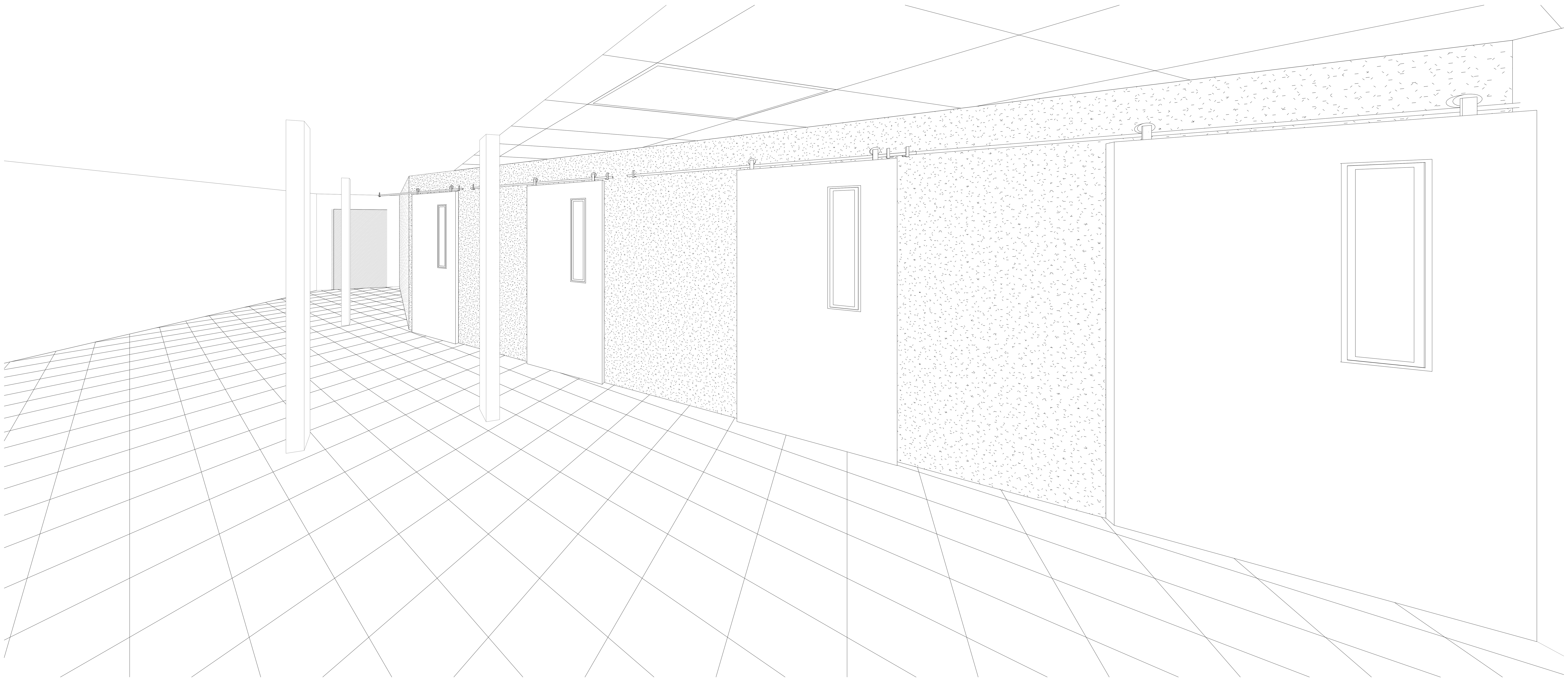
AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 ELIZABETH ST

TEXARKANA, TX 75503



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LEVEL 5

Level 5 Architecture
Mansfield, TX | Springdale, AR
level5architecture.com

REGISTERED ARCHITECT STATE OF TEXAS

10/25/2021

PROJECT INFORMATION:

AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 ELIZABETH ST
TEXARKANA, TX 75503

PROJECT NUMBER:	21-64T
ISSUE DATE:	10/25/2021
REVISIONS:	

SHEET NAME:

COVER SHEET

SHEET NUMBER:

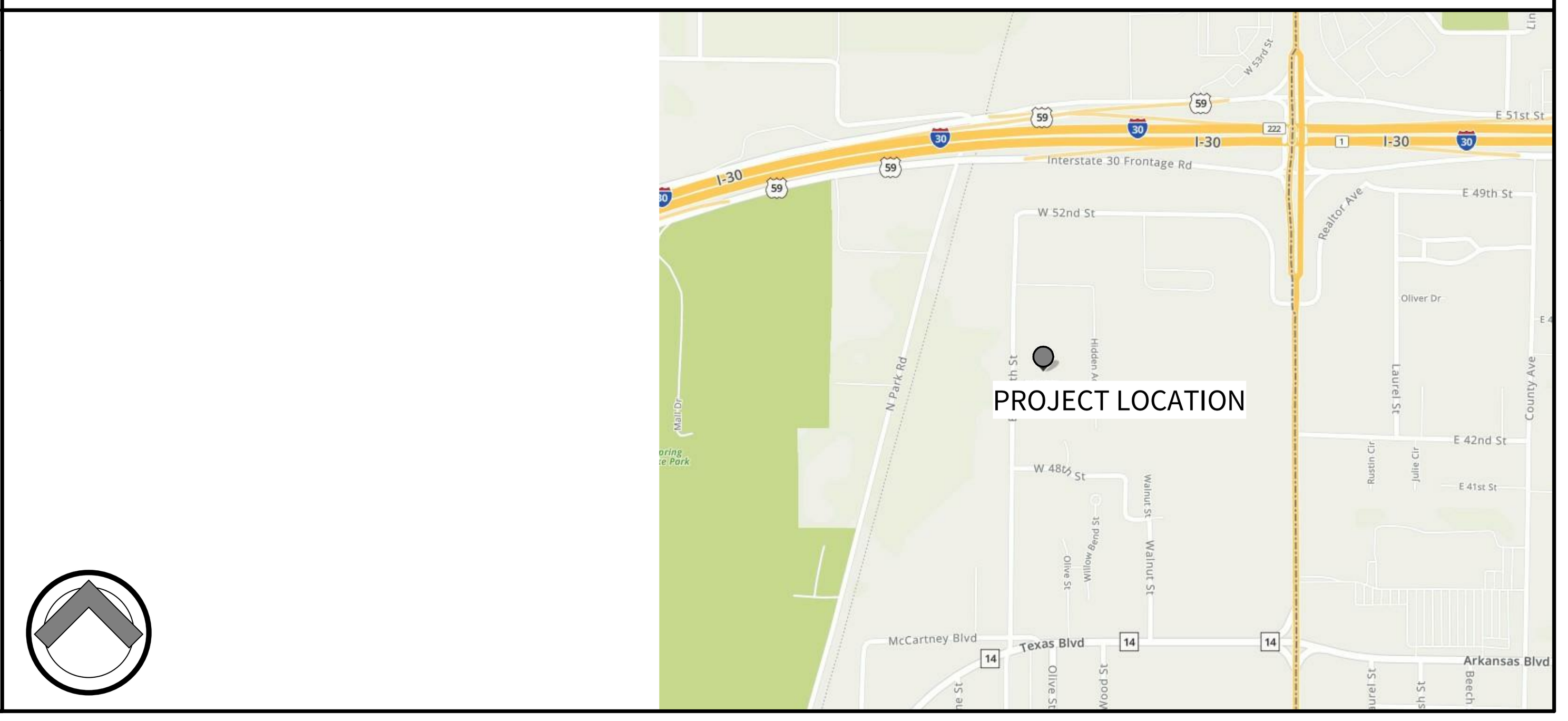
G001

10/25/2021 10:31:25 AM

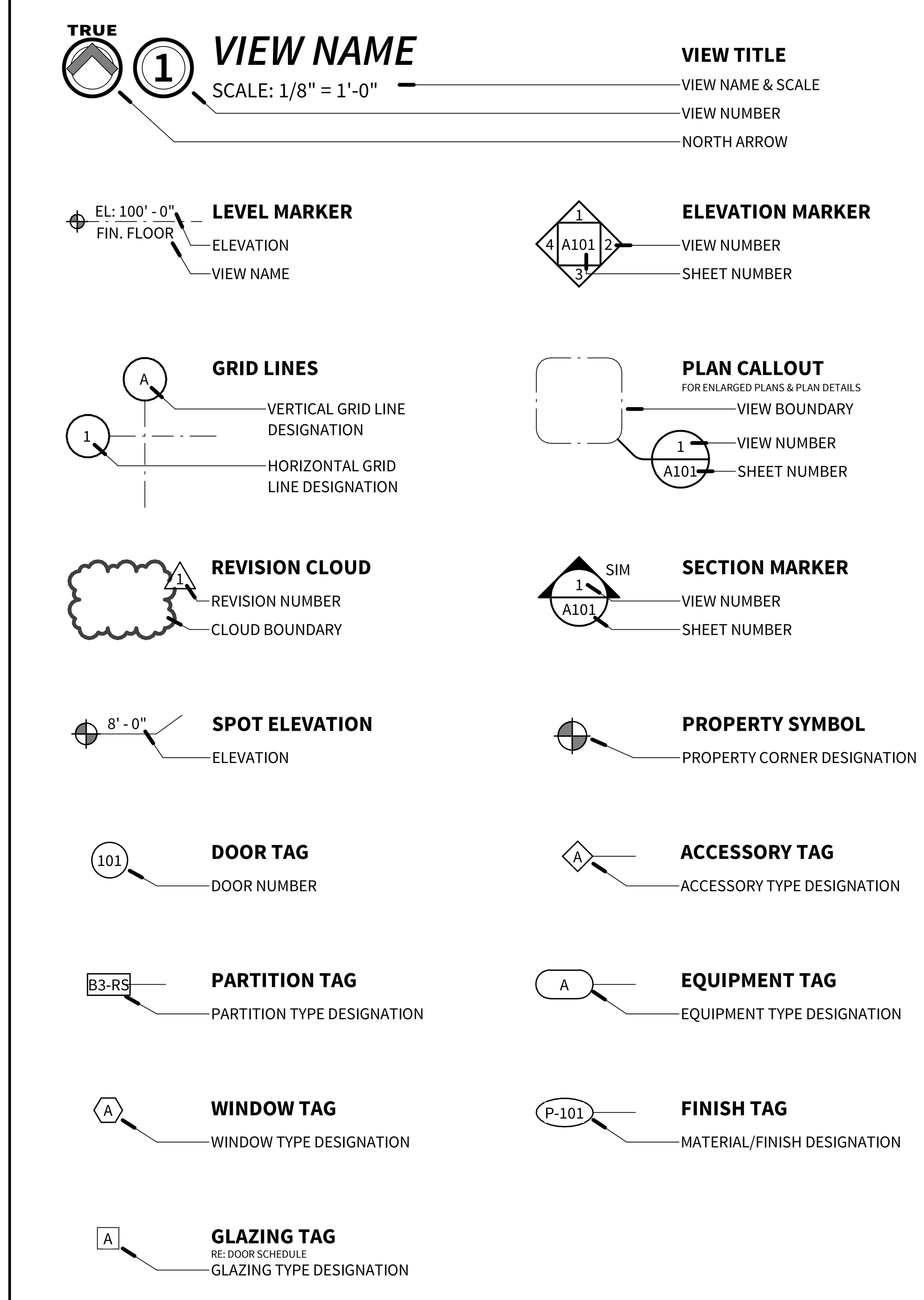
PROJECT INFORMATION

NUMBER:	21-64T	ISSUE DATE:	10/25/2021
STATUS:	PERMITTING		
PROJECT NAME:	AN INTERIOR REMODEL FOR		
ADDRESS:	4808 ELIZABETH ST TEXARKANA, TX 75503		
BUILDING NAME:	INPUT BUILDING NAME		
CLIENT NAME:	ATCOG HOUSING OFFICES REMODEL		
DESCRIPTION:	3,357 SF INTERIOR REMODEL OF OFFICE SPACE		

SITE VICITINY MAP



SYMBOL LEGEND



GENERAL PROJECT NOTES

1. ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE MUNICIPALITY & ORDINANCES AS WELLS AS ALL APPLICABLE LOCAL, STATE & FEDERAL CODES. WORK SHALL BE DONE IN A WORKMAN LIKE MANNER AS PER STANDARD BUILDING TECHNIQUES & PRACTICES
2. G.C. OR C.M. IS RESPONSIBLE FOR ALL SAFETY CONDITIONS RELATING TO JOB CONSTRUCTION & ASSURE PROTECTION FOR ANY ADJACENT OCCUPANCIES
3. G.C. OR C.M. IS TO VISIT THE SITE AND CAREFULLY INSPECT THE EXISTING CONDITIONS. ANY DISCREPANCIES BETWEEN THE DRAWINGS & EXISTING CONDITIONS MUST BE REPORTED TO THE ARCHITECT IN WRITING PRIOR TO COMMENCING WORK
4. G.C. OR C.M. TO COORDINATE THE ACTIVITIES OF ALL CONSTRUCTION TEAM MEMBERS INCLUDING, BUT NOT LIMITED TO, ALL SUBCONTRACTORS, EQUIPMENT SUPPLIERS, SERVICE PROVIDERS, LOCAL CODE ENFORCEMENT OFFICIALS & JOB VALIDATION INSPECTORS
5. WORK INDICATED ON A SHEET OF A SPECIFIC DISCIPLINE IS NOT A DETERMINATION OF THE SEPARATION OF WORK BY THE CONTRACTOR & SUBCONTRACTORS. THE G.C. OR C.M. IS RESPONSIBLE FOR SEPARATION OF WORK NOT SPECIFICALLY DESIGNATED BY THE PLANS OR SPECIFICATIONS
6. ALL DIMENSIONS ARE TO BE VERIFIED BY THE CONTRACTOR & ANY DISCREPANCIES SHALL BE REPORTED TO THE ARCHITECT. ALL DIMENSIONS ARE FROM THE FACE OF STUDS, C.M.U. OR CONCRETE & DOES NOT INCLUDE ANY FINISH MATERIAL. EXTERIOR DIMENSIONS ARE FROM THE STEEL LINE AND DOES NOT INCLUDE ANY EXTERIOR FINISH MATERIAL
7. DO NOT SCALE DRAWINGS. IF DIMENSIONS ARE IN QUESTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING CLARIFICATION FROM THE ARCHITECT PRIOR TO CONTINUING WITH CONSTRUCTION
8. G.C. OR C.M. IS RESPONSIBLE FOR DIRECTING THE LOCATION OF ALL BLOCKING REQUIRED FOR ALL WALL HUNG CABINETS, COUNTERTOPS, SHELVES, PLUMBING FIXTURES, DISPLAY BOARDS, ETC. & TO ENSURE ADEQUATE SUPPORT. COORDINATE WITH ARCHITECT AND/OR OWNER
9. PROVIDE FIRE EXTINGUISHERS PER NFPA-10 AND COORDINATE WITH LOCAL BUILDING AND/OR FIRE OFFICIALS UNLESS SPECIFICALLY SHOWN ON DRAWINGS
10. ALL PENETRATIONS (PIPING, CONDUIT, DUCTWORK, ETC.) THRU THE ROOF DECK SHALL BE COMPLETELY SEALED. LARGE OPENING SHALL BE SEALED WITH METAL LATH OR THIS NOTE DOES NOT APPLY TO SHAFTS PROTECTED BY CONTINUOUS FIRE RESISTANT PARTITIONS
11. ALL TRADES ARE RESPONSIBLE FOR THEIR OWN FIRE CAULKING (IF APPLICABLE)
12. ALL FINAL COLORS ARE TO BE SELECTED BY THE ARCHITECT. ALL COLORS SHOULD BE SUBMITTED TO THE G.C. OR C.M. FOR ARCHITECT'S APPROVAL
13. ALL QUESTIONS SHALL BE SUBMITTED TO THE ARCHITECT'S OFFICE THROUGH THE APPROPRIATE REQUEST FOR INFORMATION FOR (RFI) PROVIDED BY THE ARCHITECT'S OFFICE

APPLICABLE CODES & STANDARDS

2015 INTERNATIONAL BUILDING CODE
2015 INTERNATIONAL PLUMBING CODE
2015 INTERNATIONAL FUEL GAS CODE
2015 INTERNATIONAL MECHANICAL CODE
2009 INTERNATIONAL ENERGY CONSERVATION CODE
2018 INTERNATIONAL FIRE CODE
2015 INTERNATIONAL LIFE SAFETY CODE
2014 NATIONAL ELECTRICAL CODE

INTERNATIONAL ENERGY CODE CLASSIFICATION

COUNTY:	BOWIE
PROPERTY ZONE:	ALL ENERGY CODE REQUIREMENTS AND COMPLIANCE ARE PERMITTED UNDER THE SHELL BUILDING
CLIMATE ZONE:	
MIN. ROOF R-VALUE:	
MIN. EXT. STUD WALL R-VALUE:	

FIRE RESISTANT CONSTRUCTION

STRUCTURAL FRAMING:	EXISTING
EXTERIOR BEARING WALLS:	EXISTING
INTERIOR BEARING WALLS:	EXISTING
INTERIOR NON-BEARING WALLS:	EXISTING
FLOOR CONSTRUCTION:	EXISTING
ROOF CONSTRUCTION:	EXISTING

ALLOWABLE BUILDING AREA & HEIGHT

CONSTRUCTION TYPE:	V-B		
OCCUPANCY CLASSIFICATION	ACTUAL	ALLOWABLE	REMARKS
EXISTING TO REMAIN UNCHANGED			
BUILDING HEIGHT			
IN FEET	-	-	
IN STORIES	-	-	

ABBREVIATIONS

A
A/C AIR CONDITIONER
ADD. ADDITION
A.F.F. ABOVE FINISHED FLOOR
A.H.U. AIR HANDLER UNIT
ALUM. ALUMINUM
AMP AMPERAGE
APPROX. APPROXIMATELY
APT. APARTMENT
ARCH. ARCHITECTURAL
AVE. AVENUE
AVG. AVERAGE

B
BSMT. BASEMENT
BRD. BOARD
B.O. BOTTOM OF
BTWN. BETWEEN
BLDG. BUILDING
BLKG. BLOCKING
BLVD. BOULEVARD
BTM. BOTTOM
B.T.U. BRITISH THERMAL UNIT
B.W. BOTH WAYS

C
CAB.(S) CABINET(S)
CHK. CHECK
C.I. CAST IRON
CIR. CIRCLE
C.J. CONSTRUCTION JOINT
CLG. CEILING
CLO. CLOSET
CLMN. COLUMN
CLR. CLEAR
C.M. CONSTRUCTION MANAGER
C.M.U. CONCRETE MASONRY UNIT
C.O. CASED OPENING
CONC. CONCRETE
CONST. CONSTRUCTION
CONT. CONTINUOUS
CPT. CARPET
C.U. CONDENSING UNIT
C.W. COLD WATER

D
DBL. DOUBLE
DEPT. DEPARTMENT
D.F. DRINKING FOUNTAIN
D.H. DOUBLE HUNG
DIA. DIAMETER
DIM. DIMENSION
DIST. DISTANCE
DIV. DIVISION
DN. DOWN
DR. DOOR
D.S. DOWNSPOUT
DTL. DETAIL
D.W. DISHWASHER
DWG.(S) DRAWING(S)
DWL. DOWEL
DWR. DRAWER

E
E EAST
EA. EACH
E.J. EXPANSION JOINT
ELEC. ELECTRICAL
ELEV. ELEVATOR
ENGR. ENGINEER
EQ. EQUAL
EQPM. EQUIPMENT
E.W. EACH WAY

F
FAB. FABRICATED
F.D. FLOOR DRAIN
F.E. FIRE EXTINGUISHER
F.H. FIRE HYDRANT OR FIRE HOSE
FIN. FINISH(ED)
FLR. FLOOR(ING)
FNDN FOUNDATION
FRMG. FRAMING
FTG. FOOTING
FURN. FURNITURE
FXTR. FIXTURE

G
GA. GAUGE
GALV. GALVANIZED
G.C. GENERAL CONTRACTOR
G.I. GALVANIZED IRON
GOVT. GOVERNMENT
GRD. GRADE
GYP. GYPSUM

H
H.B. HOSE BIB
H.C. HANDICAPPED
HD. HEAD
HDR. HEADER
HDW. HARDWARE
HDWD. HARDWOOD
H.M. HOLLOW METAL
HORIZ. HORIZONTAL
H.P. HORSE POWER
HT. HEIGHT
HTR. HEATER
H.V.A.C. HEATING, VENTILATION & AIR CONDITIONING
H.W. HOT WATER

I
INFO. INFORMATION
INSUL. INSULATION
INT. INTERIOR

J
JAN. JANITOR(S)

K
KIT. KITCHEN
K.W. KILOWATT

L
LAB. LABORATORY
LAV. LAVATORY
LB. POUNDS
LGTH. LENGTH
LIB. LIBRARY
LIN. FT. LINEAR FEET
LT. LIGHT
LTR.(S) LETTER(S)
LVR. LOUVER

M
MATL. MATERIAL
MAX. MAXIMUM
M.D.F. MULTI DENSITY FIBER BOARD
MDL. MIDDLE
MECH. MECHANICAL
MED. MEDICINE OR MEDICAL
MEZZ. MEZZANINE
MFD. MANUFACTURED
MFG. MANUFACTURING
MFR. MANUFACTURER
MIN. MINIMUM
MISC. MISCELLANEOUS
MLWK. MILLWORK
MTD. MOUNTED
MTL. METAL

N
N NORTH
NATL. NATIONAL
N.E.C. NATIONAL ELECTRIC CODE
N.I.C. NOT IN CONTRACT
NO. NUMBER
NOM. NOMINAL
N.T.S. NOT TO SCALE

O
O.C. ON CENTER
O.H. OPPOSITE HAND
OPG.(S) OPENING(S)
OPP. OPPOSITE
OPR. OPERABLE
ORNA. ORNAMENTAL
OVHD. OVERHEAD

P
PED. PEDESTAL
PERF. PERFORATED
PERP. PERPENDICULAR
P. LAM. PLASTIC LAMINATE
PLUMB. PLUMBING
PLYWD. PLYWOOD
PNL.(S) PANEL(S)
PR. PAIR
PREFAB. PREFABRICATED
PREFIN. PREFINISHED
PROP. PROPERTY
P.S.I. POUNDS PER SQUARE INCH
PT. POINT
PTN. PARTITION

Q
QTY. QUANTITY

R
R RADIUS
R.C.P. REFLECTED CEILING PLAN
RD. ROAD
RDR. READER
RDWD. REDWOOD
RECP. RECEPTACLE
RE: REFERENCE
REFR. REFRIGERATOR
REG. REGISTER
REINF. REINFORCED
REQ.'D REQUIRED
RESIL. RESILIENT
REV. REVISION
R.F.I. REQUEST FOR INFORMATION
RM. ROOM
R.O. ROUGH OPENING
R.T.U. ROOF TOP UNIT

S
S SOUTH
SECT. SECTION
SGL. SINGLE
SHWR. SHOWER
SIM. SIMILAR
S.J. SAW JOINT
SPEC. SPECIFY
SPECS. SPECIFICATIONS
SQ. SQUARE
SQ. FT. SQUARE FOOT
S.S. STAINLESS STEEL
STD. STANDARD
STL. STEEL
STRFR. STORE FRONT
STRUCT.('L) STRUCTURE(AL)
SURF. SURFACE
SUSP. SUSPENDED
SWR. SEWER
SYMB. SYMBOL
SYS. SYSTEM

T
T.A.S. TEXAS ACCESSIBILITY STANDARD
TEMP. TEMPERATURE
THK. THICK
TLT. TOILET
T.O. TOP OF
T.S. TUBE STEEL
T-STAT THERMOSTAT
TYP. TYPICAL
T&B TOP AND BOTTOM
T&G TONGUE AND GROOVE

U
UTL. UTILITY
U.N.O. UNLESS NOTED OTHERWISE

V
VERT. VERTICAL
V.I.F. VERIFY IN FIELD

W
W WEST
W/ WITH
W.C. WATER CLOSET
WD. WOOD
WDW. WINDOW
W.I. WROUGHT IRON
W.L. WIND LOAD
W/O WITH OUT
W.P. WEATHER PROOF
W.S. WATERSTOP
WT. WEIGHT
W.W.F. WELDED WIRE MESH (FABRIC)

X
X.B. X- BRACING

MISC.
& AND
@ AT
$ DOLLAR(S)
% PERCENT(AGE)
+/- PLUS/MINUS TOLERANCE
POUNDS

REVISION DESCRIPTIONS

TABLE OF CONTENTS

LEVEL 5

Level 5 Architecture
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GENERAL PROJECT INFORMATION

SHEET NUMBER:

G002

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CHAPTER 3: BUILDING BLOCKS

302 FLOOR OR GROUND SURFACES

302.2 CARPET. CARPET OR CARPET TILE SHALL BE SECURELY ATTACHED AND SHALL HAVE A FIRM CUSHION, PAD, OR BACKING OR NO CUSHION OR PAD. CARPET OR CARPET TILE SHALL HAVE A LEVEL LOOP, TEXTURED LOOP, LEVEL CUT PILE, OR LEVEL CUT/UNCUT PILE TEXTURE. PILE HEIGHT SHALL BE 1/2 INCH MAXIMUM. EXPOSED EDGES OF CARPET SHALL BE FASTENED TO FLOOR SURFACES AND SHALL HAVE TRIM ON THE ENTIRE LENGTH OF THE EXPOSED EDGE. CARPET EDGE TRIM SHALL COMPLY WITH 303.

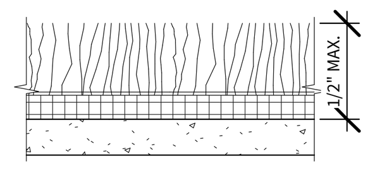

FIGURE 302.2 CARPET PILE HEIGHT

302.3 OPENINGS. OPENINGS IN FLOOR OR GROUND SURFACES SHALL NOT ALLOW PASSAGE OF A SPHERE MORE THAN 1/2 INCH DIAMETER EXCEPT AS ALLOWED IN 407.4.3, 409.4.3, 410.4, 810.5.3 AND 810.10. ELONGATED OPENINGS SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.

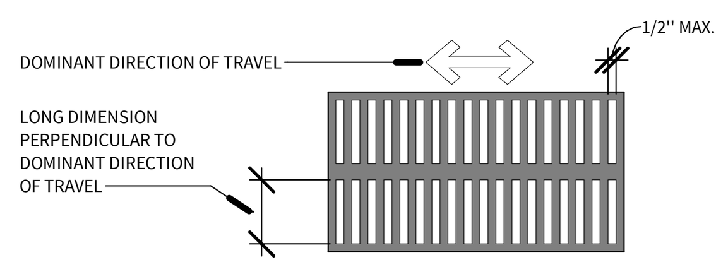

FIGURE 302.3 ELONGATED OPENINGS IN FLOOR OR GROUND SURFACES

303 CHANGES IN LEVEL

303.2 VERTICAL. CHANGES IN LEVEL OF 1/4 INCH HIGH MAXIMUM SHALL BE PERMITTED TO BE VERTICAL.

303.3 BEVELED. CHANGES IN LEVEL BETWEEN 1/4 INCH HIGH MINIMUM AND 1/2 INCH HIGH MAXIMUM SHALL BE BEVELED WITH A SLOPE NOT STEEPER THAN 1:2.

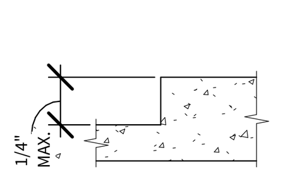

FIGURE 303.2 VERTICAL CHANGE IN LEVEL

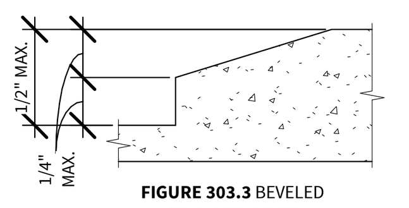

FIGURE 303.3 BEVELED CHANGE IN LEVEL

304 TURNING SPACE

304.3.1 CIRCULAR SPACE. THE TURNING SPACE SHALL BE A SPACE OF 60 INCHES DIAMETER MIN. THE SPACE SHALL BE PERMITTED TO INCLUDE KNEE AND TOE CLEARANCE COMPLYING WITH 306.

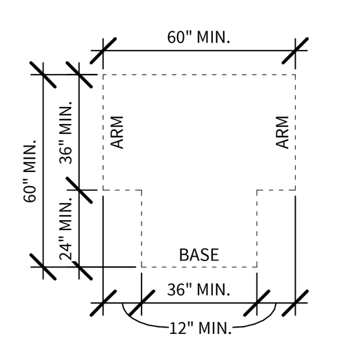

FIGURE 304.3.2 T-SHAPED TURNING SPACE

304.3.2 T-SHAPED SPACE. THE TURNING SPACE SHALL BE A T-SHAPED SPACE WITHIN A 60 INCHES SQUARE MINIMUM WITH ARMS AND BASE 36 INCHES WIDE MINIMUM EACH ARM OF THE T SHALL BE CLEAR OF OBSTRUCTIONS 12 INCHES MINIMUM IN EACH DIRECTION AND THE BASE SHALL BE CLEAR OF OBSTRUCTIONS 24 INCHES MINIMUM THE SPACE SHALL BE PERMITTED TO INCLUDE KNEE AND TOE CLEARANCE COMPLYING WITH 306 ONLY AT THE END OF EITHER THE BASE OR ONE ARM.

305 CLEAR FLOOR AND GROUND SPACE

305.3 SIZE. THE CLEAR FLOOR OR GROUND SPACE SHALL BE 30 INCHES MIN. BY 48 INCHES MIN.

305.5 POSITION. UNLESS OTHERWISE SPECIFIED, CLEAR FLOOR SPACE SHALL BE POSITIONED FOR EITHER FORWARD OR PARALLEL APPROACH TO AN ELEMENT.

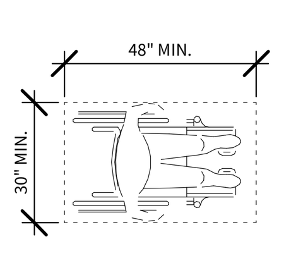

FIGURE 305.3 CLEAR FLOOR OR GROUND SPACE

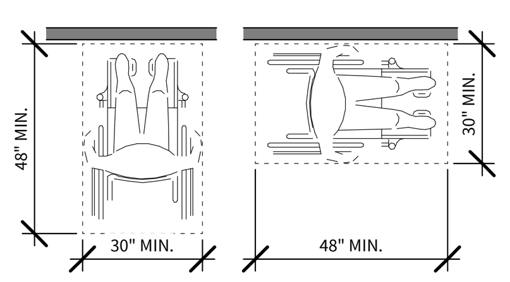

FIGURE 305.5 POSITION OF CLEAR FLOOR OR GROUND SPACE

305.7.1 FORWARD APPROACH. ALCOVES SHALL BE 36 INCHES WIDE MIN. WHERE THE DEPTH EXCEEDS 24 INCHES.

305.7.2 PARALLEL APPROACH. ALCOVES SHALL BE 60 INCHES WIDE MINIMUM WHERE THE DEPTH EXCEEDS 15 INCHES.

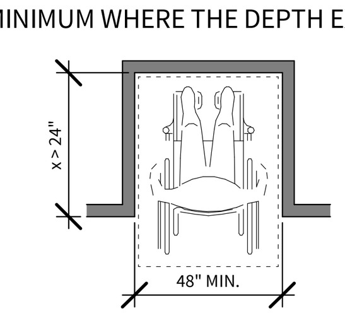

FIGURE 305.7.1 MANEUVERING CLEARANCE IN AN ALCOVE, FORWARD APPROACH

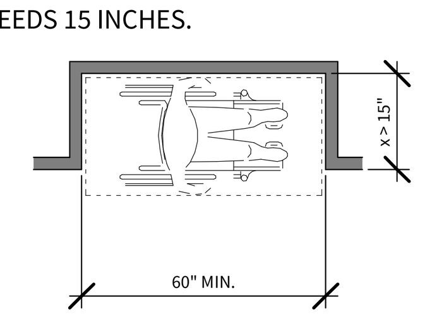

FIGURE 305.7.2 MANEUVERING CLEARANCE IN AN ALCOVE, PARALLEL APPROACH

306 KNEE AND TOE CLEARANCE

306.2.1 GENERAL. SPACE UNDER AN ELEMENT BETWEEN THE FINISH FLOOR OR GROUND AND 9 INCHES ABOVE THE FINISH FLOOR OR GROUND SHALL BE CONSIDERED TOE CLEARANCE AND SHALL COMPLY WITH 306.2.

306.2.2 MAXIMUM DEPTH. TOE CLEARANCE SHALL EXTEND 25 INCHES MAXIMUM UNDER AN ELEMENT.

306.2.3 MINIMUM REQUIRED DEPTH. WHERE TOE CLEARANCE IS REQUIRED AT AN ELEMENT AS PART OF A CLEAR FLOOR SPACE, THE TOE CLEARANCE SHALL EXTEND 17 INCHES MINIMUM UNDER THE ELEMENT.

306.2.4 ADDITIONAL CLEARANCE. SPACE EXTENDING GREATER THAN 6 INCHES BEYOND THE AVAILABLE KNEE CLEARANCE AT 9 INCHES ABOVE THE FINISH FLOOR OR GROUND SHALL NOT BE CONSIDERED TOE CLEARANCE.

306.2.5 WIDTH. TOE CLEARANCE SHALL BE 30 INCHES WIDE MIN.

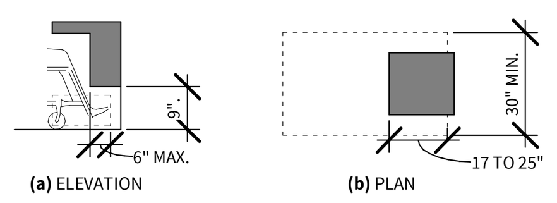

FIGURE 306.2 TOE CLEARANCE

306.3 KNEE CLEARANCE.

306.3.1 GENERAL. SPACE UNDER AN ELEMENT BETWEEN 9 INCHES AND 27 INCHES ABOVE THE FINISH FLOOR OR GROUND SHALL BE CONSIDERED KNEE CLEARANCE AND SHALL COMPLY WITH 306.3.

306.3.2 MAXIMUM DEPTH. KNEE CLEARANCE SHALL EXTEND 25 INCHES MAXIMUM UNDER 9 INCHES ABOVE THE FINISH FLOOR OR GROUND.

306.3.3 MINIMUM REQUIRED DEPTH. WHERE KNEE CLEARANCE IS REQUIRED UNDER AN ELEMENT AS PART OF A CLEAR FLOOR SPACE, THE KNEE CLEARANCE SHALL BE 11 INCHES DEEP MINIMUM AT 9 INCHES ABOVE THE FINISH FLOOR OR GROUND, AND 8 INCHES DEEP MINIMUM AT 27 INCHES ABOVE THE FINISH FLOOR OR GROUND.

306.3.4 CLEARANCE REDUCTION. BETWEEN 9 INCHES AND 27 INCHES ABOVE THE FINISH FLOOR OR GROUND, THE KNEE CLEARANCE SHALL BE PERMITTED TO REDUCE AT A RATE OF 1 INCH IN DEPTH FOR EACH 6 INCHES IN HEIGHT.

306.3.5 WIDTH. KNEE CLEARANCE SHALL BE 30 INCHES WIDE MIN.

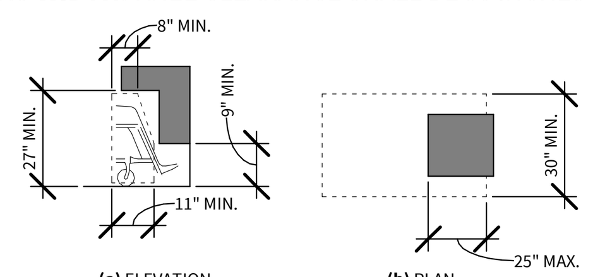

FIGURE 306.3 KNEE CLEARANCE

307 PROTRUDING OBJECTS

307.2 PROTRUSION LIMITS. OBJECTS WITH LEADING EDGES MORE THAN 27 INCHES AND NOT MORE THAN 80 INCHES ABOVE THE FINISHED FLOOR OR GROUND SHALL PROTRUDE 4" MAXIMUM HORIZONTALLY INTO THE CIRCULATION PATH

EXCEPTION: HANDRAILS SHALL BE PERMITTED TO PROTRUDE 4 1/2 INCHES MAX.

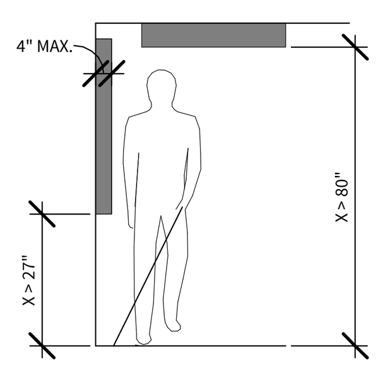

FIGURE 307.2 LIMITS OF PROTRUDING OBJECTS

307.3 POST-MOUNTED OBJECTS. FREE-STANDING OBJECTS MOUNTED ON POSTS OR PYLONS SHALL OVERHANG CIRCULATION PATHS 12 INCHES MAXIMUM WHEN LOCATED 27 INCHES MINIMUM AND 80 INCHES MAXIMUM ABOVE THE FINISH FLOOR OR GROUND. WHERE A SIGN OR OTHER OBSTRUCTION IS MOUNTED BETWEEN POSTS OR PYLONS AND THE CLEAR DISTANCE BETWEEN THE POSTS OR PYLONS IS GREATER THAN 12 INCHES, THE LOWEST EDGE OF SUCH SIGN OR OBSTRUCTION SHALL BE 27 INCHES MAXIMUM OR 80 INCHES MINIMUM ABOVE THE FINISH FLOOR OR GROUND.

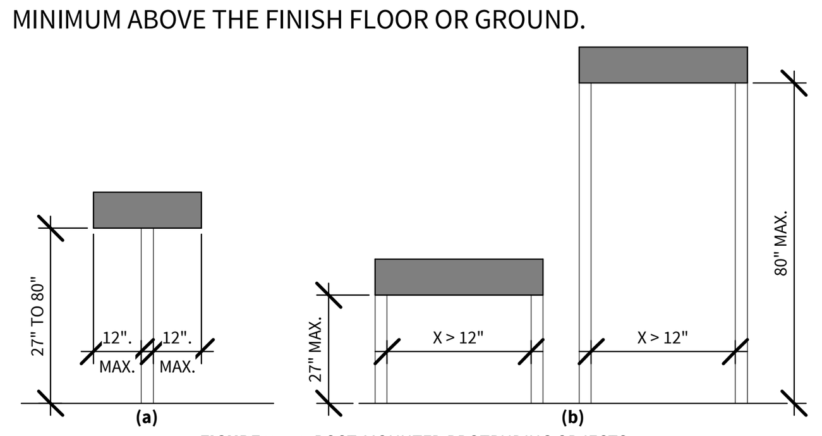

FIGURE 307.3 POST-MOUNTED PROTRUDING OBJECTS

307.4 VERTICAL CLEARANCE. VERTICAL CLEARANCE SHALL BE 80 INCHES HIGH MINIMUM. GUARDRAILS OR OTHER BARRIERS SHALL BE PROVIDED WHERE THE VERTICAL CLEARANCE IS LESS THAN 80 INCHES HIGH. THE LEADING EDGE OF SUCH GUARDRAIL OR BARRIER SHALL BE LOCATED 27 INCHES MAXIMUM ABOVE THE FINISHED FLOOR OR GROUND

EXCEPTION: DOOR CLOSERS AND DOOR STOPS SHALL BE PERMITTED TO BE 78 IN. MIN. ABOVE THE FINISHED FLOOR OR GROUND

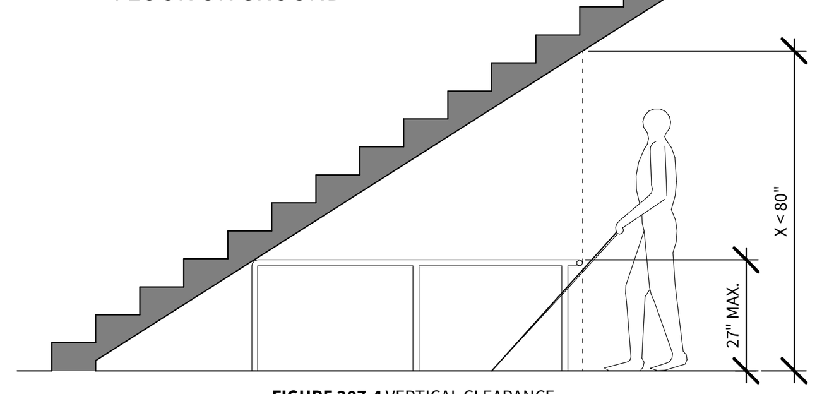

FIGURE 307.4 VERTICAL CLEARANCE

308 REACH RANGES

CHILDREN'S REACH RANGES

FORWARD OR SIDE REACH	HIGH (MAX.)	LOW (MIN.)
AGES 3 AND 4	36"	20"
AGES 5 THROUGH 8	40"	18"
AGES 9 THROUGH 12	44"	16"

308.2 FORWARD REACH.

308.2.1 UNOBSTRUCTED. WHERE A FORWARD REACH IS UNOBSTRUCTED, THE HIGH FORWARD REACH SHALL BE 48 INCHES MAXIMUM AND THE LOW FORWARD REACH SHALL BE 15 INCHES MINIMUM ABOVE THE FINISH FLOOR OR GROUND.

308.2.2 OBSTRUCTED HIGH REACH. WHERE A HIGH FORWARD REACH IS OVER AN OBSTRUCTION, THE CLEAR FLOOR SPACE SHALL EXTEND BENEATH THE ELEMENT FOR A DISTANCE NOT LESS THAN THE REQUIRED REACH DEPTH OVER THE OBSTRUCTION. THE HIGH FORWARD REACH SHALL BE 48 INCHES MAXIMUM WHERE THE REACH DEPTH IS 20 INCHES MAXIMUM. WHERE THE REACH DEPTH EXCEEDS 20 INCHES, THE HIGH FORWARD REACH SHALL BE 44 INCHES (1120 MM) MAXIMUM AND THE REACH DEPTH SHALL BE 25 INCHES MAXIMUM.

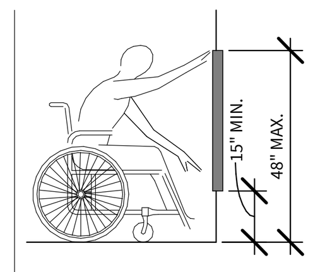

FIGURE 308.2.1 UNOBSTRUCTED FWD REACH

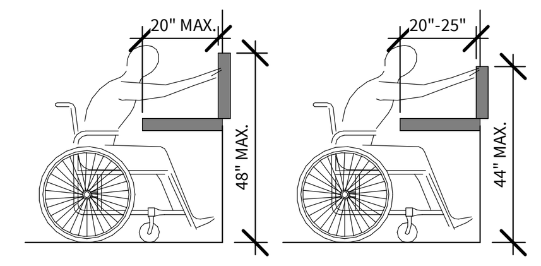

FIGURE 308.2.2 OBSTRUCTED HIGH FORWARD REACH

308.3 SIDE REACH.

308.3.1 UNOBSTRUCTED. WHERE A CLEAR FLOOR OR GROUND SPACE ALLOWS A PARALLEL APPROACH TO AN ELEMENT AND THE SIDE REACH IS UNOBSTRUCTED, THE HIGH SIDE REACH SHALL BE 48 INCHES MAXIMUM AND THE LOW SIDE REACH SHALL BE 15 INCHES MINIMUM ABOVE THE FINISH FLOOR OR GROUND.

308.3.2 OBSTRUCTED HIGH REACH. WHERE A CLEAR FLOOR OR ROUND SPACE ALLOWS A PARALLEL APPROACH TO AN ELEMENT AND THE HIGH SIDE REACH IS OVER AN OBSTRUCTION, THE HEIGHT OF THE OBSTRUCTION SHALL BE 34 INCHES MAXIMUM AND THE DEPTH OF THE OBSTRUCTION SHALL BE 24 INCHES MAXIMUM. THE HIGH SIDE REACH SHALL BE 48 INCHES MAXIMUM FOR A REACH DEPTH OF 10 INCHES MAXIMUM. WHERE THE REACH DEPTH EXCEEDS 10 INCHES THE HIGH SIDE REACH SHALL BE 46 INCHES MAXIMUM FOR A REACH DEPTH OF 24 INCHES MAXIMUM.

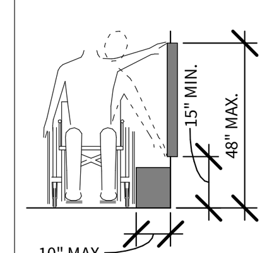

FIGURE 308.3.1 UNOBSTRUCTED SIDE REACH

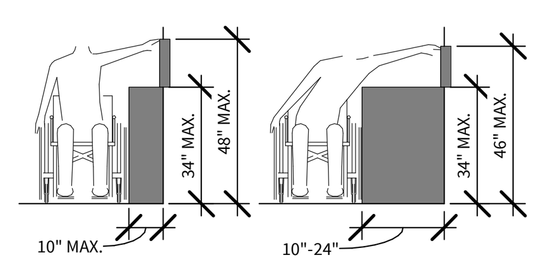

FIGURE 308.3.2 OBSTRUCTED HIGH SIDE REACH

309 OPERABLE PARTS

309.2 CLEAR FLOOR SPACE. A CLEAR FLOOR OR GROUND SPACE COMPLYING WITH 305 SHALL BE PROVIDED.

309.3 HEIGHT. OPERABLE PARTS SHALL BE PLACED WITHIN ONE OR MORE OF THE REACH RANGES SPECIFIED IN 308.

309.4 OPERATION. OPERABLE PARTS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING, OR TWISTING OF THE WRIST. THE FORCE REQUIRED TO ACTIVATE OPERABLE PARTS SHALL BE 5 POUNDS MAXIMUM.

CHAPTER 4: ACCESSIBLE ROUTES

402 ACCESSIBLE ROUTES

402.2 COMPONENTS. ACCESSIBLE ROUTES SHALL CONSIST OF ONE OR MORE OF THE FOLLOWING COMPONENTS: WALKING SURFACES WITH A RUNNING SLOPE NOT STEEPER THAN 1:20, DOORWAYS, RAMPS, CURB RAMPS EXCLUDING THE FLARED SIDES, ELEVATORS AND PLATFORM LIFTS. ALL COMPONENTS OF AN ACCESSIBLE ROUTE SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF CH. 4

ADVISORY 402.2 COMPONENTS. WALKING SURFACES MUST HAVE RUNNING SLOPS NOT STEEPER THAT 1:20, SEE 403.3. OTHER COMPONENTS OF ACCESSIBLE ROUTES, SUCH AS RAMPS (405) AND CURB RAMPS (406) ARE PERMITTED TO BE MORE STEEPLY SLOPED

403 WALKING SURFACES

403.3 SLOPE. THE RUNNING SLOPE OF WALKING SURFACES SHALL NOT BE STEEPER THAN 1:20. THE CROSS SLOPE OF WALKING SURFACES SHALL NOT BE STEEPER THAN 1:48.

403.5 CLEARANCES. WALKING SURFACES SHALL PROVIDE CLEARANCES COMPLYING WITH 403.5

EXCEPTION: WITH EMPLOYEE WORK AREAS, CLEARANCES ON COMMON USE CIRCULATION PATHS SHALL BE PERMITTED TO BE DECREASED BY WORK AREA EQUIPMENT PROVIDED THAT THE DECREASE IS ESSENTIAL TO THE FUNCTION OF THE WORK BEING PERFORMED

403.5.1 CLEAR WIDTH. EXCEPT AS PROVIDED IN 403.5.2 AND 403.5.3, THE CLEAR WIDTH OF WALKING SURFACES SHALL BE 36 IN. MIN.

EXCEPTION: THE CLEAR WIDTH SHALL BE PERMITTED TO BE REDUCED TO 32 INCHES MINIMUM FOR A LENGTH OF 24 INCHES MAXIMUM PROVIDED THAT REDUCED WIDTH SEGMENTS ARE SEPARATED BY SEGMENTS THAT ARE 48 INCHES LONG MINIMUM AND 36 INCHES WIDE MINIMUM

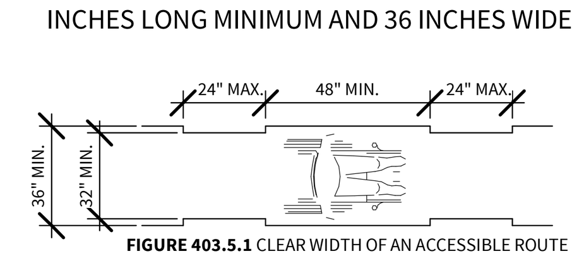

FIGURE 403.5.1 CLEAR WIDTH OF AN ACCESSIBLE ROUTE

403.5.2 CLEAR WIDTH AT TURN. WHERE THE ACCESSIBLE ROUTE MAKES A 180 DEGREE TURN AROUND AN ELEMENT WHICH IS LESS THAN 48 INCHES WIDE, CLEAR WIDTH SHALL BE 42 INCHES MINIMUM APPROACHING THE TURN, 48 INCHES MINIMUM AT THE TURN AND 42 INCHES MINIMUM LEAVING THE TURN.

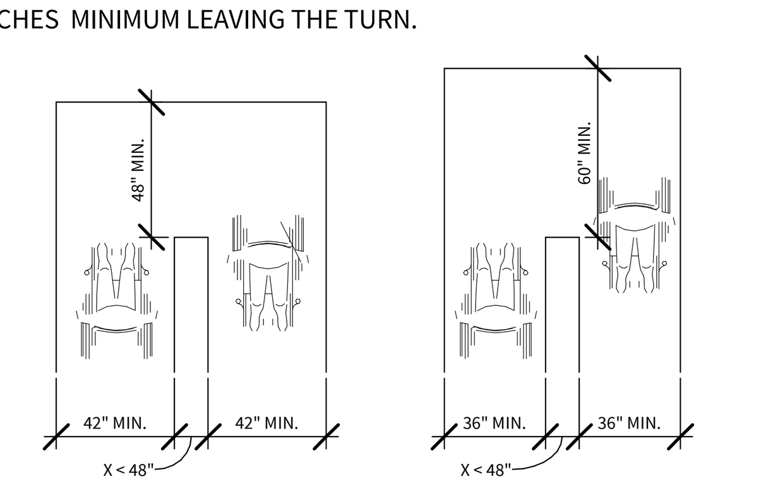

FIGURE 403.5.2 CLEAR WIDTH AT TURN

403.5.3 PASSING SPACES. AN ACCESSIBLE ROUTE WITH A CLEAR WIDTH LESS THAN 60 INCHES SHALL PROVIDE PASSING SPACES AT INTERVALS OF 200 FEET MAXIMUM.

404 DOORS, DOORWAYS, AND GATES

404.2.3 CLEAR WIDTH. DOOR OPENINGS SHALL PROVIDE A CLEAR WIDTH OF 32 INCHES MIN. CLEAR OPENINGS OF DOORWAYS WITH SWINGING DOORS SHALL BE MEASURED BETWEEN THE FACE OF THE DOOR AND THE STOP WITH THE DOOR OPEN 90 DEGREES. OPENINGS MORE THAN 24 INCHES DEEP SHALL PROVIDE A CLEAR OPENING OF 36 INCHES MIN.. THERE SHALL BE NO PROJECTIONS INTO THE REQUIRED CLEAR OPENING WIDTH LOWER THAN 34 INCHES ABOVE THE FINISH FLOOR OR GROUND. PROJECTIONS INTO THE CLEAR OPENING WIDTH BETWEEN 34 INCHES AND 80 INCHES ABOVE THE FINISH FLOOR OR GROUND SHALL NOT EXCEED 4 INCHES

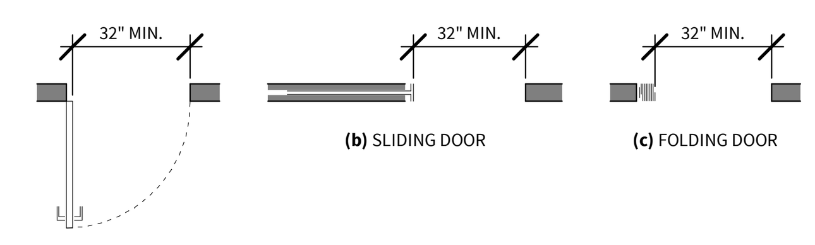

FIGURE 404.2.3 CLEAR WIDTH OF DOORWAYS

404.2.4 MANEUVERING CLEARANCES. MINIMUM MANEUVERING CLEARANCES AT DOORS AND GATES SHALL COMPLY WITH 404.2.4. MANEUVERING CLEARANCES SHALL EXTEND THE FULL WIDTH OF THE DOORWAY AND THE REQUIRED LATCH SIDE OR HINGE SIDE CLEARANCE.

404.2.4.1 SWINGING DOORS AND GATES. SWINGING DOORS AND GATES SHALL HAVE MANEUVERING CLEARANCE COMPLYING WITH FIGURE 404.2.4.1

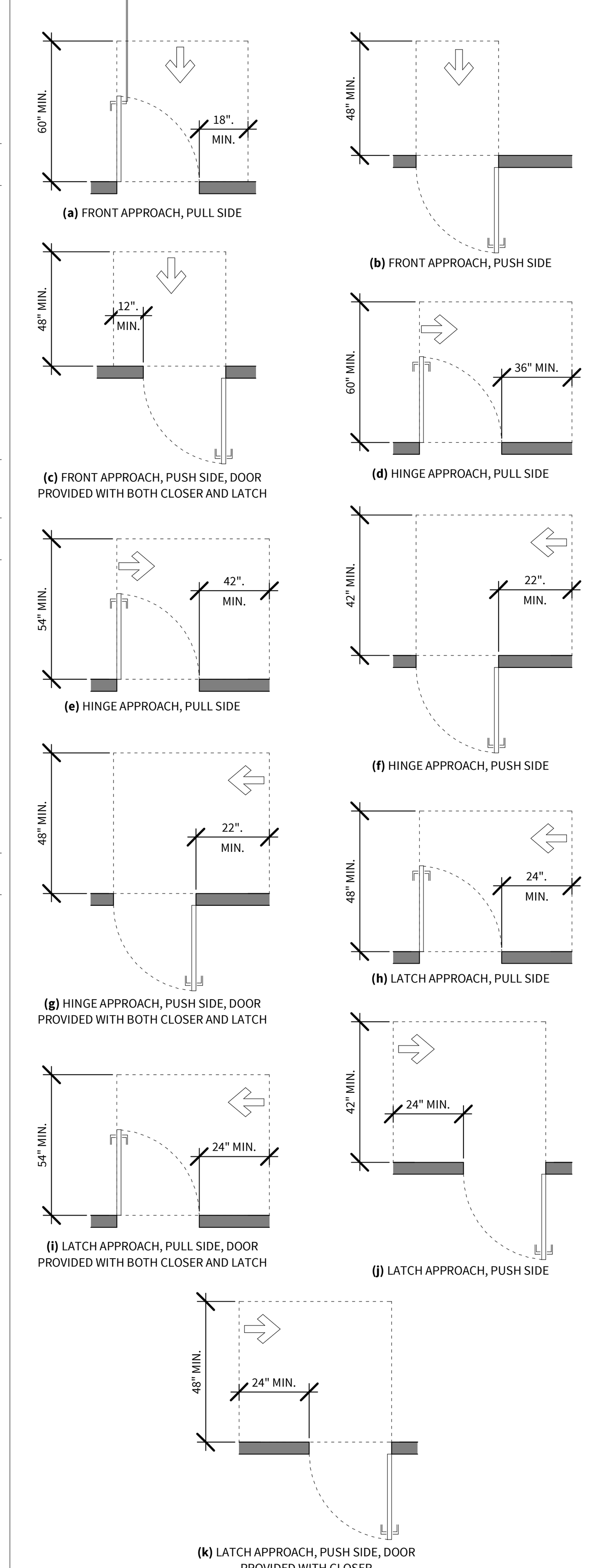

FIGURE 404.2.4.1 MANEUVERING CLEARANCES AT MANUAL SWING DOORS AND GATES

404.2.4.3 RECESSED DOORS AND GATES. MANEUVERING CLEARANCES FOR FORWARD APPROACH SHALL BE PROVIDED WHEN ANY OBSTRUCTION WITHIN 18 IN. OF THE LATCH SIDE OF A DOORWAY PROJECTS MORE THAN 8 IN. BEYOND THE FACE OF THE DOOR, MEASURED PERPENDICULAR TO THE FACE OF THE DOOR OR GATE.

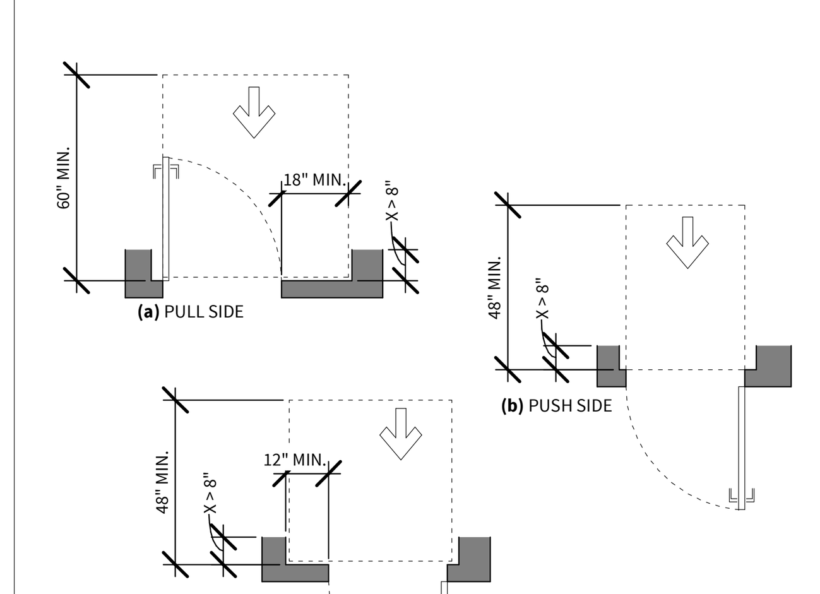

FIGURE 404.2.4.3 MANEUVERING CLEARANCES AT RECESSED DOORS & GATES

404.2.6 DOORS IN SERIES AND GATES IN SERIES. THE DISTANCE BETWEEN TWO HINGED OR PIVOTED DOORS IN SERIES AND GATES IN SERIES SHALL BE 48 INCHES MINIMUM PLUS THE WIDTH OF DOORS OR GATES SWINGING INTO THE SPACE.

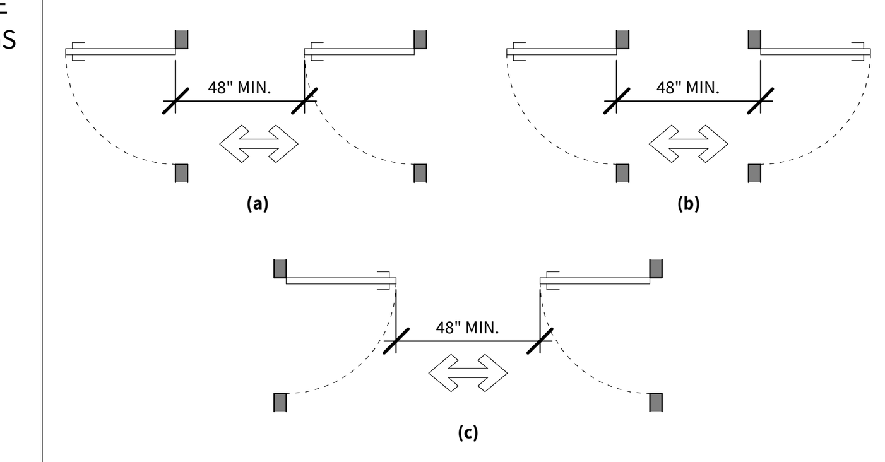

FIGURE 404.2.6 DOORS IN SERIES AND GATES IN SERIES

404.2.7 DOOR AND GATE HARDWARE. HANDLES, PULLS, LATCHES, LOCKS, AND OTHER OPERABLE PARTS ON DOORS AND GATES SHALL COMPLY WITH 309.4. OPERABLE PARTS OF SUCH HARDWARE SHALL BE 34 INCHES MINIMUM AND 48 INCHES MAXIMUM ABOVE THE FINISH FLOOR OR GROUND. WHERE SLIDING DOORS ARE IN THE FULLY OPEN POSITION, OPERATING HARDWARE SHALL BE EXPOSED AND USABLE FROM BOTH SIDES.

404.2.8.1 DOOR CLOSERS AND GATE CLOSERS. DOOR CLOSERS AND GATE CLOSERS SHALL BE ADJUSTED SO THAT FROM AN OPEN POSITION OF 90 DEGREES, THE TIME REQUIRED TO MOVE THE DOOR TO A POSITION OF 12 DEGREES FROM THE LATCH IS 5 SECONDS MIN.

404.2.8.2 SPRING HINGES. DOOR AND GATE SPRING HINGES SHALL BE ADJUSTED SO THAT FROM THE OPEN POSITION OF 70 DEGREES, THE DOOR OR GATE SHALL MOVE TO THE CLOSED POSITION IN 1.5 SECONDS MINIMUM

404.2.9 DOOR AND GATE OPENING FORCE. FIRE DOORS SHALL HAVE A MIN. OPENING FORCE ALLOWABLE BY THE APPROPRIATE ADMINISTRATIVE AUTHORITY. THE FORCE FOR PUSHING OR PULLING OPEN A DOOR OR GATE OTHER THAN FIRE DOORS SHALL BE:

1. INTERIOR HINGED DOOR AND GATES: 5 LBS MAX.
2. SLIDING OR FOLDING DOORS: 5 LBS MAX.

THESE FORCES DO NOT APPLY TO THE FORCE REQUIRED TO RETRACT LATCH BOLTS OR DISENGAGE OTHER DEVICES THAT HOLD THE DOOR OR GATE IN A CLOSE POSITION

404.2.10 DOOR AND GATE SURFACES. SWINGING DOOR AND GATE SURFACES WITHIN 10 IN. OF THE FINISH FLOOR OR GROUND MEASURED VERTICALLY SHALL HAVE A SMOOTH SURFACE ON THE PUSH SIDE EXTENDING THE FULL WIDTH OF THE DOOR OR GATE. PARTS CREATING HORIZONTAL OR VERTICAL JOINTS IN THESE SURFACES SHALL BE WITHIN 1/16 IN. OF THE SAME PLANE AS THE OTHER. CAVITIES CREATED BY ADDED KICK PLATES SHALL BE CAPPED.

404.2.11 VISION LIGHTS. DOORS, GATES, AND SIDE LIGHTS ADJACENT TO DOORS OR GATES, CONTAINING ONE OR MORE GLAZING PANELS THAT PERMIT VIEWING THROUGH THE PANELS SHALL HAVE THE BOTTOM OF AT LEAST ONE GLAZED PANEL LOCATED 43 INCHES MAXIMUM ABOVE THE FINISH FLOOR.

404.3 AUTOMATIC AND POWER-ASSISTED DOORS AND GATES. AUTOMATIC DOORS AND AUTOMATIC GATES SHALL COMPLY WITH 404.3. FULL-POWERED AUTOMATIC DOORS SHALL COMPLY WITH ANSI/BHMA A156.10 (INCORPORATED BY REFERENCE, SEE "REFERENCED STANDARDS" IN CHAPTER 1). LOW-ENERGY AND POWER-ASSISTED DOORS SHALL COMPLY WITH ANSI/BHMA A156.19 (1997 OR 2002 EDITION) (INCORPORATED BY REFERENCE, SEE "REFERENCED STANDARDS" IN CHAPTER 1).

404.3.2 MANEUVERING CLEARANCE. CLEARANCES AT POWER-ASSISTED DOORS AND GATES SHALL COMPLY WITH 404.2.4. CLEARANCES AT AUTOMATIC DOORS AND GATES WITHOUT STANDBY POWER AND SERVING AN ACCESSIBLE MEANS OF EGRESS SHALL COMPLY WITH 404.2.4.

404.3.7 REVOLVING DOORS, REVOLVING GATES, AND TURNSTILES. REVOLVING DOORS, REVOLVING GATES, AND TURNSTILES SHALL NOT BE PART OF AN ACCESSIBLE ROUTE.

405 RAMPS

405.2 SLOPE. RAMP RUNS SHALL HAVE A RUNNING SLOPE NOT STEEPER THAN 1:12.

405.3 CROSS SLOPE. CROSS SLOPE OF RAMP SHALL NOT BE STEEPER THAN 1:48.

405.5 CLEAR WIDTH. THE CLEAR WIDTH OF A RAMP RUN AND, WHERE HANDRAILS ARE PROVIDED, THE CLEAR WIDTH BETWEEN HANDRAILS SHALL BE 36 INCHES MINIMUM.

405.6 RISE. THE RISE FOR ANY RAMP RUN SHALL BE 30 IN. MAX.

405.7 LANDINGS. RAMPS SHALL HAVE LANDINGS AT THE TOP & THE BOTTOM OF EA. RAMP RUN. LANDINGS SHALL COMPLY WITH 405.7.

405.7.1 SLOPE. LANDINGS SHALL HAVE SLOPE NO STEEPER THAN 1:48. CHANGES IN LEVEL ARE NOT PERMITTED.

405.7.2 WIDTH. THE LANDING CLEAR WIDTH SHALL BE AT LEAST AS WIDE AS THE WIDEST RAMP RUN LEADING TO THE LANDING.

405.7.3 LENGTH. THE LANDING CLEAR LENGTH SHALL BE 60 INCHES LONG MINIMUM.

405.7.4 CHANGE IN DIRECTION. RAMPS THAT CHANGE DIRECTION BETWEEN RUNS AT LANDINGS SHALL HAVE A CLEAR LANDING 60 INCHES MINIMUM BY 60 INCHES MINIMUM.

405.7.5 DOORWAYS. WHERE DOORWAYS ARE LOCATED ADJACENT TO A RAMP LANDING, MANEUVERING CLEARANCES REQUIRED BY 404.2.4 AND 404.3.2 SHALL BE PERMITTED TO OVERLAP THE REQUIRED LANDING

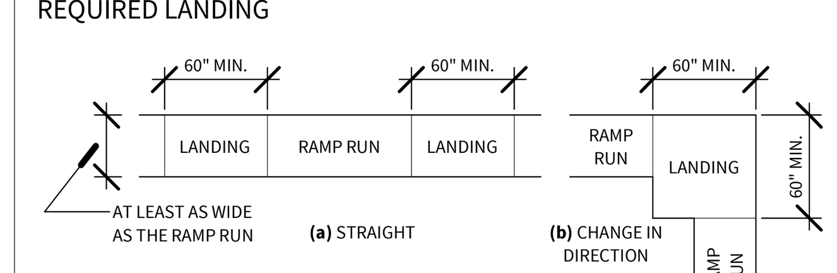

FIGURE 405.7 RAMP LANDINGS

405.8 HANDRAILS. RAMP RUNS WITH A RISE GREATER THAN 6 INCHES SHALL HAVE HANDRAILS COMPLYING WITH 505.

405.9 EDGE PROTECTION. EDGE PROTECTION COMPLYING WITH 405.9.1 OR 405.9.2 SHALL BE PROVIDED ON EACH SIDE OF RAMP RUNS AND AT EACH SIDE OF RAMP LANDINGS.

405.9.1 EXTENDED FLOOR OR GROUND SURFACE. THE FLOOR OR GROUND SURFACE OF THE RAMP RUN OR LANDING SHALL EXTEND 12 INCHES MINIMUM BEYOND THE INSIDE FACE OF A HANDRAIL COMPLYING WITH 505.

405.9.2 CURB OR BARRIER. A CURB OR BARRIER SHALL BE PROVIDED THAT PREVENTS THE PASSAGE OF A 4 INCH DIAMETER SPHERE, WHERE ANY PORTION OF THE SPHERE IS WITHIN 4 INCHES OF THE FINISH FLOOR OR GROUND SURFACE.

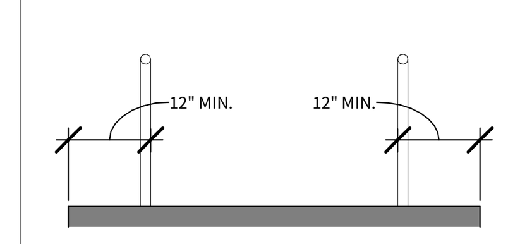

FIGURE 405.9.1 EXTENDED FLOOR OR GROUND SURFACE EDGE PROTECTION

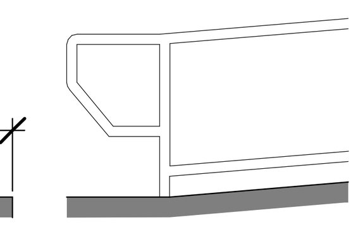
FIGURE 405.9.2 CURB OR BARRIER EDGE PROTECTION

406 CURB RAMPS

406.1 GENERAL. CURB RAMPS ON ACCESSIBLE ROUTES SHALL COMPLY WITH 406, 405.2 THROUGH 405.5 AND 405.10

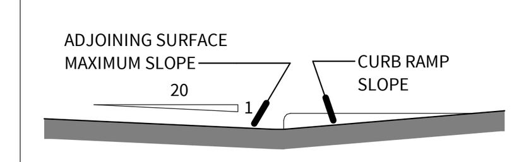

FIGURE 406.2 COUNTER SLOPE OF SURFACES ADJACENT TO CURB RAMPS

406.2 COUNTER SLOPE. COUNTER SLOPES OF ADJOINING GUTTERS AND ROAD SURFACES IMMEDIATELY ADJACENT TO THE CURB RAMP SHALL NOT BE STEEPER THAN 1:20. THE ADJACENT SURFACES AT TRANSITIONS AT CURB RAMPS TO WALKS, GUTTERS, AND STREETS SHALL BE AT THE SAME LEVEL.

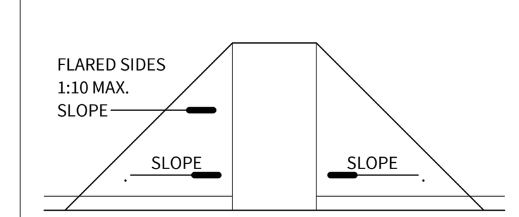

FIGURE 406.3 SIDES OF CURB RAMPS

406.3 SIDES OF CURB RAMPS. WHERE PROVIDED, CURB RAMP FLARES SHALL NOT BE STEEPER THAN 1:10.

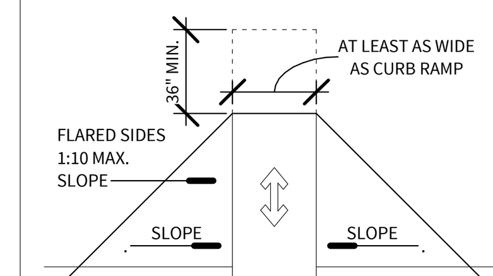

FIGURE 406.4 LANDINGS AT THE TOP OF CURB RAMPS

406.4 LANDINGS. LANDINGS SHALL BE PROVIDED AT THE TOPS OF CURB RAMPS. THE LANDING CLEAR LENGTH SHALL BE 36 IN. MIN. THE LANDING CLEAR WIDTH SHALL BE AT LEAST AS WIDE AS THE CURB RAMP, EXCLUDING FLARED SIDES, LEADING TO THE LANDING.

406.5 LOCATION. CURB RAMPS AND THE FLARED SIDES OF CURB RAMPS SHALL BE LOCATED SO THAT THEY DO NOT PROJECT INTO VEHICULAR TRAFFIC LANES, PARKING SPACES, OR PARKING ACCESS AISLES. CURB RAMPS AT MARKED CROSSINGS SHALL BE WHOLLY CONTAINED WITHIN THE MARKINGS, EXCLUDING ANY FLARED SIDES

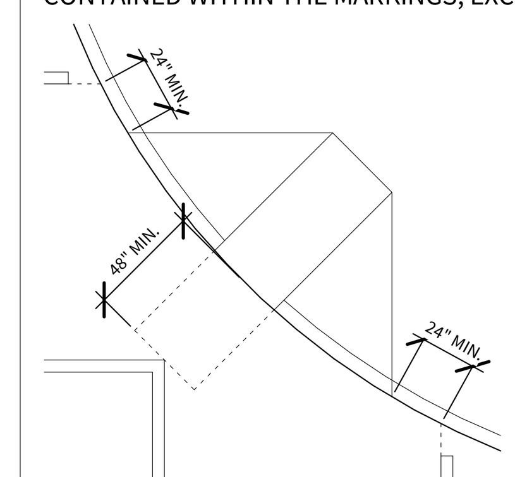

FIGURE 406.6 DIAGONAL OR CORNER TYPE CURB RAMPS

406.6 DIAGONAL CURB RAMPS. DIAGONAL OR CORNER TYPE CURB RAMPS WITH RETURNED CURBS OR OTHER WELL-DEFINED EDGES SHALL HAVE THE EDGES PARALLEL TO THE DIRECTION OF PEDESTRIAN FLOW. THE BOTTOM OF DIAGONAL CURB RAMPS SHALL HAVE A CLEAR SPACE 48 INCHES MINIMUM OUTSIDE ACTIVE TRAFFIC LANES OF THE ROADWAY. DIAGONAL CURB RAMPS PROVIDED AT MARKED CROSSINGS SHALL PROVIDE THE 48 INCHES MINIMUM CLEAR SPACE WITHIN THE MARKINGS. DIAGONAL CURB RAMPS WITH FLARED SIDES SHALL HAVE A SEGMENT OF CURB 24 INCHES LONG MINIMUM LOCATED ON EACH SIDE OF THE CURB RAMP AND WITHIN THE MARKED CROSSING.

406.7 ISLANDS. RAISED ISLANDS IN CROSSINGS SHALL BE CUT THROUGH LEVEL WITH THE STREET OR HAVE CURB RAMPS AT BOTH SIDES. EACH CURB RAMP SHALL HAVE A LEVEL AREA 48 INCHES LONG MINIMUM BY 36 INCHES WIDE MINIMUM AT THE TOP OF THE CURB RAMP IN THE PART OF THE ISLAND INTERSECTED BY THE CROSSINGS. EACH 48 INCH MINIMUM BY 36 INCH MINIMUM AREA SHALL BE ORIENTED SO THAT THE 48 INCH MINIMUM LENGTH IS IN THE DIRECTION OF THE RUNNING SLOPE OF THE CURB RAMP IT SERVES. THE 48 INCH MINIMUM BY 36 INCH MINIMUM AREAS AND THE ACCESSIBLE ROUTE SHALL BE PERMITTED TO OVERLAP

407 ELEVATORS

407.1 GENERAL. ELEVATORS SHALL COMPLY WITH 407 AND WITH ASME A17.1 (INCORPORATED BY REFERENCE, SEE "REFERENCED STANDARDS" IN CHAPTER 1) THEY SHALL BE PASSENGER ELEVATORS AS CLASSIFIED BY ASME A17.1 ELEVATOR OPERATION SHALL BE AUTOMATIC

EXCEPTION: EXISTING CONDITIONS THAT DON'T HAVE TO COMPLY

407.2.1.2 SIZE. CALL BUTTONS SHALL BE 3/4 INCH MINIMUM IN THE SMALLEST DIMENSION.

407.2.2.1 VISIBLE AND AUDIBLE SIGNALS. A VISIBLE AND AUDIBLE SIGNAL SHALL BE PROVIDED AT EACH HOISTWAY ENTRANCE TO INDICATE WHICH CAR IS ANSWERING A CALL AND THE CAR'S DIRECTION OF TRAVEL. WHERE IN-CAR SIGNALS ARE PROVIDED, THEY SHALL BE VISIBLE FROM THE FLOOR AREA ADJACENT TO THE HALL CALL BUTTONS

407.2.2.2 VISIBLE SIGNALS. VISIBLE SIGNAL FIXTURES SHALL BE CENTERED AT 72 INCHES MINIMUM ABOVE THE FINISH FLOOR OR GROUND. THE VISIBLE SIGNAL ELEMENTS SHALL BE 2 1/2 INCHES MINIMUM MEASURED ALONG THE VERTICAL CENTERLINE OF THE ELEMENT. SIGNALS SHALL BE VISIBLE FROM THE FLOOR AREA ADJACENT TO THE HALL CALL BUTTON.

407.2.3.1 FLOOR DESIGNATION. FLOOR DESIGNATIONS COMPLYING WITH 703.2 AND 703.4.1 SHALL BE PROVIDED ON BOTH JAMBS OF ELEVATOR HOISTWAY ENTRANCES. FLOOR DESIGNATIONS SHALL BE PROVIDED IN BOTH TACTILE CHARACTERS AND BRAILLE. TACTILE CHARACTERS SHALL BE 2 INCHES HIGH MINIMUM. A TACTILE STAR SHALL BE PROVIDED ON BOTH JAMBS AT THE MAIN ENTRY LEVEL.

407.2.3.2 CAR DESIGNATIONS. DESTINATION-ORIENTED ELEVATORS SHALL PROVIDE TACTILE CAR IDENTIFICATION COMPLYING WITH 703.2 ON BOTH JAMBS OF THE HOISTWAY IMMEDIATELY BELOW THE FLOOR DESIGNATION. CAR DESIGNATIONS SHALL BE PROVIDED IN BOTH TACTILE CHARACTERS AND BRAILLE. TACTILE CHARACTERS SHALL BE 2 INCHES HIGH MINIMUM.

407.3.3.1 HEIGHT. THE DEVICE SHALL BE ACTIVATED BY SENSING AN OBSTRUCTION PASSING THROUGH THE OPENING AT 5 INCHES NOMINAL AND 29 INCHES NOMINAL ABOVE THE FINISH FLOOR.

407.3.3.3 DURATION. DOOR REOPENING DEVICES SHALL REMAIN EFFECTIVE FOR 20 SECONDS MINIMUM.

407.3.4 DOOR AND SIGNAL TIMING. THE MINIMUM ACCEPTABLE TIME FROM NOTIFICATION THAT A CAR IS ANSWERING A CALL OR NOTIFICATION OF THE CAR ASSIGNED AT THE MEANS FOR THE ENTRY OF DESTINATION INFORMATION UNTIL THE DOOR OF THAT CAR STAR TO CLOSE SHALL BE CALCULATED FROM THE FOLLOWING EQUATION:

$$T = D/(1.5\ FT/S) = 5 \text{ SECONDS MINIMUM}$$

WHERE:
T = TOTAL TIME (IN SECONDS)
D = DISTANCE (IN FEET)

THE DISTANCE IS FROM THE POINT IN THE LOBBY OR CORRIDOR 60 INCHES DIRECTLY IN FRONT OF THE FARTHEST CALL BUTTON CONTROLLING THAT CAR TO THE CENTERLINE OF ITS HOISTWAY DOOR.

407.3.5 DOOR DELAY. ELEVATOR DOORS SHALL REMAIN FULLY OPEN IN RESPONSE TO A CAR CALL FOR 3 SECONDS

407.4 ELEVATOR CAR REQUIREMENTS. ELEVATOR CARS SHALL COMPLY WITH 407.4.

407.4.1 CAR DIMENSIONS. INSIDE DIMENSIONS OF ELEVATOR CARS AND CLEAR WIDTH OF ELEVATOR DOORS SHALL COMPLY WITH TABLE 407.4.1.

407.4.3 PLATFORM TO HOISTWAY CLEARANCE. THE CLEARANCE BETWEEN THE CAR PLATFORM SILL AND THE EDGE OF ANY HOISTWAY LANDING SHALL BE 1 1/4 INCH MAXIMUM.

407.4.4 LEVELING. EACH CAR SHALL BE EQUIPPED WITH A SELF-LEVELING FEATURE THAT WILL AUTOMATICALLY BRING AND MAINTAIN THE CAR AT FLOOR LANDINGS WITHIN A TOLERANCE OF 1/2 INCH UNDER RATED LOADING TO ZERO LOADING CONDITIONS.

407.4.5 ILLUMINATION. THE LEVEL OF ILLUMINATION AT THE CAR CONTROLS, PLATFORM, CAR THRESHOLD AND CAR LANDING SILL SHALL BE 5 FOOT CANDLES MINIMUM.

407.4.6 ELEVATOR CAR CONTROLS. WHERE PROVIDED, ELEVATOR CAR CONTROLS SHALL COMPLY WITH 407.4.6 AND 309.4

407.4.6.1 LOCATION. CONTROLS SHALL BE LOCATED WITHIN ONE OF THE REACH RANGES SPECIFIED IN 308.

407.4.6.2 BUTTONS. CAR CONTROL BUTTONS WITH FLOOR DESIGNATIONS SHALL COMPLY WITH 407.4.6.2 AND SHALL BE RAISED OR FLUSH

407.4.6.2.1 SIZE. BUTTONS SHALL BE 3/4 INCH MINIMUM IN THEIR SMALLEST DIMENSION.

407.4.6.4.1 HEIGHT. EMERGENCY CONTROL BUTTONS SHALL HAVE THEIR CENTERLINES 35 INCHES MINIMUM ABOVE THE FINISH FLOOR.

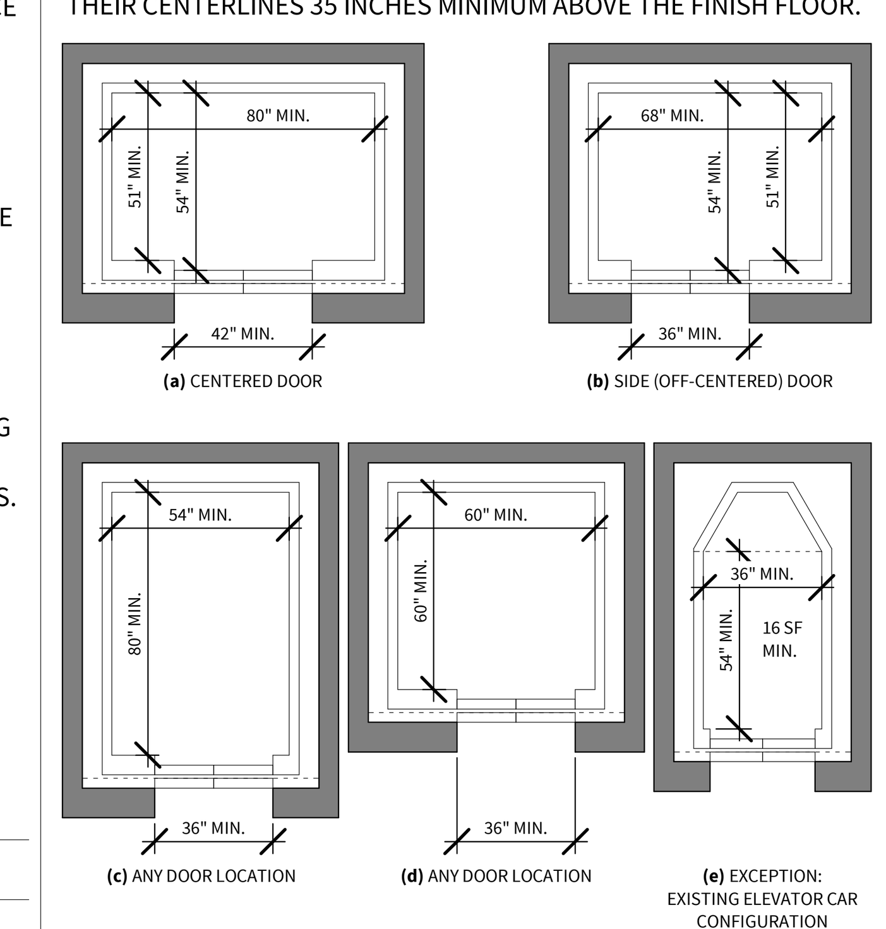

FIGURE 407.4.1 ELEVATOR CAR DIMENSIONS

407.4.7.1.1 TYPE. CONTROL BUTTONS SHALL BE IDENTIFIED BY TACTILE CHARACTERS COMPLYING WITH 703.2.

407.4.7.1.3 SYMBOLS. THE CONTROL BUTTON FOR THE EMERGENCY STOP, ALARM, DOOR OPEN, DOOR CLOSE, MAIN ENTRY FLOOR, AND PHONE, SHALL BE IDENTIFIED WITH TACTILE SYMBOLS AS SHOWN IN TABLE 407.4.7.1.3.

407.4.8.1.1 SIZE. CHARACTERS SHALL BE 1/2 INCH HIGH MINIMUM.

407.4.8.2.2 SIGNAL LEVEL. THE VERBAL ANNUNCIATOR SHALL BE 10 DB MINIMUM ABOVE AMBIENT, BUT SHALL NOT EXCEED 80 DB, MEASURED AT THE ANNUNCIATOR.

407.4.8.2.3 FREQUENCY. THE VERBAL ANNUNCIATOR SHALL HAVE A FREQUENCY OF 300 Hz MINIMUM TO 3000 Hz MAXIMUM

LEVEL 5

Level 5 Architecture
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PROJECT INFORMATION:

AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 ELIZABETH ST
TEXARKANA, TX
75503

PROJECT NUMBER: 21-64T
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REVISIONS:

SHEET NAME:

TEXAS ACCESSIBILITY STANDARDS

SHEET NUMBER:

G003

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408 LIMITED-USE/LIMITED-APPLICATION ELEVATORS

408.1 GENERAL. LIMITED-USE/LIMITED-APPLICATION ELEVATORS SHALL COMPLY WITH 408 AND WITH ASME A17.1 (INCORPORATED BY REFERENCE, SEE "REFERENCED STANDARDS" IN CHAPTER 1). THEY SHALL BE PASSENGER ELEVATORS AS CLASSIFIED BY ASME A17.1. ELEVATOR OPERATION SHALL BE AUTOMATIC.

408.2 ELEVATOR LANDINGS. LANDINGS SERVING LIMITED-USE/LIMITED-APPLICATION ELEVATORS SHALL COMPLY WITH 408.2

408.2.1 CALL BUTTONS. ELEVATOR CALL BUTTONS AND KEYPADS SHALL COMPLY WITH 407.2.1.

408.2.2 HALL SIGNALS. HALL SIGNALS SHALL COMPLY WITH 407.2.2.

408.2.3 HOISTWAY SIGNS. SIGNS AT ELEVATOR HOISTWAYS SHALL COMPLY WITH 407.2.3.1. 408.3 ELEVATOR DOORS. ELEVATOR HOISTWAY DOORS SHALL COMPLY WITH 408.3.

408.3.1 SLIDING DOORS. SLIDING HOISTWAY AND CAR DOORS SHALL COMPLY WITH 407.3.1 THROUGH 407.3.3 AND 408.4.1

408.3.2 SWINGING DOORS. SWINGING HOISTWAY DOORS SHALL OPEN AND CLOSE AUTOMATICALLY AND SHALL COMPLY WITH 404, 407.3.2 AND 408.3.2.

408.3.2.1 POWER OPERATION. SWINGING DOORS SHALL BE POWER-OPERATED AND SHALL COMPLY WITH ANSI/BHMA A156.19 (1997 OR 2002 EDITION) (INCORPORATED BY REFERENCE, SEE "REFERENCED STANDARDS" IN CHAPTER 1)

408.3.2.2 DURATION. POWER-OPERATED SWINGING DOORS SHALL REMAIN OPEN FOR 20 SECONDS MINIMUM WHEN ACTIVATED

408.4 ELEVATOR CARS. ELEVATOR CARS SHALL COMPLY WITH 408.4.

408.4.1 CAR DIMENSIONS AND DOORS. ELEVATOR CARS SHALL PROVIDE A CLEAR WIDTH 42 INCHES MINIMUM AND A CLEAR DEPTH 54 INCHES MINIMUM. CAR DOORS SHALL BE POSITIONED AT THE NARROW ENDS OF CARS AND SHALL PROVIDE 32 INCHES MINIMUM CLEAR WIDTH.

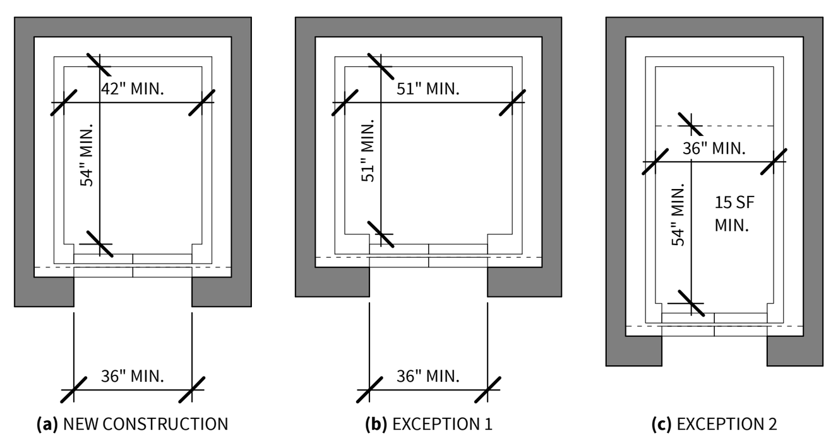

FIGURE 408.4.1 LIMITED-USE/LIMITED APPLICATION (LULA) ELEVATOR CAR DIMENSIONS

408.4.2 FLOOR SURFACES. FLOOR SURFACES IN ELEVATOR CARS SHALL COMPLY WITH 302 AND 303.

408.4.3 PLATFORM TO HOISTWAY CLEARANCE. THE PLATFORM TO HOISTWAY CLEARANCE SHALL COMPLY WITH 407.4.3

408.4.4 LEVELING. ELEVATOR CAR LEVELING SHALL COMPLY WITH 407.4.4.

408.4.5 ILLUMINATION. ELEVATOR CAR ILLUMINATION SHALL COMPLY WITH 407.4.5.

408.4.6 CAR CONTROLS. ELEVATOR CAR CONTROLS SHALL COMPLY WITH 407.4.6. CONTROL PANELS SHALL BE CENTERED ON SIDE WALL

408.4.7 DESIGNATIONS AND INDICATORS OF CAR CONTROLS. DESIGNATIONS AND INDICATORS OF CAR CONTROLS SHALL COMPLY WITH 407.4.7

408.4.8 EMERGENCY COMMUNICATIONS. CAR EMERGENCY SIGNALING DEVICES COMPLYING WITH 407.4.9 SHALL BE PROVIDED

410 PLATFORM LIFTS

410.1 GENERAL. PLATFORM LIFTS SHALL COMPLY WITH ASME A18.1 (1999 EDITION OR 2003 EDITION) (INCORPORATED BY REFERENCE, SEE "REFERENCED STANDARDS" IN CHAPTER 1) PLATFORM LIFTS SHALL NOT BE ATTENDANT-OPERATED AND SHALL PROVIDE UNASSISTED ENTRY AND EXIT FROM THE LIFT

ADVISORY 410.1 GENERAL. INCLUDED STAIRWAY CHAIRLIFTS, INCLINED AND VERTICAL PLATFORM LIFTS ARE AVAILABLE FOR SHOT DISTANCE VERTICAL TRANSPORTATION. BECAUSE AN ACCESSIBLE ROUTE REQUIRES AN 80 INCH VERTICAL CLEARANCE, CARE SHOULD BE TAKEN IN SELECTING LIFTS AS THEY MAY NOT BE EQUALLY SUITABLE FOR USE BY PEOPLE USING WHEELCHAIRS AND PEOPLE STANDING. IF A LIFT DOES NOT PROVIDE 80 INCH VERTICAL CLEARANCE IT CANNOT BE CONSIDERED PART OF AN ACCESSIBLE ROUTE IN NEW CONSTRUCTION. THE A.D.A. AND OTHER FEDERAL CIVIL RIGHTS LAWS REQUIRE THAT ACCESSIBLE FEATURES BE MAINTAINED IN WORKING ORDER SO THAT THEY ARE ACCESSIBLE TO AND USABLE BY THOSE PEOPLE THEY ARE INTENDED TO BENEFIT. BUILDING OWNERS ARE REMINDED THAT THE ASME A18 SAFETY STANDARD FOR PLATFORM LIFTS AND STAIRWAY CHAIRLIFTS REQUIRES ROUTINE MAINTENANCE AND INSPECTIONS. ISOLATED OR TEMPORARY INTERRUPTIONS IN SERVICE DUE TO MAINTENANCE OR REPAIRS MAY BE UNAVOIDABLE; HOWEVER, FAILURE TO TAKE PROMPT ACTION TO EFFECT REPAIRS COULD CONSTITUTE A VIOLATION OF FEDERAL LAWS AND THESE REQUIREMENTS

410.2 FLOOR SURFACES. FLOOR SURFACES IN PLATFORM LIFTS SHALL COMPLY WITH 302 & 303.

410.3 CLEAR FLOOR SPACE. CLEAR FLOOR SPACE IN PLATFORM LIFTS SHALL COMPLY WITH 305.

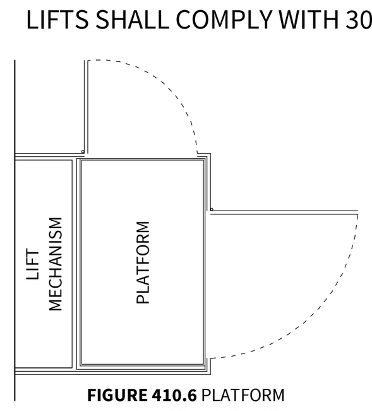

FIGURE 410.6 PLATFORM LIFT DOORS AND GATES

410.4 PLATFORM TO RUNWAY CLEARANCE. THE CLEARANCE BETWEEN THE PLATFORM SILL AND THE EDGE OF ANY RUNWAY LANDING SHALL BE 1 INCH MAXIMUM.

410.5 OPERABLE PARTS. CONTROLS FOR PLATFORM LIFTS SHALL COMPLY WITH 309.

410.6 DOORS AND GATES. PLATFORM LIFTS SHALL HAVE LOW-ENERGY POWER-OPERATED DOORS OR GATES COMPLYING WITH 404.3 DOORS SHALL REMAIN OPEN FOR 20 SECONDS MINIMUM. END DOORS AND GATES SHALL PROVIDE A CLEAR WIDTH 32 INCHES MINIMUM. SIDE DOORS AND GATES SHALL PROVIDE A CLEAR WIDTH 42 INCHES MINIMUM

EXCEPTION: PLATFORM LIFTS SERVING TWO LANDINGS MAXIMUM AND HAVING DOORS OR GATES ON OPPOSITE SIDES SHALL BE PERMITTED TO HAVE SELF-CLOSING MANUAL DOORS OR GATES

CHAPTER 5: GENERAL SITE AND BUILDING ELEMENTS

501 GENERAL

501.1 SCOPE. THE PROVISIONS OF CHAPTER 5 SHALL APPLY WHERE REQUIRED BY CHAPTER 2 OR WHERE REFERENCED BY A REQUIREMENT IN THIS DOCUMENT

502 PARKING SPACES

502.1 GENERAL. CAR AND VAN PARKING SPACES SHALL COMPLY WITH 502. WHERE PARKING SPACES ARE MARKED WITH LINES, WIDTH MEASUREMENTS OF PARKING SPACES AND AISLES SHALL BE MADE FROM THE CENTERLINE OF THE MARKINGS

EXCEPTION: WHERE PARKING SPACES OR ACCESS AISLES ARE NOT ADJACENT TO ANOTHER PARKING SPACE OR ACCESS AISLE MEASUREMENTS SHALL BE PERMITTED TO INCLUDE THE FULL WIDTH OF THE LINE DEFINING THE PARKING SPACE OR ACCESS AISLE

502.2 VEHICLE SPACES. CAR PARKING SPACES SHALL BE 96 INCHES WIDE MINIMUM AND VAN PARKING SPACES SHALL BE 132 INCHES WIDE MINIMUM. SPACES SHALL BE MARKED WITH TO DEFINE THE WIDTH AND SHALL HAVE AN ADJACENT ACCESS AISLE COMPLYING WITH 502.3

EXCEPTION: VAN PARKING SPACES SHALL BE PERMITTED TO BE 96 INCHES WIDE MINIMUM WHERE THE ACCESS AISLE IS 96 INCHES WIDE MINIMUM

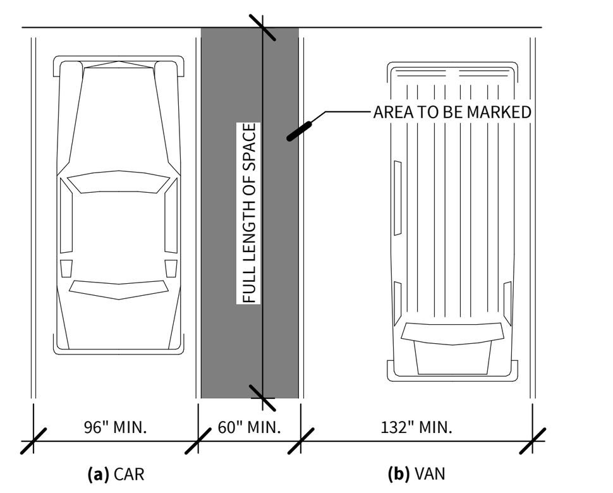

FIGURE 502.2 VEHICLE PARKING SPACES AND **FIGURED 502.3** PARKING SPACE ACCESS AISLE

502.3 ACCESS AISLE. ACCESS AISLES SERVING PARKING SPACES SHALL COMPLY WITH 502.3. ACCESS AISLES SHALL ADJOIN AN ACCESSIBLE ROUTE. TWO PARKING SPACES SHALL BE PERMITTED TO SHARE A COMMON ACCESS AISLE.

502.3.1 WIDTH. ACCESS AISLES SERVING CAR AND VAN PARKING SPACES SHALL BE 60 INCHES WIDE MINIMUM

502.3.2 LENGTH. ACCESS AISLES SHALL EXTEND THE FULL LENGTH OF THE PARKING SPACES THEY SERVE.

502.3.3 MARKING. ACCESS AISLES SHALL BE MARKED SO AS TO DISCOURAGE PARKING IN THEM.

502.3.4 LOCATION. ACCESS AISLES SHALL NOT OVERLAP THE VEHICULAR WAY. ACCESS AISLES SHALL BE PERMITTED TO BE PLACED ON EITHER SIDE OF THE PARKING SPACE EXCEPT FOR ANGLED VAN PARKING SPACES WHICH SHALL HAVE ACCESS AISLES LOCATED ON THE PASSENGER SIDE OF THE PARKING SPACES.

502.4 FLOOR OR GROUND SURFACES. PARKING SPACES AND ACCESS AISLES SERVING THEM HALL COMPLY WITH 302. ACCESS AISLES SHALL BE AT THE SAME LEVEL AS THE PARKING SPACES THEY SERVE AND CHANGES IN LEVEL ARE NOT PERMITTED

EXCEPTION: SLOPES NOT STEEPER THAN 1:48 SHALL BE PERMITTED

502.4 FLOOR OR GROUND SURFACES. PARKING SPACES AND ACCESS AISLES SERVING THEM SHALL COMPLY WITH 302. ACCESS AISLES SHALL BE AT THE SAME LEVEL AS THE PARKING SPACES THEY SERVE. CHANGES IN LEVEL ARE NOT PERMITTED.

502.5 VERTICAL CLEARANCE. PARKING SPACES FOR VANS AND ACCESS AISLES AND VEHICULAR ROUTES SERVING THEM SHALL PROVIDE A VERTICAL CLEARANCE OF 98 INCHES MINIMUM.

502.6 IDENTIFICATION. PARKING SPACE IDENTIFICATION SIGNS SHALL INCLUDE THE INTERNATIONAL SYMBOL OF ACCESSIBILITY COMPLYING WITH 703.7.2.1. SIGNS IDENTIFYING VAN PARKING SPACES SHALL CONTAIN THE DESIGNATION "VAN ACCESSIBLE." SIGNS SHALL BE 60 INCHES MINIMUM ABOVE THE FINISH FLOOR OR GROUND SURFACE MEASURED TO THE BOTTOM OF THE SIGN.

502.7 RELATIONSHIP TO ACCESSIBLE ROUTES. PARKING SPACES AND ACCESS AISLES SHALL BE DESIGNED SO THAT CARS AND VANS, WHEN PARKED, CANNOT OBSTRUCT THE REQUIRED CLEAR WIDTH OF ADJACENT ACCESSIBLE ROUTES.

503 PASSENGER LOADING ZONES

503.2 VEHICLE PULL-UP SPACE. PASSENGER LOADING ZONES SHALL PROVIDE A VEHICULAR PULL-UP SPACE 96 INCHES WIDE MINIMUM AND 20 FEET LONG MINIMUM.

503.3 ACCESS AISLE. PASSENGER LOADING ZONES SHALL PROVIDE ACCESS AISLES COMPLYING WITH 503 ADJACENT TO THE VEHICLE PULL-UP SPACE. ACCESS AISLES SHALL ADJOIN AN ACCESSIBLE ROUTE AND SHALL NOT OVERLAP THE VEHICULAR WAY.

503.3.1 WIDTH. ACCESS AISLES SERVING VEHICLE PULL-UP SPACES SHALL BE 60 INCHES WIDE MINIMUM

503.3.2 LENGTH. ACCESS AISLES SHALL EXTEND THE FULL LENGTH OF THE VEHICLE PULL-UP SPACES THEY SERVE.

503.3.3 MARKING. ACCESS AISLES SHALL BE MARKED SO AS TO DISCOURAGE PARKING IN THEM.

503.4 FLOOR AND GROUND SURFACES. VEHICLE PULL-UP SPACES AND ACCESS AISLES SERVING THEM SHALL COMPLY WITH 302. ACCESS AISLES SHALL BE AT THE SAME LEVEL AS THE VEHICLE PULL-UP SPACE THEY SERVE. CHANGES IN LEVEL ARE NOT PERMITTED. EXCEPTION: SLOPES NOT STEEPER THAN 1:48 SHALL BE PERMITTED.

503.5 VERTICAL CLEARANCE. VEHICLE PULL-UP SPACES, ACCESS AISLES SERVING THEM, AND A VEHICULAR ROUTE FROM AN ENTRANCE TO THE PASSENGER LOADING ZONE, AND FROM THE PASSENGER LOADING ZONE TO A VEHICULAR EXIT SHALL PROVIDE A VERTICAL CLEARANCE OF 114 INCHES MINIMUM.

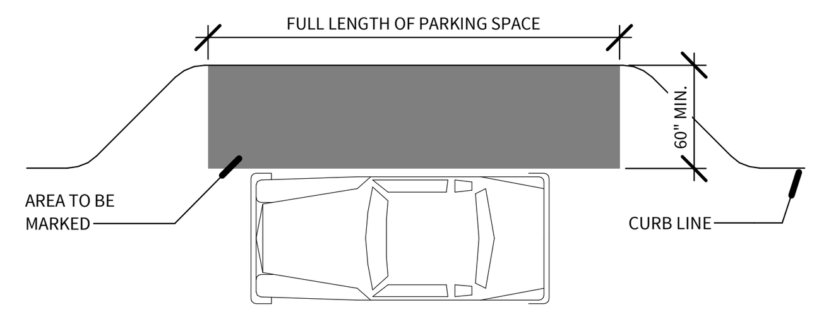

FIGURE 503.3 PASSENGER LOADING ZONE ACCESS AISLE

504 STAIRWAYS

504.1 GENERAL. STAIRS THAT ARE PART OF THE MEANS OF EGRESS IS REQUIRED TO COMPLY WITH 504

504.2 TREADS AND RISERS. ALL STEPS ON A FLIGHT OF STAIRS SHALL HAVE UNIFORM RISER HEIGHTS AND UNIFORM TREAD DEPTHS. RISERS SHALL BE 4 INCHES HIGH MINIMUM AND 7 INCHES HIGH MAXIMUM. TREADS SHALL BE 11 INCHES DEEP MINIMUM.

504.3 OPEN RISERS. OPEN RISERS ARE NOT PERMITTED.

504.4 TREAD SURFACE. STAIR TREADS SHALL COMPLY WITH 302. CHANGES IN LEVEL ARE NOT PERMITTED.

504.5 NOSINGS. THE RADIUS OF CURVATURE AT THE LEADING EDGE OF THE TREAD SHALL BE 1/2 IN. MAX. NOSINGS THAT PROJECT BEYOND RISERS SHALL HAVE THE UNDERSIDE OF THE LEADING EDGE CURVED OR BEVELED. RISERS SHALL BE PERMITTED TO SLOPE UNDER THE TREAD AT AN ANGLE OF 30 DEGREES MAX. FROM VERTICAL. THE PERMITTED PROJECTION OF THE NOSING SHALL EXTEND 1 1/2 IN. MAX. OVER THE TREAD BELOW.

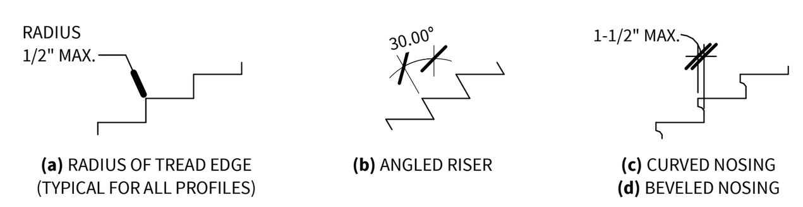

FIGURE 504.5 STAIR NOSINGS

504.6 HANDRAILS. STAIRS SHALL HAVE HANDRAILS COMPLYING WITH 505.

504.7 WET CONDITIONS. STAIR TREADS AND LANDINGS SUBJECT TO WET CONDITIONS SHALL BE DESIGNED TO PREVENT THE ACCUMULATION OF WATER.

505 HANDRAILS

505.1 GENERAL. HANDRAILS PROVIDED ALONG WALKING SURFACES COMPLYING WITH 403, REQUIRED AT RAMPS COMPLYING WITH 405, & REQUIRED AT STAIRS COMPLYING WITH 504 SHALL COMPLY WITH 505

ADVISORY: 505.1 GENERAL. HANDRAILS ARE REQUIRED ON RAMP RUNS WITH A RISE GREATER THAN 6 INCHES (SEE 405.8) AND ON CERTAIN STAIRWAYS (SEE 504) HANDRAILS ARE NOT REQUIRED ON WALKING SURFACES WITH RUNNING SLOPES LESS THAN 1:20 HOWEVER, HANDRAILS ARE REQUIRED TO COMPLY WITH 505 WHEN THEY ARE PROVIDED ON WALKING SURFACES WITH RUNNING SLOPES LESS THAN 1:20 (SEE 403.6) SECTION 505.2, 505.3, AND 505.10 DO NOT APPLY TO HANDRAILS PROVIDED ON WALKING SURFACES WITH RUNNING SLOPES LESS THAN 1:20 AS THESE SECTIONS ONLY REFERENCE REQUIREMENTS FOR RAMPS AND STAIRS

505.2 WHERE REQUIRED. HANDRAILS SHALL BE PROVIDED ON BOTH SIDES OF STAIRS AND RAMPS.

505.3 CONTINUITY. HANDRAILS SHALL BE CONTINUOUS WITHIN THE FULL LENGTH OF EACH STAIR FLIGHT OR RAMP 38 INCHES MAXIMUM VERTICALLY ABOVE WALKING SURFACES, STAIR NOSINGS, AND RAMP SURFACES. HANDRAILS SHALL BE AT A CONSISTENT HEIGHT ABOVE WALKING SURFACES, STAIR NOSINGS, AND RAMP SURFACES.

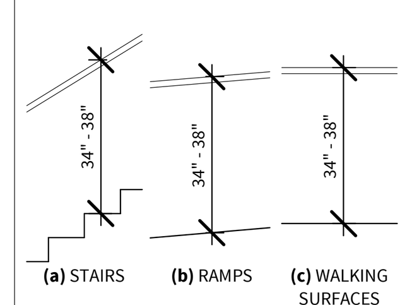

FIGURE 505.4 HANDRAIL HEIGHT

505.4 HEIGHT. TOP OF GRIPPING SURFACES OF HANDRAILS SHALL BE 34 IN. MIN. AND 38 IN. MAX. VERTICALLY ABOVE WALKING SURFACES, STAIR NOSINGS, & RAMP SURFACES. HANDRAILS SHALL BE AT A CONSISTENT HEIGHT ABOVE WALKING SURFACES, STAIR NOSINGS, AND RAMP SURFACES.

505.5 CLEARANCE. CLEARANCE BETWEEN HANDRAIL GRIPPING SURFACES AND ADJACENT SURFACES SHALL BE 1 1/2" MINIMUM

505.6 GRIPPING SURFACE. HANDRAIL GRIPPING SURFACES SHALL BE CONTINUOUS ALONG THEIR LENGTH AND SHALL NOT BE OBSTRUCTED ALONG THEIR TOPS OR SIDES. THE BOTTOMS OF HANDRAIL GRIPPING SURFACES SHALL NOT BE OBSTRUCTED FOR MORE THAN 20 PERCENT OF THEIR LENGTH. WHERE PROVIDED, HORIZONTAL PROJECTIONS SHALL OCCUR 1 1/2 INCHES MINIMUM BELOW THE BOTTOM OF THE HANDRAIL GRIPPING SURFACE.

505.7.1 CIRCULAR CROSS SECTION. HANDRAIL GRIPPING SURFACES WITH A CIRCULAR CROSS SECTION SHALL HAVE AN OUTSIDE DIAMETER OF 1 1/4 IN. MIN. AND 2 IN. MAX.

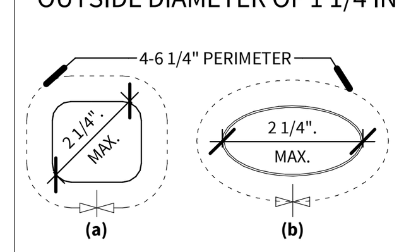

FIGURE 505.7.2 HANDRAIL NON-CIRCULAR CROSS SECTION

505.7.2 NON-CIRCULAR CROSS SECTIONS. HANDRAIL GRIPPING SURFACES WITH A NON-CIRCULAR CROSS SECTION SHALL HAVE A PERIMETER DIMENSION OF 4" MIN. AND 6 1/4" MAX., AND A CROSS-SECTION DIMENSION OF 2 1/4" MAX.

505.8 SURFACES. HANDRAIL GRIPPING SURFACES AND ANY SURFACES ADJACENT TO THEM SHALL BE FREE OF SHARP OR ABRASIVE ELEMENTS AND SHALL HAVE ROUNDED EDGES.

505.9 FITTINGS. HANDRAILS SHALL NOT ROTATE WITHIN FITTINGS.

505.10 HANDRAIL EXTENSIONS. HANDRAIL GRIPPING SURFACES SHALL EXTEND BEYOND AND IN THE SAME DIRECTION OF STAIR FLIGHTS AND RAMP RUNS IN ACCORDANCE WITH 505.10.

505.10.1 TOP AND BOTTOM EXTENSION AT RAMPS. RAMP HANDRAILS SHALL EXTEND HORIZ. ABOVE THE LANDING FOR 12" MIN. BEYOND THE TOP & BOTTOM OF RAMP RUNS. EXTENSIONS SHALL RETURN TO A WALL, GUARD, OR THE LANDING SURFACE, OR SHALL BE CONTINUOUS TO THE HANDRAIL OF AN ADJACENT RAMP RUN.

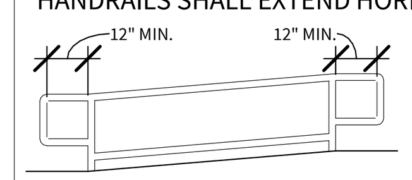

FIGURE 505.10.1 TOP AND BOTTOM HANDRAIL EXTENSION AT RAMPS

505.10.2 TOP EXTENSION AT STAIRS. AT THE TOP OF A STAIR FLIGHT, HANDRAILS SHALL EXTEND HORIZONTALLY ABOVE THE LANDING FOR 12 INCHES MINIMUM BEGINNING DIRECTLY ABOVE THE FIRST RISER NOSING. EXTENSIONS SHALL RETURN TO A WALL, GUARD, OR THE LANDING SURFACE, OR SHALL BE CONTINUOUS TO THE HANDRAIL OF AN ADJACENT STAIR FLIGHT.

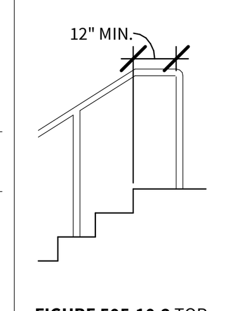

FIGURE 505.10.2 TOP HANDRAIL EXTENSION AT STAIRS

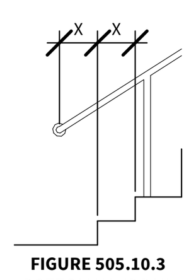

FIGURE 505.10.3 BOTTOM HANDRAIL EXTENSION AT STAIRS
NOTE: X = TREAD DEPTH

505.10.3 BOTTOM EXTENSION AT STAIRS. AT THE BOTTOM OF A STAIR FLIGHT, HANDRAILS SHALL EXTEND AT THE SLOPE OF THE STAIR FLIGHT FOR A HORIZONTAL DISTANCE AT LEAST EQUAL TO ONE TREAD DEPTH BEYOND THE LAST RISER NOSING. EXTENSION SHALL RETURN TO A WALL, GUARD, OR THE LANDING SURFACE, OR SHALL BE CONTINUOUS TO THE HANDRAIL OF AN ADJACENT STAIR FLIGHT.

CHAPTER 6: PLUMBING ELEMENTS AND FACILITIES

602 DRINKING FOUNTAINS

602.2 CLEAR FLOOR SPACE. UNITS SHALL HAVE A CLEAR FLOOR OR GROUND SPACE COMPLYING WITH 305 POSITIONED FOR A FORWARD APPROACH AND CENTERED ON THE UNIT. KNEE AND TOE CLEARANCE COMPLYING WITH 306 SHALL BE PROVIDED

EXCEPTION: A PARALLEL APPROACH COMPLYING WITH 305 SHALL BE PERMITTED AT UNITS FOR CHILDREN'S USE WHERE THE SPOUT IS 30 INCHES MAXIMUM ABOVE THE FINISH FLOOR OR GROUND AND IS 3 1/2 INCHES MAXIMUM FROM THE FRONT EDGE OF THE UNIT, INCLUDING BUMPERS

602.3 OPERABLE PARTS. OPERABLE PARTS SHALL COMPLY W/ 309.

602.4 SPOUT HEIGHT. SPOUT OUTLETS SHALL BE 36 INCHES MAXIMUM ABOVE THE FINISH FLOOR OR GROUND

602.5 SPOUT LOCATION. THE SPOUT SHALL BE LOCATED 15 INCHES MINIMUM FROM THE VERTICAL SUPPORT (WALL OR STAND) AND 5 INCHES MAXIMUM FROM THE FRONT EDGE OF THE UNIT, INCLUDING BUMPERS

602.6 WATER FLOW. THE SPOUT SHALL PROVIDE A FLOW OF WATER 4 INCHES HIGH MINIMUM AND SHALL BE LOCATED 5 INCHES MAXIMUM FROM THE FRONT OF THE UNIT. THE ANGLE OF THE WATER STREAM SHALL BE MEASURED HORIZONTALLY RELATIVE TO THE FRONT FACE OF THE UNIT. WHERE SPOUTS ARE LOCATED LESS THAN 3 INCHES OF THE FRONT OF THE UNIT, THE ANGLE OF THE WATER STREAM SHALL BE 30 DEGREES MAXIMUM. WHERE SPOUTS ARE LOCATED BETWEEN 3 INCHES AND 5 INCHES MAXIMUM FROM THE FRONT OF THE UNIT, THE ANGLE OF THE WATER STREAM SHALL BE 15 DEGREES MAXIMUM.

602.7 DRINKING FOUNTAINS FOR STANDING PERSONS. SPOUT OUTLETS OF DRINKING FOUNTAINS FOR STANDING PERSONS SHALL BE 38 INCHES MINIMUM AND 43 INCHES MAXIMUM ABOVE THE FINISH FLOOR OR GROUND.

603 TOILET AND BATHING ROOMS

603.2 CLEARANCES. CLEARANCES SHALL COMPLY WITH 603.2.

603.2.1 TURNING SPACE. TURNING SPACE COMPLYING WITH 304 SHALL BE PROVIDED WITHIN THE ROOM.

603.2.2 OVERLAP. REQUIRED CLEAR FLOOR SPACES, CLEARANCE AT FIXTURES, AND TURNING SPACE SHALL BE PERMITTED TO OVERLAP

603.2.3 DOOR SWING. DOORS SHALL NOT SWING INTO THE CLEAR FLOOR SPACE OR CLEARANCE REQUIRED FOR ANY FIXTURE. DOORS SHALL BE PERMITTED TO SWING INTO THE REQUIRED TURNING SPACE.

603.3 MIRRORS. MIRRORS LOCATED ABOVE LAVATORIES OR COUNTERTOPS SHALL BE INSTALLED WITH THE BOTTOM EDGE OF THE REFLECTING SURFACE 40 INCHES MAXIMUM ABOVE THE FINISH FLOOR OR GROUND. MIRRORS NOT LOCATED ABOVE LAVATORIES OR COUNTERTOPS SHALL BE INSTALLED WITH THE BOTTOM EDGE OF THE REFLECTING SURFACE 35 INCHES MAXIMUM ABOVE THE FINISH FLOOR OR GROUND.

603.4 COAT HOOKS AND SHELVES. COAT HOOKS SHALL BE LOCATED WITHIN ONE OF THE REACH RANGES SPECIFIED IN 308. SHELVES SHALL BE LOCATED 40 INCHES MINIMUM AND 48 INCHES MAXIMUM ABOVE THE FINISH FLOOR.

604 WATER CLOSETS AND TOILET COMPARTMENTS

604.2 LOCATION. THE WATER CLOSET SHALL BE POSITIONED WITH A WALL OR PARTITION TO THE REAR AND TO ONE SIDE. THE CENTERLINE OF THE WATER CLOSET SHALL BE 16 INCHES MINIMUM TO 18 INCHES MAXIMUM FROM THE SIDE WALL OR PARTITION, EXCEPT THAT THE WATER CLOSET SHALL BE 17 INCHES MINIMUM AND 19 INCHES MAXIMUM FROM THE SIDE WALL OR PARTITION IN THE AMBULATORY ACCESSIBLE TOILET COMPARTMENT SPECIFIED IN 604.8.2. WATER CLOSETS SHALL BE ARRANGED FOR A LEFT-HAND OR RIGHT-HAND APPROACH.

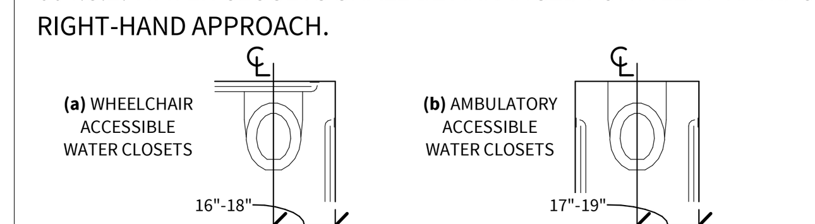

FIGURE 604.2 WATER CLOSET LOCATION

604.3.1 SIZE. CLEARANCE AROUND A WATER CLOSET SHALL BE 60 IN. MIN. MEASURED PERPENDICULAR FROM THE SIDE WALL AND 56 IN. MIN. MEASURED PERPENDICULAR FROM THE REAR WALL.

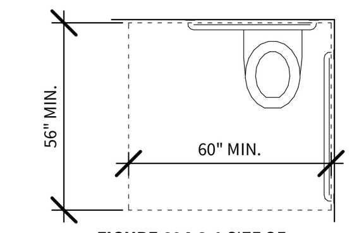

FIGURE 604.3.1 SIZE OF CLEARANCE AT WATER CLOSETS

604.3.2 OVERLAP. THE REQUIRED CLEARANCE AROUND THE WATER CLOSET SHALL BE PERMITTED TO OVERLAP THE WATER CLOSET, ASSOCIATED GRAB BARS, DISPENSERS, SANITARY NAPKIN DISPOSAL UNITS, COAT HOOKS, SHELVES, ACCESSIBLE ROUTES, CLEAR FLOOR SPACE AND CLEARANCES REQUIRED AT OTHER FIXTURES, AND THE TURNING SPACE. NO OTHER FIXTURES OR OBSTRUCTIONS SHALL BE LOCATED WITHIN THE REQUIRED WATER CLOSET CLEARANCE.

604.4 SEATS. THE SEAT HEIGHT OF A WATER CLOSET ABOVE THE FINISH FLOOR SHALL BE 17 INCHES MINIMUM AND 19 INCHES MAXIMUM MEASURED TO THE TOP OF THE SEAT. SEATS SHALL NOT BE SPRUNG TO RETURN TO A LIFTED POSITION.

604.5 GRAB BARS. GRAB BARS FOR WATER CLOSETS SHALL COMPLY WITH 609. GRAB BARS SHALL BE PROVIDED ON THE SIDE WALL CLOSEST TO THE WATER CLOSET AND ON THE REAR WALL.

604.5.1 SIDE WALL. THE SIDE WALL GRAB BAR SHALL BE 42 INCHES LONG MINIMUM, LOCATED 12 INCHES MAXIMUM FROM THE REAR WALL AND EXTENDING 54 INCHES MINIMUM FROM THE REAR WALL.

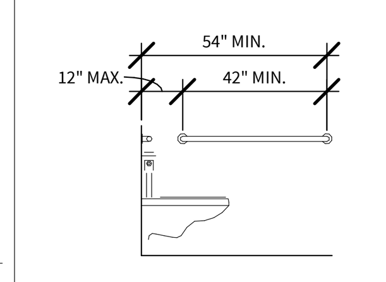

FIGURE 604.5.1 SIDE WALL GRAB BAR AT WATER CLOSETS

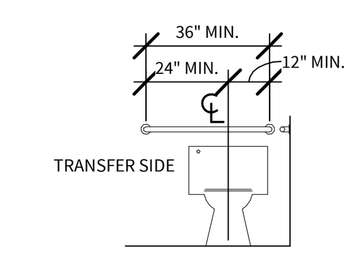

FIGURE 604.5.2 REAR WALL GRAB BAR AT WATER CLOSETS

604.5.2 REAR WALL. THE REAR WALL GRAB BAR SHALL BE 36 INCHES LONG MINIMUM AND EXTEND FROM THE CENTERLINE OF THE WATER CLOSET 12 INCHES MINIMUM ON ONE SIDE AND 24 INCHES MINIMUM ON THE OTHER SIDE.

604.6 FLUSH CONTROLS. FLUSH CONTROLS SHALL BE HAND OPERATED OR AUTOMATIC. HAND OPERATED FLUSH CONTROLS SHALL COMPLY WITH 309. FLUSH CONTROLS SHALL BE LOCATED ON THE OPEN SIDE OF THE WATER CLOSET EXCEPT IN AMBULATORY ACCESSIBLE COMPARTMENTS COMPLYING WITH 604.8.2.

604.7 DISPENSERS. TOILET PAPER DISPENSERS SHALL COMPLY WITH 309.4 AND SHALL BE 7 INCHES MINIMUM AND 9 INCHES MAXIMUM IN FRONT OF THE WATER CLOSET MEASURED TO THE CENTERLINE OF THE DISPENSER. THE OUTLET OF THE DISPENSER SHALL BE 15 INCHES MINIMUM AND 48 INCHES MAXIMUM ABOVE THE FINISH FLOOR AND SHALL NOT BE LOCATED BEHIND GRAB BARS. DISPENSERS SHALL NOT BE OF A TYPE THAT CONTROLS DELIVERY OR THAT DOES NOT ALLOW CONTINUOUS PAPER FLOW.

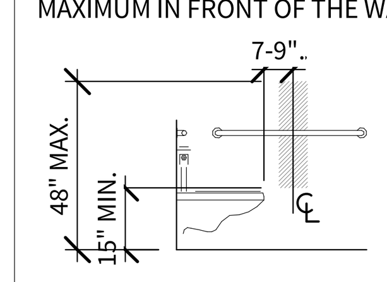

FIGURE 604.7 DISPENSER OUTLET LOCATION

604.8 TOILET COMPARTMENTS. WHEELCHAIR ACCESSIBLE TOILET COMPARTMENTS SHALL MEET THE REQUIREMENTS OF 604.8.1 AND 604.8.3. COMPARTMENTS CONTAINING MORE THAN ONE PLUMBING FIXTURE SHALL COMPLY WITH 603. AMBULATORY ACCESSIBLE COMPARTMENTS SHALL COMPLY WITH 604.8.2 AND 604.8.3

604.8.1 WHEELCHAIR ACCESSIBLE COMPARTMENTS. WHEELCHAIR ACCESSIBLE COMPARTMENTS SHALL COMPLY WITH 604.8.1

604.8.1.1 SIZE. WHEELCHAIR ACCESSIBLE COMPARTMENTS SHALL BE 60 INCHES WIDE MINIMUM MEASURED PERPENDICULAR TO THE SIDE WALL, AND 56 INCHES DEEP MINIMUM FOR WALL HUNG WATER CLOSETS AND 59 INCHES DEEP MINIMUM FOR FLOOR MOUNTED WATER CLOSETS MEASURED PERPENDICULAR TO THE REAR WALL. WHEELCHAIR ACCESSIBLE COMPARTMENTS FOR CHILDREN'S USE SHALL BE 60 INCHES WIDE MINIMUM MEASURED PERPENDICULAR TO THE SIDE WALL, AND 59 INCHES DEEP MINIMUM FOR WALL HUNG AND FLOOR MOUNTED WATER CLOSETS MEASURED PERPENDICULAR TO THE REAR WALL.

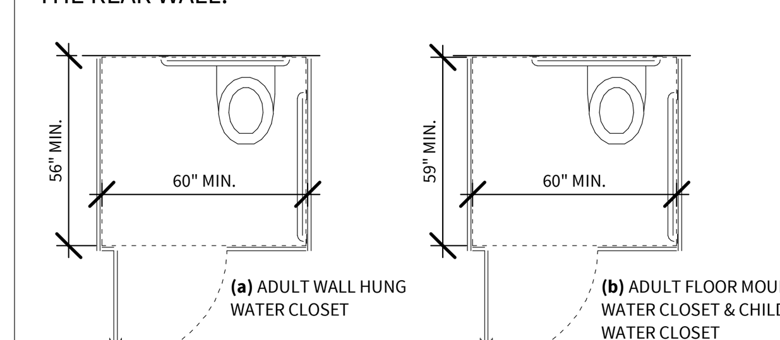

FIGURE 604.8.1.1 SIZE OF WHEELCHAIR ACCESSIBLE TOILET COMPARTMENT

604.8.1.2 DOORS. TOILET COMPARTMENT DOORS, INCLUDING DOOR HARDWARE, SHALL COMPLY WITH 404 EXCEPT THAT IF THE APPROACH IS TO THE LATCH SIDE OF THE COMPARTMENT DOOR, CLEARANCE BETWEEN THE DOOR SIDE OF THE COMPARTMENT AND ANY OBSTRUCTION SHALL BE 42 INCHES MINIMUM. DOORS SHALL BE LOCATED IN THE FRONT PARTITION OR IN THE SIDE WALL OR PARTITION FARTHEST FROM THE WATER CLOSET. WHERE LOCATED IN THE FRONT PARTITION, THE DOOR OPENING SHALL BE 4 INCHES MAXIMUM FROM THE SIDE WALL OR PARTITION FARTHEST FROM THE WATER CLOSET. WHERE LOCATED IN THE SIDE WALL OR PARTITION, THE DOOR OPENING SHALL BE 4 INCHES MAXIMUM FROM THE FRONT PARTITION. THE DOOR SHALL BE SELF-CLOSING. A DOOR PULL COMPLYING WITH 404.2.7 SHALL BE PLACED ON BOTH SIDES OF THE DOOR NEAR THE LATCH. TOILET COMPARTMENT DOORS SHALL NOT SWING INTO THE MINIMUM REQUIRED COMPARTMENT AREA.

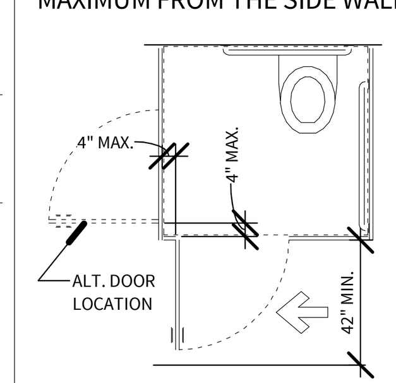

FIGURE 604.8.1.2 WHEELCHAIR ACCESSIBLE TOILET COMPARTMENT DOORS

604.8.1.3 APPROACH. COMPARTMENTS SHALL BE ARRANGED FOR LEFT-HAND OR RIGHT-HAND APPROACH TO THE WATER CLOSET

604.8.1.4 TOE CLEARANCE. THE FRONT PARTITION AND AT LEAST ONE SIDE PARTITION SHALL PROVIDE A TOE CLEARANCE OF 9 INCHES MINIMUM ABOVE THE FINISH FLOOR AND 6 INCHES DEEP MINIMUM BEYOND THE COMPARTMENT-SIDE FACE OF THE PARTITION, EXCLUSIVE OF PARTITION SUPPORT MEMBERS. COMPARTMENTS FOR CHILDREN'S USE SHALL PROVIDE A TOE CLEARANCE OF 12 INCHES MINIMUM ABOVE THE FINISH FLOOR. EXCEPTION: TOE CLEARANCE AT THE FRONT PARTITION IS NOT REQUIRED IN A COMPARTMENT GREATER THAN 62 INCHES DEEP WITH A WALL-HUNG WATER CLOSET OR 65 INCHES DEEP WITH A FLOOR-MOUNTED WATER CLOSET. TOE CLEARANCE AT THE SIDE PARTITION IS NOT REQUIRED IN A COMPARTMENT GREATER THAN 66 INCHES WIDE. TOE CLEARANCE AT THE FRONT PARTITION IS NOT REQUIRED IN A COMPARTMENT FOR CHILDREN'S USE THAT IS GREATER THAN 65 INCHES DEEP.

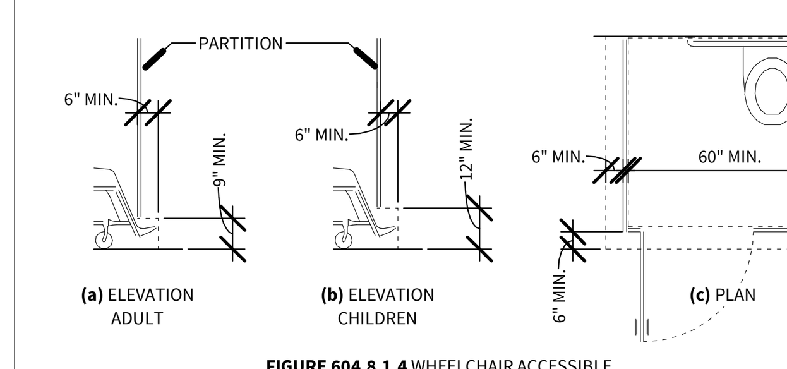

FIGURE 604.8.1.4 WHEELCHAIR ACCESSIBLE TOILET COMPARTMENT TOE CLEARANCE

604.8.1.5 GRAB BARS. GRAB BARS SHALL COMPLY WITH 609. A SIDE-WALL GRAB BAR COMPLYING WITH 604.5.1 SHALL BE PROVIDED AND SHALL BE LOCATED ON THE WALL CLOSEST TO THE WATER CLOSET. IN ADDITION, A REAR-WALL GRAB BAR COMPLYING WITH 604.5.2 SHALL BE PROVIDED.

604.8.2 AMBULATORY ACCESSIBLE COMPARTMENTS. AMBULATORY ACCESSIBLE COMPARTMENTS SHALL COMPLY WITH 604.8.2

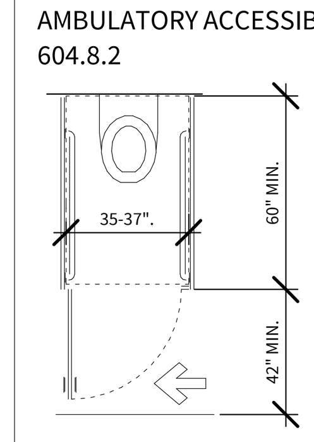

FIGURE 604.8.2 AMBULATORY ACCESSIBLE TOILET COMPARTMENT

604.8.2.1 SIZE. AMBULATORY ACCESSIBLE COMPARTMENTS SHALL HAVE A DEPTH OF 60 INCHES MINIMUM AND A WIDTH OF 35 INCHES MINIMUM AND 37 INCHES MAXIMUM

604.8.2.2 DOORS. TOILET COMPARTMENT DOORS, INCLUDING DOOR HARDWARE, SHALL COMPLY WITH 404 EXCEPT THAT IF THE APPROACH IS TO THE LATCH SIDE OF THE COMPARTMENT DOOR, CLEARANCE BETWEEN THE DOOR SIDE OF THE COMPARTMENT AND ANY OBSTRUCTION SHALL BE 42 INCHES MINIMUM. THE DOOR SHALL BE SELF-CLOSING. A DOOR PULL COMPLYING WITH 404.2.7 SHALL BE PLACED ON BOTH SIDES OF THE DOOR NEAR THE LATCH. TOILET COMPARTMENT DOORS SHALL NOT SWING INTO THE MINIMUM REQUIRED COMPARTMENT AREA.

604.8.2.3 GRAB BARS. GRAB BARS SHALL COMPLY WITH 609. A SIDE-WALL GRAB BAR COMPLYING WITH 604.5.1 SHALL BE PROVIDED ON BOTH SIDES OF THE COMPARTMENT.

604.8.3 COAT HOOKS AND SHELVES. COAT HOOKS SHALL BE LOCATED WITHIN ONE OF THE REACH RANGES SPECIFIED IN 308. SHELVES SHALL BE LOCATED 40 INCHES MINIMUM AND 48 INCHES MAXIMUM ABOVE THE FINISH FLOOR.

604.9 WATER CLOSETS AND TOILET COMPARTMENTS FOR CHILDREN'S USE. WATER CLOSETS & TOILET COMPARTMENTS FOR CHILDREN'S USE SHALL COMPLY WITH 604.9

604.9.1 LOCATION. THE WATER CLOSET SHALL BE LOCATED WITH A WALL OR PARTITION TO THE REAR AND TO ONE SIDE. THE CENTERLINE OF THE WATER CLOSET SHALL BE 12 INCHES MINIMUM AND 18 INCHES MAXIMUM FROM THE SIDE WALL OR PARTITION, EXCEPT THAT THE WATER CLOSET SHALL BE 17 INCHES MINIMUM AND 19 INCHES MAXIMUM FROM THE SIDE WALL OR PARTITION IN THE AMBULATORY ACCESSIBLE TOILET COMPARTMENT SPECIFIED IN 604.8.2. COMPARTMENTS SHALL BE ARRANGED FOR LEFT-HAND OR RIGHT-HAND APPROACH TO THE WATER CLOSET.

604.9.2 CLEARANCE. CLEARANCE AROUND A WATER CLOSET SHALL COMPLY WITH 604.3.

604.9.3 HEIGHT. THE HEIGHT OF WATER CLOSETS SHALL BE 11 IN. MIN. AND 17 IN. MAX. MEASURED TO THE TOP OF THE SEAT. SEATS SHALL NOT BE SPRUNG TO RETURN TO A LIFTED POSITION.

604.9.4 GRAB BARS. GRAB BARS FOR WATER CLOSETS SHALL COMPLY WITH 604.5.

604.9.5 FLUSH CONTROLS. FLUSH CONTROLS SHALL BE HAND OPERATED OR AUTOMATIC. HAND OPERATED FLUSH CONTROLS SHALL COMPLY WITH 309.2 AND 309.4 AND SHALL BE INSTALLED 36 INCHES MAXIMUM ABOVE THE FINISH FLOOR. FLUSH CONTROLS SHALL BE LOCATED ON THE OPEN SIDE OF THE WATER CLOSET EXCEPT IN AMBULATORY ACCESSIBLE COMPARTMENTS COMPLYING WITH 604.8.2.

604.9.6 DISPENSERS. TOILET PAPER DISPENSERS SHALL COMPLY WITH 309.4 AND SHALL BE 7 INCHES MM) MINIMUM AND 9 INCHES MAXIMUM IN FRONT OF THE WATER CLOSET MEASURED TO THE CENTERLINE OF THE DISPENSER. THE OUTLET OF THE DISPENSER SHALL BE 14 INCHES MINIMUM AND 19 INCHES MAXIMUM ABOVE THE FINISH FLOOR. THERE SHALL BE A CLEARANCE OF 1 1/2 INCHES MINIMUM BELOW THE GRAB BAR. DISPENSERS SHALL NOT BE OF A TYPE THAT CONTROLS DELIVERY OR THAT DOES NOT ALLOW CONTINUOUS PAPER FLOW.

604.9.7 TOILET COMPARTMENTS. TOILET COMPARTMENTS SHALL COMPLY WITH 604.8.

605 URINALS

605.2 HEIGHT AND DEPTH. URINALS SHALL BE THE STALL-TYPE OR THE WALL-HUNG TYPE WITH THE RIM 17 INCHES MAXIMUM ABOVE THE FINISH FLOOR OR GROUND. URINALS SHALL BE 13 1/2 INCHES DEEP MINIMUM MEASURED FROM THE OUTER FACE OF THE URINAL RIM TO THE BACK OF THE FIXTURE

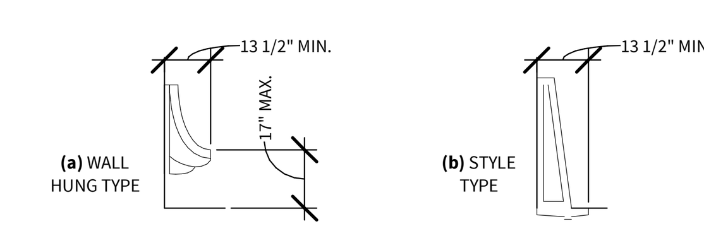

FIGURE 605.2 HEIGHT AND DEPTH OF URINALS

605.3 CLEAR FLOOR SPACE. A CLEAR FLOOR OR GROUND SPACE COMPLYING WITH 305 POSITIONED FOR FORWARD APPROACH SHALL BE PROVIDED

605.4 FLUSH CONTROLS. FLUSH CONTROLS SHALL BE HAND OPERATED OR AUTOMATIC. HAND OPERATED FLUSH CONTROLS SHALL COMPLY WITH

606 LAVATORIES AND SINKS

606.2 CLEAR FLOOR SPACE. A CLEAR FLOOR SPACE COMPLYING WITH 305, POSITIONED FOR A FORWARD APPROACH, AND KNEE AND TOE CLEARANCE COMPLYING WITH 306 SHALL BE PROVIDED.

606.3 HEIGHT. LAVATORIES AND SINKS SHALL BE INSTALLED WITH THE FRONT OF THE HIGHER OF THE RIM OR COUNTER SURFACE 34 INCHES MAXIMUM ABOVE THE FINISH FLOOR OR GROUND.

606.4 FAUCETS. CONTROLS FOR FAUCETS SHALL COMPLY WITH 309. HAND-OPERATED METERING FAUCETS SHALL REMAIN OPEN FOR 10 SECONDS MINIMUM.

606.5 EXPOSED PIPES AND SURFACES. WATER SUPPLY AND DRAIN PIPES UNDER LAVATORIES AND SINKS SHALL BE INSULATED OR OTHERWISE CONFIGURED TO PROTECT AGAINST CONTACT. THERE SHALL BE NO SHARP OR ABRASIVE SURFACES UNDER LAVATORIES AND SINKS.

607 BATHTUBS

607.2 CLEARANCE. CLEARANCE IN FRONT OF BATHTUBS SHALL EXTEND THE LENGTH OF THE BATHTUB AND SHALL BE 30 INCHES WIDE MINIMUM. A LAVATORY COMPLYING WITH 606 SHALL BE PERMITTED AT THE CONTROL END OF THE CLEARANCE. WHERE A PERMANENT SEAT IS PROVIDED AT THE HEAD END OF THE BATHTUB, THE CLEARANCE SHALL EXTEND 12 INCHES (305 MM) MINIMUM BEYOND THE WALL AT THE HEAD END OF THE BATHTUB.

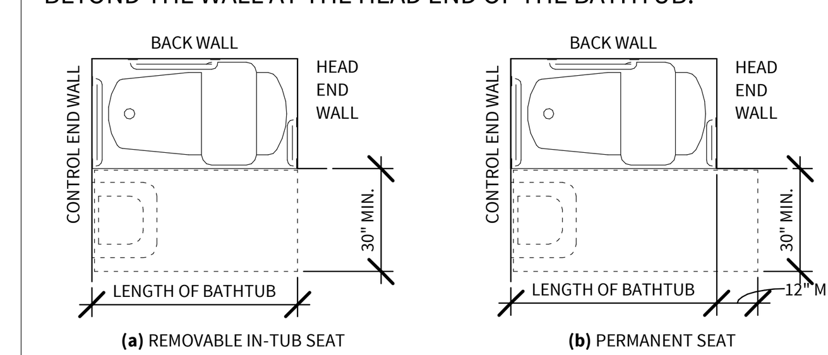

FIGURE 607.2 CLEARANCE FOR BATHTUBS

607.3 SEAT. A PERMANENT SEAT AT THE HEAD END OF THE BATHTUB OR A REMOVABLE IN-TUB SEAT SHALL BE PROVIDED. SEATS SHALL COMPLY WITH 610.

607.4 GRAB BARS. GRAB BARS FOR BATHTUBS SHALL COMPLY WITH 609 AND SHALL BE PROVIDED IN ACCORDANCE WITH 607.4.1 OR 607.4.2

607.4.1 BATHTUBS WITH PERMANENT SEATS. FOR BATHTUBS WITH PERMANENT SEATS, GRAB BARS SHALL BE PROVIDED IN ACCORDANCE WITH 607.4.1

607.4.1.1 BACK WALL. TWO GRAB BARS SHALL BE INSTALLED ON THE BACK WALL, ONE LOCATED IN ACCORDANCE WITH 609.4 AND THE OTHER LOCATED 8 INCHES MINIMUM AND 10 INCHES MAXIMUM ABOVE THE RIM OF THE BATHTUB. EACH GRAB BAR SHALL BE INSTALLED 15 INCHES MAXIMUM FROM THE HEAD END WALL AND 12 INCHES MAXIMUM FROM THE CONTROL END WALL

607.4.1.2 CONTROL END WALL. A GRAB BAR 24 INCHES (610 MM) LONG MINIMUM SHALL BE INSTALLED ON THE CONTROL END AT THE FRONT EDGE OF THE BATHTUB.

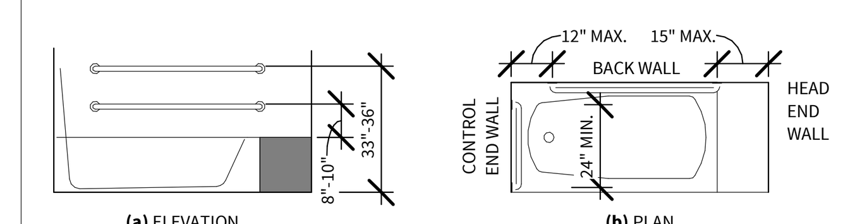

FIGURE 607.4.1 GRAB BARS FOR BATHTUBS WITH PERMANENT SEATS

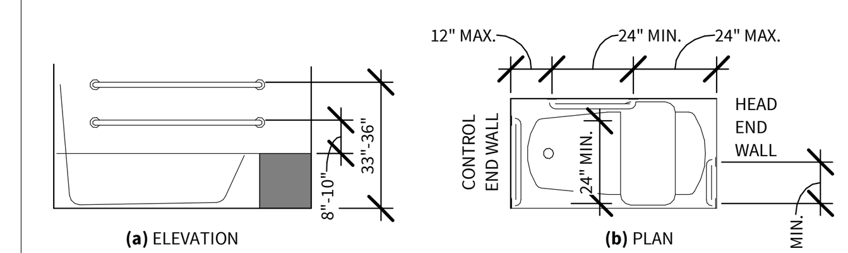

FIGURE 607.4.2 GRAB BARS FOR BATHTUBS WITH REMOVABLE IN-TUB SEATS

607.4.2 BATHTUBS WITHOUT PERMANENT SEATS. FOR BATHTUBS WITHOUT PERMANENT SEATS, GRAB BARS SHALL COMPLY WITH 607.4.2

607.4.2.1 BACK WALL. TWO GRAB BARS SHALL BE INSTALLED ON THE BACK WALL, ONE LOCATED IN ACCORDANCE WITH 609.4 AND OTHER LOCATED 8 INCHES MINIMUM AND 10 INCHES MAXIMUM ABOVE THE RIM OF THE BATHTUB. EACH GRAB BAR SHALL BE 24 INCHES LONG MINIMUM AND SHALL BE INSTALLED 24 INCHES MAXIMUM FROM THE HEAD END WALL AND 12 INCHES MAXIMUM FROM THE CONTROL END WALL.

607.4.2.2 CONTROL END WALL. A GRAB BAR 24 INCHES LONG MINIMUM SHALL BE INSTALLED ON THE CONTROL END WALL AT THE FRONT EDGE OF THE BATHTUB.

607.4.2.3 HEAD END WALL. A GRAB BAR 12 INCHES (305 MM) LONG MINIMUM SHALL BE INSTALLED ON THE HEAD END WALL AT THE FRONT EDGE OF THE BATHTUB.

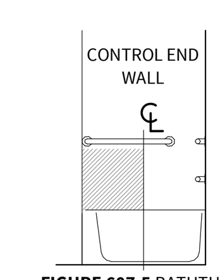

FIGURE 607.5 BATHTUB CONTROL LOCATION

607.5 CONTROLS. CONTROLS, OTHER THAN DRAIN STOPPERS, SHALL BE LOCATED ON AN END WALL. CONTROLS SHALL BE BETWEEN THE BATHTUB RIM AND GRAB BAR, AND BETWEEN THE OPEN SIDE OF THE BATHTUB AND THE CENTERLINE OF THE WIDTH OF THE BATHTUB. CONTROLS SHALL COMPLY WITH 309.4.

607.6 SHOWER SPRAY UNIT AND WATER. A SHOWER SPRAY UNIT WITH A HOSE 59 INCHES LONG MINIMUM THAT CAN BE USED BOTH AS A FIXED-POSITION SHOWER HEAD AND AS A HAND-HELD SHOWER SHALL BE PROVIDED. THE SHOWER SPRAY UNIT SHALL HAVE AN ON/OFF CONTROL WITH A NON-POSITIVE SHUT-OFF. IF AN ADJUSTABLE-HEIGHT SHOWER HEAD ON A VERTICAL BAR IS USED, THE BAR SHALL BE INSTALLED SO AS NOT TO OBSTRUCT THE USE OF GRAB BARS. BATHTUB SHOWER SPRAY UNITS SHALL DELIVER WATER THAT IS 120°F (49°C) MAXIMUM.

607.7 BATHTUB ENCLOSURES. ENCLOSURES FOR BATHTUBS SHALL NOT OBSTRUCT CONTROLS, FAUCETS, SHOWER AND SPRAY UNITS OR OBSTRUCT TRANSFER FROM WHEELCHAIRS ONTO BATHTUB SEATS OR INTO BATHTUBS. ENCLOSURES ON BATHTUBS SHALL NOT HAVE TRACKS INSTALLED ON THE RIM OF THE OPEN FACE OF THE BATHTUB.

LEVEL 5

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10/25/2021

PROJECT INFORMATION:

AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 ELIZABETH ST
TEXARKANA, TX
75503

PROJECT NUMBER:	21-64T
ISSUE DATE:	10/25/2021
REVISIONS:	

SHEET NAME:

TEXAS ACCESSIBILITY STANDARDS

SHEET NUMBER:

G004

10/25/2021 10:31:28 AM

608 SHOWER COMPARTMENTS

608.2 SIZE AND CLEARANCES FOR SHOWER COMPARTMENTS. SHOWER COMPARTMENTS SHALL HAVE SIZES AND CLEARANCES COMPLYING WITH 608.2.

608.2.1 TRANSFER TYPE SHOWER COMPARTMENTS. TRANSFER TYPE SHOWER COMPARTMENTS SHALL BE 36 INCHES BY 36 INCHES CLEAR INSIDE DIMENSIONS MEASURED AT THE CENTER POINTS OF OPPOSING SIDES AND SHALL HAVE A 36 INCH WIDE MINIMUM ENTRY ON THE FACE OF THE SHOWER COMPARTMENT. CLEARANCE OF 36 INCHES WIDE MINIMUM BY 48 INCHES LONG MINIMUM MEASURED FROM THE CONTROL WALL SHALL BE PROVIDED.

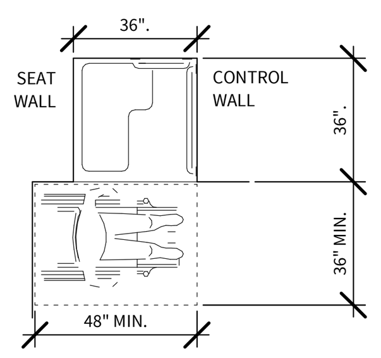

FIGURE 608.2.1 TRANSFER TYPE SHOWER COMPARTMENT SIZE AND CLEARANCE

608.2.2 STANDARD ROLL-IN TYPE SHOWER COMPARTMENTS. STANDARD ROLL-IN TYPE SHOWER COMPARTMENTS SHALL BE 30 INCHES WIDE MINIMUM BY 60 INCHES DEEP MINIMUM CLEAR INSIDE DIMENSIONS MEASURED AT CENTER POINTS OF OPPOSING SIDES AND SHALL HAVE A 60 INCHES WIDE MINIMUM ENTRY ON THE FACE OF THE SHOWER COMPARTMENT.

608.2.2.1 CLEARANCE. A 30 INCH WIDE MINIMUM BY 60 INCH LONG MINIMUM CLEARANCE SHALL BE PROVIDED ADJACENT TO THE OPEN FACE OF THE SHOWER COMPARTMENT.

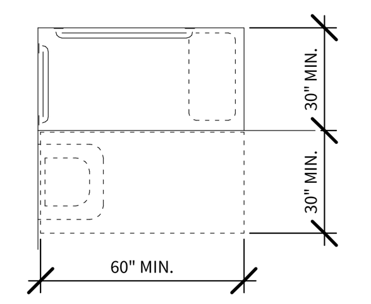

FIGURE 608.2.2 STANDARD ROLL-IN TYPE SHOWER COMPARTMENT SIZE AND CLEARANCE

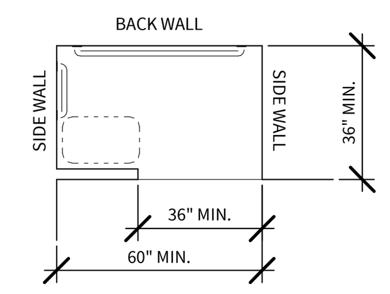

FIGURE 608.2.3 ALTERNATE ROLL-IN TYPE SHOWER COMPARTMENT SIZE AND CLEARANCE

608.2.3 ALTERNATE ROLL-IN TYPE SHOWER COMPARTMENTS. ALTERNATE ROLL-IN TYPE SHOWER COMPARTMENTS SHALL BE 36 INCHES WIDE AND 60 INCHES DEEP MINIMUM CLEAR INSIDE DIMENSIONS MEASURED AT CENTER POINTS OF OPPOSING SIDES. A 36 INCH WIDE MINIMUM ENTRY SHALL BE PROVIDED AT ONE END OF THE LONG SIDE OF THE COMPARTMENT.

608.3 GRAB BARS. GRAB BARS SHALL COMPLY WITH 609 AND SHALL BE PROVIDED IN ACCORDANCE WITH 608.3. WHERE MULTIPLE GRAB BARS ARE USED, REQUIRED HORIZONTAL GRAB BARS SHALL BE INSTALLED AT THE SAME HEIGHT ABOVE THE FINISH FLOOR.

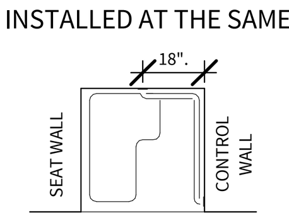

FIGURE 608.3.1 GRAB BARS FOR TRANSFER TYPE SHOWERS

608.3.1 TRANSFER TYPE SHOWER COMPARTMENTS. IN TRANSFER TYPE COMPARTMENTS, GRAB BARS SHALL BE PROVIDED ACROSS THE CONTROL WALL AND BACK WALL TO A POINT 18 INCHES FROM THE CONTROL WALL

608.3.2 STANDARD ROLL-IN TYPE SHOWER COMPARTMENTS. WHERE A SEAT IS PROVIDED IN STANDARD ROLL-IN TYPE SHOWER COMPARTMENTS, GRAB BARS SHALL BE PROVIDED ON THE BACK WALL AND THE SIDE WALL OPPOSITE THE SEAT. GRAB BARS SHALL NOT BE PROVIDED ABOVE THE SEAT. WHERE A SEAT IS NOT PROVIDED IN STANDARD ROLL-IN TYPE SHOWER COMPARTMENTS, GRAB BARS SHALL BE PROVIDED ON THREE WALLS. GRAB BARS SHALL BE INSTALLED 6 INCHES MAXIMUM FROM ADJACENT WALLS.

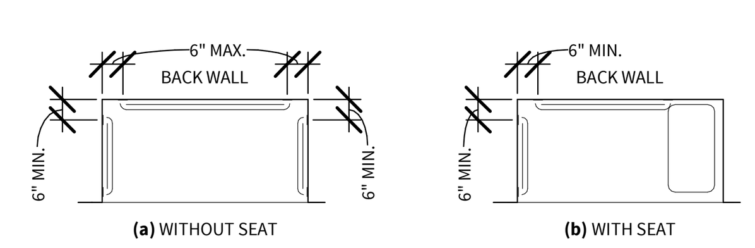

FIGURE 608.3.2 GRAB BARS FOR STANDARD ROLL-IN TYPE SHOWERS

608.3.3 ALTERNATE ROLL-IN TYPE SHOWER COMPARTMENTS. IN ALTERNATE ROLL-IN TYPE SHOWER COMPARTMENTS, GRAB BARS SHALL BE PROVIDED ON THE BACK WALL AND THE SIDE WALL FARTHEST FROM THE COMPARTMENT ENTRY. GRAB BARS SHALL NOT BE PROVIDED ABOVE THE SEAT. GRAB BARS SHALL BE INSTALLED 6 INCHES MAXIMUM FROM ADJACENT WALLS.

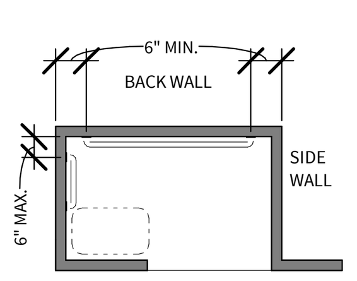

FIGURE 608.3.3 GRAB BARS FOR ALTERNATE ROLL-IN TYPE SHOWERS

608.4 SEATS. A FOLDING OR NON-FOLDING SEAT SHALL BE PROVIDED IN TRANSFER TYPE SHOWER COMPARTMENTS. A FOLDING SEAT SHALL BE PROVIDED IN ROLL-IN TYPE SHOWERS REQUIRED IN TRANSIENT LODGING GUEST ROOMS WITH MOBILITY FEATURES COMPLYING WITH 806.2. SEATS SHALL COMPLY WITH 610.

608.5 CONTROLS. CONTROLS, FAUCETS, AND SHOWER SPRAY UNITS SHALL COMPLY WITH 309.4.

608.5.1 TRANSFER TYPE SHOWER COMPARTMENTS. IN TRANSFER TYPE SHOWER COMPARTMENTS, THE CONTROLS, FAUCETS, AND SHOWER SPRAY UNIT SHALL BE INSTALLED ON THE SIDE WALL OPPOSITE THE SEAT 38 INCHES MINIMUM AND 48 INCHES MAXIMUM ABOVE THE SHOWER FLOOR AND SHALL BE LOCATED ON THE CONTROL WALL 15 INCHES MAXIMUM FROM THE CENTERLINE OF THE SEAT TOWARD THE SHOWER OPENING.

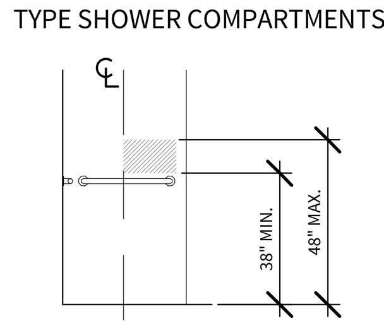

FIGURE 608.5.1 TRANSFER TYPE SHOWER COMPARTMENT CONTROL LOCATION

608.5.2 STANDARD ROLL-IN TYPE SHOWER COMPARTMENTS. IN STANDARD ROLL-IN TYPE SHOWER COMPARTMENTS, THE CONTROLS, FAUCETS, AND SHOWER SPRAY UNIT SHALL BE LOCATED ABOVE THE GRAB BAR, BUT NO HIGHER THAN 48 INCHES ABOVE THE SHOWER FLOOR. WHERE A SEAT IS PROVIDED, THE CONTROLS, FAUCETS, AND SHOWER SPRAY UNIT SHALL BE INSTALLED ON THE BACK WALL ADJACENT TO THE SEAT WALL AND SHALL BE LOCATED 27 INCHES (685 MM) MAXIMUM FROM THE SEAT WALL

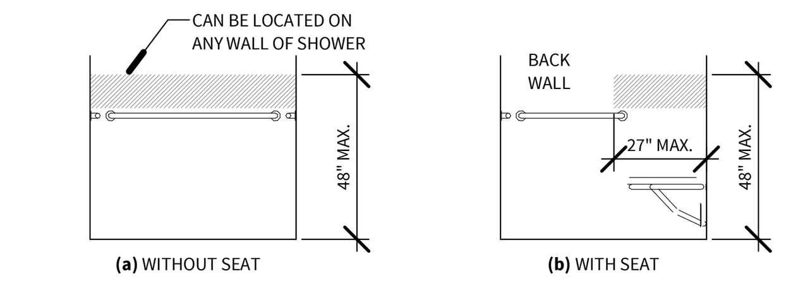

FIGURE 608.5.2 STANDARD ROLL-IN TYPE SHOWER COMPARTMENT CONTROL LOCATION

608.5.3 ALTERNATE ROLL-IN TYPE SHOWER COMPARTMENTS. IN ALTERNATE ROLL-IN TYPE SHOWER BAR, BUT NO HIGHER THAN 48 IN. ABOVE THE SHOWER FLOOR. WHERE A SEAT IS PROVIDED, THE CONTROLS, FAUCETS, AND SHOWER SPRAY UNIT SHALL BE LOCATED ON THE SIDE WALL SHOWER. SPRAY UNIT SHALL BE INSTALLED ON THE SIDE WALL FARTHEST FROM THE COMPARTMENT ENTRY.

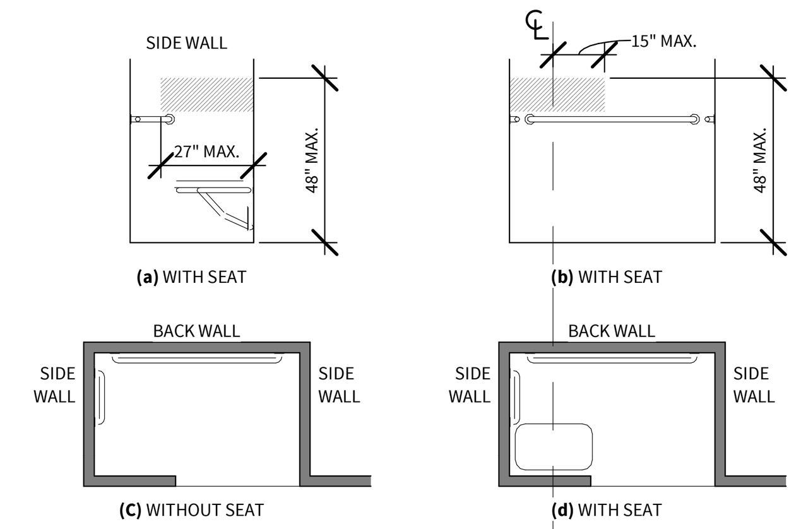

FIGURE 608.5.3 ALTERNATE ROLL-IN TYPE SHOWER COMPARTMENT CONTROL LOCATION

608.6 SHOWER SPRAY UNIT AND WATER. A SHOWER SPRAY UNIT WITH A HOSE 59 INCHES LONG MINIMUM THAT CAN BE USED BOTH AS A FIXED-POSITION SHOWER HEAD AND AS A HAND-HELD SHOWER SHALL BE PROVIDED. THE SHOWER SPRAY UNIT SHALL HAVE AN ON/OFF CONTROL WITH A NON-POSITIVE SHUT-OFF. IF AN ADJUSTABLE-HEIGHT SHOWER HEAD ON A VERTICAL BAR IS USED, THE BAR SHALL BE INSTALLED SO AS NOT TO OBSTRUCT THE USE OF GRAB BARS. SHOWER SPRAY UNITS SHALL DELIVER WATER THAT IS 120°F (49°C) MAXIMUM..

608.7 THRESHOLDS. THRESHOLDS IN ROLL-IN TYPE SHOWER COMPARTMENTS SHALL BE 1/2 INCH HIGH MAXIMUM IN ACCORDANCE WITH 303. IN TRANSFER TYPE SHOWER COMPARTMENTS, THRESHOLDS 1/2 INCH HIGH MAXIMUM SHALL BE BEVELED, ROUNDED, OR VERTICAL.

609 GRAB BARS

608.8 SHOWER ENCLOSURES. ENCLOSURES FOR SHOWER COMPARTMENTS SHALL NOT OBSTRUCT CONTROLS, FAUCETS, AND SHOWER SPRAY UNITS OR OBSTRUCT TRANSFER FROM WHEELCHAIRS ONTO SHOWER SEATS.

609.1 GENERAL. GRAB BARS IN TOILET FACILITIES AND BATHING FACILITIES SHALL COMPLY WITH 609.

609.2 CROSS SECTION. GRAB BARS SHALL HAVE A CROSS SECTION COMPLYING WITH 609.2.1 OR 609.2.2.

609.2.1 CIRCULAR CROSS SECTION. GRAB BARS WITH CIRCULAR CROSS SECTIONS SHALL HAVE AN OUTSIDE DIAMETER OF 1 1/4 INCHES (32 MM) MINIMUM AND 2 INCHES MAX.

609.2.2 NON-CIRCULAR CROSS SECTION. GRAB BARS WITH NON-CIRCULAR CROSS SECTIONS SHALL HAVE A CROSS-SECTION DIMENSION OF 2 INCHES MAXIMUM AND A PERIMETER DIMENSION OF 4 INCHES MINIMUM AND 4.8 INCHES MAXIMUM.

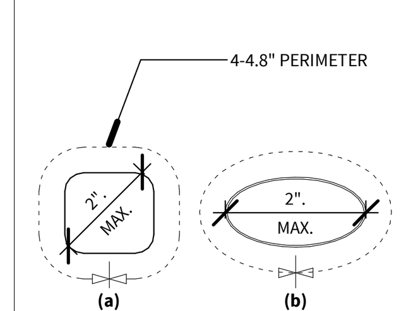

FIGURE 609.2.2 GRAB BAR NON-CIRCULAR CROSS SECTION

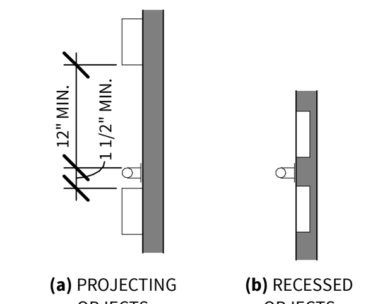

FIGURE 609.3 SPACING OF GRAB BARS

609.3 SPACING. THE SPACE BETWEEN THE WALL AND THE GRAB BAR SHALL BE 1 1/2 INCHES. THE SPACE BETWEEN THE GRAB BAR AND PROJECTING OBJECTS BELOW AND AT THE ENDS SHALL BE 1 1/2 INCHES MINIMUM. THE SPACE BETWEEN THE GRAB BAR AND PROJECTING OBJECTS ABOVE SHALL BE 12 INCHES MINIMUM.

609.4 POSITION OF GRAB BARS. GRAB BARS SHALL BE INSTALLED IN A HORIZONTAL POSITION, 33 INCHES MINIMUM AND 36 INCHES MAXIMUM ABOVE THE FINISH FLOOR MEASURED TO THE TOP OF THE GRIPPING SURFACE, EXCEPT THAT AT WATER CLOSETS FOR CHILDREN'S USE COMPLYING WITH 604.9, GRAB BARS SHALL BE INSTALLED IN A HORIZONTAL POSITION 18 INCHES MINIMUM AND 27 INCHES MAXIMUM ABOVE THE FINISH FLOOR MEASURED TO THE TOP OF THE GRIPPING SURFACE. THE HEIGHT OF THE LOWER GRAB BAR ON THE BACK WALL OF A BATHTUB SHALL COMPLY WITH 607.4.1.1 OR 607.4.2.1.

609.5 SURFACE HAZARDS. GRAB BARS AND ANY WALL OR OTHER SURFACES ADJACENT TO GRAB BARS SHALL BE FREE OF SHARP OR ABRASIVE ELEMENTS AND SHALL HAVE ROUNDED EDGES.

609.6 FITTINGS. GRAB BARS SHALL NOT ROTATE WITHIN THEIR FITTINGS.

609.7 INSTALLATION. GRAB BARS SHALL BE INSTALLED IN ANY MANNER THAT PROVIDES A GRIPPING SURFACE AT THE SPECIFIED LOCATIONS AND THAT DOES NOT OBSTRUCT THE REQUIRED CLEAR FLOOR SPACE.

609.8 STRUCTURAL STRENGTH. ALLOWABLE STRESSES SHALL NOT BE EXCEEDED FOR MATERIALS USED WHEN A VERTICAL OR HORIZONTAL FORCE OF 250 POUNDS (1112 N) IS APPLIED AT ANY POINT ON THE GRAB BAR, FASTENER, MOUNTING DEVICE, OR SUPPORTING STRUCTURE.

610 SEATS

610.2 BATHTUB SEATS. THE TOP OF BATHTUB SEATS SHALL BE 17 INCHES MINIMUM AND 19 INCHES MAXIMUM ABOVE THE BATHROOM FINISH FLOOR. THE DEPTH OF A REMOVABLE IN-TUB SEAT SHALL BE 15 INCHES MINIMUM AND 16 INCHES MAXIMUM. THE SEAT SHALL BE CAPABLE OF SECURE PLACEMENT. PERMANENT SEATS AT THE HEAD END OF THE BATHTUB SHALL BE 15 INCHES DEEP MINIMUM AND SHALL EXTEND FROM THE BACK WALL TO OR BEYOND THE OUTER EDGE OF THE BATHTUB.

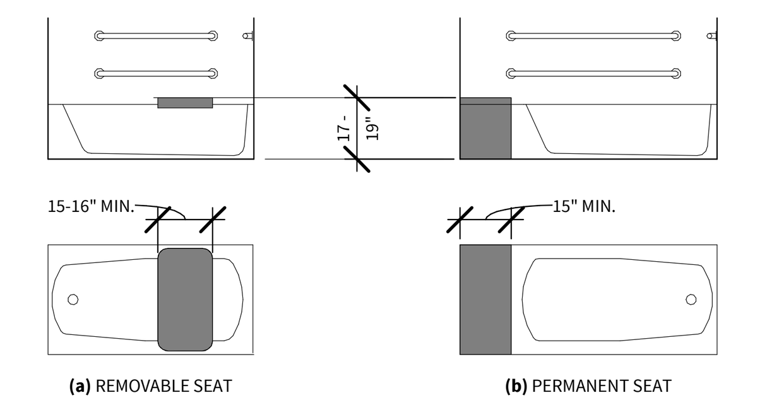

FIGURE 610.2 BATHTUB SEATS

610.3 SHOWER COMPARTMENT SEATS. WHERE A SEAT IS PROVIDED IN A STANDARD ROLL-IN SHOWER COMPARTMENT, IT SHALL BE A FOLDING TYPE, SHALL BE INSTALLED ON THE SIDE WALL ADJACENT TO THE CONTROLS, AND SHALL EXTEND FROM THE BACK WALL TO A POINT WITHIN 3 INCHES OF THE COMPARTMENT ENTRY. WHERE A SEAT IS PROVIDED IN AN ALTERNATE ROLL-IN TYPE SHOWER COMPARTMENT, IT SHALL BE A FOLDING TYPE, SHALL BE INSTALLED ON THE FRONT WALL OPPOSITE THE BACK WALL, AND SHALL EXTEND FROM THE ADJACENT SIDE WALL TO A POINT WITHIN 3 INCHES OF THE COMPARTMENT ENTRY. IN TRANSFER-TYPE SHOWERS, THE SEAT SHALL EXTEND FROM THE BACK WALL TO A POINT WITHIN 3 INCHES OF THE COMPARTMENT ENTRY. THE TOP OF THE SEAT SHALL BE 17 INCHES MINIMUM AND 19 INCHES MAXIMUM ABOVE THE BATHROOM FINISH FLOOR. SEATS SHALL COMPLY WITH 310.3.2

610.3.1 RECTANGULAR SEATS. THE REAR EDGE OF A RECTANGULAR SEAT SHALL BE 2 1/2 INCHES MAXIMUM AND THE FRONT EDGE 15 INCHES (380 MM) MINIMUM AND 16 INCHES MAXIMUM FROM THE SEAT WALL. THE SIDE EDGE OF THE SEAT SHALL BE 1 1/2 INCHES MAXIMUM FROM THE ADJACENT WALL.

610.3.2 L-SHAPED SEATS. THE REAR EDGE OF AN L-SHAPED SEAT SHALL BE 2 1/2 INCHES MAXIMUM AND THE FRONT EDGE 15 INCHES (380 MM) MINIMUM AND 16 INCHES MAXIMUM FROM THE SEAT WALL. THE REAR EDGE OF THE "L" PORTION OF THE SEAT SHALL BE 1 1/2 INCHES MAXIMUM FROM THE WALL AND THE FRONT EDGE SHALL BE 14 INCHES MINIMUM AND 15 INCHES MAXIMUM FROM THE WALL. THE END OF THE "L" SHALL BE 22 INCHES MINIMUM AND 23 INCHES MAXIMUM FROM THE MAIN SEAT WALL.

610.4 STRUCTURAL STRENGTH. ALLOWABLE STRESSES SHALL NOT BE EXCEEDED FOR MATERIALS USED WHEN A VERTICAL OR HORIZONTAL FORCE OF 250 POUNDS (1112 N) IS APPLIED AT ANY POINT ON THE SEAT, FASTENER, MOUNTING DEVICE, OR SUPPORTING STRUCTURE.

611 WASHING MACHINES AND CLOTHES DRYERS

611.2 CLEAR FLOOR SPACE. A CLEAR FLOOR OR GROUND SPACE COMPLYING WITH 305 POSITIONED FOR PARALLEL APPROACH SHALL BE PROVIDED. THE CLEAR FLOOR OR GROUND SPACE SHALL BE CENTERED ON THE APPLIANCE.

611.3 OPERABLE PARTS. OPERABLE PARTS, INCLUDING DOORS, LINT SCREENS, AND DETERGENT AND BLEACH COMPARTMENTS SHALL COMPLY WITH 309.

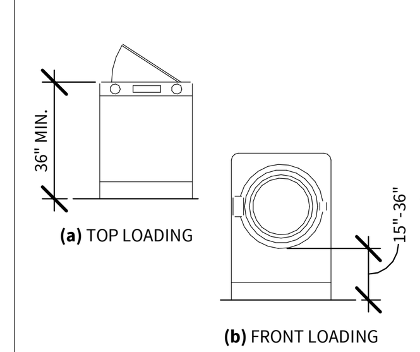

FIGURE 611.4 HEIGHT OF LAUNDRY COMPARTMENT OPENING

611.4 HEIGHT. TOP LOADING MACHINES SHALL HAVE THE DOOR TO THE LAUNDRY COMPARTMENT LOCATED 36 INCHES MAXIMUM ABOVE THE FINISH FLOOR. FRONT LOADING MACHINES SHALL HAVE THE BOTTOM OF THE OPENING TO THE LAUNDRY COMPARTMENT LOCATED 15 INCHES MINIMUM AND 36 INCHES MAXIMUM ABOVE THE FINISH FLOOR.

612 SAUNAS AND STEAM ROOMS

612.2 BENCH. WHERE SEATING IS PROVIDED IN SAUNAS AND STEAM ROOMS, AT LEAST ONE BENCH SHALL COMPLY WITH 903. DOORS SHALL NOT SWING INTO THE CLEAR FLOOR SPACE REQUIRED BY 903.2.

612.3 TURNING SPACE. A TURNING SPACE COMPLYING WITH 304 SHALL BE PROVIDED WITHIN SAUNAS AND STEAM ROOMS

CHAPTER 7: COMMUNICATION ELEMENTS AND FEATURES

702 FIRE ALARM SYSTEMS

702.1 GENERAL. FIRE ALARM SYSTEMS SHALL HAVE PERMANENTLY INSTALLED AUDIBLE AND VISIBLE ALARMS COMPLYING WITH NFPA 72 (1999 OR 2002 EDITION) (INCORPORATED BY REFERENCE, SEE "REFERENCED STANDARDS" IN CHAPTER 1), EXCEPT THAT THE MAXIMUM ALLOWABLE SOUND LEVEL OF AUDIBLE NOTIFICATION APPLIANCES COMPLYING WITH SECTION 4-3.2.1 OF NFPA 72 (1999 EDITION) SHALL HAVE A SOUND LEVEL NO MORE THAN 110 DB AT THE MINIMUM HEARING DISTANCE FROM THE AUDIBLE APPLIANCE. IN ADDITION, ALARMS IN GUEST ROOMS REQUIRED TO PROVIDE COMMUNICATION FEATURES SHALL COMPLY WITH SECTIONS 4-3 AND 4-4 OF NFPA 72 (1999 EDITION) OR SECTIONS 7.4 AND 7.5 OF NFPA 72 (2002 EDITION)

703 SIGNS

703.1 GENERAL. SIGNS SHALL COMPLY WITH 703. WHERE BOTH VISUAL AND TACTILE CHARACTERS ARE REQUIRED, EITHER ONE SIGN WITH BOTH VISUAL AND TACTILE CHARACTERS, OR TWO SEPARATE SIGNS, ONE WITH VISUAL, AND ONE WITH TACTILE CHARACTERS, SHALL BE PROVIDED.

703.2 RAISED CHARACTERS. RAISED CHARACTERS SHALL COMPLY WITH 703.2 AND SHALL BE DUPLICATED IN BRAILLE COMPLYING WITH 703.3. RAISED CHARACTERS SHALL BE INSTALLED IN ACCORDANCE WITH 703.4.

703.2.1 DEPTH. RAISED CHARACTERS SHALL BE 1/32 INCH (0.8 MM) MINIMUM ABOVE THEIR BACKGROUND.

703.2.2 CASE. CHARACTERS SHALL BE UPPERCASE.

703.2.3 STYLE. CHARACTERS SHALL BE SANS SERIF. CHARACTERS SHALL NOT BE ITALIC, OBLIQUE, SCRIPT, HIGHLY DECORATIVE, OR OF OTHER UNUSUAL FORMS.

703.2.4 CHARACTER PROPORTIONS. CHARACTERS SHALL BE SELECTED FROM FONTS WHERE THE WIDTH OF THE UPPERCASE LETTER "O" IS 55 PERCENT MINIMUM AND 110 PERCENT MAXIMUM OF THE HEIGHT OF THE UPPERCASE LETTER "I". 703.2.5 CHARACTER HEIGHT. CHARACTER HEIGHT MEASURED VERTICALLY FROM THE BASELINE OF THE CHARACTER SHALL BE 5/8 INCH MINIMUM AND 2 INCHES MAXIMUM BASED ON THE HEIGHT OF THE UPPERCASE LETTER "I."

703.2.6 STROKE THICKNESS. STROKE THICKNESS OF THE UPPERCASE LETTER "I" SHALL BE 15 PERCENT MAXIMUM OF THE HEIGHT OF THE CHARACTER.

703.2.7 CHARACTER SPACING. CHARACTER SPACING SHALL BE MEASURED BETWEEN THE TWO CLOSEST POINTS OF ADJACENT RAISED CHARACTERS WITHIN A MESSAGE, EXCLUDING WORD SPACES. WHERE CHARACTERS HAVE RECTANGULAR CROSS SECTIONS, SPACING BETWEEN INDIVIDUAL RAISED CHARACTERS SHALL BE 1/8 INCH MINIMUM AND 4 TIMES THE RAISED CHARACTER STROKE WIDTH MAXIMUM. WHERE CHARACTERS HAVE OTHER CROSS SECTIONS, SPACING BETWEEN INDIVIDUAL RAISED CHARACTERS SHALL BE 1/16 INCH (1.6 MM) MINIMUM AND 4 TIMES THE RAISED CHARACTER STROKE WIDTH MAXIMUM AT THE BASE OF THE CROSS SECTIONS, AND 1/8 INCH MINIMUM AND 4 TIMES THE RAISED CHARACTER STROKE WIDTH MAXIMUM AT THE TOP OF THE CROSS SECTIONS. CHARACTERS SHALL BE SEPARATED FROM RAISED BORDERS AND DECORATIVE ELEMENTS 3/8 INCH MINIMUM.

703.2.8 LINE SPACING. SPACING BETWEEN THE BASELINES OF SEPARATE LINES OF RAISED CHARACTERS WITHIN A MESSAGE SHALL BE 135 PERCENT MINIMUM AND 170 PERCENT MAXIMUM OF THE RAISED CHARACTER HEIGHT.

703.3 BRAILLE. BRAILLE SHALL BE CONTRACTED (GRADE 2) AND SHALL COMPLY WITH 703.3 AND 703.4.

703.3.1 DIMENSIONS AND CAPITALIZATION. BRAILLE DOTS SHALL HAVE A DOMED OR ROUNDED SHAPE AND SHALL COMPLY WITH TABLE 703.3.1. THE INDICATION OF AN UPPERCASE LETTER OR LETTERS SHALL ONLY BE USED BEFORE THE FIRST WORD OF SENTENCES, PROPER NOUNS AND NAMES, INDIVIDUAL LETTERS OF THE ALPHABET, INITIALS, AND ACRONYMS.

703.3.2 POSITION. BRAILLE SHALL BE POSITIONED BELOW THE CORRESPONDING TEXT. IF TEXT IS MULTI-LINED, BRAILLE SHALL BE PLACED BELOW THE ENTIRE TEXT. BRAILLE SHALL BE SEPARATED 3/8 INCH MINIMUM FROM ANY OTHER TACTILE CHARACTERS AND 3/8 INCH MINIMUM FROM RAISED BORDERS AND DECORATIVE ELEMENTS.

703.4 INSTALLATION HEIGHT AND LOCATION. SIGNS WITH TACTILE CHARACTERS SHALL COMPLY WITH 703.4.

703.4.1 HEIGHT ABOVE FINISH FLOOR OR GROUND. TACTILE CHARACTERS ON SIGNS SHALL BE LOCATED 48 INCHES MINIMUM ABOVE THE FINISH FLOOR OR GROUND SURFACE, MEASURED FROM THE BASELINE OF THE LOWEST TACTILE CHARACTER AND 60 INCHES MAXIMUM ABOVE THE FINISH FLOOR OR GROUND SURFACE, MEASURED FROM THE BASELINE OF THE HIGHEST TACTILE CHARACTER.

703.4.2 LOCATION. WHERE A TACTILE SIGN IS PROVIDED AT A DOOR, THE SIGN SHALL BE LOCATED ALONGSIDE THE DOOR AT THE LATCH SIDE. WHERE A TACTILE SIGN IS PROVIDED AT DOUBLE DOORS WITH ONE ACTIVE LEAF, THE SIGN SHALL BE LOCATED ON THE INACTIVE LEAF. WHERE A TACTILE SIGN IS PROVIDED AT DOUBLE DOORS WITH TWO ACTIVE LEAFS, THE SIGN SHALL BE LOCATED TO THE RIGHT OF THE RIGHT HAND DOOR. WHERE THERE IS NO WALL SPACE AT THE LATCH SIDE OF A SINGLE DOOR OR AT THE RIGHT SIDE OF DOUBLE DOORS, SIGNS SHALL BE LOCATED ON THE NEAREST ADJACENT WALL. SIGNS CONTAINING TACTILE CHARACTERS SHALL BE LOCATED SO THAT A CLEAR FLOOR SPACE OF 18 INCHES MINIMUM BY 18 INCHES MINIMUM, CENTERED ON THE TACTILE CHARACTERS, IS PROVIDED BEYOND THE ARC OF ANY DOOR SWING BETWEEN THE CLOSED POSITION AND 45 DEGREE OPEN POSITION.

703.5 VISUAL CHARACTERS. VISUAL CHARACTERS SHALL COMPLY WITH 703.5.

703.5.1 FINISH AND CONTRAST. CHARACTERS AND THEIR BACKGROUND SHALL HAVE A NON-GLARE FINISH. CHARACTERS SHALL CONTRAST WITH THEIR BACKGROUND WITH EITHER LIGHT CHARACTERS ON A DARK BACKGROUND OR DARK CHARACTERS ON A LIGHT BACKGROUND.

703.5.2 CASE. CHARACTERS SHALL BE UPPERCASE OR LOWERCASE OR A COMBINATION OF BOTH.

703.5.3 STYLE. CHARACTERS SHALL BE CONVENTIONAL IN FORM. CHARACTERS SHALL NOT BE ITALIC, OBLIQUE, SCRIPT, HIGHLY DECORATIVE, OR OF OTHER UNUSUAL FORMS.

703.5.4 CHARACTER PROPORTIONS. CHARACTERS SHALL BE SELECTED FROM FONTS WHERE THE WIDTH OF THE UPPERCASE LETTER "O" IS 55 PERCENT MINIMUM AND 110 PERCENT MAXIMUM OF THE HEIGHT OF THE UPPERCASE LETTER "I".

703.5.5 CHARACTER HEIGHT. MINIMUM CHARACTER HEIGHT SHALL COMPLY WITH TABLE 703.5.5. VIEWING DISTANCE SHALL BE MEASURED AS THE HORIZONTAL DISTANCE BETWEEN THE CHARACTER AND AN OBSTRUCTION PREVENTING FURTHER APPROACH TOWARDS THE SIGN. CHARACTER HEIGHT SHALL BE BASED ON THE UPPERCASE LETTER "I".

703.5.6 HEIGHT FROM FINISH FLOOR OR GROUND. VISUAL CHARACTERS SHALL BE 40 INCHES (1015 MM) MINIMUM ABOVE THE FINISH FLOOR OR GROUND.

703.5.7 STROKE THICKNESS. STROKE THICKNESS OF THE UPPERCASE LETTER "I" SHALL BE 10 PERCENT MINIMUM AND 30 PERCENT MAXIMUM OF THE HEIGHT OF THE CHARACTER.

703.5.8 CHARACTER SPACING. CHARACTER SPACING SHALL BE MEASURED BETWEEN THE TWO CLOSEST POINTS OF ADJACENT CHARACTERS, EXCLUDING WORD SPACES. SPACING BETWEEN INDIVIDUAL CHARACTERS SHALL BE 10 PERCENT MINIMUM AND 35 PERCENT MAXIMUM OF CHARACTER HEIGHT.

703.5.9 LINE SPACING. SPACING BETWEEN THE BASELINES OF SEPARATE LINES OF CHARACTERS WITHIN A MESSAGE SHALL BE 135 PERCENT MINIMUM AND 170 PERCENT MAXIMUM OF THE CHARACTER HEIGHT.

703.6 PICTOGRAMS. PICTOGRAMS SHALL COMPLY WITH 703.6.

703.6.1 PICTOGRAM FIELD. PICTOGRAMS SHALL HAVE A FIELD HEIGHT OF 6 INCHES MINIMUM. CHARACTERS AND BRAILLE SHALL NOT BE LOCATED IN THE PICTOGRAM FIELD.

703.6.2 FINISH AND CONTRAST. PICTOGRAMS AND THEIR FIELD SHALL HAVE A NON-GLARE FINISH. PICTOGRAMS SHALL CONTRAST WITH THEIR FIELD WITH EITHER A LIGHT PICTOGRAM ON A DARK FIELD OR A DARK PICTOGRAM ON A LIGHT FIELD.

703.6.3 TEXT DESCRIPTORS. PICTOGRAMS SHALL HAVE TEXT DESCRIPTORS LOCATED DIRECTLY BELOW THE PICTOGRAM FIELD. TEXT DESCRIPTORS SHALL COMPLY WITH 703.2, 703.3 AND 703.4.

703.7 SYMBOLS OF ACCESSIBILITY. SYMBOLS OF ACCESSIBILITY SHALL COMPLY WITH 703.7.

703.7.1 FINISH AND CONTRAST. SYMBOLS OF ACCESSIBILITY AND THEIR BACKGROUND SHALL HAVE A NON-GLARE FINISH. SYMBOLS OF ACCESSIBILITY SHALL CONTRAST WITH THEIR BACKGROUND WITH EITHER A LIGHT SYMBOL ON A DARK BACKGROUND OR A DARK SYMBOL ON A LIGHT BACKGROUND.

704 TELEPHONES

704.1 GENERAL. PUBLIC TELEPHONES SHALL COMPLY WITH 704.

704.2 WHEELCHAIR ACCESSIBLE TELEPHONES. WHEELCHAIR ACCESSIBLE TELEPHONES SHALL COMPLY WITH 704.2.

704.2.1 CLEAR FLOOR OR GROUND SPACE. A CLEAR FLOOR OR GROUND SPACE COMPLYING WITH 305 SHALL BE PROVIDED. THE CLEAR FLOOR OR GROUND SPACE SHALL NOT BE OBSTRUCTED BY BASES, ENCLOSURES, OR SEATS. ADVISORY 704.2.1 CLEAR FLOOR OR GROUND SPACE. BECAUSE CLEAR FLOOR AND GROUND SPACE IS REQUIRED TO BE UNOBSTRUCTED, TELEPHONES, ENCLOSURES AND RELATED TELEPHONE BOOK STORAGE CANNOT ENCROACH ON THE REQUIRED CLEAR FLOOR OR GROUND SPACE AND MUST COMPLY WITH THE PROVISIONS FOR PROTRUDING OBJECTS. (SEE SECTION 307).

704.2.1.1 PARALLEL APPROACH. WHERE A PARALLEL APPROACH IS PROVIDED, THE DISTANCE FROM THE EDGE OF THE TELEPHONE ENCLOSURE TO THE FACE OF THE TELEPHONE UNIT SHALL BE 10 INCHES MAXIMUM.

704.2.1.2 FORWARD APPROACH. WHERE A FORWARD APPROACH IS PROVIDED, THE DISTANCE FROM THE FRONT EDGE OF A COUNTER WITHIN THE TELEPHONE ENCLOSURE TO THE FACE OF THE TELEPHONE UNIT SHALL BE 20 INCHES MAXIMUM

704.2.2 OPERABLE PARTS. OPERABLE PARTS SHALL COMPLY WITH 309. TELEPHONES SHALL HAVE PUSH-BUTTON CONTROLS WHERE SUCH SERVICE IS AVAILABLE.

704.2.3 TELEPHONE DIRECTORIES. TELEPHONE DIRECTORIES, WHERE PROVIDED, SHALL BE LOCATED IN ACCORDANCE WITH 309

704.2.4 CORD LENGTH. THE CORD FROM THE TELEPHONE TO THE HANDSET SHALL BE 29 INCHES LONG MINIMUM.

704.3 VOLUME CONTROL TELEPHONES. PUBLIC TELEPHONES REQUIRED TO HAVE VOLUME CONTROLS SHALL BE EQUIPPED WITH A RECEIVE VOLUME CONTROL THAT PROVIDES A GAIN ADJUSTABLE UP TO 20 DB MINIMUM. FOR INCREMENTAL VOLUME CONTROL, PROVIDE AT LEAST ONE INTERMEDIATE STEP OF 12 DB OF GAIN MINIMUM. AN AUTOMATIC RESET SHALL BE PROVIDED

704.4 TTYS. TTYS REQUIRED AT A PUBLIC PAY TELEPHONE SHALL BE PERMANENTLY AFFIXED WITHIN, OR ADJACENT TO, THE TELEPHONE ENCLOSURE. WHERE AN ACOUSTIC COUPLER IS USED, THE TELEPHONE CORD SHALL BE SUFFICIENTLY LONG TO ALLOW CONNECTION OF THE TTY AND THE TELEPHONE RECEIVER.

704.4.1 HEIGHT. WHEN IN USE, THE TOUCH SURFACE OF TTY KEYPADS SHALL BE 34 INCHES MINIMUM ABOVE THE FINISH FLOOR.

704.5 TTY SHELF. PUBLIC PAY TELEPHONES REQUIRED TO ACCOMMODATE PORTABLE TTYS SHALL BE EQUIPPED WITH A SHELF AND AN ELECTRICAL OUTLET WITHIN OR ADJACENT TO THE TELEPHONE ENCLOSURE. THE TELEPHONE HANDSET SHALL BE CAPABLE OF BEING PLACED FLUSH ON THE SURFACE OF THE SHELF. THE SHELF SHALL BE CAPABLE OF ACCOMMODATING A TTY AND SHALL HAVE 6 INCHES MINIMUM VERTICAL CLEARANCE ABOVE THE AREA WHERE THE TTY IS TO BE PLACED.

705 DETECTABLE WARNINGS

705.1 GENERAL. DETECTABLE WARNINGS SHALL CONSIST OF A SURFACE OF TRUNCATED DOMES AND SHALL COMPLY WITH 705

705.1.1 DOME SIZE. TRUNCATED DOMES IN A DETECTABLE WARNING SURFACE SHALL HAVE A BASE DIAMETER OF 0.9 INCH MINIMUM AND 1.4 INCHES MAXIMUM, A TOP DIAMETER OF 50 PERCENT OF THE BASE DIAMETER MINIMUM TO 65 PERCENT OF THE BASE DIAMETER MAXIMUM, AND A HEIGHT OF 0.2 INCH.

705.1.2 DOME SPACING. TRUNCATED DOMES IN A DETECTABLE WARNING SURFACE SHALL HAVE A CENTER-TO-CENTER SPACING OF 1.6 INCHES MINIMUM AND 2.4 INCHES MAXIMUM, AND A BASE-TO-BASE SPACING OF 0.65 INCH MINIMUM, MEASURED BETWEEN THE MOST ADJACENT DOMES ON A SQUARE GRID.

705.1.2 DOME SPACING. TRUNCATED DOMES IN A DETECTABLE WARNING SURFACE SHALL HAVE A CENTER-TO-CENTER SPACING OF 1.6 INCHES MINIMUM AND 2.4 INCHES MAXIMUM, AND A BASE-TO-BASE SPACING OF 0.65 INCH MINIMUM, MEASURED BETWEEN THE MOST ADJACENT DOMES ON A SQUARE GRID.

705.1.3 CONTRAST. DETECTABLE WARNING SURFACES SHALL CONTRAST VISUALLY WITH ADJACENT WALKING SURFACES EITHER LIGHT ON DARK OR DARK ON LIGHT

705.2 PLATFORM EDGES. DETECTABLE WARNING SURFACES AT PLATFORM BOARDING EDGES SHALL BE 24" WIDE AND SHALL EXTEND THE FULL LENGTH OF THE PUBLIC USE AREAS OF THE PLATFORM.

706 ASSISTIVE LISTENING SYSTEMS

706.2 RECEIVER JACKS. RECEIVERS REQUIRED FOR USE WITH AN ASSISTIVE LISTENING SYSTEM SHALL INCLUDE A 1/8 INCH STANDARD MONO JACK

706.3 RECEIVER HEARING-AID COMPATIBILITY. RECEIVERS REQUIRED TO BE HEARING-AID COMPATIBLE SHALL INTERFACE WITH TELECOILS IN HEARING AIDS THROUGH THE PROVISION OF NECKLOOPS.

706.4 SOUND PRESSURE LEVEL. ASSISTIVE LISTENING SYSTEMS SHALL BE CAPABLE OF PROVIDING A SOUND PRESSURE LEVEL OF 110 DB MINIMUM AND 118 DB MAXIMUM WITH A DYNAMIC RANGE ON THE VOLUME CONTROL OF 50 DB.

706.5 SIGNAL-TO-NOISE RATIO. THE SIGNAL-TO-NOISE RATIO FOR INTERNALLY GENERATED NOISE IN ASSISTIVE LISTENING SYSTEMS SHALL BE 18 DB MINIMUM.

706.6 PEAK CLIPPING LEVEL. PEAK CLIPPING SHALL NOT EXCEED 18 DB OF CLIPPING RELATIVE TO THE PEAKS OF SPEECH

707 AUTOMATIC TELLER MACHINES AND FARE MACHINES

707.2 CLEAR FLOOR OR GROUND SPACE. A CLEAR FLOOR OR GROUND SPACE COMPLYING WITH 305 SHALL BE PROVIDED.

707.3 OPERABLE PARTS. OPERABLE PARTS SHALL COMPLY WITH 309. UNLESS A CLEAR OR CORRECT KEY IS PROVIDED, EACH OPERABLE PART SHALL BE ABLE TO BE DIFFERENTIATED BY SOUND OR TOUCH, WITHOUT ACTIVATION

> **EXCEPTION:** DRIVE-UP ONLY AUTOMATIC TELLER MACHINES AND FARE MACHINES SHALL NOT BE REQUIRED TO COMPLY WITH 309.2 AND 309.3

707.4 PRIVACY. AUTOMATIC TELLER MACHINES SHALL PROVIDE THE OPPORTUNITY FOR THE SAME DEGREE OF PRIVACY OF INPUT AND OUTPUT AVAILABLE TO ALL INDIVIDUALS.

707.5 SPEECH OUTPUT. MACHINES SHALL BE SPEECH ENABLED. OPERATING INSTRUCTIONS AND ORIENTATION, VISIBLE TRANSACTION PROMPTS, USER INPUT VERIFICATION, ERROR MESSAGES, AND ALL DISPLAYED INFORMATION FOR FULL USE SHALL BE ACCESSIBLE TO AND INDEPENDENTLY USABLE BY INDIVIDUALS WITH VISION IMPAIRMENTS. SPEECH SHALL BE DELIVERED THROUGH A MECHANISM THAT IS READILY AVAILABLE TO ALL USERS, INCLUDING BUT NOT LIMITED TO, AN INDUSTRY STANDARD CONNECTOR OR A TELEPHONE HANDSET. SPEECH SHALL BE RECORDED OR DIGITIZED HUMAN, OR SYNTHESIZED.

707.5.1 USER CONTROL. SPEECH SHALL BE CAPABLE OF BEING REPEATED OR INTERRUPTED. VOLUME CONTROL SHALL BE PROVIDED FOR THE SPEECH FUNCTION.

707.5.2 RECEIPTS. WHERE RECEIPTS ARE PROVIDED, SPEECH OUTPUT DEVICES SHALL PROVIDE AUDIBLE BALANCE INQUIRY INFORMATION, ERROR MESSAGES, AND ALL OTHER INFORMATION ON THE PRINTED RECEIPT NECESSARY TO COMPLETE OR VERIFY THE TRANSACTION

707.6 INPUT. INPUT DEVICES SHALL COMPLY WITH 707.6.

707.6.1 INPUT CONTROLS. AT LEAST ONE TACTILELY DISCERNIBLE INPUT CONTROL SHALL BE PROVIDED FOR EACH FUNCTION. WHERE PROVIDED, KEY SURFACES NOT ON ACTIVE AREAS OF DISPLAY SCREENS, SHALL BE RAISED ABOVE SURROUNDING SURFACES. WHERE MEMBRANE KEYS ARE THE ONLY METHOD OF INPUT, EACH SHALL BE TACTILELY DISCERNABLE FROM SURROUNDING SURFACES AND ADJACENT KEYS.

707.6.2 NUMERIC KEYS. NUMERIC KEYS SHALL BE ARRANGED IN A 12-KEY ASCENDING OR DESCENDING TELEPHONE KEYPAD LAYOUT. THE NUMBER FIVE KEY SHALL BE TACTILELY DISTINCT FROM THE OTHER KEYS.

707.6.3.1 CONTRAST. FUNCTION KEYS SHALL CONTRAST VISUALLY FROM BACKGROUND SURFACES. CHARACTERS AND SYMBOLS ON KEY SURFACES SHALL CONTRAST VISUALLY FROM KEY SURFACES. VISUAL CONTRAST SHALL BE EITHER LIGHT-ON-DARK OR

707.6.3.2 TACTILE SYMBOLS. FUNCTION KEY SURFACES SHALL HAVE TACTILE SYMBOLS AS FOLLOWS: ENTER OR PROCEED KEY: RAISED CIRCLE; CLEAR OR CORRECT KEY: RAISED LEFT ARROW; CANCEL KEY: RAISED LETTER EX; ADD VALUE KEY: RAISED PLUS SIGN; DECREASE VALUE KEY: RAISED MINUS SIGN.

707.7 DISPLAY SCREEN. THE DISPLAY SCREEN SHALL COMPLY WITH 707.7.

707.7.1 VISIBILITY. THE DISPLAY SCREEN SHALL BE VISIBLE FROM A POINT LOCATED 40 INCHES ABOVE THE CENTER OF THE CLEAR FLOOR SPACE IN FRONT OF THE MACHINE.

707.7.2 CHARACTERS. CHARACTERS DISPLAYED ON THE SCREEN SHALL BE IN A SANS SERIF FONT. CHARACTERS SHALL BE 3/16 INCH HIGH MINIMUM BASED ON THE UPPERCASE LETTER "I". CHARACTERS SHALL CONTRAST WITH THEIR BACKGROUND WITH EITHER LIGHT CHARACTERS ON A DARK BACKGROUND OR DARK CHARACTERS ON A LIGHT BACKGROUND.

707.8 BRAILLE INSTRUCTIONS. BRAILLE INSTRUCTIONS FOR INITIATING THE SPEECH MODE SHALL BE PROVIDED. BRAILLE SHALL COMPLY WITH 703.3.

708 TWO-WAY COMMUNICATION SYSTEMS

708.1 GENERAL. TWO-WAY COMMUNICATION SYSTEMS SHALL COMPLY WITH 708.

708.2 AUDIBLE AND VISUAL INDICATORS. THE SYSTEM SHALL PROVIDE BOTH AUDIBLE AND VISUAL SIGNALS.

708.3 HANDSETS. HANDSET CORDS, IF PROVIDED, SHALL BE 29 INCHES LONG MINIMUM.

708.4 RESIDENTIAL DWELLING UNIT COMMUNICATION SYSTEMS. COMMUNICATIONS SYSTEMS BETWEEN A RESIDENTIAL DWELLING UNIT AND A SITE, BUILDING, OR FLOOR ENTRANCE SHALL COMPLY WITH 708.4.

708.4.1 COMMON USE OR PUBLIC USE SYSTEM INTERFACE. THE COMMON USE OR PUBLIC USE SYSTEM INTERFACE SHALL INCLUDE THE CAPABILITY OF SUPPORTING VOICE AND TTY COMMUNICATION WITH THE RESIDENTIAL DWELLING UNIT INTERFACE.

CHAPTER 9: BUILT IN ELEMENTS

902 DINING SURFACES AND WORK SURFACES

902.2 CLEAR FLOOR OR GROUND SPACE. A CLEAR FLOOR SPACE COMPLYING WITH 305 POSITIONED FOR A FORWARD APPROACH SHALL BE PROVIDED. KNEE AND TOE CLEARANCE COMPLYING WITH 306 SHALL BE PROVIDED.

902.3 HEIGHT. THE TOPS OF DINING SURFACES AND WORK SURFACES SHALL BE 28 INCHES MINIMUM AND 34 INCHES MAXIMUM ABOVE THE FINISH FLOOR OR GROUND.

902.4 DINING SURFACES AND WORK SURFACES FOR CHILDREN'S USE. ACCESSIBLE DINING SURFACES AND WORK SURFACES FOR CHILDREN'S USE SHALL COMPLY WITH 902.4

902.4.1 CLEAR FLOOR OR GROUND SPACE. A CLEAR FLOOR SPACE COMPLYING WITH 305 POSITIONED FOR FORWARD APPROACH SHALL BE PROVIDED. KNEE AND TOE CLEARANCE COMPLYING WITH 306 SHALL BE PROVIDED, EXCEPT THAT KNEE CLEARANCE 24 INCHES MINIMUM ABOVE THE FINISH FLOOR OR GROUND SHALL BE PERMITTED.

902.4.2 HEIGHT. THE TOPS OF TABLES AND COUNTERS SHALL BE 26 INCHES MINIMUM AND 30 INCHES MAXIMUM ABOVE THE FINISH FLOOR OR GROUND.

903 BENCHES

903.2 CLEAR FLOOR OR GROUND SPACE. CLEAR FLOOR OR GROUND SPACE COMPLYING WITH 305 SHALL BE PROVIDED AND SHALL BE POSITIONED AT THE END OF THE BENCH SEAT AND PARALLEL TO THE SHORT AXIS OF THE BENCH

903.3 SIZE. BENCHES SHALL HAVE SEATS THAT ARE 42 INCHES LONG MIN. AND 20 INCHES DEEP MINIMUM AND 24 INCHES DEEP MAX.

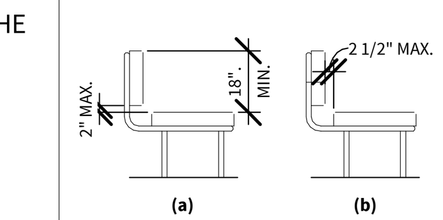

FIGURE 903.4 BENCH BACK SUPPORT

903.4 BACK SUPPORT. THE BENCH SHALL PROVIDE FOR BACK SUPPORT OR SHALL BE AFFIXED TO A WALL. BACK SUPPORT SHALL BE 42 INCHES LONG MINIMUM AND SHALL EXTEND FROM A POINT 2 INCHES MAXIMUM ABOVE THE SEAT SURFACE TO A POINT 18 INCHES MINIMUM ABOVE THE SEAT SURFACE. BACK SUPPORT SHALL BE 2 1/2 INCHES MAXIMUM FROM THE REAR EDGE OF THE SEAT MEASURED HORIZONTALLY.

903.5 HEIGHT. THE TOP OF THE BENCH SEAT SURFACE SHALL BE 17 INCHES MINIMUM AND 19 INCHES MAXIMUM ABOVE FINISH FLOOR OR GROUND

903.6 STRUCTURAL STRENGTH. ALLOWABLE STRESSES SHALL NOT BE EXCEEDED FOR MATERIALS USED WHEN A VERTICAL OR HORIZONTAL FORCE OF 250 POUNDS (1112 N) IS APPLIED AT ANY POINT ON THE SEAT, FASTENER, MOUNTING DEVICE, OR SUPPORTING STRUCTURE

903.7 WET LOCATIONS. WHERE INSTALLED IN WET LOCATIONS, THE SURFACE OF THE SEAT SHALL BE SLIP RESISTANT AND SHALL NOT ACCUMULATE WATER

904 CHECK OUT AISLES, SALES AND SERVICE COUNTERS

904.1 GENERAL. CHECK-OUT AISLES AND SALES AND SERVICE COUNTERS SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF 904

904.2 APPROACH. ALL PORTIONS OF COUNTERS REQUIRED TO COMPLY WITH 904 SHALL BE LOCATED ADJACENT TO WALKING SURFACE COMPLYING WITH 403

904.3 CHECK-OUT AISLES. CHECK-OUT AISLES SHALL COMPLY WITH 904.3.

904.3.1 AISLE. AISLES SHALL COMPLY WITH 403.

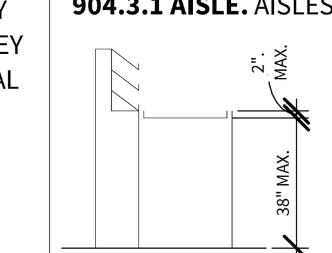

FIGURE 904.3.2 CHECK-OUT AISLE COUNTERS

904.3.2 COUNTER. THE COUNTER SURFACE HEIGHT SHALL BE 38 INCHES MAXIMUM ABOVE THE FINISH FLOOR OR GROUND. THE TOP OF THE COUNTER EDGE PROTECTION SHALL BE 2 INCHES MAXIMUM ABOVE THE TOP OF THE COUNTER SURFACE ON THE AISLE SIDE OF THE CHECK-OUT COUNTER.

904.3.3 CHECK WRITING SURFACES. WHERE PROVIDED, CHECK WRITING SURFACES SHALL COMPLY WITH 902.3.

904.4 SALES AND SERVICE COUNTERS. SALES COUNTERS AND SERVICE COUNTERS SHALL COMPLY WITH 904.4.1 OR 904.4.2. THE ACCESSIBLE PORTION OF THE COUNTER TOP SHALL EXTEND THE SAME DEPTH AS THE SALES OR SERVICE COUNTER TOP

904.4.1 PARALLEL APPROACH. A PORTION OF THE COUNTER SURFACE THAT IS 36 INCHES LONG MINIMUM AND 36 INCHES HIGH MAXIMUM ABOVE THE FINISH FLOOR SHALL BE PROVIDED. A CLEAR FLOOR OR GROUND SPACE COMPLYING WITH 305 SHALL BE POSITIONED FOR A PARALLEL APPROACH ADJACENT TO THE 36 INCH MINIMUM LENGTH OF COUNTER

904.4.2 FORWARD APPROACH. A PORTION OF THE COUNTER SURFACE THAT IS 30 INCHES LONG MINIMUM AND 36 INCHES HIGH MAXIMUM SHALL BE PROVIDED. KNEE AND TOE SPACE COMPLYING WITH 306 SHALL BE PROVIDED UNDER THE COUNTER. A CLEAR FLOOR OR GROUND SPACE COMPLYING WITH 305 SHALL BE POSITIONED FOR A FORWARD APPROACH TO THE COUNTER

904.5 FOOD SERVICE LINES. COUNTERS IN FOOD SERVICE LINES SHALL COMPLY WITH 904.5.

904.5.1 SELF-SERVICE SHELVES AND DISPENSING DEVICES. SELF-SERVICE SHELVES AND DISPENSING DEVICES FOR TABLEWARE, DISHWARE, CONDIMENTS, FOOD AND BEVERAGES SHALL COMPLY WITH 308.

904.5.2 TRAY SLIDES. THE TOPS OF TRAY SLIDES SHALL BE 28 INCHES MINIMUM AND 34 INCHES MAXIMUM ABOVE THE FINISH FLOOR OR GROUND

904.6 SECURITY GLAZING. WHERE COUNTERS OR TELLER WINDOWS HAVE SECURITY GLAZING TO SEPARATE PERSONNEL FROM THE PUBLIC, A METHOD TO FACILITATE VOICE COMMUNICATION SHALL BE PROVIDED. TELEPHONE HANDSET DEVICES, IF PROVIDED, SHALL COMPLY WITH 704.3

LEVEL 5

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10/25/2021

PROJECT INFORMATION:

AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 ELIZABETH ST
TEXARKANA, TX
75503

PROJECT NUMBER: 21-64T
ISSUE DATE: 10/25/2021
REVISIONS:

SHEET NAME:

TEXAS ACCESSIBILITY STANDARDS

SHEET NUMBER:

G005

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GENERAL NOTES

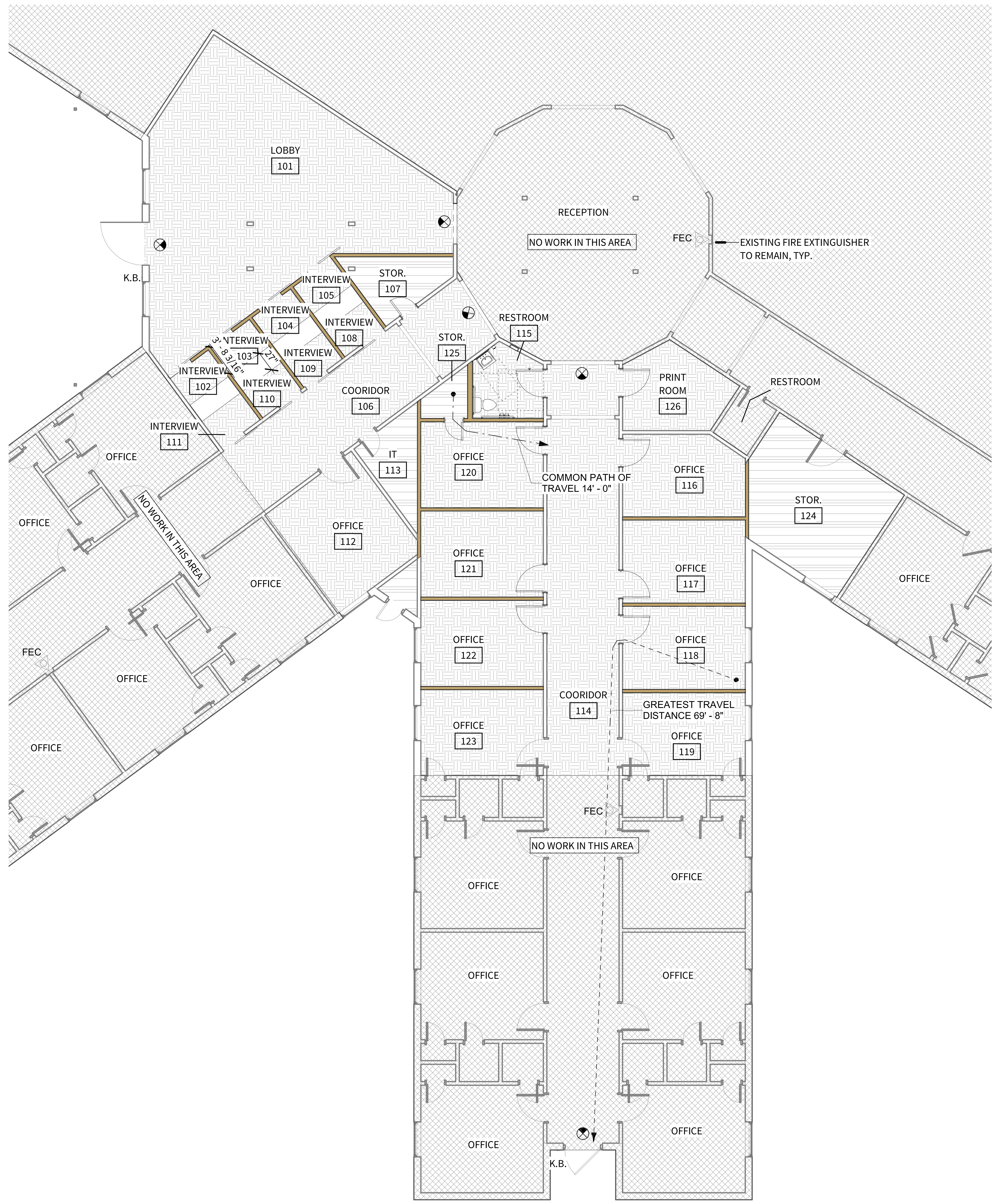
INTERIOR REMODEL SHOULD HAVE MINIMAL IMPACT ON OCCUPANCY LOAD OF THE FACILITY. PLUMBING FIXTURES ARE INCREASING BY (1) WATER CLOSET & (1) LAVATORY; WHILE LOSING A SHOWER THAT IS NOT REQUIRED IN A B OCCUPANCY. THE REMODEL WILL NOT AFFECT THE CONSTRUCTION TYPE, OCCUPANCY TYPE, NO. OF EXITS OR TRAVEL DISTANCES.

LIFE SAFETY LEGEND

F.E.C.	FIRE EXTINGUISHER
K.B.	RECESSED KNOX BOX
	FIRE ALARM PANEL
ANS	ANSUL SYSTEM
	SECURITY CAMERA
44"	EXIT LOCATION AND WIDTH (IN.)
90C	FIRE RATING OF DOOR IN MINUTES (C INDICATES A CLOSER REQUIRED AT THIS DOOR LOCATION
	EXIT LIGHT FIXTURE W/ DIRECTION ADJACENT TO EACH DOOR TO AN EGRESS STAIRWAY AND EXIT DISCHARGE, A TACTILE SIGN STATING EXIT AND COMPLYING WITH ICC A117.1 SHALL BE PROVIDED (ARROW DENOTES FACE OF FIXTURE AND EXITING DIRECTION)
	1 HR FIRE RATING
	2 HR FIRE RATING
	3 HR FIRE RATING
	1 HR SMOKE PARTITION
	NR SMOKE PARTITION

FUNCTION OF SPACE

	ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM
	BUSINESS AREAS: TABLE 1004.1.2 (IBC 2015 AND EARLIER)



TRUE

1 *LIFE SAFETY PLAN*

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

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SHEET NAME:

LIFE SAFETY PLAN

SHEET NUMBER:

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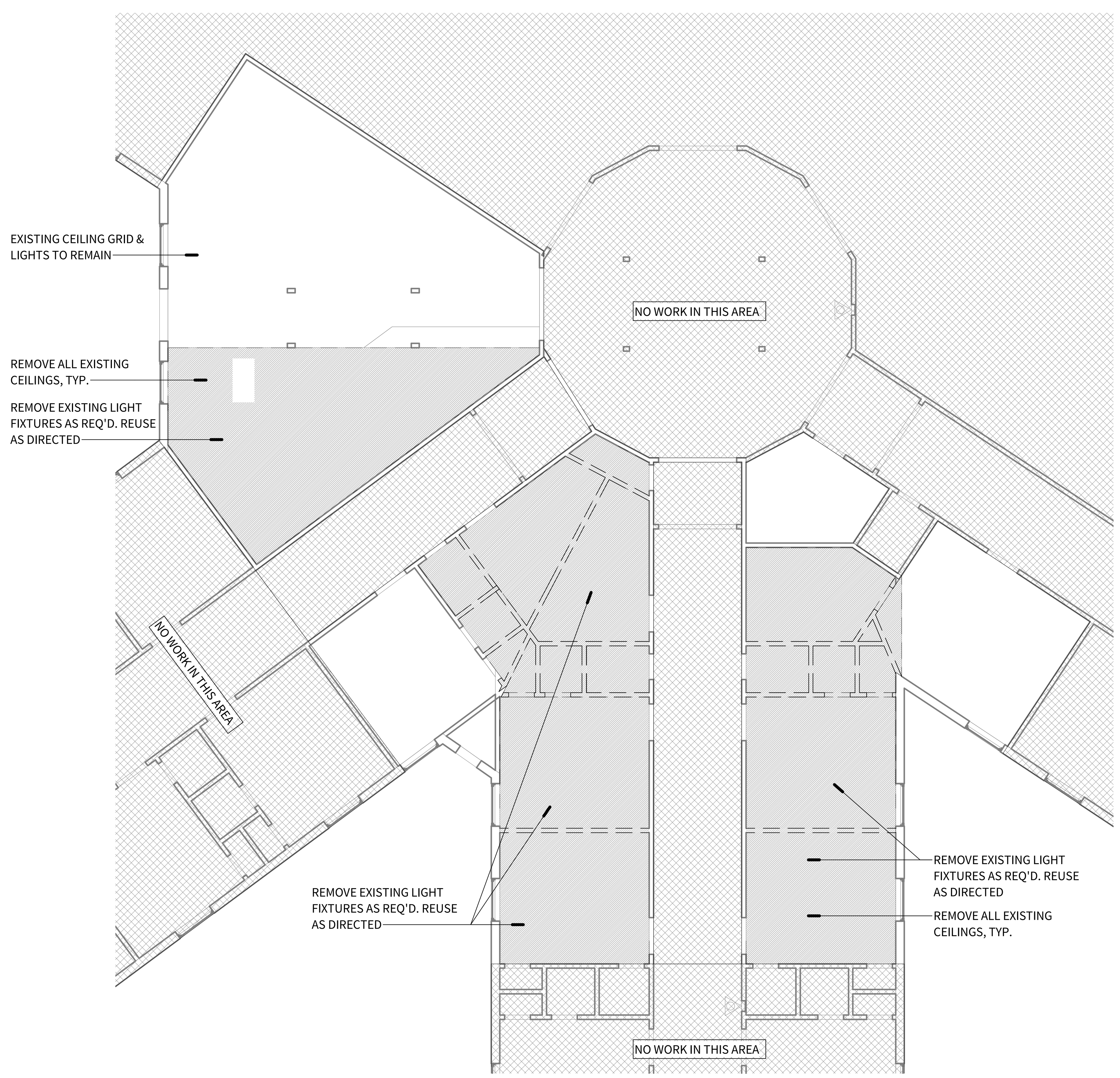
DEMOLITION LEGEND

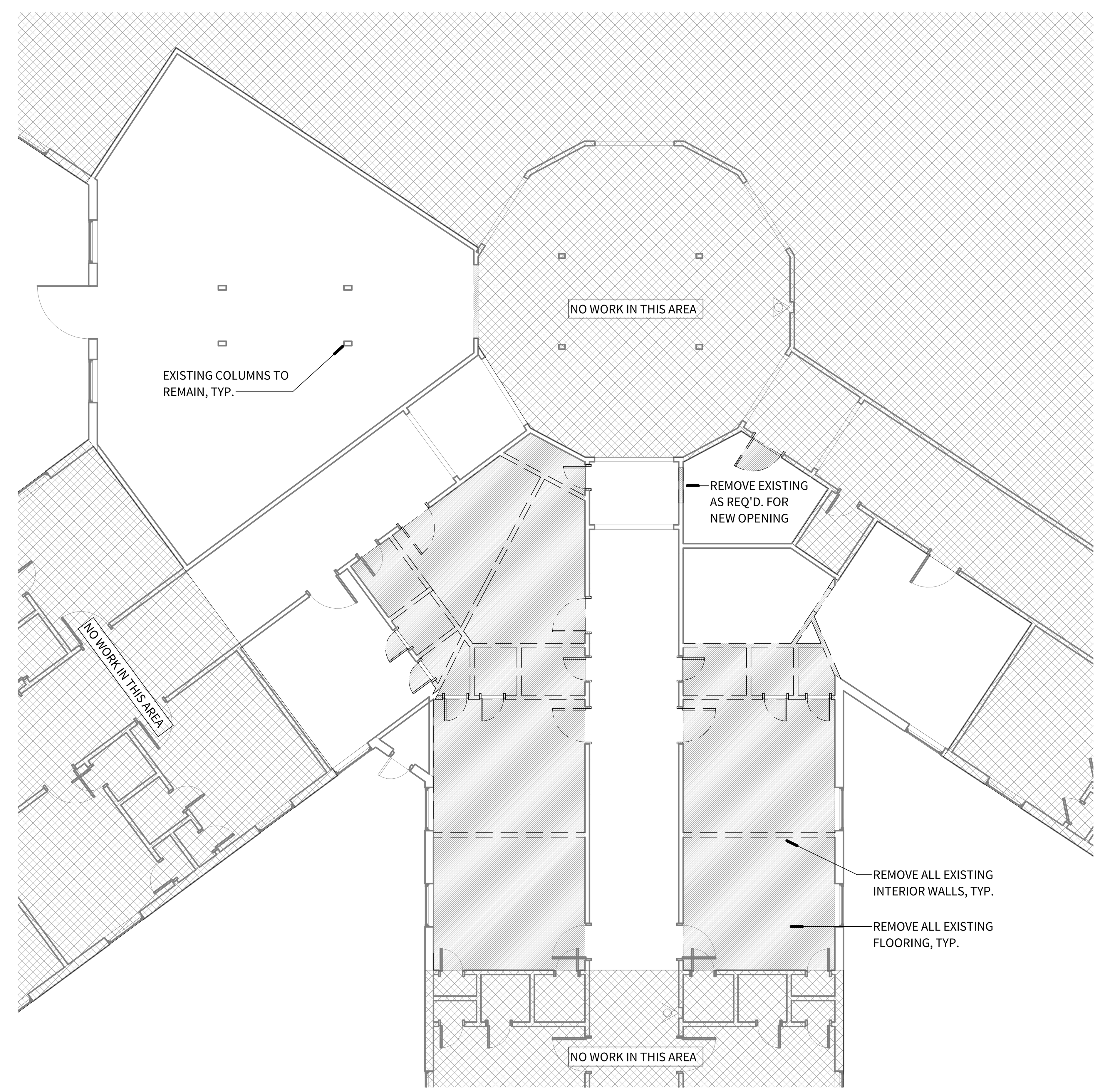
▨	EXISTING ITEMS TO BE DEMOLISHED/REMOVED
═	EXISTING ITEMS TO REMAIN
▩	NO WORK THIS AREA

DEMOLITION NOTES

1. THE INTENT OF THE DEMOLITION PLAN IS TO REMOVE ALL ITEMS NOT REQUIRED FOR NEW CONSTRUCTION; OR THAT ARE IN CONFLICT WITH NEW CONSTRUCTION, WHETHER OR NOT INDIVIDUALLY INDICATED. THE CONTRACTOR SHALL REMOVE ALL SUCH ITEMS AS REQUIRED FOR CONSTRUCTION INCLUDING BUT NOT LIMITED TO LIGHT FIXTURES, ELECTRICAL DEVICES, ETC. THESE ITEMS ARE TO BE SALVAGED AND RETURNED TO OWNER. NO ITEMS REMOVED DURING DEMOLITION MAY BE REUSED IN NEW SCOPE OF WORK WITHOUT WRITTEN APPROVAL OF THE ARCHITECT/OWNER, UNLESS NOTED OTHERWISE.
2. VERIFY LOCATION OF EXISTING UTILITY LINES PRIOR TO EXCAVATION. THESE LINES ARE TO REMAIN UNDISTURBED DURING CONSTRUCTION. NOTIFY ARCHITECT OF ANY POTENTIAL CONFLICTS PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL PROTECT EXISTING STRUCTURE/ ASSEMBLIES/ EQUIPMENT AS REQUIRED FROM DEMOLITION WORK. REPAIR, PATCH, REPLACE EXISTING CONSTRUCTED ITEMS AND EQUIPMENT THAT ARE TO REMAIN AS REQUIRED FOR NEW CONSTRUCTION.
4. THE CONTRACTOR SHALL PATCH TO MATCH EXISTING FINISHES INCLUDING WALLS, FLOORS, CEILINGS, ETC. AS REQUIRED IN THOSE AREAS NOT SPECIFICALLY CALLED OUT ON THE ROOM FINISH SCHEDULE, BUT THAT ARE AFFECTED BY CONSTRUCTION.
5. CONTRACTOR TO PATCH/REPAIR ALL AREAS RESULTING FROM DEMOLITION.
6. REMOVE ALL WASTE, REFUSE & DEBRIS ACCUMULATED FROM DEMOLITION FROM THE PREMISES. SPECIAL CARE SHOULD BE TAKEN TO REMOVE ALL NAILS AND FASTENERS FROM SITE. ALL DEMOLITION MATERIALS NOT CITED FOR REUSE OR TO BE RETAINED BY THE OWNER SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR. ALL DEBRIS REMOVED FROM SITE SHALL BE DISPOSED OF IN AN CERTIFIED LANDFILL.
7. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS.
8. ALL DIMENSIONS ON THE DEMOLITION PLAN ARE TO FACE OF CMU OR METAL STUD. ALL EXISTING DIMENSIONS TO BE VERIFIED IN THE FIELD.



TRUE ② **DEMOLITION CEILING PLAN**
SCALE: 1/8" = 1'-0"



TRUE ① **DEMOLITION PLAN**
SCALE: 1/8" = 1'-0"

LEVEL 5

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REGISTERED ARCHITECT
JUSTIN S. GILMORE
22908
STATE OF TEXAS
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SHEET NAME:

DEMOLITION FLOOR & CEILING PLANS

SHEET NUMBER:

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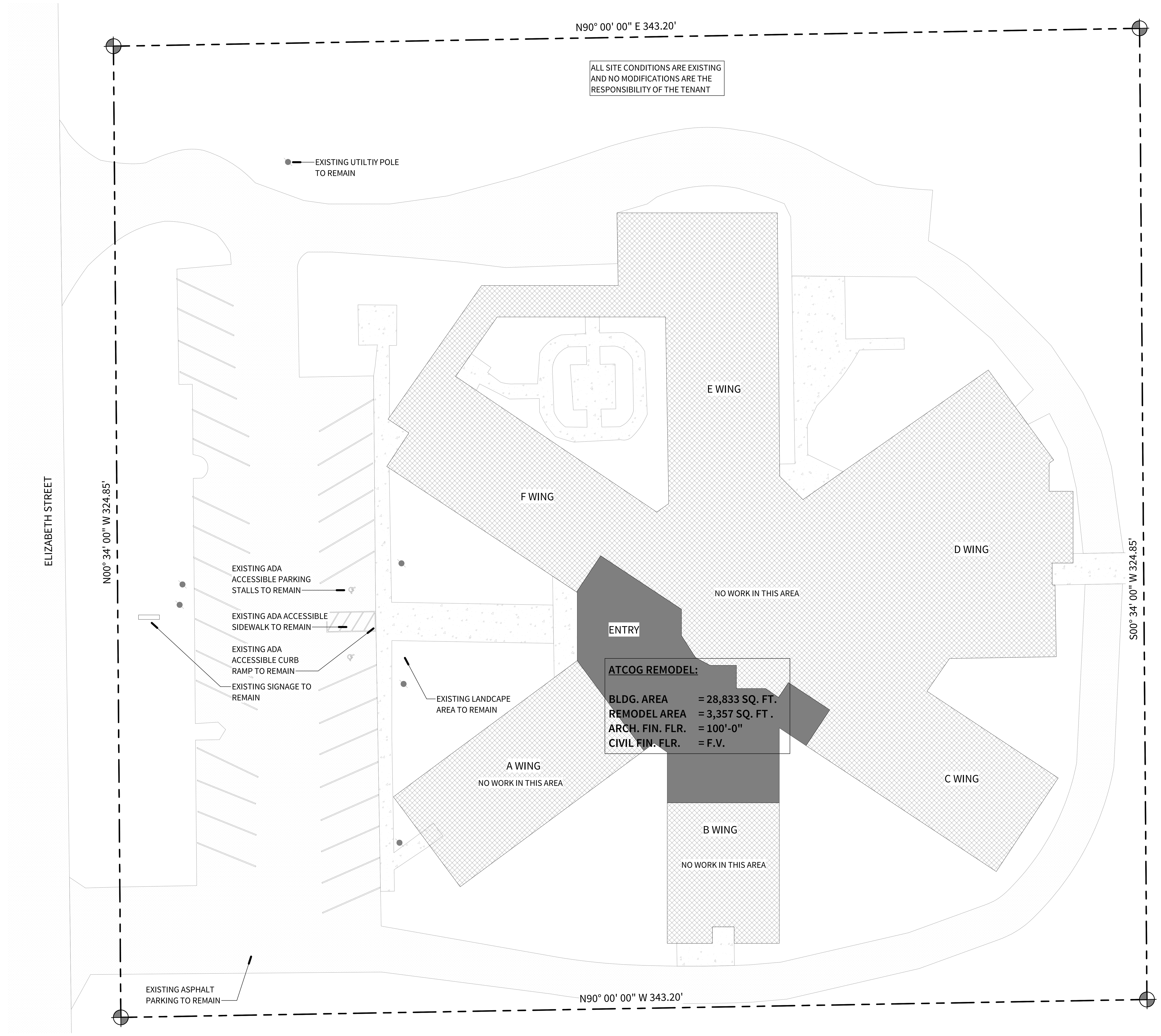

TRUE

1 ***ARCHITECTURAL SITE PLAN***

SCALE: 1" = 20'-0"

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SHEET NAME:

ARCHITECTURAL SITE PLAN

SHEET NUMBER:

A101

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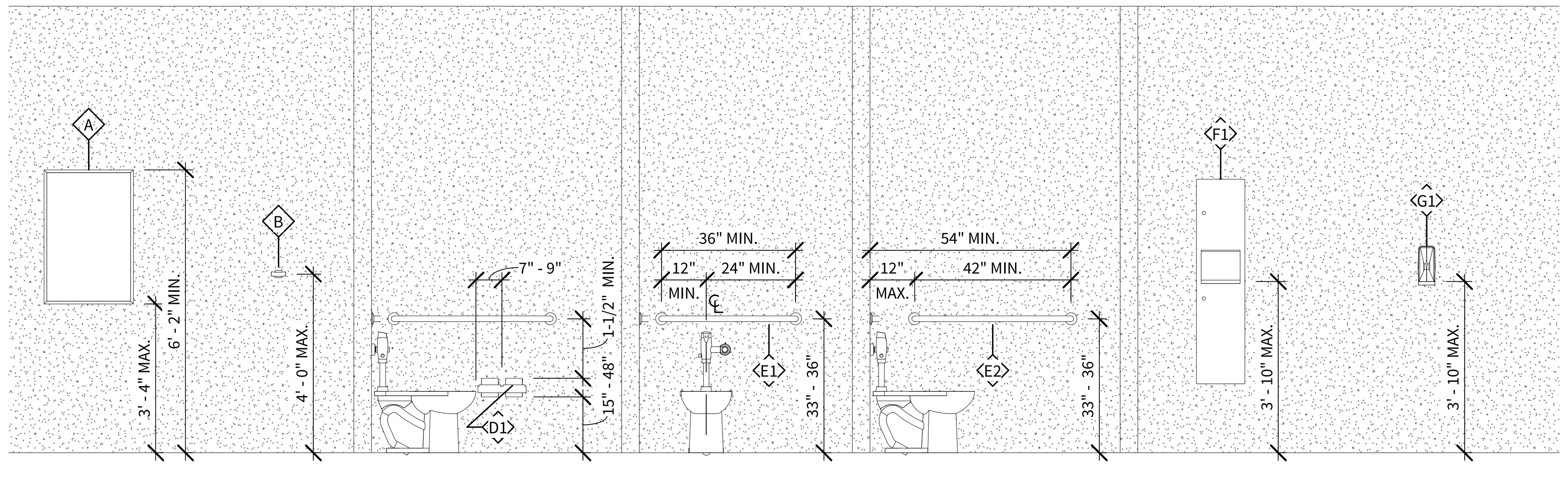
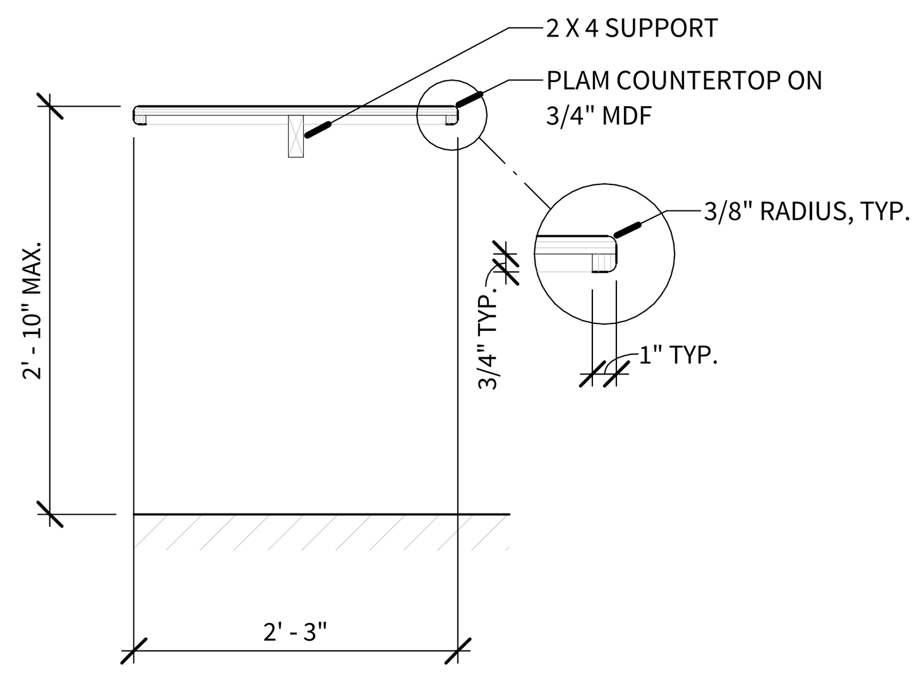


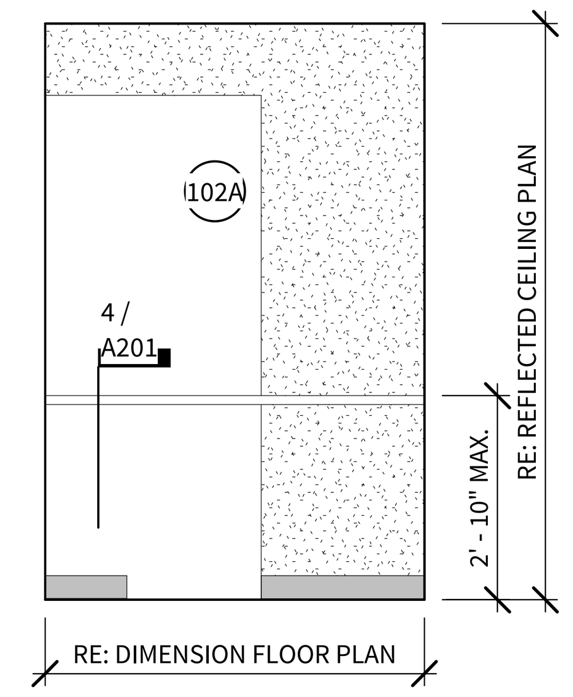
TOILET ACCESSORY LEGEND

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



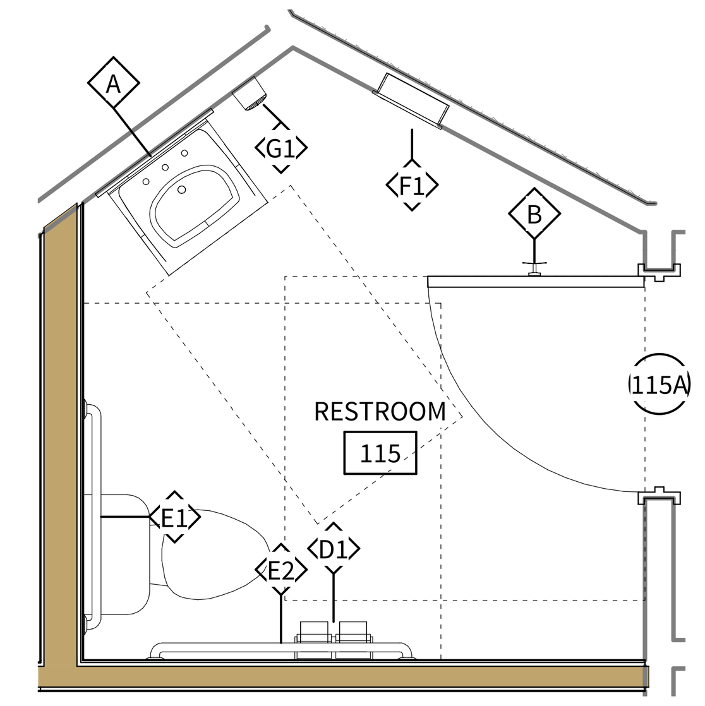
4 MILLWORK SECTION

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



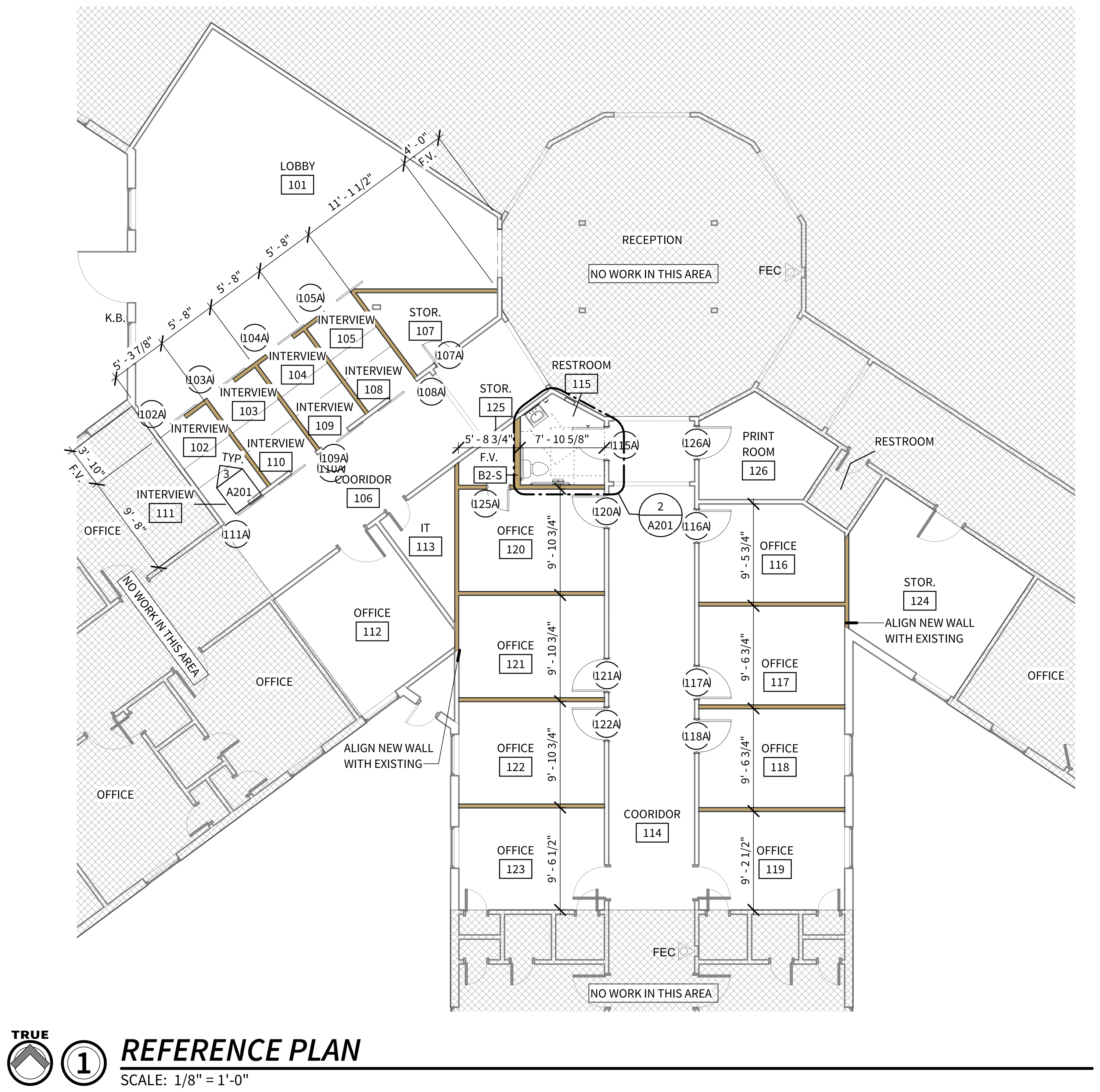
3 INTERIOR ELEVATION

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



2 ENLARGED PLAN

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



1 REFERENCE PLAN

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

REFERENCE PLAN NOTES

1. DO NOT SCALE DRAWINGS. ALL DIMENSIONS ARE TO BE VERIFIED BY THE CONTRACTOR AND ANY DISCREPANCIES SHALL BE REPORTED TO THE ARCHITECT. ALL DIMENSIONS ARE FROM THE FACE OF STUDS, CMU OR CONCRETE WALL AND DO NOT INCLUDE ANY FINISH MATERIAL. EXTERIOR DIMENSIONS ARE FROM FACE OF THE FOUNDATION, AND STEEL LINE (FACE OF FOUNDATION MINUS WIDTH OF THE LEDGE. EXCLUDES THICKNESS OF ANY EXTERIOR VENEER)
2. FOR DIMENSIONS, REFER TO DIMENSION PLAN(S)
3. REFER TO TOILET ACCESSORY LEGEND (WITH INTERIOR ELEVATIONS) FOR TYPICAL MOUNTING HEIGHTS OF TOILET ACCESSORIES
4. PIPING LOCATED ABOVE GRADE AND INSIDE THE BUILDING SHALL BE CONCEALED IN FURRED SPACES WITH THE EXCEPTION OF PIPING IN STAIRWAYS AND EQUIPMENT ROOMS. THE CONTRACTOR SHALL COORDINATE WITH OTHER TRADES TO PROVIDE FURRING FOR PIPING INSTALLED IN FINISH AREAS
5. CAULK AT JUNCTURE OF INTERIOR FACES OF DOOR FRAMES, VIEW WINDOW FRAMES, EXT. WINDOW FRAMES, CABINET WORK AND CASEWORK WITH ADJACENT MATERIALS EVEN THOUGH JOINT MAY NOT BE VISIBLE. RE: INTERIOR ELEVATIONS
6. PROVIDE WOOD BLOCKING IN STUD WALLS FOR ANCHORAGE OF GRAB BARS, PAPER HOLDERS, VANITIES, WALL MOUNTED DOOR STOPS, SINKS, SHELVING, ETC. VERIFY EXACT LOCATION AND HEIGHT WITH ALL APPLICABLE SUBCONTRACTORS
7. PROVIDE BATT INSULATION AT INTERIOR WALLS AROUND ALL OFFICES TOILETS AND TRAINING ROOMS
8. REFER TO WALL SECTIONS FOR INSULATION REQUIREMENTS AT ALL EXTERIOR WALLS AND ROOF DECK
9. FIELD VERIFY EXACT SIZE OF ALL OWNER PROVIDED EQUIPMENT. LET ARCHITECT KNOW IN WRITING OF ANY DISCREPANCIES

DIMENSION PLAN NOTES

1. ALL WALLS TO BE TYPE 'B1-S' UNLESS NOTED OTHERWISE
2. DO NOT SCALE DRAWINGS. ALL DIMENSIONS ARE TO BE VERIFIED BY THE CONTRACTOR AND ANY DISCREPANCIES SHALL BE REPORTED TO THE ARCHITECT. ALL DIMENSIONS ARE FROM THE FACE OF STUDS, CMU OR CONCRETE WALL AND DO NOT INCLUDE ANY FINISH MATERIAL. EXTERIOR DIMENSIONS ARE FROM FACE OF THE FOUNDATION, AND STEEL LINE (FACE OF FOUNDATION MINUS WIDTH OF THE LEDGE. EXCLUDES THICKNESS OF ANY EXTERIOR VENEER)
3. REFER TO THIS DWG. FOR ALL PARTITION TYPES DESIGNATED ON THIS PLAN
4. REFER TO PARTITION TYPES FOR DESIGNATIONS ON THIS PLAN
5. REFERENCE THE ENTIRE SET FOR FURTHER DIMENSIONS AS NEEDED. NOTIFY ARCHITECT OF ANY DISCREPANCIES IN PLAN DIMENSIONS BEFORE PROCEEDING
6. REFER TO TOILET ACCESSORY LEGEND (WITH INTERIOR ELEVATIONS) FOR TYPICAL MOUNTING HEIGHTS OF TOILET ACCESSORIES
7. PIPING LOCATED ABOVE GRADE AND INSIDE THE BUILDING SHALL BE CONCEALED IN FURRED SPACES WITH THE EXCEPTION OF PIPING IN STAIRWAYS AND EQUIPMENT ROOMS. THE CONTRACTOR SHALL COORDINATE WITH OTHER TRADES TO PROVIDE FURRING FOR PIPING INSTALLED IN FINISH AREAS
8. CAULK AT JUNCTURE OF INTERIOR FACES OF DOOR FRAMES, VIEW WINDOW FRAMES, EXT. WINDOW FRAMES, CABINET WORK AND CASEWORK WITH ADJACENT MATERIALS EVEN THOUGH JOINT MAY NOT BE VISIBLE. RE: INTERIOR ELEVATIONS
9. SEE ENLARGED PLANS FOR ADDITIONAL DIMENSIONS

INSULATION NOTES

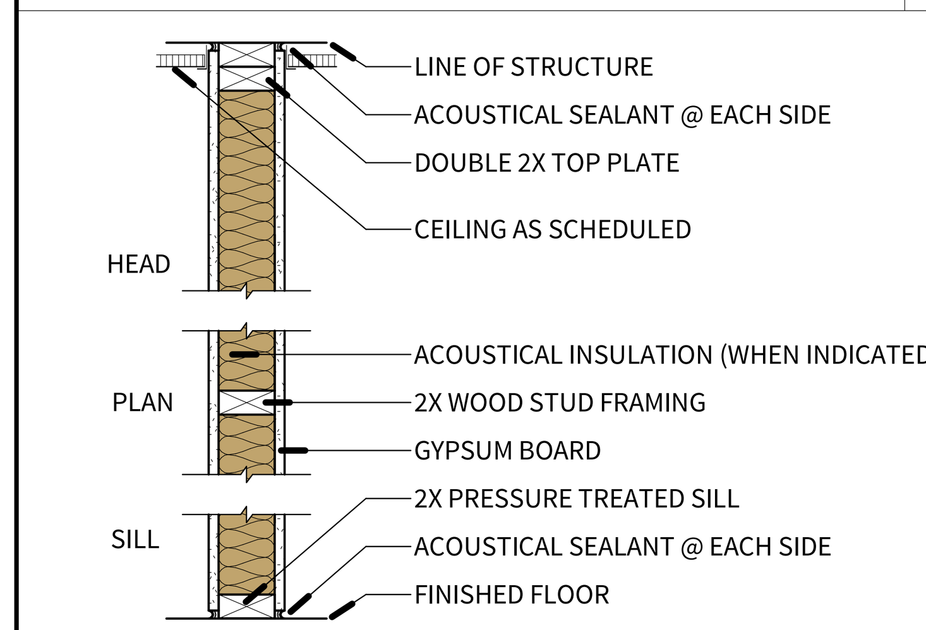
1. INTERIOR 2 x 4 STUD WALLS ARE TO RECEIVE 3 1/2"; R-13 BATT INSULATION AS SHOWN IN PARTITION TYPES AND PLANS

PARTITION GENERAL NOTES

1. ALL WALLS ARE TYPE "B1-S" UNLESS NOTED OTHERWISE.
2. ALL RATED WALLS SHALL BE CONSTRUCTED IN ACCORDANCE TO THE ASSOCIATED UNDERWRITERS LABORATORIES (U.L.) OR ENGINEERED WALL DESIGNS LIST. FIRESTOPPING TO BE PROVIDED AT PENETRATIONS THROUGH RATED WALLS.
3. GYPSUM SHALL BE APPLIED VERTICAL & STAGGERED IN ACCORDANCE WITH U.L. DESIGNS.
4. ALL JOINTS IN FINISH LAYER OF GYPSUM BOARD SHALL RECEIVE TAPE AND JOINT COMPOUND.
5. ALL FINISHED SURFACES TO BE PAINT READY UNLESS NOTED OTHERWISE.
6. ALL PARTITION TYPE DIMENSIONS ARE TO THE FACE OF THE STUD. CONTRACTOR TO ALLOW FOR ADDITIONAL FINISH MATERIAL THICKNESS AS REQUIRED. REFER TO SCHEDULES AND DETAILS FOR FINISHES.
7. ALL GYPSUM WALL BOARD MUST BE MOISTURE RESISTANT AT TOILET ROOMS, WET WALLS, JAN CLOSETS, & ALL WET LOCATIONS.
8. "LINE OF STRUCTURE" AS SHOWN AT THE HEAD CONDITIONS OF EACH WALL TYPE IS DIAGRAMMATIC ONLY AND DOES NOT INDICATE THE EXACT CONSTRUCTION CONDITION. RATED WALLS ARE TO TERMINATE AT STRUCTURAL MEMBERS WITH A FIRE-RESISTANT RATING. WHERE REQUIRED, APPROPRIATE FRAMING AND GYP. BD. IS TO BE INSTALLED AND OFFSET AROUND STRUCTURAL MEMBERS OR OTHER OBSTRUCTIONS SUCH AS PIPING OR DUCT WORK TO MAINTAIN THE FIRE RESISTANCE RATING. NON-RATED WALLS THAT CONTINUE TO STRUCTURE ARE TO TERMINATE AND MAINTAIN THE INTENT OF THE CONTINUOUS PLANE OF ONE LAYER OF GYP. BD. AS A NOISE, SMOKE OR OTHER TYPE OF BARRIER.
9. ALL GYP. BD. SHALL BE 5/8" TYPE "X", UNLESS NOTED OTHERWISE.
10. SOUND ATTENUATION BLANKETS SHALL EXTEND THE FULL HEIGHT OF THE WALLS. PROVIDE SUPPORT OF INSULATION WITH CHICKEN WIRE WHERE GYP. BD. DOES NOT EXTEND TO STRUCTURE ABOVE. WHERE THE WALLS DO NOT EXTEND TO THE STRUCTURE ABOVE, PROVIDE 48" PERIMETER OF SOUND ATTENUATION BLANKETS ABOVE THE CEILING AT OFFICE & TOILET ROOM LOCATIONS.
11. MAINTAIN 1/2" SPACE BETWEEN FLOOR SLAB AND BOTTOM OF GYP. BD. ON ALL WALLS.
12. STOP STUDS 1/2" BELOW TOP PLATE TO ALLOW FOR VERTICAL EXPANSION. DO NOT ATTACH STUDS OR GYP. BD. TO TOP PLATE.
13. EACH STUD GOING TO STRUCTURE AND EXCEEDING ALLOWABLE HEIGHTS SHALL BE BRACED 45 DEGREES DIAGONALLY 12" ABOVE CEILING WITH EQ. SIZE STUDS.
14. ALL PARTITION TYPES SHOWN ON THIS SHEET MAY NOT BE APPLICABLE. REFER TO DIMENSION PLAN FOR ACTUAL TYPES USED.

REMARKS (BY NUMBER)

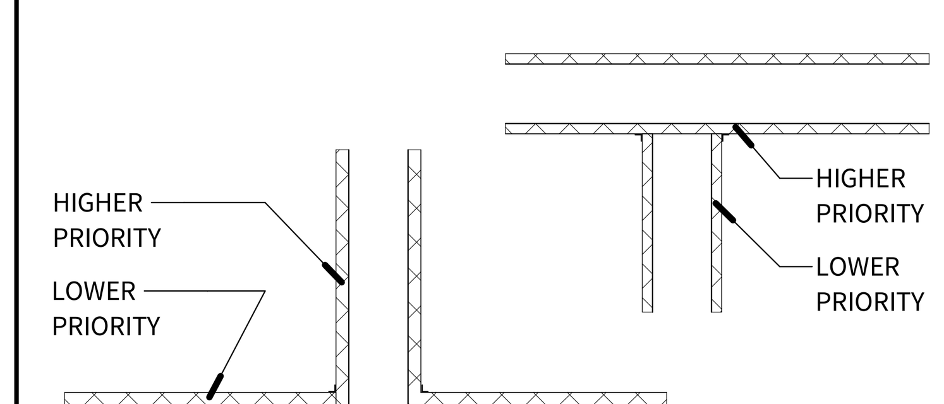
STANDARD PARTITION (FULL HEIGHT GYP) | **B**



TYPE	STUD	GYPSUM BOARD	WIDTH	RE:
B1	3 1/2"	(1) 5/8" GYPSUM BOARD TO STRUCTURE @ EACH SIDE	4 3/4"	-
B2	5 1/2"		6 3/4"	-
B3	7 1/4"		8 1/2"	-

SUFFIX	DESCRIPTION	RE:
-S	ACOUSTICAL INSULATION: 3 1/2"	-
-R	1-HR FIRE RATED	-

PARTITION PRIORITY



PARTITION FUNCTION	PRIORITY
TWO HOUR FIRE & SMOKE WALL	1 (HIGHEST)
TWO HOUR FIRE WALL	2
TWO HOUR SHAFT WALL	
ONE HOUR FIRE & SMOKE WALL	3
ONE HOUR FIRE WALL	4
NON-RATED WALL	5 (LOWEST)

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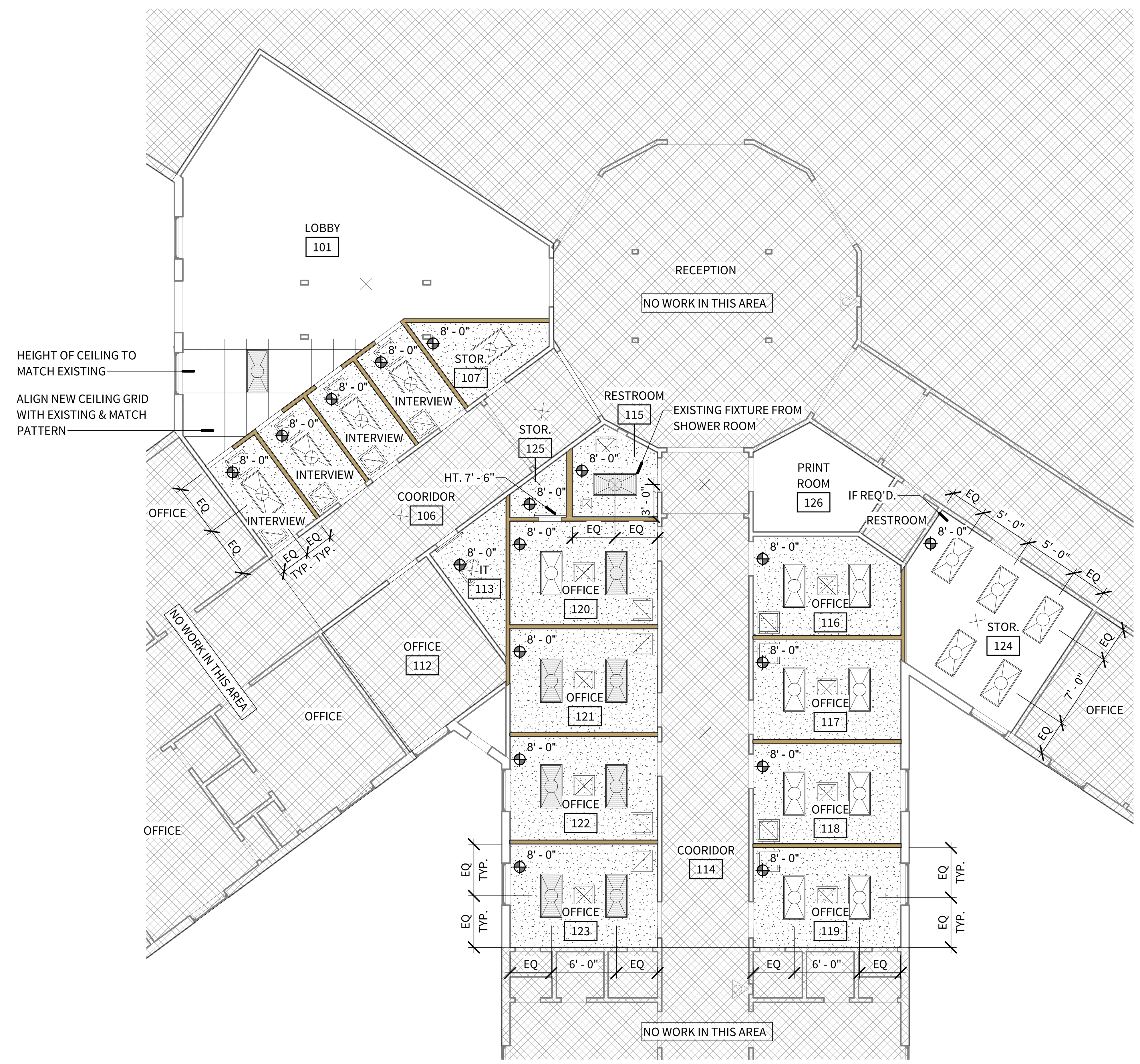
CEILING PLAN NOTES

1. UNLESS NOTED OTHERWISE ALL CEILINGS ARE TO BY GYPSUM BOARD: TAPED, BEDDED, TEXTURED AND PRIMED. FINISH TO BE SELECTED BY ARCHITECT
2. ALL KITCHEN & FOOD SERVICE AREAS ARE TO HAVE VINYL CLAD CEILING TILES WITH SCRUBBABLE SURFACES
3. ALL CEILING GRIDS ARE TO BE CENTERED IN ROOM UNLESS OTHERWISE NOTED
4. REFER TO ELECTRICAL FOR LIGHTING FIXTURE SCHEDULE
5. REFER TO MECHANICAL SCHEDULE FOR MECHANICAL GRILLE SIZES. MECHANICAL SCHEDULE TAKES PRECEDENCE OVER THE R.C.P. IN THE EVENT OF ANY DISCREPANCIES IN GRILLE SIZE SHOWN BETWEEN THE TWO. LOCATION OF GRILLES SHALL BE INSTALLED PER THE R.C.P. AS CLOSE AS POSSIBLE
6. ALL SPEAKERS, SECURITY CAMERAS, & FIRE PROTECTION TO BE COORDINATED WITH OWNER PRIOR TO INSTALLATION

CEILING LEGEND

▦	ACOUSTICAL CEILING TILE ON SUSPENDED GRID SYSTEM	▨	GYPSUM BOARD
▯	2 X 4 LIGHT	&	SURFACE MOUNTED STRIP LIGHT
▮	REUSED EXISTING LIGHT	◩	RETURN REGISTER, RE: MEP
⊠	SUPPLY DIFFUSER, RE: MEP		

NOTE: RE: ELECTRICAL LIGHTING SCHEDULE FOR FIXTURE TYPES



1 **_REFLECTED CEILING PLAN_**
SCALE: 1/8" = 1'-0"

LEVEL 5

Level 5 Architecture
Mansfield, TX | Springdale, AR
level5architecture.com

REGISTERED ARCHITECT
22908
STATE OF TEXAS
[illegible]

10/25/2021

PROJECT INFORMATION:

AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 ELIZABETH ST
TEXARKANA, TX
75503

PROJECT NUMBER: 21-64T
ISSUE DATE: 10/25/2021
REVISIONS:

SHEET NAME:

REFLECTED CEILING PLAN

SHEET NUMBER:

A202

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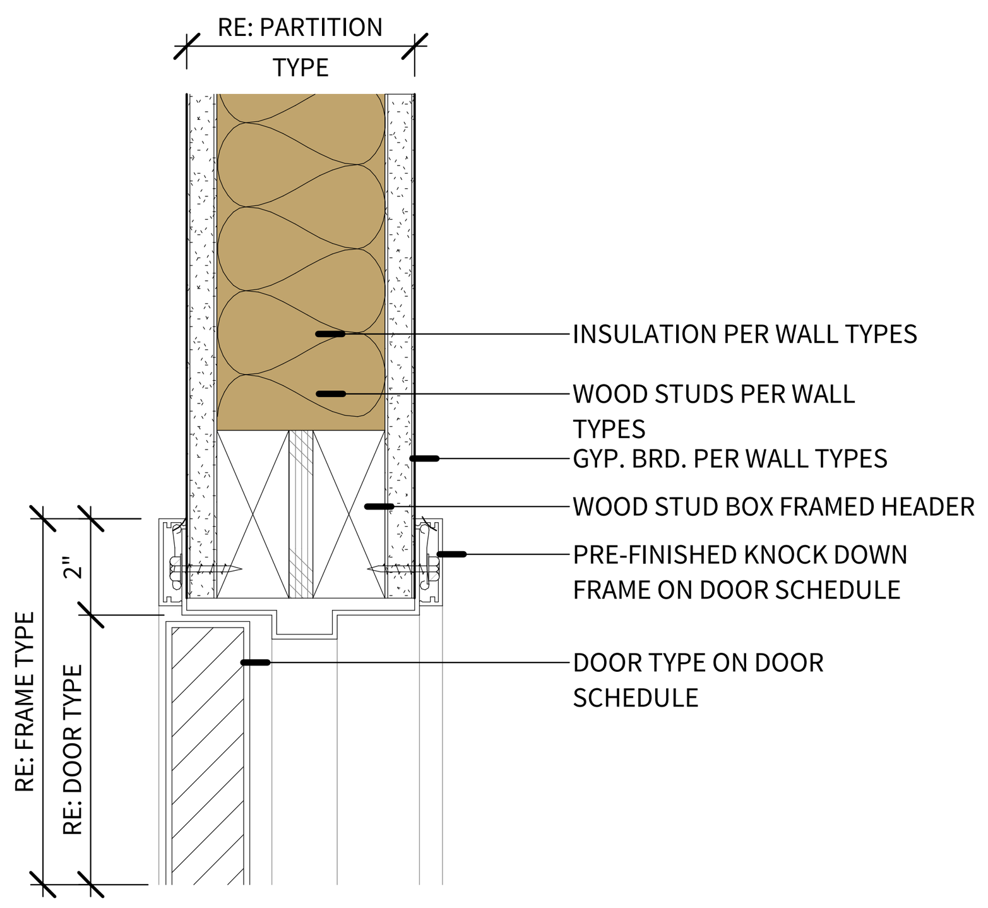
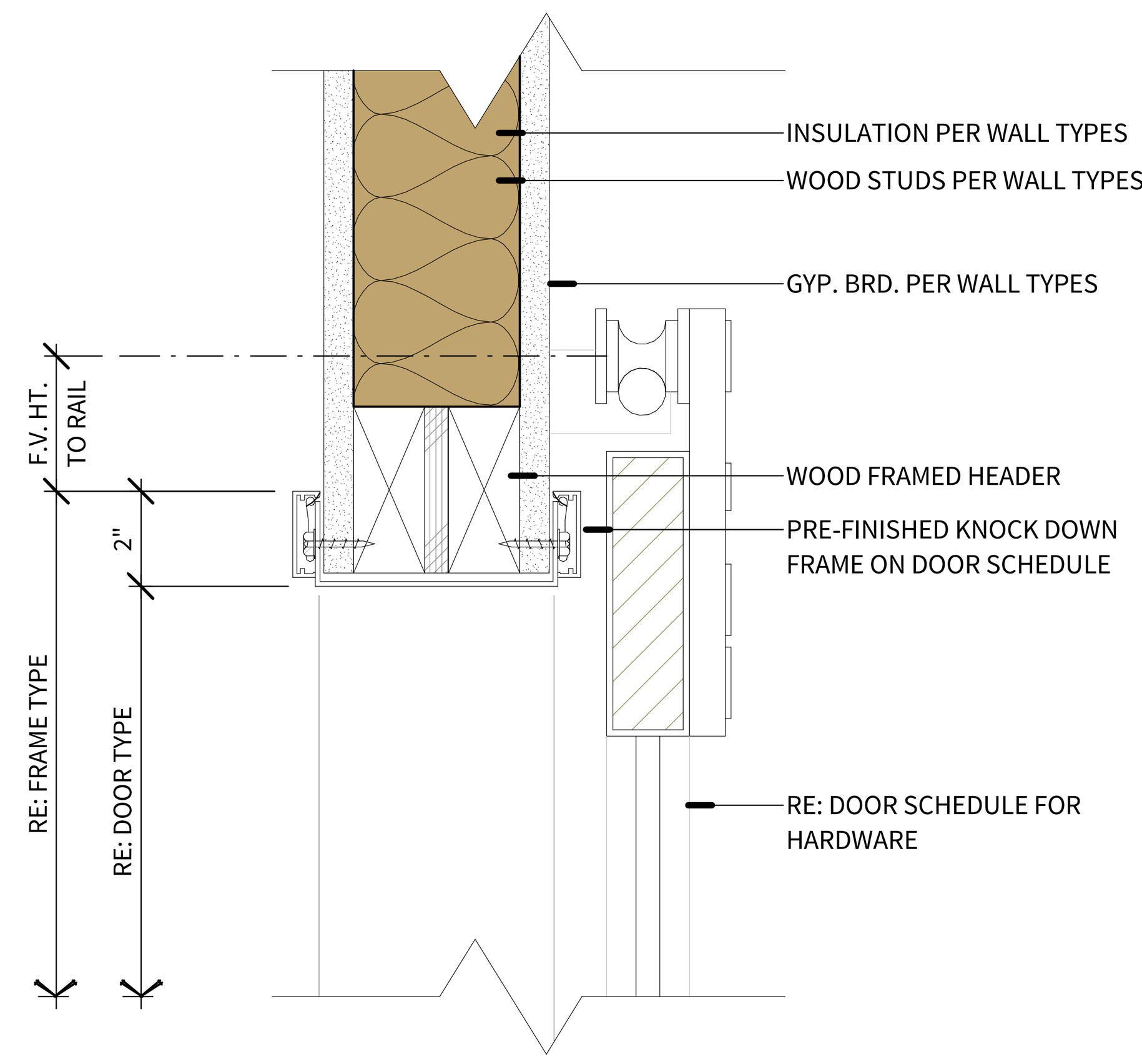


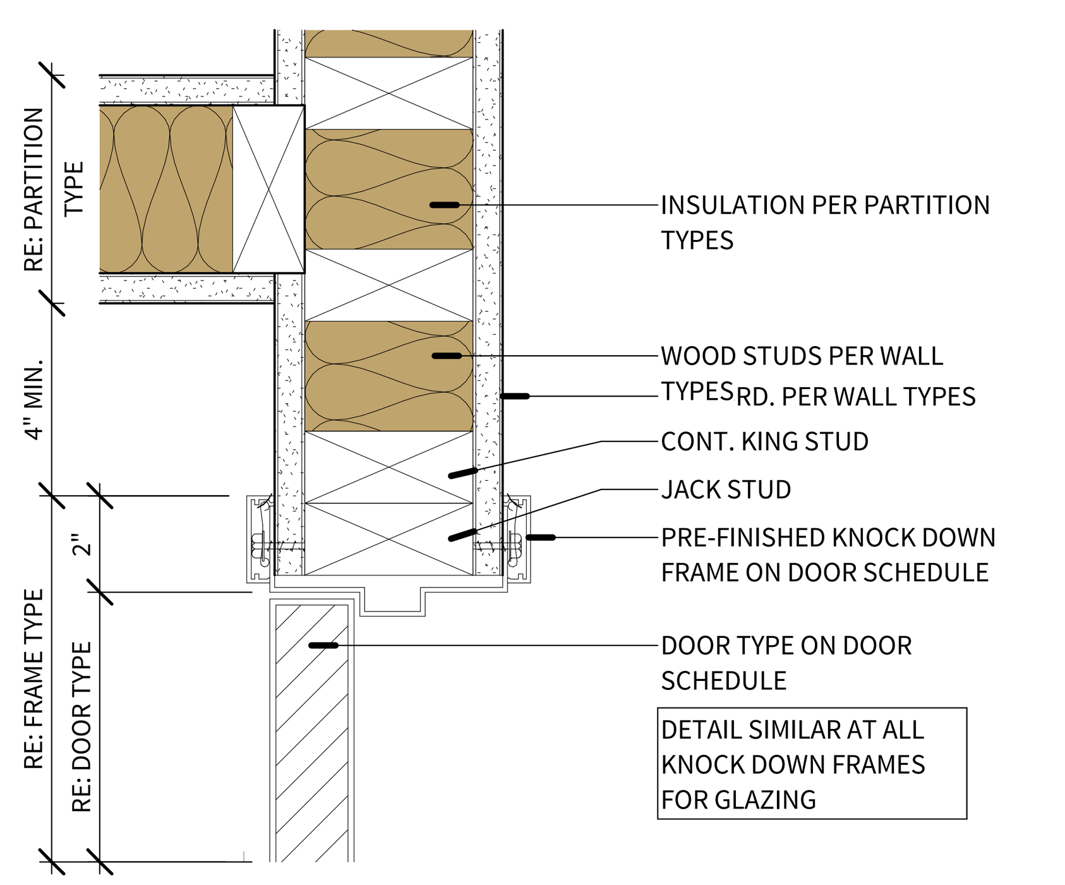
① ALUMINUM FRAME HEAD TYP.

SCALE: 3" = 1'-0"



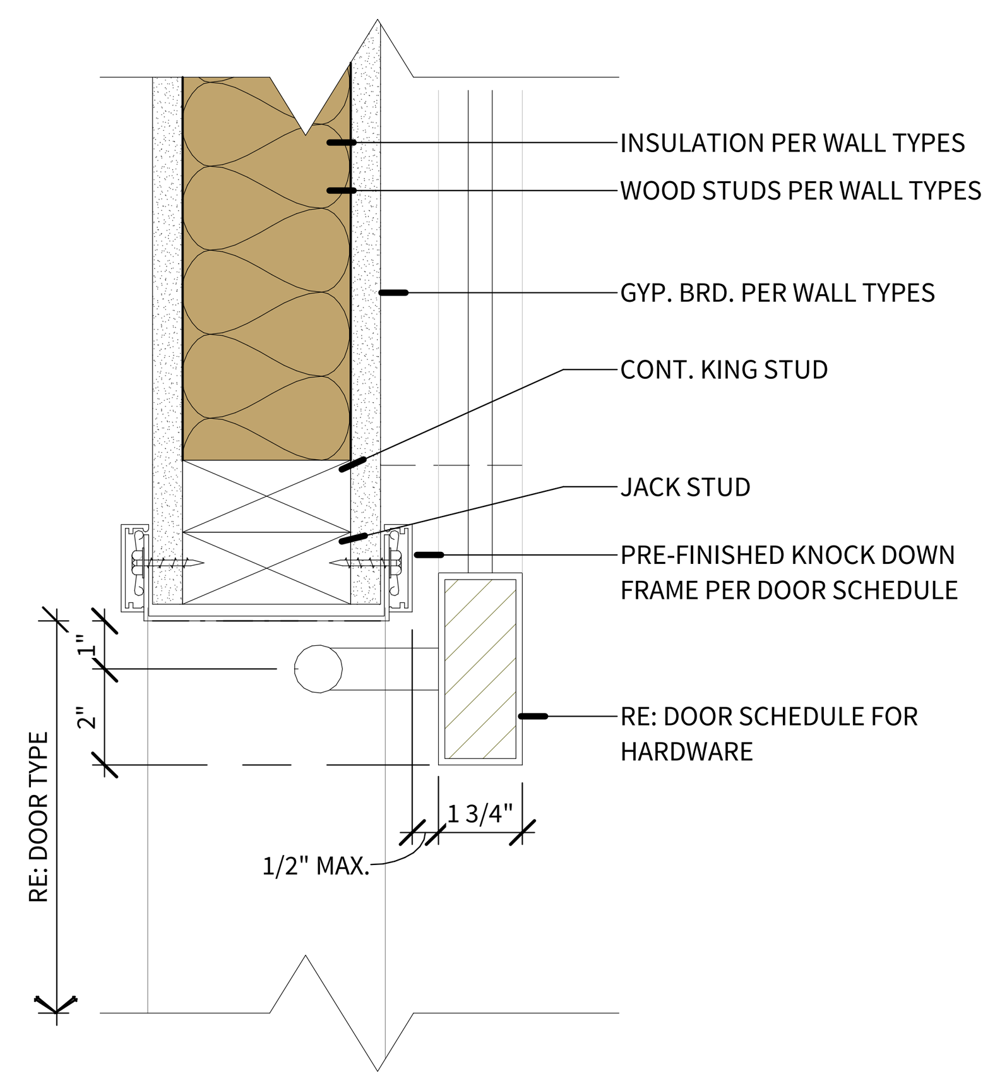
② BARN DOOR HEAD

SCALE: 3" = 1'-0"



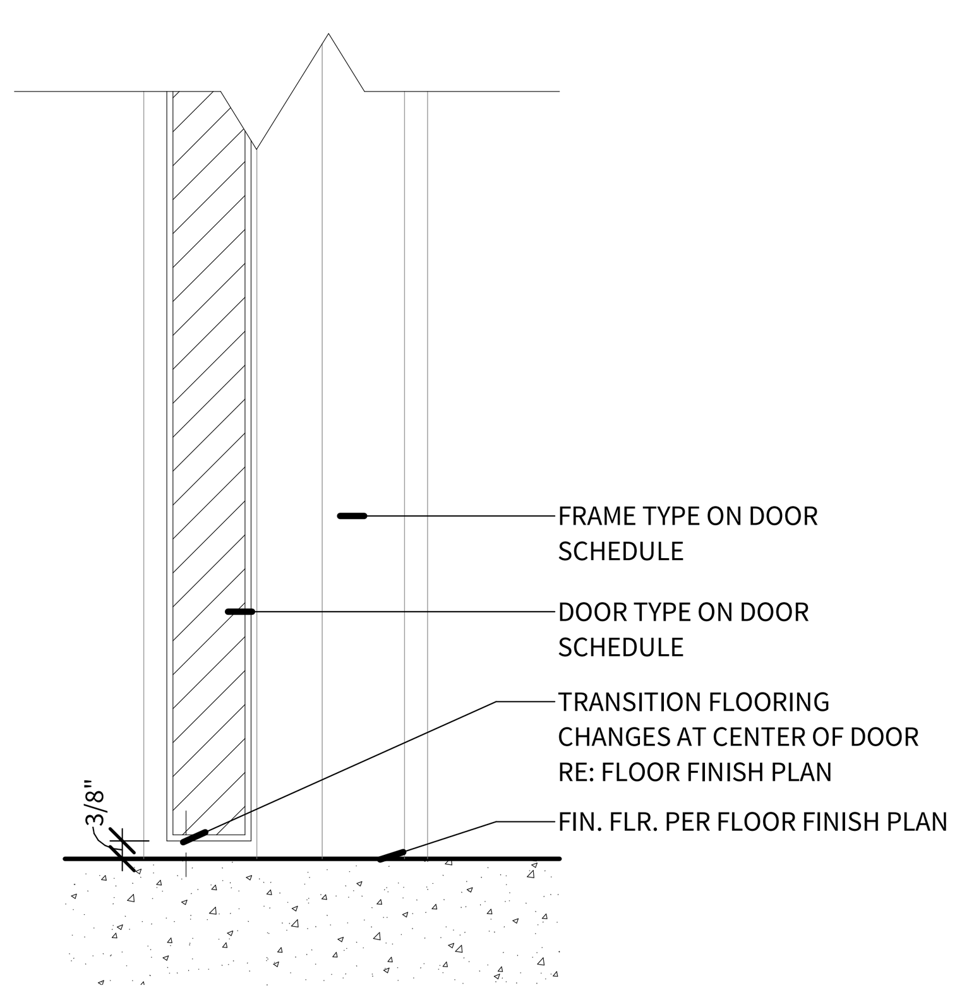
③ ALUMINUM FRAME JAMB TYP.

SCALE: 3" = 1'-0"



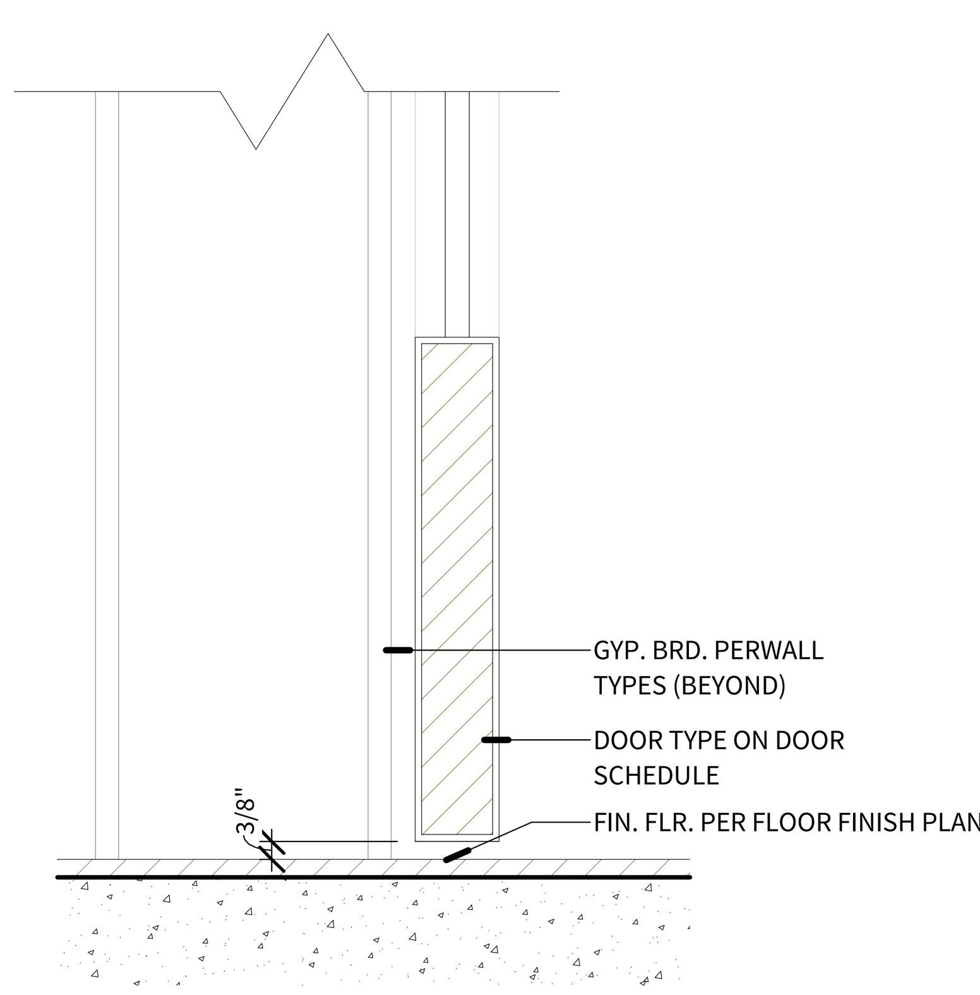
④ BARN DOOR JAMB

SCALE: 3" = 1'-0"



⑤ THRESHOLD TYP.

SCALE: 3" = 1'-0"

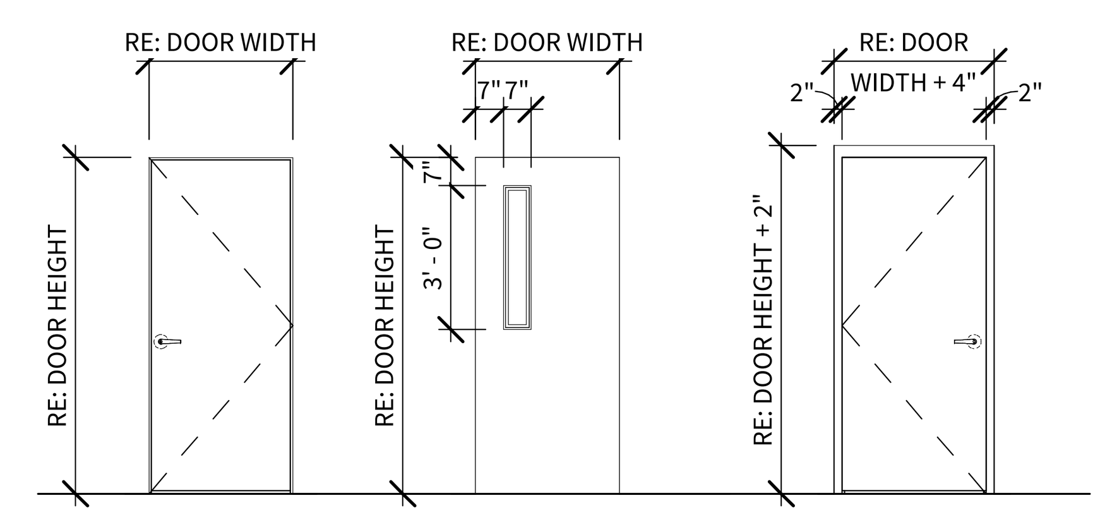


⑥ BARN DOOR THRESHOLD

SCALE: 3" = 1'-0"

DOOR SCHEDULE

MARK	TYPE	DIMENSION W	DIMENSION H	DIMENSION D	DOOR MATERIAL	GLAZING TYPE	FRAME TYPE	FRAME MATERIAL	HARDWARE SET	DETAILS HEAD	DETAILS JAMB	DETAILS SILL	REMARKS
102A	D-02	3' - 0"	7' - 0"	1 3/4"	S.C. WOOD	-	F-01	KNOCKDOWN	HW-4	2/A301	4/A301	6/A301	
103A	D-02	3' - 0"	7' - 0"	1 3/4"	S.C. WOOD	-	F-01	KNOCKDOWN	HW-4	2/A301	4/A301	6/A301	
104A	D-02	3' - 0"	7' - 0"	1 3/4"	S.C. WOOD	-	F-01	KNOCKDOWN	HW-4	2/A301	4/A301	6/A301	
105A	D-02	3' - 0"	7' - 0"	1 3/4"	S.C. WOOD	-	F-01	KNOCKDOWN	HW-4	2/A301	4/A301	6/A301	
107A	D-01	2' - 0"	7' - 0"	1 3/4"	S.C. WOOD	-	F-01	KNOCKDOWN	HW-1	1/A301	3/A301	5/A301	
108A	D-02	3' - 0"	7' - 0"	1 3/4"	S.C. WOOD	-	F-01	KNOCKDOWN	HW-4	2/A301	4/A301	6/A301	
109A	D-02	3' - 0"	7' - 0"	1 3/4"	S.C. WOOD	-	F-01	KNOCKDOWN	HW-4	2/A301	4/A301	6/A301	
110A	D-02	3' - 0"	7' - 0"	1 3/4"	S.C. WOOD	-	F-01	KNOCKDOWN	HW-4	2/A301	4/A301	6/A301	
111A	D-02	3' - 0"	7' - 0"	1 3/4"	S.C. WOOD	-	F-01	KNOCKDOWN	HW-4	2/A301	4/A301	6/A301	
115A	D-01	3' - 0"	7' - 0"	1 3/4"	S.C. WOOD	-	F-01	KNOCKDOWN	HW-3	1/A301	3/A301	5/A301	
116A	D-01	3' - 0"	7' - 0"	1 3/4"	S.C. WOOD	-	F-01	KNOCKDOWN	HW-2	1/A301	3/A301	5/A301	
117A	D-01	3' - 0"	7' - 0"	1 3/4"	S.C. WOOD	-	F-01	KNOCKDOWN	HW-2	1/A301	3/A301	5/A301	
118A	D-01	3' - 0"	7' - 0"	1 3/4"	S.C. WOOD	-	F-01	KNOCKDOWN	HW-2	1/A301	3/A301	5/A301	
120A	D-01	3' - 0"	7' - 0"	1 3/4"	S.C. WOOD	-	F-01	KNOCKDOWN	HW-2	1/A301	3/A301	5/A301	
121A	D-01	3' - 0"	7' - 0"	1 3/4"	S.C. WOOD	-	F-01	KNOCKDOWN	HW-2	1/A301	3/A301	5/A301	
122A	D-01	3' - 0"	7' - 0"	1 3/4"	S.C. WOOD	-	F-01	KNOCKDOWN	HW-2	1/A301	3/A301	5/A301	
125A	D-01	2' - 0"	7' - 0"	1 3/4"	S.C. WOOD	-	F-01	KNOCKDOWN	HW-1	1/A301	3/A301	5/A301	
126A	D-01	3' - 0"	7' - 0"	1 3/4"	S.C. WOOD	-	F-01	KNOCKDOWN	HW-2	1/A301	3/A301	5/A301	



DOOR AND FRAME TYPES

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

HARDWARE SCHEDULE

HARDWARE SET	QTY PER DOOR	DESCRIPTION	MFR	MODEL	FINISH
HW-1 (STORAGE)	3 EA.	HINGES	IVES	5 BBI 4.5X4.5 NRP	630
	1 EA.	CLOSER	LCN	4040XP SH CUSH	689
	1 EA.	CLASSROOM LOCK	SCH	PD (RHO)	630
	1 EA.	WALL STOP	IVES	WS401CCV	626
HW-2 (OFFICE)	3 EA.	HINGES	IVES	5BB1 4.5x4.5 NRP	630
	1 EA.	CLASSROOM LOCK	SCH	ND70PD (RHO)	630
	1 EA.	WALL STOP	IVES	WS401CCV	626
HW-4 (INTERVIEW DOORS)	1 EA.	TRACK HDWR SYSTEM	PEMKO	BLD-FT02 (72")	BLK
	2 EA.	DOOR PULL	PEMKO	ROCKWOOD RM3101	630
HW-4 (INTERVIEW DOORS)	1 EA.	TRACK HDWR SYSTEM	PEMKO	BLD-FT02 (72")	BLK
	2 EA.	DOOR PULL	PEMKO	ROCKWOOD RM3101	630

*SILENCERS AT ALL INTERIOR DOORS
^ASTRAGAL AND FLUSH BOLT AT DOUBLE DOORS

LEVEL 5

Level 5 Architecture
Mansfield, TX | Springdale, AR
level5architecture.com

10/25/2021

PROJECT INFORMATION:

AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 ELIZABETH ST
TEXARKANA, TX
75503

PROJECT NUMBER: 21-64T
ISSUE DATE: 10/25/2021
REVISIONS:

SHEET NAME:

DOOR & WINDOW SCHEDULES

SHEET NUMBER:

A301

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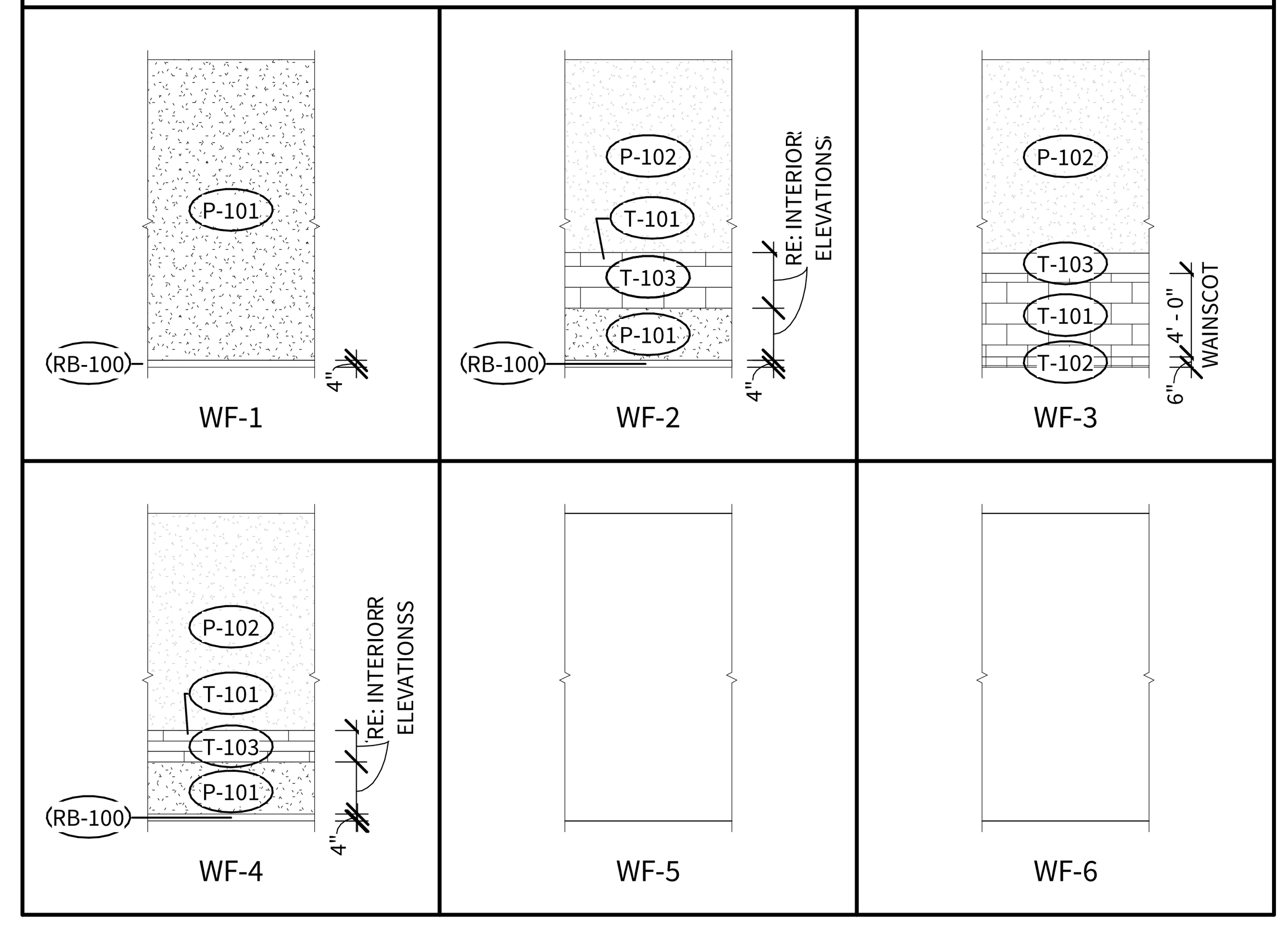
FINISH MATERIALS

MARK	VENDOR	COLLECTION	COLOR/FINISH	SIZE	GROUT	MATERIALS ONLY	ALLOWANCE	REMARKS
ACOUSTICAL CEILING TILE ON SUSPENDED GRID SYSTEM								
ACT-101	ARMSTRONG	ULTIMA	INTERIOR FINISH	24" x 24"	-	$0.00		
CARPET TILE								
CPT-101	TBD	TBD	TBD			$22.00	/YARD	
CERAMIC TILE								
T-101	INTERCERAMIC	TBD	TBD	TBD	TBD	$2.50	/SQ. FT.	MIN. 1/8" GROUT LINES
LUXURY VINYL TILE								
LVT-101	TBD	TBD	TBD	TBD		$3.00	/SQ. FT.	
PAINT								
P-101	SHERWIN WILLIAMS	COLOR	TBD	-		$0.00		EGGSHELL FINISH
PAINT - CEILING - GYP. BOARD								
P-102	SHERWIN WILLIAMS	COLOR	TBD	-	-	$0.00		FLAT
PLASTIC LAMINATE								
PL-101	WILSONART	TBD	TBD	-		$0.00		-
RUBBER WALL BASE								
RB-101	JOHNSONITE	COLOR MATCH	63 BURNT UMBER B	4"		$0.00		-
WALLS - PORCELAIN TILE								
T-102	INTERCERAMIC	TBD	TBD	TBD	TBD	$0.00		WALL BASE; MIN. 1/8" GROUT LINES

FINISH SCHEDULE

ROOM NUMBER	ROOM NAME	FLOOR FINISH	FLOOR TRANSITION	CEILING FINISH	WALL FINISH				NOTES
					NORTH	SOUTH	EAST	WEST	
101	LOBBY	LVT-101	-	ACT-101	P-101	P-101	P-101	P-101	
102	INTERVIEW	LVT-101	-	P-102	P-101	P-101	P-101	P-101	
103	INTERVIEW	LVT-101	-	P-102	P-101	P-101	P-101	P-101	
104	INTERVIEW	LVT-101	-	P-102	P-101	P-101	P-101	P-101	
105	INTERVIEW	LVT-101	-	P-102	P-101	P-101	P-101	P-101	
106	COORIDOR	LVT-101	-	EXISTING TO REMAIN	P-101	P-101	P-101	P-101	
107	STOR.	LVT-101	-	P-102	P-101	P-101	P-101	P-101	
108	INTERVIEW	LVT-101	-	P-102	P-101	P-101	P-101	P-101	
109	INTERVIEW	LVT-101	-	P-102	P-101	P-101	P-101	P-101	
110	INTERVIEW	LVT-101	-	P-102	P-101	P-101	P-101	P-101	
111	INTERVIEW	LVT-101	-	P-102	P-101	P-101	P-101	P-101	
112	OFFICE	EXISTING TO REMAIN	-	P-102 (EXISTING TO REMAIN)	P-101	P-101	P-101	P-101	
113	IT	LVT-101	-	P-102	P-101	P-101	P-101	P-101	
114	COORIDOR	EXISTING TO REMAIN	-	EXISTING TO REMAIN	P-101	P-101	P-101	P-101	
115	RESTROOM	T-101	2/Q201	P-102	P-101/WF-3	P-101/WF-3	P-101/WF-3	P-101/WF-3	
116	OFFICE	CPT-101	3/Q201	P-102	P-101	P-101	P-101	P-101	
117	OFFICE	CPT-101	3/Q201	P-102	P-101	P-101	P-101	P-101	
118	OFFICE	CPT-101	3/Q201	P-102	P-101	P-101	P-101	P-101	
119	OFFICE	CPT-101	3/Q201	P-102	P-101	P-101	P-101	P-101	
120	OFFICE	CPT-101	3/Q201	P-102	P-101	P-101	P-101	P-101	
121	OFFICE	CPT-101	3/Q201	P-102	P-101	P-101	P-101	P-101	
122	OFFICE	CPT-101	3/Q201	P-102	P-101	P-101	P-101	P-101	
123	OFFICE	CPT-101	3/Q201	P-102	P-101	P-101	P-101	P-101	
124	STOR.	EXISTING TO REMAIN	-	P-102 (EXISTING TO REMAIN)	P-101	P-101	P-101	P-101	
125	STOR.	LVT-101	3/Q201	P-102	P-101	P-101	P-101	P-101	
126	PRINT ROOM	EXISTING TO REMAIN	-	P-102 (EXISTING TO REMAIN)	P-101	P-101	P-101	P-101	

WALL FINISH TYPES



INTERIOR FINISH NOTES

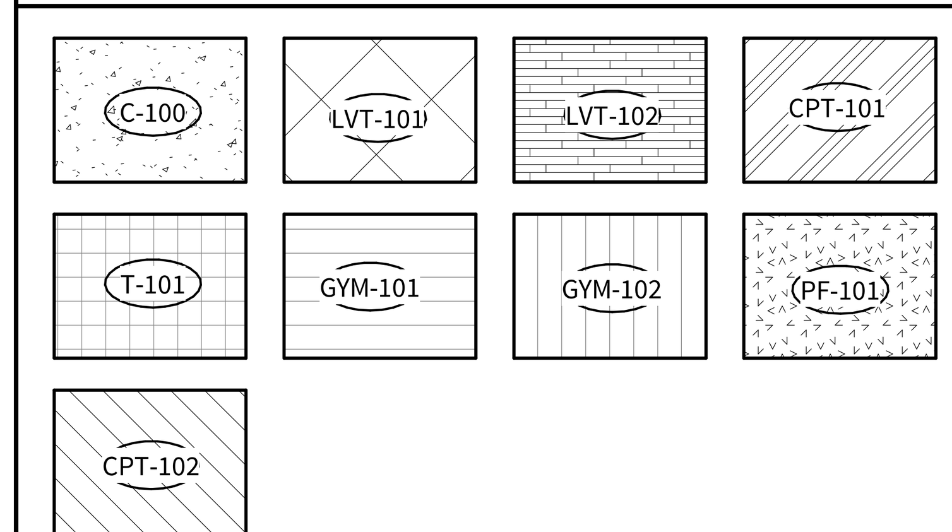
1. ALL WALLS TO BE PAINTED 'P-101' UNLESS NOTED OTHERWISE.
2. ALL GYP CEILINGS TO BE PAINTED 'P-102' UNLESS NOTED OTHERWISE.
3. ALL FURR-DOWNS & HEADERS TO BE PAINTED 'P-102' UNLESS NOTED OTHERWISE.
4. ALL WALL TILE GROUT LINES TO ALIGN WITH FLOOR TILE GROUT LINES.
5. PROVIDE CAULK AT THE FOLLOWING AREAS;
   - -DOOR FRAMES TO WALL, CEILING, FLOOR & BASE
   - -WINDOWS TO WALL
   - -PLUMBING FIXTURES TO WALL & FLOOR
   - -CASEWORK TO WALL, BENEATH BASE CABINETS & BOTTOM OF UPPER CABINETS

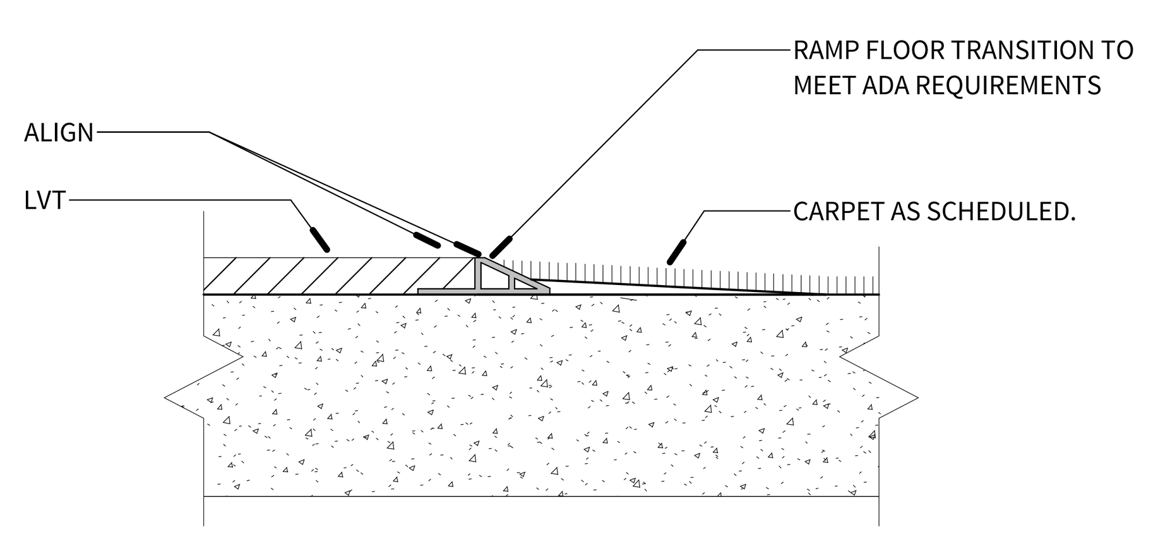
FINISH TAG

NORTH / WEST / EAST / SOUTH
CEILING
REMARK: A

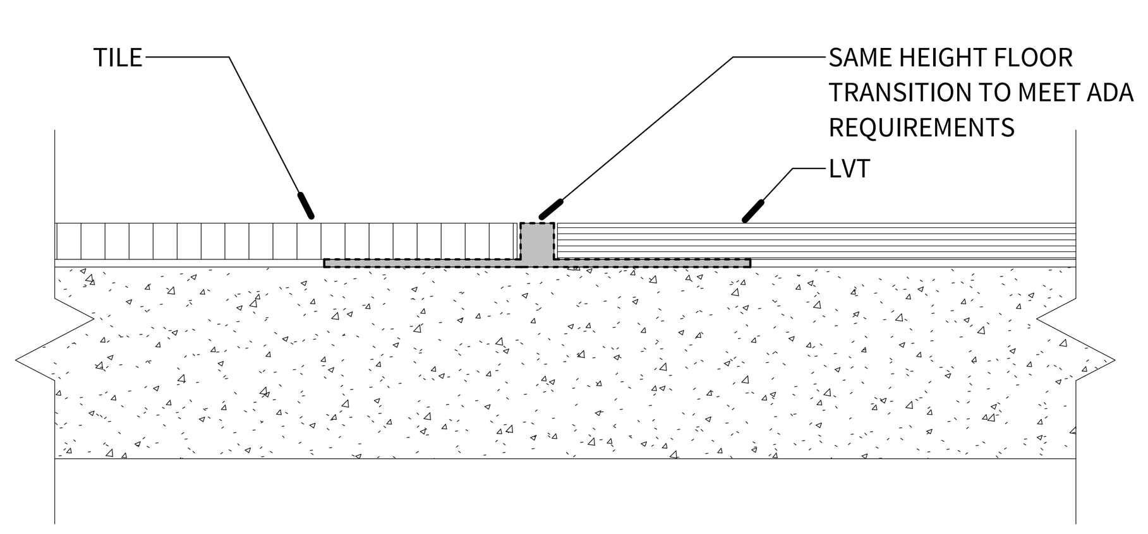
REMARKS (RE:)

MATERIAL LEGEND

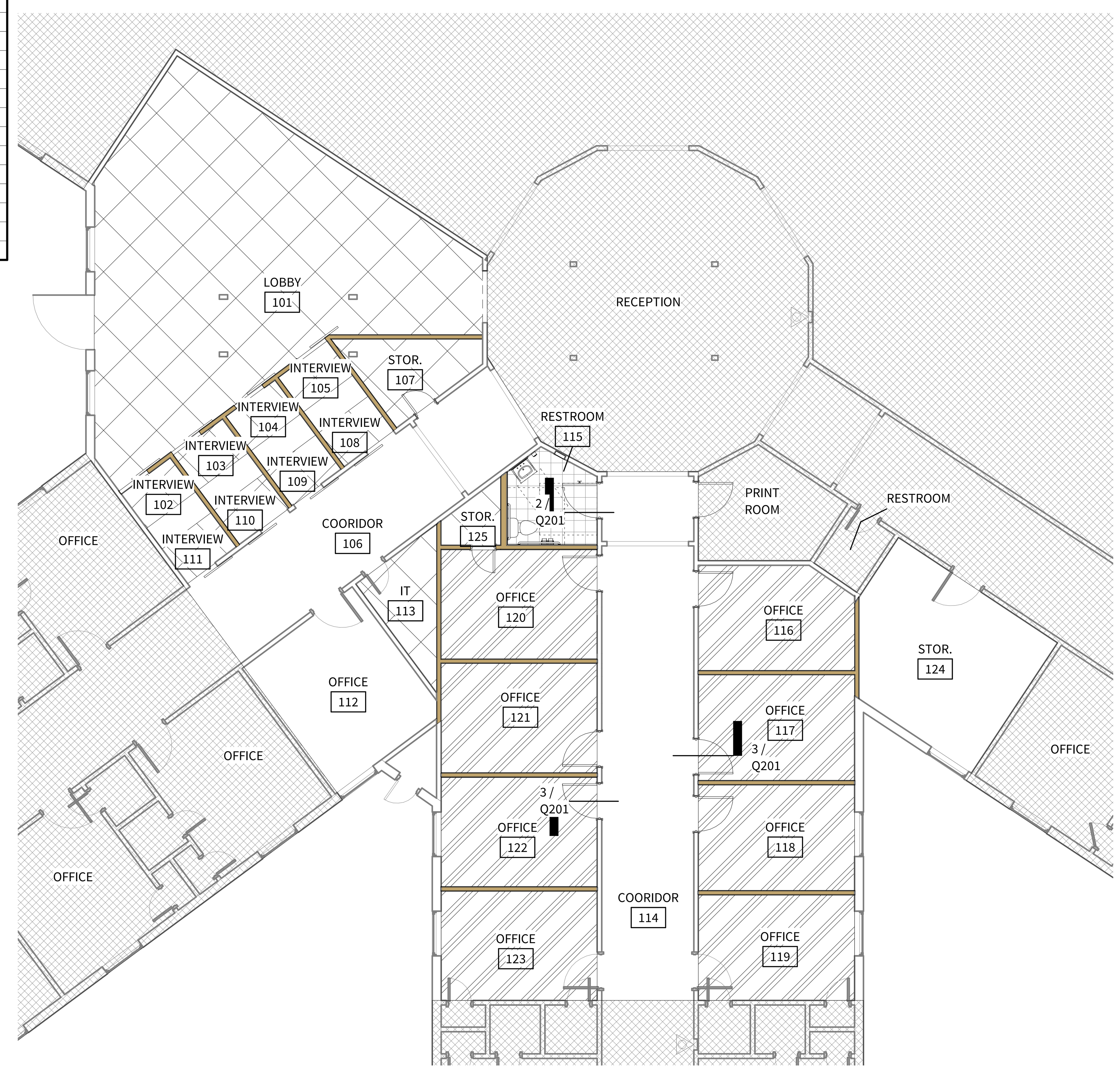




3 *FLOOR TRANSITION DETAIL*
SCALE: 12" = 1'-0"



2 *FLOOR TRANSITION DETAIL*
SCALE: 12" = 1'-0"



TRUE
1 *FINISH PLAN*
SCALE: 1/8" = 1'-0"

Level 5 Architecture
Mansfield, TX | Springdale, AR
level5architecture.com

10/25/2021

PROJECT INFORMATION:

AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 ELIZABETH ST
TEXARKANA, TX
75503

PROJECT NUMBER: 21-64T
ISSUE DATE: 10/25/2021
REVISIONS:

SHEET NAME:
FINISH FLOOR PLAN

SHEET NUMBER:
Q201

10/25/2021 12:22:36 PM

HVAC SHEET INDEX

GENERAL MECHANICAL SYMBOLS

- REVISION NUMBER - SHOWN ON PLANS
- POINT WHERE NEW CONNECTS TO EXISTING
- NUMBER OF DETAIL ON SHEET / NUMBER OF SHEET WHERE DETAIL APPEARS
- KEYNOTE
- CONTINUATION SYMBOL
- Room 5 — ROOM NAME AND NUMBER
- ITEM TO BE DEMOLISHED
- AREA NOT IN CONTRACT
- 2" — PIPE SIZE TAG (DIAMETER)
- ABOVE GROUND PIPING
- 1/8" / 12" SLOPE — PIPE SLOPE TAG
- BELOW GROUND PIPING
- INVERT: -105' - 1" — PIPE INVERT ELEVATION TAG
- (E) — EXISTING PIPE TAG
- PIPING BEING DEMOLISHED

ABBREVIATIONS

Ø	ROUND	LVR	LOUVER
ABV	ABOVE	LWT	LEAVING WATER TEMPERATURE
AC	AIR CONDITIONING	M/A	MIXED AIR
AD	AREA DRAIN	MAX	MAXIMUM
ADD	ADDENDUM	MBH	ONE THOUSAND BTU PER HOUR
AFF	ABOVE FINISHED FLOOR	MCF	ONE THOUSAND CUBIC FEET
AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY	MD	MOTORIZED DAMPER
ALT	ALTERNATE	MECH	MECHANICAL
AP	ACCESS PANEL	MFR	MANUFACTURER
ARCH	ARCHITECT/ARCHITECTURAL	MIN	MINIMUM
BFF	BELOW FINISHED FLOOR	MISC	MISCELLANEOUS
BLW	BELOW	MTR	MOTOR
BTU	BRITISH THERMAL UNITS	MU/A	MAKE-UP/AIR
BTUH	BRITISH THERMAL UNITS PER HOUR	NC	NOISE CRITERIA
CAP	CAPACITY	NC	NORMALLY CLOSED
CB	CATCH BASIN	NIC	NOT IN CONTRACT
CFM	CUBIC FEET PER MINUTE	NO	NUMBER
CLG	CEILING	NO	NORMALLY OPEN
CO	CLEAN OUT	NTS	NOT TO SCALE
CW	COLD WATER	O	OXYGEN
D	DEGREE	O/A	OUTSIDE AIR
DB	DRY BULB	ORD	OVERFLOW ROOF DRAIN
DIA	DIAMETER	PD	PRESSURE DROP
DN	DOWN	PIV	POST INDICATOR VALVE
DW	DISTILLED WATER	PLBG	PLUMBING
EA	EACH	PRESS	PRESSURE
EAT	ENTERING AIR TEMPERATURE	PRV	PRESSURE REDUCING VALVE
ELEC	ELECTRICAL	PSI	POUNDS PER SQUARE INCH
EQUIP	EQUIPMENT	PSIG	POUNDS PER SQUARE INCH GAUGE
EWC	ELECTRIC WATER COOLER	PWR	POWER
EWT	ENTERING WATER TEMPERATURE	R	DUCT RISER
E/A	EXHAUST AIR	R/A	RETURN AIR
EXIST	EXISTING	RCP	RADIANT CEILING PANEL
F	DEGREES FAHRENHEIT	RD	ROOF DRAIN
FCO	FLOOR CLEAN OUT	REC	RECESSED
FD	FLOOR DRAIN	RED	REDUCER
FDC	FIRE DEPARTMENT CONNECTION	RH	RELATIVE HUMIDITY
FL	FLOOR	RL/A	RELIEF AIR
FO	FUEL OIL	RM	ROOM
FOV	FUEL OIL VENT	RPM	REVOLUTIONS PER MINUTE
FOR	FUEL OIL RETURN	RW	RAIN WATER
FOS	FUEL OIL SUPPLY	SF	SQUARE FOOT
FPM	FEET PER MINUTE	S/A	SUPPLY AIR
FS	FLOOR SINK	SAN	SANITARY
FT	FOOT/FEET	SF	SQUARE FOOT
FTR	FIN TUBE RADIATION	SD	SMOKE DAMPER
GAL	GALLON	SM	SURFACE MOUNT
GF	GAS-FIRED	SP	STANDPIPE
GC	GENERAL CONTRACTOR	SP	STATIC PRESSURE
GPM	GALLONS PER MINUTE	STM	STEAM
GW	GREASE WASTE	T	THERMOSTAT
HB	HOSE BIB	TD	TEMPERATURE DROP
HP	HORSE POWER	TDR	TRENCH DRAIN
HTG	HEATING	TEMP	TEMPERATURE
HTR	HEATER	TYP	TYPICAL
HW	HOT WATER	UG	UNDERGROUND
HYD	HYDRANT	VAC	VACUUM
ID	INDIRECT	V	VENT
IN	INCH	VAV	VARIABLE AIR VOLUME
INV	INVERT	VENT	VENTILATION
LB	POUND	VTR	VENT THROUGH ROOF
LB/HR	POUNDS PER HOUR	W	WASTE
LAT	LEAVING AIR TEMPERATURE	WB	WET BULB
LP	LOW PRESSURE	WCO	WALL CLEAN OUT
LPG	LIQUEFIED PETROLEUM GAS	WH	WALL HYDRANT

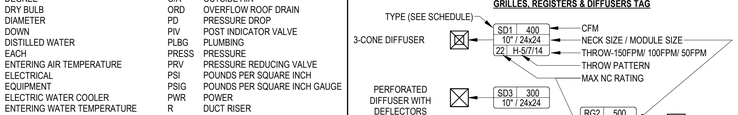
EQUIPMENT ABBREVIATIONS

AC	AIR CONDITIONING UNIT	ET	EXPANSION TANK
ACCU	AIR COOLING CONDENSING UNIT	EWH	ELECTRIC WATER HEATER
AHU	AIR HANDLING UNIT	FCU	FAN COIL UNIT
AS	AIR SEPARATOR	FP	FIRE PUMP
B	BOILER	GI	GREASE INTERCEPTOR
CH	CHILLER	GRV	GRAVITY ROOF VENTILATOR
CT	COOLING TOWER	HWP	HEATING WATER PUMP
CUH	CABINET UNIT HEATER	HRU	HEAT RECOVERY UNIT
CHWP	CHILLED WATER PUMP	PRV	POWER ROOF VENTILATOR
DBP	DOMESTIC WATER BOOSTER PUMP	RE	RETURN/EXHAUST FAN
DC	DUCT MOUNTED COIL	RTU	ROOFTOP UNIT
DCP	DOMESTIC WATER CIRCULATING PUMP	SP	SUMP PUMP
EF	EXHAUST FAN	UH	UNIT HEATER
EDC	ELECTRIC DUCT COIL	WH	WATER HEATER

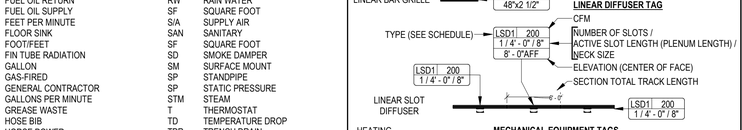
HVAC SYMBOLS

- 18"x12" — SQUARE DUCT SIZE TAG (WIDTH x HEIGHT)
- 18"/12" — OVAL DUCT SIZE TAG (WIDTH / HEIGHT)
- 18"Ø — ROUND DUCT SIZE TAG (DIAMETER)
- (E) — EXISTING DUCT TAG
- DUCT BEING DEMOLISHED
- 18"x18" S/A — SUPPLY AIR
- 18"x18" S-O/A — CONDITIONED OUTSIDE AIR
- 18"x18" O/A — OUTSIDE AIR
- 18"x18" R/A — RETURN AIR
- 18"x18" T/A — TRANSFER AIR
- 18"x18" E/A — EXHAUST AIR
- 18"x18" L/A — RELIEF AIR
- 18"x18" GE/A — GREASE EXHAUST AIR
- 18"x18" CE/A — CONDENSATE EXHAUST AIR
- 18"x18" SE/A — SMOKE EXHAUST AIR
- 5"Ø FLUE — EXHAUST GAS FLUE
- 5"Ø C/A — COMBUSTION AIR
- DROP — RECTANGULAR SUPPLY/OUTSIDE AIR DUCT RISE
- DROP — ROUND SUPPLY/OUTSIDE AIR DUCT RISE
- DROP — RECTANGULAR RETURN/TRANSFER AIR DUCT RISE
- DROP — ROUND RETURN/TRANSFER AIR DUCT RISE
- DROP — RECTANGULAR EXHAUST/RELIEF AIR DUCT RISE
- DROP — ROUND EXHAUST/RELIEF AIR DUCT RISE

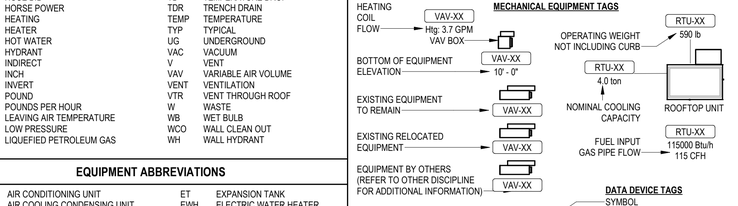
GRILLES, REGISTERS & DIFFUSERS TAG



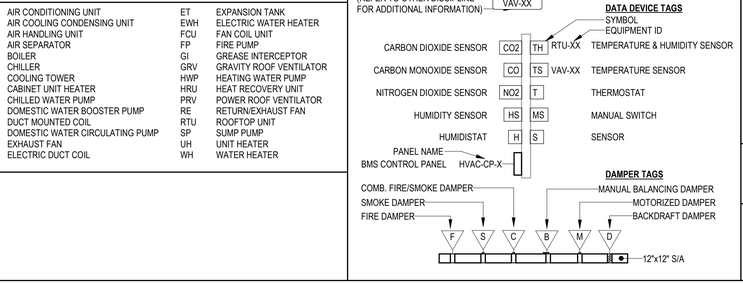
LINEAR DIFFUSER TAG



MECHANICAL EQUIPMENT TAGS



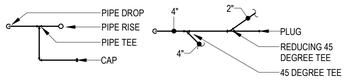
DATA DEVICE TAGS



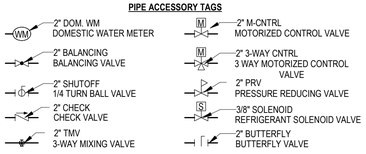
DAMPER TAGS

PIPING SYMBOLS

- CHWR — CHILLED WATER RETURN
- CHWS — CHILLED WATER SUPPLY
- CD — CONDENSATE DRAINAGE
- CWR — CONDENSER WATER RETURN
- CWS — CONDENSER WATER SUPPLY
- GWR — GEOTHERMAL WATER RETURN
- GWS — GEOTHERMAL WATER SUPPLY
- HWR — HEATING WATER RETURN
- HWS — HEATING WATER SUPPLY
- G — NATURAL GAS
- PG — PROPANE GAS
- REF-L — REFRIGERANT-LIQUID
- REF-S — REFRIGERANT-SUCTION
- REF-HG — REFRIGERANT-HOT GAS
- STM — STEAM
- CDR — CONDENSATE RETURN



PIPE ACCESSORY TAGS



PROJECT GENERAL NOTES

A. REMOVE ALL UNUSED PIPING, DUCTWORK AND ACCESSORIES.

B. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING, PRIOR TO FINAL BID, ALL EXISTING CONDITIONS FOR PLUMBING AND MECHANICAL SYSTEMS WITHIN TENANT SPACE AND WITHIN CLOSE PROXIMITY OF TENANT SPACE.

C. THE MECHANICAL CONTRACTOR SHALL PERFORM SERVICE AND REPAIR ON THE EXISTING EQUIPMENT AND ITS ACCESSORIES AS FOLLOWS: CLEAN ALL COILS, REPLACE THE FILTERS AND BELTS, INSPECT, REPAIR, OR REPLACE THE ECONOMIZERS, DRIVES AND FAN BEARINGS, MOTORS, CONTROL COMPONENTS, VALVES AND ANY OTHER ITEM NECESSARY FOR A COMPLETE AND PROPER OPERATING SYSTEM. THIS CONTRACTOR SHALL ALSO VISIT THE SITE, PRIOR TO FINAL BIDDING, AND VERIFY ALL EXISTING SITE CONDITIONS. PROVIDE ALL MATERIAL AND COMPONENTS AS NEEDED TO BRING THE UNITS TO FULL COMPLIANCE OF THE LANDLORD'S CRITERIA AND LOCAL AUTHORITY HAVING JURISDICTION.

D. WHERE FLOOR DRAINS OCCUR WITHIN THE LIMITS OF CONSTRUCTION, PREVENT CONSTRUCTION DEBRIS FROM ENTERING DRAIN BODY BY SEALING DRAIN OPENING PRIOR TO START OF WORK. UNSEAL DRAINS AT COMPLETION OF CONSTRUCTION.

E. COORDINATE INSTALLATION OF PIPING, DUCTWORK, CONDUIT, LIGHTS, CABLE TRAY, STRUCTURE, AND EQUIPMENT TO PREVENT CONFLICTS.

F. THE CONTRACTOR SHALL BE FAMILIAR WITH ALL THE CONDITIONS BOTH EXISTING AND THOSE ILLUSTRATED BY THESE DOCUMENTS AS WELL AS THOSE WHICH CAN BE REASONABLY ANTICIPATED INCLUDING, BUT NOT LIMITED TO ARCHITECTURAL, ELECTRICAL, VENTILATION, PLUMBING, AND OTHER SYSTEMS INVOLVED ON THIS PROJECT.

G. FINAL PRODUCT SHALL BE A COMPLETE AND FUNCTIONING SYSTEM, AND SHALL CONFORM TO ALL REQUIREMENTS OF APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING BUT NOT LIMITED TO THE INTERNATIONAL BUILDING CODE AND INTERNATIONAL MECHANICAL CODE.

H. LOCATE EQUIPMENT REQUIRING ACCESS 2'-0" MAXIMUM ABOVE CEILING.

J. ALL ROOF MOUNTED EQUIPMENT SHALL BE A MINIMUM 10'-0" FROM EDGE OF ROOF.

K. LOCATE DUCTWORK, PIPING AND MECHANICAL EQUIPMENT AWAY FROM THE SPACE ABOVE ELECTRICAL PANELS. TRANSFORMERS AND OTHER ELECTRICAL EQUIPMENT.

L. PENETRATIONS OF RATED ASSEMBLIES SHALL BE FIRE STOPPED. FIRE STOPPING SHALL BE AN APPROVED MATERIAL AS PRESCRIBED IN CSFM STANDARD 43-1 AND SHALL BE U.L. LISTED.

M. PROVIDE SLEEVES AND/OR OPENINGS TO RUN PIPES AND DUCTS THROUGH FOUNDATIONS, FLOORS, WALLS, AND ROOF.

N. MAINTAIN CLEAR ACCESS TO SERVICE EQUIPMENT AND OTHER ACCESSORIES REQUIRING SERVICE, VISUAL INSPECTION OR HAND OPERATION. WHERE INDICATED OR REQUIRED, PROVIDE ACCESS PANELS OF THE TYPE SELECTED TO SUIT MATERIALS IN WHICH INSTALLED.

O. ADJUST PIPING AND DUCTWORK SIZES TO PROPERLY CONNECT TO MECHANICAL EQUIPMENT.

Q. PIPE SIZES SHOWN SHALL BE CONTINUED IN THE DIRECTION OF FLOW UNTIL ANOTHER SIZE IS SHOWN.

R. FOR DETAILS, EQUIPMENT CONNECTIONS, AND PIPE SIZES NOT SHOWN ON THE SEGMENTS, REFER TO DETAILS, SCHEDULES, AND SPECIFICATIONS.

S. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH THE RESPECTIVE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS, AT A LEVEL OF QUALITY AND WORKMANSHIP CONSISTENT WITH THE SPECIFICATIONS.

T. LOCATIONS OF PIPING, DUCTWORK AND EQUIPMENT AS INDICATED ON THE DRAWING, ARE APPROXIMATE AND SUBJECT TO MINOR ADJUSTMENTS IN THE FIELD. WORK SHALL BE COORDINATED WITH ALL OTHER TRADES TO AVOID INTERFERENCE IN THE FIELD.

U. INSTALL EXPOSED PIPING AND DUCTWORK AS HIGH AS PRACTICAL IN ROOMS WITHOUT CEILINGS.

V. THE CONTRACTOR'S WORK SCHEDULE SHALL BE SUBMITTED TO AND APPROVED BY THE OWNER.

W. PRIOR TO STARTING WORK, SUBMIT SHOP DRAWINGS FOR ALL MECHANICAL EQUIPMENT, PLUMBING FIXTURES, AND DIFFUSERS.

X. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND SHALL ARRANGE FOR ALL INSPECTIONS AS REQUIRED.

Y. PROVIDE ONE YEAR WARRANTY FOR ALL WORKMANSHIP AND MATERIALS AFTER THE DATE OF FINAL ACCEPTANCE.

* NOTE *

ALL OF GENERAL NOTES ON THIS SHEET ARE TO BE APPLIED TO ALL OTHER DRAWINGS IN THIS SET.THE SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET MAY OR MAY NOT BE USED IN THIS SET OF DRAWINGS.

GENERAL MECHANICAL NOTES

1. SUBMISSION OF PROPOSAL IN CONNECTION WITH THIS WORK SHALL IMPLY THAT THE BIDDER HAS EXAMINED THE JOB SITE UNDER WHICH HE WILL BE OBLIGATED TO OPERATE SHOULD HE BE AWARDED THE WORK UNDER THIS CONTRACT. NO EXTRA CHARGE WILL BE ALLOWED FOR FAILURE OF ANY BIDDER TO EXAMINE THE SITE PRIOR TO BID.
2. DUCT DIMENSIONS LISTED ON DRAWINGS REPRESENT THE AIRFLOW FREE AREAS AND DO NOT HAVE ALLOWANCES FOR INSULATION LINER, WHERE APPLICABLE, INSIDE THE DUCTS, OR DUAL WALL DIMENSIONS. DUCTS SHALL BE CONSTRUCTED TO INCLUDE INSULATION REQUIREMENTS AND MAINTAIN AIRFLOW DIMENSIONS INDICATED ON PLANS. FOR CLASH COORDINATION INCLUDE INSULATION THICKNESS PER SCHEDULE.
3. ALL WORK SHALL CONFORM TO STATE AND LOCAL CODES, RULES, REGULATIONS, AND ORDINANCES WHICH SHALL TAKE PRECEDENCE OVER THE PLANS IF CONFLICTS EXIST BETWEEN THEM.
4. THE DRAWINGS INDICATE THE GENERAL LAYOUT REQUIREMENTS FOR EQUIPMENT, FIXTURES, PIPING, DUCTWORK, ETC. FINAL LAYOUT SHALL BE MODIFIED TO FIT ACTUAL SITE CONDITIONS. ALL REQUIRED REVISIONS SHALL BE RECORDED ON A DESIGNATED HARD COPY SET OF REDLINE PLANS TO BE KEPT CURRENT TO JOBSITE PROGRESS. AT MINIMUM, THIS DOCUMENT SHALL BE UPDATED WEEKLY AND REDILY AVAILABLE FOR REVIEW AND REFERENCE.
5. COORDINATE ALL WORK WITH THE OWNER AND ALL OTHER CONTRACTORS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RIGGING, HANDLING, AND PROTECTION OF MATERIALS. PROVIDE LABOR TO RECEIVE UNLOAD, STORE, PROTECT, AND TRANSFER TO POINT OF INSTALLATION OF ANY OWNER-FURNISHED ITEMS.
6. IN CASES OF EQUIPMENT SUBSTITUTION, CONTRACTOR IS RESPONSIBLE FOR VERIFYING THAT ALL SYSTEMS AND COMPONENTS WILL FIT PROPERLY PRIOR TO FABRICATION OR ORDERING. INSTALLED DUCTS MAY BE RESIZED BY THE CONTRACTOR TO FIT FIELD CONDITIONS AS LONG AS THE INSTALLED DUCTS SHALL HAVE EQUAL FRICTION LOSS TO THOSE SHOWN. RECTANGULAR DUCTS SHALL NOT BE CHANGED TO ROUND DUCTS. PROVIDE COMPLETE SHEET METAL SHOP DRAWINGS TO ENGINEER SHOWING ACTUAL DUCT SIZES, ARRANGEMENTS, AND UNIT LOCATIONS TO BE INSTALLED. THIS SHALL BE DONE PRIOR TO FABRICATION OR INSTALLATION.
7. INSTALL ACOUSTIC TURNING VANES IN ELBOWS IN RECTANGULAR DUCTS 20" AND LARGER. INSTALL RADIUS TYPE ELBOWS IN RECTANGULAR DUCTS SMALLER THAN 20".
8. USE 45 DEGREE TAKE-OFF FITTINGS AT ALL ROUND SUPPLY BRANCH TAKEOFFS. PROVIDE BALANCE DAMPERS AT ALL SUPPLY DUCT RUNOUTS TO GRILLES. LOCATE AS FAR AS POSSIBLE FROM GRILLES IN AN ACCESSIBLE LOCATION. PROVIDE ACCESS PANELS IN SOLID WALLS AND CEILINGS FOR BALANCING DAMPERS.
9. USE FLEX DUCTS FOR FINAL CONNECTION TO ALL CEILING DIFFUSERS, AND WHERE NECESSARY, SIDEWALL DIFFUSERS, AND LIMIT TO 6' MAX. LENGTHS.
10. PROVIDE A COMPLETE AND OPERATING MECHANICAL SYSTEM, INCLUDING ALL INCIDENTAL ITEMS AND CONNECTIONS NECESSARY FOR PROPER OPERATION OR CUSTOMARILY INCLUDED, EVEN THOUGH EACH AND EVERY ITEM MAY NOT BE INDICATED.
11. THE MECHANICAL INSTALLATION SHALL BE SAFE, RELIABLE. ENERGY EFFICIENT AND EASILY MAINTAINED WITH ADEQUATE PROVISIONS ALLOWED FOR ACCESS TO EQUIPMENT.
12. THE MECHANICAL SYSTEM SHALL OPERATE QUIETLY WITH NOISE LEVELS BELOW THE CRITERIA RECOMMENDED FOR THE APPLICATION BY ASHRAE. PROVIDE CORRECTIVE ACTION AS REQUIRED TO REDUCE OBJECTIONABLE NOISE OR VIBRATION.
13. UNDERCUT DOORS 3/4 INCH WHERE NO RETURN NOR EXHAUST GRILLE IS SHOWN TO ALLOW FOR AIR TRANSFER.(DO NOT UNDERCUT FIREDOORS.)
14. REFER TO ARCH. PLANS AND DETAILS FOR EXACT LOCATION OF ALL WALL AND CEILING MOUNTED DEVICES. ADJUST LOCATION OF SIDEWALL DEVICES AS NECESSARY TO AVOID INTERFERENCE WITH MOLDING OR OTHER ELECTRICAL DEVICES.
15. WHERE CONDUIT, CABLES, DUCTWORK OR PIPING PASSES THROUGH FIRE-RATED FLOORS OR WALLS, THE SLEEVES SHALL BE COMPLETELY SEALED WITH A FIRE STOP MATERIAL THAT IS UL LISTED AND ACCEPTED BY LOCAL AUTHORITIES HAVING JURISDICTION (AHJ) AS BEING SUITABLE FOR THIS SERVICE SUCH AS DOWN CORNING CORP "SILICONE ELASTOMER, RTV FOAM, OR SIMILAR MATERIAL TO MAINTAIN FIRE RATING OF THE WALL OR FLOOR.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CORING AND BEAM PENETRATIONS AS IT RELATES TO HIS WORK.
17. CONTRACTOR SHALL NOT INSTALL ANY MAINTENANCE ITEMS ABOVE HARD CEILINGS. THIS SHALL INCLUDE VALVES, DAMPERS, OR ANY OTHER ITEMS THAT REQUIRE ACCESS AFTER CONSTRUCTION IS COMPLETED. IF INSTALLATION ABOVE A HARD CEILING OF THESE ITEMS CANNOT BE AVOIDED, THEN PROVIDE CEILING ACCESS DOORS EQUAL TO ACUDOR MODEL FW-506 WHERE REQUIRED. AT FIRE-RATED WALLS, USE EQUIVALENT OF ACUDOR MODEL FR-5060. MINIMUM SIZE SHALL BE 12"x12". USE 18"x18" WHEN PERSONNEL ACCESS IS REQUIRED.
18. PROVIDE AN INSULATED BACK ON ALL THERMOSTATS AND TEMPERATURE SENSORS THAT ARE MOUNTED ON CMU OR HOLLOW WALLS. PROVIDE SHALLOW DEVICE EXTENSION BOX BEHIND T-STATS AND SENSORS ON MASONRY WALLS IN COMMERCIAL / RETAIL SPACES.
19. PROVIDE FIRE DAMPERS AT ALL FIRE-RATED WALLS AND FLOOR PENETRATIONS. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE BARRIER WALLS AND CEILINGS.
20. IF A CENTRAL FIRE ALARM SYSTEM IS REQUIRED FOR THIS PROJECT, MECHANICAL CONTRACTOR SHALL INSTALL DUCT MOUNTED SMOKE DETECTORS PROVIDED BY FIRE ALARM CONTRACTOR. REFER TO ELECTRICAL NOTES FOR EXACT REQUIREMENTS. MECHANICAL CONTRACTOR SHALL IDENTIFY A SET OF TERMINALS FOR EQUIPMENT SHUTDOWN ON ALL FAN POWERED EQUIPMENT REQUIRING SHUTDOWN CONTROLS. FIRE ALARM CONTRACTOR SHALL WIRE FROM DUCT MOUNTED SMOKE DETECTOR TO SHUTDOWN TERMINALS TO SHUT DOWN FAN OPERATION WHEN SMOKE IS DETECTED.
21. AT PENETRATIONS THROUGH FIRE WALLS: ANY NON-METALLIC PIPE OR DUCT SHOULD BE EXTERNALLY SLEEVED WITH STEEL, FERROUS, OR COPPER MATERIALS, SECURELY FASTENED TO THE FIRE RATED ASSEMBLY, AND ANY SPACE BETWEEN THE SLEEVE AND THE ASSEMBLY PENETRATED SHALL BE PROTECTED USING MATERIAL THAT CONFORMS TO ASTM E 814 OR UL 1479, SUCH AS FIRE STOP FS-1900, OR FLAME STOPPER 5000.
22. REFER TO ELECTRICAL DRAWINGS FOR SMOKE DAMPER AND FIRE/SMOKE DAMPER DETAIL. MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL DAMPERS WITH MOTORIZED ACTUATORS AND INSTALL SMOKE DETECTORS AND PROVIDE WIRING FOR FAN SHUTDOWN CONTROLS. COORDINATE WITH ELECTRICAL CONTRACTOR AND PROVIDE DAMPER ACTUATOR COMPATIBLE WITH ELECTRICAL WIRING PROVIDED. PROVIDE ANY WIRING OR COMPONENTS NOT PROVIDED BY THE ELECTRICAL CONTRACTOR THAT ARE REQUIRED TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.
23. AHEAD OF ALL VAV BOX INLETS, INSTALL STRAIGHT DUCT EQUIVALENT TO AT LEAST 2 DIAMETERS IN LENGTH WHETHER SHOWN ON PLANS OR NOT.
24. SEISMIC PROTECTION FOR CONCERNS OF ALL BUILDING SYSTEMS INCLUDING BUT NOT LIMITED TO MECHANICAL, PLUMBING, AND ELECTRICAL MUST MEET MINIMUM REQUIREMENTS OF ALL APPLICABLE CODES FOR BUILDINGS' CLASSIFIED SEISMIC PROTECTION MEASURES TO BE APPLIED SHALL BE INSTALLED IN STRICT ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND/OR FEDERAL CODES AND WITH MANUFACTURER'S REQUIREMENTS, THE MOST STRINGENT SHALL APPLY
26. NO RECTANGULAR DUCT SMALLER THAN 10"X10"
27. ANY LINE VOLTAGE WIRING THAT IS RUN BY THE MECHANICAL CONTRACTOR SHALL BE INSTALLED IN ACCORDANCE WITH THE ELECTRICAL PLANS, NOTES, AND SPECIFICATIONS.
28. WHERE DUCTS PASS THROUGH FIRE RATED WALLS AND NO FIRE DAMPER IS REQUIRED, PROVIDE A STEEL SLEEVE (MIN. 12" LONG BY 0.60" THICK) IN EACH DUCT OPENING PER IBC 714.

LEVEL 5

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STATE OF TEXAS — EMILY VIRGINIA VALDENMEYER — 135257 — LICENSED PROFESSIONAL ENGINEER — 10-25-2021

HP ENGINEERING INC.
F-13720

HP ENGINEERING

PROJECT NO.	21-64T
100 % COMPLETE	

HP ENGINEERING INC.
142 HOWELL STREET,SUITE 170
DALLAS, TX 75207
(479) 490-2500

F-18023

PROJECT INFORMATION:

AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 Elizabeth St.
Texarkana, TX 75503

PROJECT NUMBER:	21-64T
ISSUE DATE:	10-25-2021
REVISIONS:	
	Title Sheet Revision

SHEET NAME:

HVAC TITLE SHEET

SHEET NUMBER:

M000

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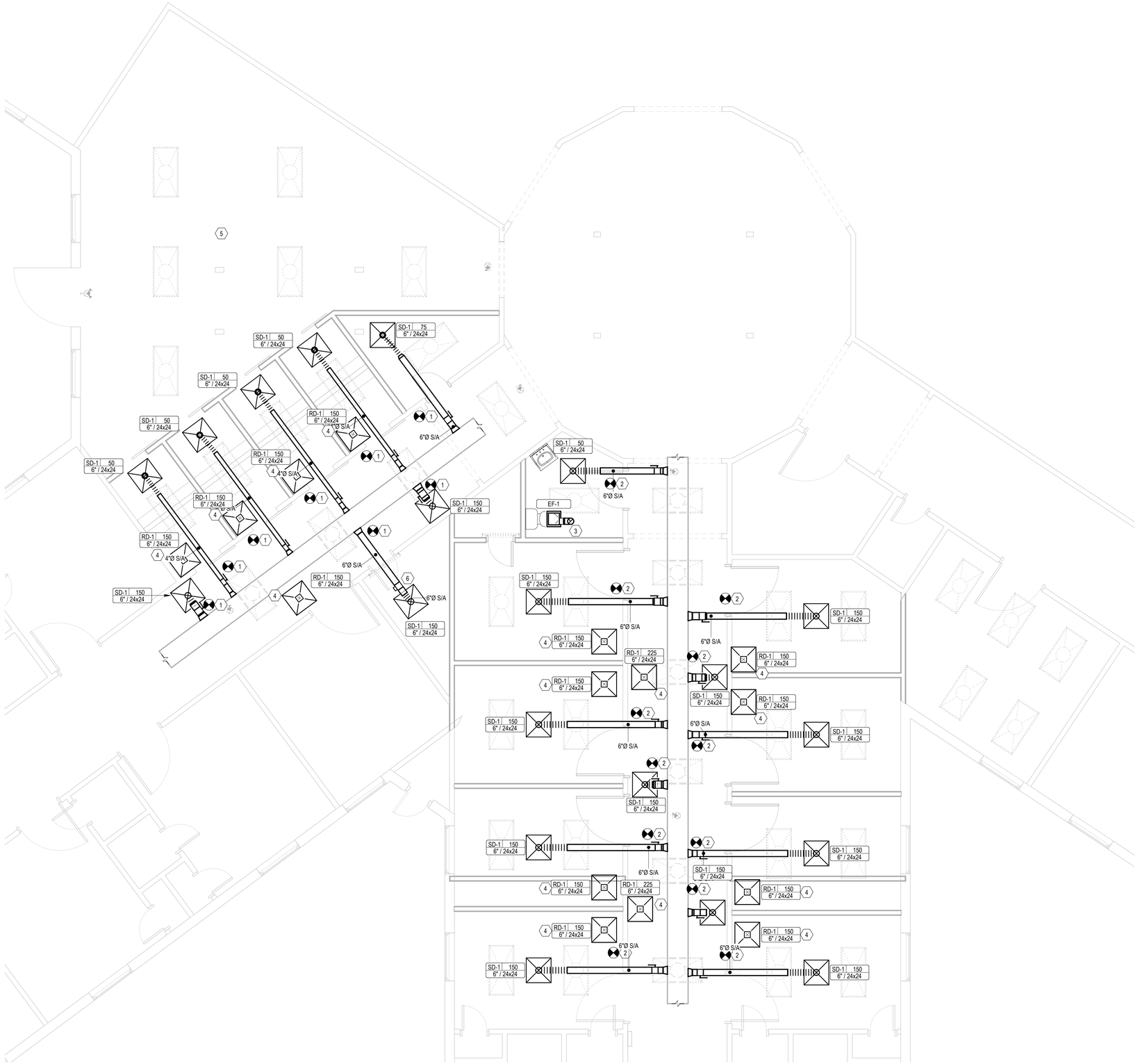

1 M100 LEVEL 1 HVAC PLAN
1/4" = 1'-0"

HVAC SHEET NOTES

A CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE A COMPLETE AND WORKING SYSTEM.

B INSTALL, SUPPORT, & BRACE NEW DUCTWORK AND ACCESSORIES PER SMACNA GUIDELINES.

C DUCT SIZES SHOWN ARE CLEAR INSIDE DIMENSIONS. CONTRACTOR SHALL MAKE ALLOWANCE FOR ANY INTERIOR LINING, INSULATION, ETC.

D ALL NEW DUCT ELBOWS SHALL BE RADIUS TYPE. WHERE NECESSARY, CONTRACTOR MAY SUBSTITUTE MITERED ELBOWS WITH TURNING VANES.

E PROVIDE FLAT BLADE MANUAL VOLUME DAMPERS AT ALL TERMINAL DUCT BRANCHES AND AS INDICATED.

F INSTALL EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. ROOFTOP EQUIPMENT SHALL BE LOCATED NO CLOSER THAN 10'-0" FROM THE ROOF EDGE.

G ALL PRIMARY CONDENSATE DRAIN PIPING SHALL BE INSULATED TO A MINIMUM THICKNESS OF 1/2" AND SHALL INCLUDE A VAPOR RETARDANT OUTSIDE THE INSULATION. SEAL ALL JOINTS AND PENETRATIONS.

H COORDINATE ALL EXTERIOR PENETRATIONS INCLUDING ROOF PENETRATIONS WITH OTHER TRADES TO PROVIDE A COMPLETE AND FULLY WEATHER-PROOF INSTALLATION.

I ALL TRANSFER DUCTWORK SHALL BE INTERNALLY LINED WITH MINIMUM 1/2" ACOUSTIC LINING.

J CONTRACTOR SHALL ENGAGE A TESTING AND BALANCE FIRM CERTIFIED BY AABC TO PERFORM TESTING AND BALANCING PROCEDURES ON EACH SYSTEM ACCORDING TO THE PROCEDURES CONTAINED IN AABC'S "NATIONAL STANDARDS.

K FOR TESTING AND BALANCING HEATING, VENTILATING, AND AIR CONDITIONING SYSTEMS" AND PROVIDE TWO COPIES OF THE CERTIFIED TAB REPORTS.

L THIS DRAWING IS DIAGRAMMATIC IN NATURE AND SHALL NOT BE SCALED TO DETERMINE THE EXACT LOCATION OR EXTENT OF THE WORK. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO THE START OF THE WORK. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE A COMPLETE AND WORKING SYSTEM.

M THIS DRAWING IS BASED ON VISUALLY OBSERVABLE EXISTING CONDITIONS AS OF THE TIME OF DESIGN. CONTRACTOR SHALL BE RESPONSIBLE TO FULLY VERIFY ALL EXISTING CONDITIONS, COMPONENTS, ETC. PRIOR TO THE START OF THE WORK. ANY DEVIATION FROM THIS DRAWING IN KIND, OR IN LOCATION EXCEEDING 1'-0", SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.

KEYNOTES

1 CONNECT TO EXISTING BRANCH SERVING HALL 1.

2 CONNECT TO EXISTING BRANCH SERVING HALL 2.

3 ROUTE 6" EXHAUST DUCT UP THROUGH ROOF.

4 RETURN DUCT OPEN TO PLENNUM.

5 AREA TO BE BALANCED WITH REMAINING AIR FROM UNIT SERVING LOBBY AND HALLWAY 1. APROXIMATELY 700 TO 1000 CFM DEPENDING ON EXISTING UNIT SIZE

6 DAMPER TO AUTOMATICALLY SHUT OFF WHEN SYSTEM IS IN HEATING MODE.

GC TO EXERCISE CAUTION ON DEMOLITION AND ANY WORK ABOVE CEILING TO NOT DAMAGE EXISTING FIBER OPTIC CABLE REQUIRED BY OWNER OF THE OCCUPIED BUILDING.

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10-25-2021

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PROJECT INFORMATION:

AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 Elizabeth St.
Texarkana, TX 75503

PROJECT NUMBER: 21-64T
ISSUE DATE: 10-25-2021
REVISIONS:

SHEET NAME:
LEVEL 1 HVAC PLAN

SHEET NUMBER:
M100

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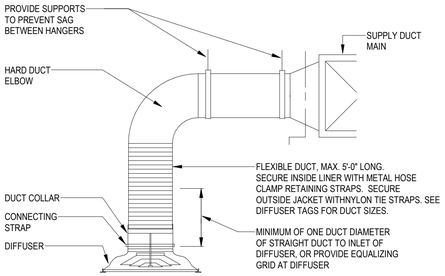
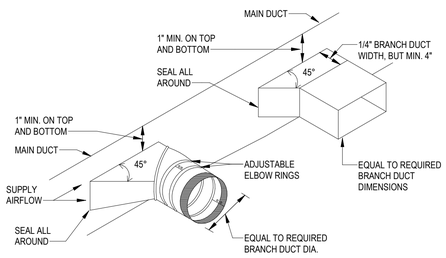
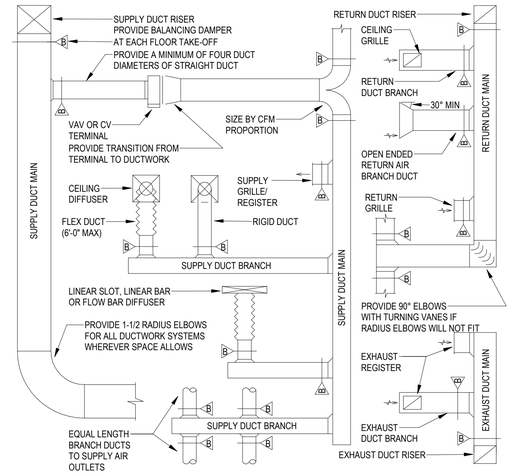


3 M200 DIFFUSER FLEXIBLE DUCT CONNECTION
NOT TO SCALE



2 M200 TYPICAL BRANCH TAKEOFF FITTING DETAIL
NOT TO SCALE

NOTES:
1. REFER TO HVAC FLOOR PLANS FOR DUCT SIZES
2. REFER TO SCHEDULES FOR GRILLES, REGISTERS, DIFFUSERS AND TERMINAL SIZES AND TYPES
3. PROVIDE A MANUAL TYPE BALANCING DAMPER FOR EACH SUPPLY OUTLET AND RETURN INLET
4. ALL DUCT RUNOUTS TO DIFFUSERS SHALL BE THE SAME SIZE AS DIFFUSER NECK SIZE, UNLESS OTHERWISE NOTED
5. FLEX DUCT WILL NOT BE ALLOWED ON RETURN OR EXHAUST DUCTWORK SYSTEMS
6. PROVIDE 12" AIR CUSHION AT THE END OF EACH SUPPLY MAIN AND BRANCH DUCT
7. INDIVIDUAL BRANCH BALANCING DAMPERS NOT REQUIRED FOR SUPPLY OR EXHAUST REGISTERS



1 M200 DUCTWORK INSTALLATION DIAGRAM
NOT TO SCALE

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SHEET NAME:

MECHANICAL DETAILS

SHEET NUMBER:

M200

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EXHAUST FAN SCHEDULE

ID	MANUFACTURER	MODEL NO.	TYPE	ARRANGEMENT	FAN									SOUND PRESS LEVEL (dBA)	UNIT WEIGHT	FLA	MCA	MOCP	VOLT	PH	INTERLOCK	REMARKS
					AIRFLOW		WHEEL		DRIVE	MOTOR												
					DESIGN	MIN	TYPE	DIA	TYPE	QTY	POWER	RPM	ECM								ID	
EF-1	GREENHECK	SP-110-VG	CEILING	ROUND OUTLET	75 CFM	50 CFM	FC	8"	DIRECT	1	0.01 hp	940	Yes	0	12 lb	0.2 A	0.3 A	15.0 A	120 V	1		INTERLOCK EXHAUST FAN WITH LIGHTS

GRILLES, REGISTERS AND DIFFUSERS SCHEDULE

ID	DESCRIPTION	MANUFACTURER	MODEL	QTY	SYSTEM	FACE SIZE	NECK SIZE	INSTALLATION BORDER TYPE	OPTIONS				SPECIFICATION	NOTES
									DAMPER DESCRIPTION	FILTER DESCRIPTION	EQUALIZING GRID	HEAVY DUTY FRAME		
RD-1	MODULAR CORE DIFFUSER	Titus	PMR	15		24x24	6"	TYPE 3 (LAY-IN)	OPPOSED BLADE DAMPER		No		DIFFUSER CORE WITH PERFORATED FACE AND FIXED LOUVER DIRECTIONAL MODULES FOR ONE-, TWO-, THREE- OR FOUR-WAY DISCHARGE	
SD-1	3-CONE DIFFUSER	Titus	TMS	20	S/A	24x24	6"	TYPE 3 (LAY-IN)	---		No		HIGH PERFORMANCE 3-CONE DIFFUSER	

MECHANICAL PIPING & INSULATION SCHEDULE

NOTE: ALL EXTERIOR INSULATED PIPING TO BE PROVIDED WITH ALUMINUM JACKET.

SERVICE	PIPING TYPE	INSULATION TYPE	INSULATION THICKNESS NOMINAL PIPE SIZE				
			<1	1 TO <1-1/2	1-1/2 TO <4	4 TO <8	≥8
EQUIPMENT DRAINS, COOLING CONDENSATE LINES, AND OVERFLOWS	TYPE "L" HARD COPPER	ELASTOMERIC	0.5	0.5	1.0	1.0	1.0
REFRIGERANT PIPING	COPPER REFRIGERANT PIPING	ELASTOMERIC	0.5	1.0	1.0	1.0	1.5
ALL OUTDOOR INSULATED PIPING	PROVIDE WITH EMBOSSED ALUMINUM JACKET OVER SCHEDULED INSULATION	PER SCHEDULE					

GENERAL NOTE:
DUCT DIMENSIONS LISTED ON DRAWINGS REPRESENT THE AIRFLOW FREE AREAS AND DO NOT HAVE ALLOWANCES FOR INSULATION LINER, WHERE APPLICABLE, INSIDE THE DUCTS, OR DUAL WALL DIMENSIONS. DUCTS SHALL BE CONSTRUCTED TO INCLUDE INSULATION REQUIREMENTS AND MAINTAIN AIRFLOW DIMENSIONS INDICATED ON PLANS.

NOTE: NO LINED DUCT IN KITCHEN

MECHANICAL DUCTWORK & INSULATION SCHEDULE

SERVICE	DUCT TYPE	INSULATION TYPE	INSULATION THICKNESS
ALL LOW PRESSURE CONSTANT VOLUME SUPPLY AIR DUCT FROM AIR HANDLER OR PACKAGED UNIT	ROUND OR RECTANGULAR, AS INDICATED ON PLANS.	FIBERGLASS WRAP	2" WRAP, R VALUE=6.0
ALL LOW PRESSURE RETURN AIR DUCT FROM AIR HANDLER OR PACKAGED UNIT	ROUND OR RECTANGULAR, AS INDICATED ON PLANS.	FIBERGLASS WRAP	2" WRAP, R VALUE=6.0
ALL RUNOUTS TO SUPPLY DIFFUSERS AND RETURN GRILLES CONCEALED ABOVE CEILINGS	ROUND OR RECTANGULAR, AS INDICATED ON PLANS.	FIBERGLASS WRAP	2" WRAP, R VALUE=6.0
ALL SUPPLY AIR DIFFUSERS (BACKSIDE, NOT EXPOSED TO SPACE)	N/A	FIBERGLASS WRAP	2" WRAP, R VALUE=6.0
FRESH AIR EXHAUST DUCT	ROUND OR RECTANGULAR, AS INDICATED ON PLANS.	FIBERGLASS WRAP OR MATTE FACED FIBERGLASS LINER, AS INDICATED ON PLANS. N/A IF IN UNCONDITIONED SPACE	2" WRAP OR 1-1/2" LINER, R VALUE=6.0
FRESH AIR SUPPLY DUCT	ROUND OR RECTANGULAR, AS INDICATED ON PLANS.	FIBERGLASS WRAP OR MATTE FACED FIBERGLASS LINER, AS INDICATED ON PLANS. N/A IF IN UNCONDITIONED SPACE	2" WRAP OR 1-1/2" LINER, R VALUE=6.0
RESTROOM EXHAUST DUCT	ROUND OR RECTANGULAR, AS INDICATED ON PLANS.	FIBERGLASS WRAP OR MATTE FACED FIBERGLASS LINER, AS INDICATED ON PLANS	2" WRAP OR 1-1/2" LINER, R VALUE=6.0

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STATE OF TEXAS
EMILY VIRGINIA WALDENMEYER
135257
LICENSED PROFESSIONAL ENGINEER
10-25-2021

HP ENGINEERING INC.
F-13720

HP ENGINEERING
PROJECT NO. 21-64T
100 % COMPLETE
HP ENGINEERING INC.
142 HOWELL STREET,SUITE 170
DALLAS, TX 75207
(479) 490-2500
F-18023

PROJECT INFORMATION:

AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 Elizabeth St.
Texarkana, TX 75503

PROJECT NUMBER: 21-64T
ISSUE DATE: 10-25-2021
REVISIONS:

SHEET NAME:
MECHANICAL SCHEDULES

SHEET NUMBER:
M300

10/25/2021 11:03:17 AM

23A HEATING, VENTILATING, AND AIR CONDITIONING
rev – 20150529

23A 1 GENERAL INSTRUCTIONS

23A 1-1 GENERAL REQUIREMENTS

Requirements under Division 1 and the general and supplementary conditions of these specifications apply to this section and division. Where the requirements of this section and division exceed those of Division 1, this section and division take precedence. Become thoroughly familiar with all their contents as to requirements that affect this division, section or both. The work required under this section includes material, equipment, appliances, transportation, services, and labor required to complete the entire system as required by the drawings and specifications, or reasonably inferred to be necessary to facilitate each system's functioning as implied by the design and the equipment specified.

The specifications and drawings for the project are complementary, and portions of the work described in one, shall be provided as if described in both. In the event of discrepancies, notify the engineer and request clarification prior to proceeding with the work involved.

Drawings are graphic representations of the work upon which the contract is based. They show the materials and their relationship to one another, including sizes, shapes, locations, and connections. They also convey the scope of work, indicating the intended general arrangement of the equipment and other materials without showing all of the exact details as to elevations, offsets, control lines, and other installation requirements. Use the drawings as a guide when laying out the work and to verify that materials and equipment will fit into the designated spaces, and which, when installed per manufacturers' requirements, will ensure a complete, coordinated, satisfactory and properly operating system. Determine exact locations by job measurements, by checking the requirements of other trades, and by reviewing all contract documents. Correct errors that could have been avoided by proper checking and inspection, at no additional cost to the owner.

Specifications define the qualitative requirements for products, materials, and workmanship upon which the contract is based.

23A 1-2 DEFINITIONS

Whenever used in these specifications or drawings, the following terms shall have the indicated meanings:

Furnish: "to supply and deliver to the project site, ready for unloading, unpacking, assembling, installing, and similar operations."

Install: "to perform all operations at the project site, including, but not limited to, and as required: unloading, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, testing, commissioning, starting up and similar operations, complete, and ready for the intended use."

Provide: "to furnish and install complete, and ready for the intended use."

Furnished by owner (or owner-furnished) or furnished by others: "an item furnished by the owner or under other divisions or contracts, and installed under the requirements of this division, complete, and ready for the intended use, including all items and services incidental to the work necessary for proper installation and operation. Include the installation under the warranty required by this division.

Engineer: where referenced in this division, "engineer" is the engineer of record and the design professional for the work under this division, and is a consultant to, and an authorized representative of, the architect, as defined in the general and/or supplementary conditions. When used in this division, it means increased involvement by, and obligations to, the engineer, in addition to involvement by, and obligations to, the "architect".

AHJ: the local code and/or inspection agency (authority) having jurisdiction over the work.

NRTL: nationally recognized testing laboratory, as defined and listed by OSHA in 29 CFR 1910.7 (e.g., UL, ETL, CSA), and acceptable to the AHJ over this project.

The terms "approved equal", "equivalent", or "equal" are used synonymously and shall mean "accepted by or acceptable to the engineer as equivalent to the item or manufacturer specified". The term "approved" shall mean labeled, listed, certified, or all three, by an NRTL, and acceptable to the AHJ over this project.

23A 1-3 PRE-BID SITE VISIT

Prior to submitting bid, visit the site of the proposed work and become fully informed as to the conditions under which the work is to be done. Failure to do so will not be considered sufficient justification to request or obtain extra compensation over and above the contract price.

23A 1-4 MATERIAL AND WORKMANSHIP

Provide all material and equipment new and in first class condition. Provide markings or a nameplate for all material and equipment identifying the manufacturer and providing sufficient reference to establish quality, size and capacity. In general, provide the following quality grade(s) for all materials and equipment:

Commercial Specification Grade
Light Duty and Residential Grade

Pipe, pipe fittings, pipe specialties and valves shall be manufactured in plants located in the United States.

Work performed under this contract shall provide a neat and "workmanlike" appearance when completed, to the satisfaction of the architect and engineer. Workmanship shall be the finest possible by experienced mechanics of the proper trade.

The complete installation shall function as designed and intended with respect to efficiency, capacity, noise level, etc. Abnormal or excessive noise from equipment, devices or other system components will not be acceptable.

Remove from the premises waste material present as a result of work. Clean equipment installed under this contract to present a neat and clean installation at the termination of the work.

Repair or replace public and private property damaged as a result of work performed under this contract to the satisfaction of authorities and regulations having jurisdiction.

23A 1-5 MANUFACTURERS

In other articles where lists of manufacturers are introduced, subject to compliance with requirements, provide products by one of the manufacturers specified.

Where a list is provided, manufacturers listed are not in accordance with any ranking or preference.

Where manufacturers are not listed, provide products subject to compliance with requirements from manufacturers that have been actively involved in manufacturing the specified product for no less than 5 years.

23A 1-6 COORDINATION

Coordinate all work with other divisions and trades so that the various components of the systems will be installed at the proper time, fit the available space, and will allow proper service access to those items requiring maintenance. Refer to all other division's drawings, and to relevant equipment submittals and shop drawings to determine the extent of clear spaces. Components which are installed without regard to the above shall be relocated at no additional cost to the owner.

Unless otherwise indicated, the general contractor will provide chases and openings in building construction required for installation of the systems specified herein. Contractor shall furnish the general contractor with information where chases and openings are required. Make all offsets required to clear equipment, beams and other structural members, and to facilitate concealing system components in the manner anticipated in the design. Keep informed as to the work of other trades engaged in the construction of the project, and execute work in a manner as to not interfere with or delay the work of other trades.

Figured dimensions shall be taken in preference to scale dimensions. Contractor shall take his own measurements at the building, as variations may occur. Contractor will be held responsible for errors that could have been avoided by proper checking and inspection

Provide materials with trim that will properly fit the types of ceiling, wall, or floor finishes actually installed. Model numbers listed in the construction documents are not necessarily intended to designate the required trim.

23A 1-7 ORDINANCES, CODES, AND STANDARDS

Work performed under this contract shall, at a minimum, be in conformance with applicable national, state and local codes having jurisdiction. Equipment furnished and associated installation work performed under this contract shall be in strict compliance with current applicable codes adopted by the local AHJ including any amendments and standards as set forth by the National Fire Protection Association (NFPA), Underwriters Laboratories (UL), Occupational Safety and Health Administration (OSHA), American Society of Mechanical Engineers (ASME), American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE), American National Standards Institute (ANSI), American Society of Testing Materials (ASTM) and other national standards and codes where applicable. Additionally, comply with rules and regulations of public utilities and municipal departments affected by connection of services.
Where the contract documents exceed the requirements of the referenced codes, standards, etc., the contract documents shall take precedence.

Promptly bring all conflicts observed between codes, ordinances, rules, regulations, referenced standards, and these documents to the engineer's attention for final resolution. Contractor will be held responsible for any violation of the law.

Procure and pay for permits and licenses required for the accomplishment of the work herein described. Where required, obtain, pay for and furnish certificates of inspection to owner. Contractor will be held responsible for violations of the law.

23A 1-8 PROTECTION OF EQUIPMENT AND MATERIALS

Store and protect from damage equipment and materials delivered to job site, in accordance with manufacturers' recommendations. For materials and equipment susceptible to changing weather conditions, dampness, or temperature variations, store inside in conditioned spaces. For materials and equipment not susceptible to these conditions, cover with waterproof, tear-resistant, heavy tarp or polyethylene plastic as required to protect from plaster, dirt, paint, water, or physical damage. Equipment and material that has been damaged by construction activities will be rejected, and contractor shall furnish new equipment and material as required at no additional cost to the owner.

Keep premises broom clean from foreign material created during work performed under this contract. Piping, equipment, etc. shall have a neat and clean appearance at the termination of the work.

Plug or cap open ends of ductwork and piping systems while stored and installed during construction when not in use to prevent the entrance of debris into the systems.

23A 1-9 SUBSTITUTIONS

Include in the base bid the products specifically named in these specifications or on the drawings. Submit, in the form of alternates, with bid, products of any other manufacturers for similar use, provided the differences in cost, if any, are included for each proposed alternate.

No substitutions will be considered with receipt of Bids, unless the Architect and Engineer have received from the Bidder a written request for approval to bid a substitution at least ten calendar days prior to the date for receipt of Bids, and have approved the substitution request. Include, with each such request, the name of the material or equipment for which substitution is being requested, and a complete description of the proposed substitution, including drawings, cut sheets, performance and test data, and all other information necessary for an evaluation. Include also a statement setting forth changes in other materials, equipment or other work that would be required to incorporate the substitution. The burden of proof of the merit of the proposed substitute is upon the proposer. The proposer of any substitutions shall compensate the Engineer at a rate of $150.00 per hour for time spent evaluating proposed substitutions and or the subsequent revisions to the design required to utilize the substitution.

The Architect's or Engineer's decision to approve or disapprove a substitution in a Bid is final.

If the proposed substitution is approved prior to receipt of Bids, such approval will be stated in an Addendum. Bidders shall not rely upon approvals made in any other manner, including verbal.

No substitutions will be considered after receipt of Bids and before award of the Contract.

No substitutions will be considered after the Contract is awarded unless specifically provided in the Contract Documents.

23A 1-10 SUBMITTALS

Assemble and submit to the architect, for engineer's review, manufacturers' product literature for material and equipment to be furnished, installed, or both, under this division, including shop drawings, manufacturers' product data and performance sheets, samples, and other submittals required by this division. Highlight, mark, list or indicate the materials, performance criteria and accessories that are being proposed. Provide the number of submittals required by division 1; however, at a minimum, submit two (2) sets. Before submitting, verify that all materials and equipment submitted are mutually compatible and suitable for the intended use, fit the available spaces, and allow ample and code-required room for access and maintenance. Submittals shall contain the following information. Submittals not so identified will be returned to the contractor without action:

The project name.
The applicable specification section and paragraph.
The submittal date.
The contractor's stamp, which shall certify that the stamped drawings have been checked by the contractor, comply with the drawings and specifications, and have been coordinated with other trades.

Submittals and shop drawings shall not contain HP Engineering's firm name or logo, nor shall it contain the HP Engineering's engineers' seal and signature. They shall not be copies of HP Engineering's work product.

Transmit submittals as early as required to support the project schedule. Allow for two weeks engineer review time, plus mailing time, plus a duplication of this time for re-submittals, if required. The engineer's submittal reviews will not relieve the contractor from responsibility for errors in dimensions, details, size of members, or quantities; or for omitting components or fittings; or for not coordinating items with actual building conditions.

Refer to division 1 for acceptance of electronic submittals for this project. For electronic submittals, contractor shall submit the documents in accordance with the procedures specified in division 1. Contractor shall notify the architect and engineer that the shop drawings have been posted. If electronic submittal procedures are not defined in division 1, contractor shall include the website, user name and password information needed to access the submittals. For submittals sent by e-mail, contractor shall copy the architect and engineer's designated representatives. Contractor shall allow the engineer review time as specified above in the construction schedule. Contractor shall submit only the documents required to purchase the materials and/or equipment in the electronic submittal and shall clearly indicate the materials, performance criteria and accessories being proposed. General product catalog data not specifically noted to be part of the specified product will be rejected and returned without review.

23A 1-11 ELECTRONIC DRAWING FILES

In preparation of shop drawings or record drawings, contractor may, as an option, obtain electronic drawing files in Revit, AutoCAD, or DXF format from the engineer for a fee of $200 for the first sheet and $100 per sheet for each additional sheet. Contact the architect for written authorization; and, contact the engineer to obtain the necessary release agreement form and to indicate the desired shipping method and drawing format. In addition to payment, architect's written authorization and engineer's release agreement form must be received before electronic drawing files will be sent.

23A 1-12 OPERATION AND MAINTENANCE MANUALS

Submit to the architect, for engineer's review, copies each of operations and maintenance instruction manuals, appropriately bound into manual form including approved copies of the following, revised if necessary to show system and equipment as actually installed. Paper clips, staples, rubber bands, and mailing envelopes are not considered approved binders. Provide the number of submittals required by Division 1; however, at a minimum, submit two (2) sets, and include, at a minimum, the following information:

Cover sheet that lists the project name, date, owner, architect, consulting engineer, general contractor, sub-contractor, and an index of contents.
Manufacturers' catalogs and product data sheets
Wiring diagrams
Operation and Maintenance instructions
Parts lists
Approved shop drawings
Test reports as defined for the systems and equipment provided or furnished or installed under this contract.
Names, addresses, telephone numbers, and e-mail addresses of local contacts for warranty services and spare parts.

Submit manuals prior to requesting the final punch list and before any requests for substantial completion. Final approval of this division's systems installed under this contract will be withheld until this equipment brochure is received and deemed complete by the architect and engineer.

Provide "as-built" drawings (see Division 1 and general conditions).

23A 1-13 TRAINING

At a time mutually agreed upon between the owner and contractor, provide the services of a factory trained and authorized representative to train owner's designated personnel on the operation and maintenance of the equipment provided for this project.

Provide training to include but not be limited to an overview of the system and/or equipment as it relates to the facility as a whole; operation and maintenance procedures and schedules related to startup and shutdown, troubleshooting, servicing, preventive maintenance and appropriate operator intervention; and review of data included in the operation and maintenance manuals.

Submit a certification letter to the architect stating that the owner's designated representative has been trained as specified herein. Letter shall include date, time, attendees and subject of training. The contractor and the owner's representative shall sign the certification letter indicating agreement that the training has been provided.

Schedule owner training with at least 7 days' advance notice.

23A 1-14 WARRANTIES

Warrant each system and each element thereof against all defects due to faulty workmanship, design or material for a period of 12 months from date of substantial completion, unless specific items are noted to carry a longer warranty in the construction documents or manufacturer's standard warranty exceeds this duration. Warranties shall include labor and material. Remedy all defects, occurring within the warranty period(s), as stated in the general conditions and Division 1 without any additional costs to the owner.

Perform any required remedial work promptly, upon written notice from the engineer or owner.

At the time of substantial completion, deliver to the owner all warranties, in writing and properly executed, including term limits for warranties extending beyond the required period, each warranty instrument being addressed to the owner and stating the commencement date and term.

23A 1-15 CUTTING AND PATCHING

Perform cutting of walls, floors, ceilings, etc. as required to install work under this section. Obtain permission from the architect prior to cutting. Do not cut or disturb structural members without prior approval from the architect. Cut holes as small as possible. General contractor shall patch walls, floors, etc. as required by work under this section. Patching shall match the original material and construction. Repair and refinish areas disturbed by work to the condition of adjoining surfaces in a manner satisfactory to the architect.

23A 1-16 ROUGH-IN

Coordinate without delay roughing-in with general construction. Conceal piping and conduit rough-in except in unfinished areas and where otherwise shown.

23A 1-17 CONCRETE BASES

Provide concrete bases for equipment where indicated on the drawings and as specified herein. Concrete bases shall have chamfered edges. Size of pad shall be a minimum of 4" greater than the footprint of the equipment that it is supporting and shall have a minimum height of 3-1/2".

Construct equipment bases and housekeeping pads shall be of a minimum 28 day, 4000 psi concrete conforming to American Concrete Institute standard building code for reinforced concrete (ACI 318-99) and the latest applicable recommendations of the ACI standard practice manual. Concrete shall be composed of cement conforming to ASTM C 150 Type I, aggregate conforming to ASTM C33, and potable water. Exposed exterior concrete shall contain 5 to 7 percent air entrainment.

Unless otherwise specified or shown on the structural drawings, reinforce equipment bases and housekeeping pads with No. 4 reinforcing bars conforming to ASTM A 615 or 6x6 - W2.9 x W2.9 welded wire mesh conforming to ASTM A185. Place reinforcing bars 24" on center with a minimum of two bars each direction.

Provide galvanized anchor bolts for equipment placed on concrete equipment bases and housekeeping pads or on concrete slabs. Anchor bolts size, number and placement shall be as recommended by the manufacturer of the equipment.

23A 1-18 STRUCTURAL STEEL

Structural steel used for support of equipment, ductwork and piping shall be new, clean, and conform to ASTM designation A-36.

Support mechanical components from the building structure. Do not support mechanical components from ceilings, other mechanical or electrical components, and other non-structural elements.

23A 1-19 ACCESS DOORS

Provide access doors in ceilings, walls, etc. where indicated or required for access or maintenance to concealed valves and equipment installed under this section. Provide concealed hinges, screwdriver-type lock, anchor straps; manufactured by Milcor, Zurn, Titus, or equal. Obtain architect's approval of type, size, location and color before ordering.

23A 1-20 PENETRATIONS

Provide sleeves for pipes passing through above grade concrete or masonry walls, concrete floor or roof slabs. Sleeves are not required for core drilled holes in existing masonry walls, concrete floors or roofs. Provide 10 gauge galvanized steel sleeves for sleeves 6" and smaller. Provide galvanized sheet metal sleeves for larger than 6". Schedule 40 PVC sleeves are acceptable for installation in areas without return air plenums.

Seal elevated floor, exterior wall and roof penetrations watertight and weathertight with non-shrink, non-hardening commercial sealant. Pack with mineral wool and seal both ends with minimum of 1/2" of sealant.

Seal around penetrations of fire rated assemblies. Coordinate fire ratings and locations with the architectural drawings. Refer to architectural specifications for fire stoppings. Provide a product schedule for UL listing, location, wall or floor rating and installation drawing for each penetration fire stop system.

Extend pipe insulation for insulated pipe through floor, wall and roof penetrations, including fire rated walls and floors. The vapor barrier shall be maintained. Size sleeve for a minimum of 1" annular clear space between inside of sleeve and outside of insulation.

Provide prefabricated roof curbs manufactured by Custom Curb, Inc., Pate Company, Thycurb or approved equal. Provide roof curb with factory installed wood nailer; welded, 18 gauge galvanized steel shell, base plate and flashing; 1-1/2" thick, 3 pound rigid insulation; fully mitered 3-inch raised cant; cover of weather-resistant, weather-proof material and pipe collar of weather-resistant material with stainless steel pipe clamps.

Provide box frames for rectangular openings welded 12 gauge galvanized steel attached to forms and of a maximum dimension established by the architect. Notify the general contractor or architect before installing any box openings not shown on the architectural or structural drawings.

Seal concrete or masonry exterior wall penetrations below grade with "wall pipes" and mechanical sleeve seals. Provide cast iron "wall pipes" with integral waterstop ring manufactured by Josam, Jay R. Smith, Wade, Watts or Zurn. Provide modular mechanical sleeve seals, manufactured by Thunderline / Link Seal, Calpico, Inc. and Metraflex.

Seal elevated concrete slab with water proof membrane penetrations with "wall pipes" and water proof sealant. Secure waterproof membrane flashing between "wall pipe" clamping flange and clamping ring. Provide cast iron "wall pipes" with integral waterstop ring manufactured by Josam, Jay R. Smith, Wade, Watts or Zurn.

Provide sleeves for horizontal pipe passing through or under foundation. Sleeves shall be cast iron soil pipe two nominal pipe sizes larger than the pipe served.

Provide Schedule 40 PVC pipe sleeves for vertical pressure pipe passing through concrete slab on grade. Sleeves shall be one nominal pipe size larger than the pipe served and two pipe sizes larger than pipe served for ductile iron pipes with restraining rods. Seal water-tight with silicone caulk.

Provide 1/2" thick cellular foam insulation around perimeter of non-pressure pipe passing thru concrete slab on grade. Insulation shall extend to 2" above and below the concrete slab.

23A 1-21 AIR FILTERS

Provide MERV 8 pleated, throwaway type filters, unless otherwise indicated. Air units shall have new filters installed when they are operated before final acceptance. Filters shall be manufactured by American Air Filter, Farr, Flanders, or approved equal.

If HVAC equipment is used during the construction period, contractor shall provide one set of filters when the unit is started and replace filters when needed, but not less than every month. Install new filters prior to testing, adjusting, and balancing work. On the day of substantial completion, the contractor shall clean the unit and provide a new set of filters in the unit before turning system over to owner.

Furnish to owner, with receipt, One set of spare filters of each type required for each unit.

23A 1-22 MOTORS AND STARTERS

Provide motors and starting equipment where not furnished with the equipment package. Motors shall have copper windings, Class B insulation, and be standard squirrel cage with starting torque characteristics suitable for the equipment served. Motors for air handling equipment shall be selected for quiet operation. Each motor shall be checked for proper rotation after electrical connection has been completed. Provide drip-proof enclosure for locations protected from weather and not in air stream of fan; and totally enclosed fan cooled enclosure for motors exposed to weather. Motors shall be manufactured by Century, General Electric, Westinghouse, Louis Allis, or approved equal.

Furnish to owner, with receipt, one complete set of belts for each relative motor utilizing a belt drive.

Provide every motor, except fractional horsepower single phase motors with an approved type of "built-in" thermal overload protection, with a motor starter. Each starter shall be provided with overload heaters sized to the motor rating, and every three phase motor starter shall have overload heaters in each phase. Ambient compensated heaters shall be installed wherever necessary. Unless noted otherwise, motor starters shall be furnished by this Divisions contractor for installation and connection by the Division 26 contractor. Starters shall be Allen-Bradley, Clark, Furnas, Square D, or approved equal.

23A 1-23 ELECTRICAL WIRING

Line Voltage control and interlock wiring shall be provided by the Division 26 contractor. Low Voltage control wiring shall be provided by the Division 23 contractor. Required conduit and rough-ins for low Voltage control wiring shall be provided by the Division 26 contractor. Furnish wiring diagrams to the Division 26 contractor as required for proper equipment hookup. Coordinate with the Division 26 contractor the actual wire sizing amps for the equipment (from the equipment nameplate) to ensure proper installation.

23A 1-24 REFRIGERANT AND OIL

Provide full refrigerant and oil charge in new air conditioning refrigeration systems, and maintain it for full term of the guarantee.

23A 1-25 FINAL TESTING AND ADJUSTMENTS

Final system testing, balancing and adjustments shall be performed by a contractor certified by the National Environmental Balancing Bureau (NEBB), Associated Air Balance Council (AABC) or other approved agency.

Perform test readings on fans, units, coils, etc. and adjust equipment to deliver specified amounts of air.

Prepare testing and balancing report log showing air supply quantities, air entering and leaving temperatures and pressures,

fan and unit test readings, motor voltage and amp draws, etc., and submit six copies of the final compilation of data to the architect for evaluation and approval before final inspection of the project. Balance air systems to within plus or minus 10 percent for terminal devices and branch lines and plus or minus 5 percent for main ducts and air handling equipment of the amount of air shown on the drawings. Further adjustments shall be made to obtain uniform temperature in spaces.

Adjust equipment to operate as intended by the specification. Align bearings and replace bearings that have dirt or foreign material in them with new bearings without additional cost to the owner. Balance contractor shall include in the report any improperly installed or missing balancing devices that would negatively impact the system operation.

Adjust thermostats and control devices to operate as intended. Adjust burners, pumps, fans, etc. for proper and efficient operation. Certify to architect that adjustments have been made and that system is operating satisfactorily. Further adjustments shall be made to obtain uniform temperature in spaces. Calibrate, set, and adjust automatic temperature controls. Check proper sequencing of interlock systems, and operation of safety controls.

23A 1-26 EQUIPMENT FURNISHED BY OTHERS

Provide necessary equipment and accessories that are not provided by the equipment supplier or owner to complete installation of cooking equipment, washing equipment, etc., furnished by others, in locations as indicated on the drawings and/or described in the general notes to this contractor. Equipment and accessories not provided by the equipment supplier may include flues, vents, intakes, associated roof jacks and caps to outdoors, dampers, in-line fans, roof fans, control interlocks, etc. as required for proper operation of the complete system in accordance with the manufacturer's instructions.

Contractor shall be responsible for correct rough-in dimensions, and shall verify same with architect and/or equipment supplier prior to service installations.

23A 1-28 BUILDING OPERATION

Comply with the schedule of operations as outlined in the architectural portions of this specification. Building shall be in continuous operation. Accomplish work requiring interruption of building operation at a time when the building is not in operation, and only with written approval of building owner and/or tenant. Coordinate interruption of building operation with the owner and/or tenant a minimum of seven days in advance of work.

23A 1-29 VIBRATION ISOLATION

Manufacturers: Provide vibration isolation equipment and materials by a single manufacturer. Approved manufacturers provided their systems are in compliance with the specified design and performance requirements include Amber Booth, Kinetics Noise Control, Mason Industries, Inc., Vibration Eliminator Co., Inc., and Vibration Mounting and Controls.

General requirements: Select vibration isolators by the weight distribution to produce uniform deflection. Vibration isolators shall have either known un-deflected heights or calibration markings so that, after adjustment, the static deflection can be verified, thus determining that the load is within the proper range of the isolator. Isolators shall operate in the linear portion of their load versus deflection curves. Spring isolators shall have 50 percent excess capacity without becoming coil bound. Coat vibration isolators with factory-applied paint. Coat vibration isolators exposed to weather and other corrosive environments with factory-applied corrosion resistance protection. Install and adjust vibration isolators in accordance with manufacturers written instructions.

Pipe connections: Provide flexible connectors for piping system connections on equipment side of shutoff valves for all pumps, mechanical equipment supported or suspended by spring isolators, and where indicated on drawings. Fabricate flexible piping connectors from stainless steel, bronze or rubber materials as suitable for system fluid. Flexible piping connectors shall be bellows, spherical or braided hose type as recommended by the manufacturer for the application.

Isolator types:

Type WP (waffle pads): Provide 5/16" thick neoprene pads ribbed or waffled on both sides. Manufacture pads with bridge bearing quality neoprene, and select for a maximum durometer of 50 and designed for 15 percent strain. Incorporate steel load-spreading plates where required between the equipment and the neoprene pad. If the isolator is bolted to the structure, install a neoprene vibration isolation washer and sleeve (Uniroyal Type 620/660 or as approved) shall be installed under the bolt head between the steel washer and the base plate. Provide Mason Industries Type W or equal.

Type SPNH (spring and neoprene hangers): Provide a steel spring in series with a neoprene isolating element. The spring shall have a minimum additional travel to solid equal to 50 percent of the specified deflection. The neoprene element shall have a static deflection of not less than 0.3" with a strain not exceeding 15 percent. Unless otherwise specified, the static deflection of SPNH hangers shall be 2". Spring diameter and hanger box hole size shall be large enough to permit the hanger rod to swing through a 30 degree arc. Provide neoprene sleeve where the lower hanger rod passes through the steel hanger box, such that the hanger rod cannot contact the steel hanger. The diameter of the clear hole in the hanger box shall be at least 3/4 inch larger than the diameter of the hanger rod. When installed, do not cock the spring element and do not allow the hanger box to rotate through a full 360 degree arc without encountering obstructions. Provide Mason Industries Type 30N or equal.

Type SPNM (spring and neoprene mounts): Provide free-standing and laterally stable steel spring without a housing. Design springs so the ratio of the horizontal to vertical spring constant is between one and two. The spring diameter shall be not less than 80% of the compressed height of the spring at rated load. Loaded springs shall have a minimum additional travel to solid equal to 50% of the specified static deflection. Unless otherwise specified, the minimum static deflection of SPNM isolators for equipment mounted on grade slabs shall be 1", and the minimum static deflection for equipment mounted above grade level shall be 2". Bond two Type WP isolation pads sandwiching a 16 gauge stainless or galvanized steel separator plate to the isolator baseplate. Unless otherwise specified, isolators need not be bolted to the floor for indoor installations. If the base plates are bolted to the structure, install a neoprene vibration isolation washer and sleeve (Uniroyal Type 620/660 or as approved) under the bolt head between the steel washer and the base plate. Provide Mason Industries Type SLFH or equal.

Type CMB (curb mounted base): Curb mounted base for roof-mounted equipment shall be a structural steel base mounted directly to the structure with an upper floating section on adjustable steel springs. The upper frame shall provide continuous support for the equipment. Steel springs shall rest on 1/4" min. thickness neoprene pads and shall have a minimum static deflection of 2" unless otherwise specified. All-directional snubber bushings shall be 1/4" minimum thickness neoprene. All hardware shall be cadmium or zinc electroplated to provide a rust resistant finish. Weather proofing shall consist of a continuous galvanized flexible counterflashing nailed over the lower curb's waterproofing and joined at the corners by EPDM bellows. All spring locations shall have access ports with removable waterproof covers to allow for adjustment or replacement of springs. Lower curbs shall have provision for 2" insulation. Duct connections shall be made using a length of flexible duct dimensioned to match the equipment opening, using a foam rubber gasket to seal against the unit bottom. Provide Mason Industries Type RSC or equal.

23A 1-30 MECHANICAL IDENTIFICATION

Provide manufacturer's standard pre-printed, semi-rigid snap-on or permanent adhesive, pressure-sensitive vinyl pipe markers. Color code pipe markers to comply with ANSI A13.1.

Install pipe markers on each HVAC piping system and include arrows to show normal direction of flow.

Locate pipe markers and color bands wherever piping is exposed to view in occupied spaces, machine rooms, accessible maintenance spaces (shafts, tunnels, plenums) and exterior non-concealed locations.

Provide plastic laminate or brass valve tag on every valve, cock and control device in each HVAC piping system; exclude check valves, valves within factory fabricated equipment units, and shut-off valves at HVAC terminal devices and similar rough-in connections of end-use fixtures and units.

Provide manufacturer's standard laminated plastic, color coded equipment markers. Conform to the following color code: green for cooling; yellow for heating; yellow/green for combination cooling and heating; brown for energy reclamation; blue for other equipment types. Conform to ANSI A13.1 for hazardous equipment.

Provide stenciled signs for equipment identification at contractor's option or where distance of required identification requires lettering larger than 1" height. Stencil paint shall be exterior type, oil-based, alkyd enamel, minimum 1-1/4" height or greater as required for long distance identification, white or black color for best contrast.

Provide duct markers or provide stenciled signs and arrows indicating ductwork service and flow direction in black or white lettering for best contrast with duct or insulation color. Locate markers maximum 50 feet along each duct side and within 5 feet of all control and balancing dampers or branch ducts more than 25 feet length and within 5 feet on each side of wall, floor, and ceiling penetrations. Provide additional markers in congested areas or at multiple duct runs as required for clarity.

23A 1-31 SEISMIC REQUIREMENTS

Seismic protection for seismic concerns of all building systems including but not limited to mechanical, plumbing, and electrical must meet minimum requirements of all applicable codes for buildings' classified seismic use group and seismic design category. Any requirements for seismic protection measures to be applied shall be installed in strict accordance with all applicable local, state, and/or federal codes and with manufacturer's requirements, the most stringent shall apply.

The contractor shall be responsible for determining the type and location of seismic restraints required for the various system's elements contained in the construction documents based on the related seismic code criteria, the size and weight of the supported element and the distance from structure that the element will be installed. If required by local, state, federal codes and/or other authority having jurisdiction the contractor shall submit descriptive catalog data of seismic restraints, shop drawings showing the types, locations and installation details of seismic restraints and calculations showing that the seismic restraints meet the seismic requirements to the local authority having jurisdiction for review and approval. Calculations shall be signed and sealed by a registered professional engineer, licensed in the state of the project location and employed by the manufacturer of the seismic restraint products. Calculations shall include dead loads, static seismic loads and capacity of materials utilized for connections to equipment and structure.

Seismic restraints, isolators, and isolation materials shall be of the same manufacturer, and shall be certified by the manufacturer. Restraining devices shall have a pre-approval number from California OSHPD or other recognized government agency showing maximum restraint ratings.

23A 2 INSULATION AND SHEET METAL WORK

23A 2-1 DUCT INSULATION

Cover concealed rigid round supply and return air ductwork, round and rectangular outside air ductwork, and round and rectangular exhaust and relief air ductwork in unconditioned spaces and within 10 feet of exterior discharge outlets with
2 1/4" thick, 3/4 pound density, minimum R-6.0 duct wrap, Certainteed or equivalent Owens-Corning or Knauf with heavy-duty foil-scrim-kraft facing, and with joints taped with 3" wide foil tape.
Where contractor has the option to provide duct liner, in lieu of duct wrap, in rectangular supply and return air ductwork. Liner shall be 2-pound density fiberglass, minimum R-6.0 CertainTeed Corp. "ToughGard" or equivalent Owens-Corning or Knauf long textile fiber duct liner. Liner surface shall serve as a barrier against infiltration of dust and dirt, shall meet ASTM C 1338 for fungi resistance and shall be cleanable using duct cleaning methods and equipment outlined by North American Insulation Manufacturers Association (NAIMA) duct cleaning guide. Install with liner adhesive and mechanical fasteners in accordance with manufacturer's instructions and recommendations. Duct dimensions listed on drawings represent the airflow free areas and do not have allowances for insulation liner, where applicable, inside the ducts, or dual wall dimensions. Ducts shall be constructed to include insulation requirements and maintain airflow dimensions indicated on plans.

Insulating materials, adhesives, coatings, etc., shall not exceed flame spread rating of 25 and smoke developed rating of 50 per ASTM E 84. Containers for mastics and adhesives shall have UL label.

For ductwork that is located exterior to the building, insulate with 2" (minimum R-8.0) thick fibrous board insulation and provide minimum 20 gauge aluminum jacket sealed with approved weatherproof sealant.
Insulating materials, adhesives, coatings, etc., shall not exceed flame spread rating of 25 and smoke developed rating of 50 per ASTM E 84. Containers for mastics and adhesives shall have UL label.

For ductwork that is located exterior to the building, insulate with 2" (minimum R-8.0) thick fibrous board insulation and provide minimum 20 gauge aluminum jacket sealed with approved weatherproof sealant.

LEVEL 5
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STATE OF TEXAS
REGISTERED
EMILY VIRGINIA VALDENMEYER
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LICENSED
PROFESSIONAL ENGINEER
10/25/2021

HP ENGINEERING INC.
F-13720

HP ENGINEERING
PROJECT NO. 21-64T
100 % COMPLETE

HP ENGINEERING INC.
142 HOWELL STREET,SUITE 170
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(479) 490-2500

F-18023

PROJECT INFORMATION:

AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 Elizabeth St.
Texarkana, TX 75503

PROJECT NUMBER: 21-64T
ISSUE DATE: 10-25-2021
REVISIONS:

SHEET NAME:

MECHANICAL SPECIFICATIONS

SHEET NUMBER:

M500

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23A 2-2 DUCTWORK

Provide galvanized steel ductwork and housings as shown on drawings. Construct ductwork including fittings and transitions in conformance with current SMACNA standards relative to gauge, bracing, joints, etc. Minimum thickness of duct shall be 26-gauge sheet metal. Reinforce housings and ductwork over 30" with 1-1/4" angles not less than 5'-6" on centers, and closer if required for sufficient rigidity to prevent vibration. Support horizontal runs of duct from strap iron hangers on centers not to exceed 8'-0". Do not support ceiling grid, conduits, pipes, equipment, etc. from ductwork. Coordinate routing of ductwork with other contractors such that piping, electrical conduit, and associated supports are not routed through the ductwork.

Construct supply ducts to meet SMACNA positive pressure of 3" w.g. Construct return, outdoor and exhaust ductwork upstream of fans to meet SMACNA negative pressure of 2" w.g. Construct exhaust ductwork downstream of fans to meet SMACNA positive pressure of 2" w.g.

Provide mill phosphatized or galvanealed finish for exposed ductwork to be field painted. Shop treated sheet metal shall have galvanized metal primer applied in the shop after fabrication and prior to shipping.

Ductwork above roof or otherwise exterior to building shall be minimum #18 gauge with longitudinal and transverse joints welded.

Seal ductwork with heavy liquid sealant, Hardcast Irongrip 601, Design Polymer DP 1010, United McGill duct sealer or approved equal, applied according to sealant manufacturer's instructions. For ducts with pressure classification of 2" w.g. and greater seal longitudinal and transverse ductwork joints airtight to meet SMACNA Class B. For ducts with pressure classification less than 2" w.g. seal transverse joints airtight to meet SMACNA Class C. Tapes and mastics shall be listed and labeled in accordance with UL 181A.

Provide radius elbows, turns, and offsets with a minimum centerline radius of 1-1/2 times the duct width. Where space does not permit full radius elbows, provide short radius elbows with a minimum of two continuous splitter vanes. Vanes shall be the entire length of the bend. Provide mitered elbows where space does not permit radius elbows, where shown on the drawings, or at the option of the contractor with the engineer's approval. Mitered elbows less than 45 degrees shall not require turning vanes. Mitered elbows 45-degrees and greater shall have single thickness turning vanes of same gauge as ductwork, rigidly fastened with guide strips in ductwork. Vanes for mitered elbows shall be provided in all supply and exhaust ductwork and in return and outside air ductwork that has an air velocity exceeding 1000 fpm. Do not install vanes in grease ductwork.

Ducts shall be connected to fans, fan casings and fan plenums by means of flexible connectors. Flexible connectors shall be neoprene coated glass cloth canvas connections, Duro-Dyne, Elgen, Ventfabric or equal. Flexible connectors shall have a flame spread of 25 or less and smoke developed rating not higher than 50. Make airtight joints and install with minimum 1-1/2" slack.

Provide balancing dampers, manufactured by Ruskin, Greenheck, Nailor Industries, Cesco, Louvers & Dampers, Pottorff or approved equal, where shown on drawings and wherever necessary for complete control of air flow. Splitter dampers shall be controlled by locking quadrants; provide Young's Regulator or Ventilok end bearings for the damper rod. Rectangular volume dampers shall be opposed blade interlocking type. Round volume dampers shall be butterfly type consisting of circular blade mounted to a solid shaft. Damper leakage for outside air dampers shall not exceed 6.5 cfm/square foot in full closed position at 4" wg pressure differential across damper. Reference manufacturer and model number for outside air dampers is Ruskin model CD-50.

Provide Flexmaster model STO or equal 45 degree rectangular/round side takeoff fitting with model SLBO double bearing damper with insulation build out for round ductwork branch takeoffs to individual air devices. Omit damper at takeoff fitting when damper is located downstream of takeoff.

Where access to dampers through a hard ceiling is required, provide a Metropolitan Air Technology model RT-250 or equal by Young's Regulator concealed, cable operated volume damper with remote operator. Damper shall be adjustable through the diffuser face or frame with standard 1/4" nutdriver or flat screwdriver. Cable assembly shall attach to damper as one piece with no linkage adjustment. Positive, direct, two-way damper control shall be provided with no sleeves, springs or screw adjustments to come loose after installation. Support cable assembly to avoid bends and kinks in cable.

Where approved by architect, a ceiling cup with cover plate can be used for access to cable operator.

Round or oval ductwork shall be Semco, United, Wesco or equal, sheetmetal, with smooth interior surface, with low pressure (duct pressure class up to and including 2" w.g.) round ductwork gauges per the following table (reference SMACNA HVAC duct construction standards for gauges when pressures exceed 2" w.g.):

Size	Duct gauge	Fitting gauge
14" & under	26	24
15" thru 26"	24	22
28" thru 36"	22	20
38" thru 50"	20	20
52" thru 60"	18	18

Provide double wall insulated round ductwork where exposed or as otherwise indicated. Fabricate double-wall insulated ducts and fittings with an outer shell, insulation, and an inner liner as specified below. At dual wall ducts, the dimension shown is the outside metal duct size and already has allowances for the insulation thickness.

Outer shell shall be 2" longer than inner shell and insulation and shall be gauge as specified for single wall duct.

nside dimensions. Outer shell shall be 2" longer than inner shell and insulation and shall be gauge as specified for single wall duct.

Insulation shall be fiberglass with thickness as required for thermal resistance of R-6.

Perforated inner liner shall be 24 gauge up to 34 inches, 22 gauge from 35 to 58 inches, and 20 gauge above 60 inches. Provide 3/32" perforations with an overall open area of 23 percent.

Maintain concentricity of liner to outer shell by mechanical means. Retain insulation from dislocation by mechanical means.

Lindab Spirosafe, Lewis & Lambert or approved equal factory manufactured round ductwork and fittings may be substituted for specified round branch ductwork, at contractor's option. Heavy liquid joint sealant may be omitted on factory-manufactured round ductwork.

Low pressure (duct pressure class up to and including 2" w.g.) fittings 24" in diameter and less shall be prefabricated, spotwelded and internally sealed. Continuously weld fittings larger than 24" in diameter. Fitting gauge shall be 22 gauge for 36" fittings and under, 20 gauge for larger sizes. 90 degree tee's shall be conical type. Seal longitudinal and transverse ductwork joints airtight with heavy liquid sealant applied according to manufacturer's instructions. Provide gauge thickness in medium pressure (duct pressure class 3" to 6" w.g.) Ductwork as recommended by SMACNA.

At contractor's option, provide Ductmate, Gripple, or approved equal wire rope duct hanging system. Provide Ductmate WR10 through WR40 or gripple No. 1 through No. 5 wire rope using 7x7 or 7x19 aircraft quality zinc coated cable or galvanized steel wire rope. Secure wire rope to duct using Ductmate Clutcher or Gripple Hang Fast adjustable rope attachment. Where applicable for upper attachment, provide Ductmate EZ-Lock wire rope beam clamp with locking nut adjustment or Gripple ceiling, beam, or purlin clips. Wire rope, adjustable duct attachment, and upper attachment to structure shall each have minimum 5 to 1 load safety factor.

23A 2-3 FLEXIBLE DUCT

Low pressure (duct pressure class up to and including 2" w.g.) and medium pressure (duct pressure class 3" to 6" w.g.) flexible duct shall be Flexmaster Type 8B, Thermaflex Type G-KM, M-KE, or equal (fire retardant polyethylene) protective vapor barrier, UL181 Class 1,

acoustical insulated duct, R-6.0 fiberglass insulation. Provide CPE liner with steel wire helix mechanically locked or permanently bonded to the liner.

High pressure (duct pressure class over 6" w.g.) flexible duct shall be Flexmaster Type 4B, Thermaflex Type M-KC, or equal (fire retardant polyethylene) protective vapor barrier, UL181 Class 1, acoustical insulated duct, steel wire helix core, mechanical lock construction, R-6.0 fiberglass insulation. Connect each end with stainless steel screw operated metal draw bands.

Flexible duct runs shall not exceed 5 feet in length, and shall be installed fully extended and straight as possible avoiding tight turns. Install flexible duct in accordance with manufacturer's instructions. Support flexible duct at maximum 5 feet on center and within 6 inches of bends. Bends shall not exceed a centerline radius of one duct diameter. Duct sag shall not exceed 1/2". Supporting material in direct contact with the duct shall not be less than 1-1/2" in width.

Connect flexible duct to rigid metal duct or air devices as recommended by the manufacturer. At a minimum, install two wraps of duct tape around the inner core connection and a metallic or non-metallic clamp over the tape and two wraps of duct tape or a clamp over the outer jacket. Duct clamps shall be labeled in accordance with UL-181b and marked 181b-c. Duct tape shall be labeled in accordance with UL 181b and marked 181b-fx.

23A 2-4 FLUES

Where flues are indicated on the drawings, provide Selkirk Metalbestos model QC or RV or equal by Metal-Fab, Simpson or Van-Packer, Type "B" double wall gas vent flues from the various items of gas-fired equipment up to flue caps above the roof. Single wall flues are unacceptable. Flues shall be complete with necessary fittings, connectors, flashing cone, storm collar, thimble supports, guy wires, and other accessories, and shall be installed as recommended by the manufacturer, and in conformance with applicable codes. Flash flues watertight at the roof line.

23A 2-5 SPECIAL GAS FLUES

Where special gas flues are indicated on the drawings, provide Selkirk Metalbestos model DCV double wall or equal by Heat-Fab Type 29-4c stainless steel special gas vent. Flues shall be complete with necessary fittings, connectors, flashing cone, storm collar, thimble supports, guy wire, and other accessories, and shall be installed as recommended by the manufacturer, and in compliance with applicable codes.

23A 2-6 CONDENSING GAS FURNACE AND APPLIANCE VENT

Vents and combustion air ducts for condensing type appliances shall be Schedule 40 PVC, DWV, meeting ASTM D1784 Grade 1, Type 1, with dimensions meeting ASTM D2665. Fittings shall be DWV, PVC meeting ASTM D2665 with solvent cement socket joints. Solvent used for joints shall meet ASTM D2564.

23A 2-7 AIR DEVICES

Provide air devices as scheduled on drawings, manufactured by Carnes, Price, Krueger, Nailor Industries, Titus, or Tuttle & Bailey. Select air devices to limit room noise level to no higher than NC-30 unless otherwise shown. Provide devices with a soft plastic gasket to make an airtight seal against the mounting surface. Coordinate final location, frame, and mounting type of air devices with architectural reflected ceiling plans.

Submit complete shop drawings including information on noise level, pressure drop, throw, cfm for each air device, styles, borders, etc. clearly marked with specified equipment number. Submit samples of each air device as requested by the engineer.

Provide wall supply air registers with double deflection blades and opposed blade dampers unless indicated otherwise. Provide wall return air grilles and exhaust air registers with horizontal 35 or 45 degree angle vision-proof bars. Provide concealed fasteners for wall mounted registers and grilles.

Provide ceiling supply air registers of aluminum curved blade type with blades parallel to long dimension and with throw pattern as indicated on drawings.

Provide opposed blade dampers for supply air registers and exhaust air registers unless indicated otherwise.

Provide ceiling supply air diffusers and return air grilles of lay-in or surface mounted type as required to be compatible with ceiling construction. Provide ceiling diffusers and grilles with white enamel finish unless noted otherwise.

Provide linear slot diffusers of standard one-piece lengths up to 6-feet and furnish in multiple sections greater than 6-feet. Join multiple sections together end-to-end with alignment pins to form a continuous slot appearance. Provide alignment components by the manufacturer. Provide plenums by the slot diffuser manufacturer.

Provide drop box diffusers with minimum 22 gauge galvanized steel construction, factory assembled and welded, and provided with standard duct connections and mounting brackets for field installation. Diffusers shall have double deflection grilles or drum louvers that are individually adjustable to customize horizontal and vertical throws and factory installed air diverters or turning vanes. Insulate diffusers with 1" thick, 1.5 lb duct liner insulation.

Provide factory primed and painted diffusers, color as selected by the architect.

Provide drop box diffusers as manufactured by AES Industries, Can Fab, Custom Curb, Inc. or Plenums, Inc.

23A 2-8 FIRE DAMPERS

Provide fire dampers where shown on drawings, and as required by code enforcing authority. Damper ratings shall be as required to maintain the fire and/or smoke ratings noted on the architectural drawings. Provide fire dampers conforming to NFPA-90a and UBC standard 43-7 with recommended steel sleeves of length as required to meet the installed location, 165 degrees Fahrenheit fusible link, spring catches and non-corrosive bearings. Dampers shall be UL listed, manufactured by Ruskin, Greenheck, Air Balance, Cesco, United Air or Nailor Industries.

Provide access door, sized per SMACNA with minimum size of 10" by 10", in duct for inspection and service to fire damper and fusible link. Provide duct access door(s) within 12 inches of the device to allow for testing and maintenance. Label each door (with minimum 1" lettering) indicating which damper type is served. Door should be capable of being fully opened or provide removable door. Provide removable section of duct where duct size is too small for 10" by 10" access door. Provide access door in ceiling or wall as required to access damper.

23A 2-9 COMBINATION FIRE/SMOKE DAMPERS

Provide combination fire/smoke dampers where shown on drawings and as required by code enforcing authority with fire/smoke ratings as required to maintain the fire rating noted on the architectural drawings. Dampers shall meet UL 555 classification for fire rating and UL 555s classification of leakage class ii smoke damper; damper shall bear a UL label attesting to these classifications.

Provide fire damper with a 165 degrees Fahrenheit resettable temperature device. Rate fire/smoke dampers for a minimum velocity of 2,000 fpm and pressure of 4" w.g. Provide manufacturer recommended steel sleeve of length as required to meet the installed location.

Provide a qualified 24 volt electric actuator installed by the manufacturer at time of damper fabrication. Actuators shall be rated for a minimum of 20,000 cycles of operation, shall comply with the locally adopted building code and shall open in 15 seconds or less and close in 15 seconds or less after alarm or smoke detection has occurred. Provide stainless steel spring loaded leakage seals in sides of casing, and

Damper shall be manufactured by Ruskin, Air Balance, Greenheck, Cesco, United Air or Nailor Industries.

Provide access door, sized per SMACNA with minimum size of 10" by 10", in duct for inspection and service to fire damper and fusible link. Provide duct access door(s) within 12 inches of the device to allow for testing and maintenance. Label each door (with minimum 1" lettering) indicating which damper type is served. Door should be capable of being fully opened or provide removable door. Provide removable section of duct where duct size is too small for 10" by 10" access door. Provide access door in ceiling or wall as required to access damper.

23A 2-10 LOUVERS, PLENUMS, SCREENS

Provide intake and exhaust air louvers by Ruskin model ELF375DX or equal Greenheck, American Warming & Ventilating, Cesco, Industrial Louvers or Louvers & Dampers as scheduled on the drawings. Coordinate exact size and location with architectural drawings. Louvers shall be stationary, with mill finish. Louvers shall have extruded aluminum blades, 0.080" wall thickness, 45 degree blade angle, blades on 5" centers; frame shall be extruded aluminum, 0.080" wall thickness; with expanded flattened aluminum insect screen. Provide louvers with a minimum free area of 45 percent, with a maximum air pressure drop of 0.1" at scheduled airflow.

Construct plenums with galvanized steel framing members and galvanized sheetmetal, braced with galvanized angles. Gauges and bracing shall conform to SMACNA recommendations for ductwork of like sizes. Where access doors are shown, provide hinged doors with #202 Ventlok latch. Make watertight connections to louvers, sloping bottom of plenum to drain water to weepholes in bottom of louver.

Provide screens on louvers, ducts, hoods, fans, and openings to the outdoors as scheduled and/or noted on the drawings. Insect screens shall be 0.009 thickness, 1/4" mesh, stainless steel wire. Bird screens shall be 0.047-inch, 1/2" mesh stainless steel wire.

23A 2-11 DUCT SILENCERS

Provide duct silencers as scheduled on drawings, manufactured by I.A.C., Aerosonics, Dynasonics or Vibro-Acoustics. Silencers shall be rated for low frequency attenuation and low air pressure drop.

23A 2-12 ROOF MOUNTED INTAKE AIR AND RELIEF AIR HOODS

Provide air intake and relief hoods as scheduled on drawings. Hoods shall be low silhouette, aluminum, square curb cap, with birdscreen, roof curb, and barometric or motorized backdraft damper as scheduled. Manufactured by Cook, Greenheck, Acme, Carnes, Cesco or equal.

23A 2-13 EXHAUST AIR SYSTEMS

Provide roof mounted exhaust fans as scheduled on the drawings, or equal manufactured by Cook, Greenheck, Carnes, Twin City Fans, Acme or Penn-Barry complete with aluminum housing, aluminum centrifugal wheel, motor with integral thermal overload protection, disconnect switch mounted inside the housing, birdscreen, backdraft damper, and pate prefabricated roof curb with minimum height of 12" inches for roofs with no insulation, 15" for roofs with insulation or as scheduled on the drawings. Three phase fans shall be furnished with magnetic starters with push button station.

Provide roof mounted upblast exhaust fans as scheduled on the drawings, or equal manufactured by Cook, Greenheck, Carnes, Twin City Fans, Acme or Penn-Barry complete with aluminum housing, aluminum centrifugal wheel, motor with integral thermal overload protection, disconnect switch mounted inside the housing, drain trough, birdscreen and pate prefabricated roof curb with minimum height of 12" inches for roofs with no insulation, 15" for roofs with insulation or as scheduled on the drawings. Exhaust fans serving Type I kitchen exhaust hoods shall discharge a minimum of 40" above the roof surface, shall have hinged access including access for blade inspection and cleaning per NFPA 96, grease drain trough with cup and insulated curb, and shall be installed in accordance with NFPA 96 and local codes.

Provide wall mounted exhaust fans as scheduled on the drawings, or equal manufactured by Cook, Greenheck, Carnes, Twin City Fans, Acme or Penn-Barry heavy-duty wall-mounted propeller fans, complete with belt drive with minimum of two belts, ball bearing supported fan shaft, ball bearing motor, magnetic starter, inlet screen, and motor-operated shutter. Inlet louvers shall be Ruskin ELF81 with heavy duty motor operated damper, Ruskin CD35 with parallel blades and Honeywell M-445 damper motor. Provide transformer for damper motors if different voltage.

Provide ceiling mounted exhaust fans as scheduled on the drawings, or equal manufactured by Cook, Greenheck, Carnes, Twin City Fans, Acme or Penn-Barry complete with isolated blower unit and ceiling grille. Provide disconnect switch, backdraft damper, discharge duct,

wall louver, and neoprene vibration isolators with all-thread hanging rods.

Provide in-line (duct) mounted exhaust fans as scheduled on the drawings, or equal manufactured by Cook, Greenheck, Carnes, Twin City Fans, Acme or Penn-Barry complete with isolated blower unit and ceiling grille. Provide backdraft damper, discharge duct,

wall louver, and vibration isolation as scheduled or shown on the drawings.

23A 3 HVAC EQUIPMENT

Provide UL listed smoke detectors as required by code to shut down rooftop unit upon detection of smoke. Division 28 contractor shall provide and wire UL listed duct type smoke detectors as required by code to shut down rooftop unit upon detection of smoke

23A 4 TEMPERATURE CONTROLS

23A 4-1 GENERAL REQUIREMENTS

Provide a system of temperature controls including thermostats, control panels, time switches, override timers, damper motors, and relays required to provide the desired sequence of operation. Contract with Building Owner's Building Automation System contractor for new devices, programming, and interconnection with the existing BAS system. Provide integrated wiring diagrams showing interconnections between field installed equipment and package wiring furnished with the HVAC equipment.

Provide supervision and on-job checkout service as required to ensure that installation meets requirements of the specification. The system shall be guaranteed for a period of one year following the acceptance of the system by the architect/engineer. Correct defects occurring during this period at no additional cost to the owner.

23A 4-2 EQUIPMENT

Manufacturers and model numbers are listed for reference as to quality and features required for the control devices. Provide control devices by Barber-Colman, Alerton, Honeywell, Johnson Controls, Carrier, Trane or White Rodgers with quality and features as indicated.

Low voltage type non-programmable heating and cooling thermostats shall be Honeywell series T FocusPro 5000 or equal with integral subbase.

23A 6 ALTERNATES

23A 6-1 DESCRIPTION

Provide all work contemplated under the different alternates to include labor, materials, equipment and services necessary for and incidental to the completion of work under each particular alternate. Furnish separate bids for each alternate applicable to contractor's proposal, stating the amount to be added or deducted from the base bid in case the alternate is accepted. Comply with applicable sections of the base specifications for work required by the alternate unless otherwise specified. Refer to the architectural portion of the specification.

END OF SECTION 23A

LEVEL 5

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STATE OF TEXAS
EMILY VIRGINIA WALDENMEYER
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LICENSED PROFESSIONAL ENGINEER
10/25/2021

HP ENGINEERING INC.
F-13720

HP ENGINEERING

PROJECT NO. 21-64T
100 % COMPLETE

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(479) 490-2500

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PROJECT INFORMATION:

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ATCOG HOUSING OFFICES REMODEL

4808 Elizabeth St.
Texarkana, TX 75503

PROJECT NUMBER: 21-64T
ISSUE DATE: 10-25-2021
REVISIONS:

SHEET NAME:

MECHANICAL SPECIFICATIONS

SHEET NUMBER:

M501

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SYMBOL	DESCRIPTION
	POLE/AREA LIGHTS
	POST-TOP AREA LIGHT
	BOLLARD LIGHT
	DIAGONAL HATCH INDICATES LIGHT ON A CRITICAL CIRCUIT
	SOLID HATCH INDICATES LIGHT ON AN EMERGENCY OR LIFE SAFETY CIRCUIT
	SINGLE POLE SWITCH
3	3-WAY SWITCH
4	4-WAY SWITCH
K	KEYED SWITCH
D	DIMMER SWITCH
OS	OCCUPANCY SENSOR W/ MANUAL SWITCH
T	TIMER SWITCH
TD	TIME DELAY SWITCH
TC	TIME CONTROL SWITCH
F P	FIRE ALARM PULL STATION
F	FIRE ALARM BELL
F	FIRE ALARM HORN W/STROBE
F S	FIRE ALARM SPEAKER W/STROBE
F	FIRE ALARM BELL W/STROBE
F	FIRE ALARM CHIME W/STROBE
	FIRE ALARM DOOR HOLDER
	FIRE ALARM DOOR CLOSER
FR	FIRE ALARM SHUT DOWN RELAY
	SPRINKLER FLOW SWITCH
	SPRINKLER VALVE TAMPER SWITCH
	THERMAL DETECTOR
S	DUCT SMOKE DETECTOR
S	CEILING SMOKE DETECTOR

SYMBOL	DESCRIPTION
	SINGLE RECEPT.
	DUPLEX RECEPT.
48"	(DESIGNATES SPECIFIC MOUNTING HEIGHT) DUPLEX RECEPT.
GFI	GFI DUPLEX RECEPT. (FEED THROUGH)
GFI WP	GFI WEATHERPROOF RECEPT.
	SPLIT DUPLEX RECEPT.
	DUPLEX ISOLATED GROUND RECEPT.
	DUPLEX RECEPT. ON EMERG. CIRCUIT
	FLOOR DUPLEX RECEPT.
CLNG	CEILING DUPLEX RECEPT.
	FOURPLEX RECEPT.
	FOURPLEX RECEPT. ON EMERG. CIRCUIT
	240V RECEPTACLE
	SPECIAL RECEPT.
J	JUNCTION BOX
J	FLOOR JUNCTION BOX
J CLNG	CEILING JUNCTION BOX
	TELEPHONE OUTLET
	FLOOR TELEPHONE OUTLET
CR	CARD READER
	FLOOR DATA OUTLET
CLNG	CEILING DATA OUTLET
	COMB. MOTOR STARTER (FUSED)
	SAFETY DISC. SW. (NON-FUSED)
	SAFETY DISC. SW. (FUSED)
P	POWER POLE (OPEN OFFICE STYLE)
	SURGERY SERVICE COLUMN

XX-1 MOTOR
XX-1 ← IDENTITY (SEE SCHEDULE)

EXISTING TO REMAIN XX-1 XX-1 | RELOCATED XX-1 XX-1 | DEMOLISHED XX-1 XX-1

T1 TRANSFORMER

ELECTRICAL SYMBOL NOTES

S3 -<unnamed> d

LIGHTING FIXTURE TAG DESCRIPTORS:
TOP VALUE: FIXTURE TYPE ID.
MIDDLE VALUE, NUMBER: PANEL AND CIRCUIT NUMBER
BOTTOM VALUE, LOWERCASE LETTER: SWITCH DESIGNATION.
ABSENCE OF A SWITCH ID INDICATES FIXTURE IS CONTROLLED BY THE ONLY SWITCH IN THE SPACE.
"x" IN PLACE OF THE SWITCH ID INDICATES NIGHT LIGHT, UNSWITCHED.

WX1 -<unnamed> EXIT LIGHTS. STEM INDICATES WALL MOUNTING. NO STEM INDICATES CEILING MOUNTING. SHADED AREA INDICATES ILLUMINATED FACE(S). ARROW INDICATES DIRECTIONAL ARROW ON ILLUMINATED FACE(S).

<unnamed> d

DEVICES. TAG INDICATES PANEL AND CIRCUIT NUMBER. THE SWITCH DESIGNATION IS INDICATED BY A LOWER CASE LETTER. EXAMPLE: SPLIT DUPLEX RECEPTACLE IS CONNECTED TO CIRCUIT 1 AND ONE RECEPTACLE OUTLET IS CONTROLLED BY SWITCH "d".

d

THE CONTROL DEVICE DESIGNATION IS INDICATED BY A LOWER CASE LETTER. EXAMPLE: SINGLE POLE SWITCH "d" TO CONTROL LIGHTING FIXTURES INDICATED BY "d".

D e

WALL BOX DIMMER. EXAMPLE: CONTROL LIGHTING FIXTURES INDICATED BY "e". SEE SPECIFICATIONS FOR WATTAGE.

PANELBOARDS. PANELBOARD DOORS MAY BE SHOWN TO INDICATE OPENING SIDE OF RECESSED PANELBOARDS. SEE PANELBOARD IDENTIFICATION FOR DESIGNATION CODES.

FLOOR CLEARANCE AREA

XX-1

MOTOR CONNECTIONS. THE MOTOR IS INDICATED BY A NUMBER WITHIN OR CHARACTERS ADJACENT TO THE MOTOR SYMBOL. SEE THE MOTOR AND EQUIPMENT SCHEDULE FOR THE MOTOR DESCRIPTION AND ELECTRICAL REQUIREMENTS.

T1

TRANSFORMERS. THE TRANSFORMER TYPE IS INDICATED BY A NUMBER FOLLOWING THE UPPER CASE LETTER "T". SEE THE TRANSFORMER SCHEDULE OR THE SINGLE LINE DIAGRAM FOR THE TRANSFORMER DESCRIPTION AND REQUIREMENTS. EXAMPLE: TRANSFORMER TYPE "T1".

GRAPHICAL REPRESENTATION OF PHASING, TYPICAL FOR ALL SYMBOLS.

EXISTING TO REMAIN
EXISTING TO BE REMOVED
NEW

ITEM TO BE REMOVED

AREA NOT IN CONTRACT

REVISION NUMBER - SHOWN ON PLANS

NUMBER OF DETAIL ON SHEET
EX-XX NUMBER OF SHEET WHERE DETAIL APPEARS

1 KEYED NOTE (SEE SCHEDULE)

Room 6 ROOM NAME AND NUMBER

ELECTRICAL ABBREVIATIONS LIST

1P	1 POLE (2P, 3P, 4P, ETC.)
A	AMPERE
AC	ABOVE COUNTER
ACLG	ABOVE CEILING
ADO	AUTOMATIC DOOR OPENER
AF	AMP FRAME
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AFI	ARC FAULT CIRCUIT INTERRUPTER
AHU	AIR HANDLING UNIT
AL	ALUMINUM
ALT	ALTERNATE
AMP	AMPERE
AMPL	AMPLIFIER
ANNUN	ANNUNCIATOR
APPROX	APPROXIMATELY
AQ-STAT	AQUASTAT
ARCH	ARCHITECT, ARCHITECTURAL
AS	AMP SWITCH
AT	AMP TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AV	AUDIO VISUAL
AWG	AMERICAN WIRE GAUGE
BATT	BATTERY
BD	BOARD
BLDG	BUILDING
BMS	BUILDING MANAGEMENT SYSTEM
C	CONDUIT
CAB	CABINET
CAT	CATALOG
CATV	CABLE TELEVISION
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
CLG	CEILING
COMB	COMBINATION
CMPR	COMPRESSOR
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUATION OR CONTINUOUS
CONTR	CONTRACTOR
CONV	CONVECTOR
CP	CIRCULATING PUMP
CRT	CATHODE-RAY TUBE
CT	CURRENT TRANSFORMER
CTR	CENTER
CU	COPPER
DCP	DOMESTIC WATER CIRCULATING PUMP
DEPT	DEPARTMENT
DET	DETAIL
DIA	DIAMETER
DISC	DISCONNECT
DIST	DISTRIBUTION
DN	DOWN
DPR	DAMPER
DS	SAFETY DISCONNECT SWITCH
DT	DOUBLE THROW
DWG	DRAWING
EC	ELECTRICAL CONTRACTOR
ELEC	ELECTRIC, ELECTRICAL
ELEV	ELEVATOR
ELU	EMERGENCY LIGHTING UNIT
EM	EMERGENCY
EMS	ENERGY MANAGEMENT SYSTEM
EMT	ELECTRICAL METALLIC TUBING
EP	ELECTRIC PNEUMATIC
EQUIP	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EXIST	EXISTING
EXH	EXHAUST
EXP	EXPLOSION PROOF
FA	FIRE ALARM
FABP	FIRE ALARM BOOSTER POWER SUPPLY PANEL
FACP	FIRE ALARM CONTROL PANEL
FCU	FAN COIL UNIT
FIXT	FIXTURE
FLR	FLOOR
FLUOR	FLUORESCENT
FU	FUSE
FUDS	FUSED SAFETY DISCONNECT SWITCH
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GEN	GENERATOR
GFI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTOR
GND	GROUND
GRS	GALVANIZED RIGID STEEL (CONDUIT)
GYP BD	GYPSUM BOARD
HOA	HANDS-OFF-AUTOMATIC SWITCH
HORIZ	HORIZONTAL
HP	HORSEPOWER
HPF	HIGH POWER FACTOR
HT	HEIGHT
HTG	HEATING
HTR	HEATER
HV	HIGH VOLTAGE
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
IC	INTERRUPTING CAPACITY
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
INCAND	INCANDESCENT
IR	INFRARED
I/W	INTERLOCK WITH
J-BOX	JUNCTION BOX
KV	KILOVOLT
KVA	KILOVOLT-AMPERE
KVAR	KILOVOLT-AMPERE REACTIVE
KW	KILOWATT
KWH	KILOWATT HOUR
LOC	LOCATE OR LOCATION
LT	LIGHT
LTG	LIGHTING
LTNG	LIGHTNING
LV	LOW VOLTAGE
MAX	MAXIMUM
MAG.S	MAGNETIC STARTER
M/C	MOMENTARY CONTACT
MC	MECHANICAL CONTRACTOR

MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDC	MAIN DISTRIBUTION CENTER
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MFS	MAIN FUSED DISCONNECT SW
MH	MANHOLE
MIC	MICROPHONE
MIN	MINIMUM
MISC	MISCELLANEOUS
MLO	MAIN LUGS ONLY
MMS	MANUAL MOTOR STARTER
MOA	MULTIOUTLET ASSEMBLY
MSP	MOTOR STARTER PANELBOARD
MSBD	MAIN SWITCHBOARD
MT	MOUNT
MT.C	EMPTY CONDUIT
MTS	MANUAL TRANSFER SWITCH
MTR	MOTOR, MOTORIZED
N.C.	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
NFDS	NON-FUSED SAFETY DISCONNECT SWITCH
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
N.O.	NORMALLY OPEN
NPF	NORMAL POWER FACTOR
NTS	NOT TO SCALE
OH	OVERHEAD
OL	OVERLOADS
PA	PUBLIC ADDRESS
PB	PULL BOX OR PUSHBUTTON
PE	PNEUMATIC ELECTRIC
PED	PEDESTAL
PF	POWER FACTOR
PH	PHASE
PIV	POST INDICATING VALVE
PNL	PANEL
PP	POWER POLE
PR	PAIR
PRI	PRIMARY
PROJ	PROJECTION
PRV	POWER ROOF VENTILATOR
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE (CONDUIT)
PWR	POWER
QUAN	QUANTITY
RCPT	RECEPTACLE
REQD	REQUIRED
RM	ROOM
RSC	RIGID STEEL CONDUIT
RTU	ROOF TOP UNIT
SC	SURFACE CONDUIT
SEC	SECONDARY
SHT	SHEET
SIM	SIMILAR
S/N	SOLID NEUTRAL
SPEC	SPECIFICATION
SPKR	SPEAKER
SP	SPARE
SR	SURFACE RACEWAY
SS	STAINLESS STEEL
SSW	SELECTOR SWITCH
S/S	STOP/START PUSHBUTTONS
STA	STATION
STD	STANDARD
SURF	SURFACE MOUNTED
SW	SWITCH
SWBD	SWITCHBOARD
SYM	SYMMETRICAL
SYS	SYSTEM
TEL	TELEPHONE
TEL/DATA	TELEPHONE/DATA
TERM	TERMINAL
TL	TWIST LOCK
TR	TAMPER RESISTANT
T-STAT	THERMOSTAT
TTC	TELEPHONE TERMINAL CABINET
TV	TELEVISION
TVTC	TELEVISION TERMINAL CABINET
TYP	TYPICAL
UC	UNDER COUNTER
UE	UNDERGROUND ELECTRICAL
UG	UNDERGROUND
UH	UNIT HEATER
UT	UNDERGROUND TELEPHONE
UTIL	UTILITY
UV	ULTRAVIOLET
V	VOLT
VA	VOLT-AMPERES
VDT	VIDEO DISPLAY TERMINAL
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VOL	VOLUME
W	WATT
W/	WITH
WG	WIRE GUARD
WH	WATER HEATER
W/O	WITHOUT
WP	WEATHERPROOF
XFMR	TRANSFORMER
XFR	TRANSFER
∠	ANGLE
@	AT
▲	DELTA
'	FEET
"	INCHES
#	NUMBER
Ø	PHASE
C	CENTER LINE
P	PLATE

EXISTING ELECTRICAL AND DEMOLITION NOTES

1	PRIOR TO SUBMITTING BID, VISIT THE JOB SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS OF THE FACILITY AND RELATED SITE. REVIEW THE GENERAL NOTES AND ALL OTHER TRADE DRAWINGS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY ARCHITECT, ENGINEER OR OWNER, AS SPECIFIED, OF ANY CONFLICTS OR DISCREPANCIES PRIOR TO SUBMITTING BID.
2	ANY EXISTING CONDITIONS REFLECTED WERE TAKEN FROM ORIGINAL DRAWINGS AND SITE VISITS AND MAY NOT REFLECT EXACT "AS-BUILT" CONDITIONS. FIELD VERIFY ALL EXISTING CONDITIONS AND CAREFULLY COORDINATE NEW WORK AND DEMOLITION WITH ALL OTHER DISCIPLINES AND EXISTING CONDITIONS.
3	PROVIDE ALL DEMOLITION OF EXISTING ELECTRICAL SYSTEMS AND NEW ELECTRICAL SYSTEM MODIFICATIONS REQUIRED BECAUSE OF BUILDING REMODELING, AS NOTED ON THE DRAWINGS, OR NECESSARY FOR PROPER OPERATION AND NEW CONSTRUCTION. REMOVE ALL ABANDONED CABLES AND WIRING ABOVE ACCESSIBLE CEILINGS AND VENTILATION SHAFTS.
4	COORDINATE INTERUPTION OF ALL BUILDING SERVICES INCLUDING BUT NOT LIMITED TO BRANCH CIRCUITS, DATA, TELEPHONE, ETC WITH BUILDING OWNER PRIOR TO INTERUPTION. PROVIDE LABOR AND MATERIALS AS REQUIRED TO REDUCE INTERUPTIONS IN ORDER TO MAINTAIN EXISTING OPERATION.
5	PAY SPECIAL ATTENTION NOT TO DAMAGE THE FINISH OF EXISTING WALLS AND CEILINGS THAT ARE TO REMAIN WHEN REMOVING OR REPLACING LIGHT FIXTURES AND OTHER ELECTRICAL DEVICES. REPAIR ANY DAMAGE CAUSED DURING WORK AT NO EXTRA COST TO THE OWNER. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
6	RELOCATE ALL EXISTING ELECTRICAL, FIRE ALARM, AND OTHER LOW-VOLTAGE SYSTEMS REQUIRED TO BE IN OPERATION AT SUBSTANTIAL COMPLETION OF THE CONTRACT, IF REQUIRED, AS A RESULT OF WORK INCLUDED UNDER THIS CONTRACT, EVEN IF NOT SPECIFICALLY INDICATED IN THE DRAWINGS OR SPECIFICATIONS.
7	SEAL ALL PENETRATIONS THROUGH FLOORS, WALLS, CEILINGS, AND ROOF WHERE ELECTRICAL COMPONENTS ARE REMOVED AND WHERE THE EXISTING PENETRATION IS NOT USED FOR THE NEW INSTALLATION. REPAIR DAMAGED SURFACES TO MATCH ADJACENT AREAS OR AS DIRECTED BY THE OWNER.
8	UNLESS NOTED OTHERWISE, ABANDONED CONDUIT ASSEMBLIES SERVING DEMOLISHED DEVICES SHALL BE REMOVED BACK TO NEAREST JUNCTION BOX OUTSIDE OF AREA OF DEMOLITION AND LABLED AS REQUIRED FOR FUTURE USE. ASSOCIATED WIRING SHALL BE REMOVED BACK TO SERVING PANELBOARD, UPDATE PANELBOARD CIRCUIT DIRECTORY AS REQUIRED TO INDICATE RELATED CIRCUIT(S) AS "SPARE".
9	ANY PANELBOARD CIRCUIT DISCRIPTIONS SHOWN AS "existing" OR IN OTHER LOWER CASE LETTERING IS INTENDED TO REFLECT AN EXISTING CIRCUIT TO REMAIN UNLESS OTHERWISE IDENTIFIED DIFFERENTLY THRU THE COURSE OF CONSTRUCTION.
10	ALL CIRCUIT BREAKERS SERVING BRANCH CIRCUITS TO BE REMOVED SHALL REMAIN IN RESPECTIVE PANELBOARD FOR FUTURE USE UNLESS NOTED OTHERWISE.
11	EXISTING DEVICES ARE SHOWN LIGHT. NEW DEVICES ARE SHOWN BOLD.

GENERAL LIGHTING NOTES

1	WHERE RECESSED LIGHTING FIXTURES ARE INDICATED IN A FIRE RATED CEILING, PROVIDE A ONE HOUR RATED "TENT" FOR FIXTURE
2	PROVIDE ALL MOUNTING AND SUPPORT HARDWARE FOR LIGHT FIXTURES TO MEET SPECIFIED MOUNTING HEIGHTS, REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT MOUNTING HEIGHTS OF FIXTURES.
3	CONNECT "UN-SWITCHED" HOT CONDUCTOR FROM CIRCUIT SERVING SPACE LIGHTING TO EACH EXIT SIGN, EMERGENCY LIGHT, AND ANY FIXTURE DESIGNATED AS NIGHT LIGHT SERVING THE SPACE.
4	COORDINATE ALL DEVICES AND WALL-MOUNTED LIGHT FIXTURE LOCATIONS WITH THE ARCHITECTURAL WALL FINISHES AND ELEVATIONS. SPECIAL ATTENTION AND COORDINATION OF WALL TYPES AND FINISHES IS REQUIRED PRIOR TO ROUGH-IN. EXACT LOCATION OF DEVICES SHALL BE COORDINATED WITH THE ARCHITECT PRIOR TO ROUGH-IN TO AVOID INSTALLATION ON SPECIAL ARCHITCTURAL WALL FINISHES. DEVICES NOT PROPERLY COORDINATED WITH THE SPECIAL WALL FINISHES INDICATED IN THE CONSTRUCTION DOCUMENTS PRIOR TO ROUGH-IN SHALL BE RELOCATED AT NO ADDITIONAL COST TO THE OWNER.
5	ELECTRICAL CONTRACTOR SHALL VERIFY CHEVRON DIRECTIONS OF ALL EXIT SIGNS PRIOR TO ORDERING.
6	FOR BATTERY FED EMERGENCY LIGHTS: PROVIDE EMERGENCY BALLAST. PROVIDE "HOT" WIRE TO EMERGENCY BALLAST. SWITCH FIXTURE AS INDICATED ON PLANS.
7	COORDINATE AND PROVIDE DIMMER SWITCHES RATED FOR AND COMPATABLE WITH INTENDED LIGHT FIXTURE(S) TO BE CONTROLLED. CIRCUITS CONTROLLED WITH LINE-VOLTAGE DIMMER SWITCHES SHALL NOT SHARE NEUTRAL CONDUCTORS.
8	FOR GENERATOR FED EXIT AND EMERGENCY LIGHTS: CIRCUITS SHALL HAVE RELAY FUNCTION OVERRIDE LIGHTING CONTROLS, DURING GENERATOR OPERATION.

GENERAL LOW VOLTAGE NOTES

1	PROVIDE (1) 1/2" CONDUIT, AND 4" SQUARE BOX WITH SINGLE GANG DEVICE RING FOR ALL THERMOSTAT LOCATIONS INDICATED ON THE MECHANICAL DRAWINGS. ROUTE CONDUIT FROM BOX TO ACCESSIBLE CEILING CAVITY. PROVIDE PLASTIC BUSHINGS ON EXPOSED CONDUIT ENDS. PROVIDE PULL STRING IN ALL EMPTY CONDUIT SYSTEMS. COORDINATE EXACT LOCATIONS AND MOUNTING HEIGHTS WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.
2	PROVIDE CABLE HOOKS ABOVE CEILING ON 6' CENTERS IN ALL CORRIDORS. MOUNT 6 INCHES ABOVE CEILING.
3	PROVIDE ROUGH-IN OF ALL BACK BOXES, CONDUITS (WITH BUSHINGS AND PULL STRINGS) AND OTHER WIRE WAYS AS REQUIRED FOR LOW VOLTAGE SYSTEMS, COORDINATE ALL REQUIRED LOCATIONS WITH OWNER AND RESPONSIBLE CONTRACTOR(S).
4	EC SHALL COORDINATE PHONE SERVICE LOCATION AND PHONE SERVICE CONDUITS WITH BUILDING OWNER AND EXISTING BUILDING DATA SERVICE PRIOR TO ROUGH-IN.

GENERAL POWER NOTES

1	ALL RECEPTACLES SHALL BE GROUNDING TYPE.
2	ALL RECEPTACLES INSTALLED IN BATHROOMS, OUTDOORS AND KITCHENS SHALL HAVE GROUND-FAULT CIRCUIT INTERRUPTER PROTECTION AS REQUIRED BY THE NATIONAL ELECTRIC CODE.
3	COORDINATE MECHANICAL EQUIPMENT CONNECTION REQUIREMENTS WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. LOCATE FEEDERS, DISCONNECTS AND MAINTENANCE RECEPTACLES SO THAT THEY WILL NOT INTERFERE WITH OPERATION OR MAINTENANCE OF MECHANICAL EQUIPMENT.
4	PROVIDE POWER TO MECHANICAL, PLUMBING, AND ALL OTHER EQUIPMENT AS REQUIRED FOR PROPER OPERATION, COORDINATE AND VERIFY EACH PIECE OF EQUIPMENTS POWER/CONTROL REQUIRMENTS PRIOR TO ORDERING RELATED ELECTRICAL EQUIPMENT. REFER TO RELATED MECHANICAL, PLUMBING, AND OTHER RELATED DOCUMENTS FOR LOCATIONS OF EQUIPMENT AND REQUIRED CLEARANCES AROUND EQUIPMENT.
5	COORDINATE EXACT MOUNTING HEIGHT OF EACH ABOVE COUNTER RECEPTACLE WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN.
6	ALL OUTLETS LOCATED IN AREAS REQUIRING GROUND-FAULT CIRCUIT INTERRUPTER PROTECTION PER NEC-210 SHALL CONSIST OF A GFCI PROTECTED DEVICE, EVEN IF NOT SPECIFICALLY INDICATED IN THE DRAWINGS. THE GROUND-FAULT CIRCUIT INTERRUPTER SHALL BE INSTALLED IN A READILY ACCESSIBLE LOCATION AS DEFINED IN THE NEC. ALL RECEPTACLES SUPPLIED THROUGH A GROUND-FAULT CIRCUIT INTERRUPTER SHALL BE MARKED "GFCI PROTECTED."
7	PROVIDE TAMPER RESISTANT RECEPTACLES AS REQUIRED BY THE 2014 NEC. PROVIDE AFCI PROTECTION AND COMBINATION-TYPE ARC/GFI PROTECTION AS REQUIRED BY 2014 NEC INCLUDING KITCHEN AND LAUNDRY AREAS.

GENERAL ELECTRICAL NOTES

1	DRAWINGS ARE DIAGRAMMATIC ONLY AND REPRESENT THE GENERAL SCOPE OF THE WORK. REVIEW ALL GENERAL NOTES, SPECIFICATIONS AND PLANS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS.
2	SPECIAL ATTENTION SHALL BE GIVEN TO ALL RACEWAYS WITHIN FINISHED AREAS WITHOUT CEILINGS AND EXPOSED TO STRUCTURE. IN GENERAL, ALL RACEWAYS SHALL BE CONCEALED WITHIN WALLS, ABOVE STRUCTURE FINISH, OR BELOW FLOOR SLABS WHEN SPECIFIED. WHERE EXPOSED CONDITIONS ARE NECESSARY OR UNAVOIDABLE DUE TO OTHER CONDITIONS, THE BID SHALL INCLUDE ANY REASONABLE MEANS TO MINIMIZE THE AMOUNT OF SURFACE MOUNTED EQUIPMENT. PRIOR TO ROUGH-IN, COORDINATE ALL EXPOSED RACEWAY AND BOX CONDITIONS WITH ARCHITECT PRIOR TO CONSTRUCTION OF WALLS, ROOF DECK, OR FLOOR SLABS. ATTACHMENT TO ROOF DECK OR JOIST WEBBINGS IS NOT ALLOWED, MAINTAIN A MINIMUM SPACING OF 1-1/2" FROM CONDUIT TO ROOF DECK. IN AREAS WHERE EXPOSED RACEWAYS ARE REQUIRED, INSTALL SYSTEMS SQUARE AND TIGHT TO STRUCTURE AND PAINT TO MATCH THE STRUCTURE PER ARCHITECT AND/OR OWNER SPECIFICATIONS. FAILURE TO PROPERLY COORDINATE THE ROUTING OF EXPOSED RACEWAYS MAY RESULT IN RELOCATION OF SUCH RACEWAYS AT NO ADDITIONAL COST TO THE OWNER.
3	OPENINGS AROUND ELECTRICAL PENETRATIONS THROUGH FIRE-RESISTANT-RATED WALLS, PARTITIONS, FLOORS OR CEILINGS SHALL BE FIRESTOPPED USING APPROVED METHODS TO MAINTAIN THE FIRE RESISTANCE RATING. PROVIDE PENETRATION FIRE STOPPING WITH RATINGS DETERMINED PER ASTM E 814 OR UL 1479. FIRE STOPPING SHALL NOT BE LESS THAN FIRE RESISTANCE RATING OF CONSTRUCTED PENETRATIONS.
4	FIELD MOUNTED DEVICES SUCH AS SWITCHES, MOTOR STARTERS, RECEPTACLES, ETC., ARE SHOWN IN THEIR APPROXIMATE LOCATION. SWITCH MOUNTING HEIGHT SHALL BE 48" ABOVE FINISHED FLOOR AND RECEPTACLE MOUNTING HEIGHT SHALL BE 18" ABOVE FINISHED FLOOR UON. REFER TO THE TYPICAL MOUNTING HEIGHT DETAIL.
5	INSTALL EQUIPMENT IN A MANNER TO REMAIN ACCESSIBLE WITH REASONABLE MEANS BY THE OWNER FOLLOWING COMPLETION OF WORK. SPECIAL ATTENTION AND ADDITIONAL COORDINATION IS EXPECTED IN AREAS OF THE BUILDING WHERE THE CEILING AND STRUCTURE HEIGHTS HAVE SIGNIFICANT DIFFERENT ELEVATIONS. EQUIPMENT REQUIRING POSSIBLE FUTURE ACCESS SHALL BE INSTALLED SUCH THAT IT MAY BE SAFELY ACCESSED FROM A STANDARD STEP LADDER OR PERSONNEL LIFT SUITABLE FOR THE LOCATION AND CEILING HEIGHT, WITHOUT REMOVING OR DAMAGING THE CEILING GRID STRUCTURE.
6	COORDINATE ALL CEILING MOUNTED ELECTRICAL ITEMS WITH OTHER DISCIPLINES, WITH CEILING, AND STRUCTURE. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN.
7	FIELD VERIFY LOCATIONS OF EXISTING ELECTRICAL EQUIPMENT, INCLUDING POWER POLES, TELEPHONE PEDESTALS, OVERHEAD AND UNDERGROUND FEEDERS, METERS, PANELS, DEVICES, ETC. PROVIDE FOR COORDINATION WITH EXISTING EQUIPMENT.
8	ROOM NAMES/NUMBERS SHOWN IN PANELBOARD SCHEDULES ARE PER ARCHITECTURAL FLOOR PLANS. CONTRACTOR SHALL PROVIDE FINALIZED PANELBOARD SCHEDULES AT COMPLETION OF PROJECT WITH OWNER PROVIDED ROOM NAMES/NUMBERS.
9	CONDUCTORS FOR BRANCH CIRCUITS AS DEFINED IN ARTICLE 100, SHALL BE SIZED TO PREVENT A VOLTAGE DROP EXCEEDING 3% AT THE FARTHEST LOAD, AND WHERE THE MAXIMUM TOTAL VOLTAGE DROP ON BOTH FEEDERS AND BRANCH CIRCUITS TO THE FARTHEST LOAD DOES NOT EXCEED 5%.
10	ALL WORK IS TO BE PERFORMED IN STRICT COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE, STATE LAWS, ALL AUTHORITIES HAVING JUISDICTION, AND ALL OTHER REGULATIONS GOVERNING WORK OF THIS NATURE.
11	THE CONTRACTOR IS RESPONSIBLE FOR ALL WORK, MATERIAL, AND LABOR TO SATISFY A COMPLETE AND WORKING SYSTEM WHETHER SPECIFIED OR IMPLIED.
12	CONTRACTOR TO CONFIRM EXACT LOCATION OF EXISTING AND NEW EQUIPMENT.
13	THE CONTRACTOR SHALL FURNISH AND INSTALL ALL GROUNDING SYSTEMS (AS REQUIRED) IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE.
14	ALL ELECTRIC MATERIALS AND EQUIPMENT FOR THE PROJECT SHALL BE NEW AND U.L. OR EQUALLY LISTED.
15	SUBMIT TO THE OWNER CERTIFICATES OF INSPECTIONS IN DUPLICATE FROM AN APPROVED INSPECTION AGENCY UPON COMPLETION.
16	THE CONTRACTOR SHALL SECURE ALL PERMITS OR APPLICATIONS AND PAY ANY AND ALL FEES AS REQUIRED,
17	THE CONTRACTOR SHALL FURNISH ALL INSTRUMENTS AND QUALIFIED PERSONNEL OR FIRM TO PERFORM ALL REQUIRED TESTS.
18	NO EQUIPMENT SHALL BE ENERGIZED UNTIL ALL TEST AND ADJUSTMENTS HAVE BEEN MADE. THREE COPIES OF ALL TEST RESULTS SHALL BE DELIVERED TO THE OWNER
19	ALL ELECTRICAL WORK SHALL BE COORDINATED WITH THE MECHANICAL WORK AS CALLED FOR IN MECHANICAL SPECIFICATIONS AND PLANS.
20	JUNCTION BOXES LOCATED ABOVE GRID CEILINGS SHALL BE LOCATED NO GREATER THAN 4-FEET ABOVE THE CEILING IN A LOCATION ACCESSIBLE VIA A LADDER FROM THE ROOM BELOW.
21	ALL WIRING DEVICE COVERPLATES SHALL INDICATE PANELBOARD AND CIRCUIT SERVING THE DEVICE. UTILIZE CLEAR VINYL (BLACK LETTERING) IDENTIFICATION LABLES MANUFACTURED BY 3M COMPANY (OR APPROVED EQUIVALENT).
22	THE TYPE OF CONDUIT SHALL BE AS FOLLOWS FOR ALL FEEDERS AND DISTRIBUTION CIRCUITS, UNLESS OTHERWISE SPECIFIED. APPLICATION - TYPE OF CONDUIT BURIED IN CONCRETE OR OUTDOORS - PVC WITH RIGID GALVANIZED STEEL ELBOWS SERVICE ENTRANCE - GALVANIZED RIGID STEEL OR SERVICE UTILITY SPECIFICATIONS.
23	PROVIDE A MINIMUM OF (3) SPARE 1" CONDUITS FROM RECESSED PANELBOARD, UP TO ACCESSIBLE CEILING SPACE.
24	UNDERGROUND UTILITIES/FEEDERS/BRANCH CIRCUITS/ETC. SHALL NOT BE ROUTED THROUGH OR WITHIN 25 FEET OF ANY AREAS DEDICATED FOR FUTURE BUILDING ADDITION.
25	DESIGNATED SPARE CIRCUIT BREAKERS SHALL BE PLACED IN THE OFF POSITION
26	COORDINATE ALL POWER, DATA, FIRE ALARM AND LIGHTING, OUTLETS/DEVICES AND EQUIPMENT WITH OWNER, OWNER'S REPRESENTATIVE, AND/OR ARCHITECTURAL MILLWORK PRIOR TO ROUGH-IN OR FINAL INSTALLATION.

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HP ENGINEERING
PROJECT NO. 21-64T
100 % COMPLETE
HP ENGINEERING INC.
142 HOWELL STREET,SUITE 170
DALLAS, TX 75207
(479) 490-2500
F-18023

PROJECT INFORMATION:

AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 Elizabeth St.
Texarkana, TX 75503

PROJECT NUMBER: 21-64T
ISSUE DATE: 10-25-2021
REVISIONS:
Title Sheet Revision

SHEET NAME:

ELECTRICAL LEGEND AND NOTES

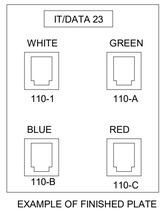
SHEET NUMBER:

E001

10/25/2021 11:01:56 AM

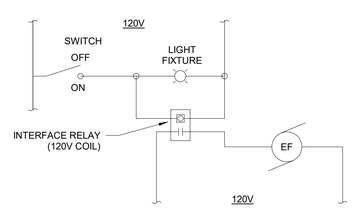
DATA CABLING NOTES:

1. LENGTH OF ANY DATA CABLE RUN FROM PATCH PANEL TO DATA JACK MUST NOT EXCEED 300FT.
2. EC SHALL USE PLENUM RATED BELDEN CAT6e CABLING FOR ALL DATA HOME RUNS. ALL DATA CABLING MUST BE CAPABLE OF SUPPORTING 10 /100/ 1000 -BASE TX ETHERNET.
3. ALL DATA CABLING MUST BE TERMINATED BYB569-B MODULAR RJ-45 JACKS IN FLUSH MOUNT WALL PLATES.
4. CABLE JACKET COLORS MUST BE WHITE FOR VOICE, GREEN FOR VOIP, BLUE FOR THE FIRST DATA JACK AND RED FOR THE SECOND DATA JACK.
5. VOICE PHONE JACKS SHALL BE LABELED NUMERICALLY. DATA AND JACKS SHALL BE LABELED ALPHABETICALLY.
6. ROUTE AND LABEL DATA CABLES FROM EACH DROP TO IT ROOM AS SHWN ON THE PLANS. USE J-HOOKS AS REQUIRED.
7. TERMINATE ALL DATA CABLES IN TELEPHONE BOARD.

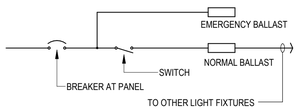


EXAMPLE OF FINISHED PLATE

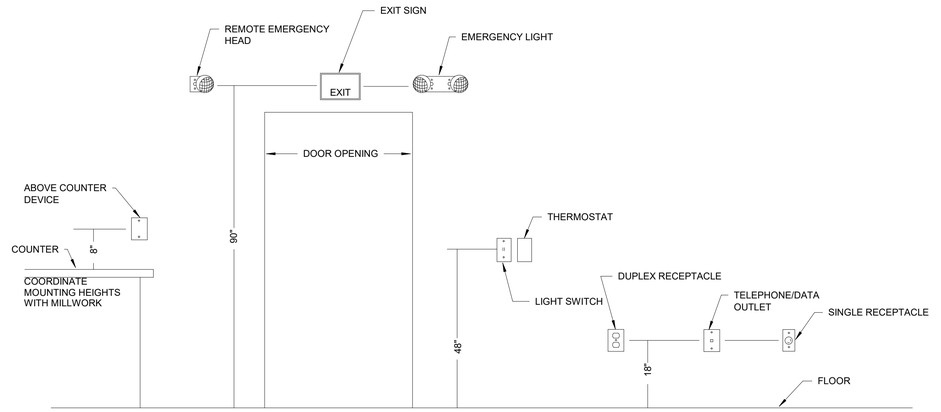
4 E002 DATA CABLING NOTES AND DETAIL
NTS



3 E002 EXHAUST FANS/LIGHTING INTERLOCK
NTS



2 E002 EMERGENCY LIGHTING WIRING
NTS



1 E002 TYPICAL MOUNTING HEIGHT
NTS

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ROBERT BRANDON PINKERTON
100677
LICENSED
PROFESSIONAL ENGINEER
10-25-2021
HP ENGINEERING INC.
F-18023

HP ENGINEERING
HP ENGINEERING INC.
142 HOWELL STREET,SUITE 170
DALLAS, TX 75207
(479) 490-2500
F-18023

PROJECT NO. 21-64T
100 % COMPLETE

PROJECT INFORMATION:

AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 Elizabeth St.
Texarkana, TX 75503

PROJECT NUMBER: 21-64T
ISSUE DATE: 10-25-2021
REVISIONS:

SHEET NAME:

ELECTRICAL DETAILS

SHEET NUMBER:

E002

10/25/2021 11:01:58 AM

1 E101 LEVEL 1 POWER PLAN
1/4" = 1'-0"
0 2' 4' 8'

POWER PLAN NOTES

1	COORDINATE EXACT LOCATION OF ALL DATA DEVICES WITH ARCHITECT PRIOR TO INSTALLATION. VERIFY A/V REQUIREMENTS WITH A/V CONTRACTOR AND ARCHITECT PRIOR TO INSTALLATION.
2	EXISTING DEVICES AND CIRCUITRY NOT SHOWN SHALL REMAIN.
3	CONTRACTOR SHALL ENSURE NOT MORE THAN 8 RECEPTACLES ARE CIRCUITED ON A 20A/1-POLE CIRCUIT BREAKER.
4	ALL DATA DROPS TO INCLUDE (2) CAT6E CABLES. ROUTE CABLES FROM THE DATA LOCATION OVERHEAD TO AV RACK. E.C. SHALL VISIT THE SITE PRIOR TO BIDDING TO IDENTIFY EXISTING CONDITIONS FOR PRICING.

KEYNOTES

26.10	ELECTRICAL CONTRACTOR TO CONNECT ALL NEW RECEPTACLES IN THIS AREA TO A NEW 20A/1-POLE CIRCUIT BREAKER IN EXISTING ELECTRICAL 120/208V PANEL SERVING AREA. FIELD VERIFY BREAKER SPACE AND PANEL ELECTRICAL LOAD CAPACITY ARE AVAILABLE PRIOR TO ROUGH-IN. PROVIDE NEW BREAKER AS NEEDED. MATCH AIC RATING AND MANUFACTURER TYPE. CONFIRM PANEL DOES NOT EXCEED 80% OF BREAKER CAPACITY.
26.12	LOCATION OF NEW 42 POLE PANEL 'A'. CONTRACTOR TO DO A ONE TO ONE RECONNECTION OF ALL CONDUITS AND WIRES BACK FROM JUNCTION BOX ABOVE CEILING. ALL EXISTING CIRCUITS SERVED FROM THE DEMOLISHED PANEL TO BE RECONNECTED TO THE NEW PANEL. MATCH AIC RATING OF ORIGINAL PANEL AND BREAKER TYPE. PROVIDE AN UPDATED PANELBOARD SCHEDULE.

GC TO EXERCISE CAUTION ON DEMOLITION AND ANY WORK ABOVE CEILING TO NOT DAMAGE EXISTING FIBER OPTIC CABLE REQUIRED BY OWNER OF THE OCCUPIED BUILDING.

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SHEET NAME:

LEVEL 1 POWER PLAN

SHEET NUMBER:

E101

10/25/2021 11:02:04 AM

1 E102 LEVEL 1 POWER HVAC PLAN
1/4" = 1'-0"

POWER SHEET NOTES

A	WHERE CONNECTED TO A 20A. BRANCH CIRCUIT SUPPLYING AN INDIVIDUAL RECEPTACLE (SIMPLEX OR DUPLEX), THE RECEPTACLE SHALL BE RATED AT 20A.
B	REFER TO SECTION 26 0519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
C	WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
D	MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUITS INDICATED ON THIS DRAWING ARE PROHIBITED.
E	CIRCUIT WIRING IS NOT SHOWN EXCEPT FOR SWITCHING INTENT OF FIXTURES AND CONTROL OF DEVICES.
F	PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUITING AND SWITCHING SHOWN.
G	CIRCUIT NUMBERS AT DEVICES CORRESPOND TO PANELBOARD BREAKERS (SEE PANELBOARD SCHEDULE). BRANCH CIRCUITS SHALL BE SIZED ACCORDING TO THE CIRCUIT BREAKER RATING, UNLESS INDICATED OTHERWISE ON THE ELECTRICAL EQUIPMENT SCHEDULE.

MECHANICAL POWER PLAN NOTES

1	EXHAUST FANS SHALL BE CIRCUITED WITH LIGHTS UNLESS SHOWN OTHERWISE. REFER TO MECHANICAL PLANS FOR CONTROLS OF EXHAUST FANS.

KEYNOTES

26.03	ELECTRICAL CONTRACTOR SHALL WIRE EXHAUST FAN AND TIE TO OCCUPANCY SENSOR CONTROLLING LIGHTING WITHIN THE ROOM. REFER TO DETAIL 3 ON SHEET E002 FOR MORE INFORMATION.

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PROJECT NUMBER: 21-64T
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REVISIONS:

SHEET NAME:

LEVEL 1 POWER HVAC PLAN

SHEET NUMBER:

E102

10/25/2021 11:02:11 AM

1 E201 LEVEL 1 LIGHTING PLAN
1/4" = 1'-0"

LIGHTING SHEET NOTES

A	ALL RECESSED LIGHTING FIXTURES IN LAY-IN CEILINGS SHALL BE INSTALLED WITH 6' LONG FLEXIBLE METAL CONDUIT.
B	ALL MOUNTING HEIGHTS FOR LIGHTING FIXTURES ARE TO THE BOTTOM OF THE FIXTURES UNLESS INDICATED OTHERWISE.
C	REFER TO SHEET E501 FOR LIGHT FIXTURE SCHEDULE.
D	REFER TO SECTION 26 0519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
E	WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
F	MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUITS INDICATED ON THIS DRAWING ARE PROHIBITED.
G	CIRCUIT WIRING IS NOT SHOWN EXCEPT FOR SWITCHING INTENT OF FIXTURES AND CONTROL OF DEVICES.
H	PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUITING AND SWITCHING SHOWN.
I	CONNECT ALL NEW LIGHT FIXTURES AND NEW CONTROLS TO EXISTING LIGHTING CIRCUIT SERVING AREA. PROVIDE AN UPDATED PANELBOARD SCHEDULE. ALL NEW CORRIDOR LIGHT FIXTURES TO BE CONNECTED TO EXISTING CONTROLS. EXTEND CONTROL CONDUIT AND WIRE AS NEEDED TO FORM A COMPLETE AND OPERATIONAL SYSTEM. CONFIRM LOAD ON INDIVIDUAL BREAKER DOES NOT EXCEED 80% OF BREAKER CAPACITY.

KEYNOTES

26.03	ELECTRICAL CONTRACTOR SHALL WIRE EXHAUST FAN AND TIE TO OCCUPANCY SENSOR CONTROLLING LIGHTING WITHIN THE ROOM. REFER TO DETAIL 3 ON SHEET E002 FOR MORE INFORMATION.
26.07	WIRE EXIT AND EMERGENCY LIGHTS TO LOCAL LIGHTING CIRCUIT SERVING THE AREA, AHEAD OF ANY SWITCHES AND AUTOMATIC CONTROLS. REFER TO DETAIL 2 ON SHEET E002 FOR MORE INFORMATION.
26.08	ALL LIGHTING FIXTURES, CONTROLS AND WIRING IN THIS AREA TO REMAIN.
26.16	NEW LOCATION OF EXISTING LIGHT FIXTURE TO BE REUSED.CONNECT TO NEW CONTROLS SHOWN. EXTEND CONDUIT AND CONTROL WIRE AS NEEDED TO FORM A COMPLETE AND OPERATIONAL SYSTEM.CONNECT TO EXISTING LIGHTING CIRCUIT SERVING AREA.
26.17	NEW LOCATION OF EXISTING LIGHT FIXTURE FROM SHOWER ROOM. CONNECT TO NEW CONTROLS SHOWN. PROVIDE NEW CONDUIT AND CONTROL WIRE AS NEEDED TO FORM A COMPLETE AND OPERATIONAL SYSTEM. CONNECT TO EXISTING LIGTING CIRCUIT SERVING AREA.

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PROJECT NUMBER: 21-64T
ISSUE DATE: 10-25-2021
REVISIONS:

SHEET NAME:

LEVEL 1 LIGHTING PLAN

SHEET NUMBER:

E201

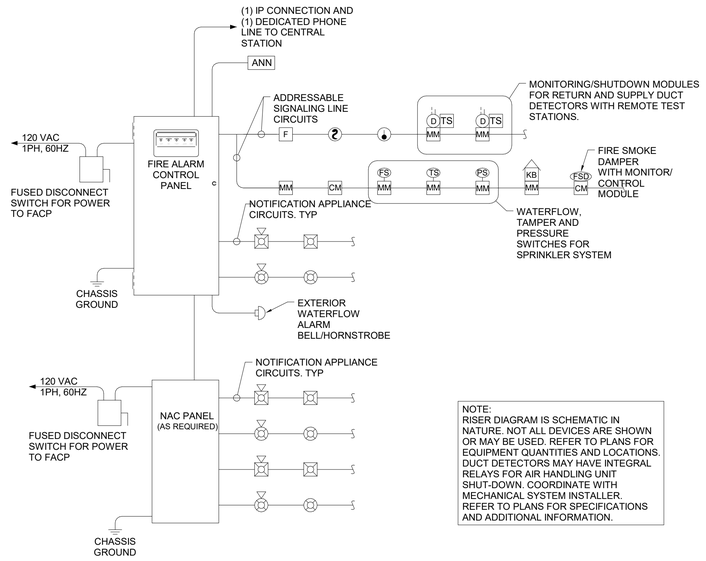
10/25/2021 11:02:17 AM

FIRE ALARM INSTALLATION NOTES

1	SYSTEM SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 72 AND LOCAL CODES AND REGULATIONS. ALL EQUIPMENT AND MATERIALS SHALL BE UL LISTED AND APPROVED BY THE AUTHORITY HAVING JURISDICTION
2	INTERFACE WITH AND MONITOR ALL FIRE SUPPRESSION SYSTEM DEVICES INCLUDING (BUT NOT LIMITED TO) SPRINKLER FLOW AND TAMPER SWITCHES
3	WIRE AND CABLE SHALL BE UL LISTED AND LABELED AS COMPLYING WITH NFPA 70, ARTICLE 760. SIGNALING LINE CIRCUITS TO BE TWISTED, SHIELDED PAIR, SIZED AS RECOMMENDED BY SYSTEM MANUFACTURER. NON-POWER-LIMITED CIRCUITS TO BE SOLID-COPPER CONDUCTORS WITH 600-V RATED, 75 DEG C, COLOR-CODED INSULATION. 9.1 LOW-VOLTAGE CIRCUITS: NO. 16 AWG, MINIMUM 9.2 LINE-VOLTAGE CIRCUITS: NO. 12 AWG, MINIMUM
4	INSTALL AND TEST SYSTEMS ACCORDING TO NFPA 72. COMPLY WITH NECA 1
5	TEST ALL SYSTEM DEVICES FOR PROPER OPERATION IN THE PRESENCE OF THE AHJ AND OTHER OFFICIALS INSPECTING THE FIRE ALARM SYSTEM
6	IF REQUIRED BY THE LOCAL AHJ, EQUIPMENT DATA SHEETS AND BATTERY CALCULATIONS IN ACCEPTANCE WITH NFPA 72 SHALL BE PERFORMED BY THE FIRE ALARM SYSTEM MANUFACTURER/INSTALLER TO MATCH EQUIPMENT TO BE INSTALLED
7	SYSTEM INSTALLER SHALL BE A LICENSED FIRE ALARM CONTRACTOR IN THE RESPECTIVE STATE OF THIS PROJECT
8	FIRE ALARM CONTROL PANEL SHALL BE MODULAR, POWER-LIMITED DESIGN WITH ELECTRONIC MODULES, UL 864 LISTED, AND DESIGNED TO TRANSMIT ALARM, TROUBLE, AND SUPERVISORY SIGNALS TO A UL LISTED CENTRAL STATION THROUGH A DIGITAL ALARM COMMUNICATOR TRANSMITTER WITH (1) ETHERNET PORT CONNECTION AND (1) DEDICATED TELEPHONE LINE
9	PROVIDE 120VAC POWER THROUGH DEDICATED LOCKING BREAKER AT POWER PANEL
10	GROUND THE FACP AND ALL ASSOCIATED CIRCUITS
11	INSTALL A #6 AWG GROUND WIRE FROM THE TELE-COMMUNICATIONS EQUIPMENT GROUNDING POINT TO THE FACP
12	SYSTEM SHALL INCLUDE 24V DC POWER SYSTEM WITH SEALED LEAD CALCIUM BATTERIES AND AUTOMATIC BATTERY CHARGER IN ACCORDANCE WITH NFPA 72
13	PROVIDE (1) IP CONNECTION TO CUSTOMERS INTERNET NETWORK AND (1) DEDICATED TELEPHONE LINE TERMINATED WITH (1) RJ-31X MODULAR OUTLET AT DACT LOCATION

FIRE ALARM GENERAL NOTES

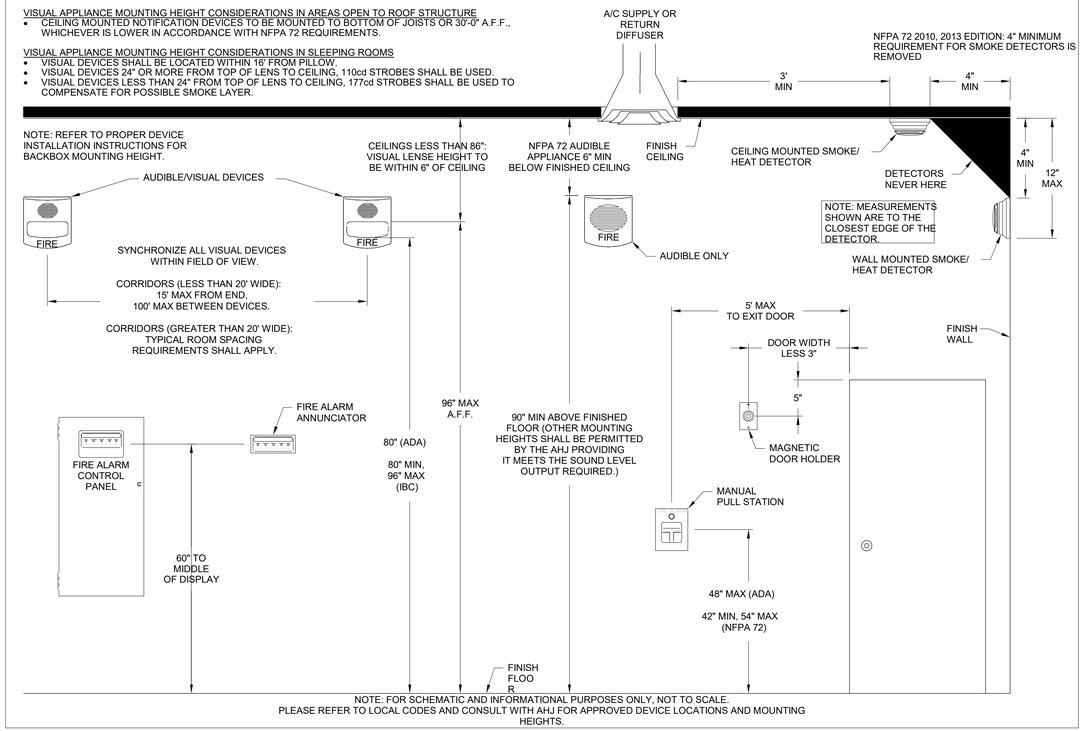
1	FIRE ALARM SYSTEM DESIGN, INSTALLATION AND MATERIALS SHALL BE IN ACCORDANCE WITH NFPA 70 AND NFPA 72. SYSTEM SHALL ALSO MEET ALL APPLICABLE BUILDING CODES, FIRE CODES AND THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION AND INSURANCE CARRIER. VERIFY REQUIREMENTS PRIOR TO BID SUBMITTAL
2	INFORMATION ON CONTRACT DOCUMENTS IS GENERAL INFORMATION AND FOR BID PURPOSES ONLY. PERFORM REQUIRED CALCULATIONS AND COORDINATE WITH OTHER TRADES. DEVIATIONS FROM ENGINEERS LAYOUT WILL NOT BE CONSIDERED UNLESS A FORMALLY SUBMITTED RFI IS RECEIVED AND APPROVED
3	PROVIDE ADDITIONAL MATERIALS AND LABOR REQUIRED DUE TO LACK OF COORDINATION OR TO MEET AUTHORITY HAVING JURISDICTION AND INSURANCE CARRIER REQUIREMENTS AT NO ADDITIONAL COST TO THE OWNER
4	PROVIDE ALL EQUIPMENT AND LABOR REQUIRED FOR A COMPLETE AND OPERATIONAL FIRE ALARM SYSTEM
5	AUDIBLE NOTIFICATION DEVICES SHALL SOUND UNTIL SILENCED AT THE CONTROL PANEL OR REMOTE ANNUNCIATOR AS REQUIRED. VISUAL ALARM IS DISPLAYED UNTIL DEVICE IS RETURNED TO ITS NORMAL POSITION OR SUPERVISORY CONDITION IS CLEARED
6	FORWARD COMPLETED FIRE ALARM CERTIFICATE OF COMPLETION TO THE OWNER
7	REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION
9	PROVIDE NOTIFICATION, INITIATING AND MONITORING DEVICES AS INDICATED ON THE DRAWINGS. FIRE ALARM DEVICES SHALL BE OF ONE MANUFACTURER AND SHALL BE LISTED FOR USE WITH THE FIRE ALARM CONTROL PANEL
10	THE FIRE ALARM CONTROL PANEL AND REMOTE ANNUNCIATOR LOCATIONS SHOWN SHALL BE COORDINATED WITH THE FIRE DEPARTMENT AND AHJ PRIOR TO INSTALLATION
11	PROVIDE DEDICATED CONNECTION OF THE FIRE ALARM SYSTEM TO A UL LISTED CENTRAL STATION
12	PROVIDE KNOX BOX FOR FIRE DEPARTMENT ACCESS. CONNECT TAMPER SWITCH TO FIRE ALARM SYSTEM AS REQUIRED
13	AIR HANDLING SYSTEMS THAT ARE MONITORED SHALL SHUTDOWN AND REMAIN DOWN UNTIL MANUALLY RESET
14	ROOF TOP AIR DISTRIBUTION SYSTEMS EXCEEDING 2,000 CFM: PROVIDE DUCT MOUNTED SMOKE DETECTORS FOR AIR HANDLING UNIT SHUTDOWN AND INSTALL PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE MONITOR MODULE FOR SUPPLY AIR DUCT DETECTOR AND RELAY/MONITOR MODULE FOR RETURN AIR DUCT DETECTOR. REFER TO MECHANICAL SHEETS FOR AIR HANDLING UNIT AND DUCTWORK LAYOUT AND DETAILS
15	PROVIDE DUCT MOUNTED SMOKE DETECTORS FOR SMOKE DAMPER AND FIRE/SMOKE DAMPER OPERATION AND INSTALL PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE RELAY/MONITOR MODULE FOR DUCT DETECTOR. REFER TO MECHANICAL DOCUMENTS FOR DAMPER LOCATION AND REQUIREMENTS.
16	DUCT SMOKE DETECTION SHALL TRANSMIT A SUPERVISORY SIGNAL TO THE FACP



NOTE:
RISER DIAGRAM IS SCHEMATIC IN NATURE. NOT ALL DEVICES ARE SHOWN OR MAY BE USED. REFER TO PLANS FOR EQUIPMENT QUANTITIES AND LOCATIONS. DUCT DETECTORS MAY HAVE INTEGRAL RELAYS FOR AIR HANDLING UNIT SHUT-DOWN. COORDINATE WITH MECHANICAL SYSTEM INSTALLER. REFER TO PLANS FOR SPECIFICATIONS AND ADDITIONAL INFORMATION.

2 E300 EXISTING TYPICAL FIRE ALARM RISER DETAIL
NTS

FIRE ALARM DEVICE MOUNTING HEIGHTS (PER NFPA 72)



NOTE: FOR SCHEMATIC AND INFORMATIONAL PURPOSES ONLY, NOT TO SCALE.
PLEASE REFER TO LOCAL CODES AND CONSULT WITH AHJ FOR APPROVED DEVICE LOCATIONS AND MOUNTING HEIGHTS.

1 E300 FIRE ALARM MOUNTING HEIGHTS
NTS

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SHEET NAME:

FIRE ALARM DETAILS AND NOTES

SHEET NUMBER:

E300

10/25/2021 11:37:00 AM

1 E301 LEVEL 1 FIRE ALARM PLAN
1/4" = 1'-0"

SYSTEMS SHEET NOTES

A	ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR WIRING ALL ELECTRICAL ITEMS SHOWN ON THE DRAWINGS, EXCEPT ITEMS LISTED ON SHEET E0.01 GENERAL ELECTRICAL NOTES.
B	MAXIMUM NUMBER OF 4 INFORMATION OUTLET LOCATIONS PER CONDUIT HOME RUN TO MDF OR IDF IS PERMITTED. CONDUIT SHALL BE SIZED AS FOLLOWS
C	1 INFORMATION OUTLET LOCATION: 1"
D	2 INFORMATION OUTLET LOCATIONS: 1 1/4"
E	3 INFORMATION OUTLET LOCATIONS: 1 1/2"
F	ALL COMMUNICATIONS CABLES SHALL BE INSTALLED IN CONDUIT, CABLE TRAY, OR SUPPORTED BY CABLE HOOKS. PROVIDE BUSHINGS AT THE ENDS OF ALL CONDUIT WHERE STUBBED ABOVE ACCESSIBLE CEILINGS OR WHERE DROPPED INTO CABLE TRAY. PROVIDE CABLE HOOKS ABOVE ACCESSIBLE CEILINGS FOR CABLE INSTALLATION WHERE NOT INSTALLED IN CONDUIT OR CABLE TRAY.
G	ALL FIRE ALARM DEVICES TO BE CONNECTED TO EXISTING FIRE ALARM SYSTEM.

DESIGN/APPROVAL NOTES.

THE SHOWN FIRE ALARM SYSTEM IS FOR INITIAL DESIGN APPROVAL. THE AUTHORITY HAVING JURISDICTION (AHJ) SHALL RECEIVE SHOP DRAWINGS, CALCULATIONS, AND EQUIPMENT DATA FROM THE INSTALLING FIRM. THE INSTALLING FIRM SHALL BE STATE LICENSED AND NICET CERTIFIED. INSTALLING FIRE ALARM FIRM SHALL HAVE FINAL DESIGN CONTROL. INSTALLING FIRM MUST PROVIDE DRAWINGS AND DATA TO THE AHJ PRIOR TO THE 50% BUILDING INSPECTION. HORN AND STROBE PROVIDED BY FIRE ALARM CONTRACTOR. E.C. SHALL BE RESPONSIBLE FOR ADDING DEVICE ROUGH-IN PER DIRECTION OF FIRE MARSHALL.

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LEVEL 1 FIRE ALARM PLAN

SHEET NUMBER:

E301

10/25/2021 11:02:26 AM

Branch Panel: A

Location:
Supply From:
Mounting: SURFACE
Enclosure: NEMA1

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: Fully (7)
Mains Type: MCB
Mains Rating: 100 A

Notes: 4, 12
1. THIS PANELBOARD IS MAX AT 100 AMPS. CONTRACTOR TO ENSURE ALL EXISTING AND NEW LOADS DO NOT EXCEED 80% OF THE BREAKER RATING PER NEC.

CKT	Circuit Description	Trip	Poles	Wire	A		B		C		Wire	Poles	Trip	Circuit Description	CKT
1					0 VA	0 VA					--	1	20 A	EXISTING LOAD	2
3	EXISTING LOAD	35 A	3	--			0 VA	0 VA			--	1	20 A	EXISTING LOAD	4
5									0 VA	0 VA	--	1	20 A	EXISTING LOAD	6
7					0 VA	0 VA					--	1	20 A	EXISTING LOAD	8
9	EXISTING LOAD	35 A	3	--			0 VA	0 VA			--	1	20 A	EXISTING LOAD	10
11									0 VA	0 VA	--	1	20 A	EXISTING LOAD	12
13	EXISTING LOAD	20 A	1	--	0 VA	0 VA					--	1	20 A	EXISTING LOAD	14
15	EXISTING LOAD	20 A	1	--			0 VA	0 VA			--	1	20 A	EXISTING LOAD	16
17	EXISTING LOAD	20 A	1	--					0 VA	0 VA	--	1	20 A	EXISTING LOAD	18
19	EXISTING LOAD	20 A	1	--	0 VA	0 VA					--	1	20 A	EXISTING LOAD	20
21	EXISTING LOAD	20 A	1	--			0 VA	0 VA			--	1	20 A	EXISTING LOAD	22
23	EXISTING LOAD	20 A	1	--					0 VA	0 VA	--	1	20 A	EXISTING LOAD	24
25	EXISTING LOAD	20 A	1	--	0 VA	0 VA					--	1	20 A	EXISTING LOAD	26
27	RECEP OFFICE 122/123	20 A	1				1440 VA	1440 VA				1	20 A	RECEP OFFICE 120/121	28
29	RECEP OFFICE 118/119	20 A	1						1440 VA	180 VA		1	20 A	RECEP RESTROOM 115	30
31	RECP OFFICE 116/117	20 A	1		1440 VA	0 VA					--	1	20 A	SPARE	32
33	RECEP IT 113	20 A	1				1800 VA	0 VA			--	1	20 A	SPARE	34
35	SPARE	20 A	1	--					0 VA	0 VA	--	--	--	SPACE	36
37	SPARE	20 A	1	--	0 VA	0 VA					--	--	--	SPACE	38
39	SPACE	--	--	--			0 VA	0 VA			--	--	--	SPACE	40
41	SPACE	--	--	--					0 VA	0 VA	--	--	--	SPACE	42
		Total Load:			1440 VA		4680 VA		1620 VA						
		Total Amps:			12.0 A		39.2 A		13.7 A						

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Receptacle	7740 VA	100.00%	7740 VA	
				Total Conn. Load: 7740 VA
				Total Est. Demand: 7740 VA
				Total Conn.: 21.5 A
				Total Est. Demand: 21.5 A

Notes:
2. THE TOTAL ESTIMATED DEMAND CURRENT SHOWN ONLY TAKES INTO ACCOUNT THE NEW LOADS. CONTRACTOR TO FIELD VERIFY EXISTING LOADS AND AMPACITY ON THE EXISTING PANEL PRIOR TO BID/ROUGH-IN AND ENSURE THE NEW LOADS CAN BE ADDED TO THE PANEL. IF THE LOADS EXCEED THE PANEL CAPACITY, CONSULT WITH THE ENGINEER.

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	DIMMING	VOLT	LAMP	WATTS	MOUNT	MANUFACTURER
A	2'X4' LAY IN LED FLAT PANEL, IC RATED, DIMMABLE.	0-10V	120	LED	36 W	LAY-IN	LITHONIA BLC 2X4 4000LM 80CRI 35K ADSM MIN 10 ZT MVOLT-DGA24
AE	2'X4' LAY IN LED FLAT PANEL, IC RATED AND EMERGENCY WITH 90 MINUTE BATTERY BACK-UP UNIT	0-10V	120	LED	36W	LAY-IN	LITHONIA BLC 2X4 4000LM 80CRI 35K ADSM MIN 10 ZT MVOLT-DGA24-PS1050
A1	2'X4' SURFACE LED FLAT PANEL, DIMMABLE	0-10V	120	LED	36 W	UNIVERSAL (CEILING)	LITHONIA BLC 2X4 4000LM 80CRI 35K ADSM MIN 10 ZT MVOLT-2X4SMKSHP PAF
A1E	2'X4' SURFACE LED FLAT PANEL, IC RATED AND EMERGENCY WITH 90 MINUTE BATTERY BACK-UP UNIT	0-10V	120	LED	36 W	UNIVERSAL (CEILING)	LITHONIA BLC 2X4 4000LM 80CRI 35K ADSM MIN 10 ZT MVOLT-2X4SMKSHP PAF-PS1050
C	48" SURFACE MOUNTED STRIPLIGHT AND EMERGENCY WITH 90 MINUTE BATTARY BACK-UP UNIT	0-10V	120	LED	25W	UNIVERSAL (WALL)	LITHONIA ZL1D L48 3500LM FST 120V 40K 80CRI WH E10WLCP
X	DIRECTIONAL EXIT SIGN, RED LETTERS, UNIVERSAL MOUNT, FACE, AND CHEVRON		120	LED	5 W	UNIVERSAL (CEILING)	LITHONIA LHQM-LED-R
X1	SELF CONTAINED EXIT COMBO LIGHT, DUAL LED HEAD WITH HIGH 90 MINUTE EMERGENCY BATTERY BACK-UP		120	LED	5 W	UNIVERSAL (WALL)	LITHONIA EU2C 120 HO ERE W T SQ M12

NOTES:
1. CONNECT ALL EXIT AND EMERGENCY LIGHTS TO LOCAL AREA LIGHTING CIRCUIT AHEAD OF ANY SWITCHING. EMERGENCY LIGHTING FIXTURES IN LAY-IN CEILINGS ARE TO BE PERMANENTLY IDENTIFIED ON THE EXTERIOR SURFACE WITH A RED DOT OR LABEL.
2. ELECTRICAL CONTRACTOR SHALL PROVIDE A SUBMITTAL PACKAGE INCLUDING CUTSHEETS FOR EACH FIXTURE.
3. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL ACCESSORIES FOR A COMPLETE ASSEMBLY INCLUDING MOUNTING HARDWARE.
4. THE MOUNTING TYPE OF EACH FIXTURE SHALL BE COMPATIBLE WITH THE INSTALLATION SURFACE OF THE FIXTURE.
5. ALL FINISHES SHALL BE COORDINATED WITH ARCHITECT AND DOCUMENTED ON SUBMITTALS.

ELECTRICAL FEEDER KEYNOTES

100-4	1 - 1 1/4"C,4#3,1#8 GR

1. CONDUIT SIZED BASED ON CONDUCTOR PROPERTIES LISTED IN THE CURRENT NEC EDITION, CHAPTER, 9, TABLES 5 AND 5A, AND CONDUIT AREAS LISTED CHAPTER 9, TABLE 4 FOR EMT WITH 40% FILL. OTHER CONDITIONS MAY REQUIRE A LARGER CONDUIT, SUCH AS UNDERGROUND PVC, SIZED FOR NEC.
2. GROUND SIZES: EQUIPMENT GROUNDING CONDUCTOR BASED ON NEC TABLE 250.122 - COPPER / GROUNDING ELECTRODE CONDUCTOR BASED ON NEC TABLE 250.66 - COPPER
3. CONDUCTOR SIZES BASED ON NEC TABLE 310.15 - COPPER 75°C.

PANELBOARD NOTES (#)

1. TERMINATE GROUND ON ISOLATED GROUND BUS.
2. INSTALL LOCKING DEVICE FURNISHED WITH PANELBOARD (LOCK-OFF FOR MAINTENANCE).
3. INSTALL LOCKING DEVICE FURNISHED WITH PANELBOARD (LOCK-ON FOR CRITICAL LOAD).
4. GFI BREAKER FOR PERSONNEL PROTECTION (5mA).
5. GFI BREAKER FOR EQUIPMENT PROTECTION (30mA).
6. CONDUCTOR SIZE SHOWN IN PANEL SCHEDULE HAS BEEN INCREASED FOR VOLTAGE DROP. SIZE EQUIPMENT GROUND PROPORTIONALLY PER NEC. REFERENCE GROUND WIRE SIZING CHART.
7. REFER TO FAULT CURRENT SCHEDULE FOR AVAILABLE FAULT CURRENT FOR INTERRUPT RATINGS.
8. REFER TO ONE-LINE DIAGRAM FOR WIRE SIZES.
9. FACTORY WIRED TO LOAD.
10. THRU CONTROLLER. REFER TO LIGHTING CONTROLLER DETAIL.
11. ADD NEW CIRCUIT BREAKER TO EXISTING PANEL. NEW CIRCUIT BREAKER SHALL MATCH AIC RATING, MANUFACTURER, AND TYPE OF EXISTING CIRCUIT BREAKERS.
12. MATCH AIC RATING OF SERVICING DEVICE.

EQUIPMENT GROUNDING CONDUCTOR SIZING CHART

BRKR AMPS		WIRE SIZE				
15-20	PHASE	12	10	8	6	4
	GROUND	12	10	8	6	4
25-30	PHASE	10	8	6	4	3
	GROUND	10	8	6	4	3
35-50	PHASE	8	6	4	3	2
	GROUND	10	8	4	4	4
60	PHASE	6	4	3	2	1
	GROUND	10	6	6	4	4
70	PHASE	6	4	3	2	1
	GROUND	8	4	4	3	2
80-90	PHASE	4	3	2	1	1/0
	GROUND	8	6	4	4	3
100	PHASE	3	2	1	1/0	2/0
	GROUND	8	6	4	4	3
PER NEC 250.122(B)						

CIRCUIT DESCRIPTIONS SHOWN AS "existing" OR IN LOWER CASE LETTERS INDICATE AN EXISTING CIRCUIT BREAKER TO REMAIN AND IS BASED ON ORIGINAL BUILDING PLANS, PANEL SCHEDULES AND BREAKER ARRANGEMENTS AT THE TIME OF THE SITE VISIT.

EQUIPMENT LABELS

ALL PANELBOARDS SHALL HAVE A LABEL APPLIED TO WARN OF POTENTIAL ARC FLASH HAZARDS

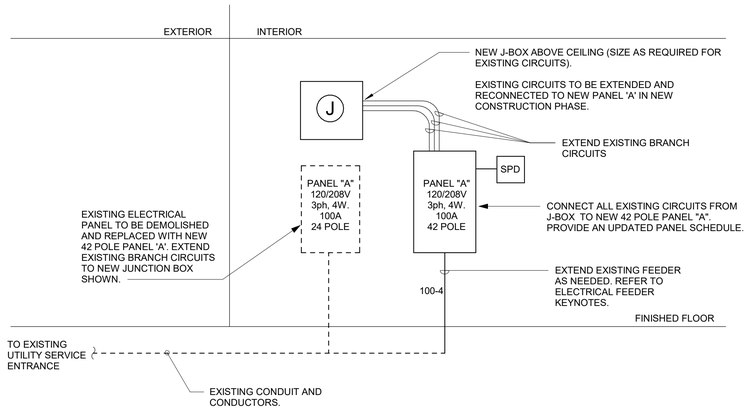
WARNING

ARC FLASH AND SHOCK HAZARD. APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIRED.

NOTES:

A. ALL PANELBOARDS SHALL HAVE A COMMERCIALLY PRODUCED PERMANENT LABEL APPLIED, SIMILAR TO THE ABOVE, TO WARN OF POTENTIAL ARC FLASH HAZARDS, IN ACCORDANCE WITH NEC 110.16 AND NFPA 70E.

B. LABELING MAY BE COMPLETED BY EQUIPMENT MANUFACTURER, EQUIPMENT VENDOR/SUPPLIER, OR THE CONTRACTOR. THE CONTRACTOR SHALL VERIFY THAT ALL SWITCHBOARDS AND PANELBOARDS ARE PROPERLY LABELED IN THE FIELD.



2 / E401 RISER DIAGRAM
NTS

LEVEL 5
Level 5 Architecture
Mansfield, TX | Springdale, AR
level5architecture.com

STATE OF TEXAS
ROBERT BRANDON PINKERTON
100677
LICENSED
PROFESSIONAL ENGINEER
10-25-2021

HP ENGINEERING INC.
F-18023

HP ENGINEERING

PROJECT NO. 21-64T
100 % COMPLETE

HP ENGINEERING INC.
142 HOWELL STREET,SUITE 170
DALLAS, TX 75207
(479) 490-2500

F-18023

PROJECT INFORMATION:

AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 Elizabeth St.
Texarkana, TX 75503

PROJECT NUMBER: 21-64T
ISSUE DATE: 10-25-2021
REVISIONS:

SHEET NAME:

ELECTRICAL SCHEDULES AND RISER

SHEET NUMBER:

E401

10/25/2021 11:02:30 AM

SECTION 26A GENERAL ELECTRICAL REQUIREMENTS
Rev - 20150422

26A 1 GENERAL INSTRUCTIONS

26A 1-1 GENERAL REQUIREMENTS
Requirements under Division 1 and the general and supplementary conditions of these specifications apply to this section and division. Where the requirements of this section and division exceed those of Division 1, this section and division take precedence. Become thoroughly familiar with all their contents as to requirements that affect this division, section or both. The work required under this section includes material, equipment, appliances, transportation, services, and labor required to complete the entire system as required by the drawings and specifications, or reasonably inferred to be necessary to facilitate each system's functioning as implied by the design and the equipment specified.

The specifications and drawings for the project are complementary, and portions of the work described in one, shall be provided as if described in both. In the event of discrepancies, notify the engineer and request clarification prior to proceeding with the work involved.

Drawings are graphic representations of the work upon which the contract is based. They show the materials and their relationship to one another, including sizes, shapes, locations, and connections. They also convey the scope of work, indicating the intended general arrangement of the equipment and other materials without showing all of the exact details as to elevations, offsets, control lines, and other installation requirements. Use the drawings as a guide when laying out the work and to verify that materials and equipment will fit into the designated spaces, and which, when installed per manufacturers' requirements, will ensure a complete, coordinated, satisfactory and properly operating system. Determine exact locations by job measurements, by checking the requirements of other trades, and by reviewing all contract documents. Correct errors that could have been avoided by proper checking and inspection, at no additional cost to the owner.

Specifications define the qualitative requirements for products, materials, and workmanship upon which the contract is based.

26A 1-2 DEFINITIONS

Whenever used in these specifications or drawings, the following terms shall have the indicated meanings:

Furnish: "to supply and deliver to the project site, ready for unloading, unpacking, assembling, installing, and similar operations."

Install: "to perform all operations at the project site, including, but not limited to, and as required: unloading, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, testing, commissioning, starting up and similar operations, complete, and ready for the intended use."

Provide: "to furnish and install complete, and ready for the intended use."

Furnished by owner (or owner-furnished) or furnished by others: "an item furnished by the owner or under other divisions or contracts, and installed under the requirements of this division, complete, and ready for the intended use, including all items and services incidental to the work necessary for proper installation and operation. Include the installation under the warranty required by this division.

Engineer: where referenced in this division, "engineer" is the engineer of record and the design professional for the work under this division, and is a consultant to, and an authorized representative of, the architect, as defined in the general and/or supplementary conditions. When used in this division, it means increased involvement by, and obligations to, the engineer, in addition to involvement by, and obligations to, the "architect".
AHJ: the local code and/or inspection agency (authority) having jurisdiction over the work.

NRTL: nationally recognized testing laboratory, as defined and listed by OSHA in 29 CFR 1910.7 (e.g., UL, ETL, CSA), and acceptable to the AHJ over this project.

The terms "approved equal", "equivalent", or "equal" are used synonymously and shall mean "accepted by or acceptable to the engineer as equivalent to the item or manufacturer specified". The term "approved" shall mean labeled, listed, certified, or all three, by an NRTL, and acceptable to the AHJ over this project.

26A 1-3 PRE-BID SITE VISIT

Prior to submitting bid, visit the site of the proposed work and become fully informed as to the conditions under which the work is to be done. Failure to do so will not be considered sufficient justification to request or obtain extra compensation over and above the contract price.

26A 1-4 MATERIAL AND WORKMANSHIP

Provide all material and equipment new and in first class condition. Provide markings or a nameplate for all material and equipment identifying the manufacturer and providing sufficient reference to establish quality, size and capacity. In general, provide the following quality grade(s) for all materials and equipment:
Commercial Specification Grade
Work performed under this contract shall provide a neat and "workmanlike" appearance when completed, to the satisfaction of the architect and engineer.
Workmanship shall be the finest possible by experienced mechanics of the proper trade
The complete installation shall function as designed and intended with respect to efficiency, capacity, noise level, etc. Abnormal or excessive noise from equipment, devices or other system components will not be acceptable.

Remove from the premises waste material present as a result of work. Clean equipment installed under this contract to present a neat and clean installation at the termination of the work.

Repair or replace public and private property damaged as a result of work performed under this contract to the satisfaction of authorities and regulations having jurisdiction.

26A 1-5 MANUFACTURERS

In other articles where lists of manufacturers are introduced, subject to compliance with requirements, provide products by one of the manufacturers specified.

Where a list is provided, manufacturers listed are not in accordance with any ranking or preference.

Where manufacturers are not listed, provide products subject to compliance with requirements from manufacturers that have been actively involved in manufacturing the specified product for no less than 5 years.

26A 1-6 COORDINATION

Coordinate all work with other divisions and trades so that the various components of the systems will be installed at the proper time, fit the available space, and will allow proper service access to those items requiring maintenance. Refer to all other division's drawings, and to relevant equipment submittals and shop drawings to determine the extent of clear spaces. Components which are installed without regard to the above shall be relocated at no additional cost to the owner.

Unless otherwise indicated, the general contractor will provide chases and openings in building construction required for installation of the systems specified herein. Contractor shall furnish the general contractor with information where chases and openings are required. Make all offsets required to clear equipment, beams and other structural members, and to facilitate concealing system components in the manner anticipated in the design. Keep informed as to the work of other trades engaged in the construction of the project, and execute work in a manner as to not interfere with or delay the work of other trades.

Figured dimensions shall be taken in preference to scale dimensions. Contractor shall take his own measurements at the building, as variations may occur. Contractor will be held responsible for errors that could have been avoided by proper checking and inspection

Provide materials with trim that will properly fit the types of ceiling, wall, or floor finishes actually installed. Model numbers listed in the construction documents are not necessarily intended to designate the required trim.

26A 1-7 ORDINANCES, CODES, AND STANDARDS

Work performed under this contract shall, at a minimum, be in conformance with applicable national, state and local codes having jurisdiction. Equipment furnished and associated installation work performed under this contract shall be in strict compliance with current applicable codes adopted by the local AHJ including any amendments and standards as set forth by the National Fire Protection Association (NFPA), Underwriters Laboratories (UL), Occupational Safety and Health Administration (OSHA), American Society of Mechanical Engineers (ASME), American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE), American National Standards Institute (ANSI), American Society of Testing Materials (ASTM) and other national standards and codes where applicable. Additionally, comply with rules and regulations of public utilities and municipal departments affected by connection of services.
Where the contract documents exceed the requirements of the referenced codes, standards, etc., the contract documents shall take precedence.

Promptly bring all conflicts observed between codes, ordinances, rules, regulations, referenced standards, and these documents to the engineer's attention for final resolution. Contractor will be held responsible for any violation of the law.

Procure and pay for permits and licenses required for the accomplishment of the work herein described. Where required, obtain, pay for and furnish certificates of inspection to owner. Contractor will be held responsible for violations of the law.

26A 1-8 PROTECTION OF EQUIPMENT AND MATERIALS

Store and protect from damage equipment and materials delivered to job site, in accordance with manufacturers' recommendations. For materials and equipment susceptible to changing weather conditions, dampness, or temperature variations, store inside in conditioned spaces. For materials and equipment not susceptible to these conditions, cover with waterproof, tear-resistant, heavy tarp or polyethylene plastic as required to protect from plaster, dirt, paint, water, or physical damage. Equipment and material that has been damaged by construction activities will be rejected, and contractor shall furnish new equipment and material as required at no additional cost to the owner.

Keep premises broom clean from foreign material created during work performed under this contract. Piping, equipment, etc. shall have a neat and clean appearance at the termination of the work.

Plug or cap open ends of conduits while stored and installed during construction when not in use to prevent the entrance of debris into the systems.

26A 1-9 SUBSTITUTIONS

Include in the base bid the products specifically named in these specifications or on the drawings. Submit, in the form of alternates, with bid, products of any other manufacturers for similar use, provided the differences in cost, if any, are included for each proposed alternate.

No substitutions will be considered with receipt of Bids, unless the Architect and Engineer have received from the Bidder a written request for approval to bid a substitution at least ten calendar days prior to the date for receipt of Bids, and have approved the substitution request. Include, with each such request, the name of the material or equipment for which substitution is being requested, and a complete description of the proposed substitution, including drawings, cut sheets, performance and test data, and all other information necessary for an evaluation. Include also a statement setting forth changes in other materials, equipment or other work that would be required to incorporate the substitution. The burden of proof of the merit of the proposed substitute is upon the proposer. The proposer of any substitutions shall compensate the Engineer at a rate of $150.00 per hour for time spent evaluating proposed substitutions and or the subsequent revisions to the design required to utilize the substitution.

The Architect's or Engineer's decision to approve or disapprove a substitution in a Bid is final.

If the proposed substitution is approved prior to receipt of Bids, such approval will be stated in an Addendum. Bidders shall not rely upon approvals made in any other manner, including verbal.

No substitutions will be considered after receipt of Bids and before award of the Contract.

No substitutions will be considered after the Contract is awarded unless specifically provided in the Contract Documents.

26A 1-10 SUBMITTALS

Assemble and submit to the architect, for engineer's review, manufacturers' product literature for material and equipment to be furnished, installed, or both, under this division, including shop drawings, manufacturers' product data and performance sheets, samples, and other submittals required by this division. Highlight, mark, list or indicate the materials, performance criteria and accessories that are being proposed. Provide the number of submittals required by division 1; however, at a minimum, submit two (2) sets. Before submitting, verify that all materials and equipment submitted are mutually compatible and suitable for the intended use, fit the available spaces, and allow ample and code-required room for access and maintenance. Submittals shall contain the following information. Submittals not so identified will be returned to the contractor without action:

The project name.
The applicable specification section and paragraph.
The submittal date.
The contractor's stamp, which shall certify that the stamped drawings have been checked by the contractor, comply with the drawings and specifications, and have been coordinated with other trades.

Submittals and shop drawings shall not contain HP Engineering's firm name or logo, nor shall it contain the HP Engineering's engineers' seal and signature. They shall not be copies of HP Engineering's work product.

Transmit submittals as early as required to support the project schedule. Allow for two weeks engineer review time, plus mailing time, plus a duplication of this time for re-submittals, if required. The engineer's submittal reviews will not relieve the contractor from responsibility for errors in dimensions, details, size of members, or quantities; or for omitting components or fittings; or for not coordinating items with actual building conditions.

Refer to division 1 for acceptance of electronic submittals for this project. For electronic submittals, contractor shall submit the documents in accordance with the procedures specified in division 1. Contractor shall notify the architect and engineer that the shop drawings have been posted. If electronic submittal procedures are not defined in division 1, contractor shall include the website, user name and password information needed to access the submittals. For submittals sent by e-mail, contractor shall copy the architect and engineer's designated representatives. Contractor shall allow the engineer review time as specified above in the construction schedule. Contractor shall submit only the documents required to purchase the materials and/or equipment in the electronic submittal and shall clearly indicate the materials, performance criteria and accessories being proposed. General product catalog data not specifically noted to be part of the specified product will be rejected and returned without review.

26A 1-11 ELECTRONIC DRAWING FILES

In preparation of shop drawings or record drawings, contractor may, as an option, obtain electronic drawing files in Revit, AutoCAD, or DXF format from the engineer for a fee of $200 for the first sheet and $100 per sheet for each additional sheet. Contact the architect for written authorization; and, contact the engineer to obtain the necessary release agreement form and to indicate the desired shipping method and drawing format. In addition to payment, architect's written authorization and engineer's release agreement form must be received before electronic drawing files will be sent.

26A 1-12 OPERATION AND MAINTENANCE MANUALS

Submit to the architect, for engineer's review, copies each of operations and maintenance instruction manuals, appropriately bound into manual form including approved copies of the following, revised if necessary to show system and equipment as actually installed. Paper clips, staples, rubber bands, and mailing envelopes are not considered approved binders. Provide the number of submittals required by Division 1; however, at a minimum, submit two (2) sets, and include, at a minimum, the following information:

Cover sheet that lists the project name, date, owner, architect, consulting engineer, general contractor, sub-contractor, and an index of contents.
Manufacturers' catalogs and product data sheets
Wiring diagrams
Operation and Maintenance instructions
Parts lists
Approved shop drawings
Test reports as defined in NETA ATS for the systems and equipment provided or furnished or installed under this contract.
Names, addresses, telephone numbers, and e-mail addresses of local contacts for warranty services and spare parts.

Submit manuals prior to requesting the final punch list and before any requests for substantial completion. Final approval of this division's systems installed under this contract will be withheld until this equipment brochure is received and deemed complete by the architect and engineer.

Provide "as-built" drawings (see Division 1 and general conditions).

26A 1-13 TRAINING

At a time mutually agreed upon between the owner and contractor, provide the services of a factory trained and authorized representative to train owner's designated personnel on the operation and maintenance of the equipment provided for this project.

Provide training to include but not be limited to an overview of the system and/or equipment as it relates to the facility as a whole; operation and maintenance procedures and schedules related to startup and shutdown, troubleshooting, servicing, preventive maintenance and appropriate operator intervention; and review of data included in the operation and maintenance manuals.

Submit a certification letter to the architect stating that the owner's designated representative has been trained as specified herein. Letter shall include date, time, attendees and subject of training. The contractor and the owner's representative shall sign the certification letter indicating agreement that the training has been provided.

Schedule training with owner with at least 7 days advance notice.

26A 1-14 WARRANTIES
Warrant each system and each element thereof against all defects due to faulty workmanship, design or material for a period of 12 months from date of substantial completion, unless specific items are noted to carry a longer warranty in the construction documents or manufacturer's standard warranty exceeds this duration. Warranties shall include labor and material. Remedy all defects, occurring within the warranty period(s), as stated in the general conditions and Division 1 without any additional costs to the owner.

Perform any required remedial work promptly, upon written notice from the engineer or owner.

At the time of substantial completion, deliver to the owner all warranties, in writing and properly executed, including term limits for warranties extending beyond the required period, each warranty instrument being addressed to the owner and stating the commencement date and term.

26A 2 ELECTRICAL WORK

26A 2-1 BUILDING OPERATION

Comply with the schedule of operations as outlined in the architectural portions of this specification. Building shall be in continuous operation. Accomplish work that requires interruption of building operation at a time when the building is not in operation, and only with written approval of building owner and/or tenant. Coordinate interruption of building operation with the owner and/or tenant a minimum of 7 days in advance of work.

26A 2-3 COINCIDENTAL DAMAGE

Repair all streets, sidewalks, drives, paving, walls, finishes, and other facilities damaged in the course of this work. Repair materials shall match existing construction and or conform to all requirement identified in other divisions. All backfilling and repairing shall meet all requirements of the owner, city and others having jurisdiction. Repair work shall be thoroughly first class.

26A 2-4 CUTTING AND PATCHING

Following the requirements in Division 1, cut walls, floors, ceilings, and other portions of the facility as required to perform work under this division. Obtain permission of the architect, owner, or both, before doing any cutting. Cut all holes as small as possible. Patch walls, floors, and other portions of the facility as required by work under this division. All patching shall be thoroughly first class and shall match the original material and construction, including fire ratings if applicable in a manner satisfactory to the architect.

26A 2-5 ROUGH-IN

Coordinate without delay all roughing-in with other divisions. Conceal all piping and rough-in except in unfinished areas and where otherwise indicated in the construction documents.

26A 2-6 SUPPORT SYSTEMS

1.Steel slotted support systems (slotted channel): comply with MFMA-3, factory-fabricated components for field assembly; 12-gauge, 1-5/8-inch by 1-5/8-inch; Cooper B-Line, Erico International Corporation, Hilti, Inc., Power-Strut, Thomas & Betts Corporation, Unistrut.

Finishes:

A.Metallic coatings: hot-dip galvanized after fabrication and applied according to MFMA-3
B.Nonmetallic coatings: manufacturer's standard PVC, polyurethane or polyester coating applied according to MFMA-3.
C.Painted coatings: manufacturer's standard painted coating applied according to MFMA-3.
D. Stainless steel: type 304, per ASTM A240.
2.Aluminum slotted support systems (slotted channel): comply with MFMA-3, type 6063-T6, per ASTM B221; factory-fabricated components for field assembly; 12-gauge, 1-5/8-inch by 1-5/8-inch; Cooper B-Line, Erico International Corporation, Hilti, Inc., Power-Strut, Thomas & Betts Corporation, Unistrut.

Field Fabrication:

Where field cutting of standard lengths of channel are required, make cuts straight and perpendicular to manufactured surfaces.

For field-cut or damaged surfaces of coated channels, dress cut ends, damaged surfaces, or both, with an abrasive material (e.g., file, grinding stone, or similar) and cleanser to remove oils, rust, sharp edges and shards.

For channel with a factory-applied coating, re-finish cut edges with a coating compatible with the factory finish and as recommended by the manufacturer (e.g., manufacturer's touch-up paint or zinc-rich cold-galvanizing compound, as applicable).

26A 2-7 PENETRATIONS

Coordinate sleeve selection and application with selection and application of fire-stopping specified in Division 7 section "through-penetration firestop systems."

Roofs:

Coordinate all roof penetrations with engineer, owner, and as applicable, the roofing contractor providing a roof warranty.

Keep all raceway penetrations within mechanical equipment curbs wherever possible. Coordinate with all other applicable Division's work.

Flash and counterflash all openings through roof, and/or provide pre-fabricated molded seals compatible with the roof construction installed, or as required by the engineer, owner, or roofing contractor. All roof penetrations shall be leak-tight at the termination of the work and shall not void any new or existing roof warranties.

Walls and Floors:

Sleeves for raceways and cables

Steel pipe sleeves: ASTM A 53/A 53M, type E, grade B, schedule 40, galvanized steel, plain ends and drip rings.
Cast-iron pipe sleeves: cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

Sleeves for rectangular openings: galvanized sheet steel with minimum 0.138 inch thickness and of width and length to suit application.

26A 2-8 FIRE-STOPPING THROUGH PENETRATIONS

Fire-resistant through penetration sealants: two-part, foamed-in-place, silicone sealant formulated for use in through-penetration fire-stopping around cables, raceways, and cable tray penetrations through fire-rated walls and floors. Sealants and accessories shall have fire-resistance ratings indicated, as established by testing identical assemblies in accordance with ASTM E 814, by underwriters' laboratories, inc., or other NRTL acceptable to AHJ.

Acceptable manufacturers:

Hilti, Inc.
3m Corp.
Rectorseal.
Specify Technology Inc.
United States Gypsum Company.

Submittals

Submit product data, manufacturer's specifications and technical data for each material including the composition and limitations, documentation of UL firestop systems to be used and manufacturer's installation instructions to comply with Division 1.

Manufacturer's engineering judgment identification number and drawing details when no UL system is available for an application. Engineering judgment shall include both project name and contractor's name who will install firestop system as described in drawings.

Submit material safety data sheets provided with product delivered to job-site.

26A 2-9 CONCRETE BASES

Provide concrete bases (e.g., housekeeping pads) for equipment where indicated on the drawings and as specified herein. Concrete bases shall have chamfered edges. Size of base shall be a minimum of 2 inches greater than the footprint of the equipment that it is supporting.

Construct equipment bases of a minimum 28-day, 4000-psi concrete conforming to American Concrete Institute standard building code for reinforced concrete (ACI 318-99) and the latest applicable recommendations of the ACI standard practice manual. Concrete shall be composed of cement conforming to ASTM C 150 type I, aggregate conforming to ASTM C33, and potable water. Exposed exterior concrete shall contain 5 to 7 percent air entrainment.

Unless otherwise specified or shown on the structural drawings, reinforce equipment bases with no. 4 reinforcing bars conforming to ASTM A 615 or 6x6 – w2.9 x w2.9 welded wire mesh conforming to ASTM A185. Place reinforcing bars 24 inches on center with a minimum of two bars each direction.

Provide galvanized anchor bolts for equipment placed on concrete bases or on concrete slabs. Anchor bolts size, number and placement shall be as recommended by the manufacturer of the equipment.

Concrete equipment bases shall have a minimum height of 4 inches and shall be poured-in-place.

26A 2-10 ACCESS DOORS

Provide access doors in ceilings and walls, where indicated or required for access or maintenance to concealed equipment installed under this section. Provide concealed hinges, screwdriver-type lock, and anchor straps.

Manufactured by Milcor, Zurn, Titus, or equal. Obtain architect's approval of type, size, location and color before ordering.

26A 2-11 EQUIPMENT FURNISHED BY OTHERS

Provide necessary equipment and accessories that are not provided by the equipment supplier or owner to complete installation of equipment furnished by others, in locations as indicated on the drawings, specified herein, or both. Equipment and accessories not provided by the equipment supplier may include such items as flexible cords and plugs, as required for proper operation of the complete system, in accordance with the manufacturers' instructions.

Be responsible for correct rough-in dimensions, and verify them with engineer, owner's representative, equipment supplier, or all three, prior to rough-in and service installations.

26A 2-12 CLEANING

In addition to the requirements of Division 1, remove from the premises dirt and refuse resulting from the performance of the electrical work, as required, to prevent accumulation. Cooperate in maintaining reasonably clean premises at all times. Immediately prior to final inspection, make a final cleanup of dirt and refuse resulting from the work. Clean all material and equipment installed under this division. Remove dirt, dust, plaster, stains and foreign matter from all surfaces. Touch up and restore all damaged finishes to their original condition.

26A 2-13 ADJUSTING, ALIGNING AND TESTING

Adjust, align, and test all electrical equipment on this project provided under this division and all electrical equipment furnished by others for installation or wiring under this division, for proper operation.

Test all systems and equipment according to the requirements in NETA ATS (latest edition) and all additional requirements specified in following sections.

Maintain the following on the project premises at all times: a true RMS reading voltmeter, a true RMS reading ammeter, and a megohmmeter insulation resistance tester. Provide test data readings as requested or as required by the engineer.

26A 2-14 EQUIPMENT IDENTIFICATION

Provide equipment identification nameplates:

-On all panelboards, switches, starters, dimmers, switches in distribution panelboards and switchboards as well as where indicated elsewhere in the construction documents.

Nameplates:

Engraved, contrasting color, three-layer, laminated plastic indicating the name of the equipment, load, or circuit as designated on the drawings and in the specifications:
-Field-applied permanent epoxy adhesive, compatible with the equipment finish.
-Attachment method shall be acceptable to the manufacturers of the equipment to which the nameplates are being applied.
Color: black background with white letters for normal power; red background with white letters for emergency power. Letter height: ½ -inch minimum.

26A 2-15 SYSTEM START UP

Prior to starting up the electrical systems:

Check all components and devices.

Lubricate items accordingly.

Tighten screws and bolts for connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486a and UL 486b.

Adjust taps on each transformer for rated secondary voltage when the transformer is at minimum load.

Check and record building's service entrance voltage, grounding conditions, grounding resistance, and proper phasing.

Replace all burned-out lamps and lamps used for temporary construction lighting in permanent light fixtures.

After all systems have been inspected and adjusted, confirm all operating features required by the drawings and specifications and make final adjustments as necessary.

26A 4 ALTERNATES

Provide all work contemplated under the different alternates to include labor, materials, equipment and services necessary for and incidental to the completion of work under each particular alternate. Furnish separate bids for each alternate applicable to contractor's proposal, stating the amount to be added or deducted from the base bid in case the alternate is accepted. Comply with applicable sections of the base specifications for work required by the alternate unless otherwise specified. Refer to the architectural portion of the specification.

END OF SECTION 26A

LEVEL 5
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STATE OF TEXAS
ROBERT BRANDON PINKERTON
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PROJECT INFORMATION:

AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 Elizabeth St.
Texarkana, TX 75503

PROJECT NUMBER: 21-64T
ISSUE DATE: 10-25-2021
REVISIONS:

SHEET NAME:

ELECTRICAL SPECIFICATIONS

SHEET NUMBER:

E500

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26B BASIC ELECTRICAL MATERIALS AND METHODS
rev - 20150520

26B 1 METHODS

26B 1-1 RACEWAYS

Metallic Conduit And Tubing:

Electrical Metallic Tubing and fittings (EMT): ANSI C80.3, UL 797.
Reduced wall EMT is not allowed.
Flexible Metal Conduit (FMC): zinc-coated steel or aluminum, UL 1.
Reduced-wall FMC is not allowed.
Intermediate Metal Conduit (IMC): hot-dip galvanized rigid steel conduit: ANSI C80.6, UL 1242.

Liquidtight Flexible Metal Conduit (LFMC): flexible steel conduit with PVC jacket: UL 360

Rigid Metal Conduit (RMC): hot-dip Galvanized Rigid Steel conduit (GRS): ANSI C80.1, UL 6.
Plastic-coated IMC, RMC, and fittings: NEMA RN 1, UL listed.

IMC and RMC fittings: NEMA FB 1; compatible with conduit type and material, UL listed

Non-Metallic Conduit And Tubing:

Rigid Nonmetallic Conduit (RNC): schedule 40 PVC, 90 deg C rated, NEMA TC-2, UL 651; fittings: NEMA TC 3, TC 6; UL 514, compatible with conduit/tubing type and material, UL listed.
Electrical Nonmetallic Tubing (ENT): NEMA TC 13, UL listed.
Liquidtight Flexible Nonmetallic Conduit (LFNC): UL 1660.
ENT and LFNC fittings: Compatible with conduit/tubing type and material, UL listed.
26B 1-2 RACEWAY INSTALLATION

Above Ground Use:
Install all circular raceways concealed above suspended ceilings or concealed in walls or floors wherever possible except where otherwise indicated.

Provide GRS for all conduits run exposed to weather, or exposed to other hazardous conditions.

All other raceway may be EMT where approved by local code. Use compression type fittings for EMT, with all fittings UL listed for the environment in which they are used.

Underground use:
Equipment Connections:
Use FMC for final connection to each motor and transformer, and to any device that would otherwise transmit motion, vibration, or noise. Use LFMC where exposed to liquids, vapors or sunlight, and to connect to kitchen and food service equipment. Provide all FMC and LFMC with an insulated bonding conductor.

Use only metal raceways for all power wiring from the output of variable frequency drives to their respective motors. All feeders to variable frequency drives (VFDs) shall be in EMT or other metallic conduit. PVC or fiberglass is not allowed for feeders to VFDs.

General Raceway Installation Requirements:
Install raceways parallel and perpendicular to building lines.

Install raceways to requirements of structure and to requirements of all other work on the project; to clear all openings, depressions, pipes, ducts, reinforcing steel, and other immovable obstacles.

Install raceways set in forms for concrete structure in such a manner that installation will not affect the strength of the structure.

Except where approved in writing by the engineer, install no raceway in a slab-on-grade. Locate raceway in granular fill below slabs-on-grade.

Install raceways continuous between connections to outlets, boxes and cabinets with a minimum possible number of bends and not more than the equivalent of four 90-degree bends between connections. Use manufactured elbows for all 45- and 90-degree bends, unless approved by the engineer in advance. Make other bends smooth and even and without flattening raceway or flaking galvanizing or enamel. Radii of bends shall be as long as possible and never shorter than the corresponding trade elbow.

Use long radius elbows for all underground installations, where necessary or indicated.

Securely fasten raceways in place with approved straps, hangers and steel supports as required. Attach raceway supports to the building structure. Hang single raceways for feeders with malleable split ring hangers with rod and turnbuckle suspension from inserts spaced not over 10 feet apart in construction above. Clamp groups of horizontal feeder raceways to steel channels that are suspended from inserts spaced not over 10 feet apart in construction above. Securely clamp vertical feeder raceways to structural steel members attached to structure. Install cable clamps for support of vertical feeders where required. Add raceway supports within 12 inches of all bends, on both sides of the bends. Do not support raceways from suspended ceiling components.

Ream raceway ends, thoroughly clean raceways before installation, and keep clean after installation. Plug or cover openings and boxes as required to keep raceways clean during construction and fish all raceways clear of obstructions before pulling conductors. Provide raceways of ample size for pulling of wire and not smaller than code requirements and not less than 1/2-inch in size, unless indicated otherwise on drawings.

Protect all raceway installations against damage during construction. Repair all raceways damaged or moved out of line after roughing-in to meet engineer's approval without additional cost to the owner.

Align and install true and plumb all raceway terminations at panelboards, switchboards, motor control equipment and junction boxes.

Install approved expansion/deflection fittings where raceways pass through (if embedded) or across (if exposed) expansion joints. Also when using RNC or RAC in exposed environments in accordance with the NEC and expansion/contraction properties of RNC or RAC.

Install a pull wire in each empty raceway that is left for installation of conductors or cables under other divisions or contracts. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 24 inches of slack at each end of pull wire.

Make all joints and connections in a manner that will ensure mechanical strength and electrical continuity.

26B 1-3 BUSHINGS AND LOCKNUTS

Rigidly terminate conduits entering sheet metal enclosures to the enclosure with a bushing and locknut on the inside and a locknut or an approved hub on the outside. Conduit shall enter the enclosure squarely.

Provide bushings and locknuts made of galvanized malleable iron with sharp, clean-cut threads.

Where EMT enters a box, provide approved EMT compression connectors.

Use insulated, grounding, or combination, bushings wherever connection is subject to vibration or moisture, when required by NFPA 70, or both.
26B 1-4 CONDUCTORS AND CABLES

Conductor Material:
Annealed (soft) copper complying with ICEA S-95-658/NEMA WC70;
Conductor insulation types: 90-degree C-rated, type THHN/THWN-2 or XHHW-2 complying with ICEA S-95-658/NEMA WC70.

Sizes of conductors and cables indicated or specified are in American Wire Gage (AWG - brown and sharpe).

All feeder and branch circuit conductors no. 8 AWG and larger: stranded.

All conductors, no. 10 AWG and smaller: solid copper

All branch circuit wiring: not smaller than no. 12 AWG. If no conductor size is indicated on the drawings for a branch circuit, provide conductors and conduit sized per NFPA 70 and based on the indicated branch circuit overcurrent protective device (OCPD) rating and number of poles. Where no circuit size (i.e., conductors and OCPD) is indicated on the drawings for a branch circuit, provide three no. 12 AWG conductors, in 1/2-inch raceway, and a 20a circuit breaker.

Control wiring: stranded copper conductors, 600v insulation, of the proper type, size and number as required to accomplish specified function. Minimum size: no. 14 AWG, unless noted otherwise.

Stranded for all flexible cords and cables, or as otherwise indicated.

Unless indicated otherwise, special purpose conductors and cables, such as low voltage control and shielded instrument wiring, shall be as recommended by the system equipment manufacturer.

Type MC cable: 600v, unjacketed; ANSI E119 and E814, UL standards 44 or 83 (as applicable), and 1569, NFPA 70 article 330; aluminum or galvanized steel interlocked armor; THHN- or XHHW-insulated conductors; color code: ICEA method 1, with green insulated grounding conductor
26B 1-5 INSTALLATION OF CONDUCTORS AND CABLES

Install all wiring in approved raceway and enclosures
, except where specified or indicated, for low-voltage wiring or direct-buried cables; or, where type MC cable is indicated, specified as acceptable, or both.

Support all conductors and cables in vertical installations, as required by NFPA 70, by installing cable supports or plug-type conduit riser supports, or wire-mesh safety grips.

Install all conductors and cable in raceways continuous without taps or splices. Splice or tap only in approved boxes and enclosures with approved solderless connectors, or crimp connectors and terminal blocks for control wiring, and keep to the minimum required. Insulate all splices, taps, and joints as required by codes.

All materials used to terminate, splice or tap conductors: designed for, properly sized for, and UL listed for the specific application and conductors involved, and installed in strict accordance with the manufacturer's recommendations, using the manufacturer's recommended tools.

Where wiring is indicated as installed, but the connection is indicated "future" or "by other division, trades, or contracts", leave a minimum 3-foot "pigtail" at the box, tape the ends of the conductors, and cover the box.

The number of conductors in a specific raceway "home run" is typically indicated with cross lines (tick marks) on each "circuit run" on the drawings. In general, the direction of branch circuit "home run" routing is indicated on the drawings, complete with circuit numbers and panelboard designation. Continue all such "home run" wiring to the designated panelboard, as though "circuit runs" were indicated in their entirety.

Multi-wire branch circuits (i.e., shared neutral) shall be provided with a means that will simultaneously disconnect all ungrounded conductors at the point the branch circuit originates. Multi-pole breakers or 3 single pole breakers with a handle tie are two examples.

When multiple home runs are combined into a single raceway such that the number of conductors exceeds four (conductor count is made up of any combination of phase and neutral conductors), the following restrictions apply, which are in addition to those in NFPA 70:

NORMAL or NON-ESSENTIAL CIRCUITS:

Maximum of 16 conductors in a single raceway. For up to eight conductors in a raceway, minimum raceway size: 3/4-inch. For greater than eight conductors, minimum raceway size: 1-inch. Do not install any other type of circuit in this raceway.

The minimum wire size for all conductors in this raceway: no. 10 AWG.

Only 15a and 20a branch circuit homeruns may be combined into one raceway.

ISOLATED GROUND (IG) CIRCUITS:

The Isolated Ground conductor of each IG circuit shall be continuous (no splices) the entire length of the circuit.

IG circuits shall be provided with dedicated neutrals, equipment grounds, and isolated grounds and routed in separate conduits from other circuits.

GFCI CIRCUITS:

Do not use multi-conductor circuits, with a shared neutral, for any GFCI circuit breaker or receptacle circuit.

For branch circuits fed from GFCI circuit breakers, limit the one-way conductor length to 100 feet between the panelboard and the most remote receptacle or load on the GFCI circuit

Properly identify all terminal blocks and wire terminals for control wiring with vinyl stick-on markers or equivalent. Provide engineer with a list of proposed identifying numbers for review prior to installing markers.

Provide an equipment-grounding conductor, or bonding jumper, as applicable, in all feeders and branch circuits, sized in accordance with NFPA 70 tables 250.66 or 250.122, as applicable, unless indicated as larger on the drawings.

Voltage drop in branch circuits shall not exceed 3 percent.

Wiring shall have insulation of the proper color to match color code system in the table below unless there is a color system currently in use by the facility, in which case the colors are to match the existing system. In larger sizes, where properly colored insulation is not available, use vinyl plastic electrical tape of the appropriate color around each conductor at all termination points, junction and pull boxes

System Voltage
240v and under – 208y/120, 120/240, 120/208, 240d/120
Phase A – black, phase B – red, phase C – blue, neutral – white, equipment ground green, isolated ground – green w/yellow stripe.
480v and 480y/277v
Phase A – brown, phase B – orange, phase C – yellow, neutral – gray, equipment ground – green.
Use of MC Cable, May Only Be Used:

In lieu of flexible conduit and wiring from light fixtures in accessible ceilings to junction boxes (attached to building structure) above the ceiling. Provide cable whips of sufficient lengths to allow for relocating each light fixture within a 5-foot radius of its installed location, but not exceeding 6 feet in unsupported lengths.

For vertical drops in stud walls.

In lieu of EMT, only for 15a and 20a branch circuits (with up to four (4) conductors, not including ground conductor), and only in dry concealed locations above grade, except where specifically not permitted by NFPA 70.
Do Not Use MC Cable For The Following:

Homeruns to panelboards.

Where exposed to view.

Where exposed to damage.

Hazardous locations.

Wet locations.

When restricted otherwise above, and when specifically disallowed by the local AHJ, landlord, or both.

Circuits that can be supplied by an emergency or standby power source.
26B 1-6 JUNCTION BOXES, PULL BOXES, CABINETS AND WIREWAYS

Provide junction boxes, pull boxes, cabinets and wireways wherever necessary for proper installation of various electrical systems according to NFPA 70 and where indicated on the drawings. Size as required for the specific function or as required by NFPA 70, whichever is larger. Construction shall be of a NEMA design suitable for the environment installed.

Junction boxes installed behind wall cases, and in or on other display fixtures, except where otherwise specified, shall be 4-inch square or larger, with galvanized covers.
26B 1-7 OUTLET BOXES

All outlets including light fixture, switch, receptacle, and similar outlets: National Electrical, Appleton, Steel City, Raco, or approved equal, galvanized steel knockout boxes, suitable in design to the purpose they serve and the space they occupy. Size as required for the specific function or as required by NFPA 70, whichever is larger. Set all outlet boxes in walls, columns, floors, or ceilings so they are flush with the finished surface, accurately set, and rigidly secured in position. Provide plaster rings, extension rings and/or masonry rings as required for flush mounting. Provide approved cast outlet boxes, with hubs and weatherproof covers, in all areas subject to damp, wet, or harsh conditions.
26B 1-8 OUTLET LOCATIONS

Coordinate locations of outlet boxes. Outlets are only approximately located on the small scale drawings. Use great care in the actual location by consulting the various large scale detailed drawings used by other division trades, and by securing definite locations from the architect and/or engineer.
26B 1-9 MOUNTING HEIGHTS

Unless noted otherwise, install wiring devices as indicated below (note: all dimensions are to the bottom of the outlet box unless noted otherwise):

Receptacles:
Vertically aligned with the ground slot mounted at the bottom: 16 inches above finished floor.
Horizontally aligned, with neutral slot mounted at the top: 16 inches above finished floor.
For above counters: 6 inches above top of counter or as specified by others.
Mechanical and electrical equipment rooms and janitors closets: 44 inches above finished floor, vertically aligned.
Garages: 24 inches above finished floor, vertically aligned
Weatherproof exterior receptacles: 24 inches above finished grade or as indicated on drawings, vertically aligned.
GFCI receptacles: same as general receptacles

Isolated ground receptacles: same as general receptacles

SPD receptacles: same as general receptacles
Clock receptacles: 84 inches above finished floor or as specified by others.
Concrete block walls: dimensions above may be adjusted slightly, as required to compensate for variable joint dimensions, such that bottom or top of boxes, as applicable, are at block joints.

Switches:
General: 46 inches above finished floor.
Above counters: same as for receptacles.
Concrete block walls: 40 inches above finished floor (dimension may be adjusted slightly, as required to compensate for variable joint dimensions, such that bottom of boxes are at block joints).
Walls with wainscoting: 6 inches minimum above wainscoting, but not exceeding 48 inches above finished floor.
Telephone/Data Outlet Boxes:

General: match mounting height of adjacent wiring device listed above.

Wall-mounted telephone: 40 inches above finished floor.

For other than wiring devices, refer to paragraphs, articles, sections, divisions, or drawings to obtain mounting heights for specific equipment or systems.
26B 1-10 WIRING DEVICES

Unless noted otherwise on the drawings wiring devices are 20a rated devices. Where 15a rated devices are indicated on the drawings or required for circuit rating limitations, provide wiring devices equivalent to those specified for 20a, but rated for 15a.

Provide the following wiring devices where shown on drawings or required. Minor changes relative to the location of electrical equipment may be made to comply with structural and building requirements as determined in the course of construction. Provide all wiring devices of the same manufacturer and not mixed on the project, to the maximum extent possible. Provide color of toggles and receptacles as requested by the engineer:

Duplex convenience receptacles: Specification grade, NEMA 5-20R, 125V, 20A, grounding type, UL listed and labeled, nylon face, side and back wired, self grounding, manufactured by Leviton or approved equivalent.
Hospital Grade straight blade receptacles: NEMA 5-20R, 125V, 20A, grounding type, UL listed and labeled, nylon face, side and back wired, self-grounding, manufactured by Leviton or approved equivalent.
Hospital Grade straight blade safety type, tamper-resistant receptacles: NEMA 5-20R, 125V, 20A, grounding type, UL listed and labeled, nylon face, side and back wired, self-grounding, manufactured by Leviton or approved equivalent.
Twist-Locking type receptacles: NEMA L5-20R, 125V, 20A, grounding type, UL listed and labeled, nylon face, side and back wired, self-grounding, Leviton 2310 or approved equivalent.
Ground fault circuit interrupter type receptacles: Specification Grade, Self-Test type
UL listed and labeled complying with UL 943, Class A and NEMA WD-1-1.10, 125V, 20A, trip at 4-6mA within 0.25 second, and feed-thru type with integral heavy duty NEMA 5-20R receptacle arranged to protect receptacles downstream on the same circuit, manufactured by Leviton or approved equivalent
125V, 20A, grounding type, UL listed and labeled, nylon face, side and back wired, furnished with a green pigtail connected to the grounding contact, and grounding contacts electrically isolated from the mounting strap, manufactured by Leviton or approved equivalent.
voltage) service: NEMA 5-20R, 125V, 20A, self-grounding type, RFI/EMI noise filtering, UL listed 1449 Second Edition (1998) & 489; equipped with LED indicator(s) and audible alarm, manufactured by Leviton or approved equivalent.
Suppression module shall protect normal and common modes, with the following mode characteristics, and be suitable for ANSI/IEEE C62.41-1991 A, B installations:
Peak Energy240 joules minimum
Peak Current13,000A minimum
UL 3000A Test400V minimum
Response Time5 nano-seconds
Special Warranty: Manufacturer agrees to repair or replace TVSS receptacles, or replaceable surge modules (if removable),
that fail in materials or workmanship within 5 years from date of Substantial Completion.
Special purpose receptacles: Grounding type, UL listed with NEMA configurations as implied on the Drawings, manufactured by Leviton or approved equivalent.
Switches: Specification grade, rated for 120/277V, 20A, back and side wired, and UL listed and labeled, manufactured by Leviton or approved equivalent.
Pilot Light switches: 20A, 1-pole, 2-pole, 3-way switch with red neon lighted handle. Toggle shall be illuminated when the switch is in the "ON" position, manufactured by Leviton or approved equivalent.
Lighted Handle switches: 20A, 1-pole, 3-way switch with clear neon lighted handle. Toggle shall be illuminated when the switch is in the "OFF" position. Manufactured by Leviton or approved equivalent.
Key operated light switches: Same as standard light switches except toggle handle shall be operated by a factory provided key, manufactured by Leviton or approved equivalent.
Switches for use with mechanically-held, electrically-operated lighting contactors: Single pole, double throw, momentary, center off switch, rated for 120/277V, and UL listed and labeled, manufactured by Leviton or approved equivalent.
Wall box dimmers: Specification grade slider type wall box dimmers, UL listed and labeled, with Radio Frequency Interference (RFI) filters to avoid interference with electronic equipment, and a minimum wattage as indicated on the Drawings or as required for the load, manufactured by Leviton or approved equivalent.
Dual Voltage Switch Relay; A normally-open, electrically-held relay that allows a single-pole switch to control loads operating at two different voltages (e.g., 120V and 277V); listed to UL Standard 916; installed in a 2-gang outlet box, with a voltage-separating barrier and plaster ring manufactured by Lighting Controls and Designs (GR 2001 DV) or approved equivalent.
Wall switch occupancy sensors: Passive Infrared type, wall box switch, 120/277V, up to 20-minute time delay, light level sensor, 180-degree field of view, square-foot coverage as required for minimum coverage of the space per the manufacturer, UL listed and labeled, and conforms to California Title 24 Energy Code, manufactured by Leviton or approved equivalent.
Wall switch occupancy sensors: Adaptive technology type, wall box switch, 120/277V, up to 20-minute time delay, light level sensor, 180-degree field of view, square-foot coverage as required for minimum coverage of the space per the manufacturer, UL listed and labeled, and conforms to California Title 24 Energy Code, manufactured by Leviton or approved equivalent.
Ceiling mounted occupancy sensors: Passive Infrared type, 120/277V, up to 20-minute time delay, light level sensor, 360-degree field of view, square-foot coverage as required for minimum coverage of the space per the manufacturer, UL listed and labeled, and conforms to California Title 24 Energy Code, manufactured by Leviton or approved equivalent.
Ceiling mounted occupancy sensors: Dual technology type, 120/277V, up to 20-minute time delay, light level sensor, 360-degree field of view, square-foot coverage as required for minimum coverage of the space per the manufacturer, UL listed and labeled, and conforms to California Title 24 Energy Code, manufactured by Leviton or approved equivalent.
26B 1-11 SWITCH AND OUTLET COVER PLATES

Switch and outlet plates: colored, smooth nylon; by the same manufacturer as the wiring devices, wherever possible. Verify desired materials and colors with architect and/or engineer before installation. Switch plates in unfinished rooms and spaces: stamped steel, cadmium plated. Install groups of switches under one ganged-plate, usually horizontally; or, where required by details, vertically. Set all cover plates plumb, parallel, and finished flush with the wall.
26B 1-12 WEATHERPROOF COVER PLATES

For exterior unattended, wet locations or other locations as indicated: in-use NEMA 3R recessed or flush mount, UL-labeled plates molded from a clear high impact ultraviolet stabilized polycarbonate material for easy verification that cords are plugged in and that the GFCI is functioning. Back box must be suitable for conduit connecting. Coordinate back box with wall depth. Intermatic WP1000RC/HRC or equal.

For attended wet or damp locations: weatherproof cover plates, UL-listed for wet locations with cover(s) closed; die-cast aluminum or type 302 stainless steel; single-cover for switches and vertically mounted receptacles; double-cover for horizontally mounted receptacles; self-closing covers.

Cover plates: by the same manufacturer as the wiring devices; complying with NFPA 70 406.8 (A) or (B) requirements for attended or unattended use as applicable.
26B 2 ELECTRICAL SERVICE AND GROUNDING

26B 2-1 ELECTRICAL SERVICE

See drawings for type, size, voltage, phase, and other requirements.

Provide, or arrange with the serving utility for installation to provide, a recording voltmeter at the service point, on the first day the facility is open for business, for a 24-hour voltage test. If voltage and regulation are not within acceptable limits, arrange with the utility for proper voltage. Submit to the owner a report of maximum and minimum voltage and a copy of the recording voltmeter chart.
26B 2-2 CONNECTION TO SERVICE UTILITIES

Provide raceways, terminations, metering provisions, and miscellaneous equipment, as required, for electrical and telephone services for connection by the serving utility, in strict compliance with the requirements of all applicable codes and of the serving utility involved. Verify all service terminations and connection points in the field and work in conjunction with the utility involved in the installation of all services. Provide all materials and equipment required for complete utility connection but not furnished by the serving utility. Notify the utility companies involved within two weeks after notice to proceed, of all required information necessary for the utility to supply the project without delay. Pay all charges of the serving utility for the electrical service(s).
26B 2-3 GROUNDING

Permanently and effectively ground and bond the electrical installation in a thorough and efficient manner, and in conformance, at a minimum, with NFPA 70, or these documents, where they exceed code requirements. Use bare or insulated conductors, as specified herein, and other materials indicated on the drawings.
26B 3 DISTRIBUTION AND CONTROL EQUIPMENT
26B 3-3 SERVICE ENTRANCE CIRCUIT BREAKER – ENCLOSED, 100A – 6000A

Enclosed circuit breaker: Square D micro-logic and thermal magnetic type or equal by Siemens, Cutler-Hammer, or General Electric; rated at 100% of the ampere size indicated, number of phases and other ratings as indicated on the drawings; permanently labeled as suitable for use as service entrance equipment; integral ground fault relay and operator where indicated or required by NFPA 70; interlocked cover and an engraved nameplate for identification. Provide with integral and separate neutral and ground assemblies, suitable for the sizes of conductors indicated. Do not double-lug any terminations not specifically listed as suitable for more than one conductor. Enclosure: NEMA design suitable for the environment in which installed or as indicated.
26B 3-5 POWER DISTRIBUTION PANELBOARDS - CIRCUIT BREAKER, 1200A BUS OR SMALLER

Panelboards: Square D type I-Line, Siemens types S4 or S5, Cutler-Hammer type Pow-R-Line 4, or General Electric types CCB or AV-1; dead front distribution panelboards with number and sizes of circuit breakers as indicated on the drawings; where installed as service entrance equipment, permanently label as suitable for use as service entrance equipment; fully-rated for the available fault current as required unless specifically indicated otherwise on the drawings; hinged, lockable front door that covers the circuit breaker handles. Circuit breakers: quick-make, quick-break, indicating type; engraved nameplates for circuit identification of each circuit breaker. Any feeder circuit breakers 800 amps and larger and all main circuit breaker(s) shall be rated at 100% of the ampere size indicated. Provide a typewritten card directory indicating exactly what each circuit breaker controls on the inside face of the door for circuit identification.
26B 3-6 MODULAR METER CENTERS

Modular meter centers: Square D type EZ Meter-Pak, or approved equal by Siemens, Cutler-Hammer, or General Electric, complete with integral bus, individual current limiting circuit breaker for each module, meter sockets compatible with utility company meters, NEMA rated construction, and main lugs or disconnect as indicated on the drawings. Provide centers fully-rated for the available fault current as required unless specifically indicated otherwise on the drawings. All main circuit breaker(s) shall be rated at 100% of the ampere size indicated.
26B 3-7 GENERAL PURPOSE PANELBOARDS

Panelboards: Square D type NQOD or NF, as applicable, based on voltage and ampere ratings and required short-circuit interrupting ratings as required unless otherwise indicated on the drawings, or approved equal by Siemens, Cutler Hammer, or General Electric; complete with bolt-on thermal magnetic, molded case circuit breakers assembled in a dead-front finished cabinet containing a typewritten card directory indicating exactly what each circuit breaker controls; main circuit breaker shall be rated at 100% of the ampere size indicated, fully-rated and with the integrated short circuit current ratings as required. Plug-in type breakers will not be acceptable. All two and three pole breakers: common trip type. Breakers used as switches for 120v or 277v lighting circuits: approved for the purpose and marked "SWD". Breakers used for the protection of HVAC and refrigeration equipment: HACR type.
26B 3-11 DISCONNECT (SAFETY) SWITCHES

Disconnect (safety) switches: Square D, Siemens, Cutler Hammer, or General Electric fused or non-fused (as indicated on drawings or required) NEMA KS1, heavy duty, externally operated, visible-blade safety switches; NEMA enclosure type indicated on the drawings or suitable for the environment in which installed. Based on fusible switch and fuse sizes indicated, include class R, J, or I fuse provisions as applicable.

Where indicated, provide fusible switches permanently labeled as suitable for use as service entrance equipment, with integral and separate neutral and ground assemblies, suitable for the sizes of conductors indicated. Do not double-lug any terminations not specifically listed as suitable for more than one conductor.

Provide switches where not furnished with the starting equipment, at all other points required by NFPA 70, and where indicated on the drawings.
26B 3-12 SURGE-PROTECTIVE DEVICES (SPD)

Provide SPD labeled in accordance with the latest editions of UL 1283 and 1449, including the highest fault current of section 37.3 (UL recognized for integral).

SPD shall meet or exceed the following criteria:

UL 1449 ratings: the system performance ratings shall be based on the UL 1449 listing ratings for IEEE C62.41 category C3 impulse waveforms of 6kv 1.2 x 50 microseconds, 3ka, 8 x 20 microsecond waveshapes. The maximum UL 1449 listed surge rating for each and/or all of the specified protection modes shall not be exceeded.

Maximum surge current capability (single pulse rated) per phase shall be:

Service entrance switchboards, switchgear: 240ka.

Distribution panelboards, panelboards used for service entrance & MCC: 120ka.

Branch panelboards: 80ka (non-modular is acceptable).

UL 1449 listed and recognized component suppression voltage ratings shall not exceed the following:

VOLTAGE	L-N	L-G	N-G
208y/120	330v	330v	330v
480y/277	700v	700v	700v

SPD shall have a minimum EMI/RFI filtering of –50db at 100khz.

Indicators: the SPD shall use LED indicators that provide indication of suppression component failure in all protection modes including N-G, as well as optically isolated N/C dry contacts for remote monitoring.

Transient counter: a transient voltage surge counter shall be included to totalize transient voltage surges which deviate from the sine wave envelope by more than 125v. The readout shall be at least a six digit LCD located on the unit's hinged front cover. The counter shall be equipped with a battery back-up to retain memory when power is not present. A push-button switch on the display's face-plate shall be provided for manual counter reset.
Manufacturers: Cutler hammer, General Electric, Siemens, Square D, APT, Surge Suppression Incorporated.

Switchboard, switchgear, panelboard and MCC internally mounted SPD: factory installed, UL- labeled by, and at the facility of the electrical distribution equipment manufacturer.

Externally mounted SPD (only allowed where noted on the construction documents): install with conductors as short and straight as possible. Twist the SPD input conductors together to reduce input conductor inductance. Follow the SPD manufacturer's recommended installation practices and comply with all applicable codes.

Warranty: the manufacturer shall provide a minimum full five year parts, labor, travel warranty from date of substantial completion against any part failure, excluding breakers, when installed in compliance with manufacturer's written instructions, UL listing requirements, and all applicable national or local electrical codes. Manufacturer shall make available local, national field engineering service support. Where direct factory employed service engineers are not locally available, travel time from the factory or nearest dispatch center shall be stated.

Thoroughly factory test the specified system before shipment. Testing of each system shall include, but shall not be limited to, quality control checks, dielectric voltage withstand tests at twice rated voltage plus 1000v per UL requirements, and operational and calibration tests.

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PROFESSIONAL ENGINEER
10-25-2021

HP ENGINEERING INC.
F-18023

HP ENGINEERING
PROJECT NO. 21-64T
100 % COMPLETE
HP ENGINEERING INC.
142 HOWELL STREET,SUITE 170
DALLAS, TX 75207
(479) 490-2500
F-18023

PROJECT INFORMATION:

AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 Elizabeth St.
Texarkana, TX 75503

PROJECT NUMBER: 21-64T
ISSUE DATE: 10-25-2021
REVISIONS:

SHEET NAME:

ELECTRICAL SPECIFICATIONS

SHEET NUMBER:

E501

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26B 4 LIGHT FIXTURES, LAMPS AND BALLASTS

26B 4-1 LIGHT FIXTURE LOCATIONS

Light fixtures shown on the electrical drawings represent general arrangements only. Refer to architectural drawings for more exact locations. Coordinate location with all other trades before installation to avoid conflicts. Coordinate light fixture locations in mechanical rooms with final installed piping and ductwork layouts.

26B 4-2 LIGHT FIXTURES

Provide light fixtures as scheduled on drawings, including all lamps, all necessary accessories, material and labor to securely hang, clean, and make light fixtures completely ready for use. Provide: all hangers, supports, and miscellaneous hardware required to install light fixtures; proper trim to fit each ceiling condition actually encountered; additional tie wires connected to structure to conform to seismic requirements where required by the applicable building code.

Packaging of light fixtures will not be allowed. Only those luminares listed in the light fixture schedule, or approved in accordance with substitutions of these specifications, will be accepted. Where the light fixture schedule indicates an allowance for a specific light fixture, the price is a contractor price. Include all additional costs for freight, lamps, and installation of light fixture and lamps.

Install all linear light fixtures located in areas without ceilings immediately below the roof-framing members, or suspended from chain hangers suitable in length to provide the indicated mounting height.

Through wiring of recessed light fixtures, in suspended ceilings, is not permitted. Connect each light fixture by a whip to a junction box. Provide cable whips of sufficient lengths to allow for relocating each light fixture within a 5-foot radius of its installed location, but not exceeding 6 feet in unsupported lengths.

26B 4-3 EMERGENCY LIGHTING UNITS AND EXIT SIGNS

Description: self-contained units complying with UL 924.

Battery: sealed, maintenance-free, lead-acid type. The batteries shall be of suitable rating and capacity to supply and maintain at not less than 87 1/ 2 percent of the nominal battery voltage for the total lamp load associated with the unit for a period of at least 1 1/ 2 hours, or the unit equipment shall supply and maintain not less than 60 percent of the initial emergency illumination for a period of at least 1 1/ 2 hours.

Charger: fully automatic, solid-state type with sealed transfer relay.

Operation: relay automatically turns lamp on when power supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
Test push button: push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
LED indicator light: indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.

Integral time-delay relay: holds unit on for fixed interval of 15 minutes when power is restored after an outage
Integral self-test: factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and flashing red LED.

26B 4-4 LAMPS

Provide lamps as indicated on the drawings for all light fixtures; or, if not indicated, as recommended by the light fixture manufacturer. In all cases, lamps shall be compatible with the specified light fixture. Acceptable lamp manufacturers: General Electric, Osram/Sylvania, Philips, or Venture.

All fluorescent lamps shall be minimum of 4100 degrees k, with a minimum color-rendering index of 80, unless noted or directed otherwise.

Incandescent lamps: type and wattage as shown on the drawings; rated 130v unless otherwise scheduled or specified.

26B 4-5 BALLASTS

Fluorescent ballasts: low heat type; thermally protected against overheating; ETL-CBM, class P to meet all requirements of section 410-73 (E) of the NFPA 70 as a minimum; comply with the national ballast energy law; 90-percent power factor or greater; sound levels not exceeding class A ambient noise levels. Ballasts in indoor locations shall have disconnecting means either internal or external to the luminaire.

Indoor Fluorescent Ballasts: electronic type suitable for operation of specified lamps; total harmonic distortion less than 20 percent; frequency of operation of 20 khz or greater with no visible flicker; line transient withstand ratings as defined in ANSI/IEEE C62.41, category A; manufacturers: Equal to Advance Rel/vel series.

Exterior and Low Temperature Fluorescent Ballasts: shall be electronic type suitable for operation of specified lamps; shall have a total harmonic distortion less than 20 percent; shall have a frequency of operation of 20 khz or greater and operate with no visible flicker; shall withstand line transients as defined in ANSI/IEEE C62.41, category A; shall have a minimum starting temperature of –20 degrees F; and shall be equal to Advance Rel/vel series.

Compact Fluorescent Ballasts: shall be thermally protected against overheating; shall be class P; shall have a minimum 90 percent power factor; sound levels shall not exceed class a ambient noise levels; and shall be low heat type. All ballasts shall be equal to those by Advance.

High-Intensity Discharge (HID) ballasts (includes High Pressure Sodium (HPS) and Metal Halide (MH)): shall have a power factor greater than 90 percent; comply with underwriters laboratory (UL) 1029; provide normal operation and light output with the input voltage is within 10 percent of nominal ballast rating (except HPS lamps smaller than 250w which must have the input voltage within +5 percent); shall have a minimum starting temperature of –20 degrees F. Provide encapsulated and remote types where indicated on the drawings.

Emergency Fluorescent Ballasts: shall be as noted on the fixture schedule or elsewhere on the drawings.

26B 4-6 PARKING LOT LIGHTING

Provide all components of the outdoor lighting system, including pole assemblies as detailed on the drawings and described below. All material furnished shall be of the best quality and workmanship, and the manufacturer may be required to furnish satisfactory evidence of the ability to supply the material in accordance with the drawings and specifications.

Poles and light fixtures shall be as noted on the drawings. If contractor desires to substitute other than the specified manufacturer(s), refer to article "substitutions" in this division, for requirements. No alternate manufacturers will be considered for approval without this prior submittal.

Furnish all poles with hand holes and no less than four high-strength steel anchor bolts for pole mounting. Each anchor bolt shall be threaded at the top, fitted with hexagon nuts, and shall have an "l" bend on the bottom of the bolt. All anchor bolts and nuts shall be hot-dip galvanized. All other small hardware required (bolts, nuts, washers, shims, etc.) Shall be galvanized. Provide pole finishes as noted on the drawings.

26B 5 MISCELLANEOUS ELECTRICAL

26B 5-1 WIRING OF EQUIPMENT

Provide all raceways and power wiring for all applicable Divisions equipment requiring electrical connections, including, but not limited to, pumps, water heaters, and HVAC equipment, and all line-voltage control and interlock wiring not provided under other Divisions. Connect per manufacturers' wiring diagrams. Coordinate with applicable Divisions for disconnects furnished with equipment, and provide all disconnect switches as required. After installing wiring, verify that each motor load has the correct phase rotation.

Verify the actual "maximum overcurrent protection" (MOCP) device ratings and "minimum circuit ampacity" (MCA) conductor sizing for mechanical equipment from the equipment nameplate. Base electrical installations on actual required amperages, which may vary somewhat from the conductor and equipment sizes shown on the drawings; however, in no case, reduce the size of conductors indicated on the drawings without authorization from the engineer. Provide properly sized electrical wiring and equipment without extra cost to the owner. Notify the engineer of all changes required in the electrical installation due to equipment variances so that the effects on feeders, branch circuits, panelboards, fuses and circuit breakers can be checked prior to purchasing and installation. Be responsible for coordinating with applicable Divisions to verify the actual ampacities and correct sizes of all conductors and overcurrent protective devices for all equipment, and correct overload heaters for all motors, when starters are provided under Division 26.

26B 5-2 WIRING OF THERMOSTATS, TIME AND TEMPERATURE CONTROLS

Provide all raceways, power wiring, and line-voltage control and interlock wiring not provided under other Divisions, for all thermostats, temperature control devices, and controls, including, but not limited to, night-stats, water heater interlocks, time switches and override timers. See mechanical drawings for locations and temperature control diagrams. Low-voltage conductors for thermostats and temperature control system may be run exposed above finished accessible ceilings, if approved and listed for this purpose, but shall be installed in conduit within walls and where exposed in the work areas.

26B 5-3 TELEPHONE SYSTEM PROVISIONS

Provide incoming telephone service raceways as indicated on drawings or as required by the serving telephone company. Provide 3/4-inch thick plywood board, fire-retardant-treated and stamped FRT, securely anchored to the wall, at the location and of the size as indicated on the drawings.
Provide flush mounted telephone outlet boxes with ¾ -inch EMT stub-up concealed to accessible ceiling space at locations as indicated on the drawings.

26B 5-4 DATA SYSTEM PROVISIONS

Provide flush mounted data outlet boxes with ¾ -inch conduit stub-up concealed to accessible ceiling space at locations as indicated on the drawings.

26B 5-5 TIME SWITCHES

Time switches: electronic digital astronomical, type as indicated, with manual bypass switch, NEMA enclosure suitable for the environment installed; number and types of contacts, sequence, and voltage as indicated on the drawings, or as required, based on the time switch function and the number of branch circuits or contactors controlled. Provide wiring to photocells, contactors, relays or other control points as required. Manufacturers: Intermatic, Paragon or Tork.

26B 5-6 PHOTO CONTROL

The Photo Control Shall:

Provide automatic switching for lighting loads using a thermal design with built in delay to ensure that the controlled lighting does not switch off due to ambient light or lightning striking the photocell.

Have a rating based on UL testing at 50% power factor for ballast loads, be UL listed, and meet all applicable agency requirements

Be stem-mounting type with all necessary mounting hardware and instructions; have a housing constructed of high impact poly-carbonate; photo control components consisting of a metal film resistor, dual temperature compensating bi metal blades, snap action contact blades, chemically treated/polymer encapsulated cadmium sulfide photocell and silver alloy contacts to ensure reliable 5 year manufacturer warranted operation. Photo control shall be 100% factory tested for function within manufacturer's specified light levels.

Be from the same manufacturer of and totally compatible with the time switches specified above.
22,000a at 240v maximum
as indicated on the drawings
Enclosures: NEMA rated for environment installed in or as indicated on the drawings.
Coil voltage: 120v AC or as indicated on the drawings.
Mechanically-held type, control interface shall be 2-wire input module with 3-wire output or as indicated on the drawings; Square D class 8903 LX or equivalent of General Electric, Siemens, Cutler Hammer or Asco.

26B 5-9 MISCELLANEOUS EQUIPMENT AND CONNECTIONS

Provide all wiring and connections to equipment furnished by others, including, but not limited to, bakery equipment, deli equipment, meat room equipment, kitchen equipment, checkstand and scanners, exhaust hood fire extinguishing system, etc. Install scan system electronic communication cable in underfloor duct (cable provided by others).
Provide all raceways, wiring and related connections of devices to energy management system that are not the responsibility of Division 23.

All wiring and connections of exit door alarms.
END OF SECTION 26B

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10-25-2021

HP ENGINEERING INC.
F-18023

HP ENGINEERING
PROJECT NO. 21-64T
100 % COMPLETE

HP ENGINEERING INC.
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(479) 490-2500

F-18023

PROJECT INFORMATION:

AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 Elizabeth St.
Texarkana, TX 75503

PROJECT NUMBER: 21-64T
ISSUE DATE: 10-25-2021
REVISIONS:

SHEET NAME:

ELECTRICAL SPECIFICATIONS

SHEET NUMBER:

E502

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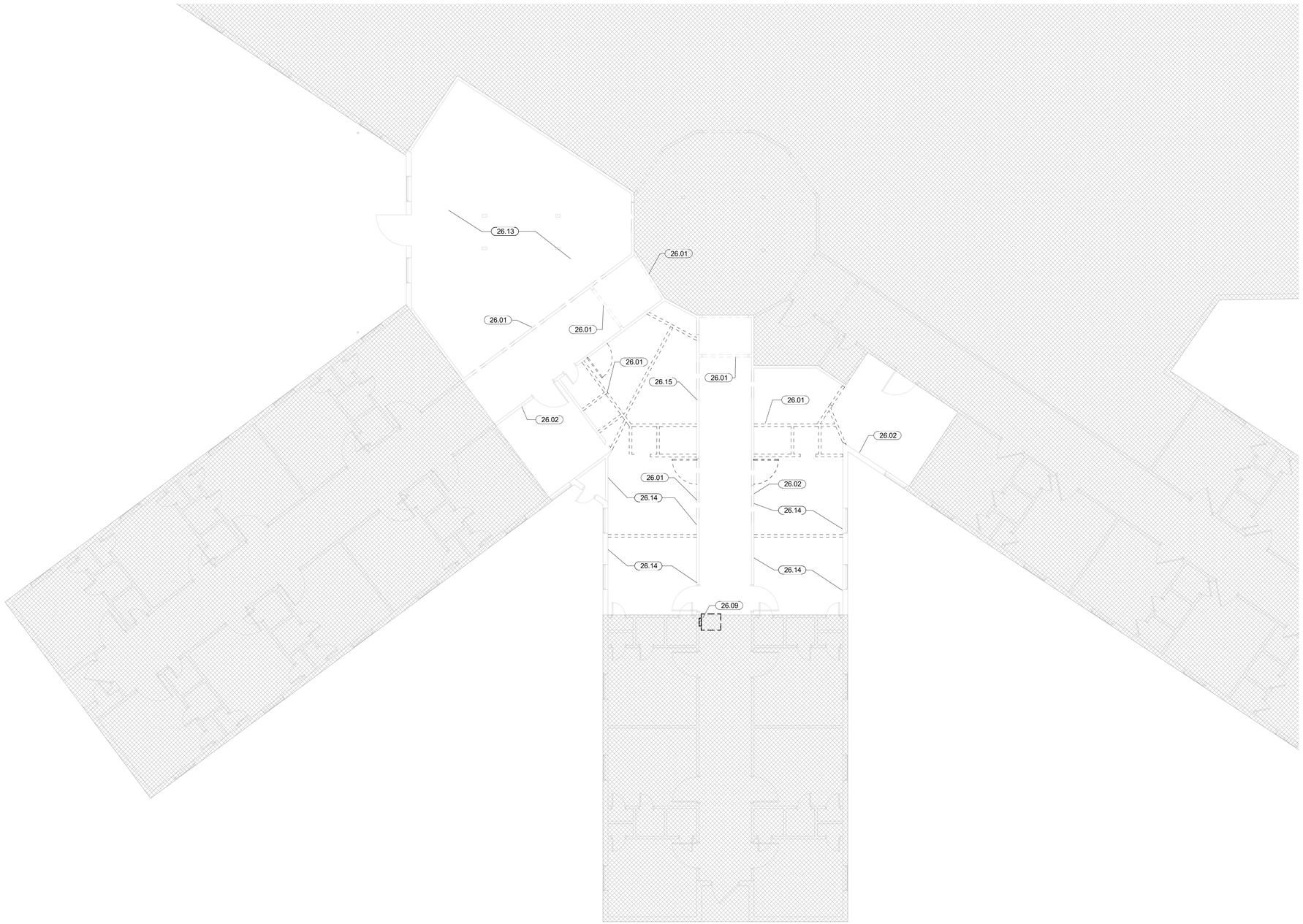

1 ED101 LEVEL 1 ELECTRICAL DEMOLITION PLAN
1/8" = 1'-0"

DEMOLITION SHEET NOTES

A	SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR PHASES OF DEMOLITION AND CONSTRUCTION. COORDINATE WITH GENERAL CONSTRUCTION.
B	DISCONNECT AND REMOVE ALL ELECTRICAL DEVICES AND LIGHTING FIXTURES IN DEMOLITION AREAS UNLESS NOTED OTHERWISE.
C	DISCONNECT AND REMOVE ALL ELECTRICAL DEVICES IN WALLS TO BE DEMOLISHED. WALLS TO BE DEMOLISHED ARE SHOWN DASHED. DISCONNECT AND REMOVE ASSOCIATED CONDUIT AND WIRE BACK TO LAST REMAINING DEVICE. FURNISH AND INSTALL CONDUIT AND WIRE AS NECESSARY FOR CONTINUITY OF CIRCUIT(S) TO ANY EXISTING DEVICES TO REMAIN. COORDINATE AND VERIFY REQUIREMENTS WITH NEW WORK IN AREA.
D	FURNISH AND INSTALL CONDUIT AND WIRE AS NECESSARY FOR CONTINUITY OF ANY FEEDERS OR BRANCH CIRCUITS ORIGINATING OUTSIDE THE DEMOLITION AREA THAT SERVES ANY ELECTRICAL EQUIPMENT OR DEVICES TO REMAIN AFTER DEMOLITION. MODIFY OR REPLACE AS REQUIRED.
E	FURNISH AND INSTALL CONDUIT AND/OR COMMUNICATIONS/DATA WIRING AS NECESSARY FOR CONTINUITY OF ANY WIRING ORIGINATING OUTSIDE THE DEMOLITION AREA THAT SERVES ANY COMMUNICATIONS/DATA EQUIPMENT OR DEVICES TO REMAIN AFTER DEMOLITION. MODIFY OR REPLACE AS REQUIRED.
F	DISCONNECT AND REMOVE LIGHT SWITCHES IN DEMOLITION AREAS AS NECESSARY TO ACCOMMODATE NEW DOOR CONFIGURATIONS.
G	DISCONNECT AND REMOVE ANY EXISTING ELECTRICAL DEVICES AND BACK BOXES AS NECESSARY WHERE NEW WALL CONSTRUCTION WILL INTERSECT AN EXISTING WALL. FURNISH AND INSTALL CONDUIT AND WIRE AS REQUIRED FOR CONTINUITY OF CIRCUIT(S).
H	FURNISH AND INSTALL BLANK COVER PLATES OVER ALL EXISTING UNUSED OPENINGS.

KEYNOTES

26.01	WALL TO BE DEMOLISHED. ELECTRICAL CONTRACTOR TO REMOVE ALL CONDUIT AND WIRE TO BACK TO SOURCE PANEL.
26.02	ALL LIGHTING FIXTURES, CONTROLS AND WIRING IN THIS AREA TO BE REMOVED. ELECTRICAL CONTRACTOR TO REMOVE ALL CONDUIT AND WIRE BACK TO NEAREST J-BOX LOCATED ABOVE CEILING. PREP J-BOX AND CONDUIT FOR REUSE.
26.09	LOCATION OF EXISTING PANEL TO BE DEMOLISHED AND UPGRADED TO A 42 POLE PANEL. CONTRACTOR TO REMOVE ALL CONDUIT AND WIRE BACK TO NEAREST J-BOX. PROVIDE A NEW JUNCTION BOX ABOVE CEILING AND SIZE PER NEC REQUIRMENTS. ALL EXISTING CIRCUITS SERVED FROM THE DEMOLISHED PANEL TO BE RECONNECTED TO THE NEW PANEL IN NEW CONSTRUCTION PHASE. PREP ALL CONDUIT AND WIRE FOR REUSE.
26.13	ALL EXISTING LIGHTING FIXTURES IN THIS AREA TO BE TEMPORARILY REMOVED, CLEANED AND PREPPED FOR REUSE. EXISTING WIRING AND CONTROLS TO REMAIN FOR REUSE.
26.14	(2) EXISTING SURFACE MOUNTED LIGHT FIXTURES IN THIS ROOM TO BE TEMPORARILY REMOVED, CLEANED AND PREPPED FOR REUSE. EXISTING WIRING AND CONTROLS TO REMAIN FOR REUSE.
26.15	EXISTING SURFACE MOUNTED LIGHT FIXTURES IN THIS ROOM TO BE TEMPORARILY REMOVED, CLEANED AND PREPPED FOR REUSE. EXISTING WIRING AND CONTROLS TO REMAIN FOR REUSE.

GC TO EXERCISE CAUTION ON DEMOLITION AND ANY WORK ABOVE CEILING TO NOT DAMAGE EXISTING FIBER OPTIC CABLE REQUIRED BY OWNER OF THE OCCUPIED BUILDING.

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PROJECT NUMBER: 21-64T
ISSUE DATE: 10-25-2021
REVISIONS:

SHEET NAME:

LEVEL 1 ELECTRICAL DEMOLITION PLAN

SHEET NUMBER:

ED101

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GENERAL PLUMBING NOTES

1	THE ENTIRE PLUMBING SYSTEM SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE INTERNATIONAL/ARKANSAS PLUMBING CODE REGULATIONS AND LOCAL PLUMBING INSPECTOR.
2	IT IS THE PLUMBING CONTRACTOR'S RESPONSIBILITY TO CORRDINATE WITH THE SITE CONTRACTOR TO CONFIRM THAT THE INVERT AND LOCATION OF THE SANITARY SERVICE IS COMPATIBLE WITH THE SITE UTILITIES PRIOR TO BEGINNING WORK.
3	THE PIPING INDICATED ON THESE PLANS ARE DIAGRAMMATICAL. ALL WORK SHALL BE COORDINATED WITH ALL OTHER TRADES PRIOR TO INSTALLATION. CONTRACTOR SHALL COORDINATE ROUTING OF ALL PIPING WITH EXISTING CONDITIONS AND SHALL PROVIDE ANY NECESSARY OFFSETS, REROUTING, TEES, ELBOWS, ETC. REQUIRED FOR A COMPLETE AND COORDINATED INSTALLATION.
4	THE CONTRACTOR SHALL OBTAIN AND PAY ALL FEES RELATED TO PERMITTING, INSPECTIONS, TAP-ON FEES, ETC.
5	THE CONTRACTOR SHALL COORDINATE ANY PLUMBING OR PIPING SYSTEM SHUTDOWN WITH THE OWNER 48 HOURS IN ADVANCE.
6	CONTRACTOR SHALL COORDINATE AND PROVIDE ALL NECESSARY PIPING & PLUMBING FITTINGS, PIPING, MISCELLANEOUS ITEMS REQUIRED FOR A COMPLETE INSTALLATION OF ALL PLUMBING RELATED ITEMS.
7	DOMESTIC WATER AND SEWER LOCATED OUTSIDE OF FOOTING SHALL MAINTAIN A MINIMUM OF 10' SEPARATION UNLESS WRITTEN PERMISSION IS OBTAINED FROM LOCAL AUTHORITIES AND/OR PROPER CONTAMINATION PROVISIONS PER LOCAL CODE HAVE BEEN MET.
8	ALL DOMESTIC WATER, NATURAL GAS, DEIONIZED WATER, CARBON DIOXIDE, COMPRESSED AIR, AND NITROGEN PIPING SHOWN IS ABOVE CEILING, EXPOSED OVERHEAD, AND WITHIN WALLS UNLESS OTHERWISE NOTED. WATER HAMMER ARRESTORS SHALL BE INSTALLED AT DISHWASHERS, WASHING MACHINES, SUPPLY BOXES, AND QUICK CLOSING VALVES NOT LISTED. INSTALL WHA-1 AS CLOSE TO QUICK CLOSING VALVE AS POSSIBLE PER MANUFACTURER'S RECOMMENDATIONS. ISOLATION VALVES SHALL BE INSTALLED ON ALL SUPPLY FIXTURE GROUPS AND HOT WATER BALANCING VALVES.
9	ALL SANITARY, GREASE, LAB, AND ACID WASTE PIPING SHOWN IS BELOW SLAB, BELOW FLOOR, OR WITHIN WALLS UNLESS OTHERWISE NOTED. ALL SANITARY VENT PIPING SHOWN IS ABOVE CEILING, EXPOSED OVERHEAD, OR WITHIN WALLS UNLESS OTHERWISE NOTED.
10	FROST PROOF HOSE BIBBS AND SUPPLY PIPING SHALL BE INSTALLED ON THE INSIDE OF THE INSULATION. SEAL SHEATHING PENETRATION TO PREVENT AIR FROM REACHING THE VALVE.
11	FLOOR DRAIN CONNECTION SIZE TO BE THE SAME SIZE AS THE DRAIN LINE IT CONNECTS UNLESS NOTED OTHERWISE. IF SIZE IS NOT INDICATED ON DRAWINGS REFER TO PLUMBING ROUGH-IN SCHEDULE FOR PROPER SIZE.
12	FLUSH CONTROLS FOR HANDICAPPED WATER CLOSETS ARE TO BE MOUNTED TO THE OPEN SIDE OF THE TOILET AREAS.
13	THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL UNDER SLAB PIPING WITH EXISTING STRUCTURAL FOUNDATIONS. UNDERGROUND UTILITY LOCATIONS SHALL BE VERIFIED PRIOR TO ANY WORK BEING PERFORMED. CONTRACTOR SHALL REPAIR OR REPLACE ALL PIPING NOT IN PROPER WORKING ORDER OR DAMAGED DURING INSTALLATION OF THE NEW UNDERGROUND PIPING.
14	ALL PIPING PENETRATIONS THROUGH NEW, EXISTING WALL, OR FLOOR SHALL BE SEALED TO EQUAL THE RATING OF THE NEW, EXISTING WALL OR FLOOR.
15	THE PLUMBING SYSTEM SHALL BE TESTED AS REQUIRED BY LOCAL CODE OR BY THE REQUIREMENTS OF THE LOCAL PLUMBING INSPECTOR.
16	THE ENTIRE DOMESTIC WATER SYSTEM (EXISTING/NEW) SHALL BE DISINFECTED IN ACCORDANCE TO THE LOCAL CODE & HEALTH DEPARTMENT REQUIREMENTS.
17	FINISHED FLOOR ELEVATION (F.F.E.) SHALL BE 0.00' FOR CALCULATION PURPOSES ONLY, UNLESS NOTED OTHERWISE.
18	THE BACKFLOW PREVENTION DEVICE SHALL BE INSTALLED PER LOCAL CODE & PER AUTHORITY HAVING JURISDICTION REQUIREMENTS. NON-LEAD TYPE ONLY.
19	ALL PIPING ON ROOF SHALL BE ANCHORED TO STEEL RIB FASTENERS APPROVED BY THE ROOF MANUFACTURER. INSTALL ANCHORS PER MANUFACTURERS RECOMMENDATION.
20	ALL PLUMBING & PIPING SYSTEMS SHALL BE SUPPORTED AS REQUIRED BY THE LOCAL CODE REQUIREMENTS AND PER MANUFACTURER'S RECOMMENDATIONS.
21	ALL VENT THRU ROOF (VTR'S) PENETRATIONS INDICATED ON PLANS ARE PRELIMINARY. FINAL LOCATIONS SHALL BE COORDINATED WITH ALL TRADES. ALL VTR'S SHALL BE A MINIMUM OF 10'-0" FROM ALL FRESH AIR INTAKE OPENINGS.
22	ANY PVC PIPE PENETRATING A FIRE RATED ASSEMBLY SHALL BE EXTERNALLY SLEEVED WITH STEEL, FERROUS, OR COPPER MATERIALS, SECURELY FASTENED TO THE FIRE RATED ASSEMBLY. ANY SPACE BETWEEN THE SLEEVE AND THE FIRE RATED ASSEMBLY PENETRATED SHALL BE PROTECTED USING MATERIAL THAT CONFORMS TO ASTM E 814 OR UL 1479, SUCH AS FIRE STOP FS-1900 OR FLAME STOPPER 5000.
23	CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS FOR DISHWASHER, WASHING MACHINE, REFRIGERATOR, ETC.
24	PROVIDE SHUT-OFF VALVES FOR PROPER OPERATION AND SERVICING OF DOMESTIC WATER DISTRIBUTION SYSTEM. LOCATION SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING: AT EACH FIXTURE GROUP, AT EACH BRANCH TAKE-OFF FROM MAINS AND AT THE BASE OF EACH RISER. COORDINATE WITH ARCHITECTURAL PLAN FOR ACCESS DOOR LOCATIONS.
25	TEMPERED WATER, NOT EXCEEDING A MAXIMUM OF 110° F, SHALL BE DELIVERED FROM PUBLIC HANDWASHING FACILITIES THROUGH AN APPROVED WATER TEMPERATURE LIMITING DEVICE THAT CONFORMS TO ASSE 1070.
26	VALVES SHALL BE LOCATED 6" ABOVE ACCESSIBLE CEILING WHEN AT ALL POSSIBLE AND SHALL BE CLEAR OF ANY OBSTRUCTIONS FROM OTHER TRADES. MAINTENANCE SHALL BE ABLE TO ACCESS VALVES WITH STANDARD LADDER. SHOULD LOCATION NOT BE APPLICABLE CONTRACTOR SHALL PROVIDE A CONTROL CHAIN AND/OR ARM.
27	PLUMBING CONTRACTOR SHALL PROVIDE AS AN ADD ALTERNATE BID: HAVE A FLOW TEST DONE FOR THE DOMESTIC WATER TO DETERMINE IF A BOOSTER PUMP WILL BE REQUIRED. IF ONE IS REQUIRED, CONTRACTOR SHALL HAVE ONE SIZED AND PROVIDE IT FOR THE PROJECT. COORDINATE ELECTRICAL REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR.
28	REGULATORS INSTALLED ON THE INTERIOR OF THE BUILDING SHALL BE VENTED TO THE EXTERIOR PER LOCAL AND STATE CODES.
29	IT IS THE PLUMBING CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE SITE CONTRACTOR TO CONFIRM THAT THE INVERTS AND LOCATIONS OF THE BUILDING UTILITIES ARE COMPATABLE WITH THE SITE UTILITIES PRIOR TO BEGINNING WORK.
30	CONTRACTOR SHALL PROVIDE A PRESSURE REDUCING VALVE (PRV-1) SHOULD THE WATER PRESSURE EXCEED 75 PSI. CONTRACTOR SHALL CONFIRM WITH ON SITE CONDITIONS AND LOCAL UTILITY.
31	PROVIDE BALANCING VALVES FOR PROPER OPERATION AND PRESSURE OF DOMESTIC WATER DISTRIBUTION SYSTEM. LOCATION SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING: AT EACH FIXTURE GROUP, AT EACH BRANCH TAKE-OFF FROM MAINS AND AT THE EACH RISER. INSTALL PER MANUFACTURE'S REQUIREMENTS.
32	PROVIDE AUTOMATIC SHUT-OFF VALVE ON GAS LINE FEEDING KITCHEN EQUIPMENT BELOW TYPE-1 HOOD PRIOR TO ANY TAKE OFF. VALVE SHALL BE CONNECTED TO FIRE ALARM SYSTEM.
33	PROVIDE DRAIN PANS FOR ALL WATER LINES CROSSING OVER "IT" CLOSET/ROOM. ROUTE DRAIN PAN(S) TO NEAREST APPROVED WASTE RECEPTICAL.
34	PROVIDE DRAIN PANS FOR ALL OVER HEAD DRAIN PIPING CROSSING OVER KITCHEN. ROUTE DRAIN PAN(S) TO NEAREST APPROVED WASTE RECEPTICAL.
35	ANY LINE VOLTAGE WIRING THAT IS RUN BY THE PLUMBING CONTRACTOR SHALL BE INSTALLED IN ACCORDANCE WITH THE ELECTRICAL PLANS, NOTES, AND SPECIFICATIONS.
36	INSULATION JACKET SHALL BE PROVIDED WHEN PIPING INSULATION IS EXPOSED.
37	THE PLUMBING CONTRACTOR SHALL INSPECT EXISTING CONDITIONS PRIOR TO BEGINNING WORK. FIELD VERIFY SIZE AND LOCATION OF ALL EXISTING SERVICES TO BE TIED INTO.
38	CAMERA SURVEY ALL EXISTING SANITARY SEWER LOCATIONS AND INVERTS BELOW SLAB OR GRADE. NOTIFY GENERAL CONTRACTOR OF ANY POTENTIAL CONFLICTS WITH WORK PRIOR TO BEGINNING CONSTRUCTION.
39	THE EXISTING PIPING INDICATED ON THESE PLANS SHALL BE VERIFIED IN THE FIELD FOR EXACT LOCATIONS, QUANTITY, AND PIPE SIZES.

GENERAL MECHANICAL SYMBOLS

- REVISION NUMBER - SHOWN ON PLANS
- POINT WHERE NEW CONNECTS TO EXISTING
- NUMBER OF DETAIL ON SHEET / NUMBER OF SHEET WHERE DETAIL APPEARS
- KEYNOTE
- CONTINUATION SYMBOL
- ROOM NAME AND NUMBER (Room 4)
- ITEM TO BE DEMOLISHED
- AREA NOT IN CONTRACT
- PIPE SIZE TAG (DIAMETER) (2")
- ABOVE GROUND PIPING
- PIPE SLOPE TAG (1/8" / 12" SLOPE)
- BELOW GROUND PIPING
- PIPE INVERT ELEVATION TAG (INVERT: -105' - 1")
- EXISTING PIPE TAG ((E))
- PIPING BEING DEMOLISHED

ABBREVIATIONS

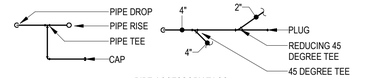
Ø	ROUND	LVR	LOUVER
ABV	ABOVE	LWT	LEAVING WATER TEMPERATURE
AC	AIR CONDITIONING	M/A	MIXED AIR
AD	AREA DRAIN	MAX	MAXIMUM
ADD	ADDENDUM	MBH	ONE THOUSAND BTU PER HOUR
AFF	ABOVE FINISHED FLOOR	MCF	ONE THOUSAND CUBIC FEET
AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY	MD	MOTORIZED DAMPER
ALT	ALTERNATE	MECH	MECHANICAL
AP	ACCESS PANEL	MFR	MANUFACTURER
ARCH	ARCHITECT/ARCHITECTURAL	MIN	MINIMUM
BFF	BELOW FINISHED FLOOR	MISC	MISCELLANEOUS
BLW	BELOW	MTR	MOTOR
BTU	BRITISH THERMAL UNITS	MU/A	MAKE-UP/AIR
BTUH	BRITISH THERMAL UNITS PER HOUR	NC	NOISE CRITERIA
CAP	CAPACITY	NC	NORMALLY CLOSED
CB	CATCH BASIN	NIC	NOT IN CONTRACT
CFM	CUBIC FEET PER MINUTE	NO	NUMBER
CLG	CEILING	NO	NORMALLY OPEN
CO	CLEAN OUT	NTS	NOT TO SCALE
CW	COLD WATER	O	OXYGEN
D	DEGREE	O/A	OUTSIDE AIR
DB	DRY BULB	ORD	OVERFLOW ROOF DRAIN
DIA	DIAMETER	PD	PRESSURE DROP
DN	DOWN	PIV	POST INDICATOR VALVE
DW	DISTILLED WATER	PLBG	PLUMBING
EA	EACH	PRESS	PRESSURE
EAT	ENTERING AIR TEMPERATURE	PRV	PRESSURE REDUCING VALVE
ELEC	ELECTRICAL	PSI	POUNDS PER SQUARE INCH
EQUIP	EQUIPMENT	PSIG	POUNDS PER SQUARE INCH GAUGE
EWC	ELECTRIC WATER COOLER	PWR	POWER
EWT	ENTERING WATER TEMPERATURE	R	DUCT RISER
E/A	EXHAUST AIR	R/A	RETURN AIR
EXIST	EXISTING	RCP	RADIANT CEILING PANEL
F	DEGREES FAHRENHEIT	RD	ROOF DRAIN
FCO	FLOOR CLEAN OUT	REC	RECESSED
FD	FLOOR DRAIN	RED	REDUCER
FDC	FIRE DEPARTMENT CONNECTION	RH	RELATIVE HUMIDITY
FL	FLOOR	RL/A	RELIEF AIR
FO	FUEL OIL	RM	ROOM
FOV	FUEL OIL VENT	RPM	REVOLUTIONS PER MINUTE
FOR	FUEL OIL RETURN	RW	RAIN WATER
FOS	FUEL OIL SUPPLY	SF	SQUARE FOOT
FPM	FEET PER MINUTE	S/A	SUPPLY AIR
FS	FLOOR SINK	SAN	SANITARY
FT	FOOT/FEET	SF	SQUARE FOOT
FTR	FIN TUBE RADIATION	SD	SMOKE DAMPER
GAL	GALLON	SM	SURFACE MOUNT
GF	GAS-FIRED	SP	STANDPIPE
GC	GENERAL CONTRACTOR	SP	STATIC PRESSURE
GPM	GALLONS PER MINUTE	STM	STEAM
GW	GREASE WASTE	T	THERMOSTAT
HB	HOSE BIB	TD	TEMPERATURE DROP
HP	HORSE POWER	TDR	TRENCH DRAIN
HTG	HEATING	TEMP	TEMPERATURE
HTR	HEATER	TYP	TYPICAL
HW	HOT WATER	UG	UNDERGROUND
HYD	HYDRANT	VAC	VACUUM
ID	INDIRECT	V	VENT
IN	INCH	VAV	VARIABLE AIR VOLUME
INV	INVERT	VENT	VENTILATION
LB	POUND	VTR	VENT THROUGH ROOF
LB/HR	POUNDS PER HOUR	W	WASTE
LAT	LEAVING AIR TEMPERATURE	WB	WET BULB
LP	LOW PRESSURE	WCO	WALL CLEAN OUT
LPG	LIQUEFIED PETROLEUM GAS	WH	WALL HYDRANT

EQUIPMENT ABBREVIATIONS

AC	AIR CONDITIONING UNIT	ET	EXPANSION TANK
ACCU	AIR COOLING CONDENSING UNIT	EWH	ELECTRIC WATER HEATER
AHU	AIR HANDLING UNIT	FCU	FAN COIL UNIT
AS	AIR SEPARATOR	FP	FIRE PUMP
B	BOILER	GI	GREASE INTERCEPTOR
CH	CHILLER	GRV	GRAVITY ROOF VENTILATOR
CT	COOLING TOWER	HWP	HEATING WATER PUMP
CUH	CABINET UNIT HEATER	HRU	HEAT RECOVERY UNIT
CHWP	CHILLED WATER PUMP	PRV	POWER ROOF VENTILATOR
DBP	DOMESTIC WATER BOOSTER PUMP	RE	RETURN/EXHAUST FAN
DC	DUCT MOUNTED COIL	RTU	ROOFTOP UNIT
DCP	DOMESTIC WATER CIRCULATING PUMP	SP	SUMP PUMP
EF	EXHAUST FAN	UH	UNIT HEATER
EDC	ELECTRIC DUCT COIL	WH	WATER HEATER

PLUMBING AND PIPING SYMBOLS

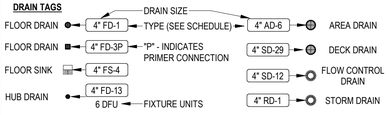
- CHWR — CHILLED WATER RETURN
- CHWS — CHILLED WATER SUPPLY
- CD — CONDENSATE DRAINAGE
- CWR — CONDENSER WATER RETURN
- CWS — CONDENSER WATER SUPPLY
- GWR — GEOTHERMAL WATER RETURN
- GWS — GEOTHERMAL WATER SUPPLY
- HWR — HEATING WATER RETURN
- HWS — HEATING WATER SUPPLY
- G — NATURAL GAS
- PG — PROPANE GAS
- REF-L — REFRIGERANT-LIQUID
- REF-S — REFRIGERANT-SUCTION
- REF-HG — REFRIGERANT-HOT GAS
- STM — STEAM
- CDR — CONDENSATE RETURN
- CWV — COMBINATION WASTE & VENT
- CA — COMPRESSED AIR
- CW — DOMESTIC COLD WATER
- H-CW — HARD COLD WATER
- S-CW — SOFT COLD WATER
- F-CW — FILTERED COLD WATER
- RO — REVERSE OSMOSIS WATER
- HW — HOT WATER
- HW 140° — HOT WATER 140°
- HW-R — HOT WATER RECIRCULATION
- HW-R 140° — HOT WATER RECIRCULATION 140°
- GV — GREASE VENT
- GW — GREASE WASTE
- IW — INDIRECT WASTE
- OV — OIL VENT
- OW — OIL WASTE
- PD — PUMP DISCHARGE
- V — SANITARY VENT
- SS — SANITARY SEWER
- SHWR — SOLAR HOT WATER RETURN
- SHWS — SOLAR HOT WATER SUPPLY
- SD — STORM DRAINAGE
- OSD — OVERFLOW STORM DRAINAGE



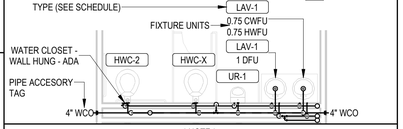
PIPE ACCESSORY TAGS

- WM — 2" DOM. WM — DOMESTIC WATER METER
- 2" BALANCING — BALANCING VALVE
- 2" SHUTOFF — 1/4 TURN BALL VALVE
- 2" CHECK — CHECK VALVE
- 2" TMV — 3-WAY MIXING VALVE
- GATE VALVE
- P — 3-WAY AIRMOTOR CONTROLLER
- ANGLE GLOBE VALVE
- ANGLE HOSE VALVE
- DIAPHRAGM VALVE
- GLOBE VALVE
- HOSE GLOBE VALVE
- M — 2" M-CNTRL — MOTORIZED CONTROL VALVE
- M — 2" 3-WAY CNTRL — 3 WAY MOTORIZED CONTROL VALVE
- 2" PRV — PRESSURE REDUCING VALVE
- S — 3/8" SOLENOID — REFRIGERANT SOLENOID VALVE
- 2" BUTTERFLY — BUTTERFLY VALVE
- LOCK SHIELD VALVE
- NEEDLE VALVE
- PLUG VALVE
- QUICK OPENING VALVE
- SPRING CHECK VALVE
- SWING GATE CHECK VALVE
- TEMP PRESSURE RELIEF VALVE

DRAIN TAGS



PLUMBING FIXTURE TAGS



* NOTE *

ALL OF GENERAL NOTES ON THIS SHEET ARE TO BE APPLIED TO ALL OTHER DRAWINGS IN THIS SET.THE SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET MAY OR MAY NOT BE USED IN THIS SET OF DRAWINGS.

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STATE OF TEXAS — REGISTERED — EMILY VIRGINIA VALDENMEYER — 135257 — LICENSED PROFESSIONAL ENGINEER — 10-25-2021

HP ENGINEERING INC.
F-13720

HP ENGINEERING
PROJECT NO. 21-64T
100 % COMPLETE
HP ENGINEERING INC.
142 HOWELL STREET,SUITE 170
DALLAS, TX 75207
(479) 490-2500
F-18023

PROJECT INFORMATION:

AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 Elizabeth St.
Texarkana, TX 75503

PROJECT NUMBER: 21-64T
ISSUE DATE: 10-25-2021
REVISIONS:
Title Sheet Revision

SHEET NAME:
PLUMBING TITLE SHEET

SHEET NUMBER:
P000

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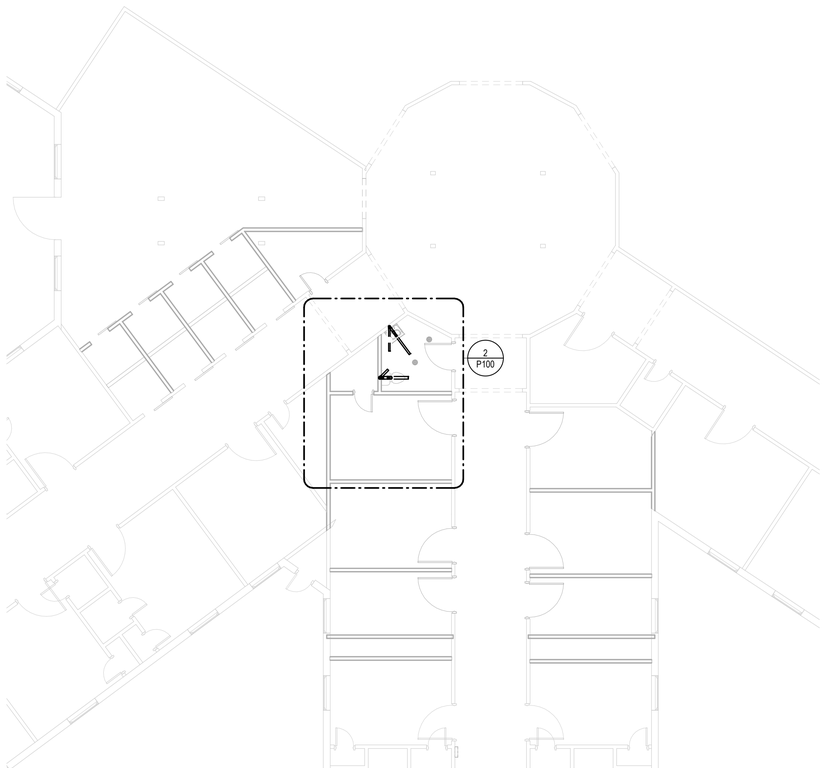
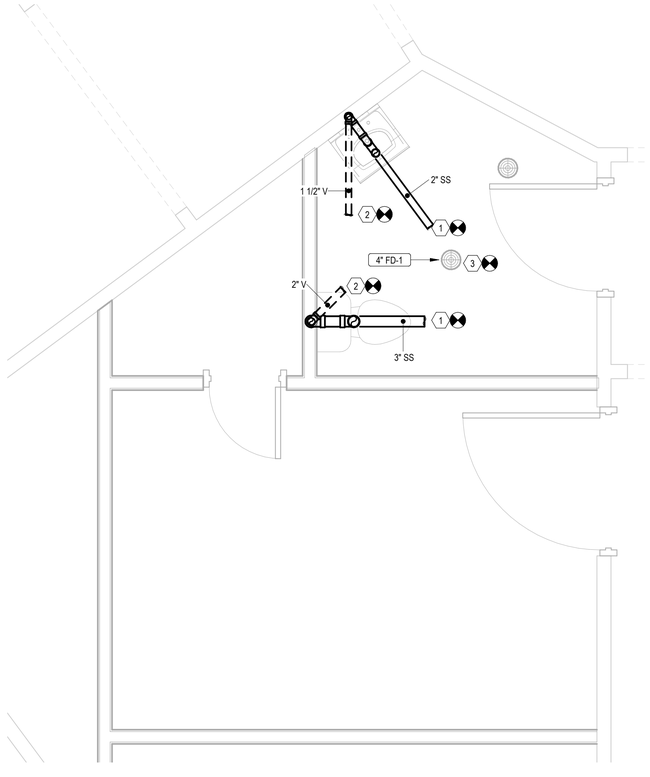


1 P100 LEVEL 1 PLUMBING PLAN
1/8" = 1'-0"



2 P100 RESTROOM WASTE PLAN ENLARGED
1/2" = 1'-0"

KEYNOTES

1. CONNECT SANITARY TO EXISTING SANITRY. CONTRACTOR TO VERIFY SIZE AND LOCATION ON SITE.
2. CONNECT VENT TO EXISTING VENT THROUGH ROOF. CONTRACTOR TO VERIFY SIZE AND LOCATION ON SITE.
3. CONNECT FLOOR DRAIN TO EXISTING SANITARY LINE.

GC TO EXERCISE CAUTION ON DEMOLITION AND ANY WORK ABOVE CEILING TO NOT DAMAGE EXISTING FIBER OPTIC CABLE REQUIRED BY OWNER OF THE OCCUPIED BUILDING.

GC NEEDS TO RELOCATE AND ADJUST FIRE SPRINKLER SYSTEM AS NEEDED

GENERAL PLUMBING NOTES

1	THE ENTIRE PLUMBING SYSTEM SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE INTERNATIONAL/ARKANSAS PLUMBING CODE REGULATIONS AND LOCAL PLUMBING INSPECTOR.
2	IT IS THE PLUMBING CONTRACTOR'S RESPONSIBILITY TO CORRDINATE WITH THE SITE CONTRACTOR TO CONFIRM THAT THE INVERT AND LOCATION OF THE SANITARY SERVICE IS COMPATIBLE WITH THE SITE UTILITIES PRIOR TO BEGINNING WORK.
3	THE PIPING INDICATED ON THESE PLANS ARE DIAGRAMMATICAL. ALL WORK SHALL BE COORDINATED WITH ALL OTHER TRADES PRIOR TO INSTALLATION. CONTRACTOR SHALL COORDINATE ROUTING OF ALL PIPING WITH EXISTING CONDITIONS AND SHALL PROVIDE ANY NECESSARY OFFSETS, REROUTING, TEES, ELBOWS, ETC. REQUIRED FOR A COMPLETE AND COORDINATED INSTALLATION.
4	THE CONTRACTOR SHALL OBTAIN AND PAY ALL FEES RELATED TO PERMITTING, INSPECTIONS, TAP-ON FEES, ETC.
5	THE CONTRACTOR SHALL COORDINATE ANY PLUMBING OR PIPING SYSTEM SHUTDOWN WITH THE OWNER 48 HOURS IN ADVANCE.
6	CONTRACTOR SHALL COORDINATE AND PROVIDE ALL NECESSARY PIPING & PLUMBING FITTINGS, PIPING, MISCELLANEOUS ITEMS REQUIRED FOR A COMPLETE INSTALLATION OF ALL PLUMBING RELATED ITEMS.
7	DOMESTIC WATER AND SEWER LOCATED OUTSIDE OF FOOTING SHALL MAINTAIN A MINIMUM OF 10' SEPARATION UNLESS WRITTEN PERMISSION IS OBTAINED FROM LOCAL AUTHORITIES AND/OR PROPER CONTAMINATION PROVISIONS PER LOCAL CODE HAVE BEEN MET.
8	ALL DOMESTIC WATER, NATURAL GAS, DEIONIZED WATER, CARBON DIOXIDE, COMPRESSED AIR, AND NITROGEN PIPING SHOWN IS ABOVE CEILING, EXPOSED OVERHEAD, AND WITHIN WALLS UNLESS OTHERWISE NOTED. WATER HAMMER ARRESTORS SHALL BE INSTALLED AT DISHWASHERS, WASHING MACHINES, SUPPLY BOXES, AND QUICK CLOSING VALVES NOT LISTED. INSTALL WHA-1 AS CLOSE TO QUICK CLOSING VALVE AS POSSIBLE PER MANUFACTURER'S RECOMMENDATIONS. ISOLATION VALVES SHALL BE INSTALLED ON ALL SUPPLY FIXTURE GROUPS AND HOT WATER BALANCING VALVES.
9	ALL SANITARY, GREASE, LAB, AND ACID WASTE PIPING SHOWN IS BELOW SLAB, BELOW FLOOR, OR WITHIN WALLS UNLESS OTHERWISE NOTED. ALL SANITARY VENT PIPING SHOWN IS ABOVE CEILING, EXPOSED OVERHEAD, OR WITHIN WALLS UNLESS OTHERWISE NOTED.
10	FROST PROOF HOSE BIBBS AND SUPPLY PIPING SHALL BE INSTALLED ON THE INSIDE OF THE INSULATION. SEAL SHEATHING PENETRATION TO PREVENT AIR FROM REACHING THE VALVE.
11	FLOOR DRAIN CONNECTION SIZE TO BE THE SAME SIZE AS THE DRAIN LINE IT CONNECTS UNLESS NOTED OTHERWISE. IF SIZE IS NOT INDICATED ON DRAWINGS REFER TO PLUMBING ROUGH-IN SCHEDULE FOR PROPER SIZE.
12	FLUSH CONTROLS FOR HANDICAPPED WATER CLOSETS ARE TO BE MOUNTED TO THE OPEN SIDE OF THE TOILET AREAS.
13	THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL UNDER SLAB PIPING WITH EXISTING STRUCTURAL FOUNDATIONS. UNDERGROUND UTILITY LOCATIONS SHALL BE VERIFIED PRIOR TO ANY WORK BEING PERFORMED. CONTRACTOR SHALL REPAIR OR REPLACE ALL PIPING NOT IN PROPER WORKING ORDER OR DAMAGED DURING INSTALLATION OF THE NEW UNDERGROUND PIPING.
14	ALL PIPING PENETRATIONS THROUGH NEW, EXISTING WALL, OR FLOOR SHALL BE SEALED TO EQUAL THE RATING OF THE NEW, EXISTING WALL OR FLOOR.
15	THE PLUMBING SYSTEM SHALL BE TESTED AS REQUIRED BY LOCAL CODE OR BY THE REQUIREMENTS OF THE LOCAL PLUMBING INSPECTOR.
16	THE ENTIRE DOMESTIC WATER SYSTEM (EXISTING/NEW) SHALL BE DISINFECTED IN ACCORDANCE TO THE LOCAL CODE & HEALTH DEPARTMENT REQUIREMENTS.
17	FINISHED FLOOR ELEVATION (F.F.E.) SHALL BE 0.00' FOR CALCULATION PURPOSES ONLY, UNLESS NOTED OTHERWISE.
18	THE BACKFLOW PREVENTION DEVICE SHALL BE INSTALLED PER LOCAL CODE & PER AUTHORITY HAVING JURISDICTION REQUIREMENTS. NON-LEAD TYPE ONLY.
19	ALL PIPING ON ROOF SHALL BE ANCHORED TO STEEL RIB FASTENERS APPROVED BY THE ROOF MANUFACTURER. INSTALL ANCHORS PER MANUFACTURERS RECOMMENDATION.
20	ALL PLUMBING & PIPING SYSTEMS SHALL BE SUPPORTED AS REQUIRED BY THE LOCAL CODE REQUIREMENTS AND PER MANUFACTURER'S RECOMMENDATIONS.
21	ALL VENT THRU ROOF (VTR'S) PENETRATIONS INDICATED ON PLANS ARE PRELIMINARY. FINAL LOCATIONS SHALL BE COORDINATED WITH ALL TRADES. ALL VTR'S SHALL BE A MINIMUM OF 10'-0" FROM ALL FRESH AIR INTAKE OPENINGS.
22	ANY PVC PIPE PENETRATING A FIRE RATED ASSEMBLY SHALL BE EXTERNALLY SLEEVED WITH STEEL, FERROUS, OR COPPER MATERIALS, SECURELY FASTENED TO THE FIRE RATED ASSEMBLY. ANY SPACE BETWEEN THE SLEEVE AND THE FIRE RATED ASSEMBLY PENETRATED SHALL BE PROTECTED USING MATERIAL THAT CONFORMS TO ASTM E 814 OR UL 1479, SUCH AS FIRE STOP FS-1900 OR FLAME STOPPER 5000.
23	CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS FOR DISHWASHER, WASHING MACHINE, REFRIGERATOR, ETC.
24	PROVIDE SHUT-OFF VALVES FOR PROPER OPERATION AND SERVICING OF DOMESTIC WATER DISTRIBUTION SYSTEM. LOCATION SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING: AT EACH FIXTURE GROUP, AT EACH BRANCH TAKE-OFF FROM MAINS AND AT THE BASE OF EACH RISER. COORDINATE WITH ARCHITECTURAL PLAN FOR ACCESS DOOR LOCATIONS.
25	TEMPERED WATER, NOT EXCEEDING A MAXIMUM OF 110° F, SHALL BE DELIVERED FROM PUBLIC HANDWASHING FACILITIES THROUGH AN APPROVED WATER TEMPERATURE LIMITING DEVICE THAT CONFORMS TO ASSE 1070.
26	VALVES SHALL BE LOCATED 6" ABOVE ACCESSIBLE CEILING WHEN AT ALL POSSIBLE AND SHALL BE CLEAR OF ANY OBSTRUCTIONS FROM OTHER TRADES. MAINTENANCE SHALL BE ABLE TO ACCESS VALVES WITH STANDARD LADDER. SHOULD LOCATION NOT BE APPLICABLE CONTRACTOR SHALL PROVIDE A CONTROL CHAIN AND/OR ARM.
27	PLUMBING CONTRACTOR SHALL PROVIDE AS AN ADD ALTERNATE BID: HAVE A FLOW TEST DONE FOR THE DOMESTIC WATER TO DETERMINE IF A BOOSTER PUMP WILL BE REQUIRED. IF ONE IS REQUIRED, CONTRACTOR SHALL HAVE ONE SIZED AND PROVIDE IT FOR THE PROJECT. COORDINATE ELECTRICAL REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR.
28	REGULATORS INSTALLED ON THE INTERIOR OF THE BUILDING SHALL BE VENTED TO THE EXTERIOR PER LOCAL AND STATE CODES.
29	IT IS THE PLUMBING CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE SITE CONTRACTOR TO CONFIRM THAT THE INVERTS AND LOCATIONS OF THE BUILDING UTILITIES ARE COMPATABLE WITH THE SITE UTILITIES PRIOR TO BEGINNING WORK.
30	CONTRACTOR SHALL PROVIDE A PRESSURE REDUCING VALVE (PRV-1) SHOULD THE WATER PRESSURE EXCEED 75 PSI. CONTRACTOR SHALL CONFIRM WITH ON SITE CONDITIONS AND LOCAL UTILITY.
31	PROVIDE BALANCING VALVES FOR PROPER OPERATION AND PRESSURE OF DOMESTIC WATER DISTRIBUTION SYSTEM. LOCATION SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING: AT EACH FIXTURE GROUP, AT EACH BRANCH TAKE-OFF FROM MAINS AND AT THE EACH RISER. INSTALL PER MANUFACTURE'S REQUIREMENTS.
32	PROVIDE AUTOMATIC SHUT-OFF VALVE ON GAS LINE FEEDING KITCHEN EQUIPMENT BELOW TYPE-1 HOOD PRIOR TO ANY TAKE OFF. VALVE SHALL BE CONNECTED TO FIRE ALARM SYSTEM.
33	PROVIDE DRAIN PANS FOR ALL WATER LINES CROSSING OVER "IT" CLOSET/ROOM. ROUTE DRAIN PAN(S) TO NEAREST APPROVED WASTE RECEPTICAL.
34	PROVIDE DRAIN PANS FOR ALL OVER HEAD DRAIN PIPING CROSSING OVER KITCHEN. ROUTE DRAIN PAN(S) TO NEAREST APPROVED WASTE RECEPTICAL.
35	ANY LINE VOLTAGE WIRING THAT IS RUN BY THE PLUMBING CONTRACTOR SHALL BE INSTALLED IN ACCORDANCE WITH THE ELECTRICAL PLANS, NOTES, AND SPECIFICATIONS.
36	INSULATION JACKET SHALL BE PROVIDED WHEN PIPING INSULATION IS EXPOSED.
37	THE PLUMBING CONTRACTOR SHALL INSPECT EXISTING CONDITIONS PRIOR TO BEGINNING WORK. FIELD VERIFY SIZE AND LOCATION OF ALL EXISTING SERVICES TO BE TIED INTO.
38	CAMERA SURVEY ALL EXISTING SANITARY SEWER LOCATIONS AND INVERTS BELOW SLAB OR GRADE. NOTIFY GENERAL CONTRACTOR OF ANY POTENTIAL CONFLICTS WITH WORK PRIOR TO BEGINNING CONSTRUCTION.
39	THE EXISTING PIPING INDICATED ON THESE PLANS SHALL BE VERIFIED IN THE FIELD FOR EXACT LOCATIONS, QUANTITY, AND PIPE SIZES.

LEVEL 5

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STATE OF TEXAS
EMILY VIRGINIA WALDENMEYER
135257
LICENSED PROFESSIONAL ENGINEER
10/25/2021

HP ENGINEERING INC.
F-13720

HP ENGINEERING

PROJECT NO. 21-64T
100 % COMPLETE

HP ENGINEERING INC.
142 HOWELL STREET,SUITE 170
DALLAS, TX 75207
(479) 490-2500

F-18023

PROJECT INFORMATION:

AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 Elizabeth St.
Texarkana, TX 75503

PROJECT NUMBER: 21-64T
ISSUE DATE: 10-25-2021
REVISIONS:

SHEET NAME:

PLUMBING WASTE PLAN

SHEET NUMBER:

P100

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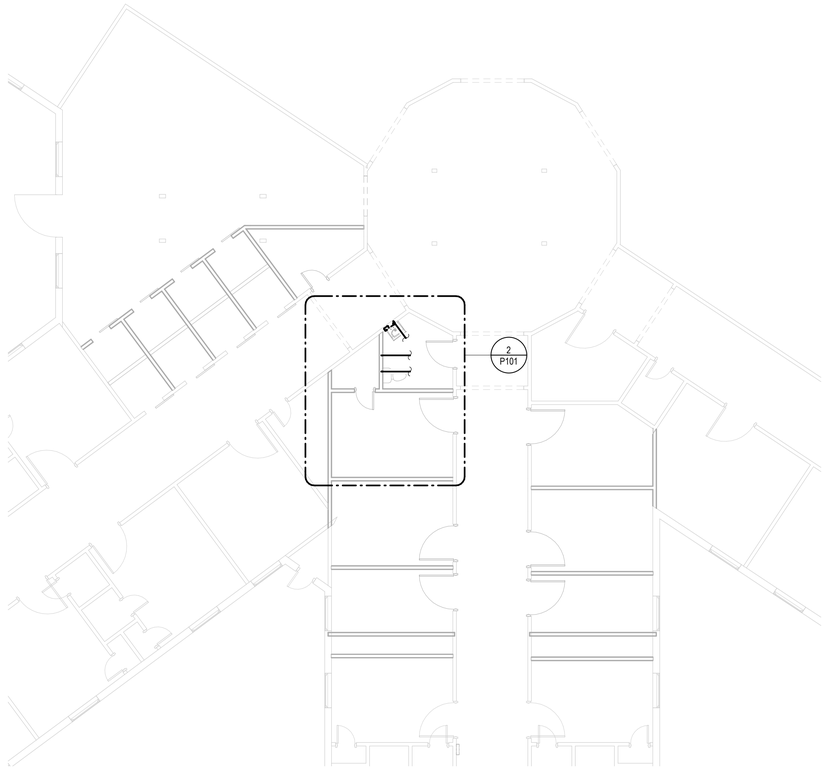
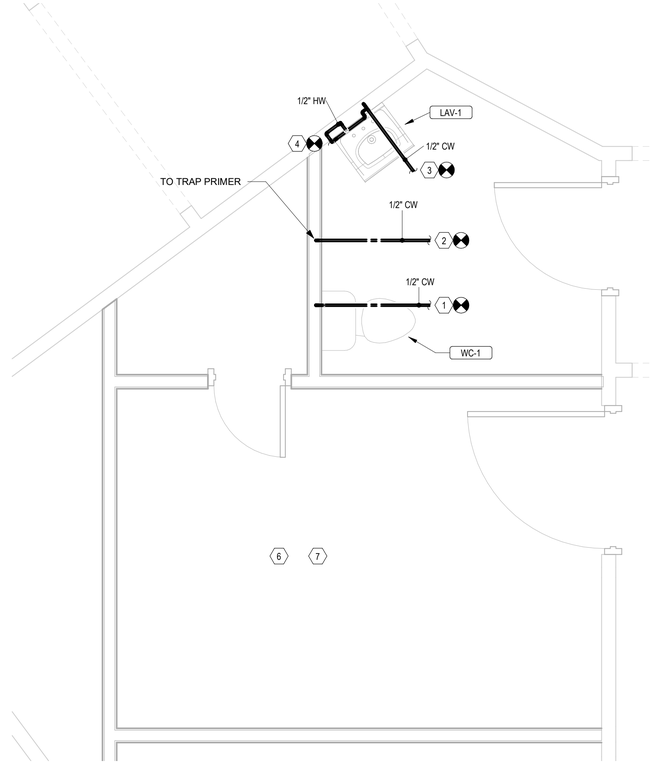


1 P101 LEVEL 1 PLUMBING PLAN
1/8" = 1'-0"



2 P101 RESTROOM SUPPLY PLAN ENLARGED
1/2" = 1'-0"

KEYNOTES

1 CONNECT 1/2" CW LINE TO WC-1 FROM EXISTING CW SUPPLY LINE.
2 CONNECT 1/2" CW LINE TO TP-1 FROM EXISITING CW SUPPLY LINE.
3 CONNECT 1/2" CW LINE TO LAV-1 AND WH-1 FROM EXISTING CW SUPPLY LINE.
4 CONNECT 1/2" CW LINE TO LAV-1 AND WH-1 FROM EXISTING CW SUPPLY LINE.
6 GC TO RELOCATE AND ADJUST FIRE SPRINKLER SYSTEM IN FEILD OF SCOPE AS NEEDED.
7 GC TO EXERCISE CAUTION ON DEMOLITION AND ANY WORK ABOVE CEILING TO NOT DAMAGE EXISTING FIBER OPTIC CABLE REQUIRED BY OWNER OF THE OCCUPIED BUILDING.

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26	VALVES SHALL BE LOCATED 6" ABOVE ACCESSIBLE CEILING WHEN AT ALL POSSIBLE AND SHALL BE CLEAR OF ANY OBSTRUCTIONS FROM OTHER TRADES. MAINTENANCE SHALL BE ABLE TO ACCESS VALVES WITH STANDARD LADDER. SHOULD LOCATION NOT BE APPLICABLE CONTRACTOR SHALL PROVIDE A CONTROL CHAIN AND/OR ARM.
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28	REGULATORS INSTALLED ON THE INTERIOR OF THE BUILDING SHALL BE VENTED TO THE EXTERIOR PER LOCAL AND STATE CODES.
29	IT IS THE PLUMBING CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE SITE CONTRACTOR TO CONFIRM THAT THE INVERTS AND LOCATIONS OF THE BUILDING UTILITIES ARE COMPATABLE WITH THE SITE UTILITIES PRIOR TO BEGINNING WORK.
30	CONTRACTOR SHALL PROVIDE A PRESSURE REDUCING VALVE (PRV-1) SHOULD THE WATER PRESSURE EXCEED 75 PSI. CONTRACTOR SHALL CONFIRM WITH ON SITE CONDITIONS AND LOCAL UTILITY.
31	PROVIDE BALANCING VALVES FOR PROPER OPERATION AND PRESSURE OF DOMESTIC WATER DISTRIBUTION SYSTEM. LOCATION SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING: AT EACH FIXTURE GROUP, AT EACH BRANCH TAKE-OFF FROM MAINS AND AT THE EACH RISER. INSTALL PER MANUFACTURE'S REQUIREMENTS.
32	PROVIDE AUTOMATIC SHUT-OFF VALVE ON GAS LINE FEEDING KITCHEN EQUIPMENT BELOW TYPE-1 HOOD PRIOR TO ANY TAKE OFF. VALVE SHALL BE CONNECTED TO FIRE ALARM SYSTEM.
33	PROVIDE DRAIN PANS FOR ALL WATER LINES CROSSING OVER "IT" CLOSET/ROOM. ROUTE DRAIN PAN(S) TO NEAREST APPROVED WASTE RECEPTICAL.
34	PROVIDE DRAIN PANS FOR ALL OVER HEAD DRAIN PIPING CROSSING OVER KITCHEN. ROUTE DRAIN PAN(S) TO NEAREST APPROVED WASTE RECEPTICAL.
35	ANY LINE VOLTAGE WIRING THAT IS RUN BY THE PLUMBING CONTRACTOR SHALL BE INSTALLED IN ACCORDANCE WITH THE ELECTRICAL PLANS, NOTES, AND SPECIFICATIONS.
36	INSULATION JACKET SHALL BE PROVIDED WHEN PIPING INSULATION IS EXPOSED.
37	THE PLUMBING CONTRACTOR SHALL INSPECT EXISTING CONDITIONS PRIOR TO BEGINNING WORK. FIELD VERIFY SIZE AND LOCATION OF ALL EXISTING SERVICES TO BE TIED INTO.
38	CAMERA SURVEY ALL EXISTING SANITARY SEWER LOCATIONS AND INVERTS BELOW SLAB OR GRADE. NOTIFY GENERAL CONTRACTOR OF ANY POTENTIAL CONFLICTS WITH WORK PRIOR TO BEGINNING CONSTRUCTION.
39	THE EXISTING PIPING INDICATED ON THESE PLANS SHALL BE VERIFIED IN THE FIELD FOR EXACT LOCATIONS, QUANTITY, AND PIPE SIZES.

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STATE OF TEXAS
EMILY VIRGINIA WALDENMEYER
135257
LICENSED PROFESSIONAL ENGINEER
10-25-2021

HP ENGINEERING INC.
F-13720

HP ENGINEERING
PROJECT NO. 21-64T
100 % COMPLETE
HP ENGINEERING INC.
142 HOWELL STREET,SUITE 170
DALLAS, TX 75207
(479) 490-2500
F-18023

PROJECT INFORMATION:

AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 Elizabeth St.
Texarkana, TX 75503

PROJECT NUMBER: 21-64T
ISSUE DATE: 10-25-2021
REVISIONS:

SHEET NAME:

PLUMBING SUPPLY PLAN

SHEET NUMBER:

P101

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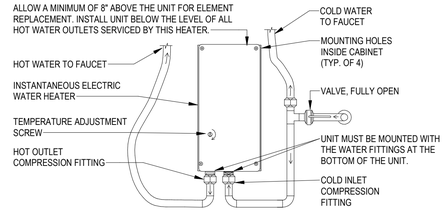
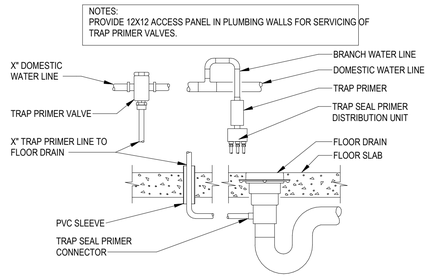
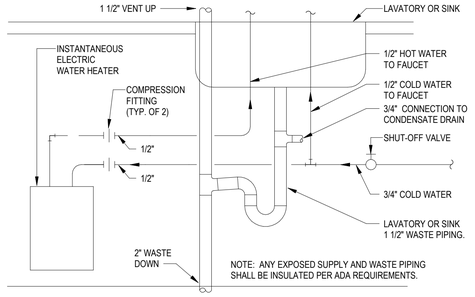


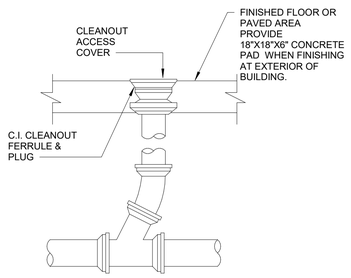
NOTE: THIS UNIT IS NOT REQUIRED BY UNDERWRITERS LABORATORIES TO HAVE A PRESSURE/TEMPERATURE RELIEF DEVICE



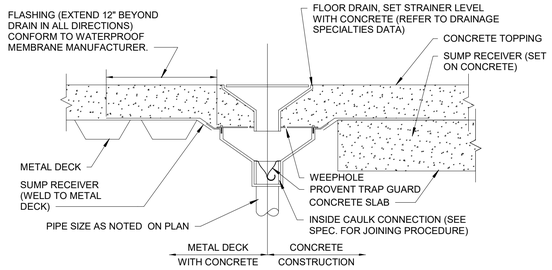
6 P200 TRAP PRIMER DETAIL
1/8" = 1'-0"



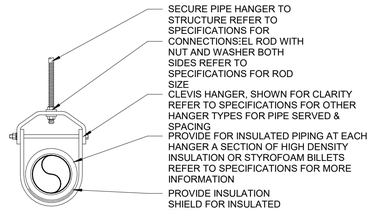
5 P200 INSTANTANEOUS ELECTRIC WATER HEATER
1/8" = 1'-0"



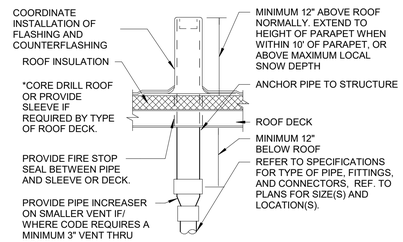
4 P200 FLOOR CLEANOUT
N.T.S.



3 P200 FLOOR DRAIN
N.T.S.



2 P200 PIPE HANGER DETAIL
N.T.S.



LOCATE VTR MINIMUM THREE FEET FROM PROPERTY LINE, TEN FEET HORIZONTAL OR THREE FEET VERTICAL ABOVE ANY BUILDING OPENING OR FRESH AIR INTAKE, AND ONE FOOT FROM ANY VERTICAL SURFACE. REFER TO LOCAL CODES FOR OTHER VENT TERMINATION REQUIREMENTS. LOCATE VTR MINIMUM 18" FROM ADJACENT WALL, PARAPET, EXPANSION JOINT, ROOF DRAIN, EQUIPMENT CURB, OR OTHER ROOF FEATURE. OFFSET IN CEILING SPACE WHERE REQUIRED TO MEET THESE CONDITIONS. INSULATE LAST SIX FEET OF VENT PIPE INSIDE BUILDING PER SPECIFICATIONS.

1 P200 VENT THRU ROOF ("VTR")
N.T.S.

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SHEET NAME:

PLUMBING EQUIPMENT DETAILS

SHEET NUMBER:

P200

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PLUMBING ACCESSORIES SCHEDULE

FIXTURE TAG	DESCRIPTION	MANUFACTURER	TRIM	ELECTRICAL REQUIREMENTS
BV-1	BALL VALVE	APOLLO INTERNATIONAL 94ALF-A	LEAD FREE BALL VALVE, FULL PORT, BLOWOUT-PROOF, PRESSURE RETAINING, ADJUSTABLE STEM PACKING NUT	
WHA-1	WATER HAMMER ARRESTOR	SIOUX CHIEF 650B680 HYDRARESTER	VACURESTER VACUUM BREAKER ARRESTER, TYPE L COPPER CONSTRUCTION, IF AN ACCESS DOOR IS NEEDED CONTACT THE ARCHITECT	

FLOOR DRAIN SCHEDULE

ID	DESCRIPTION	MANUFACTURER	MODEL	MATERIAL DESCRIPTION		SPECIFICATION	REMARKS
				DRAIN BODY	STRAINER		
FD-1	FLOOR DRAIN	MIFAB	F1000	EPOXY COATED CAST IRON	STAINLESS STEEL	CAST IRON BODY, ANCHOR FLANGE, SECURED ROUND ADJUSTABLE STRAINER HEAD WITH HOLE GRATE, LOOSE GRATE AND SEDIMENT BUCKETS, MIFAB TRAP GUARD, REFER TO PLANS FOR SIZES.	

FIXTURE SCHEDULE

FIXTURE TAG	FIXTURE				FAUCET/VALVE			DESCRIPTION	SCHEDULE NOTES
	TYPE	MANUFACTURER	MODEL	MATERIAL DESCRIPTION	MANUFACTURER	MODEL	TYPE		
LAV-1	LAVATORY - WALL HUNG - ADA	ZURN	Z5314	WHITE VITREOUS CHINA	ZURN	Z7440-XL-BA-FC	MANUAL	TMV-1, ZURN Z8743-PC GRID STRAINER, ZURN Z8700 SERIES P-TRAP. ZURN Z8800 SERIES STOP WITH FLEXIBLE SUPPLIES AND TURN KEY, ZURN Z8946-1-NT ADA TRAP, STOP AND SUPPLY PROTECTOR PVC TYPE INSULATION AROUND "P" TRAP & IPS CONNECTIONS, CONCEALED ARM CARRIER SYSTEM, THREE HOLES ON DECK 4" CENTERS	
WC-1	WATER CLOSET - FLOOR - TANK TYPE - ADA	ZURN	Z5555-K	WHITE VITREOUS CHINA	TANK TYPE			1.28 GPF, ELONGATED RIM, 12" ROUGH-IN, 1.28 GPF, ECOVANTAGE SIPHON-JET, EZ-FLO 65913 OPEN FRONT SEAT, McGUIRE 172LK CHROME PLATED BRASS CLOSET SUPPLY W/ 5" CHROME PLATED COPPER EXTENSION TUBE, Z5972-COMB CLOSET BOLT & WAX RING KIT, Z8800-CR STANDARD STOP WITH FLEXIBLE CLOSET RISER	

ELECTRIC INSTANT WATER HEATER SCHEDULE

ID	MANUFACTURER	MODEL NO.	VOL	POWER	VOLT	PH	UNIT WEIGHT	REMARKS
ALT:WH-1	Stiebel Eltron	MINI-E 2.5-1	.91 GPM	20A	120	1	3.44 LBS	

ROUGH-IN AND MOUNTING HEIGHT SCHEDULE

NOTES:
1. ALL VENT LINE SIZES SHOWN ARE MINIMUM UNLESS SHOWN LARGER ON RISER DIAGRAMS.
2. SIZES SHOWN FOR WASTE ARE FOR RISERS ONLY.
3. ALL DRAIN AND VENT LINES BELOW SLAB SHALL BE 2" OR LARGER.
4. VENT LINES SHALL RISE 6" ABOVE FLOOD LEVEL RIM BEFORE OFFSETTING HORIZONTALLY, EXCEPT FOR INTERCEPTORS LOCATED OUTDOORS.
5. SIZES SHOWN APPLY UNLESS NOTED DIFFERENTLY ON PLANS.

FIXTURE	WASTE	VENT	COLD WATER	HOT WATER	HEIGHT OF INSTALLATION
FLOOR DRAINS/SINKS	2"	1-1/2"			
LAVATORIES AND SINKS, WALL MOUNTED	1-1/2"	1-1/4"	1/2"	1/2"	NON-ADA 31" TO TOP OF RIM ADA 34" TO TOP OF RIM
WATER CLOSET FLUSH TANK FLOOR MOUNTED	3"	1-1/2"	1/2"		

PIPING MATERIAL SCHEDULE

DESCRIPTION	MATERIAL
ABOVE GROUND GAS	SCHEDULE 40 BLACK STEEL WITH MALLEABLE IRON FITTINGS OR WELDED JOINTS WITH BUTT WELD FITTINGS. PROVIDE CORROSION-RESISTANT MATERIAL ON PIPING EXPOSED TO ATMOSPHERE OR IN CONTACT WITH MATERIAL EXERTING A CORROSIVE ACTION
ABOVE GROUND SANITARY SEWER AND VENT	SERVICE WEIGHT (SV) CAST IRON HUB AND SPIGOT PIPE AND FITTINGS. COAT INSIDE AND OUTSIDE WITH COAL TAR VARNISH. COMPRESSION NEOPRENE GASKETS FOR JOINTS.
ABOVE GROUND SANITARY SEWER AND VENT	PVC SCHEDULE 40 PIPE AND FITTINGS EXCEPT IN PLENUM RETURN AREAS. IN PLENUM RETURN AREAS WRAP PVC WITH 1" FIRE WRAP.
ACID RESISTANT PIPING ABOVE GROUND	SCHEDULE 40 POLYPROPYLENE WITH MECHANICAL JOINT COUPLINGS EQUAL TO ORION BLUELINE. FIRE RETARDANT. MEETS ASTM D634, SELF EXTINGUISHING. ASTM D2843 SMOKE CHAMBER TEST, MAX. VALUE LESS THAN 50.
ACID RESISTANT PIPING BELOW GROUND	SCHEDULE 40 POLYPROPYLENE WITH MECHANICAL JOINT COUPLINGS EQUAL TO ORION BROWNLINE, NON-FIRE RETARDANT.
ACID RESISTANT PIPING IN PLENUM	SCHEDULE 40 POLYVINYLIDENE (PVDF) WITH MECHANICAL JOINT COUPLINGS EQUAL TO ORION KYNAR BRAND PIPING ASME E-84 STANDARD FOR FLAME SPREAD AND SMOKE GENERATION.
COMPRESSED AIR	ASTM A-53 SEAMLESS GALVANIZED STEEL OR COPPER (300 PSIG WORKING PRESSURE). FITTINGS THREADED SUITABLE FOR 300 PSIG WORKING PRESSURE.
FLEXIBLE GAS PIPING INSIDE BUILDING	FOR FINAL CONNECTION TO EQUIPMENT ONLY. CORRUGATED STAINLESS STEEL GAS LINE WITH POLYETHYLENE JACKET AND FITTINGS BY MFG. MUST MEET ANSI, NFPA, FACTORY MUTUAL CODE AND LISTINGS AS AN ACCEPTABLE GAS PIPING MATERIAL, ALL STATE AND LOCAL CODE APPROVALS. PROVIDE PIPING EQUAL TO TRACPIPE BY OMEGA FLEX. SIZE PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
FORCED MAIN PIPING	SCHEDULE 40 GALVANIZED STEEL WITH SCREWED JOINTS.
HIGH PRESSURE, HIGH TEMPERATURE HOT WATER (HPHW)	SCHEDULE 80 GALVANIZED STEEL PIPING AND FITTINGS TO BE RATED FOR 1500 PSIG.
MEDICAL COMPRESSED AIR	ASTM B88 TYPE L OXY/MED. HARD COPPER WITH WROUGHT COPPER FITTINGS. MEDICAL AIR SUPPLY PIPING SHALL BE FACTORY CLEANED, OIL FREE & SEALED PER NFPA 99. JOINTS TO BE BRAZED.
MEDICAL GAS PIPING	ASTM B88 TYPE L HARD COPPER WITH WROUGHT COPPER FITTINGS. MEDICAL GAS SUPPLY PIPING SHALL BE FACTORY CLEANED, OIL FREE & SEALED PER NFPA 99. JOINTS TO BE BRAZED.
REVERSE OSMOSIS, CONCENTRATE AND BICARBONATE PIPING	SCHEDULE 80 PVC PIPE AND FITTINGS. NO JOINTS OR TURNS GREATER THAN 45°.
STORM DRAIN PIPING, ROOF DRAIN PIPING ABOVE AND BELOW GROUND	STANDARD WEIGHT CAST IRON "NO-HUB" PIPE AND FITTINGS, AND JOINTS OF STANDARD WEIGHT STAINLESS STEEL / NEOPRENE COUPLINGS.
STORM DRAIN PIPING, ROOF DRAIN PIPING BELOW GROUND	SCHEDULE 40 PVC PIPE AND FITTINGS.
UNDER GROUND GAS	APPROVED PLASTIC WITH COMPATIBLE FITTINGS CONFORMING WITH ASTM D 2513 AND SHALL BE INSTALLED IN ACCORDANCE WITH GAS CODE OR WITH SCH. 40 STEEL WITH MALLEABLE IRON FITTINGS OR WELDED JOINTS WITH BUTT WELD FITTINGS. MILL COAT PIPE WITH HIGH DENSITY POLYETHYLENE OVER ADHESIVE UNDERCOATING WRAP FIELD JOINTS AND FITTINGS WITH REPUBLIC "X-TRU-TAPE" OR EQUAL, PROVIDE WITH MARKER TAPE.
UNDERGROUND SANITARY SEWER AND VENT PIPING INSIDE BUILDING AND OUTSIDE BUILDING	SERVICE WEIGHT (SV) CAST IRON HUB AND SPIGOT PIPE AND FITTINGS. COAT INSIDE AND OUTSIDE WITH COAL TAR VARNISH. COMPRESSION NEOPRENE GASKETS FOR JOINTS.
UNDERGROUND SANITARY SEWER AND VENT PIPING INSIDE BUILDING AND OUTSIDE BUILDING	PVC SCHEDULE 40 PIPE AND FITTINGS.
WATER DISTRIBUTION PIPE	WATER DISTRIBUTION PIPE SHALL CONFORM TO NSF 61 AND SHALL BE COPPER AND CONFORM TO THE STANDARDS LISTED IN TABLE 605.4 OF THE I.P.C
WATER SERVICE PIPE	WATER SERVICE PIPE SHALL CONFORM TO NSF 61 AND SHALL BE COPPER AND CONFORM TO THE STANDARDS LISTED IN TABLE 605.3 OF THE I.P.C

PLUMBING PIPING INSULATION SCHEDULE

		INSULATION THICKNESS NOMINAL PIPE SIZE				
DESCRIPTION	INSULATION TYPE	<1	1 TO <1-1/2	1-1/2 TO <4	4 TO <8	≥8
DOMESTIC COLD WATER PIPING BELOW GRADE	PVC OR HDPE JACKET ONLY, NO INSULATION	1	1	1.5	1.5	1.5
CONDENSATE PIPING ABOVE GRADE	ELASTOMERIC, ADD ASTM E84 COMPLIANT JACKET IN AIR PLENUM SPACES	0.5	1	1	1	1.5
PVC WASTE VENT AND WASTE DRAIN IN AIR PLENUM SPACE	COMPRESSED FIBERGLASS OR ELASTOMERIC WITH ASTM E84 COMPLIANT JACKET	0.5	0.5	0.5	0.5	0.5
PVC AND CAST IRON ROOF DRAINS IN ALL AREAS ABOVE GRADE	COMPRESSED FIBERGLASS OR ELASTOMERIC WITH ASTM E84 COMPLIANT JACKET	1	1	1.5	1.5	1.5
WATER COOLER TRAPS, ALL EXPOSED LAVATORY AND SINK TRAPS, TAILPIECES, HOT AND COLD WATER SUPPLY LINES/ANGLE VALVES TO THESE DEVICES	EQUIVALENT TO TRUEBRO 102 E-Z PIPE COVER	0.125	0.125	0.125	0.125	0.125
STEAM	RIGID GLASS-FIBER (FIRE RATED IN PLENUMS)	1.5"	1.5"	2"	2"	2"
DOMESTIC HOT WATER AND HOT WATER RETURN PIPING BELOW GRADE	ELASTOMERIC OR FOAM. ENCAPSULATE WITH PVC OR HDPE JACKET	1	1	1.5	1.5	1.5
DOMESTIC COLD WATER, HOT WATER, AND HOT WATER RETURN PIPING ABOVE GRADE	ELASTOMERIC, ADD ASTM E84 COMPLIANT JACKET IN AIR PLENUM SPACES	1	1	1.5	1.5	1.5
CAST IRON WASTE DRAIN AND WASTE VENT IN ALL AREAS ABOVE GRADE	NOT REQUIRED					
PVC WASTE DRAIN IN WALLS, AND WASTE VENT IN ALL AREAS ABOVE GRADE	COMPRESSED FIBERGLASS OR ELASTOMERIC WITH ASTM E84 COMPLIANT JACKET	1"	1"	1.5"	1.5"	1.5"
HEATING HOT WATER	RIGID GLASS-FIBER	1"	1"	1"	1.5"	1.5"

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SHEET NAME:

PLUMBING SCHEDULES

SHEET NUMBER:

P300

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22A PLUMBING
rev – 20150529

22A 1 GENERAL INSTRUCTIONS

22A 1-1 GENERAL REQUIREMENTS

Requirements under Division 1 and the general and supplementary conditions of these specifications apply to this section and division. Where the requirements of this section and division exceed those of Division 1, this section and division take precedence. Become thoroughly familiar with all their contents as to requirements that affect this division, section or both. The work required under this section includes material, equipment, appliances, transportation, services, and labor required to complete the entire system as required by the drawings and specifications, or reasonably inferred to be necessary to facilitate each system's functioning as implied by the design and the equipment specified.

The specifications and drawings for the project are complementary, and portions of the work described in one, shall be provided as if described in both. In the event of discrepancies, notify the engineer and request clarification prior to proceeding with the work involved.

Drawings are graphic representations of the work upon which the contract is based. They show the materials and their relationship to one another, including sizes, shapes, locations, and connections. They also convey the scope of work, indicating the intended general arrangement of the equipment and other materials without showing all of the exact details as to elevations, offsets, control lines, and other installation requirements. Use the drawings as a guide when laying out the work and to verify that materials and equipment will fit into the designated spaces, and which, when installed per manufacturers' requirements, will ensure a complete, coordinated, satisfactory and properly operating system. Determine exact locations by job measurements, by checking the requirements of other trades, and by reviewing all contract documents. Correct errors that could have been avoided by proper checking and inspection, at no additional cost to the owner.

Specifications define the qualitative requirements for products, materials, and workmanship upon which the contract is based.

22A 1-2 DEFINITIONS

Whenever used in these specifications or drawings, the following terms shall have the indicated meanings:

Furnish: "to supply and deliver to the project site, ready for unloading, unpacking, assembling, installing, and similar operations."

Install: "to perform all operations at the project site, including, but not limited to, and as required: unloading, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, testing, commissioning, starting up and similar operations, complete, and ready for the intended use."

Provide: "to furnish and install complete, and ready for the intended use."

Furnished by owner (or owner-furnished) or furnished by others: "an item furnished by the owner or under other divisions or contracts, and installed under the requirements of this division, complete, and ready for the intended use, including all items and services incidental to the work necessary for proper installation and operation. Include the installation under the warranty required by this division.

Engineer: where referenced in this division, "engineer" is the engineer of record and the design professional for the work under this division, and is a consultant to, and an authorized representative of, the architect, as defined in the general and/or supplementary conditions. When used in this division, it means increased involvement by, and obligations to, the engineer, in addition to involvement by, and obligations to, the "architect".

AHJ: the local code and/or inspection agency (authority) having jurisdiction over the work.

NRTL: nationally recognized testing laboratory, as defined and listed by OSHA in 29 CFR 1910.7 (e.g., UL, ETL, CSA), and acceptable to the AHJ over this project.

The terms "equivalent", "equivalent", or "equal" are used synonymously and shall mean "accepted by or acceptable to the engineer as equivalent to the item or manufacturer specified". The term "approved" shall mean labeled, listed, certified, or all three, by an NRTL, and acceptable to the AHJ over this project.

22A 1-3 PRE-BID SITE VISIT

Prior to submitting bid, visit the site of the proposed work and become fully informed as to the conditions under which the work is to be done. Failure to do so will not be considered sufficient justification to request or obtain extra compensation over and above the contract price.

22A 1-4 MATERIAL AND WORKMANSHIP

Provide all material and equipment new and in first class condition. Provide markings or a nameplate for all material and equipment identifying the manufacturer and providing sufficient reference to establish quality, size and capacity. In general, provide the following quality grade(s) for all materials and equipment:
Commercial Specification Grade
Pipe, pipe fittings, pipe specialties and valves shall be manufactured in plants located in the United States.

Work performed under this contract shall provide a neat and "workmanlike" appearance when completed, to the satisfaction of the architect and engineer. Workmanship shall be the finest possible by experienced mechanics of the proper trade.

The complete installation shall function as designed and intended with respect to efficiency, capacity, noise level, etc. Abnormal or excessive noise from equipment, devices or other system components will not be acceptable.

Remove from the premises waste material present as a result of work. Clean equipment installed under this contract to present a neat and clean installation at the termination of the work.

Repair or replace public and private property damaged as a result of work performed under this contract to the satisfaction of authorities and regulations having jurisdiction.

22A 1-5 MANUFACTURERS

In other articles where lists of manufacturers are introduced, subject to compliance with requirements, provide products by one of the manufacturers specified.

Where a list is provided, manufacturers listed are not in accordance with any ranking or preference.

Where manufacturers are not listed, provide products subject to compliance with requirements from manufacturers that have been actively involved in manufacturing the specified product for no less than 5 years.

22A 1-6 COORDINATION

Coordinate all work with other divisions and trades so that the various components of the systems will be installed at the proper time, fit the available space, and will allow proper service access to those items requiring maintenance. Refer to all other division's drawings, and to relevant equipment submittals and shop drawings to determine the extent of clear spaces. Components which are installed without regard to the above shall be relocated at no additional cost to the owner.

Unless otherwise indicated, the general contractor will provide chases and openings in building construction required for installation of the systems specified herein. Contractor shall furnish the general contractor with information where chases and openings are required. Make all offsets required to clear equipment, beams and other structural members, and to facilitate concealing system components in the manner anticipated in the design. Keep informed as to the work of other trades engaged in the construction of the project, and execute work in a manner as to not interfere with or delay the work of other trades.

Figured dimensions shall be taken in preference to scale dimensions. Contractor shall take his own measurements at the building, as variations may occur. Contractor will be held responsible for errors that could have been avoided by proper checking and inspection

Provide materials with trim that will properly fit the types of ceiling, wall, or floor finishes actually installed. Model numbers listed in the construction documents are not necessarily intended to designate the required trim.

22A 1-7 ORDINANCES, CODES, AND STANDARDS

Work performed under this contract shall, at a minimum, be in conformance with applicable national, state and local codes having jurisdiction. Equipment furnished and associated installation work performed under this contract shall be in strict compliance with current applicable codes adopted by the local AHJ including any amendments and standards as set forth by the National Fire Protection Association (NFPA), Underwriters Laboratories (UL), Occupational Safety and Health Administration (OSHA), American Society of Mechanical Engineers (ASME), American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE), American National Standards Institute (ANSI), American Society of Testing Materials (ASTM) and other national standards and codes where applicable. Additionally, comply with rules and regulations of public utilities and municipal departments affected by connection of services.
Where the contract documents exceed the requirements of the referenced codes, standards, etc., the contract documents shall take precedence.

Promptly bring all conflicts observed between codes, ordinances, rules, regulations, referenced standards, and these documents to the engineer's attention for final resolution. Contractor will be held responsible for any violation of the law.

Procure and pay for permits and licenses required for the accomplishment of the work herein described. Where required, obtain, pay for and furnish certificates of inspection to owner. Contractor will be held responsible for violations of the law.

22A 1-8 PROTECTION OF EQUIPMENT AND MATERIAL

Store and protect from damage equipment and materials delivered to job site, in accordance with manufacturers' recommendations. For materials and equipment susceptible to changing weather conditions, dampness, or temperature variations, store inside in conditioned spaces. For materials and equipment not susceptible to these conditions, cover with waterproof, tear-resistant, heavy tarp or polyethylene plastic as required to protect from plaster, dirt, paint, water, or physical damage. Equipment and material that has been damaged by construction activities will be rejected, and contractor shall furnish new equipment and material as required at no additional cost to the owner.

Keep premises broom clean from foreign material created during work performed under this contract. Piping, equipment, etc. shall have a neat and clean appearance at the termination of the work.

Plug or cap open ends of piping systems while stored and installed during construction when not in use to prevent the entrance of debris into the systems. Keep the manufacturer-provided protective coverings on floor drains, floor sinks and trench drains during construction. Remove coverings at the termination of the work and polish exposed surfaces

22A 1-9 SUBSTITUTIONS

Include in the base bid the products specifically named in these specifications or on the drawings. Submit, in the form of alternates, with bid, products of any other manufacturers for similar use, provided the differences in cost, if any, are included for each proposed alternate.

No substitutions will be considered with receipt of Bids, unless the Architect and Engineer have received from the Bidder a written request for approval to bid a substitution at least ten calendar days prior to the date for receipt of Bids, and have approved the substitution request. Include, with each such request, the name of the material or equipment for which substitution is being requested, and a complete description of the proposed substitution, including drawings, cut sheets, performance and test data, and all other information necessary for an evaluation. Include also a statement setting forth changes in other materials, equipment or other work that would be required to incorporate the substitution. The burden of proof of the merit of the proposed substitute is upon the proposer. The proposer of any substitutions shall compensate the Engineer at a rate of $150.00 per hour for time spent evaluating proposed substitutions and or the subsequent revisions to the design required to utilize the substitution.

The Architect's or Engineer's decision to approve or disapprove a substitution in a Bid is final.

If the proposed substitution is approved prior to receipt of Bids, such approval will be stated in an Addendum. Bidders shall not rely upon approvals made in any other manner, including verbal.

No substitutions will be considered after receipt of Bids and before award of the Contract.

No substitutions will be considered after the Contract is awarded unless specifically provided in the Contract Documents.

22A 1-10 SUBMITTALS

Assemble and submit to the architect, for engineer's review, manufacturers' product literature for material and equipment to be furnished, installed, or both, under this division, including shop drawings, manufacturers' product data and performance sheets, samples, and other submittals required by this division. Highlight, mark, list or indicate the materials, performance criteria and accessories that are being proposed. Provide the number of submittals required by division 1; however, at a minimum, submit two (2) sets. Before submitting, verify that all materials and equipment submitted are mutually compatible and suitable for the intended use, fit the available spaces, and allow ample and code-required room for access and maintenance. Submittals shall contain the following information. Submittals not so identified will be returned to the contractor without action:

The project name.
The applicable specification section and paragraph.
The submittal date.
The contractor's stamp, which shall certify that the stamped drawings have been checked by the contractor, comply with the drawings and specifications, and have been coordinated with other trades.

Submittals and shop drawings shall not contain HP Engineering's firm name or logo, nor shall it contain the HP Engineering's engineers' seal and signature. They shall not be copies of HP Engineering's work product.

Transmit submittals as early as required to support the project schedule. Allow for two weeks engineer review time, plus mailing time, plus a duplication of this time for re-submittals, if required. The engineer's submittal reviews will not relieve the contractor from responsibility for errors in dimensions, details, size of members, or quantities; or for omitting components or fittings; or for not coordinating items with actual building conditions.

Refer to division 1 for acceptance of electronic submittals for this project. For electronic submittals, contractor shall submit the documents in accordance with the procedures specified in division 1. Contractor shall notify the architect and engineer that the shop drawings have been posted. If electronic submittal procedures are not defined in division 1, contractor shall include the website, user name and password information needed to access the submittals. For submittals sent by e-mail, contractor shall copy the architect and engineer's designated representatives. Contractor shall allow the engineer review time as specified above in the construction schedule. Contractor shall submit only the documents required to purchase the materials and/or equipment in the electronic submittal and shall clearly indicate the materials, performance criteria and accessories being proposed. General product catalog data not specifically noted to be part of the specified product will be rejected and returned without review.

22A 1-11 ELECTRONIC DRAWINGS

In preparation of shop drawings or record drawings, contractor may, as an option, obtain electronic drawing files in Revit, AutoCAD, or DXF format from the engineer for a fee of $200 for the first sheet and $100 per sheet for each additional sheet. Contact the architect for written authorization; and, contact the engineer to obtain the necessary release agreement form and to indicate the desired shipping method and drawing format. In addition to payment, architect's written authorization and engineer's release agreement form must be received before electronic drawing files will be sent.

22A 1-12 OPERATION AND MAINTENANCE INSTRUCTIONS

Submit to the architect, for engineer's review, copies each of operations and maintenance instruction manuals, appropriately bound into manual form including approved copies of the following, revised if necessary to show system and equipment as actually installed. Paper clips, staples, rubber bands, and mailing envelopes are not considered approved binders. Provide the number of submittals required by Division 1; however, at a minimum, submit two (2) sets, and include, at a minimum, the following information:

Cover sheet that lists the project name, date, owner, architect, consulting engineer, general contractor, sub-contractor, and an index of contents.
Manufacturers' catalogs and product data sheets
Wiring diagrams
Operation and Maintenance instructions
Parts lists
Approved shop drawings
Test reports as defined for the systems and equipment provided or furnished or installed under this contract.
Names, addresses, telephone numbers, and e-mail addresses of local contacts for warranty services and spare parts.

Submit manuals prior to requesting the final punch list and before any requests for substantial completion. Final approval of this division's systems installed under this contract will be withheld until this equipment brochure is received and deemed complete by the architect and engineer.

Provide "as-built" drawings (see Division 1 and general conditions).

22A 1-13 TRAINING

At a time mutually agreed upon between the owner and contractor, provide the services of a factory trained and authorized representative to train owner's designated personnel on the operation and maintenance of the equipment provided for this project.

Provide training to include but not be limited to an overview of the system and/or equipment as it relates to the facility as a whole; operation and maintenance procedures and schedules related to startup and shutdown, troubleshooting, servicing, preventive maintenance and appropriate operator intervention; and review of data included in the operation and maintenance manuals.

Submit a certification letter to the architect stating that the owner's designated representative has been trained as specified herein. Letter shall include date, time, attendees and subject of training. The contractor and the owner's representative shall sign the certification letter indicating agreement that the training has been provided.

Schedule owner training with at least 7 days' advance notice.

22A 1-14 WARRANTIES

Warrant each system and each element thereof against all defects due to faulty workmanship, design or material for a period of 12 months from date of substantial completion, unless specific items are noted to carry a longer warranty in the construction documents or manufacturer's standard warranty exceeds this duration. Warranties shall include labor and material. Remedy all defects, occurring within the warranty period(s), as stated in the general conditions and Division 1 without any additional costs to the owner.

Perform any required remedial work promptly, upon written notice from the engineer or owner.

At the time of substantial completion, deliver to the owner all warranties, in writing and properly executed, including term limits for warranties extending beyond the required period, each warranty instrument being addressed to the owner and stating the commencement date and term.

22A 1-15 EXCAVATION AND BACKFILLING

Perform excavation and backfill required for installation of underground work under this contract. Trenches shall be of sufficient width. Crib or brace trenches to prevent cave-in or settlement. Do not excavate trenches close to columns and walls of building without prior consultation with the architect. Use pumping equipment if required to keep trenches free of water. Backfill trenches in maximum 6" layers of well-tamped dry earth in a manner to prevent future settlement.

Excavation as herein specified shall be classified as common excavation. Common excavation shall comprise the satisfactory removal and disposition of material of whatever substances and of every description encountered, including rock, if any, within the limits of the work as specified and shown on the drawings. Excavation shall be performed to the lines and grades indicated on the drawings. Excavated materials which are considered unsuitable for backfill, and surplus of excavated material which is not required for backfill, shall be disposed of by the contractor at his own expense and responsibility, and to the satisfaction of the architect.

22A 1-16 COINCIDENTAL DAMAGE

Repair all streets, sidewalks, drives, paving, walls, finishes, and other facilities damaged in the course of this work. Repair materials shall match existing construction. All backfilling and repairing shall meet all requirements of the owner, city and others having jurisdiction. Repair work shall be thoroughly first class. Conform to all requirements of Division 2 of these specifications.

22A 1-17 CUTTING AND PATCHING

Following the requirements in Division 1, cut walls, floors, ceilings, and other portions of the facility as required to perform work under this division. Obtain permission of the architect, owner, or both, before doing any cutting. Cut all holes as small as possible. Patch walls, floors, and other portions of the facility as required by work under this division. All patching shall be thoroughly first class and shall match the original material and construction, including fire ratings if applicable in a manner satisfactory to the architect.

22A 1-18 ROUGH-IN

Coordinate without delay all roughing-in with other divisions. Conceal all piping and rough-in except in unfinished areas and where otherwise indicated in the construction documents.

22A 1-19 CONCRETE BASES

Provide concrete bases for equipment where indicated on the drawings. Concrete bases shall have chamfered edges. Size of pad shall be a minimum of 4" greater than the footprint of the equipment that it is supporting.

Construct equipment bases and housekeeping pads of a minimum 28 day, 4000 psi concrete conforming to American Concrete Institute standard building code for reinforced concrete (ACI 318-99) and the latest applicable recommendations of the ACI standard practice manual. Concrete shall be composed of cement conforming to ASTM C 150 Type I, aggregate conforming to ASTM C33, and potable water. Exposed exterior concrete shall contain 5 to 7 percent air entrainment.

Unless otherwise specified or shown on the structural drawings, reinforce equipment bases and housekeeping pads with No. 4 reinforcing bars conforming to ASTM A 615 or 6x6 – W2.9 x W2.9 welded wire mesh conforming to ASTM A185. Place reinforcing bars 24" on center with a minimum of two bars each direction.

Provide galvanized anchor bolts for equipment placed on concrete equipment bases and housekeeping pads or on concrete slabs. Anchor bolts size, number and placement shall be as recommended by the manufacturer of the equipment.

Concrete equipment bases shall have minimum heights in accordance with the following: for water heaters, water softeners and other equipment not listed, minimum height is 4". For water heaters over 200 gallons capacity and domestic water booster pumps, minimum height is 6". Height of equipment bases applies to equipment installed on slab-on-grade. For equipment installed on floors above grade and on the roof, refer to the drawings.

22A 1-20 STRUCTURAL STEEL

Structural steel used for pipe supports, equipment supports, etc., shall be new and clean, and shall conform to ASTM designation A-36.

Support plumbing equipment and piping from the building structure. Do not support plumbing equipment and piping from ceilings, other mechanical or electrical components, and other non-structural elements.

22A 1-21 ACCESS DOORS

Provide access doors in ceilings and walls where indicated or required for access to concealed valves and equipment installed under this section. Provide concealed hinges, screwdriver-type lock, anchor straps; manufactured by Milcor, Zurn, Titus, or equal. Obtain architect's approval of type, size, location, and color before ordering.

22A 1-22 PENETRATIONS

Provide sleeves for pipes passing through above grade concrete or masonry walls, concrete floor or roof slabs. Sleeves are not required for core drilled holes in existing masonry walls, concrete floors or roofs. Provide 10 gauge galvanized steel sleeves for sleeves 6" and smaller. Provide galvanized sheet metal sleeves for larger than 6". Schedule 40 PVC sleeves are acceptable for installation in areas without return air plenums.

Seal elevated floor, exterior wall and roof penetrations watertight and weathertight with non-shrink, non-hardening commercial sealant. Pack with mineral wool and seal both ends with minimum of ½" of sealant.

Seal around penetrations of fire rated assemblies. Coordinate fire ratings and locations with the architectural drawings. Refer to architectural specifications for fire stoppings. Provide a product schedule for UL listing, location, wall or floor rating and installation drawing for each penetration fire stop system.

Extend pipe insulation for insulated pipe through floor, wall and roof penetrations, including fire rated walls and floors. The vapor barrier shall be maintained. Size sleeve for a minimum of 1" annular clear space between inside of sleeve and outside of insulation.

Seal concrete or masonry exterior wall penetrations below grade with "wall pipes" and mechanical sleeve seals. Provide cast iron "wall pipes" with integral waterstop ring manufactured by Josam, Jay R. Smith, Wade, Watts or Zurn. Provide modular mechanical sleeve seals, manufactured by Thunderline / Link Seal, Calpico, Inc., and Metraflex.

Seal elevated concrete slab with water proof membrane penetrations with "wall pipes" and water proof sealant. Secure waterproof membrane flashing between "wall pipe" clamping flange and clamping ring. Provide cast iron "wall pipes" with integral waterstop ring manufactured by Josam, Jay R. Smith, Wade, Watts or Zurn.

Provide sleeves for horizontal pipe passing through or under foundation. Sleeves shall be cast iron soil pipe two nominal pipe sizes larger than the pipe served.

Provide Schedule 40 PVC pipe sleeves for vertical pressure pipe passing through concrete slab on grade. Sleeves shall be one nominal pipe size larger than the pipe served and two pipe sizes larger than pipe served for ductile iron pipes with restraining rods. Seal water-tight with silicone caulk.

Provide 1/2" thick cellular foam insulation around perimeter of non-pressure pipe passing thru concrete slab on grade. Insulation shall extend to 2" above and below the concrete slab.

22A 1-24 ELECTRICAL WIRING

Line Voltage control and interlock wiring shall be provided by the Division 26 contractor. Low Voltage control wiring shall be provided by the Division 23 contractor. Required conduit and rough-ins for low Voltage control wiring shall be provided by the Division 26 contractor. Furnish wiring diagrams to the Division 26 contractor as required for proper equipment hookup. Coordinate with the Division 26 contractor the actual wire sizing amps for the equipment (from the equipment nameplate) to ensure proper installation.

22A 1-25 EQUIPMENT FURNISHED BY OTHERS

Furnish and install roughed-in wastes, vents and water services. Provide final connection to kitchen equipment, furnished by others, in locations as indicated on the drawings. Provide accessory items that are required but not furnished with the equipment, including traps, stop valves, PRV's, indirect drain from equipment to floor drains, and accessory items indicated or required for the proper operation of the complete system at the termination of the work.

Contractor shall be responsible for correct rough-in dimensions, and shall verify same with architect and/or equipment supplier prior to service installations.

22A 1-26 ALTERNATES

Refer to the architectural portion of the specification for list of alternates. Applicable sections of the base specifications shall apply to all work required by the alternate unless otherwise specified. Determine whether or not and how each alternate affects work. Include labor, materials, equipment and transportation services necessary for and incidental to the completion of work under each particular alternate. Furnish separate bid for each alternate applicable to work, stating the amount to be added or deducted from the base bid.

22A 1-27 EXTERIOR UTILITY CONNECTIONS
Terminate domestic water, storm, and sewer lines at a point approximately five feet from the building wall, or as shown on the drawings. Make connection to the various services provided by others and coordinate connection requirements with civil engineer. Verify that installation will tie into the various services provided by others at the indicated invert elevation point prior to installation. If the installation will not tie into the indicated invert elevation point while maintaining proper fall, notify architect and civil engineer so that an alternative may be determined.

Provide service piping and accessories required to complete utility connections that are not furnished by the serving utility.
Coordinate with the local gas service company to provide a new gas service, including gas meter, shut-off valves, and regulator as indicated on the drawings. Installation shall be in complete conformance with the requirements of the local gas service company.

22A 1-29 BUILDING OPERATION

Comply with the schedule of operations as outlined in the architectural portions of this specification. Building shall be in continuous operation. Accomplish work that requires interruption of building operation at a time when the building is not in operation, and only with written approval of building owner and/or tenant. Coordinate interruption of building operation with the owner and/or tenant a minimum of 7 days in advance of work.

22A 1-30 SYSTEM TESTING AND ADJUSTING

Upon completion of each phase of the installation, test each system in conformance with local code requirements and as noted below. Furnish labor and equipment required to test plumbing work installed under this contract, and assume costs involved in making the tests, and repairing and/or replacing damage resulting therefrom.

Notify the architect and the authority having jurisdiction, three (3) working days prior to making plumbing system tests. Leave concealed work uncovered until the required tests have been completed, but if necessary due to construction procedure, tests on portions of the work may be made, and when satisfactory, the work may be concealed. Test piping before insulation is installed, and before backfill. Pipes, joints, flanges, valve stems, etc., shall be leak tight. Repair or replace system defects with new materials. Caulking of defective joints, cracks or holes will not be permitted. Repeat tests after defects have been eliminated. Make tests in the presence of the administrative authority and/or the owner's authorized representative.

Upon completion of the systems installation, and prior to acceptance by the architect and engineer, make general operating tests to demonstrate that equipment and systems are in proper working order, and are functioning in conformance with the intent of the drawings and specifications. As a part of these tests, open every water outlet to ensure complete system flushing, remove and clean faucet aerators, clean strainers, light pilot lights, and operate every piece of equipment furnished under this contract to demonstrate proper functioning.

Test the drainage and vent system by plugging openings with test plugs, except those at the top of the stacks. Fill the system with water; test results will be satisfactory if the water level remains stationary for not less than one (1) hour. Subject the drainage and vent system to a pressure of at least ten (10) feet of water. If leaks develop, repair them and repeat the test.

Test the domestic water system by filling it with water and then isolating the system from its source. Keep the system closed for a period of twenty-four hours, with no fixture being used. The pressure differential for this test period shall not exceed 10 psig. Test water piping to a 125 psi hydrostatic pressure.

For low pressure natural gas systems, subject the pipe to 10 psig air pressure for a period of one hour. The resultant pressure differential for this period shall be 0 psig. Test per gas company requirements where required.

22A 2 PLUMBING PIPING

22A 2-1 PIPING MATERIALS

Materials specified or noted on the drawings are subject to the approval of local code authorities. Verify approval before installing any material or joining method.

Domestic Water (cold, hot and hot water recirculation): Domestic water piping installed above the floor slab inside the building shall be type "L" hard temper copper tube with wrought copper fittings and soldered connections made up with 95/5 solder. Brazed mechanically formed tee connections (T-drill) may be used in copper lines where approved by code; connection shall be made with brazed silver solder (Silfos) joints in conformance with manufacturer's instructions.

Underground domestic water piping 2" and smaller shall be type "K" soft temper copper tubing with flared copper alloy fittings and connections, or type "K" hard temper copper tubing with conventional wrought copper fittings and silver solder (Silfos) joints. Install as few underground copper piping joints as possible. At building service entrance, no joints shall be installed under or within 5 feet of the building. Install domestic water piping below grade outside building at adequate depth to prevent freezing.

Underground domestic water piping 3" and larger shall be Class 52 ductile iron meeting the requirements of ANSI / AWWA Standard C151/A21.51. Piping shall be double cement lined in accordance with ANSI / AWWA Standard C104/A21.4. Fittings shall have mechanical joints. At contractor's option, pipe joints in straight runs (not at fittings) and not installed under or within 5 feet of the building slab may be push-on joints. Joints shall conform to the requirements of ANSI 21.11.

Interior Waste and Vent Below Slab: Waste and vent pipe below slab inside building shall be service weight cast iron soil pipe with hub and spigot fittings with neoprene gasket joints, meeting ASTM A74, manufactured by AB & I Foundry, Charlotte or Tyler Pipe and bearing the trademark of the CISPI and NSF. Hubless waste and vent pipe is not permitted below base slab. PVC Schedule 40 DWV ASTM D2665 pipe with PVC meeting ASTM B1784, "solid wall" cell Class 12454-B with ASTM 2665 socket fittings with solvent weld joints is also permitted where approved by code.

Interior Waste and Vent Above Slab: Waste and vent pipe above slab inside building shall be hubless cast iron soil pipe and fittings, meeting ASTM A888 and CISPI 301, manufactured by AB & I Foundry, Charlotte or Tyler Pipe and bearing the trademark of the CISPI and NSF. PVC Schedule 40 DWV ASTM D2665 pipe with PVC meeting ASTM B1784, "solid wall" cell class 12454-B with ASTM 2665 socket fittings with solvent weld joints is also permitted where approved by code,
(Note: PVC piping is not allowed in ceiling return air plenums)

Interior Storm: Inside building shall be same as specified for interior waste and vent pipe.

Deionized Water: Schedule 80 PP Kynar PVDF by Orion in return air plenums pipe and fittings, mechanical couplings above grade and thermal fusion welded below grade, installed per manufacturer's recommendations. Pipe shall be carefully cut and assembled to avoid creating pits and crevices where contamination may accumulate. Slope piping at a 1% grade to allow for drainage. Coordinate requirements for PP pipe with ASTM type I quality deionized water.

Connections To Plumbing Fixtures And Equipment: 1-1/4" and larger waste connections from fixture traps to cast iron pipe shall be "DWV" copper with wrought copper drainage pattern fittings with copper sweat or compression joints at fixture trap connections and threaded joints at connections to cast iron pipe.

Indirect and Condensate Drain Inside Building: Indirect and condensate drain pipe installed inside the building shall be Type "M" hard copper with wrought copper fittings for 1" and smaller and "DWV" copper with wrought copper drainage pattern fittings for 1-1/4" and larger Install cleanouts at elbows greater than 45 degrees.

Indirect and Condensate Drain Outside Building: Indirect and condensate drain pipe installed outside the building above ground shall be Type "M" for 1" and smaller and "DWV" for 1-1/4" and larger Terminate at nearest roof drain, gutter or other location as shown drawings. Install cleanouts at elbows greater than 45 degrees.

LEVEL 5
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STATE OF TEXAS
EMILY VIRGINIA VALDENMEYER
135257
LICENSED PROFESSIONAL ENGINEER
10/25/2021

HP ENGINEERING INC.
F-13720

HP ENGINEERING
PROJECT NO. 21-64T
100 % COMPLETE
HP ENGINEERING INC.
142 HOWELL STREET,SUITE 170
DALLAS, TX 75207
(479) 490-2500
F-18023

PROJECT INFORMATION:

AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 Elizabeth St.
Texarkana, TX 75503

PROJECT NUMBER: 21-64T
ISSUE DATE: 10-25-2021
REVISIONS:

SHEET NAME:

PLUMBING SPECIFICATIONS

SHEET NUMBER:

P500

10/25/2021 11:04:03 AM

22A 2-2 PIPING AND EQUIPMENT INSULATION

Domestic cold water, hot water, indirect and condensate drain pipe (within building)

interior horizontal storm drain piping above ceiling and exposed

Refer to pipe insulation schedule on drawings for insulation details. Provide with self-sealing lap to provide a continuous vapor barrier by Certainteed, Owens-Corning or Armstrong. For hot piping, provide pipe hangers and riser clamps sized for the outside diameter of piping. Butt insulation to hanger or riser clamp for vertical pipe. Seal exposed insulation with insulation sealer. Exception for vertical piping: provide clamps sized for the outside diameter of the vertical pipe and extend clamp through insulation. Seal penetrations of insulation and vapor barrier with wet coat of vapor barrier lap cement. For cold piping at hangers provide 8" long sections of high density, high temperature calcium silicate by Johns-Manville, fiberglass by Knauf, or 8" long styrofoam billets by Dow or flexible unicellular piping insulation meeting ASTM C 534-01, Type I with integral high density pipe supports and encased in steel insulation shield by Cooper B-Line / Armacell or equivalent. Insulation shall be continuous along the pipe surface, except at valves, unions, and where piping is exposed at fixtures. Provide insulation on vent piping within six feet of vent through the roof. Provide insulation on domestic cold and hot water pipes installed in walls and chases.

Roof drain bodies: 2" one-piece fiberglass covering with fire-resistant jacket with self-sealing lap to provide a continuous vapor barrier, by Certainteed, Owens-Corning or Armstrong.

Provide insulation protection shield at each hanger for insulated piping.

Cover fittings with Zeston, Knauf, or equal one-piece PVC pre-molded insulating covers. Fitting covers, jackets and adhesives shall not exceed flame spread rating of 25 and smoke development rating of 50 per ASTM E84. At all elbows and tees, fill voids between covers and piping with fiberglass insulation and tape joints. Install pipe insulation in compliance with manufacturer's recommendations. Where pre-molded insulating fittings are not approved by local authorities, miter insulation at fittings.

Provide 2" fiberglass thick insulation for water, sanitary, waste or grease waste piping in unheated spaces where indicated on the drawings.

22A 2-3 PIPING JOINTS

Copper Tubing: Joints in hard temper tubing shall be soldered joints using lead-free 95/5 solder except where tubing is installed below grade or below the base slab, in which case joints shall be soldered with silver solder (Silfos). Joints in soft temper copper tubing shall be of the flared type installed in compliance with the fitting manufacturer's recommendations.

Threaded Steel Pipe: Threaded joints shall be full and clean, cut with not more than three (3) threads exposed beyond the fittings. Make joints tight with graphite base pipe joint compound and paint exposed threads of ferrous pipe with acid-resisting paint after piping has been tested and proven tight. No caulking, lamp-wick or other material will be permitted for correction of defective joints.

Welded Steel Pipe: Welded joints shall be of the butt welded single "vee" type. Bevel pipe at a 45 degree angle to within 1/16" of the inside wall, and build up the weld to one fourth greater depth than the pipe wall thickness. Welding shall be either electric or oxy-acetylene, performed in conformance with the ASME code for pressure pipe welding, and only by experienced certified welders.

Cast Iron Pipe Below Grade: Joints in bell and spigot cast iron waste and vent pipe shall be neoprene compression gaskets, Tyseal or equal.

Cast Iron Pipe Above Grade: Joints in hubless pipe shall be standard CISPI 310 domestically manufactured by Anaco, AB & I Foundry, Charlotte, Husky, Ideal, Tyler, Mission or Femco.

PVC Pipe: Clean joints free from debris and moisture. Apply PVC primer meeting ASTM F656 to each joint. Apply solvent cement meeting ASTM D2564 and make joint while wet and in accordance with ASTM D2855.

Pipe Adapters: Make connection of new waste pipe to new or existing dissimilar waste pipe using adapter couplings. Provide Fernco, Proflex 3000 series or Mission Flexseal MR56 series with neoprene adapter gasket with stainless steel shield and hose clamps for connecting dissimilar pipes above grade. Provide Fernco, 1056 series or Mission sewer couplings with neoprene adapter gasket and hose clamps for connecting dissimilar pipes below grade and coat stainless steel bands with mastic

22A 2-4 PIPING INSTALLATION

General: Clean pipe thoroughly prior to installation. Ream ends of pipe to remove burrs. Cut pipe accurately to measurements taken on the job. Install with adequate clearance for installation of coverings where required. Pipe shall not be sprung or bent. Neatly align pipe, connect it securely, and support it from the building structure with hangers as specified below. Provide chrome-plated escutcheons on pipes passing through ceilings, floors or walls of finished spaces. Run pipes freely through floor and wall penetrations using pipe sleeves. Do not grout in place unless required for structural fire integrity. Install pipe concealed in finished spaces wherever possible. Use a dielectric union where ferrous and copper pipe connect. Dielectric union shall have a zinc-plated steel body, a threaded nylon insert, and insulating pressure gasket. No ferrous metal-to-copper connection made without insulating unions will be allowed.

Hanger & Supports: Pipe hangers shall be as described in the specifications by B-Line or equal by Anvil, Michigan, Truscon, or Unistrut. Connect hangers to the structure with side beam connectors and all thread hanger rods. Provide engineered support struts between joists and other structural members as required to provide a rigid hanging installation. Do not hang pipes from other pipes, conduit or ductwork. Provide hanger rods and space hangers at intervals as specified in "hanger spacing". Provide support within 1' of each elbow and tee. Provide supports within 1' of each equipment connection. Provide two nuts on threaded supports to securely fasten the support. Install hanger types or supports for various piping as follows:

Copper Tube: Adjustable band hangers for bare copper tube 3" and smaller shall be B-Line #B3170 CT copper plated adjustable band swivel ring type. Adjustable band hangers for insulated copper tube and 3" smaller shall be B-Line #B3170 NF adjustable band swivel ring type. Clevis hangers for insulated copper tube 4" and larger shall be B-Line #B3100 galvanized steel clevis type. Support exposed copper tube 2" and smaller to walls or chases with B-Line #B3198 RCT copper coated extension split ring pipe clamps, 3/8" threaded rod and B-Line #B3199 CT ceiling flanges. Support copper tube in chases and walls at plumbing fixtures with plastic or copper brackets secured to structure and u-bolts sized to bare on the pipe. Riser clamps to support vertical copper tube shall be B-Line #B3373 CT copper coated steel, cut insulation, seal vapor barrier, and attach to bare tube.

Steel Pipe: Adjustable band hangers for 2" and smaller shall be B-Line #B3170 NF adjustable band swivel ring type. Clevis hangers for 2-1/2" and larger shall be B-Line #B3100 galvanized steel clevis type. Riser clamps to support vertical pipe shall be B-Line #B3373 galvanized steel.

Cast Iron Pipe: Adjustable band hangers for 2" and smaller shall be B-Line #B3170 NF adjustable band swivel ring type. Clevis hangers for 3" and larger shall be B-Line #B3100 galvanized steel clevis type. Riser clamps to support vertical pipe shall be B-Line #B3373 galvanized steel.

PVC Pipe: Adjustable band hangers for 3" and smaller shall be B-Line #B3170 NF adjustable band swivel ring type. Clevis hangers for 4" and larger shall be B-Line #B3100 galvanized steel clevis type. Riser clamps to support vertical pipe shall be B-Line #B3373 galvanized steel.

Insulation Protection Shields: B-Line #B3151 of 18 gauge galvanized sheet metal. Shield shall cover half of the circumference of the pipe and shall be of length indicated by manufacturer for pipe size and thickness of insulation.

Hanger Spacing, Rod Sizes & Connectors: Connect rods to steel beams or joists with B-Line #B3031 or #B3033 beam clamps as required. Connect rods to concrete with B-Line #B3014 malleable iron single type inserts with malleable iron nut. Connect rods in wood construction with B-Line #B3058 side beam connectors. Hang and support piping with spacing and rod sizes as follows:

Copper Tube: 1-1/2" and smaller - every 6' with 3/8"hanger rods; 2" every 10' with 3/8"hanger rods; 2-1/2" every 10' with 3/8" hanger rods; 3" every 10' with ½" rods; 4" every 10' with 5/8" hanger rods. Support vertical copper tube every 10'.

Steel Pipe: 1" and smaller - every 8' with 3/8" hanger rods; 1-1/4" to 2" every 10' with 3/8" hanger rods; 2-1/2" and 3" every 10' with ½" hanger rods; 4" every 10' with 5/8" hanger rods. Support vertical steel pipe every 10'.

Cast Iron Pipe: Every 10' and within 1' of each joint. 2" and smaller with 3/8" hanger rods; 3" with 1/2" hanger rods; 4" with 5/8" hanger rods; 6" with 3/4" hanger rods; 8" and larger with 7/8" hanger rods. Support vertical cast iron pipe every 15'.

PVC Pipe: Support all pipes sizes every 4'. 1-1/2" and smaller with 3/8" hanger rods; 2" with 1/2"hanger rods; 2-1/2" and 3" with 1/2" hanger rods; 4" and larger with 5/8" hanger rods. Support vertical PVC pipe every 4'.

Supports on roof: Support piping on roof with 4" x 4" x 12" long CCA rot-proof wood blocks. Set wood blocks on 18" x 18" x 3/16" thick roof walkway material. Connect pipe to wood blocks with galvanized steel pipe clamp and 1/4" x 1-1/2" long cadmium plated lag screws. Stack blocks and nail them together as required and support pipe as required to change pipe elevation. Support pipe with spacing as described above at a minimum 7" above the roof. Set blocks on 18" x 18" x 3/16" thick roof walkway material compatible with actual roof material.

Supports On Floor: Support piping from the floor where required for ferrous pipe or insulated copper tube, shall be B-Line #B3093 galvanized steel with pipe saddle, threaded shank for height adjustment and floor stand secured to the floor.

Below Ground Installation For Soil, Waste And Storm: Install soil and waste piping to a uniform slope of not less than 1/8" per foot for piping 3" or larger, and not less than 1/4" per foot for piping 2-1/2" or smaller.

Slope storm piping at 1/4" per foot. Lay pipe at uniform slope, free from sags, with hub end upstream. Make changes in direction from horizontal to vertical, at fixture branches and other branch connections with sanitary "tees" or short sweep "ells". Make changes in direction from vertical to horizontal or horizontal to horizontal with long radius fittings, long sweeping "ells", combination "y and 1/8 bend" fittings, or 45 degree "ells" (1/8 bend fittings), 1/6 bend or 1/16 bend and "y" fittings. Install pipe with the barrel of the pipe on firm, solid earth for its entire length, and excavate holes for the pipe bells. Lay pipe in a straight line and install with uniform grade to line with batten boards set not more than 24'-0" apart. Close open ends of pipe with a stopper when pipe laying is not in progress. Center spigots accurately in bells for uniform caulking. Provide a smooth and uniform invert in the system. Drilling or tapping of soil and waste lines, and saddle hubs and bands are not permitted. Locate and install soil and waste lines as indicated on the drawings. Determine exact locations in such a manner as to maintain proper clearance. Prior to installation of any building drain pipe, verify elevation of connection point of existing sewer, service line or existing tenant connections indicated on the drawings. If the installation will not tie into the indicated invert elevation point while maintaining proper fall, notify architect so that an alternative may be determined.

Above Ground Installation For Soil, Waste And Storm: Install piping to a uniform slope of not less than 1/8" per foot for piping 3" or larger, and not less than 1/4" per foot for piping 2-1/2" or smaller. Lay pipe at uniform slope free from sags. Support pipe within 12" of each joint. Make changes in direction from horizontal to vertical, at fixture branches and other branch connections with sanitary "tees" or short sweep "ells". Make changes in direction from vertical to horizontal or horizontal to horizontal with long radius fittings, long sweeping "ells", combination "y and 1/8 bend" fittings, or 45 degree "ells" (1/8 bend fittings), 1/6 bend or 1/16 bend and "y" fittings. Provide a smooth and uniform invert in the system. Drilling or tapping of soil and waste lines, and saddle hubs and bands are not permitted. Locate and install soil and waste lines as indicated on the drawings. Determine exact locations in such a manner as to maintain proper clearance.

PLUMBING VENT: Connect plumbing vent pipes to fixture drain pipes as indicated on the drawings or as required by the installation practices adopted and enforced by local codes official, and extend vent pipes full size through the roof line. Grade pipe to a uniform slope so as to drain back by gravity to the drainage piping system. Vents passing through the roof shall be minimum 3" size except in tropical climates, per local codes. Turn flashing down into stacks at least 2", and extend flashing 24" in all directions from the pipe at the roof line. Apply white lead pipe dope on male steel pipe threads. Vent lines shall be air and water tight. Vent floor drains individually or connect them to a horizontally vented line as shown on the drawings.

DOMESTIC WATER: Arrange cold, hot, and hot water recirculation piping to drain at the lowest point in each system. Install at least one pipe union adjacent to all shutoff valves, at connection points of each piece of equipment, and elsewhere in the system where required to allow proper maintenance. Provide unions of the ground joint type. Make allowance for expansion and contraction where required by the installation. Where water piping occurs in exterior walls, hold pipe as close as possible to the interior face of wall and install insulation batt or other insulation (minimum R-8) between piping and the exterior wall face.

NATURAL GAS: Pitch natural gas piping, and provide accessible dirt legs at the low points. Take branch pipes off the top or sides of main pipes, to prevent accumulation of water in the branches. Install gas piping valves and unions only in accessible locations. Do not install gas pipe below the base slab.

22A 2-5 PIPING SANITIZATION

Sanitize the entire domestic water piping system (cold, hot, and hot water return) with a solution containing not less than 50 ppm available chlorine. Keep solution in the system for a minimum of 24 hours, with each valve being operated several times during the period. After completion, flush system with city water until chlorine residual is lowered to incoming city water level.

22A 2-6 PIPE AND VALVE MARKERS

Provide manufacturer's standard pre-printed, semi-rigid snap-on or permanent adhesive, pressure-sensitive vinyl pipe markers. Pipe markers shall be color-coded complying with ANSI A13.1.

Install pipe markers on each plumbing piping system and include arrows to show normal direction of flow.

Locate pipe markers and color bands wherever piping is exposed to view in occupied spaces, machine rooms, accessible maintenance spaces (shafts, tunnels, plenums) and exterior non-concealed locations.

Provide plastic laminate or brass valve tag on every valve, cock and control device in each plumbing piping system; exclude check valves, valves within factory-fabricated equipment units, plumbing fixture faucets, convenience and lawn-watering hose bibbs, and shut-off valves at plumbing fixtures and similar rough-in connections of end-use fixtures and units.

22A 2-9 AIR ADMITTANCE VALVES

Provide air admittance valves where indicated on drawings. Air admittance valves shall meet ASSE 1050 or 1051 where applicable by Studor or equal, by Oatey, Proset, or Rectorseal. Install per code and manufacturer requirements.

22A 3 PLUMBING SPECIALTIES

22A 3-1 WATER HAMMER ARRESTORS, AND TRAPSProvide water hammer arrestors at valves or batteries of fixtures as indicated on the drawings to prevent water hammer. Arrestors shall be Josam, Jay R. Smith, Precision Plumbing Products, Profio, Sioux Chief, Wade, Watts, or Zurn, stainless steel bellows type, or o-ring sealed and lubricated acetal piston. Install water hammer arrestors per the Plumbing and Drainage Institute PDI WH-201 installation instructions. Installation of arrestors at batteries of fixtures precludes the requirement for individual air chambers at each battery fixture. Air chambers are not acceptable as a substitute for water hammer arrestors.

Provide water-seal traps on floor drains, fixtures and equipment with drain connections, including traps not furnished in combination with fixtures and equipment. Place trap as close to the fixture or drain as possible. Exposed traps in finished spaces shall be chrome-plated brass.

Provide conventional "p" type trap, water-sealed self-cleaning design. Full "s" traps or trap standards shall be used only where specifically called for on the drawings or elsewhere in this specification. Trap water seals shall not be less than 2", and deep seal traps shall be provided where specified or indicated. Each trap not integral with the fixture or floor drain or installed below the base slab shall be provided with an accessible cleanout of adequate size. Provide trap primers where required by code and where indicated on the drawings.

22A 3-2 CLEANOUTS, FLOOR DRAINS AND ROOF DRAINS

Cleanouts, floor drains and roof drains shall be by one manufacturer if possible. Acceptable manufacturers are Josam, Jay R. Smith, Wade, Watts, Mifab, and Zurn.

Provide long sweep fittings for cleanout extensions; short sweeps at start of runs or change in direction and combination wye and eighth bend fittings in horizontal runs. Install cleanouts with a minimum of 18" clear all around, consult local codes for other requirements, for easy system maintenance. Install plug with teflon joint compound.

FLOOR DRAINS: Shall be as scheduled on the drawings, manufactured by Zurn or equivalent by ABT, Inc., Polydrain, Quazite, Mifab, Jay R. Smith – ACO or NDS.

TRENCH DRAINS: Shall be as scheduled on the drawings, manufactured by Zurn or equivalent by ABT, Inc., Polydrain, Quazite, Mifab, Jay R. Smith – ACO or NDS.

FLOOR CLEANOUTS: Shall be as scheduled on the drawings. Install cleanouts at points as noted on the drawings, at the building exit; at a minimum of every 50 feet in horizontal soil and waste lines; and at turns of pipe greater than 45 degrees cleanouts shall be full size of the pipe up to 4", and 4" size for pipes larger than 4". Determine the type of floor covering to be used at each floor cleanout location and provide top with variations suitable for floor covering (carpet markers, recessed for tile and scoriated for unfinished floor). Rough-in and install each floor cleanout flush with the finished floor construction.

EXTERIOR CLEANOUTS: Shall be as scheduled on the drawings. Install cleanouts at points as noted on the drawings, at the building exit; at a minimum of every 100 feet in horizontal soil, waste and storm service lines. Embed each exterior cleanout in a block of concrete, flush with finished grade. Coordinate size of block with construction documents.

WALL CLEANOUTS: Shall be as scheduled on the drawings. Install wall cleanouts at points as noted on the drawings; at the foot of each soil, waste or interior downspout stack; at horizontal soil and waste branches longer than five feet not served by a floor cleanout; consult local codes for installation at specific fixture types. Install wall cleanouts above the flood rim of the fixture served within four feet of the floor and install extensions from the cleanout tee to the wall to locate the plug within 2" of the wall where required. Install cleanouts on urinals and sinks where required by code.

ROOF DRAINS: Shall be as scheduled on the drawings. Provide with roof sump receiver, extension, secondary flashing clamps and underdeck clamp as required; provide expansion joints where required. Provide overflow roof drains where indicated on the drawings with inlet flow line 2" above the primary roof drain inlet.

BACKWATER VALVES – removable flapper type: Shall be as scheduled on the drawings by Cleancheck or equal, by Mainline Backflow Products or Spears.

22A 3-3 VALVES, STRAINERS, HOSE BIBBS, AND UNIONS

Plumbing system valves shall be Crane Company or Nibco of models herein specified, or equivalent by Hammond, Milwaukee, Stockham or Mueller Valves. Valves shall be of the best quality, designed for 125 psi steam working pressure. Install valves on the hot and cold water lines at the water heater connections and other items of equipment, at branches from mains serving groups of fixtures, and at other places indicated or required by the installation to allow ease of future maintenance

GATE VALVES: Class 125, size 2" and smaller shall be Nibco #S-113-LF non-rising stem, soldered lead free bronze body and parts, with wedge disc. Gate valves 2-1/2" and larger shall be Crane #465-1/2 or Nibco #617-0, OS&Y, iron body flanged wedge gate with brass seats and stem.

BALL VALVES (may be used in lieu of gate valves up to 2"): 2" and smaller, Nibco #S-685-80-LF; two piece lead free bronze body, with soldered ends, chrome plated bronze ball with conventional port, 600 psi, blow-out proof stem.

GLOBE VALVES: Globe valves shall be Class 125. Globe valves 2" and smaller shall be Milwaukee #UP1502, screwed lead free bronze body and brass disc. Globe valves 2-1/2" and larger shall be Crane #351 iron body flanged valve with brass trim.

CHECK VALVES: Check valves shall be Class 125. Check valves for installation in horizontal pipe runs shall be of the "swing disc" design. Horizontal check valves 2" and smaller shall be Milwaukee #UP1509 or Nibco #S-413-Y-LF with soldered lead free bronze body and bronze disc. Horizontal check valves 2-1/2" and larger shall be Crane #373 or Nibco F-918 iron body flanged valve with brass trim. Check valves for installation in vertical pipe runs shall be of the "vertical lift" spring loaded design. Vertical check valves 2" and smaller shall be Milwaukee #UP1548T or Nibco #S-480-Y-LF with soldered lead free bronze body and bronze disc. Vertical check valves 3" and larger shall be center guided.

GAS COCKS: Gas cocks 2" and smaller shall be Homestead #611, screwed iron body with brass trim and flat head. Gas cocks 2-1/2" and larger shall be Homestead #612 flanged semi-steel body with iron trim and square head. Equivalent are Flowserve-Nordstrom or RM Energy Systems "Hercules".

THERMOSTATIC MIXING VALVES: Thermostatic mixing valves shall be Powers as described on the drawings or equal Armstrong, Bradley, Leonard, Lawler, Symmons or Watts meeting ASSE 1070 with brass body, non-corrosive internal parts, tamper resistant temperature adjustment, union inlets and check stops with strainers. Set temperature at 110 deg. F for hand washing.

EMERGENCY MIXING VALVES: Emergency mixing valves shall be Powers as described on the drawings or equal by Armstrong, Bradley, Leonard, Lawler, Symmons or Haws meeting ASSE 1071 complete with chrome plated bronze body construction, full flow cold water by-pass, non-corrosive internal parts, tamper resistant temperature adjustment, dial thermometer, union inlets with strainers, checks, and stops. Refer to construction documents for required temperature setting.

GAS LINE PRESSURE REGULATORS: Gas line pressure regulators shall be by American Meter Company, Fisher, Itron, Maxitrol or Sensus with capacities as scheduled on the drawings. Regulators shall be single stage, steel jacketed, corrosion-resistant type with interstitial relief valve with atmospheric vent, elevation compensator; with threaded ends, for inlet and outlet.

BALL VALVES FOR DEIONIZED WATER: Ball valves shall be by Chemitrol, or R&G Sloane. Valves shall be Schedule 80 PP PVDF true union full port ball type with mechanical couplings. Coordinate requirement for // PP / / PVDF // pipe with ASTM Type I quality deionized water.

STRAINERS: Strainers 2" and smaller shall be Watts #S777SI or Watts #LFS777SI with soldered lead free bronze, brass cap and Monel 40 mesh screen. Strainers 2-1/2" and larger shall be Watts #77F-DI-FDA-125 with flanged iron body with fused FDA epoxy coating, bolted iron cap and stainless steel screen with 1/16" perforations. Strainers size 2-1/2" and larger shall have a 1" blow-off line with a 1" gate valve connected to the blow-off connection and shall be extended to the nearest floor drain.

22A 3-5 WATER SERVICE ENTRANCE: PRESSURE REDUCING VALVE AND BACKFLOW PREVENTER

Provide a backflow preventer (BFP) of type required by local code, and a pressure reducing valve (PRV) if required by water pressure greater than 80 psi, on the domestic water service immediately downstream of the BFP at the water service entry. Set the PRV as indicated on the drawings. Provide a pressure gauge and hose bibb with isolation valve downstream of the BFP and/or PRV for system drain down.
For water services 2" and smaller provide a Type "K" soft copper tube that runs continuously from five feet outside the building with sweeping bend to 12" above the floor slab. Provide a shutoff valve at 12" above the floor. There shall be no fittings under the floor slab. Provide a PVC sleeve two pipe sizes larger than the water pipe served and seal with caulk.
For water services 3" and larger provide ductile iron pipe and fittings from five feet outside the building to 12" above the floor. Provide a shutoff valve at 12" above the floor. Provide a PVC sleeve two pipe sizes larger than the water pipe served and seal with caulk.

22A 3-6 SYSTEM ACCESSORIES

Thermometers shall be American 3" bi-metal dial type with separable socket, and shall be installed where indicated or required.

Pressure gauges shall be Ashcroft 3" dial type with shut-off cock, and shall be installed where indicated or required.

Trap primers shall be as specified on the drawings, Precision Plumbing Products "prime rite" or equal by Mifab or Sioux Chief with brass body and integral vacuum breaker. Provide distribution box where more than one trap is indicated to be primed on the drawings. Provide access panel where required.

Trap guards shall be by Proset Systems of molded PVC elastomer that allows the flow of waste water and closes upon termination of flow. Install per manufacturer's installation instructions. Do not touch elastomeric plug or allow contact with primer or solvent cement.

22A 4 PLUMBING FIXTURES AND EQUIPMENT

22A 4-1 PLUMBING FIXTURES

Provide china fixtures as scheduled by American-Standard or equivalent by Crane, Eljer, Gerber, Kohler, Toto-kiki or Zurn. Provide stainless steel sinks as scheduled by Elkay or equal by Just. Provide electric water coolers as scheduled by Elkay or equivalent by Acorn / Aqua, Halsey Taylor or Haws. Provide mop sinks as scheduled by Stern-Williams or equal by Acorn Engineering Co., Fiat or Florestone. Provide fixtures of same manufacturer where possible.

Fixtures shown on the drawings or specified herein shall be furnished and installed, set firm and true, connected to required piping services, thoroughly cleaned, left clean and ready for use. Exposed fittings and piping at the fixtures shall be chrome-plated, and water supply piping shall be valved at each fixture.

Vitreous china fixtures shall be of the best grade vitreous ware, without pit holes or blemishes, and the outlines shall be generally true. The engineer reserves the right to reject any pieces which, in his opinion, are faulty. Fixtures set against walls shall have ground backs and shall be caulked with silicone sealant of a matching color.

22A 4-2 PLUMBING FIXTURE TRIM

Faucets and trim in contact with drinking water shall meet or exceed the safe water drinking act (SWDA) lead-free standards of ANSI/NSF Standard 61, Section 9.

Provide faucets as scheduled on drawings.

Provide single lever handle faucets as scheduled on drawings.

Fixture p-traps shall be 17 gauge brass body with cleanout, 17 gauge seamless tubular wall bend with cast brass slip nut, shallow steel flange, all chrome plated.

Lavatory, sink and water closet supplies shall be solid brass angle or straight type with full turn brass stem, wheel handle or loose key types as noted on drawings, shallow steel flange, 3/8" copper riser flange, all chrome plated, final connection as required.

Lavatory drains shall be grid type chrome plated 17 gauge brass open grid with 1-1/4" x 6" long seamless brass tailpiece and brass locknut with heavy rubber basin washer and fiber friction washer.

Provide shower valves as scheduled on drawings.

Sink drains shall be basket type with chrome plated forged brass basket strainer and strainer body with 1-1/2" x 4" long seamless brass tailpiece and cast brass lock and coupling nuts.

Provide handicap insulation kits for lavatories and sinks on exposed water and waste pipes and fittings, including offset drain and continuous waste covers where required.

Provide flush valves as specified on drawings: Sloan or equivalent with chrome plated brass body, chloramine resistant diaphragm with protected orifice, screw driver angle stop, non-hold open feature and sweat adapter kit. Provide ADA handles on ADA compliant fixtures. Provide solid pipe ring supports for urinal flush tubes anchored securely to wall where indicated on the drawings. Provide low consumption type valves with 1.28 gallons per flush for water closets and 0.125 gallons per flush for urinals.

Provide carriers for mounting wall mounted water closets and lavatories as described on the drawings. Securely fasten carriers to floor and test per manufacturer's recommendations prior to installation of partitions.

Secure wall-mounted water closet carriers to floor with 3/8" anchor bolts, including the anchor foot. Secure lavatory chair carriers to floor with 1/2" anchor bolts.

Furnish to the owner, with receipt, the spare parts to include faucet washers and o-rings, flushometer repair kits and water closet tank repair kits for the fixtures furnished under the construction documents for this project.

22A 4-3 WATER HEATER

Water heater shall be Rheem or equivalent with capacity as scheduled on the drawings. Unit shall be wall-mounted, tankless, point-of-use type with thermostatic control, flow switch, completely pre-wired and jacket, ULI approved.

END OF SECTION 22A

LEVEL 5
Level 5 Architecture
Mansfield, TX | Springdale, AR
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STATE OF TEXAS
EMILY ANN VALDENMEYER
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LICENSED PROFESSIONAL ENGINEER
10-25-2021

HP ENGINEERING INC.
F-13720

HP ENGINEERING
PROJECT NO. 21-64T
100 % COMPLETE

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F-18023

PROJECT INFORMATION:

AN INTERIOR REMODEL FOR

ATCOG HOUSING OFFICES REMODEL

4808 Elizabeth St.
Texarkana, TX 75503

PROJECT NUMBER: 21-64T
ISSUE DATE: 10-25-2021
REVISIONS:

SHEET NAME:

PLUMBING SPECIFICATIONS

SHEET NUMBER:

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