one of the following products:
   a. Epoxy: HIT-RE 500V3 SAFE SET (ICC-ES ESR-3814), Hilti Inc.
   b. Epoxy: SET-3G (ICC-ES ESR-4057), Simpson Strong-Tie Co., Inc.
   c. Acrylic: HIT-HY 200 V3 SAFE-SET (ICC-ES ESR-4868), Hilti Inc.

E. Anchor and Dowel Installation
1. Anchors and dowels of the size and embedment shown on the Drawings shall be installed in accordance with the Contract Documents, the manufacturer's recommendations, and the manufacturer's current evaluation (ICC-ES or IAPMO-ES) report for the anchor. If conflicts exist between these referenced documents, the most stringent requirements shall govern.
2. The Contractor shall locate all existing reinforcing steel and other embedded items contained in the concrete using non-destructive methods and shall position anchor locations to avoid conflicts with existing embedded items. Anchor or dowel locations can be adjusted by a maximum of 1 1/2" from detailed locations to avoid conflicts, but shall neither change arrangement nor move closer to a concrete edge.
3. Based on field verified locations of reinforcing steel and embedded items, the Contractor shall create templates for each anchor group. Submit template dimensions for review prior to fabrication of connection plates.
4. Holes for anchors and dowels shall be drilled in a continuous operation using the drill-bit type and size recommended by the anchor manufacturer. Holes shall be drilled perpendicular to the concrete surface and shall not be enlarged or redirected at any point along its length. Holes shall be drilled using a hammer drill, coring shall not be allowed, unless noted otherwise.
5. Oil free compressed air shall be used to blow out the holes; shop vacs, squeeze bulbs, etc. shall not be used. Refer to manufacturer's information for detailed cleaning instructions.
   a. Hilti Safe-Set system may be used to eliminate hole cleaning with adhesive anchors.
6. All abandoned holes shall be filled with non-metallic nonshrink grout capable of reaching a design compressive strength of 5,000 psi at 28 days.
7. Holes in connection plates shall be no more than 1/16" larger than the anchor diameter. If larger holes are required for erection purposes, Contractor shall notify Engineer such that a plate washer size can be provided.
8. Anchors may be installed in concrete obtaining a minimum compressive strength of 2500 psi at 21 days.
9. Adhesive anchors and dowels: Concrete and masonry substrates shall have the following minimum and maximum temperatures at the time of adhesive anchor and dowel installation:

	Minimum (°F)	Maximum (°F)
Hilti HIT RE-500V3	None specified	
Simpson SET-3G	45	90
Hilti HY-270	41	104
Hilti HY-200 V3	14	104

F. The following parameters were used in the determination of the adhesive bond stress for adhesive anchors:
1. Concrete temperature range:
   a. Epoxy: HIT-RE 500V3 SAFE SET (ICC-ES ESR-3814): Temperature range "A" (Max short term temp = 110° F, max long term temp = 80° F)
   b. Epoxy: SET-3G (ICC-ES ESR-4057): Temperature Range A (Max. Short term temp. = 160° F, max. long term temp. = 110° F)
   c. Acrylic: HIT-HY200 V3 SAFE SET (ICC-ES ESR-3187): Temperature range "A" (Max short term temp = 104° F, max long term temp = 75° F)
2. Drilled hole condition: Dry

G. For adhesive anchors installed in a horizontal orientation subject to sustained tension loading and all upwardly inclined (including soffit installations) orientation:
1. Per ACI 318-14 (17.8.2.2): Installation shall be performed by personnel certified by ACI/CRSI "Adhesive Anchor Installer Certification Program." Certification shall include written and performance tests.

STRUCTURAL STEEL

A. Material
1. All hot rolled steel members shall be new and conform to ASTM specification A6.
2. ASTM Specification and Grade - clearly mark the grade on each member.
3. Unless Noted otherwise on the Structural Drawings, structural steel members shall be:
   a. W-shapes shall conform to ASTM A992.
   b. Channels shall conform to ASTM A36.
   c. Angles shall conform to ASTM A36.
   d. Steel pipe shall conform to ASTM A53, Type E or S, Grade B.
   e. Round hollow structural shape members shall conform to ASTM A500, Grade B Fy = 42 ksi.
   f. Square or rectangular hollow structural shape members shall conform to ASTM A500 Grade B, Fy = 46 ksi.
   g. Structural steel plate shall conform to ASTM A36.
   h. Any other steel shall conform to ASTM A36.

B. Fabrication
1. Splicing of structural steel members is prohibited without prior approval of the Engineer as to location and type of splice to be made. Any member having splice not shown and detailed on shop drawings will be rejected.
2. Dimensional tolerances of fabricated structural steel shall conform to Section 6.4 of the AISC Code of Standard Practice unless noted otherwise on the Structural Drawings.
3. Shop painting: Paint structural steel with one coat of manufacturer's standard red oxide primer applied at a rate to provide a uniform dry film thickness of 2.5 mils.

C. Erection
1. Erection tolerances of anchor bolts, embedded items, and all structural steel unless specified otherwise on the Structural Drawings shall conform to the AISC Code of Standard Practice.
2. Field cutting of structural steel or any field modifications to structural steel shall not be made without prior approval of the Engineer.
3. Contractor shall protect any unprimed structural steel from detrimental effects of corrosion, as required, until the steel is enclosed and protected by the new construction.
4. Hot dip galvanize after fabrication all structural steel items and connections permanently exposed to the weather, whether specified on the Structural Drawings or not. Such items include, but are not limited to:
   a. Shelf angles
   b. All embedded plates in concrete
   c. Building cladding support steel in space not air conditioned and/or exposed to moisture outside the exterior waterproofing surface if any.
   d. Railing exposed to weather.
   e. Examine the Architectural and Structural Drawings for other items required to be hot dipped galvanized. Galvanize all nuts, bolts, and washers used in connection with such steel. Field welded connections shall have welds protected with "Z.R.C. Cold Galvanizing Compound" as manufactured by Z.R.C. Company.

D. Contractor shall coordinate structural steel fireproofing requirements. All interior structural steel, including steel joists, scheduled or indicated to receive spray applied fireproofing shall be delivered to the project site unprimed. Steel exposed to corrosive conditions after installation shall be primed with a protective coating which does not diminish the bond between the spray applied fireproofing, and the steel substrate. Any primer, and/or coating applied to structural steel shall be approved for use in the applicable U.L. Fire Resistance Assembly used on the project.

E. Submittal: Provide drawings showing details for fabrication and shop assembly of members, erection plans and details. Include details of connections, camber, weld profiles and sizes and spacing. Shop and erection drawings shall not be made using reproductions of the Structural Drawings.

STRUCTURAL STEEL CONNECTIONS

A. Welded Connections
1. All welding shall conform to ANSI/AWS D1.1, latest edition.
2. Fillet welds with no size specified shall be 3/16 inch or minimum size required by AISC, whichever is larger.

B. Bolted Connections
1. Unless noted otherwise on the Structural Drawings, bolts shall be 3/4 inch diameter and conform to ASTM F3125, grade A325, type 1. Bolts shall be designed using values for bearing type bolts with thread allowed in the shear plane.
2. Bolts shall be tightened to "snug tight" as defined by AISC, unless noted otherwise on the Structural Drawings.
3. Refer to "Structural Steel Slip-Critical Bolted Connections" structural notes at slip-critical bolted connections.

C. Structural steel connections not specifically detailed on the Structural Drawings shall be designed and detailed by the Contractor under the direct supervision of a professional engineer licensed in the state having jurisdiction at the project site. Sealed calculations for all connections designed by the Contractor shall be submitted for the Architect's files.

D. Beam connections shall be designed and detailed as follows, unless noted otherwise on the Structural Drawings:
1. Connections shall be AISC type 2 simple framing connections. Shear tab connections shall not be used unless specifically detailed on the Structural Drawings, or connections are designed and detailed by the fabricator's registered professional engineer licensed in the State of Texas and sealed calculations are submitted.
2. In general, shop connections shall be bolted or welded and field connections shall be bolted.
3. Where indicated, connections shall be designed for the scheduled shear force. The shear force is indicated on the Structural Drawings as "R = ", and the horizontal force indicated as "H = ".
4. If not indicated on the Structural Drawings, connections shall be designed for 55 percent of the total load capacity for the beam span shown in the beam tables in the AISC Manual referenced in the "Codes & Referenced Reports" notes.
5. Short slotted holes shall be permitted provided washers are installed in accordance with AISC requirements. Washers shall be hardened where A325 bolts are utilized.

E. All beam shears, reactions, member forces, moments, etc. shown on the Structural Drawings are unfactored loads conforming to the requirements of AISC Allowable Stress Design (ASD).

F. Roof edge angles shall be continuous and shall be spliced only at supports. Splices shall be butt welded to develop full capacity of the member.

G. Base Plates
1. Column base plates shall be set to the elevation indicated on the Structural Drawings and leveled using shims or by double nuts on anchor bolts. Base plates shall then be grouted with a non-shrink, high strength nonmetallic grout. Tighten anchor bolts after supported members have been positioned and plumbed.
2. Hole sizes in base plates shall be oversized with fabricated plate washers per AISC Table 14-2.

H. Anchor rods shall be:
1. Typical: ASTM F1554 Gr. 36, Weldable.

I. For connections not specifically addressed by these notes or the Structural Drawings, provide fillet welds at all contact surfaces sufficient to develop the tensile strength of the smaller member at the joint.

PRE-ENGINEERED METAL BUILDINGS

A. All structural steel used for Pre-Engineered Building Components shall be designed, fabricated, and erected in conformance with the latest standards of the AISC. The design and fabrication of cold-formed steel members shall comply with the AISI, latest edition.

B. The design for all Pre-Engineered Building members and components (including anchor bolt sizes, lengths and embedment) shall be the responsibility of the Pre-Engineered Building manufacturer. The design shall be carried out under the direction of a registered professional engineer licensed in the state having jurisdiction at the project site.

C. The design of all Pre-Engineered Building Components shall be based on the all dead, live, wind, seismic and collateral loads indicated in the "Design Loads" section of the Structural Notes. Colateral loads do not include individual mechanical units. Load combinations shall comply with the building code. Deflections of the Pre-Engineered Building Structure under loading shall not exceed the following:

1. End Wall Column supporting the following (Wind):
   formed metal siding — L/240 Lateral
2. End Wall Rafter supporting the following:
   formed metal roofing and no roof covering and not supporting ceiling (Live) — L/150 Vertical
   nonplaster ceiling (Live or Wind) — L/240 Vertical
   glass skylights (Live) — 3/4" max
4. Wall Girt supporting the following (Wind):
   formed metal siding — L/90 Lateral
   flexible finishes — L/120 Lateral
   flexible finishes and glass — L/180 Lateral
5. Roof Purlin supporting the following:
   formed metal roofing and no roof covering and not supporting ceiling (Live) — L/150 Vertical
   nonplaster ceiling (Live or Wind) — L/240 Vertical
   glass skylights (Live) — 3/4" max
6. Wall Panel siding made of formed metal sheets — L/60
7. Roof Panel supporting no roof covering — L/60
8. Rigid Frame Drift supporting the following (Wind):
   metal panel — L/120
9. Rigid Frame supporting the following:
   formed metal roofing and no roof covering and not supporting ceiling (Live) — L/150 Vertical
   nonplaster ceiling (Live or Wind) — L/240 Vertical
   glass skylights (Live) — 3/4" max
10. Wind Bent Drift supporting the following:
   metal panel — L/120

D. Bases of columns shall be designed as pinned supports.

E. All building components shall be compatible with the Contract Documents. Any requests for modifications shall be submitted to the Architect during the bidding process.

F. Field welded connections for cold-formed steel members shall not be permitted without specific written approval of the Architect.

G. Lateral stability of the building frame shall be provided in the structural framing. Walls and other building components shall not be used to resist lateral loads unless noted otherwise on the Structural Drawings.

H. Shop drawings shall be prepared for all structural items and submitted for record only. Structural Drawings shall not be reproduced and used as shop drawings. Any items deviating from the Contract Documents or from previously submitted shop drawings shall be so noted. Shop drawings shall be sealed and signed by a registered professional engineer licensed in the state having jurisdiction at the project site.

I. Metal building shall be designed and constructed to support all mechanical equipment. Girts and purlins shall be provided as required by design.

OPEN WEB JOISTS

A. Open web steel joists shall conform to the Standard Specifications of the Steel Joist Institute (SJI). Chords of joists shall be angles or tees.

B. Provide bridging in accordance with SJI Specifications and OSHA Standard 29 CFR-1926.757(C). Bridging shall be continuous through structural steel members, and shall be anchored to spandrel members or walls. Provide additional bridging where required for uplift.

C. Design joists for dead loads, live loads, snow loads, and wind pressures indicated in the Design Loads section of the Structural Notes. Joists shall be designed for additional loads indicated on roof loading plans, roof framing plans, and sections/details, as applicable.

D. Joist manufacturer shall design chords of joists to support a nominal concentrically-applied load of 100 pounds between all panel points without requiring additional reinforcing. This additional load has been accounted for in the overall design loads and is not additive to those specified.

E. All hangers or attachments to joists shall be placed concentric with the top and bottom chord(s). Hangers with reactions in excess of 100 pounds must be located at the panel points of the joist, or the chord(s) shall be reinforced in accordance with the "Typical Details."

F. Provide flat bearing for all joists. Bear joists on supports in accordance with SJI Specifications.

G. Joists shall be connected to their supports in accordance with SJI Specifications and as indicated by the joist manufacturer.

H. Shop painting: Joists shall receive a shop-coat of the joist manufacturer's standard rust inhibitive primer conforming to the Steel Structures Painting Council Specification, SSPC No. 15, or better.

I. Submittals: Submit shop drawings including setting plans and shop tickets indicating standard designations, bridging, camber, material strengths, spacing, joist seat extensions and connection details. Submit calculations for all joists for which standard load tables are not applicable. Calculations must be submitted prior to or with shop drawings. Calculations shall be signed and sealed by a registered professional engineer licensed in the state having jurisdiction at the project site. Calculations will be retained for the Architects file and shall not be approved or returned.

METAL DECKS

A. Metal Roof Deck
1. Metal Roof Deck Schedule:

Location	Gauge	SDI Deck Type	Deck Depth (in)	Sheet Width (in)	Min. Ix (in4)	Min. Sp (in3)	Min. Sn (in3)
Typ. UNO	20	WR	1.5	36	0.212	0.234	0.245

Sp = positive section modulus in3
Sn = negative section modulus in3
I = moment of inertia in4

2. Roof deck shall be galvanized.
3. Sheet steel for galvanized roof deck and accessories shall conform to ASTM A653, Structural Quality, with a minimum yield strength of 33 ksi. Galvanizing shall conform to ASTM A653 with a minimum coating of G60 as defined in A653.
4. Sheet steel for prime painted roof deck and accessories shall conform to ASTM A1008 with a minimum yield strength of 33 ksi.
5. Roof deck shall be continuous over four or more supports.
6. Place deck panels on structural supports and adjust to final position with ends lapped 2 inches over structural supports. Provide minimum end bearing of 2 inches.
7. Roof deck connections shall be as follows:

Location	Support Connx Pattern	Support Fastener	Sidelap Fastener/ No per span
Typical Building			
Interior Field	36/4	5/8 ASW	#10 Tek/ 3
Perimeter Band	36/7	5/8 ASW	#10 Tek/ 5
Ridge Band	36/7	5/8 ASW	#10 Tek/ 5
Corner Zones	36/7	5/8 ASW	#10 Tek/ 5

See Design Wind Load information or plans for "a" dimension and Interior Fields, Perimeter Band, Ridge Band, and Corner Zones wind loads.
ASW = Arc Spot Weld

10. Arc Spot Welds shall be 5/8" minimum diameter and shall be made through weld washers for decking lighter than 22 gauge.
11. Weld electrodes shall be: E60XX for deck thickness of 22 gage or greater and E70XX for deck thickness less than 22 gage.
12. Mechanical, electrical and plumbing systems shall not be supported by the metal roof deck.
13. Submittal: Submit deck layout plans and details indicating deck type, fastening methods and layout, support locations, projections, openings and reinforcement, and any other pertinent details and accessories.

LIGHT GAUGE STRUCTURAL STEEL MEMBERS

A. The design, installation, and construction of cold-formed structural steel shall be in accordance with the American Iron and Steel Institute (AISI-General, AISI-NAS, AISI-Header, AISI-WSD, and AISI-Lateral)

B. Unless noted otherwise on the Structural Drawings, all cold-formed structural steel shall be manufactured from zinc coated (hot dip process minimum G60) sheet conforming to current ASTM A653 with minimum yield strength of 33 ksi for 18 gauge and lighter and 50 ksi for 16 gauge and heavier.

C. The design of all cold-formed structural steel members shall be based on the dead, live, wind, seismic and collateral loads indicated in the "Design Loads" section of the Structural Notes. Colateral loads do not include individual mechanical units. Load combinations shall comply with the building code. Deflections of the cold-formed steel members under loading shall not exceed the following:

1. Roof Members with:
   Drop-in Ceiling or No Ceiling — L/240 Vertical
   Plaster or Gypsum Board Ceiling — L/360 Vertical
2. Exterior Walls and Interior Partitions behind:
   Other Brittle Finishes — L/360 Lateral
   Flexible Finishes — L/240 Lateral
   Masonry Veneer — L/600 Lateral

D. All cold-formed structural steel studs and jambs shall be full height without an intermediate plate line or splice unless detailed otherwise on the Structural Drawings.

E. All connections in between cold-formed structural steel and connections to foundation, unless noted otherwise on the Structural Drawings, are not the responsibility of the Engineer, and shall be designed by a registered professional engineer licensed in the state having jurisdiction at the project site.

F. Contractor shall submit shop drawings and calculations for review and approval prior to fabrication or construction. Shop drawings and calculations shall be signed and sealed by a registered professional engineer licensed in the state having jurisdiction at the project site to include the following:
1. Design of permanent wall horizontal bridging and joist blocking, including member sizes and connections.
2. C.F.S. wall studs, headers, beams, and their connections.
3. Properties of connection components, such as clips, straps, and screws.
4. Forces in connections and design of connections.
5. Erection plan identifying all temporary bracing required for wall studs.

G. Roof Decking: 3/8" Performance Category, APA rated Sheathing, span rated 24/0. Exposure 1, nominal 4'-0" x 8'-0" (either tongue and groove or square edge). Panels shall be continuous over two or more spans with the long dimension oriented perpendicular to the framing members. Connections to joists shall be #8 wafer head screws at 8" o.c. at all supported edges, and at 12" o.c. at all intermediate supports. Screws shall be 3/8" from the edge of sheathing. Provide 1/8" gap at panel edges and stagger joints in sheathing.

JOINT SEALANT

A. Joint sealant shall be a 2-component, premium-grade, polyurethane-based, elastomeric sealant with a chemical cure. Sealant shall have a self-leveling consistency in horizontal applications, and a non-sag consistency in vertical applications.

B. All joint surfaces shall be clean, sound and frost-free. Joint walls shall be free of oil, grease, curing compound residues, and any other foreign matter that may prevent bond. Cleaning and preparation of joint surfaces shall be accomplished by mechanical means.

C. Bond breaker tape, closed-cell backer rod or other approved method shall be used in bottom of joint to control depth and to prevent bond to bottom of joint.

D. Thoroughly mix A, B and color pack components in accordance with manufacturer's instructions to achieve a uniform color and consistency.

E. Pour or extrude sealant in one direction and allow to flow and level as necessary. Place nozzle of gun into bottom of joint and fill entire joint. Keep the nozzle deep in the sealant and continue with steady flow of sealant preceding nozzle to avoid air entrapment. Do not overlap sealant. Tool joint surface as required.

F. Self-leveling joint sealant shall be Sikaflex -2c SL by Sika Corp. or accepted equivalent.

G. Non-sag joint sealant shall be Sikaflex -2c NS by Sika Corp. or accepted equivalent.

H. Submittals: Submit manufacturer's data sheets and application instructions for review.

EXPANSION JOINT SEALS

A. Expansion joint seals shall be a preformed expanding foam sealant produced by impregnating permanently elastic, high density, open-cell, polyurethane foam with water-based, polymer-modified asphalt. Material shall be precompressed to 20% of the material's original uncompressed dimension.

B. All joint surfaces shall be free from gross irregularities, loose particles, foreign matter such as dirt, dust, ice, snow, or water, coatings such as oil, grease, or curing compound residues, and any other foreign matter that may prevent bond. Cleaning and preparation of joint surfaces shall be accomplished by mechanical means.

C. Mix and apply epoxy primer to the joint surfaces and install expansion joint seals per manufacturer's instructions.

D. Join consecutive lengths of material with a 45 degree miter.

E. Manufacturer's representative shall review joint after surface preparation and prior to seal installation, and shall observe initial installation of seal to confirm contractor is complying with manufacturer's instructions.

F. Expansion joint seals shall be 20H System by Emseal Joint Systems, Ltd. or accepted equal.

G. Submittals: Submit manufacturer's data sheets and installation instructions for review.

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WILCO - FLEET SERVICES ADDITION

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PROJECT PHASE
CONSTRUCTION DOCUMENTS

REVISIONS

PROJECT NUMBER
2423
DATE ISSUED
07/29/2024
SHEET TITLE
GENERAL STRUCTURAL NOTES

SHEET NUMBER
S002

SPECIAL INSPECTIONS

1. Special Inspections shall be performed in accordance with Chapter 17 of the International Building Code (IBC) by a Special Inspector hired by the Owner to perform the Special Inspections listed below. The Special Inspector shall be qualified by an approved agency according to the City's building official to perform the special inspections for which they will be undertaking. The Contractor shall coordinate with and notify the Special Inspector of all tests. The Special Inspector shall be responsible to verify that the items detailed in the Construction Documents were built accordingly and shall prepare, sign, and furnish inspection reports to the building official and the Architect for all time spent at the site. The Inspector shall bring discrepancies to the Immediate attention of the General Contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the building official and to the Architect prior to the completion of that phase of the work. These special inspections are in addition to the other inspections listed in these Structural Notes or Project Specifications.

2. Where structural load-bearing members and assemblies are shop fabricated, the Special Inspector shall verify that the fabricator maintains detailed fabrication and quality control procedures that provide a basis for inspection control of the workmanship and the fabricator's ability to conform to the Construction Documents and Referenced Standards, unless the fabricator is registered and approved to perform such work without special inspection.

VERIFICATION AND INSPECTION TASKS FOR WELDING OF STRUCTURAL STEEL[1] (AISC 360-10 Table N5.4)

SPECIAL INSPECTION REQUIRED	VERIFICATION AND INSPECTION	INSPECTION FREQUENCY		REFERENCED STANDARD	IBC REFERENCE
		CONTINUOUS	PERIODIC		
	1. Inspection tasks prior to welding:				
YES	a. Welding procedure specifications (WPSs) available	X	–	AISC 360-10 N5.4-1; AWS D1.1	1705.2.1
YES	b. Manufacturer certifications for welding consumables available	X	–		
YES	c. Material identification (type/grade) [2]	–	X		
YES	d. Welder identification system [2]	–	X		
YES	e. Fit-up of groove welds (including joint geometry) [2] 1) Joint preparation 2) Dimensions (alignment, root opening, root face, bevel) 3) Cleanliness (condition of steel surfaces) 4) Tacking (tack weld quality and location) 5) Backing type and fit (if applicable)	–	X		
YES	f. Configuration and finish of access holes. 2	–	X		
YES	g. Fit-up of fillet welds [2] 1) Dimensions (alignment, gaps at root) 2) Cleanliness (condition of steel surfaces) 3) Tacking (tack weld quality and location)	–	X		
YES	h. Check welding equipment	–	X		
	2. Inspection tasks during welding:				
YES	a. Use of qualified welders	–	X	AISC 360-10 N5.4-2: AWS D1.1	1705.2.1
YES	b. Control and handling of welding consumables [2] 1) Packaging 2) Exposure control	–	X		
YES	c. No welding over cracked tack welds 2	–	X		
YES	d. Environmental conditions [2] 1) Wind speed within limits 2) Precipitation and temperature	–	X		
YES	e. WPS followed [2] 1) Settings on weld equipment 2) Travel speed 3) Selected welding materials 4) Shielding gas type/flow rate 5) Preheat applied 6) Interpass temperature maintained (min./max.) 7) Proper position (F, V, H, OH)	–	X		
YES	f. Welding techniques [2] 1) Interpass and final cleaning 2) Each pass within profile limitations 3) Each pass meets quality requirements	–	X		
	3. Inspection tasks after welding:				
YES	a. Welds cleaned	–	X	AISC 360-10 N5.4-2: AWS D1.1	1705.2.1
YES	b. Size, length and location of welds	X	–		
YES	c. Welds meet visual acceptance criteria 1) Crack prohibition 2) Weld/base-metal fusion 3) Crater cross section 4) Weld profiles 5) Weld size 6) Undercut 7) Porosity	X	–		
YES	d. Arc strikes [3]	X	–		
YES	e. k-area	X	–		
YES	f. Backing removed and weld tabs removed (if required)	X	–		
YES	g. Repair activities	X	–		
YES	h. Document acceptance or rejection of welded joint or member	X	–		

1. Inspection tasks noted in this table are the responsibility of the Special Inspector or Quality Assurance Inspector (QAI). The fabricator and erector are responsible for all inspection tasks indicated in AISC 360-10 Section N5 and assigned to the Quality Control Inspector (QCI)

2. Inspection tasks may be coordinated with the fabricator or erector's Quality Control Inspector (QCI) where indicated with this footnote. All other tasks shall be performed by the Special Inspector.

3. 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 in. (75 mm) of the weld.

VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION OTHER THAN STRUCTURAL STEEL (IBC 1705.2.2)

SPECIAL INSPECTION REQUIRED	VERIFICATION AND INSPECTION	INSPECTION FREQUENCY		REFERENCED STANDARD	IBC REFERENCE
		CONTINUOUS	PERIODIC		
	1. Cold-formed steel deck:				
YES	a. Floor and roof deck welds	–	X	SDI QA/QC	1705.2.2

REQUIRED SPECIAL INSPECTION OF OPEN-WEB STEEL JOISTS AND JOIST GIRDERS (IBC TABLE 1705.2.3)

SPECIAL INSPECTION REQUIRED	VERIFICATION AND INSPECTION	INSPECTION FREQUENCY		REFERENCED STANDARD	IBC REFERENCE
		CONTINUOUS	PERIODIC		
	1. Installation of open-web steel joists and joist girders.				
YES	a. End connections - welding or bolted.	–	X	SJI Specs per IBC 2207.1	1705.2.3
YES	b. Bridging - horizontal or diagonal	–			
	1. Standard bridging	–	X	SJI Specs per IBC 2207.1	1705.2.3
	2. Bridging that differs from the SJI specifications listed in IBC Section 2207.1	–	X		1705.2.3

LEVEL A REQUIRED VERIFICATION AND INSPECTION OF MASONRY CONSTRUCTION (ACI 530 Table 3.1.1)
MINIMUM VERIFICATION
Prior to construction, verify certificates of compliance used in masonry construction.
INSPECTION TASK
Verify compliance with the approved submittals

VERIFICATION AND INSPECTION TASKS FOR BOLTING STRUCTURAL STEEL[1] (AISC 360-10 Tables N5.6)

SPECIAL INSPECTION REQUIRED	VERIFICATION AND INSPECTION	INSPECTION FREQUENCY		REFERENCED STANDARD	IBC REFERENCE
		CONTINUOUS	PERIODIC		
	1. Inspection tasks prior to bolting:				
YES	a. Manufacturer's certifications available for fastener materials	X	–	AISC 360-10 N5.6-1	1705.2.1
YES	b. Fasteners marked in accordance with ASTM requirements	–	X		
YES	c. Proper fasteners selected for the joint detail (grade, type, bolt length if threads are to be excluded from shear plane) [2]	–	X		
YES	d. Proper bolting procedure selected for joint detail 2	–	X		
YES	e. Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements	–	X		
YES	f. Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used	–	X		
YES	g. Proper storage provided for bolts, nuts, washers and other fastener components	–	X		
	2. Inspection tasks during bolting:				
YES	a. Fastener assemblies, of suitable condition, placed in all holes and washers (if required) are positioned as required [2]	–	X	AISC 360-10 N5.6-2	1705.2.1
YES	b. Joint brought to the snug-tight condition prior to the pretensioning operation [2]	–	X		
YES	c. Fastener component not turned by the wrench prevented from rotating.[2]	–	X		
YES	d. Fasteners are pretensioned in accordance with the RCSC Specification, progressing systematically from the most rigid point toward the free edges	–	X		
	3. Inspection tasks after bolting:				
YES	a. Document acceptance or rejection of bolted connections	X	–	AISC 360-10 N5.6-3	1705.2.1

1. Inspection tasks noted in this table are the responsibility of the Special Inspector or Quality Assurance Inspector (QAI). The fabricator and erector are responsible for all inspection tasks indicated in AISC 360-10 Section N5 and assigned to the Quality Control Inspector (QCI)

2. Inspection tasks may be coordinated with the fabricator or erector's Quality Control Inspector (QCI) where indicated with this footnote. All other tasks shall be performed by the Special Inspector.

VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION (IBC TABLE 1705.3)

SPECIAL INSPECTION REQUIRED	VERIFICATION AND INSPECTION	INSPECTION FREQUENCY		REFERENCED STANDARD	IBC REFERENCE
		CONTINUOUS	PERIODIC		
YES	1. Inspection of reinforcing steel, including prestressing tendons, and placement.	–	X	ACI 318 Ch. 20, 25.2, 25.3, 26.5.1-26.5.3	1908.4
	2. Reinforcing bar welding:				
YES	a. Verify weldability of reinforcing bars other than ASTM A706	–	X	AWS D1.4 ACI 318: 26.5.4	–
YES	b. Inspect single-pass fillet welds, maximum 5/16"	–	X		
YES	c. Inspect all other welds.	X	–		
YES	3. Inspection of anchors cast in concrete.	–	X	ACI 318: 17.8.2	–
	4. Inspection of post-installed anchors in hardened concrete.				
YES	a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.	X	–	ACI 318: 17.8.2.4	–
YES	b. Mechanical anchors and adhesive anchors not defined in 4.a.	–	X	ACI 318: 17.8.2	
YES	Special Inspector must be certified by ACI/CRSI "Adhesive Anchor Installer". A report must be submitted to the licensed design professional and building official documenting, stating how each anchor was installed, including the Manufacturer's Printed Installation Instructions per ACI 318	–	–	ACI 318: 17.8.2.2 17.8.2.4	
YES	5. Verify use of required design mix.	–	X	ACI 318: Ch. 19 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
YES	6. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	–	ASTM C172 ASTM C31 ACI 318: 26.4.5, 26.12	1908.10
YES	7. Inspect concrete and shotcrete placement for proper application techniques.	X	–	ACI 318: 26.4.5	1908.6, 1908.7, 1908.8
YES	8. Verify maintenance of specified curing temperature and techniques.	–	X	ACI 318: 26.4.7-26.4.9	1908.9
	9. Inspection of prestressed concrete:				
YES	a. Application of prestressing forces	X	–	ACI 318: 26.9.2.1	–
YES	b. Grouting of bonded prestressing tendons	X	–	ACI 318: 26.9.2.3	
YES	10. Inspect erection of precast concrete members.	–	X	ACI 318: 26.8	–
YES	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.	–	X	ACI 318: 26.10.2	–
YES	12. Inspect formwork for shape, location and dimensions of the concrete member being formed.	–	X	ACI 318: 26.10.1(b)	–

VERIFICATION AND INSPECTION OF SOILS (IBC TABLE 1705.6)

SPECIAL INSPECTION REQUIRED	VERIFICATION, INSPECTION AND TESTING	INSPECTION FREQUENCY	
		CONTINUOUS	PERIODIC
YES	1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	–	X
YES	2. Verify excavations are extended to proper depth and have reached proper material.	–	X
YES	3. Perform classification and testing of compacted fill materials.	–	X
YES	4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.	X	–
YES	5. Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly.	–	X

VERIFICATION AND INSPECTION OF CAST-IN-PLACE DEEP FOUNDATION ELEMENTS (IBC TABLE 1705.8)

SPECIAL INSPECTION REQUIRED	VERIFICATION AND INSPECTION	INSPECTION FREQUENCY	
		CONTINUOUS	PERIODIC
YES	1. Inspect drilling operations and maintain complete and accurate records for each element.	X	–
YES	2. Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable) and adequate end bearing strata capacity. Record concrete or grout volumes.	X	–
YES	3. For concrete elements, perform additional inspections in accordance with IBC 2015 Section 1705.3	–	–

STRUCTURAL ABBREVIATIONS

ABOVE	- ABV.
ABOVE FINISHED FLOOR	- A.F.F.
ADDITIONAL	- ADD'TL.
ADHESIVE	- ADH.
ADJACENT	- ADJ.
AGGREGATE	- AGGR.
AIR CONDITIONER	- A/C
AIR HANDLING UNIT	- AHU
ALTERNATE	- ALT.
AMERICAN CONCRETE INSTITUTE	- A.C.I.
AMERICAN INSTITUTE OF STEEL CONSTRUCTION	- A.I.S.C.
ANCHOR BOLT	- A.B.
AND	- &
ANGLE	- L
APPROVED	- APPD.
APPROXIMATE	- APPROX.
ARCHITECT	- ARCH.
ARCHITECTURAL	- ARCH'L
ARCHITECTURALLY EXPOSED STRUCTURAL STEEL	- A.E.S.S.
ARCHITECTURALLY EXPOSED CONCRETE	- A.E.C.
AT	- @
BACK FACE	- B.F.
BACK TO BACK	- B. TO B.
BALANCED	- BAL.
BASEMENT	- BSMT.
BEAM	- BM.
BEARING	- BRG.
BELOW FINISH FLOOR	- B.F.F.
BETWEEN	- BTWN.
BEVEL(ED)	- BEV('D)
BLOCK	- BLK.
BLOCK LINTEL	- B.L.
BLOCKING	- BLK'G.
BOTTOM	- BOT.
BOTTOM OF	- B.O.
BOTTOM OF STEEL	- B.O.S.
BRACKET	- BRKT.
BRICKLEDGE	- BR.L.
BRIDGING	- BRDG.
BUILDING	- BLDG.
CANTILEVER(ED)	- CANT
CAMBER	- C
CAST-IN-PLACE	- C.I.P.
CEILING	- CLG.
CENTER LINE	- C.L.
CENTER OF GRAVITY	- C.G.
CENTER OF GRAVITY OR STRAND	- C.G.S.
CLEAR OR CLEARANCE	- CLR.
COLD FORMED STEEL	- CFS
COLUMN	- COL.
COMPRESSION	- C OR COMP.
CONCRETE	- CONC.
CONCRETE MASONRY UNIT	- CMU
CONNECTION(S)	- CONN(S)
CONTINUOUS	- CONT.
CONTRACTOR	- CONTR.
CONTROL JOINT	- C.J.
CONSTRUCTION	- CONST.
CONSTRUCTION JOINT	- CONST. JT.
COORDINATE	- COORD.
COVER PLATE	- COV. PL.
DETAIL	- DTL.
DEAD LOAD	- D.L.
DEFORMED BAR ANCHOR	- D.B.A.
DIAGONAL	- DIAG.
DIAMETER	- DIA. OR Ø
DIMENSION(S)	- DIM(S).
DOUBLE	- DBL.
DOUBLE EXTRA STRONG	- XX-STR
DOUGLAS FIR-LARCH	- DF
DOVETAIL	- DVTL.
DOWEL(S)	- DWL(S).
DOWNSPOUT	- DS.
DRAWING(S)	- DWG(S).
EACH	- EA.
EACH FACE	- E.F.
EACH WAY	- E.W.
EDGE OF DECK	- E.O.D.
ELECTRICAL	- ELEC.
ELEVATION	- EL.
ELEVATOR	- ELEV.
EMBEDMENT	- EMBED.
ENGINEER	- ENGR.
ENGINEER OF RECORD	- EOR
EQUAL	- EQ.
EQUIPMENT	- EQUIP.
EXHAUST FAN	- EF
EXISTING	- EXIST.
EXPANSION	- EXP.
EXPANSION JOINT	- E.J.
EXTERIOR	- EXT.
EXTRA STRONG	- X-STR
FACE TO FACE	- F. TO F.
FABRICATOR	- FABR.
FAR SIDE	- F.S.
FIELD VERIFY	- F.V.
FINISH(ED)	- FIN('D)
FINISHED FLOOR	- FIN.FL.
FIREPROOF(ING)	- FP.
FLANGE	- FLG.
FLOOR	- FL.
FLOOR DRAIN	- F.D.
FOOT(OR)FEET	- FT.
FOUNDATION	- FDN.
FRAMING	- FRMG
FULL PENETRATION	- FP
GAGE OR GAUGE	- GA.
GALVANIZED	- GALV.
GENERAL CONTRACTOR	- G.C.
GENERAL STRUCTURAL NOTES	- GSN
GLUE-LAMINATED	- GL.
GRADE	- GR.
GRADE BEAM	- GR.BM.
GRIND SMOOTH	- GS
HEADED STUD ANCHOR	- H.S.A.
HEIGHT	- HT.
HIGH POINT	- H.P.
HOLLOW STRUCTURAL SECTION	- HSS
HOOK	- HK.
HORIZONTAL	- HORIZ.
HORIZONTAL BRACE	- H.B.
HOT-DIP	- H.D.
INCH	- IN.
INFORMATION	- INFO.
INSIDE DIAMETER	- I.D.
INSIDE FACE	- I.F.
INTERIOR	- INT.
INTERMEDIATE	- INTERM.
JOINT	- JT.
JOIST(S)	- JST(S)
JOIST GIRDER	- J.G.
KIPS (1000 LB)	- K
KIP PER LINEAR FOOT	- KLF
KIP PER SQUARE FOOT	- KSF
KIP PER SQUARE INCH	- KSI
LAMINATED VENEER LUMBER	- LVL
LENGTH	- L.
LIGHTWEIGHT	- L.W.
LIGHTWEIGHT CONCRETE	- L.W.C.
LIVE LOAD	- L.L.
LOCATION	- LOC.
LONGITUDINAL	- LONG.
LONG LEG HORIZONTAL	- LLH
LONG LEG VERTICAL	- LLV
LONG SIDE HORIZONTAL	- LSH
LONG SIDE VERTICAL	- LSV
LONG SLOTTED HOLE	- LSL
LOW POINT	- L.P.
LOW VELOCITY FASTENER(S)	- L.V.F.('s)
MANUFACTURE(R)	- MFR.
MASONRY	- MAS.
MASONRY CONTROL JOINT	- MCJ
MASONRY EXPANSION JOINT	- MEJ
MATERIAL	- MAT.
MAXIMUM	- MAX.
MECHANICAL	- MECH.
MECHANICAL, ELECTRICAL, PLUMBING	- MEP
METAL	- MTL.
MEZZANINE	- MEZZ.
MIDDLE	- MID.
MINIMUM	- MIN.
MISCELLANEOUS	- MISC.
MOMENT	- M
MOMENT CONNECTION(S)	- M.C.
NEAR FACE	- N.F.
NOMINAL	- NOM.
NON-SHRINK	- N.S.
NOT IN CONTRACT	- N.I.C.
NOT TO SCALE	- N.T.S.
NUMBER	- NO. OR #
ON CENTER	- O.C.
OPENING(S)	- OPNG(S)
OPPOSITE	- OPP.
OPPOSITE HAND	- O.H.
OUTSIDE FACE	- O.F.
OUTSIDE DIAMATER	- O.D.
OVER-SIZED HOLE	- OVS
PAN	- P
PANEL JOINT	- P.J.
PARALLEL	- PAR.
PARALLEL STRAND LUMBER	- PSL
PERPENDICULAR	- PERP.
PIECE	- PC.
PLATE	- PL.
POINT	- PT.
POST-TENSION(ED)	- P-T
POUNDS	- # OR LB
POUNDS PER CUBIC FOOT	- PCF
POUNDS PER LINEAR FOOT	- PLF
POUNDS PER SQUARE FOOT	- PSF
POUNDS PER SQUARE INCH	- PSI
PRECAST CONCRETE	- P/C
PRE-ENGINEERED	- P/E
PRE-ENGINEERED METAL BUILDING	- P.E.M.B.
PREFABRICATED	- PREFAB.
PRELIMINARY	- PRELIM.
PRESSURE TREATED	- P.T.
PROJECTION	- PROJ.
QUANTITY	- QTY.
RADIUS	- R
REINFORCED CONCRETE PIPE	- RCP
REINFORCE(ING)(ED)(MENT)	- REINF.
REMAINDER	- REM.
REQUIRE	- REQ.
REQUIRED	- REQ'D.
RETENTION SYSYTEM	- RET.SYS.
RISER	- RIS.
ROOF	- RF.
ROOF DRAIN	- R.D.
ROOF TOP UNIT	- R.T.U.
ROOM	- RM.
ROUGH OPENING	- R.O.
ROUGH SAWN CEDAR	- R.S.C.
ROUND	- RND.
SCHEDULE(D)	- SCHED.
SECTION	- SECT.
SHEAR	- V
SHEET	- SHT.
SHORT SLOTTED HOLE	- SSL
SIDEWALK	- SW.
SIMILAR	- SIM.
SLAB ON GRADE	- S.O.G.
SOUTHERN PINE	- SYP
SPACE	- SPA.
SPECIFICATIONS(S)	- SPEC(S)
SPECIFIED	- SPEC'D
SQUARE	- SQ.
SQUARE FOOT	- S.F.
STAGGERED	- STAGG.
STAINLESS STEEL	- S.S.
STANDARD	- STD.
STEEL	- STL.
STEEL JOIST INSTITUTE	- S.J.I.
STIFFENER	- STIFF
STRAIGHT	- STR.
STIRRUPS	- STIRR.
STRUCTURAL	- STRUCT'L
STRUCTURE	- STRUCT.
SUBCONTRACTOR	- SUBCONTR.
SUPPORT(S)	- SUPT(S).
TEMPERATURE	- TEMP.
TENSION	- T
TERRAZZO	- TERR.
THICK	- THK.
THREAD(ED)	- THRD.
TONGUE AND GROOVE	- T&G
TOP AND BOTTOM	- T&B
TOP OF	- T.O.
TOP OF BEAM	- T.O.B.
TOP OF CONCRETE	- T.O.C.
TOP OF FOOTING	- T.O.F.
TOP OF JOIST	- T.O.J.
TOP OF PIER	- T.O.P.
TOP OF PIER (PIPLE) CAP	- T.O.P.C.
TOP OF STEEL	- T.O.S.
TOP OF WALL	- T.O.W.
TRANSVERSE	- TRANSV.
TREAD	- TR.
TYPICAL	- TYP.
UNLESS NOTED OTHERWISE	- U.N.O.
VERTICAL	- VERT.
VERTICAL BRACE	- V.B.
VERTICAL SLIDE CLIP	- VSC
WATERPROOFING	- WPFG.
WATERSTOP	- WS.
WEIGHT	- WT.
WELDED WIRE MESH	- W.W.M.
WIDTH	- W.
WIND LOAD	- W.L.
WINDOW	- WDW.
WITH	- W/
WITHOUT	- W/O
WOOD	- WD.
WORK POINT	- W.P.

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STATE OF TEXAS
AN-YIH SU
123736
LICENSED PROFESSIONAL ENGINEER

WILCO - FLEET SERVICES ADDITION

WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

PROJECT PHASE
CONSTRUCTION DOCUMENTS

REVISIONS

PROJECT NUMBER
2423

DATE ISSUED
07/29/2024

SHEET TITLE
SPECIAL INSPECTIONS AND ABBREVIATIONS

SHEET NUMBER
S003

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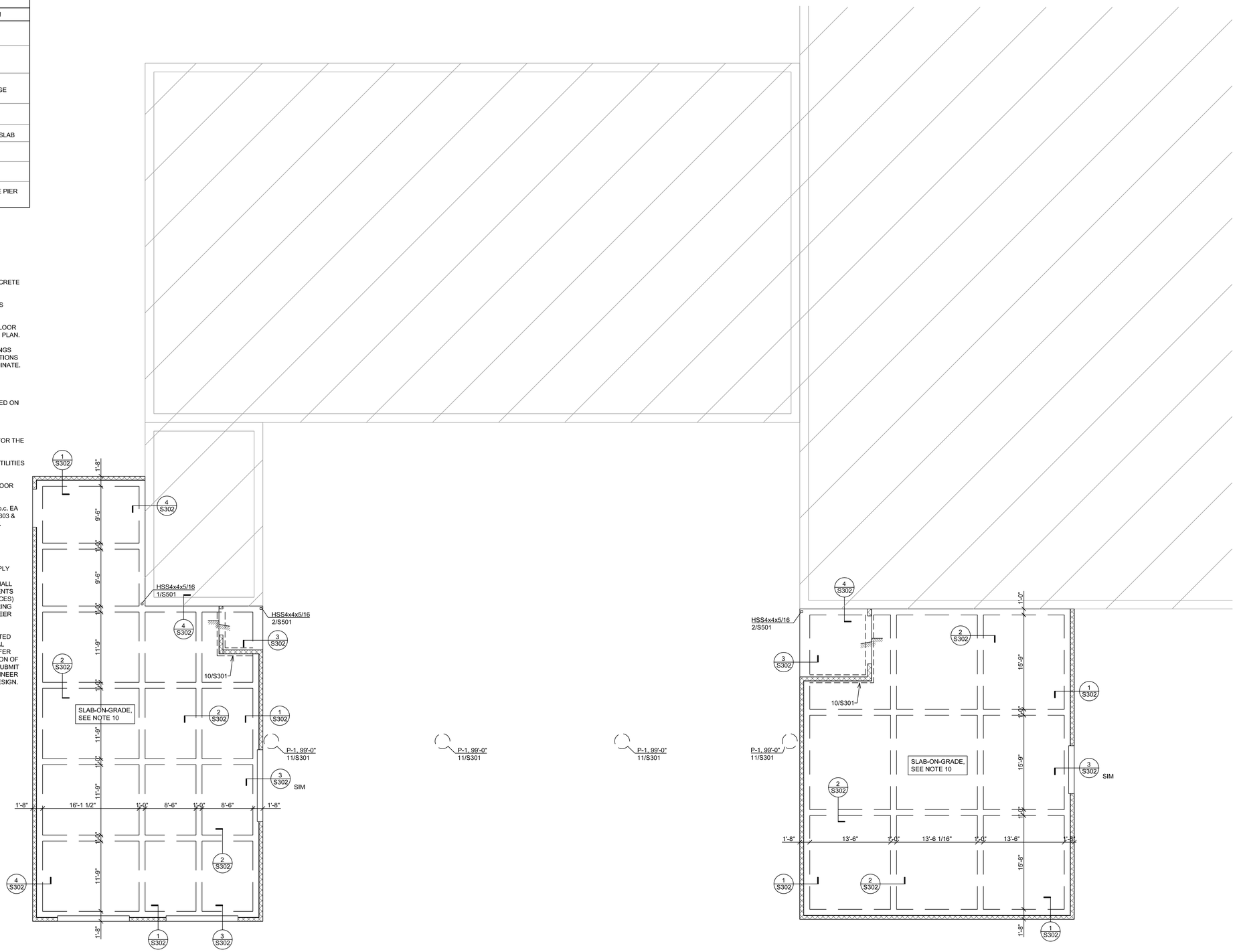
LEGEND

SYMBOL	DESCRIPTION
COLUMN SIZE / BASE PLATE	STEEL COLUMN
	8" NOM. CMU WALL, SEE 5/S303
	THICKENED SLAB EDGE
	DROP IN SLAB
	DROP AND SLOPE IN SLAB
	SLOPE IN SLAB
	EXISTING, F.V.
PIER TYPE, T.O. PIER EL / T.O. PIER DETAIL	CONCRETE PIER, SEE PIER SCHED & NOTE 11.

PLAN NOTES

1. FINISH FLOOR ELEVATION = MATCH EXISTING TOP OF CONCRETE SLAB, FIELD VERIFY. EXISTING TOP OF CONCRETE ELEVATION = 100'-0", UNLESS NOTED OTHERWISE.
2. TOP OF CONCRETE ELEVATION = FINISH FLOOR, UNLESS RECESSED TO RECEIVE FLOORING MATERIALS.
3. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF FLOOR RECESSES, DROPS AND SLOPES NOT DIMENSIONED ON PLAN.
4. SEE MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR LOCATIONS AND DIMENSIONS OF FLOOR PENETRATIONS NOT DIMENSIONED ON PLAN CONTRACTOR TO COORDINATE.
5. VERIFY AND COORDINATE DIMENSIONS SHOWN WITH ARCHITECTURAL DRAWINGS.
6. CENTERLINES OF FOOTINGS NOT SPECIFICALLY LOCATED ON PLAN BY NOTE OR DIMENSION SHALL BE LOCATED AT CENTERLINES OF FREESTANDING COLUMNS.
7. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS. CONCRETE MASONRY UNIT (CMU) WALLS ARE SHOWN FOR THE LEVEL ABOVE THE SLAB.
8. CONTRACTOR TO VERIFY LOCATION OF ALL EXISTING UTILITIES PRIOR TO EXCAVATION.
9. MASONRY LEDGE ELEVATION IS 1 1/2" BELOW FINISH FLOOR UNLESS SHOWN OTHERWISE.
10. 8" CONC. SLAB-ON-GRADE REINF w/ 2-LAYERS #4 @ 12" o.c. EA WAY TOP & BOTTOM OVER VAPOR RETARDER - SEE 5/S303 & STRUCTURAL NOTES FOR BUILDING PAD PREPARATION.
11. COORDINATE DRILLED PIER LOCATION WITH PEMB MANUFACTURER.
12. PEMB OVERHANG AT EXISTING SHOP OVERHANG:
    A. THE PEMB MANUFACTURER SHALL DESIGN AND SUPPLY MATERIAL REQUIRED TO MEET THE ARCHITECTURAL DRAWINGS AND LOCAL BUILDING CODES. THE PEMB SHALL ACT AS THE ENGINEER OF RECORD FOR THE COMPONENTS ABOVE THE FOUNDATION (BUILDING AND APPURTENANCES) AND SUBMIT CALCULATION AND SHOP DRAWINGS BEARING THE SIGNATURE AND SEAL OF A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS.

    B. FOUNDATIONS HAVE BEEN DESIGNED USING ESTIMATED REACTIONS ASSUMING PINNED PRE-ENGINEERED METAL BUILDING (PEMB) COLUMN BASES THAT DO NOT TRANSFER MOMENT TO THE FOUNDATION. PRIOR TO CONSTRUCTION OF THE FOUNDATION, THE PEMB MANUFACTURER SHALL SUBMIT THE COLUMN REACTIONS TO THE ARCHITECT AND ENGINEER FOR COMPATIBILITY REVIEW WITH THE FOUNDATION DESIGN.



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

N

WILCO - FLEET SERVICES ADDITION

WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

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CONSTRUCTION DOCUMENTS

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2423
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FOUNDATION PLAN

SHEET NUMBER
S101

KSS ENGINEERS
280 WESTBURY LN
GEORGETOWN, TX 78633
512-401-3100
F-20710

LEGEND

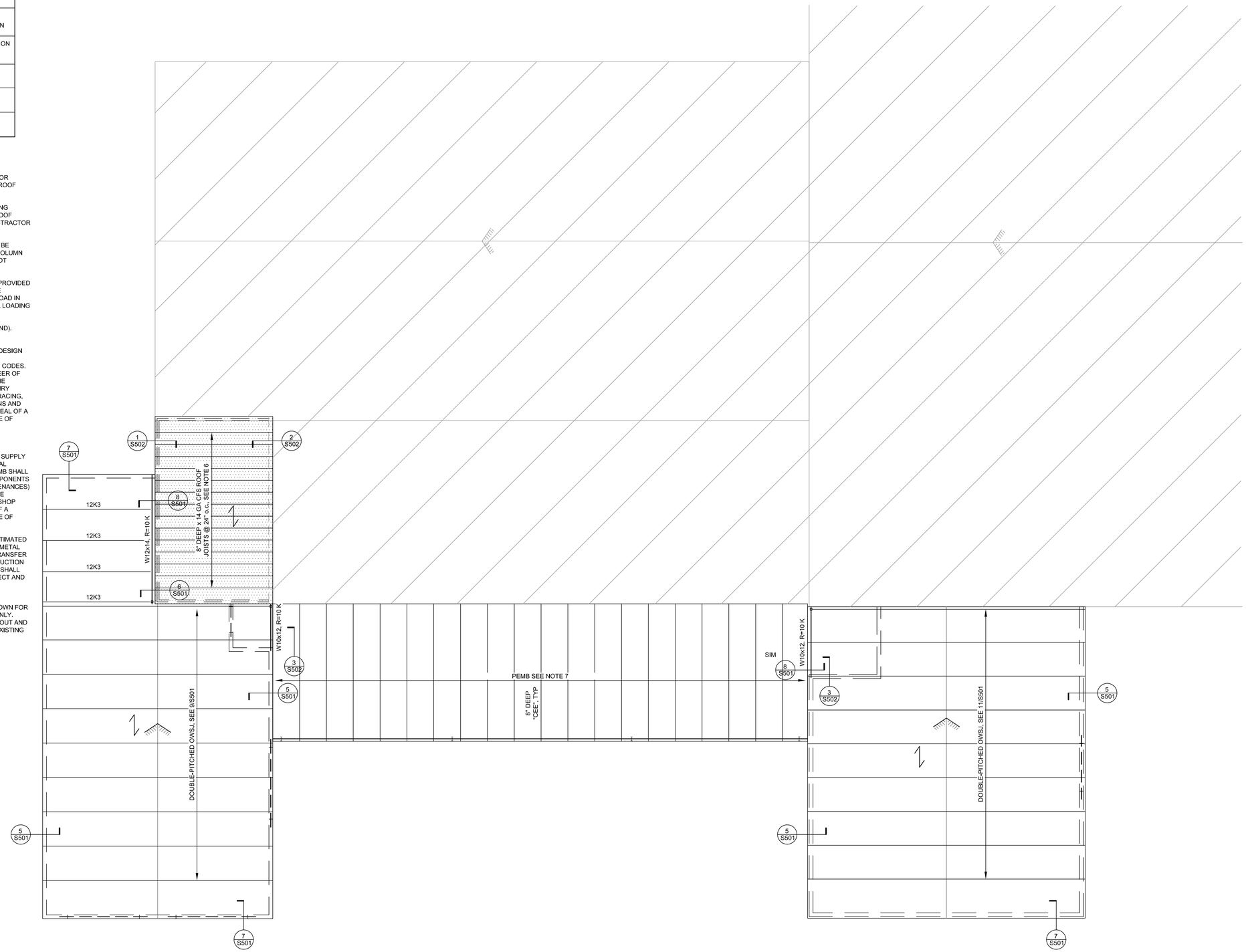
SYMBOL	DESCRIPTION
	DECK OR SHEATING SPAN DIRECTION, SEE GSN
W##x##, R = ## K / H = ## K	STEEL BEAM SIZE, REACTION DRAG FORCE (ASD)
1.4K (D)	ADD-LOAD (LOADING TYPE)
	EXISTING, F.V.
	CFS OVERFRAMING

PLAN NOTES

1. TOP OF STEEL ELEVATION = TOP OF BEAM, JOIST, OR MEMBER SUPPORTING ROOF DECK = BOTTOM OF ROOF DECK.
2. REFER TO MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR LOCATION AND DIMENSIONS OF ROOF PENETRATIONS NOT DIMENSIONED ON PLAN. CONTRACTOR TO COORDINATE.
3. UNLESS NOTED OTHERWISE, STEEL JOISTS SHALL BE CENTERED ON AND EQUALLY SPACED BETWEEN COLUMN CENTERLINES. ROOF BEAMS AND JOISTS SHALL NOT EXCEED 5'-9" ON CENTER SPACING.
4. JOISTS NOTED "SP" ARE SPECIAL DESIGNS TO BE PROVIDED BY JOIST MANUFACTURER. LOADS INDICATED ARE UNIFORMLY DISTRIBUTED ASD TOTAL LOAD/LIVE LOAD IN PLF. SEE PLAN AND PLAN NOTES FOR ADDITIONAL LOADING DUE TO PARAPET AND MECHANICAL LOADS.
5. DESIGN JOISTS FOR NET UPLIFT OF 3 PSF (0.6 x WIND).
6. OVERFRAMING ABOVE EXISTING SHOP ROOF:
   COLD-FORMED STEEL (CFS) CONTRACTOR SHALL DESIGN AND SUPPLY MATERIAL REQUIRED TO MEET THE ARCHITECTURAL DRAWINGS AND LOCAL BUILDING CODES. THE CFS CONTRACTOR SHALL ACT AS THE ENGINEER OF RECORD FOR THE COMPONENTS ATTACHED TO THE EXISTING SHOP PARAPET (ROOF FRAMING, MASONRY VENEER STUD BACK-UP WALL, ROOF AND WALL BRACING, AND THEIR ATTACHMENTS). SUBMIT CALCULATIONS AND SHOP DRAWINGS BEARING THE SIGNATURE AND SEAL OF A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS. THE MAXIMUM SELF-WEIGHT OF THE CFS COMPONENTS SHALL NOT EXCEED 3.0 PSF.
7. PEMB OVERHANG AT EXISTING SHOP OVERHANG:
   A. THE PEMB MANUFACTURER SHALL DESIGN AND SUPPLY MATERIAL REQUIRED TO MEET THE ARCHITECTURAL DRAWINGS AND LOCAL BUILDING CODES. THE PEMB SHALL ACT AS THE ENGINEER OF RECORD FOR THE COMPONENTS ABOVE THE FOUNDATION (BUILDING AND APPURTENANCES) AS WELL AS MODIFICATION OR ALTERATION TO THE EXISTING PEMB AND SUBMIT CALCULATIONS AND SHOP DRAWINGS BEARING THE SIGNATURE AND SEAL OF A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS.

   B. FOUNDATIONS HAVE BEEN DESIGNED USING ESTIMATED REACTIONS ASSUMING PINNED PRE-ENGINEERED METAL BUILDING (PEMB) COLUMN BASES THAT DO NOT TRANSFER MOMENT TO THE FOUNDATION. PRIOR TO CONSTRUCTION OF THE FOUNDATION, THE PEMB MANUFACTURER SHALL SUBMIT THE COLUMN REACTIONS TO THE ARCHITECT AND ENGINEER FOR COMPATIBILITY REVIEW WITH THE FOUNDATION DESIGN.

   C. PEMB PURLIN, RIGID FRAME, AND COLUMNS SHOWN FOR THE OPEN BUILDING STRUCTURE IS SCHEMATIC ONLY. PEMB CONTRACTOR SHALL DETERMINE FINAL LAYOUT AND DESIGN, AS WELL AS VERIFY THE ADEQUACY OF EXISTING PEMB ALTERATIONS AS NEEDED.



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

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STATE OF TEXAS
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123736
LICENSED
PROFESSIONAL ENGINEER

WILCO - FLEET SERVICES ADDITION

WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

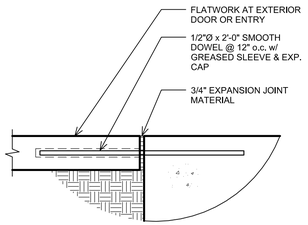
PROJECT PHASE
CONSTRUCTION DOCUMENTS

REVISIONS

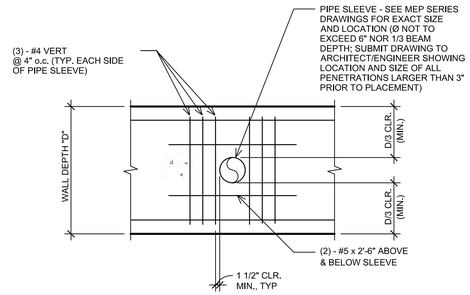
PROJECT NUMBER
2423
DATE ISSUED
07/29/2024
SHEET TITLE
ROOF FRAMING PLAN

SHEET NUMBER
S103

KSS ENGINEERS
280 WESTBURY LN
GEORGETOWN, TX 78633
512-401-3100
F-20710

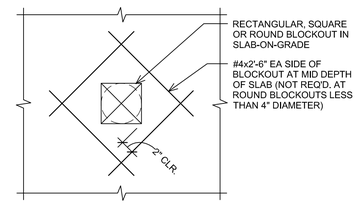


1 TYPICAL FLATWORK AT EXTERIOR ENTRIES DETAIL
NO SCALE



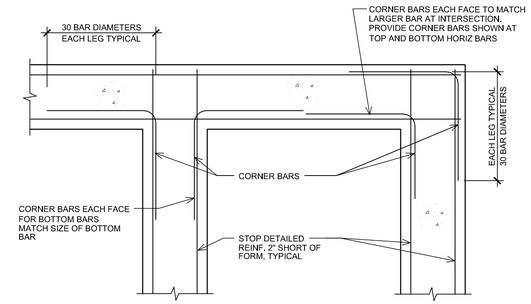
ELEVATION

2 TYPICAL HORIZONTAL WALL PENETRATION DETAIL
NO SCALE



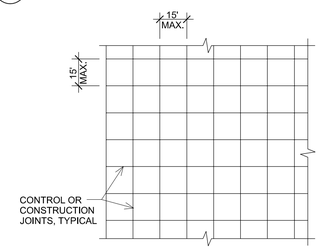
PLAN

3 TYPICAL REINFORCING AT BLOCKOUT
NO SCALE



PLAN

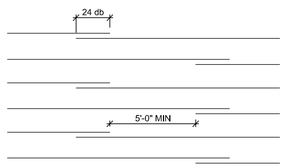
4 TYPICAL CORNER BARS DETAIL
NO SCALE



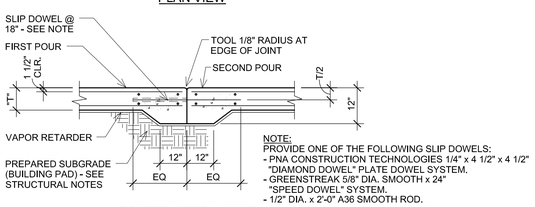
PLAN VIEW

SLAB-ON-GRADE NOTES:

1. SEE PLAN FOR THICKNESS OF SLAB (T) AND REINFORCING.
2. SAWCUT JOINTS WITH IN THE TIME FRAME NOTED BELOW:
   a. 12 HOURS FOR SLABS COVERED BY FINISHES OR NON PUBLIC SPACES.
   b. 4 HOUR FOR SLABS EXPOSED TO PUBLIC VIEW OR WHERE NOTED "SOFF-CUT" BRAND SAW SHALL BE USED.
3. IF METAL FORMS ARE USED, REMOVE THEM BEFORE PLACING ADJACENT SLAB.
4. LAP REINFORCING 40 BAR DIAMETER MINIMUM.
5. IF IT IS NECESSARY TO LAP SLAB STEEL, LAPS IN ADJACENT BARS SHALL BE STAGGERED AT LEAST 5'-0". LAP A MINIMUM OF 24 BAR DIAMETERS AND ALLOW 1 1/2" COVER OVER THE ENDS OF THE BARS.

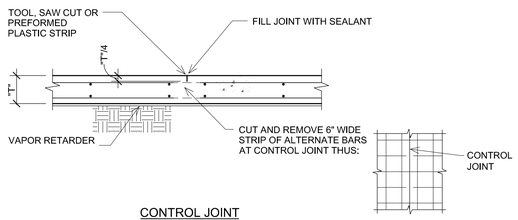


MIN SLAB REINF LAP & STAGGER PLAN



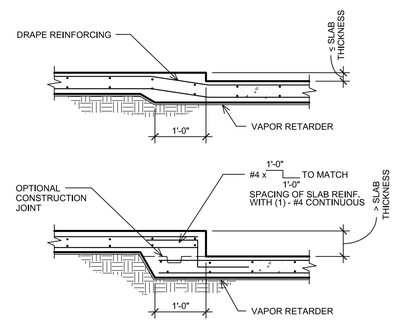
NOTE:
PROVIDE ONE OF THE FOLLOWING SLIP DOWELS:
- PNA CONSTRUCTION TECHNOLOGIES 1/4" x 4 1/2" x 4 1/2" "DIAMOND DOWEL" PLATE DOWEL SYSTEM.
- GREENSTREAK 5/8" DIA. SMOOTH x 24" "SPEED DOWEL" SYSTEM.
- 1/2" DIA. x 2'-0" A36 SMOOTH ROD.

CONSTRUCTION JOINT



CONTROL JOINT

5 TYPICAL SLAB-ON-GRADE DETAIL
NO SCALE



7 TYPICAL DROP IN SLAB-ON-GRADE DETAIL
NO SCALE

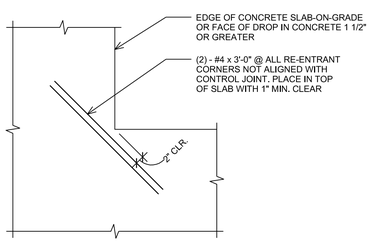
DOWEL SCHEDULE

MARK	SIZE	A	B
DWL.-A	#4	8"	3'-2"
DWL.-B	#4	3'-0"	3'-0"
DWL.-C	#4	-	4'-0"

NOTES:

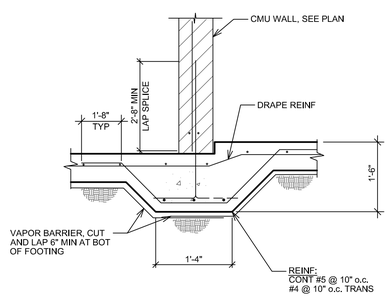
1. SCHEDULED DOWELS ARE MARKED "DWL." ON THE SECTIONS AND DETAILS.
2. DOWEL SPACING TO BE THE SAME AS VERTICAL BEAM OR WALL REINFORCEMENT UNLESS NOTED OTHERWISE ON DETAILS.

8 DOWEL SCHEDULE
NO SCALE

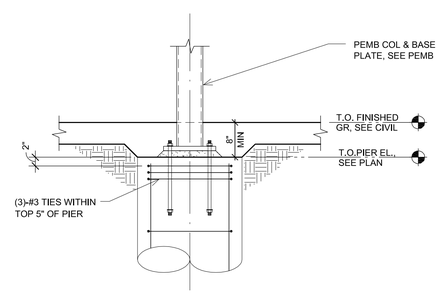


PLAN

9 TYPICAL RE-ENTRANT CORNER REINFORCING
NO SCALE



10 TYPICAL INTERIOR THICKENED SLAB FTG DETAIL
NO SCALE



11 TYPICAL TOP OF PIER DETAIL
NO SCALE

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WILCO - FLEET SERVICES ADDITION

WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

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CONSTRUCTION DOCUMENTS

REVISIONS

PROJECT NUMBER
2423
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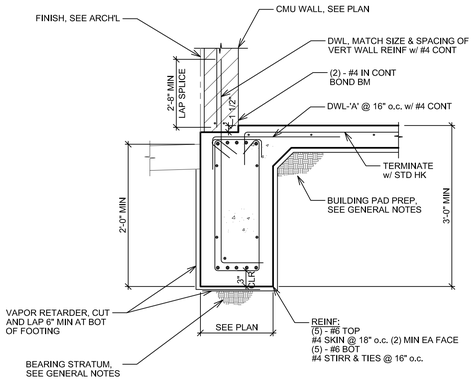
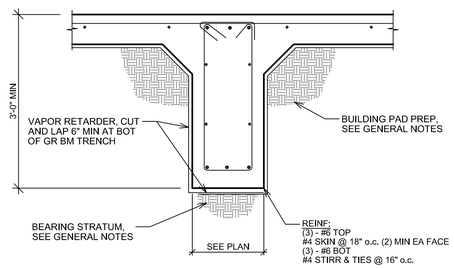
07/29/2024
SHEET TITLE
CONCRETE DETAILS

SHEET NUMBER
S301

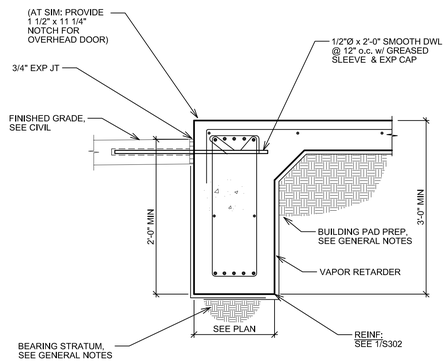
KSS ENGINEERS
280 WESTBURY LN
GEORGETOWN, TX 78633
512-401-3100
F-20710



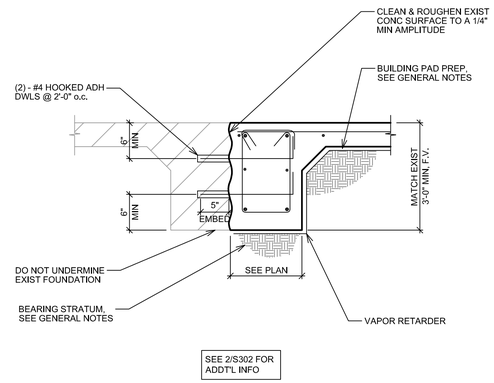
1 TYPICAL EXTERIOR GRADE BEAM DETAIL
NO SCALE



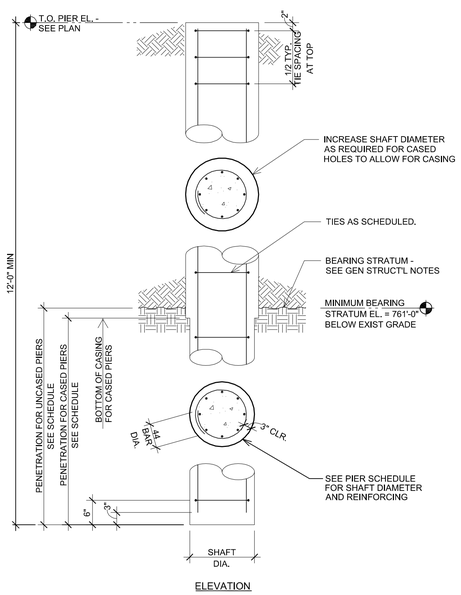
2 TYP INTERIOR THICKENED SLAB FTG DETAIL
NO SCALE



3 TYP EXTERIOR THICKENED SLAB FTG DETAIL
NO SCALE



4 TYPICAL GRADE BEAM AT EXIST GRADE BEAM DETAIL
NO SCALE



PIER SCHEDULE

MARK	SHAFT DIAMETER	VERTICAL BARS	TIES	PENET.	CAPACITY
P-1	2'-6" Ø	(6) - #7	#3 @ 14"	1'-0"	73.6 K

NOTES:

1. PIER REINFORCING AND CONCRETE SHALL BE PLACED IMMEDIATELY AFTER DRILLING OPERATIONS ARE COMPLETE. SEE GENERAL STRUCTURAL NOTES FOR ADDITIONAL REQUIREMENTS.
2. CONTRACTOR SHALL NOT DRILL PIERS THAT CANNOT BE PLACED BY THE END OF THE WORK DAY. PIER EXCAVATIONS SHALL NOT BE LEFT OPEN OVERNIGHT.
3. ALL PIER INSTALLATIONS SHALL BE CONTINUOUSLY INSPECTED BY A REPRESENTATIVE OF THE OWNER'S SPECIAL INSPECTION AGENCY DURING EXCAVATION AND PRIOR TO PLACEMENT OF CONCRETE. SEE DRILLED PIER SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

9 TYPICAL CASED DRILLED PIER DETAIL AND SCHEDULE
NO SCALE

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WILCO - FLEET SERVICES ADDITION

WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

PROJECT PHASE
CONSTRUCTION DOCUMENTS

REVISIONS

PROJECT NUMBER
2423
DATE ISSUED
07/29/2024
SHEET TITLE
CONCRETE DETAILS

SHEET NUMBER
S302

KSS ENGINEERS
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512-401-3100
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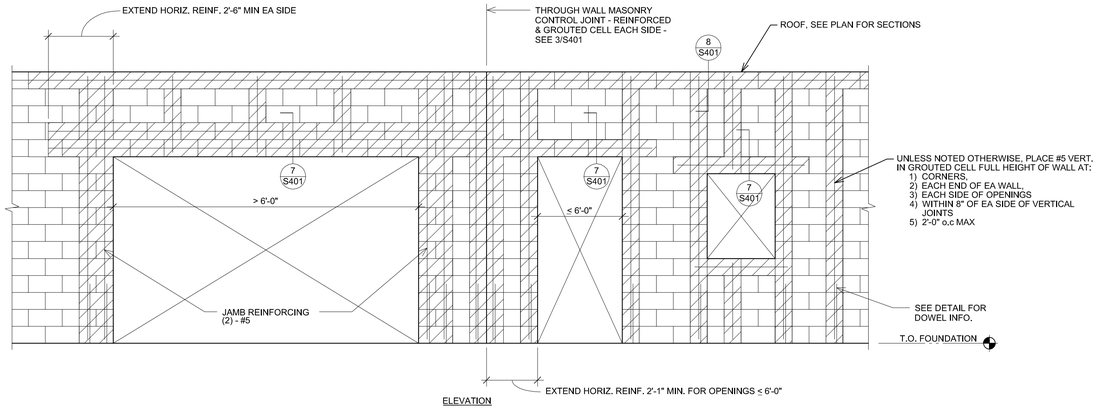
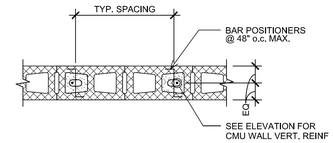


ELEVATION

NOTES:
1. SEE ARCH'L. DRAWINGS FOR LOCATION AND DIMENSIONS OF WALL OPENINGS.
2. FOR LAP SPLICE LENGTHS SEE 4/S401.

1 TYPICAL EXTERIOR CMU WALL REINFORCING DETAIL
NO SCALE



8" CMU WALL

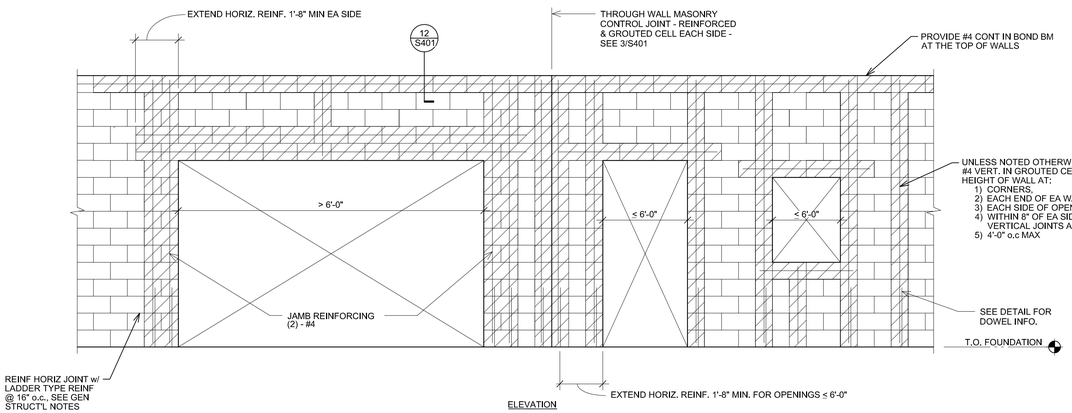
PROVIDE BAR POSITIONERS AT TOP AND BOTTOM OF LAP SPLICES AND @ 48" o.c. MAX. VERTICALLY.

3 TYPICAL CMU BAR PLACEMENT DETAIL
NO SCALE

CMU WALL LAP SPLICE SCHEDULE		
BAR SIZE	LAP LENGTH	
	BOND BEAMS	VERTICAL REINF.
#4	1'-8"	2'-6"
#5	2'-1"	3'-2"
#6	2'-6"	3'-9"
#7	2'-11"	4'-5"

NOTES:
1. SPLICES FOR VERTICAL REINF. SHALL BE STAGGERED IN ADJACENT CELLS SO THAT NO MORE THAN 1/2 OF ALL BARS ARE SPLICED AT THE SAME LOCATION.
2. DO NOT SPLICE BARS IN LINTELS.

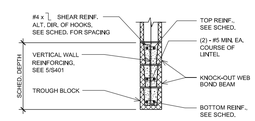
4 TYPICAL CMU DETAIL
NO SCALE



ELEVATION

NOTES:
1. SEE ARCH'L. DRAWINGS FOR LOCATION AND DIMENSIONS OF WALL OPENINGS.
2. FOR LAP SPLICE LENGTHS SEE 4/S401.

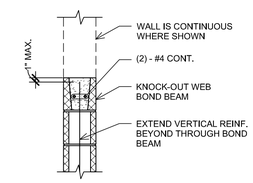
5 TYPICAL INTERIOR NON-LOAD BEARING CMU WALL REINF DETAIL
NO SCALE



NOTES:
1. LINTELS SHALL REMAIN SHORED UNTIL MASONRY CONSTRUCTION ABOVE HAS CURED FOR A MINIMUM OF 14 DAYS.
2. SEE ARCHITECTURAL DRAWINGS FOR OPENING SIZE AND LOCATION.
3. EXTEND LINTELS PAST EDGES OF OPENINGS, SEE WALL ELEVATION.
4. VERTICAL CONTROL JOINTS SHALL NOT CROSS LINTEL REINFORCING.

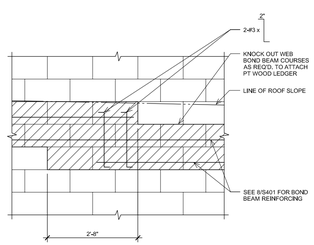
LINTEL REINFORCING SCHEDULE						
CLEAR SPAN	LOCATION	DEPTH	BOTTOM REINF.	TOP REINF.	TIE SPA.	JAMB DETAIL
≤ 6'-0"	EXTERIOR	16"	(2) - #5	(2) - #5	8"	-
6'-1" ≤ SPAN' ≤ 12'-0"	EXTERIOR	24"	(2) - #5	(2) - #5	8"	-

7 TYPICAL CMU LINTEL DETAIL & REINF SCHEDULE
NO SCALE



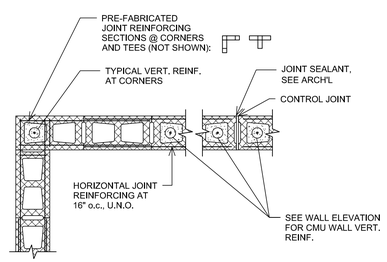
NOTE:
PLACE HORIZONTAL BOND BEAMS: AT THE TOP & BOTTOM OF EACH WALL; AT LEDGERS SUPPORTING ROOF FRAMING; AND AT 4'-0" o.c. MAXIMUM VERTICAL SPACING.

8 TYPICAL CMU BOND BEAM DETAIL
NO SCALE



ELEVATION

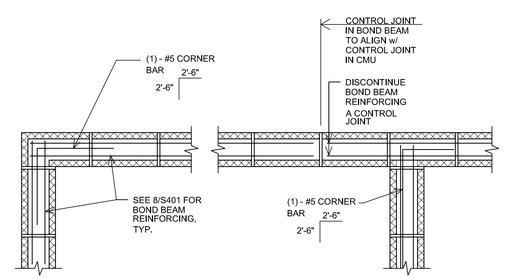
9 TYPICAL CMU DETAIL
NO SCALE



PLAN

NOTES:
1. SEE ARCHITECTURAL DRAWINGS FOR CONTROL JOINT LOCATIONS.
2. MAXIMUM ON CENTER SPACING OF CONTROL JOINTS IS 20'-0".
3. DISCONTINUE JOINT REINFORCEMENT AT CONTROL JOINTS.
4. FROM CORNERS, OFFSET CONTROL JOINT A MAXIMUM OF 10'-0".
5. CONTROL JOINTS SHALL BE LOCATED AWAY FROM OPENINGS.

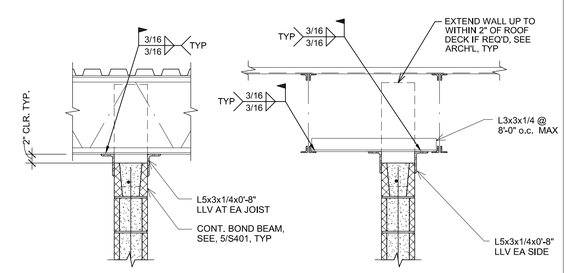
10 TYPICAL CMU DETAIL
NO SCALE



NOTE:
SEE 10/S401 FOR CTRL JOINT SPACING.

11 TYPICAL CMU DETAIL
NO SCALE

SPACE CMU WALL BRACING @ 8'-0" o.c. MAX. AND @ 4'-0" MAX FROM ENDS OF WALL



12 TYPICAL CMU PARTITION WALL BRACE DETAIL
NO SCALE

WILCO - FLEET SERVICES ADDITION

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3151 SE INNER LOOP, GEORGETOWN, TX 78626

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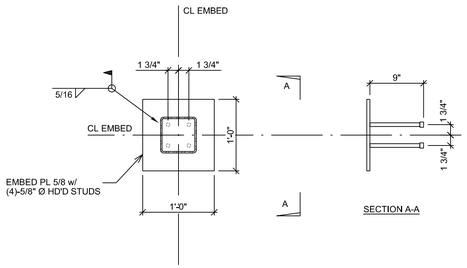
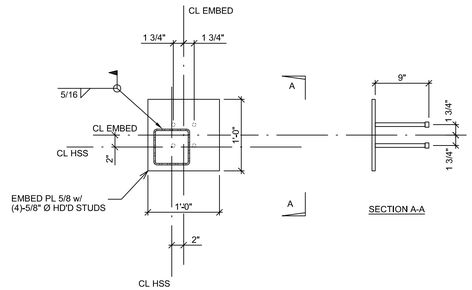
CMU DETAILS

SHEET NUMBER
S401

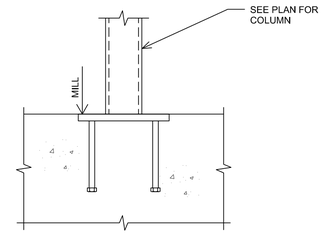
KSS ENGINEERS
280 WESTBURY LN
GEORGETOWN, TX 78633
512-401-3100
F-20710



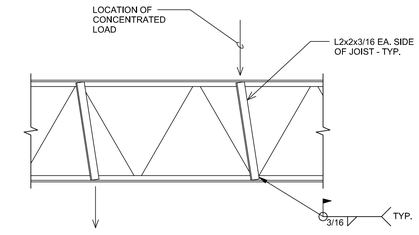
1 TYPICAL EMBED PLATE DETAIL
NO SCALE



2 TYPICAL EMBED PLATE DETAIL
NO SCALE



3 TYPICAL COLUMN EMBED PLATE ELEVATION
NO SCALE

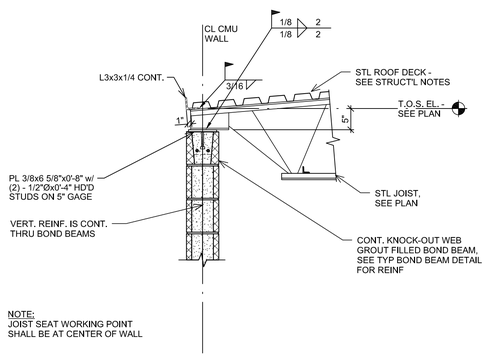


NOTES:

1. THIS DETAIL APPLIES WHEREVER A CONCENTRATED LOAD GREATER THAN 100 LB BUT LESS THAN 250 LB MAX OCCURS MORE THAN 4" AWAY FROM A JOIST TOP OR BOTTOM CHORD PANEL POINT. DO NOT PLACE CONCENTRATED LOADS CLOSER THAN 4'-0" O.C.

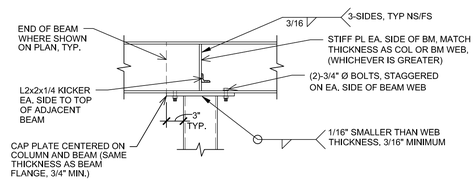
2. ALL HANGERS OR ATTACHMENTS TO JOISTS SHALL BE PLACED CONCENTRIC WITH THE TOP AND BOTTOM CHORD(S) AND SHALL NOT ATTACH TO ONLY ONE ANGLE OF CHORD.

4 TYPICAL JOIST CHORD REINFORCEMENT DETAIL
NO SCALE



NOTE:
JOIST SEAT WORKING POINT
SHALL BE AT CENTER OF WALL

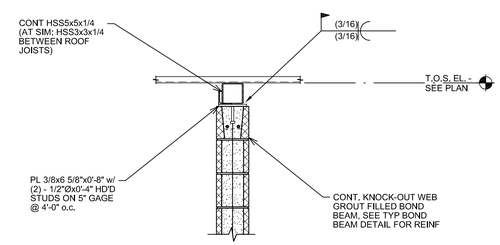
5 TYPICAL JOIST BEARING ON EXTERIOR MASONRY WALL DETAIL
NO SCALE



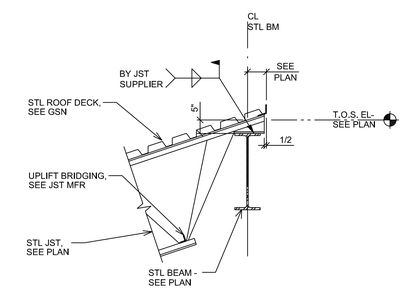
COLUMN WEB PERPENDICULAR TO BEAM

NOTE:
SEE ROOF PLAN FOR ROOF SLOPE AND SLOPE CAP PLATES ACCORDINGLY.

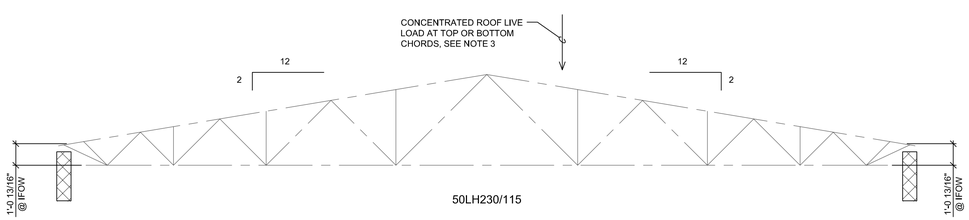
6 TYPICAL COLUMN EMBED PLATE ELEVATION
NO SCALE



7 TYPICAL STEEL DETAIL
NO SCALE



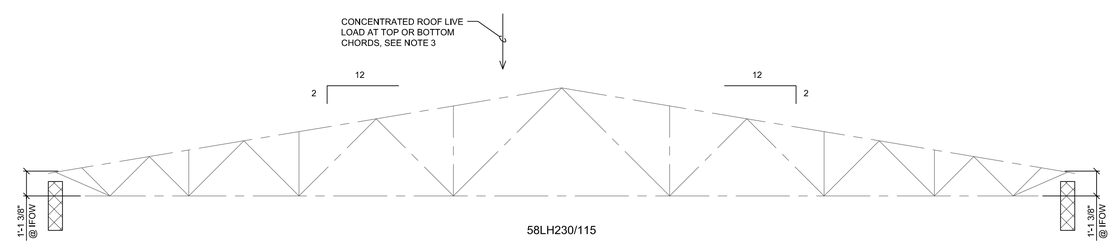
8 TYPICAL "K" JOIST AT HIGH END DETAIL
NO SCALE



DOUBLE-PITCHED JOIST NOTES:

1. PROFILES ARE GRAPHICAL. WEB LAYOUT SHALL BE DETERMINED BY THE OPEN WEB STEEL JOIST SUPPLIER.
2. DESIGN DEAD LOAD DOES NOT INCLUDE SELF-WEIGHT OF JOIST NOR BRIDGING. JOIST SUPPLIER SHALL ADD JOIST SELF-WEIGHT AND BRIDGING TO THE DESIGN DEAD LOAD SHOWN.
3. DESIGN JOIST FOR DISTRIBUTED ROOF LIVE LOAD SHOWN OR A 300 LB CONCENTRATED LOAD, WHICHEVER PRODUCES THE GREATER LOAD EFFECTS. CONCENTRATED LOAD SHALL BE LOCATED SO AS TO PRODUCE THE MAXIMUM LOAD EFFECTS IN THE JOIST MEMBERS, (I.E. ADD-LOAD & BEND-CHECK).
4. BRIDGING SHALL BE DETAILED BY THE JOIST SUPPLIER AND SHALL BE IN ACCORDANCE WITH STEEL JOIST INSTITUTE STANDARD SPECIFICATIONS.
5. SEE PLAN FOR NET UPLIFT DUE TO WIND. UPLIFT BRIDGING SHALL BE DETAILED BY THE JOIST SUPPLIER SEE NOTE 4 FOR ADDITIONAL INFORMATION.

9 DOUBLE-PITCHED JOIST LOADING DIAGRAM AND PROFILE AT SHOP
NO SCALE



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11 DOUBLE-PITCHED JOIST LOADING DIAGRAM AND PROFILE AT PARTS
NO SCALE

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STATE OF TEXAS
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123736
LICENSED
PROFESSIONAL ENGINEER

WILCO - FLEET SERVICES ADDITION

WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

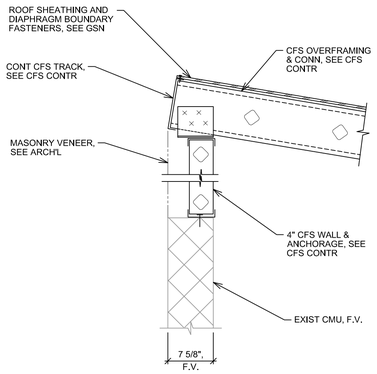
PROJECT PHASE
CONSTRUCTION DOCUMENTS

REVISIONS

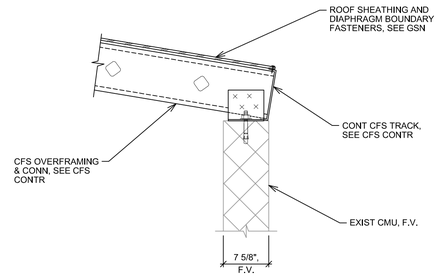
PROJECT NUMBER
2423
DATE ISSUED
07/29/2024
SHEET TITLE
STEEL DETAILS

SHEET NUMBER
S501

KSS ENGINEERS
280 WESTBURY LN
GEORGETOWN, TX 78633
512-401-3100
F-20710



1 TYPICAL OVERFRAMING DETAIL
NO SCALE



2 TYPICAL OVERFRAMING DETAIL
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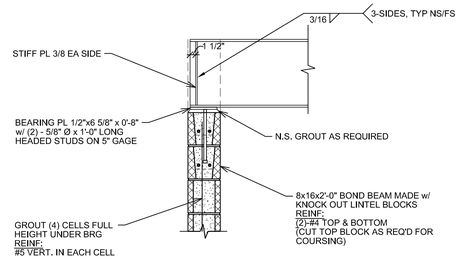

3 TYPICAL MASONRY WALL BEARING BEAM DETAIL
NO SCALE

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WILCO - FLEET SERVICES ADDITION

WILLIAMSON COUNTY FACILITIES
3151 SE INNER LOOP, GEORGETOWN, TX 78626

PROJECT PHASE
CONSTRUCTION DOCUMENTS

REVISIONS

PROJECT NUMBER
2423
DATE ISSUED
07/29/2024
SHEET TITLE
STEEL DETAILS

SHEET NUMBER
S502

MECHANICAL SPECIFICATIONS

A. GENERAL MECHANICAL REQUIREMENTS

1. CONFLICT RESOLUTION: WHERE CONFLICTS MAY EXIST BETWEEN THE MINIMUM REQUIREMENTS OF VARIOUS LAWS, CODES, AUTHORITIES, AND/OR WITHIN THE CONTRACT DOCUMENTS, THE HIGHER QUALITY, GREATER QUANTITY, MORE RESTRICTIVE AND/OR MORE EXPENSIVE REQUIREMENT SHALL BE THE BASIS OF CONTRACTOR PRICING AND THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER AND OWNER'S REPRESENTATIVE FOR THE RESOLUTION OF THE ISSUE PRIOR TO EXECUTING THE WORK IN QUESTION.
2. SHOULD ANY ERRORS, OMISSIONS, CONFLICTS, OR AMBIGUITIES EXIST IN THE DRAWINGS, THE CONTRACTOR SHALL BRING THESE TO THE ATTENTION OF THE ENGINEER IMMEDIATELY FOR ADJUSTMENT IN WRITING BEFORE SIGNING THE CONTRACT OR PROCEEDING WITH THE WORK. OTHERWISE, HE SHALL AT HIS OWN EXPENSE, SUPPLY THE PROPER MATERIALS AND LABOR TO MAKE GOOD ANY DAMAGE OR DEFECT CAUSED BY SUCH UNINTENTIONAL ERROR.
3. CONTRACTOR IS RESPONSIBLE FOR CHECKING ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS FOR ACCURACY, AND CONFIRMING THAT THE WORK IS BUILDABLE AS SHOWN AND MEETS ALL APPLICABLE CODES BEFORE PROCEEDING WITH CONSTRUCTION. IF THERE ARE ANY QUESTIONS REGARDING THESE OR OTHER COORDINATION ISSUES, THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK IN QUESTION OR RELATED WORK.
4. COORDINATION:
   - 4.1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING FULL COORDINATION WITH OTHER TRADES AND CONTRACTORS TO ACCOMPLISH THE WORK AS SHOWN AND NOTED IN THESE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL COMPARE THE DRAWINGS OF OTHER TRADES AND REPORT ANY DISCREPANCIES TO THE OWNER'S REPRESENTATIVE.
   - 4.2. THE CONTRACTOR SHALL NOT FABRICATE OR INSTALL ITEMS AS SHOWN ON THE DRAWINGS IF THERE ARE DISCREPANCIES OR CONFLICTS BETWEEN THE EXISTING CONDITIONS AND THE INFORMATION SHOWN ON THE DRAWINGS UNTIL SUCH DISCREPANCIES HAVE BEEN RESOLVED. PRIOR TO FABRICATION OR INSTALLATION, THE CONTRACTOR SHALL IMMEDIATELY CALL SUCH DISCREPANCIES OR CONFLICTS TO THE ATTENTION OF THE PROJECT COORDINATOR.
   - 4.3. DUCTWORK, PIPING, CONDUIT, CABLING, ETC. SHOWN ON DRAWINGS SHALL BE COORDINATED WITH AIR DISTRIBUTION DEVICES, SPECIAL CEILING, FLOOR, AND STRUCTURE CONSTRUCTION, ETC. PROVIDE ADDITIONAL RISES AND DROPS TO THOSE INDICATED ON THE DRAWINGS AS REQUIRED TO COORDINATE WITH ARCHITECTURAL, STRUCTURAL OR MEP ELEMENTS SHOWN ON THE CONTRACT DOCUMENTS. ALL UTILITIES SHALL BE ROUTED IN AN ORDERLY MANNER, GROUPED TOGETHER WHEREVER POSSIBLE, AND LOCATED SO AS TO CONSERVE BUILDING SPACE. DUCTWORK, PIPING, CONDUIT, CABLING, ETC. SHOWN ON EACH PLAN IS RUN ABOVE THE CEILING ON THE FLOOR WHERE IT IS SHOWN UNLESS OTHERWISE NOTED.
5. AS-BUILTS: THE CONTRACTOR SHALL MAINTAIN HIS SET OF CONSTRUCTION DRAWINGS ON SITE AT ALL TIMES SO THAT ALL CHANGES BETWEEN THE DRAWINGS AND THE ACTUAL CONSTRUCTION CAN BE NOTED ON THE DRAWINGS. THIS INCLUDES ALL DEVIATIONS FROM THE ORIGINAL CONTRACT. THE CONTRACTOR SHALL INDICATE ALL CHANGES FROM THE ORIGINAL PLANS MADE DURING THE INSTALLATION OF HIS WORK IN RED INK ON TWO BLUELINE PRINTS. AT THE END OF CONSTRUCTION, THE CONTRACTOR SHALL SIGN AND DATE THE DRAWINGS CERTIFYING THAT THEY ARE AN ACCURATE REFLECTION OF THE ACTUAL CONSTRUCTION. AS-BUILT DRAWINGS ARE TO BE DELIVERED TO THE OWNER'S PROJECT COORDINATOR AFTER PROJECT COMPLETION. NOTE THAT THE FINAL INVOICE FOR THE CONTRACT WILL NOT BE PAID BY THE OWNER UNTIL FINAL AS-BUILT DRAWINGS ARE RECEIVED.
6. STARTUP AND TRAINING: VENDORS FOR ALL MAJOR PIECES OF EQUIPMENT SHALL PROVIDE STARTUP ASSISTANCE AND A MINIMUM OF 2 HOUR OWNER TRAINING.

B. SUBMITTALS

1. CONTRACTOR SHALL PROVIDE PRODUCT DATA SUBMITTALS ON ALL MAJOR EQUIPMENT, COMPONENTS, AND MATERIALS SPECIFIED IN THESE PLANS FOR ENGINEER'S AND OWNER'S REVIEW AND ACCEPTANCE PRIOR TO INSTALLATION.
   - 1.1. COMPLIANCE DATA: PUBLISHED LITERATURE, CERTIFICATES, AND LISTS INDICATING THE PRODUCT'S COMPLIANCE WITH STANDARDS REFERENCED IN THESE SPECIFICATIONS.
   - 1.2. PUBLISHED LITERATURE: INDICATE DIMENSIONS, WEIGHTS, CAPACITIES, RATINGS, HORSEPOWER, GAGES, AND FINISHES OF MATERIALS, AND ELECTRICAL CHARACTERISTICS AND CONNECTION REQUIREMENTS.
   - 1.3. PERFORMANCE DATA: PERFORMANCE DATA INCLUDING FAN CURVES, PUMP CURVES, AND EQUIPMENT OUTPUT CAPACITIES COMPLETE WITH RATING CONDITIONS AS SCHEDULED ON CONTRACT DRAWINGS. AS A MINIMUM SUBMITTED DATA SHALL INCLUDE ALL PERFORMANCE DATA SCHEDULED OR NOTED ON CONTRACT DRAWINGS.
   - 1.4. SOUND POWER LEVEL DATA: EQUIPMENT SOUND POWER LEVEL AT 63, 125, 250, 500, 1000, 2000, 4000, AND 8000 HZ OCTAVE BAND CENTER FREQUENCIES PLUS DB A WEIGHTED SOUND LEVEL. DATA SHALL INCLUDE DISTANCE FROM EQUIPMENT TO TEST EQUIPMENT.
   - 1.5. ELECTRICAL REQUIREMENTS: POWER SUPPLY WIRING INCLUDING WIRING DIAGRAMS FOR INTERLOCK AND CONTROL WIRING, CLEARLY INDICATING FACTORY-INSTALLED AND FIELD-INSTALLED WIRING.
   - 1.6. SHOP DRAWINGS: INDICATE ASSEMBLY, UNIT DIMENSIONS, WEIGHT LOADING, REQUIRED CLEARANCES, CONSTRUCTION DETAILS, FIELD CONNECTION DETAILS, AND ELECTRICAL CHARACTERISTICS AND CONNECTION REQUIREMENTS.
   - 1.7. MANUFACTURER'S INSTRUCTIONS: INCLUDE INSTALLATION INSTRUCTIONS.
   - 1.8. CERTIFICATES: SIGNED LETTERS CERTIFYING COMPLIANCE WITH SPECIFIED REQUIREMENTS.
   - 1.9. CALCULATIONS: DESIGN AND/OR DESIGN CALCULATIONS.
   - 1.10. MANUFACTURER'S WARRANTIES.
   - 1.11. INSTALLATION, OPERATION, AND MAINTENANCE MANUALS.
2. SHOP DRAWINGS: ALL SHOP DRAWINGS, INCLUDING PRODUCT DATA SUBMITTALS, SHALL BE REVIEWED BY THE CONTRACTOR PRIOR TO SUBMITTING TO THE ENGINEER. ALL SHOP DRAWINGS NOT REVIEWED BY THE CONTRACTOR WILL BE RETURNED WITHOUT REVIEW. AFTER REVIEW HAS BEEN COMPLETED, SUBMIT A COPY OF EACH SHOP DRAWING TO THE OWNER WITH THE APPROVAL SEAL OF THE ENGINEER AND THE CONTRACTOR. THE USE OF REPRODUCTIONS OF THESE CONTRACT DRAWINGS BY ANY CONTRACTOR, SUBCONTRACTOR, ERECTOR, FABRICATOR OR MATERIAL SUPPLIER, IN LIEU OF THE PREPARATION OF SHOP DRAWINGS IS FORBIDDEN. SHOP DRAWINGS RECEIVED BEARING THE ENGINEER'S TITLE AND SEAL SHALL BE PROMPTLY REJECTED.

C. DUCTWORK

1. PROVIDE DUCTWORK MATERIALS PER THE DUCTWORK SCHEDULE ON THE DRAWINGS. USE ONLY THE JOINING METHODS SHOWN IN THE SCHEDULE.

D. HANGERS AND SUPPORTS

1. ALL OPENINGS THROUGH FLOORS, WALLS, AND ROOFS, ETC., REGARDLESS OF MATERIAL FOR THE PASSAGE OF PIPING, DUCTWORK, CONDUIT, CABLE TRAYS, ETC., SHALL BE SLEEVED. ALL PENETRATIONS MUST PASS THROUGH SLEEVES. SLEEVES SHALL BE SET IN NEW CONSTRUCTION BEFORE CONCRETE IS POURED, AS CUTTING HOLES THROUGH ANY PART OF THE CONCRETE WILL NOT BE PERMITTED UNLESS ACCEPTABLE TO THE ARCHITECT/ENGINEER.
   - 1.1. SLEEVE MATERIAL FOR FLOORS AND EXTERIOR WALLS SHALL BE SCHEDULE 40 GALVANIZED STEEL WITH 1-1/2 WIDE CENTER FLANGE WELDED WATER STOP RINGS. REFER TO DRAWINGS FOR ADDITIONAL REQUIREMENTS.
   - 1.2. SLEEVES THRU INTERIOR WALLS TO BE GALVANIZED SHEETMETAL WITH GAGE AS REQUIRED BY WALL FIRE RATING, 20 GA MINIMUM.

F. IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

1. PROVIDE AND INSTALL PLASTIC VINYL FILM TAPE DUCT MARKERS WITH PRESSURE SENSITIVE BACKING AND 4" PRINTED MARKINGS. MINIMUM SIZE 24"X4". DUCTS SHALL BE LABELED EVERY 20 LINEAR FEET OF DUCT. EACH DUCT BRANCH SHALL BE LABELED WITH ROOMS AND AREAS SERVED.
2. PROVIDE AND INSTALL PLASTIC VINYL FILM TAPE PIPE MARKERS WITH PRESSURE SENSITIVE BACKING AND PRINTED MARKINGS. COLOR AND LETTERING SHALL CONFORM TO ASME A13.1. EVERY 20 LINEAR FEET OF DUCT. EACH DUCT BRANCH SHALL BE LABELED WITH ROOMS AND AREAS SERVED.
3. PROVIDE AND INSTALL 2" TALL ENGRAVED PHENOLIC PLASTIC EQUIPMENT TAGS, WHITE LETTERS ON BLACK BACKGROUND, FOR ALL EQUIPMENT TO MATCH TAGS INDICATED ON PLANS. IF EXISTING TAGS ARE PRESENT EITHER FROM THE MANUFACTURER OR EXISTING CONDITIONS, COVER OR PAINT OVER THE OLD TAG AS REQUIRED TO ELIMINATE CONFLICTING TAG NAMES. LABEL THERMOSTATS TO MATCH UNIT DESIGNATION. INDICATE ELECTRICAL PANEL AND CIRCUIT BREAKER NUMBER IDENTIFICATION ON NAMEPLATE IN SMALLER LETTERS IN PARENTHESES.
4. PROVIDE AND INSTALL BRASS VALVE TAGS WITH STAMPED LETTER WITH A MINIMUM TAG SIZE OF 1-1/2" DIAMETER WITH FINISHED EDGES. PROVIDE A PLASTIC LAMINATED VALVE TAG CHART WITH TYPEWRITTEN LETTER SIZE LIST OF APPLIED TAGS AND LOCATION.

H. HVAC INSULATION

1. PROVIDE HVAC INSULATION ON DUCT AND PIPE TO MEET THE MINIMUM THICKNESS REQUIREMENTS OF IECC 2015.
2. INSULATE ENTIRE EQUIPMENT SURFACES FOR EQUIPMENT CONTAINING FLUIDS BELOW AMBIENT TEMPERATURE AND ABOVE 100 DEGREES F.

MECHANICAL GENERAL NOTES

1. ALL WALL MOUNTED ROOM THERMOSTATS SHALL BE LOCATED 48" A.F.F., CENTERED ADJACENT TO LIGHT SWITCHES WHERE BOTH OCCUR IN THE SAME LOCATION. WHERE LOCATED ON COLUMN, THERMOSTAT SHALL BE CENTERED. TEMPERATURE SENSORS SHALL BE MOUNTED AT 70" A.F.F. SENSORS MOUNTED ON EXTERIOR COLUMNS SHALL BE MOUNTED ON INSULATED BASES. CONFIRM EXACT LOCATIONS OF THERMOSTATS WITH OWNER'S REPRESENTATIVE.
2. LOCATION OF AIR DEVICES SHALL BE COORDINATED W/ ARCHITECTURAL REFLECTED CEILING PLANS. TO ACHIEVE THE BEST COMBINATION OF PERFORMANCE AND AESTHETICS, THE FINAL LOCATIONS OF AIR DEVICES SHALL BE DETERMINED FROM THE ARCHITECTURAL REFLECTED CEILING PLANS. NO CHANGES TO AIR DEVICE LOCATIONS SHALL BE MADE WITHOUT PRIOR APPROVAL OF THE ARCHITECT AND ENGINEER. SPRAY PAINT INTERIOR OF DUCTWORK BEHIND OR ABOVE AIR DEVICES TO 12" INSIDE DUCTWORK OPENING WITH FLAT BLACK PAINT TO RENDER DUCT INTERIOR INVISIBLE. LOCATE LOUVERED RETURN GRILLE BLADES SUCH THAT VISION INTO DUCT INTERIOR IS RESTRICTED.
3. DUCTWORK, PIPING, CONDUIT, CABLING, ETC. SHOWN ON DRAWINGS SHALL BE COORDINATED WITH AIR DISTRIBUTION DEVICES, SPECIAL CEILING, FLOOR, AND STRUCTURE CONSTRUCTION, ETC. PROVIDE ADDITIONAL RISES AND DROPS TO THOSE INDICATED ON THE DRAWINGS AS REQUIRED TO COORDINATE WITH ARCHITECTURAL, STRUCTURAL OR MEP ELEMENTS SHOWN ON THE CONTRACT DOCUMENTS. DUCTWORK, PIPING, CONDUIT, CABLING, ETC. SHOWN ON EACH PLAN IS RUN ABOVE THE CEILING ON THE FLOOR WHERE IT IS SHOWN UNLESS OTHERWISE NOTED.
4. ALL DUCT SIZES ARE INSIDE CLEAR DIMENSIONS IN INCHES.
5. WHERE DUCTS PASS THROUGH ROOFS AND FLOORS, PROVIDE AS MINIMUM 1-1/2"x1-1/2"x1/8" STEEL ANGLE FRAMES AT EACH SIDE OF OPENING. THE ANNULAR SPACE BETWEEN DUCT AND ANGLE FRAMES SHALL BE CAULKED WITH SILICONE SEALANT OR FIREPROOFED AS REQUIRED BY ASSEMBLY FIRE RATING.
6. FLEXIBLE COLLARS SHALL BE FURNISHED AND INSTALLED IN ALL CONNECTIONS BETWEEN VIBRATING EQUIPMENT (FANS, AIR HANDLERS, ROOFTOP UNITS, ETC.) AND DUCTS OR CASINGS. ALSO FURNISH AND INSTALL FLEXIBLE CONNECTIONS WHERE DUCTS CROSS BUILDING EXPANSION JOINTS.
7. PROVIDE COMBINATION FIRE/SMOKE DAMPERS IN ALL DUCTWORK PIERCING FLOORS, FIRE WALLS AND AIR CONDITIONING CHASES, UNLESS OTHERWISE NOTED. DAMPERS INSTALLED IN ASSEMBLIES OF LESS THAN A 3-HOUR RATING SHALL HAVE A RATING OF 1.5 HOUR MINIMUM. DAMPERS INSTALLED IN AN ASSEMBLY OF GREATER THAN A 3-HOUR RATING SHALL HAVE A RATING OF 3 HOURS. ALL DAMPERS SHALL CONFORM TO THE REQUIREMENTS OF UL 555.
8. PROVIDE AND INSTALL DUCT ACCESS DOORS AT ALL COMBINATION FIRE/SMOKE DAMPER LOCATIONS. SCORE END OF DAMPER SHAFTS TO INDICATE OPEN/CLOSED POSITION.
9. LOCATION OF MECHANICAL EQUIPMENT IS APPROXIMATE WHERE SHOWN. FIELD ADJUST AS REQUIRED. MAINTAIN ACCESS TO EQUIPMENT FOR MAINTENANCE. SUFFICIENT SPACE SHALL BE MAINTAINED FOR REMOVAL OF INDIVIDUAL COMPONENTS WITHOUT REMOVAL OF THE ENTIRE UNIT.
10. CONTRACTOR SHALL APPLY ADHESIVE PLASTIC PIPE MARKERS WITH MINIMUM INFORMATION INDICATING FLOW DIRECTION ARROW AND FLUID IN PIPE. INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. APPLY ON NEW AND EXISTING PIPING AT 20 FT. INTERVALS AND AT EACH CHANGE IN DIRECTION.
11. VIBRATION ISOLATION DEVICES SHALL BE PROPERLY SIZED, FURNISHED, AND INSTALLED FOR ALL EQUIPMENT AS SPECIFIED.
12. INSTALL A NEW SET OF AIR FILTERS ON ALL APPLICABLE EQUIPMENT AT COMPLETION OF PROJECT.
13. FURNISH AND INSTALL ALL MITERED ELBOWS WITH TURNING VANES. RADIUSED RECTANGULAR ELBOWS SHALL HAVE CENTER LINE RADIUS TO WIDTH RATIO (R/W) OF 1.5 UNLESS OTHERWISE SPECIFIED. ALL ROUND ELBOWS SHALL HAVE A CENTERLINE RADIUS TO DIAMETER RATIO (R/D) OF 1.5 UNLESS NOTED OTHERWISE
14. PROVIDE PIPE HANGERS OR SUPPORTS FOR HORIZONTAL PIPING ON SPACING ADEQUATE TO PREVENT SAGGING. PROVIDE COPPER PLATED HANGERS AND SUPPORTS FOR COPPER PIPING. PLACE HANGER WITHIN TWELVE INCHES OF EACH HORIZONTAL ELBOW.
15. AN NEBB OR AABC CERTIFIED CONTRACTOR SHALL BALANCE ALL AIRSIDE AND WATERSIDE SYSTEMS TO THE QUANTITIES AND FLOWRATES SHOWN ON THE DRAWINGS AND FURNISH A CERTIFIED TESTING AND BALANCING REPORT TO THE ENGINEER FOR REVIEW AND APPROVAL.

MECHANICAL SYMBOLS

- NEW DUCTWORK INDICATED BOLD
- EXISTING DUCTWORK INDICATED AS DASHED
- CONCENTRIC TRANSITION
- ECCENTRIC TRANSITION
- RECTANGULAR ELBOW WITHOUT TURNING VANES
- RECTANGULAR ELBOW WITH TURNING VANES
- STANDARD SMACNA DUCT PRESSURE TAP
- ROUND SPIN-IN WITHOUT DAMPER
- ROUND SPIN-IN WITH DAMPER
- VD — MANUAL VOLUME DAMPER
- MD — MOTORIZED DAMPER
- FD — FIRE DAMPER IN VERTICAL POSITION
- FD — FIRE DAMPER IN HORIZONTAL POSITION
- SFD — COMBINATION SMOKE/FIRE DAMPER IN VERTICAL POSITION
- SFD — COMBINATION SMOKE/FIRE DAMPER IN HORIZONTAL POSITION
- NEW-TO-EXISTING CONNECTION
- SD — SMOKE DETECTOR
- FLEXIBLE CONNECTION
- ROUND SPIN-IN DAMPER AND FLEXIBLE DUCT RUNOUT
- POSITIVE PRESSURE DUCT DOWN
- POSITIVE PRESSURE DUCT UP
- NEGATIVE PRESSURE DUCT DOWN
- NEGATIVE PRESSURE DUCT UP
- SUPPLY AIR DIFFUSER
- RETURN AIR DIFFUSER
- EXHAUST AIR DIFFUSER
- SIDEWALL RETURN/EXHAUST GRILLE
- SIDEWALL SUPPLY GRILLE
- SLOT DIFFUSER
- HEPA FILTER
- T_N — THERMOSTAT OR TEMPERATURE SENSOR MOUNTED AT +48" AFF SUBSCRIPT "N" NEW, "E" EXISTING TO REMAIN, "R" RELOCATE
- SP — STATIC PRESSURE SENSOR
- DP — DIFFERENTIAL PRESSURE SENSOR
- CO — CO2 SENSOR
- AIRFLOW DIRECTIONAL INDICATOR (SUPPLY)
- AIRFLOW DIRECTIONAL INDICATOR (RETURN OR EXHAUST)
- TAG / CFM / A 50 6"Ø / NECK SIZE — AIR DEVICE TAG

SINGLE LINE DUCT SYMBOLS

- DEMOLITION
- EXISTING TO REMAIN
- NEW WORK
- DIRECTION OF FLOW
- 24/12 — DUCT SIZE, FIRST FIGURE IS SIDE SHOWN (DIMENSIONS ARE CLEAR INSIDE, U.N.O.)
- CONCENTRIC DUCT REDUCER
- ECCENTRIC DUCT REDUCER
- SQUARE DUCT TO ROUND DUCT
- DUCT CAP
- ROUND DUCT DOWN
- ROUND DUCT UP
- RECTANGULAR RETURN DUCT DOWN
- RECTANGULAR RETURN DUCT UP
- RECTANGULAR SUPPLY DUCT DOWN
- RECTANGULAR SUPPLY DUCT UP
- FLEXIBLE DUCT TO DIFFUSER DROP
- UP / DN — CHANGE OF ELEVATION UP OF DOWN IN DIRECTION OF AIRFLOW
- RADUIS ELBOW (45° & 90°)
- RECTANGULAR ELBOW (45° & 90°)
- VD — RECTANGULAR 90° SPLIT
- VD — RECTANGULAR TEE SPLIT (NO VOLUME DAMPER REQUIRED ON EQUAL SPLITS)
- VD — RADIUS TEE SPLIT
- SIDEWALL REGISTER TAP
- VD — BRANCH DUCT TAP (w/ SMACNA 45° FITTING)
- VD — SPIN-IN DUCT TAP
- CONICAL DUCT TAP

MECHANICAL PIPING SYMBOLS

	BLIND FLANGE OR CAP
	PIPING BREAK FOR PLAN CLARITY
CD	CONDENSATE DRAIN (COND.)
CWS	CONDENSER WATER SUPPLY
CWR	CONDENSER WATER RETURN
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
HPS	HIGH PRESSURE STEAM
MPS	MEDIUM PRESSURE STEAM
LPS	LOW PRESSURE STEAM
HPC	HIGH PRESSURE CONDENSATE
MPC	MEDIUM PRESSURE CONDENSATE
LPC	LOW PRESSURE CONDENSATE
PC	PUMPED CONDENSATE
HWS	HEATING HOT WATER SUPPLY
HWR	HEATING HOT WATER RETURN
CA	COMPRESSED AIR
CDA	CLEAN DRY COMPRESSED AIR
N	NITROGEN
DI	DE-IONIZED WATER
V	VACUUM
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION

- GATE VALVE
- OS&Y
- PLUG VALVE
- BALL VALVE
- BUTTERFLY VALVE
- STRAINER
- STRAINER WITH BLOWDOWN VALVE
- CHECK VALVE
- RELIEF VALVE
- UNION
- FLEXIBLE CONNECTION
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- MANUAL AIR VENT
- AUTOMATIC AIR VENT
- THERMOMETER
- PRESSURE GAGE
- HOSE BIBB (PLAN)
- HOSE BIBB (ELEVATION)
- 2-WAY CONTROL VALVE (PNEUMATIC)
- 3-WAY CONTROL VALVE (PNEUMATIC)
- 2-WAY CONTROL VALVE (ELECTRIC)
- 3-WAY CONTROL VALVE (ELECTRIC)

MECHANICAL DESIGN CRITERIA

MECHANICAL DESIGN CONDITIONS

SUMMER

OUTDOOR DESIGN:	98° F DB / 74° F WB
CONDENSER DESIGN:	105° F DB AMB.

WINTER

OUTDOOR DESIGN:	22° F DB

INDOOR DESIGN

SUMMER DESIGN:	75° F DB / 50% RH (MAXIMUM)
WINTER DESIGN:	72° F DB

PROJECT CLOSEOUT

THE HVAC CONTRACTOR SHALL PERFORM THE FOLLOWING TASKS UPON PROJECT COMPLETION. ALL REQUIRED REPORTS AND AS-BUILTS SHALL BE SUBMITTED WITHIN TWO (2) WEEKS OF DATE OF SUBSTANTIAL COMPLETION OR OWNER OCCUPANCY.

A. PROVIDE AND INSTALL CLEAN FILTERS FOR ALL EQUIPMENT.

B. SUBMIT REQUIRED NUMBER OF COPIES OF HVAC TEST-ADJUST-BALANCE REPORTS TO THE OWNER FOR REVIEW.

C. SUBMIT "AS-BUILT" RECORD DRAWINGS INDICATING ACTUAL AS-BUILT CONDITIONS TO THE OWNER FOR REVIEW. RECORD DRAWINGS SHALL BE STAMPED "AS-BUILT" AND SHALL HAVE THE NAME, ADDRESS, AND TELEPHONE NUMBER OF THE CONTRACTOR. ALL ENGINEERS' SEALS SHALL BE REMOVED FROM THE DRAWINGS. PROVIDE TWO (2) COPIES.

D. SUBMIT REQUIRED NUMBER OF COPIES OF OWNERS MAINTENANCE MANUALS. THE MANUALS SHALL INCLUDE RATINGS, CAPACITIES, PARTS LISTS, WIRING DIAGRAMS, SERVICE/MAINTENANCE RECOMMENDATIONS, AND WARRANTIES.

E. SUBMIT WRITTEN RESPONSE TO ALL FIELD REPORTS INDICATING CORRECTIVE ACTIONS TAKEN AND DATE CORRECTIVE ACTION WAS TAKEN TO THE OWNER FOR REVIEW.

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LICENSED
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09/13/24

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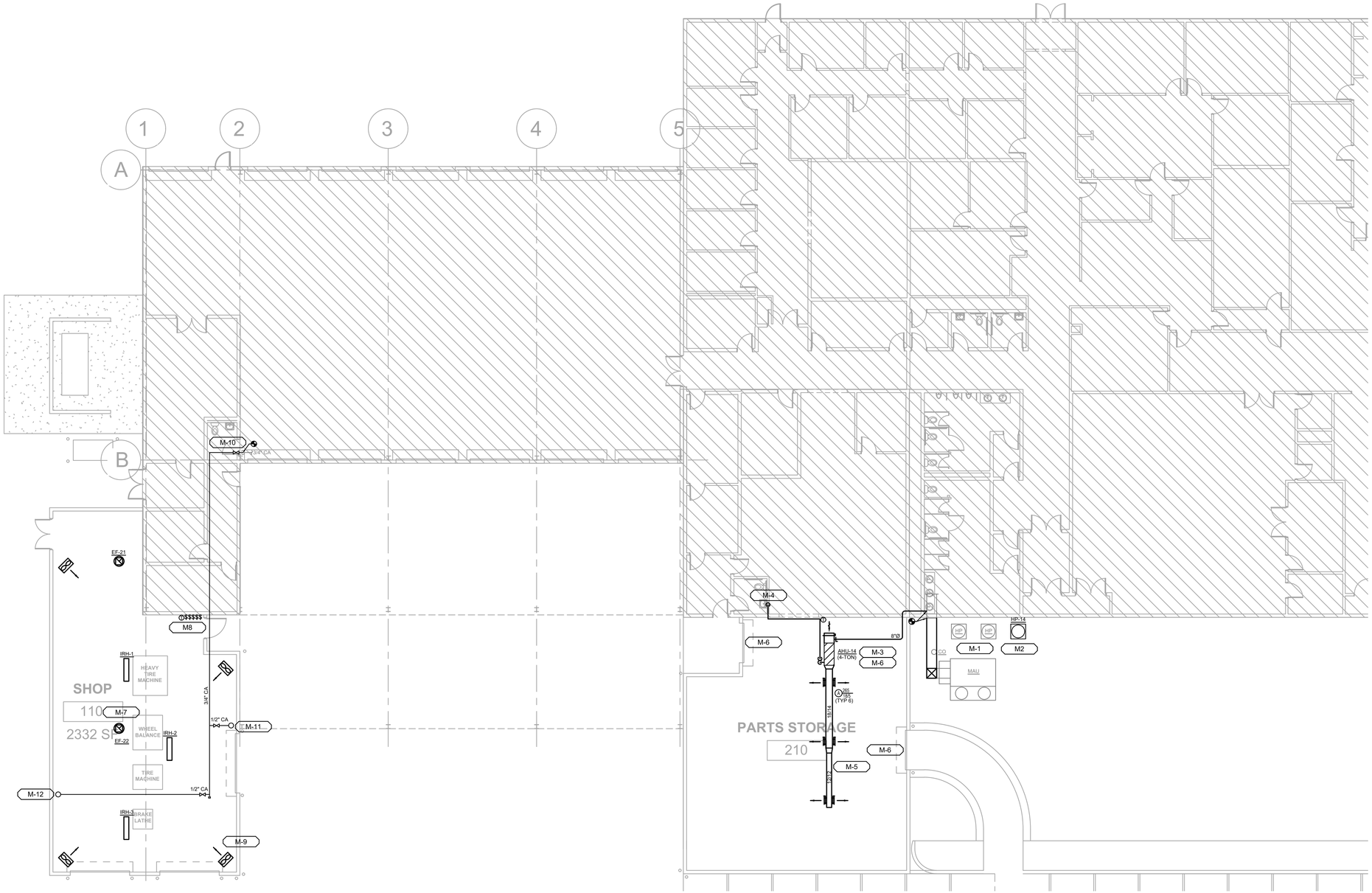
MECHANICAL
NOTES & SYMBOLS



1 **MECHANICAL FLOOR PLAN**
3/32" = 1'-0"

GENERAL NOTES

1. APPLICABLE CODES: IBC 2021, IFC 2021, IMC 2021, AND IECC 2021 WITH LOCAL AMENDMENTS.
2. ALL HVAC EQUIPMENT TO BE APPROVED BY OWNER, ARCHITECT, AND ENGINEER PRIOR TO PURCHASING. ALL HVAC EQUIPMENT TO MEET ALL APPLICABLE CODES AND MINIMUM EFFICIENCIES.
3. PROVIDE DUCTWORK TRANSITIONS AT ALL EQUIPMENT AS REQUIRED.
4. SEAL ALL DUCTWORK PENETRATIONS THROUGH WALLS TO STRUCTURE LEAK TIGHT. PROVIDE DUCTWORK SLEEVES AT ALL WALL PENETRATIONS.
5. PROVIDE MANUAL VOLUME DAMPERS IN DUCTWORK AT ALL BRANCH DUCTS TO AIR DEVICES INCLUDING EXHAUST AIR GRILLES. PROVIDE YOUNG'S REGULATORS ABOVE HARD CEILINGS.
6. ALL MITERED ELBOWS TO BE PROVIDED WITH TURNING VANES.
7. INSULATE EXTERIOR OF ALL SUPPLY AIR DIFFUSERS.
8. MAINTAIN ALL NEC REQUIRED AND NECESSARY MAINTENANCE CLEARANCES.

MECHANICAL KEYED NOTES (M-1)

1. RELOCATE EXISTING MAU TO LOCATION SHOWN. ROUTE ELEVATED DUCTWORK ABOVE EXISTING PLUMBING AND RECONNECT TO EXISTING DUCTWORK. PROVIDE WALL SUPPORTS OR STANCHIONS AS REQUIRED. RELOCATE EXISTING DUCT MOUNTED SENSOR.
2. PROVIDE CONCRETE HOUSEKEEPING PAD FOR ALL CONDENSING UNITS. FIELD COORDINATE EXACT LOCATIONS. PROVIDE REFRIGERANT PIPING WITH ALUMINUM JACKET AND PENETRATE EXTERIOR THE WALL WITH A PIPE SLEEVE SEALED LEAK TIGHT.
3. HORIZONTAL DX SPLIT SYSTEM WITH AUX DRAIN PAN AND FLOAT SWITCH MOUNTED TIGHT TO STRUCTURE. ROUTE 8" OUTSIDE AIR TO EXISTING MAU SUPPLY DUCT AND BALANCE TO 170 CFM. REFER TO AHU DETAIL FOR MORE INFORMATION.
4. ROUTE 3/4" INSULATED PVC CONDENSATE DRAIN RESTROOM AND TERMINATE IN LAVATORY TAIL-PIECE.
5. PROVIDE EXPOSED RECTANGULAR DUCT WITH 1" INTERNAL LINER. SIZES SHOWN ARE INSIDE DIAMETER. PAINT DUCTWORK WHITE.
6. AHU TO BE INTERLOCKED WITH ALL GARAGE DOORS USING A WHISKER SWITCH PER IECC 2021. THE AHU SHALL BE OFF WHEN THE GARAGE DOOR IS OPEN.
7. PROVIDE NEW AUTOMATED LOGIC HVAC CONTROL SYSTEM FOR AHU/HP-14, EF-21, & EF-22. ADD SPACE TEMPERATURE MONITORING FOR 110 SHOP & 210 PARTS STORAGE. CONNECT TO EXISTING AUTOMATED LOGIC HVAC CONTROL SYSTEM WITHIN THE EXISTING FLEET SHOP. MATCH EXISTING AHU AND EF CONTROL POINTS. ALL EXPOSED INTERIOR & EXTERIOR CONTROL WIRING TO BE IN CONDUIT.
8. PROVIDE OVERRIDE SWITCHES FOR EXHAUST FANS AND INFRARED HEATERS.
9. PROVIDE 30" OSCILLATING FANS WALL MOUNTED IN EACH CORNER OF THE SHOP (QTY 4).
10. CONNECT TO EXISTING 3/4" THREADED BLACK STEEL COMPRESSED AIR PIPING AND ROUTE PIPING UP IN ROOF STRUCTURE.
11. PROVIDE 3/8" COMPRESSED AIR HOSE REEL - 50' LENGTH.
12. PROVIDE 1/2" COMPRESSED AIR HOSE REEL - 50' LENGTH.

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MECHANICAL FLOOR PLAN

DUCTWORK SCHEDULE

DUCT SYSTEM	SERVICE	MATERIAL	PRESSURE CLASS	SEAL CLASS	INSULATION INTERIOR CONCEALED	INSULATION INTERIOR EXPOSED	REMARKS
SA	SUPPLY AIR	GALVANIZED STEEL	+ 1" W.G.	A	1.5" DWF-FSK R=8 MIN	1" DLR R=6 MIN	NONE
RA	RETURN AIR	GALVANIZED STEEL	- 1" W.G.	A	1.5" DWF-FSK R=8 MIN	1" DLR R=6 MIN	NONE
OA	UNCONDITIONED OUTSIDE AIR	GALVANIZED STEEL	- 1" W.G.	A	1.5" DWF-FSK R=8 MIN	1" DLR R=6 MIN	NONE
EA	EXHAUST AIR	GALVANIZED STEEL	- 1" W.G.	A	1.5" DWF-FSK R=8 MIN	NONE	NONE
SA / RA	FINAL AIR DEVICE CONNECTIONS	FLEXIBLE ROUND DUCTWORK	N/A	N/A	R=6 MIN	R=6 MIN	FLEXIBLE DUCTWORK LIMITED TO 5 FEET MAX

NOTES:
1. ALL DUCT SIZES INDICATE INSIDE CLEAR DIMENSIONS IN INCHES.
2. ALL DUCTWORK TO BE CONSTRUCTED PER SMACNA STANDARDS.
3. DWF- FLEXIBLE DUCT WRAP, DWR - RIGID DUCT WRAP, DLF - FLEXIBLE DUCT LINER, DLR - RIGID DUCT LINER.
4. ASJ - ALL SERVICE JACKET, FSK - FOIL-SKRIM-KRAFT JACKET, MAS - MASTIC JACKET, AL - ALUMINUM JACKET, PVC - PVC JACKET
5. DUCTWORK IN VENTILATED ATTICS TO BE INSULATED PER THE EXTERIOR INSULATION REQUIREMENTS.
6. DUCTWORK IN RETURN AIR PLENUMS TO BE INSULATED PER THE INTERIOR EXPOSED REQUIREMENTS
7. ALL DUCTWORK SUPPORTS SHALL BE FURNISHED AND INSTALLED PER SMACNA HVAC DUCT CONTRUCTION STANDARDS.

AIR DISTRIBUTION DEVICE SCHEDULE

MARK	MANUF.	MODEL	TYPE	CONSTRUCTION	NOTES
A	PRICE	520FS	SUPPY DOUBLE DEFLECTION SIDEWALL	STEEL	SIZES SHOWN ON PLANS. FURNISH WITH OPPOSED BLADE DAMPER AND FRONT FRONT BLADES PARALLEL TO THE VERTICAL DIMENSION

NOTES:
1. PROVIDE MAKE AND MODEL SPECIFIED OR ENGINEER APPROVED SUBSTITUTE.
2. COORDINATE AIR DEVICE COLOR SELECTION WITH ARCHITECT.
3. ALL CEILING SUPPLY DIFFUSERS TO HAVE INSULATED BACKS.
4. ALL CEILING MOUNTED SUPPLY AND RETURNS IN GYP OR PLASTER CEILINGS SHALL BE INSTALLED WITH A LAY-IN PLASTER FRAME

LOUVER SCHEDULE

TAG	MANUFACTURER	MODEL	SERVICE	OPENING SIZE (IN/IN)	MAX. VOLUME (CFM)	MAX. VELOCITY (FPM)	MAX P.D. (IN. W.G.)	CONSTRUCTION
L-1	RUSKIN	ELF375DX	FLEET SHOP	48x32	2,500	500	0.1	ALUMINUM

NOTES:
1. PROVIDE MAKE AND MODEL SPECIFIED OR ENGINEER APPROVED EQUAL.
2. FURNISH WITH BIRDSCREEN CONSTRUCTED OF GALVANIZED STEEL MESH.
3. PROVIDE LOUVER WITH BACKDRAFT DAMPER.
4. ALL LOUVERS TO HAVE MINIMUM 50% FREE AREA.
5. COORDINATE COLOR WITH ARCHITECT

DX SPLIT SYSTEM SCHEDULE (INDOOR UNIT)

MARK	MFTR	MODEL	TOTAL AIR CFM	OUTSIDE AIR CFM	% OUTSIDE AIR	FILTER	COOLING SENSIBLE MBH	COOLING TOTAL MBH	HEAT PUMP TEMP RISE	HEAT PUMP TOTAL MBH	AUX HEAT KW	AUX HEAT NO. OF STAGES	SUPPLY FAN E.S.P. INCHES	SUPPLY FAN MOTOR HP	ELECTRICAL V/PH	ELECTRICAL MCA	ELECTRICAL MOCP	NOTES
AHU-14	CARRIER	FJ4D	1,600	150	9%	1" MERV 8	45.3	47.6	27.5	47.8	15.0	1	0.5	3/4	480/3	25.5	30	PROVIDE 408V/3PH - 15KW HEATER WITH 208V/1PH XFMR

NOTES:
1. PROVIDE THE MAKE AND MODEL SPECIFIED OR AN ENGINEER APPROVED EQUAL.
2. PROVIDE DX SPLIT SYSTEMS WITH CONTROLS INCLUDING WALL MOUNTED ELECTRONIC 7-DAY PROGRAMMABLE THERMOSTATS WITH AUTOMATIC HEAT/COOL SWITCH-OVER CAPABILITY.
3. PROVIDE ALL INDOOR UNITS WITH SINGLE POINT ELECTRICAL CONNECTION.
4. THE MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL FLEXIBLE DUCT CONNECTIONS AT THE SUPPLY AND RETURN CONNECTIONS OF THE INDOOR FAN COIL UNIT.
5. THE MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL REFRIGERATION PIPING IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND REQUIREMENTS.
6. THE MECHANICAL CONTRACTOR SHALL INSTALL SECONDARY DRIP PANS UNDER ALL CONCEALED INDOOR FAN COIL UNITS. THE SECONDARY DRIP PAN SHALL BE MONITORED BY A FLOAT SWITCH THAT IS INTERLOCKED TO THE SUPPLY FAN SUCH THAT THE UNIT WILL SHUT DOWN UPON DETECTION OF CONDENSATE IN THE SECONDARY PAN.

DX SPLIT SYSTEM SCHEDULE (OUTDOOR UNIT)

MARK	MFTR	MODEL	TYPE	NOMINAL TONS	COOLING STAGES	MIN EFFICIENCY SEER2	ELECTRICAL V/PH	ELECTRICAL MCA	ELECTRICAL MOCP	NOTES
HP-14	CARRIER	25SCA	HEAT PUMP	4	1	14.3 SEER2 7.5 HSPF2	208/1	32.8	50	

NOTES:
1. PROVIDE THE MAKE AND MODEL SPECIFIED OR AN ENGINEER APPROVED EQUAL.
2. PROVIDE ALL OUTDOOR UNITS WITH SINGLE POINT ELECTRICAL CONNECTION.

FAN SCHEDULE

MARK	MAKE	MODEL	SERVICE	FAN FLOW (CFM)	FAN SPEED (RPM)	FAN SP (IN. WG.)	FAN MAX SONES	MOTOR POWER (HP)	MOTOR SPEED (RPM)	MOTOR V/PH	MOTOR DRIVE	NOTES
EF-21 & 22	GREENHECK	G-090-VG	FLEET SHOP	600	1,501	0.25	7.0	1/10	1,550	120/1	DIRECT	1,2

NOTES:
1. PROVIDE MAKE AND MODEL SPECIFIED OR ENGINEER APPROVED EQUAL.
2. PROVIDE WITH 14" CURB AND BACKDRAFT DAMPER.

ELECTRIC INFRARED HEATER SCHEDULE

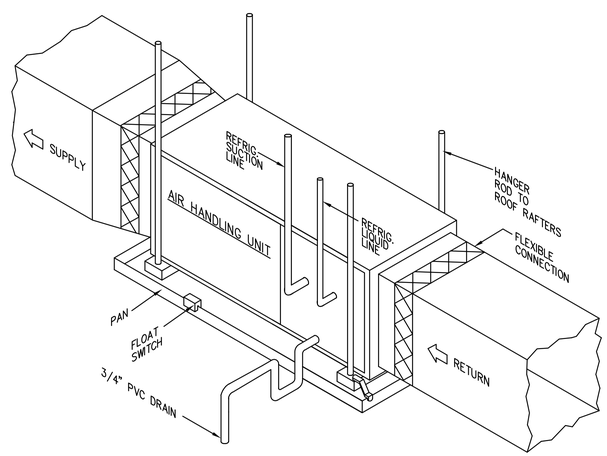
MARK	MAKE	MODEL	LAMPS (QTY)	PATTERN (DEG)	ELECTRIC DATA KW	ELECTRIC DATA FLA	ELECTRIC DATA MOCP	ELECTRIC DATA V/PH	REMARKS
IRH-1,2,3	TPI	OCH2-55-208V	2	60	4.0	19.2	30.0	208/1	

NOTES:

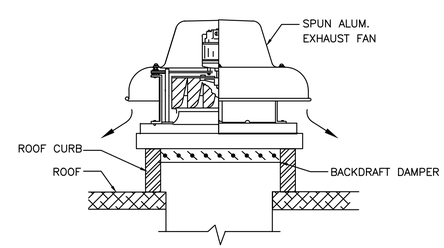
VENTILATION RATE CALCULATION

SPACE	OCCUPANCY CLASSIFICATION	AREA (SF)	OCCUPANCY (QTY PEOPLE)	PEOPLE OA FLOW (CFM/PERSON)	AREA OA FLOW (CFM/SF)	CALCULATED OA FLOW (CFM)	REMARKS
210 - PARTS STORAGE	WAREHOUSE	2,135	4	10	0.06	168	
					AHU-14 TOTAL	**168**	
210 - PARTS STORAGE	STORAGE	2,332	4	10	0.06	180	
					EF-22 & 23 TOTAL	**180**	

NOTES:
1. VENTILATION FLOW RATE CALCULATIONS BASED ON 2021 IMC TABLE 402.1 MINIMUM VENTILATION RATES



1 **AIR HANDLER DETAIL**
NTS



2 **EXHAUST FAN DETAIL**
NTS

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MECHANICAL SCHEDULES & DETAILS

ELECTRICAL SPECIFICATIONS

A. GENERAL MECHANICAL REQUIREMENTS

1. CONFLICT RESOLUTION: WHERE CONFLICTS MAY EXIST BETWEEN THE MINIMUM REQUIREMENTS OF VARIOUS LAWS, CODES, AUTHORITIES, AND/OR WITHIN THE CONTRACT DOCUMENTS, THE HIGHER QUALITY, GREATER QUANTITY, MORE RESTRICTIVE AND/OR MORE EXPENSIVE REQUIREMENT SHALL BE THE BASIS OF CONTRACTOR PRICING AND THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER AND OWNER'S REPRESENTATIVE FOR THE RESOLUTION OF THE ISSUE PRIOR TO EXECUTING THE WORK IN QUESTION.
2. SHOULD ANY ERRORS, OMISSIONS, CONFLICTS, OR AMBIGUITIES EXIST IN THE DRAWINGS, THE CONTRACTOR SHALL BRING THESE TO THE ATTENTION OF THE ENGINEER IMMEDIATELY FOR ADJUSTMENT IN WRITING BEFORE SIGNING THE CONTRACT OR PROCEEDING WITH THE WORK. OTHERWISE, HE SHALL AT HIS OWN EXPENSE, SUPPLY THE PROPER MATERIALS AND LABOR TO MAKE GOOD ANY DAMAGE OR DEFECT CAUSED BY SUCH UNINTENTIONAL ERROR.
3. CONTRACTOR IS RESPONSIBLE FOR CHECKING ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS FOR ACCURACY, AND CONFIRMING THAT THE WORK IS BUILDABLE AS SHOWN AND MEETS ALL APPLICABLE CODES BEFORE PROCEEDING WITH CONSTRUCTION. IF THERE ARE ANY QUESTIONS REGARDING THESE OR OTHER COORDINATION ISSUES, THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK IN QUESTION OR RELATED WORK.
4. COORDINATION:
   - 4.1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING FULL COORDINATION WITH OTHER TRADES AND CONTRACTORS TO ACCOMPLISH THE WORK AS SHOWN AND NOTED IN THESE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL COMPARE THE DRAWINGS OF OTHER TRADES AND REPORT ANY DISCREPANCIES TO THE OWNER'S REPRESENTATIVE.
   - 4.2. THE CONTRACTOR SHALL NOT FABRICATE OR INSTALL ITEMS AS SHOWN ON THE DRAWINGS IF THERE ARE DISCREPANCIES OR CONFLICTS BETWEEN THE EXISTING CONDITIONS AND THE INFORMATION SHOWN ON THE DRAWINGS UNTIL SUCH DISCREPANCIES HAVE BEEN RESOLVED. PRIOR TO FABRICATION OR INSTALLATION, THE CONTRACTOR SHALL IMMEDIATELY CALL SUCH DISCREPANCIES OR CONFLICTS TO THE ATTENTION OF THE PROJECT COORDINATOR.
   - 4.3. DUCTWORK, PIPING, CONDUIT, CABLING, ETC. SHOWN ON DRAWINGS SHALL BE COORDINATED WITH AIR DISTRIBUTION DEVICES, SPECIAL CEILING, FLOOR, AND STRUCTURE CONSTRUCTION, ETC. PROVIDE ADDITIONAL RISES AND DROPS TO THOSE INDICATED ON THE DRAWINGS AS REQUIRED TO COORDINATE WITH ARCHITECTURAL, STRUCTURAL OR MEP ELEMENTS SHOWN ON THE CONTRACT DOCUMENTS. ALL UTILITIES SHALL BE ROUTED IN AN ORDERLY MANNER, GROUPED TOGETHER WHEREVER POSSIBLE, AND LOCATED SO AS TO CONSERVE BUILDING SPACE. DUCTWORK, PIPING, CONDUIT, CABLING, ETC. SHOWN ON EACH PLAN IS RUN ABOVE THE CEILING ON THE FLOOR WHERE IT IS SHOWN UNLESS OTHERWISE NOTED.
5. AS–BUILTS: THE CONTRACTOR SHALL MAINTAIN HIS SET OF CONSTRUCTION DRAWINGS ON SITE AT ALL TIMES SO THAT ALL CHANGES BETWEEN THE DRAWINGS AND THE ACTUAL CONSTRUCTION CAN BE NOTED ON THE DRAWINGS. THIS INCLUDES ALL DEVIATIONS FROM THE ORIGINAL CONTRACT. THE CONTRACTOR SHALL INDICATE ALL CHANGES FROM THE ORIGINAL PLANS MADE DURING THE INSTALLATION OF HIS WORK IN RED INK ON TWO BLUELINE PRINTS. AT THE END OF CONSTRUCTION, THE CONTRACTOR SHALL SIGN AND DATE THE DRAWINGS CERTIFYING THAT THEY ARE AN ACCURATE REFLECTION OF THE ACTUAL CONSTRUCTION. AS–BUILT DRAWINGS ARE TO BE DELIVERED TO THE OWNER'S PROJECT COORDINATOR AFTER PROJECT COMPLETION. NOTE THAT THE FINAL INVOICE FOR THE CONTRACT WILL NOT BE PAID BY THE OWNER UNTIL FINAL AS–BUILT DRAWINGS ARE RECEIVED.
6. STARTUP AND TRAINING: VENDORS FOR ALL MAJOR PIECES OF EQUIPMENT SHALL PROVIDE STARTUP ASSISTANCE AND A MINIMUM OF 2 HOUR OWNER TRAINING.

B. SUBMITTALS

1. CONTRACTOR SHALL PROVIDE PRODUCT DATA SUBMITTALS ON ALL MAJOR EQUIPMENT, COMPONENTS, AND MATERIALS SPECIFIED IN THESE PLANS FOR ENGINEER'S AND OWNER'S REVIEW AND ACCEPTANCE PRIOR TO INSTALLATION.
   - 1.1. COMPLIANCE DATA: PUBLISHED LITERATURE, CERTIFICATES, AND LISTS INDICATING THE PRODUCT'S COMPLIANCE WITH STANDARDS REFERENCED IN THESE SPECIFICATIONS.
   - 1.2. PUBLISHED LITERATURE: INDICATE DIMENSIONS, WEIGHTS, CAPACITIES, RATINGS, HORSEPOWER, GAGES, AND FINISHES OF MATERIALS, AND ELECTRICAL CHARACTERISTICS AND CONNECTION REQUIREMENTS.
   - 1.3. PERFORMANCE DATA: PERFORMANCE DATA INCLUDING LIGHTING PERFORMANCE, HARMONICS, AND EQUIPMENT OUTPUT CAPACITIES COMPLETE WITH RATING CONDITIONS AS SCHEDULED ON CONTRACT DRAWINGS. AS A MINIMUM SUBMITTED DATA SHALL INCLUDE ALL PERFORMANCE DATA SCHEDULED OR NOTED ON CONTRACT DRAWINGS.
   - 1.4. ELECTRICAL REQUIREMENTS: POWER SUPPLY WIRING INCLUDING WIRING DIAGRAMS FOR INTERLOCK AND CONTROL WIRING, CLEARLY INDICATING FACTORY–INSTALLED AND FIELD–INSTALLED WIRING.
   - 1.5. SHOP DRAWINGS: INDICATE ASSEMBLY, UNIT DIMENSIONS, WEIGHT LOADING, REQUIRED CLEARANCES, CONSTRUCTION DETAILS, FIELD CONNECTION DETAILS, AND ELECTRICAL CHARACTERISTICS AND CONNECTION REQUIREMENTS.
   - 1.6. MANUFACTURER'S INSTRUCTIONS: INCLUDE INSTALLATION INSTRUCTIONS.
   - 1.7. CERTIFICATES: SIGNED LETTERS CERTIFYING COMPLIANCE WITH SPECIFIED REQUIREMENTS.
   - 1.8. CALCULATIONS: DESIGN AND/OR DESIGN CALCULATIONS.
   - 1.9. MANUFACTURER'S WARRANTIES.
   - 1.10. INSTALLATION, OPERATION, AND MAINTENANCE MANUALS.
2. SHOP DRAWINGS: ALL SHOP DRAWINGS, INCLUDING PRODUCT DATA SUBMITTALS, SHALL BE REVIEWED BY THE CONTRACTOR PRIOR TO SUBMITTING TO THE ENGINEER. ALL SHOP DRAWINGS NOT REVIEWED BY THE CONTRACTOR WILL BE RETURNED WITHOUT REVIEW. AFTER REVIEW HAS BEEN COMPLETED, SUBMIT A COPY OF EACH SHOP DRAWING TO THE OWNER WITH THE APPROVAL SEAL OF THE ENGINEER AND THE CONTRACTOR. THE USE OF REPRODUCTIONS OF THESE CONTRACT DRAWINGS BY ANY CONTRACTOR, SUBCONTRACTOR, ERECTOR, FABRICATOR OR MATERIAL SUPPLIER, IN LIEU OF THE PREPARATION OF SHOP DRAWINGS IS FORBIDDEN. SHOP DRAWINGS RECEIVED BEARING THE ENGINEER'S TITLE AND SEAL SHALL BE PROMPTLY REJECTED.

C. CONDUCTORS AND GROUNDING

1. THHN/THWN SOFT DRAWN, STRANDED COPPER, XHHW FOR UG, USE SOLID COPPER FOR #10 & SMALLER, MIN SIZE #12
2. ALL BUILDING WIRING SHALL BE INSULATED COPPER CONDUCTORS RUN FROM LOAD TO SOURCE INSIDE RACEWAY, CONTINUOUS (WITHOUT SPLICES) BETWEEN JUNCTION AND PULL BOXES, AND EXPOSED INSIDE PANELS ONLY.
3. ALL SINGLE POLE CIRCUITS SHALL HAVE A DEDICATED NEUTRAL CONDUCTOR ROUTED TO THE SOURCE PANEL.
4. FIELD VERIFY WHETHER A NEUTRAL IS REQUIRED FOR ALL TWO AND THREE POLE CIRCUITS. FOR ALL LOADS EXCEPT MOTORS, A NEUTRAL IS ASSUMED TO BE REQUIRED UNLESS FIELD DETERMINED TO BE UNNECESSARY.

2. ALL POWER & CONTROL WIRING ROUTED THROUGH RETURN AIR PLENUMS SHALL BE PLENUM RATED.

3. UP TO 3–20A CIRCUITS MAY SHARE A RACEWAY FOR HOMERUNS WHERE SUITABLE & PER NEC CONDUIT FILL RULES.

4. 120V, 20A. HOME RUNS LONGER THAN 100' AND 277V, 20A. HOME RUNS LONGER THAN 150' SHALL BE #10 MIN.

5. ALL RACEWAYS AND CIRCUITS SHALL BE PROVIDED WITH A NEC 250 COMPLIANT GREEN GROUND CONDUCTOR.

6. ALL EQUIPMENT SHALL BE PROPERLY BONDED.

7. AT A MINIMUM, A GROUNDING ELECTRODE CONDUCTOR, SIZED PER NEC TABLE 250–66, SHALL BE CONNECTED FROM THE GROUND BUS OF THE SERVICE ENTRANCE DISCONNECT TO A 3/4"X10' COPPER CLAD STEEL GROUND ROD, TO THE BUILDING METAL COLD WATER AND GAS PIPING AT THE POINT OF ENTRANCE INTO THE BUILDING, STRUCTURAL STEEL, AND 20' OF BARE COPPER ENCASED IN THE SLAB. ADDITIONAL GROUNDING REQUIREMENTS MAY BE SPECIFIED ON THE PLANS OR IN THE SPECIFICATIONS.

8. ROUTING OF GROUNDING ELECTRODE CONDUCTORS SHALL BE IN METAL CONDUIT IN ALL LOCATIONS THAT ARE SUBJECT TO PHYSICAL ABUSE OR ENVIRONMENTAL DETERIORATION SUCH AS EXTERIOR MOUNTED, EXPOSED BELOW LAY IN CEILING, ETC.

9. UPON COMPLETION OF THE WORK, ALL PARTS OF THE ELECTRICAL INSTALLATION SHALL BE MEGGER TESTED AND PROVED TO BE FREE OF UNWANTED GROUNDS AND OTHER DEFECTS.

10. PROVIDE A #4 GROUND FROM THE SERVICE ENTRANCE GROUND BUS TO ALL TELEPHONE SERVICE BOARDS AND COMMUNICATIONS EQUIPMENT ROOMS AND TERMINATE AT A GROUND BUS.

D. HANGERS AND SUPPORTS

1. SUPPORT RACEWAYS USING GALVANIZED STEEL OR MALLEABLE IRON STRAPS; CHANNEL OR PIPE CLAMPS AS APPROPRIATE.
2. PROVIDE SUPPORTS AT ALL BOXES, ELEC. EQUIP., LOADS, & AT CODE REQUIRED INTERVALS ALONG RACEWAYS.
3. GROUP RELATED RACEWAYS AND SUPPORT USING STEEL CHANNEL CONDUIT RACKS WITH 25% SPARE CAPACITY.

F. IDENTIFICATION

1. PROVIDE APPROPRIATE LABELS AND WARNING SIGNS FOR ALL EQUIPMENT, WIRING DEVICES, CONDUCTORS, CABLES, BOX, AND ENCLOSURES. PROVIDE BURIED DETECTABLE WARNIGN TABLE FOR UNDERGROUND CONDUITS.
2. CONDUCTOR TAGGING: TAG ALL CONDUCTORS AT MOTOR CONTROLS, PANELS, TERMINAL CABINETS AND JUNCTION BOXES. TAG CIRCUITS WHICH PASS THROUGH OTHER DEVICES SUCH AS LIGHTING CONTACTORS.
3. PROVIDE A TYPED PANEL DIRECTORY FOR EACH PANEL PROVIDED OR MODIFIED FOR THIS PROJECT. DIRECTORY SHALL IDENTIFY THE CIRCUIT NUMBER, LOADS SERVED, AND LOCATION OF LOADS BY ROOM NUMBER. MOUNT ON INSIDE OF EACH PANEL AND FILE THEM WITH THE OWNER WHEN THE WORK IS COMPLETED.
4. PROVIDE EACH PANEL WITH A MANUFACTURER PREPARED ARC FLASH HAZARD WARNING LABEL.
5. ALL ELECTRICAL EQUIPMENT SHALL BE IDENTIFIED BY MEANS OF 3"X1" (MIN)NAMEPLATES PERMANENTLY ATTACHED TO THE EQUIPMENT, PLATES SHALL BE METAL, PLASTIC, OR SIMILAR, BLACK WITH 1/4"H (MIN) ENGRAVED WHITE LETTERS.
6. JUNCTION AND PULL BOXES SHALL BE LABELED WITH PANEL NAME, CIRCUIT #, AND VOLTAGE.
7. RECEPTACLES SHALL BE LABELED WITH THE PANEL NAME AND CIRCUIT #. USE WHITE LABELS WITH BLACK TEXT.
8. FIRE ALARM, EMERGENCY/CRITICAL PWR, LIFE SAFETY LABELS, INCLUDING RECEPTACLES, SHALL BE COLOR CODED & ENGRAVED.

H. RACEWAY AND BOXES

1. PROVIDE COMPLETE RACEWAY SYSTEMS FROM SOURCE TO ALL LOADS WITH DEDICATED SUPPORTS FOR EACH RACEWAY ELEMENT.
2. PROVIDE ALL REQUIRED BOXES & SUPPORTS FOR WIRING DEVICES, TELECOMMUNICATIONS, FIRE ALARM, ACCESS CONTROL, CONTROLS EQUIPMENT, ALARMS, SENSORS, ETC.
3. PROVIDE PULL BOXES AT APPROPRIATE LOCATIONS FOR ALL POWER AND SPECIAL SYSTEMS RACEWAYS WHETHER SHOWN ON PLANS OR NOT. INSTALL IN CONCEALED, ACCESSIBLE LOCATIONS.
4. DO NOT INSTALL RACEWAY WITH MORE THAN THE EQUIVALENT OF THREE NINETY DEGREE BENDS BETWEEN PULL POINTS.
5. THE CONDUIT ROUTING SHOWN ON THESE PLANS IS DIAGRAMMATIC.
6. COORDINATE INTERIOR ROUTING WITH OTHER TRADES; STRUCTURE; NEW AND EXISTING UTILITIES, DUCTWORK, PIPING; AND OTHER EXISTING CONDITIONS AS REQUIRED FOR A COMPLETE, CONFLICT FREE INSTALLATION.
7. COORDINATE SITE ROUTING WITH OTHER TRADES; STRUCTURE; NEW AND EXISTING BURIED UTILITIES, PAVED AREAS, CONDUIT SLEEVES, AND LANDSCAPING BEFORE DIGGING TO AVOID CONFLICTS, DAMAGE, AND TO ALLOW FOR FUTURE INSTALLATIONS.
8. ROUTE RACEWAYS PARALLEL AND PERPENDICULAR TO WALLS, FLOORS, AND CEILINGS.

5. ROUTE EXPOSED CONDUIT PARALLEL AND TIGHT TO STRUCTURAL ELEMENTS. FOLLOW ALL SURFACE CONTOURS; DO NOT ROUTE IN FREE AIR FROM POINT TO POINT.

6. INSTALL RACEWAYS SO THAT IT DRAINS TO JUNCTION AND PULL BOXES TO AVOID MOISTURE TRAPS AT LOW POINTS; INSTALL JUNCTION BOX WITH DRAIN FITTING AT LOW POINTS IN CONDUIT SYSTEM.

7. INSTALL FITTINGS TO ACCOMMODATE EXPANSION AND DEFLECTION WHERE RACEWAY CROSSES SEISMIC, CONTROL, AND EXPANSION JOINTS.

8. INSTALL SUITABLE PULL STRING OR CORD IN EACH EMPTY RACEWAY, LABEL, AND CAP.

9. CLOSE ENDS AND UNUSED OPENINGS IN SURFACE RACEWAYS, WIREWAY, BOXES, AND ENCLOSURES.

10. ALL ROOF AND WALL PENETRATIONS SHALL BE FLASHED AND SEALED TO MAINTAIN THE FIRE RATING AND WATERPROOFING OF THE STRUCTURE PER THE MANUFACTURER OF THE MATERIAL'S RECOMMENDED PRACTICES.

11. PAINT EXPOSED RACEWAYS AND BOXES TO MATCH THE SURFACE TO WHICH THEY ARE ATTACHED.

12. ALL CONDUIT SHALL HAVE AN NEC COMPLIANT GROUND AND AN INSULATED THROAT BUSHING IN PLACE FOR PULLING CONDUCTORS.

13. ALL CONNECTIONS TO MOTORS, INSTRUMENTS, MACHINES, AND EQUIPMENT SUBJECT TO MOVEMENT OR VIBRATION SHALL BE MADE USING LIQUID–TIGHT, FLEXIBLE METAL CONDUIT (LFMC), (3FT MAX).

ELECTRICAL GENERAL NOTES

1. CONTRACTOR SHALL PROVIDE ACCURATE TYPE–WRITTEN PANEL SCHEDULES. SCHEDULES SHALL INDICATE DEVICES AND/OR EQUIPMENT SERVED, LOCATION AND ROOM NUMBERS.

2. TYPICAL CIRCUIT IDENTIFICATION LABELS FOR RECEPTACLES, SWITCHES, J–BOXES, ETC. SHALL BE CLEAR ADHESIVE TAPE WITH BLACK LETTERING AND SHALL PROVIDE THE FOLLOWING INFORMATION:

   EXAMPLE: HA1–1 CIRCUIT CONDUCTOR IDENTIFICATION
   SOURCE PANELBOARD IDENTIFICATION

   PROVIDE SAMPLE OF LABELS TO OWNER FOR APPROVAL PRIOR TO INSTALLATION.

3. ALL PANELBOARDS, MOTOR STARTERS, CONTROL PANELS, CONTROL REMOTE STATIONS, DISCONNECT SWITCHES, CIRCUIT BREAKERS OR OTHER EQUIPMENT IN SEPARATE ENCLOSURES SHALL BE EQUIPPED WITH NAMEPLATES. THE NAMEPLATES SHALL BE ENGRAVED RIGID PLASTIC LAMINATE OR APPROVED EQUAL, WHITE LETTERING ON BLACK BACKGROUND FOR EQUIPMENT 208/120 VOLT, AND BE ATTACHED TO THE EQUIPMENT SECURELY WITH SCREWS. EACH NAMEPLATE SHALL GIVE THE DESIGNATION OF THE EQUIPMENT AS SHOWN ON THE ONE–LINE DIAGRAM AND ALSO THE SOURCE. UTILIZE SIMILAR RED AND WITH NAMEPLATES FOR ALL EMERGENCY POWERED EQUIPMENT. LETTERS SHALL BE SIZED AT 1/4" TYPICAL.

   EXAMPLE: HA1–10
   FED FROM PANEL MSB–1

4. SUPPORT HORIZONTAL RUNS OF EMT CONDUIT AT INTERVALS NOT TO EXCEED 10'–0"" AND WITHIN 3'' FROM FITTINGS, BOXES, PANELS, ETC. CONDUIT SHALL NOT BE FASTENED TO CEILING GRID. ALL CONDUITS SHALL BE ROUTED AND SUPPORTED FROM THE STRUCTURE ABOVE THE CEILING LINE. CONDUIT SUPPORT SHALL BE PER NEC AND LOCAL REQUIREMENTS.

5. NO RUN OF CONDUIT SHALL HAVE MORE THAN 360 DEGREE BENDS AND SHALL NOT BE MORE THAN 100 FEET IN LENGTH WITHOUT A PULL OR JUNCTION BOX OF THE PROPER SIZE AS REQUIRED PER NEC.

6. IF ACCEPTABLE TO THE OWNER MC CABLE SHALL ONLY BE ALLOWED WITHIN WALLS OR PARTITIONS FOR RUN–OUTS TO WIRING DEVICES. MC CABLE SHALL NOT BE UTILIZED ABOVE THE CEILING LINE FOR ANYTHING OTHER THAN 6'–0" MAXIMUM FIXTURE TAILS.

7. EMT CONDUIT SHALL BE SIZED IN ACCORDANCE WITH THE PERCENT FILL REQUIREMENTS OF THE NEC AND AS INDICATED ON THE DRAWINGS AND SHALL BE OF AMPLE SIZE TO PERMIT THE READY INSERTION AND WITHDRAWAL OF CONDUCTORS WITHOUT ABRASION. GROUPING OF "HOME RUNS" IS ACCEPTABLE ONLY WHERE THE NUMBER OF CONDUCTORS INDICATED ON THE DRAWINGS IS MAINTAINED AND THE PROPER NEC DE–RATING FACTORS ARE APPLIED BASED ON FULL RATING OF THE BRANCH CIRCUIT OVER CURRENT PROTECTION DEVICES. FOR 20 AMP CIRCUITS, NOT MORE THAN NINE (9) – #12 THHN OR TWENTY (20) – #10 THHN CURRENT CARRYING (PHASE AND NEUTRAL) CONDUCTORS SHALL BE INSTALLED IN EACH RACEWAY.

8. WHERE SEPARATE HOMERUNS ARE INDICATED ON THE PLANS, DO NOT UTILIZE THE NEUTRAL OR GROUND CONDUCTOR FOR ANY OTHER CIRCUITS. TERMINATE ONLY AT DEVICES AND PANELBOARD AS INDICATED.

9. ALL 120 VOLT, 20 AMP HOME RUNS LONGER THAN 100 FEET HOMERUNS LONGER THAN 120 FEET SHALL BE #10 MINIMUM.

10. NEW CIRCUITRY SHALL BE ACCURATELY IDENTIFIED AT THE RESPECTIVE ABOVE CEILING JUNCTION BOXES. THE ASSOCIATED PANEL, CIRCUITS, AND VOLTAGE SHALL BE IDENTIFIED ON ALL JUNCTION BOX COVERS.

11. ALL WIRING SHALL BE TYPE THHN IN MINIMUM 3/4" EMT CONDUIT WITH GROUND WIRE UNLESS NOTED OR REQUIRED OTHERWISE. USE OF CONDUIT AS ONLY GROUND PATH IS UNACCEPTABLE. ALL CONDUCTORS SMALLER THAN #10 SHALL BE SOLID. ALL CONDUCTORS #10 AND LARGER SHALL BE STRANDED. UTILIZE T&B "STA–KON" OR EQUAL FORK TERMINALS FOR #10 WIRE TERMINATIONS ON ALL WIRING DEVICES WITH SCREW TERMINALS.

12. ALL WIRING DEVICES SHALL BE COMMERCIAL SPECIFICATION GRADE UNLESS OTHERWISE NOTED. UTILIZE HUBBELL, LEVITON, AND/OR ARROW–HART. VERIFY COLOR.

13. VERIFY WITH ARCHITECT AS TO THE FINISH, EXACT LOCATION, AND HEIGHT OF ALL LIGHT FIXTURES, SWITCHES, AND WIRING DEVICES.

14. VERIFY LOCATION, MOUNTING HEIGHT AND ORIENTATION FOR ALL WIRING DEVICES AT MILLWORK LOCATIONS WITH ALL TRADES PRIOR TO ROUGH–IN.

15. ALL WALL MOUNTED OUTLETS AND/OR BOXES SHALL NOT BE MOUNTED BACK–TO–BACK ON EITHER SIDE OF WALL AND SHALL BE SEPARATED BY A WALL STUD.

16. PROVIDE AN EMPTY JUNCTION BOX, RUBBER GROMMET AND PULL STRING TO ACCESSIBLE CEILING SPACE FOR ALL COMMUNICATION AND TV DEVICES UNLESS OTHERWISE NOTED. ALL COMMUNICATION AND TV JUNCTION BOXES LOCATED ON WALLS TO DECK AND/OR SOUND INSULATED WALLS SHALL BE PROVIDED WITH 1" EMT CONDUIT AND PULL STRING INTO ACCESSIBLE CEILING SPACE.

17. IF PROVIDED, THE ELECTRICAL CONTRACTOR SHALL PROVIDE CONTROL POWER AND CONNECTION OF SMOKE DAMPERS TO BUILDING FIRE ALARM SYSTEM AS REQUIRED. PROVIDE ADDITIONAL SMOKE DETECTORS AS REQUIRED FOR ACTIVATION OF DAMPERS. COORDINATE WITH MECHANICAL CONTRACTOR.

18. ALL WALL MOUNTED FIRE ALARM DEVICES LOCATED ADJACENT TO THE LIGHT SWITCHES SHALL BE ALIGNED VERTICALLY.

19. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LIGHT FIXTURE LOCATIONS AND QUANTITIES.

20. EXAMINE THE AREA OF INSTALLATION TO VERIFY ADEQUATE SPACE AND MOUNTING PROVISIONS ARE PROVIDED FOR THE SPECIFIED LUMINAIRE PRIOR TO ORDERING LUMINAIRES.

21. VERIFY THAT LUMINAIRES WILL NOT INTERFERE WITH REQUIRED CLEARANCES FOR EQUIPMENT NCLUDING FILTER PULL SPACE, NEC WORKING SPACE IN FRONT OF DISCONNECTS, CONTROL PANELS, ETC.

22. COORDINATE EXIT LIGHT LOCATIONS WITH STRUCTURE AND BUILDING SYSTEMS TO INSURE EXIT SIGNS ARE VISIBLE.

23. PROVIDE GROUND WIRE AND ONE NEUTRAL CONDUCTOR PER CIRCUIT IN ALL LIGHTING CONDUIT.

24. LABEL ALL CIRCUIT BREAKERS SERVING EMERGENCY LIGHTING.

25. UNO, ALL EXIT SIGNS, EMERGENCY EGRESS PATHWAY LIGHT FIXTURES, LIGHTS NOTED "XE", AND LIGHTS SHOWN CROSS HATCHED SHALL BE CONNECTED TO THE SWITCHED AREA LIGHTING CIRCUIT FOR NORMAL OPERATION AND AN UNSWITCHED CIRCUIT FROM THE SAME OCPD TO AUTOMATICALLY POWER TRANSFER TO AN INTEGRAL BATTERY PACK FOR 90 MINUTES OF EMERGENCY OPERATION WHEN LOSS OF NORMAL POWER IS SENSED ON THE UNSWITCHED CIRCUIT. PROVIDE A BATTERY STATUS INDICATOR MOUNTED IN A VISIBLE LOCATION.

26. LUMINAIRE WHIPS SHALL BE FLEXIBLE METAL CONDUIT, 6FT MAX. SECURE TO STRUCTURE WITH LISTED SUPPORTS.

GENERAL PROVISIONS

1. FURNISH AND INSTALL ALL ITEMS, INCLUDING EVERY ARTICLE, DEVICE OR ACCESSORY REASONABLY NECESSARY TO FACILITATE EACH SYSTEMS FUNCTIONING AS INDICATED BY THE DESIGN AND THE EQUIPMENT SPECIFIED. ELEMENTS OF THE WORK SHALL INCLUDE, BUT ARE NOT LIMITED TO, MATERIALS, LABOR, SUPERVISION, SUPPLIES, EQUIPMENT, TRANSPORTATION, HOISTING/RIGGING, STORAGE, UTILITIES, AND ALL REQUIRED PERMITS AND LICENSES.

2. DRAWINGS ARE SCHEMATIC IN NATURE AND DO NOT NECESSARILY REFLECT ALL WORK REQUIRED TO COMPLETE PROJECT. CONTRACTOR SHALL PROVIDE ALL WORK REQUIRED TO COMPLETE PROJECT. CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR AND EQUIPMENT AS REQUIRED TO COMPLETE PROJECT WITHIN DESIGN INTENT AT NOT ADDITIONAL INFORMATION IN CASES OF DOUBT.

3. ALL WORK SHALL BE IN STRICT ACCORDANCE WITH THE 2020 NEC AND THE MOST RECENTLY REVISED VERSIONS OF ALL APPLICABLE PORTIONS OF ALL NATIONAL, STATE, AND LOCAL CODES AND STANDARDS. MODIFICATIONS REQUIRED BY THE ABOVE SAID AUTHORITIES SHALL BE MADE WITHOUT ADDITIONAL CHARGE TO THE OWNER. WHERE ALTERATIONS TO AND DEVIATIONS FROM THE CONTRACT DOCUMENTS ARE REQUIRED BY SAID AUTHORITY, REPOT THE REQUIREMENTS AND SECURE APPROVAL BEFORE STARTING WORK. WHERE THE CONTRACT DOCUMENTS ARE IN EXCESS OF CODE REQUIREMENTS, THE CONTRACT DOCUMENTS SHALL GOVERN. IN THE EVENT OF A CONFLICT BETWEEN THE CONTRACT DOCUMENTS AND APPLICABLE CODES, THE LATTER SHALL GOVERN.

4. FIELD VERIFICATION OF EXISTING CONDITIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES FOUND PRIOR TO SUBMISSION OF BID. THE CONTRACTOR SHALL TAKE NOTE THAT THE DRAWINGS ARE SCHEMATIC IN NATURE AND INDICATE THE APPROXIMATE LOCATIONS OF THE ELECTRICAL SYSTEMS. LOCATE ALL ITEMS BY ON–THE–JOB MEASUREMENTS. COOPERATE WITH OTHER TRADES TO ENSURE PROPER FIT AND ACCESS TO ALL ITEMS.

5. CONSIDERATION SHALL NOT BE GRANTED FOR MISUNDERSTANDING OF THE SCOPE OR AMOUNT OF WORK TO BE PERFORMED. TENDER OF A PROPOSAL CONVEYS FULL CONTRACTOR AGREEMENT OF THE ITEMS AND CONDITIONS SPECIFIED AND/OR INDICATED, SCHEDULED, OR IMPLIED ON THE CONTRACT DOCUMENTS, AND/OR REQUIRED BY THE NATURE OF THIS WORK.

6. ALL WORK SHALL BE ARRANGED IN A NEAT, WELL–ORGANIZED MANNER. ALL SERVICES SHALL BE ROUTED PARALLEL AND PERPENDICULAR TO THE PRIMARY LINES OF THE BUILDING. LOCATE ALL OPERATING AND CONTROL EQUIPMENT PROPERLY TO PROVIDE EASY ACCESS AND ARRANGE ENTIRE WORK WITH ADEQUATE ACCESS FOR OPERATION AND MAINTENANCE, AND FOR PROPER CODE AND/OR MANUFACTURERS CLEARANCES.

7. AFTER COMPLETION OF INSTALLATION, BUT PRIOR TO SUBSTANTIAL COMPLETION, CONTRACTOR SHALL CERTIFY IN WRITING THAT PRODUCTS AND MATERIALS INSTALLED AND PROCESSES USED DO NOT CONTAIN ASBESTOS OR POLYCHLORINATED BIPHENYL (PCB).

8. IN THE EVENT THAT MATERIALS, PRODUCTS, AND/OR PROCESSES BEING PROPOSED FOR THIS PROJECT CONTAIN, OR MAY EMIT, ANY VOLATILE ORGANIC COMPOUNDS (VOC), FORMALDEHYDE FORMULATIONS, OR HAZARDOUS OUT–GASSING, AS DETERMINED BY THE MANUFACTURER, A MATERIALS SAFETY DATA SHEET SHALL BE SUBMITTED AS PART OF THE SHOP DRAWING PROCESS FOR REVIEW BY THE ARCHITECT/ENGINEER/OWNER.

9. ALL EQUIPMENT AND MATERIAL TO BE FURNISHED AND INSTALLED ON THIS PROJECT SHALL BE UL OR ETL LISTED, IN ACCORDANCE WITH THE AUTHORITY HAVING JURISDICTION, AND SUITABLE FOR ITS INTENDED USE ON THIS PROJECT.

SPECIAL SYSTEMS

1. SPECIAL SYSTEMS INCLUDE, BUT ARE NOT LIMITED TO, TELECOMMUNICATIONS, FIRE ALARM, AUDIO/VIDEO, ACCESS CONTROL SYSTEMS.
2. FOR SPECIAL SYSTEMS EQUIPMENT AND DEVICES SHOWN ON THE CONSTRUCTION DOCUMENTS, OR EQUIPMENT AND DEVICES THAT CAN REASONABLY IMPLIED AS REQUIRED TO OPERATE ITEMS SHOWN, ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR POWER, RADCEWAY/BOX/ENCLOSURES ROUGH–IN, AND INFRASTRUCTURE PROVISION EVEN IF SAID SPECIAL SYSTEMS ARE PROVIDED BY A SPECIALIST CONTRACTOR, OWNER'S AGENT, OR UNDER SEPARATE CONTRACT.
3. TELECOMMUNICATIONS: IT CABLING, JACKS, EQUIPMENT RACKS, NETWORKING EQUIPMENT, AND PATCH PANELS WILL BE PROVIDED AND INSTALLED BY TELECOM CONTRACTOR. ALL OTHER WORK BY ELEC. CONTRACTOR
4. AUDIO/VIDEO: COORDINATE SCOPE WITH OWNER PRIOR TO BID
5. ACCESS CONTROL (SECURITY): COORDINATE SCOPE WITH OWNER PRIOR TO BID
6. COORDINATE REQUIREMENTS FOR DATA ROOMS WITH OWNER'S INFORMATION TECHNOLOGIES REPRESENTATIVE (IT REP).
4. AT MINIMUM, THE FOLLOWING GENERAL PROVISIONS SHALL BE PROVIDED BY THE CONTRACTOR. ADDITIONAL ITEMS SPECIFIED ELSEWHERE ON THE CONSTRUCTION DOCUMENTS:
   - 4.1. 3/4", FIRE RATED, PLYWOOD SHEETS ON ALL WALLS OF IT CLOSETS UNLESS DIRECTED OTHERWISE BY IT REP. PAINT TO MATCH WALL TO WHICH BOARD IS ATTACHED.
   - 4.2. SERVICE CONDUITS BURIED IN SAND AT 18" WITH PULL STRING FROM SERVICE DEMARC TO MAIN TELECOM ROOM. COORDINATE DEMARC LOCATION WITH SERVICE PROVIDER AND TERMINATION POINT WITH COMMUNICATIONS CONTRACTORS. REFER TO SITE PLANS TO DETERMINE CONDUIT RUN LENGTHS AND ROUTING.
   - 4.3. FOUR(4) 4" CONDUIT SLEEVES BETWEEN EACH FLOOR FOR TELECOM, FA, AND ACCESS CONTROL
   - 4.4. DOUBLE GANG DEVICE BOX WITH SINGLE GANG REDUCER (AS NEEDED) AT EACH LOCATION SHOWN ON PLANS. NOTE THAT SOME SPECIAL SYSTEMS EQUIPMENT MAY REQUIRE A DIFFERENT SIZE BOX. COORDINATE LOCATIONS AND SIZES FOR BOXES WITH RESPECTIVE SPECIALIST CONTRACTORS PRIOR TO ROUGH–IN.
   - 4.5. CONDUIT WITH PULL STRINGS FROM SOURCE (TELEPHONE BACKBOARD, SECURITY PANEL, FACP, ETC) OR ACCESSIBLE CEILING SPACE TO ALL DEVICE LOCATIONS SHOWN ON THESE PLANS. HOMERUN CONDUITS MAY BE COMBINED WHERE APPROVED BY SPECIALIST CONTRACTOR. COORDINATE CONDUIT SIZES WITH RESPECTIVE SPECIALIST CONTRACTORS PRIOR TO INSTALLATION.
   - 4.6 ALL ALARM PANELS (GAS, CHEMICAL, FIRE, SECURITY, ETC) SHOWN ON THE MEP PLANS SHALL BE PROVIDED WITH A MIN. OF THREE(3)–1" CONDUITS ROUTED FROM THE PANEL TO ABOVE CEILING AND A 20A, 120V CIRCUIT AT THE PANEL. COORDINATE ROUTING AND ADDITIONAL REQUIREMENTS WITH SPECIALIST CONTRACTOR.
5. POWER LIMITED AND NON POWER LIMITED CABLE SHALL NOT SHARE COMMON RACEWAYS OR ENTER JUNCTION BOXES THROUGH THE SAME OPENING.

PROJECT CLOSEOUT

THE ELECTRICAL CONTRACTOR SHALL PERFORM THE FOLLOWING TASKS UPON PROJECT COMPLETION. ALL REQUIRED REPORTS AND AS–BUILTS SHALL BE SUBMITTED WITHIN TWO (2) WEEKS OF DATE OF SUBSTANTIAL COMPLETION OR OWNER OCCUPANCY.

A. SUBMIT "AS–BUILT" RECORD DRAWINGS INDICATING ACTUAL AS–BUILT CONDITIONS TO THE ARCHITECT/ENGINEER FOR REVIEW. RECORD DRAWINGS SHALL BE STAMPED "AS–BUILT" AND SHALL HAVE THE NAME, ADDRESS, AND TELEPHONE NUMBER OF THE CONTRACTOR. ALL ENGINEERS' SEALS SHALL BE REMOVED FROM THE DRAWINGS. FOR EACH CONSTRUCTION DOCUMENT FROM WHICH ACTUAL WORK VARIES, PROVIDE FOUR (4) BLACK ON WHITE BOND COPIES. IF ELECTRONIC FILES OF CONSTRUCTION DOCUMENTS WERE PROVIDED TO THE CONTRACTOR, ALSO PROVIDE ONE (1) ELECTRONIC FILE OF EACH "AS–BUILT" CONSTRUCTION DOCUMENT IN .PDF, .DXF, OR .DWG FORMAT ON OPTICAL DISC (CD–ROM).

B. EXISTING CIRCUITRY SHOWN FOR INFORMATION ONLY. CONTRACTOR SHALL FIELD VERIFY EXACT CIRCUITRY AND INDICATE ANY DEVIATIONS ON THE "AS BUILT" DRAWINGS. "AS BUILT" DRAWINGS SHALL ACCURATELY INDICATE THE LOCATION OF ALL NEW AND EXISTING JUNCTION BOXES WITH THE RESPECTIVE PANEL AND CIRCUIT NUMBERS.

C. SUBMIT TWO (2) COPIES OF OWNERS MAINTENANCE MANUALS. THE MANUALS SHALL INCLUDE RATINGS, CAPACITIES, PARTS LISTS, WIRING DIAGRAMS, SERVICE/MAINTENANCE RECOMMENDATIONS, AND WARRANTIES.

D. SUBMIT WRITTEN RESPONSE TO ALL FIELD REPORTS INDICATING CORRECTIVE ACTIONS TAKEN AND DATE CORRECTIVE ACTION WAS TAKEN TO THE ARCHITECT/ENGINEER FOR REVIEW.

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Issue Log	
	ISSUE FOR CONSTRUCTION 09/13/24

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ELECTRICAL NOTES

ELECTRICAL SYMBOLS

POWER

	SIMPLEX RECEPTACLE–18" AFF
	CEILING MOUNTED SIMPLEX RECEPTACLE
	FLOOR MOUNTED SIMPLEX RECEPTACLE
	SIMPLEX RECEPTACLE ON EMERGENCY POWER – 18" AFF
	DUPLEX RECEPTACLE–18" AFF
	DUPLEX RECEPTACLE HALF CONTROLLED – 18" AFF
GF	DUPLEX RECEPTACLE WITH GROUND FAULT PROTECTOR – 18" AFF
WP	DUPLEX RECEPTACLE WITH WEATHERPROOF COVER – 18" AFF
TV	DUPLEX RECEPTACLE FOR TELEVISION – 78" AFF
#	DUPLEX RECEPTACLE W/NUMERAL INDICATING CIRCUIT NUMBER
TR	TAMPER RESISTANT DUPLEX RECEPTACLE – 18" AFF
	DUPLEX RECEPTACLE; MOUNT BOTTOM OF DEVICE 4" ABOVE COUNTER OR DESKTOP OR SEE ARCH. ELEVATION IF PROVIDED
	CEILING MOUNTED DUPLEX RECEPTACLE
	CEILING MOUNTED DUPLEX RECEPTACLE ON EMERGENCY POWER
	FLOOR MOUNTED DUPLEX RECEPTACLE
	FLOOR MOUNTED DUPLEX RECEPTACLE ON EMERGENCY POWER
	QUADRAPLEX RECEPTACLE–18" AFF
	CEILING MOUNTED QUADRAPLEX RECEPTACLE
	FLOOR MOUNTED QUADRAPLEX RECEPTACLE
	SPECIALTY OUTLET
XX YY	POWER POLE, OUTLETS ON SIDES OF EXTENDED LINES XX–TYPE(SEE SPECIFICATIONS) YY–MTG HT OF LOWEST DEVICE
	DISCONNECT SWITCH
	COMBINATION STARTER
M	MANUAL MOTOR STARTER
$_M$	SINGLE POLE, 20A, TOGGLE TYPE, HP RATED DISCONNECT
	ELECTRICAL CONNECTION
S	ELECTRICAL SOLENOID CONNECTION
H	ELECTRICAL HEATER CONNECTION
	MOTOR – BY DIV. 23. XX REPRESENTS HORSEPOWER VALUE
	JUNCTION BOX
	FLOOR MOUNTED JUNCTION BOX
T	DRY TYPE TRANSFORMER
	MULTIOUTLET ASSEMBLY
	ELECTRICAL PANELBOARD
	ELECTRICAL ENCLOSURE
	PUSH PLATE (AUTO DOOR)
—B—	BUSWAY (IN PLAN)
	GROUNDING MODULE
VFC ##	VARIABLE FREQUENCY SPEED CONTROLLER, SEE SCHEDULE
	ATTACHED DEVICE IS WALL MOUNTED
	ENCLOSED DEVICE IS FLOOR MOUNTED
F/SD	FIRE/SMOKE DAMPER
E	EMERGENCY POWER OFF SWITCH WITH SHUNT TRIP TO POWER PANEL
I	WELDING RECEPTACLE

LIGHTING

	2'x4' FLUORESCENT LIGHTING FIXTURE ON NORMAL POWER
	2'x2' FLUORESCENT LIGHTING FIXTURE ON NORMAL POWER
	1'x4' FLUORESCENT LIGHTING FIXTURE ON NORMAL POWER
	DIAGONAL HATCHING INDICATES LIGHTING FIXTURE ON EMERGENCY POWER
	WALL MOUNTED EMERGENCY LIGHTING UNIT
	WALL MOUNTED LIGHT FIXTURES
	2' WALL MOUNTED LIGHT FIXTURE
	4' WALL MOUNTED LIGHT FIXTURE
	POLE MOUNTED LIGHT FIXTURES
	DUAL POLE MOUNTED LIGHT FIXTURES
	CEILING MOUNTED DOWNLIGHTS
	UNDERCABINET LIGHT OR COVE/STRIP LIGHT
	EXIT SIGN. FIELD REMOVABLE DIRECTIONAL ARROWS (CHEVRON TYPE) AS SHOWN ON DRAWINGS. SHADING INDICATES FACE OF SIGN.
	SPECIAL WORDING ILLUMINATED SIGN
$	SINGLE POLE SWITCH – 48" AFF
$_3$	3–WAY SWITCH – 48" AFF
$_4$	4–WAY SWITCH – 48" AFF
$_D$	DIMMER SWITCH – 48" AFF
$_P$	SINGLE POLE SWITCH WITH PILOT LIGHT – 48" AFF
$_K$	KEY OPERATED SWITCH – 48" AFF
$_{OS}$	DUAL TECHNOLOGY MOTION SENSOR WALL SWITCH – 48" AFF
$_{OS1}$	DUAL TECHNOLOGY MOTION SENSOR WALL SWITCH FULL, MANUAL ON, AUTOMATIC OFF – 48" AFF
$_{OS2}$	DUAL TECHNOLOGY MOTION SENSOR WALL SWITCH FULL, AUTOMATIC ON, AUTOMATIC OFF – 48" AFF
$_{OS}$	DUAL TECHNOLOGY MOTION SENSOR WALL SWITCH – 48" AFF
OS	DUAL TECHNOLOGY MOTION SENSOR
R	MOTION DETECTOR RELAY
PC	PHOTOCELL. ORIENT TO FACE NORTHERN SKY U.N.O.

FIRE ALARM

F	F.A. MANUAL PULL STATION–48" AFF
F	F.A. AUDIBLE/VISUAL – 80" AFF TO BOTTOM OF DEVICE.
F	F.A. EXTERIOR HORN – 120" ABOVE FINISHED GRADE
F	F.A. CEILING MOUNTED
F V	F.A. VISUAL ONLY – 80" AFF TO BOTTOM OF DEVICE.
SD	SMOKE DETECTOR
DD	DUCT SMOKE DETECTOR
HD	HEAT DETECTOR
FACP	FIRE ALARM CONTROL PANEL
FAA	FIRE ALARM ANNUNCIATOR
FS	SPRINKLER FLOW SWITCH
VS	VALVE SUPERVISORY SWITCH
	MAGNETIC DOOR HOLDER – 72" AFF UNO
PS	PRESSURE SWITCH
AR	ADDRESSABLE RELAY INTERFACE
RTS	REMOTE TEST SWITCH DUCT SMOKE DETECTOR
FC	FIREMAN'S 2–WAY COMMUNICATION DEVICE

ONE LINE DIAGRAM

	POINT OF CONNECTION
	CIRCUIT BREAKER
	CONTACT
	CAPACITOR
	SWITCH
	INSTRUMENT TRANSFORMER
	POWER TRANSFORMER
	GROUND
	TRANSFER SWITCH
EM	ELECTRONIC MULTIFUNCTION METER
	FUSE
	DRAWOUT CIRCUIT BREAKER
	STAB–ON BREAKER
	OVERLOAD RELAY
	MOTOR CONTROL CENTER COMBINATION STARTER
	MOTOR CONTROLLER
	COMBINATION MOTOR CONTROLLER
M	MANUAL MOTOR STARTER
	DISCONNECT SWITCH
VFC ##	VARIABLE FREQUENCY SPEED CONTROLLER, BY DIV. 23
CNTR	EQUIPMENT CONTROLLER SUPPLIED BY EQUIPMENT VENDOR
#	MOTOR, # REPRESENTS HORSEPOWER VALUE. BY DIV. 23
S	SHUNT TRIP
K	KIRK KEY INTERLOCK
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION UNIT
PFCC	POWER FACTOR CORRECTION CAPACITOR
GF	GROUND FAULT
A30	FEEDER SIZE, SEE FEEDER SCHEDULE UNLESS NOTED ON DRAWINGS.
GFP	GROUND FAULT PROTECTION
M	CURRENT TRANSFORMER AND METER SOCKET ENCLOSURE

COMMUNICATIONS

	TELEPHONE OUTLET – 18" AFF
W	WALL MOUNTED TELEPHONE OUTLET – 48" AFF
	DATA OUTLET – 18" AFF
	TELEPHONE/DATA OUTLET 18" AFF UNO – SEE DETAILS
C	CLOCK
S	CEILING MOUNTED PAGING SPEAKER
S_V	SPEAKER VOLUME CONTROL
	PUSH BUTTON
	TELEPHONE TERMINAL BOARD

SECURITY

CR	CARD READER
TV	CCTV CAMERA (FIXED U.N.O.)
ES	ELECTRIC DOOR STRIKE
M	ELECTROMAGNETIC DOOR LOCK
MD	MOTION DETECTOR
OHD	OVERHEAD DOOR CONTACT
TSB	TOUCH SENSE BAR (CRASH BAR)

ELECTRICAL ABBREVIATIONS

ABBREV.	DESCRIPTION	ABBREV.	DESCRIPTION
A	AMMETER, AMPERE	M	MAGNETIC, COIL OR CONTACT
AB	ABSOLUTE	MCB	MAIN CIRCUIT BREAKER
AC	ALTERNATING CURRENT	MCC	MOTOR CONTROL CENTER
ACB	AIR CIRCUIT BREAKER	MCCB	MOLDED CASE CIRCUIT BREAKER
AF	AMPERE FRAME	MCP	MOTOR CIRCUIT PROTECTOR
AFF	ABOVE FINISHED FLOOR	MFR	MANUFACTURER
AIC	AMP INTERRUPTING CAPACITY	MH	MANHOLE
AL	ALUMINUM	MLO	MAIN LUGS ONLY
ANN	ANNUNCIATOR	MT,MTD	MOUNT, MOUNTED
ARF	ABOVE RAISED FLOOR	MTG	MOUNTING
AS	AMMETER SWITCH	(N)	NEW
AT	AMP TRIP		NEUTRAL
ATS	AUTOMATIC TRANSFER SWITCH	NC	NORMALLY CLOSED
ATX	AUTO TRANSFORMER	NEC	NATIONAL ELECTRICAL CODE
B	BELL	NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
BC	BARE COPPER		
BKR	BREAKER	NF	NON–FUSED
BLDG	BUILDING	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
BOC	BOTTOM OF CONDUIT	NIC	NOT IN CONTRACT
BOD	BOTTOM OF DUCT	NL	NIGHT LIGHT
BOT	BOTTOM OF TRAY	NO	NORMALLY OPEN
BRN	BUS REFERENCE NUMBER	NP	NAMEPLATE
C	CONDUIT, COIL	NTS	NOT TO SCALE
CB	CIRCUIT BREAKER	OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
CCTV	CLOSED CIRCUIT TELEVISION		
CKT	CIRCUIT	OFOI	OWNER FURNISHED, OWNER INSTALLED
CO	CONDUIT ONLY	OL	OVERLOAD RELAY
CPT	CONTROL POWER TRANSFORMER	OO	ON–OFF
CR	CONTROL RELAY	OOA	ON–OFF–AUTO
CRE	CORROSION RESISTANT	OOR	ON–OFF–REMOTE
CRS	COATED RIGID STEEL CONDUIT	PA	PUBLIC ADDRESS
CRWP	CLEANROOM WALL PANEL	PB	PUSHBUTTON
CT	CURRENT TRANSFORMER	PC	PHOTOCELL
CU	COPPER	PIV	POST INDICATOR VALVE
D	DUCT	PL	PILOT LIGHT
DB	DUCT BANK	PNL	PANEL
DIA	DIAMETER	PVC	POLYVINYL CHLORIDE
DC	DIRECT CURRENT	ø	PHASE
DIV	DIVISION	QTY	QUANTITY
Δ	DELTA CONNECTED	(R)	RELOCATED
E	EMPTY, EMERGENCY	R	RATE OF RISE
(E)	EXISTING	RCPT	RECEPTACLE
EG	ENGINE GENERATOR	RM	ROOM
EM	EMERGENCY	RNC	RIGID NON–METALLIC CONDUIT
EPO	EMERGENCY POWER OFF	RQD	REQUIRED
EMO	EMERGENCY MANUAL OFF	RSC	RIGID STEEL CONDUIT
EMT	ELECTRICAL METALLIC TUBING	RVNR	REDUCED VOLTAGE NON–REVERSING
ENT	ELECTRICAL NON–METALLIC TUBING	RVR	REDUCED VOLTAGE REVERSING
EOL	END–OF–LINE DEVICE	S	SPEAKER
EOS	ELECTROSTATIC OVERSTRESS	SCADA	SUPERVISORY CONTROL & DATA ACQUISITION
ERT	EMERGENCY RESPONSE TEAM	SCP	SECURITY CONTROL PANEL
EWC	ELECTRIC WATER COOLER	SFEP	SMOKE/FUME EXHAUST PANEL
F	FLUSH	SOL	SLOW SPEED OL RELAY
(F)	FUTURE	SQ	SQUARE
FA	FIRE ALARM	SS	STAINLESS STEEL
FACP	FIRE ALARM CONTROL PANEL	STP	SHIELDED TWISTED PAIR
FBO	FURNISHED BY OWNER	SUR	SURFACE
FDR	FEEDER	SW	SWITCH
FLR	FLOOR	SWBD	SWITCHBOARD
FMC	FLEXIBLE METALLIC CONDUIT	SWGR	SWITCHGEAR
FNC	FLEXIBLE NONMETALLIC CONDUIT	SYM	SYMMETRICAL
FOL	FAST SPEED OL RELAY	2S1W	TWO SPEED, ONE WINDING
FU	FUSE	2S2W	TWO SPEED, TWO WINDING
FVNR	FULL VOLTAGE NON–REVERSING	T	THERMOSTAT
FVR	FULL VOLTAGE REVERSING	TB	TERMINAL BLOCK
G	GROUND	TBD	TO BE DETERMINED
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	TDR	TIME DELAY RELAY
GFR	GROUND FAULT RELAY	TJB	TERMINAL JUNCTION BOX
GRD	GROUND	TS	TAMPER SWITCH
GSM	GAS SAFETY MONITOR	TWL	TWISTLOCK
H	HORN	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
HH	HANDHOLE	TYP	TYPICAL
HID	HIGH INTENSITY DISCHARGE	U/G	UNDERGROUND
HOA	HAND–OFF–AUTOMATIC	UNO	UNLESS NOTED OTHERWISE
HP	HORSEPOWER	UPS	UNINTERRUPTIBLE POWER SUPPLY
HT	HEIGHT	UTP	UNSHIELDED TWISTED PAIR
ICCB	INSULATED CASE CIRCUIT BREAKER	V	VOLTMETER, VOLT
IER	INTEGRATED EQUIPMENT RATING	VA	VOLT–AMPERE
IG	ISOLATED GROUND	VAR	VOLT–AMPERE REACTIVE
IMC	INTERMEDIATE METALLIC CONDUIT	VFC	VARIABLE FREQUENCY CONTROLLER
I/O	INPUT/OUTPUT	VP	VAPORPROOF
IPS	INTERRUPTIBLE POWER SUPPLY	VS	VALVE SUPERVISORY SWITCH, VOLTMETER SWITCH
I.T.	INFORMATION TECHNOLOGY		
J	JUNCTION BOX	VT	VOLTAGE TRANSFORMER
K	KEY INTERLOCK	W	WATT, WIRE, WIDE
KA	KILOAMPERE	WCR	WITHSTAND/CLOSING RATING
KVA	KILOVOLT–AMPERE	WHD	WATTHOUR DEMAND METER
KVAR	KILOVOLT–AMPERE REACTIVE	WP	WEATHER PROTECTED
KW	KILOWATT	X	EXPLOSION CLASS & GROUP AS NOTED
KWH	KILOWATT HOUR	(X)	EXISTING TO BE RELOCATED
KX	KNOX BOX	XFMR	TRANSFORMER
L	LONG	Y	WYE CONNECTED
LAN	LOCAL AREA NETWORK	Y–Δ	WYE–DELTA REDUCED VOLTAGE STARTER
LC	LIGHTING CONTACTOR	Z	IMPEDANCE
LFMC	LIQUIDTIGHT FMC		
LFNC	LIQUIDTIGHT FNC		
LSI	LONG TIME, SHORT TIME, INSTANTANEOUS TRIP		
LSIG	LSI PLUS GROUND FAULT TRIP		

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09/13/24

project number
20240102

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Issue Log

	ISSUE FOR CONSTRUCTION 09/13/24

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sheet
E0.1
ELECTRICAL SYMBOLS

GENERAL NOTES

1. APPLICABLE CODES: IBC 2021, IFC 2021, IECC 2021, AND NEC 2020 WITH CITY AMENDMENTS.
2. ALL WORK IS TO BE PERFORMED BY A LICENSED ELECTRICIAN IN ACCORDANCE WITH ALL LOCAL AND NATIONAL CODES.
3. FIELD VERIFY ALL ELECTRICAL REQUIREMENTS WITH EQUIPMENT MANUFACTURERS PRIOR TO ROUGH IN.
4. COORDINATE SWITCH, RECEPTACLE, AND COVER COLOR WITH OWNER.
5. ALL JUNCTION BOXES SHALL BE LABELED WITH THE BRANCH CIRCUIT NUMBERS AND THEIR PANEL ORIGINATIONS.
6. ALL 15A AND 20A 120V RECEPTACLES WITHIN 6 FEET OF A SINK ARE REQUIRED TO HAVE GFCI PROTECTION PER NEC 2020 ARTICLE 210.8. ALL GFI OUTLETS TO BE READILY ACCESSIBLE PER ARTICLE 210.8. FIELD COORDINATE GFI PROTECTION AT BREAKER IF NECESSARY.

ELECTRICAL KEYED NOTES (E-1)

1. ALL NEW CIRCUITS IN 210 PARTS STORAGE TO BE SERVED FROM EXISTING PANELS HVM & LVM LOCATED ON THE MECHANICAL MEZZANINE INSIDE THE FLEET BUILDING.
2. SUSPEND TRANSFORMER T-L4 (75 KVA) FROM CMU WALL ABOVE PANEL L4. REFER TO ONE-LINE PANEL SCHEDULE FOR MORE INFORMATION.
3. RELOCATE SHOP EQUIPMENT SHOWN FROM EXISTING SHOP (PANEL L3) TO NEW SHOP ADDITION (PANEL L4). FIELD VERIFY EXISTING BREAKER, CONDUCTOR, AND CONDUIT SIZES.
4. PROVIDE SO CORD WITH STRAIN RELIEF MOUNTED TO A J-BOX IN THE CEILING. PROVIDE NEMA L5-20 AND NEMA L6-20 TWIST-LOCK RECEPTACLES AS REQUIRED FOR EQUIPMENT. TERMINATE 3'-0" AFF.
5. RELOCATE EXISTING MAU ELECTRICAL DISCONNECT. EXTEND CIRCUIT TO THE NEW LOCATION.
6. PROVIDE 60A/NF/2P/N3R DISCONNECT FOR HP-14. ROUTE CIRCUIT BACK TO PANEL LVM.
7. PROVIDE 30A/NF/3P/N1 DISCONNECT FOR AHU-14. ROUTE CIRCUIT BACK TO PANEL HVM.
8. PROVIDE 120V/1PH-20A POWER CIRCUIT AND LOW VOLTAGE BACKBOX & CONDUIT ROUGH-INS WITH PULL STRING FOR CARD READERS. FIELD COORDINATE ANY ROUGH-IN REQUIREMENTS FOR ELECTRIC DOOR STRIKES OR MAGNETIC LOCKS. ALL LOW VOLTAGE DEVICES TO BE IN CONDUIT.
9. EXTEND FIRE ALARM DEVICES TO THE NEW AREAS. ALL LOW VOLTAGE DEVICES TO BE IN CONDUIT. ELECTRICIAN TO COORDINATE REQUIREMENTS WITH FIRE ALARM SUBCONTRACTOR.

1 **ELECTRICAL POWER PLAN**
3/32" = 1'-0"

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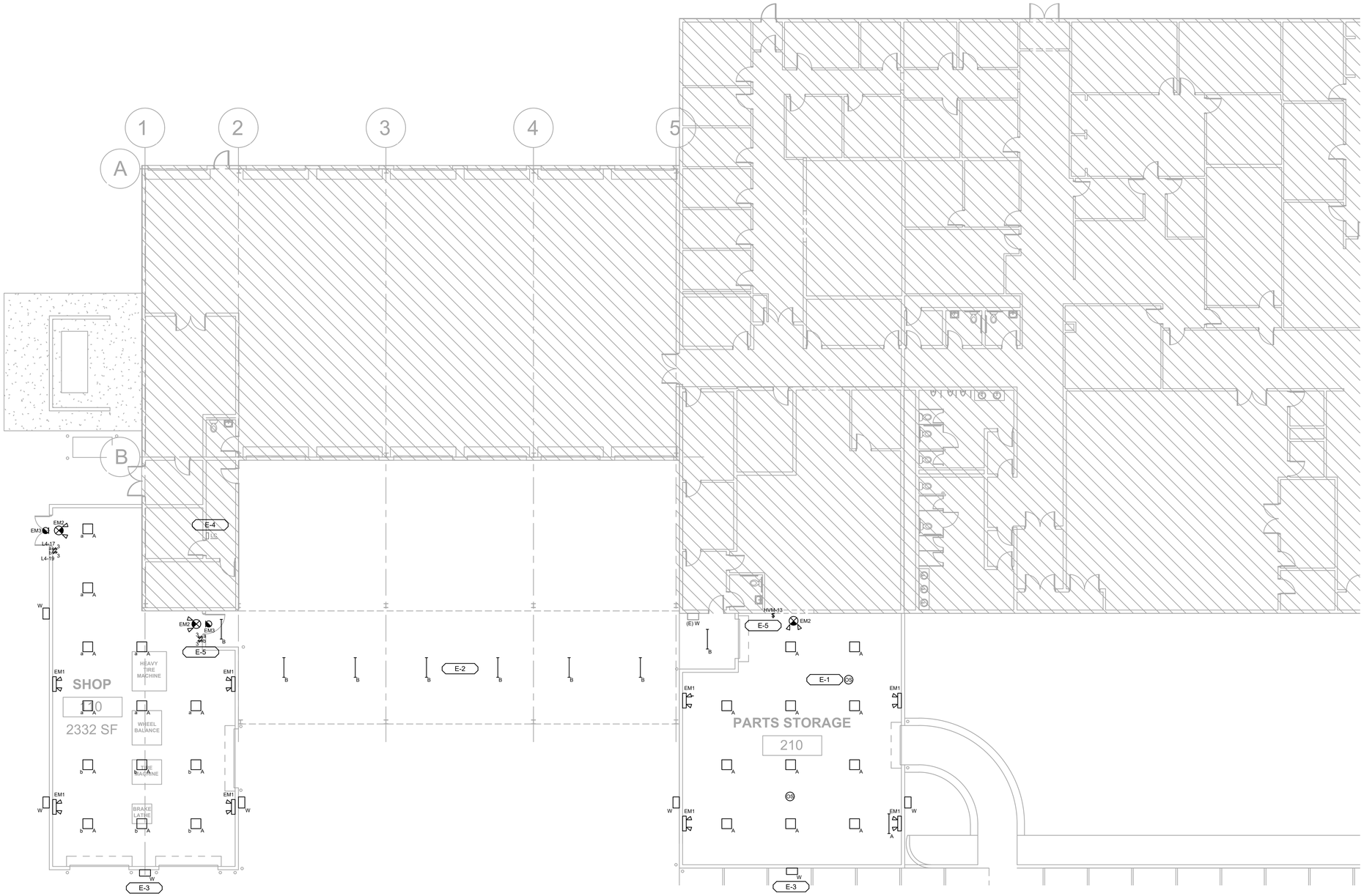
sheet
E1.0
ELECTRICAL POWER PLAN

GENERAL NOTES

1. APPLICABLE CODES: IBC 2021, IFC 2021, IECC 2021, AND NEC 2020 WITH CITY AMENDMENTS.
2. ALL WORK IS TO BE PERFORMED BY A LICENSED ELECTRICIAN IN ACCORDANCE WITH ALL LOCAL AND NATIONAL CODES.
3. CONTRACTOR SHALL COORDINATE LUMINAIRE LOCATIONS WITH THE ARCHITECTURAL ELEVATIONS AND RCP PRIOR TO INSTALLATION. VERIFY LOCATIONS, AND MOUNTING METHODS, AND MATERIALS THAT ARE UNCLEAR PRIOR TO ORDERING OR INSTALLING LUMINAIRES.
4. CIRCUIT EXIT SIGNS (UNSWITCHED) WITH ADJACENT LIGHTING IN THE ROOM
5. PROVIDE EMERGENCY FIXTURES WITH UNSWITCHED HOT.

ELECTRICAL KEYED NOTES (E-1)

1. OCCUPANCY SENSOR MUST BE AUTO ON / MANUAL OR AUTO OFF. IF MANUAL OFF FEATURE IS PRESENT, IT MUST NOT BE ABLE TO OVERRIDE THE AUTO-ON FEATURE FOR MORE THAN 5 MINUTES.
2. EXTEND EXISTING EXTERIOR LIGHTING CIRCUIT FOR CANOPY LIGHTING (FIXTURE B). ALL EXTERIOR LIGHTING TO BE CONTROLLED BY EXISTING LIGHTING CONTACTOR.
3. EXTEND EXISTING EXTERIOR LIGHTING CIRCUIT FOR WALL PACK LIGHTING (FIXTURE W). ALL EXTERIOR LIGHTING TO BE CONTROLLED BY EXISTING LIGHTING CONTACTOR.
4. EXISTING EXTERIOR LIGHTING CONTACTOR (120V).
5. MOUNT LIGHTING CONTROLS ROOM CONTROLLER ABOVE LIGHT SWITCH AT 7' AFF. ALL LOW VOLTAGE WIRING TO BE IN CONDUIT.



1 ELECTRICAL LIGHTING PLAN
3/32" = 1'-0"

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sheet
E2.0
ELECTRICAL LIGHTING PLAN

PANEL SCHEDULE - H1 (EXISTING)

MAIN: 400A MLO | VOLTAGE: 480/277V,3Ø,4W | MOUNTING: SURFACE | AIC: 50,000 | RATING: NEMA 1

CKT #	TRIP/ POLE	DESCRIPTION	LTG	REC	CONT	MISC	MTR	KIT	Ø	LTG	REC	CONT	MISC	MTR	KIT	DESCRIPTION	TRIP/ POLE	CKT #
			LOAD (VA)							LOAD (VA)								
1	20/1	LIGHTING	750						A				20000			XFMR L1 (112.5 KVA)	173/3	2
3	**90/3**	**XFMR T-L4 (75 KVA)**	1096	720	0	6000	1500	0	B				20000			XFMR L1 (112.5 KVA)	–	4
5	–	**XFMR T-L4 (75 KVA)**	64	720	0	6500	1000	0	C				20000			XFMR L1 (112.5 KVA)	–	6
7	–	**XFMR T-L4 (75 KVA)**	1507	720	0	5500	1000	0	A					5000		AIR COMPRESSOR	40/3	8
9	20/1	LIGHTING	750						B					5000		AIR COMPRESSOR	–	10
11	20/1	AG	750						C					5000		AIR COMPRESSOR	–	12
13	20/1	TRAINING ROOM	750						A	1000	720	0	1500	43600	0	PANEL HVM	200/3	14
15	20/1	SPARE							B	0	720	0	500	45000	0	PANEL HVM	–	16
17	20/1	SPARE							C	0	720	0	1000	41000	0	PANEL HVM	–	18
19	20/1	SPARE							A							SPARE	20/3	20
21	20/1	SPARE							B							SPARE	–	22
23	20/1	LIGHTING SHOP	750						C							SPARE	–	24
25	20/3	HP-2					1800		A					4000		AHU-7	20/3	26
27	–	HP-2					1800		B					4000		AHU-7	–	28
29	–	HP-2					1800		C					4000		AHU-7	–	30
31	20/3	HP-1					2000		A					4000		AHU-5	20/3	32
33	–	HP-1					2000		B					4000		AHU-5	–	34
35	–	HP-1					2000		C					4000		AHU-5	–	36
37	20/3	HP-5					2000		A					3300		AHU-4	20/3	38
39	–	HP-5					2000		B					3300		AHU-4	–	40
41	–	HP-5					2000		C					3300		AHU-4	–	42
43	20/3	HP-4					1800		A					4000		AHU-3	20/3	44
45	–	HP-4					1800		B					4000		AHU-3	–	46
47	–	HP-4					1800		C					4000		AHU-3	–	48
49	20/3	HP-3					2000		A					3300		AHU-6	20/3	50
51	–	HP-3					2000		B					3300		AHU-6	–	52
53	–	HP-3					2000		C					3300		AHU-6	–	54
55	20/3	HP-7					2000		A					3300		AHU-9	20/3	56
57	–	HP-7					2000		B					3300		AHU-9	–	58
59	–	HP-7					2000		C					3300		AHU-9	–	60
61	20/3	HP-6					1800		A					3300		AHU-8	20/3	62
63	–	HP-6					1800		B					3300		AHU-8	–	64
65	–	HP-6					1800		C					3300		AHU-8	–	66
67	20/3	HP-9					1800		A					2500		BRIDGE CRANE	20/3	68
69	–	HP-9					1800		B					2500		BRIDGE CRANE	–	70
71	–	HP-9					1800		C					2500		BRIDGE CRANE	–	72
73	20/3	HP-8					1800		A				4000			WH-1	20/3	74
75	–	HP-8					1800		B				4000			WH-1	–	76
77	–	HP-8					1800		C				4000			WH-1	–	78
79	30/3	HP-10					2000		A	500	0	0	5000	9600	0	PANEL H3	250/3	80
81	–	HP-10					2000		B	750	0	0	5000	9600	0	PANEL H3	–	82
83	–	HP-10					2000		C	0	0	0	5000	9600	0	PANEL H3	–	84

	LTG	REC	CONT	MISC	MTR	KIT	TOTAL KVA	TOTAL AMPS
PHASE A - CONNECTED LOAD	4.51	1.44	0.00	36.00	105.90	0.00	147.85	534
PHASE B - CONNECTED LOAD	2.60	1.44	0.00	35.50	107.80	0.00	147.34	532
PHASE C - CONNECTED LOAD	1.56	1.44	0.00	36.50	103.30	0.00	142.80	516
TOTAL CONNECTED LOAD	8.67	4.32	0.00	108.00	317.00	0.00	437.99	527
DEMAND FACTOR	1.25	(1)	1.25	1	(2)	0.65		
PHASE A - DEMAND LOAD	5.63	1.44	0.00	36.00	106.21	0.00	149.28	539
PHASE B - DEMAND LOAD	3.25	1.44	0.00	35.50	108.11	0.00	148.30	535
PHASE C - DEMAND LOAD	1.96	1.44	0.00	36.50	103.61	0.00	143.51	518
TOTAL DEMAND LOAD	10.83	4.32	0.00	108.00	317.93	0.00	441.09	531

NOTES:
(1) PER NEC 220.44
(2) PER NEC 220.50
LARGEST MOTOR HORSEPOWER: 5

PANEL SCHEDULE - L4 (NEW)

MAIN: 200A MCB | VOLTAGE: 208/120V,3Ø,4W | MOUNTING: SURFACE | AIC: 14,000 | NEMA 4

CKT #	TRIP/ POLE	DESCRIPTION	LTG	REC	CONT	MISC	MTR	KIT	Ø	LTG	REC	CONT	MISC	MTR	KIT	DESCRIPTION	TRIP/ POLE	CKT #
			LOAD (VA)							LOAD (VA)								
1	20/2	WHEEL BALANCE				1000			A				2000			IRH-1	30/2	2
3	–	WHEEL BALANCE				1000			B				2000			IRH-1	--	4
5	20/1	BRAKE LATHE				1000			C				2000			IRH-2	30/2	6
7	20/1	TIRE MACHINE				1000			A				2000			IRH-2	--	8
9	20/1	HEAVY TIRE MACHINE				1000			B				2000			IRH-3	30/2	10
11	20/1	RECEPTACLES		720					C				2000			IRH-3	--	12
13	20/1	RECEPTACLES		720					A					500		EF-21 & 22	20/1	14
15	20/1	RECEPTACLES		720					B					1000		GARAGE DOOR	20/1	16
17	20/1	NORTH HIGH BAY LIGHTS	1507						C					1000		GARAGE DOOR	20/1	18
19	20/1	SOUTH HIGH BAY LIGHTS	1096						A					1000		GARAGE DOOR	20/1	20
21	20/1	EMERGENCY LIGHTS	64						B				500			CARD READER	20/1	22
23	20/1	SPARE							C				500			DDC CONTROLS	20/1	24
25	20/1	SPARE							A							SPARE	20/1	26
27	20/1	SPARE							B							SPARE	20/1	28
29	20/1	SPARE							C							SPARE	20/1	30
31	20/1	SPARE							A							SPARE	20/1	32
33	20/1	SPARE							B							SPARE	20/1	34
35	20/1	SPARE							C							SPARE	20/1	36
37		SPACE							A							SPACE		38
39		SPACE							B							SPACE		40
41		SPACE							C							SPACE		42

	LTG	REC	CONT	MISC	MTR	KIT	TOTAL KVA	TOTAL AMPS
PHASE A - CONNECTED LOAD	1.10	0.72	0.00	6.00	1.50	0.00	9.32	78
PHASE B - CONNECTED LOAD	0.06	0.72	0.00	6.50	1.00	0.00	8.28	69
PHASE C - CONNECTED LOAD	1.51	0.72	0.00	5.50	1.00	0.00	8.73	73
TOTAL CONNECTED LOAD	2.67	2.16	0.00	18.00	3.50	0.00	26.33	73
DEMAND FACTOR	1.25	(1)	1.25	1	(2)	0.65		
PHASE A - DEMAND LOAD	1.37	0.72	0.00	6.00	1.62	0.00	9.71	81
PHASE B - DEMAND LOAD	0.08	0.72	0.00	6.50	1.12	0.00	8.42	70
PHASE C - DEMAND LOAD	1.88	0.72	0.00	5.50	1.12	0.00	9.23	77
TOTAL DEMAND LOAD	3.33	2.16	0.00	18.00	3.87	0.00	27.37	76

NOTES:
(1) PER NEC 220.44
(2) PER NEC 220.50
LARGEST MOTOR HORSEPOWER: 2

PANEL SCHEDULE - HVM (EXISTING)

MAIN: 200A MCB | VOLTAGE: 480/277V,3Ø,4W | MOUNTING: SURFACE | AIC: 50,000 | RATING: NEMA 1

CKT #	TRIP/ POLE	DESCRIPTION	LTG	REC	CONT	MISC	MTR	KIT	Ø	LTG	REC	CONT	MISC	MTR	KIT	DESCRIPTION	TRIP/ POLE	CKT #
			LOAD (VA)							LOAD (VA)								
1	100/3	XFMR T-LVM (75 KVA)	0	720	0	1000	13000	0	A					3300		AHU-1	20/3	2
3	--	XFMR T-LVM (75 KVA)	0	720	0	0	14400	0	B					3300		AHU-1	--	4
5	--	XFMR T-LVM (75 KVA)	0	720	0	1000	11400	0	C					3300		AHU-1	--	6
7	20/3	AHU-2					3300		A					20000		MAU	90/3	8
9	--	AHU-2					3300		B					20000		MAU	--	10
11	--	AHU-2					3300		C					20000		MAU	--	12
13	**20/1**	**PARTS STORAGE LTS & E-LTS**	**1000**						A					**5000**		**AHU-14**	**30/3**	14
15		SPACE							B					**5000**		**AHU-14**	**--**	16
17		SPACE							C					**5000**		**AHU-14**	**--**	18
19		SPACE							A							SPACE		20
21		SPACE							B							SPACE		22
23		SPACE							C							SPACE		24
25		SPACE							A							SPACE		26
27		SPACE							B							SPACE		28
29		SPACE							C							SPACE		30
31		SPACE							A							SPACE		32
33		SPACE							B							SPACE		34
35		SPACE							C							SPACE		36
37		SPACE							A							SPACE		38
39		SPACE							B							SPACE		40
41		SPACE							C							SPACE		42

	LTG	REC	CONT	MISC	MTR	KIT	TOTAL KVA	TOTAL AMPS
PHASE A - CONNECTED LOAD	1.00	0.72	0.00	1.00	44.60	0.00	47.32	171
PHASE B - CONNECTED LOAD	0.00	0.72	0.00	0.00	46.00	0.00	46.72	169
PHASE C - CONNECTED LOAD	0.00	0.72	0.00	1.00	43.00	0.00	44.72	161
TOTAL CONNECTED LOAD	1.00	2.16	0.00	2.00	133.60	0.00	138.76	167
DEMAND FACTOR	1.25	(1)	1.25	1	(2)	0.65		
PHASE A - DEMAND LOAD	1.25	0.72	0.00	1.00	45.22	0.00	48.19	174
PHASE B - DEMAND LOAD	0.00	0.72	0.00	0.00	46.62	0.00	47.34	171
PHASE C - DEMAND LOAD	0.00	0.72	0.00	1.00	43.62	0.00	45.34	164
TOTAL DEMAND LOAD	1.25	2.16	0.00	2.00	135.47	0.00	140.88	169

NOTES:
(1) PER NEC 220.44
(2) PER NEC 220.50
LARGEST MOTOR HORSEPOWER: 10

PANEL SCHEDULE - LVM (EXISTING)

MAIN: 225A MLO | VOLTAGE: 208/120V,3Ø,4W | MOUNTING: SURFACE | AIC: 14,000 | NEMA 1

CKT #	TRIP/ POLE	DESCRIPTION	LTG	REC	CONT	MISC	MTR	KIT	Ø	LTG	REC	CONT	MISC	MTR	KIT	DESCRIPTION	TRIP/ POLE	CKT #
			LOAD (VA)							LOAD (VA)								
1	20/2	AHU-1					1000		A					1000		AHU-2	20/2	2
3	–	AHU-1					1000		B					1000		AHU-2	–	4
5	20/2	AHU-3					1000		C					1000		AHU-4	20/2	6
7	–	AHU-3					1000		A					1000		AHU-4	–	8
9	20/2	SPARE							B					1000		AHU-6	20/2	10
11	–	SPARE							C					1000		AHU-6	–	12
13	20/2	SPARE							A					1000		AHU-8	20/2	14
15	–	SPARE							B					1000		AHU-8	–	16
17	20/2	AHU-9					1000		C							SPARE	20/2	18
19	–	AHU-9					1000		A							SPARE	–	20
21	20/2	SPARE							B							SPARE	20/2	22
23	–	SPARE							C							SPARE	–	24
25	20/2	SPARE							A					4000		AHU-11	50/2	26
27	–	SPARE							B					4000		AHU-11	–	28
29	**20/1**	**RECEPTACLES**		**720**					C							SPARE	20/2	30
31	**20/1**	**RECEPTACLES**		**720**					A							SPARE	–	32
33	**20/1**	**RECEPTACLES**		**720**					B					**3400**		**HP-14**	**50/2**	34
35	**20/1**	**GARAGE DOOR**				**1000**			C					**3400**		**HP-14**	**–**	36
37	**20/1**	**GARAGE DOOR**				**1000**			A				**500**			**CARD READER**	**20/1**	38
39		SPACE							B				**500**			**DDC CONTROLS**	**20/1**	40
41		SPACE							C							SPACE		42

	LTG	REC	CONT	MISC	MTR	KIT	TOTAL KVA	TOTAL AMPS
PHASE A - CONNECTED LOAD	0.00	0.72	0.00	1.50	10.00	0.00	12.22	102
PHASE B - CONNECTED LOAD	0.00	0.72	0.00	0.50	11.40	0.00	12.62	105
PHASE C - CONNECTED LOAD	0.00	0.72	0.00	1.00	7.40	0.00	9.12	76
TOTAL CONNECTED LOAD	0.00	2.16	0.00	3.00	28.80	0.00	33.96	94
DEMAND FACTOR	1.25	(1)	1.25	1	(2)	0.65		
PHASE A - DEMAND LOAD	0.00	0.72	0.00	1.50	10.31	0.00	12.53	104
PHASE B - DEMAND LOAD	0.00	0.72	0.00	0.50	11.71	0.00	12.93	108
PHASE C - DEMAND LOAD	0.00	0.72	0.00	1.00	7.71	0.00	9.43	79
TOTAL DEMAND LOAD	0.00	2.16	0.00	3.00	29.73	0.00	34.89	97

NOTES:
(1) PER NEC 220.44
(2) PER NEC 220.50
LARGEST MOTOR HORSEPOWER: 5

LIGHT FIXTURE SCHEDULE

TYPE	MANUFACTURER	MODEL	LAMP TYPE	FIXTURE WATTS	VOLTAGE	MOUNTING	REMARKS
A	LITHONIA	CPHB-AL013-MVOLT-SWW9-80CRI-DWH	12,000/15,000/18,000 LM 80 CRI, 4000K/5000K	89	MVOLT	FLUSH	LED HIGH BAY, WHITE SELECTABLE LUMEN OUTPUT SELECTABLE CCT COLOR TEMP
B	LITHONIA	CSVT L48-ALO3-MVOLT-SWW3-80CRI	3,106 - 4,946 LUMEN LED 80 CRI, 35K/40K/50K	42	MVOLT	SURFACE	4FT LED STRIP LIGHT, VAPOR TIGHT, WHITE SWITCHABLE LUMENS SWITCHABLE COLOR TEMP
W	ATLAS AMERICAN LIGHTING	WLM--43LED----	5,726 LUMEN LED 80 CRI, 4500K	43	MVOLT	SURFACE	WALL PACK, BRONZE
EM1	LITHONIA	ELM2L M12	LED	4	120	SURFACE	LED EMERGENCY LIGHT
EM2	LITHONIA	ECRG HO RD M6	LED	4	120	CEILING/WALL	LED EXIT SIGN WITH EMERGENCY LIGHTS, SINGLE FACE, DIRECTION ARROW/MOUNTING AS REQUIRED LED EXIT SIGN WITH EMERGENCY LIGHTS, DOUBLE FACE, DIRECTION ARROWS/MOUNTING AS REQUIRED
EM3	LITHONIA	AFF-OEL-DBLBXD-UVOLT-LTP-SDRT-FCT-CW	LED	12	120	SURFACE	DIE CAST EMERGENCY LIGHT

GENERAL NOTES:
1. CATALOG NUMBERS PROVIDED FOR REFERENCE ONLY. CONTRACTOR TO PROVIDE ALL NECESSARY ACCESSORIES AND MOUNTING HARDWARE REQUIRED FOR A COMPLETE INSTALLATION.
2. ALL LIGHTING TO BE INSTALLED PER MANUFACTURERS' RECOMMENDATIONS
3. VERIFY QUANTITIES WITH THOSE SHOWN ON PLANS. PROVIDE QUANTITIES NEEDED TO CARRY OUT DESIGN INTENT.

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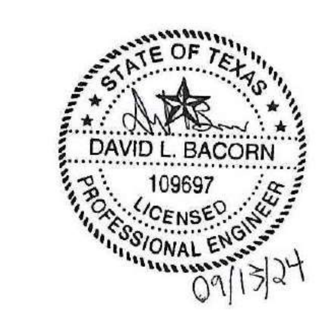

project number
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Issue Log

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sheet
E3.0
ELECTRICAL SCHEDULES

FEEDER SCHEDULE

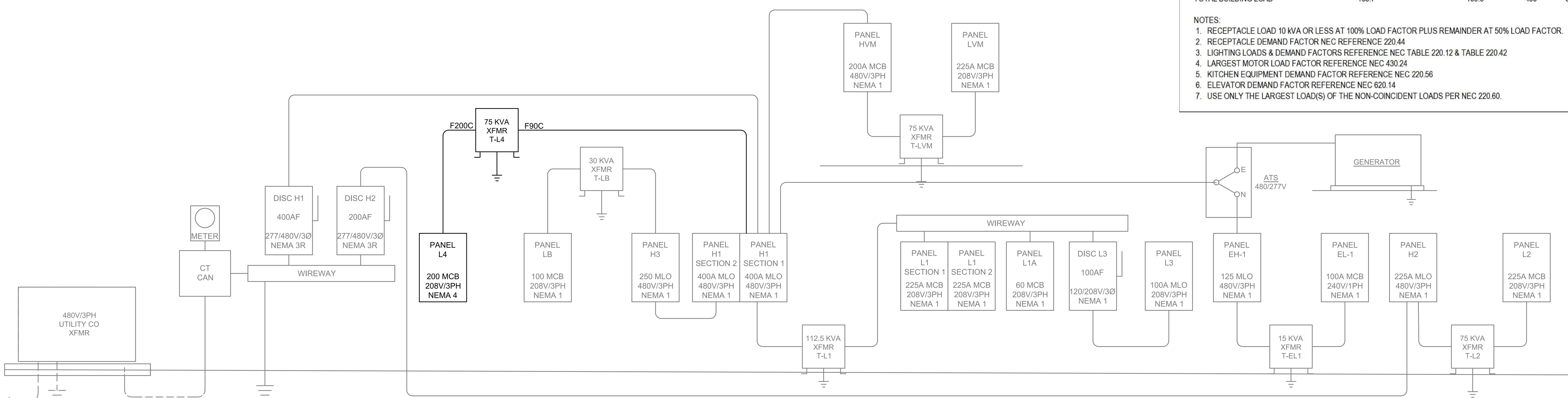
TAG	FEEDER	TAG	FEEDER	TAG	FEEDER	ALT ALUMINUM FEEDER
F20A	2#12 CU, #12G CU, IN 3/4"C	F20B	3#12 CU, #12G CU, IN 3/4"C	F20C	4#12 CU, #12G CU, IN 3/4"C	N/A
F25A	2#10 CU, #10G CU, IN 3/4"C	F25B	3#10 CU, #10G CU, IN 3/4"C	F25C	4#10 CU, #10G CU, IN 3/4"C	N/A
F30A	2#10 CU, #10G CU, IN 3/4"C	F30B	3#10 CU, #10G CU, IN 3/4"C	F30C	4#10 CU, #10G CU, IN 3/4"C	N/A
F35A	2#8 CU, #10G CU, IN 3/4"C	F35B	3#8 CU, #10G CU, IN 3/4"C	F35C	4#8 CU, #10G CU, IN 3/4"C	N/A
F40A	2#8 CU, #10G CU, IN 3/4"C	F40B	3#8 CU, #10G CU, IN 3/4"C	F40C	4#8 CU, #10G CU, IN 3/4"C	N/A
F45A	2#8 CU, #10G CU, IN 3/4"C	F45B	3#8 CU, #10G CU, IN 3/4"C	F45C	4#8 CU, #10G CU, IN 3/4"C	N/A
F50A	2#6 CU, #10G CU, IN 3/4"C	F50B	3#6 CU, #10G CU, IN 3/4"C	F50C	4#6 CU, #10G CU, IN 1"C	N/A
F60A	2#6 CU, #10G CU, IN 3/4"C	F60B	3#6 CU, #10G CU, IN 3/4"C	F60C	4#6 CU, #10G CU, IN 1"C	N/A
F70A	2#4 CU, #8G CU, IN 1"C	F70B	3#4 CU, #8G CU, IN 1"C	F70C	4#4 CU, #8G CU, IN 1-1/2"C	N/A
F80A	2#4 CU, #8G CU, IN 1"C	F80B	3#4 CU, #8G CU, IN 1"C	F80C	4#4 CU, #8G CU, IN 1-1/2"C	N/A
F90A	2#3 CU, #8G CU, IN 1"C	F90B	3#3 CU, #8G CU, IN 1"C	F90C	4#3 CU, #8G CU, IN 1-1/2"C	N/A
F100A	2#3 CU, #8G CU, IN 1"C	F100B	3#3 CU, #8G CU, IN 1"C	F100C	4#3 CU, #8G CU, IN 1-1/2"C	#2/O AL, IN 2"C
F110A	2#2 CU, #6G CU, IN 1"C	F110B	3#2 CU, #6G CU, IN 1-1/2"C	F110C	4#2 CU, #6G CU, IN 1-1/2"C	#2/O AL, IN 2"C
F125A	2#1 CU, #6G CU, IN 1-1/2"C	F125B	3#1 CU, #6G CU, IN 1-1/2"C	F125C	4#1 CU, #6G CU, IN 1-1/2"C	#2/O AL, IN 2"C
F150A	2#1/O CU, #6G CU, IN 1-1/2"C	F150B	3#1/O CU, #6G CU, IN 1-1/2"C	F150C	4#1/O CU, #6G CU, IN 1-1/2"C	#3/O AL, IN 2"C
F175A	2#2/O CU, #6G CU, IN 1-1/2"C	F175B	3#2/O CU, #6G CU, IN 2"C	F175C	4#2/O CU, #6G CU, IN 2"C	#4/O AL, IN 2-1/2"C
F200A	2#3/O CU, #6G CU, IN 1-1/2"C	F200B	3#3/O CU, #6G CU, IN 2"C	F200C	4#3/O CU, #6G CU, IN 2"C	#250 AL, IN 3"C
F225A	2#4/O CU, #4G CU, IN 2"C	F225B	3#4/O CU, #4G CU, IN 2"C	F225C	4#4/O CU, #4G CU, IN 2-1/2"C	#300 AL, IN 3"C
F250A	2#250 CU, #4G CU, IN 2"C	F250B	3#250 CU, #4G CU, IN 2-1/2"C	F250C	4#250 CU, #4G CU, IN 3"C	#350 AL, IN 3"C
F300A	2#350 CU, #4G CU, IN 2-1/2"C	F300B	3#350 CU, #4G CU, IN 3"C	F300C	4#350 CU, #4G CU, IN 3"C	#500 AL, IN 3-1/2"C
F350A	-	F350B	3#500 CU, #3G CU, IN 3-1/2"C	F350C	4#500 CU, #3G CU, IN 3-1/2"C	#700 AL, IN 4"C
F400A	-	F400B	3#600 CU, #3G CU, IN 4"C	F400C	4#600 CU, #3G CU, IN 4"C	(2) SETS #250 AL, IN 3"C
F450A	-	F450B	(2) SETS 3#4/O CU, #2G CU, IN 2"C	F450C	(2) SETS 4#4/O CU, #2G CU, IN 2-1/2"C	(2) SETS #300 AL, IN 3"C
F500A	-	F500B	(2) SETS 3#250 CU, #2G CU, IN 2-1/2"C	F500C	(2) SETS 4#250 CU, #2G CU, IN 3"C	(2) SETS #350 AL, IN 3"C
F600A	-	F600B	(2) SETS 3#350 CU, #1G CU, IN 3"C	F600C	(2) SETS 4#350 CU, #1G CU, IN 3"C	(2) SETS #500 AL, IN 3-1/2"C

DESIGN LOAD ANALYSIS

BUILDING AREA (SF) 4,400

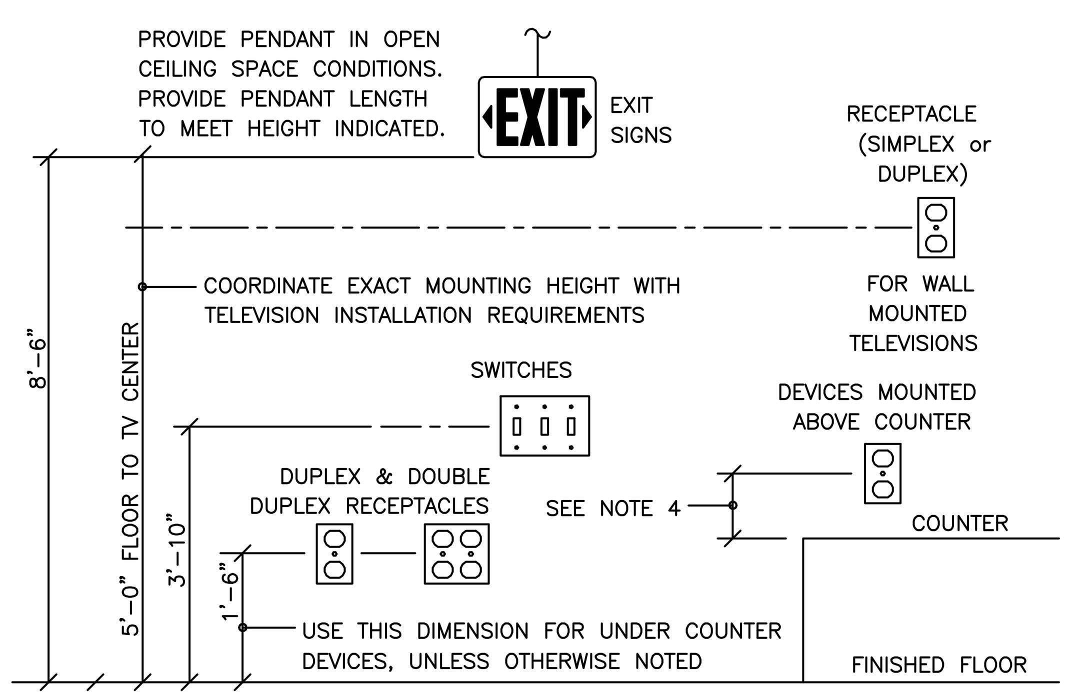
	CONNCTED KVA	LOAD FACTOR	DESIGN KVA	VOLTAGE	PH	CURRENT	NOTES
GENERAL POWER/RECEPTACLES	8.8	(1)	8.8	120	1	73.3	(2)
LIGHTING	8.8	1.25	11.0	120	1	91.7	(3)
DEDICATED LOADS							
SHOP EQUIPMENT	5.0	1.00	5.0	120	1	41.7	
GARAGE DOOR (QTY 5)	5.0	0.75	3.8	208	1	18.0	
LARGEST MOTOR LOAD (5 HP)	3.8	0.25	0.9	120	1	7.8	(4)
HVAC EQUIPMENT							
AHU-1 (15 KW HEAT)	21.0	1.00	21.0	480	3	25.3	
HP-1 (20-TON)	6.8	1.00	6.8	208	1	32.7	
INFRARED HEATER (QTY 3)	12.0	1.00	12.0	208	1	57.7	
FANS	1.5	1.00	1.5	120	1	12.5	
NEW ADDITION SUB-TOTAL	72.7		70.8	480	3	85.2	
EXISTING BUILDING LOADS							
METERED LOAD (NEC 220.87)	96.0	1.25	120.0	480	3	144.5	
TOTAL BUILDING LOAD	168.7		190.8	480	3	229.8	

NOTES:
1. RECEPTACLE LOAD 10 kVA OR LESS AT 100% LOAD FACTOR PLUS REMAINDER AT 50% LOAD FACTOR.
2. RECEPTACLE DEMAND FACTOR NEC REFERENCE 220.44
3. LIGHTING LOADS & DEMAND FACTORS REFERENCE NEC TABLE 220.12 & TABLE 220.42
4. LARGEST MOTOR LOAD FACTOR REFERENCE NEC 430.24
5. KITCHEN EQUIPMENT DEMAND FACTOR REFERENCE NEC 220.56
6. ELEVATOR DEMAND FACTOR REFERENCE NEC 620.14
7. USE ONLY THE LARGEST LOAD(S) OF THE NON-COINCIDENT LOADS PER NEC 220.60.



1 ELECTRICAL RISER DIAGRAM

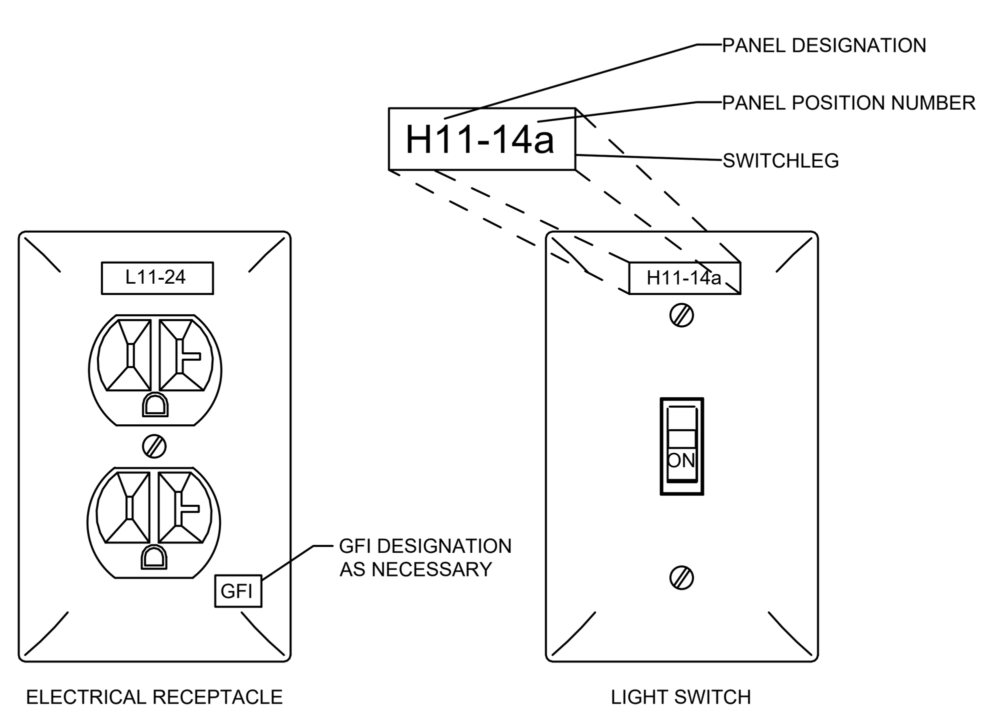
N.T.S.



NOTES:
1. ALL MOUNTING HEIGHTS SHALL BE MEASURED FROM FINISHED FLOOR TO CENTERLINE OF DEVICE EXCEPT EXIT SIGNS.
2. DEVICES SHALL BE INSTALLED ON A COMMON VERTICAL CENTERLINE WHEREVER POSSIBLE.
3. ALL DEVICES SHALL BE INSTALLED AT THE MOUNTING HEIGHT INDICATED ON THIS DETAIL, UNLESS OTHERWISE NOTED.
4. MOUNT 6" ABOVE COUNTERTOP OR ASSOCIATED BACKSPLASH. REFER TO ARCHITECTURAL DRAWINGS FOR COUNTERTOP HEIGHTS AND ASSOCIATED BACKSPLASH HEIGHT INFORMATION.

2 DEVICE MOUNTING HEIGHTS

NTS



COVER LABELS
ALL COVERS SHALL BE PROVIDE WITH AN IDENTIFIER. THE POWER DEVICE COVER LABELING MUST BE DONE IAW THE FOLLOWING GUIDELINES:

1. RECEPTACLES AND SWITCHES SHALL BE IDENTIFIED WITH THE PANEL AND POSITION OF THE CIRCUIT BREAKER USED TO SHUT OFF POWER TO THE DEVICE.

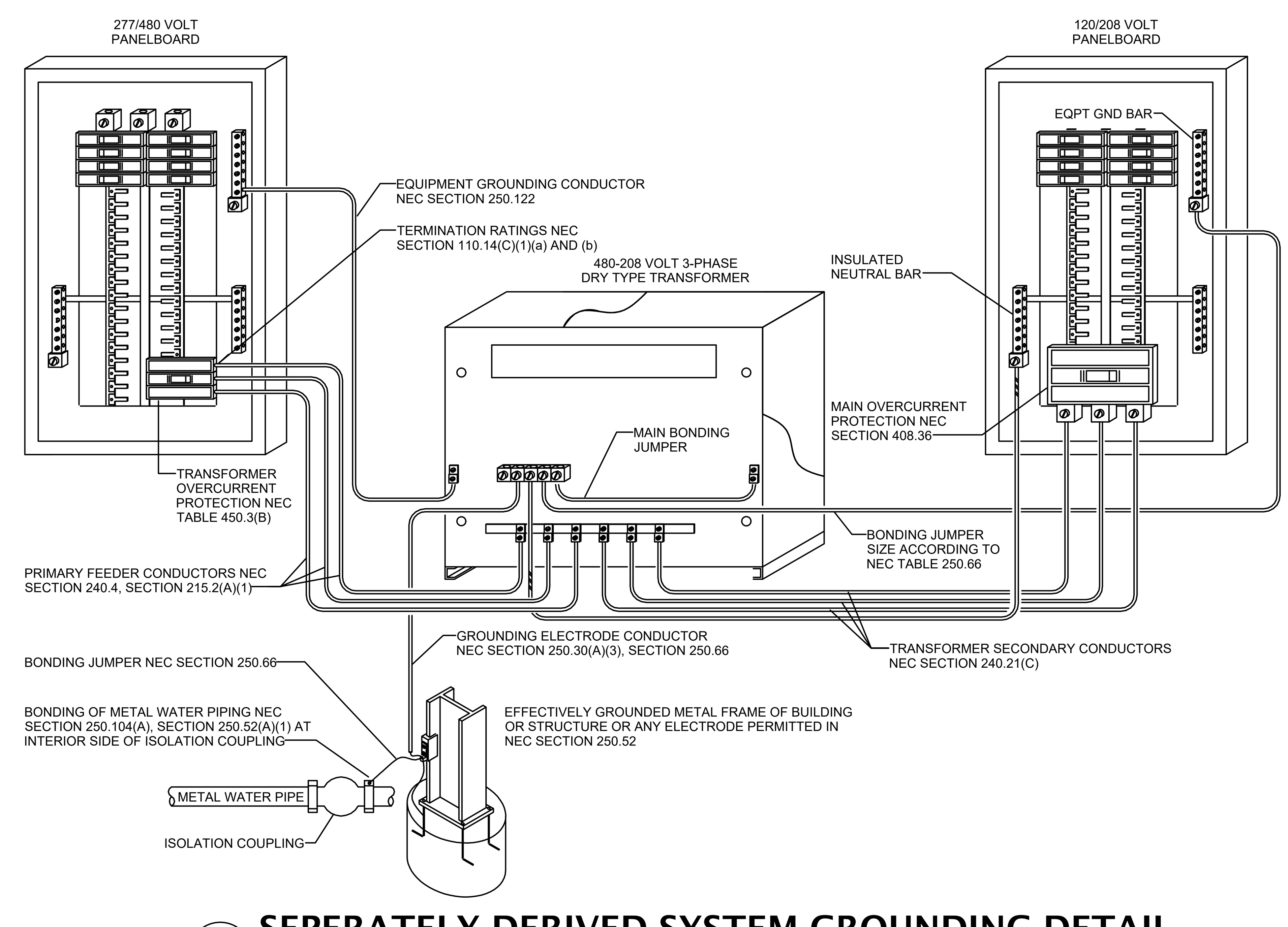
2. OUTLET BOXES USED FOR CIRCUIT EXTENSION TO SYSTEMS FURNITURE SHALL HAVE ALL CIRCUITS WITHIN THE BOX LISTED ON THE COVER.

3. SWITCHES, OCCUPANCY SENSORS, AND DAYLIGHTING CONTROLS, IN COMMON SPACES HAVING DEVICES ON DIFFERENT SWITCHLEGS, INCLUDE THE SWITCHLEG DESIGNATION.

4. WHERE ITEM 3 APPLIES: OCCUPANCY SENSORS AND DAYLIGHTING CONTROL DEVICES SHALL HAVE A LABEL PLACED ON THE ADJACENT CEILING OR ON THE EXPOSED BOX WHEN NOT PLACED IN A CEILING.

3 DEVICE & OUTLET LABELS

NTS



4 SEPERATELY DERIVED SYSTEM GROUNDING DETAIL

NTS

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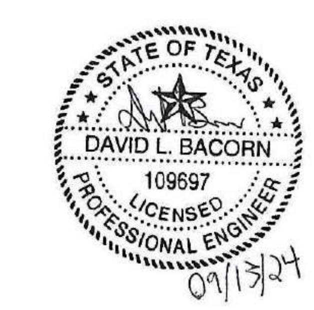

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