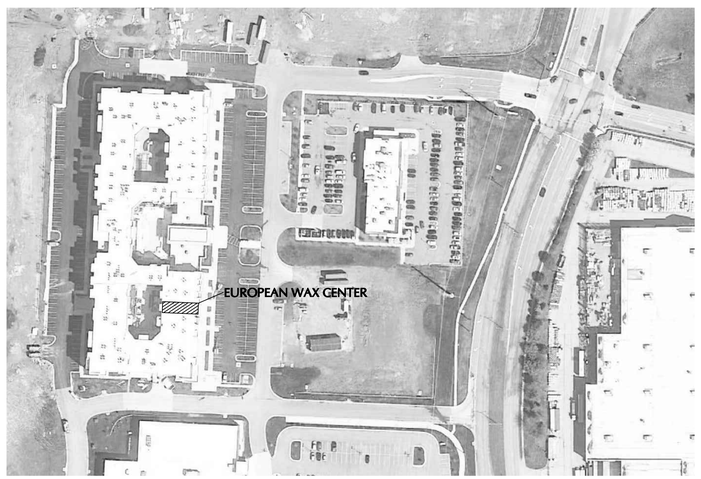
EUROPEAN WAX CENTER - LEE'S SUMMIT - MO
940 NW PRYOR ROAD
LEE'S SUMMIT, MO 64081

CONSTRUCTION DOCUMENTS
JANUARY 26TH 2022



ADDRESS:
940 NW PRYOR ROAD
LEE'S SUMMIT, MO 64081

NET SF : 1,358 SF

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CODE INFORMATION

BUILDING	2018 INTERNATIONAL BUILDING CODE
FIRE PROTECTION & FIRE SAFETY	2018 INTERNATIONAL FIRE CODE
MECHANICAL	2018 INTERNATIONAL MECHANICAL CODE 2018 INTERNATIONAL FUEL GAS CODE
ELECTRICAL	2017 NATIONAL ELECTRICAL CODE
PLUMBING	2018 INTERNATIONAL PLUMBING CODE
BARRIER FREE	ICC/ANSI A117.1-2009, ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES
ENERGY CODE	IECC 2015
FIRE SPRINKLER	YES (DIFFERED)
FIRE ALARM	YES (DIFFERED)

Joe Frogge

RELEASED FOR CONSTRUCTION
As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
02/23/2022

PROJECT NARRATIVE / WORK SCOPE

THIS PROJECT IS AN INTERIOR BUILD OUT ONLY (EXTERIOR WORK IS LIMITED TO MAIN SIGNAGE - UNDER A SEPARATE PERMIT). THE NEW INTERIOR LAYOUT THAT IS BEING PROPOSED INCLUDES: NEW LAYOUT, NEW LIGHTING, NEW POWER OUTLETS, NEW LOW VOLTAGE, NEW PLUMBING LAYOUT (INCLUDING UNDERGROUND WORK), NEW MECHANICAL LAYOUT, NEW CEILING, NEW FINISHES.

DRAWING INDEX

DWG. NO.	DRAWING TITLE	01/26/2022 CONSTRUCTION DOCUMENTS	02/14/2022 PER PLAN REVIEW COMMENTS (1)
ARCHITECTURAL			
A-000	COVER	■	■
A-001	GENERAL NOTES	■	
A-002	HANDICAP ADAPTABILITY NOTES	■	
A-003	SCHEDULE	■	■
A-101	FLOOR PLAN & EGRESS DIAGRAM	■	■
A-102	FINISH & FIXTURE PLANS	■	■
A-120	REFLECTED CEILING PLAN	■	
A-201	STOREFRONT SIGNAGE ELEVATION	■	
A-301	INTERIOR ELEVATIONS	■	
A-302	INTERIOR ELEVATIONS	■	■
A-303	INTERIOR ELEVATIONS	■	
A-401	DETAILS	■	
A-601	DOOR SCHEDULE & WALL TYPES	■	
MEP			
M-001	MECHANICAL SYMBOLS AND NOTES	■	
M-002	MECHANICAL SPECIFICATIONS	■	
M-003	MECHANICAL SPECIFICATIONS	■	
M-101	MECHANICAL FIRST FLOOR PLAN	■	
M-501	MECHANICAL DETAILS	■	
M-601	MECHANICAL SCHEDULES	■	
E-001	ELECTRICAL SYMBOLS	■	
E-002	ELECTRICAL NOTES	■	■
E-003	ELECTRICAL SPECIFICATIONS	■	
E-004	ELECTRICAL SPECIFICATIONS	■	
E-005	ELECTRICAL SPECIFICATIONS	■	
E-101	ELECTRICAL FIRST FLOOR LIGHTING PLAN	■	
E-102	ELECTRICAL FIRST FLOOR POWER PLAN	■	
E-501	ELECTRICAL DETAILS	■	
P-001	PLUMBING SYMBOLS AND NOTES	■	
P-002	PLUMBING SPECIFICATIONS	■	
P-101	PLUMBING FIRST FLOOR PLAN	■	
P-501	PLUMBING DETAILS	■	
P-601	PLUMBING SCHEDULES AND RISER DIAGRAMS	■	
FA-001	FIRE ALARM SYMBOLS AND NOTES	■	
FA-002	FIRE ALARM SPECIFICATIONS	■	
FA-101	FIRE ALARM FIRST FLOOR PLAN	■	
FA-601	FIRE ALARM RISER DIAGRAMS	■	

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EUROPEAN WAX CENTER
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940 NW PRYOR ROAD
LEE'S SUMMIT, MO 64081
JOB#: 1551.445

EUROPEAN WAX CENTER

ISSUE:
CONSTRUCTION DOCUMENTS
JANUARY 26TH, 2022

1 PER PLAN REVIEW COMMENTS
02-14-2022

DRAWN BY:
CC

REVISED BY:
DAM

DRAWING:
COVER

SCALE:
NTS

SEAL

STATE OF MISSOURI
DAVID EARL GROSS
NUMBER A-2019000254
ARCHITECT

ARCHITECT: DAVID E. GROSS
MO LICENSE No. A-2019000254

DRAWING NO.

A-000

RELEASED FOR CONSTRUCTION
As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
02/23/2022

GENERAL NOTES

SECTION 1: GENERAL CONDITIONS

1.01 THE GENERAL CONDITION OF THE CONTRACT FOR CONSTRUCTION, A.I.A. DOCUMENT A102 (2017 EDITION) IS PART OF THIS CONTRACT AND APPLIES TO THE WORK OF ALL DIVISIONS, SECTIONS AND TRADES.

1.02 THE COMPLETE CONTRACT DOCUMENTS INCLUDE THESE SPECIFICATIONS AND DRAWINGS REFLECTED ON A-000

1.03 CONTRACTOR SHALL LAY OUT WORK, BE RESPONSIBLE FOR ITS CORRECTNESS AND SAFETY, AND PROVIDE ALL NECESSARY LINES, LEVELS AND DIMENSIONS AS NOTED. ALL MEASUREMENTS AND CONDITIONS MUST BE VERIFIED AT SITE BY CONTRACTOR AND SUB-CONTRACTORS PRIOR TO ORDERING MATERIALS OR COMMENCING OF WORK. ANY DISCREPANCIES IN PLANS AND DETAILS MUST BE REPORTED TO THE ARCHITECT IMMEDIATELY. NO CHANGES OR SUBSTITUTIONS MAY BE MADE WITHOUT APPROVAL BY THE ARCHITECT.

1.04 ALL WORK MUST CONFORM TO THE REQUIREMENTS OF ALL NATIONAL, STATE, MUNICIPAL AND OTHER CODES AND AUTHORITIES HAVING JURISDICTION, INCLUDING THE APPLICABLE BUILDING CODE. ALL PLUMBING AND ELECTRICAL WORK MUST BE DONE BY LICENSED WORKMEN. CONTRACTOR SHALL OBTAIN, PAY FOR, AND SUBMIT TO OWNER ALL REQUIRED PERMITS PRIOR TO COMMENCING WORK AND ALL REQUIRED APPROVALS AND INSPECTION CERTIFICATES UPON COMPLETION. OWNER WILL REIMBURSE CONTRACTOR FOR DIRECT FOISTS OR PERMITS.

1.05 ALL DIMENSIONS PROVIDED IN THE CONTRACT DOCUMENTS ARE ASSUMED TO BE CORRECT. ANY DISCREPANCIES ARE TO BE REPORTED TO THE THE ARCHITECT IMMEDIATELY. AT NO TIME ARE THE CONTRACT DOCUMENTS TO BE SCALED FOR DIMENSIONAL INFORMATION.

1.06 GC SHALL VERIFY AND REVIEW SITE CONDITIONS PRIOR TO SUBMITTING BIDS. GC SHALL NOTIFY THE ARCHITECT OF ANY DISCREPANCIES OR OMISSIONS WHICH MAY INTERFERE WITH COMPLETION OF THE WORK.

1.07 THE CONTRACTOR SHALL PROVIDE A SCHEDULE OF VALUES (COMPONENT COSTS) TO ARCHITECT PRIOR TO COMMENCING ANY WORK, OR ORDERING ANY MATERIALS. PROGRESS PAYMENTS SHALL BE MADE BASED UPON PERCENTAGE OF COMPLETION OF THE VARIOUS COMPONENT PART AS DESCRIBED IN THE AFOREMENTIONED SCHEDULE. (SEE SEE ART. 4 OF CONTRACT)

1.08 PRELIMINARY LAYOUT OF PLAN TO BE APPROVED BY ARCHITECT BEFORE FRAMING COMMENCES.

1.09 THE GENERAL CONTRACTOR MUST PROVIDE CERTIFICATES OF INSURANCE FOR WORKMEN'S COMPENSATION AND DISABILITY AND LIABILITY $1,000,000 MINIMUM AS REQUIRED BY THE BUILDING OWNER / MANAGEMENT, PRIOR TO START OF WORK.

1.10 WORK THAT DOES NOT CONFORM TO THE PLAN AND SPECIFICATIONS TO BE DEEMED UNACCEPTABLE AND SHALL BE REPLACED OR CORRECTED AT CONTRACTOR'S EXPENSE.

1.11 GENERAL CONTRACTOR IS ALERTED TO ORDER LONG LEAD TIME ITEMS IMMEDIATELY TO ELIMINATE ANY DELAYS DUE TO UNAVAILABILITY OF MATERIALS.

1.12 THE GC SHALL SUBMIT PROPOSALS FOR ADDITIONAL WORK IN WRITING FOR REVIEW AND APPROVAL. NO ADDITIONAL WORK MUST PROCEED UNTIL A SIGNED PROPOSAL IS RETURNED TO THE GC.

1.13 THE CONTRACTOR SHALL PROVIDE A SUPERINTENDENT ON THE JOB SITE AT ALL TIMES.

1.14 THE CONTRACTOR TO BE RESPONSIBLE TO PROTECT AND GUARD AGAINST DAMAGE OF ALL EXISTING CONSTRUCTION, EQUIPMENT AND FURNISHINGS IN TENANT SPACE AND PUBLIC AREAS. PROVIDE DUSTPROOF PARTITIONS WHERE REQUIRED.

1.15 ALL MATERIALS AND EQUIPMENT SHALL BE STORED IN A SECURED AREA. PREMISES SHALL REMAIN IN A SAFE AND WORKMANLIKE CONDITION FOR THE DURATION OF THE PROJECT. PROTECTION OF EXISTING CONSTRUCTION DESIGNATED TO REMAIN SHALL BE THE RESPONSIBILITY OF THE GC.

1.16 ALL WORK, LABOR AND MATERIALS SHALL BE GUARANTEED BY THE GENERAL CONTRACTOR FOR A PERIOD OF A MINIMUM OF ONE YEAR FROM THE DATE OF FINAL COMPLETION. MANUFACTURER'S WARRANTIES SHALL BE DULY REGISTERED AND FURNISHED TO THE OWNER.

1.17 AT COMPLETION, THE ENTIRE CONSTRUCTION AREA SHALL BE COMPLETELY CLEANED AND MADE READY FOR OWNER USE. GC TO SUBMIT LINE ITEM COST FOR CLEANING SERVICE, AS REQUIRED.

1.18 UPON COMPLETIONS, GC SHALL SUBMIT CERTIFICATES OF INSPECTIONS AND A CERTIFICATE OF SUBSTANTIAL COMPLETION (AIA DOCUMENT #G-704)

1.19 THE TERMS "GENERAL CONTRACTOR" AND "GC" SHALL BE UNDERSTOOD TO BE THE SAME UNLESS SPECIFICALLY NOTED OTHERWISE.

1.20 GENERAL CONTRACTOR SHALL CLEAN AND VACUUM ALL FLOOR SURFACES INCLUDING PERIMETER RADIATOR/CONVECTOR ENCLOSURES AFTER CONSTRUCTION. "AREAS OF WORK" SHALL BE MAINTAINED BROOM CLEAN AT ALL TIMES AND ALL DEBRIS REMOVED DAILY. WHERE RAISED FLOOR SYSTEM IS INSTALLED, G.C. SHALL VACUUM ENTIRE UNDER FLOOR SLAB AREA.

1.21 UNLESS OTHERWISE NOTED, ALL WORK SHALL BE PERFORMED BY THE GENERAL CONTRACTOR.

1.22 TENANT AND GF55 ARCHITECTS RESERVE THE RIGHT TO EXECUTE OTHER CONTRACTS IN CONNECTION WITH THE WORK OF THE PROJECT. THE GC SHALL BE RESPONSIBLE FOR THE COORDINATION OF WORK AND ESTABLISHING SCHEDULES FOR ALL TRADES. THE GC SHALL AFFORD OTHER CONTRACTORS REASONABLE OPPORTUNITY FOR THE INTRODUCTION AND STORAGE OF THEIR MATERIALS AND EQUIPMENT TO PERMIT EXECUTION OF THEIR WORK.

1.23 GC SHALL PROVIDE ALL LABOR AND MATERIAL, EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE, NECESSARY TO COMPLETE THE WORK.

1.24 GC SHALL BE RESPONSIBLE FOR COORDINATING ALL ARRANGEMENTS WITH THE BUILDING MANAGEMENT FOR USE OF THE ELEVATORS AND OTHER HOISTING FACILITIES IN TRANSPORTING CONSTRUCTION MATERIALS. ANY FEES INCURRED FOR HOISTING AND RIGGING SERVICE ELEVATORS (OTHER THAN NORMAL OPERATIONS) WILL BE THE RESPONSIBILITY OF THE GC AND SUBCONTRACTORS. NORMAL OPERATION OF SERVICE ELEVATORS IS PROVIDED TO TENANT AT NO CHARGE TO SUBCONTRACTORS (AND GC).

1.25 LANDLORD'S STRUCTURAL ENGINEERING CONSULTANTS SHALL REVIEW PLANS AND MAKE RECOMMENDATIONS FOR ALL REQUIRED REINFORCEMENTS.

1.26 GC/ CONTRACTORS SHALL SUBMIT ALL SHOP DRAWINGS, CUTS AND FINISH SAMPLES TO ARCHITECT AND ENGINEER(S) FOR REVIEW PRIOR TO ORDERS, FABRICATIONS AND INSTALLATIONS.

1.27 ALL SUBCONTRACTOR'S SHOP DRAWINGS SHALL BE SUBMITTED TO ARCHITECT FOR APPROVAL THROUGH THE GC PRIOR TO WORK BEING PERFORMED, UNLESS OTHERWISE NOTED. THREE (3) PRINTS SHALL BE SUBMITTED.

1.28 NO MATERIAL SUBSTITUTIONS TO BE MADE WITHOUT REVIEW AND APPROVAL. CONTRACTOR SHALL SUBMIT SAMPLES AND CUTS FOR WRITTEN APPROVAL FROM ARCHITECT PRIOR TO START OF ANY WORK.

1.29 ALL SUBCONTRACTORS SHALL COMPLY WITH ALL REGULATIONS OF THE BUILDING MANAGEMENT. IT SHALL BE THE INDIVIDUAL CONTRACTOR'S RESPONSIBILITY TO OBTAIN SUCH REGULATIONS FORM THE BUILDING OWNER. IN THE EVENT OF CONFLICT BETWEEN THE BUILDING REGULATIONS AND OTHER CONTRACT DOCUMENTS, THE ARCHITECT IS TO BE CONSULTED PRIOR TO PROCEEDING.

1.30 ALL MECHANICAL, SPRINKLER, FIRE ALARM SYSTEM, LIGHTING, ELECTRICAL FIXTURES AND THEIR INSTALLATIONS SHALL COMPLY WITH LOCAL MUNICIPAL BUILDING CODES, BUILDING STANDARDS & NATIONAL (FEDERAL) STANDARDS.

1.31 GC AND ALL SUBCONTRACTORS SHALL BECOME FAMILIAR WITH ADA STANDARDS AND MIN. CLEARANCES AND SHALL INFORM ARCHITECT OF ANY CONFLICTS WITH COMPLYING WITH THOSE MIN. CLEARANCES AND STANDARDS.

1.32 GF55 ARCHITECTS SHALL NOT BE RESPONSIBLE FOR ANY DELAYS OR COSTS ASSOCIATED WITH FAILURES CAUSED BY THE GC OR A SUBCONTRACTOR IN CONNECTION WITH THE EXECUTION OF THE TERMS & CONDITIONS OF THE CONTRACT DOCUMENTS. ANY LABOR DISPUTE RESULTING IN THE AFOREMENTIONED COSTS OR DELAYS WILL CONSTITUTE FAILURE ON BEHALF OF THE GC.

1.33 MENTION IN THIS SPECIFICATION OR INDICATIONS ON DRAWINGS, OF ARTICLES OPERATIONS, METHODS, OR MATERIALS REQUIRES THAT THE CONTRACTOR PROVIDE EACH ITEM MENTIONED, INDICATED, OR IMPLIED, TO ACHIEVE THE INTENDED BUILDING, ACCORDING TO THE METHODS OF BEST CONSTRUCTION PRACTICE OR OF A QUALITY AND METHOD SPECIFICALLY NOTED.

1.34 ALL EQUIPMENT AND MATERIALS ARE TO BE INSTALLED IN A STRICT ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

1.35 WORK PROGRESS SCHEDULE: CONTRACTOR SHALL PROVIDE A WORK PROGRESS SCHEDULE TO BE REVIEWED WITH THE ARCHITECT AND OWNER PRIOR TO COMMENCING ANY WORK OR ORDERING ANY MATERIALS.

1.36 THE EXTENT OF THE WORK SHALL BE CONFINED TO THE PLANS SUBMITTED.

1.37 ALL FINISHES NOTED SHALL COMPLY WITH INTERIOR FINISH REQUIREMENTS, AS STATED BY THE APPLICABLE BUILDING CODE

1.38 ACCORDING TO THE SCOPE OF WORK, THERE SHALL BE NO CHOPPING OR PENETRATING OF THE FLOOR SLABS, AND NO CUTTING OR CHANNELING OF BUILDING STRUCTURE.

1.39 ACCORDING TO THE SCOPE OF WORK, THERE SHALL BE NO PENETRATIONS AT TENANT DEMISING WALLS.

1.40 FIRESTOPPING IS TO BE PROVIDED AS REQUIRED BY APPLICABLE BUILDING CODE.

SECTION 2: GENERAL CONSTRUCTION

2.01 ALL PARTITIONS SHALL BE ERECTED PLUMB AND TRUE INCLUDING LAMINATIONS AND FUR-OUT WALLS. DIMENSIONS ARE FINISHED DIMENSIONS, UNLESS OTHERWISE NOTED.

2.02 ALL MILLWORK INCLUDING BLOCKING AND BRACING SHALL BE FIRE-RETARDANT AS PER LOCAL MUNICIPAL BUILDING CODES.

2.03 IF ANY EXISTING SURFACE OR FINISH IS DAMAGED DURING ANY STAGE OF THE WORK, THE CONDITION SHALL BE REPAIRED OR REPLACED BY THE GC AT THEIR EXPENSE.

2.04 GC TO CAP ALL EXISTING EXPOSED PIPING BEHIND FINISH SURFACES. GENERAL CONTRACTOR TO DETERMINE WHICH SUBSTRATES ARE RESPONSIBLE FOR CAPPING PIPES. (COORD. W/ ENGINEERING DWG.S AS REQ'D.)

2.05 ALL LOCKSETS SHALL BE MASTER KEYED AS REQUIRED BY THE BUILDING MANAGEMENT. COORDINATE AS REQUIRED. REFER TO DOOR / HARDWARE SCHEDULE AS APPLICABLE.

2.06 ALL GYPSUM BOARD CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH THE LATEST EDITION OF THE GYPSUM CONSTRUCTION HANDBOOK AS PUBLISHED BY THE UNITED STATES GYPSUM COMPANY.

2.07 LOCATION OF REQUIRED ACCESS PANELS, IF ANY MUST BE PRESENTED TO AND APPROVED BY ARCHITECT PRIOR TO INSTALLATION.

2.08 WHERE EXISTING PARTITIONS HAVE BEEN REMOVED, ADJOINING WALLS, FLOOR, CEILING, ETC. TO BE PATCHED OR PREPARED TO RECEIVE NEW FINISHES.

2.09 ALL GYPSUM BOARD PARTITIONS AND JOINTS ARE TO BE TAPED, SPACKLED AND SANDED SMOOTH FOR SPECIFIED FINISHES. ALL EXPOSED CORNERS ARE TO BE FITTED WITH METAL CORNER BEADS AT WALLS NOT EXTENDING TO SLAB, 20GA. METAL STUDS & CROSS BRACING SHALL BE ANCHORED TO SLABS AT THE FOLLOWING LOCATIONS;, DOORS, TRIMMED OPENINGS, WALL CORNERS AND AT INTERMEDIATE LOCATIONS AS REQUIRED.

2.10 WHERE PARTITION INTERSECTS WINDOW MULLION, PROVIDE 1/2" THICK CLOSED CELL NEOPRENE JOINT FILLER GASKET BETWEEN METAL STUD AND MULLION. DO NOT ATTACH STUD TO WINDOW MULLION. INSTALL SOUND ATTENUATION BAFFLES IN CONVECTOR ENCLOSURE WHERE WALLS INTERSECT/OVERLAP CONVECTOR ENCLOSURE.

2.11 ALL PARTITIONS SHOWN "ALIGNED" ARE TO BE SMOOTH AND FLUSH WITH EXISTING PARTITION OR COLUMN, WHERE REQUIRED AND WHERE PARTITIONS ALIGN WITH EXISTING SURFACE, CARRY SINGLE FACE GYPSUM BOARD TIGHT TO AND PAST COLUMN FACE. REMOVE EXISTING BEADS AS REQUIRED.

2.12 ALIGN PARTITIONS WHERE NEW WALLS JOIN EXISTING COLUMN AND/OR WALLS:
A-DRYWALL TO PLASTER OR DRYWALL: REMOVE EXISTING CORNER BEAD, TAPE AND SPACKLE JOINTS (3 COATS MIN.) EXCEPT AT COLUMN WHERE GYPSUM BOARD WILL PASS OVER COLUMN.
B-PLASTER TO PLASTER: REMOVE EXISTING CORNER BEAD, REINFORCE JOINT WITH DIAMOND WIRE MESH AND PLASTER TO FORM A SMOOTH PLUMB CONTINUOUS SURFACE.
C-IN AREAS WHERE DRYWALL PARTITION ALIGNS WITH COLUMNS OR OTHER SIMILAR CONDITIONS, STUDS SHALL BE BROUGHT FLUSH TO ALIGN FACES WITH GYPSUM BOARD PASSING TIGHT IN FRONT OF OBJECT.

2.13 DRYWALL CONTRACTOR SHALL PROVIDE OPENINGS AS REQ'D. IN EXISTING WALLS FOR INSTALLATION OF ELECTRICAL AND DATA OUTLETS, JUNCTION BOXES & ASSOCIATED DEVICES. SURFACES SHALL BE PATCHED AND PREPARED FOR NEW FINISHES.

2.14 DRYWALL CONTRACTOR TO BE RESPONSIBLE FOR TAPING AND SPACKLING NEW GYPSUM BOARD WORK, INCLUDING PATCHING AND REPAIRING ALL EXISTING WALLS, CEILINGS, AND COLUMNS AS NECESSARY TO RENDER INDISTINGUISHABLE FROM NEW WORK.

2.15 CONTRACTOR TO REFER TO REFLECTED CEILING PLAN FOR ALL GYPSUM BOARD CEILINGS, SOFFITS AND FASCIA INSTALLATIONS. ALL GYP BOARD CEILINGS SHALL BE TAPED, SPACKLED, SKIM COATED AND SANDED SMOOTH FOR NEW APPLICATION OF FINISHES.

2.16 CONTRACTOR SHALL REAPPLY CEMENTITIOUS FIREPROOFING AT ALL EXPOSED STRUCTURE. SEAL ALL NEW (EXISTING FLOOR PENETRATIONS TO ACHIEVE A TWO-HOUE FIRE RATING ASSEMBLY.

2.17 THE GC SHALL BE RESPONSIBLE FOR INSTALLING WD. BLOCKING FOR ALL MILLWORK, FIXTURE AND FURNITURE INSTALLATIONS. SEE PLAN DRAWINGS AND ELEVATIONS FOR LOCATIONS. CONTRACTOR SHALL VERIFY AND COORDINATE WITH MILLWORKER OR FURNITURE INSTALLER AS REQUIRED. THE GC IS RESPONSIBLE FOR ENSURING THAT SUBCONTRACTORS PROVIDE AND INSTALL ALL BLOCKING AND GROUNDS AS REQUIRED FOR THE INSTALLATION OF WINDOW BLINDS, DRAPERIES, CURTAINS AND OTHER SUSPENDED UNITS AS REQUIRED.

2.18 GC/CONTRACTORS SHALL FURNISH AND INSTALL, INCLUDING ALL FINAL CONNECTIONS, ALL PANTRY EQUIPMENT, PLUMBING FIXTURES AND ACCESSORIES AS INDICATED ON DRAWING, UNLESS OTHERWISE NOTED.

2.19 GC RESPONSIBLE FOR CLEANING AND REMOVING FROM THE PREMISES ALL WASTE MATERIALS AND RUBBISH GENERATED BY THE CONSTRUCTION, DEMOLITION AND/OR DELIVERY AND INSTALLATION OF CARPET, WOODWORK, TELE/DATA VENDOR AND OTHER TRADES EMPLOYED BY OWNER.

2.20 AT COMPLETION, ALL FLOORING, VCT, STONE, CERAMIC, VINYL, RUBBER BASE AND SIMILAR MATERIALS SHALL BE FULLY CLEANED AS REQUIRED BY THE TYPE OR FINISH. PROVIDE INITIAL SEALING OR WAXING OR OTHER AS SPECIFIED AND AS APPROVED BY THE MANUFACTURERS FOR VARIOUS FINISHES.

2.21 GC TO RESTORE ANY DAMAGED CONDITIONS RESULTING FROM THEIR ACTIVITY.

2.22 GC SHALL BE RESPONSIBLE FOR SUBCONTRACTORS PROVIDE AND ASSUME ALL COSTS ASSOCIATED WITH ALL CONTROLLED INSPECTIONS LISTED OR REQUIRED AND AMENDING AT THE BUILDING DEPARTMENT, THE PROFESSIONAL RESPONSIBLE FOR PROVIDING THE CONTROLLED INSPECTION. CONTROLLED INSPECTIONS REQUIRED AS LISTED.

2.23 GC TO INVESTIGATE (THROUGH BUILDING MANAGEMENT) AND PROVIDE ANY AND ALL BUILDING RELATED COSTS, FEES FOR HOISTING ELEVATORS, ENGINEERS & SHUTDOWNS WITHIN THE BASE CONTRACT COST.

SECTION 3: DEMISING WALL

3.01 DEMISING WALLS SHALL NOT HAVE ANY THROUGH-WALL PENETRATIONS OR HOUSE ANY RECESSED EQUIPMENT SUCH AS AN ELECTRICAL PANEL OR ANY FURNISHINGS. THE DEMISING WALL SHALL REMAIN CONTINUOUS FROM FLOOR SLAB TO UNDERSIDE OF DECK AT ALL LOCATIONS. ANY DAMAGE CAUSED DURING CONSTRUCTION SHOULD BE REPAIRED.

3.02 ANY STORE BUILD OUT CONSTRUCTION OR FINISH SHOULD BE APPLIED OVER THE DEMISING WALL. DEMISING WALL SHOULD NOT BE ALTERED IN ANY WAY UNLESS OTHERWISE NOTED. THE EXISTING DEMISING WALL CONSTRUCTION SHOULD BE MAINTAINED.

SECTION 4: WALL FINISHES, PAINTS AND STAINS

4.01 ALL SURFACES TO BE SMOOTH AND WITHOUT BLEMISH. SAND ALL DRY WALL JOINTS TO MAKE FLUSH AND SMOOTH. ALL WOODWORK TO BE SANDED. ALL MACHINES MARKS REMOVED, ALL CORNERS TO BE LIGHTLY EASED. ALL CRACKS AND IRREGULARITIES IN JOINTS BETWEEN SIMILAR AND DISSIMILAR MATERIALS SHALL BE FILLED

4.02 ALL GYPSUM WALL BOARD TO HAVE LEVEL 4 FINISH ALL JOINTS AND INTERIOR ANGLES HAVE TAPE EMBEDDED IN JOINT COMPOUND AND TWO SEPARATE COATS OF JOINT COMPOUND APPLIED OVER ALL FLAT JOINTS AND ONE SEPARATE COAT OF JOINT COMPOUND APPLIED OVER INTERIOR ANGLES. FASTENER HEADS AND ACCESSORIES SHALL BE COVERED WITH THREE SEPARATE COATS OF JOINT COMPOUND. ADDITIONALLY, A THIN SKIM COAT OF JOINT COMPOUND, OR MATERIAL MANUFACTURED ESPECIALLY FOR THIS PURPOSE, IS APPLIED TO THE ENTIRE SURFACE. THE SURFACE IS SMOOTH AND FREE FROM TOOL MARKS AND RIDGES. BEFORE FINAL DECORATION IT'S RECOMMENDED THAT THE PREPARED SURFACE BE COATED WITH A PRIMER PRIOR TO THE APPLICATION OF FINAL FINISHES.

4.03 ALL PRIMED AREAS AND SURFACES SHALL RECEIVE TWO (2) COATS OF PAINT PER FINISH SCHEDULE AND FRANCHISE SPECIFICATIONS

4.04 ALL TRIM AND DOORS SHALL FINISHED PER FINISH SCHEDULE AND FRANCHISE SPECIFICATIONS

4.05 PREPARE PAINT SAMPLES OF 5' X 4' WALL AREAS AS DIRECTED FOR ARCHITECT'S APPROVAL PRIOR TO COMMENCING ANY WORK.

4.06 WOODWORK INTENDED TO BE PAINTED SHALL BE SANDED SMOOTH WITH 00 PAPER AND ALL MARKS REMOVED. KNOT AND PITCH POCKETS IN WOOD SHALL BE SHELLACKED, AND NAIL HOLES SHALL BE PUTTIED. BOTTOM AND TOP EDGES OF DOORS SHALL BE SEALED IMMEDIATELY AFTER TRIMMING AND FITTING.

4.07 REMOVE ALL LOOSE DEBRIS FROM WALLS AND CLEAN THOROUGHLY BEFORE APPLYING PAINT.

SECTION 5: FLOORING

5.01 CONTRACTOR SHALL FLASH PATCH AND PREPARE ALL FLOORS AS REQUIRED TO RECEIVE SPECIFIED FLOORING MATERIAL. THE CONTRACTOR SHALL ALLOW FOR SUFFICIENT DRYING TIME.

5.02 CARPET CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY UNACCEPTABLE FINISH WORK CAUSED BY SUB-FLOOR CONDITIONS.

5.05 CONTRACTOR SHALL FLASH PATCH SUB-FLOOR WHERE REQUIRED. WHERE FLOORING TRANSITION OCCURS, FLASH FLOOR SLAB A MINIMUM OF 4 FEET IN EACH DIRECTION FROM TRANSITION.

5.06 CONTRACTOR SHALL PROVIDE TRANSITION MATERIAL PER DETAILS IN DRAWINGS

5.08 CARPET CONTRACTOR SHALL INSPECT THE SUB-FLOOR PRIOR TO COMMENCEMENT OF WORK. CARPET CONTRACTOR SHALL NOTIFY THE ARCHITECT AND/OR TENANT OF ANY CONDITIONS WHICH WILL PREVENT CONTRACTOR FROM PRODUCING SATISFACTORY FINISH WORK.

SECTION 6: TILES

6.01 TILE INSTALLATION SHALL CONFORM TO ALL APPLICABLE INSTALLATION METHODS OF THE "HANDBOOK FOR CERAMIC TILE INSTALLATION" PUBLISHED BY THE TILE COUNCIL OF AMERICA, INC.

SECTION 7: SUSPENDED ACOUSTICAL CEILING

7.01 SYSTEM COMPONENTS SHALL CONFORM TO ASTM C635 INTERMEDIATE DUTY AND UBC STANDARD 47-18 INTERMEDIATE DUTY. THE INSTALLATION OF SYSTEM SHALL CONFORM TO ASTM C636, WITH A DEFLECTION OF NOT MORE THAN 1/360 OF THE SPAN.

SECTION 8: ELECTRICAL

8.01 ALL LIGHT FIXTURES ARE TO BE STATE APPROVED/UL LISTED AND INSTALLED BY A LICENSED ELECTRICIAN.

8.02 NOT IN USE.

8.03 ALL WORK DONE IN THIS SECTION TO BE DONE IN ACCORDANCE WITH ALL APPLICABLE CODES BY LICENSED ELECTRICIANS.

8.04 GENERAL CONTRACTOR TO PROVIDE ALL POWER TO EQUIPMENT SPECIFIED ELSEWHERE IN THESE SPECIFICATIONS.

SECTION 9: FINAL CLEANING

EXECUTE FINAL CLEANING PRIOR TO FINAL INSPECTIONS. THOROUGHLY CLEAN THE PROJECT INCLUDING (BUT NOT NECESSARILY LIMITED TO) THE FOLLOWING:

9.01. REMOVE LABELS WHICH ARE NOT REQUIRED AS PERMANENT LABELS.

9.02 CLEAN TRANSPARENT MATERIALS, INCLUDING MIRROR, WINDOW AND DOOR GLASS, TO A POLISHED CONDITION, REMOVING SUBSTANCES WHICH ARE NOTICEABLE AS VISION-OBSCURING MATERIALS. REPLACE BROKEN AND DAMAGED GLASS AND DAMAGED TRANSPARENT MATERIALS.

9.03 CLEAN EXPOSED EXTERIOR AND INTERIOR HARD-SURFACED FINISHES, TO A DIRT-FREE CONDITION, FREE OF DUST, STAINS, FILMS AND SIMILAR NOTICEABLE DISTRACTING SUBSTANCES. EXCEPT AS OTHERWISE INDICATED, AVOID DISTURBANCE OF NATURAL WEATHERING OF EXTERIOR SURFACES.

9.04 WIPE SURFACES OF MECHANICAL AND ELECTRICAL EQUIPMENT CLEAN, REMOVE EXCESS LUBRICATION AND OTHER SUBSTANCES.

9.05 REMOVE DEBRIS AND SURFACE DUST FROM LIMITED-ACCESS SPACES INCLUDING PLENUMS, SHAFTS, TRENCHES, MANHOLES, ATTICS AND SIMILAR SPACES.

9.06 THOROUGHLY CLEAN CONCRETE FLOORS.

9.07 VACUUM CLEAN CONCRETE FLOORS.

9.08 CLEAN PLUMBING FIXTURES TO A SANITARY CONDITION, FREE OF STAINS INCLIDING THOSE RESULTING FROM WATER EXPOSURE.

9.09 CLEAN LIGHT FIXTURES AND LAMPS/LIGHT BULBS WHICH HAVE BURNED HALF THEIR RATED LIFE OR MORE.

9.10 REMOVE WASTE AND SURPLUS MATERIALS, RUBBISH AND CONSTRUCTION FACILITIES FROM SITE.

SECTION 10: TENANT SAFETY PLAN NOTES

10.1 CONSTRUCTION WORK WILL BE CONFINED TO THE SHOP AREA AND NOT CREATE DUST, DIRT, OR OTHER SUCH INCONVENIENCES TO OTHER OFFICE DWELLERS WITHIN THE BUILDING.

10.2 CONSTRUCTION OPERATION WILL NOT BLOCK THE HALLWAYS OR EGRESS FOR THE TENANTS OF THE BUILDING.

10.3 CONSTRUCTION OPERATIONS WILL NOT INVOLVE HEATING, WATER OR ELECTRICAL SERVICES TO OTHER TENANTS OF THE BUILDING.

10.4 CONSTRUCTION OPERATIONS WILL BE CONFINED TO NORMAL BUSINESS WORKING HOURS: 8AM TO 5PM MONDAY THROUGH FRIDAY.

10.5 THE CONTRACTOR SHALL CONTACT THE BUILDING MANAGEMENT TO DETERMINE THE RULES OF THE BUILDING OWNER WITH REGARD TO NOTIFICATIONS, CONSTRUCTION, SCHEDULING, OVERTIME WORK, DELIVERIES AND OTHER SPECIAL BUILDING REGULATIONS AND CHARGES WHICH WILL AFFECT THE WORK.

10.6 EACH CONTRACTOR AND SUB CONTRACTOR SHALL MAKE ALL REQUIRED ARRANGEMENTS FOR DELIVERY OF EQUIPMENT, SUPPLIES AND MATERIALS, INCLUDING THE FOLLOWING:
A) DATES AND TIMES OF DELIVERY SHALL BE ESTABLISHED AND COORDINATED WITH THE APPROPRIATE BUILDING PERSONNEL.
B) BUILDING CONDITIONS, INCLUDING THE SIZE OF THE ELEVATOR(S), SIZE OF DOORWAYS, CORRIDORS AND WINDOWS.
C) CHARGES INVOLVING INSTALLATION AND OPERATION OF A HOIST SYSTEM, IF REQUIRED, SHALL BE BORNE BY THE CONTRACTOR USING THE SYSTEM.

10.7 THE GENERAL CONTRACTOR SHALL INCLUDE IN HIS COST ESTIMATE ALL COSTS (INCLUDING OVERTIME WORK) FOR REMOVAL, NEW INSTALLATION AND RE INSTALLATION OF ALL HVAC, PLUMBING, ELECTRICAL, TELEPHONE DATA, COMMUNICATION AND SUSPENDED CEILINGS ON THE FLOORS ABOVE AND BELOW THE TENANT SPACE REQUIRED TO COMPLETE THE WORK.

10.8 THE GENERAL CONTRACTOR SHALL INSTITUTE ALL NECESSARY MEASURES TO PREVENT DIRT, DUST OR DEBRIS FROM LEAVING THE JOB SITE.

ABBREVIATIONS

A.D.	AREA DRAIN
ADJ.	ADJACENT
AJSTBL.	ADJUSTABLE
AESS	ARCHITECTURAL EXPOSED STRUCTURAL STEEL
A.F.F.	ABOVE FINISH FLOOR
ALT.	ALTERNATE
ALUM.	ALUMINUM
A.P.	ACCESS PANEL
APPROX.	APPROXIMATE
ARCH.	ARCHITECT / ARCHITECTURAL
BATH.	BATHROOM
BD.	BOARD
BLDG.	BUILDING
B.O.	BOTTOM OF
CAB.	CABINET
CB.	CATCH BASIN
CER.	CERAMIC
C.J.	CONTROL JOINT
	CENTER LINE
CL.	CLOSET
CLG.	CEILING
CLR.	CLEAR
C.M.U.	CONCRETE MASONRY UNIT
C.O.	CLEAN OUT
COL.	COLUMN
COMP.	COMPOSITE
CONC.	CONCRETE
CONT.	CONTINUOUS
C.T.	CERAMIC TILE
CTR.	CENTER
C.W.	COLD WATER
DIA.	DIAMETER
DBL.	DOUBLE
DET.	DETAIL
D.F.	DRINKING FOUNTAIN
DIM.	DIMENSION
DIM. PT.	DIMENSION POINT
DN.	DOWN
D.S.	DOWN SPOUT
DWG.	DRAWING
E.	EAST
EA.	EACH
EBC.	EXISTING BOTTOM OF CURB
E.J.	EXPANSION JOINT
EL.	ELEVATION
ELEV.	ELEVATOR
ELEC.	ELECTRICAL
E.W.H.	ELECTRIC WATER HEATER
ENCL.	ENCLOSURE
E.O.C.	EDGE OF CONCRETE
E.O.S.	EDGE OF SLAB
EQ.	EQUAL
EXIST.	EXISTING
EXT.	EXTERIOR
EXP.	EXPOSED
ETC.	EXISTING TOP OF CURB
E.T.R.	EXISTING TO REMAIN
F.A.	FIRE ALARM
F.B.O.	FURNISHED BY OWNER
F.D.	FLOOR DRAIN
F.E.	FIRE EXTINGUISHER
FIN.	FINISH
F.F.E.	FINISH FLOOR ELEVATION
F.F.	FINISH FACE OR FLOOR
FIXT.	FIXTURE
F.L.	FLOW LINE
FL.	FLOOR
FLG.	FLOORING
F.O.	FACE OF
F.O.S.	FACE OF STUD
FR.	FROM
F.R.T.	FIRE RETARDANT TREATED
FT.	FOOT OR FEET
GA.	GAUGE
GALV.	GALVANIZED
G.S.M.	GALVANIZED SHEET METAL
G.B.	GRAB BAR
G.F.	GROUND FACE
GEN.	GENERAL
GL.	GLASS OF GLAZED
GYP.	GYPSUM
H.C.	HOLLOW CORE
HDCP.	HANDICAPPED
HDWRE.	HARDWARE
H.M.	HOLLOW METAL
HOR.	HORIZONTAL
H.P.	HIGH POINT
HR.	HOUR
HT.	HEIGHT
H.W.	HOT WATER
I.D.	INSIDE DIAMETER
INSUL.	INSULATION
INT.	INTERIOR
JT.	JOINT
LAM.	LAMINATED
LAV.	LAVATORY
LN.	LINE
MAX	MAXIMUM
M.B.	MACHINE BOLT
MECH.	MECHANICAL
MEP.	MECHANICAL, ELECTRICAL, PLUMBING
MTL.	METAL
MFR.	MANUFACTURER
MIN.	MINIMUM
MISC.	MISCELLANEOUS
M.O.	MASONRY OPENING
MR.	MECHANICAL ROOM
MTD.	MOUNTED
(N)	NEW
N	NORTH
N.I.C.	NOT IN CONTRACT
NO.	NUMBER
NOM.	NOMINAL
NTC.	NEW TOP OF CURB
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
OPNG.	OPENING
OPP.	OPPOSITE
O.T.A.	OPEN TO ABOVE
O.T.B.	OPEN TO BELOW
PCT.	PORCELAIN CERAMIC TILE
P. LAM.	PLASTIC LAMINATE
PLAS.	PLASTER
PL.	PLATE
PT.	POINT
PTD.	PAINTED
PERF.	PERFORATED
R.	RISER
RAD.	RADIUS
R.C.P.	REFLECTED CEILING PLAN
REF.	REFERENCE
REFRG.	REFRIGERATOR
REINF.	REINFORCED
REQD.	REQUIRED
R.D.	ROOF DRAIN
RM.	ROOM
R.O.	ROUGH OPENING
S.	SOUTH
S.SURF.	SOLID SURFACE
S.A.D.	SEE ARCH. DRAWINGS
S.C.	SOLID CORE
SCHED.	SCHEDULE
SECT.	SECTION
S.E.D.	SEE ELECTRICAL DRAWINGS
SHT.	SHEET
SIM.	SIMILAR
SPEC.	SPECIFICATIONS
SQ.	SQUARE
S.S.	STAINLESS STEEL
S.L.D.	SEE LANDSCAPE DRAWINGS
S.S.D.	SEE STRUCTURAL DRAWINGS
ST.	STORAGE
STD.	STANDARD
STIFF.	STIFFENER
STL.	STEEL
STRUC.	STRUCTURAL
SUSP.	SUSPENDED
SYM.	SYMMETRICAL
T.	TREAD
TECH.	TECHNICAL
TEL.	TELEPHONE
TEMP.	TEMPERED
T.G.	TONGUE AND GROOVE
TBD.	TO BE DETERMINED
TBR.	TO BE REMOVED
THRD.	THREADED
T.O.	TOP OF
T.O.C.	TOP OF CURB
T.O.F.	TOP OF FINISH
T.O.P.	TOP OF PLANK
T.O.S.	TOP OF SLAB
T.O.STL.	TOP OF STEEL
T.O.T.	TOP OF TOPPING
TYP.	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
UR.	URINAL
VAR.	VARIES
V.C.T.	VINYL COMPOSITION TILE
VENT.	VENTILATION
VERT.	VERTICAL
V.I.F.	VERIFY IN FIELD
W	WEST
W/	WITH
W.C.	WATER CLOSET
WIN.	WINDOW
W/O	WITHOUT
W.B.	WHITE BOARD
WD.	WOOD
&	AND
∠	ANGLE
@	AT
℄	CENTER LINE
[	CHANNEL
⅊	PROPERTY LINE
#	NUMBER

1. EWC SPECIFICATIONS REQUIRE A 200 AMP ELECTRICAL PANEL. THE ELECTRICIAN IS TO CONFIRM THAT THIS POWER IS ALREADY IN PLACE OR BEING PROVIDED AS A NEW PANEL.
2. IF THE SPACE IS BEING DELIVERED TO THE GC WITH A PREVIOUSLY EXISTING STORE'S CONSTRUCTION IN PLACE, THE GC IS OBLIGATED TO CONFIRM THE EXISTING DIMENSIONS OF THE SPACE AFTER DEMOLITION.
3. THE GC IS TO LAYOUT THE SPACE IN CHALK AND REPORT TO THE ARCHITECT ANY DISCREPANCIES IN LAYOUT BEFORE ACTUALLY BUILDING - ONCE CONFIRMED THAT THE LAYOUT IS CORRECT ANY DISCREPANCIES ARE THE RESPONSIBILITY OF THE GC.
4. ELECTRICIAN/ GC TO DO A PRECONSTRUCTION EVALUATION TO DETERMINE SIZE OF HVAC UNIT AND ELECTRICAL PANEL TO BE INSTALLED BY TENANT.
5. FINAL ELECTRICAL PANEL LOCATION TO BE CONFIRMED BY GC ON SITE AFTER LOCATING LANDLORD PROVIDED CONDUITS.
6. CLIENT IS RESPONSIBLE TO ASK THE LL IF A NEW LOCAL FIRE ALARM IS REQUIRED TO BE TIED INTO THE BUILDING'S OVERALL SYSTEM.
7. GC IS RESPONSIBLE TO BUILD ACCORDING TO ARCHITECTURAL DRAWINGS AND EWC CONSTRUCTION SPECIFICATIONS AND TENANT/LL CONSTRUCTION DOCUMENTATION.
8. ALL SQUARE FOOTAGE CALCULATIONS ARE TO BE USED FOR BUILDING PURPOSES ONLY AND SHOULD NOT BE USED FOR LEASE PURPOSES.

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02-14-2022

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GENERAL NOTES

SCALE:
NTS

SEAL
DAVID EARL GROSS
NUMBER A-2019000254

ARCHITECT: DAVID E. GROSS
MO LICENSE No. A-2019000254

DRAWING NO.
A-001

DRINKING FOUNTAIN

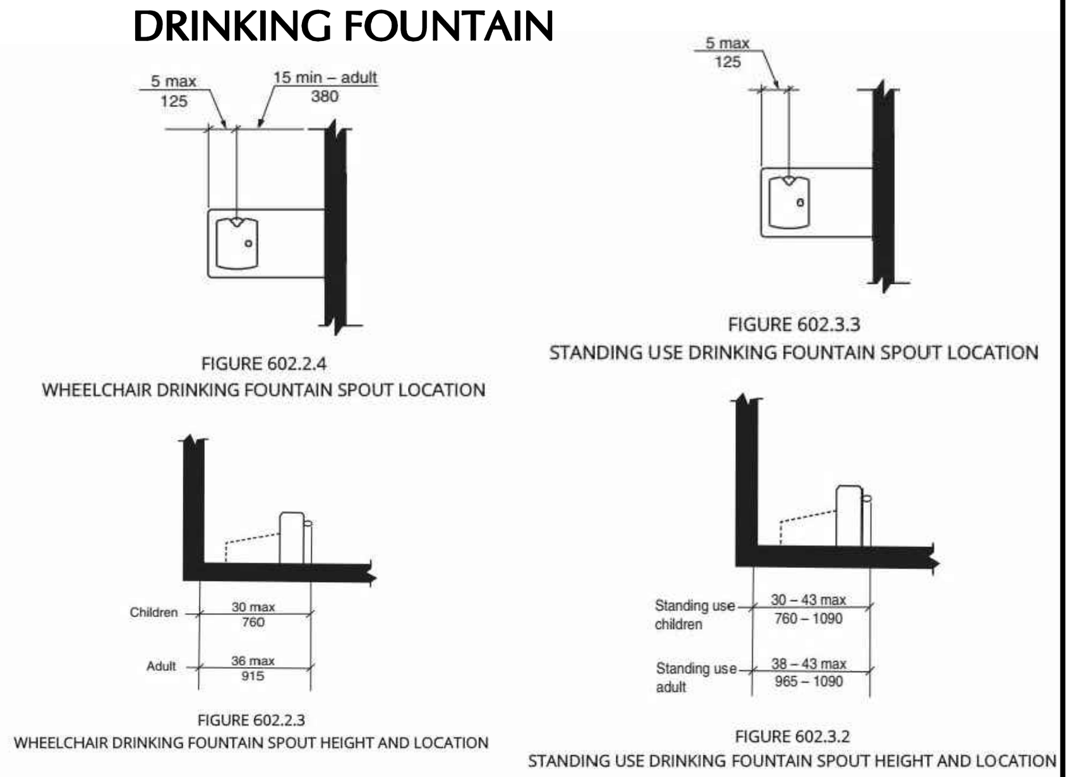

FIGURE 602.2.4
WHEELCHAIR DRINKING FOUNTAIN SPOUT LOCATION

FIGURE 602.3.3
STANDING USE DRINKING FOUNTAIN SPOUT LOCATION

FIGURE 602.2.3
WHEELCHAIR DRINKING FOUNTAIN SPOUT HEIGHT AND LOCATION

FIGURE 602.3.2
STANDING USE DRINKING FOUNTAIN SPOUT HEIGHT AND LOCATION

MINIMUM CLEARANCES @ CORRIDOR

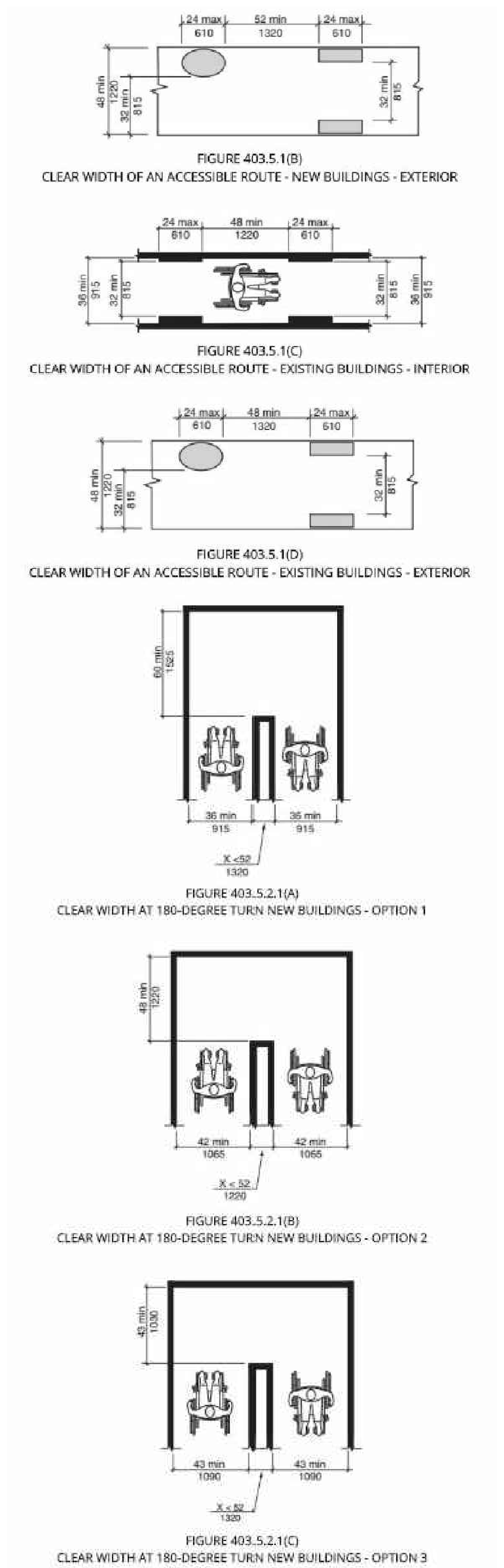

FIGURE 403.5.1(B)
CLEAR WIDTH OF AN ACCESSIBLE ROUTE - NEW BUILDINGS - EXTERIOR

FIGURE 403.5.1(C)
CLEAR WIDTH OF AN ACCESSIBLE ROUTE - EXISTING BUILDINGS - INTERIOR

FIGURE 403.5.1(D)
CLEAR WIDTH OF AN ACCESSIBLE ROUTE - EXISTING BUILDINGS - EXTERIOR

FIGURE 403.5.2.1(A)
CLEAR WIDTH AT 180-DEGREE TURN NEW BUILDINGS - OPTION 1

FIGURE 403.5.2.1(B)
CLEAR WIDTH AT 180-DEGREE TURN NEW BUILDINGS - OPTION 2

FIGURE 403.5.2.1(C)
CLEAR WIDTH AT 180-DEGREE TURN NEW BUILDINGS - OPTION 3

WATER CLOSETS

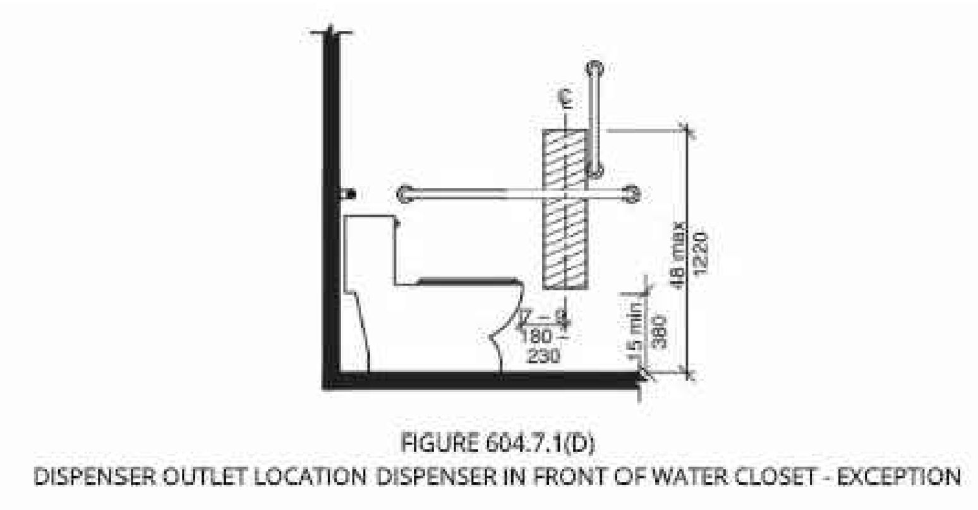

FIGURE 604.7.1(D)
DISPENSER OUTLET LOCATION DISPENSER IN FRONT OF WATER CLOSET - EXCEPTION

LOCATIONS FOR TOILET PAPER HOLDER
N.T.S.

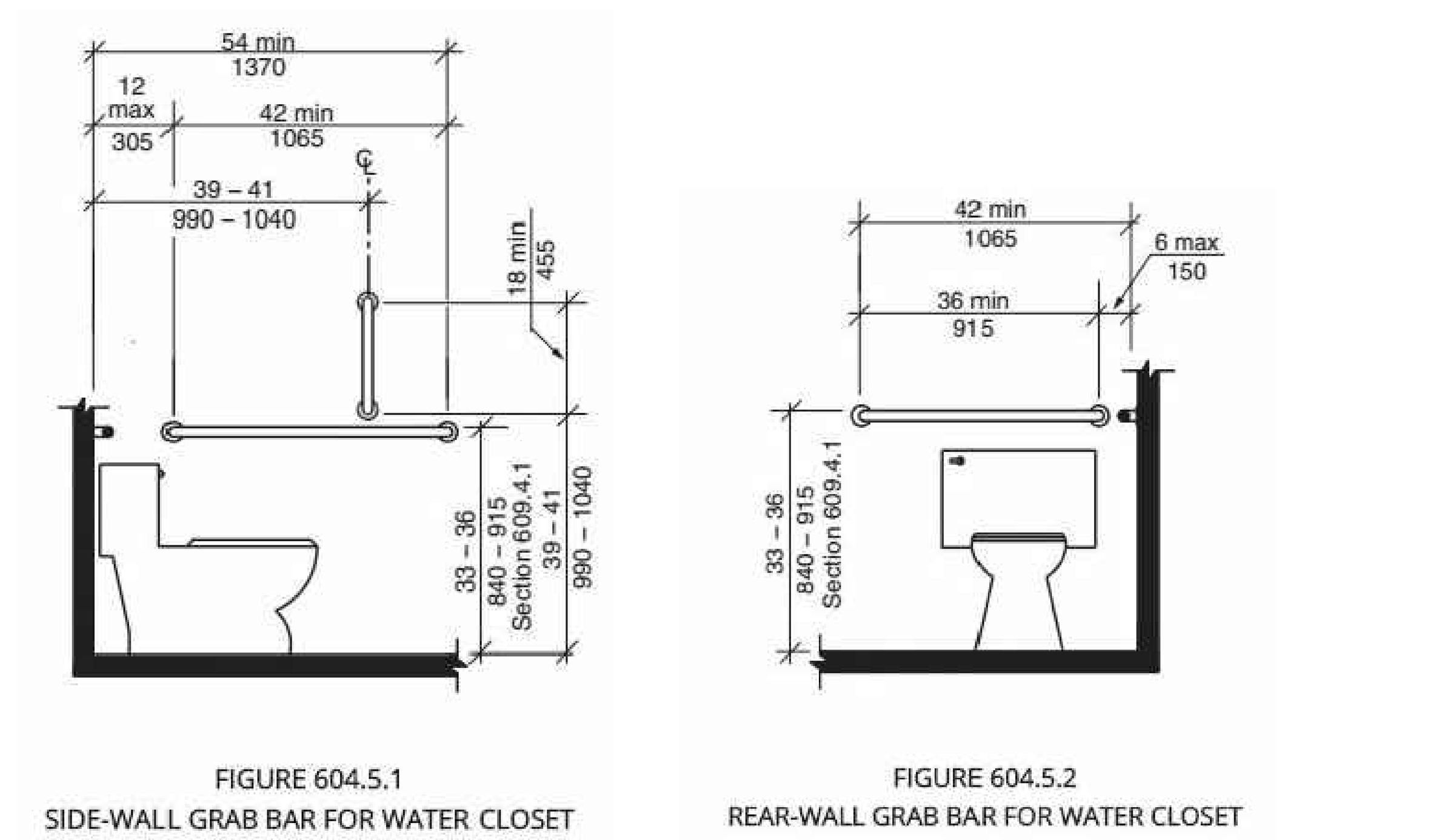

FIGURE 604.5.1
SIDE-WALL GRAB BAR FOR WATER CLOSET

FIGURE 604.5.2
REAR-WALL GRAB BAR FOR WATER CLOSET

ACCESSIBLE TOILET LOCATIONS FOR GRAB BARS
N.T.S.

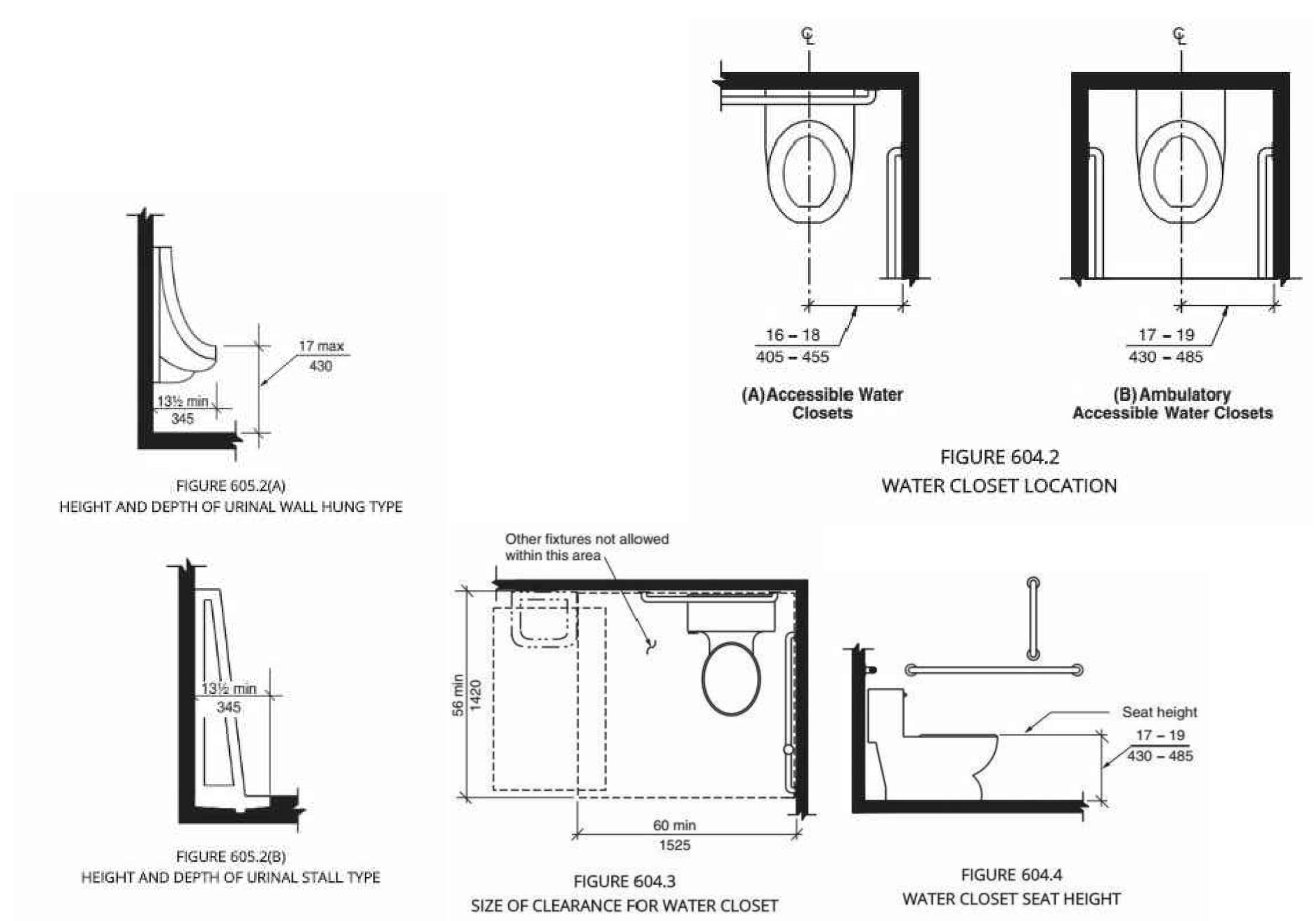

FIGURE 605.2(A)
HEIGHT AND DEPTH OF URINAL WALL HUNG TYPE

FIGURE 604.2
WATER CLOSET LOCATION

FIGURE 605.2(B)
HEIGHT AND DEPTH OF URINAL STALL TYPE

FIGURE 604.3
SIZE OF CLEARANCE FOR WATER CLOSET

FIGURE 604.4
WATER CLOSET SEAT HEIGHT

ACCESSIBLE WATER CLOSET
N.T.S.

TACTILE SIGNS / PICTOGRAM

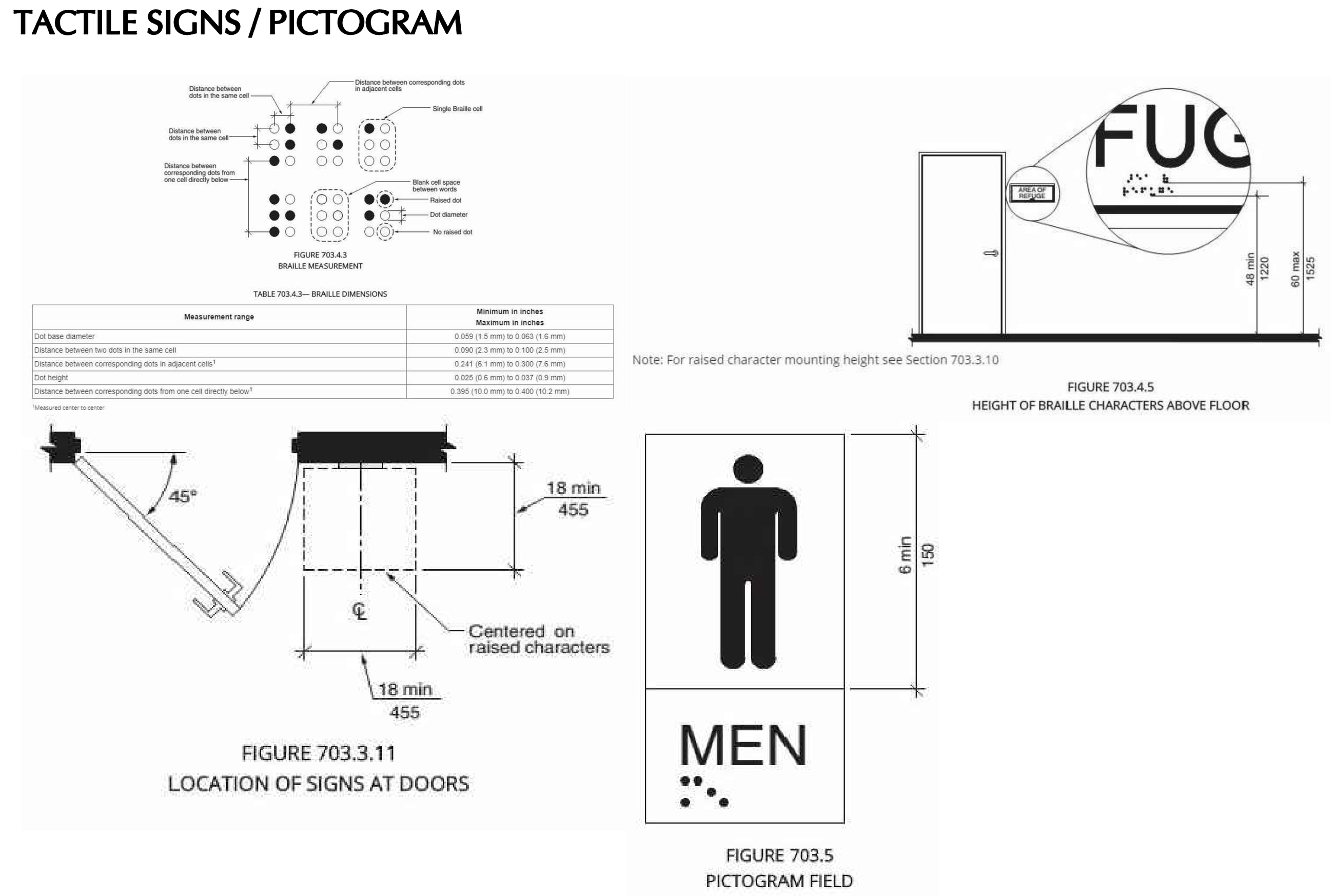

FIGURE 703.4.5
HEIGHT OF BRAILLE CHARACTERS ABOVE FLOOR

FIGURE 703.3.11
LOCATION OF SIGNS AT DOORS

FIGURE 703.5
PICTOGRAM FIELD

LAVATORIES

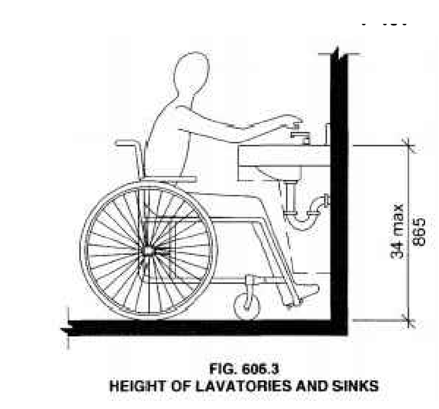

FIG. 606.3
HEIGHT OF LAVATORIES AND SINKS

TURNING / CLEAR FLOOR SPACE

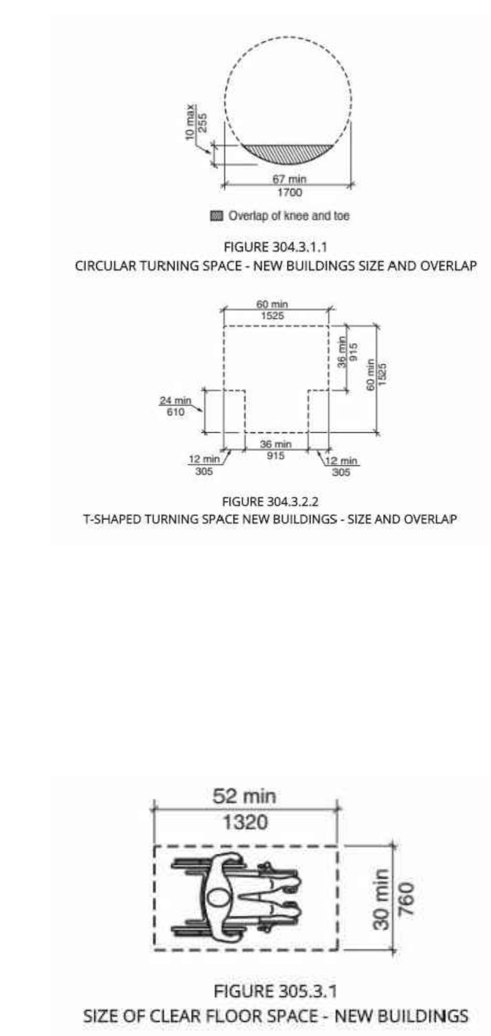

FIGURE 304.3.1.1
CIRCULAR TURNING SPACE - NEW BUILDINGS SIZE AND OVERLAP

FIGURE 304.3.2.2
T-SHAPED TURNING SPACE NEW BUILDINGS - SIZE AND OVERLAP

FIGURE 305.3.1
SIZE OF CLEAR FLOOR SPACE - NEW BUILDINGS

KNEE CLEARANCE / REACH

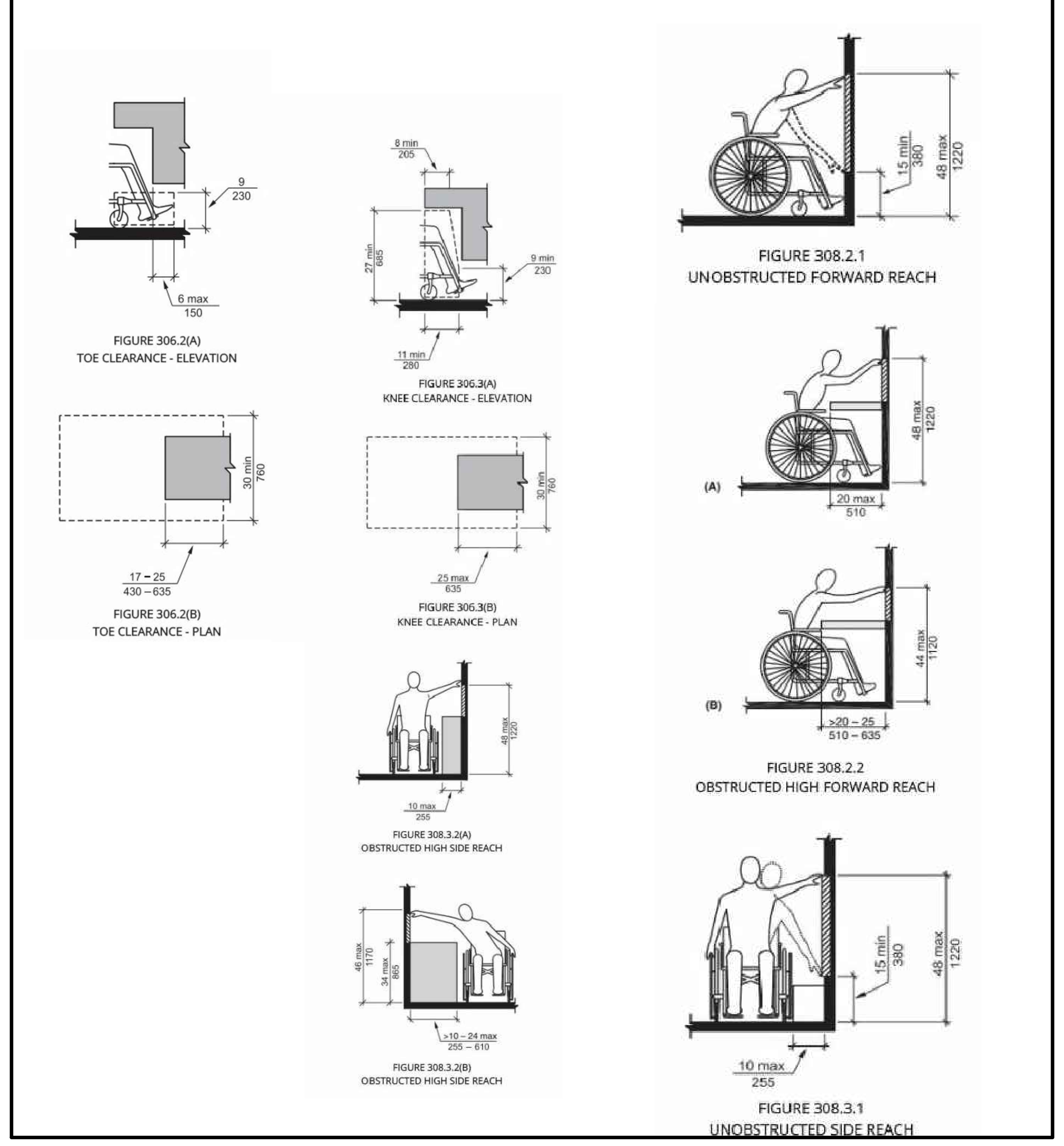

FIGURE 306.2(A)
TOE CLEARANCE - ELEVATION

FIGURE 306.3(A)
KNEE CLEARANCE - ELEVATION

FIGURE 308.2.1
UNOBSTRUCTED FORWARD REACH

FIGURE 306.2(B)
TOE CLEARANCE - PLAN

FIGURE 306.3(B)
KNEE CLEARANCE - PLAN

FIGURE 308.3.2(A)
OBSTRUCTED HIGH SIDE REACH

FIGURE 308.2.2
OBSTRUCTED HIGH FORWARD REACH

FIGURE 308.3.2(B)
OBSTRUCTED HIGH SIDE REACH

FIGURE 308.3.1
UNOBSTRUCTED SIDE REACH

SALES AND SERVICE COUNTERS

SECTION 904
SALES AND SERVICE COUNTERS AND WINDOWS

904.1 General.

Accessible sales and service counters and windows shall comply with Section 904 as applicable.

Exception: Drive-up only sales or service counters and windows are not required to comply with Section 904.

904.2 Approach.

All portions of counters required to be accessible shall be located adjacent to a walking surface complying with Section 403.

904.3 Sales and service counters and windows.

Sales and service counters and windows shall comply with Section 904.3.1 and either Section 904.3.2 or Section 904.3.3. Where counters are provided, the accessible portion of the countertop shall extend the same depth as the public portion of the sales and service countertop provided for standing customers.

Exception: In alterations, when the provision of a counter complying with this section would result in a reduction of the number of existing counters at work stations or a reduction of the number of existing mail boxes, the counter shall be permitted to have a portion which is 24 inches (610 mm) minimum in length complying with Section 904.3.2 provided that the required clear floor space is centered on the accessible length of the counter.

904.3.1 Vertical barriers.

At service windows or service counters, any vertical barrier between service personnel and customers shall be at a height of 43 inches (1090 mm) maximum above the floor.

Exception: Transparent security glazing shall be permitted above the 43 inches (1090 mm) maximum height.

904.3.2 Parallel approach.

A portion of the public use side of the counter surface 36 inches (915 mm) minimum in length and 26 inches (660 mm) minimum to 36 inches (915 mm) maximum in height above the floor shall be provided. A clear floor space positioned for a parallel approach adjacent to the accessible counter shall be provided. The space between the accessible counter surface and any projecting objects above the accessible counter shall be 12 inches (305 mm) minimum.

Exception: Where the counter surface is less than 36 inches (915 mm) in length, the entire counter surface shall be 26 inches (660 mm) minimum to 36 inches (915 mm) maximum in height above the floor.

904.3.3 Forward approach.

A portion of the public use side of the counter surface 30 inches (760 mm) minimum in length and 36 inches (915 mm) maximum in height above the floor shall be provided. A clear floor space positioned for a forward approach to the accessible counter shall be provided. Knee and toe clearance complying with Section 306 shall be provided under the accessible counter. The space between the accessible counter surface and any projecting objects above the accessible counter shall be 12 inches (305 mm) minimum.

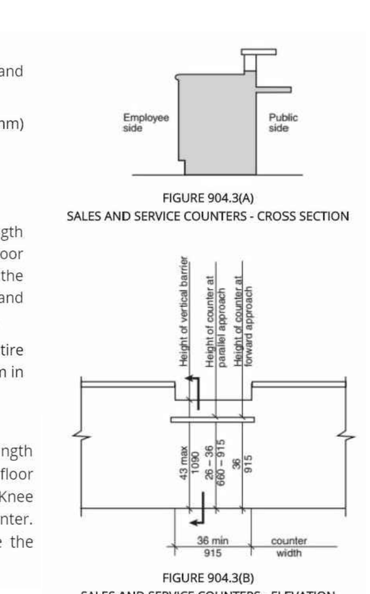

FIGURE 904.4(A)
SALES AND SERVICE COUNTERS - CROSS SECTION

FIGURE 904.4(B)
SALES AND SERVICE COUNTERS - ELEVATION

CLEARANCES AT DOOR

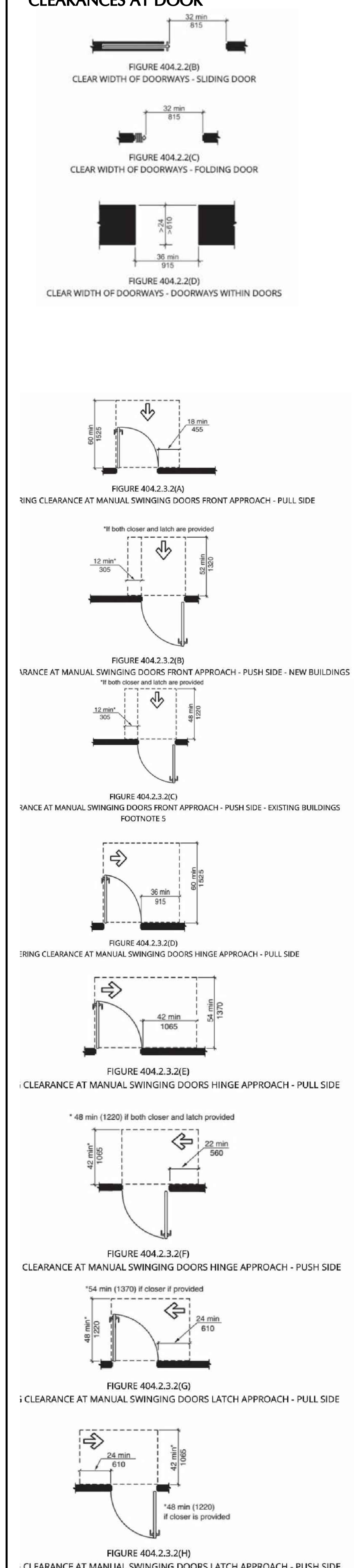

FIGURE 404.2.2(B)
CLEAR WIDTH OF DOORWAYS - SLIDING DOOR

FIGURE 404.2.2(C)
CLEAR WIDTH OF DOORWAYS - FOLDING DOOR

FIGURE 404.2.2(D)
CLEAR WIDTH OF DOORWAYS - DOORWAYS WITHIN DOORS

FIGURE 404.2.3.2(A)
...RING CLEARANCE AT MANUAL SWINGING DOORS FRONT APPROACH - PULL SIDE

FIGURE 404.2.3.2(B)
...RANCE AT MANUAL SWINGING DOORS FRONT APPROACH - PUSH SIDE - NEW BUILDINGS

FIGURE 404.2.3.2(C)
...RANCE AT MANUAL SWINGING DOORS FRONT APPROACH - PUSH SIDE - EXISTING BUILDINGS
FOOTNOTE 5

FIGURE 404.2.3.2(D)
...RING CLEARANCE AT MANUAL SWINGING DOORS HINGE APPROACH - PULL SIDE

FIGURE 404.2.3.2(E)
CLEARANCE AT MANUAL SWINGING DOORS HINGE APPROACH - PULL SIDE

FIGURE 404.2.3.2(F)
CLEARANCE AT MANUAL SWINGING DOORS HINGE APPROACH - PUSH SIDE

FIGURE 404.2.3.2(G)
CLEARANCE AT MANUAL SWINGING DOORS LATCH APPROACH - PULL SIDE

FIGURE 404.2.3.2(H)
CLEARANCE AT MANUAL SWINGING DOORS LATCH APPROACH - PUSH SIDE

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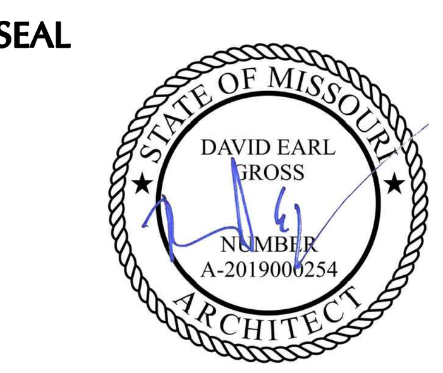
DRAWING: HANDICAP ADAPTABILITY NOTES

SCALE:
AS NOTED

SEAL



ARCHITECT: DAVID E. GROSS
MO LICENSE No. A-2019000254

DRAWING NO.

A-002

FINISH SCHEDULE

FLOORING	SOURCES	QUANTITY
FT-1	ENTRY, WAX RMS., BATHRM., OFFICE, & STORAGE RM.	
	SPECIFICATION: MATTE PORCELAIN TILE VENDOR: FLOOR AND DECOR SIZE: 24" X 24" DESCRIPTION: CESARI BIANCA II CONTACT: 469.380.1208	GC TO VERIFY QUANTITY
FT-2	HALLWAY & CLOSET	
	SHAW CONTRACT GROUP 6"X 24" COLLECTION: ODYSSEY MODEL: CTT1D ODYSSEY COLOR: GRAY 00500 904-553-5160	GC TO VERIFY QUANTITY
CP-1	CALL CENTER/ BASEMENT	
	SHAW CARPETS #J0056 COLOR: 56500 TRIBUNE COLLECTION: QUEEN COMMERCIAL	N/A
WT-1	RESTROOM WALL TRIM AND LOBBY/WAX ROOM TRIM	
	SPECIFICATION: MATTE PORCELAIN TILE VENDOR: FLOOR AND DECOR SIZE: CUT 12"X24" DESCRIPTION: CESARI BIANCA II CONTACT: 469.380.1208	GC TO VERIFY QUANTITY
		GC TO VERIFY QUANTITY

BASE	SOURCES		
B-1	ENTRY, WAX RMS., OFFICE, & STORAGE		
	SPECIFICATION: MATTE PORCELAIN TILE VENDOR: FLOOR AND DECOR SIZE: CUT 12"X24" TO 4"X24" DESCRIPTION: CESARI BIANCA II CONTACT: 469.380.1208	1	GC TO VERIFY QUANTITY
B-2	HALLWAY & CLOSET	1	
	COLLECTION-ODYSSEY MODEL: CTT1D ODYSSEY COLOR: GRAY 00500 VENDOR: SHAW INDUSTRIES	CUT TO 4"X24" PIECES	GC TO VERIFY QUANTITY
B-3	CALL CENTER/ BASEMENT		
	ROPPE 4" X 120' DARK GRAY VINYL COVE WALL BASE HOMEDEPOT MODEL: HC40LASP150		N/A

GROUT	SOURCES		
GR-1	FLOOR TILE		
	CUSTOM BUILDING PRODUCTS GROUT COLOR: #183 CHATEAU GRAY	FOR USE WITH FT-1, WT-1, AND WT-2	GC TO VERIFY QUANTITY

CEILING	SOURCES		
CL-2	ACOUSTICAL T-BAR GRID CEILING		
	CEILING TILES PRODUCT: USG OLYMPIA MICRO ACOUSTICAL TILE #4221 OR ARMSTRONG EQUIVALENT	ASTM E 1264 CLASSIFICATION: TYPE III, FORM 2, PATTERN C E FLAME SPREAD CLASSIFICATION: CLASS A	GC TO VERIFY QUANTITY

FINISH SCHEDULE (CONT.)

PLUMBING FIXTURES	SOURCES	QUANTITY
FX-1		
	KOHLER 2-PIECE TOILET MODEL: K-4484-0 (TOP) & K-4304-0 (BOTTOM) HIGHLINE CLASSIC COMFORT WITH KOHLER K-4650 LUSTRA TOILET SEAT SOLID POLYPROPYLENE PLASTIC	1
FX-2		
	KOHLER SOHO K-2053-N SOHO WALL MOUNTED OR CONCEALED CARRIER ARM MOUNTED COMMERCIAL BATHROOM SINK WITH FX-3 FAUCET WHITE FINISH	1
FX-3		
	MOEN 8820 BATHROOM FAUCET CHROME FINISH	1
FX-4		
	ADA COMPLIANT 42" GRAB BARS STAINLESS STEEL GRAB BAR FINISH: STAIN FINISH STAINLESS STEEL BOBRICK B-5806 x 42 CONTACT: HTTP://WWW.BOBRICK.COM	1
FX-5		
	ADA COMPLIANT 36" GRAB BARS STAINLESS STEEL GRAB BAR FINISH: STAIN FINISH STAINLESS STEEL BOBRICK B-5806 x 36 CONTACT: HTTP://WWW.BOBRICK.COM	1
FX-6		
	ADA COMPLIANT 18" GRAB BARS STAINLESS STEEL GRAB BAR FINISH: STAIN FINISH STAINLESS STEEL BOBRICK B-5806 x 18 CONTACT: HTTP://WWW.BOBRICK.COM	1
FX-7		
	MOP SERVICE SINK @ SERVICE SINK CLOSET FIAT PRODUCT MOLDED STONE MOP SERVICE BASINS MSB-2424	N/A
FX-8		
	FAUCET (MOP SINK) @ SERVICE SINK CLOSET PRICE PFISTER LAUNDRY UTILITY FAUCET 64 SERIES 64-020	N/A
FX-9		
	HOT WATER HEATER **SPEC TO BE DETERMINED BY GC**	1
FX-10		
	DYSON AIRBLADE V (AB12 SPRAYED NICKEL) HAND DRYER - CLIENT TO APPROVE MODEL	N/A
FX-11		
	FIAT SERV-A-SINK FL-1 & CORRESPONDING FAUCET	1
FX-12		
	C FOLD TOWEL DISPENSER - **FRANCHISEE WILL ORDER FROM MEDLINE ON THE DEVELOPING LOCATION WORKSHEET**	1
FX-13		
	BUILT-IN FILTERED WATER DISPENSER VENDER: ELKAY ELKAY EZH2O LIV BUILT-IN FILTERED WATER DISPENSER MODEL LBWD00 ADA COMPLIANT UNIT - SEE SPEC ON PLUMBING PAGE	1
FX-14		
	WALL MOUNTED MOP HOLDER	1
FX-15		
	SURFACE MOUNTED TWIN JUMBO ROLL TOILET TISSUE DISPENSER - **FRANCHISEE WILL ORDER FROM MEDLINE ON THE DEVELOPING LOCATION WORKSHEET**	1
FX-16		
	DOUBLE STAINLESS STEEL ADA COMPLIANT WATER FOUNTAIN - SEE PRODUCT SPEC	N/A
FX-17		
	ADA COMPLIANT COUNTER AND CABINETRY BY GC AND OWNER (SINK BASE TO BE ADA COMPLIANT)	NA
FX-18		
	HAND WASHING SINK @ WAX ROOM AMERICAN STANDARD MINIETTE CORNER CERAMIC SINK 0481.021.020 - OWNER TO VERIFY SELECTION	N/A
FX-19		
	FAUCET (HAND WASHING SINK) @ WAX ROOM AMERICAN STANDARD COLONIAL SOFT SINGLE CONTROL CENTERSET - 2175.503.002 OWNER TO VERIFY SELECTION	N/A
HDWR-1		
	COAT HOOK HOMEDEPOT EVERBILT SATIN NICKEL END COAT & HAT HOOK MODEL# 15559.0	9

FINISH SCHEDULE (CONT.)

CONT.	SOURCES	QUANTITY
FX-20		
	SOAP DISPENSER - ADVANCE TABCO 7-PS-12-X20 OZ WALL MOUNT PUSH UPC CODE #747545103818	1

MILLWORK UNIT	SOURCES	QUANTITY
MWA-1	CASHWRAP	
	SEE MILLWORK SPECIFICATION PACKET ☒ **8'-0" RECEPTION DESK** ☐ **9'-4" CUSTOM 3-PERSON DESK**	1
MWA-2	RETAIL WALL DISPLAY SHELVES	
	CUSTOM 3 BAY LINER RETAIL UNIT COORDINATE THROUGH 3G	1
MWA-3	WAXROOM CABINET	
	SEE MILLWORK SPECIFICATION PACKET	1 PER ROOM
MWA-5	WAX BED	
	SEE MILLWORK SPECIFICATION PACKET	1 PER ROOM
MWA-6	CORNER SHELF	
	SEE MILLWORK SPECIFICATION PACKET	1 PER WAX ROOM 1 PER BATHROOM

ACCESSORY	SOURCES	
GP-1	FRAMED GRAPHIC	
	SPEC BY EWC 2-EACH WAX ROOM	2 PER WR ROOM
GP-2	FRAMED GRAPHIC	
	SPEC BY EWC 3-WAITING AREA	3

CHAIR	SOURCES	
CH-1	FRONT ENTRY	
	TBD	TBD
CH-2	FRONT ENTRY	
	TBD	TBD
CH-3	WAX ROOM	
	TBD	1 PER ROOM

PAINT	SOURCES	
P1		
	SHERWIN WILLIAMS COLOR: MEDICI IVORY SW7558 FINISH: EGGSHELL CONTACT: ANGIE FRANCE 623-606-1130	GC TO VERIFY QUANTITY
P2		
	SHERWIN WILLIAMS COLOR: REALISTIC BEIGE SW6078 FINISH: EGGSHELL CONTACT: ANGIE FRANCE 623-606-1130	GC TO VERIFY QUANTITY
P3		
	PRODUCT: MODERN MASTERS COLLECTION DESIGNER COLOR: METALLIC PAINT COLOR: SMOKE ME243	GC TO VERIFY QUANTITY
P4		
	WAITING ROOM CEILING PAINT PRODUCT: SHERWIN WILLIAMS EXTRA WHITE COLOR: SW 7006 'EXTRA WHITE' EGGSHELL FINISH	GC TO VERIFY QUANTITY
P5		
	DOOR PAINT (SPRAY APPLICATION): MODERN MASTERS COLLECTION DESIGNER COLOR: METALLIC PAINT COLOR: SASHAY RED #ME513 CONTACT: ANGIE FRANCE 623-606-1130	GC TO VERIFY QUANTITY

FINISH SCHEDULE (CONT.)

WALL COVERING	SOURCES		QUANTITY
WC-1	WAITING AREA		
	KORSEAL GUSTAN DAMASK #D222-40 EARNEST 54" WIDE	ASTM E-84 CLASS A NON-WOVEN	GC TO VERIFY QUANTITY

ACRLYIC	SOURCES		QUANTITY
AC-2	RECEPTION LOGO SIGNAGE		
	BY EWC		1

GLASS SURFACES	SOURCES		QUANTITY
GL-1	HALLWAY DOOR		
	CAROLINA CABINET COMPANY 3093 HWY 95-301 NORTH WILSON, NC 27893 TELE: 252-291-5181		GC TO VERIFY SIZE SEE PLAN

	SOURCES		QUANTITY
FM-1	FLOOR MAT		
	CLIENT TO CHOOSE FROM OPTION 1 OR 2 FROM THE SPEC BOOK		1

FINISH NOTES:

1. ALL GYP. BD. SURFACES THROUGHOUT SHALL HAVE A SMOOTH (NO TEXTURE) SANDED SURFACE AND SHALL BE PREPARED FOR PAINT FINISH AS SPECIFIED ON THE PLANS.
2. ALL PAINT USED SHALL BE COMMERCIAL WATER BASED INTERIOR ENAMEL
3. ALL NEW GYP. BD. SURFACES SHALL RECEIVED 2 (TWO) COATS OF PAINT.
4. ALL DRYWALL FINISHES GYPSUM CEILING IN THE WAITING AREA AND CORRIDOR ARE TO BE A LEVEL 4 FINISH.
5. MAXIMUM GROUT LINE IS 1/16", AND ALL TILE NEEDS TO BE MUDSET.
6. ALL GROUT IS TO BE SEALED BY GC.

NOTES:

REGARDLESS OF LANDLORD WORK SCOPE, GC IS RESPONSIBLE TO VERIFY THAT ALL WORK OF THE EWC BUILD-OUT IS DONE PER ADA CODES & EWC SPECS. GC TO COORDINATE WITH LANDLORD AS NECESSARY.

DEMISING WALL NOTE:
GC TO COMPLETE ALL DEMISING WALLS AS NEEDED PER WALL TYPE 2 - SEE A-601.

RESPONSIBILITY SCHEDULE

ITEM	FURNISHED: LANDLORD	FURNISHED: FRANCHISEE	FURNISHED: CONTRACTOR	FURNISHED: EWC	INSTALLED: LANDLORD	INSTALLED: FRANCHISEE	INSTALLED: CONTRACTOR	INSTALLED: EWC	REMARKS
•CHANGE PER SPECIFIC JOB									RESPONSIBILITY SCHEDULE IS GENERAL IN NATURE AND DOES NOT REFLECT EVERY COMPONENT OR RESPONSIBILITY. U.O.N. RESPONSIBILITY IS G.C. FURNISHED AND INSTALLED.
STOREFRONT / EXTERIOR									
•STOREFRONT GLAZING	■				■				EXISTING
STOREFRONT SIGN			■				■		COORD. INSTALL. W/ SIGNAGE CONTRACTOR
FLOORING / BASE	L	F	C	E	L	F	C	E	
•CONCRETE FLOOR SLAB			■				■		EXISTING - G.C. TO REPAIR AS NEEDED
CONCRETE FLOOR PATCH & LEVELING			■				■		G.C. USE SELF LEVELING MAT. WHEN REQ.
QUARTZ TILE & BASE			■				■		GROUT LINE MAX IS 1/16" -TILE TO BE IN MUDSET
PORCELAIN TILE & BASE			■				■		GROUT LINE MAX IS 1/16" -TILE TO BE IN MUDSET
TILE & GROUT SEALER			■				■		
REDUCER / TRANSITION STRIPS			■				■		
WOOD BASE			■				■		
•WALK-OFF MAT	■						■		
WALLS	L	F	C	E	L	F	C	E	EXISTING
•DEMISING PART. STUDS			■				■		GC TO REPAIR AND AND COMPLETE AS NEEDED
•DEMISING PART. DRYWALL			■				■		GC TO REPAIR AND AND COMPLETE AS NEEDED
BACKING FOR WALL MTD. EQUIPMENT			■				■		COORD. W/ EQUIPMENT LOC.
FURRING AT COLUMNS AND CMU WALLS			■				■		AS APPLICABLE
INTERIOR PARTITIONS			■				■		
WALL BASE			■				■		W/ PAINT FINISH
FRP BOARD			■				■		
WALLCOVERING			■				■		
CEILINGS	L	F	C	E	L	F	C	E	
GYP. BD. CEILINGS OR SOFFITS			■				■		
SUSP. T-BAR CEILING GRID AND TILES			■				■		
LIGHTING FIXTURE	L	F	C	E	L	F	C	E	
•CHANDELIER			■				■		
WALL SCONCE			■				■		
HIGH HAT			■				■		
LAY-IN FLUORESCENT LIGHT			■				■		
DOORS	L	F	C	E	L	F	C	E	
•ENTRY DOOR & FRAME	■				■				EXISTING TO BE MODIFIED IF NEEDED BY G.C.
•REAR DOOR AND FRAME	■				■				EXISTING TO BE MODIFIED IF NEEDED BY G.C.
•REAR DOOR HARDWARE			■				■		PANIC HARDWARE BY G.C.
WAX ROOM, FRAME & HARDWARE			■				■		
STORAGE ROOM DOOR, FRAME & HDW.			■				■		
TOILET ROOM DOOR, FRAME & HARDWARE			■				■		
ACCESS PANELS			■				■		AS REQUIRED - VERIFY IN FIELD
FIXTURES / EQUIPMENT	L	F	C	E	L	F	C	E	
WAX ROOM COUNTER		■					■		
WAX ROOM STOOL		■					■		
COUNTERS / CASEWORK / TOPS			■				■		
WAX ROOM BED		■					■		
INTERIOR SIGNAGE		■					■		
GLASS SURFACES			■				■		
BRICK ARCHS / PANELS		■					■		
MECHANICAL	L	F	C	E	L	F	C	E	
•HVAC UNIT(S)	■				■				G.C. TO COORDINATE WORK
•SUPPLY AND R/A DUCTWORK PER PLAN			■				■		G.C. TO COORDINATE TO MEET REQUIREMENTS
•ALL DIFFUSERS / GRILLES			■				■		
•THERMOSTATS			■				■		
•TOILET RM. EXHAUST FAN			■				■		
•HVAC DUCT / SMOKE DETECTORS			■				■		
•CERTIFIED AIR BALANCE REPORT			■				■		
TOILET / PLUMBING	L	F	C	E	L	F	C	E	
LOCATE EXTEND WASTE/ VENT LINES			■				■		INCLUDING ROOF PENETRATIONS WHEN REQ.
WATER METER			■				■		
•PLUMBING FIXTURES			■				■		
FLOOR DRAINS / TRAP PRIMERS			■				■		
•WATER HEATERS(S)			■				■		
•GRAB BARS			■				■		
•MIRROR		■					■		
•TOILET PAPER DISPENSERS		■	■				■		SOAP DISPENSER
•PAPER TOWEL & TOILET SEAT COVER DISP		■	■				■		
•									
WATER SUPPLY TO PREMISES	■								G.C. TO LOCATE / EXTEND AS / IF REQ.
SANITARY SERVICE			■				■		G.C. TO LOCATE / EXTEND AS / IF REQ.
ELECTRICAL	L	F	C	E	L	F	C	E	
•CONDUIT TO SPACE	■						■		EXISTING. G.C. TO MATCH ELECTRICAL DWGS
•FEEDERS	■						■		GC TO COORDINATE
ELECTRICAL DISTRIBUTION			■				■		HOMERUNS, WIRE CONDUIT, DEVICES, ETC.
LIGHT FIXTURES & LAMPS & FAN			■				■		
•TEL. CONDUIT TO SPACE			■				■		GC TO COORDINATE
TELEPHONE TERMINAL BOARD			■				■		LOCATE ABOVE CEILING
PHONE & DATA CABLE			■				■		PROVIDE PER SCHEMATIC ON ELECTRICAL SHT
PHONE TERMINATIONS			■				■		
ELECTRICAL PANEL BOARDS			■				■		
GENERAL REQUIREMENTS	L	F	C	E	L	F	C	E	
PERMITS, FEES AND INSURANCE			■				■		
DEMOLITION			■				■		COORDINATE WITH LANDLORD
PROFESSIONAL CLEANING			■				■		
CERTIFICATE OF OCCUPANCY			■				■		
CONSTRUCTION DUMPSTER/ TRASH REMOVAL			■				■		
TEMPORARY POWER / WATER			■				■		IF REQUIRED. G.C. TO VERIFY.
SPECIALTIES	L	F	C	E	L	F	C	E	
UTILITY ACCOUNT SETUP		■				■			
POS / COMPUTER SYSTEM				■				■	
AUDIO SYSTEM - EQUIPMENT & WIRE			■				■		
FIRE EXTINGUISHERS			■				■		
•FIRE SPRINKLER MODIFICATIONS									N/A
FIRE ALARM INTERFACE			■				■		G.C. TO TIE INTO BLDG. SYSTEM AS/IF REQ.

RELEASED FOR CONSTRUCTION
As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
02/23/2022

GF55

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1 PER PLAN REVIEW COMMENTS
02-14-2022

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DRAWING:
SCHEDULE

SCALE:
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SEAL

STATE OF MISSOURI
DAVID EARL GROSS
NUMBER A-2019000254
ARCHITECT

ARCHITECT: DAVID E. GROSS
MO LICENSE No. A-2019000254

DRAWING NO.

A-003

FIRE ALARM SYSTEM NOTE

GC IS TO CONFIRM FIRE ALARM STATUS BEFORE CONSTRUCTION - IF EXISTING, THEN TO REMAIN; IF NOT, THEN TO INSTALL IF REQ.

INCREASED OCCUPANCY: 15

1,358 SF/150 SF PER OCC. = 9 OCCUPANTS
INCREASED OCCUPANCY TO 15 PER IBC 1004.5.1

EGRESS WIDTH REQUIRED: .2" PER OCC. x 15 OCC. = 3.0"

EGRESS WIDTH PROVIDED: 72" (72" > 3.0")

GROUND FLOOR - PLUMBING FIXTURE CHART: PROVIDED

	TOILET		LAVATORY		SERVICE SINK
	FEMALE	MALE	FEMALE	MALE	
PROPOSED	1		1		1
(REQUIRED)	(1)		(1)		(1)

FIRE STOPPING NOTES

EXISTING DEMISING WALL ASSEMBLY (WALL TYPE 2) TO REMAIN FIRE BARRIER REQUIRED SEPARATION: 1 HOUR.

EXISTING LANDLORD'S EXTERIOR WALL CONSTRUCTION TO REMAIN. (CONSTRUCTION CLASSIFICATION TYPE II-B)

ANY PENETRATION TO BE INSTALLED WITH TESTED FIRE STOP SYSTEM IN ACCORDANCE WITH APPLICABLE BUILDING CODE.

GENERAL NOTES

1. SEE DRAWING A-601 FOR DOOR SCHEDULE.

2. SEE DRAWING A-601 FOR WALL TYPES.

3. DOOR STOPS TO BE SCREWED INTO FLOOR IN WAX ROOMS. SEE DRAWING A/A-102 FOR DOOR STOP LOCATION.

LEGEND

- EXIT SIGN
- EXTERIOR ILLUMINATION HEAD LAMP AT EXIT DISCHARGE
- TRAVEL DISTANCE
- EMERGENCY LIGHTS
- FE — FIRE EXTINGUISHER

NOTES:
1.BUILDING IS FULLY SPRINKLED AS PER NFPA 13

PLUMBING NOTES

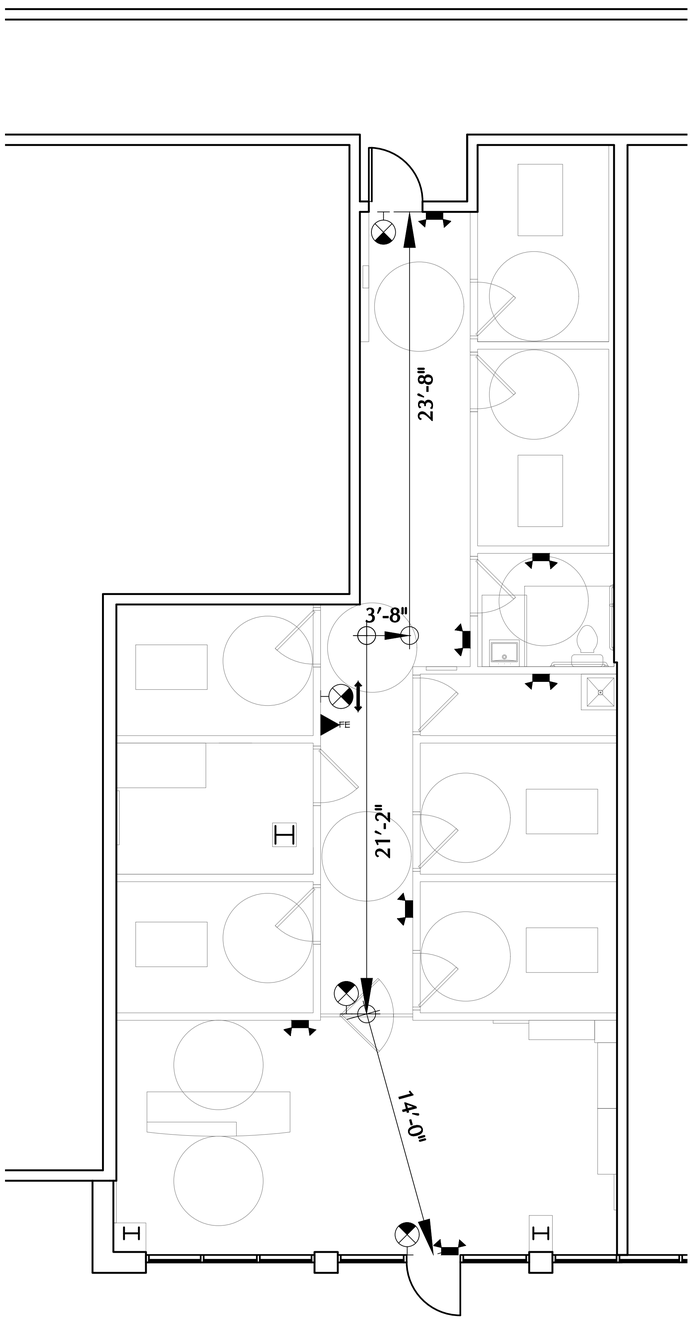
NUMBER OF PROVIDED PLUMBING FIXTURE SHALL MEET NATIONAL STANDARD PLUMBING CODE 2018, SECTION 7.21 MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURE, (TABLE 7.21.1)
7.21.4 SEPARATE FACILITIES
SEPARATE TOILET FACILITIES SHALL BE PROVIDED FOR EACH SEX.

EXCEPTIONS
2) IN OCCUPANCIES SERVING 15 OR FEWER PEOPLE, ONE TOILET FACILITY DESIGNED FOR USE BY NO MORE THAN ONE PERSON AT A TIME, SHALL BE PERMITTED FOR USE BY BOTH SEXES.

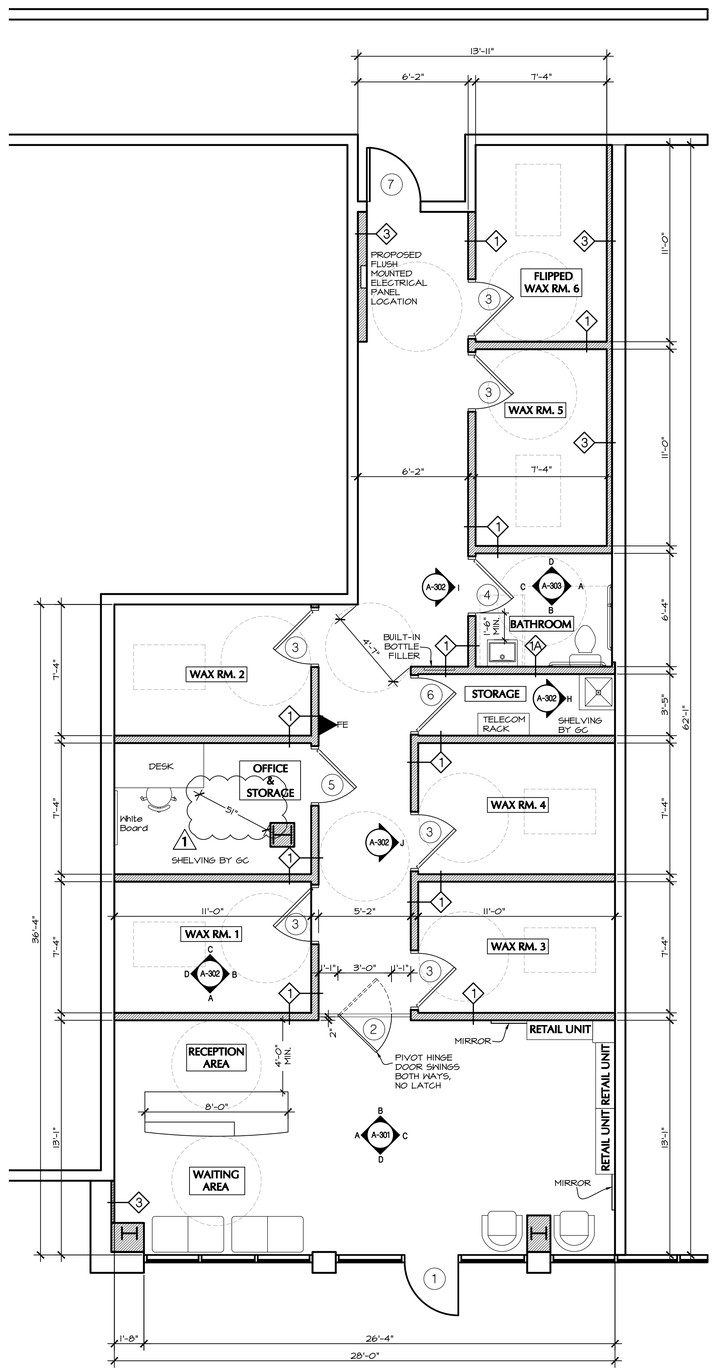
3) IN BUSINESS OCCUPANCIES WITH A TOTAL FLOOR AREA OF 1500 SQUARE FEET OR LESS, ONE TOILET FACILITY, DESIGNED FOR USE BY NO MORE THAN ONE PERSON AT A TIME, SHALL SATISFY THE REQUIREMENTS FOR SERVING CUSTOMERS AND EMPLOYEES OF BOTH SEXES.

TABLE 7.21.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES

No.	CLASSIFICATION	USE GROUP	DESCRIPTION	NUMBER OF PERSONS OF EACH SEX	WATER CLOSET (URINALS)		LAVATORIES		DRINKING WATER FACILITIES	BATH OR SHOWER	OTHER
					MALE	FEMALE	MALE	FEMALE			
2	BUSINESS	B	BUILDINGS FOR THE TRANSACTION OF BUSINESS, PROFESSIONAL SERVICE, OFFICE BUILDINGS, BANKS, AND SIMILAR USES. SEE NOTES 6,8,12,15	1-15	1	1	1	1	1 PER 100 PEOPLE		1 SERVICE SINK PER FLOOR
				16-50	ADD 1	ADD 1	ADD 0	ADD 0			
				EA. ADDITIONAL 50 OVER 50	ADD 1	ADD 1	ADD 1	ADD 1			



B EGRESS DIAGRAM
1/4"=1'-0"



A FLOOR PLAN - 1,358 NET SF
1/4"=1'-0"

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FLOOR PLAN

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

SEAL
STATE OF MISSOURI
DAVID EARL GROSS
NUMBER A-2019000254
ARCHITECT

ARCHITECT: DAVID E. GROSS
MO LICENSE No. A-2019000254

DRAWING NO.

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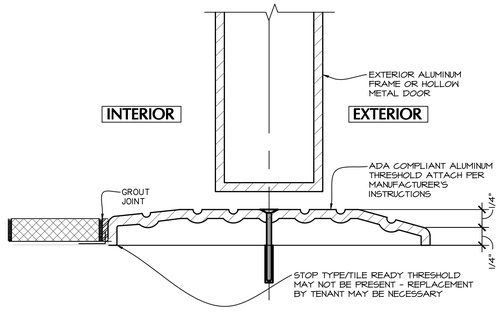
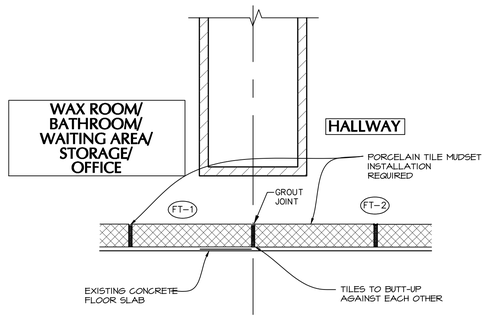


1 **DOOR THRESHOLD**

FULL SCALE



2 **FLOOR FINISH TRANSITION**

FULL SCALE

FINISH NOTES

1. DENOTES WALL PAINT FINISH P1.
2. FOR WALL FINISH, SEE INTERIOR ELEVATIONS AS WELL.

FIXTURE NOTES

1. REFER TO MILLWORK DRAWING PACKAGE FOR DETAIL OF EACH MILLWORK FIXTURE.
2. SEE SCHEDULE FOR SPEC OF EACH FIXTURE.
3. ALL CABINET MILLWORK TO BE CAULKED TO FLOOR WITH MATCHING COLOR.

FLOORING CONSTRUCTION NOTE:

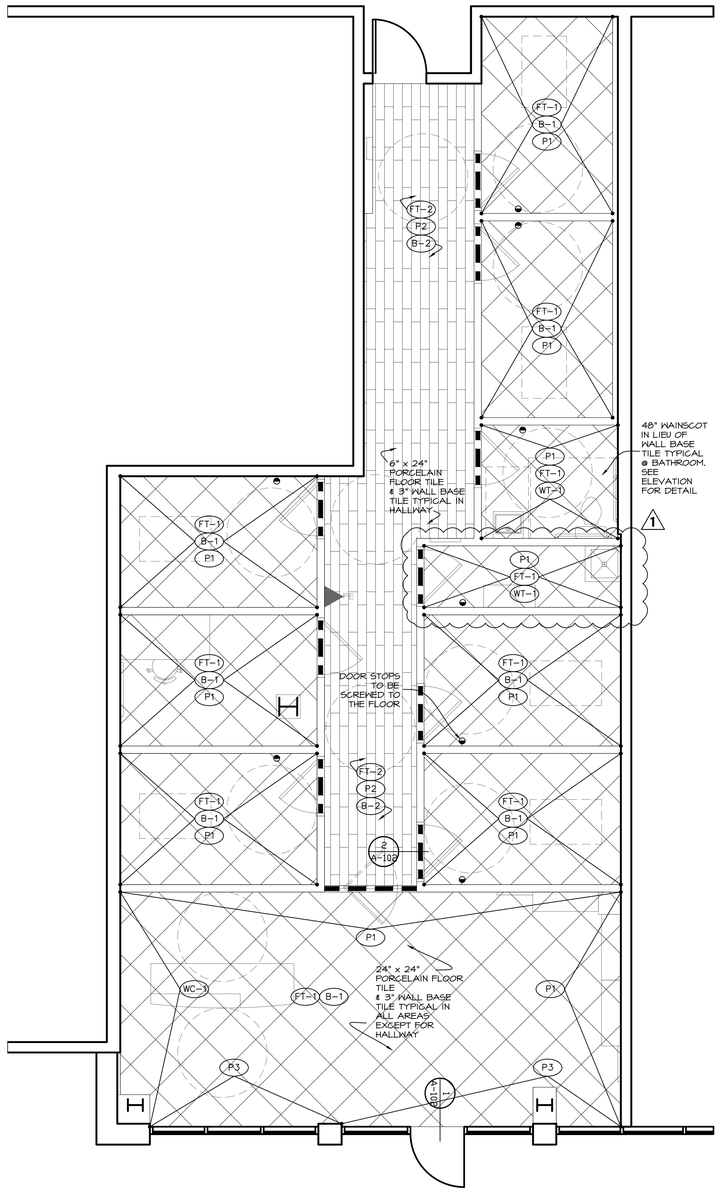
EXPANSION JOINT TO BE CONFIRMED BY FLOORING INSTALLER

WAX ROOM DOOR NOTE

IF WAX ROOMS ARE 10'-10", WAX ROOM DOOR ARE TO BE MOUNTED DIRECTLY ON THE ADJACENT WALL.

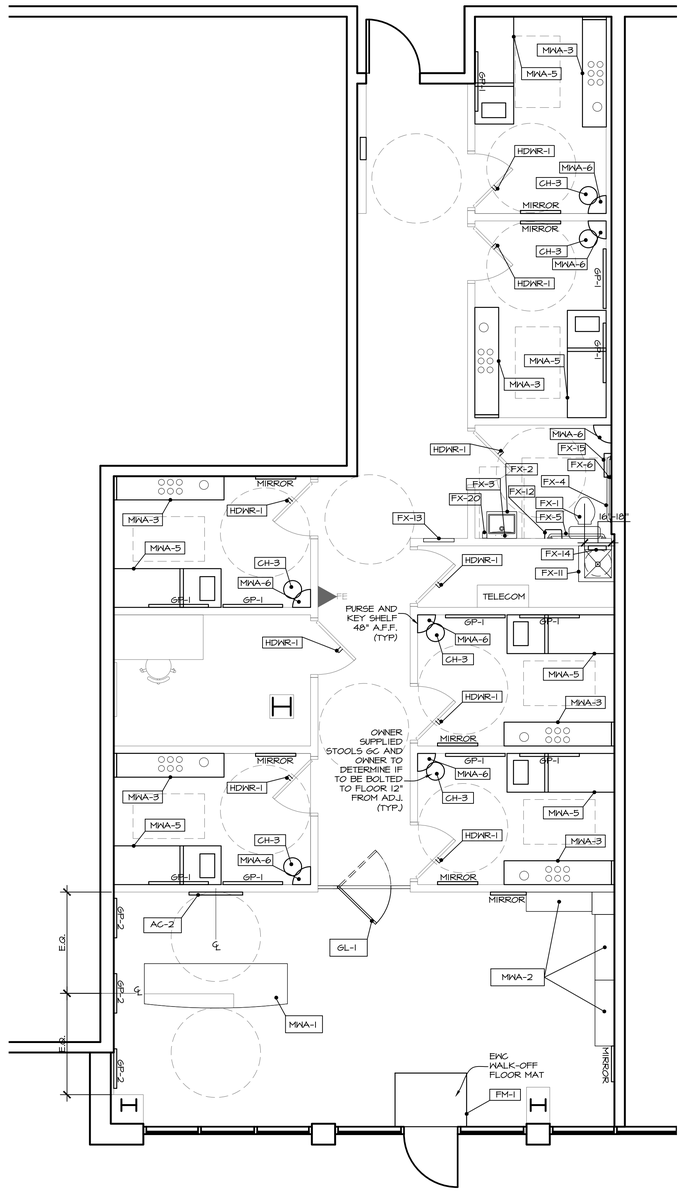
GENERAL NOTE

PLEASE SEE A-120 FOR CEILING FINISH COLOURS.



B **FINISH PLAN**

1/4"=1'-0"



A **FIXTURE PLAN**

1/4"=1'-0"

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ARCHITECT: DAVID E. GROSS
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DRAWING NO.

A-102

CEILING TYPES

CL1	WAITING ROOM AREA, HALLWAY, BATHROOM: SUSPENDED GYP. BOARD CEILING W/ TAPED JOINTS SANDED SMOOTH. ALL GYPSUM BD. CEILING TO BE SKIM COATED. PREPARE FOR PAINT FINISH. PROVIDE AT HEIGHT AS INDICATED ON PLAN.
CL2	WAX ROOMS, OFFICE, STORAGE ROOM - LAY-IN ACOUSTICAL CEILING SYSTEM: 24" X 24" X 15/16" SUSPENDED SUSPENDED T-BAR GRID SYSTEM AT HEIGHT AS INDICATED ON PLANS; USG OLYMPIA MICRO ACOUSTICAL PANELS #4221 NOTE: OR ARMSTRONG EQUIVALENT
CL3	FIRE-RATED CEILING: SUSPENDED 5/8" TYPE 'X' GYP. BD. CEILING W/ TAPED JOINTS SANDED SMOOTH. ALL GYPSUM BD. CEILING TO BE SKIM COATED. PREPARE FOR PAINT FINISH. PROVIDE AT HEIGHT AS INDICATED ON PLAN.

HVAC SYMBOLS

KEY	SYMBOL	DESCRIPTION	LOCATION (TYP.)
	F	EXHAUST FAN GC TO SUBMIT PRODUCT SPEC	GYP. CEILING OR LAY-IN GRID
		SUPPLY AIR DIFFUSER - TITUS TMS 3 CONE INDUSTRIAL GRADE COLOR TO MATCH ADJACENT CEILING 24"x 24" (LOBBY TO BE 16"X16" AND HALLWAY)	GYP. CEILING OR LAY-IN GRID
		RETURN AIR GRILLE - TITUS PAR COLOR TO MATCH ADJACENT CEILING 24"x 24" (LOBBY TO BE 16"X16" AND HALLWAY)	GYP. CEILING OR LAY-IN GRID

SOUND SYSTEM SYMBOLS

KEY	SYMBOL	DESCRIPTION	LOCATION (TYP.)
		SPEAKER (ROUND) - MANUFACTURER: ATLAS SEE SPEC FROM ENG. - PAINTED TO MATCH	CEILING

SOUND SYSTEM NOTE: PROVIDE MINIMUM 4 VOLUME CONTROLS WITH SEPARATE ZONE WIRING AS BELOW.
A. ONE FOR ALL WAX ROOMS
B. ONE FOR THE CORRIDOR
C. ONE FOR LOBBY AREA
D. ONE FOR THE RESTROOM(S)
E. OWNER AND CORPORATE TO FINALIZE LOCATION OF VOLUME CONTROLS.
F. MASTER VOLUME CONTROL TO BE INSTALLED AT TELECOM

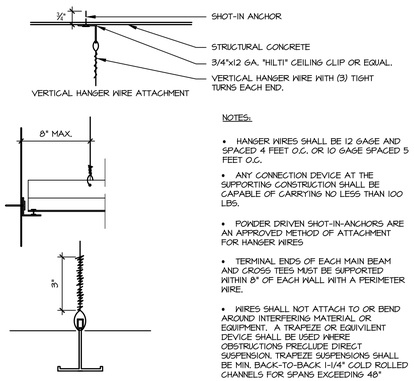
LIGHTING SYMBOLS

KEY	SYMBOL	HEIGHT	DESCRIPTION (EM = EMERGENCY BALLAST, NL = NIGHT LIGHT)
A		MOUNTED IN T-BAR GRID CEILING	24" X 48" LAY -IN RECESSED FIXTURE WITH PRISMATIC (ACRYLIC) LENS
A2		MOUNTED IN T-BAR GRID CEILING	24" X 24" LAY -IN RECESSED FIXTURE
B		BOTTOM OF FIXTURE @ 7'-2" A.F.F.	WESTPORT LIGHTING - MODEL 5485 BRUSHED NICKEL FINISH
E2		PER GYP. HEIGHT SEE PLAN	RECESSED DOWN LIGHT. TRIM PAINTED TO MATCH CEILING COLOR. SEE E-101 FOR LIGHTING SCHEDULE, SEE SPEC BOOK FOR DETAILS.
E3 DIMM		PER GYP. HEIGHT SEE PLAN	RECESSED DOWN LIGHT. TRIM PAINTED TO MATCH CEILING COLOR. SEE E-101 FOR LIGHTING SCHEDULE, SEE SPEC BOOK FOR DETAILS.
E4		BOTTOM OF FIXTURE @ 7'8" A.F.F.	SURFACE MOUNT SOLID PENDANT LIGHT MONOPOINT FROST STAIN NICKEL FINISH, WITH LED LIGHT
F		PER GYP. HEIGHT SEE PLAN	2 LAMP T8 STRIP LIGHTS LOCATED IN UPPER INSIDE WALL CORNER CENTERED OVER DOORS IN CLOSETS
G2		VERTICALLY MTD. TO WALL - BOTTOM OF FIXTURE @ 5'-0" A.F.F.	MANUFACTURER: SONNEMAN 24" LED SCONCE HEIGHT 24.25", WIDTH 1.75", EXTENSION 2.75", MINIMUM EXTENSION 2.75", MAXIMUM EXTENSION 2.75" SWITCH TYPE N/A, FIXTURE WEIGHT 3 LBS. COLOR: TEXTURED GRAY MATERIAL: ALUMINUM
H		WALL	SURFACE MTD. DUAL HEAD EMERGENCY LIGHT UNIT W/ COMPACT BATTERY PACK.
I		SEE ELEVATIONS	ILLUM. GLASS BLADE EXIT SIGN CONVERTIBLE TO MULTIPLE APPLICATIONS. INSTALL AS SHOWN ON PLAN.

NOTE: SEE POWER & LIGHTING PLAN FOR LIGHT FIXTURE SCHEDULE

GENERAL NOTES

1. IF GC IS GOING TO INSTALL A PLENUM CEILING RETURN SYSTEM, GC IS TO INSTALL PLENUM RATED CEILING SYSTEM PER APPLICABLE CODES.
2. FIRE ALARM REQUIREMENTS ARE THE RESPONSIBILITY OF THE OWNER AND GC TO COORDINATE WITH THE LL AND LOCAL FIRE MARSHALL.

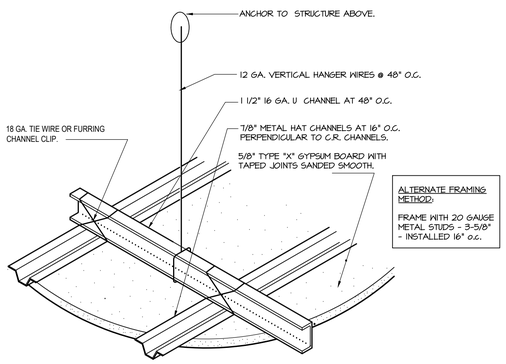


NOTES:

- HANGER WIRES SHALL BE 12 GAGE AND SPACED 4 FEET O.C. OR 10 GAGE SPACED 5 FEET O.C.
- ANY CONNECTION DEVICE AT THE SUPPORTING CONSTRUCTION SHALL BE CAPABLE OF CARRYING NO LESS THAN 100 LBS.
- POWDER DRIVEN SHOT-IN-ANCHORS ARE AN APPROVED METHOD OF ATTACHMENT FOR HANGER WIRES
- TERMINAL ENDS OF EACH MAIN BEAM AND CROSS TEES MUST BE SUPPORTED WITHIN 8" OF EACH WALL WITH A PERIMETER WIRE.
- WIRES SHALL NOT ATTACH TO OR BEND AROUND INTERFERING MATERIAL OR EQUIPMENT. A TRAPEZE OR EQUIVILENT DEVICE SHALL BE USED WHERE OBSTRUCTIONS PRECLUDE DIRECT SUSPENSION. TRAPEZE SUSPENSIONS SHALL BE MIN. BACK-TO-BACK 1-1/4" GOLD ROLLED CHANNELS FOR SPANS EXCEEDING 48"

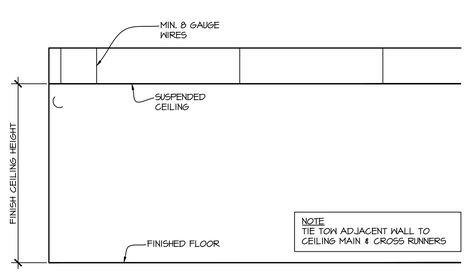
E SUSPENDED CEILING HANGER WIRE DETAIL

NTS



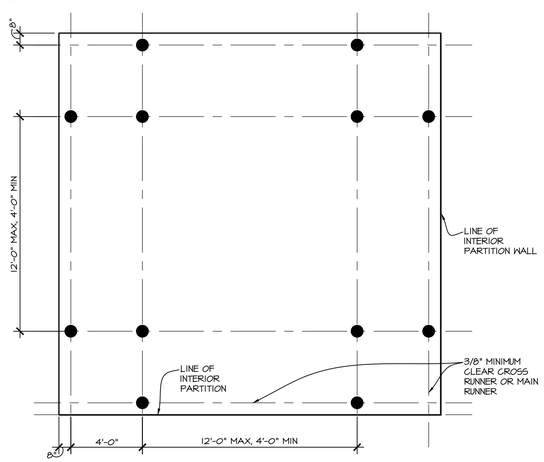
D SUSPENDED GWB CEILING DETAIL

NTS



C SUSPENDED CEILING FRAMING (SECTION)

NTS



B DIAGRAMMATIC SUSPENDED CEILING FRAMING

NTS

LIGHT FIXTURES NOTE

LIGHT FIXTURES WEIGHING LESS THAN 10 LBS. SHALL HAVE ONE 12 GAGE HANGER WIRE CONNECTED FROM THE FIXTURE TO THE STRUCTURE ABOVE. THIS WIRE MAY BE SLACK.

LIGHT FIXTURES WEIGHING MORE THAN 10 LBS. AND LESS THAN 56 LBS. SHALL HAVE TWO 12 GAGE WIRES ATTACHED AT OPPOSING CORNERS OF THE LIGHT FIXTURE TO THE STRUCTURE ABOVE.THESE WIRES MAY BE SLACK

LIGHT FIXTURES WEIGHING MORE THAN 56 LBS. SHALL BE SUPPORTED BY DIRECTLY FROM THE STRUCTURE ABOVE THESE WIRES MUST BE TAUT.

PENDANT MOUNTED FIXTURES SHALL BE DIRECTLY SUPPORTED FROM THE STRUCTURE ABOVE USING A 9 GAGE WIRE OR AN APPROVED ALTERNATE SUPPORT WITHOUT USING THE CEILING SUSPENSION SYSTEM FOR DIRECT SUPPORT

TANDEM FIXTURES MAY UTILIZE COMMON WIRES

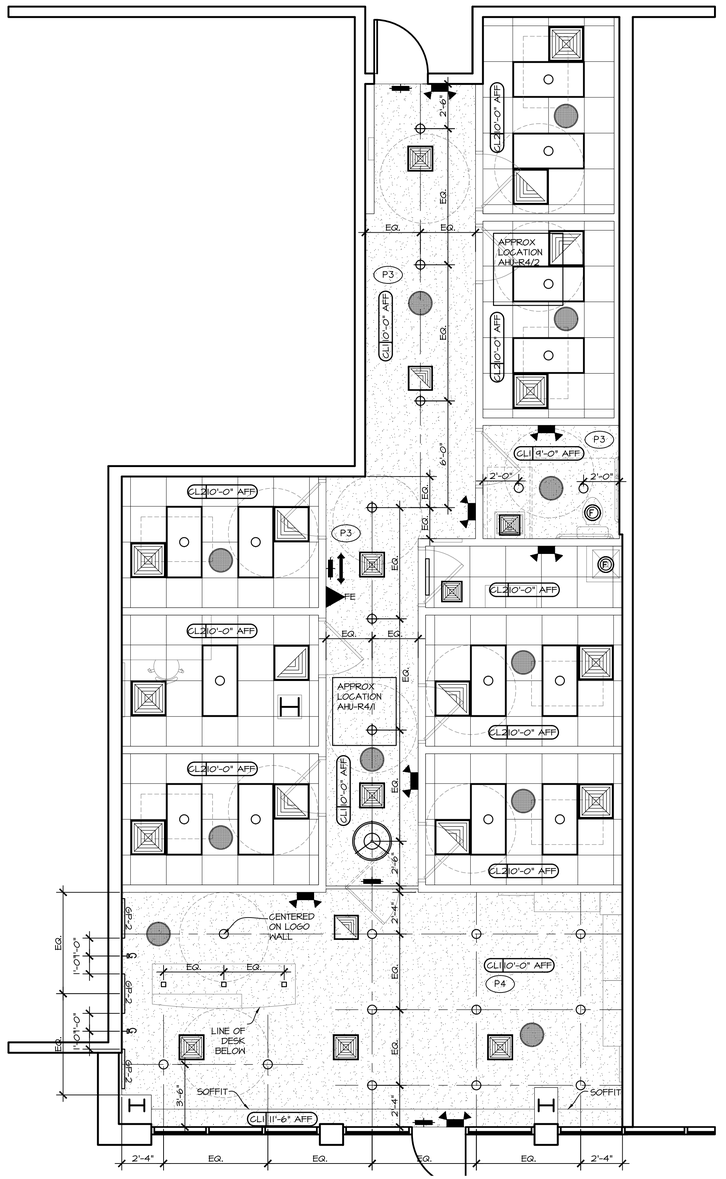
LIGHTING VENDOR:
JOSH_HUISKEN@WBLIGHT.COM
714.553.5993

GENERAL NOTES

1. ADDITIONAL AIR SUPPLY REGISTERS TO BE PLACED IN CLOSET STORAGE WHERE TELECOM, COMPUTER SERVER, AND OTHER EQUIPMENT TO BE HOUSED.

VOLUME CONTROL NOTE:
1. 4 VOLUME CONTROLS WITH SEPARATE ZONE WIRING IN STORAGE ROOM WITHIN IT CABINET
2. 1 FOR ALL WAX ROOMS, 1 FOR CORRIDOR, 1 FOR LOBBY, 1 FOR RESTROOM(S)

LOW VOLTAGE NOTE:
1. G.C. TO COORDINATE ALL LOW VOLTAGE / VOLUME CONTROL WORK
2. SINGLE GANG PRE-CONTSTRUCTION RING FOR EACH VOLUME CONTROL LOCATION WITH PULL STRING, CONDUIT STUB UP WHERE REQUIRED AT 48" FROM FINISHED FLOOR.



A REFLECTED CEILING PLAN

1/4"=1'-0"

RELEASED FOR CONSTRUCTION
As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
02/23/2022

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225 WEST 39TH STREET
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212.352.3099

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CONSTRUCTION DOCUMENTS
JANUARY 26TH, 2022

PER PLAN REVIEW COMMENTS
02-14-2022

DRAWN BY:
CC

REVISED BY:
DAM

DRAWING:
REFLECTED CEILING PLAN

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

SEAL

STATE OF MISSOURI
DAVID EARL GROSS
NUMBER A-2019000254
ARCHITECT

ARCHITECT: DAVID E. GROSS
MO LICENSE No. A-2019000254

DRAWING NO.

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DRAWN BY:
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DRAWING:
STOREFRONT ELEVATION

SCALE:
NTS

SEAL

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DAVID EARL GROSS
NUMBER A-2019000254
ARCHITECT

ARCHITECT: DAVID E. GROSS
MO LICENSE No. A-2019000254

DRAWING NO.

A-201

A STOREFRONT SIGNAGE ELEVATION

1/2"=1'-0"

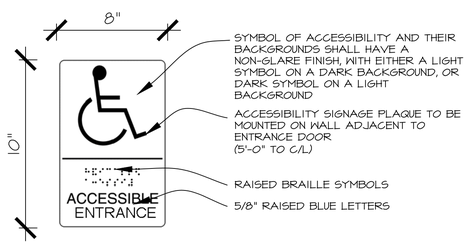
GENERAL NOTES:

1. EXISTING STOREFRONT TO REMAIN BY LL.

2. WINDOWS: IF FRANCHISE WANTS TO INSTALL WINDOW TINT FILM PLEASE CALL LEWIS WINDOWS; INTERNATIONAL SOLAR CONTROL INC.; COLOR: NICHROME; LEWIS - 305.827.8468

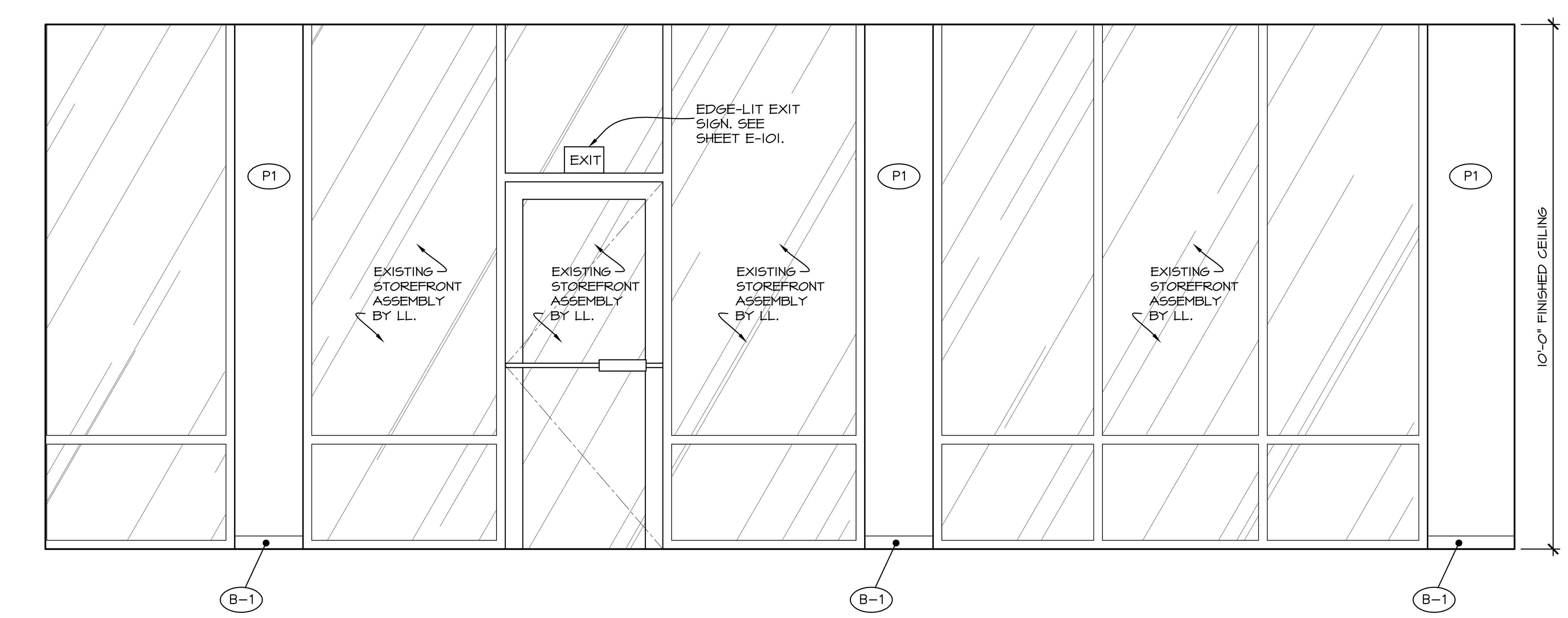
NOTE:
THE STOREFRONT SIGN SHALL BE UNDER A SEPARATE PERMIT OBTAINED BY THE TENANT'S SIGN CONTRACTOR.

NOTE:
THE SIGN CONTRACTOR SHALL CONSTRUCT THE SIGN AT THE MAXIMUM SIZE AS ALLOWED BY THE LANDLORD AND CITY ORDINANCE.



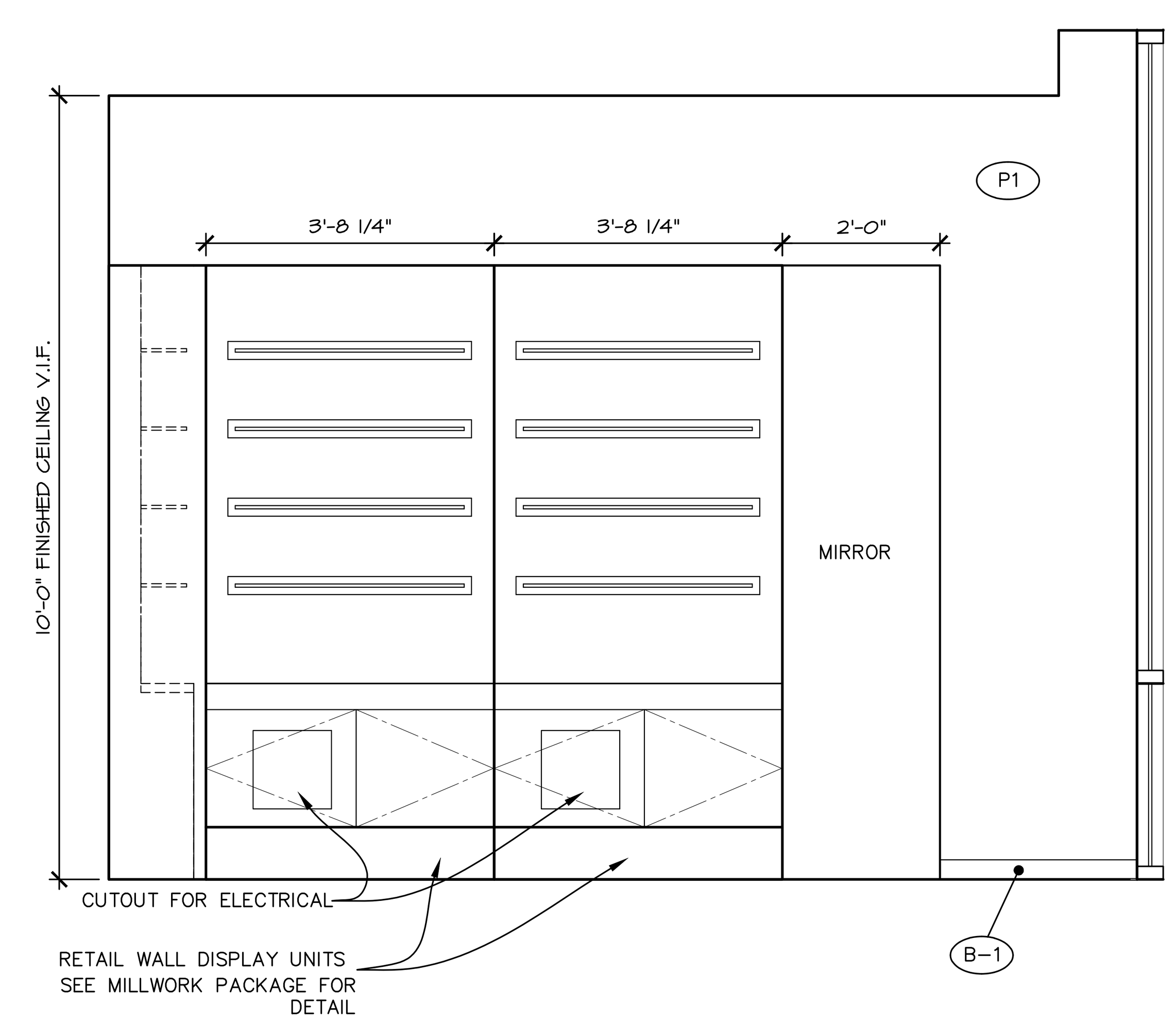
B H.C. ENTRY SIGN

NTS



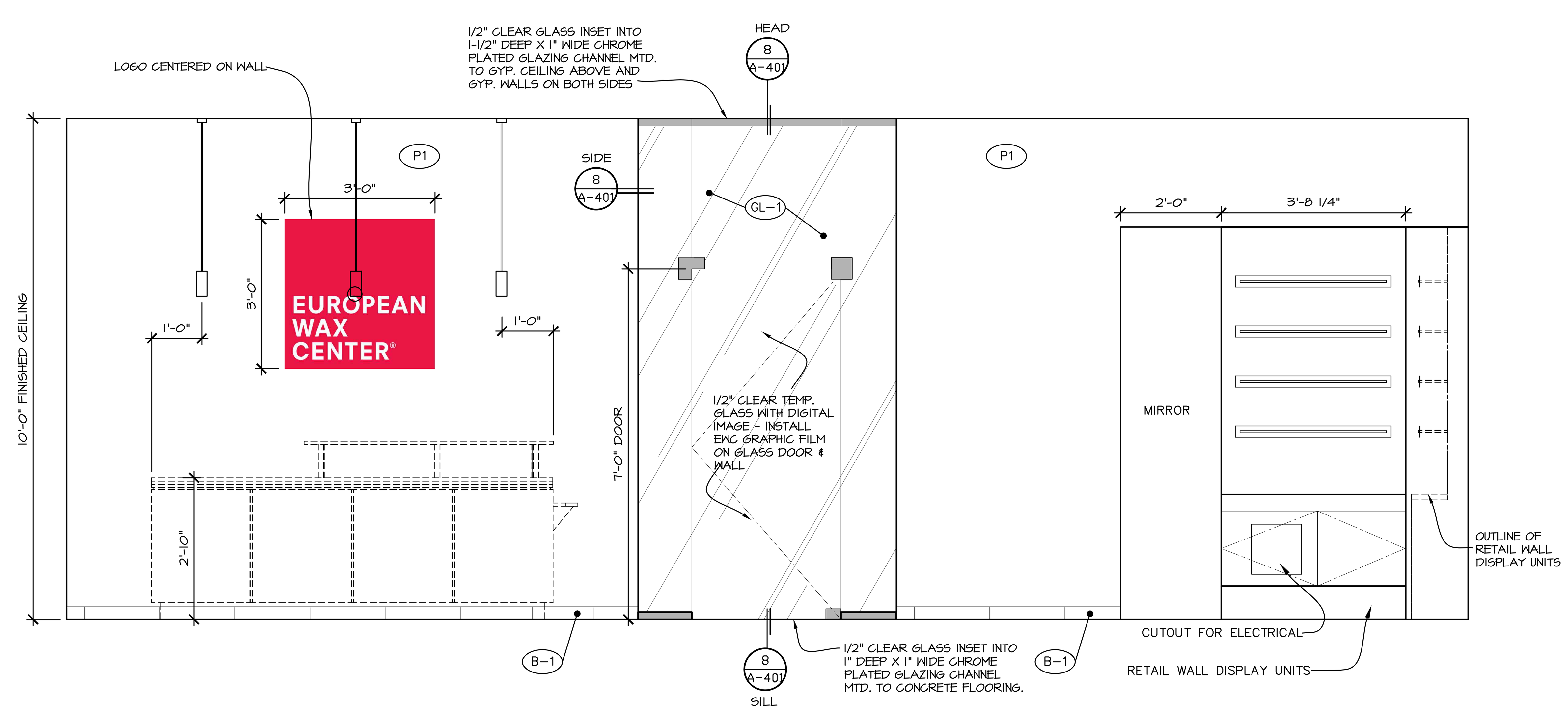
D INTERIOR ELEVATION WAITING AREA

1/2"=1'-0"



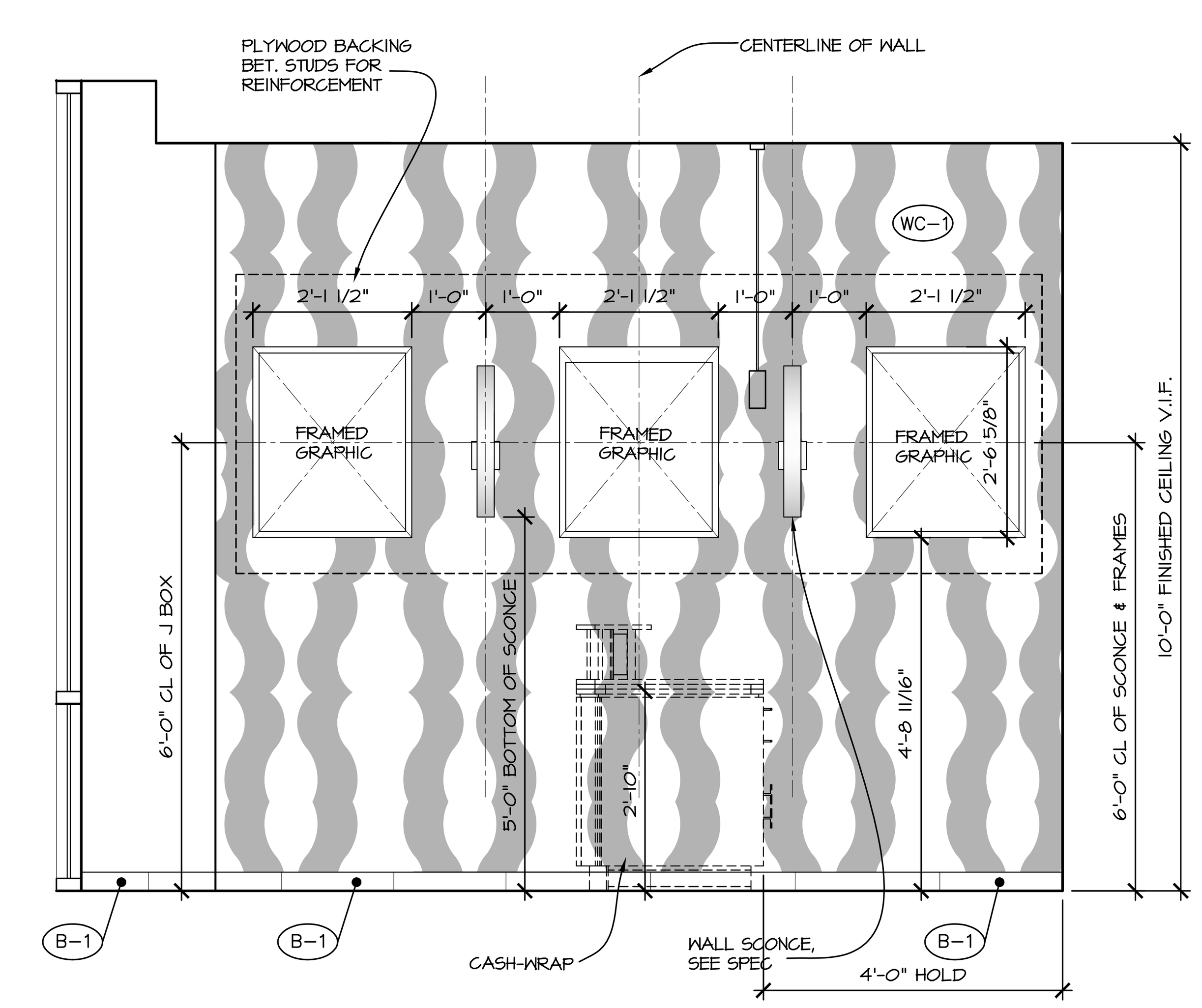
C INTERIOR ELEVATION WAITING AREA

1/2"=1'-0"



B INTERIOR ELEVATION WAITING AREA

1/2"=1'-0"



A INTERIOR ELEVATION WAITING AREA

1/2"=1'-0"

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DAM

DRAWING:
INTERIOR ELEVATIONS

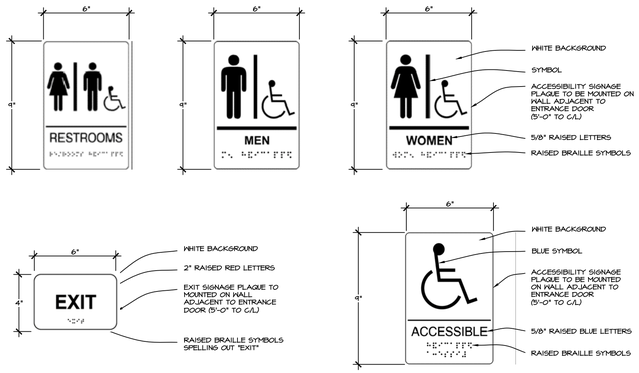
SCALE:
1/2"=1'-0"

SEAL

ARCHITECT: DAVID E. GROSS
MO LICENSE No. A-2019000254

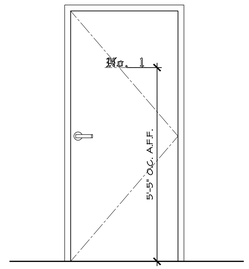
DRAWING NO.

A-301



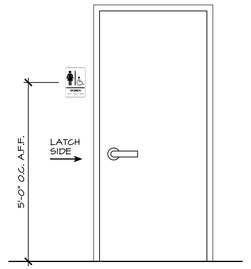
K ADA SIGN SAMPLE DETAIL

3"=1'-0"



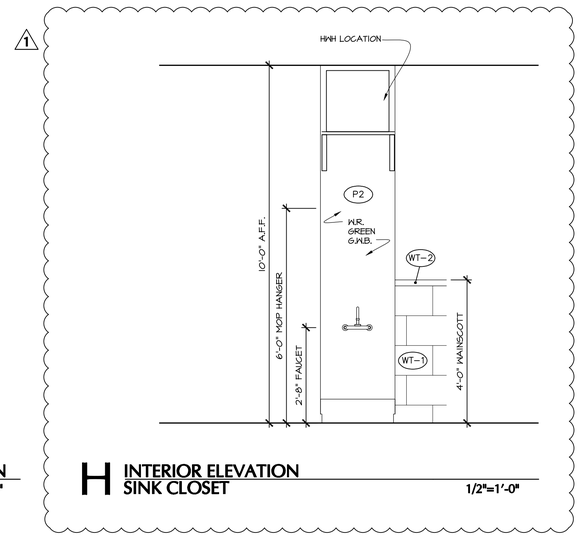
J ROOM SIGN LOCATION

1/2"=1'-0"



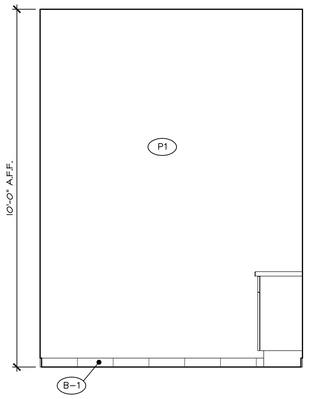
I BATHROOM SIGN PLATE LOCATION

1/2"=1'-0"



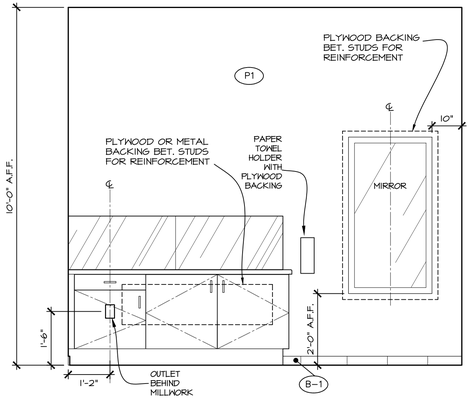
H INTERIOR ELEVATION SINK CLOSET

1/2"=1'-0"



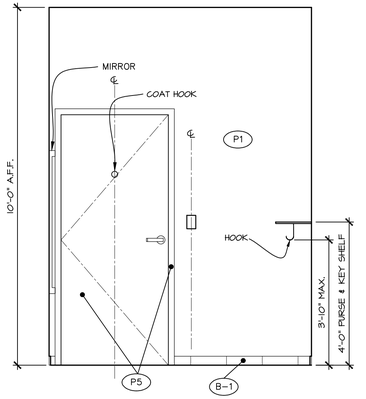
D WAX ROOM ELEVATION DETAIL

1/2"=1'-0"



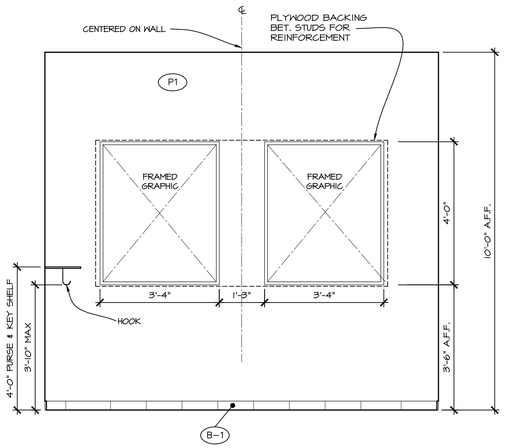
C WAX ROOM ELEVATION DETAIL

1/2"=1'-0"



B WAX ROOM ELEVATION DETAIL

1/2"=1'-0"



A WAX ROOM ELEVATION DETAIL

1/2"=1'-0"

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DRAWING:
INTERIOR ELEVATIONS

SCALE:
AS NOTED

SEAL

STATE OF MISSOURI
DAVID EARL GROSS
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ARCHITECT: DAVID E. GROSS
MO LICENSE No. A-2019000254

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DRAWING:
INTERIOR ELEVATIONS

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

SEAL

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DAVID EARL GROSS
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ARCHITECT: DAVID E. GROSS
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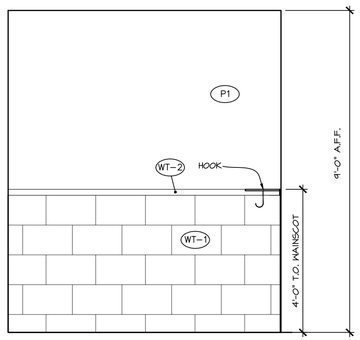
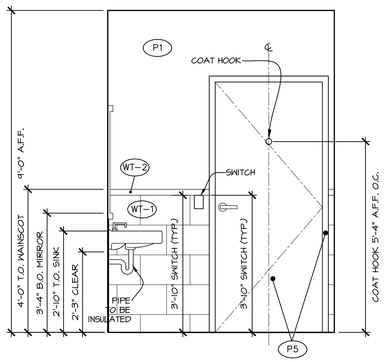
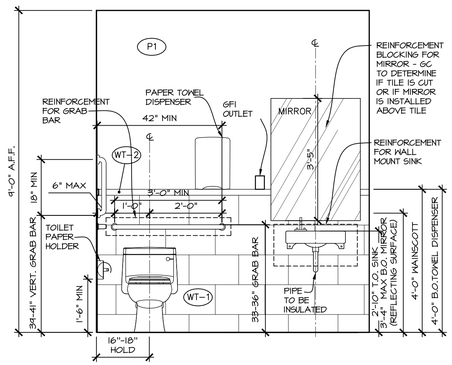
A-303



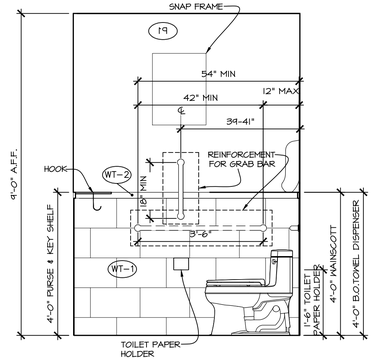
D BATHROOM ELEVATION DETAIL
1/2"=1'-0"



C BATHROOM ELEVATION DETAIL
1/2"=1'-0"



B BATHROOM ELEVATION DETAIL
1/2"=1'-0"



A BATHROOM ELEVATION DETAIL
1/2"=1'-0"

NOTES

VERTICAL STRUTS AND CEILING NOTES

MAX. LENGTHS FOR VERTICAL STRUTS

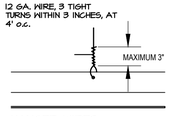
EMT CONDUIT	
½" EMT CONDUIT	UP TO 5'-10"
¾" EMT CONDUIT	UP TO 7'-8"
1" EMT CONDUIT	UP TO 9'-9"

METAL STUDS	
SINGLE 1-5/8" METAL STUD (20 GAUGE)	UP TO 12'-0"
BACK-TO-BACK 1-5/8" METAL STUD (20 GUAGE)	UP TO 15'-0"
SINGLE 2-1/2" METAL STUD (20 GUAGE)	UP TO 13'-6"
BACK-TO-BACK 2-1/2" METAL STUD (25 GUAGE)	UP TO 15'-0"

CEILING GRID -
2'X2' ACOUSTICAL DROP CEILING

CL-2 - BRAND: USG OLYMPIA™ MICRO™ACOUSTICAL PANELS
TYPE: #4221, COLOR: WHITE

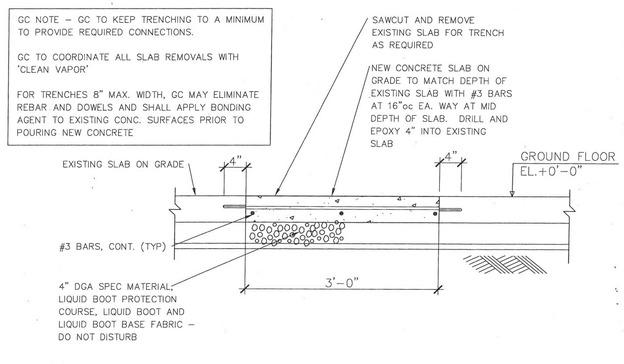
REFERENCED SOURCES: IBC, ASTM C635, C636, ASCE 7-05



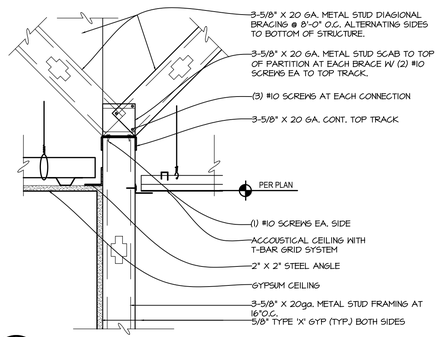
HANGER WIRES

NOTES:
1. PLENUM AREAS GREATER THAN 15' REQUIRE ENGINEERING CALCULATIONS.

2. ERT. STRUT MAY BE EMT CONDUIT, METAL STUDS OR A PROPRIETARY COMPRESSION POST.

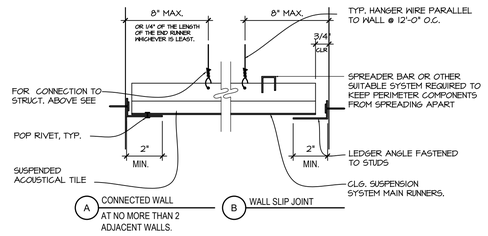


13 A-401 SLAB REPAIR DETAIL
SCALE: 1 1/2" = 1'-0"

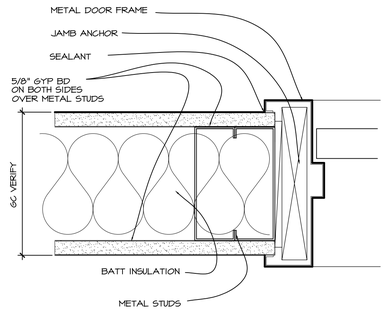


12 A-401 TOP OF NON-BEARING INTERIOR PARTITION
SCALE: 1 1/2" = 1'-0"
CEILING GWB TO TBAR

HANGER WIRE NOTES:
- HANGER WIRES THAT ARE MORE THAN 1 IN 6 OUT OF PLUMB ARE TO HAVE COUNTER SLOPING WIRES.
- SEISMIC SPLAY WIRES SHALL BE ATTACHED TO THE GRID AND TO THE STRUCTURE SUCH THAT THEY CAN SUPPORT A DESIGN LOAD OF NOT LESS THAN 200 POUNDS, THE ACTUAL DESIGN LOAD, WITH A SAFETY FACTOR OF 2 WHICH EVER IS GREATER.
- WIRES SHALL NOT ATTACH TO OR BEND AROUND INTERFERING MATERIAL OR EQUIPMENT.



10 A-401 WALL MOLDING @SUSPENDED CEILING
SCALE: 3"=1'-0"



9 A-401 DOOR JAMB HEAD DETAIL
N.T.S.

8 A-401 FRAMELESS GLASS DETAIL
SCALE: 3"=1'-0"
FRAMELESS GLASS DETAIL

WALL MOUNT - (Wood/Metal Studs)

QUICK STAND™ Models: #30-SWHP-WM, #40-SWHP-W, #40-SWHP-WM, #50-SWHP-W, #50-SWHP-WM, #60-SWHP-W, 60-SWHP-WM, 60-SWHP-W-C

FINISH WALL MOUNT ONLY (Where No Backing is Installed)

1. Select desired location for wall mount platform (MUST BE 16" CENTER STUD SPACING MAXIMUM).
2. Use template printed on bottom of platform box to mark four attachments points on wall surface; verify that template is held level when making marks. (See Fig #6A)
3. Use box template lay-out marks (step 2 above) to draw upper and lower horizontal lines on wall surface. (See Fig #6A) 3.1. Lines must span completely across three studs (16" center stud spacing maximum).
4. Locate the center line of each wood or metal stud, mark intersection point with horizontal lines. Six center points must be located - two on each of three studs. (See Fig #6B)
   - 4.1. On either Wood or Metal Stud Framing drill ¼" pilot holes in 12 locations (2 for each of 6 item 'A' brackets). (See Fig #6A and #6B)
   - 4.2. On Metal Framed Walls Only- Using ¼" pilot holes as guides (from step 4.1 above), drill ¾" holes to accept Toggler® Bolts (item 'F1') in 12 locations. (See Fig #6B)
   - 4.3. On Metal Framed Walls Only- Install 12 Toggler® bolt items 'F1' in the ¾" holes. (See Fig #7A & #7B)
5. Pre-assemble three item 'P' brackets to each of two item 'G' Unistrut Channels (channels must be 36" minimum length) using hardware items 'C', 'D' and 'H'. (See Fig #5A and #8B)
   - 5.1. Build two Fig #8A assemblies (Only hand-tighten these hardware components at this point)
6. Mount both the upper and lower unistrut assemblies to the wall. (See Fig #9)
   - 6.1. For Wood Framed Walls Only- Use lag bolt item 'E' (12 ea.) and washer item 'C' (12 ea.)
   - 6.2. For Metal Framed Walls Only- Use Toggler® Bolt item 'F2' (12 ea.) and washer item 'C' (12 ea.)
7. Tighten all hardware securely (if vibrating equipment will be mounted, Loctite® or similar is recommended)
8. Locate the four equipment platform mounting locations and mark these onto the Unistrut® assemblies. (See Fig #10A for locations or use the box template)
9. Install the four Unistrut® channel studs, item 'H' in the locations located in step 8 above using items 'I', 'C' and 'D'. (See Fig #10B)
10. Affix 45° Brackets 'J' (4) to ends of both 3/8" threaded rods item 'Q'. (See Fig #11)
11. Affix one rod assembly to each of the upper two Strut Channel Studs item 'H' and Suspension Washer item 'I' under nut and washer 'C' & 'D'.
12. Refer to steps 6 thru 11 on page 5 (CONCRETE - Steps 6-11) to complete the platform installation.

7 A-401 HOT WATER HEATER SUPPORT DETAIL
N.T.S.

6 A-401 LIGHT FIXTURE SUPPORT DETAIL
SCALE: NOT TO SCALE

4 A-401 TOP OF NON-BEARING INTERIOR DEMISING WALL
SCALE: 1 1/2" = 1'-0"
CEILING GWB TO STRUCTURE

3 A-401 TOP OF NON-BEARING INTERIOR PARTITION
SCALE: 1 1/2" = 1'-0"

2 A-401 BOTTOM OF NON-BEARING INTERIOR PARTITION
NTS

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DRAWING:
DETAILS

SCALE:
AS NOTED

SEAL
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DRAWING NO.

A-401

DOOR SCHEDULE

KEY	DESCRIPTION
1	ENTRY DOOR - TYPE STF: ☐ NEW ☒ EXISTING ALUMINUM DOOR: STOREFRONT DOOR (1) 3'-0" X 7'-0" VESTIBULE DOOR (1) 3'-0" X 7'-0" HARDWARE: GC TO PROVIDE CODE COMPLIANT HARDWARE, RE-KEY PER OWNER'S REQUIREMENTS. SIGNAGE: • SIGN ABOVE DOOR STATING IN 1" HIGH LETTERS ON A CONTRASTING BACKGROUND "THIS DOOR TO REMAIN UNLOCKED WHILE OCCUPIED" WHEN REQUIRED BY CODE • PROVIDE HANDICAP ACCESSIBLE AND TACTILE EXIT SIGNAGE AS CALLED FOR ON PLAN AND / OR REQUIRED BY CODE.
2	FRAME-LESS GLASS DOOR (SINGLE) - TYPE FLG: DOOR: NEW 3'-0" x 7'-0" X 1/2" GLASS TEMPERED FRAMELESS DOOR DOUBLE ACTING, MULTIPOINT HOLD OPEN (90DEG ON BOTH SIDE)

HARDWARE QUANTITY:	DESCRIPTION / MODEL #:	MANUFACTURER:	FINISH:
(1)	FLOOR CLOSER / BTS-75V OR SIMILAR OPTIONAL: CRL 380 HYDRAULIC PATCH HINGE	DORMA	POLISHED CRM
(1 EACH)	MTL PATCH UNIVERSAL PT 10, PT 20, PT 30, PT 40 PT 60/61	DORMA	POLISHED CRM
(2)	DOOR PULL / CM10X10 (BACK-TO-BACK)	CR LAURENCE	POLISHED CRM

NOTE:
• DOOR SUPPLIER TO COORDINATE GLASS, PATCH FITTINGS, AND ACCESSORIES

3 WAX ROOM DOOR (SINGLE) - TYPE DR-1:

DOOR:
NEW 3'-0" X 7'-0" X 1 3/4" HOLLOW METAL DOOR IN TIMELY 'C' SERIES K/D 18 GA. STEEL

HARDWARE QUANTITY:	DESCRIPTION / MODEL #:	MANUFACTURER:	FINISH:
(1 1/2) PR.	HINGES / TA2714 4 1/2"x4 1/2"	MCKINNEY	ALUMINUM
(1)	LOCKSET (PRIVACY) / GCL240 E 619	K2 COMMERCIAL	SATIN NICKEL
(1)	HI-RISE FLOOR MOUNT DOOR STOP	STANLEY	SATIN NICKEL
(1)	SOUND SEAL / MCKS88 D x DOOR PERIMETER	MCKINNEY	

PAINT:
P5 (SPRAY APPLICATION)
SIGNAGE:
• BOTTOM OF ROOM NUMBER @ 5'-5" A.F.F. (OUTSIDE)
• TRIM STRIKER PLATE AS NEEDED TO PROVIDE ADEQUATE SEAL

4 BATHROOMS DOOR (SINGLE) - TYPE DR-1:

DOOR:
NEW 3'-0" X 7'-0" X 1 3/4" HOLLOW METAL DOOR IN TIMELY 'C' SERIES K/D 18 GA. STEEL

HARDWARE QUANTITY:	DESCRIPTION / MODEL #:	MANUFACTURER:	FINISH:
(1 1/2) PR.	HINGES / TA2714 4 1/2"x4 1/2"	MCKINNEY	ALUMINUM
(1)	LOCKSET (PRIVACY) / GCL240 E 619	K2 COMMERCIAL	SATIN NICKEL
(1)	HI-RISE FLOOR MOUNT DOOR STOP	STANLEY	SATIN NICKEL
(1)	DOOR SILENCERS / MCKS88 D x DOOR PERIMETER	LOCAL	

PAINT:
P5 (SPRAY APPLICATION)
SIGNAGE: "TOILETTES" LETTERING BY EMC
•PROVIDE HANDICAP ACCESSIBLE SIGNAGE AS CALLED FOR ON PLAN AND / OR REQUIRED BY CODE.

5 OFFICE DOOR (SINGLE) - TYPE DR-1:

DOOR:
NEW 3'-0" X 7'-0" X 1 3/4" HOLLOW METAL DOOR WITH A KNOCK DOWN FRAME

HARDWARE QUANTITY:	DESCRIPTION / MODEL #:	MANUFACTURER:	FINISH:
(1 1/2) PR.	HINGES / TA2714 4 1/2"x4 1/2"	MCKINNEY	SATIN NICKEL
	LOCKSET (OFFICE/ENTRY) / GCL250 E 619	K2 COMMERCIAL	SATIN NICKEL
	HI-RISE FLOOR MOUNT DOOR STOP	STANLEY	SATIN NICKEL
	SOUND SEAL / MCKS88 D x DOOR PERIMETER	MCKINNEY	

PAINT: P2 (SPRAY APPLICATION) SIGNAGE: ● "EMPLOYEES ONLY" SIGNAGE.

6 STORAGE ROOM DOOR (SINGLE) - TYPE DR-1:

DOOR:
NEW 3'-0" X 7'-0" X 1 3/4" HOLLOW METAL DOOR WITH A KNOCK DOWN FRAME

HARDWARE QUANTITY:	DESCRIPTION / MODEL #:	MANUFACTURER:	FINISH:
(1 1/2) PR.	HINGES / TA2714 4 1/2"x4 1/2"	MCKINNEY	SATIN NICKEL
	LOCKSET (PASSAGE) / GCL230 E 619	K2 COMMERCIAL	SATIN NICKEL
	HI-RISE FLOOR MOUNT DOOR STOP	STANLEY	SATIN NICKEL
	SOUND SEAL / MCKS88 D x DOOR PERIMETER	MCKINNEY	

PAINT:
P5 (SPRAY APPLICATION)
SIGNAGE:
● "EMPLOYEES ONLY" SIGNAGE.

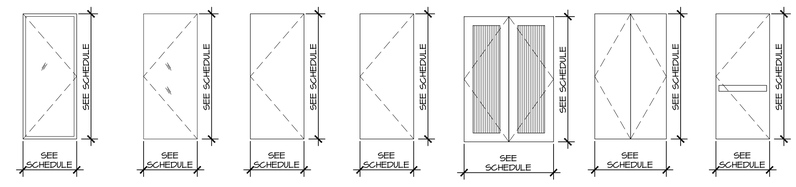
7 REAR EXIT DOOR - TYPE D-4 :
☐ NEW ☒ EXISTING

EXISTING BY LL

G.C. TO PROVIDE A PANIC HARDWARE ON REAR DOOR.

FINISH:
P2

DOOR TYPES



TYPE STF	TYPE FLG	TYPE DR-1	TYPE D-1	TYPE D-2	TYPE D-3	TYPE D-4
EXISTING STORE FRONT DOOR	FRAMELESS DOOR DOUBLE ACTING, MULTIPOINT HOLD OPEN (90DEG ON BOTH SIDE) WITH VINYL EMC LOGO	HOLLOW METAL	FRAMELESS HIDDEN	DOUBLE SWING DOOR WITH TEXTURE PANEL INSERT AT HALLWAY	DOUBLE LEAF	EXIT DOOR WITH PANIC DEVICE

GENERAL NOTES

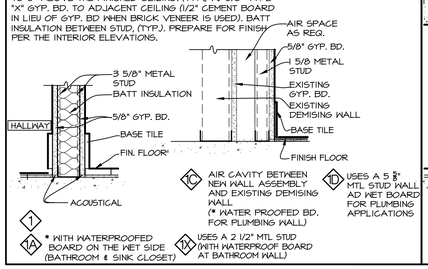
1. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS PRIOR TO ORDERING DOOR.
2. SEE PLANS FOR DOOR SWING LOCATION.
3. SEE DRAWING A/A-102 FOR DOOR STOP LOCATION.

DOOR NOTES

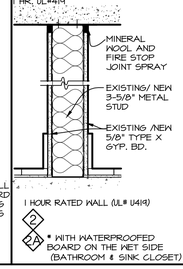
1. UNDERCUT ALL BUILDING STANDARD INTERIOR DOORS AS REQ'D TO CLEAR FLOORING MATERIAL BY 1/4" MIN.
2. ALL EXIT DOORS SHALL BE OPENABLE FROM THE INSIDE WITHOUT USE OF KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT. NO DEAD BOLTS, NO SLIDING BOLTS, ETC.
3. HAND ACTIVATED DOOR HARDWARE SHALL BE CENTERED BETWEEN 34 AND 42 INCHES ABOVE THE FLOOR. LATCHING AND LOCKING DOORS IN THE PATH OF TRAVEL SHALL BE OPERABLE WITH A SINGLE EFFORT BY LEVER TYPE HARDWARE, PANIC BARS, OR OTHER HARDWARE WHICH DOES NOT REQUIRE THE ABILITY TO GRASP THE OPENING HARDWARE.
4. MAXIMUM ELEVATION CHANGE ACROSS THRESHOLD OF EXIT DOORS SHALL NOT EXCEED 1/4" WITHOUT ADDITIONAL SLOPED TRANSITION.
5. MAXIMUM ELEVATION CHANGE ACROSS THRESHOLD OF EXIT DOORS SHALL NOT EXCEED 1/4" WITHOUT ADDITIONAL SLOPED TRANSITION.
6. A READILY VISIBLE SIGN STATING "THIS DOOR MUST REMAIN UNLOCKED DURING BUSINESS HOURS." SHALL BE PLACED ABOVE ALL EXIT DOORS.
7. ALL EXTERIOR DOORS SHALL MATCH BUILDING STANDARDS. CONTRACTOR TO VERIFY BUILDING STANDARDS.
8. REFER TO SPECIFICATIONS SP-1 FOR ADDITIONAL REQUIREMENTS ON DOORS & FRAMES.

WALL TYPES

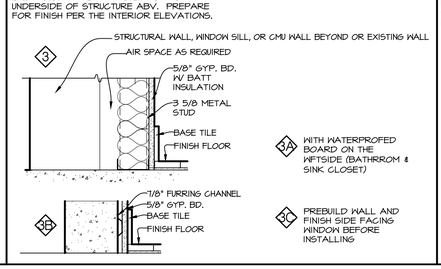
3-5/8" X 20ga. METAL STUDS (ICBO ER#4943) @ 24" O.C. TO 6" ABOVE THE FINISHED CEILING. (TYP.) W/ 5/8" TYPE "X" GYP. BD. TO ADJACENT CEILING (1/2" CEMENT BOARD IN LIEU OF GYP. BD WHEN BRICK VENEER IS USED). BATT INSULATION BETWEEN STUD, (TYP.). PREPARE FOR FINISH PER THE INTERIOR ELEVATIONS.



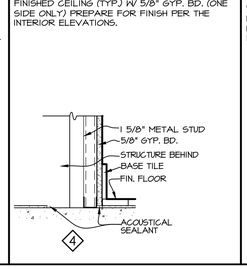
TENANT'S CONTRACTOR SHALL PROVIDE METAL STUD AND SHEETROCK, MIN.3-1/2" MTL. STUD, 20GA @ 16" O.C. 1 HR. UL#U419



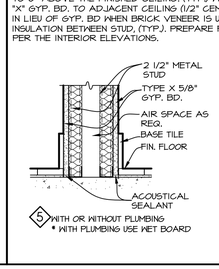
3-5/8" X 20ga. METAL STUDS (ICBO ER#4443) @ 24" O.C. WITH BATT INSULATION TO UNDERSIDE OF STRUCTURE ABV. PREPARE FOR FINISH PER THE INTERIOR ELEVATIONS.



1-5/8" X 20ga. METAL STUDS AROUND EXISTING STRUCTURE @ 24" O.C. TO 6" ABOVE THE FINISHED CEILING (TYP.) W/ 5/8" GYP. BD. (ONE SIDE ONLY) PREPARE FOR FINISH PER THE INTERIOR ELEVATIONS.



2-1/2" X 20ga. METAL STUDS (ICBO ER#4443) @ 24" O.C. TO 6" ABOVE THE FINISHED CEILING. (TYP.) W/ 5/8" TYPE "X" GYP. BD. TO ADJACENT CEILING (1/2" CEMENT BOARD IN LIEU OF GYP. BD WHEN BRICK VENEER IS USED). BATT INSULATION BETWEEN STUD, (TYP.). PREPARE FOR FINISH PER THE INTERIOR ELEVATIONS.



RELEASED FOR CONSTRUCTION
As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
02/23/2022

GF55

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ISSUE:
CONSTRUCTION DOCUMENTS
JANUARY 26TH, 2022

PER PLAN REVIEW COMMENTS
02-14-2022

DRAWN BY:
CC

REVISED BY:
DAM

DRAWING:
DOOR SCHEDULE & WALL TYPES

SCALE:
NTS

SEAL

STATE OF MISSOURI
DAVID EARL GROSS
NUMBER A-2019000254
ARCHITECT

ARCHITECT: DAVID E. GROSS
MO LICENSE No. A-2019000254

DRAWING NO.

A-601

MISSOURI STATE BUILDING DEPARTMENT NOTES

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF THE BUILDING CODE, STATE OF MISSOURI, EFFECTIVE JANUARY 1, 2015 AND ALL AMENDMENTS AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

1. A TEST WILL BE CONDUCTED UNDER DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF THE MECHANICAL SYSTEM. THE TEST WILL SHOW COMPLIANCE WITH 2015 BUILDING CODE REQUIREMENTS.THE INSPECTION FOR MAINTENANCE OF HVAC SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH ASHRAE/ACCA/ANSI STANDARD 180.
2. SMOKE DETECTION SYSTEMS SHALL BE INSTALLED AND SEQUENCED TO FOLLOW CONTROLS OPERATIONS IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 606 [SMOKE DETECTION SYSTEMS CONTROL] OF THE 2015 MECHANICAL CODE. DUCT SMOKE DETECTORS SHALL COMPLY WITH UL 268A. OTHER SMOKE DETECTORS SHALL COMPLY WITH UL 268.
3. FIRE DAMPERS, SMOKE DAMPERS, COMBINATION FIRE/SMOKE DAMPERS AND CEILING DAMPERS LOCATED WITHIN AIR DISTRIBUTION AND SMOKE CONTROL SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 701.2 [DAMPERED OPENINGS] OF THE 2015 MECHANICAL CODE.
4. ALL FIRE DAMPERS SHALL BE ACCEPTED FOR USE BY THE MISSOURI STATE DEPARTMENT OF BUILDINGS AND SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF UL 555.
5. SMOKE DAMPERS SHALL BE ACCEPTED FOR USE BY THE MISSOURI STATE DEPARTMENT OF BUILDINGS AND SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF UL 555S.
6. COMBINATION FIRE/SMOKE DAMPERS SHALL BE ACCEPTED FOR USE BY THE MISSOURI STATE DEPARTMENT OF BUILDINGS AND SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH BOTH UL 555 AND UL 555S WITH THE REQUIREMENTS OF SECTIONS 607.3.1 THROUGH 607.3.3.
7. CEILING RADIATION DAMPERS SHALL BE ACCEPTED FOR USE BY THE MISSOURI STATE DEPARTMENT OF BUILDINGS AND SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF UL 555C OR SHALL BE TESTED AS PART OF A FIRE-RESISTANCE-RATED FLOOR/CEILING OR ROOF/CEILING ASSEMBLY IN ACCORDANCE WITH ASTM E 119 OR UL 263.
8. THESE PLANS ARE APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.
9. ALL PLANS HAVE BEEN DRAWN IN COMPLIANCE WITH THE CODES AND STANDARDS LISTED IN CHAPTER 15 OF MECHANICAL CODE 2015 OF MISSOURI AND SUCH CODES AND STANDARDS SHALL BE CONSIDERED AS PART OF THE REQUIREMENTS FURTHER REGULATED IN SECTIONS 102.8.1 AND 102.8.2.

MECHANICAL LEGEND

	CEILING SUPPLY DIFFUSER
	CEILING RETURN/EXHAUST REGISTER
A(200)	DIFFUSER TYPE AND CFM (CUBIC FEET PER MINUTE). REFER TO SCHEDULE.
	LINEAR SUPPLY/RETURN DIFFUSER
	SIDEWALL DIFFUSER
	DOUBLE LINE DUCT
	DOUBLE LINE PIPE
	ACOUSTIC LINING IN DUCT
	FLEXIBLE DUCT
	WIRE MESH SCREEN
L	DOOR LOUVER
U	UNDERCUT DOOR
R	SLOPING RISE IN DUCT IN DIRECTION OF ARROW
D	SLOPING DROP IN DUCT IN DIRECTION OF ARROW
	VOLUME DAMPER
BD	BACKDRAFT DAMPER
MD	MOTORIZED DAMPER WITH DUCT ACCESS DOOR
FD	FIRE DAMPER WITH DUCT ACCESS DOOR
SD	SMOKE DAMPER WITH DUCT ACCESS DOOR
FSD	COMBINATION FIRE/SMOKE DAMPER WITH DUCT ACCESS DOOR
	FAN
	CEILING MOUNTED INLINE EXHAUST FAN
T	THERMOSTAT/TEMPERATURE SENSOR. REFER TO PLANS FOR LOCATION.
H	HUMIDISTAT/HUMIDITY SENSOR. REFER TO PLANS FOR LOCATION.
L	SPOT TYPE LIQUID DETECTOR
	ELECTRIC ON/OFF THERMALLY PROTECTED SWITCH WITH PILOT LIGHT
DD	DUCT MOUNTED SMOKE DETECTOR

NOTES: NOT ALL SYMBOLS SHOWN HERE NECESSARILY APPEAR IN THE DRAWINGS IN THIS SET.

LINE REPRESENTATION

	NEW PIPING, DUCTWORK OR EQUIPMENT
	EXISTING DUCTWORK
	EXISTING PIPING
	EXISTING PIPING, DUCTWORK OR EQUIPMENT TO BE REMOVED
	THERMOSTAT/SENSOR WIRING FROM SENSING DEVICE TO CONTROLLED DEVICE
	NEW EQUIPMENT
	EXISTING EQUIPMENT TO REMAIN
ER	EXISTING EQUIPMENT TO BE RELOCATED
RE	RELOCATED POSITION OF EXISTING EQUIPMENT
	EXISTING EQUIPMENT TO BE REMOVED

DRAWING NOTATIONS

#	DRAWING KEYNOTE TAG
1	DRAWING KEYNOTE TAG
1	DRAWING KEYNOTE TAG
A / B	SECTION DESIGNATION ON DRAWING WHERE SECTION IS CUT A-SECTION DESIGNATION B-DRAWING NO.
	POINT OF NEW CONNECTION TO EXISTING WORK
	POINT OF DEMOLITION
	REMOVE AND PATCH EXISTING WORK
1	REVISION DELTA

ABBREVIATIONS

AC	AIR CONDITIONING UNIT
AH	AIR HANDLING UNIT
AD	ACCESS DOOR
AF	AIR FILTER
AFF	ABOVE FINISH FLOOR
AL	ACOUSTIC LINING
ATC	AUTOMATIC TEMPERATURE CONTROL
AHC	ABOVE HUNG CEILING
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CG	CEILING GRILLE
CR	CEILING REGISTER
D	DRAIN
DN	DOWN
EF	EXHAUST FAN
FAI	FRESH AIR INTAKE
FC	FLEXIBLE CONNECTION
FD	FIRE DAMPER
FPB	FAN POWERED TERMINAL BOX
FSD	FIRE SMOKE DAMPER
GC	GENERAL CONTRACTOR
LD	LINEAR DIFFUSER
MD	MOTORIZED DAMPER
NK	NECK SIZE
OA	OUTSIDE AIR
OED	OPEN ENDED DUCT
RG	RETURN GRILLE
RA	RETURN AIR
RTU	ROOFTOP AIR CONDITIONING UNIT
TD/TRD	TRANSFER DUCT
TF	TRANSFER FAN
TR	TOP REGISTER
TG	TRANSFER GRILLE
TX	TOILET EXHAUST FAN
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER (OPPOSED BLADE DAMPER)
WMS	WIRE MESH SCREEN

NOTES: NOT ALL ABBREVIATONS SHOWN HERE NECESSARILY APPEAR IN THE DRAWINGS IN THIS SET.

DRAWING LIST

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225 WEST 39TH STREET
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1301 Solana Blvd.
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DECEMBER 01, 2021
REVISED FOR BOTTLE FILLER
JANUARY 19, 2022
CONSTRUCTION DOCUMENTS
JANUARY 26, 2022

DRAWN BY:
LM

PROJECT ENGINEER:
LM

DRAWING:
MECHANICAL SYMBOLS AND NOTES

SCALE:
NOT TO SCALE

SEAL

STATE OF MISSOURI
D.J. PENN
NUMBER E-28507
REGISTERED PROFESSIONAL ENGINEER
01/26/2022

DRAWING NO.

M-001

RELEASED FOR CONSTRUCTION
As Noted on Plans Review

Development Services Department
Lee's Summit, Missouri
02/23/2022

MECHANICAL SPECIFICATIONS

MECHANICAL SPECIFICATIONS

PART 1- GENERAL

1.01 GENERAL

A. THE LATEST EDITION OF AIA DOCUMENTS A201 GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, OR AS REQUIRED BY THE ARCHITECTURAL DOCUMENTS AND/OR THE STRUCTURAL ENGINEERS DOCUMENTS ARE PART OF THE CONTRACT.

B. BIDDERS SHALL VISIT AND CAREFULLY EXAMINE THE AREA AFFECTED BY THIS WORK TO FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND THE DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THIS WORK BEFORE SUBMITTING PROPOSALS. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT, OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ENGINEERS ATTENTION PRIOR TO BID. IF DISCREPANCIES ARE NOT RESOLVED TO CONTRACTORS SATISFACTION THEY SHALL BE QUALIFIED IN THEIR BID SUBMISSION.

C. THIS CONTRACTOR SHALL REVIEW ALL CONSTRUCTION DOCUMENTS ASSOCIATED WITH THIS PROJECT INCLUDING GENERAL CONSTRUCTION, DEMOLITION, ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND SPRINKLER PLANS AND SPECIFICATIONS. ALL WORK REQUIRED IN THE BID WHICH IS INDICATED OR IMPLIED TO BE PERFORMED BY THIS TRADE IN OTHER SECTIONS OF THE WORK SHALL BE INCLUDED IN THEIR BID. IF A CONFLICT OCCURS IN THE BID SPECIFICATIONS AND/OR ON THE DRAWINGS, THE MORE STRINGENT SITUATION SHALL APPLY.

D. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED IN CONTRACT. IT IS NOT INTENDED TO SPECIFY OR TO SHOW EVERY OFFSET, FITTING, OR COMPONENT. HOWEVER, CONTRACT DOCUMENTS REQUIRE COMPONENTS AND MATERIALS WHETHER OR NOT INDICATED OR SPECIFIED AS NECESSARY TO MAKE THE INSTALLATION COMPLETE AND OPERATIONAL. FINAL LOCATIONS OF DIFFUSERS, GRILLES, REGISTERS, THERMOSTATS, SENSORS, SWITCHES AND ANY WALL MOUNTED DEVICES SHALL BE AS PER THE ARCHITECT. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID CONFLICT.

E. GUARANTEE: THE CONTRACTOR SHALL GUARANTEE AND SERVICE THE ENTIRE INSTALLATION FOR A PERIOD OF ONE YEAR FROM THE DATE OF THE FINAL ACCEPTANCE OF THE INSTALLATION. THE CONTRACTOR SHALL, DURING THE PERIOD OF THE GUARANTEE, REPLACE OR REPAIR AT HIS OWN EXPENSE ANY PIECE OF EQUIPMENT AND/OR MATERIAL WHICH IS FOUND TO BE DEFECTIVE. THE REPLACEMENT OR REPAIR SHALL BE PERFORMED THE SAME DAY OF NOTIFICATION IN AN EMERGENCY FASHION WHEN NOTIFIED BY THE OWNER OR AUTHORIZED REPRESENTATIVE. THE CONTRACTOR SHALL ALSO REPAIR ALL DAMAGE TO SURROUNDING WORK CAUSED BY THE FAILURE, REPAIR OR REPLACEMENT OF DEFECTIVE EQUIPMENT. ALL REFRIGERATION COMPRESSORS SHALL HAVE A FACTORY GUARANTEE INCLUDING PARTS AND LABOR FOR FIVE YEARS TOTAL. THE FINAL ACCEPTANCE WILL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, BALANCED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATION, AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVALS.

F. SUBSTITUTIONS: DEVIATIONS FROM CONTRACT DOCUMENTS AND SUBSTITUTION OF MATERIALS OR EQUIPMENT FOR THOSE SPECIFIED SHALL BE REQUESTED INDIVIDUALLY IN WRITING. SUBMIT LETTER BEFORE TRANSMITTAL OF PRODUCT DATA TO THE PROJECT TEAM FOR THEIR REVIEW AND APPROVAL. DESCRIBE REASON FOR CHANGE, CONNECTIONS TO ADJACENT MATERIALS, ELECTRICAL SERVICES, SERVICE ACCESS REQUIREMENTS, DIFFERENCES IN OPERATING CHARACTERISTICS OR CYCLES AND ALL OTHER POINTS OF DEVIATION. CONTRACTOR TO ASSUME FULL RESPONSIBILITY FOR SAFETY, OPERATION AND PERFORMANCE OF ALTERED SYSTEM.

G. THIS CONTRACTOR IS TO OBTAIN A COPY OF THE BUILDING RULES AND REGULATIONS PRIOR TO BID SUBMISSION. ALL WORK MUST BE INSTALLED IN ACCORDANCE WITH THE BUILDING RULES AND REGULATIONS. DETERMINE REQUIREMENTS AND THE EXTENT OF PREMIUM TIME WORK REQUIRED BY BUILDING, FOR THE PURPOSE OF THE BID ASSUME ANY NOISY WORK (E.G., CHOPPING, CORE DRILLING, WELDING, BRAISING, SOLDERING, ETC.) AND BASE BUILDING SYSTEMS INTERRUPTIONS ARE TO BE PERFORMED OUTSIDE NORMAL BUSINESS HOURS.

H. REMOVAL, TEMPORARY CONNECTIONS AND RELOCATION OF CERTAIN EXISTING WORK WILL BE NECESSARY FOR THE INSTALLATION OF THE NEW SYSTEMS. ALL EXISTING CONDITIONS ARE NOT COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND MAKE ALL NECESSARY CHANGES REQUIRED BASED ON EXISTING CONDITIONS FOR PROPER INSTALLATION OF NEW WORK.

I. PLAN INSTALLATION OF NEW WORK AND CONNECTIONS TO EXISTING WORK TO INSURE MINIMUM INTERFERENCE WITH REGULAR OPERATION OF EXISTING FACILITIES. ALL SYSTEM SHUTDOWNS AFFECTING OTHER AREAS SHALL BE COORDINATED WITH BUILDING MANAGEMENT.

J. ALL NECESSARY CUTTING AND PATCHING IN FLOOR SLABS, ROOF SLABS, WALLS, AND CEILINGS FOR THE HVAC WORK SHALL BE PERFORMED BY THIS CONTRACTOR. RESTORE TO MATCH EXISTING CONDITIONS.

K. WHERE PIPE AND/OR DUCTWORK PENETRATE RATED WALLS, THE SPACE BETWEEN THE INSULATION AND THE WALL SHALL BE CAULKED WITH NON-COMBUSTIBLE MATERIAL IN AN APPROVED MANNER. ALL PIPING AND/OR DUCTWORK TO BE INSTALLED ABOVE HUNG CEILING UNLESS OTHERWISE NOTED ON DRAWINGS. THE CONTRACTOR SHALL COORDINATE WITH ARCHITECTURAL DRAWINGS FOR ALL CEILING ELEVATIONS.

L. ACCESS DOORS IN FINISHED CONSTRUCTION: THE CONTRACTOR SHALL PREPARE A LIST OF ALL ACCESS DOORS (MINIMUM 18"X18") REQUIRED FOR OPERATION AND MAINTENANCE OF ALL CONCEALED EQUIPMENT AND OTHER DEVICES, WHICH SHALL BE SUPPLIED TO THE GENERAL CONTRACTOR FOR INSTALLATION. THE COST TO FURNISH AND INSTALL ACCESS DOORS SHALL BE INCLUDED IN THIS CONTRACTORS BID. THIS CONTRACTOR IN ADVANCE OF CEILING INSTALLATIONS SHALL SUITABLY FIELD TAG AND IDENTIFY ALL CONCEALED EQUIPMENT, VALVES, DAMPERS, ETC., WHICH REQUIRE ACCESS DOOR PROVISIONS.

M. NEW DUCTWORK SHALL ARRIVE ON THE CONSTRUCTION SITE SEALED AND REMAIN PROTECTED FROM DEBRIS THROUGHOUT CONSTRUCTION PRIOR TO FINAL INSTALLATION. AIR DISTRIBUTION ACCESSORIES AND INTERNAL COMPONENTS OF ALL HVAC EQUIPMENT SHALL BE SEALED AND PROTECTED FROM DEBRIS WHILE ON THE CONSTRUCTION SITE PRIOR TO FINAL CONNECTION AND START-UP.

N. ALL VOLATILE ORGANIC COMPOUND (VOC) LIMITS OF ADHESIVES, SEALANTS AND SEALANT PRIMERS MUST COMPLY WITH SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD) RULE #1168, AMENDMENT DATE OF JANUARY 7, 2005.

1.02 SCOPE OF WORK

A. THE CONTRACTOR SHALL FURNISH AND INSTALL AN HVAC SYSTEM COMPLETE WITH ALL EQUIPMENT, DUCTWORK, PIPING, INSULATION, CONTROLS, ACCESSORIES AND ASSOCIATED WORK IN ACCORDANCE WITH THE MISSOURI CITY BUILDING CODE, ALL NATIONAL, STATE AND LOCAL AUTHORITIES HAVING JURISDICTION, BUILDING MANAGEMENT, DESIGN DRAWINGS AND THIS SPECIFICATION.

B. THE WORK SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, HOISTING AND RIGGING, BREAKDOWN AND SETUP OF EQUIPMENT FOR INSTALLATION, SCAFFOLDING, AND SERVICES TO COMPLETE THE SYSTEM AND PROVIDE THE OWNER WITH A FULLY OPERATIONAL SYSTEM. ANY EQUIPMENT, PARTS, MATERIALS, ACCESSORIES, OR LABOR THAT IS NECESSARY FOR PROPER PERFORMANCE OF THE MECHANICAL WORK ALTHOUGH NOT SPECIFICALLY MENTIONED HEREIN OR SHOWN ON THE DRAWINGS, SHALL BE FURNISHED AND INSTALLED WITHOUT ADDITIONAL COSTS.

C. THIS TENANT/OWNER SHALL PROCURE THE SERVICES OF A THIRD PARTY INSPECTION COMPANY TO PERFORM ALL SPECIAL INSPECTIONS IN ACCORDANCE WITH THE MISSOURI STATE BUILDING CODE. SECURE ALL REQUIRED PERMITS AND APPROVALS AND TRANSMIT SAME TO THE OWNER. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES.

1.03 SHOP DRAWINGS, EQUIPMENT SUBMISSION, MAINTENANCE MANUALS

A. SUBMIT ONE (1) REPRODUCIBLE AND ONE (1) PRINT OF THE SHEET METAL AND PIPING SHOP DRAWINGS, 3/8" SCALE, CERTIFIED BY ALL TRADES THAT COORDINATION HAS BEEN ESTABLISHED.

B. SUBMIT THREE (3) COPIES OF ALL SHEET METAL AND PIPING SHOP STANDARDS LEAKAGE TEST CERTIFICATION, AIR AND WATER BALANCING REPORTS, AND CERTIFIED EQUIPMENT CUTS WITH CONSTRUCTION WIRING DIAGRAMS, AND AUTOMATIC TEMPERATURE CONTROL SHOP DRAWINGS INCLUDING CONTROL AND POWER WIRING DIAGRAMS, SEQUENCE OF OPERATIONS AND ALL CUTS OF EQUIPMENT AND DEVICES.

C. SUBMIT FOUR (4) BOOK BOUND OPERATING AND SERVICE MANUALS WHICH SHALL INCLUDE COPIES OF ALL AS-BUILT SHOP DRAWINGS FOLDED AND PLACED INTO BINDER POCKETS, AS-BUILT DRAWINGS IN ELECTRONIC FORMAT, COPIES OF REVIEWED EQUIPMENT CUTS FOR INSTALLED EQUIPMENT, COPIES OF EQUIPMENT START UP CHECKLISTS, AIR AND WATER BALANCING REPORTS, LEAK TESTS, HYDROSTATIC TESTS, WATER TREATMENT AND CHEMICAL CLEANING CERTIFICATION. CONTRACTOR SHALL INSTRUCT OWNERS PERSONNEL ON THE OPERATION OF ALL HVAC SYSTEMS.

D. AS WORK PROGRESSES AND FOR DURATION OF CONTRACTOR, MAINTAIN COMPLETE AND SEPARATE SET OF PRINTS OF CONTRACT DRAWINGS AT THE JOB SITE. RECORD WORK COMPLETED AND ALL CHANGES FROM ORIGINAL CONTRACT DRAWINGS CLEARLY AND ACCURATELY INCLUDING WORK INSTALLED AS A MODIFICATION OR ADDITION TO THE ORIGINAL DESIGN. RECORD VALVE TAGS AS THEY ARE INSTALLED. FINAL SUBMISSION OF REPRODUCIBLE AS-BUILT DRAWINGS ARE TO BE SIGNED AND CERTIFIED BY INSTALLING CONTRACTOR THAT THIS IS THE AS-BUILT CONDITION OF THE WORK. AS-BUILT SHOP DRAWINGS SHALL BE SUBMITTED IN DRAWING AND ELECTRONIC FORMAT (AUTOCAD 2007 MINIMUM).

PART 2- PRODUCT/APPLICATION

2.01 DUCTWORK

A. PROVIDE ALL SUPPLY, RETURN, EXHAUST, AND OUTSIDE AIR SHEET METAL DUCTWORK, FITTINGS, DAMPERS, TURNING VANES, ACCESS DOORS, PLENUMS, FLEXIBLE CONNECTIONS, AND SUPPORTS AND PERFORM LEAK TEST PER LATEST SMACNA STANDARDS AND NFPA90A AS MODIFIED BY N.Y.C. BUILDING CODE. ALL DUCTWORK JOINTS SHALL BE SEALED AIR TIGHT WITH APPROVED DUCT SEALANT, SIMILAR TO 3M-900.

B. CONTRACTOR SHALL ADHERE TO THE FULL INSIDE CROSS SECTIONAL DUCTWORK AREAS SHOWN ON THE DRAWINGS AND PROVIDE ALL TRANSITIONS AND OFFSETS AS REQUIRED TO MEET FIELD CONDITIONS, ACCOMMODATE EQUIPMENT MAINTENANCE REQUIREMENTS AND COORDINATE WITH ALL TRADES. ALL FIELD CONDITIONS WHICH REQUIRE MODIFIED TRANSITIONS WILL NOT BE APPROVED WITHOUT PRIOR ENGINEER APPROVAL THROUGH SHOP DRAWING OR RFI.

C. FOR DUCTS WITH ACOUSTICAL LINING THE SIZES SHOWN ON THE PLAN SHALL BE THE CLEAR INSIDE DIMENSIONS.

D. EXISTING DUCTWORK TO BE REUSED: CONTRACTOR SHALL INSPECT, SEAL AS PER PRESSURE CLASSIFICATION, LEAK TEST, AND INSULATE ALL EXISTING DUCTWORK TO BE REUSED. ALL REQUIRED WORK SHALL BE PART OF BID.

E. NEW AND EXISTING DUCTWORK TO BE REUSED SHALL HAVE PRESSURE CLASSIFICATION, SEALING REQUIREMENTS AND LEAKAGE TESTING AS LISTED BELOW UNLESS OTHERWISE SPECIFIED OR SHOWN ON THE DRAWINGS:

1. 4" CLASS: ALL SUPPLY DUCTWORK FROM DISCHARGE OF AIR UNITS TO INLETS OR TERMINAL BOXES. SEAL CLASS A, LEAKAGE CLASS 6 (RECTANGULAR) OR CLASS 3 (ROUND).
2. 3" CLASS: ALL SUCTION AND DISCHARGE OF KITCHEN HOOD, AND SMOKE EXHAUST DUCTWORK. SEAL CLASS B, LEAKAGE CLASS 12 (RECTANGULAR) OR CLASS 6 (ROUND).
3. 2" CLASS: ALL OTHER LOW PRESSURE DUCTWORK. SEAL CLASS B, LEAKAGE CLASS 24 (RECTANGULAR) OR CLASS 12 (ROUND).
4. LEAKAGE TESTING:
    A) FOR DUCT SYSTEMS DESIGNED TO OPERATE AT STATIC PRESSURES IN EXCESS OF 3 INCHES W.G. (746 PA) (3" CLASS AND ABOVE), REPRESENTATIVE SECTIONS (AS DETERMINED BY THE INSPECTOR WHEN APPLICABLE), TOTALING AT LEAST 25% OF THE DUCT AREA SHALL BE TESTED TO VERIFY THAT ACTUAL AIR LEAKAGE IS BELOW ALLOWABLE AMOUNTS AS DEFINED BY ASHRAE 90.1 OR THE ENERGY CODE AS INDICATED ON THE PROJECT'S COMCHECK COMPLIANCE CERTIFICATE, WHICHEVER IS MORE STRINGENT.
    B) ALL EXISTING LOW PRESSURE DUCTWORK SHALL BE LEAK TESTED PRIOR TO REUSE TO VERIFY ITS INTEGRITY.
    C) ALL NEW LOW PRESSURE DUCTWORK (2" CLASS) SHALL BE TESTED ON AN AS-NEEDED BASIS AT THE ENGINEERS DISCRETION OR IF BALANCING AIR QUANTITIES CAN NOT BE MET. IF SPECIMEN FAILS TO MEET ALLOTTED LEAKAGE LEVEL, THE CONTRACTOR SHALL MODIFY TO BRING IT INTO COMPLIANCE AND SHALL RETEST IT UNTIL ACCEPTABLE LEAKAGE IS DEMONSTRATED. TESTS AND NECESSARY REPAIRS SHALL BE COMPLETED PRIOR TO CONCEALMENT OF DUCTS.

F. MATERIALS:

1. SHEETMETAL: HOT-DIPPED GALVANIZED SHEETMETAL WITH G60 COMMERCIAL COATING ACCORDING TO ASTM A653 & A924 FOR ALL DUCTWORK UNLESS OTHERWISE SPECIFIED.
2. STAINLESS STEEL: PROVIDE DUCTWORK OF STAINLESS STEEL CONSTRUCTION, WHERE INDICATED. DUCTWORK SHALL BE 316/NO.4 FINISH FOR EXPOSED DUCT. 304/NO.1 FINISH FOR CONCEALED DUCTS. PROVIDE FOR ALL CORROSIVE EXHAUST SYSTEMS INCLUDING FUME HOODS AND DISHWASHER EXHAUST.
3. ALUMINUM: ALLOY 3003-H14, OF THICKNESS REQUIRED BY THE SMACNA DUCT CONSTRUCTION STANDARDS. PROVIDE FOR ALL DUCTWORK EXPOSED TO WEATHER AND MOISTURE INCLUDING OUTSIDE AIR DUCTS WITHIN 10 FEET OF LOUVERS AND TOILET ROOMS EQUIPPED WITH BATHS OR SHOWERS.
4. FLEXIBLE CONNECTIONS AT FANS SHALL BE NEOPRENE COATED, FLAME RETARDANT GLASS FABRIC (COMPLYING WITH NFPA 90), 30 OZ./SQ, YD. WITH SEWED AND CEMENTED SEAMS.

G. PROVIDE MANUAL BALANCING DAMPERS AS REQUIRED TO PROPERLY BALANCE THE AIR DISTRIBUTION SYSTEM AS SHOWN ON DRAWINGS AND AS LISTED BELOW:

1. ALL SUPPLY AIR MAIN BRANCHES FROM TRUNK, EACH SPLIT, AND ALL SUB-BRANCHES FROM MAINS SHALL HAVE BALANCING DAMPERS.
2. EXHAUST AND RETURN MAIN BRANCHES FROM TRUNK, EACH SPLIT AND ALL SUB-BRANCHES FROM MAINS SHALL HAVE BALANCING DAMPERS.
3. IF DAMPER IS NOT ACCESSIBLE, OR IS LOCATED ABOVE A PLASTER OR DRYWALL CEILING, PROVIDE A REMOTE DAMPER ACTUATOR AND DAMPER AS MANUFACTURED BY YOUNG REGULATOR MODEL 896-C WITH NO. 1200A RIGHT ANGLE WORM GEAR AND DAMPER MODEL 820 OR APPROVED EQUAL.

H. FIRE DAMPERS AND FIRE/SMOKE DAMPERS:

1. PROVIDE ALL FIRE DAMPERS, SMOKE DAMPERS, COMBINATION FIRE/SMOKE DAMPERS, SMOKE DETECTORS, AND ASSOCIATED CONTROLS AND ALARMS AS REQUIRED BY CODE.
2. DAMPERS SHALL BE DYNAMIC TYPE, U.L. LISTED AND LABELED, AND IN CONFORMANCE WITH NFPA.
3. FIRE DAMPER SHALL BE FUSIBLE LINK TYPE (165 DEGREE F.), TYPE B SHUTTER OUT OF THE AIR STREAM AS MANUFACTURED BY POTTORFF MODEL VFD-10 (1-1/2 HR RATED) OR MODEL VFD-30 (3HR RATED) AS REQUIRED OR APPROVED EQUAL.
4. COMBINATION FIRE/SMOKE DAMPERS SHALL BE CLASS II, REMOTE RESETTABLE, MULTI-BLADE TYPE WITH FIRESTAT OR HEAT SENSOR DEVICE AND 120-VOLT ACTUATOR MOUNTED OUT OF THE AIR STREAM, WITH DAMPER OPERATOR AND BLADE POSITION INDICATOR SWITCHES. PROVIDE MOTOR MOUNT BRACKET STRENGTHENER FOR DAMPERS OVER 10" IN HEIGHT. PROVIDE A 10 GAUGE WELDED VERTICAL STIFFENER AT EACH CORNER TO PREVENT DAMPER MISALIGNMENT.
5. COMBINATION FIRE/SMOKE DAMPERS SHALL BE MANUFACTURED BY POTTORFF MODEL FSD-142 (1-1/2 HR RATED) OR MODEL FSD-342 (3HR RATED) AS REQUIRED OR APPROVED EQUAL.
6. THE HVAC CONTRACTOR SHALL PROVIDE ALL DEVICES, RELAYS, END SWITCHES, E/P SWITCHES, CONTROL COMPONENTS, AIR PIPING, POWER WIRING, CONTROL WIRING AND INTERLOCK WIRING AS REQUIRED TO ACCOMPLISH THE SEQUENCE OF OPERATION FOR THESE DAMPERS.
7. DUCTWORK SHALL BE TRANSITIONED LARGER AT ALL FIRE AND FIRE/SMOKE DAMPERS SUCH THAT THE NET FREE AREA OF THE DUCTWORK IS NOT COMPROMISED.

I. SLOPE AND DRAIN ALL DUCTS EXPOSED TO MOISTURE, CONSTRUCT OF ALUMINUM AND DO NOT INTERNALLY LINE.

J. AUTOMATIC CONTROL DAMPERS: PROVIDE DAMPERS WITH PARALLEL BLADES FOR 2-POSITION OR MIXING CONTROL, OR OPPOSED BLADES FOR MODULATING CONTROL OF CONSTANT OR VARIABLE VOLUME SYSTEM. AUTOMATIC DAMPERS ARE TO BE VERY LOW LEAKING TYPE WITH A MAXIMUM LEAKAGE RATE OF 6 CFM PER SQUARE FOOT AT 4" W.G. DAMPER MATERIAL SHALL BE THE SAME AS DUCT. PROVIDE WEATHERPROOF COMPONENTS FOR DAMPERS IN A MOISTURE ENVIRONMENT.

2.02 GRILLES, REGISTERS AND DIFFUSERS

A. PROVIDE ALL AIR OUTLETS AND RETURNS OF THE TYPE AND SIZES, AS SELECTED AND INDICATED ON DRAWING. ALL DUCTED RETURN AND EXHAUST OUTLETS SHALL HAVE OPPOSED BLADE DAMPERS (ADJUSTABLE THROUGH THE FACE). PROVIDE FRAMES AND MOUNTING TYPES AS REQUIRED TO MATCH SURROUNDING CEILING CONSTRUCTION. FINISHES TO BE SELECTED BY THE ARCHITECT.

B. ALL CEILING TYPE AIR DIFFUSERS SHALL BE PROVIDED WITH EQUALIZING DEFLECTOR.

C. A SCHEDULE OF DIFFUSERS, GRILLES AND REGISTERS WITH MANUFACTURERS MODELS, SIZES, ACCESSORIES, FINISHES, ETC., SHALL BE SUBMITTED FOR APPROVAL PRIOR TO RELEASE FOR FABRICATION AND DELIVERY

D. DIFFUSERS SHOWN ON DIFFUSER SCHEDULE SHALL BE CHANGED TO MATCH EXISTING DIFFUSER TYPE WHERE EXISTING DIFFUSERS ARE REMAINING.

2.03 PIPING

A. PROVIDE PIPING WHICH IS SCHEMATICALLY INDICATED AND SIZED ON DRAWINGS. PIPING TO BE INSTALLED TO MEET SPECIFIED HEADROOM OR FIELD CONDITIONS AND SHALL CONFORM TO LATEST ASME CODES FOR PRESSURE PIPING. PIPE MATERIALS AND FITTING MATERIALS SHALL BE AS PER THE PIPE AND FITTING SCHEDULES SHOWN ON DRAWINGS.

B. PIPING, FITTINGS, AND ALL PIPE APPURTENANCES SHALL BE SUITABLE FOR THE PRESSURE AND TEMPERATURE OF SERVICE.

C. PROVIDE DIELECTRIC FITTINGS TO CONNECT DIFFERENT PIPING MATERIALS.

D. PROVIDE AIR VENTS AT EACH HIGH POINT AND DRAIN VALVES WITH HOSE BIB AT EACH LOW POINT.

E. PIPING SHALL BE INSTALLED WITH PROPER ANCHORS AND EXPANSION/CONTRACTION DEVICES SUCH AS LOOPS OR APPROVED EXPANSION JOINTS TO PREVENT UNDUE STRAINS ON PIPING OR APPARATUS CONNECTED TO THE PIPING, AS REQUIRED.

F. SUPPORT PIPING WITH HANGERS EQUIPPED WITH INSULATION SADDLES FROM APPROVED CONCRETE INSERTS, EXPANSION SHIELDS, BEAM CLAMPS, AND/OR SUPPLEMENTARY STEEL ANGLES, PLATES, AND CHANNELS. CONTRACTOR SHALL SUBMIT METHOD OF PIPING SUPPORT SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER FOR REVIEW.

G. UNIONS WITH REMOVABLE SECTIONS OF PIPING SHALL BE INSTALLED AT ALL EQUIPMENT TO PERMIT EASE OF DISCONNECTION FOR EQUIPMENT SERVICE/REMOVALS WITHOUT DISMANTLING OF MAJOR PORTIONS OF CONNECTED PIPING.

H. PROVIDE TEES IN PIPING SYSTEM FOR TESTING AND BALANCING, AND INSTALLATIONS OF FLOW OR FLOAT SWITCHES, GAUGED, THERMOMETERS AND OTHER BALANCING AND CONTROL DEVICES, COORDINATE WITH THE CONTROL CONTRACTOR AND BALANCER.

I. PROVIDE AUTOMATIC PRESSURE RELIEF VALVES AND VACUUM BREAKERS TO PREVENT AGAINST PIPE RUPTURE OR SYPHONING ACTIONS. EXTEND DRAINS FROM RELIEF VALVES TO SPILL OVER FLOOR DRAINS.

J. ALL PIPE SLEEVES SHALL BE SCHEDULE 40 GALVANIZED STEEL. ANNULUS BETWEEN PIPE OR PIPE INSULATION AND SLEEVE SHALL BE CAULKED WITH A NON-COMBUSTIBLE MATERIAL TO WITHIN 1/4" OF WALL FACES AND FILLED WITH CAULKING COMPOUND FOR INTERIOR SLEEVES. EXTERIOR SLEEVES OR WATERPROOF SLEEVES SHALL UTILIZE LINK SEAL (LS) TYPE TO FILL THE ANNULUS. PROVIDE ESCUTCHEONS ON ALL EXPOSED PIPING THROUGH WALLS OR FLOORS HELD IN PLACE WITH SCREWS.

K. PROVIDE SECURELY FASTENED LABELING OF ALL PIPING (BOTH EXPOSED AND CONCEALED) IN ACCORDANCE WITH ANSI STANDARDS AND COLOR CODED AS PER BUILDING MANAGEMENT STANDARDS. LABELING SHOULD BE PROVIDED 20 FEET ON CENTERS AND/OR AT LEAST ONCE IN EACH ENCLOSED SPACE OR ROOM WHERE THE WALLS EXTEND ABOVE THE CEILING.

L. PROVIDE VALVE TAGS AND CHARTS:

1. EACH VALVE SHALL HAVE A 2 INCH DIAMETER BRASS TAG WITH 1 INCH HIGH NUMERAL STAMPED THEREON, SECURED TO THE VALVE BY MEANS OF BRASS S HOOK OR BRASS CHAIN. EACH SYSTEM TO HAVE A LETTER DESIGNATION INDICATING SERVICE.
2. THE CONTRACTOR SHALL FURNISH AN APPROVED NEATLY DRAWN VALVE CHART, PROPERLY FRAMED, SHOWING THE USE AND LOCATION OF EACH VALVE THAT IS TAGGED.

M. VALVES AND STRAINERS:

1. VALVES, STRAINERS, STEAM TRAPS, ETC., SHALL NOT CONTAIN ASBESTOS AND HAVE THE NAME OF THE MANUFACTURER AND GUARANTEED WORKING PRESSURE CAST OR STAMPED ON BODIES. VALVES OF SIMILAR TYPE SHALL BE BY A SINGLE MANUFACTURER.
2. VALVES 6" AND LARGER SHALL HAVE GEAR OPERATORS AND HAND WHEELS. VALVES LOCATED 7 FEET OR MORE ABOVE OPERATING FLOOR OR PLATFORM SHALL BE PROVIDED WITH CHAIN OPERATED HAND WHEELS, RUSTPROOF CHAIN AND CHAIN GUIDE.
3. VALVES USED FOR THROTTLING OR CONTROLLING FLOW SHALL BE BALL (3" OR SMALLER) OR PLUG TYPE VALVES (ALL SIZES). VALVES FOR ISOLATION SHALL BE BALL FOR LIQUID SYSTEMS AND GATE FOR STEAM SYSTEMS UNLESS OTHERWISE SPECIFIED. BUTTERFLY VALVE SHALL BE LUG TYPE AND MAY BE SUBSTITUTED FOR BALL VALVES FOR SIZES 4" AND LARGER. BUTTERFLY VALVES SHALL NOT BE USED FOR MODULATING SERVICE OR STEAM SERVICE, USE ONLY FOR 2 POSITION ISOLATION ON WATER SYSTEMS. REFER TO AUTOMATIC TEMPERATURE CONTROL SECTION FOR CONTROL VALVES.
4. VALVES SHALL HAVE WORKING PRESSURE AND TEMPERATURE RATINGS SAME AS PIPE FITTINGS SPECIFIED FOR THE SERVICE. REGARDLESS OF SERVICE, VALVES SHALL NOT BE DESIGNED FOR LESS THAN 125 PSI STEAM WORKING PRESSURE.
5. LUBRICATED, TAPERED PLUG VALVES WITH LOCKING FLOW PLATE SHALL BE PROVIDED IN THE DISCHARGE PIPING FROM WATER CIRCULATING PUMPS, IN THE LEAVING WATER PIPING BRANCHES FROM ALL COILS, HEAT EXCHANGER TYPES OF EQUIPMENT, AND ALL RETURN WATER RISERS OF SUB-MAINS THAT CONNECT TO HYDRONIC MAINS FOR BOTH BALANCING AND ISOLATION PURPOSES.
6. CHECK VALVES SIZED 2-1/2" AND LARGER SHALL BE IRON BODY, FLANGED ENDS, BRONZE MOUNTED, SWING PATTERN, WITH REMOVABLE CAP, RE-GRINDABLE DISC AND SEAT RING. CHECK VALVES SIZED 2" AND SMALLER SHALL BE BRONZE BODY, SCREWED ENDS, SWING PATTERN. PROVIDE SPRING LOADED, SILENT ACTION, NON-SLAM TYPE CHECK VALVE WITH REMOVABLE CAP, RE-GRINDING DISC AND SEAT RING IN ALL VERTICAL INSTALLATIONS AND DISCHARGE PIPING FROM PUMPS AS MANUFACTURED BY SMOLENKSY, MEULLER, WILLIAMS-HAGER OR MILLER.
7. BALL VALVES SHALL BE PROVIDED WITH STAINLESS STEEL BALL, STEM AND SEAT RING, TFE BUSHING AND SEAT RING GASKET. BALL VALVES INSTALLED IN COPPER SYSTEMS SHALL HAVE BRONZE BODIES. BALL VALVES SHALL BE RATED FOR A MINIMUM OF 275 PSI @ 100 DEGREE F. BALL VALVES USED FOR THROTTLING (3" AND SMALLER) SHALL BE PROVIDED WITH A LOCKING BALANCING STOP.
8. STRAINERS OF SARCO OR MEULLER MANUFACTURER SHALL BE PROVIDED IN THE INLET PIPING TO EACH STEAM TRAP, MAKE UP CONNECTION, PUMP, AND AUTOMATIC CONTROL VALVE OF STEAM AND HYDRONIC SYSTEM. STRAINER SHALL BE Y-PATTERN UNLESS OTHERWISE SPECIFIED ON DRAWINGS. STRAINERS SHALL BE OF DESIGN TO ALLOW BLOW-DOWN OF ACCUMULATED DEBRIS AND TO FACILITATE REMOVAL AND REPLACEMENT OF THE STRAINER SCREEN WITHOUT DISCONNECTION FROM THE MAIN PIPING. STRAINERS INSTALLED IN COPPER SYSTEMS SHALL HAVE BRONZE BODIES. STRAINER BASKET SHALL BE NICKEL, COPPER, BRASS OR STAINLESS STEEL OF AMPLE STRENGTH TO PREVENT COLLAPSING UNDER SHOCK LOADING. PERFORATIONS SHALL BE AS FOLLOWS: STEAM=1/32", WATER UP TO 3" SIZE-1/16", WATER 4" AND OVER -1/8". FOR STRAINERS 2-1/2" AND LARGER, PROVIDE A VALVE DIRT BLOW-OUT PIPING CONNECTION TERMINATED WITH A PIPE NIPPLE AND CAP. STRAINERS 2" AND SMALLER SHALL HAVE 6" LONG BLOW-OFF NIPPLE WITH CAPPED END.

N. COMBINATION FLOAT AND THERMOSTATIC TRAPS (0-15 PSI):

1. COMBINATION FLOAT AND THERMOSTATIC TRAPS SHALL HAVE A VALVE MECHANISM, THE POSITION OF WHICH IS CONTROLLED BY A CLOSED, STAINLESS STEEL BALL FLOAT. THE SEAT OF THE VALVE WILL BE WATERTIGHT AT ALL TIMES. THE ACTION OF THIS TYPE OF TRAP MUST DISCHARGE THE CONDENSATE AS SOON AS IT ENTERS THE TRAP AND ITS RATE OF DISCHARGE MUST BE PROPORTIONATE TO THE RATE OF THE FLOW OF CONDENSATE TO THE TRAP.
2. THE TRAP SHALL BE PROVIDED WITH AN AUTOMATIC THERMOSTATIC AIR BYPASS OF THE BALANCED PRESSURE, MULTIPLE BELLOWS TYPE.
3. ALL WORKING PARTS SHALL BE OF NON-CORROSIVE METAL (HARD BRONZE, MONEL OR STAINLESS STEEL) AND SHALL BE REMOVABLE WITHOUT DISCONNECTING THE PIPING. FLOATS TO BE OF STAINLESS STEEL. VALVE HEADS AND SEATS TO BE STAINLESS STEEL.
4. BODY AND COVER TO BE OF HIGH GRADE CAST IRON SUITABLE FOR 125 PSI (861 KPA) PRESSURE FOR A 0-15 PSI (0-130 KPA) LINE, SIMILAR TO SARCO FT-15, OR APPROVED EQUAL.

O. THERMOMETERS AND PRESSURE GAUGES:

1. PROVIDE PIPE THERMOMETERS WITH SEPARABLE SOCKETS IN THE ENTERING AND LEAVING WATER PIPING CONNECTIONS TO COOLING TOWERS, CHILLERS, HEAT EXCHANGES, HEATING, COOLING AND CONDENSER COILS. THERMOMETERS SHALL BE WEISS, WEKSLER, THERICE OR OTHER APPROVED MANUFACTURER AND SHALL BE MINIMUM OF 4-1/2" DIAL TYPE, ALUMINUM FLANGELESS CASE FURNISHED WITH MICROMETER ADJUSTABLE POINTER. THERMOMETER SHALL HAVE A 1% ACCURACY AND MIDPOINT AS SYSTEM OPERATING TEMPERATURE.
2. PROVIDE LIQUID FILLED PRESSURE GAUGES ON INLET AND OUTLET WATER PIPING CONNECTIONS TO ALL PUMPS AND OTHER WATER HEAT EXCHANGE APPARATUS INCLUDING WATER COILS, HEAT EXCHANGERS, CHILLERS. EACH PRESSURE GAUGE INSTALLATION SHALL INCLUDE A 1/4" BALL VALVE FOR ITS CONNECTION TO PIPING. PRESSURE GAUGES SHALL BE WEISS, WEKSLER, THERICE OR OTHER APPROVED MANUFACTURER AND SHALL BE MINIMUM OF 4-1/2" DIAL TYPE, CAST ALUMINUM CASE, STEEL MOVEMENT, MICROMETER ADJUSTABLE POINTER, 1% ACCURACY AND MIDPOINT AT SYSTEM OPERATING PRESSURE.

P. PIPE TESTING:

1. NO TESTING SHALL BE CONDUCTED UNTIL PIPE CLEANING AND PRETREATMENT HAS BEEN COMPLETED AND RECORDED.
2. ALL TESTING SHALL BE COORDINATED BY THE CONTRACTOR AND SHALL BE WITNESSED BY A BUILDING OWNERS REPRESENTATIVE. ALL SYSTEMS WHICH FAIL THE PRESSURE TESTS SHALL BE FIXED AND RETESTED AT NO EXPENSE TO THE OWNER.
3. ISOLATE ALL EQUIPMENT WHICH IS TO BE EXCLUDED FROM THE PRESSURE TEST AND PROVIDE ALL TEMPORARY PIPING CONNECTIONS, FITTINGS, VALVES, EQUIPMENT, LABOR, ETC., TO PRESSURE TEST ALL SYSTEMS.
4. ALL TENANT WATER SYSTEM SHALL BE ISOLATED FROM THE BASE BUILDING SYSTEM.
5. CHILLED WATER, CONDENSER WATER, AND STEAM SYSTEMS WILL BE HYDROSTATICALLY TESTED WITH WATER AT 1-1/2 TIMES THE WORKING PRESSURE, FOR A MINIMUM PERIOD OF TWO HOURS, WITH NO LEAKS.
6. REFRIGERANT PIPING SHALL BE TESTED IN ACCORDANCE WITH ASHRAE 15-2013 AND ASHRAE 2014 REFRIGERATION HANDBOOK. CONTRACTOR SHALL USE MINIMUM TEST PRESSURES ON THE GAS SIDE AND LIQUID SIDE IN ACCORDANCE WITH REFRIGERANT TYPE OPERATING PRESSURES AS DICTATED BY ASHRAE. AN ELECTRONIC REFRIGERANT DETECTOR SHALL BE UTILIZED FOR LEAK DETECTION.
7. ALL REFRIGERATION AND OIL LOST DURING GUARANTEE PERIOD SHALL BE REPLACED BY THE CONTRACTOR AT NO EXPENSE TO THE OWNER.
8. FUEL OIL PIPING CARRIER AND OUTER CONDUIT SHALL BE TESTED WITH WATER TO HYDROSTATIC PRESSURE AT 1-1/2 TIMES OPERATION PRESSURE OR 50 PSI WHICHEVER IS GREATER. ALL CONNECTION SHALL BE CHECKED FOR LEAKS WITH SOAP SOLUTION. VACUUM TESTS SHALL BE PERFORMED ON ALL FUEL OIL SUCTION LINES AS REQUIRED BY CODE.
9. HIGH PRESSURE STEAM PIPING WELDS SHALL BE X-RAY TESTED IN ACCORDANCE WITH NEW YORK CITY CODE REQUIREMENTS. TESTING SHALL BE DONE BY AN INDEPENDENT TESTING LABORATORY. PROVIDE CERTIFICATION OF TEST AS WELL AS X-RAYS TO OWNER UPON COMPLETION.

Q. REFRIGERANT SYSTEMS:

1. PROVIDE ALL REFRIGERANT PIPING REQUIRED FOR A COMPLETE REFRIGERATION SYSTEM, WITH ALL VALVES, FITTINGS AND SPECIALTIES NECESSARY FOR SATISFACTORY OPERATION IN ACCORDANCE WITH ASHRAE STANDARD 15-1994 OR LATEST EDITION AND ALL AUTHORITIES HAVING JURISDICTION. REFRIGERATION SYSTEM SHALL INCLUDE ALL REQUIRED ITEMS FOR CHARGING, DRAINING AND PURGING THE SYSTEM.
2. JOINTS IN REFRIGERATION PIPING SHALL BE BRAZED. REFRIGERANT PIPING SHALL BE OF THE SIZE RECOMMENDED BY THE MANUFACTURER AND AS APPROVED BY THE ENGINEER.
3. HORIZONTAL PIPING OF THE COMPRESSOR SUCTION AND DISCHARGE LINES AND THE CONDENSER DISCHARGE LINES SHALL BE PITCHED A MINIMUM OF 1/2" IN 10', IN THE DIRECTION OF REFRIGERANT FLOW. EACH SUCTION GAS VERTICAL RISER SHALL BE TRAPPED AT ITS EVAPORATOR WITH A TRAP AS RECOMMENDED BY THE COMPRESSOR MANUFACTURER.
4. INSTALL REFRIGERANT PIPING TO PREVENT EXCESSIVE OIL FROM BEING TRAPPED IN THE SYSTEM. ANY ADDITIONAL RISERS OR EQUALIZER LINES REQUIRED BY THE MANUFACTURER OF EQUIPMENT FOR THE PROPER SYSTEM OPERATION SHALL BE INSTALLED AS PART OF THIS CONTRACT. PROVIDE A FULLY PIPED OIL SEPARATOR FOR EACH REFRIGERANT SYSTEM AS PER MANUFACTURERS RECOMMENDATIONS.
5. VALVES SHALL BE DESIGNED FOR REFRIGERANT SERVICE. SHUTOFF VALVES SHALL BE BRASS PACKLESS TYPE. UNIONS, FLANGED VALVES OR FITTINGS SHALL BE PROVIDED FOR DISCONNECTING EQUIPMENT, CONTROLS, ETC., FOR MAKING REPAIRS. PIPING SHALL BE RUN IN A SINGLE LAYER, WITH EACH LINE ISOLATED FROM ANOTHER TO PREVENT RUBBING. PROVISION SHALL BE MADE FOR EXPANSION AND CONTRACTION OF PIPING. ALL PIPING PASSING THROUGH WALLS, PARTITIONS, ETC. SHALL BE FURNISHED WITH SLEEVES AS REQUIRED.
6. REFRIGERANT PIPING PASSING THROUGH RATED FLOORS OR DEMISING WALLS SHALL BE ENCLOSED IN A RIGID AND GAS-TIGHT CONTINUOUS FIRE-RESISTING PIPE DUCT OR SHAFT VENTED TO THE OUTSIDE, IN ACCORDANCE WITH ASHRAE STANDARD 15-1994 OR LATEST EDITION. PIPE CONDUIT SHALL BE SCHEDULE 40 BLACK STEEL FILE STOPPED AT BOTH ENDS. REFER TO DOUBLE PIPE ENCASED REFRIGERANT PIPING DETAIL.
7. REFRIGERANT PIPING TESTING:
    A) THE REFRIGERANT PIPING FOR TIGHTNESS AND LEAKS UNDER PRESSURE OR VACUUM. THE DURATION OF EACH TEST SHALL BE TWENTY-FOUR (24) HOURS.
    B) TEST JOINTS IN ACCORDANCE WITH ASHRAE 15-1994. THERE SHALL BE NO OBSERVABLE LEAKS OR CHANGES IN PRESSURE. IF EITHER IS OBSERVED, SEAL LEAKS, AND REPEAT TEST PROCEDURES.

2.04 INSULATION REQUIREMENTS

A. INSULATION SHALL BE APPLIED TO PIPING AND DUCTWORK OF MATERIALS AS SPECIFIED HEREIN AND FOR APPLICABLE SYSTEMS OF THIS PROJECT. INSULATION SHALL HAVE A FLAME SPREAD RATING NOT EXCEEDING 25 AND A SMOKE DEVELOPED INDEX OF 50 OR LESS AND SHALL MEET THE REQUIREMENTS OF ASTM, NFPA.

B. INSULATION SHALL BE CONTINUOUS THROUGH WALL AND SLAB SLEEVE OPENINGS EXCEPT FOR RATED WALLS OR SLABS WHERE AN APPROVED FIRESTOP IS REQUIRED AS PER NFPA.

C. INSULATION OF COLD SURFACES WHERE VAPOR BARRIER JACKETS ARE SPECIFIED SHALL BE APPLIED WITH AN UNBROKEN VAPOR SEAL. HANGERS AND SUPPORTS THAT ARE SECURED TO COLD SURFACES SHALL BE ADEQUATELY INSULATED TO PREVENT CONDENSATION.

D. WHERE INSULATION IS SPECIFIED FOR PIPING, INSULATE SIMILARLY ALL CONNECTIONS, VENTS, DRAINS, FLANGES, FITTINGS, VALVES, TANKS, PUMP CASINGS AND OTHER PARTS OF THE SYSTEM SUBJECT TO HEAT GAIN OR LOSS AND TO PREVENT CONDENSATION.

E. ALL EQUIPMENT, FITTINGS, DEVICES, ETC REQUIRING SERVICING OR INSPECTION SHALL HAVE REMOVABLE INSULATION WHICH CAN BE REPLACED WITHOUT DAMAGE.

F. ALL LEAK AND PRESSURE TESTS SHALL BE COMPLETED PRIOR TO THE INSTALLATION OF ANY INSULATION.

G. DUCTWORK INSULATION:

1. ALL NEW AND EXISTING SHEET METAL DUCTWORK SHALL BE INSULATED WITH FLEXIBLE DUCT WRAP INSULATION, OF REQUIRED THICKNESS AND DENSITY TO ACHIEVE A MINIMUM INSTALLED R-6 INSULATIVE VALUE AT 75 DEGREES F MEAN TEMPERATURE WHEN LOCATED WITH A CONDITIONED SPACE AND A MINIMUM INSTALLED R-8 INSULATION VALUE WHEN LOCATED IN AN UNCONDITIONED SPACE. INSULATION TO BE PROVIDED WITH REINFORCED FOIL FACED, FLAME RESISTANT, ALUMINUM FOIL VAPOR BARRIER. ALL INSULATION SHALL BE SECURED WITH DUCT ADHESIVE AND SEAMS SEALED BY TWO-INCH SEALING LIP WITH ADHESIVE AND FASTENED WITH 16 GAUGE RUST RESISTANT WIRE OR FIBERGLASS CORD ON 12" CENTERS. ON DUCTS OVER 24" WIDE, WELDED PINS AND CLIPS SHALL BE USED ON THE UNDERSIDE FOR FASTENING INSULATION.
2. OUTDOOR DUCTWORK OR DUCTWORK EXPOSED TO THE ELEMENTS SHALL HAVE TWO (2) COATS OF WEATHERPROOF MASTIC AND TWO (2) LAYERS OF GLASS CLOTH EMBED INTO WET COAT APPLIED OVER RIGID DUCT INSULATION OF REQUIRED THICKNESS AND DENSITY TO ACHIEVE A MINIMUM INSTALLED R-8 INSULATIVE VALUE AT 75 DEGREES MEAN TEMPERATURE. INSULATION TO BE PROVIDED WITH WHITE VINYL FOIL BARRIER FACING. SMOOTH MEMBRANE TO AVOID WRINKLES AND OVERLAP ALL SEAMS AT LEAST 3". APPLY A SECOND COAT OF SAME COATING TO THE ENTIRE SURFACE. TOP CENTER OF RECTANGULAR DUCT SHALL PITCH TO EACH SIDE TO AVOID TRAPPING OF WATER IN THE CENTER.
3. OUTDOOR DUCTWORK OR DUCTWORK EXPOSED TO THE ELEMENTS SHALL BE WRAPPED IN A SELF ADHESIVE MEMBRANE APPLIED OVER RIGID DUCT INSULATION OF REQUIRED THICKNESS AND DENSITY TO ACHIEVE A MINIMUM INSTALLED R-8 INSULATIVE VALUE AT 75 DEGREES MEAN TEMPERATURE. TOP CENTER OF RECTANGULAR DUCT SHALL PITCH TO EACH SIDE TO AVOID TRAPPING OF WATER IN THE CENTER. SELF ADHESIVE MEMBRANE SHALL BE POLYGUARD OR EQUAL.

H. PIPING INSULATION:

1. CONDENSATE DRAIN AND DOMESTIC WATER MAKE-UP PIPING SHALL BE INSULATED WITH 1" THICK MOLDED GLASS FIBER WITH A MAXIMUM K FACTOR OF 0.27 AT 75 DECREE F MEAN TEMPERATURE AND FACTORY APPLIED VAPOR BARRIER JACKET.
2. REFRIGERANT LIQUID AND SUCTION PIPING SHALL BE INSULATED WITH 1-1/2" THICK MOLDED GLASS FIBER FOR PIPE SIZES UP TO 1-1/2" INCHES IN DIAMETER AND 1-1/2" THICK FOR PIPE SIZES LARGER THAN 1-1/2" INCHES IN DIAMETER. INSULATION SHALL HAVE A MAXIMUM K FACTOR OF 0.27 AT 75 DEGREE F MEAN TEMPERATURE AND FACTORY APPLIED VAPOR BARRIER JACKET.
3. OUTDOOR PIPING:
    A) INSULATION ON OUTDOOR PIPING SHALL BE TWICE THE THICKNESS LISTED FOR INDOOR PIPE BUT NOT LESS THAN 4". HEAT TRACE IF USED IN WINTER OR NOT DRAINED.
    B) PROVIDE JACKETS MADE OF 0.016" ALUMINUM HELD WITH A FRICTION TYPE, Z-LOCK AND ALUMINUM BANDS. PROVIDE A MOISTURE BARRIER LINING.
    C) IF PIPING IS TO BE ACTIVE DURING THE WINTER MONTHS, PIPING IS BE PROVIDED WITH HEAT TRACING. HEAT TRACING SHALL BE RAYCHEM MODEL XL-TRACE HEAT TRACE SELF REGULATING SYSTEM OR APPROVED EQUAL. THE SYSTEM SHALL BE UL LISTED, CSA CERTIFIED OR FM APPROVED FOR THE INTENDED USE.
    D) COORDINATE WITH ELECTRICAL CONTRACTOR FOR ALL HEAT TRACING REQUIREMENTS AND PIPING LENGTH REQUIREMENTS. ELECTRICAL TO PROVIDE CABLING AND THERMOSTAT.
4. ALL PIPING INSULATION TO BE INSTALLED WITH LONGITUDINAL LAP AND VAPOR BARRIER JOINT SEAL STRIPS WITH ADHESIVE OR SELF-SEALING LAPS. FITTINGS, FLANGES, AND VALVES SHALL BE INSULATED WITH PRE-MOLDED AND PRE-CUT FITTINGS WITH METERED SEGMENTS.

2.05 ACOUSTICAL TREATMENT

A. ACOUSTICAL LINING SHALL MEET THE MINIMUM THERMAL INSULATION VALUE OF R-6 OR A MAXIMUM K FACTOR OF 0.24 AT 1.5" THICKNESS WITH A MEAN TEMPERATURE OF 75 DEGREE F.

B. ACOUSTICAL LINING SHALL MEET THE MINIMUM THERMAL INSULATION VALUE OF R-4.2 OR A MAXIMUM K FACTOR OF 0.24 AT 1" THICKNESS WITH A MEAN TEMPERATURE OF 75 DEGREE F.

C. INSTALL LINER IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. COMPLETELY COVER ALL PORTIONS OF DUCTWORK PLENUMS AND CASINGS WITH APPROVED ADHESIVE. INSTALL LINER WITH ALL TRAVERSE JOINTS NEATLY BUTTED WITH NO INTERRUPTIONS OR GAPS. COVER ALL EXPOSED EDGES, JOINTS, MECHANICAL FASTENERS AND ANY DAMAGED AREAS WITH ADHESIVE. PROVIDE METAL NOSING AT EQUIPMENT DISCHARGES AND AT END EDGES OF LINING. SECURE LINER WITH APPROVED MECHANICAL FASTENERS INSTALLED IN ACCORDANCE WITH SMACNA DUCT LINER APPLICATION STANDARD.

D. DO NOT EXTERNALLY INSULATE ACOUSTICALLY LINED DUCTS.

E. DO NOT INTERNALLY LINE DUCTWORK WHICH IS A PART OF AN OUTSIDE AIR SYSTEM WHICH DISTRIBUTES UNCONDITIONED AIR.

F. FURNISH AND INSTALL ACOUSTICAL LINING IN DUCTWORK, PLENUMS AND CASINGS AS SHOWN ON THE DRAWINGS AND AS SPECIFIED BELOW:

1. ALL DUCTS WITH DUCT VELOCITIES GREATER THAN 2,000 FPM SHALL HAVE ACOUSTICAL LINING FACED WITH 24 GAUGE PERFORATED ALUMINUM OR GALVANIZED STEEL SUPPORTED 12" ON CENTER.
2. A MINIMUM DISTANCE OF 20 FEET FROM ALL AIR CONDITIONING UNIT INLETS AND DISCHARGES.

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MECHANICAL SPECIFICATIONS (CONT.)

3. ALL RETURN/EXHAUST FANS SHALL BE ACOUSTICALLY LINED FOR A MINIMUM DISTANCE OF 20 FEET OF THE FAN INTAKE AND DISCHARGE OPENING.
4. ALL TRANSFER DUCTS SHALL BE PROVIDED WITH 1" THICK ACOUSTICAL LINING FOR ACOUSTICAL PURPOSES ONLY.
5. ALL DUCTWORK PASSING THROUGH OR SERVING CONFERENCE AND MEETING ROOMS SHALL BE PROVIDED WITH ACOUSTICAL LINING.
6. ALL EXPOSED DUCTWORK.

2.06 VIBRATION ISOLATION SYSTEMS

A. ALL ROTATING, REVOLVING OR RECIPROCATING EQUIPMENT, INCLUDING PIPING CONNECTIONS TO THIS EQUIPMENT SHALL BE ACOUSTICALLY ISOLATED TO PREVENT THE TRANSMISSION OF OBJECTIONABLE NOISES, SOUND OR VIBRATIONS TO THE OCCUPIED SPACES AND TO THE BUILDING STRUCTURES. ALL VIBRATION ISOLATION PRODUCTS SHALL BE SPECIFICALLY DESIGNED FOR THEIR INTENDED USE.

B. STATIC DEFLECTION OF ISOLATORS SHALL BE A MINIMUM OF 90% EFFICIENT.

C. MANUFACTURER OF VIBRATION ISOLATION EQUIPMENT SHALL DETERMINE VIBRATION ISOLATOR SIZES AND LOCATIONS, PROVIDE SUITABLE PIPING AND EQUIPMENT VIBRATION ISOLATION SYSTEMS, GUARANTEE SPECIFIED ISOLATION SYSTEM ATTENUATION AND DEFLECTION, AND PROVIDE INSTALLATION INSTRUCTIONS, DRAWINGS AND FIELD SUPERVISION TO ASSURE PROPER INSTALLATION AND PERFORMANCE.

D. MOUNTING TYPES:

1. PROVIDE TYPE SLR SPRING ISOLATORS FOR ROOF MOUNTED EQUIPMENT AND TYPE SLF SPRING ISOLATORS FOR INDOOR EQUIPMENT SUCH AS FLOOR AND ROOF MOUNTING OF FACTORY ASSEMBLED AIR HANDLING UNITS, AIR CONDITIONING UNITS, PUMPS AND CONDENSING UNITS.
2. PROVIDE SPRING ISOLATORS TYPE 30N FOR CEILING-SUPPORTED FANS, IN-LINE PUMPS, HEAT EXCHANGERS, AND AIR HANDLING UNITS. PROVIDE 1" MINIMUM STATIC DEFLECTION.
3. PACKAGED AIR CONDITIONING UNITS WITH INTERNAL ISOLATION OF COMPRESSORS, PROVIDE EXTERNAL SPRINGS (TYPE SLR RESTRAINED FOR FLOOR MOUNTING AND 30N FOR CEILING MOUNTED) WITH 1" MINIMUM STATIC DEFLECTION.
4. SUPPORT OF PIPING EXPOSED ON ROOF AND IN EQUIPMENT ROOMS:
   A) FLOOR SUPPORTED PIPING ISOLATORS (TYPE SLR).
   B) VERTICAL RISER PIPING ANCHOR AND GUIDES (TYPE ADA).
   C) CEILING SUPPORTED PIPING ISOLATORS (TYPE 30N).
5. PROVIDE FLEXIBLE CONNECTIONS BETWEEN ALL FANS, AHU, AC UNITS AND DUCTWORK AS PER DUCTWORK SPECIFICATION SECTION.

E. SPRING TYPE 30N HANGERS SHALL BE PROVIDED FOR PIPING FOR A DISTANCE OF 50 FEET OR 50 PIPE DIAMETERS, WHICHEVER IS GREATER, UP AND DOWNSTREAM OF ALL POWER DRIVEN EQUIPMENT. THE HANGER SHALL PROVIDE 1" OF STATIC DEFLECTION FOR PIPES 4" OF OUTSIDE DIAMETER AND LARGER AND 1/2" STATIC DEFLECTION FOR PIPES SMALLER THEN 4" OUTSIDE DIAMETER.

F. VIBRATION ISOLATORS FOR FLOOR OR CEILING SUPPORTED EQUIPMENT SHALL HAVE A MAXIMUM LATERAL MOTION UNDER EQUIPMENT START-UP OR SHUT-DOWN CONDITIONS OF 1/4" AND MOTIONS IN EXCESS SHALL BE RESTRAINED BY SPRING TYPE MOUNTINGS.

G. ALL ISOLATORS INSTALLED OUTDOORS SHALL BE PROVIDED WITH CORROSION PROTECTION.

H. VIBRATION ISOLATOR SHALL BE PROVIDED BY MASON INDUSTRIES, VIBRATION ELIMINATOR CO., CONSOLIDATED KINETICS CO., OR APPROVED EQUAL.

PART 3- EXECUTION

3.01 A. PROVIDE AND INSTALL ALL EQUIPMENT AND ACCESSORIES OF THE SIZES AND CAPACITIES AS SCHEDULED AND AS INDICATED ON THE DRAWINGS AND IN ACCORDANCE WITH APPROVED SHOP DRAWINGS AND MANUFACTURERS RECOMMENDATIONS. PROVIDE ALL MOTOR STARTERS AS REQUIRED; MOTOR STARTERS WILL BE INSTALLED BY THIS CONTRACTOR AND WIRED BY ELECTRICAL TRADE.

Q. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL REQUIRED CLEARANCES FOR SERVICING AND MAINTENANCE. COORDINATE REQUIREMENTS WITH ALL TRADES.

R. IDENTIFICATION OF EQUIPMENT AND CONTROLS:

1. ALL EQUIPMENT SHALL BE STENCILED OR LABELED WITH LAMACOID PLATES SCREWED THEREON WHICH SHALL INDICATE SYSTEMS SERVICE.
2. MOTOR STARTERS SHALL BE PROVIDED WITH LAMACOID PLATES WHICH INDICATE SYSTEM SERVED.
3. CONTRACTOR TO SUBMIT LIST OF EQUIPMENT TO RECEIVE LABELS AND THE COORDINATED DESIGNATIONS, SIZE OF LABEL LETTERING, PLATE SIZE AND COLOR FOR REVIEW PRIOR TO INSTALLATION.

3.02 CHEMICAL CLEANING AND PRETREATMENT

A. CLEANING OF PIPING SHALL BE PERFORMED IN THE PRESENCE OF A BUILDING REPRESENTATIVE.

B. PROVIDE ALL DISPERSANTS, SCALE INHIBITORS AND CORROSION INHIBITORS AS REQUIRED FOR CLEANING AND TREATING ALL PIPING SYSTEMS. CHROMATES SHALL NOT BE USED.

C. ALL CHEMICALS TO BE USED FOR PIPE CLEANING SHALL BE APPROVED BY THE BASE BUILDING CHEMICAL TREATMENT COMPANY.

D. FLUSH PIPING SYSTEMS WITH THE APPROVED CLEANING CHEMICAL TO REMOVE PIPE DOPE, SLUSHING COMPOUNDS, CUTTING OILS AND OTHER LOOSE EXTRANEOUS MATERIALS. SEAL ENDS AFTER CLEANING.

E. THE CONTRACTOR SHALL:

1. SATISFY EACH CHEMICAL HAS THE PROPER FEED RATES FOR CLEANING AND PRETREATMENT OF EACH SYSTEM AND RECORD.
2. CHECK THAT THE CLEANING SOLUTION IS ACTUALLY IN EACH SYSTEM.
3. SATISFY WHEN TO FLUSH THE SYSTEM.
4. CHECK EACH SYSTEM FOLLOWING FLUSHING TO ENSURE CLEANING CHEMICALS HAVE BEEN REMOVED FROM EACH SYSTEM AND TEST TO ENSURE PH OF NEW SYSTEM IS WITHIN 0.5 OF FRESH INCOMING WATER.

F. BLOCK MODULATING VALVES, ZONE VALVES AND OTHER SYSTEM RESTRICTIONS. PROVIDE BY PASS PIPING AND VALVING TO ISOLATE NEW AND EXISTING TO BE RE-USED EQUIPMENT SUCH AS CHILLERS, COILS, HEAT EXCHANGERS, ETC. FROM THE CLEANING PROCESS.

G. PROVIDE PORTABLE PUMPS TO CIRCULATE WATER FOR CLEANING PURPOSES AT RESPECTIVE FLOWS FOR FOUR (4) HOURS. REMOVE AND CLEAN STRAINERS. BLOW OFF LOW POINTS WITH STEAM AFTER CLEANING AND BEFORE TRAPS ARE INSTALLED. DRAIN ENTIRE SYSTEM.

3.03 EQUIPMENT START-UP AND TESTING

A. UPON COMPLETION OF THE INSTALLATION, THIS CONTRACTOR SHALL ENSURE THAT ALL EQUIPMENT AND SYSTEMS ARE TESTED AND BALANCED UNDER FIELD OPERATING CONDITIONS TO DEMONSTRATE ITS COMPLIANCE WITH SPECIFICATION REQUIREMENTS.

B. SHOULD ANY PART OF THE EQUIPMENT OR SYSTEM FAIL TO MEET THE CONTRACT REQUIREMENTS, THIS CONTRACTOR SHALL ADJUST, REPAIR OR REPLACE ALL DEFECTIVE OR INOPERATIVE PARTS AND AGAIN CONDUCT THE COMPLETE START-UP TEST.

C. SUBMIT SYSTEM START UP SHEETS AND TEST RESULTS TO THE OWNER AND ENGINEER.

3.04 ELECTRICAL WORK

A. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR POWER WIRING UNDER A SEPARATE DIVISION OF CONTRACT WORK. AUTOMATIC TEMPERATURE, SAFETY AND INTERLOCKING CONTROLS FOR MOTORS, MOTOR STARTERS AND OTHER ELECTRICAL APPARATUS AND DEVICES SHALL BE PROVIDED BY THE HVAC CONTRACTOR. CONTROL WIRING SHALL INCLUDE BUT NOT LIMITED TO ALL 12, 24, AND 120 VOLT WIRING.

B. THE MECHANICAL CONTRACTOR SHALL PREPARE AND SUBMIT FOR APPROVAL TERMINAL POINT TO TERMINAL POINT, COMPLETELY COORDINATED AND INTEGRATED WIRING DIAGRAMS FOR ALL WIRING REQUIRING FIELD INSTALLATION BY THE ELECTRICAL CONTRACTOR.

C. SPECIFIC WIRING DIAGRAMS OF FACTORY INSTALLED EQUIPMENT WIRING SHALL ALSO BE SUBMITTED FOR APPROVAL AND FURNISHED TO THE ELECTRICAL CONTRACTOR FOR HIS INSTALLATION REQUIREMENTS AND OTHER USES.

D. HVAC CONTRACTOR SHALL MAINTAIN ALL EXISTING CONTROL CONNECTIONS FOR STARTERS TO BE REUSED. CONTRACTOR SHALL COORDINATE EXISTING CONDITIONS AND PROVIDE ALL CONTACTS AND RELAYS REQUIRED FOR EXISTING STARTERS TO BE REPLACED WITH NEW.

E. HVAC CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL CONTRACTOR FOR THE INSTALLATION OF DUCT DETECTORS. DUCT DETECTOR SHALL BE FURNISHED AND WIRED BY THE ELECTRICAL CONTRACTOR AND MOUNTED BY THE HVAC CONTRACTOR.

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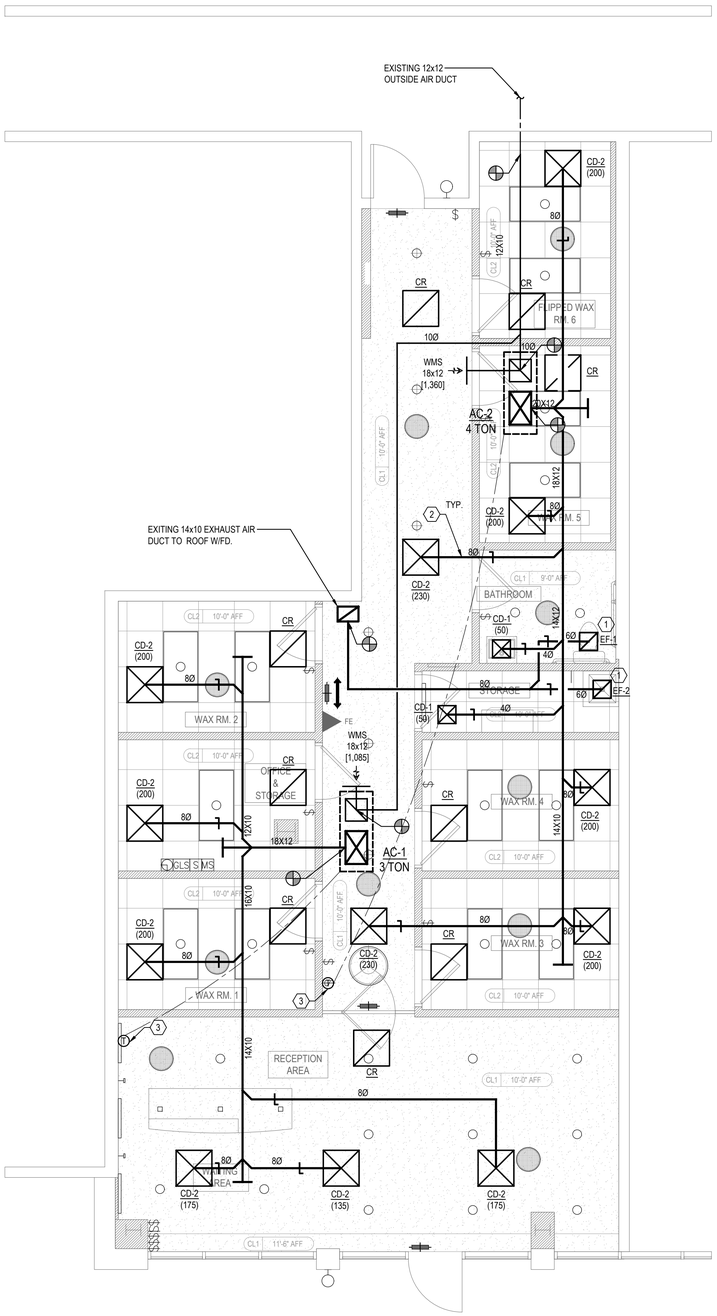

DRAWING NOTES

1. IT IS HIGHLY RECOMMENDED THAT THE ROOF DECK BE INSULATED WITH MINIMUM R-30 INSULATION.
2. DUCT WORK TO BE COORDINATED WITH OTHER TRADES. SEE PLUMBING AND ELECTRICAL DRAWINGS FOR COORDINATION. REFER TO ARCHITECTURAL DRAWINGS FOR ALL CEILING HEIGHTS.
3. ALL DUCTWORK SHALL BE CONSTRUCTED, INSTALLED, SEALED AND INSULATED PER THE SPECIFICATIONS IN MECHANICAL SPECIFICATIONS SHEET.
5. FOR NEW DUCTWORK AS INDICATED, MAINTAIN TOP OF DUCTWORK LEVEL AND AS HIGH AS POSSIBLE. UNLESS OTHERWISE NOTED, TRANSITION RECTANGULAR DUCTWORK ON BOTTOM AND SIDES, ONE SIDE AT A TIME ONLY. ALL DUCT TRANSITIONS FROM SQUARE TO ROUND SHALL BE SMOOTH SQUARE-TO-ROUND TRANSITIONS. SPIN-IN FITTINGS AT THE END OF CAPPED DUCTS ARE NOT ACCEPTABLE.
6. ALL EXISTING MODIFIED DUCTWORK SHALL BE SEALED AIRTIGHT TO THE SEAL CLASS AS SPECIFIED IN THE SPECIFICATION SHEET.
7. CONTRACTOR IS RESPONSIBLE FOR TESTING AND BALANCING OF AIR SYSTEMS IN ACCORDANCE WITH NEBB GUIDELINES. SEE SPECIFICATIONS. A CERTIFIED REPORT MUST BE SUBMITTED AT COMPLETION OF THE PROJECT. PROVIDE ALL DUCT BALANCING PRIOR TO INSTALLATION OF CEILING.
8. FINAL BORDER STYLE AND FINISH OF ALL DIFFUSERS, REGISTERS AND GRILLES SHALL BE COORDINATED WITH ARCHITECT.
9. COORDINATE LOCATION OF ALL FLOOR, CEILING, WALL DIFFUSERS & GRILLES WITH ARCHITECTURAL PLANS AND RCP. REVIEW PROPOSED LOCATIONS W/ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION.
10. REFER TO ARCHITECTURAL PLANS FOR MOUNTING HEIGHT OF ALL THERMOSTATS AND/OR SWITCHES WHERE INDICATED ON PLANS.
11. ALL EXISTING PIPES, CONTROL DEVICES AND WIRING DISCONNECTED FOR THE INSTALLATION OF THE NEW WORK OR TO BE RELOCATED SHALL BE RECONNECTED AND MADE FUNCTIONAL AGAIN.
12. ALL DAMPERS ABOVE CEILING SHALL BE ACCESSIBLE. CONTRACTOR SHALL COORDINATE ALL ACCESS PANELS IN CEILINGS OR WALLS WITH ARCHITECTURAL REFLECTED CEILING PLANS AND ANY AVAILABLE INTERIOR DRAWINGS FOR PROPER LOCATIONS. WHERE NEW OR EXISTING DEVICES ARE LOCATED ABOVE A HARD CEILING, A 24"X24" ACCESS PANEL SHALL BE PROVIDED.
13. ALL EQUIPMENT, PIPING, CONDUITS OR ANY PORTIONS OF DUCTWORK VISIBLE THROUGH GRILLES AND REGISTERS IN FINISHED AREA SHALL BE PAINTED FLAT BLACK.
14. PROVIDE FIRE-STOPPING AT ALL VERTICAL AND HORIZONTAL PENETRATIONS THROUGH ALL RATED WALLS AND FLOORS. SEE SPECIFICATIONS SHEET FOR PENETRATION FIRE-STOPPING.
15. A PLENUM RETURN AIR STRATEGY WILL BE EMPLOYED WITH RETURN AIR THROUGH GRILLES. ALL WIRING AND CONTROL TUBING IN THE CEILING PLENUM FOR ALL NEW WORK SHALL BE PLENUM-RATED. SEE MECHANICAL AND ELECTRICAL SPECIFICATIONS. DURING CONSTRUCTION, COVER ALL RETURN AIR INTAKES WITH MERV-8 FILTER MEDIA.

SHEET NOTES

1. TX OPERATION INTERLOCKED WITH MANUAL ON/OFF SWITCH FOR LIGHT.
2. SEE DIFFUSER SCHEDULE FOR NECK SIZE. DIFFUSER NECK SIZE DICTATES FLEX DUCT DIAMETER. ALL DIFFUSERS SHALL BE SUSPENDED FROM STRUCTURE ABOVE WITH ANCHOR WIRES. ALL CEILING MOUNTED AIR DISTRIBUTION DEVICES LOCATED ABOVE INACCESSIBLE CEILINGS SHALL HAVE FACE OPERABLE DAMPERS TO ALLOW AIR BALANCING OF THE SYSTEM AFTER THE CEILING IS IN PLACE.
3. PROVIDE HEATING/COOLING PROGRAMMABLE THERMOSTATS FOR RTU-1 AND RTU-2.

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MECHANICAL
FIRST FLOOR PLAN

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

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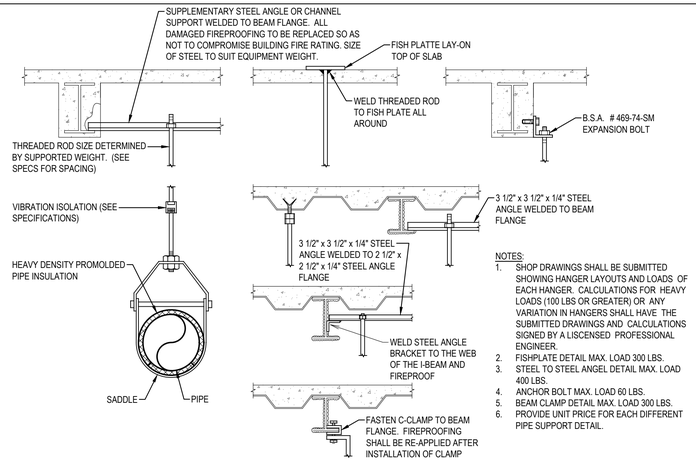

NOTES:
1. SHOP DRAWINGS SHALL BE SUBMITTED SHOWING HANGER LAYOUTS AND LOADS OF EACH HANGER. CALCULATIONS FOR HEAVY LOADS (100 LBS OR GREATER) OR ANY VARIATION IN HANGERS SHALL HAVE THE SUBMITTED DRAWINGS AND CALCULATIONS SIGNED BY A LISCENSED PROFESSIONAL ENGINEER.
2. FISHPLATE DETAIL MAX. LOAD 300 LBS.
3. STEEL TO STEEL ANGEL DETAIL MAX. LOAD 400 LBS.
4. ANCHOR BOLT MAX. LOAD 60 LBS.
5. BEAM CLAMP DETAIL MAX. LOAD 300 LBS.
6. PROVIDE UNIT PRICE FOR EACH DIFFERENT PIPE SUPPORT DETAIL.

TYPICAL PIPE HANGING DETAILS

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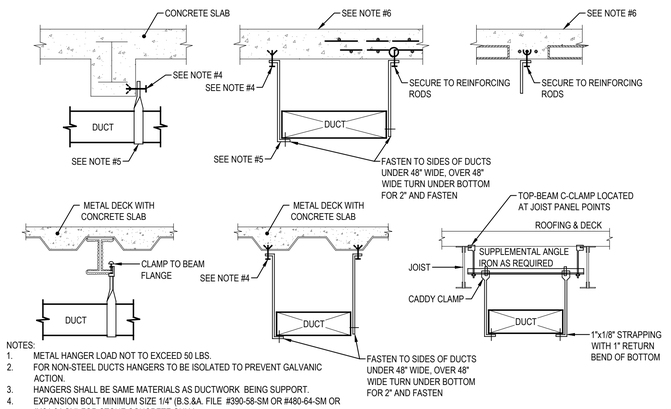

NOTES:
1. METAL HANGER LOAD NOT TO EXCEED 50 LBS.
2. FOR NON-STEEL DUCTS HANGERS TO BE ISOLATED TO PREVENT GALVANIC ACTION.
3. HANGERS SHALL BE SAME MATERIALS AS DUCTWORK. BEING SUPPORT.
4. EXPANSION BOLT MINIMUM SIZE 1/4" (B.S.&A. FILE #390-58-SM OR #480-64-SM OR #481-64-SM) FOR STONE CONCRETE ONLY.
5. 1/8" x 1" GALVANIZED IRON HANGERS 8'-0" ON CENTER FOR DUCTS 4 SQ. FT. AND UNDER, 4'-0" ON CENTER FOR DUCTS OVER 4 SQ. FT. IN AREA.
6. IN CINDER CONCRETE SLABS OR IN REPUBLIC ARCH. USE APPROVE SCISSOR TYPE HANGER HOOK (B.S.&A. FILE #A-61-63 SM).

TYPICAL DUCT HANGING DETAILS

NOT TO SCALE

NOTES:
1. TRANSFER DUCTS SHALL BE INSTALLED IN ROOMS WHERE ALL WALLS ARE FLOOR-TO-SLAB (WITH EXCEPTION OF DATA CENTERS, SERVER ROOM, ETC).
2. TRANSFER DUCTS TO BE SIZED AT 1 SQ. FT FOR 500 CFM.

TRANSFER DUCT

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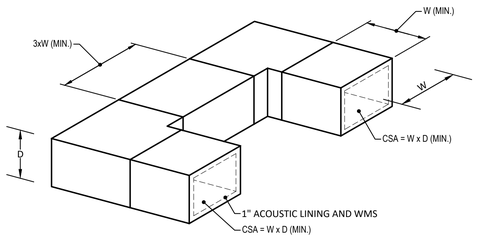
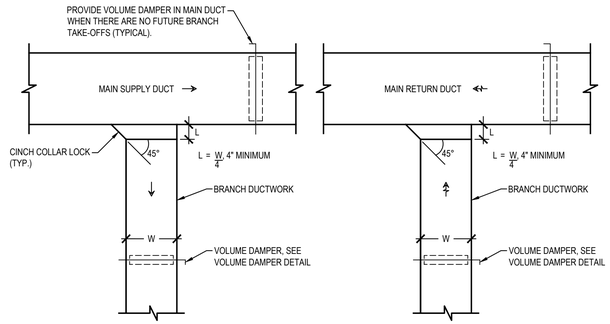


NOTES:
1. SEE PLANS FOR DUCT SIZES.
2. ALL DIMENSIONS SHOWN ON PLANS ARE ALL INTERIOR DUCT SIZES.



TYPICAL RECTANGULAR SUPPLY AND RETURN DUCTWORK BRANCH DUCT CONNECTIONS

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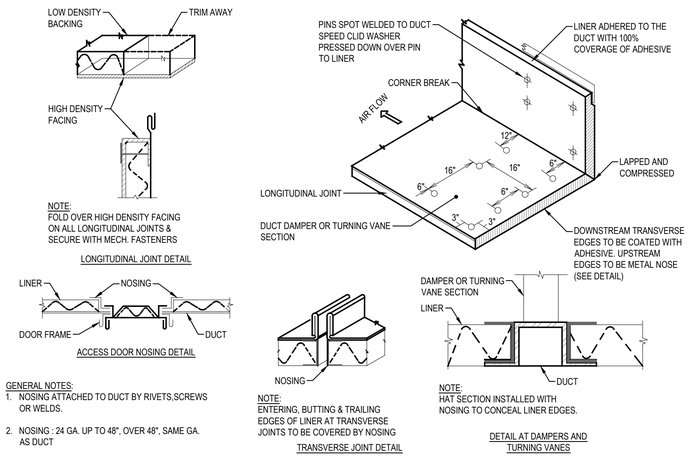


GENERAL NOTES:
1. NOSING ATTACHED TO DUCT BY RIVETS,SCREWS OR WELDS.
2. NOSING : 24 GA. UP TO 48", OVER 48", SAME GA. AS DUCT

NOTE:
ENTERING, BUTTING & TRAILING EDGES OF LINER AT TRANSVERSE JOINTS TO BE COVERED BY NOSING

NOTE:
HAT SECTION INSTALLED WITH NOSING TO CONCEAL LINER EDGES.

ACOUSTICAL DUCT LINER DETAIL

NOT TO SCALE

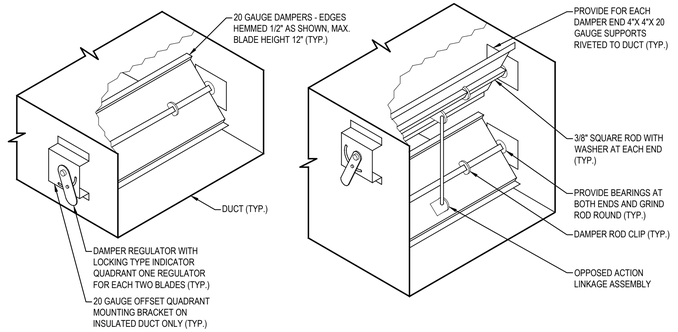
SUPPY DUCT. SEE PLAN FOR SIZE AND LAYOUT
SPIN-IN COLLAR
MANUAL BALANCE DAMPER
RIGID ROUND DUCT ELBOW DUCT SIZE TO MATCH DIFFUSER'S NECK
STAINLESS STEEL DRAW BANDS
DIFFUSER W/ ROUND NECK
RIGID ROUND DUCT. DUCT SIZE TO MATCH EXISTING.
HUNG CEILING

NOTES:
1. ALL BRANCH DUCTWORK TO AIR DEVICES MUST BE PROVIDED WITH VOLUME DAMPERS FOR BALANCING.
2. ALL SUPPLY DUCTWORK SHALL BE INSULATED IN ACCORDANCE WITH MECHANICAL SPECIFICATIONS.

BRANCH DUCT AND DIFFUSER DETAIL

NOT TO SCALE

NOTES:
1. USE SINGLE BLADE FOR DUCTS UP TO 12" HIGH AND LESS THAN 29" WIDE.
2. USE MULTIPLE BLADES FOR DUCTS GREATER THAN OR EQUAL TO 29" AND/OR OVER 12" HIGH.
3. PROVIDE DAMPERS FOR ALL BRANCH DUCT SERVING AIR DEVICES.



LOW PRESSURE BALANCING DAMPER

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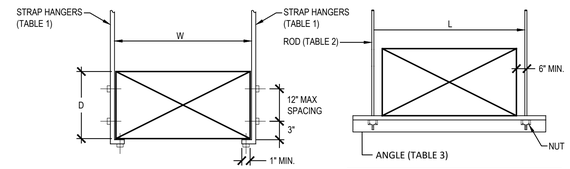

TABLE 1 STRAP HANGERS (PAIR) SPACED

W + D MAX.	10'-0" MAX.	8'-0" MAX.	5'-0" MAX.
72"	1"x22 GA	1"x 22 GA	1"x 22 GA
96"		1"x 20 GA	1"x 22 GA
120"		1"x 18 GA	1"x 22 GA
168"			1"x 18 GA
192"			1"x 16 GA
193" UP	SPECIAL ANALYSIS REQUIRED		

TABLE 2 ALLOWABLE HANGER LOAD (MAX)

STRAPS	LBS	STRAPS	LBS
2 - 1"x 22 GA	520	2 - 3/8" DIA	1360
2 - 1"x 22 GA	640	2 - 3/8" DIA	2500
2 - 1"x 22 GA	840	2 - 3/8" DIA	4000
2 - 1"x 22 GA	1400	2 - 3/8" DIA	6000

TABLE 3 TRAPEZE ANGLE LOAD (MAX)

L	2"x2"x1/4"	2 1/2"x2 1/2"x1/4"
36"	1200 LBS	1940 LBS
48"	1160 LBS	1900 LBS
60"	1060 LBS	1800 LBS
72"	900 LBS	1640 LBS
84"	660 LBS	1400 LBS
96"	320 LBS	1060 LBS

NOTES:
1. TABULATED DATA FROM SMACNA ALLOWS FOR DUCT REINFORCING AND INSULATION, BUT NO EXTERNAL LOAD.
2. PROVIDE HIGH DENSITY INSERT AT TRAPEZE FOR INSULATED DUCTS.
3. NO PIPING OR ELECTRIC CONDUIT SHALL BE SUPPORTED FROM THE DUCTWORK.
4. COORDINATE ALL STRUCTURE ATTACHMENTS TO THE EXISTING SLAB WITH THE STRUCTURAL ENGINEER.

RECTANGULAR DUCT HANGERS

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M-501

EXISTING SPLIT AIR COOLED AIR CONDITIONING UNIT SCHEDULE

DESIGNATION	EVAPORATOR UNIT											CONDENSING UNIT												COMMENTS
	CAPACITY			ENT. AIR (°F)	LVG. AIR (°F)	SUPPLY FAN		ELECTRICAL		WEIGHT (LBS)	DIMENSIONS (LxWxH)	MANUFACTURER/ MODEL	DESIGNATION	TOTAL (MBH)	SENS. (MBH)	COMPRESSOR		CFM	EXT. SP	VFD	AMB. (°F)	ELECTRICAL VOLT/Ø/Hz	COMPRESSOR MCA	WEIGHT (LBS)	DIMENSIONS (LxWxH)	MANUFACTURER/ MODEL	
	NOMINAL (TONS)	COOLING (MBH)	HEATING (MBH)			EXT. SP	CFM	VOLT/Ø/Hz	EVAP. FLA							QTY	LRA/RLA (EACH)									
AC-1	3	33.2	25.6	80	67	0.5	1085	208/1/60	2	169	22X21.5X53.62	LENNOX / CBA25UH-036	ACCU-1	34.2	25	1	24.7 / -	-	-	NO	95	208/1/60	19	190	28.25X28.25X33.25	LENNOX / ML14XC1S036-230	--
AC-2	4	46.4	38.5	80	67	0.5	1,360	208/1/60	7.6	179	22X21.5X55	LENNOX / CBA25UH-048	ACCU-2	46.4	33.5	1	27.8 / -	-	-	NO	95	208/1/60	24	218	28.25X28.25X37.25	LENNOX / ML14XC1-048-230	--

SPLIT AIR COOLED AIR CONDITION UNIT SCHEDULE NOTES (TYPICAL FOR EACH UNIT):

1. UNITS MOUNTED WITH SECTIONS ADJACENT TO BE PROVIDE WITH SINGLE POWER CONNECTION POINT.
2. PROVIDE SPRING TYPE VIBRATION UNDER EACH UNIT SECTION, REFER TO SPECIFICATIONS FOR FURTHER INFO.
3. PROVIDE COMBINATION STARTER AND DISCONNECT FOR EACH UNIT/SECTION AS REQUIRED.
4. SPEED CONTROLLERS TO BE MOUNTED TO EVAPORATOR SECTION CASINGS FOR BALANCING PURPOSES.
5. CONTRACTOR TO PROVIDE INTERCONNECTING INDOOR AND OUTDOOR SECTIONS AS REQUIRED TO MAKE SYSTEM FUNCTIONAL.
6. PROVIDE LOW AMBIENT CONTROL FOR EACH SYSTEM.
7. OPTIONAL UNIT ORIENTATIONS ARE AVAILABLE, CONTRACTOR TO COORDINATE REQUIRED UNIT ORIENTATIONS PER PLANS OR FIELD CONDITIONS.
8. ALL REFRIGERANT PIPING SHALL BE SIZED AS PER MANUFACTURER'S RECOMMENDATIONS.
9. CONTRACTOR TO PROVIDE ALL NECESSARY ACCESSORIES AND REFRIGERANT SPECIALTIES REQUIRED FOR REFRIGERANT PIPING RUNS.
10. SEE EQUIPMENT SPECIFICATIONS FOR ADDITIONAL INFORMATION.

EXHAUST/TRANSFER FAN SCHEDULE

DESIGNATION	SERVICE	CFM	STATIC PRESSURE (IN W.G.)	ELECTRICAL VOLT/Ø/Hz	MOTOR (W)	DRIVE (BELT OR DIRECT)	VFD	CONTROL (SWITCH OR THERMOSTAT)	WEIGHT	MANUFACTURER/ MODEL	COMMENTS
EF-1,EF-2	RESTROOM AND STORAGE ROOM	75	0.25	115/1/60	21	DIRECT	NO	SWITCH	11	GREENHECK / SP-B90	--

EXHAUST FAN SCHEDULE NOTES (TYPICAL FOR EACH FAN):

1. MOTOR RATED FOR CONTINUOUS USE
2. MOTOR WITH THERMAL OVERLOAD, CSA APPROVAL AND 40 DEGREE AMBIENT TEMP.
3. UL/cUL 507 LISTED - ELECTRIC FAN
4. PROVIDE ISOLATION KIT, (PN: VI KIT-SP/CSP), SHIPPED LOOSE
5. SEE EQUIPMENT SPECIFICATIONS FOR ADDITIONAL INFORMATION.

AIR OUTLET SCHEDULE

DESIGNATION	DESCRIPTION	NECK SIZE	FRAME SIZE	CFM RANGE	MAX NC	MANUFACTURER/ MODEL	COMMENTS
CD-1	CEILING DIFFUSER	4Ø	12X12	35-100	25	TITUS TMS	SEE NOTES
CD-2	CEILING DIFFUSER	8Ø	24X24	140-340	25	TITUS TMS	SEE NOTES
CR	CEILING RETURN	--	24X24	0-1600	25	TITUS PAR	PLENUM RETURN GRILLE, NO NECK

AIR OUTLET SCHEDULE NOTES (TYPICAL FOR EACH OUTLET):

1. INSTALL FOUR (4) WAY DIFFUSER UNLESS OTHERWISE NOTED. PROVIDE BLANK OFF BAFFLES FOR DIFFUSERS SHOWN TO HAVE 2-WAY AND 3-WAY PATTERNS. INCREASE NECK SIZES AS REQUIRED TO COMPENSATE FOR BLANKED-OFF AREA.
2. DIFFUSERS SHALL BE SUITABLE FOR THE TYPE OF CEILINGS CONSTRUCTION BEING INSTALLED IN.
3. DIFFUSERS THAT SERVE AREAS WITHOUT HUNG CEILINGS SHALL BE SUITABLE FOR DUCTWORK MOUNTING.
4. FINISHES SHALL BE AS SPECIFIED BY THE ARCHITECT.
5. SEE EQUIPMENT SPECIFICATIONS FOR ADDITIONAL INFORMATION.

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DRAWING NO.
M-601

PLUMBING GENERAL NOTES

1. PLUMBING CONTRACTOR TO FIELD VERIFY EXACT SIZE AND LOCATION OF EXISTING WET COLUMN RISERS AND BRANCH PIPING PRIOR TO ANY CONNECTIONS.
2. NO WORK IS TO BE REMOVED WITHOUT APPROVAL OF BUILDING ENGINEERS.
3. PORTION OF MAINS TO BE REMOVED OR ABANDONED AS A RESULT OF DEMOLITION WORK, BUT WHICH ARE REQUIRED TO REMAIN ACTIVE SHALL BE CUT AT CONVENIENT LOCATIONS, RE-ROUTED AND RECONNECTED.
4. THE CONTRACTOR SHALL NOTIFY THE BUILDING ENGINEER AT THE APPROPRIATE TIME OF THE PROJECTED DEMOLITION AND SCHEDULE SO THAT REMOVAL OR RELOCATION OF AFFECTED UTILITIES MAY BE CARRIED OUT IN COORDINATION WITH THE PROJECT REQUIREMENTS.
5. ALL EXISTING MATERIAL IN USEABLE CONDITION WHICH IS TO BE REMOVED UNDER THIS CONTRACT, SHALL BE PROTECTED AND REMAIN THE PROPERTY OF THE OWNER OR SHALL BE DISPOSED OF BY THIS CONTRACTOR, AS DIRECTED BY THE BUILDING ENGINEER.
6. ARRANGE TO WORK CONTINUOUSLY, INCLUDE OVERTIME, IF REQUIRED, TO ASSURE THAT SYSTEMS WILL BE SHUT DOWN ONLY DURING THE TIME OF ACTUALLY REQUIRED TO MAKE THE NECESSARY CONNECTIONS TO THE EXISTING SYSTEMS.
7. ALL SERVICE SHUT DOWN SHALL BE COORDINATED WITH THE BUILDING ENGINEER.
8. MAINTAIN CONTINUITY OF ALL EXISTING DOMESTIC WATER AND SYSTEM WHICH SERVE ADJACENT AREA AND ARE NOT AFFECTED BY THIS CONTRACT.
9. DURING DEMOLITION PHASE OF THIS PROJECT, CONTRACTOR SHOULD PROTECT EXISTING PIPING LOCATED IN THE STUD WALL.
10. THE LANDLORD SHALL REVIEW A REPORT FROM TENANT STRUCTURAL ENGINEER STATING THEY OBSERVED DURING SITE VISITS THAT ANCHORS WERE INSTALLED IN ACCORDANCE WITH THE SPECIFICATION AND SUBMITTALS.
11. THE GENERAL CONTRACTOR SHALL OBTAIN PERMISSION FROM THE BLDG. MANAGEMENT AND TENANT BELOW FOR INSTALLATION OF SANITARY PIPING IN CEILING BELOW.
12. REFER TO ARCHITECTURAL DRAWING FOR PLUMBING FIXTURE SCHEDULE AND / OR COORDINATE WITH THE BUILDING STANDARDS.
13. ALL EXPOSED P-TRAPS, STOPS, SUPPLIES AND ASSOCIATED PIPING THAT SHALL BE PROVIDED WITH TRAP WRAP.
14. ALL SINKS SHALL BE EQUIPPED WITH THERMOSTATIC MIXING VALVES.
15. ALL EXISTING PLUMBING ASSOCIATED PIPING SHALL BE PROTECTED DURING ALL PHASE OF CONSTRUCTION. PROVIDE LABELING ON ALL EXISTING PIPING COLD WATER, SANITARY AND VENT PIPING.
16. STRUCTURAL ENGINEERING SHALL SPECIFY TYPES OF ANCHORS/METHODOLOGY TO USE FOR EVERY TYPE OF HANGING LOAD.(SANITARY PIPING, VENT PIPING AND WATER PIPING).
17. STRUCTURAL ENGINEERING SHALL REVIEW SUBMITTALS/CUT SHEETS FOR ALL ANCHORS TO BE USE FOR THE PLUMBING PIPING INSTALLATION.
18. ALL NEW PLUMBING INSTALLATION, MATERIAL, SUPPORTS, HANGERS, CORE DRILLING, VALVE TYPE, PIPE TYPE, PIPE PRESSURE RATING, PRV, ETC, SHALL COMPLY WITH THE LATEST BUILDING SPECIFICATION/STANDARDS AND RULES & REGULATIONS (LATEST EDITION). SEEK BUILDING APPROVAL ON ALL ITEMS PRIOR TO ANY INSTALLATION.

PLUMBING DEMOLITION GENERAL NOTES

1. PLUMBING CONTRACTOR TO FIELD VERIFY THE EXACT SIZE AND LOCATION OF EXISTING WET COLUMN RISERS AND BRANCH PIPING PRIOR TO ANY NEW CONNECTIONS.
2. NO WORK IS TO BE REMOVED WITHOUT THE APPROVAL OF THE BUILDING ENGINEERS.
3. PORTION OF MAINS TO BE REMOVED OR ABANDONED AS A RESULT OF DEMOLITION WORK, BUT WHICH ARE REQUIRED TO REMAIN ACTIVE SHALL BE CUT AT CONVENIENT LOCATIONS, RE-ROUTED AND RECONNECTED.
4. THE CONTRACTOR SHALL NOTIFY THE BUILDING ENGINEER AT THE APPROPRIATE TIME OF THE PROJECTED DEMOLITION AND SCHEDULE SO THAT REMOVAL AND RELOCATION OF AFFECTED UTILITIES MAY BE CARRIED OUT IN COORDINATION WITH THE PROJECT REQUIREMENTS.
5. ALL EXISTING MATERIAL IN USEABLE CONDITION WHICH IS TO BE REMOVED UNDER THIS CONTRACT SHALL BE PROTECTED AND REMAIN THE PROPERTY OF THE OWNER OR SHALL BE DISPOSED OF BY THIS CONTRACTOR, AS DIRECTED BY THE BUILDING ENGINEER.
6. ARRANGE TO WORK CONTINUOUSLY, INCLUDING OVERTIME IF REQUIRED, TO ASSURE THAT SYSTEMS WILL BE SHUT DOWN ONLY DURING THE TIME ACTUALLY REQUIRED TO MAKE THE NECESSARY CONNECTIONS TO THE EXISTING SYSTEMS.
7. ALL SERVICE SHUT DOWNS SHALL BE COORDINATED WITH THE BUILDING ENGINEER.
8. MAINTAIN CONTINUITY OF ALL EXISTING DOMESTIC WATER AND SYSTEMS WHICH SERVE THE ADJACENT AREA AND ARE NOT AFFECTED BY THIS CONTRACT.
9. DURING DEMOLITION PHASE OF THIS PROJECT, CONTRACTOR SHOULD PROTECT EXISTING PIPING LOCATED IN THE STUD WALL AND ALL PLUMBING RELATED TO THE RISERS.
10. FIELD VERIFY ALL PLUMBING PIPING LOCATIONS WITH THE BUILDING MANAGEMENT.
11. ALL EXISTING PLUMBING RISERS (I.E. SANITARY, VENT, STORM, HOT AND COLD WATER) SHALL BE PROTECTED DURING ALL PHASES OF DEMOLITION AND CONSTRUCTION.

LINE REPRESENTATION

	NEW COLD WATER PIPING
	NEW HOT WATER PIPING
	NEW HOT WATER PIPING WITH TEMPERATURE MAINTENANCE CABLE
	NEW HOT WATER RECIRCULATION PIPING
	NEW VENT PIPING
	NEW SANITARY OR STORM WATER PIPING ABOVE GROUND
	NEW SANITARY OR STORM WATER PIPING BELOW GROUND
G	NEW GAS PIPING
AW	NEW ACID WASTE PIPING
	EXISTING COLD WATER PIPING TO REMAIN
	EXISTING HOT WATER PIPING TO REMAIN
	EXISTING HOT WATER RECIRCULATION PIPING TO REMAIN
	EXISTING VENT PIPING TO REMAIN
	EXISTING SANITARY OR STORM WATER PIPING ABOVE GROUND TO REMAIN
	EXISTING SANITARY OR STORM WATER PIPING BELOW GROUND TO REMAIN
	EXISTING PIPE TO BE REMOVED

DRAWING NOTATIONS

#	DRAWING KEYNOTE TAG
1	DRAWING KEYNOTE TAG
1	DRAWING KEYNOTE TAG
A / B	SECTION DESIGNATION ON DRAWING WHERE SECTION IS CUT A-SECTION DESIGNATION B-DRAWING NO.
	POINT OF NEW CONNECTION TO EXISTING WORK
	POINT OF DEMOLITION
	REMOVE AND PATCH EXISTING WORK
1	REVISION DELTA
F.D.	FIRE STANDPIPE RISER DESIGNATION
P.D.	PLUMBING RISER DESIGNATION
L.D.	STORM LEADER DESIGNATION
	PIPING FLOW DIRECTION

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
BFP	BACKFLOW PREVENTER
CM	COFFEE MAKER
CODP	CLEAN OUT DECK PLATE
CW	COLD WATER
DIA	DIAMETER
DN	DOWN
DF	DRINKING FOUNTAIN
EWC	ELECTRIC WATER COOLER
FAI	FRESH AIR INLET
FD	FLOOR DRAIN
FFD	FUNNEL FLOOR DRAIN
FL	FLOOR
FS	FLOOR SINK
HB	HOSE BIBB
HW	HOT WATER
HWR	HOT WATER RECIRCULATION
IM	ICE MAKER
LAV	LAVATORY
LDR	LEADER
MIN	MINIMUM
MR	MOP RECEPTOR
RD	ROOF DRAIN
RPZ	REDUCED PRESSURE ZONE
RTU	ROOF TOP UNIT
S	SANITARY
SH	SHOWER SERVICE
SK	SINK
TP	TRAP PRIMER
UR	URINAL
V	VENT
VB	VACUUM BREAKER
VTR	VENT THRU ROOF
W	WASTE
WH	WALL HYDRANT
WC	WATER CLOSET

PLUMBING LEGEND

	PIPE UP
	PIPE DROP
	BOTTOM CONNECTION
	TOP CONNECTION
	CAP
	PLUG OUTLET
	CLEANOUT
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	GATE VALVE
	CHECK VALVE
	BALL VALVE
	O, S & Y VALVE
	SOLENOID VALVE
	PRESSURE REDUCING VALVE
	SHOCK OBSORBER
	VACUUM BREAKER
	PIPE GUIDE
	UNION
	VALVE WITH HOSE BIBB
	FLOOR DRAIN
	ELECTRONIC WATER COOLER
	WATER CLOSET
	LAVATORY
	PANTRY SINK
	SLOP SINK
	WATER CLOSET (FLUSH VALVE-WALL HUNG)
	URINAL
	LAVATORY
	MOP RECEPTOR (ELEVATION)
	LAVATORY (ELEVATION)
	WATER CLOSET (ELEVATION)
	SLOP SINK (ELEVATION)

DRAWING LIST

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PLUMBING
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P-001

PLUMBING SPECIFICATIONS

SECTION 15055 - COMMON PIPING REQUIREMENTS
PART 1 - GENERAL
A. SECTION REQUIREMENTS
1. COMPLY WITH THE REQUIREMENTS OF THE BUILDING CODE AND THE LOCAL AUTHORITY HAVING JURISDICTION.

PART 2 - PRODUCTS
2.1 SUPPORT DEVICES
A. HANGER AND PIPE ATTACHMENTS: FACTORY FABRICATED WITH GALVANIZED COATINGS; NONMETALLIC COATED FOR HANGERS IN DIRECT CONTACT WITH COPPER TUBING.
B. BUILDING ATTACHMENTS: POWDER ACTUATED TYPE, DRIVE PIN ATTACHMENTS WITH PULLOUT AND SHEAR CAPACITIES APPROPRIATE FOR SUPPORTED LOADS AND BUILDING MATERIALS; UL LISTING AND FM APPROVAL FOR FIRE PROTECTION SYSTEMS.
C. MECHANICAL ANCHOR FASTENERS: INSERT-TYPE ATTACHMENTS WITH PULLOUT AND SHEAR CAPACITIES APPROPRIATE FOR SUPPORTED LOADS AND BUILDING MATERIALS; UL LISTING AND FM APPROVAL FOR FIRE PROTECTION SYSTEMS.

PART 3 - EXECUTION
3.1 INSTALLATION
A. INSTALL PIPING FREE OF SAGS AND BENDS.
B. INSTALL FITTINGS FOR CHANGES IN DIRECTION AND BRANCH CONNECTIONS.
C. INSTALL SLEEVES FOR PIPES PASSING THROUGH CONCRETE AND MASONRY WALLS, GYPSUM BOARD PARTITIONS AND CONCRETE FLOOR AND ROOF SLABS.
D. EXTERIOR WALL, PIPE PENETRATIONS: MECHANICAL SLEEVE SEALS INSTALLED IN STEEL OR CAST IRON PIPES FOR WALL SLEEVES.
E. FIRE BARRIER PENETRATIONS: SEAL PIPE PENETRATIONS WITH THROUGH-PENETRATION FIRESTOP SYSTEMS.
F. INSTALL UNIONS ADJACENT TO EACH VALVE AND AT FINAL CONNECTION TO EACH PIECE OF EQUIPMENT.
G. INSTALL DIELECTRIC UNIONS AND FLANGES TO CONNECT PIPING MATERIALS OF DISSIMILAR METALS IN GAS PIPING.
H. INSTALL DIELECTRIC COUPLING AND NIPPLE FITTINGS TO CONNECT PIPING MATERIALS OF DISSIMILAR METALS IN WATER PIPING.
I. PROVIDE FULL RING ESCUTCHEONS AT PLUMBING PENETRATIONS THROUGH WALLS OR CEILINGS. TIGHTLY SEAL ESCUTCHEONS TO THE ADJACENT SURFACE.

3.2 HANGERS AND SUPPORTS
A. INSTALL BUILDING ATTACHMENTS WITHIN CONCRETE OR TO STRUCTURAL STEEL. INSTALL ADDITIONAL ATTACHMENTS AT CONCENTRATED LOADS, INCLUDING VALVES, FLANGERS, GUIDES, STRAINERS, EXPANSION JOINTS, AND AT CHANGES IN DIRECTION OF PIPING.
B. INSTALL POWDER ACTUATED DRIVE PIN FASTENERS IN CONCRETE AFTER CONCRETE IS CURED. DO NOT USE IN LIGHTWEIGHT CONCRETE OR IN SLABS LESS THAN FOUR INCHES THICK.
C. INSTALL MECHANICAL ANCHOR FASTENERS IN CONCRETE AFTER CONCRETE IS CURED. DO NOT USE IS LIGHTWEIGHT CONCRETE OR IN SLABS LESS THAN FOUR INCHES THICK.
D. SUPPORT FIRE PROTECTION SYSTEM PIPING INDEPENDENT OF OTHER PIPING.
E. LOAD DISTRIBUTION: INSTALL HANGERS AND SUPPORTS SO PIPING LIVE AND DEAD LOADING AND STRESSES FROM MOVEMENT WILL NOT BE TRANSMITTED TO CONNECTED EQUIPMENT.
END OF SECTION 15055

SECTION 15080 - MECHANICAL INSULATION
PART 1 - GENERAL
1.1 SECTION REQUIREMENTS
A. SUBMITTALS: NONE
B. QUALITY ASSURANCE: LABELED WITH MAXIMUM FLAME-SPREAD RATING OF 25 AND MAXIMUM SMOKE DEVELOPED RATING OF 50 ACCORDING TO ASTM E 84

PART 2 - PRODUCTS
2.1 PIPE INSULATION
A. PREFORMED GLASS FIBER PIPE INSULATION: ASTM C 547, CLASS 1, WITH FACTOR APPLIED, ALL PURPOSE, VAPOR RETARDER JACKET.\
B. POLYOLEFIN PIPE INSULATION: UNICELLULAR POLYETHYLENE, PREFORMED PIPE INSULATION. COMPLY WITH ASTM C 534, TYPE 1, EXCEPT FOR DENSITY.

PART 3 - EXECUTION
3.1 INSTALLATION
A. INSTALL VAPOR BARRIERS ON INSULATED PIPES WITH SURFACE OPERATING TEMPERATURES BELOW 60°F.
B. INSULATED FITTINGS, VALVES AND SPECIALITIES.
C. SEAL VAPOR BARRIER PENETRATIONS FOR HANGERS, SUPPORTS, ANCHORS AND OTHER PROJECTS.
D. COAT GLASS FIBER PIPE INSULATION ENDS WITH VAPOR BARRIER COATINGS.
E. ROOF PENETRATIONS: APPLY INSULATION FOR INTERIOR APPLICATIONS TO A POINT EVEN WITH THE TOP OF THE ROOF FLASHING.
F. EXTERIOR WALL PENETRATIONS: FOR PENETRATIONS OF BELOW GRADE EXTERIORS WALLS, TERMINATE INSULATION FLUSH WITH MECHANICAL SLEEVE SEAL.
G. INTERIOR WALLS AND PARTITIONS PENETRATIONS: APPLY INSULATION CONTINUOUSLY THROUGH WALLS AND PARTITIONS, EXCEPT FIRE RATED WALLS AND PARTITIONS.
H. FIRE RATED WALLS AND PARTITIONS PENETRATIONS: TERMINATE INSULATION AT PENETRATIONS THROUGH FIRE RATED WALLS AND PARTITIONS. SEAL AROUND PENETRATION WITH THROUGH PENETRATION FIRESTOP SYSTEMS.
I. FLOOR PENETRATIONS: TERMINATE INSULATION AT THE UNDERSIDE OF THE FLOOR ASSEMBLY AND AT THE FLOOR SUPPORT AT TOP OF THE FLOOR. SEAL AROUND PENETRATION WITH THROUGH PENETRATION FIRESTOP SYSTEMS.
J. GLASS FIRE INSULATION INSTALLATION: BOND INSULATION TO PIPE WITH ADHESIVE. SEAL SEAMS AND JOINTS WITH VAPOR BARRIER COMPOUND.
K. INTERIOR PIPING SYSTEM APPLICATIONS: INSULATE THE FOLLOWING PIPING SYSTEMS:
1. DOMESTIC HOT AND COLD WATER
2. EXPOSED SANITARY DRAINS OF FIXTURES FOR THE DISABLED.
3. REFRIGERANT PIPING.
L. DO NOT APPLY INSULATION TO THE FOLLOWING SYSTEMS, MATERIALS AND EQUIPMENT:
1. FLEXIBLE CONNECTORS
2. FIRE PROTECTION PIPING SYSTEMS
3. SANITARY DRAINAGE AND VENT PIPING
4. CHROME PLATED PIPES AND FITTINGS, EXCEPT FOR PLUMBING FIXTURES FOR THE DISABLES
5. PIPING SPECIALTIES, INCLUDING AIR CHAMBERS, UNIONS, STRAINERS, CHECK VALVES, PLUG VALVES AND FLOW REGULATORS.
M. PIPE INSULATION THICKNESS APPLICATION SCHEDULE: INSULATE PIPING WITH THE FOLLOWING MATERIALS AND THICKNESSES:
1. DOMESTIC HOT AND COLD WATER: 1/2 - INCH PREFORMED GLASS FIBER PIPE INSULATION.
2. SANITARY DRAINS: 1/2-INCH POLYOLEFIN PIPE INSULATION.
END OF SECTION 15080

SECTION 15110 - VALVES
PART 1 - GENERAL (NOT APPLICABLE)
PART 2 - PRODUCTS
2.1 GENERAL DUTY VALVES
A. END CONNECTIONS: THREADS SHALL COMPLY WITH ASNI B.1.20.1. FLANGES SHALL COMPLY WITH ANSI B16.1 FOR CAST IRON VALVES AND ANSI B16.24 FOR BRONZE VALVES. SOLDER-JOINT CONNECTIONS SHALL COMPLY WITH ANSI B16.18.
B. BALL VALES: RATED FOR 150 PSIG SATURATED STEAM PRESSURE, 400 PSIG WOG PRESSURE; 2 PIECE CONSTRUCTION; WITH BRONZE BODY, STANDARD (OR REGULAR) PORT, CHROME PLATED BRASS BALL, REPLACEABLE "TEFLON" OR "TFE" SEATS AND SEALS, BLOWOUT PROOF STEM AND VINYL COVERED STEEL HANDLE.
C. PLUG VALVES: RATED AT 150 PSIG WOG; BRONZE BODY, WITH STRAIGHTAWAY PATTERN, SQUARE HEAD AND THREADED ENDS.
D. SWING CHECK VALVES: CLASS 125, CAST BRONZE BODY AND CAP; WITH HORIZONTAL SWING, Y-PATTERN, AND BRONZE DISC.
E. VALVES FOR COPPER TUBE: SOLDER ENDS, EXCEPT PROVIDED THREADED ENDS FOR HEATING HOT HOT WATER AND LOW PRESSURE STEAM SERVICE.
F. VALVES FOR STEEL PIPING: THREADED ENDS

PART 3 - EXECUTION
3.1 INSTALLATION
A. USE GATE AND BALL VALVES FOR SHUTOFF DUTY AND BALL FOR THROTTLING DUTY.
B. LOCATE VALVES FOR EASY ACCESS AND PROVIDE SEPARATE SUPPORT WHERE NECESSARY.
C. INSTALL VALVES FOR EACH FIXTURE AND ITEM FOR EQUIPMENT.
D. INSTALL VALVES IN HORIZONTAL PIPING WITH STEM AT OR ABOVE CENTER OF PIPE.
E. INSTALL VALVES IN A POSITION TO ALLOW FULL STEM MOVEMENT.
F. INSTALL CHECK VALVES FOR PROPER DIRECTION OF FLOW IN HORIZONTAL POSITION WITH HINGE PIN LEVEL.
END OF SECTION 15110

SECTION 15140 - DOMESTIC WATER PIPING
PART 1 - GENERAL
1.1 SECTION REQUIREMENTS
A. PERFORMANCE REQUIREMENTS: UNLESS OTHERWISE INDICATED MINIMUM PRESSURE REQUIREMENTS FOR WATER PIPING ARE AS FOLLOWS:
1. SERVICE ENTRANCE PIPING: 100 PSIG
2. DOMESTIC WATER PIPING: 80 PSIG
B. COMPLY WITH NSF 14 "PLASTIC PIPING COMPONENTS AND MATERIALS"
C. COMPLY WITH NSF 61 "DRINKING WATER SYSTEM COMPONENTS - HEALTH EFFECTS"

PART 2 - PRODUCTS
2.1 PIPES AND TUBES:
A. HARD COPPER TUBE: ASTM B88, TYPES L AND M, WATER TUBE, DRAWN TEMPER.
B. PVC PLASTIC, WATER PIPE: ASTM D 1785, SCHEDULE 80, PLAIN ENDS.
2.2 FITTINGS
A. WROUGHT COPPER, SOLDER JOINT PRESSURE FITTINGS: ASME B 16.22
B. CAST COPPER ALLOY SOLDER JOINT PRESSURE FITTINGS: ASME B 16.18
C. BRONZE FLANGES: ASME B 16.24, CLASSES 150 AND 300
D. COPPER UNIOTNS: ASME B 16.18, CAST COPPER ALLOW BODY, HEXAGONAL STOCK WITH BALL AND SOCKET JOINT, METAL TO METAL SEATING SURFACES AND SOLDER JOINT, THREADED OR SOLDER JOINT AND THREADED ENDS. THREADS COMPLYING WITH ASME B 1.20.1
E. PVC PLASTIC, SCHEDULE 80, SOCKET TYPE PIPE FITTINGS: ASTM D 2467.
2.3 JOINING MATERIALS
A. SOLDER FILLER METAL: ASTM B32, LEAD FREE
B. BRAZING FILLER METALS: AWS A5.8, ALLOWS TO SUIT SYSTEM REQUIREMENTS.
C. SOLVENT CEMENTS: AS RECOMMENDED BY MANUFACTURER
D. PLASTIC PIPE SEALS: ASTM F 477, ELASTOMERIC GASKET.

PART 3 - EXECUTION
3.1 VALVE APPLICATIONS
A. INSTALL GATE VALVES CLOSE TO MAIN ON EACH BRANCH AND RISER SERVING TWO OR MORE PLUMBING FIXTURES OR EQUIPMENT CONNECTIONS AND WHERE INDICATED.
B. INSTALL GATE OR BALL VALVES ON INLET TO EACH PLUMBING EQUIPMENT ITEM, ON EACH SUPPLY TO EACH PLUMBING FIXTURE NOT HAVING STOPS ON SUPPLIES AND ELSEWHERE AS INDICATED.
C. INSTALL DRAIN VALVE AT BASE OF EACH RISER, AT LOW POINTS OF HORIZONTAL RUNS AND WHERE REQUIRED TO DRAIN WATER DISTRIBUTION PIPING SYSTEM.
D. INSTALL SWING CHECK VALVE ON DISCHARGE SIDE OF EACH PUMP AND ELSEWHERE AS INDICATED.
E. INSTALL BALL VALVES IN EACH HOT WATER CIRCULATING LOOP AND DISCHARGE SIDE OF EACH PUMP.
3.2 PIPING INSTALLATIONS
A. INSTALL HANGERS AND SUPPORTS AT INTERVALS INDICATED IN THE APPLICABLE PLUMBING CODE AND AS RECOMMENDED BY PIPE MANUFACTURER.
B. SUPPORT VERTICAL PIPING AT EACH FLOOR.
3.3 INSPECTING AND CLEANING
A. INSPECT AND TEST PIPING SYSTEMS FOLLOWING PROCEDURES OF AUTHORITIES HAVING JURISDICTION.
B. CLEAN AND DISINFECT WATER DISTRIBUTION PIPING FOLLOWING PROCEDURES OF AUTHORITIES HAVING JURISDICTION.
END OF SECTION 15140

SECTION 15150 - SANITARY WASTE AND VENT PIPING
PART 1 - GENERAL
A. MINIMUM PRESSURE REQUIREMENT OF SOIL, WASTE AND VENT: 10 FEET HEAD
B. COMPLY WITH NSF 14 "PLASTIC PIPING COMPONENTS AND RELATED MATERIALS"

PART 2 - PRODUCTS
2.1 PIPES AND TUBES
A. PVC PLASTIC, DWV PIPE: ASTM D 2665, SCHEDULE 40, PLAIN ENDS.
2.2 FITTINGS
A. PVC PLASTIC, DWV PIPE FITTINGS:ASTM D 2665, MADE TO ASTM D 3311; SOCKET TYPE: DRAIN, WASTE AND VENT PIPE PATTERNS.

PART 3 - EXECUTION
3.1 PIPE INSTALLATION
A. INSTALL CLEANOUT AND EXTENSION TO GRADE AT CONNECTION OF BUILDING SANITARY DRAIN AND BUILDING SANITARY SEWER.
B. LOCATE DRAINAGE PIPING RUNOUTS AS CLOSE AS POSSIBLE TO BOTTOM OF FLOOR SLAB SUPPORTING FIXTURES OR DRAINS.
3.2 INSPECTIONS
A. INSPECT AND TEST PIPING SYSTEMS FOLLOWING PROCEDURES OF AUTHORITIES HAVING JURISDICTION.
END OF SECTION 15150

SECTION 15410 - PLUMBING FIXTURES
PART 1- GENERAL
1.1 SECTION REQUIREMENTS
A. SUBMITTALS: NONE
B. COMPLY WITH REQUIREMENTS OF PUBLIC LAW 102-486, "ENERGY POLICY ACT" REGARDING WATER FLOW RATE AND WATER CONSUMPTION OF PLUMBING FIXTURES.
C. COMPLY WITH APPLICABLE STANDARD BELOW:
1. ENAMELED, COAST IRON FIXTURES: ASME A112.19.1M
2. NATIONAL SANITATION FOUNDATION CONSTRUCTION: NFS2
3. PORCELAIN ENAMELED FIXTURES: ASME A112.19.4M
4. SLIP RESISTANT BATHING SURFACES: ASTM F 462
5. STAINLESS STEEL FIXTURES: ASME A112.19.3M
6. VITREOUS CHINA FIXTURES: ASME A112.19.2M

PART 2 - PRODUCTS
2.1 REFER TO ARCHITECTURAL PLANS FOR SPECIFICATIONS.

PART 3 - EXECUTION
3.1 INSTALLATION
A. INSTALL FITTING INSULATION KITS ON FIXTURES FOR THE DISABLED.
B. INSTALL FIXTURES WITH FLANGES AND GASKET SEALS.
C. INSTALL FLUSHOMETER VALVES FOR ACCESSIBLE WATER CLOSETS AND URINALS WITH HANDLE MOUNTED ON WIDE SIDE OF COMPARTMENT. INSTALL OTHER ACTUATORS IN LOCATIONS THAT ARE EASY FOR THE DISABLE TO REACH.
D. FASTEN WALL HANGING PLUMBING FIXTURES SECURELY TO SUPPORTS ATTACHED TO BUILDING SUBSTRATE WHEN SUPPORTS ARE SPECIFIED, AND TO BUILDING WALL CONSTRUCTION WHERE NO SUPPORT IS INDICATED.
E. FASTEN FLOOR MOUNTED FIXTURES TO SUBSTRATE. WITH FIXTURES HAVING HOLES FOR SECURING FIXTURE TO WALL CONSTRUCTION , FASTEN TO REINFORCEMENT BUILT INTO WALLS.
F. FASTEN WALL MOUNTED FITTINGS TO REINFORCEMENT BUILT INTO WALLS.
G. FASTEN COUNTER MOUNTED PLUMBING FIXTURES TO CASEWORK.
H. SECURE SUPPLIES TO SUPPORTS OR SUBSTRATE WITHIN PIPE SPACE BEHIND FIXTURES.
I. SET SHOWER RECEPTORS AND MOP BASINS IN LEVELING BED OF CEMENT GROUT.
J. INSTALL INDIVIDUAL SUPPLY INLETS, SUPPLY STOPS, SUPPLY RISER AND TUBULAR BRASS TRAPS WITH CLEANOUTS AT FIXTURE.
K. INSTALL WATER SUPPLY STOP VALVE SIN ACCESSIBLE LOCATIONS.
L. INSTALL TRAPS ON FIXTURE OUTLETS. OMIT TRAPS ON FIXTURES HAVING INTEGRAL TRAPS. OMIT TRAPS ON INDIRECT WASTE, UNLESS OTHERWISE INDICATED.
M. INSTALL ESCUTCHEONS AT WALLS, FLOOR AND CEILING PENETRATIONS IN EXPOSED, FINISHED, LOCATION AND WITHIN CABINETS AND MILLWORK. USE DEEP PATTERN ESCUTCHEONS WHERE REQUIRED TO CONCEAL PROTRUDING PIPE FITTINGS.
N. SEAL JOINTS BETWEEN FIXTURES AND WALLS, FLOORS AND COUNTERS USING SANITARY TYPE, ONE PART, MILDEW RESISTANT, SILICONE SEALANT. MATCH SEALANT COLOR TO FIXTURE COLOR.
O. INSTALL PIPING CONNECTIONS BETWEEN PLUMBING FIXTURES AND PIPING SYSTEMS AND PLUMBING EQUIPMENT. INSTALL INSULATION ON SUPPLIES AND DRAINS OF FIXTURES FOR THE DISABLED.
P. GROUND EQUIPMENT. TIGHTEN ELECTRICAL CONNECTORS AND TERMINATE ACCORDING TO UL 486A AND UL 486B.
END OF SECTION 15410

SECTION 15425 - PLUMBING SPECIALTIES
PART 1 - GENERAL
1.1 SECTION REQUIREMENTS
A. MINIMUM WORKING PRESSURE RATING FOR PRODUCTS:
1. WATER DISTRIBUTION PIPING: 80 PSIG.
B. SUBMITTALS: PRODUCT DATA

PART 2 - PRODUCTS
2.1 REFER TO FIXTURE SCHEDULE

PART 3 - EXECUTION
3.1 INSTALLATION
A. INSTALL BACKFLOW PREVENTERS AT EACH WATER SUPPLY CONNECTION TO MECHANICAL EQUIPMENT AND WHERE REQUIRED BY AUTHORITIES HAVING JURISDICTION.
B. INSTALL HOSE BIBBS WITH INTEGRAL OR FIELD INSTALLED VACUUM BREAKER
C. INSTALL FLOOR DRAINS AT LOW POINTS OF SURFACE AREAS AND WHERE INDICATED. SET TOPS OF DRAINS FLUSH WITH FINISHED FLOOR.
1. TRAP DRAINS CONNECT TO SANITARY BUILDING DRAIN.
2. INSTALL DRAIN FLASHING COLLAR OR FLANGE SO NO LEAKAGE OCCURS BETWEEN DRAIN AND ADJOINING FLOOR. MAINTAIN INTEGRITY OF WATERPROOF MEMBRANES.
END OF SECTION 15425

SECTION 15554 - FLUES AND VENTS
PART 1 - GENERAL
1.1 SECTION REQUIREMENTS
A. SUBMITTALS: NONE

PART 2 - PRODUCTS
2.1 GAS VENTS
A. VENT/AIR INTAKE FOR HIGH EFFICIENCY DOMESTIC WATER HEATER. SIZE PER MANUFACTURERS RECOMMENDATION.
B. ACCESSORIES: TEES, ELBOWS, INCREASERS, DRAFT HOOD CONNECTORS, METAL CAP WITH BIRD BARRIER, ADJUSTABLE ROOF FLASHING, STORM COLLAR, SUPPORT ASSEMBLY, THIMBLES, FIRESTOPPING SPACERS AND FASTENERS; FABRICATED OF SIMILAR MATERIALS AND DESIGNS AS VENT-PIPING STRAIGHT SECTIONS.

PART 3 - EXECUTION
3.1 INSTALLATION
A. INSTALL VENTS ACCORDING TO STIPULATED MINIMUM CLEARANCES FROM COMBUSTIBLES.
B. SEAL BETWEEN SECTIONS OF POSITIVE PRESSURE VENTS USING ONLY SEALANTS RECOMMENDED BY MANUFACTURER.
C. SUPPORT VENTS AT INTERVALS TO SUPPORT THE WEIGHT OF THE VENT AND ALL ACCESSORIES, WITHOUT EXCEEDING LOADING OF APPLIANCES.
END OF SECTION 15554

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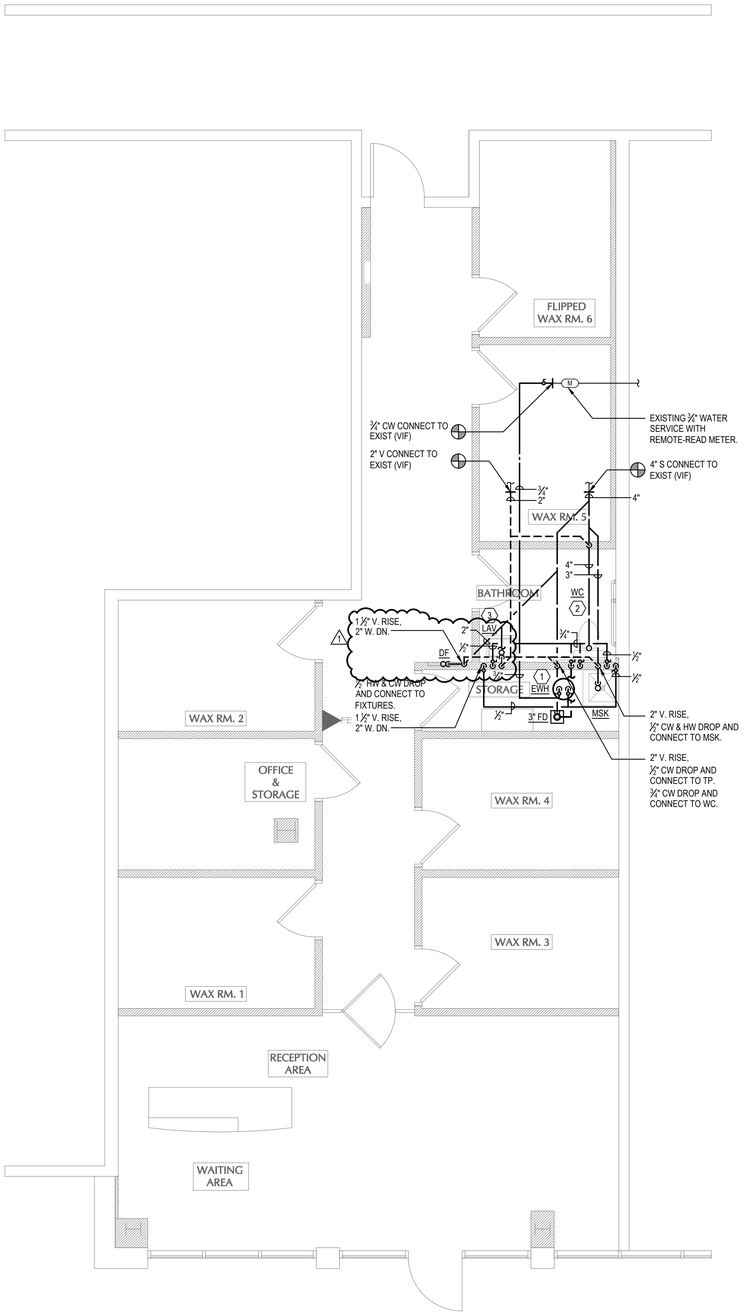

DRAWING NOTES

1. THE PLUMBING CONTRACTOR SHALL COORDINATE ALL NEW WORK WITH THE EXISTING CONDITIONS AND THE NEW WORK OF ALL OTHER TRADES ON THE JOB SITE AND SHALL BE RESPONSIBLE TO REPAIR AND REPLACE ANY EXISTING SUSPENDED CEILINGS AND/OR FINISHES DAMAGED BY THE INSTALLATION OF EQUIPMENT, PIPING, FIXTURES, ETC. UNDER THE PLUMBING CONTRACT.
2. ALL REQUIRED CLEANOUTS SHALL BE INSTALLED AS PER 2015 INTERNATIONAL PLUMBING CODE.
3. ROUTING OF WASTE, VENT AND DOMESTIC WATER PIPING IS SHOWN DIAGRAMMATICALLY ONLY. PLUMBING CONTRACTORS MUST DETERMINE EXACT ROUTING OF NEW PIPING COORDINATED WITH ALL NEW AND EXISTING CONDITIONS
4. THE HOT WATER SYSTEM DESIGN COMPLIED WITH ASSE 1070 WHICH LIMITS THE HOT WATER SUPPLY TEMPERATURE TO 120°F.
5. ALL PIPE, PIPE FITTINGS, TRAPS, FIXTURES, MATERIAL AND DEVICES USEDIN THE PLUMBING SYSTEM SHALL BE LISTED OR THIRD PART CERTIFIED BY AN APPROVED LISTING AGENCY AND SHALL CONFORM TO APPLICABLE RECOGNIZED STANDARDS REFERENCED IN THE OHIO PLUMBING CODE.
6. ALL TENANT WASTE LINES SHOULD BE NEW AND CONNECT TO THE BASE BUILDING SANITARY WASTE RISER, CONTRACTOR SHALL NOT REUSE ANY EXISTING HORIZONTAL WASTE LINES.
7. EACH PLUMBING VENT SHALL TERMINATE NOT LESS THAN 10 FEET OR AT LEAST 3 FEET ABOVE ANY WINDOW, DOOR, OPENING OR AIR INTAKES.

PLUMBING KEY NOTES

1. NEW ELECTRIC WATER HEATER, 3 KW, 12 GALLON CAPACITY. PROVIDE ¾" WATER CONNECTIONS TO HEATER. PROVIDE DRAIN PAN PIPED TO ADJACENT FLOOR DRAIN. PROVIDE THERMOSTATIC MIXING VALVE. PROVIDE AMTROL MODEL # ST-5C EXPANSION TANK.
2. INSTALL NEW WATER CLOSET. PROVIDE ¾" CW CONNECTION WITH WATER HAMMER ARRESTOR. BOTTOM DISCHARGE TOILET CONNECT 4" SANITARY PIPING.
3. INSTALL NEW LAVATORY. PROVIDE ½" CW & HW CONNECTIONS AND 2" SANITARY PIPING. PROVIDE 1 ½" VENT AND LOCAL THERMOSTATIC MIXING VALVE WITH NO LEAD SET AT 105F.

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PLUMBING
FIRST FLOOR PLAN

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

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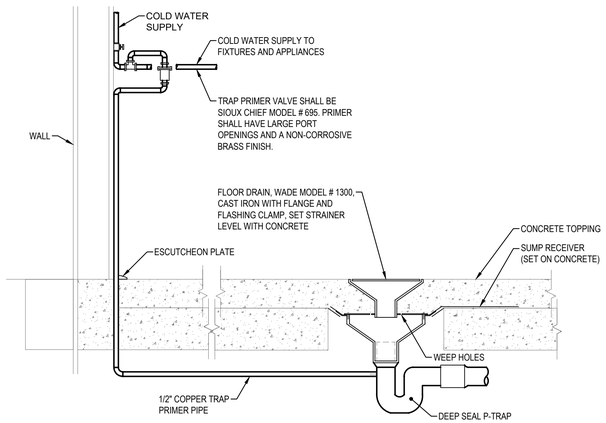

FLOOR DRAIN TRAP PRIMER DETAIL

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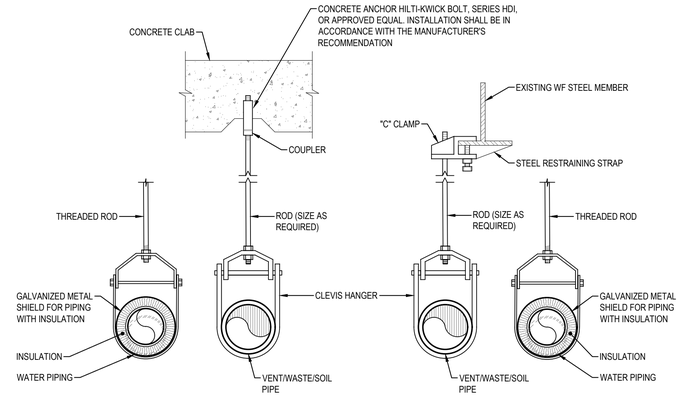

NOTES:

1. CLEVIS HANGERS REQUIRED ON PIPING LARGER THAN 1"

TYPICAL HANGER DETAILS

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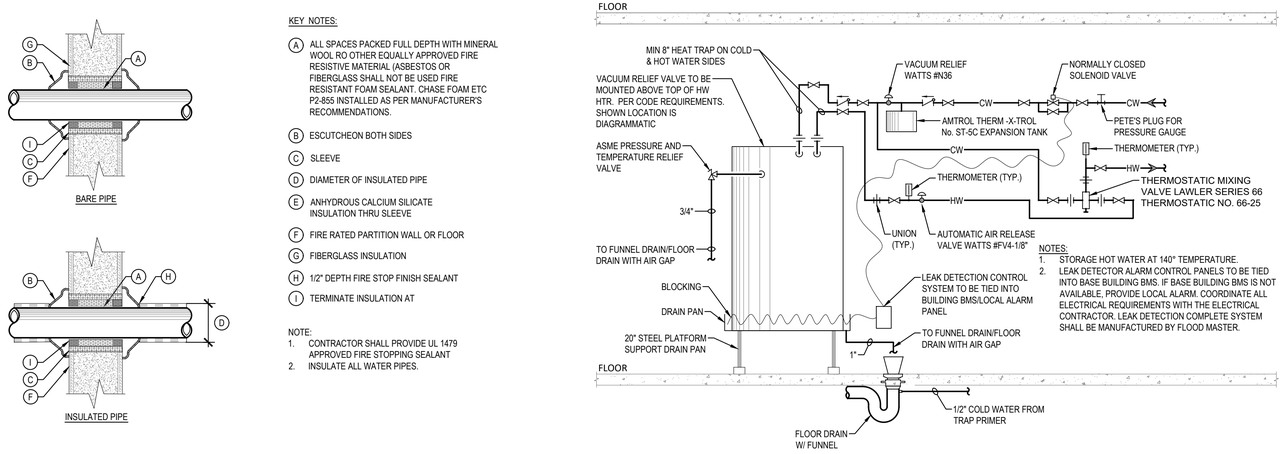

KEY NOTES:

- (A) ALL SPACES PACKED FULL DEPTH WITH MINERAL WOOL RO OTHER EQUALLY APPROVED FIRE RESISTIVE MATERIAL (ASBESTOS OR FIBERGLASS SHALL NOT BE USED FIRE RESISTANT FOAM SEALANT. CHASE FOAM ETC P2-855 INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS.
- (B) ESCUTCHEON BOTH SIDES
- (C) SLEEVE
- (D) DIAMETER OF INSULATED PIPE
- (E) ANHYDROUS CALCIUM SILICATE INSULATION THRU SLEEVE
- (F) FIRE RATED PARTITION WALL OR FLOOR
- (G) FIBERGLASS INSULATION
- (H) 1/2" DEPTH FIRE STOP FINISH SEALANT
- (I) TERMINATE INSULATION AT

NOTE:

1. CONTRACTOR SHALL PROVIDE UL 1479 APPROVED FIRE STOPPING SEALANT
2. INSULATE ALL WATER PIPES.

PIPING PIERCING FIRE RATED PARTITIONS, WALLS AND FLOORS DETAILS

NOT TO SCALE

NOTES:

1. STORAGE HOT WATER AT 140° TEMPERATURE.
2. LEAK DETECTOR ALARM CONTROL PANELS TO BE TIED INTO BASE BUILDING BMS. IF BASE BUILDING BMS IS NOT AVAILABLE, PROVIDE LOCAL ALARM. COORDINATE ALL ELECTRICAL REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR. LEAK DETECTION COMPLETE SYSTEM SHALL BE MANUFACTURED BY FLOOD MASTER.

NEW FLOOR MOUNTED ELECTRIC WATER HEATER INSTALLATION DETAIL

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ELECTRIC WATER HEATER SCHEDULE

ITEM	LOCATION	STORAGE CAPACITY (GAL)	RECOVERY RATE (GPH)	WORKING PRESSURE (PSIG)	TEMP. RISE (°F)	ELECTRICAL			MAXIMUM OPERATING WEIGHT (LBS)	MANUFACTURER/ MODEL	NOTES
						V/PH	KW	QUANTITY OF ELEMENTS/TYPE			
EWH	STORAGE	12	12	--	100	208/3	3	2/ROD	--	BRADFORD WHITE LE112T3-1	1,3,5,

ELECTRIC TANK WATER HEATER SCHEDULE NOTES:

1. PROVIDE WITH PRESSURE AND TEMPERATURE RELIEF VALVE, MAGNESIUM ANODE ROD AND BAKED ENAMEL FINISH OUTER JACKET.
2. PROVIDE DRIP PAN.
3. TANK SHALL BE ENCLOSED WITH FOAM INSULATION AND SHALL MEET OR EXCEED THE REQUIREMENTS OF ASHRAE STANDARDS FOR ENERGY DEFICIENCIES.
4. PROVIDE EXPANSION TANK. AMTROL ST-5 OR SIMILAR.
5. PROVIDE LEAK DETECTION.

PIPE MATERIAL SCHEDULE

SERVICE	PIPE	REMARKS
DOMESTIC WATER SYSTEM	HARD DRAWN COPPER TUBING, ASTM B88	TYPE K FOR UNDERGROUND USE
DOMESTIC COLD WATER SYSTEM	SEAMLESS COPPER TUBING, TYPE L HARD DRAWN, ASTM B88	ABOVE FLOOR USE
SOIL, WASTE AND VENT	COPPER DWV PIPE WITH SOLDERED FITTINGS	ABOVE GROUND (EXPOSED)
SOIL, WASTE AND VENT	PVC PLASTIC DWV PIPES AND FITINGS	ABOVE FLOOR USE (CONCEALED). BELOW GROUND

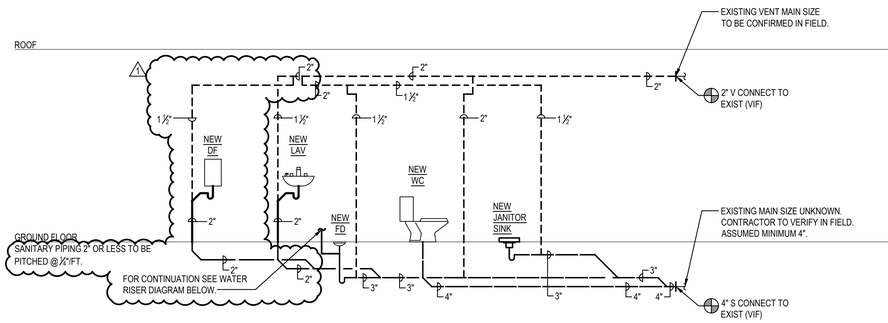
1. NOT ALL PIPING LISTED WITHIN THIS SCHEDULE WILL BE UTILIZED ON THIS PROJECT.

MINIMUM PIPE INSULATION THICKNESS SCHEDULE (IN INCHES)

FLUID OPERATING TEMPERATURE RANGE AND USAGE (F°)	TABLE C403.2.10: MINIMUM PIPE INSULATION THICKNESS (IN INCHES) a,c							
	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)					
	CONDUCTIVITY BTU IN/(h x ft² F°)	MEAN RATING TEMPERATURE, °F	<1	1 TO < 1 1/2"	1 1/2" TO < 4	4 TO < 8	≥ 8	SELECTED ITEM
>350	0.32 - 0.34	250	4.5	5.0	5.0	5.0	5.0	
251 - 350	0.29 - 0.32	200	3.0	4.0	4.5	4.5	4.5	
201 - 250	0.27 - 0.30	150	2.5	2.5	2.5	3.0	3.0	
141 - 200	0.25 - 0.29	125	1.5	1.5	2.0	2.0	2.0	
105 - 140	0.21 - 0.28	100	1.0	1.0	1.5	1.5	1.5	
40 - 60	0.21 - 0.27	75	0.5	0.5	1.0	1.0	1.0	
< 40	0.20 - 0.26	50	0.5	1.0	1.0	1.0	1.5	

MINIMUM PIPE INSULATION THICKNESS SCHEDULE (IN INCHES) NOTES:

1. FOR PIPING SMALLER THAN 1 1/2" INCHES AND LOCATED IN PARTITIONS WITHIN CONDITIONED SPACES, REDUCTION OF THESE THICKNESSES BY 1" SHALL BE PERMITTED (BEFORE THICKNESS ADJUSTMENT REQUIRED IN FOOTNOTE B) BUT NOT TO THICKNESS LESS THAN 1 INCH.
2. FOR INSULATION OUTSIDE THE STATED CONDUCTIVITY RANGE, THE MINIMUM THICKNESS (T) SHALL BE DETERMINED.



SANITARY AND VENT RISER DIAGRAM

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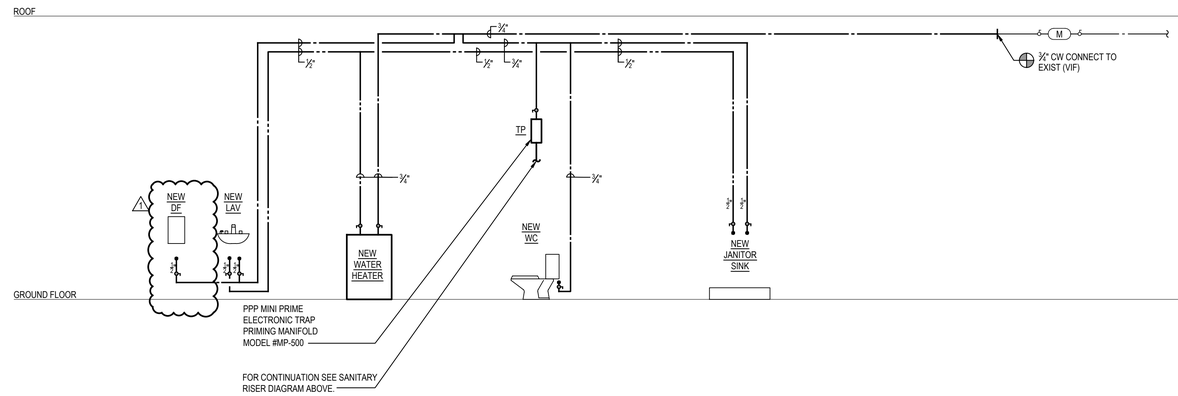

DOMESTIC WATER RISER DIAGRAM

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As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
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REGISTERED PROFESSIONAL ENGINEER

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ELECTRICAL LEGEND - RISER

PL-XXX	PANELBOARD
DB-	DISTRIBUTION BOARD
	FUSED DISCONNECT SWITCH U.O.N.
	FUSE
	DISCONNECT SWITCH
	DISCONNECT SWITCH
	DRAWOUT TYPE CIRCUIT BREAKER
E N L	AUTOMATIC TRANSFER SWITCH
M	METER AND CURRENT TRANSFORMER
	GROUND CONNECTION
	TRANSFORMER
T	FLOOR MOUNTED TRANSFORMER
R	GROUNDING RESISTER

ABBREVIATIONS

A	AMP/AMPERE
ACU	AIR CONDITIONING UNIT
ADA	AMERICANS WITH DISABILITIES ACT
AFF	ABOVE FURNISHED FLOOR
AHJ	AUTHORITIES HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AL	ALUMINUM
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO VISUAL
AWG	AMERICAN WIRE GAUGE
BDS	BATTERY DIAGNOSTIC SYSTEM
C, CDT	CONDUIT
CAC	COMPUTER ROOM GRADE AIR CONDITIONING UNIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CP	CONDENSATE PUMP
CT	COOLING TOWER
CU	COPPER
DISC	DISCONNECT
DWG	DRAWING
E	EXISTING TO REMAIN
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EHC	ELECTRIC HEAT COIL
ELEC	ELECTRICAL
EM	EMERGENCY
EPO	EMERGENCY POWER OFF
EWH	ELECTRIC HOT WATER HEATER
(ER)	EXISTING TO BE RELOCATED
FA	FIRE ALARM
FBO	FURNISHED BY OTHERS, INSTALLED AND WIRED BY THE ELECTRICAL CONTRACTOR
FCU	FAN COIL UNIT
FIBO	FURNISHED AND INSTALLED BY OTHERS, WIRED BY THE ELECTRICAL CONTRACTOR
FT	FEET
G, GND	GROUND
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER
HZ	HERTZ
IG	ISOLATED GROUND
IDF	INFORMATION DISTRIBUTION FRAME
IT	INFORMATION TECHNOLOGY
JB	JUNCTION BOX
KVA	KILOVOLT AMPERE
KCMIL	THOUSAND CIRCULAR MILS
LCP	LIGHTING CONTROL PANEL
LD	LEAK DETECTOR
LDP	LEAK DETECTION PANEL
LTG	LIGHTING
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MD	MOTORIZED DAMPER
MECH	MECHANICAL
MER	MECHANICAL EQUIPMENT ROOM
MLO	MAIN LUG ONLY
MS	MOTORIZED SHADE
MTD	MOUNTED
(N)	NEW
N	NEUTRAL
NE	NEW TO REPLACE EXISTING
NF	NON-FUSED
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NTS	NOT TO SCALE
P	POLE
PB	PULL BOX
PDU	POWER DISTRIBUTION UNIT
PH	PHASE
PS	PROJECTION SCREEN
PNL	PANEL
R	REMOVE EXISTING EQUIPMENT
RE	RELOCATED EXISTING (NEW LOCATION)
RECEPT	RECEPTACLE
RGB	REFERENCE GROUND BAR
RM	ROOM
SD	SMOKE DETECTOR
SRG	SIGNAL REFERENCE GROUND BAR
SPEC	SPECIFICATION
SW	SWITCH
SWBD	SWITCHBOARD
TEL	TELEPHONE
TF	TRANSFER FAN
TV	TELEVISION
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
UNF	UNFUSED
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLT/VOLTAGE
VA	VOLTAMPERE
VAV	VARIABLE AIR VOLUME
W	WIRE
WP	WEATHERPROOF
X	REMOVE

POWER LEGEND

A	WALL MOUNTED SPECIAL RECEPTACLE. LETTER DENOTES TYPE.
	WALL MOUNTED DUPLEX RECEPTACLE, 20A, 125V, 2P, 3W NEMA 5-20R.
IG	WALL MOUNTED DUPLEX RECEPTACLE, ISOLATED GROUND, 20A, 125V, 2P, 3W.
GFI	WALL MOUNTED DUPLEX RECEPTACLE, GROUND FAULT CIRCUIT INTERRUPTING, 20A, 125V, 2P, 3W.
	WALL MOUNTED DEDICATED DUPLEX RECEPTACLE, 20A, 125V, 2P, 3W NEMA CONFIGURATION 5-20R.
	WALL MOUNTED DOUBLE DUPLEX RECEPTACLE, 20A, 125V, 2P, 3W (GROUNDED) NEMA CONFIGURATION 5-20R, IN 2 GANG BOX.
	CLOCK RECEPTACLE
	ELECTRIFIED FURNITURE MOUNTED DUPLEX RECEPTACLE. FURNISHED BY FURNITURE VENDOR. INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.
	FLUSH FLOOR MOUNTED ELECTRICAL RECEPTACLE
	SLAB MOUNTED ELECTRICAL RECEPTACLE
	CABLE TRAY MOUNTED ELECTRICAL RECEPTACLE
	SURFACE FLOOR MOUNTED DUPLEX
	WALL MOUNTED DATA OUTLET
	WALL MOUNTED TELEPHONE OUTLET
	WALL MOUNTED TELEPHONE/DATA OUTLET
	CEILING MOUNTED TELECOMMUNICATION OUTLET
	FLUSH FLOOR MOUNTED TELECOMMUNICATION OUTLET
P	FLOOR MOUNTED POWER CIRCUITRY INFEED FOR ELECTRIFIED FURNITURE SYSTEM
C	FLOOR MOUNTED TELECOM INFEED FOR ELECTRIFIED FURNITURE SYSTEM
P	WALL MOUNTED POWER CIRCUITRY INFEED FOR ELECTRIFIED FURNITURE SYSTEM
C	WALL MOUNTED TELECOM INFEED FOR ELECTRIFIED FURNITURE SYSTEM
	FLOOR MOUNTED ELECTRICAL & COMBINATION TYPE POKE THRU FITTING
	ELECTRICAL/COMMUNICATION FLUSH MOUNTED RAISED FLOOR BOX
	ELECTRICAL FLUSH MOUNTED RAISED FLOOR BOX

LIGHTING LEGEND

a	20A, 120/277V LIGHTING CONTROL SWITCH ("a" DENOTES LIGHTING FIXTURES CONTROLLED). IF NO LETTER SHOWN SWITCH SHALL CONTROL ALL LIGHT FIXTURES IN THE ROOM OR SPACE.
K	20A, 277V KEY OPERATED SWITCH
La	LOW VOLTAGE LIGHTING SWITCH ("a" DENOTES RELAY ZONE CONTROL).
R/L	LOW VOLTAGE LIGHTING SWITCH ("a" DENOTES RELAY ZONE CONTROL).
TC	DIGITAL TIME SWITCH
WP	WEATHERPROOF SWITCH
3	3-WAY LIGHTING CONTROL SWITCH
4	4-WAY LIGHTING CONTROL SWITCH
	20A, 277V SWITCH WITH PILOT LIGHT
	MANUAL WALL DIMMER SWITCH
VS	WALL MOUNTED VACANCY SENSOR
VS	CEILING MOUNTED VACANCY SENSOR
OS	WALL MOUNTED OCCUPANCY SENSOR
OS	CEILING MOUNTED OCCUPANCY SENSOR
A a 2	DOWNLIGHT. THE FOLLOWING IS TYPICAL FOR ALL LIGHT FIXTURES: "A" - UPPER CASE LETTER DENOTES FIXTURE TYPE. "a" - LOWER CASE LETTER DENOTES SWITCH CONTROL. IF NO LETTER SHOWN SWITCH SHALL CONTROL ALL LIGHTS IN SPACE. "2" - NUMBER DENOTES CIRCUIT TO SWITCH FIXTURE IS CONNECTED.
A a 2	FLUORESCENT LIGHT FIXTURE "A" - UPPER CASE LETTER DENOTES FIXTURE TYPE. "a" - LOWER CASE LETTER DENOTES SWITCH CONTROL. IF NO LETTER SHOWN SWITCH SHALL CONTROL ALL LIGHTS IN SPACE. "2" - NUMBER DENOTES CIRCUIT TO SWITCH FIXTURE IS CONNECTED.
	CONTINUOUS LIGHTING STRIP FIXTURE
	CEILING MOUNTED WASH LIGHT FIXTURE
	CEILING MOUNTED EXIT SIGN WITH OUTLET BOX WITH OR WITHOUT DIRECTIONAL ARROWS. SHADED PORTION INDICATES ILLUMINATED FACE.
	WALL MOUNTED EXIT SIGN WITH OUTLET BOX WITH OR WITHOUT DIRECTIONAL ARROWS. SHADED PORTION INDICATES ILLUMINATED FACE.
	WALL MOUNTED BATTERY LIGHT FIXTURE
	EMERGENCY BATTERY UNIT WITH REMOTE LIGHTING FIXTURE (1 HEAD)
	EMERGENCY BATTERY UNIT WITH REMOTE LIGHTING FIXTURE (2 HEAD)

ELECTRICAL LEGEND

PNL-1	HOMERUN WITH PANEL DESIGNATION. NUMERAL WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSIST OF 2#12-S"C, UNLESS OTHERWISE NOTED.
	CONCEALED WIRING (IN WALL OR CEILING)
	EXPOSED WIRING
J	CEILING MOUNTED JUNCTION BOX
J	WALL MOUNTED JUNCTION BOX
J	SLAB MOUNTED JUNCTION BOX
	PULL/TAP BOX
	MOTOR
	FINAL EQUIPMENT CONNECTION
T	MANUAL MOTOR SWITCH WITH THERMAL OVERLOAD PROTECTION
	TOGGLE-TYPE DISCONNECT SWITCH WITH FLEXIBLE EQUIPMENT CONNECTION.
J	ELECTRICAL SYMBOL FOR MISCELLANEOUS CONNECTION: PS-PROJECTION SCREEN PJ-PROJECTION EQUIPMENT MS-MOTORIZED SHADE MD-MOTORIZED DRAPE SEC SECURITY EQUIPMENT FA-FIRE ALARM
	UNFUSED DISCONNECT SWITCH U.O.N.
	FUSED DISCONNECT SWITCH U.O.N.
	COMBINATION MOTOR STARTER/DISCONNECT SWITCH
J	ELECTRICAL SYMBOL FOR MECHANICAL EQUIPMENT CONNECTION. AHU-AIR HANDLING UNIT FVAV-FAN POWERED VAV BOX FCU-FAN COIL UNIT AC-AIR CONDITIONING UNIT VAV-VARIABLE AIR VOLUME BOX UH-UNIT HEATER EHC-ELECTRIC HEAT COIL EWC-ELECTRIC WATER COOLER MD-MOTORIZED DAMPER HWH-HOT WATER HEATER ECH-ELECTRIC CABINET HEATER CP-CONDENSATE PUMP
	NEW LIGHTING RELAY PANEL
	NEW SURFACE MOUNTED PANELBOARD
	NEW FLUSH MOUNTED PANELBOARD
	EXISTING LIGHTING RELAY PANEL
	EXISTING SURFACE MOUNTED PANELBOARD
	EXISTING FLUSH MOUNTED PANELBOARD
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION DEVICE
ATS	AUTOMATIC TRANSFER SWITCH
VFD	VARIABLE FREQUENCY DRIVE
T	TRANSFORMER

DRAWING NOTATIONS

#	DRAWING KEYNOTE TAG
A / B	SECTION DESIGNATION ON DRAWING WHERE SECTION IS CUT A-SECTION DESIGNATION B-DRAWING NO.
1	REVISION DELTA

DRAWING LIST

GF55
225 WEST 39TH STREET
NEW YORK, NY 10018
212 352 3099

DP CE
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ISSUE:
CONSTRUCTION DOCUMENTS
JANUARY 26, 2022
CLOUDED CHANGES
FEBRUARY 10, 2022
PER PLAN REVIEW COMMENTS
FEBRUARY 14, 2022

DRAWN BY:
RS

PROJECT ENGINEER:
RS

DRAWING:
ELECTRICAL SYMBOLS

SCALE:
NOT TO SCALE

SEAL
STATE OF MISSOURI
D.J. PENN
NUMBER E-28507
REGISTERED PROFESSIONAL ENGINEER
01/26/2022

DRAWING NO.
E-001

POWER NOTES

1. REFER TO ARCHITECTURAL DRAWINGS FOR THE EXACT LOCATIONS AND MOUNTING HEIGHTS OF ALL DEVICES (i.e. RECEPTACLES, DATA/TELEPHONE OUTLETS, SECURITY DEVICES, PANELS, SPEAKER/STROBE, ETC.
2. ELECTRICAL CONTRACTOR SHALL MAINTAIN THE CONTINUITY OF CIRCUITING IN AREAS WHICH ARE CONNECTED TO EXISTING ELECTRICAL DEVICES AND ELECTRICAL SERVICES STILL IN USE.
3. CIRCUIT NUMBERS ARE FOR CONTRACTOR'S REFERENCE ONLY AND MAY NOT NECESSARILY REFLECT THE EXACT CIRCUIT ARRANGEMENT IN PANELS. ELECTRICAL CONTRACTOR SHALL UTILIZE EXISTING SPARE CIRCUIT BREAKERS AND CIRCUIT BREAKERS MADE AVAILABLE FROM DEMOLITION FOR CIRCUITS INDICATED TO RESPECTIVE PANEL. CONTRACTOR SHALL ADJUST ACCORDINGLY IN THE FIELD TO BALANCE THE CIRCUITRY EVENLY ON ALL PHASES ON EACH PANEL. FINAL CIRCUIT NUMBERS AND ARRANGEMENT MUST BE INDICATED ON AS-BUILT DRAWINGS AS PER SPECIFICATIONS.
4. RECEPTACLES SHALL BE CIRCUITED IN ACCORDANCE WITH CIRCUIT NUMBER INDICATED ADJACENT TO EACH DEVICE. CIRCUITRY MAY BE SHOWN IN CERTAIN INSTANCES. PROVIDE ALL WIRING IN CONDUIT AND OUTLET BOXES REQUIRED FOR CIRCUITRY INCLUDING ALL PULLBOX AND JUNCTION BOX.
5. ALL RECEPTACLES SPECIFIED FOR PERSONAL COMPUTERS, LASER PRINTERS, AND SIMILAR TYPES OF EQUIPMENT SHALL BE PROVIDED WITH A SEPARATE NEUTRAL AND GROUND CONDUCTOR, OR AN OVERSIZED NEUTRAL CONDUCTOR. THIS IS TO COMPENSATE FOR HARMONIC CURRENTS. SHARED NEUTRAL CONDUCTORS FOR THESE HOMERUNS SHALL BE MINIMUM # 10 AWG. ALL MULTI-PURPOSE PHASE CIRCUITS SHALL BE PROVIDED WITH #10 NEUTRAL. PROVIDE TIE BARS ON ALL SINGLE POLE CIRCUIT BREAKERS SERVING MULTI-WIRE BRANCH CIRCUITS IN COMPLIANCE WITH NEC ARTICLE 210.4(B). EXISTING CIRCUIT BREAKERS REQUIRING TIE HANDLES SHALL BE REPLACED WITH NEW TRIP FREE HANDLE BREAKERS. NEW BREAKERS SHALL MATCH BASE BUILDING STANDARDS, SHALL BE FROM SAME MANUFACTURER OF EXISTING BREAKERS THAT ARE TO REMAIN IN PANEL, AND SHALL BE COMPATIBLE WITH PANELBOARD. CONTRACTOR SHALL COORDINATE REQUIREMENTS IN FIELD WITH EXISTING EQUIPMENT.
6. ALL BRANCH CIRCUITS SPECIFIED FOR BROADCAST EQUIPMENT, STUDIO EQUIPMENT, EDITING EQUIPMENT AND SIMILAR TYPES OF EQUIPMENT SHALL BE PROVIDED WITH A SEPARATE NEUTRAL AND GROUND CONDUCTOR.
7. PERMANENTLY LABEL ALL RECEPTACLES WITH PANEL AND CIRCUIT DESIGNATION. RECEPTACLES DESIGNATED FOR PC SHALL BE LABELED "PC". COORDINATE RECEPTACLE FACE COLOR WITH ARCHITECT AND ENGINEER FOR ALL PC RECEPTACLES.
8. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT RATING AND NEMA CONFIGURATION OF ALL SPECIAL RECEPTACLES. RECEPTACLES FOR ALL COPIER EQUIPMENT SHALL NOT BE INSTALLED UNTIL RECEIPT OF WRITTEN CONFIRMATION OF RECEPTACLE NEMA CONFIGURATION IS OBTAINED FROM OWNER, ARCHITECT OR VENDOR.
9. REFER TO TELECOMMUNICATIONS AND AUDIO VISUAL DRAWINGS FOR ALL EMPTY CONDUIT REQUIREMENTS. ALL CONDUITS ON OTHER CONSULTANT'S DRAWINGS ARE THE RESPONSIBILITY OF THIS CONTRACTOR. ELECTRICAL DOCUMENTS DO NOT INDICATE ALL CONDUIT REQUIREMENTS AND A CROSS CHECK OF OTHER TRADES MUST BE COORDINATED.
10. ALL DATA/COMMUNICATION CABLING SHALL BE PROVIDED AND INSTALLED BY CLIENT'S APPROVED COMMUNICATIONS VENDOR. COORDINATE ALL POWER BETWEEN. SPECIFIED EQUIPMENT (MONITORS, TERMINALS, PRINTERS, ETC.) WITH CLIENT'S COMMUNICATIONS VENDOR.
11. ALL WALL MOUNTED TELEPHONE OUTLETS SHALL BE PROVIDED WITH 1"EMPTY CONDUIT STUB-UP TO 6"ABOVE HUNG CEILING, UNLESS OTHERWISE NOTED.
12. ALL TELEPHONE/DATA CONDUIT STUB-UPS, WHERE GYPBOARD CEILINGS OCCUR, SHALL RUN INTO ACCESSIBLE CEILING AREAS.
13. CONTRACTOR SHALL PROVIDE AN EMPTY CONDUIT SYSTEM AND OUTLET BOXES FOR INSTALLATION OF SECURITY SYSTEM. ALL SECURITY DEVICES AND EQUIPMENT AND WIRING ARE BY OTHERS. PROVIDE JUNCTION BOX AND 1"EMPTY CONDUIT WITH DRAG WIRE STUB-UP TO ACCESSIBLE HUNG CEILING. COORDINATE WITH OWNER'S VENDOR FOR WIRING REQUIREMENTS, UNLESS OTHERWISE NOTED ON RESPECTIVE DESIGN DRAWINGS.
14. A/V RECEPTACLES, AS INDICATED, SHALL BE CONNECTED ON THE SAME PHASE. ALL A/V RECEPTACLES SHALL BE IDENTIFIED ON AND COORDINATED WITH CONSULTANT'S DRAWINGS AND SHALL BE ISOLATED GROUND TYPE. COORDINATE QUANTITY AND LOCATIONS WITH A/V CONSULTANT'S DRAWINGS.
15. ANY DISCREPANCIES SHALL BE DIRECTED TO ARCHITECT PRIOR TO BIDDING. WHERE DISCREPANCIES CANNOT BE RESOLVED PRIOR TO SUBMITTING BIDS, CONTRACTOR SHALL PROCEED BASED ON MORE COSTLY OR RESTRICTIVE INTERPRETATIONS.
16. MECHANICAL EQUIPMENT IS LOCATED ABOVE THE HUNG CEILING UNLESS OTHERWISE NOTED. EXACT LOCATION SHALL BE DETERMINED FROM MECHANICAL DRAWINGS.
17. DOOR MAGNETIC LOCKS AND ELECTRIC STRIKES SHALL INTERFACE WITH THE BUILDING CLASS "E" FIRE ALARM SYSTEM FOR RELEASE UPON ACTIVATION OF THE FIRE ALARM SYSTEM. COORDINATE AVAILABLE DRY CONTACT POINTS WITH THE BUILDING'S FIRE ALARM VENDOR.

LIGHTING FIXTURE SCOPE

REFER TO ARCHITECT AND LIGHTING CONSULTANT DRAWINGS FOR LIGHTING FIXTURE SCHEDULE AND SCOPE. REFER TO ELECTRICAL DRAWINGS FOR FIXTURE VOLTAGE AND EMERGENCY FIXTURES ONLY.

SECURITY SCOPE

CONTRACTOR SHALL PROVIDE INFRASTRUCTURE (EMPTY CONDUITS, BACKBOXES, ETC.) ONLY. REFER TO SECURITY CONSULTANT'S DOCUMENTS FOR ELECTRICAL CONTRACTOR SCOPE AND INCLUDE SAME IN BID. ELECTRICAL CONTRACTOR SHALL INCLUDE FULL COORDINATION AND MODIFICATION OF PLACEMENTS WITH AND AS REQUIRED BY SECURITY CONSULTANT REPRESENTATIVE PRIOR TO INSTALL INCLUSIVE OF SECURITY RISERS.

AUDIOVISUAL SCOPE

REFER TO A.V. CONSULTANT'S DOCUMENTS FOR ELECTRICAL CONTRACTOR SCOPE AND INCLUDE SAME IN BID. ELECTRICAL CONTRACTOR SHALL INCLUDE FULL COORDINATION AND MODIFICATION OF PLACEMENT WITH AND AS REQUIRED BY A.V. CONSULTANT REPRESENTATIVE PRIOR TO INSTALL.

TELECOMMUNICATION SCOPE

CONTRACTOR TO PROVIDE A COMMUNICATION CONDUIT AND FIELD COORDINATION OF THE CONDUIT INSTALLATION AND CONDUIT ROUTING.

LIGHTING NOTES

1. REFER TO ARCHITECTURAL DRAWINGS FOR THE EXACT LOCATION, QUANTITIES, TYPES, AND MOUNTING HEIGHTS OF LIGHT FIXTURES, EXIT SIGNS, SWITCHES, DIMMERS, ETC.
2. PRIOR TO ORDERING LIGHTING FIXTURES, COORDINATE WITH ARCHITECTURAL AND ENGINEERING INFORMATION, OBTAIN CLARIFICATION OF ANY QUESTIONS PRIOR TO PROCEEDING.
3. UNLESS OTHERWISE INDICATED ON FIXTURE SCHEDULE, ALL FLUORESCENT LIGHT FIXTURES SHALL HAVE ENERGY SAVING, HIGH POWER FACTOR ELECTRONIC BALLAST.
4. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL NEW LIGHT FIXTURES AS INDICATED AND INSTALL NEW SWITCHES, DIMMERS, ETC. FOR CONTROL OF LIGHT FIXTURES AS SHOWN ON ARCHITECTURAL DRAWINGS. VERIFY AND COORDINATE SWITCHING CONTROL WITH ARCHITECT/CLIENT REPRESENTATIVES.
5. LIGHTING FIXTURES SHALL BE CIRCUITED IN ACCORDANCE WITH CIRCUIT NUMBER INDICATED ADJACENT TO EACH LIGHTING FIXTURE. CIRCUITRY MAY BE SHOWN IN CERTAIN INSTANCES AND ONLY UNDER SPECIAL CIRCUMSTANCES. PROVIDE ALL CONDUITS, WIRES AND BOXES AS WELL AS CEILING OUTLETS AND FIXTURES WHIPS REQUIRED FOR CIRCUITRY INCLUDING WIRING FOR SWITCHING OF THE FIXTURES.
6. CIRCUIT NUMBERS ARE FOR CONTRACTOR'S REFERENCE ONLY AND MAY NOT NECESSARILY REFLECT THE EXACT CIRCUIT ARRANGEMENT IN PANELS. ELECTRICAL CONTRACTOR SHALL UTILIZE EXISTING SPARE CIRCUIT BREAKERS AND CIRCUIT BREAKERS MADE AVAILABLE FROM DEMOLITION FOR CIRCUITS INDICATED TO RESPECTIVE PANEL. CONTRACTOR SHALL ADJUST ACCORDINGLY IN THE FIELD TO BALANCE THE CIRCUITRY EVENLY ON ALL PHASES ON EACH PANEL. FINAL CIRCUIT NUMBERS AND ARRANGEMENT MUST BE INDICATED ON AS-BUILT DRAWINGS AS PER SPECIFICATIONS.
7. ALL LIGHTING FIXTURES UTILIZING ELECTRONIC BALLAST SHALL BE PROVIDED WITH A DEDICATED NEUTRAL OR AN OVERSIZED NEUTRAL WHEN SHARED. CIRCUIT FOR EMERGENCY LIGHTING AND EXIT LIGHT SHALL BE INSTALLED IN SEPARATE CONDUITS FROM NORMAL LIGHTING CIRCUITS. PROVIDE TIE BARS ON ALL SINGLE PHASE CIRCUIT BREAKERS SERVING MULTI-WIRE BRANCH CIRCUITS IN COMPLIANCE WITH NEC ARTICLE 210.4(B). EXISTING CIRCUIT BREAKERS REQUIRING HANDLES SHALL BE REPLACED WITH NEW TRIP FREE HANDLE BREAKERS. NEW BREAKERS SHALL MATCH BASE BUILDING STANDARDS, SHALL BE FROM SAME MANUFACTURER OF EXISTING BREAKERS THAT ARE TO REMAIN IN PANEL, AND SHALL BE COMPATIBLE WITH PANELBOARD. CONTRACTOR SHALL COORDINATE REQUIREMENTS IN FIELD WITH EXISTING EQUIPMENT.
8. ALL LIGHTING BRANCH CIRCUITS SERVING DIMMABLE FIXTURES SHALL HAVE SEPARATE NEUTRAL CONDUCTORS.
9. CONTRACTOR TO MAINTAIN THE CONTINUITY OF EXISTING SERVICES AND SYSTEMS IN THE CORE AREAS OF THE FLOOR THAT ARE TO REMAIN. COORDINATE EXISTING WIRE AND CIRCUITING WITH NEW PANELS AND SCHEDULES.
10. SEPARATELY MOUNTED OUTLET BOXES AND FLEXIBLE CONDUIT PIGTAIL CONNECTIONS SHALL BE PROVIDED FOR LIGHTING FIXTURES RECESSED IN HUNG CEILINGS. IN ACCESSIBLE TILE HUNG CEILING AREAS, A SINGLE OUTLET BOX MAY SERVE UP TO A MAXIMUM OF FOUR (4) LIGHTING FIXTURES USING FLEXIBLE CONDUIT PIGTAIL CONNECTIONS WITH A MAXIMUM LENGTH OF 6'-0".
11. PROVIDE AN OUTLET BOX FOR A MINIMUM OF TWO ADJACENT LIGHT FIXTURES. FLEXIBLE CONDUIT FROM OUTLET BOX TO FIXTURES SHALL NOT EXCEED 6'-0" IN LENGTH.
12. ALL JUNCTION OR OUTLET BOXES SHALL BE INSTALLED SO AS TO ALLOW ACCESS TO COVER. PROVIDE TO THE ARCHITECT APPROVED ACCESS DOORS OR PLATES AS REQUIRED IN AREAS WHERE UNOBSTRUCTED ACCESS TO BOX OR OUTLET IN NOT POSSIBLE.
13. LIGHTING CONTROLS SHALL COMPLY WITH THE RELEVANT ENERGY CONSERVATION CODE, REQUIRING VACANCY SENSOR CONTROLS FOR ALL CONFERENCE/MEETING ROOMS, EMPLOYEE LUNCH/BREAK ROOMS, COPY/PRINT ROOMS, STORAGE ROOMS, PRIVATE OFFICES, AND ALL OTHER SPACES 300 SQUARE FEET OR LESS ENCLOSED BY FLOOR-TO-CEILING HEIGHT PARTITIONS.
14. WHERE MULTIPLE SWITCHES ARE GROUPED TOGETHER AT ONE LOCATION, THEY SHALL BE MOUNTED IN A SINGLE OUTLET BOX WITH A COMMON FACEPLATE. BUTTED OUTLET BOXES AND SWITCHPLATES ARE NOT PERMITTED. PROVIDE DIVIDER FOR SEPARATION OF SERVICE.
15. NEW EXIT SIGNS SHALL BE CONNECTED TO RESPECTIVE EXIT SIGN CIRCUIT SERVING THESE AREAS IF APPROVED BY BUILDING OWNERSHIP & MANAGEMENT. CONTRACTOR TO COORDINATE AND VERIFY CIRCUIT IN FIELD.
16. EXIT LIGHT FIXTURES SHALL HAVE FACTORY DIE CUT DIRECTIONAL ARROWS AS INDICATED ON PLANS. ALL EXIT SIGNS SHALL BE PROVIDED WITH EMERGENCY BATTERY PACKS.
17. LIGHTING FIXTURES DESIGNATED WITH "EM" OR SHADED SHALL BE INSTALLED WITH AN EMERGENCY PACK UNIT ENABLING FIXTURE TO CONVERT TO EMERGENCY SOURCE WHEN LOSS OF NORMAL POWER OCCURS. FURNISH UNSWITCHED PHASED LEG TO BATTERY PACK. ON/OFF SWITCHING SHALL NOT CAUSE BATTERY PACK UNIT TO ENERGIZE. FIXTURES DESIGNATED WITH "EM/NL" (EMERGENCY/NIGHT LIGHT) SHALL BE UNSWITCHED. PROVIDE LOCKING TYPE CIRCUIT BREAKER IN PANELBOARD.

ELECTRICAL PRE-DEMOLITION NOTES

1. PRIOR TO COMMENCEMENT OF DEMOLITION WORK, CONTRACTOR SHALL UNDERTAKE ELECTRICAL SURVEY TO TRACE ALL EXISTING BRANCH CIRCUITS/FEEDERS. CONTRACTOR SHALL CLEARLY IDENTIFY ALL CIRCUITS/FEEDERS THAT SERVE EXISTING TO REMAIN DEVICES/EQUIPMENT/FIXTURES/ETC. WITHIN OR OUTSIDE THE DEMISED AREA TO BE DEMOLISHED. THIS SHALL INCLUDE CIRCUITS THAT PASS THROUGH AND/OR FEED THE SPACE AND EXTEND OUTSIDE THE DEMISED AREA ON AND OFF THE FLOOR (E.G. ABOVE AND BELOW).
2. EXISTING TO REMAIN CIRCUITS WILL BE CLEARLY IDENTIFIED AT THE RESPECTIVE ELECTRICAL PANEL AS "TO REMAIN" WITH THE LOAD SERVED INDICATED. A SCHEDULE FOR EACH PANEL THE ACTIVE LOADS FEEDING OUTSIDE THE DEMISED PREMISES SHALL BE FURNISHED TO CLIENT/ENGINEER PRIOR TO COMMENCEMENT OF DEMOLITION (SEE NOTE 5).
3. THE ASSOCIATED CONDUIT FOR EXISTING TO REMAIN ACTIVE CIRCUITS SHALL BE CLEARLY IDENTIFIED IN THE ELECTRICAL CLOSET AND FOR A MINIMUM OF 24" OUTSIDE THE ELECTRICAL CLOSET PRIOR TO ANY DEMOLITION WORK. AFTER CEILING DEMO, THE ENTIRE LENGTH OF THE CIRCUIT CONDUIT SHALL BE CLEARLY MARKED.
4. THE METHOD OF INDICATING EXISTING TO REMAIN DEVICES/CIRCUITS/WIREWAYS, ETC. SHALL BE AGREED BETWEEN LL/CLIENT REPRESENTATIVE/EC AND DEMOLITION CONTRACTOR, PRIOR TO COMMENCEMENT OF DEMO.
5. THE EC SHALL BE RESPONSIBLE TO INDICATE ALL CIRCUITS TO REMAIN ON AN EXISTING FLOOR PLAN, (PROVIDED BY ARCHITECT/CLIENT REP). THE MARK-UP SHALL INDICATE POINT OF ORIGIN (EG. PANEL), CONDUIT ROUTE AND LOAD SERVED.

DEMOLITION NOTES

1. PRIOR TO SUBMISSION OF THE BID, THIS CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS TO DETERMINE THEIR IMPACT ON THE EXECUTION OF WORK IN THIS CONTRACT.
2. THE DEMOLITION WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, ANY AND ALL MATERIALS, CONNECTIONS, EXTENSIONS, CUTTING, REPAIRING AND OTHER ELECTRICAL WORK, TEMPORARY OR PERMANENT, THAT MAY BE REQUIRED TO MAINTAIN SERVICE THROUGH THE COMPLETION OF THIS PROJECT. COORDINATE THE EXTENT OF THE DEMOLITION WORK WITH THE ARCHITECT.
3. EXISTING FEEDERS AND BRANCH CIRCUITING PASSING THROUGH THE AREA OF DEMOLITION AND SERVING OCCUPIED ADJACENT AREAS AND/OR INTERFERING WITH THE NEW WORK SHALL BE TRACED AND RELOCATED BY THIS CONTRACTOR. ALL NECESSARY SHUTDOWNS REQUIRED TO PERFORM THIS WORK SHALL BE COORDINATED WITH THE BUILDING MANAGEMENT.
4. WIRING, CONDUITS, AND SUPPORTS FOR FEEDERS AND BRANCH CIRCUITING SHALL BE REMOVED TO THEIR PANEL OF ORIGIN.
5. MAINTAIN THE CONTINUITY OF EXISTING BRANCH CIRCUITING SERVING REMAINING ELECTRICAL DEVICES OUTSIDE THE SCOPE OF WORK WHERE PORTIONS OF EXISTING BRANCH CIRCUITING ARE BEING REMOVED.
6. IDENTIFY AS SPARE ANY PROTECTIVE DEVICE IN EXISTING PANELS THAT ARE MADE SPARE DUE TO DEMOLITION. PANEL DIRECTORIES SHALL BE UPDATED ACCORDINGLY.
7. UNLESS OTHERWISE NOTED, REMOVE ALL POWER AND COMMUNICATIONS OUTLETS AND DEVICES COMPLETE WITH WIRING, RACEWAYS AND BACK BOXES IN AREA OF DEMOLITION.
8. ALL LIGHTING FIXTURES, SWITCHES AND ASSOCIATED WIRING AND CONDUIT IN AREA OF DEMOLITION SHALL BE REMOVED UNLESS OTHERWISE NOTED.
9. EXISTING BASE BUILDING FIRE ALARM SYSTEM DEVICES ARE TO REMAIN AND KEPT OPERATIONAL DURING ALL STAGES OF THE PROJECT. ALL DEVICES SHALL BE PROPERLY PROTECTED.

GENERAL NOTES

1. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC. SIZES AND LOCATION OF EQUIPMENT AND WIRING ARE SHOWN TO SCALE WHERE POSSIBLE, BUT MAY BE DISTORTED FOR CLARITY ON THE DRAWINGS. FINAL LOCATION OF OUTLETS AND EQUIPMENT SHALL BE AS APPROVED BY THE ARCHITECT. IT IS NOT WITHIN THE SCOPE OF THE DRAWINGS TO SHOW ALL NECESSARY BENDS, OFFSET, PULL BOXES AND OBSTRUCTIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL HIS WORK TO CONFORM TO THE STRUCTURE, PRESERVE HEADROOM AND KEEP OPENINGS AND PASSAGEWAYS CLEAN.
2. REFER TO SPECIFICATIONS COVERING HVAC, PLUMBING AND FIRE PROTECTION WORK FOR POSSIBLE ADDITIONAL WORK TO BE PERFORMED UNDER THE ELECTRICAL CONTRACT.
3. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING THE FULL SET OF BID DOCUMENTS TO BE AWARE OF THE TOTAL SCOPE PRIOR TO SUBMITTING BID.
4. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WORK WITH HVAC, PLUMBING AND OTHER TRADES FOR EXACT LOCATION OF ALL CONTROL DEVICES. LOCATION AS SHOWN ON THE ELECTRICAL PLANS ARE APPROXIMATE. ALL FINAL CONNECTIONS TO MOTOR TERMINALS SHALL BE DONE WITH A MINIMUM 18" OF LIQUID TIGHT FLEXIBLE CONDUIT USING THE APPROPRIATE FITTINGS. PROVIDE EXTERIOR GROUND WIRE WRAPPED AROUND FLEXIBLE CONDUIT WHERE REQUIRED BY CODE.
5. ALL NOTATIONS OF "SCALE: ARE INTENDED AS APPROXIMATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE TO ASCERTAIN THE EXACT LOCATIONS OF ALL EQUIPMENT AND VERIFYING REQUIRED CLEARANCES.
6. THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL LABOR AND MATERIALS REQUIRED TO PRODUCE COMPLETE AND WORKING SYSTEMS. HE SHALL FURNISH AND INSTALL COMPLETE WIRING FOR LIGHTING, POWER, HVAC EQUIPMENT, ETC.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FIELD MEASUREMENTS AND VERIFICATION OF FIELD CONDITIONS PRIOR TO PERFORMING HIS WORK. ANY CHANGES IN WORK NECESSITATED BY FAILURE OF THIS CONTRACTOR TO COMPLY WITH THIS CONDITION SHALL BE UNDERTAKEN BY THIS CONTRACTOR AT HIS OWN EXPENSE.
8. ALL AREAS ABOVE PANELBOARDS SHALL BE FREE FROM WORK OF OTHER TRADES.
9. ALL WORKING CLEARANCES FOR PANELBOARDS AND OTHER ELECTRICAL EQUIPMENT SHALL COMPLY WITH THE NEC/NEW YORK CITY ELECTRIC CODE AND ASSOCIATED TABLES.
10. NUMERAL INDICATED ADJACENT TO LIGHT FIXTURES, RECEPTACLES, DEVICES AND EQUIPMENT INDICATES CIRCUIT NUMBER IN PANEL. PROVIDE WIRE AND CONDUIT TO INTERCONNECT THE AFOREMENTIONED, ASSOCIATED SWITCHES, AND CONTROL DEVICES WITH SAME CIRCUIT NUMBERS. ROUTE TO PANEL VIA CONDUIT HOMERUNS SHOWN.
11. ELECTRICAL CONTRACTOR SHALL PROVIDE UPDATED TYPEWRITTEN PANEL DIRECTORIES IN COMPLIANCE WITH NEC ARTICLE 408.4. THE IDENTIFICATION SHALL INCLUDE AN APPROVED DEGREE OF DETAIL THAT ALLOWS EACH CIRCUIT TO BE DISTINGUISHED FROM ALL OTHERS. CIRCUITS USED FOR THE SAME PURPOSE MUST BE IDENTIFIED BY THEIR LOCATION. UTILIZE ROOM NUMBERS, WORKSTATION NUMBERS, COLUMN GRID LINES, ETC. SUBMIT SCHEDULES TO ENGINEER FOR REVIEW PRIOR TO INSTALLATION
12. PROVIDE TIE BARS ON ALL SINGLE POLE CIRCUIT BREAKERS SERVING MULTI-WIRE BRANCH CIRCUITS IN COMPLIANCE WITH NEC ARTICLE 210.4 (B). EXISTING CIRCUIT BREAKERS REQUIRING TIE HANDLES SHALL BE REPLACED WITH NEW TRIP FREE HANDLE BREAKERS. NEW BREAKERS SHALL MATCH BASE BUILDING STANDARDS, SHALL BE FROM SAME MANUFACTURER OF EXISTING BREAKERS THAT ARE TO REMAIN IN PANEL, AND SHALL BE COMPATIBLE WITH PANELBOARD. CONTRACTOR SHALL COORDINATE REQUIREMENTS IN FIELD WITH EXISTING EQUIPMENT.
13. ARMORED CABLE SHALL NOT BE INSTALLED EXPOSED IN ELECTRIC CLOSETS, MECHANICAL ROOMS, TELEPHONE CLOSETS, ETC. EMT OR CONDUIT SHALL BE UTILIZED FROM ELECTRIC CLOSET TO FIRST RECEPTACLE OR LIGHT FIXTURES.
14. THE CONTRACTOR SHALL DO NECESSARY CUTTING, CHOPPING AND PATCHING FOR WORK UNDER THIS CONTRACT. ALL CHOPPING, ETC. SHALL BE PERFORMED AFTER HOURS AND COORDINATED WITH BUILDING MANAGEMENT.
15. THE ARCHITECT SHALL VERIFY MOUNTING HEIGHTS OF ALL DEVICES.
16. FINISHES OF ALL RECEPTACLES, SWITCHES, TELEPHONE OUTLETS, ETC. TO BE SELECTED BY ARCHITECT.
17. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF ALL RECEPTACLES, TELEPHONE OUTLETS, FLOOR BOXES, ETC. CONSTRUCTION DOCUMENTS SHALL NOT BE SCALED.
18. ALL RECEPTACLES AND SWITCHES IN OFFICES SHALL BE "DECORA/DESIGNER" STYLE.
19. COORDINATE LOCATION OF OUTLETS AND SWITCHES WITH THE FURNITURE AND EQUIPMENT LAYOUTS AND WITH OWNER'S REPRESENTATIVE.
20. VERTICALLY ALIGN ALL LIGHT SWITCHES, STROBE DEVICES AND THERMOSTATS IN ALL AREAS.
21. ALL DEVICES GANGED TOGETHER SHALL BE MOUNTED UNDER A SINGLE COVER PLATE.
22. ALL PANTRY RECEPTACLES SHALL BE GFI TYPE.
23. PROVIDE UNFUSED DISCONNECT SWITCHES FOR ALL MECHANICAL EQUIPMENT UNLESS OTHERWISE NOTED ON CONSTRUCTION DOCUMENTS OF HVAC SCHEDULES.
24. THE MINIMUM RATING OF DISCONNECT SWITCHES SHALL BE EQUAL TO OR GREATER THAN THE RATING OF THE PROTECTIVE DEVICE ON THE SUPPLY SIDE OF THE DISCONNECT SWITCH. MINIMUM DISCONNECT SWITCH SIZE IS 30 AMPERES.
25. WIRING IN ALL PLENUM HUNG CEILING INSTALLED WITHOUT CONDUIT OR EMT SHALL BE TEFLON JACKETED OR LISTED FOR INSTALLATION IN A PLENUM.
26. ALL CONTROL WIRING ASSOCIATED WITH MECHANICAL EQUIPMENT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR.
27. NO LOW VOLTAGE WIRING SHALL BE PERMITTED IN THE SAME RACEWAY AS POWER WIRING.
28. FURNISH AND INSTALL WIRING FOR EQUIPMENT FURNISHED BY OTHERS AS SHOWN ON ARCHITECTURAL, MECHANICAL, PLUMBING, AND/OR ELECTRICAL DRAWINGS. COORDINATE WITH OTHER TRADES FOR DETAILS OF INSTALLATION AND WIRING REQUIREMENTS.
29. PROVIDE FIRESTOPPING ON ALL NEW AND EXISTING PENETRATIONS THROUGH THE WALL AND FLOOR DUE TO DEMOLITION OR NEW CONSTRUCTION. THE FIRE RATING OF THE PENETRATION SEALING METHOD SHALL MATCH THE RATING OF THE WALL OR FLOOR. USE A UL LISTED SEALING METHOD WHICH IS ACCEPTABLE TO BUILDING MANAGEMENT.
30. HANGING OF ALL TRANSFORMERS SHALL INCLUDE SEISMIC BRACING.
31. BRANCH CIRCUIT HOMERUN CONDUCTORS SHALL BE INCREASED ONE SIZE TO COMPENSATE FOR VOLTAGE DROP WHEN 120V CIRCUITING EXCEEDS 100 FEET.
32. UPON COMPLETION OF ALL ELECTRICAL WORK, THE ELECTRICAL CONTRACTOR SHALL ADJUST AND TEST ALL CIRCUITS, RECEPTACLES, SWITCHES, LIGHTS, MOTORS AND ANY OTHER ELECTRICAL ITEMS INSTALLED. ANY DEFECTIVE ITEMS SHALL BE IMMEDIATELY REPAIRED OR REPLACED WITH NEW AND THAT PORTION OF THE SYSTEM RETESTED. ALL SUCH REMEDIAL WORK SHALL BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER.
33. COORDINATE WITH BUILDING MANAGER FOR ANY SERVICE INTERRUPTION OF EXISTING LIGHTING AND POWER PANELS AND GIVE NOTICE FIVE DAYS PRIOR TO ANY WORK.
34. EXISTING BASE BUILDING CORE DEVICES (LIGHTING, RECEPTACLES, ETC.) SHALL REMAIN ACTIVE. IF DEVICES HAVE BEEN DISCONNECTED BY DEMOLITION, DEVICES SHALL BE RECONNECTED AND RE-ENERGIZED UTILIZING SPARE CIRCUIT BREAKERS. ALL CORE DEVICES VISUAL TO TENANT SHALL BE REMOVED AND REPLACED WITH NEW DEVICES MATCHING PROJECT STANDARDS. (ENGINEER PROVIDE SPARE CIRCUIT BREAKERS IN PANELS FOR EXISTING DEVICES TO REMAIN)
35. PER NEC 2017 ARTICLE 210.8(B), ALL 125-VOLT, SINGLE-PHASE, 15- AND 20-AMP RECEPTACLES INSTALLED IN BATHROOMS, KITCHENS, ROOFTOPS, OUTDOORS, WITHIN 6 FEET OF SINKS, INDOOR WET LOCATIONS, ETC. SHALL HAVE GROUND-FAULT CIRCUIT-INTERRUPTER PROTECTION FOR PERSONNEL. REFER TO ARTICLE 210.8(B)(1) THROUGH (10).

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RELEASED FOR CONSTRUCTION
As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
02/23/2022

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EUROPEAN WAX CENTER

ISSUE:
CONSTRUCTION DOCUMENTS
JANUARY 26, 2022
CLOUDED CHANGES
FEBRUARY 10, 2022
PER PLAN REVIEW COMMENTS
FEBRUARY 14, 2022

DRAWN BY: RS

PROJECT ENGINEER: RS

DRAWING: ELECTRICAL NOTES

SCALE: NOT TO SCALE

SEAL

STATE OF MISSOURI
D.J. PENN
NUMBER E-28507
REGISTERED PROFESSIONAL ENGINEER
01/26/2022

DRAWING NO.

E-002

RELEASED FOR CONSTRUCTION
As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
02/23/2022

ELECTRICAL SPECIFICATIONS

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. ALL WORK SHALL COMPLY WITH REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE, BUILDING CODE, BUILDING MANAGEMENT AND ALL AUTHORITIES HAVING JURISDICTION (AHJ). APPLICABLE NATIONAL, STATE AND LOCAL CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK SHALL BE INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS.

B. IF A CONFLICT OCCURS IN THE SPECIFICATIONS AND/OR ON THE DRAWINGS, THE MORE STRINGENT SITUATION SHALL APPLY.

C. ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF THIS WORK. FINAL ACCEPTANCE SHALL BE DEFINED AS THE TIME AT WHICH THE ELECTRICAL WORK IS TAKEN OVER AND ACCEPTED BY THE OWNER. ENGAGE THE SERVICES OF VARIOUS MANUFACTURERS SUPPLYING THE EQUIPMENT FOR THE PROPER STARTUP, OPERATION AND TRAINING OF ALL SYSTEMS INSTALLED. INSTRUCT THE OWNERS PERSONNEL IN THE PROPER OPERATION AND SERVICING OF THE EQUIPMENT.

D. ELECTRICAL CONTRACTOR SHALL VISIT AND EXAMINE CAREFULLY THE EXISTING AREAS AFFECTED BY THIS WORK TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND WITH DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THE WORK. CONTRACTOR SHALL PERFORM THIS, PRIOR TO SUBMITTING HIS PROPOSAL. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN UNDERTAKEN.

E. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF WORK. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF ALL DEVICES INCLUDING DIMENSIONS AND ELEVATIONS. WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID CONFLICTS.

F. ALTHOUGH NOT SPECIFICALLY MENTIONED HEREIN OR SHOWN ON THE DRAWINGS, ANY EQUIPMENT, MATERIALS, ACCESSORIES, OR LABOR REQUIRED FOR PROPER AND COMPLETE INSTALLATION OF THE ELECTRICAL WORK SHALL BE FURNISHED AND INSTALLED AS PART OF THE ORIGINAL BID

G. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE LATEST COPY OF THE BUILDING RULES AND REGULATIONS TO DETERMINE THE EXTENT OF PREMIUM TIME WORK REQUIRED. BASE BUILDING SYSTEM INTERRUPTIONS ARE TO BE PERFORMED OUTSIDE OF NORMAL BUSINESS HOURS. COORDINATE WITH BUILDING OWNER FOR ANY SERVICE INTERRUPTION OF EXISTING SYSTEMS AND GIVE NOTICE AS REQUIRED BY BUILDING RULES AND REGULATIONS.

H. ANY DAMAGE TO EXISTING PARTITIONS, FLOORS, CEILINGS OR ANY PART OF THE BUILDING OR EQUIPMENT HOUSED THEREIN CAUSED BY THE WORK OF THE CONTRACTOR SHALL BE REPAIRED AT NO ADDITIONAL EXPENSE TO THE OWNER.

I. ALL NEW MATERIALS REQUIRED SHALL CONF0RM WITH THE STANDARDS OF THE UNDERWRITERS LABORATORIES, INC. (UL) IN EVERY CASE WHERE SUCH A STANDARD EXISTS.

J. DURING THE PROJECT DURATION, THE BUILDING MANAGEMENT OFFICE AND ITS DESIGNATED REPRESENTATIVE SHALL BE ABLE TO INSPECT THE WORK IN PROGRESS. ANY WORK WHICH THE BUILDING MANAGEMENT DEEMS UNACCEPTABLE SHALL BE REMOVED AND REPLACED AT THE EXPENSE OF CONTRACTOR/TENANT.

K. ALL EQUIPMENT INSTALLED OR CONNECTED INTO THE BUILDING RISERS, SYSTEMS AND INFRASTRUCTURE SHALL BE APPROVED IN ADVANCE BY THE BUILDING PRIOR TO INSTALLATION.

1.02 SCOPE OF WORK

A. PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY FOR COMPLETE, SAFE INSTALLATION OF ALL ELECTRICAL WORK. THE SCOPE OF WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:

   1. INSTALLATION OF LIGHTING FIXTURES AND LAMPS INCLUDING EXIT AND EMERGENCY LIGHTING.
   2. INSTALLATION OF WALL SWITCHES, RECEPTACLES, VOICE/DATA, OUTLETS, ETC.
   3. INSTALLATION OF NEW RACEWAY AND CONDUCTORS FOR LIGHTING AND POWER.
   4. ADDITION OR MODIFICATION OF EXISTING ELECTRICAL DISTRIBUTION EQUIPMENT.
   5. INSTALLATION OF MECHANICAL EQUIPMENT FEEDERS AND FINAL CONNECTIONS TO MECHANICAL EQUIPMENT.
   6. GROUNDING OF ALL EQUIPMENT AS REQUIRED BY CODE AND AS SPECIFIED.
   7. MODIFICATION OF EXISTING FIRE ALARM SYSTEM.
   8. TEMPORARY LIGHTING AND POWER DURING CONSTRUCTION.
   9. CUTTING, CHANNELING, CORING, AND CHASING REQUIRED TO ACCOMMODATE ELECTRIC INSTALLATION AND ROUGH PATCHING.
   10. DEMOLITION AND REMOVAL OF ELECTRICAL EQUIPMENT AS REQUIRED INCLUDING ALL CONDUCTORS AND CONDUIT BACK TO THEIR SOURCE.
   11. MAINTENANCE AND PROPER OPERATION OF EXISTING BASE BUILDING SYSTEMS WITHIN THE CONTRACT AREA IN ACCORDANCE WITH THE REQUIREMENTS OF BUILDING MANAGEMENT.
   12. PROVISION OF IT INFRASTRUCTURE AS DETAILED.
   13. PROVISION OF SECURITY SYSTEM INFRASTRUCTURE AS DETAILED.
   14. PROVISION OF AUDIO VISUAL SYSTEM INFRASTRUCTURE AS DETAILED.
   15. RECEIPT AND INSTALLATION OF DEVICES, EQUIPMENT, SYSTEMS, SUPPLIED BY OTHERS AS DETAILED.
   16. COORDINATION WITH OTHER TRADES.
   17. COMMISSIONING
   18. GROUND TESTING RESULTS.
   19. SHORT-CIRCUIT, COORDINATION AND ARC-FLASH HAZARD ANALYSIS.
   20. INSTALLATION OF LIGHTNING PROTECTION SYSTEM.
   21. INSTALLATION OF POWER MONITORING SYSTEM.

1.03 SUBSTITUTIONS

A. NO SUBSTITUTE MATERIAL OR MANUFACTURER OF EQUIPMENT SHALL BE PERMITTED WITHOUT A FORMAL WRITTEN SUBMITTAL TO THE ENGINEER WHICH INCLUDES ALL DIMENSIONAL, PERFORMANCE AND MATERIAL SPECIFICATIONS. ANY CHANGES IN LAYOUT, MECHANICAL CHARACTERISTICS, STRUCTURAL REQUIREMENTS, OR DESIGN DUE TO THE USE OF A SUBSTITUTION SHALL BE SUBMITTED TO THE ENGINEER AS PART OF THIS PROPOSAL. THE CONTRACTOR TAKES FULL RESPONSIBILITY FOR THE SUBSTITUTION AND ALL CHANGES RESULTING FROM SUBSTITUTION. ALL ITEMS SHALL BE SUBMITTED FOR REVIEW IN CONJUNCTION WITH THE SUBMITTAL OF THE ALTERNATE. ANY SUBSTITUTION MUST BE SUBMITTED WITH AN EXPLANATION WHY SUBSTITUTION IS BEING UTILIZED. IF THE SUBSTITUTED ITEM DEVIATES FROM THE SPECIFIED ITEM, THOSE DEVIATIONS ARE TO BE IDENTIFIED ON A LINE BY LINE BASIS. IF THE SUBSTITUTION IS BEING UTILIZED FOR FINANCIAL REASONS, THE ASSOCIATED CREDIT MUST BE SIMULTANEOUSLY SUBMITTED.

B. ALL SUBSTITUTED EQUIPMENT SHALL CONFORM TO SPACE REQUIREMENTS AND PERFORMANCE REQUIREMENTS SHOWN ON CONTRACT DOCUMENTS.

C. CONTRACTOR SHALL SUBMIT BID BASED ON SPECIFIED ITEMS AND SHALL SUPPLY AS AN ALTERNATE PRICE ANY SUBSTITUTIONS.

D. ALL EQUIPMENT SHALL BE APPROVED FOR USE IN THE STATE OF NEW JERSEY.

1.04 SHOP DRAWINGS

A. SHOP DRAWINGS SUBMISSION SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:

   1. DISTRIBUTION EQUIPMENT (PANELS, SWITCHES, ETC.).
   2. OVERCURRENT PROTECTIVE DEVICES (FUSES AND BREAKERS).
   3. LIGHTING FIXTURES.
   4. WIRING DEVICES.
   5. FIRE ALARM EQUIPMENT, WIRING SCHEMATIC AND SEQUENCE OF OPERATION.
   6. COORDINATION DRAWINGS OF ELECTRIC CLOSET LAYOUTS INCLUDING ELEVATIONS AND MOUNTING DETAILS OF PANELBOARDS, TRANSFORMERS, ETC.
   7. FLOOR BOXES/ POKE THRU DEVICES.
   8. GROUNDING EQUIPMENT/DEVICES.
   9. CONDUIT, RACEWAYS, WIREWAYS
   10. WIRING
   11. LIGHTING CONTROL SYSTEMS
   12. TESTING AND COMMISSIONING SCHEDULE.
   13. SCALED FIELD DRAWINGS.
   14. TRANSFORMERS.
   15. UPS SYSTEMS.
   16. GENERATORS.
   17. AUTOMATIC TRANSFER SWITCHES.
   18. SHORT-CIRCUIT COORDINATION, ARC-FLASH HAZARD ANALYSIS.
   19. SURGE PROTECTION DEVICES.

B. PROVIDE A MINIMUM OF THREE (3) COPIES OF 8-1/2"x 11" SUBMISSIONS AND TWO (2) SETS OF ALL DRAWINGS.

C. CHANGES MADE TO SHOP DRAWINGS BY THE CONSULTANT WILL NOT AFFECT THE CONTRACT PRICE.

1.05 QUALITY ASSURANCE

A. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY A TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, AND MARKED FOR INTENDED USE.

B. COMPLY WITH NFPA 70

1.06 COORDINATION

A. COORDINATE CHASES, SLOTS, INSERTS, SLEEVES, AND OPENINGS WITH GENERAL CONSTRUCTION WORK AND ARRANGE IN BUILDING STRUCTURE DURING PROGRESS OF CONSTRUCTION TO FACILITATE THE ELECTRICAL INSTALLATIONS THAT FOLLOW.

   1. SET INSERTS AND SLEEVES IN POURED-IN-PLACE CONCRETE, MASONRY WORK, AND OTHER STRUCTURAL COMPONENTS AS THEY ARE CONSTRUCTED.

B. SEQUENCE, COORDINATE, AND INTEGRATE INSTALLING ELECTRICAL MATERIALS AND EQUIPMENT FOR EFFICIENT FLOW OF THE WORK. COORDINATE INSTALLING LARGE EQUIPMENT REQUIRING POSITIONING BEFORE CLOSING IN THE BUILDING.

C. COORDINATE ELECTRICAL SERVICE CONNECTIONS TO COMPONENTS FURNISHED BY UTILITY COMPANIES.

   1. COORDINATE INSTALLATION AND CONNECTION OF EXTERIOR UNDERGROUND AND OVERHEAD UTILITIES AND SERVICES, INCLUDING PROVISION FOR ELECTRICITY-METERING COMPONENTS.
   2. COMPLY WITH REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION AND OF UTILITY COMPANY PROVIDING ELECTRICAL POWER AND OTHER SERVICES.

D. COORDINATE LOCATION OF ACCESS PANELS AND DOORS FOR ELECTRICAL ITEMS THAT ARE CONCEALED BY FINISHED SURFACES. ACCESS DOORS AND PANELS ARE SPECIFIED IN A SEPARATE DIVISION OF THE SPECIFICATIONS.

E. WHERE ELECTRICAL IDENTIFICATION DEVICES ARE APPLIED TO FIELD-FINISHED SURFACES, COORDINATE INSTALLATION OF IDENTIFICATION DEVICES WITH COMPLETION OF FINISHED SURFACE.

F. WHERE ELECTRICAL IDENTIFICATION MARKINGS AND DEVICES WILL BE CONCEALED BY ACOUSTICAL CEILINGS AND SIMILAR FINISHES, COORDINATE INSTALLATION OF THESE ITEMS BEFORE CEILING INSTALLATION.

1.07 AS-BUILT DRAWINGS

A. CONTRACTOR SHALL MAINTAIN RECORD DRAWING PRINTS ON JOB SITE AND RECORD, AT TIME OF OCCURRENCE, DEVIATIONS FROM CONTRACT DOCUMENTS.

B. AT THE COMPLETION OF WORK AND BEFORE FINAL ACCEPTANCE, PROVIDE AS-BUILT DRAWINGS OF THE INSTALLATION, IN AUTO-CAD 2004 OR NEWER. AN ELECTRONIC COPY (AUTOCAD FORMAT) OF ALL DRAWINGS WILL BE PROVIDED TO THE ELECTRICAL CONTRACTOR BY THE CONSULTANT AT NO COST. THE DRAWINGS WILL REFLECT THE BID AND/OR CONSTRUCTION SET OF DRAWINGS. SHOULD THE CONTRACTOR REQUIRE ADDITIONAL ELECTRONIC COPIES DURING CONSTRUCTION, A COST OF $250.00 PER DRAWING WILL BE CHARGED BY THE CONSULTANT.

C. INCORPORATE ALL CHANGES AND DEVIATIONS FROM BID DRAWINGS, UTILIZING NORMAL RECOGNIZED DRAFTING PROCEDURES THAT MATCH THE ORIGINAL DRAFTING METHODOLOGY.

D. ALL MAIN BRANCH CONDUIT RUNS, JUNCTION BOX LOCATIONS, CONDUIT RUNS FOR ALL FLOOR OUTLETS, ETC., MUST BE REFLECTED ON THE DRAWINGS.

E. REMOVE THE ELECTRICAL ENGINEER'S STAMP FROM ALL AS-BUILT DRAWINGS.

F. REMOVE ALL ELECTRICAL ENGINEER'S DRAWING DIRECTIVE NOTES TO CONTRACTOR

G. CLEARLY INDICATE THE WORDS “AS-BUILT” IN THE TITLE BLOCK COLUMN OF THE DRAWINGS AS WELL AS THE ELECTRICAL CONTRACTOR'S NAME AND ADDRESS.

H. SUBMIT A SINGLE (1) PRINT TO CONSULTANT FOR REVIEW. WHEN FOUND ACCEPTABLE BY THE CONSULTANT, SUBMIT THREE (3) SETS OF PRINTS TOGETHER WITH THE CAD DISK FOR PRESENTATION TO THE LANDLORD AND TENANT.

1.08 OPERATION AND MAINTENANCE MANUALS

A. PROVIDE 2 (TWO) SETS OF OPERATION AND MAINTENANCE MANUALS SUBMITTED IN HARD COVER 3-RING BINDERS. INCLUDE THE FOLLOWING INFORMATION IN THE OPERATIONS AND MAINTENANCE MANUALS:

   1. NAMES AND ADDRESS OF LOCAL SUPPLIERS FOR THE ITEMS INCLUDED.
   2. TECHNICAL DATA, PRODUCT DATA, SUPPLEMENTED BY BULLETINS, COMPONENT ILLUSTRATIONS, EXPLODED VIEWS, TECHNICAL DESCRIPTIONS OF ITEMS, AND PARTS LISTS. ADVERTISING OR SALES LITERATURE IS NOT ACCEPTABLE.
   3. THE CONSULTANTS REVIEWED SHOP DRAWINGS.
   4. CERTIFICATE(S) OF ACCEPTANCE FROM THE AUTHORITIES INSPECTION DEPARTMENT.
   5. VERIFICATION REPORTS AND CERTIFICATE(S) FOR ANY NEW FIRE ALARM COMPONENTS OR TIE-INS AND ANY BASE BUILDING TIE-INS FOR MISCELLANEOUS SYSTEMS (I.E. SECURITY, LIGHTING CONTROL, DIGITAL METERING).
   6. LOAD BALANCE REPORT.
   7. WRITTEN GUARANTEE.
   8. LIST OF EACH FIXTURE TYPE IDENTIFYING TYPE OF LAMP, WATTAGE AND MANUFACTURER'S CONTACT INFO.
   9. COORDINATION STUDY.

B. REVIEW INFORMATION PROVIDED IN THE MAINTENANCE INSTRUCTIONS AND MANUALS WITH THE TENANT'S OPERATING PERSONNEL AND LANDLORD'S OPERATING PERSONNEL WHERE BASE BUILDING SYSTEMS ARE REVISED, TO ENSURE A COMPLETE UNDERSTANDING OF THE ELECTRICAL EQUIPMENT AND SYSTEMS AND THEIR OPERATION.

1.09 MATERIALS AND EQUIPMENT

A. ALL MATERIALS AND EQUIPMENT SHALL BE NEW, CERTIFIED BY A NATIONALLY RECOGNIZED TESTING LABORATORY AND MANUFACTURED TO THE STANDARDS SPECIFIED.

B. WHERE THERE IS NO ALTERNATIVE TO SUPPLYING EQUIPMENT WHICH IS NOT NRTL CERTIFIED, OBTAIN SPECIAL APPROVAL FROM THE LOCAL ELECTRICAL SAFETY AUTHORITY.

1.10 INSURANCE

A. PROVIDE AND MAINTAIN INSURANCE TO PROTECT THE LANDLORD, TENANT AND TRADES FROM ALL POSSIBLE CLAIMS. SUBMIT WITH BID FOR AN AMOUNT ACCEPTABLE TO LANDLORD AND TENANT.

1.11 CONTRACT DOCUMENTS

A. THE DRAWINGS FOR THE ELECTRICAL WORK ARE DIAGRAMMATIC PERFORMANCE DRAWINGS ONLY, INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE THE GENERAL ARRANGEMENT AND APPROXIMATE SIZE AND LOCATION OF ELECTRICAL EQUIPMENT. THE DRAWINGS DO NOT INTEND TO SHOW ARCHITECTURAL, INTERIOR DESIGN, MECHANICAL, STRUCTURAL OR BASE BUILDING DETAILS. BE RESPONSIBLE FOR A THOROUGH KNOWLEDGE OF SAME BEFORE PROCEEDING WITH THE WORK.

B. DO NOT SCALE OR MEASURE DRAWINGS, BUT OBTAIN INFORMATION REGARDING ACCURATE DIMENSIONS FROM THE DIMENSIONS SHOWN ON THE DESIGN CONSULTANT/ARCHITECT'S DRAWINGS, OR BY SITE MEASUREMENTS.

C. ANY DISCREPANCIES BETWEEN DRAWINGS AND/OR SPECIFICATIONS AND EXISTING CONDITIONS, MUST BE REFERRED TO THE DESIGN CONSULTANT/ARCHITECT BEFORE ANY WORK AFFECTED IS BEGUN.

D. COOPERATE AND COORDINATE WITH OTHER CONTRACTORS IN LAYING OUT OF WORK SO AS NOT TO CONFLICT WITH THE WORK OF OTHER CONTRACTORS. CARRY OUT WORK PROMPTLY AS PER CONSTRUCTION SCHEDULE AND COORDINATE WITH WORK OF OTHER CONTRACTORS.

E. MAKE, AT NO ADDITIONAL COST, ANY CHANGES OR ADDITIONS TO MATERIALS AND EQUIPMENT NECESSARY TO ACCOMMODATE STRUCTURAL CONDITIONS (OFFSETS AROUND BEAMS, COLUMN, ETC.)

1.12 INTENT

A. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS THAT THE CONTRACTOR PROVIDES COMPLETE AND OPERATIONAL SYSTEMS AS REQUIRED. WHERE DIFFERENCES OCCUR, THE MAXIMUM CONDITION SHALL GOVERN.

B. ANY MISCELLANEOUS ITEMS, HARDWARE, DEVICES, WIRING, ETC., NOT SPECIFICALLY DESCRIBED, BUT REQUIRED FOR THE OPERATION OF THE SYSTEM, MUST BE PROVIDED AND INCLUDED AS PART OF THE BID.

1.13 LOCATIONS OF OUTLETS

A. REFER TO DESIGN CONSULTANT'S/ARCHITECT'S DRAWINGS FOR EXACT LOCATIONS OF ALL LIGHTING FIXTURES AND WIRING DEVICES.

B. CHANGE LOCATION OF OUTLETS AT NO COST OR CREDIT, PROVIDING DISTANCE DOES NOT EXCEED (10'-0") AND INFORMATION IS GIVEN PRIOR TO INSTALLATION.

C. ALL OUTLETS TO BE MARKED ON JOB SITE FOR APPROVAL BY DESIGN CONSULTANT/ARCHITECT PRIOR TO INSTALLATION.

1.14 PLYWOOD

A. ALL SURFACE MOUNTED ELECTRICAL DISTRIBUTION EQUIPMENT SHALL BE MOUNTED ON PLYWOOD BACKBOARDS. PROVIDE ALL PLYWOOD BACKBOARDS REQUIRED FOR THE WORK OF THIS DIVISION. PLYWOOD BACKBOARDS SHALL BE 3/4” THICK, OF HIGHEST QUALITY FIRE RETARDANT FIR. PRIME AND PAINT BACKBOARDS WITH FIRE RETARDANT PAINT COLOR AS SELECTED BY THE DESIGN CONSULTANT/ARCHITECT.

1.15 ACCESS DOORS

A. WHEREVER ANY BASE BUILDING EQUIPMENT REQUIRES ACCESSIBILITY, MAINTENANCE OR ADJUSTMENT, PROVIDE ACCESS DOORS APPROVED BY DESIGN CONSULTANT/ARCHITECT AND LANDLORD. ARRANGE FOR ITS INSTALLATION BY THE DIVISION IN WHOSE WORK IT OCCURS.

1.16 DRY WALL CEILINGS

A. IN ALL DRYWALL CEILING AREAS, DIVISION 16 IS TO REMOVE AND RELOCATE ALL EXISTING JUNCTION BOXES TO ACCESSIBLE CEILING SPACE.

B. PROVIDE ACCESS PANELS FOR ALL NEW AND EXISTING DEVICES AS REQUIRED

1.17 CORE DRILLING/TRENCHING/CHASING

A. BEFORE CORE DRILLING/CHASING FLOOR SLAB OR STRUCTURAL WALLS, X-RAY SLABS OR WALLS AND HAVE THE LOCATIONS APPROVED BY THE LANDLORD IN WRITING.

B. ANY EXISTING BUILDING SERVICE DAMAGED BY CORE DRILLING SHALL BE REPAIRED IMMEDIATELY AT NO COST TO LANDLORD OR TENANT.

C. FLOOR DRILLING TO BE PERFORMED AFTER NORMAL WORKING HOURS AND AT A TIME ACCEPTABLE TO LANDLORD AND ALLOWANCES FOR THIS WORK SHALL BE INCLUDED IN BID PRICE SUBMITTED.

D. ALL ELECTRICAL CONDUCTORS AND IT WORK INSTALLED IN THE CEILING OF ANOTHER TENANT SPACE SHALL BE IN CONDUIT. ARMORED CABLING AND USE OF EXPOSED PLENUM IT CABLING SHALL NOT BE PERMITTED.

1.18 NOISE AND VIBRATION

A. ELECTRICAL EQUIPMENT IS TO OPERATE WITHOUT OBJECTIONABLE NOISE OR VIBRATION. IF, IN THE OPINION OF THE LANDLORD, ARCHITECT OR CONSULTANT, THE EQUIPMENT OPERATES WITH EXCESSIVE NOISE OR VIBRATION, THEN THE EQUIPMENT MUST BE REPLACED OR NOISE OR VIBRATION ELIMINATED.

B. CONNECTIONS TO NOISE-PRODUCING AND VIBRATING EQUIPMENT MUST BE MADE WITH LIQUID-TIGHT FLEXIBLE CONDUIT AND ASSOCIATED CONNECTORS. THIS INCLUDES TRANSFORMERS, DIMMING EQUIPMENT RACKS, AND MOTORS. USE A MINIMUM OF 3 FT OF FLEXIBLE CABLE WITH SLACK AT EACH DEVICE.

C. VIBRATION ISOLATORS ARE TO BE PROVIDED WHERE INDICATED OR REQUIRED. TRANSFORMERS TO BE ISOLATED FROM THE STRUCTURE, WITH SPRING AND RUBBER ISOLATORS WHEN WALL MOUNTED OR SUSPENDED AND 1/2" HIGH DENSITY NEOPRENE SANDWICH PADS (TYPE MWP) WHEN FLOOR MOUNTED.

1.19 TENANT'S EQUIPMENT

A. WHERE SPECIFIED, INSTALL ALL EQUIPMENT PROVIDED BY THE TENANT. RECEIVE, STORE AND INSTALL EQUIPMENT AND ACCEPT FULL RESPONSIBILITY FOR ITS CORRECT OPERATION. PROVIDE CONDUIT, WIRE, BOXES, SWITCHES, OUTLETS, DEVICES, FLEX CONNECTIONS, ETC., AS REQUIRED.

1.20 INTERRUPTION OF SERVICES

A. INTERRUPTION OF ELECTRICAL SERVICE TO ANY PART OF THE BUILDING SHALL OCCUR ONLY BY PRE-ARRANGEMENT WITH AND AT TIMES SUITABLE TO THE LANDLORD.

B. INTERRUPTIONS SHALL ONLY OCCUR DURING PREMIUM TIME PERIODS; ALL ALLOWANCES FOR THIS SHALL BE INCLUDED IN THE PRICE SUBMITTED.

1.21 VALUATION OF CHANGES

A. PROVIDE COMPLETE BREAKDOWN OF MATERIAL, LABOR, OVERHEAD, PROFIT, ETC., WHEN SUBMITTING QUOTATIONS FOR CHANGE NOTICES ON THIS PROJECT.

B. THE HOURLY LABOR RATE SHALL BE INCLUSIVE OF ALL CHARGES FOR SUPERVISION, VARIABLE LABOR FACTORS, HAND TOOLS, PAYROLL BURDENS, HEIGHT FACTORS, WARRANTIES, STORAGE, RENTALS, ADDITIONAL BONDING, PARKING, CLEAN-UP, AS-BUILT DRAWINGS, HOISTING, FREIGHT AND DELIVERY, BUT EXCLUSIVE OF OVERHEAD AND PROFIT.

1.22 ENGINEERS FINAL INSPECTION

A. FINAL INSPECTION IS IMPERATIVE. PRIOR TO CLOSING OF CEILINGS, THIS CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD AND THE LANDLORD'S REPRESENTATIVE TO PERFORM A FINAL INSPECTION. WHEN CEILING TILES HAVE BEEN INSTALLED IT WILL BE NECESSARY FOR THE CONTRACTOR TO REMOVE PORTIONS FOR INSPECTION.

1.23 COMPLETION OF CONTRACT

A. ALL EQUIPMENT MUST BE CLEANED AND TESTED BEFORE FINAL ACCEPTANCE BY THE CONSULTANT.

B. DEFECTS AND DEFICIENCIES WHICH ORIGINATE OR BECOME EVIDENT DURING THE WARRANTY PERIOD MUST BE REPAIRED OR REPLACED, AT NO COST.

C. REPLACE, AT NO COST, ALL INCANDESCENT LAMPS BURNED-OUT DURING A THIRTY (30) DAY PERIOD AND ALL BURNED-OUT FLUORESCENT AND HID LAMPS FOR A PERIOD OF NINETY (90) DAYS AFTER DATE OF ISSUANCE OF CERTIFICATE OF “SUBSTANTIAL PERFORMANCE” FOR THE CONTRACT FOR THE WORK.

D. IF, DURING THE WARRANTY PERIOD, TRANSFORMERS, BALLASTS OR OTHER NOISE AND VIBRATION PRODUCING EQUIPMENT ARE CONSIDERED BY THE CONSULTANT TO EXCEED ACCEPTABLE STANDARDS, THEN THESE MUST BE REPLACED WITHOUT DELAY OR ADDITIONAL COST TO THE TENANT. ALL WORK RELATING TO THE REPLACEMENT OF DEFECTIVE ITEMS, MUST BE CARRIED OUT AFTER NORMAL WORKING HOURS AND AT A TIME WHICH IS ACCEPTABLE TO THE TENANT.

1.24 DEMOLITION

A. VISIT THE SITE, EXAMINE THE EXISTING CONDITIONS AND BECOME FAMILIAR WITH THE EXTENT OF THE NECESSARY REMOVAL, RELOCATION, RECONNECTING AND REROUTING OF ELECTRICAL EQUIPMENT AND WIRING AS NECESSARY FOR THE COMPLETION OF THE PROJECT.

B. REVIEW AND CONFIRM WITH THE ARCHITECT/DESIGNER'S DRAWINGS FOR THE COMPLETE EXTENT OF DEMOLITION AND ALTERATION.

C. MAKE SAFE AND DISCONNECT ALL POWER AND SYSTEMS, AS AND WHEN, AND TO THE EXTENT REQUIRED TO FACILITATE WITH THE DEMOLITION.

D. ENSURE THAT ALL ELECTRICAL, LIFE SAFETY SERVICES, AND SERVICES FOR EXISTING EQUIPMENT, IN AREAS OUTSIDE THE AREAS OF THIS WORK, THAT ARE REQUIRED TO REMAIN IN SERVICE, SHALL DO SO.

E. RELOCATE ANY ELECTRICAL FEEDERS OR EQUIPMENT THAT ARE REQUIRED TO REMAIN IN SERVICE, THAT ARE SECURED TO EXISTING WALLS, FLOORS OR CEILINGS TO BE DEMOLISHED OR THAT ARE BURIED AND REQUIRED TO BE EXCAVATED FOR NEW WORK.

F. REMOVE AND REPLACE ANY ELECTRICAL EQUIPMENT ON WALLS OR CEILINGS THAT WILL BE DEMOLISHED AND REBUILT.

G. WHEN DELETING AND/OR MAKING SAFE EXISTING ELECTRICAL WORK, ENSURE THAT IT INCLUDES ALL CONDUITS AND WIRING BACK TO THE ASSOCIATED PANELBOARD OR CONTROL PANEL. WHERE FLOORBOXES ARE BEING REMOVED, ENSURE UNDER-FLOOR CONDUIT IS REMOVED BACK TO SOURCE AND FILL ALL CORE HOLES, IN FLOORS AND WIN WALLS, WITH APPROPRIATE CONCRETE.

H. DISCONNECT AND REMOVE EXISTING LIGHT FIXTURES, DEVICES, OUTLETS, ETC. WHICH ARE NOT TO BE REUSED. SUCH ITEMS SHALL BE CARTONED AND TURNED OVER TO THE LANDLORD AT A PLACE DESIGNATED BY THE LANDLORD. CUT BACK AND CAP UNUSED RACEWAY AND OUTLETS AND REMOVED UNUSED WIRING BACK TO PANELBOARD IN AN APPROVED MANNER.

I. INCLUDE IN DEMOLITION WORK FOR REMOVAL OF ALL COMMUNICATION DEVICES, OUTLETS, CABLES, CONDUITS ETC., WHICH ARE NOT TO BE REUSED. ALL REDUNDANT CABLING AND CONDUIT SHALL BE REMOVED IN ITS ENTIRETY FROM TENANT SPACE BACK TO BASE BUILDING RISER ROOMS. REMOVE ALL UNNECESSARY CABLES AND EQUIPMENT IN HUB ROOMS AND/OR TELEPHONE ROOMS WITH EXTREME CARE TO AVOID ANY ACCIDENTAL SHUTDOWN TO EXISTING SERVICES SERVING OTHER PARTS OF THE BUILDING.

J. PROVIDE BLANK COVERPLATE WHERE OUTLETS ARE REMOVED FROM EXISTING WALLS TO REMAIN.

K. ALL EXISTING ELECTRICAL EQUIPMENT WHICH IS NO LONGER REQUIRED SHALL BE REMOVED AND DISPOSED OF, OFF SITE.

L. BE RESPONSIBLE AND PAY FOR ANY DAMAGE TO THE BASE BUILDING INCURRED BY WORK OF THIS DIVISION, OR REPAIR TO THE SATISFACTION OF THE CONSULTANT.

M. CARRY OUT THE WORK WITH MINIMUM OF NOISE, DUST AND DISTURBANCE.

1.25 WORK IN NEW AND RENOVATED AREAS

A. WHEN DELETING AND/OR MAKING SAFE EXISTING ELECTRICAL WORK, ENSURE THAT IT INCLUDES REMOVAL OF ALL DISCONNECTED WIRING BACK TO THE ASSOCIATED PANELBOARD OR DISTRIBUTION EQUIPMENT.

B. DISCONNECT AND REMOVE EXISTING LUMINAIRES, DEVICES, OUTLETS, ETC., WHICH ARE NOT TO BE REUSED. SUCH ITEMS SHALL BE CARTONED AND TURNED OVER TO THE LANDLORD AT A PLACE DESIGNATED BY THE LANDLORD. CUT BACK AND CAP UNUSED RACEWAY AND OUTLETS AND REMOVE UNUSED WIRING BACK TO PANELBOARD IN AN APPROVED MANNER. REMOVE ALL REDUNDANT COMMUNICATIONS CABLES BACK TO HUB ROOMS AND/OR TELEPHONE RISER ROOMS.

C. ENSURE THAT ALL EXISTING EQUIPMENT WHICH IS TO BE REUSED AND/OR RELOCATED IS THOROUGHLY INSPECTED AND REFURBISHED TO ENSURE CORRECT OPERATION WHEN PUT BACK INTO SERVICE AND MEETS THE LOCAL ELECTRICAL SAFETY AUTHORITY'S APPROVAL. OUTLET BOXES AND WIRING AND/OR CONDUITS WHICH ARE CORRODED OR DAMAGED ARE TO BE REPLACED.

D. ALL EXISTING ELECTRICAL EQUIPMENT WHICH IS NO LONGER REQUIRED SHALL BE REMOVED AND DISPOSED OF, OFF SITE.

E. WHERE EXISTING OUTLET BOXES ARE REMOVED FROM EXISTING UNDERFLOOR DUCTS, PLUG AND CAP EXISTING HOLES FLUSH WITH FLOOR USING APPROVED FITTINGS. REMOVE ALL REDUNDANT WIRE AND CABLE BACK TO SERVICE.

F. BE RESPONSIBLE AND PAY FOR ANY DAMAGE TO THE BASE BUILDING INCURRED BY WORK OF THIS DIVISION, OR REPAIR TO THE SATISFACTION OF THE CONSULTANT.

G. CARRY OUT THE WORK WITH A MINIMUM OF NOISE, DUST AND DISTURBANCE.

H. PROVIDE TOOLS AND CLEAN UP EQUIPMENT. OBTAIN THE LANDLORD'S PERMISSION FOR THE USE OF ELECTRICAL, ELEVATOR, PLUMBING OR DRAINAGE OUTLETS.

I. PROVIDE DAILY CLEAN UP AND PROPER DISPOSAL OF DEBRIS GENERATED BY DAILY OPERATIONS. ON COMPLETION OF THE WORK, ALL TOOLS, SURPLUS MATERIALS AND WASTE MATERIALS SHALL BE REMOVED AND THE PREMISES LEFT IN A CLEAN AND PERFECT CONDITION.

J. REMOVE AND REROUTE EXISTING CONDUITS WHICH ARE TO REMAIN IN “FINISHED” AREAS WHICH ARE TO BE EXPOSED.

K. CONDUITS WHICH ARE TO BE CUT BACK ARE TO TERMINATE IN A JUNCTION BOX.

L. CLEAN LUMINAIRE REFLECTORS AND LENSES, LAMPS AND OTHER SURFACES THAT HAVE BEEN EXPOSED TO CONSTRUCTION DUST AND DIRT. CLEAN THE INSIDES AND OUTSIDES OF PANELBOARDS, SPLITTERS AND OTHER ELECTRICAL EQUIPMENT, AND COMPLETELY REMOVE ALL DEBRIS AND TOOLS FROM THE PROJECT.

1.26 SHORT CIRCUIT, DEVICE COORDINATION AND ARC-FLASH ANALYSIS

A. ENSURE CIRCUIT PROTECTIVE DEVICES SUCH AS OVERCURRENT TRIPS, RELAYS, CIRCUIT BREAKERS AND FUSES ARE INSTALLED TO VALUES AND SETTINGS SO AS TO PROVIDE PROTECTION BY MEANS OF OPENING THE CLOSEST DEVICE TO THE FAULT.

B. SUBMIT A SHORT CIRCUIT, COORDINATION AND ARC-FLASH STUDY AS FOLLOWS:

   1. UTILIZE COMPUTER SOFTWARE PROGRAMS CERTIFYING COMPLIANCE WITH IEEE 399. MANUAL CALCULATIONS ARE NOT ACCEPTABLE.
   2. OBTAIN AVAILABLE FAULT CURRENT AND UTILITY IMPEDANCE FROM UTILITY COMPANY.
   3. OBTAIN AND TABULATE ALL ELECTRICAL PROTECTION DATA FOR ALL THE EQUIPMENT.
   4. OBTAIN FEEDER LENGTHS AND RATINGS FOR ALL NEW AND EXISTING FEEDERS.
   5. PERFORM A SHORT CIRCUIT ANALYSIS TO DETERMINE SHORT CIRCUIT CURRENT AND GROUND FAULT CURRENTLEVELS AT EACH PIECE OF EQUIPMENT IN THE DISTRIBUTION SYSTEM, HAVING OBTAINED THE AVAILABLE SHORT CIRCUIT CURRENT AND IMPEDANCE OF UTILITY SERVICE ENTRANCE FROM THE LOCAL ELECTRICAL SUPPLY AUTHORITY.
   6. PERFORM ANALYSIS FOR EACH SYSTEM SCENARIO.
   7. GENERATE AN EQUIPMENT EVALUATION REPORT FOR ALL ELECTRICAL EQUIPMENT AND OVERCURRENT PROTECTIVE DEVICES COMPARING CALCULATED AVAILABLE FAULT CURRENTS TO EQUIPMENT WITHSTAND RATINGS.
   8. GENERATE APPROPRIATE SETTINGS FOR ALL RELAYS AND PROTECTIVE DEVICES FROM THE LEVEL OF THE LOCAL ELECTRICAL SUPPLY AUTHORITY FEEDER PROTECTIVE DEVICES TO ALL DOWNSTREAM DEVICES.

C. PERFORM AN ARC-FLASH HAZARD ANALYSIS IN ACCORDANCE WITH IEEE 1584 EQUATIONS AS PRESENTED IN NFPA 70E.

   1. CALCULATE THE FLASH PROTECTION BOUNDARY AND THE INCIDENT ENERGY AT EACH PIECE OF ELECTRICAL EQUIPMENT.
   2. CALCULATIONS MUST BE PERFORMED FOR ALL SYSTEM SCENARIOS AND GREATEST INCIDENT ENERGY SHALL BE REPORTED.
   3. WHERE 'DANGEROUS' INCIDENT ENERGY LEVELS EXIST, MAKE RECOMMENDATIONS TO REDUCE ENERGY LEVELS.
   4. PROVIDE ARC-FLASH LABELS FOR EACH PIECE OF EQUIPMENT.

D. PROVIDE A COMPLETE, COMPREHENSIVE REPORT AT THE CONCLUSION OF THE SHORT CIRCUIT, COORDINATION AND ARC-FLASH STUDY CONSISTING OF THE FOLLOWING:

   1. A SET OF TIME CURRENT CURVE CHARACTERISTICS OF ALL PROTECTIVE DEVICES IN THE SYSTEM PLOTTED ON LOG/LOG GRAPH PAPER WITH CORRESPONDING SHORT CIRCUIT CURRENT LEVELS.
   2. TIME CURRENT DAMAGE CURVES FOR ALL TRANSFORMERS, MOTORS, AND CABLES
   3. PROVIDE A COMPLETE SCHEDULE OF ALL MAIN PROTECTIVE RELAYS, FUSES AND OTHER PROTECTIVE DEVICE LISTING DEVICE LOCATIONS, MANUFACTURER, MODEL NUMBER, SIZE, RANGE, SETTING, ETC.
   4. ENTIRE REPORT SHALL BE PERFORMED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED, WHO SHALL SIGN AND STAMP THE STUDY.

E. THE COMPLETE STUDY WILL ILLUSTRATE AND ENSURE THAT THE SETTINGS AND SIZES OF ALL PROTECTIVE DEVICES FOR EACH VOLTAGE LEVEL HAVE BEEN CHOSEN TO ENSURE MAXIMUM OR OPTIMAL PROTECTION AND COORDINATION DURING ELECTRICAL FAULT OR OVERLOAD CONDITIONS.

F. THESE GENERATED SETTINGS WILL THEN BE APPLIED BY “IN-FIELD” TESTING METHODS TO THE RESPECTIVE DEVICES.

1.27 UNIT PRICES

A. SUBMIT THE FOLLOWING LIST OF UNIT PRICES:

   1. LIGHT FIXTURES -FOR EACH TYPE SPECIFIED ON DRAWINGS ($/FIXTURE).
   2. RECEPTACLES - ADD/DEDUCT PRICE FOR EACH TYPE SPECIFIED ON DRAWINGS ($/RECEPTACLE).
   3. DATA/TELEPHONE OUTLET -ADD/DEDUCT PRICE FOR WALL MOUNTED TELEPHONE OUTLET WITH 1" CONDUIT STUBBED INTO HUNG CEILING ($/OUTLET).
   4. RACEWAYS - ALL SIZES ON PROJECT ($/LIN FT), CONDUCTORS ($/LIN FT), MC CABLE ($/LIN FT)
   5. FIRE ALARM DEVICES.
   6. ELECTRICAL PANELS - ALL TYPES INDICATED ON DRAWINGS.
   7. TRANSFORMERS - ALL RATINGS INDICATED ON DRAWINGS.

PART 2 PRODUCT/APPLICATION

2.01 RACEWAYS

A. EMT: ANSI C80.3, ZINC-COATED STEEL, WITH SET-SCREW OR COMPRESSION FITTINGS.

B. FMC: ZINC-COATED STEEL.

C. RMC: ANSI C80.1, HOT-DIPPED GALVANIZED STEEL WITH THREADED FITTINGS

D. IMC: ANSI C80.6, ZINC-COATED STEEL, WITH THREADED FITTINGS.

E. LFMC: ZINC-COATED STEEL WITH SUNLIGHT-RESISTANT AND MINERAL-OIL-RESISTANT PLASTIC JACKET.

F. RNC: NEMA TC 2, SCHEDULE 40/SCHEDULE 80 PVC, WITH NEMA TC3 FITTINGS.

G. RACEWAY FITTINGS: SPECIFICALLY DESIGNED FOR THE RACEWAY TYPE WITH WHICH USED.

H. ELECTRIC METALLIC TUBING SHALL BE INDUSTRY STANDARD THIN WALL CONDUIT, HOT DIPPED GALVANIZED STEEL (3/4" MIN, 4" MAX).

I. THE FLEXIBLE METALLIC CONDUIT SHALL BE OF THE GROUNDING TYPE. IT SHALL CONSIST OF GALVANIZED STEEL TAPE FORMED INTO AN INDUSTRY STANDARD INTERLOCKING COIL (3/4" MIN).

J. RIGID METAL CONDUIT SHALL BE INDUSTRY STANDARD STEEL CONDUIT (3/4" MIN, 4" MAX.

K. THREADED FITTINGS SHALL BE USED WITH RIGID CONDUIT. DOUBLE SET SCREW OR COMPRESSION FITTINGS SHALL BE USED WITH EMT.

2.02 WIRE AND CABLE

A. CONDUCTORS, NO. 10 AWG AND SMALLER: SOLID COPPER.

B. CONDUCTORS, LARGER THAN NO. 10 AWG: STRANDED COPPER.

C. INSULATION: THERMOPLASTIC, RATED AT 75 DEG C MINIMUM.

D. ALL CONDUCTORS SHALL BE SOFT 98% MINIMUM CONDUCTIVITY PROPERLY REFINED COPPER, TYPE THHN/THWN INSULATED RATED AT 600V, UNLESS OTHERWISE NOTED.

E. REFER TO SECTION 3.09 FOR COLOR-CODING OF ALL WIRING.

2.03 SUPPORTING DEVICES

A. MATERIAL: COLD-FORMED STEEL, WITH CORROSION-RESISTANT COATING ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.

B. METAL ITEMS FOR USE OUTDOORS OR IN DAMP LOCATIONS: HOT-DIP GALVANIZED STEEL.

C. SLOTTED-STEEL CHANNEL SUPPORTS: FLANGE EDGES TURNED TOWARD WEB AND 9/16-INCH DIAMETER SLOTTED HOLES AT A MAXIMUM OF 2 INCHES O.C., IN WEBS.

D. SLOTTED-STEEL CHANNEL SUPPORTS: COMPLY WITH DIVISION 5 SECTION "METAL FABRICATIONS" FOR SLOTTED CHANNEL FRAMING.

   1. CHANNEL THICKNESS: SELECTED TO SUIT STRUCTURAL LOADING.
   2. FITTINGS AND ACCESSORIES: PRODUCTS OF THE SAME MANUFACTURER AS CHANNEL SUPPORTS.

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ISSUE:
CONSTRUCTION DOCUMENTS
JANUARY 26, 2022
CLOUDED CHANGES
FEBRUARY 10, 2022
PER PLAN REVIEW COMMENTS
FEBRUARY 14, 2022

DRAWN BY:
RS

PROJECT ENGINEER:
RS

DRAWING:
ELECTRICAL SPECIFICATIONS

SCALE:
NOT TO SCALE

SEAL

D.J. PENN
NUMBER E-28507
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DRAWING NO.

E-003

RELEASED FOR CONSTRUCTION
As Noted on Plans Review
Development Services Department
Lee's Summit, Missouri
02/23/2022

ELECTRICAL SPECIFICATIONS

E. NONMETALLIC CHANNEL AND ANGLE SYSTEMS: STRUCTURAL-GRADE, FACTORY-FORMED, GLASS-FIBER-RESIN CHANNELS AND ANGLES WITH 9/16-INCH- DIAMETER HOLES AT A MAXIMUM OF 8 INCHES O.C., IN AT LEAST ONE SURFACE.

1. FITTINGS AND ACCESSORIES: PRODUCTS OF THE SAME MANUFACTURER AS CHANNELS AND ANGLES.
2. FITTINGS AND ACCESSORY MATERIALS: SAME AS CHANNELS AND ANGLES, EXCEPT METAL ITEMS MAY BE STAINLESS STEEL.

F. RACEWAY AND CABLE SUPPORTS: MANUFACTURED CLEVIS HANGERS, RISER CLAMPS, STRAPS, THREADED C-CLAMPS WITH RETAINERS, CEILING TRAPEZE HANGERS, WALL BRACKETS, AND SPRING-STEEL CLAMPS OR CLICK-TYPE HANGERS.

G. PIPE SLEEVES: ASTM A 53, TYPE E, GRADE A, SCHEDULE 40, GALVANIZED STEEL, PLAIN ENDS.

H. CABLE SUPPORTS FOR VERTICAL CONDUIT: FACTORY-FABRICATED ASSEMBLY CONSISTING OF THREADED BODY AND INSULATING WEDGING PLUG FOR NONARMORED ELECTRICAL CABLES IN RISER CONDUITS. PLUGS HAVE NUMBER AND SIZE OF CONDUCTOR GRIPPING HOLES AS REQUIRED TO SUIT INDIVIDUAL RISERS. BODY CONSTRUCTED OF MALLEABLE-IRON CASTING WITH HOT-DIP GALVANIZED FINISH.

I. EXPANSION ANCHORS: CARBON-STEEL WEDGE OR SLEEVE TYPE.

J. TOGGLE BOLTS: ALL-STEEL SPRINGHEAD TYPE.

K. POWDER-DRIVEN THREADED STUDS: HEAT-TREATED STEEL

L. PROVIDE ALL STEEL SUPPORTING MEMBERS, HANGERS, BRACKETS OR OTHER SPECIAL DETAILS REQUIRED AND NECESSARY AS PER CODE.

M. EXCEPT FOR BRANCH CIRCUITRY INSTALL ALL CONDUIT IN HUNG CEILING SPACE ON ACCEPTABLE HANGERS AND INSERTS. CONDUIT OR MC CABLE FOR BRANCH CIRCUITRY SHALL BE SUPPORTED BY CLAMPS OR PIPE STRAPS SECURED TO THE CEILING SUPPORT SYSTEM (BLACK IRON - NYC), FROM STRUCTURAL MEMBERS OR FROM THE DECK. SUPPORT FROM CEILING TEES, CROSS TEES OR SUPPORT WIRES IS PROHIBITED.

N. SPACING OF SUPPORTS SHALL BE PER THE NEC/NYCEC.

O. INSERTS ARE TO BE OF A LEAD SHIELD TYPE.

P. HANGERS MUST NOT BE WELDED TO STRUCTURAL STEEL MEMBERS AND BURNING OF HOLES IN STRUCTURAL STEEL IS PROHIBITED.

Q. SLEEVES ARE TO BE OF A TYPE SUITABLE FOR THE APPLICATION AND BE SEALED AND MADE WATERTIGHT. SLEEVES THROUGH CONCRETE SHALL BE SCHEDULE 40 STEEL PIPE, SIZED FOR FREE PASSAGE OF CONDUIT AND INSTALLED FLUSH WITH UNDERSIZE OF CONCRETE SLAB AND EXTEND 4" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED.

2.04 PULLBOXES, JUNCTION BOXES AND OUTLET BOXES

A. PULLBOXES, JUNCTION BOXES AND OUTLET BOXES SHALL BE MANUFACTURED FROM GALVANIZED INDUSTRY STANDARD GAUGE SHEET STEEL.

B. PROVIDE PULL BOXES AND JUNCTION BOXES IN LONG STRAIGHT RUNS OF RACEWAY TO ASSURE THAT CABLES ARE NOT DAMAGED WHEN THEY ARE PULLED, TO FULFILL REQUIREMENTS AS TO THE NUMBER OF BENDS PERMITTED IN RACEWAY BETWEEN CABLE ACCESS POINTS, THE ACCESSIBILITY OF CABLE JOINTS AND SPLICES, AND THE APPLICATION OF CABLE SUPPORTS.

C. PULLBOXES AND JUNCTION BOXES SHALL BE SIZED SO THAT THE MINIMUM BENDING RADIUS CRITERIA SPECIFIED FOR THE WIRES AND CABLE ARE MAINTAINED.

D. SWITCH RECEPTACLE AND WALL OUTLET BOXES SHALL BE A NOMINAL 4" SQUARE, 1-1/2" OR 2-1/8" DEEP AS REQUIRED BY CODE WITH A RAISED COVER, UNLESS OTHERWISE INDICATED ON THE DRAWING.

E. PROVIDE BLANK COVERPLATES FOR BOXES WITHOUT WIRING DEVICES.

F. DO NOT INSTALL OUTLET BOXES BACK TO BACK IN PARTITIONS. STAGGER TO PREVENT SOUND TRANSFER.

G. TWO OR MORE OUTLET BOXES THAT OCCUR AT THE SAME LOCATION SHALL BE GANGED TOGETHER IN THE SAME COVERPLATE UNLESS OTHERWISE NOTED.

H. LIGHTING FIXTURE BOXES SHALL BE 4" OCTAGON TYPE, DEPTH AS REQUIRED WITH 3/8" FIXTURE STUD. FOR SUSPENDED CEILING WORK, PROVIDE A 4" OCTAGON BOX WITH REMOVABLE BACKPLATE WHERE REQUIRED.

I. PULL/JUNCTION BOX BARRIERS SHALL BE PROVIDED WHERE REQUIRED BY CODE.

J. INSTALL JUNCTION AND PULLBOXES IN INCONSPICUOUS LOCATIONS.

K. A MINIMUM OF ONE PULLBOX SHALL BE INSTALLED FOR EVERY 100 FT OF CONDUITS. (NOTE: EACH 90 DEGREE BEND SHALL EQUATE TO 30' LENGTH OF CONDUIT).

L. NO MORE THAN TWO (2) 90 DEGREE BENDS SHALL BE INSTALLED BETWEEN AND TWO ADJACENT PULLBOXES.

M. ALL EQUIPMENT, DEVICE BOXES, JUNCTION BOXES, PULLBOXES AND OUTLET BOXES SHALL BE INSTALLED SO AS TO ALLOW ACCESS TO THE BOX.

N. OUTLET BOXES SHALL BE PROVIDED FOR ALL LOW VOLTAGE DEVICES (I.E. TELEPHONE/DATA, SECURITY, FIRE ALARM, ETC.). COORDINATE BOX SIZE AND DEPTH WITH RESPECTIVE VENDOR.

2.05 WIRING DEVICES

A. WIRING DEVICES SHALL BE SPECIFICATION GRADE, DECORATIVE STYLE, UNLESS OTHERWISE NOTED.

B. DEVICES GANGED TOGETHER IN MULTI-GANG BOX SHALL BE MOUNTED UNDER A SINGLE COVERPLATE.

C. LINE VOLTAGE SWITCHES SHALL BE 120/277 VOLTS, RATED AT 20 AMPERES, QUIET OPERATION ROCKER TYPE, DECORA STYLE.

D. RECEPTACLES

1. PROVIDE SPECIFICATION GRADE 20A. 120 VOLT, "U" GROUND RECEPTACLES, WITH MATCHING COVERPLATES. RECEPTACLES SHALL BE OF THE "DECORATOR STYLE".
2. REFER TO NOTES AND DETAILS FOR SPECIALITY RECEPTACLE COLORS
3. RECEPTACLES TO HAVE CIRCUIT NUMBER IDENTIFIED ON THE WALL PLATE AND FURTHER IDENTIFIED WITH THE EXACT LOCATION LISTED IN THE PANEL DIRECTORY.
4. RECEPTACLES CONTROLLED FOR COMPLIANCE WITH ASHRAE 90.1-2010 (2013) SHALL BE LABELED WITH NEMA APPROVED MARKINGS, SIMILAR TO P&S 26352 SERIES

E. DIMMERS

1. PROVIDE DIMMERS WITH LINEAR CONTROL, SIZED TO SUIT LOADS CONTROLLED FOR 0-10V, 3-WIRE, INCANDESCENT, LOW VOLTAGE MAGNETIC AND LOW VOLTAGE ELECTRONIC LIGHTING AS INDICATED.
2. DIMMERS SHALL BE COMPATIBLE WITH THE LAMPS CONTROLLED. VERIFY WITH DIMMER AND LAMP MANUFACTURER'S PRIOR TO INSTALLATION.
3. ALL DIMMERS SHALL INCORPORATE AN AIR GAP SWITCH WHICH SHALL BE ACCESSIBLE WITHOUT REMOVING THE FACEPLATE: MEET THE U.L. 20 U.L. 1472 LIMITED SHORT CIRCUIT TEST REQUIREMENTS FOR SNAP SWITCHES; AND MEET ANSI/IEEE STANDARD C62.41-2003, TESTED TO WITHSTAND VOLTAGE SURGES OF UP TO 6,000V AND CURRENT SURGES OF UP TO 200A WITHOUT DAMAGE. MANUFACTURER SHALL PROVIDE FILE CARD UPON REQUEST SHOWING THEIR COMPLIANCE WITH THE ABOVE STANDARDS.
4. DIMMERS SHALL BE RATED AT VOLTAGE COMPATIBLE WITH FIXTURE, WATTAGE SIZE AS REQUIRED.
5. WHERE DIMMER SWITCHES ARE LOCATED NEXT TO SINGLE POLE OR VARIABLE SPEED TYPE SWITCHES, THE SINGLE POLE/VARIABLE SPEED SWITCHES SHALL MATCH THE DIMMING SWITCH STYLE.
6. DIMMERS, WHERE GANGED TOGETHER, SHALL BE PROPERLY DERATED BASED ON MANUFACTURERS RECOMMENDATIONS. FINS OF DIMMERS SHALL NOT BE REMOVED IN MULTIGANG INSTALLATIONS. PROVIDE OVER-SIZED JUNCTION BOX FOR MOUNTING OF WALL DIMMER
7. DIMMERS SHOWN SIDE BY SIDE SHALL BE GANGED UNDER ONE SEAMLESS, MULTI-GANG FACEPLATE.
8. WHEN FLUORESCENT AND/OR LED LAMPS ARE TO BE DIMMED, PROVIDE STANDARD 0-10V DC ELECTRONIC DIMMING BALLASTS/DRIVERS AS SPECIFIED IN LUMINAIRE SCHEDULE. OPERATE FLUORESCENT LAMPS AT FULL BRIGHTNESS FOR A MINIMUM 100 HOURS PRIOR TO DIMMING.

2.06 SUPPORTS AND FASTENINGS

A. PROVIDE ALL STEEL SUPPORTING MEMBERS, HANGERS, BRACKETS OR OTHER SPECIAL DETAILS REQUIRED AND NECESSARY AS PER CODE.

B. EXCEPT FOR BRANCH CIRCUITRY INSTALL ALL CONDUIT IN HUNG CEILING SPACE ON ACCEPTABLE HANGERS AND INSERTS. CONDUIT OR MC CABLE FOR BRANCH CIRCUITRY SHALL BE SUPPORTED BY CLAMPS OR PIPE STRAPS SECURED TO THE CEILING SUPPORT SYSTEM (BLACK IRON), FROM STRUCTURAL MEMBERS OR FROM THE DECK. SUPPORT FROM CEILING TEES, CROSS TEES OR SUPPORT WIRES IS PROHIBITED.

C. SPACING OF SUPPORTS SHALL BE PER THE NEC.

D. INSERTS ARE TO BE OF A LEAD SHIELD TYPE.

E. HANGERS MUST NOT BE WELDED TO STRUCTURAL STEEL MEMBERS AND BURNING OF HOLES IN STRUCTURAL STEEL IS PROHIBITED.

F. SLEEVES ARE TO BE OF A TYPE SUITABLE FOR THE APPLICATION AND BE SEALED AND MADE WATERTIGHT. SLEEVES THROUGH CONCRETE SHALL BE SCHEDULE 40 STEEL PIPE, SIZED FOR FREE PASSAGE OF CONDUIT AND INSTALLED FLUSH WITH UNDERSIZE OF CONCRETE SLAB AND EXTEND 4" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED.

2.07 DISCONNECT SWITCHES

A. INDOOR DISCONNECT SWITCHES SHALL BE "QUICK-MAKE, QUICK-BREAK," HEAVY DUTY TYPE IN NEMA 1 ENCLOSURES. PROVIDE ALL FUSES WHERE NOTED.

B. OUTDOOR DISCONNECT SWITCHES SHALL BE SIMILAR TO INDOOR, EXCEPT LISTED FOR OUTDOOR APPLICATIONS (NEMA 3R OR 4, AS REQUIRED)

C. FUSED DISCONNECT SWITCHES SHALL BE PROVIDED WITH FUSE CLIPS TO ACCEPT SPECIFIED FUSES.

2.08 FUSES

A. FUSES SHALL BE CURRENT LIMITING TYPE WITH A UL LISTED INTERRUPTING CAPACITY OF 200,000 RMS.

B. FUSES RATED 601 AMPS AND LARGER SHALL BE CURRENT-LIMITING, TIME-DELAY, UL CLASS L FUSES.

C. FUSES RATED 600 AMPS AND BELOW SHALL BE CUREENT-LIMITING, DUAL-ELEMENT, TTIME-DELAY UL CLASS RK-1 FOR NON-MOTOR CIRCUITS AND UL CLASS RK-5 FOR MOTORL CIRCUITS.

D. ALL FUSES SHALL BE OF THE SAME MANUFACTURER.

2.09 CIRCUIT BREAKERS

A. FOR PANELBOARD APPLICATIONS, CIRCUIT BREAKERS SHALL BE BOLTED TO THE PANELBOARD BUS BARS. WHERE CIRCUIT BREAKERS ARE INSTALLED IN EXISTING PANELBOARD BREAKERS SHALL BE OF THE SAME MANUFACTURER AND INTERRUPTING RATING. BREAKERS SHALL BE COMPATIBLE WITH EXISTING PANELBOARD.

B. CIRCUIT BREAKERS SHALL BE "THERMAL MAGNETIC" TYPE, QUICK-MAKE, QUICK- BREAK, TRIP-FREE WITH NON-WELDING CONTACTS COMPENSATED FOR AMBIENT TEMPERATURES AND SHALL HAVE A MINIMUM SHORT CIRCUIT RATING OF 10,000 AMPERES SYMMETRICAL FOR 120/280V PANELS AND 14,000 AMPERES SYMMETRICAL FOR 277/480V PANELS OR HIGHER WHERE NOTED.

C. MULTI-WIRE BRANCH CIRCUITS SUPPLYING POWER TO MORE THAN ONE DEVICE OR EQUIPMENT SHALL BE PROVIDED WITH A MEANS TO DISCONNECT SIMULTANEOUSLY ALL UNGROUNDED CONDUCTORS AT THE PANELBOARD WHERE THE BRANCH CIRCUIT ORIGINATES. CONTRACTOR SHALL COORDINATE WITH LOCAL AHJ THE MEANS REQUIRED TO MEET NEC/NYCEC SECTIONS 210.4(B). CONTRACTOR SHALL REMOVE AND REPLACE ALL EXISTING CIRCUIT BREAKERS THAT CAN NOT BE RETROFITTED WITH TIE BARS AS REQUIRED TO COMPLY WITH REQUIREMENT.

D. TANDEM BREAKERS MAY NOT BE UTILIZED.

E. PROVIDE BREAKER LOCKS FOR ALL NEW AND EXISTING BREAKERS SERVING EXIT LIGHTS, EMERGENCY LIGHTING AND EMERGENCY BATTERY PACKS.

F. WHERE INDICATED TO BE LSI TYPE, CIRCUIT BREAKERS SHALL BE SOLID-STATE ELECTRONIC TRIP WITH FIELD-ADJUSTABLE LONG-TIME AND SHORT-TIME PICKUP LEVELS, LONG-TIME AND SHORT-TIME TIME ADJUSTMENTS, INSTANTANEOUS TRIP. PROVIDE ADJUSTABLE GROUND FAULT PICKUP AND TIME DELAY WHERE INDICATED.

2.10 PANELBOARDS

A. PANELBOARD BOXES SHALL BE MADE OF SHEET STEEL "BENT-UP" OR RIVETED OR BOLTED TOGETHER WITH EXTERIOR ANGLE IRON FRAME. BOX SHALL BE OF SUFFICIENT SIZE TO ALLOW A GUTTER AT LEAST 6" IN WIDTH ENTIRELY SURROUNDING EACH SECTION OF BOARD. PANELBOARDS SHALL BE SURFACE OR FLUSH TYPE AS NOTED ON THE DRAWINGS. PANEL BOX AND COVER SHALL BE GIVEN TWO COATS OF GRAY ENAMEL PAINT.

B. PROVIDE CODE GAUGE STEEL DOORS FOR ALL PANELBOARD BOXES. FRONT COVER SHALL BE A "DOOR WITHIN A DOOR" TYPE. THE OUTER DOOR (TRIM) SHALL ALLOW ACCESS TO ENTIRE PANELBOARD BOX INCLUDING GUTTER SPACES. OUTER DOOR (TRIM) SHALL BE ATTACHED DIRECTLY TO BOX BY A FULL LENGTH PIANO HINGE. THE INNER DOOR SHALL ALLOW ACCESS TO CIRCUIT BREAKERS ONLY. PROVIDE LOCK AND SET OF KEYS FOR INNER DOOR PER PANELBOARD.

C. PANEL BUS BARS SHALL BE COPPER PROPORTIONED FOR A CURRENT DENSITY OF 1000 AMPERES PER SQUARE INCH OF CROSS-SECTIONAL AREA. PROVIDE A COPPER EQUIPMENT GROUND BAR IN EACH PANEL, AND A COPPER ISOLATED GROUND BAR IN NOTED PANELS.

D. PANELS SHALL BE PROVIDED WITH NEUTRAL BARS SIZED AT 200% OF THE PHASE BUS BARS.

E. ALL MAIN BREAKERS SHALL BE SEPARATELY MOUNTED ON TOP OR BOTTOM OF PANEL TO SUIT CABLE ENTRY

F. ALL FLOOR MOUNTED DISTRIBUTION EQUIPMENT, INCLUDING PANELBOARDS AND/OR DISTRIBUTION PANELBOARDS SHALL BE INSTALLED ON A 4" HIGH CONCRETE BASE TO EXTEND 2" ON ALL SIDES WITH CHAMFERED CORNERS. ALL CONCRETE WORK TO BE INCLUDED, IN THIS DIVISION.

G. A TYPEWRITTEN LIST OF CIRCUITS SHOWING CLEARLY THE LOADS SUPPLIED BY EACH CIRCUIT SHALL BE INSTALLED ON THE INSIDE OF EACH PANEL BOARD DOOR. THIS LIST SHALL BE MOUNTED IN A STEEL FRAME UNDER A PLASTIC WINDOW. EACH PANEL SHALL BE EXTERNALLY TAGGED WITH PERMANENT LAMACOID PLATE INDICATING PANEL DESIGNATION AND VOLTAGE. PANEL DIRECTORY SHALL BE SUBMITTED TO ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLING IN PANELBOARD. LOAD DESCRIPTION SHALL INCLUDE COLUMN GRID LINES, ROOM NUMBERS, OR OTHER INFORMATION TO CLEARLY DISTINGUISH LOAD LOCATION.

H. PHASE LEGS OF ALL PANELS SHALL BE BALANCED AT SUPPLY POINT TO WITHIN 10% AFTER ALL CIRCUITS ARE WIRED AND LOADS CONNECTED.

2.11 TRANSFORMERS

A. THREE PHASE TRANSFORMERS SHALL BE 480 VOLT DELTA PRIMARY AND 208/120 VOLT WYE SECONDARY IN A NEMA 1 VENTILATED ENCLOSURE, UNLESS OTHERWISE NOTED. TRANSFORMERS SHALL HAVE A MINIMUM OF TWO 2-1/2% FULL CAPACITY PRIMARY TAPS ABOVE AND FOUR 2-1/2% FULL CAPACITY PRIMARY TAPS BELOW NORMAL PRIMARY VOLTAGE. ADJUST SECONDARY VOLTAGE TO BE 208/120 WHEN INSTALLED.

B. TRANSFORMERS 15KVA AND ABOVE SHALL BE 115 DEGREE CENTIGRADE TEMPERATURE RISE ABOVE 40 DEGREES CENTIGRADE AMBIENT BASED UPON A 220°C INSULATION SYSTEM.

C. DRY TYPE TRANSFORMERS SHALL BE OF THE SAME MANUFACTURER AS THE BASE BUILDING BUT WITH A DESIGN K FACTOR OF 13 AND WITH ELECTROSTATICALLY SHIELDED, COPPER WINDINGS. TRANSFORMERS SHALL NOT BE "T-TAP" TYPE.

D. ALL NON LINEAR LOAD TRANSFORMERS SHALL BE INSTALLED WITH NEUTRAL CONDUCTORS SIZED AT TWICE THE AMPACITY OF THE PHASE CONDUCTORS. PROVIDE DOUBLE LUGS ON TRANSFORMER NEUTRALS FOR CONNECTION OF CABLES.

E. TRANSFORMERS SHALL BE PROVIDED WITH COPPER WINDINGS.

F. 75KVA TRANSFORMERS & LOWER SHALL BE SUSPENDED FROM SLAB WITH SUSPENSION RODS AND SPRING ISOLATORS.

G. TRANSFORMERS NOTED AS FLOOR MOUNTED SHALL BE INSTALLED WITH VIBRATION ISOLATION.

H. TRANSFORMERS SHALL COMPLY WITH DEPARTMENT OF ENERGY EFFICIENT REQUIREMENTS.

2.12 LIGHTING FIXTURES

A. ALL LIGHTING FIXTURE MOUNTING HARDWARE SHALL MATCH AND BE COORDINATED WITH THE NEW CEILING SYSTEM TYPE. ALL FIXTURES SHALL BE EQUIPPED WITH "EARTHQUAKE" CLIPS. ALL LIGHTING FIXTURES SHALL BE INSTALLED WITH SEISMIC BRACING AS INDICATED ON ARCHITECTURAL CEILING DETAILS.

B. ALL FIXTURES SHALL BE FREE OF LIGHT LEAKS BELOW CEILING.

C. FLUORESCENT BALLASTS SHALL BE UL'S CLASS "P" AND SHALL CONFORM TO ANSI AND UL SPECIFICATION WITH LABELS OF APPROVAL BY UL AND CERTIFICATION BY C.B.M. BALLASTS SHALL COMPLY WITH THE STATE ENERGY CODE. BALLASTS FOR FLUORESCENT LAMPS SHALL BE OF THE ENERGY SAVING SUPER LOW HEAT DESIGN WITH HIGH POWER FACTOR (0.9 MINIMUM) AND A HIGH BALLAST FACTOR (0.95 MINIMUM). ALL BALLASTS SHALL BE SUPPLIED AS UNIVERSAL VOLTAGE, SUITABLE TO BE CONNECTED TO 120 VOLT OR 277 VOLT LIGHTING.

D. WHERE DIMMING OF FLUORESCENT FIXTURES IS REQUIRED, THE ELECTRONIC BALLAST INSTALLED MUST BE COMPATIBLE WITH THE DIMMING SPECIFIED.

E. ALL FLUORESCENT LIGHTING FIXTURES THAT UTILIZE DOUBLE ENDED LAMPS OR ARE SUPPLIED FROM MULTI-WIRE BRANCH CIRCUITS AND CONTAIN BALLASTS THAT CAN BE SERVICED IN PLACE SHALL BE PROVIDED WITH A DISCONNECTING MEANS.

F. REFER TO ARCHITECTURAL DRAWINGS FOR ALL LIGHTING FIXTURE SPECIFICATIONS.

G. ALL FIXTURES SHALL BE COMPLETE WITH NEW LAMPS, BALLASTS, ACCESSORIES AND MOUNTING APPURTENANCES.

H. ALL LIGHT FIXTURES SHALL BE U.L. APPROVED.

I. CONTRACTOR SHALL AIM AND ADJUST ALL LIGHT FIXTURES IN PRESENCE OF LIGHTING CONSULTANT.

J. WHERE DIMMING OF FLUORESCENT FIXTURES IS REQUIRED IN DAYLIGHT ZONES, THE ELECTRONIC BALLAST INSTALLED SHALL BE COMPATIBLE WITH THE DAYLIGHTING SENSOR, AS NOTED BY THE LIGHTING DESIGNER/ARCHITECT SCHEDULE. CONTRACTOR WILL BE RESPONSIBLE FOR REVIEWING FIXTURE SPECIFICATION AND ENSURING SENSOR INSTALLED IS COORDINATED WITH FIXTURE TYPE.

K. WHERE DIMMING OF LOW VOLTAGE FIXTURES IS REQUIRED, THE STEP DOWN VOLTAGE TRANSFORMER SHALL BE ELECTRONIC (OR MAGNETIC) AS NOTED BY THE LIGHTING DESIGNER/ARCHITECT SCHEDULE. CONTRACTOR WILL BE RESPONSIBLE FOR REVIEWING FIXTURE SPECIFICATION AND ENSURING DIMMER SWITCH INSTALLED IS COORDINATED WITH FIXTURE TYPE.

2.13 GROUNDING

A. PROVIDE SUPPLEMENTARY GROUND BONDING WHERE METALLIC CONDUITS TERMINATE AT METAL CLAD EQUIPMENT (OR AT THE METAL PULL BOX OF EQUIPMENT) FOR WHICH A GROUND BUS IS SPECIFIED WITH A BUSHING OF THE GROUNDING TYPE CONNECTED INDIVIDUALLY TO GROUND BUS.

B. GROUND ALL EQUIPMENT IN ACCORDANCE WITH LATEST EDITION OF THE NATIONAL ELECTRICAL CODE. PROVIDE SEPARATE GREEN INSULATED GROUND CONDUCTOR IN EVERY CONDUIT TO ALL DEVICES, LIGHTING FIXTURES AND FEEDERS (PANELBOARDS, DISCONNECT SWITCHES, ETC.)

C. ALL GROUND WIRES SHALL BE SUITABLY PROTECTED FROM MECHANICAL INJURY.

D. SPECIALTY GROUNDING AS DETAILED ON THE DESIGN DRAWINGS OR REQUESTED AS ELECTRICAL CONTRACTOR SCOPE BY OTHER CONSULTANTS DOCUMENTS.

2.14 SELF-POWERED EXIT SIGNS

A. FURNISH AND INSTALL SELF-POWERED EXIT SIGNS COMPLETE WITH INTEGRAL BATTERY/CHARGER CAPABLE OF OPERATING THE SIGN FOR 90 MINUTES IN THE EVENT OF A POWER FAILURE.

B. UNIT SHALL HAVE SEALED NICKEL CADMIUM BATTERY, LED ILLUMINATORS, TEST BUTTON AND INDICATING LIGHT.

C. BATTERY/CHARGER PACK SHALL BE MOUNTED ABOVE THE SIGN. CEILING MOUNTED SIGNS SHALL BE ARRANGED SO THAT THE PACK IS RECESSED ABOVE THE CEILING. WALL MOUNTED SIGNS SHALL HAVE CONCEALED BATTERY PACKS.

D. EDGE LIT PANEL SHALL HAVE LEGEND "EXIT" IN RED LETTERING, 6" HIGH OR 8" HIGH IN PLACES OF ASSEMBLY OR WHERE REQUIRED BY LL.

E. EXIT SIGNS SHALL MATCH BUILDING STANDARD OR BE MANUFACTURED BY ATLITE, ENCORE, LIGHT ALARMS, OR APPROVED EQUAL.

F. SINGLE FACE AND DOUBLE FACE EXIT SIGNS SHALL BE PROVIDED WITH MYLAR BACKING.

G. EXTEND WIRING TO NEW EMERGENCY LUMINAIRES FROM EXISTING CIRCUITS AVAILABLE IN CEILING SPACE. DO NOT OVERLOAD CIRCUIT. PROVIDE NEW CIRCUITS AS NECESSARY, IF REQUIRED. PLANS DENOTE FINAL LOCATION OF EMERGENCY LUMINAIRES. RECIRCUIT EXISTING NORMAL AND EMERGENCY LIGHTING CIRCUITS TO OBTAIN LAYOUT AS SHOWN.

H. CONNECT EXIT LIGHTS TO NEAREST EXIT LIGHT CIRCUIT ON THIS FLOOR (IF EXISTS). EXIT LIGHTS TO MATCH BASE BUILDING STANDARD UNLESS OTHERWISE NOTED. DO NOT OVERLOAD CIRCUIT. PROVIDE NEW CIRCUITS AS NECESSARY, IF REQUIRED.

I. EXIT SIGN SHALL BE UL LISTED AND SHALL MEET THE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.

J. ELECTRICAL CONTRACTOR IS RESPONSIBLE TO INCLUDE COST TO REPLACE ALL EXISTING BASE BUILDING RED "EXIT" SINGS (INDICATED ON THE PLANS AS EXISTING OR EXISTING TO BE RELOCATED) WITH NEW EDGELIT LED TYPE FULLY RECESSED.

2.15 MOTORS AND APPARATUS FURNISHED BY OTHERS

A. INSTALL ALL WIRING IN CONDUITS. CONNECT CONDUIT TO MOTOR CONDUIT TERMINAL BOXES WITH 18" TO 24" OF FLEXIBLE CONDUIT FROM END OF CONDUIT TO MOTOR TERMINAL BOX.

B. PROVIDE CONNECTIONS TO ALL "EXISTING TO BE RELOCATED" AS WELL AS NEW MOTORS, CONTROLLERS, DISCONNECTS, ACTUATING AND CONTROL DEVICES. CONDUCTORS TO MOTORS TO BE THE SAME AS TO CONTROLLERS EXCEPT AS NOTED.

C. MOTORS, CONTROLLERS, ACTUATING AND CONTROL DEVICES WILL BE SUPPLIED UNDER SECTIONS OF WORK EXCEPT AS NOTED.

D. ACCEPT DELIVERY OF CONTROLLERS, OR RELOCATE EXISTING CONTROLLERS, ERECT ON WALLS OR ABOVE CEILING AS INDICATED AND WIRE UNDER THIS SECTION EXCEPT AS NOTED.

E. WIRE ALL MOTOR AND ACTUATING DEVICES SUPPLIED AND INSTALLED UNDER OTHER SECTIONS OF WORK EXCEPT AS NOTED.

F. FURNISH DISCONNECT SWITCHES UNDER THIS SECTIONS OF WORK EXCEPT AS NOTED.

G. LEAVE MOTOR, CONTROL AND ACTUATING EQUIPMENT READY FOR OPERATION.

H. ASCERTAIN EXACT LOCATIONS OF CONTROLLERS AND CONTROL SERVICES PRIOR TO INSTALLATION AND PULLING WIRING.

I. COORDINATE WITH ALL OTHER TRADES AND PROVIDE ALL WIRING, CONDUIT, JUNCTION BOXES, DISCONNECTS, CONNECTIONS AND TERMINATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER WIRING AND NECESSARY ELECTRICAL ADJUSTMENTS AS REQUIRED BY THE EQUIPMENT SPECIFICATION.

J. UNLESS OTHERWISE NOTED, ALL STARTERS AND CONTROL WIRING TO BE PROVIDED BY DIVISION 15. DIVISION 16 TO RECEIVE, INSTALL STARTERS AND PROVIDE ALL LINE-SIDE AND LOAD-SIDE POWER WIRING AND REQUIRED ISOLATING DISCONNECT SWITCHES.

K. CONFIRM ELECTRICAL REQUIREMENTS AND EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT WITH DIVISION 15 PRIOR TO INSTALLATION

2.16 CUTTING AND PATCHING

A. ALL CUTTING AND PATCHING REQUIRED TO THE EXISTING BUILDING STRUCTURE FOR THE WORK SHALL BE INCLUDED UNDER THIS CONTRACT AND BE ACCEPTABLE TO THE LANDLORD. OBTAIN WRITTEN APPROVAL FROM LANDLORD BEFORE ANY CUTTING IS CARRIED OUT.

B. WHERE CONDUITS PASS THROUGH FIRE RATED WALLS OR FLOORS, PROVIDE FIRE STOPPING MATERIAL LISTED WITH, AND BEAR LABEL OF CSA AND ULC, AND MAINTAIN SAME FIRE RATING OF BUILDING COMPONENT PENETRATION.

2.17 BALANCING AND METERING

A. MEASURE PHASE CURRENT TO PANELBOARDS WITH NORMAL LOADS OPERATING AT TIME OF ACCEPTANCE. ADJUST BRANCH CIRCUIT CONNECTIONS AS REQUIRED TO OBTAIN BEST BALANCE OF CURRENT BETWEEN PHASES AND SUBMIT A REPORT FOR INSERTION INTO MANUALS.

B. METER ALL POWER CIRCUIT FEEDERS. IF GROUND RESISTANCE ON ANY CIRCUIT IS LESS THAN THAT REQUIRED BY NEC OR OTHER GOVERNING REGULATIONS, SUCH CIRCUITS ARE TO BE CONSIDERED DEFECTIVE AND MUST BE REPLACED.

2.18 ELECTRICAL IDENTIFICATION

A. IDENTIFICATION DEVICES: A SINGLE TYPE OF IDENTIFICATION PRODUCT FOR EACH APPLICATION CATEGORY. USE COLORS PRESCRIBED BY ANSI A13.1, NFPA 70, AND THESE SPECIFICATIONS.

B. RACEWAY AND CABLE LABELS: COMPLY WITH ANSI A13.1, TABLE 3, FOR MINIMUM SIZE OF LETTERS FOR LEGEND AND MINIMUM LENGTH OF COLOR FIELD FOR EACH RACEWAY AND CABLE SIZE.

1. TYPE: PRETENSIONED, WRAPAROUND PLASTIC SLEEVES. FLEXIBLE, PREPRINTED, COLOR-CODED, ACRYLIC BAND SIZED TO SUIT THE DIAMETER OF THE ITEM IT IDENTIFIES.
2. TYPE: PREPRINTED, FLEXIBLE, SELF-ADHESIVE, VINYL. LEGEND IS OVERLAMINATED WITH A CLEAR, WEATHER- AND CHEMICAL-RESISTANT COATING.
3. COLOR: BLACK LETTERS ON ORANGE BACKGROUND.
4. LEGEND: INDICATES VOLTAGE.

C. COLORED ADHESIVE MARKING TAPE FOR RACEWAYS, WIRES, AND CABLES: SELF-ADHESIVE VINYL TAPE, NOT LESS THAN 1 INCH WIDE BY 3 MILS THICK.

D. UNDERGROUND WARNING TAPE: PERMANENT, BRIGHT-COLORED, CONTINUOUS-PRINTED, VINYL TAPE WITH THE FOLLOWING FEATURES:

1. NOT LESS THAN 6 INCHES WIDE BY 4 MILS THICK (150 MM WIDE BY 0.102 MM THICK).
2. COMPOUNDED FOR PERMANENT DIRECT-BURIAL SERVICE.
3. EMBEDDED CONTINUOUS METALLIC STRIP OR CORE.
4. PRINTED LEGEND THAT INDICATES TYPE OF UNDERGROUND LINE.

E. TAPE MARKERS FOR WIRE: VINYL OR VINYL-CLOTH, SELF-ADHESIVE, WRAPAROUND TYPE WITH PREPRINTED NUMBERS AND LETTERS.

F. COLOR-CODING CABLE TIES: TYPE 6/6 NYLON, SELF-LOCKING TYPE. COLORS TO SUIT CODING SCHEME.

G. ENGRAVED-PLASTIC LABELS, SIGNS, AND INSTRUCTION PLATES: ENGRAVING STOCK, MELAMINE PLASTIC LAMINATE PUNCHED OR DRILLED FOR MECHANICAL FASTENERS 1/16-INCH (1.6-MM) MINIMUM THICKNESS FOR SIGNS UP TO 20 SQ. IN. (129 SQ. CM) AND 1/8-INCH (3.2-MM) MINIMUM THICKNESS FOR LARGER SIZES. ENGRAVED LEGEND IN BLACK LETTERS ON WHITE BACKGROUND.

H. INTERIOR WARNING AND CAUTION SIGNS: COMPLY WITH 29 CFR, CHAPTER XVII, PART 1910.145. PREPRINTED, ALUMINUM, BAKED-ENAMEL-FINISH SIGNS, PUNCHED OR DRILLED FOR MECHANICAL FASTENERS, WITH COLORS, LEGEND, AND SIZE APPROPRIATE TO THE APPLICATION.

I. EXTERIOR WARNING AND CAUTION SIGNS: COMPLY WITH 29 CFR, CHAPTER XVII, PART 1910.145. WEATHER-RESISTANT, NONFADING, PREPRINTED, CELLULOSE-ACETATE BUTYRATE SIGNS WITH 0.0396-INCH (1-MM), GALVANIZED-STEEL BACKING, WITH COLORS, LEGEND, AND SIZE APPROPRIATE TO THE APPLICATION. 1/4-INCH (6-MM) GROMMETS IN CORNERS FOR MOUNTING.

J. FASTENERS FOR NAMEPLATES AND SIGNS: SELF-TAPPING, STAINLESS-STEEL SCREWS OR NO. 10/32 STAINLESS-STEEL MACHINE SCREWS WITH NUTS AND FLAT AND LOCK WASHERS.

2.19 EQUIPMENT FOR UTILITY COMPANY'S ELECTRICITY METERING

A. CURRENT-TRANSFORMER CABINETS: COMPLY WITH REQUIREMENTS OF ELECTRICAL POWER UTILITY COMPANY.

B. METER SOCKETS: COMPLY WITH REQUIREMENTS OF ELECTRICAL POWER UTILITY COMPANY.

C. MODULAR METER CENTERS: FACTORY-COORDINATED ASSEMBLY OF A MAIN METER CENTER CIRCUIT-BREAKER UNIT WITH WIREWAYS, TENANT METER SOCKET MODULES, AND TENANT BRANCH CIRCUIT BREAKERS ARRANGED IN ADJACENT VERTICAL SECTIONS, COMPLETE WITH INTERCONNECTING BUSES.

1. HOUSING: NEMA 250, [TYPE 1] [TYPE 3R] ENCLOSURE.
2. TENANT BRANCH CIRCUIT BREAKERS: SERIES COMBINATION RATED TO PROTECT CIRCUIT BREAKERS IN DOWNSTREAM PANELBOARDS THAT HAVE 10,000-A INTERRUPTING CAPACITY, MINIMUM.

2.20 EQUIPMENT FOR ELECTRICITY METERING BY OWNER

A. METER: ELECTRONIC KILOWATT-HOUR MEASURING TO RECORD ELECTRICITY USED.

B. METER: ELECTRONIC KILOWATT-HOUR/DEMAND MEASURING TO RECORD ELECTRICITY USED AND HIGHEST PEAK DEMAND OVER A TIME PERIOD ACCORDING TO ELECTRIC UTILITY. METER IS DESIGNED FOR USE ON THE TYPE AND RATING OF CIRCUIT INDICATED FOR ITS APPLICATION.

1. KILOWATT-DEMAND DISPLAY: DIGITAL, LIQUID-CRYSTAL TYPE TO REGISTER HIGHEST PEAK DEMAND.
2. ENCLOSURE: NEMA 250, TYPE 1, MINIMUM, WITH HASP FOR PADLOCKING OR SEALING.
3. MEMORY BACKUP: SELF-CONTAINED TO MAINTAIN MEMORY THROUGHOUT POWER OUTAGES OF 72 HOURS, MINIMUM.
4. SENSORS: CURRENT-SENSING TYPE, WITH CURRENT OR VOLTAGE OUTPUT, SELECTED FOR OPTIMUM RANGE AND ACCURACY FOR THE RATINGS OF THE CIRCUITS INDICATED FOR THIS APPLICATION.
   a. TYPE: [SPLIT] [SOLID] CORE.
5. ACCURACY: NATIONALLY RECOGNIZED TESTING LABORATORY CERTIFIED TO MEET ANSI C12.1 SPECIFICATIONS.
6. DEMAND SIGNAL COMMUNICATION INTERFACE: MATCH SIGNAL TO BUILDING AUTOMATION SYSTEM INPUT THAT CONVEYS DATA ON INSTANTANEOUS/INTEGRATED DEMAND LEVEL MEASURED BY METER USED FOR LOAD SWITCHING TO CONTROL DEMAND.

C. CURRENT-TRANSFORMER CABINETS: LISTED OR RECOMMENDED BY METERING EQUIPMENT MANUFACTURER FOR USE WITH SENSORS INDICATED.

D. AVAILABLE METERING EQUIPMENT MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

2.21 CONCRETE BASES

A. CONCRETE FORMS AND REINFORCEMENT MATERIALS: AS SPECIFIED IN OTHER SECTIONS OF THIS SPECIFICATION.

B. CONCRETE: 6" HIGH AS SPECIFIED IN OTHER SECTIONS OF THIS SPECIFICATION.

2.22 TOUCHUP PAINT

A. FOR EQUIPMENT: EQUIPMENT MANUFACTURER'S PAINT SELECTED TO MATCH INSTALLED EQUIPMENT FINISH.

B. GALVANIZED SURFACES: ZINC-RICH PAINT RECOMMENDED BY ITEM MANUFACTURER.

2.23 ACCEPTABLE MANUFACTURERS:

A. RECEPTACLES: PASS & SEYMOUR, LEVITON, OR HUBBELL

B. LIGHT SWITCHES: LUTRON, LEVITON, OR SENSORSWITCH

C. DIMMER SWITCHES: LUTRON, LEVITON, OR SENSORSWITCH

D. RACEWAYS: NATIONAL WIRE PRODUCTS, TRIANGLE, OR REPUBLIC

E. WIRE/CABLE: SOUTHWIRE, GENERAL CABLE, OR CERRO

F. METAL CLAD CABLE: AFC, SOUTHWIRE, OR STABILOY

G. FITTINGS, COUPLINGS, BUSHINGS, CONNECTORS: OZ GEDNEY, BURNDY, NEPCO, OR THOMAS AND BETTS

H. DISCONNECT SWITCHES: EATON, GE, SQUARE D, OR SIEMENS

I. FUSES: BUSSMAN, MERSEN, OR LITTLEFUSE

J. CIRCUIT BREAKERS: EATON, GE, SQUARE D OR SIEMENS. MATCH BUILDING STANDARD

K. PANELBOARDS: EATON, GE, SQUARE D OR SIEMENS, MATCH BUILDING STANDARD

L. TRANSFORMERS: EATON, GE, SQUARE D, SIEMENS. MATCH BUILDING STANDARD

M. LAMPS: GE, SYLVANIA, OR PHILLIPS

N. BALLASTS: OSRAM SYLVANIA, ESB, OR UNIVERSAL

O. FLOOR BOXES POKE-THRU'S: WIREMOLD, HUBBELL, OR FSR

P. OCCUPANCY SENSORS: REFER TO SCHEDULE

Q. WIREWAYS: HUBBELL OR WIREMOLD

R. METERING: EMON CORPORATION, NATIONAL METER INDUSTRIES, INC, SATEC. MATCH BUILDING STANDARD

S. TIME CLOCKS: TORK OR APPROVED EQUAL

T. RELAY CONTROLS: DOUGLAS, LUTRON, COOPER, OR APPROVED EQUAL

U. INVERTERS: MYERS POWER PRODUCTS, LITHONIA, PHILIPS BODINE

V. TVSS: CURRENT TECHONOLOGIES, SURGE SUPPRESSION INC., SQUARE D

PART 3 EXECUTION

3.01 GENERAL

A. PERFORM THE WORK AT SUCH TIME AND IN SUCH MANNER AS TO MINIMIZE INTERFERENCE WITH BUILDING'S NORMAL OPERATION. NOTIFY BUILDING MANAGEMENT REPRESENTATIVES IN ADVANCE EACH TIME A SERVICE OUTAGE OR INTERRUPTION WILL BE REQUIRED FOR THE PERFORMANCE OF SOME PHASE OF THE WORK. SCHEDULE SUCH SERVICE OUTAGE OR INTERRUPTION, ONLY AFTER HAVING RECEIVED APPROVAL OF DATE, HOUR, AND TIME INTERVAL REQUIRED THEREOF. SCHEDULE OF WORK AS DIRECTED SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE.

B. OPENINGS AROUND ELECTRICAL PENETRATIONS THROUGH FIRE RESISTANCE RATED WALLS, PARTITIONS, FLOORS, OR CEILINGS SHALL BE FIRE STOPPED USING APPROVED METHODS. SEALANT SHALL BE RATED FOR 3 HOURS. TELECOMMUNICATION CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING FIRE STOPPING IN 'IT' CONDUITS/SLEEVES/PENETRATIONS AFTER 'IT' WIRES ARE PULLED.

C. PROVIDE 277/480 VOLT DANGER LABELING AT ALL EQUIPMENT AND JUNCTION/PULL BOXES PER CODE.

D. MAINTAIN GROUND CONTINUITY THROUGHOUT ALL SYSTEMS.

E. MAINTAIN CONTINUITY AND PROTECT ALL EXISTING CIRCUITS TO REMAIN SERVING EQUIPMENT WITHIN BASE BUILDING CORE AREAS OR OTHER TENANT AREAS AFFECTED BY THE ALTERATION WORK. CONTRACTOR SHALL BE RESPONSIBLE TO TRACE ALL EXISTING CIRCUITS TO REMAIN ORIGINATING FROM PANELBOARDS, AND SUBMIT FINDINGS TO ENGINEER FOR CLARIFICATION PRIOR TO THE START OF ANY PANELBOARD WORK. WHENEVER IT IS REQUIRED THAT AN EXISTING CIRCUIT BE MODIFIED, REVISED, DISCONNECTED OR REMOVED IT SHALL BE UNDERSTOOD THAT THE CIRCUIT SHALL BE RECONNECTED AND SERVICE RE-ESTABLISHED IN THE REMAINING PORTION OF THE CIRCUIT AFFECTED BY THE ALTERNATION.

F. PRIOR TO ANY CHASING, CHOPPING, OR CORE DRILLING BEING PERFORMED, THE CONTRACTOR SHALL FIELD INVESTIGATE CONDITIONS AND COORDINATE WITH ALL APPROPRIATE TRADES TO ENSURE THAT WORK WILL BE IN HARMONY WITH OTHER WORK AND NOT AFFECTED ANY EXISTING BUILDING SYSTEMS. X-RAY SLABS IF REQUIRED. THIS WORK MUST BE APPROVED BY BUILDING MANAGEMENT PRIOR TO PROCEEDING. ALL CORING/CHASING WILL BE DONE ON OVERTIME.

G. FOR TEMPORARY POWER, FURNISH AND INSTALL WIRING FOR ADEQUATE LIGHT AND SMALL TOOLS POWER FOR THE PROJECT. THIS SHALL INCLUDE STRINGERS, LAMPS, OUTLETS, BREAKERS, AND FUSING, AS IT IS NECESSARY. ALL TEMPORARY WIRING SHALL BE REMOVED FROM SPACE AT COMPLETION OF PROJECT.

H. FURNISH AND INSTALL A MINIMUM 1" EMPTY CONDUIT FOR ALL WALL MOUNTED LOW VOLTAGE EQUIPMENT JUNCTION BOXES. CONDUIT SHALL BE STUBBED 6" ABOVE HUNG CEILING AND TURNED TOWARDS TERMINATION CLOSET ABOVE ACCESSIBLE CEILING AREA.

I. COORDINATE WITH THE BUILDING OWNER FOR ANY SERVICE INTERRUPTION OF EXISTING SYSTEMS AND GIVE NOTICE AS REQUIRED BY BUILDING RULES AND REGULATIONS OR A MINIMUM OF FIVE (5) DAYS PRIOR TO ANY WORK, WHICHEVER IS MORE STRINGENT. CONTRACTOR IS TO PERFORM WORK ON PREMIUM TIME SO AS TO NOT DISTURB EXISTING TENANTS ON OTHER FLOORS.

J. PRIOR TO CONNECTING ANY NEW CIRCUITS TO EXISTING PANELBOARDS, CONNECTED TO FEEDERS WHICH SERVE OTHER TENANTS OR LOADS, PERFORM A 30 DAY CONTINUOUS METERING OF AMPERAGE ON ALL THREE PHASES PER NEC/NYCEC ARTICLE 220-87, EXCEPTION (1). SUBMIT INITIAL RESULTS TO ENGINEER FOR EVALUATION AFTER RECORDING OF 7 DAYS. NEW LOADS SHALL NOT BE CONNECTED TO AFFECTED PANELS PRIOR TO ENGINEER'S EVALUATION.

K. WHEN USING TEMPORARY LIGHTING, THE CONTRACTOR SHALL CLEARLY LABEL PANELS AND BREAKERS USED FOR LIGHTING. LOCATION OF PANELS TO BE SHOWN ON FLOOR PLAN POSTED AT ENTRANCE TO WORK AREA. PROPER TEMPORARY LIGHTING AND POWER MUST BE INSTALLED AND MAINTAINED IN ALL WORK AREAS. CONNECTIONS TO EXISTING STAIRWELL AND EXIT LIGHT SYSTEMS ARE NOT PERMITTED.

L. THE CONTRACTOR SHALL CUT BACK TO THE FLOOR, WALL OR CEILING, REMOVE WIRING AND PLUG BOTH ENDS OF CONCEALED CONDUITS MADE OBSOLETE BY THIS ALTERNATION. EXPOSED CONDUITS, WIREWAYS, OUTLET BOXES, PULL BOXES, HANGERS, ETC. MADE OBSOLETE BY THE ALTERNATION WORK SHALL BE REMOVED, UNLESS OTHERWISE NOTED.

M. IT IS POSSIBLE THAT THERE WILL BE CERTAIN REMOVALS AND RELOCATIONS OF THE EXISTING ELECTRICAL INSTALLATION NECESSARY FOR THE SATISFACTORY PERFORMANCE OF THE WORK. THESE CHANGES CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS, BUT MUST BE CONSIDERED BY THE CONTRACTOR WHILE REVIEWING THE EXISTING CONDITIONS AT THE SITE AND PREPARING THE PROPOSAL.

3.02 ELECTRICAL EQUIPMENT INSTALLATION

A. HEADROOM MAINTENANCE: IF MOUNTING HEIGHTS OR OTHER LOCATION CRITERIA ARE NOT INDICATED, ARRANGE AND INSTALL COMPONENTS AND EQUIPMENT TO PROVIDE THE MAXIMUM POSSIBLE HEADROOM.

B. MATERIALS AND COMPONENTS: INSTALL LEVEL, PLUMB, AND PARALLEL AND PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS, UNLESS OTHERWISE INDICATED.

C. EQUIPMENT: INSTALL TO FACILITATE SERVICE, MAINTENANCE, AND REPAIR OR REPLACEMENT OF COMPONENTS. CONNECT FOR EASE OF DISCONNECTING, WITH MINIMUM INTERFERENCE WITH OTHER INSTALLATIONS.

D. RIGHT OF WAY: GIVE TO RACEWAYS AND PIPING SYSTEMS INSTALLED AT A REQUIRED SLOPE.

E. PROVIDE CONCRETE BASE FOR ALL FLOOR-MOUNTED ELECTRICAL EQUIPMENT.

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RS

PROJECT ENGINEER:
RS

DRAWING:
ELECTRICAL SPECIFICATIONS

SCALE:
NOT TO SCALE

SEAL

D.J. PENN
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DRAWING NO.

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As Noted on Plans Review

Development Services Department
Lee's Summit, Missouri
02/23/2022

ELECTRICAL SPECIFICATIONS

3.03 RACEWAY APPLICATION

A. USE THE FOLLOWING RACEWAYS FOR INDOOR INSTALLATIONS:
  1. EXPOSED: EMT.
  2. CONCEALED: EMT (MC CABLE WHERE PERMISSIBLE ACCORDING TO SECTION 3.06B).
  3. CONNECTION TO VIBRATING EQUIPMENT: FMC; EXCEPT IN WET OR DAMP LOCATIONS, USE LFMC.
  4. DAMP OR WET LOCATIONS: IMC/RMC.
  5. BOXES AND ENCLOSURES: NEMA 250, TYPE 1, UNLESS OTHERWISE INDICATED.

B. USE THE FOLLOWING RACEWAYS FOR OUTDOOR INSTALLATIONS:
  1. EXPOSED: IMC/RMC.
  2. CONCEALED: IMC/RMC.
  3. UNDERGROUND, BELOW SLAB: RNC - SCHEDULE 40 PVC.
  4. UNDERGROUND, ALL OTHER LOCATIONS: RNC - SCHEDULE 80 PVC.
  5. CONNECTION TO VIBRATING EQUIPMENT: LFMC.
  6. BOXES AND ENCLOSURES: NEMA 250, TYPE 3R OR TYPE 4.

3.04 RACEWAY AND CABLE INSTALLATION

A. CONCEAL RACEWAYS AND CABLES, UNLESS OTHERWISE INDICATED, WITHIN FINISHED WALLS, CEILINGS, AND FLOORS.

B. INSTALL RACEWAYS AND CABLES AT LEAST 6 INCHES (150 MM) AWAY FROM PARALLEL RUNS OF FLUES AND STEAM OR HOT-WATER PIPES. LOCATE HORIZONTAL RACEWAY RUNS ABOVE WATER AND STEAM PIPING.

C. USE TEMPORARY RACEWAY CAPS TO PREVENT FOREIGN MATTER FROM ENTERING.

D. MAKE CONDUIT BENDS AND OFFSETS SO ID IS NOT REDUCED. KEEP LEGS OF BENDS IN THE SAME PLANE AND STRAIGHT LEGS OF OFFSETS PARALLEL, UNLESS OTHERWISE INDICATED.

E. USE RACEWAY AND CABLE FITTINGS COMPATIBLE WITH RACEWAYS AND CABLES AND SUITABLE FOR USE AND LOCATION.

F. INSTALL RACEWAYS EMBEDDED IN SLABS IN MIDDLE THIRD OF SLAB THICKNESS WHERE PRACTICAL, AND LEAVE AT LEAST 1-INCH CONCRETE COVER. OBTAIN STRUCTURAL ENGINEER'S APPROVAL PRIOR TO INSTALLATION.
  1. SECURE RACEWAYS TO REINFORCING RODS TO PREVENT SAGGING OR SHIFTING DURING CONCRETE PLACEMENT.
  2. SPACE RACEWAYS LATERALLY TO PREVENT VOIDS IN CONCRETE.
  3. INSTALL CONDUIT LARGER THAN 1-INCH TRADE SIZE (DN27) PARALLEL TO OR AT RIGHT ANGLES TO MAIN REINFORCEMENT. WHERE CONDUIT IS AT RIGHT ANGLES TO REINFORCEMENT, PLACE CONDUIT CLOSE TO SLAB SUPPORT.
  4. TRANSITION FROM SCHEDULE 40 NONMETALLIC TUBING TO SCHEDULE 80 NONMETALLIC CONDUIT, RIGID STEEL CONDUIT, OR IMC BEFORE RISING ABOVE FLOOR.
  5. MAKE BENDS IN EXPOSED PARALLEL OR BANKED RUNS FROM SAME CENTERLINE TO MAKE BENDS PARALLEL. USE FACTORY ELBOWS ONLY WHERE ELBOWS CAN BE INSTALLED PARALLEL; OTHERWISE, PROVIDE FIELD BENDS FOR EXPOSED PARALLEL RACEWAYS.

G. INSTALL PULL WIRES IN EMPTY RACEWAYS. USE NO. 14 AWG ZINC-COATED STEEL OR MONOFILAMENT PLASTIC LINE WITH NOT LESS THAN 200-LB TENSILE STRENGTH. LEAVE AT LEAST 12 INCHES OF SLACK AT EACH END OF THE PULL WIRE.

H. INSTALL TELEPHONE AND SIGNAL SYSTEM RACEWAYS, 2-INCH TRADE SIZE AND SMALLER, IN MAXIMUM LENGTHS OF 100 FEET AND WITH A MAXIMUM OF TWO 90-DEGREE BENDS OR EQUIVALENT. SEPARATE LENGTHS WITH PULL OR JUNCTION BOXES WHERE NECESSARY TO COMPLY WITH THESE REQUIREMENTS, IN ADDITION TO REQUIREMENTS ABOVE.

I. CONNECT MOTORS AND EQUIPMENT SUBJECT TO VIBRATION, NOISE TRANSMISSION, OR MOVEMENT WITH A MAXIMUM OF 72-INCH (1830-MM) FLEXIBLE CONDUIT. INSTALL LFMC IN WET OR DAMP LOCATIONS. INSTALL SEPARATE GROUND CONDUCTOR ACROSS FLEXIBLE CONNECTIONS.

J. SET FLOOR BOXES LEVEL AND TRIM AFTER INSTALLATION TO FIT FLUSH TO FINISHED FLOOR SURFACE.

3.05 WIRING METHODS FOR POWER, LIGHTING, AND CONTROL CIRCUITS

A. FEEDERS: TYPE THHN/THWN INSULATED CONDUCTORS IN RACEWAY

B. UNDERGROUND FEEDERS AND BRANCH CIRCUITS: TYPE THWN OR SINGLE-WIRE, TYPE UF INSULATED CONDUCTORS IN RACEWAY.

C. BRANCH CIRCUITS: TYPE THW OR THHN/THWN INSULATED CONDUCTORS IN RACEWAY WHERE EXPOSED. METAL-CLAD CABLE SHALL BE PERMITTED WHERE PERMITTED BY AUTHORITIES HAVING JURISDICTION AND WHEN APPROVED BY LANDLORD RULES AND REGULATIONS. METAL-CLAD CABLE SHALL NOT BE INSTALLED WITHIN ELECTRIC CLOSETS OR DIRCTLY INTO PANELBOARDS.

D. REMOTE-CONTROL SIGNALING AND POWER-LIMITED CIRCUITS: TYPE THHN/THWN INSULATED CONDUCTORS IN RACEWAY FOR CLASSES 1, 2, AND 3, UNLESS OTHERWISE INDICATED.

E. MULTI-WIRE BRANCH CIRCUITS SHALL BE PROVIDED WITH A MEANS TO DISCONNECT SIMULTANEOUSLY ALL UNGROUNDED CONDUCTORS AT THE PANELBOARD WHERE THE BRANCH CIRCUIT ORIGINATES.

3.06 WIRING INSTALLATION

A. ALL CONDUCTORS SHALL BE RUN IN CONDUIT. [SEE WIRE AND CABLE SECTION 3.06B FOR ALTERNATE PRICING TO UTILIZE MC CABLE WHERE PERMISSIBLE.]

B. METAL CLAD (TYPE MC) FOR CONCEALED BRANCH CIRCUITRY IN TENANT SPACE ONLY MAYBE USED WHEN APPROVED BY TENANT AND BUILDING MANAGEMENT AND WHERE PERMITTED BY CODE. EMT SHALL BE USED OUTSIDE TENANT SPACE AND IN BUILDING CLOSETS. CONTRACTOR SHALL SUBMIT A DEDUCT ALTERNATE PRICE FOR USE OF MC IN LIEU OF EMT THROUGHOUT IN SUBMISSION OF BID. METAL CLAD (TYPE MC) SHALL NOT BE INSTALLED INTO PANELBOARDS.

C. WIRE CONNECTORS AND SPLICES: UNITS OF SIZE, AMPACITY RATING, MATERIAL, TYPE, AND CLASS SUITABLE FOR SERVICE INDICATED.

D. THE MINIMUM WIRE SIZE FOR BRANCH CIRCUITS SHALL BE NO. 12 AWG EXCEPT 120 VOLT CIRCUITS OVER 100' IN LENGTH SHALL BE NO. 10 AWG.

E. ALL FEEDER CONDUCTORS SHALL BE SIZED FOR MAXIMUM 2% VOLTAGE DROP PER ASHRAE 90.1-2010 8.4.1.1. BRANCH CIRCUITS SHALL ALSO BE SIZED FOR 2.5% VOLTAGE DROP

F. TAG ALL FEEDERS IN ALL PULL BOXES, GUTTER SPACES, AND WIREWAYS THROUGH WHICH THEY PASS.

G. TERMINATE STRANDED CONDUCTORS NO. 8 AWG AND LARGER, AT SWITCHBOARDS, TRANSFORMERS, UPS SYSTEMS WITH COMPRESSION TYPE CONNECTORS. TERMINATE WITH MECHANICAL LUGS AT PANELBOARDS.

H. JOIN OR TAP STRANDED CONDUCTORS (NO. 6 AWG AND LARGER) WITH PRESSURE INDENT TYPE CONNECTORS BURNDY, NEPCO, OR O.Z./GEDNEY WITH COMPOSITION INSULATING COVERS.

I. SPLICES IN BRANCH WIRING (NO. 8 AWG AND SMALLER) SHALL BE TWISTED AND MADE MECHANICALLY TIGHT; THEN SECURED WITH PIGTAIL CONNECTORS, CRIMP TYPE CONNECTORS SHALL NOT BE USED. UTILIZE UL LISTED, "SILICON FILLED" PIGTAIL CONNECTORS WHERE LOCATED IN WET ENVIRONMENTS OR OUTDOORS.

J. SUPPORT CONDUCTORS IN VERTICAL RACEWAYS IN ACCORDANCE WITH THE NEC BASED ON CONDUCTOR SIZE AND VERTICAL DISTANCE.

K. WALL MOUNTED DEVICES SHALL BE FED VERTICALLY. HORIZONTAL RUNS THROUGH PARTITIONS SHALL NOT BE PERMITTED, EXCEPT IN LOW HEIGHT PARTITIONS OR WHERE NOTED ON DRAWINGS

L. INSTALL WIRING AT OUTLETS WITH AT LEAST 12 INCHES (300 MM) OF SLACK CONDUCTOR AT EACH OUTLET.

M. CONNECT OUTLET AND COMPONENT CONNECTIONS TO WIRING SYSTEMS AND TO GROUND. TIGHTEN ELECTRICAL 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.

N. FOR ALL SIZES OF CONDUIT LARGER THAN 1-1/2", USE STANDARD ELBOW.

O. CONDUIT SHALL BE SECURELY FASTENED IN PLACE AND HANGERS, SUPPORTS OR FASTENINGS SHALL BE PROVIDED AT EACH ELBOW AND AT EACH END OF EACH STRAIGHT RUN TERMINATED AT A BOX OR CABINET.

P. PROVIDE EXPANSION FITTINGS IN EACH CONDUIT RUN WHEREVER IT CROSSES AN EXPANSION JOINT AND WHEREVER THE CONDUIT LENGTH EXCEEDS 200 FEET.

Q. UNLESS OTHERWISE INDICATED OR SPECIFIED, ALL WIRING SHALL BE INSTALLED CONCEALED.

R. FEEDERS AND BRANCH CIRCUITRY ABOVE HUNG CEILING AND IN PARTITIONS SHALL BE RUN IN ELECTRICAL METALLIC TUBING (EMT) UNLESS OTHERWISE NOTED. FINAL CONNECTIONS TO MOTORS, LIGHT FIXTURES, TRANSFORMERS, AND EQUIPMENT SUBJECT TO VIBRATION WILL BE DONE WITH FLEXIBLE METALLIC CONDUIT (GREENFIELD). LENGTH SHALL NOT EXCEED 6 FEET.

S. ALL CONDUIT IN MECHANICAL ROOMS, ELECTRICAL CLOSETS AND WHERE CONCEALED IN CONCRETE OR INSTALLED OUTDOORS SHALL BE RIGID THREADED REGARDLESS OF SIZE.

T. ALL CONDUITS INSTALLED IN CONCRETE OR OUTDOORS SHALL BE PROVIDED WITH WEATHERPROOF CONNECTORS.

U. ALL METAL CONDUIT TERMINATING IN A METAL ENCLOSURE SHALL HAVE AN INSULATED BUSHING. PROVIDE "GROUNDING" TYPE BUSHING WHERE REQUIRED.

V. WHERE CONDUITS ARE RUN IN THE CEILING SPACE OF THE FLOOR BELOW, THEY SHALL BE CONTINUOUS AND HAVE NO JUNCTION OR PULL BOXES UNLESS PRIOR APPROVAL IS GIVEN BY BUILDING MANAGEMENT/CLIENT.

W. INSTALL CONDUITS TO CONSERVE HEADROOM, PARALLEL AND PERPENDICULAR TO BUILDING LINES. DO NOT CLIP CONDUITS TO CEILING HANGER

X. INSTALL TWO (2) (1") SPARE CONDUITS UP TO CEILING SPACE FOR EACH RECESSED PANELBOARD. TERMINATE THESE CONDUITS IN A 6" X 6" X 4" COVERED JUNCTION BOX IN CEILING SPACE.

Y. WALL COMMUNICATIONS CONDUIT SHALL BE REAMED AND INSTALLED COMPLETE WITH INSULATED BUSHINGS AT EACH END.

3.07 ELECTRICAL SUPPORTING DEVICE APPLICATION

A. DAMP LOCATIONS AND OUTDOORS: HOT-DIP GALVANIZED MATERIALS OR NONMETALLIC, U-CHANNEL SYSTEM COMPONENTS.

B. DRY LOCATIONS: STEEL MATERIALS.

C. SUPPORT CLAMPS FOR PVC RACEWAYS: CLICK-TYPE CLAMP SYSTEM.

D. SELECTION OF SUPPORTS: COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.

E. STRENGTH OF SUPPORTS: ADEQUATE TO CARRY PRESENT AND FUTURE LOADS, TIMES A SAFETY FACTOR OF AT LEAST FOUR; MINIMUM OF 200-LB (90-KG) DESIGN LOAD.

3.08 SUPPORT INSTALLATION

A. INSTALL SUPPORT DEVICES TO SECURELY AND PERMANENTLY FASTEN AND SUPPORT ELECTRICAL COMPONENTS.

B. INSTALL INDIVIDUAL AND MULTIPLE RACEWAY HANGERS AND RISER CLAMPS TO SUPPORT RACEWAYS. PROVIDE U-BOLTS, CLAMPS, ATTACHMENTS, AND OTHER HARDWARE NECESSARY FOR HANGER ASSEMBLIES AND FOR SECURING HANGER RODS AND CONDUITS.

C. SUPPORT PARALLEL RUNS OF HORIZONTAL RACEWAYS TOGETHER ON TRAPEZE- OR BRACKET-TYPE HANGERS.

D. SIZE SUPPORTS FOR MULTIPLE RACEWAY INSTALLATIONS SO CAPACITY CAN BE INCREASED BY A 25 PERCENT MINIMUM IN THE FUTURE.

E. SUPPORT INDIVIDUAL HORIZONTAL RACEWAYS WITH SEPARATE, MALLEABLE-IRON PIPE HANGERS OR CLAMPS.

F. INSTALL 1/4-INCH- (6-MM-) DIAMETER OR LARGER THREADED STEEL HANGER RODS, UNLESS OTHERWISE INDICATED.

G. SPRING-STEEL FASTENERS SPECIFICALLY DESIGNED FOR SUPPORTING SINGLE CONDUITS OR TUBING MAY BE USED INSTEAD OF MALLEABLE-IRON HANGERS FOR 1-1/2-INCH (38-MM) AND SMALLER RACEWAYS SERVING LIGHTING AND RECEPTACLE BRANCH CIRCUITS ABOVE SUSPENDED CEILINGS AND FOR FASTENING RACEWAYS TO SLOTTED CHANNEL AND ANGLE SUPPORTS.

H. ARRANGE SUPPORTS IN VERTICAL RUNS SO THE WEIGHT OF RACEWAYS AND ENCLOSED CONDUCTORS IS CARRIED ENTIRELY BY RACEWAY SUPPORTS, WITH NO WEIGHT LOAD ON RACEWAY TERMINALS.

I. SIMULTANEOUSLY INSTALL VERTICAL CONDUCTOR SUPPORTS WITH CONDUCTORS.

J. SEPARATELY SUPPORT CAST BOXES THAT ARE THREADED TO RACEWAYS AND USED FOR FIXTURE SUPPORT. SUPPORT SHEET-METAL BOXES DIRECTLY FROM THE BUILDING STRUCTURE OR BY BAR HANGERS. IF BAR HANGERS ARE USED, ATTACH BAR TO RACEWAYS ON OPPOSITE SIDES OF THE BOX AND SUPPORT THE RACEWAY WITH AN APPROVED FASTENER NOT MORE THAN 24 INCHES (610 MM) FROM THE BOX.

K. INSTALL METAL CHANNEL RACKS FOR MOUNTING CABINETS, PANELBOARDS, DISCONNECT SWITCHES, CONTROL ENCLOSURES, PULL AND JUNCTION BOXES, TRANSFORMERS, AND OTHER DEVICES UNLESS COMPONENTS ARE MOUNTED DIRECTLY TO STRUCTURAL ELEMENTS OF ADEQUATE STRENGTH.

L. INSTALL SLEEVES FOR CABLE AND RACEWAY PENETRATIONS OF CONCRETE SLABS AND WALLS UNLESS CORE-DRILLED HOLES ARE USED. INSTALL SLEEVES FOR CABLE AND RACEWAY PENETRATIONS OF MASONRY AND FIRE-RATED GYPSUM WALLS AND OF ALL OTHER FIRE-RATED FLOOR AND WALL ASSEMBLIES. INSTALL SLEEVES DURING ERECTION OF CONCRETE AND MASONRY WALLS.

M. SECURELY FASTEN ELECTRICAL ITEMS AND THEIR SUPPORTS TO THE BUILDING STRUCTURE, UNLESS OTHERWISE INDICATED. PERFORM FASTENING ACCORDING TO THE FOLLOWING UNLESS OTHER FASTENING METHODS ARE INDICATED:
  1. WOOD: FASTEN WITH WOOD SCREWS OR SCREW-TYPE NAILS.
  2. MASONRY: TOGGLE BOLTS ON HOLLOW MASONRY UNITS AND EXPANSION BOLTS ON SOLID MASONRY UNITS.
  3. NEW CONCRETE: CONCRETE INSERTS WITH MACHINE SCREWS AND BOLTS.
  4. EXISTING CONCRETE: EXPANSION BOLTS.
  5. INSTEAD OF EXPANSION BOLTS, THREADED STUDS DRIVEN BY A POWDER CHARGE AND PROVIDED WITH LOCK WASHERS MAY BE USED IN EXISTING CONCRETE.
  6. STEEL: WELDED THREADED STUDS OR SPRING-TENSION CLAMPS ON STEEL.
    a. FIELD WELDING: COMPLY WITH AWS D1.1.
  7. WELDING TO STEEL STRUCTURE MAY BE USED ONLY FOR THREADED STUDS, NOT FOR CONDUITS, PIPE STRAPS, OR OTHER ITEMS.
  8. LIGHT STEEL: SHEET-METAL SCREWS.
  9. FASTENERS: SELECT SO THE LOAD APPLIED TO EACH FASTENER DOES NOT EXCEED 25 PERCENT OF ITS PROOF-TEST LOAD.

3.09 IDENTIFICATION MATERIALS AND DEVICES

A. INSTALL AT LOCATIONS FOR MOST CONVENIENT VIEWING WITHOUT INTERFERENCE WITH OPERATION AND MAINTENANCE OF EQUIPMENT.

B. COORDINATE NAMES, ABBREVIATIONS, COLORS, AND OTHER DESIGNATIONS USED FOR ELECTRICAL IDENTIFICATION WITH CORRESPONDING DESIGNATIONS INDICATED IN THE CONTRACT DOCUMENTS OR REQUIRED BY CODES AND STANDARDS. USE CONSISTENT DESIGNATIONS THROUGHOUT PROJECT.

C. SELF-ADHESIVE IDENTIFICATION PRODUCTS: CLEAN SURFACES BEFORE APPLYING.

D. IDENTIFY RACEWAYS AND CABLES WITH COLOR BANDING AS FOLLOWS:
  1. BANDS: PRETENSIONED, SNAP-AROUND, COLORED PLASTIC SLEEVES OR COLORED ADHESIVE MARKING TAPE. MAKE EACH COLOR BAND 2 INCHES (51 MM) WIDE, COMPLETELY ENCIRCLING CONDUIT, AND PLACE ADJACENT BANDS OF TWO-COLOR MARKINGS IN CONTACT, SIDE BY SIDE.
  2. BAND LOCATIONS: AT CHANGES IN DIRECTION, AT PENETRATIONS OF WALLS AND FLOORS, AT 50-FOOT (15-M) MAXIMUM INTERVALS IN STRAIGHT RUNS, AND AT 25-FOOT (8-M) MAXIMUM INTERVALS IN CONGESTED AREAS.
  3. COLORS: AS FOLLOWS:
    a. FIRE ALARM SYSTEM: RED.
    b. SECURITY SYSTEM: BLUE AND YELLOW.
    c. TELECOMMUNICATION SYSTEM: GREEN AND YELLOW.

E. TAG AND LABEL CIRCUITS DESIGNATED TO BE EXTENDED IN THE FUTURE. IDENTIFY SOURCE AND CIRCUIT NUMBERS IN EACH CABINET, PULL AND JUNCTION BOX, AND OUTLET BOX. COLOR-CODING MAY BE USED FOR VOLTAGE AND PHASE IDENTIFICATION.

F. INSTALL CONTINUOUS UNDERGROUND PLASTIC MARKERS DURING TRENCH BACKFILLING, FOR EXTERIOR UNDERGROUND POWER, CONTROL, SIGNAL, AND COMMUNICATION LINES LOCATED DIRECTLY ABOVE POWER AND COMMUNICATION LINES. LOCATE 6 TO 8 INCHES BELOW FINISHED GRADE. IF WIDTH OF MULTIPLE LINES INSTALLED IN A COMMON TRENCH OR CONCRETE ENVELOPE DOES NOT EXCEED 16 INCHES, OVERALL, USE A SINGLE LINE MARKER.

G. COLOR-CODE 208/120-V SYSTEM SECONDARY SERVICE, FEEDER, AND BRANCH-CIRCUIT CONDUCTORS THROUGHOUT THE SECONDARY ELECTRICAL SYSTEM SHALL BE SIMILAR TO (MATCHING BUILDING STANDARDS):
  1. PHASE A: BLACK.
  2. PHASE B: RED.
  3. PHASE C: BLUE.
  4. NEUTRAL: WHITE
  5. GROUND: GREEN

H. COLOR-CODE 480/277-V SYSTEM SECONDARY SERVICE, FEEDER, AND BRANCH-CIRCUIT CONDUCTORS THROUGHOUT THE SECONDARY ELECTRICAL SYSTEM SHALL BE SIMILAR TO (MATCHING BUILDING STANDARDS):
  1. PHASE A: YELLOW.
  2. PHASE B: BROWN.
  3. PHASE C: ORANGE.
  4. NEUTRAL: GRAY OR WHITE WITH A COLORED STRIPE (NOT GREEN),
  5. GROUND: GREEN

I. INSTALL WARNING, CAUTION, AND INSTRUCTION SIGNS WHERE REQUIRED TO COMPLY WITH 29 CFR, CHAPTER XVII, PART 1910.145, AND WHERE NEEDED TO ENSURE SAFE OPERATION AND MAINTENANCE OF ELECTRICAL SYSTEMS AND OF ITEMS TO WHICH THEY CONNECT. INSTALL ENGRAVED PLASTIC-LAMINATED INSTRUCTION SIGNS WITH APPROVED LEGEND WHERE INSTRUCTIONS ARE NEEDED FOR SYSTEM OR EQUIPMENT OPERATION. INSTALL METAL-BACKED BUTYRATE SIGNS FOR OUTDOOR ITEMS.

J. INSTALL ENGRAVED-LAMINATED EMERGENCY-OPERATING SIGNS WITH WHITE LETTERS ON RED BACKGROUND WITH MINIMUM 3/8-INCH- (9-MM-) HIGH LETTERING FOR EMERGENCY INSTRUCTIONS ON POWER TRANSFER, LOAD SHEDDING, AND OTHER EMERGENCY OPERATIONS.

3.10 UTILITY COMPANY ELECTRICITY-METERING EQUIPMENT

A. INSTALL EQUIPMENT ACCORDING TO UTILITY COMPANY'S WRITTEN REQUIREMENTS. PROVIDE GROUNDING AND EMPTY CONDUITS AS REQUIRED BY UTILITY COMPANY.

3.11 FIRESTOPPING

A. APPLY FIRESTOPPING TO CABLE AND RACEWAY PENETRATIONS OF FIRE-RATED FLOOR AND WALL ASSEMBLIES TO ACHIEVE FIRE-RESISTANCE RATING OF THE ASSEMBLY. FIRESTOPPING MATERIALS AND INSTALLATION REQUIREMENTS ARE SPECIFIED IN DIVISION 7 SECTION "FIRESTOPPING."

3.12 CONCRETE BASES

A. CONSTRUCT CONCRETE BASES OF DIMENSIONS INDICATED, BUT NOT LESS THAN 4 INCHES (100 MM) LARGER, IN BOTH DIRECTIONS, THAN SUPPORTED UNIT. FOLLOW SUPPORTED EQUIPMENT MANUFACTURER'S ANCHORAGE RECOMMENDATIONS AND SETTING TEMPLATES FOR ANCHOR-BOLT AND TIE LOCATIONS, UNLESS OTHERWISE INDICATED. USE 3000-PSI (20.7-MPA), 28-DAY COMPRESSIVE-STRENGTH CONCRETE AND REINFORCEMENT AS SPECIFIED A SEPARATE DIVISION OF THE SPECIFICATIONS.

3.13 DEMOLITION

A. PROTECT EXISTING ELECTRICAL EQUIPMENT AND INSTALLATIONS INDICATED TO REMAIN. IF DAMAGED OR DISTURBED IN THE COURSE OF THE WORK, REMOVE DAMAGED PORTIONS AND INSTALL NEW PRODUCTS OF EQUAL CAPACITY, QUALITY, AND FUNCTIONALITY.

B. ACCESSIBLE WORK: REMOVE EXPOSED ELECTRICAL EQUIPMENT AND INSTALLATIONS, INDICATED TO BE DEMOLISHED, IN THEIR ENTIRETY.

C. ABANDONED WORK: CUT AND REMOVE BURIED RACEWAY AND WIRING, INDICATED TO BE ABANDONED IN PLACE, 2 INCHES (50 MM) BELOW THE SURFACE OF ADJACENT CONSTRUCTION. CAP RACEWAYS AND PATCH SURFACE TO MATCH EXISTING FINISH.

D. REMOVE DEMOLISHED MATERIAL FROM PROJECT SITE.

E. REMOVE, STORE, CLEAN, REINSTALL, RECONNECT, AND MAKE OPERATIONAL COMPONENTS INDICATED FOR RELOCATION.

3.14 CUTTING AND PATCHING

A. CUT, CHANNEL, CHASE, AND DRILL FLOORS, WALLS, PARTITIONS, CEILINGS, AND OTHER SURFACES REQUIRED TO PERMIT ELECTRICAL INSTALLATIONS. PERFORM CUTTING BY SKILLED MECHANICS OF TRADES INVOLVED.

B. REPAIR AND REFINISH DISTURBED FINISH MATERIALS AND OTHER SURFACES TO MATCH ADJACENT UNDISTURBED SURFACES. INSTALL NEW FIREPROOFING WHERE EXISTING FIRESTOPPING HAS BEEN DISTURBED. REPAIR AND REFINISH MATERIALS AND OTHER SURFACES BY SKILLED MECHANICS OF TRADES INVOLVED.

3.15 REFINISHING AND TOUCHUP PAINTING

A. REFINISH AND TOUCH UP PAINT. PAINT MATERIALS AND APPLICATION REQUIREMENTS ARE SPECIFIED A SEPARATE DIVISION OF THE SPECIFICATIONS
  1. CLEAN DAMAGED AND DISTURBED AREAS AND APPLY PRIMER, INTERMEDIATE, AND FINISH COATS TO SUIT THE DEGREE OF DAMAGE AT EACH LOCATION.
  2. FOLLOW PAINT MANUFACTURER'S WRITTEN INSTRUCTIONS FOR SURFACE PREPARATION AND FOR TIMING AND APPLICATION OF SUCCESSIVE COATS.
  3. REPAIR DAMAGE TO GALVANIZED FINISHES WITH ZINC-RICH PAINT RECOMMENDED BY MANUFACTURER.
  4. REPAIR DAMAGE TO PVC OR PAINT FINISHES WITH MATCHING TOUCHUP COATING RECOMMENDED BY MANUFACTURER.

3.16 CLEANING AND PROTECTION

A. ON COMPLETION OF INSTALLATION, INCLUDING OUTLETS, FITTINGS, AND DEVICES, INSPECT EXPOSED FINISH. REMOVE BURRS, DIRT, PAINT SPOTS, AND CONSTRUCTION DEBRIS.

B. PROTECT EQUIPMENT AND INSTALLATIONS AND MAINTAIN CONDITIONS TO ENSURE THAT COATINGS, FINISHES, AND CABINETS ARE WITHOUT DAMAGE OR DETERIORATION AT TIME OF SUBSTANTIAL COMPLETION.

3.17 IDENTIFICATION OF EQUIPMENT:

A. ALL PANELBOARDS, CONTROL PANELS, AND CABINETS SPECIFIED HEREIN SHALL BE CLEARLY IDENTIFIED WITH THE EQUIPMENT DESIGNATION AND VOLTAGE RATING. IDENTIFICATION SHALL BE BY WHITE ON BLACK PLASTIC NAMEPLATE WITH 1/2" MINIMUM LETTERING ATTACHED BY SCREWS.

B. ALL PANELBOARDS, SPECIFIED HEREIN SHALL BE PROVIDED WITH A MEANS OF IDENTIFICATION OF THE MULTI-WIRE BRANCH CIRCUIT COLOR CODE IDENTIFICATION SYSTEM INSTALLED PER THE REQUIREMENTS OF NEC/NYCEC ARTICLE 210.5. REFER TO SPECIFICATION SECTION 2.03.E FOR COLOR CODING DESIGNATIONS.

C. JUNCTION BOXES, SPLICE BOXES, ETC., SHALL BE IDENTIFIED WITH PANEL AND CIRCUIT NUMBERS, FOR CIRCUITS CONTAINED THEREIN. FACEPLATE OF SWITCHES FOR EQUIPMENT SUCH AS MOTORIZED SCREENS, ETC., SHALL BE IDENTIFIED WITH THE NAME OF THE DEVICE CONTROLLED. IDENTIFICATION SHALL BE BY INDELIBLE MARKER IN CONCEALED LOCATIONS AND ADHESIVE ('P' TOUCH TYPE) LABELS IN EXPOSED LOCATIONS. EMERGENCY DEVICES SHALL BE IDENTIFIED IN RED.

D. CLEARLY LABEL ALL EXPOSED CONDUIT, PULLBOXES, JUNCTION BOXES, ETC TO INDICATE THE NATURE OF THE SERVICE.

E. EMPTY CONDUITS SHALL BE IDENTIFIED WITH TAGS AT BOTH ENDS INDICATING THE LOCATION OF TERMINATION OF THE OPPOSITE END.

F. FIRE ALARM SYSTEM JUNCTION BOXES SHALL BE PAINTED FIRE DEPARTMENT RED. APPROVED IDENTIFICATION CARDS SHALL BE FURNISHED ADJACENT TO ALL CONTROL PANELS AND MANUAL STATIONS.

G. ALL RECEPTACLES SHALL HAVE CIRCUIT NUMBERS AND ASSOCIATED PANEL DESIGNATION CLEARLY IDENTIFIED ON THE RECEPTACLES (OR DISCONNECT JUNCTION BOX, ETC...) FACEPLATE. IDENTIFICATION SHALL BE PERMANENT, INDELIBLE AND TYPEWRITTEN.

H. PROVIDE SCREW-FASTENED TYPEWRITTEN ENGRAVED LAMICOID NAMEPLATE WITH MINIMUM 1/4" HIGH WHITE LETTERING ON BLACK BACKGROUND, CLEARLY INDICATING THE FUNCTION, DESIGNATION OR EQUIPMENT CONTROLLED FOR EACH OF THE FOLLOWING:
  1. ALL PANEL AND SWITCH BOARDS
  2. MOTOR STARTERS AND MISCELLANEOUS CONTROL SWITCHES
  3. DISCONNECT SWITCHES
  4. ENCLOSED CIRCUIT BREAKERS
  5. CONTACTORS AND RELAYS
  6. CONTROL SWITCHES
  7. TRANSFORMERS
  8. UPS
  9. PRE-ACTION MANUAL PULL STATION.
  10. PRE-ACTION CONTROL PANEL.
  11. PRE-ACTION HORNS AND BELL.
  12. UPS COMPONENTS
  13. AUTOMATIC TRANSFER SWITCHES
  14. LIGHTING CONTROL RELAY PANELS

I. PROVIDE NAMEPLATES FOR ALL NEW AND EXISTING EQUIPMENT AS DESCRIBED ABOVE AND/OR DETAILED ON THE ENGINEERING DRAWINGS.

J. PROVIDE TYPEWRITTEN DIRECTORIES FOR NEW AND EXISTING PANELS. CONFIRM EXISTING IDENTIFICATION AND CORRECT WHERE NECESSARY

3.18 EXISTING EQUIPMENT REFURBISHMENT:

A. WHERE PANELBOARDS, SWITCHES, CIRCUIT BREAKERS, TRANSFORMERS, ETC. ARE EXISTING TO BE REUSED THE CONTRACTOR SHALL CLEAN AND REFURBISH THE EQUIPMENT. THIS SHALL INCLUDE TIGHTENING ALL CONNECTIONS, REPLACING DEFECTIVE MECHANISMS, EXERCISING MECHANISMS AND PROVIDING ANY MISCELLANEOUS COMPONENTS SO THE EQUIPMENT IS IN FIRST CLASS WORKING ORDER.

B. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO FIELD SURVEY ALL EXISTING BASE BUILDING RECEPTACLE, LIGHTING AND EQUIPMENT CIRCUITS WHICH ARE EXISTING TO REMAIN. PROVIDE AS BUILT SURVEY PRIOR TO THE START OF ANY WORK AND SUBMIT TO ENGINEER FOR RECORD. CIRCUITS SHALL REMAIN IN EXISTING PANELS OR WHEN PANELBOARDS ARE REPLACED, RETERMINATED IN NEW PANELBOARD.

3.19 ELECTRICAL FURNITURE SYSTEMS

A. THE ELECTRIFIED FURNITURE VENDOR WILL SUPPLY ALL RECEPTACLES, FURNITURE TASK LIGHTING FIXTURES, WIRING HARNESSES, CONNECTORS AND FITTINGS TO THE ELECTRICAL CONTRACTOR FOR THE COMPLETE WIRING INSTALLATION. ALL WIRING AND COMPONENTS SHALL BE INSTALLED AS DIRECTED BY VENDOR. ELECTRICAL CONTRACTOR SHALL FURNISH AN 18" MAXIMUM LIQUID TIGHT FLEXIBLE CONDUIT CONNECTIONS WITH REQUIRED PHASE CONDUCTORS, NEUTRAL CONDUCTORS AND GROUND CONDUCTORS AS INDICATED FROM WALL OR FLOOR OUTLET.

B. THE FURNITURE VENDOR SHALL CHALK THE FURNITURE SYSTEM OUTLINE ON THE FLOOR FOR COORDINATION OF POWER AND COMMUNICATION IN-FEED LOCATIONS. IN-FEED LOCATIONS INDICATED ON PLAN DOCUMENTS ARE FOR CLARITY PURPOSES. IN-FEED LOCATIONS AND QUANTITY SHALL BE APPROVED IN FIELD BY ARCHITECT AND FURNITURE SYSTEM VENDOR PRIOR TO INSTALLATION.

C. FURNITURE SYSTEM CIRCUITRY DESIGN IS DEVELOPED BASED UPON A "2+2" WIRING CONFIGURATION. CONTRACTOR SHALL CIRCUIT 2 PHASE CONDUCTORS, WITH A NEUTRAL FOR CIRCUITS "1&2" AND 2 PHASE CONDUCTORS, WITH A NEUTRAL FOR CIRCUITS "3&4". BOTH PAIRS OF CIRCUITS SHALL BE PROVIDED WITH A GROUND CONDUCTOR. CONTRACTOR SHALL INSTALL 8#10 AWG CONDUCTORS TO EACH FURNITURE SYSTEM INFEED.

D. MULT-FIWIRE BRANCH CIRCUITS SUPPLYING POWER TO PERMANENTLY CONNECTED FREESTANDING PARTITIONS (ELECTRIFIED FURNITURE SYSTEMS) SHALL BE PROVIDED WITH A MEANS TO DISCONNECT SIMULTANEOUSLY ALL UNGROUNDED CONDUCTORS AT THE PANELBOARD WHERE THE BRANCH CIRCUIT ORIGINATES. CONTRACTOR SHALL COORDINATE WITH LOCAL AHJ THE MEANS REQUIRED TO MEET NEC SECTIONS 605.7.

3.20 LIFE SAFETY TESTING

A. AFTER COMPLETION OF THE PROJECT, PERFORM A TEST OF THE EMERGENCY EGRESS LIGHTING SYSTEM. TEST SHALL BE PERFORMED AFTER DARK (AT LEAST 1 HOUR AFTER SUNSET); SIMULATE POWER FAILURE ON ALL LIGHTING CIRCUITS. TAKE LIGHT LEVEL READINGS ALONG PATHS OF EGRESS AT FLOOR LEVEL UTILIZING A FOOT CANDLE METER; RECORD READINGS ON A REDUCED SCALE (1/16"=1'-0") FLOOR PLAN. READINGS SHALL BE TAKEN ALONG THE ENTIRE EGRESS PATH, AND THE AVERAGE, MINIMUM, AND MAX TO MIN RATIO SHALL BE RECORDED. SUBMIT SEALED AND SIGNED COPY OF THE FLOOR PLAN READINGS TO THE ENGINEER.

3.21 WARNING LABELS

A. SWITCHBOARDS, PANELBOARDS AND ASSOCIATED EQUIPMENT (UPS, ETC.) THAT WILL REQUIRE ADJUSTMENT, SERVICING, INSPECTION, OR MAINTENANCE WHILE ENERGIZED SHALL BE FIELD MARKED INDICATING VOLTAGE AND WARNING QUALIFIED PERSONS OF POTENTIAL ELECTRIC ARC-FLASH HAZARDS PER NEC SECTION 110.16 AND NFPA 70E. REFER TO SECTION 1.26 FOR ADDITIONAL INFORMATION ON FLASH HAZARD ANALYSIS.

B. SERVICE EQUIPMENT SHLL BE FIELD MARKED INDICATING THE MAXIMUM AVAILABLE FAULT CURRENT IN ACCORDANCE WITH NEC 110.24 (A). CONTRACTOR IS RESPONSIBLE FOR OBTAINING CORRECT VALUES FROM THE UTILITY COMPANY,

3.22 PROTECTION

A. CONTRACTOR SHALL BE RESPONSIBLE FOR WORK AND EQUIPMENT UNTIL FINALLY INSPECTED, TESTED AND ACCEPTED. MATERIALS AND EQUIPMENT SHALL BE CAREFULLY STORED WHICH ARE NOT IMMEDIATELY INSTALLED AFTER DELIVERY TO SITE. CLOSE EXPOSED PARTS OF THE WORK WITH TEMPORARY COVERS, OR PLUGS DURING CONSTRUCTION, TO PREVENT ENTRY OF MOISTURE OR OBSTRUCTING MATERIALS.

B. PROTECT THE WORK AND MATERIAL OF OTHERS FROM DAMAGE INSTALLED AS PART OF THIS CONTRACT. RESTORE ANY WORK DAMAGED AND BE RESPONSIBLE FOR ALL CURRENT WORK AND ASSOCIATED COSTS.

3.23 FIELD QUALITY CONTROL

A. INSPECT INSTALLED COMPONENTS FOR DAMAGE AND FAULTY WORK, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
  1. RACEWAYS.
  2. BUILDING WIRE AND CONNECTORS.
  3. SUPPORTING DEVICES FOR ELECTRICAL COMPONENTS.
  4. ELECTRICAL IDENTIFICATION.
  5. ELECTRICITY-METERING COMPONENTS.
  6. CONCRETE BASES.
  7. ELECTRICAL DEMOLITION.
  8. CUTTING AND PATCHING FOR ELECTRICAL CONSTRUCTION.
  9. TOUCHUP PAINTING.
  10. PANELBOARDS
  11. SWITCHBOARDS
  12. AUTOMATIC TRANSFER SWITCHES
  13. UPS COMPONENTS

B. TEST OWNER'S ELECTRICITY-METERING INSTALLATION FOR PROPER OPERATION, ACCURACY, AND USABILITY OF OUTPUT DATA.
  1. CONNECT A LOAD OF KNOWN KW RATING, 1.5 KW MINIMUM, TO A CIRCUIT SUPPLIED BY THE METERED FEEDER.
  2. TURN OFF CIRCUITS SUPPLIED BY THE METERED FEEDER AND SECURE THEM IN THE "OFF" CONDITION.
  3. RUN THE TEST LOAD CONTINUOUSLY FOR EIGHT HOURS, MINIMUM, OR LONGER TO OBTAIN A MEASURABLE METER INDICATION. USE A TEST LOAD PLACEMENT AND SETTING THAT ENSURE CONTINUOUS, SAFE OPERATION.
  4. CHECK AND RECORD METER READING AT END OF TEST PERIOD AND COMPARE WITH ACTUAL ELECTRICITY USED BASED ON TEST LOAD RATING, DURATION OF TEST, AND SAMPLE MEASUREMENTS OF SUPPLY VOLTAGE AT THE TEST LOAD CONNECTION. RECORD TEST RESULTS.
  5. REPAIR OR REPLACE MALFUNCTIONING METERING EQUIPMENT OR CORRECT TEST SETUP; THEN RETEST. REPEAT FOR EACH METER IN INSTALLATION UNTIL PROPER OPERATION OF ENTIRE SYSTEM IS VERIFIED.

3.24 EXTRA MATERIALS:

A. IN ADDITION TO ALL MATERIALS AND INSTALLATION COMPONENTS INICATED ON THE DRAWINGS, ELECTRICAL CONTACOTR SHALL PROVIDE THE FOLLOWING (INCLUSIVE OF ALL MATERIAL AND LABOR ASSOCIATED WITH INSTALL):
  1. TWENTY-FIVE (25) DUPLEX RECEPTACLES
  2. FIVE (5) CEILING MOUNTED OCCUPANCY/VACANCY SENSORS
  3. TWELVE (12) 20 AMPERE, 1-POLE BRANCH CIRCUITS CONSISTING OF 100' OF 3#12 IN 3/4" CONDUIT.
  4. ALLOW FOR SIX (6) ADDITIONAL EXIT SIGNS PER FLOOR TO BE INSTALLED AS PER BUILDING INSPECTORS REQUIREMENTS UPON FINAL INSPECTION. INCLUDE FOR 30 FEET OF RACEWAY, WIRING AND FINAL CONNECTION TO EMERGENCY LIGHTING CIRCUIT.

3.25 COMMISSIONING:

A. ELECTRICAL SYSTEMS TO BE COMMISSIONED:
  1. LIGHTING CONTROL SYSTEM
  2. OCCUPANCY/VACANCY SENSORS
  3. LIGHTING CONTROL DEVICES
  4. EXISTING ELECTRICAL SUB-METERING

B. ELECTRICAL CONTRACTOR SHALL ASSIST OWNER SELECTED COMMISSIONING AGENT WITH THE COMMISSIONING OF THE LIGHTING CONTROL SYSTEM FOR COMPLIANCE ALL APPLICABLE CODE REQUIREMENTS (I.E. ENERGY CODE, ELECTRICAL CODE, ETC.).

C. ELECTRICAL CONTRACTOR SHALL INCLUDE IN THEIR BASE BID, THE SERVICES OF THE LIGHTING CONTROL SYSTEM AND SENSOR SYSTEM MANUFACTURER'S REPRESENTATIVES TO ATTEND AND ASSIST IN THE FINAL COMMISSIONING OF THE SYSTEMS.

D. COMMISSIONING SHALL ENSURE THAT ALL CONTROL HARDWARE AND SOFTWARE ARE CALIBRATED, ADJUSTED, PROGRAMMED AND IN PROPER WORKING CONDITION IN ACCORDANCE WITH CONSTRUCTION DOCUMENTS AND MANUFACTURER'S INSTALLATION INSTRUCTIONS.

E. COORDINATE ALL WORK ASSOCIATED WITH THE FUNDAMENTAL COMMISSIONING ACTIVITIES, INCLUDING:
  1. ATTEND ALL COMMISSIONING MEETINGS WITH ASSOCIATED SUB-CONTRACTORS AND MANUFACTURER'S REPRESENTATIVES THAT ARE REQUIRED TO COMPLETE THE COMMISSIONING OF THE EQUIPMENT PROVIDED.
  2. PERFORM AND DOCUMENT TESTING OUTLINED IN THE COMMISSIONING AUTHORITY PROCEDURES.
  3. WORK CLOSELY WITH THE COMMISSIONING AUTHORITY IN IDENTIFYING ALL OPERATING, MAINTENANCE, FAILURE MODES THAT MUST BE DEMONSTRATED AS PART OF THE COMMISSIONING PROCESS.
  4. COMPLETE PRE-STARTUP AND STARTUP ON ALL INSTALLED EQUIPMENT PRIOR TO ALL COMMISSIONING ACTIVITIES.
  5. COORDINATE, SCHEDULE, AND COMPLETE COMMISSIONING TASKS WITH THE COMMISSIONING AUTHORITY. THE ELECTRICAL CONTRACTOR SHALL BE MADE READILY AVAILABLE FOR OPERATING AND TESTING ALL EQUIPMENT TO BE COMMISSIONED.
  6. PROVIDE MANUFACTURER ACCEPTABLE TESTING DOCUMENTATION (STARTUP MANUALS) PRIOR TO START OF COMMISSIONING TESTING PROCEDURES.
  7. RESPONSIBLE FOR ALL COSTS FOR TESTING, INCLUDING PRE-TESTING DUE TO DEFICIENCIES/NON-COMPLIANCE WITH TESTING/SPECIFICATIONS.
  8. RESPONSIBLE TO SUPPLY AND CONNECT ALL TESTING EQUIPMENT REQUIRED FOR ANY PART OF THE COMMISSIONING PROCESS (I.E. LOAD BANKS, CABLES, INFRARED SCANNING, TEMPORARY COOLING MEANS, ETC.).

F. SYSTEM REVIEW SHALL INCLUDE THAT ALL SENSORS, SWITCHES, PROGRAMMED SCHEDULE CONTROLS, PHOTOSENSORS OR DAYLIGHT CONTROLS MEET THE FOLLOWING REQUIREMENTS:
  1. COMMISSIONING AGENT SHALL CONFIRM PLACEMENT, SENSITIVITY AND TIME OUT ADJUSTMENTS FOR OCCUPANT SENSORS YIELD ACCEPTABLE PERFORMANCE.
  2. COMMISSIONING AGENT SHALL CONFIRM THAT TIME SWITCHES AND PROGRAMMABLE SCHEDULE CONTROLS ARE PROGRAMMED TO TURN OFF LIGHTING
  3. COMMISSIONING AGENT SHALL CONFIRM THAT THE PLACEMENT AND SENSITIVITY ADJUSTMENTS FOR PHOTOSENSOR CONTROLS REDUCE ELECTRIC LIGHT BASED ON THE AMOUNT OF USABLE DAYLIGHT IN THE SPACE AS SPECIFIED.

G. ELECTRICAL CONTRACTOR SHALL PRETEST ALL SYSTEMS AND DEVICES AND SHALL SUBMIT A COMPLETION CERTIFICATE FROM THE MANUFACTURER'S REPRESENTATIVE, ON MANUFACTURER'S LETTERHEAD, THAT ALL SYSTEMS ARE OPERATIONAL AND PERFORM TO CONTRACT DOCUMENT SPECIFICATIONS. MANUFACTURER'S CERTIFICATE SHALL BE DELIVERED TO GENERAL CONTRACTOR/ CONSTRUCTION MANAGER, TENANT, AND ENGINEER A MINIMUM OF FIVE (5) DAYS PRIOR TO TENANT MOVE IN.

H. COMMISSIONING OF LIGHTING CONTROL SYSTEM (PROGRAMMABLE SYSTEM CONTROLS, OCCUPANT SENSORS, PHOTOSENSORS, AND DAYLIGHT CONTROLS) SHALL BE READY FOR COMMISSIONING AGENT NO FEWER THAN TEN (10) WORKING DAYS PRIOR TO TENANT MOVE IN

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ISSUE:
CONSTRUCTION DOCUMENTS
JANUARY 26, 2022
CLOUDED CHANGES
FEBRUARY 10, 2022
PER PLAN REVIEW COMMENTS
FEBRUARY 14, 2022

DRAWN BY:
RS

PROJECT ENGINEER:
RS

DRAWING:
ELECTRICAL SPECIFICATIONS

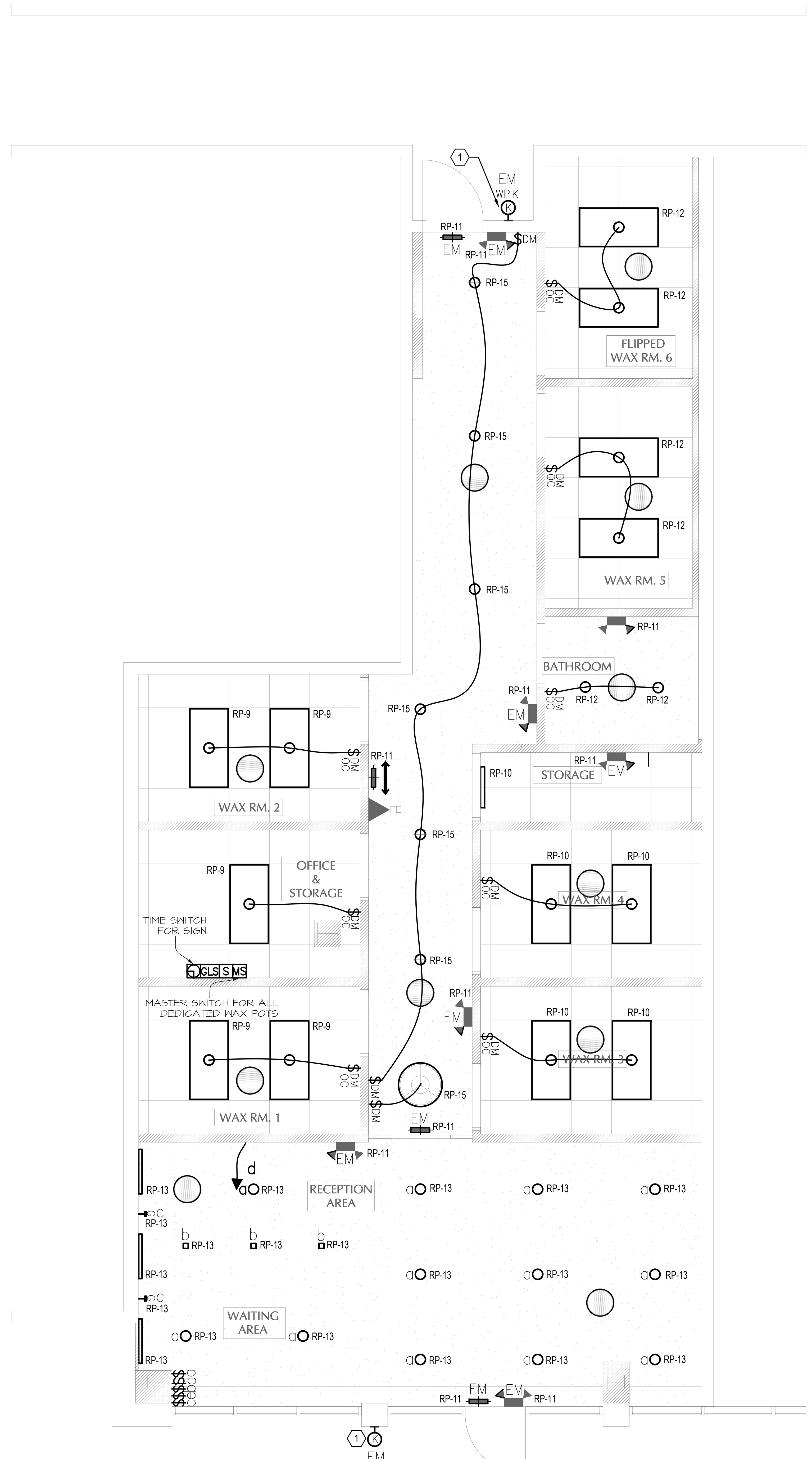
SCALE:
NOT TO SCALE

SEAL

D.J. PENN
NUMBER E-28507
01/26/2022

DRAWING NO.

E-005



LIGHTING NOTES

1. FOR EXACT LOCATION, QUANTITY AND ELEVATION OF LIGHTING FIXTURES AND SWITCHES REFER TO ARCHITECTURAL DRAWINGS AND COORDINATE WITH ARCHITECT IN THE FIELD.
2. ALL NIGHT LIGHTS SHALL BE UNSWITCHED AND CIRCUITED DIRECTLY TO ASSOCIATED ELECTRICAL PANELS. BRANCH CIRCUIT BREAKERS FEEDING STAIR LIGHTS SHALL BE SWITCH RATED AND LOCKED IN "ON" POSITION.
3. PROVIDE ADDITIONAL UNSWITCHED BATTERY PACK POWER SENSING LEG FOR ALL SWITCHED FIXTURES CONTAINING EMERGENCY BATTERY BALLASTS . FLUORESCENT FIXTURES LABELED "EM" SHALL BE FURNISHED WITH EMERGENCY BALLASTS.
4. LIGHTING FIXTURE SCHEDULE IS SHOWN ON THIS DRAWINGS FOR INFORMATION PURPOSES ONLY. LIGHTING FIXTURES SHOWN ARE THOSE SELECTED BY EWC AND THE OWNER.. SELECTION AND OVERALL LIGHTING DESIGN. REFER TO ARCHITECTURAL DRAWINGS FOR FURTHER INFORMATION
5. ALL OUTLET ARE TO BE LOCATED AT 18" A.F.F. U.O.N. ALL TOP OF SWITCHES ARE TO BE LOCATED AT 48" A.F.F. U.O.N.
6. LOCATE ALL ELEC. BOXES TO ALLOW FOR FACE PLACE INSULATION OVER THE MILLWORK FINISH, TYP.
7. PROVIDE DEDICATED CIRCUIT FOR OUTLET FOR EACH WAX CABINET.
8. ELECTRICIAN TO REVIEW PLAN AND CIRCUIT SCHEDULE BEFO WITH ARCHITECT PRIOR TO ANY WORK TO BEGIN.

KEY NOTES

(1) CONTRACTOR TO CONNECT EXTERIOR SIGNAGE TO BUILDING CIRCUIT AND CONTROLS

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FEBRUARY 14, 2022

DRAWN BY: RS

PROJECT ENGINEER: RS

DRAWING: ELECTRICAL FIRST FLOOR LIGHTING PLAN

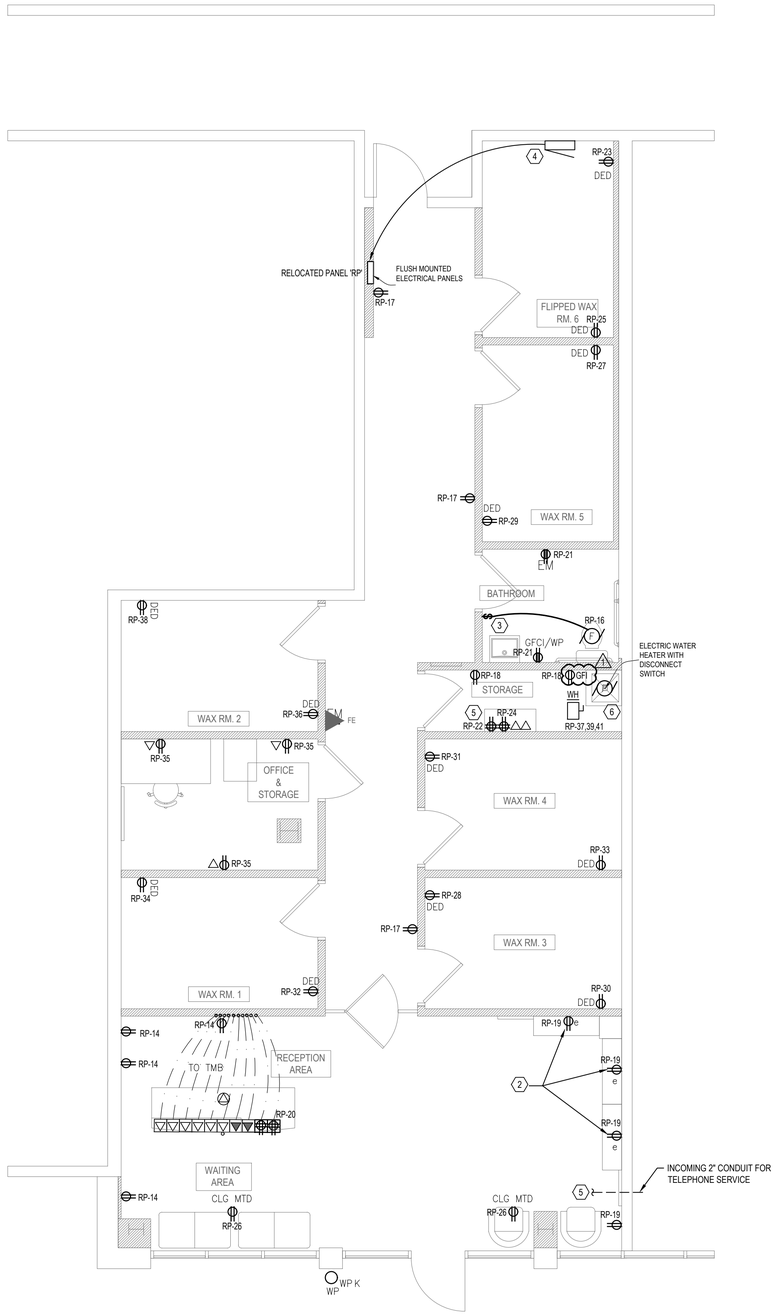
SCALE: 1/4" = 1'-0"

SEAL

STATE OF MISSOURI
D.J. PENN
NUMBER E-28507
REGISTERED PROFESSIONAL ENGINEER
01/26/2022

DRAWING NO.

E-101



POWER NOTES

1. ALL OUTLET ARE TO BE LOCATED AT 18" A.F.F. U.N.O ALL TOP OF SWITCHES ARE TO BE LOCATED AT 48" A.F.F. U.N.O.
2. LOCATE ALL ELECTRICAL BOXES TO ALLOW FOR FACE PLACE INSULATION OVER THE MILLWORK FINISH, TYPICAL.
3. PROVIDE DEDICATED CIRCUIT OUTLET FOR EACH WAX CABINET.
4. ELECTRICIAN TO REVIEW PLAN AND CIRCUIT SCHEDULE WITH ARCHITECT PRIOR TO COMMENCEMENT OF ANY WORK.
5. ALL OUTLETS AND OUTLET COVERS TO BE WHITE IN COLOR.
6. CONTRACTOR SHALL COORDINATE ALL LOW VOLTAGE SCOPE OF WORK AND VOLUME CONTROL WITHIN IT RACK WITH ARCHITECT.
7. UPON COMPLETION OF WORKS THE CONTRACTOR SHALL ENSURE THAT PANEL DIRECTORIES COMPLY WITH NEC 408.4.
8. ALL RECEPTACLES SHALL BE TAMPER RESISTANT.

KEY NOTES

1. CONTRACTOR TO CONNECT EXHAUST FAN TO LIGHT CIRCUIT SERVING SPACE.
2. SWITCHED RECEPTACLES. REFER TO LIGHTING PLAN FOR SWITCH LOCATION.
3. EXHAUST FAN TO BE SWITCHED INTEGRAL WITH BATHROOM LIGHTS. REFER TO LIGHTING PLAN FOR MORE INFORMATION.
4. EXISTING PANEL 'RP' TO BE RELOCATED AS SHOWN. EXTEND CONDUIT AND WIRING AS REQUIRED.
5. EXISTING 2" CONDUIT FOR TELEPHONE SERVICE TO BE EXTENDED FROM INCOMING LOCATION TO STORAGE ROOM FOR CIRCUITS #22 AND #24.
6. PROVIDE 120v CIRCUIT TO NEW TRAP PRIMER AND LEAK DETECTOR. COORDINATE WITH PLUMBING DRAWINGS FOR LOCATION

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DRAWN BY:
RS

PROJECT ENGINEER:
RS

DRAWING:
ELECTRICAL
FIRST FLOOR POWER PLAN

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

SEAL

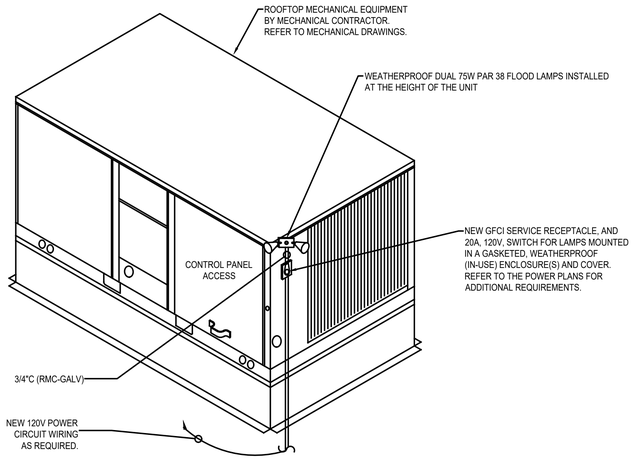
STATE OF MISSOURI
D.J. PENN
NUMBER E-28507
REGISTERED PROFESSIONAL ENGINEER
01/26/2022

DRAWING NO.

E-102

RELEASED FOR CONSTRUCTION
As Noted on Plans Review

Development Services Department
Lee's Summit, Missouri
02/23/2022



TYPICAL ROOFTOP UNIT SERVICE LIGHT AND RECEPTACLE INSTALLATION DIAGRAM

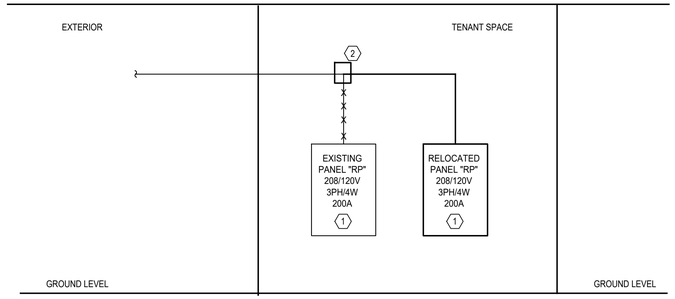
LEGEND OF FEEDER SIZES COPPER CONDUCTORS

FEEDER SYMBOL	CONDUCTORS (3 PHASE, 3 WIRE) WITH GROUND	RACEWAY SIZE CONDUIT	CONDUCTORS (3 PHASE, 4 WIRE) WITH GROUND	RACEWAY SIZE CONDUIT	NOMINAL AMPERE RATING
60/3	3#4 & 1#10G.	1"			60
60/4			4#4 & 1#10G.	1 1/4"	
70/3	3#4 & 1#8G.	1"			70
70/4			4#4 & 1#8G.	1 1/4"	
100/3	3#1 & 1#8G.	1 1/2"			100
100/4			4#1 & 1#8G.	1 1/2"	
125/3	3#1/0 & 1#6G.	1 1/2"			125
125/4			4#1/0 & 1#6G.	2"	
150/3	3#1/0 & 1#6G.	1 1/2"			150
150/4			4#1/0 & 1#6G.	2"	
175/3	3#2/0 & 1#6G.	2"			175
175/4			4#2/0 & 1#6G.	2"	
200/3	3#3/0 & 1#6G.	2"			200
200/4			4#3/0 & 1#6G.	2"	
225/3	3#4/0 & 1#4G.	2"			225
225/4			4#4/0 & 1#4G.	2 1/2"	
250/3	3#250 KCMIL & 1#4G.	2 1/2"			250
250/4			4#250 KCMIL & 1#4G.	3"	
300/3	3#350 KCMIL & 1#4G.	3"			300
300/4			4#350 KCMIL & 1#4G.	3"	
350/3	3#500 KCMIL & 1#3G.	3 1/2"			350
350/4			4#500 KCMIL & 1#3G.	4"	
400/3	3#600 KCMIL & 1#3G.	3 1/2"			400
400/4			4#600 KCMIL & 1#3G.	4"	
500/3	6#250 KCMIL & 2#2G.	2-2 1/2"			500
500/4			8#250 KCMIL & 2#2G.	2-4"	
600/3	6#350 KCMIL & 2#1G.	2-3"			600
600/4			8#350 KCMIL & 2#1G.	2-3"	

NOTES:

1. 600KCMIL FEEDERS SHALL BE PROVIDED WITH MAC ADAPTERS AS REQUIRED TO COORDINATE WITH BREAKER LUG SIZES.

2. SEE SPECIFICATIONS FOR ACCEPTABLE CONDUCTOR TYPES.



RISER DIAGRAM

KEY NOTES

1. EXISTING PANEL RP TO BE RELOCATED. REFER TO PANEL SCHEDULE FOR NEW CIRCUIT INFORMATION. CONTRACTOR TO SPLICE AND EXTEND ALL EXISTING TO REMAIN CIRCUITS TO NEW LOCATION OF PANEL

2. CONTRACTOR TO CUT AND PROIVDE NEW JUNCTION BOX. SPLICE AND EXTEND TO NEW PANEL LOCATION. CONTRACTOR TO FIELD VERIFY WIRE SIZE, TYPE AND QUANTITY.

LIGHTING FIXTURE SCHEDULE

FOR REFERENCE ONLY. REFER TO ARCH DRAWINGS FINAL SPECIFICATIONS

KEY	SYMBOL	MANUFACTURER / MODEL#	VOLTAGE/ IMPUT WATTAGE	LAMP TYPE	MOUNTING	QTY	REMARKS
A	⊡	LITHONIA LIGHTING (OR EQUAL) 2'X4' 2BLT4 72L ADP GZ10 LP840	UNV / 67W	67W LED 5000K	T-BAR CEILING	14	RECESSED INTO T-BAR CEILING GRID LED ELECTRONIC BALLAST - TYPICAL
A2	⊡	LITHONIA LIGHTING (OR EQUAL) 2'X2' LED 2BLT2 33L ADP GZ10 LP840	UNV / 26W	26W (24")	T-BAR CEILING	13	RECESSED INTO T-BAR CEILING GRID LED LIGHT WITH PRISMATIC LENS
B	⊛	TO BE SUPPLIED BY: WESTPORT LIGHTING - MODEL 5485 WITH BRUSHED NICKEL FINISH	25W	25 WATT 2750 LUMEN LED MODULE	SUSPENDED	1	DECORATIVE PENDANT, VERIFY MOUNTING HEIGHT WITH ARCHITECT / OWNER PRIOR TO INSTALLATION
E2	○	TO BE SUPPLIED BY: WIEDENBACH BROWN - NLCBC-65 COBALT SERIES. 6" GENERAL RECESSED RETROFIT DOWNLIGHT W/WHITE TRIM. 16.6W CHIP ON BOARD 1000Lm LED JOSH HUISKEN: 714-982-1554	120V / 16.6W	(1) DIMMABLE LED USE LAMP COMES WITH FIXTURE OR SEE SPECIFICATION	RECESSED	17	RECESSED DOWNLIGHT WITH LED LIGHT BULB, DIMMABLE. TRIM PAINTED TO MATCH CEILING. SEE SPEC FOR DETAILS.
E3 DIMM	⊕	TO BE SUPPLIED BY: WIEDENBACH BROWN - NLCBC-65 COBALT SERIES. 6" GENERAL RECESSED RETROFIT DOWNLIGHT W/WHITE TRIM. 16.6W CHIP ON BOARD 1000Lm LED JOSH HUISKEN: 714-982-1554	120V / 16.6W	(1) DIMMABLE LED USE LAMP COMES WITH FIXTURE OR SEE SPECIFICATION	RECESSED	12	RECESSED DOWNLIGHT WITH LED LIGHT BULB, DIMMABLE. TRIM PAINTED TO MATCH CEILING. SEE SPEC FOR DETAILS.
E4	▫	TO BE SUPPLIED BY: TECHLIGHTING 700 MP SLD F S LEDS930 SOLITUDE PENDANT	12V / 8W	8W 12V LED (3000K)	SUSPENDED	3	3 PENDANT LIGHT FIXTURES ABOVE RECEPTION DESK (ACCENT LIGHTING) AT SAME HEIGHT
F	▭	LITHONIA LIGHTING MODEL #MNS8-2-17-120-RE 2 FT. 2-LIGHT GLOSS WHITE T8 FLUORESCENT STRIP LIGHT OR SIMILAR	120V / 34W	(2) 17W T8 STRIP LIGHT	RECESSED	0	LOCATED IN UPPER INNER WALL CORNER CENTERED OVER DOORS IN CLOSETS
G2	G	MANUFACTURER: SONNEMAN 24" LED SCONCE HEIGHT 24.25", WIDTH 1.75", EXTENSION 2.75", MINIMUM EXTENSION 2.75", MAXIMUM EXTENSION 2.75" SWITCH TYPE N/A, FIXTURE WEIGHT 3 LBS. COLOR: TEXTURED GRAY MATERIAL: ALUMINUM	120VAC/13W	INTEGRAL LED	WALL	3	N/A
H	▬	EXITRONIX PRODUCTS LED EDGE-LIT EXIT SIGN 2900U-WB-SR-G-AG 2900U-WB-SR-R-AG	2.5W	LED	CEILING MOUNT	6	ILLUM. GLASS BLADE EXIT SIGN CONVERTIBLE TO MULTIPLE APPLICATIONS. INSTALL AS SHOWN ON PLAN.
I	▬	EXITONIX PRODUCTS LED-52-WH	2W	LED	WALL	6	
K	Ⓚ	CROSSOVER MEDIUM LED WALL PACK (SWM) SWM LED WALL PACK-2-LED-CW-UE-GBZ OR SPEC BY LL	DUAL VOLTAGE	120V / 42W	EXTERIOR WALL ABOVE EACH EXIT DOOR	2	EXTERIOR HEAD LIGHT WITH EMERGENCY BATTERY BACKUP, PER CODE RE: IBC SECTION 1006 MEANS OF EGRESS ILLUMINATION

PANEL RP

PANELBOARD SCHEDULE

RATING (AMPS):	MAIN TYPE:	VOLTAGE:	PHASE:	NEUTRAL:	WIRE:	ENCLOSURE	MOUNTING	FEED THRU LUGS:	ISOLATED GND	AIC:
225A	LUGS ONLY	208Y/120V	3	100%	4	NEMA 1	SURFACE	NO	NO	EXIST.

CKT #	TYPE	NOTE	TRIP / POLE	DESCRIPTION	BRANCH CKT			LOAD (KVA)								PHASE	LOAD (KVA)								BRANCH CKT			DESCRIPTION	TRIP / POLE	NOTE	TYPE	CKT #
					Ø	N	C	LTG	REC	MTR	A/C	HTG	DATA	KIT	MISC		LTG	REC	MTR	A/C	HTG	DATA	KIT	MISC	Ø	N	C					
1	-	EX	60/2	AHU-2	-	-	-									**A**												AHU-1	50/2	EX	-	2
3					-											**B**																4
5	-	EX	40/2	CU-R2	-	-	-									**C**									-	-	-	CU-R1	30/2	EX	-	6
7					-											**A**									-							8
9	-	-	20/1	LTG - WAX RMS, OFFICE	#10	#12	3/4"	0.3								**B**	0.3								#10	#12	3/4"	LTG - WAX RMS & STOR.	20/1	-	-	10
11	-	-	20/1	LTG - EXIT / EMERGENCY	#10	#12	3/4"	0.5								**C**	0.3								#10	#12	3/4"	LTG - WAX RMS & BATHRM	20/1	-	-	12
13	-	-	20/1	LTG - WAITING AREA	#10	#12	3/4"	0.4								**A**		0.4							#10	#12	3/4"	REC - RECEPTION	20/1	-	-	14
15	-	-	20/1	LTG - CORRIDOR	#10	#12	3/4"	0.1								**B**			0.5						-	-	-	BATHROOM EXHAUST FAN	20/1	-	-	16
17	-	-	20/1	REC - CORRIDOR	#10	#12	3/4"		0.6							**C**		0.4							#10	#12	3/4"	REC - STORAGE	20/1	-	-	18
19	-	-	20/1	REC - RECEPTION	#10	#12	3/4"		0.7							**A**		0.8							#10	#12	3/4"	REC - RECEPTION	20/1	-	-	20
21	-	-	20/1	REC - GFI	#10	#12	3/4"		0.4							**B**		0.4							#10	#12	3/4"	REC - STORAGE	20/1	-	-	22
23	-	-	20/1	REC - WAX RM	#10	#12	3/4"		0.2							**C**		0.4							#10	#12	3/4"	REC - STORAGE	20/1	-	-	24
25	-	-	20/1	REC - WAX RM	#10	#12	3/4"		0.2							**A**		0.4							#10	#12	3/4"	REC - RECEPTION	20/1	-	-	26
27	-	-	20/1	REC - WAX RM	#10	#12	3/4"		0.2							**B**		0.2							#10	#12	3/4"	REC - WAX RM	20/1	-	-	28
29	-	-	20/1	REC - WAX RM	#10	#12	3/4"		0.2							**C**		0.2							#10	#12	3/4"	REC - WAX RM	20/1	-	-	30
31	-	-	20/1	REC - WAX RM	#10	#12	3/4"		0.2							**A**		0.2							#10	#12	3/4"	REC - WAX RM	20/1	-	-	32
33	-	-	20/1	REC - WAX RM	#10	#12	3/4"		0.2							**B**		0.2							#10	#12	3/4"	REC - WAX RM	20/1	-	-	34
35	-	-	20/1	REC - OFF	#10	#12	3/4"		0.5							**C**		0.2							#10	#12	3/4"	REC - WAX RM	20/1	-	-	36
37	-	-	20/3	WATER HEATER	#10	#10	3/4"					1.0				**A**		0.2							#10	#12	3/4"	REC - WAX RM	20/1	-	-	38
39					#10							1.0				**B**	1.0								#10	#12	3/4"	LTG - EXTERIOR SIGNAGE	20/1	-	-	40
41					#10							1.0				**C**												SPARE	20/1	-	-	42
LIGHTING (KVA):				3.0				1.4	3.5	0.0	0.0	3.0	0.0	0.0	0.0		1.6	4.0	0.5	0.0	0.0	0.0	0.0	0.0				CONNECTED LOAD (KVA):	14.0			

RECEPTACLES (KVA):	7.5	PHASE BREAKDOWN			TYPES		NOTES		DEMAND LOAD (KVA):	14.7
MOTORS (KVA):	0.5	PHASE A	5	37.9	ST =	SHUNT TRIP	EX =	EXISTING		
A/C (KVA):	0.0	PHASE B	5	40.7	GF =	GROUND FAULT	ME =	MATCH EXISTING	CONNECTED LOAD (AMPS):	38.8
HEATING (KVA):	3.0	PHASE C	5	37.8	AF =	ARC FLASH	SR =	SEE RISER(1-LINE)	DEMAND LOAD (AMPS):	40.9
DATA PROCESSING (KVA):	0.0		KVA	AMPS	KK =	KIRK KEY	ES =	SEE EQUIP. CONN. SCH.		
KITCHEN(KVA): 0 PIECES	0.0	BASIS OF DESIGN:							AMPACITY REQUIRED:	**40.9**
MISCELLANEOUS (KVA):	0.0	SQUARE D								

NOTES:

GF55

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CLOUDED CHANGES
FEBRUARY 10, 2022
PER PLAN REVIEW COMMENTS
FEBRUARY 14, 2022

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PROJECT ENGINEER:
RS

DRAWING:
ELECTRICAL DETAILS

SCALE:
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SEAL

STATE OF MISSOURI
D.J. PENN
NUMBER E-28507
REGISTERED PROFESSIONAL ENGINEER
01/26/2022

DRAWING NO.

E-501

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