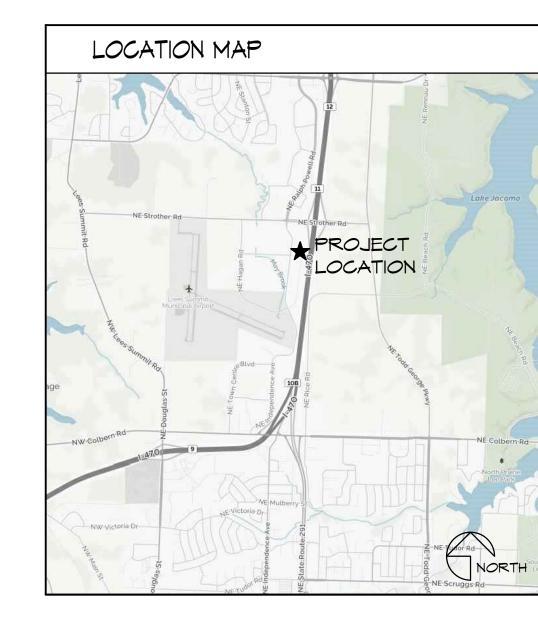


# KANSAS CITY BONE & JOINT

# 2737 NORTHEAST McBAINE DRIVE LEE'S SUMMIT MISSOURI, 64064

# CODE NOTES

- A. TENANT FINISH
- ALL CONSTRUCTION FOR THIS PROJECT SHALL CONFORM TO THE FOLLOWING BUILDING CODES AND REQUIREMENTS ADOPTED AND AS AMENDED BY THE CITY
- B.2. 2018 International Plumbing Code
- 2018 International Fuel Gas Code
- B.5. 2018 International Residential Code B.6. 2018 International Fire Code
- 2017 National Electrical Code B.8. ICC/ANSI A117.1-2009, Accessible and Usable Buildings and Facilities
- C. OCCUPANCY GROUP: B
- D. CONSTRUCTION TYPE: IIB
- E. NONE-SPRINKLED
- FIRE ALARM PROVIDED F. OCCUPIED AREA:
- F.1. FIRST FLOOR: 5007 SF
- G. OCCUPANT LOAD (TABLE 1003.2.2.2): G.1. FIRST FLOOR OCCUPIED AREA = 5007 SF / 150 = 33.38
- SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY (TABLE 1006.2.1) COMMON PATH OF EGRESS TRAVEL IN GROUP B OCCUPANCY WITHOUT 5PRINKLER SYSTEM IN A SPACE WITH OCCUPANT LOAD OF ≤30, THE LENGTH



# GENERAL NOTES

- MAINTAIN ACCESS TO EXISTING WALKWAYS, CORRIDORS, AND OTHER ADJACENT OCCUPIED OR USED FACILITIES. DO NOT CLOSE OR OBSTRUCT WALKWAYS, CORRIDORS, OR OTHER OCCUPIED OR USED FACILITIES WITHOUT PERMISSION FROM TENANT.
- REMOVE AND DISCARD: DETACH ITEMS FROM EXISTING CONSTRUCTION AND LEGALLY DISPOSE OF THEM OFF-SITE. REMOVE AND SALVAGE: DETACH ITEMS FROM EXISTING CONSTRUCTION 7.
- AND TURN OVER TO TENANT UNDAMAGED.
- RELOCATE: DETACH ITEMS FROM EXISTING CONSTRUCTION, MOVE ITEMS TACT AND UNDAMAGED, AND REINSTALL THEM WHERE INDICATED. EXISTING TO REMAIN: EXISTING ITEMS OF CONSTRUCTION THAT ARE NOT
- O BE REMOVED, BUT ARE TO REMAIN IN PLACE AND BE UNDAMAGED. REMOVE AND RECLAIM: DETACH ITEMS FROM EXISTING CONSTRUCTION. AT CONTRACTORS OPTION ITEM MAY BE REUSED AS PART OF NEW WORK. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO INVENTORY ITEMS TO DETERMINE IF ITEMS WILL FUNCTION AND APPEAR LIKE THE NEW ITEMS SPECIFIED AND CALLED OUT ON THESE DOCUMENTS. IF ITEMS ARE REUSED, CONTRACTOR IS TO CLEAN, REPAIR, OR OTHERWISE BRING ITEMS TO LIKE NEW CONDITION. MODIFY REUSED ITEMS AS REQUIRED AND SUPPLEMENT WITH MATERIALS, AND INCIDENTALS NECESSARY TO EXECUTE A COMPLETE WORKMANLIKE JOB. IF CONTRACTOR CHOOSES TO NOT REUSE ITEM, LEGALLY DISPOSE OF ITEM OFF-SITE AND REPLACE
- WITH NEW TO MATCH EXISTING. PROVIDE: THE MEANING OF THE WORD "PROVIDED" INCLUDES, BUT IS NOT LIMITED TO, FURNISHED, DELIVERED, INSTALLED, FINISHED, MADE FULLY OPERABLE AND COMPLETE. UNLESS SPECIFICALLY NOTED OTHERWISE, ALL WORK DESCRIBED IN THESE DOCUMENTS IS TO BE PROVIDED BY THE CONTRACTOR.
- CONTRACTOR IS TO INCLUDE AS PART OF HIS SCOPE ALL CUTTING AND PATCHING REQUIRED THROUGH CAREFUL EVALUATION OF THE EXISTING SITE AND THE CONSTRUCTION DOCUMENTS. CONTRACTOR SHALL COORDINATE THE CUTTING AND PATCHING OF EXISTING CONSTRUCTION NECESSARY TO PERMIT INSTALLATION OR PERFORMANCE OF THE WORK INDICATED IN THESE CONSTRUCTION DOCUMENTS. SAW-CUT CONC. SLAB AS REQUIRED FOR UTILITIES, FOR EQUIPMENT AND SINKS. VERIFY ROUTE AND TRENCH DEPTH IN FIELD. PATCH BACK WITH MATCHING SLAB THICKNESS OVER SAME MATERIAL, COMPACT UNDERLYING MATERIALS TO MEET BEST PRACTICES. DOWEL NEW TO EXISTING WITH #4 REBAR AT 30" OC.
- WHERE WALLS, CASEWORK, FINISHES, EQUIPMENT OR OTHER ITEMS AND CONSTRUCTIONS HAVE BEEN REMOVED EXPOSING UNDERLYING WALL AND/OR FLOOR SURFACES, SUCH SURFACES ARE TO BE PATCHED AND REPAIRED AS REQUIRED TO ACCEPT NEW FINISHES. ALL HOLES, DAMAGES, DEFECTS, ETC. IN EXISTING SURFACES ARE TO BE PATCHED TO MATCH EXISTING CONDITIONS.
- EXISTING CONDITIONS SHOWN ON THESE DRAWINGS ARE BASED UPON BASE BUILDING OR OTHER CONSTRUCTION DOCUMENTS MADE AVAILABLE TO THE DESIGNER BY THE BUILDING MANAGEMENT. ALL AS-BUILT ARCHITECTURAL CONDITIONS HAVE NOT BEEN FIELD VERIFIED AND MAY VARY FROM THOSE
- PRIOR TO BID: FIELD VERIFY ALL EXISTING CONSTRUCTION TO REMAIN AND INCLUDE COSTS FOR REPAIR AND RECONDITION OF ALL EXISTING

CONSTRUCTION TO REMAIN SO THAT IT MEETS THE AESTHETIC AND FUNCTIONAL STANDARD OF QUALITY FOR NEW CONSTRUCTION. BLEND AND MATCH EXISTING CONSTRUCTION WITH NEW CONSTRUCTION PRIOR TO BID, ADVISE TENANT OF ANY CONDITIONS WHICH CANNOT BE REPAIRED OR RECONDITIONED, BLENDED AND MATCHED. NOTE CONTRACT DOCUMENT REQUIREMENTS FOR EXISTING CONSTRUCTION AND INCLUDE COSTS FOR THIS MORK IN BID PROPOSAL.

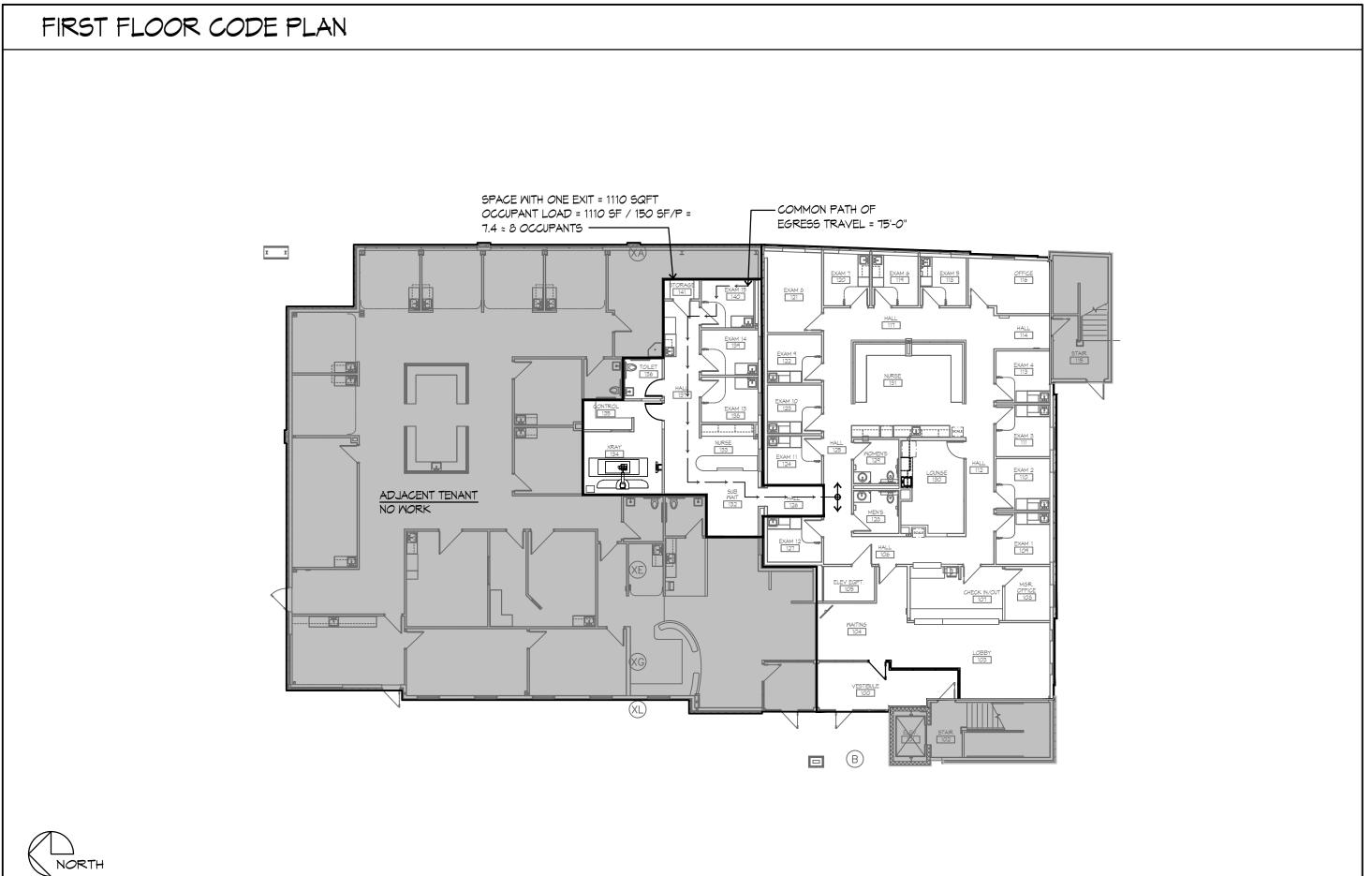
THE GENERAL CONTRACTOR SHALL, IN THE BIDDING PROCESS, REQUIRE THAT MECHANICAL AND ELECTRICAL SUBCONTRACTORS MAKE A THOROUGH FIELD INSPECTION OF AS-BUILT CONDITIONS OF EXISTING SYSTEMS. AFTER SUCH FIELD VERIFICATION HAS BEEN COMPLETED, THE GENERAL CONTRACTOR AND SUBCONTRACTORS SHALL PROVIDE IN THEIR BIDS, ANY MODIFICATIONS TO THE EXISTING SYSTEMS WHICH MAY BE REQUIRED TO ACCOMMODATE THE PROPOSED REQUIREMENTS FOR THIS TENANT. IF A DETERMINATION OF SUCH MODIFICATIONS CANNOT BE MADE, THE GENERAL CONTRACTOR SHALL NOTIFY THE TENANT, AND AT THE DIRECTION OF THE TENANT, PROVIDE AN AGREED UPON ALLOWANCE TO COVER SUCH WORK.

- 8. COMMENCING WORK BY A CONTRACTOR OR SUBCONTRACTOR CONSTITUTES ACCEPTANCE OF THE UNDERLYING CONDITIONS AND SURFACES. PRIOR TO PROCEEDING WITH THE WORK, PREPARE EXISTING AND NEW UNDERLYING CONDITIONS AND SUBSTRATE TO COMPLY WITH THE CONTRACT DOCUMENTS, INDUSTRY STANDARDS AND MANUFACTURER'S RECOMMENDATION.
- 9. FIELD VERIFY ALL ROUGH OPENINGS AND WALL WIDTHS PRIOR TO ORDERING OR FABRICATION OF MATERIALS.
- 10. DIMENSIONS ARE NOMINAL AND TO THE FACE OF PARTITIONS
- 11. CLEAN-UP OF RUBBISH AND DEBRIS RESULTING FROM DEMOLITION AND NEW WORK SHALL BE COLLECTED REGULARLY FROM PROJECT SITE AND LEGALLY
- 12. ALL MEATHER EXPOSED SURFACES SHALL HAVE A MEATHER RESISTIVE BARRIER TO PROTECT THE INTERIOR WALL COVERING AND EXTERIOR OPENINGS SHALL BE FLASHED IN SUCH A MANNER AS TO MAKE THEM
- 13. BUILDING ADDRESS NUMBERS TO BE PROVIDED ON THE FRONT AND STREET SIDE OF THE BUILDING. SAID NUMBERS SHALL BE A MIN. OF 7" HIGH WITH 1" WIDE STROKES CONTRASTING WITH THEIR BACKGROUND
- SHOWN IN THESE DRAWINGS GRAPHICALLY AS WELL AS THOSE CALLED FOR 15. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS TO COMPLETE

14. CONTRACTORS ARE RESPONSIBLE FOR ALL MATERIALS AND QUANTITIES

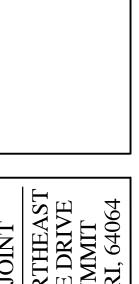
- THE PROPOSED WORK AND SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS 16. THE TENANT OR THE TENANT'S DESIGNATED REPRESENTATIVE WILL PROVIDE
- SERVICES IN CONNECTION WITH ADMINISTRATION OF THE CONTRACT
- 17. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL LOCAL LAWS, ORDINANCES, RULES AND REGULATIONS OF THE GOVERNING AGENCIES

- HAYING JURISDICTION
- 18. THE CONTRACTOR MUST TAKE ADEQUATE CARE TO PROTECT ALL AREAS OF THE BUILDING WHERE THE WORK OF THIS PROJECT IS LOCATED AS WELL AS THE AREAS ADJACENT TO THE AREA OF THE WORK OF THIS PROJECT SO AS TO PREVENT DAMAGE TO LIFE OR PROPERTY AS A RESULT OF THIS CONSTRUCTION PROJECT
- 19. ONLY MATERIALS THAT ARE NEW, UNUSED, FREE FROM DEFECTS, AND THE BEST OF THEIR RESPECTIVE KINDS SHALL BE USED. THE BASIS OF QUALITY SHALL BE THE LATEST STANDARDS OF ASTM, ASA OR ASHRA
- 20. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES INCLUDING THOSE OF THE TENANT WHO MAY BE ENGAGED UNDER A SEPARATE
- 21. INSTALL ALL WORK IN SUCH A MANNER AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND/OR REPAIRS
- 22. ALL WORK AND EQUIPMENT SHALL BE CLEANED TO THE SATISFACTION OF THE TENANT BEFORE BEING TURNED OVER FOR USE
- 23. A COPY OF THE LATEST SET OF CONSTRUCTION DOCUMENTS SHALL BE KEPT AT THE JOB SITE AT ALL TIMES
- 24. THE CONTRACTOR AND EACH SUBCONTRACTOR SHALL KEEP ACCURATE RECORDS OF ANY MODIFICATION OR DEVIATIONS FROM THE CONTRACT DRAWINGS
- 25. PROJECT CLOSE OUT DOCUMENTS SHALL BE PROVIDED TO THE TENANT. INCLUDE AS-BUILT DRAWINGS, WARRANTY/MAINTENANCE MANUALS AND TESTING AND SUPERVISION AS REQUIRED. PRESERVE ALL PRINTED INSTRUCTIONS AND WARRANTIES THAT ARE PROVIDED WITH EQUIPMENT OR MATERIALS USED, AND DELIVER SAID PRINTED MATTER TO THE TENANT AT THE TIME OF SUBSTANTIAL COMPLETION. IF REQUESTED BY THE TENANT, INSTRUCT THE MANAGEMENT IN THE PROPER USE AND MAINTENANCE OF ALL ITEMS OF
- 26. PROVIDE WORK IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATION, EXCEPT IN THE CASE WHERE THE CONTRACT DOCUMENTS ARE MORE STRINGENT. PROVIDE ANY MISCELLANEOUS ITEMS OR MATERIALS NOT SPECIFICALLY NOTED, BUT REQUIRED FOR PROPER INSTALLATION OF THE
- 27. ALL WORK SHALL BE WARRANTED BY THE CONTRACTOR TO BE SATISFACTORY, IN MATERIALS AND WORKMANSHIP, FOR A MINIMUM PERIOD OF ON (1) YEAR, OR FOR THE PERIOD OF WARRANTY CUSTOMARY, SPECIFIED FOR, THE TRADE, CRAFT OR PRODUCT, WHICHEVER IS LONGER.
- 28. SUBMIT REQUESTS FOR SUBSTITUTIONS OF SPECIFIED ITEMS IN WRITING, ACCOMPANIED BY THE ALTERNATIVE PRODUCT INFORMATION, TO THE TENANT. SUBSTITUTIONS MAY BE CONSIDERED ONLY IF THEY DO NOT SACRIFICE QUALITY, APPEARANCE AND FUNCTION. ACCEPTANCE OF SUBSTITUTIONS IS AT THE SOLE DISCRETION OF THE TENANT.

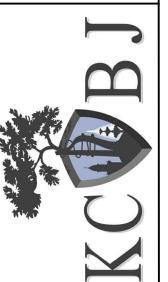


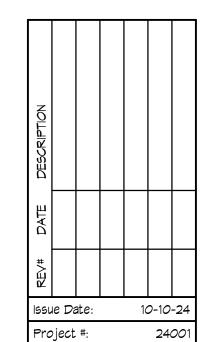
CONSTRUCTION

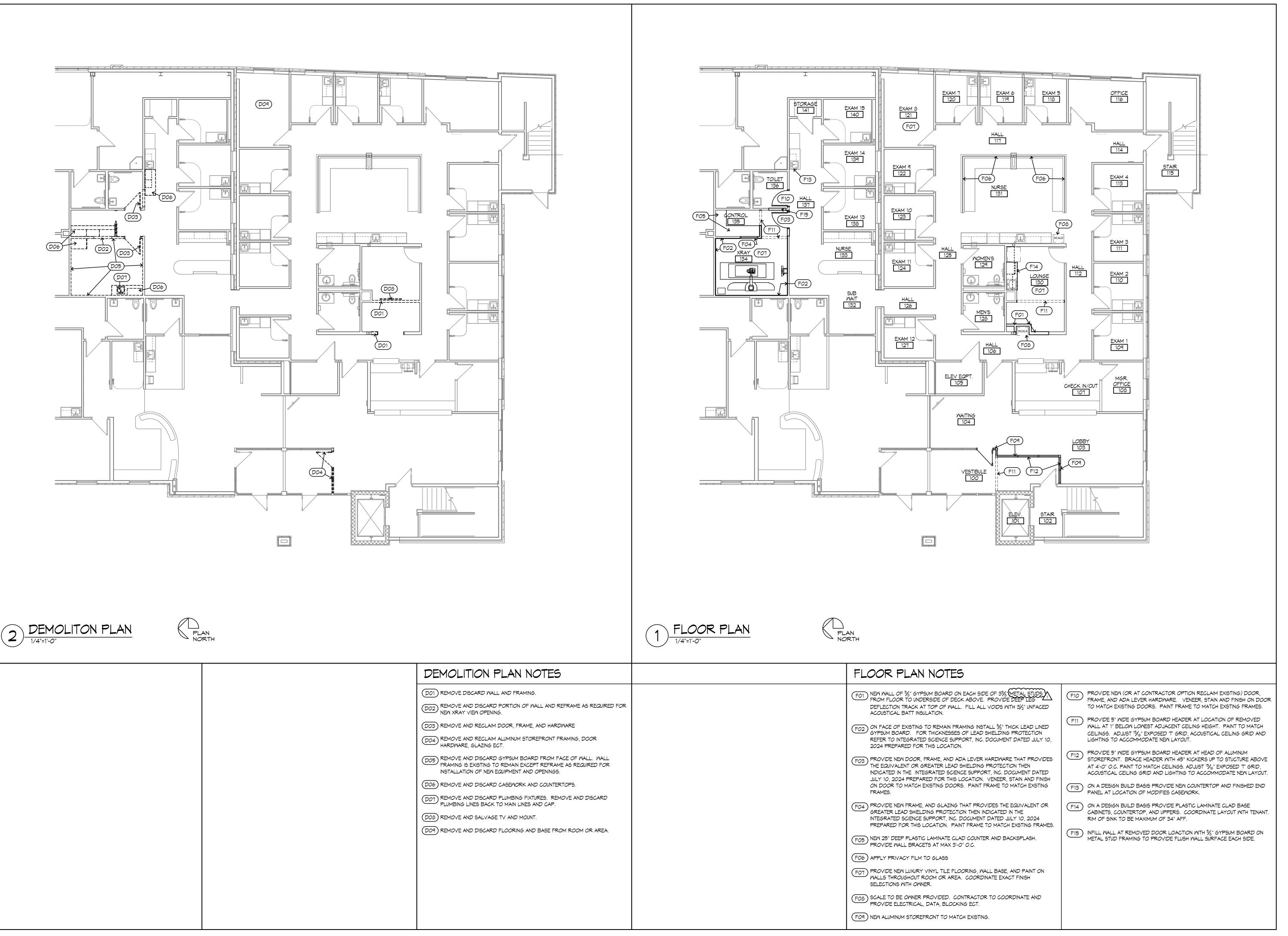












CONSTRUCTION
As Noted on Plans Review

GUY GRONBERG ARCHITECTS, P.C. 113 SE 3rd St. Lee's Summit, MO 64063 Phone 316.524.0878 Fax 316.524.8578

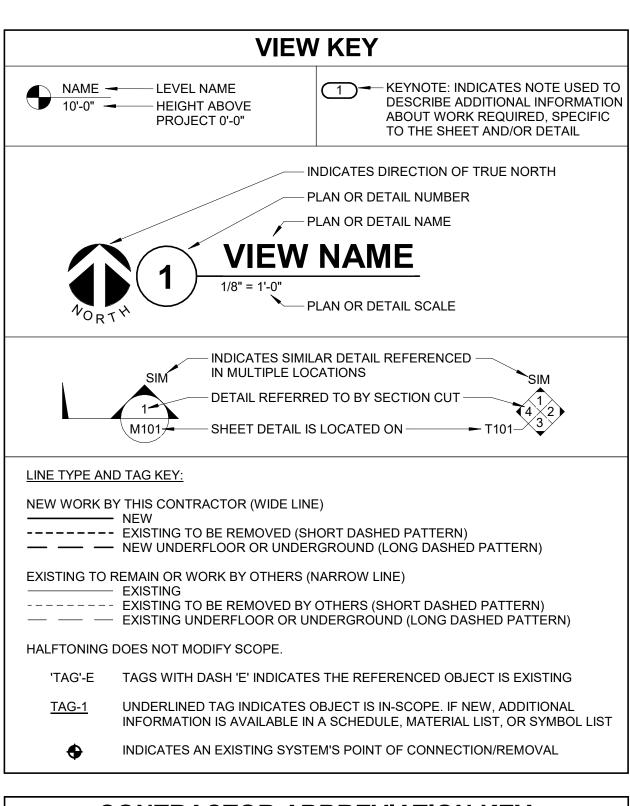






DESCRIPTION	10-21-24 CITY COMMENTS				
DATE	10-21-24				
REV#	$\bigvee$				
Issi	ie Da	ate:	10	D-1 <i>0</i>	-24

Project #:



	<b>CONTRACTOR ABBREVIATION KEY</b>
ABBR:	DESCRIPTION:
A.C.	ASBESTOS ABATEMENT CONTRACTOR
A.V.C.	AUDIO/VISUAL CONTRACTOR
C.C.	CIVIL CONTRACTOR
C.M.	CONSTRUCTION MANAGER
E.C.	ELECTRICAL CONTRACTOR
F.P.C.	FIRE PROTECTION CONTRACTOR
F.S.C.	FOOD SERVICE CONTRACTOR
G.C.	GENERAL CONTRACTOR
H.C.	HEATING CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
N.C.C.	NURSE CALL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
S.C.	SECURITY CONTRACTOR
T.C.	TECHNOLOGY CONTRACTOR
T.C.C.	TEMPERATURE CONTROLS CONTRACTOR
V.C.	VENTILATION CONTRACTOR

——AV——	ACID VENT
——AW——	ACID WASTE
——СА——	COMPRESSED AIR
CW	COLD WATER - POTABLE
D	DRAIN - PLUMBING
DI	DEIONIZED WATER
—DPP—	DRAIN - PIPING
——FP——	FIRE PROTECTION
——G——	NATURAL GAS
—GSAN—	SANITARY DRAINAGE (GREASE SANITARY DRAINAGE)
HW	HOT WATER - POTABLE
—HWC—	HOT WATER CIRCULATING - POTABLE
——IA——	INSTRUMENT AIR
MA	MEDICAL AIR
—MPG——	MEDIUM PRESSURE GAS
MV	MEDICAL VACUUM
N	NITROGEN
NO	NITROUS OXIDE
	OXYGEN
_	
PCWS/PCWR-PD	PROCESS COOLING WATER SUPPLY/RETURN
——PU——— ——PW———	PUMPED DISCHARGE PURE WATER
RO	REVERSE OSMOSIS WATER
—SAN——	SANITARY DRAINAGE
—SCW—	SOFT COLD WATER
—SHW—	SOFT HOT WATER
-ST(1,000)—	STORM DRAINAGE (ROOF SQUARE FOOTAGE)
—STS——	STORM DRAINAGE (SECONDARY)
—STW——	SOFT TEMPERED WATER
TW	TEMPERED WATER
V	VENT
VAC	LAB VACUUM
	SERVICE WATER - POTABLE
—WAGD—	WASTE ANETHESIA GAS DISPOSAL
_	
$\longrightarrow$	PIPE CONTINUATION
	PIPE CAP
	PIPE LID OR LID/DOWN
	PIPE UP OR UP/DOWN
o <sub>FD</sub>	PIPE SERVING FIXTURE ON FLOOR ABOVE (EXAMPLE: FD = FLOOR DRAIN)
<b>—</b>	PITCH PIPE IN DIRECTION
<b>—</b>	DIRECTION OF FLOW IN PIPE
¬,	ROUTE TO DRAIN
RD-1	CVMPOL
6"(1000)	SIZE (ROOF SQ. FT.)
<del></del>	DIELECTRIC CONNECTION
	UNION/FLANGE
<b>─</b>	SHUTOFF VALVE NORMALLY OPEN
<b></b>	SHUTOFF VALVE NORMALLY CLOSED
<b></b> ⊠	BALANCING VALVE (NUMBER INDICATES GPM)
<b>──</b>	CHECK VALVE

PLUMBING SYMBOL LIST

NOT ALL SYMBOLS MAY APPLY.

SYMBOL: DESCRIPTION:

# PLUMBING ROUGH-IN SCHEDULE

NOTES: (APPLIES TO ALL PLUMBING FIXTURES LISTED BELOW) 1) SIZES`SHOWN ARE MINIMUMS. LARGER SIZES SHOWN ON THE DRAWING SHALL DICTATE THE ROUGH-IN SIZE. 2) SANITARY RISERS UP IN WALL TO FIXTURES SHALL BE A MINUMUM OF 2". 3) DOMESTIC WATER BRANCH PÍPING OUTSIDE OF THE WALL/CHASE SHALL BE A MINIMUM OF 3/4" UNLESS NOTED OTHERWISE. ONLY THE FINAL RISE-DROP SHALL BE SMALLER. 4) FINAL SANITARY SIZE SHALL MATCH P-TRAP SIZE (REFER TO MATERIAL

LIST).						
TAG NAME	DESCRIPTION	TRAP	COLD WATER	HOT WATER	SANITARY	VENT
SK-1	SINK	1 1/2"	1/2"	1/2"	1 1/2"	1 1/2"

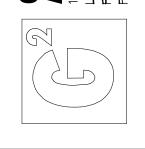
- 1. THE SYMBOLS AND THE MATERIAL LIST ARE FOR THE CONVENIENCE OF THE CONTRACTOR. CONTRACTOR SHALL VERIFY QUANTITIES AND FURNISH ALL MATERIALS REQUIRED FOR FULLY OPERATIONAL SYSTEMS, WHETHER SPECIFIED OR NOT.
- 2. CATALOG NUMBERS SHALL NOT BE CONSIDERED COMPLETE, BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR A COMPLETE DESCRIPTION OF MATERIAL ON THESE DRAWINGS AND IN THE SPECIFICATIONS BEFORE ORDERING. THE DESCRIPTION OF THE MATERIAL TAKES PRECEDENCE OVER THE CATALOG NUMBER. THE FIRST MANUFACTURER LISTED IS THE BASIS OF DESIGN.
- 3. CONTRACTOR SHALL VERIFY THAT FIXTURES SUPPLIED ARE APPROVED PER ALL
- APPLICABLE STATE, LOCAL AND GOVERNING AUTHORITIES. ALL FIXTURES SHALL CONFORM TO FEDERAL ACT S.3874
- 5. INVERT ELEVATIONS ARE FROM EXISTING DRAWINGS AND MAY NOT BE ACCURATE. VERIFY ALL ELEVATIONS BEFORE BEGINNING WORK.
- 6. VERIFY UNDERGROUND PIPE SIZES, INVERT ELEVATIONS, AND LOCATIONS PRIOR TO
- BEGINNING ANY WORK. REFER TO THE PLUMBING ROUGH-IN SCHEDULE FOR THE SIZES OF BRANCH PIPES TO
- PLUMBING FIXTURES. 8. EXISTING CONDITIONS ON DEMOLITION PLANS ARE PROVIDED TO INDICATE THE GENERAL SCOPE OF ITEMS TO BE REMOVED. REFER TO SPECIFICATION SECTION 22 05 05 FOR ADDITIONAL DEMOLITION INFORMATION.
- 9. P.C. SHALL CUT AND PATCH EXISTING AS REQUIRED FOR NEW OR DEMOLITION WORK UNLESS NOTED OTHERWISE. REFER TO SPECIFICATION SECTION 22 05 05 FOR ADDITIONAL INFORMATION.

**PLUMBING GENERAL NOTES:** 

OF M/S

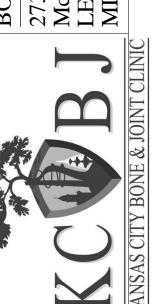
CONSTRUCTION As Noted on Plans Review



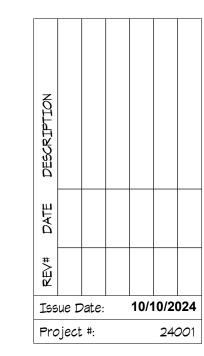












SHEET NUMBER

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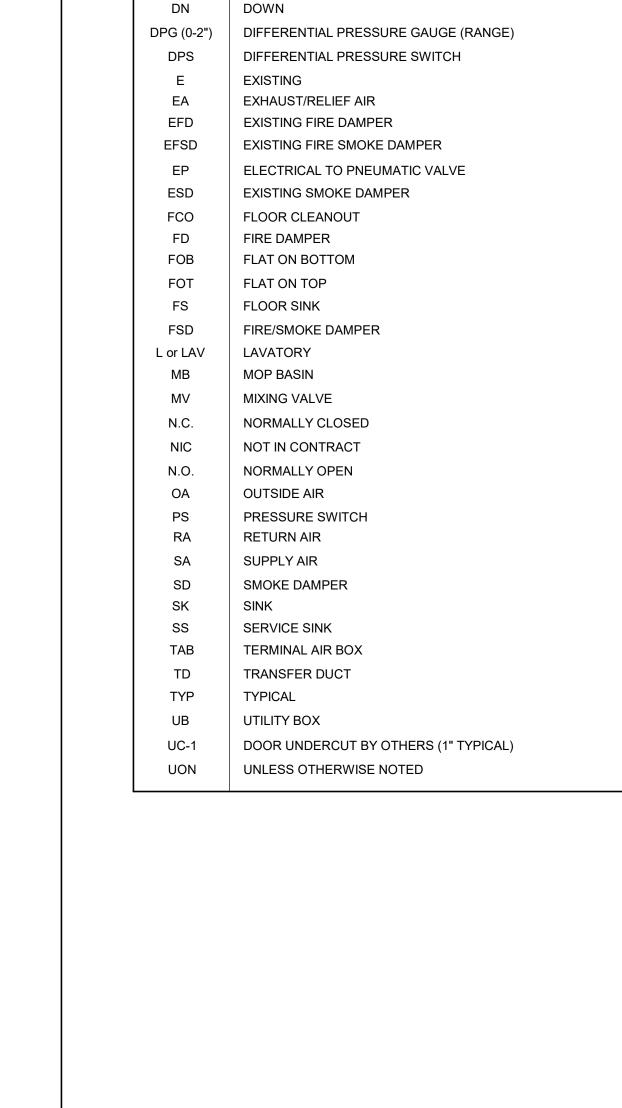
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Missouri Certificate of Authority #2023010035

PROJECT #24003931.00

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REF. SCALE IN INCHES



PLUMBING ABBREVIATION KEY

ABBR:

AD

AFF

BFP

CO

**DESCRIPTION:** 

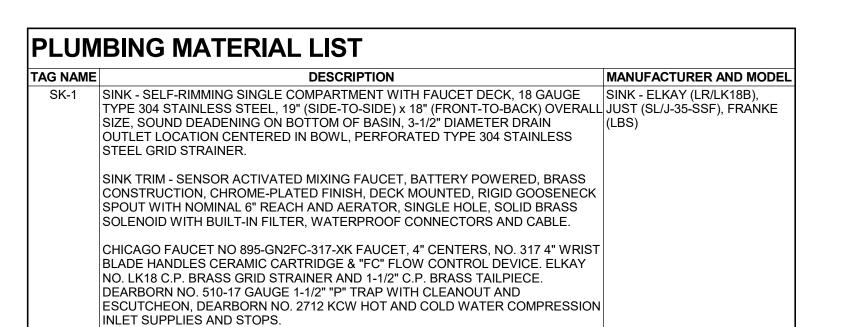
ABOVE FINISHED FLOOR

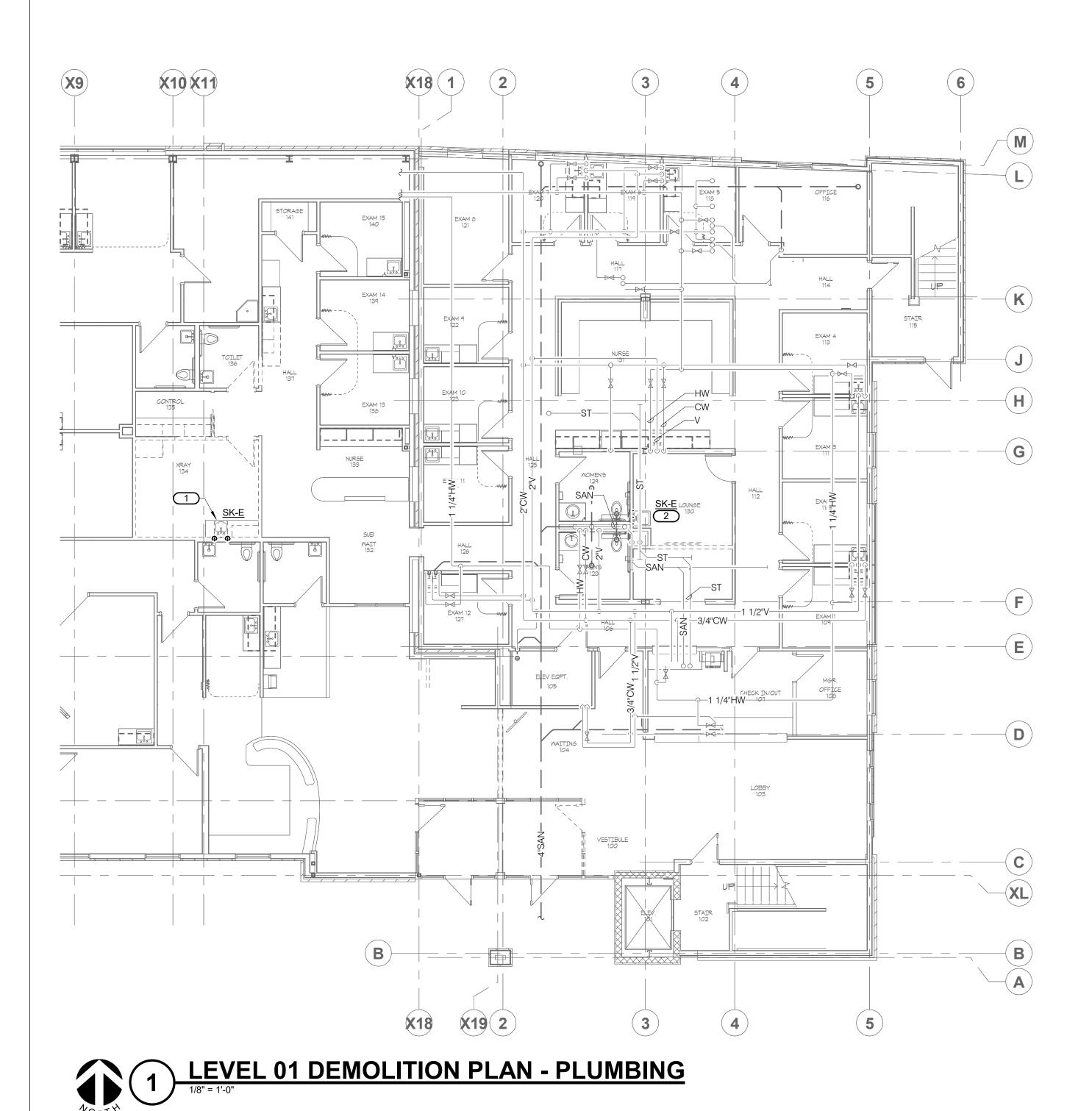
**BACKFLOW PREVENTER** 

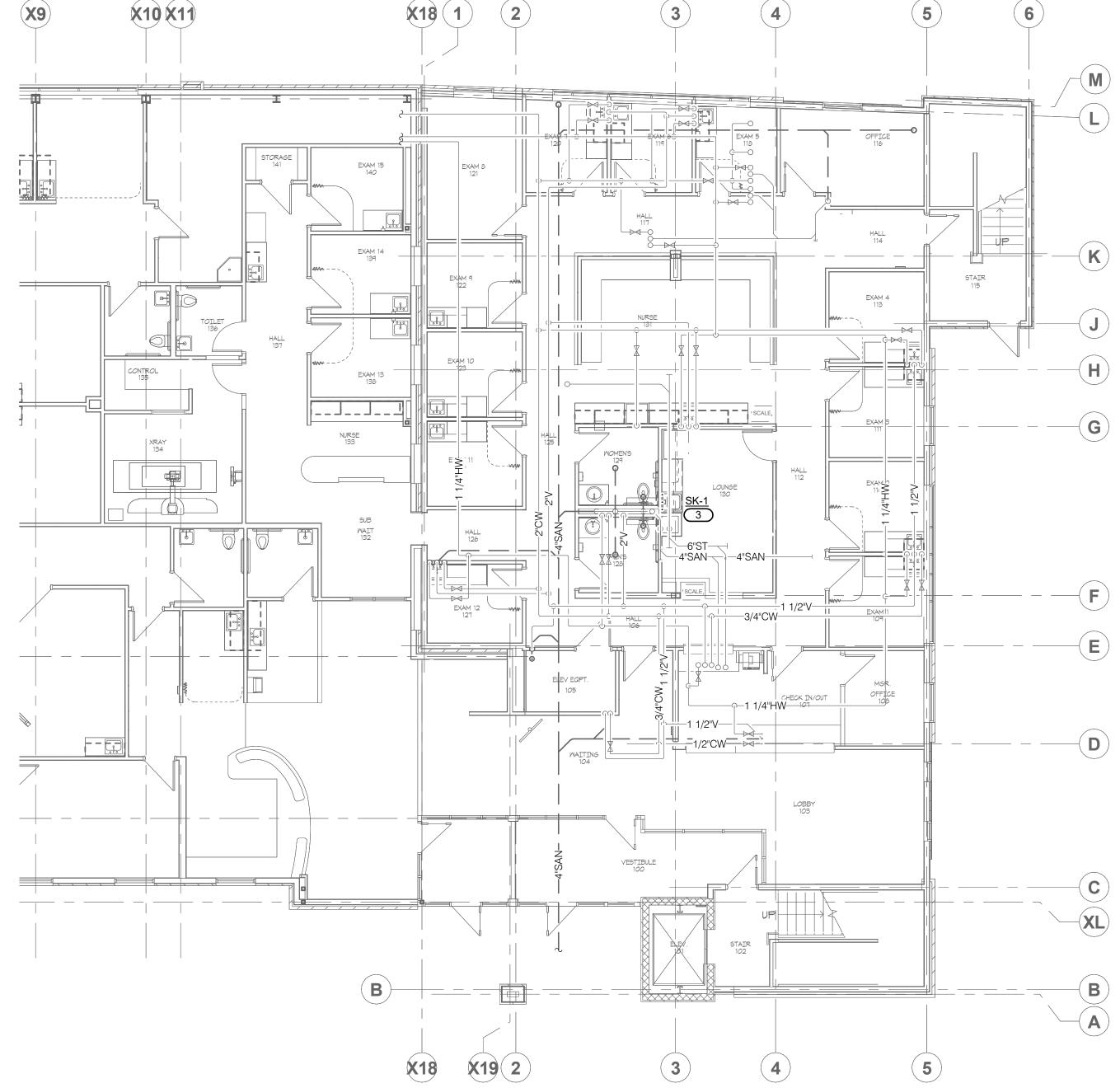
ACCESS DOOR

COMMON

CLEANOUT







SHEET NOTES:

AND SYMBOLS LIST.

PLANNED SHUTDOWNS.

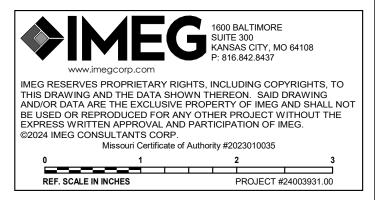
REFER TO SHEET M000 FOR GENERAL NOTES

SYSTEM SHUTDOWNS SHALL BE MINIMIZED

AND SHALL BE COORDINATED WITH THE

OWNER A MINIMUM OF 2 WEEKS BEFORE





Development Services Department Lee's Summit, Missouri

INVITATION HAMINATURE PROPERTY OF THE PROPERTY OF THE

KEYNOTES: #

BEHIND THE WALL.

SERVE NEW SINK.

REMOVE EXISTING SINK AND CAP PIPING

REMOVE EXISTING SINK. MAINTAIN WATER,

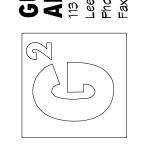
RE-USE EXISTING ROUGH-IN. ROUTE PIPING AS

NECESSARY IN WALL OR BELOW COUNTER TO

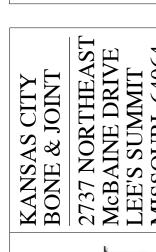
WASTE & VENT PIPING FOR NEW SINK.

CONSTRUCTION

GUY GRONBERG ARCHITECTS, P.C. 113 SE 3rd St. Lee's Summit, MO 64063 Phone 816.524.0878 Fax 816.524.8578

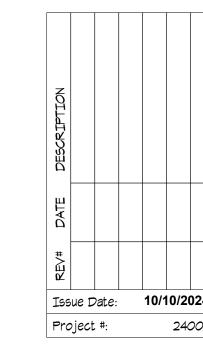






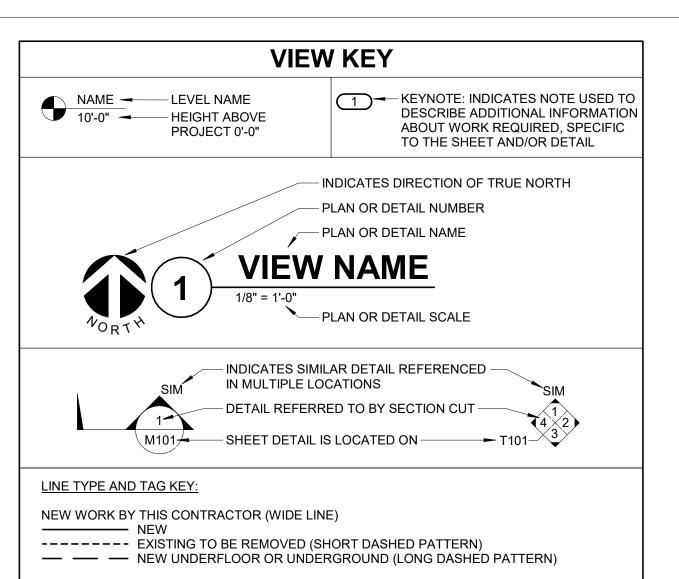






SHEET NUMBER

P101



EXISTING TO REMAIN OR WORK BY OTHERS (NARROW LINE)

---- EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN)

— — EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

'TAG'-E TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING

UNDERLINED TAG INDICATES OBJECT IS IN-SCOPE. IF NEW, ADDITIONAL

INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST

EXISTING

HALFTONING DOES NOT MODIFY SCOPE.

SECURITY CONTRACTOR

**TECHNOLOGY CONTRACTOR** 

VENTILATION CONTRACTOR

TEMPERATURE CONTROLS CONTRACTOR

S.C.

T.C.

T.C.C.

V.C.

	CONTRACTOR ABBREVIATION KEY
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F.S.C.	FOOD SERVICE CONTRACTOR
G.C.	GENERAL CONTRACTOR
H.C.	HEATING CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
N.C.C.	NURSE CALL CONTRACTOR
P.C.	PLUMBING CONTRACTOR

	MECHANICAL SYMBOL LIST
	NOT ALL SYMBOLS MAY APPLY.
SYMBOL:	DESCRIPTION:
	DIRECTION OF AIR FLOW
	FLEXIBLE DUCT
	MANUAL VOLUME DAMPER
- R	RISE IN DIRECTION OF AIR FLOW
D	DROP IN DIRECTION OF AIR FLOW
-	DUCT CAP
	DUCT DOWN
	DUCT UP
	SUPPLY/OUTSIDE AIR DUCT SECTION
	RETURN AIR DUCT SECTION
	EXHAUST/RELIEF AIR DUCT SECTION
	4-WAY DIFFUSER WITH BLANKOFF IN ONE DIRECTION
<u>SD-1</u> 6/115	AIR TERMINAL PROPERTIES SYMBOL NECK SIZE/CFM
[###]	VARIABLE AIR VOLUME BOX (REFER TO SCHEDULE)
	FAN POWERED TERMINAL AIR BOX w/REHEAT COIL (REFER TO SCHEDULE)
/×/×	OPPOSED BLADE DAMPER (REFER TO SCHEDULE)
* * * *	PARALLEL BLADE DAMPER (REFER TO SCHEDULE)
XX-Y	AIRFLOW MEASUREMENT SYMBOL XX - AHU SYMBOL Y - SEQUENTIAL NUMBER
•	DIFFERENTIAL PRESSURE SENSOR
T	THERMOSTAT/SENSOR

# MECHANICAL ABBREVIATION KEY

ABBR:	DESCRIPTION:
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
BFP	BACKFLOW PREVENTER
С	COMMON
CO	CLEANOUT
DN	DOWN
DPG (0-2")	DIFFERENTIAL PRESSURE GAUGE (RANGE)
DPS	DIFFERENTIAL PRESSURE SWITCH
E	EXISTING
EA	EXHAUST/RELIEF AIR
EFD	EXISTING FIRE DAMPER
EFSD	EXISTING FIRE SMOKE DAMPER
EP	ELECTRICAL TO PNEUMATIC VALVE
ESD	EXISTING SMOKE DAMPER
FCO	FLOOR CLEANOUT
FD	FIRE DAMPER
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FS	FLOOR SINK
FSD	FIRE/SMOKE DAMPER
L or LAV	LAVATORY
MB	MOP BASIN
MV	MIXING VALVE
N.C.	NORMALLY CLOSED
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
OA	OUTSIDE AIR
PS	PRESSURE SWITCH
RA	RETURN AIR
SA	SUPPLY AIR
SD	SMOKE DAMPER
SK	SINK
SS	SERVICE SINK
TAB	TERMINAL AIR BOX
TD	TRANSFER DUCT
TYP	TYPICAL
UB	UTILITY BOX
UC-1	DOOR UNDERCUT BY OTHERS (1" TYPICAL)
UON	UNLESS OTHERWISE NOTED

# **MECHANICAL RENOVATION NOTES:**

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO. FIRE PROTECTION. PLUMBING. VENTILATION. PIPING AND TEMPERATURE CONTROL

- 1. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS, AND STAFF. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS BEFORE PROCEEDING.
- 2. NOT ALL EXISTING DUCTWORK AND PIPING IS SHOWN. VERIFY EXISTING CONDITIONS
- BEFORE STARTING WORK. NOTIFY ENGINEER OF ANY CONFLICTS WITH NEW WORK. 3. FIELD VERIFY THE AVAILABLE CLEARANCES FOR DUCTWORK AND PIPING BEFORE
- FABRICATION. RISES AND DROPS MAY BE NECESSARY BECAUSE OF EXISTING FIELD
- 4. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CUTTING, REMOVAL AND PATCHING OF ROOFS, WALLS, AND FLOORS ASSOCIATED WITH WORK BY ALL CONTRACTORS.
- CONTRACTORS SHALL NOTIFY THE GC OF AFFECTED AREAS PRIOR TO BIDDING. 5. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF
- CEILINGS, CEILING TILES, AND CEILING GRIDS ASSOCIATED WITH AREAS OF WORK BY ALL CONTRACTORS. NOTIFY THE GENERAL CONTRACTOR OF AFFECTED AREAS PRIOR TO 6. WHERE EXISTING MECHANICAL SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH
- NEW EQUIPMENT, PIPING, OR DUCTWORK TO BE INSTALLED, EACH CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, PIPING, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING MECHANICAL SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK. 7. PROVIDE TEMPORARY CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING
- CONSTRUCTION, MAINTAIN ACCESS TO EXISTING MECHANICAL INSTALLATIONS THAT REMAIN ACTIVE.
- 8. OBTAIN PERMISSION FROM OWNER BEFORE SHUTTING DOWN ANY SYSTEM FOR ANY REASON. MAINTAIN SERVICE TO ALL COMPONENTS THAT ARE TO REMAIN UNTIL NEW SYSTEMS ARE INSTALLED.
- 9. MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR TIE IN AND SWITCHOVER. DRAIN SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS, OBTAIN PERMISSION FROM OWNER BEFORE PARTIALLY OR COMPLETELY DRAINING SYSTEM. MAKE CHANGEOVER TO NEW SYSTEMS WITH MINIMUM OUTAGE.

# **TAB PRE-DEMOLITION NOTES:**

- 1. BEFORE ANY DEMOLITION WORK IS BEGUN A COMPLETE AIR BALANCE TEST SHALL BE PERFORMED BY THE TESTING, ADJUSTING AND BALANCING (TAB) CONTRACTOR ON EXISTING AIR HANDLERS AND EXHAUST FANS SERVING THE AREAS AFFECTED BY CONSTRUCTION. EQUIPMENT TO BE DEMOLISHED DOES NOT REQUIRE TESTING. PROVIDE AIR BALANCE TESTING ONLY ON EQUIPMENT THAT WILL CONTINUE TO BE USED TO SERVE RENOVATED AREAS AFTER THE CONSTRUCTION PHASE IS COMPLETED.
- 2. IN THE EVENT A DUCT TRAVERSE LOCATION AS MARKED ON THIS PLAN IS INACCESSIBLE FOR MEASUREMENT, THE TAB CONTRACTOR SHALL PERFORM THE TRAVERSE AT AN ALTERNATE LOCATION OR SHALL TAKE MULTIPLE DUCT TRAVERSES AND/OR READINGS AS REQUIRED TO DETERMINE THE AIRFLOW READING WHERE THE DUCT TRAVERSE SYMBOL IS SHOWN. IN THE EVENT TRAVERSES ARE TAKEN AT ALTERNATE LOCATION(S), TAB CONTRACTOR SHALL INCLUDE A DRAWING THAT SHOWS THE LOCATIONS WHERE THE ACTUAL MEASUREMENTS WERE TAKEN.
- 3. TAKE A DUCT STATIC PRESSURE READING AT EACH LOCATION WHERE A DUCT TRAVERSE
- READING IS TAKEN AND INCLUDE IN THE FINAL PRE-DEMOLITION TAB REPORT. 4. TAB CONTRACTOR SHALL COMPILE AND SUBMIT FOUR COPIES OF THE FINAL PRE-DEMOLITION REPORT WITHIN 10 WORKING DAYS AFTER THE FIELD MEASUREMENTS ARE COMPLETED. FINAL TAB REPORT SHALL BE SUBMITTED FOR REVIEW TO THE ARCHITECT/ENGINEER. TESTING SHALL INCLUDE ALL ITEMS REQUIRED IN THE
- SPECIFICATIONS. 5. BALANCING CONTRACTOR SHALL PRE-BALANCE ALL EXISTING SYSTEMS TO REMAIN PER SPECIFICATION SECTION 23 05 93. BALANCE READINGS WILL BE REQUIRED AT AIR OUTLETS AND DUCT TRAVERSES TO VERIFY EXISTING AIRFLOW TO UNAFFECTED SPACES.

# **VENTILATION GENERAL NOTES:**

- 1. UNLESS NOTED OTHERWISE, THE SIZE OF EACH BRANCH DUCT TO A VARIABLE AIR VOLUME BOX (VAV) SHALL MATCH THE INLET SIZE UNLESS THE BRANCH IS GREATER THAN 6 FEET IN LENGTH, IN WHICH CASE THE BRANCH DUCT SHALL BE SIZED AT A PRESSURE DROP OF 0.07" W.C. PER 100' OF DUCTWORK.
- 2. UNLESS NOTED OTHERWISE, THE SIZE OF EACH BRANCH DUCT TO AN AIR TERMINAL SHALL
- MATCH THE INLET SIZE. 3. ALIGN TEMPERATURE SENSORS WITH LIGHT SWITCHES AND WHEN IN CLOSE PROXIMITY TO
- EACH OTHER. 4. PROVIDE ACCESS DOORS AT ALL DUCT MOUNTED EQUIPMENT.
- 5. EXISTING AIR INLET AND OUTLET CFM SHOWN ON DRAWINGS ARE FROM EXISTING DRAWINGS, AND ARE FOR REFERENCE ONLY, CONTRACTOR SHALL USE PRE-BALANCE VALUES, AND NOT EXISTING CFM SHOWN ON DRAWINGS.
- 6. CONTRACTOR MAY REUSE PORTIONS OF EXISTING DUCT PROVIDED SIZES AND PRESSURE CLASSES ARE CORRECT, DUCT IS THOROUGHLY CLEANED AND FREE OF DEFECTS, AND ALL TRANSVERSE JOINTS, LONGITUDINAL SEAMS, AND DUCT WALL PENETRATIONS ARE SEALED AS SPECIFIED FOR NEW DUCTWORK.
- 7. CLEAN ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK UPSTREAM OF ALL NEW CONNECTIONS PER SPECIFICATION SECTION 23 31 00.

# **MECHANICAL GENERAL NOTES:**

- THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, PLUMBING, VENTILATION, PIPING AND TEMPERATURE CONTROL.
- 1. DRAWINGS SHOWING LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT EXACT INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF DUCTWORK, PIPING, EQUIPMENT, ETC., AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT
- 2. CATALOG AND MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE. BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR THE COMPLETE DESCRIPTION OF MATERIAL SCHEDULED ON THESE DRAWINGS AND IN THE SPECIFICATIONS BEFORE ORDERING. THE DESCRIPTION OF THE MATERIAL AND SCHEDULED PERFORMANCE TAKES PRECEDENCE OVER THE MODEL NUMBER. THE FIRST MANUFACTURER SCHEDULED IS THE BASIS OF DESIGN.
- DETERMINATION OF QUANTITIES OF MATERIAL AND EQUIPMENT REQUIRED SHALL BE MADE BY THE CONTRACTOR FROM THE DOCUMENTS. WHERE MATERIAL AND/OR QUANTITY DISCREPANCIES ARISE BETWEEN DRAWINGS, SCHEDULES AND/OR SPECIFICATIONS, THE
- HIGHER QUALITY/ GREATER NUMBER SHALL GOVERN. 4. DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR
- PHYSICALLY AT SITE. REVIEW ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES. COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, CODE COMPLIANCE, AND TO VERIFY NON-INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF NECESSARY CLEARANCES FOR ALL TRADES. BRING ANY INTERFERENCES OR CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH FABRICATION OR EQUIPMENT ORDERS.
- 6. REVIEW SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED OR SUBSTITUTED AND MAKE REASONABLE ACCOMMODATIONS IN LAYOUT AND POSITIONING TO PROVIDE PROPER ACCESS.
- 7. ANY CHANGES REQUIRED TO ELIMINATE CONFLICTS OR THAT RESULT FROM A FAILURE TO COORDINATE SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL COST OR EXPENSE TO OTHERS.
- 8. EACH CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ELECTRICAL CHANGES REQUIRED FOR EQUIPMENT PROPOSED THAT DIFFERS FROM THE BASIS OF
- 9. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL, TECHNOLOGY AUDIO/VISUAL, AND OTHER MECHANICAL PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED DEVICES. OTHER THAN SPRINKLERS.
- 10. EACH CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND
- 11. IN AREAS WITH DRYWALL CEILINGS COORDINATE LOCATIONS OF ACCESS PANELS WITH THE GC FOR ACCESS TO VALVES, DUCTWORK ACCESSORIES, DAMPERS, ETC. COORDINATE PANEL TYPE AND COLOR WITH ARCHITECT. NOTIFY THE GC OF THE REQUIRED ACCESS
- PANELS PRIOR TO BIDDING. 12. SEAL ALL WALL PENETRATIONS AIRTIGHT WHERE CONDUITS, PIPING, AND DUCTS
- PENETRATE. 13. CAULK ALL PIPE AND DUCT PENETRATIONS OF FULL HEIGHT NON-FIRE RATED WALL. PARTITION, FLOOR, AND ROOF ASSEMBLIES. THIS IS ESSENTIAL TO PREVENT NOISE TRANSMISSION FROM ONE ROOM TO ANOTHER AND TO PROVIDE THE DESIRED NC LEVELS
- 14. EQUIPMENT SIZES AND SERVICE CLEARANCE REQUIREMENTS VARY AMONG DIFFERENT MANUFACTURERS, CONSULT APPROVED SHOP DRAWINGS FOR EQUIPMENT SIZES AND REQUIRED SERVICE CLEARANCES. COORDINATE WITH LAYOUT OF EQUIPMENT PADS, PIPING, DUCTWORK, ETC.
- 15. DO NOT BLOCK TUBE PULL OR EQUIPMENT SERVICE CLEARANCES. 16. MAINTAIN A MINIMUM WORKING CLEARANCE OF 3'-6" IN FRONT OF ALL ELECTRICAL EQUIPMENT REQUIRING MAINTENANCE, INSPECTION, AND TESTING INCLUDING BUT NOT
- LIMITED TO PANELS, DISTRIBUTION PANELS, SWITCHBOARDS, MOTOR CONTROL CENTERS, TRANSFORMERS, EQUIPMENT DISCONNECTS AND STARTERS. 17. MAINTAIN THE DEDICATED ELECTRICAL EQUIPMENT SPACE DEFINED BY THE WIDTH / DEPTH OF ELECTRICAL EQUIPMENT MEASURED FROM THE FLOOR TO A HEIGHT 6'-0" ABOVE THE
- EQUIPMENT OR THE STRUCTURAL CEILING, WHICHEVER IS LOWER. SYSTEMS FOREIGN TO THE ELECTRICAL DISTRIBUTION SYSTEM ARE NOT ALLOWED IN THE DEDICATED ELECTRICAL SPACE INCLUDING: DUCTWORK, PIPING, ETC.
- 18. DO NOT EXCEED 25 LBS PER HANGER AND A MINIMUM SPACING OF 2'-0" ON CENTER WHEN ATTACHING TO METAL ROOF DECKING (LIMITATION NOT REQUIRED WITH CONCRETE ON METAL DECK). THIS 25 LBS. LOAD AND 2'-0" SPACING INCLUDE ADJACENT ELECTRICAL AND ARCHITECTURAL ITEMS HANGING FROM DECK. IF THE HANGER RESTRICTIONS CANNOT BE ACHIEVED, SUPPLEMENTAL FRAMING OFF STEEL FRAMING SHALL BE ADDED. ANCHORS EMBEDDED IN CONCRETE SHALL BE CRACKED CONCRETE APPROVED IN ACCORDANCE WITH SPECIFICATIONS.

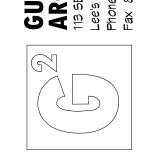
# **TAB POST-CONSTRUCTION NOTES:**

- AFTER CONSTRUCTION ACTIVITIES ARE COMPLETE, TESTING, ADJUSTING (TAB) AND BALANCING CONTRACTOR SHALL REBALANCE AIR HANDLING UNITS AND EXHAUST FANS AS REQUIRED TO ACHIEVE THE NEW AIRFLOW VALUES SHOWN ON THE CONSTRUCTION DRAWINGS.
- 2. AREAS SERVED BY THIS EQUIPMENT WHICH WERE NOT RENOVATED SHALL BE RE-BALANCED TO THE AIRFLOW RATES MEASURED BEFORE THE RENOVATION OCCURRED
- (REFER TO THE FINAL PRE- DEMOLITION REPORT). 3. IF DUCT TRAVERSE LOCATION AS MARKED ON THE DRAWINGS IS INACCESSIBLE FOR MEASUREMENT, THE TAB CONTRACTOR SHALL PERFORM THE TRAVERSE AT AN ALTERNATE LOCATION OR SHALL TAKE MULTIPLE DUCT TRAVERSES AND/OR GRILLE READINGS AS REQUIRED TO DETERMINE THE FLOW RATE. IN THE EVENT TRAVERSES ARE TAKEN AT AN ALTERNATE LOCATION(S), TAB CONTRACTOR SHALL INCLUDE A DRAWING THAT SHOWS THE LOCATIONS WHERE THE ACTUAL MEASUREMENTS WERE TAKEN.
- 4. A DUCT STATIC PRESSURE READING SHALL BE TAKEN AT EACH LOCATION WHERE A DUCT TRAVERSE READING IS TAKEN AND SHALL BE INCLUDED IN THE FINAL POST-CONSTRUCTION TAB REPORT.
- 5. TAB CONTRACTOR SHALL COMPILE AND SUBMIT COPIES OF THE FINAL POST-
- CONSTRUCTION TAB REPORT AS REQUIRED BY SECTION 23 05 93. THE FINAL POST CONSTRUCTION REPORT SHALL INCLUDE ALL ITEMS REQUIRED IN THE SPECIFICATIONS.

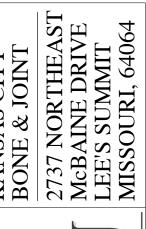


CONSTRUCTION



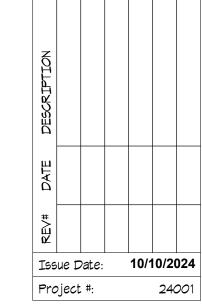






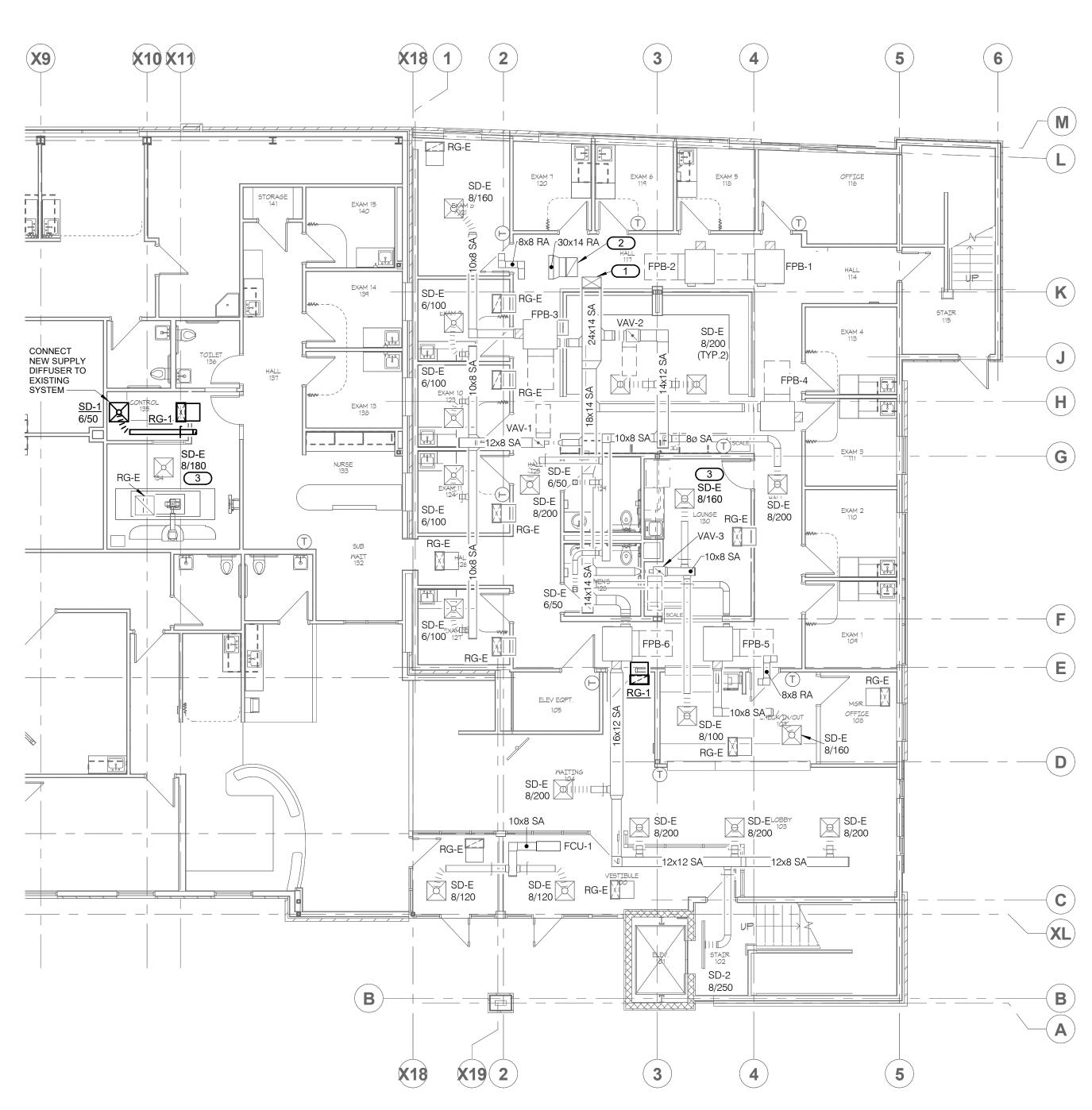






SHEET NUMBER

AIR T	ERMINAL	SCHEDU	JLE						
	CTOR SHALL DETER D DRAWINGS FOR N		-				ZE UNLESS NOTED OTH	HERWISE.	
TAG NAME	FACE SIZE (IN.) (NOTE 2)	TYPE	BORDER (NOTE 1)	MATERIAL	FINISH	VOLUME DAMPER REQUIRED	MANUFACTURER	MODEL	NOTES
RG-1	INLET +2	35 DEGREE DEFLECTION	1 1/4"	STEEL	WHITE	NO	TITUS	350R	
SD-1	24x24	PLAQUE	LAY-IN	STEEL	WHITE	NO	TITUS	OMNI	



SHEET NOTES:

AND SYMBOLS LIST.

PLANNED SHUTDOWNS.

REFER TO SHEET M000 FOR GENERAL NOTES

SYSTEM SHUTDOWNS SHALL BE MINIMIZED

AND SHALL BE COORDINATED WITH THE

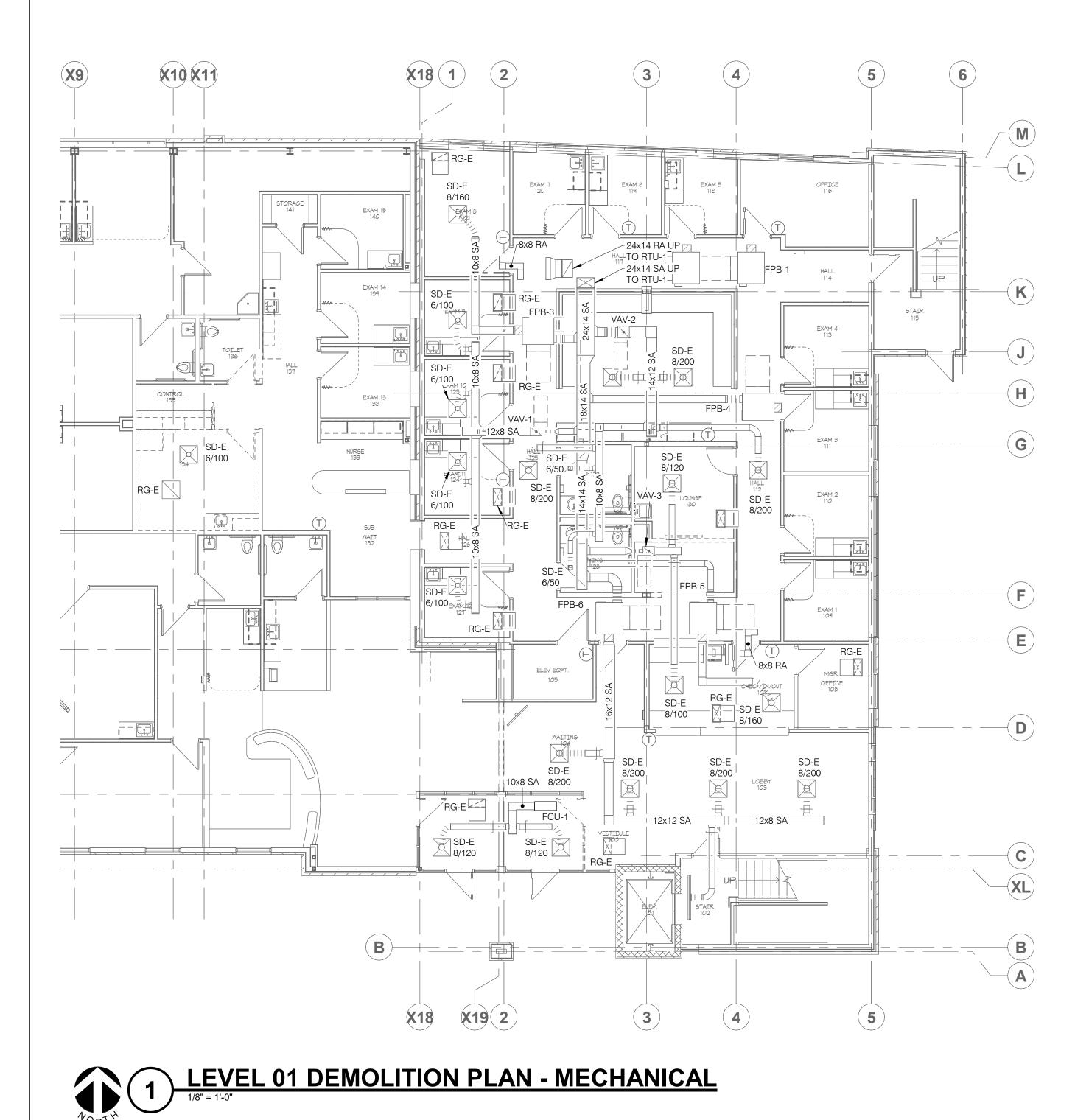
OWNER A MINIMUM OF 2 WEEKS BEFORE

KEYNOTES:

LISTED.

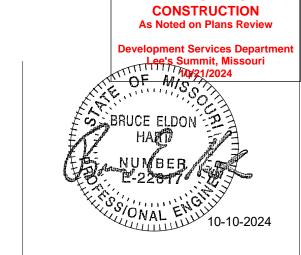
EXISTING 24x14 SA UP TO RTU-1. EXISTING 24x14 RA UP TO RTU-1.

REBALANCE EXISTING SUPPLY GRILLE TO CFM



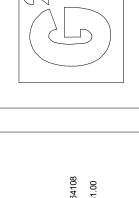




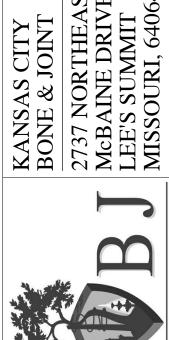




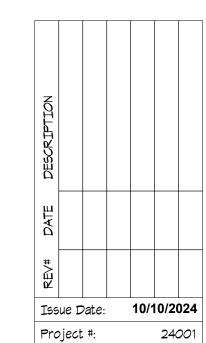












SHEET NUMBER

M101

### MECHANICAL AND PLUMBING SPECIFICATIONS

### **BASIC MECHANICAL REQUIREMENTS**

SCOPE OF WORK
THE CONTRACTOR SHALL FURNISH AND INSTALL ALL NEW MATERIALS AS INDICATED ON THE DRAWINGS, AND/OR IN THESE SPECIFICATIONS, AND ALL ITEMS REQUIRED TO MAKE ASSOCIATED PORTION OF THE MECHANICAL WORK A FINISHED AND WORKING SYSTEM.

QUALITY ASSURANCE
THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTING COMPLETE AND OPERATING SYSTEMS. THE CONTRACTOR ACKNOWLEDGES AND UNDERSTANDS THAT THE CONTRACT DOCUMENTS ARE A TWO-DIMENSIONAL REPRESENTATION OF A THREE-DIMENSIONAL OBJECT, SUBJECT TO HUMAN INTERPRETATION. THIS REPRESENTATION MAY INCLUDE IMPERFECT DATA, INTERPRETED CODES, UTILITY GUIDELINES, THREE-DIMENSIONAL CONFLICTS, AND REQUIRED FIELD COORDINATION ITEMS. SUCH DEFICIENCIES CAN BE CORRECTED WHEN IDENTIFIED PRIOR TO ORDERING MATERIAL AND STARTING INSTALLATION. THE CONTRACTOR AGREES TO CAREFULLY STUDY AND COMPARE THE INDIVIDUAL CONTRACT DOCUMENTS AND REPORT AT ONCE IN WRITING TO THE DESIGN TEAM ANY DEFICIENCIES THE CONTRACTOR MAY DISCOVER. THE CONTRACTOR FURTHER AGREES TO REQUIRE EACH SUBCONTRACTOR TO LIKEWISE STUDY THE DOCUMENTS AND REPORT AT ONCE ANY DEFICIENCIES DISCOVERED. CONSTRUCTION DRAWINGS FOR THIS PROJECT HAVE BEEN PREPARED UTILIZING AUTOCAD MEP. CONTRACTORS AND SUBCONTRACTORS MAY REQUEST

ELECTRONIC MEDIA FILES OF THE CONTRACT DRAWINGS. THE ELECTRONIC CONTRACT DOCUMENTS CAN BE USED FOR PREPARATION OF SHOP DRAWINGS AND AS-BUILT DRAWINGS ONLY. THE INFORMATION MAY NOT BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT.

CONFORM TO ALL REQUIREMENTS OF THE CITY OF LEE'S SUMMIT, MO., CODES, LAWS, ORDINANCES AND OTHER REGULATIONS HAVING JURISDICTION. CONFORM TO ALL STATE CODES.

PERMITS AND FEES
PROCURE ALL APPLICABLE PERMITS AND LICENSES. ABIDE BY LOCAL AND STATE LAWS, REGULATIONS, AND ORDINANCES. PAY ALL CHARGES FOR PERMITS OR LICENSES. PAY ALL FEES AND TAXES IMPOSED BY STATE, MUNICIPAL, AND OTHER REGULATORY BODIES. PAY ALL CHARGES ARISING OUT OF REQUIRED INSPECTIONS BY AN AUTHORIZED BODY. PAY ALL CHARGES ARISING OUT OF REQUIRED CONTRACT DOCUMENT REVIEWS ASSOCIATED WITH THE PROJECT AND AS INITIATED BY THE OWNER OR AUTHORIZED AGENCY/CONSULTANT.

SUBMITTALS SHALL BE REQUIRED FOR ALL EQUIPMENT, FIXTURES, DEVICES, PIPING, CONDUIT, WIRE, ETC. AS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL SUBMIT ELECTRONIC COPIES OF EACH SHOP DRAWING FOR REVIEW BY THE ARCHITECT/ENGINEER BEFORE RELEASING ANY EQUIPMENT FOR

PRODUCT DELIVERY, STORAGE, AND HANDLING
EXERCISE CARE IN TRANSPORTING AND HANDLING TO AVOID DAMAGE TO MATERIALS. STORE MATERIALS ON THE SITE TO PREVENT DAMAGE. KEEP MATERIALS CLEAN, DRY AND FREE FROM HARMFUL CONDITIONS. IMMEDIATELY REMOVE ANY MATERIALS THAT BECOME WET OR THAT ARE SUSPECTED OF BECOMING CONTAMINATED WITH MOLD OR OTHER ORGANISMS.

PROVIDE MINIMUM ONE-YEAR WARRANTY COMMENCING ON DATE OF FINAL ACCEPTANCE FOR ALL FIXTURES, EQUIPMENT, MATERIALS, AND WORKMANSHIP.
WARRANTY REQUIREMENTS SHALL EXTEND TO CORRECTION, WITHOUT COST TO OWNER, OF ALL WORK FOUND TO BE DEFECTIVE OR NONCONFORMING TO THE CONTRACT DOCUMENTS. REFER TO SUBSECTIONS FOR ADDITIONAL WARRANTY REQUIREMENTS.

MATERIAL SUBSTITUTION
WHERE SEVERAL MANUFACTURERS' NAMES ARE GIVEN, THE MANUFACTURER FOR WHICH A CATALOG NUMBER IS GIVEN IS THE BASIS OF DESIGN AND ESTABLISHES THE QUALITY REQUIRED. EQUIVALENT EQUIPMENT MANUFACTURED BY THE OTHER NAMED MANUFACTURERS MAY BE USED. CONTRACTOR SHALL ENSURE THAT ALL ITEMS SUBMITTED BY THESE OTHER MANUFACTURERS MEET ALL REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS, AND FIT IN THE ALLOCATED SPACE. THE ARCHITECT/ENGINEER SHALL MAKE THE FINAL DETERMINATION OF WHETHER A PRODUCT IS EQUIVALENT. ANY MATERIAL, ARTICLE OR EQUIPMENT OF OTHER UNNAMED MANUFACTURERS WHICH WILL ADEQUATELY PERFORM THE SERVICES AND DUTIES IMPOSED BY THE DESIGN AND IS OF A QUALITY EQUAL TO OR BETTER THAN THE EQUIPMENT IDENTIFIED BY THE DRAWINGS MAY BE USED IF APPROVAL IS SECURED IN WRITING FROM THE ARCHITECT/ENGINEER VIA ADDENDUM.

SUBMIT AN ELECTRONIC COPY OF THE 0&M MANUALS TO THE OWNER. OPERATION AND MAINTENANCE DATA SHALL CONSIST OF WRITTEN INSTRUCTIONS FOR THE CARE, MAINTENANCE, AND OPERATION OF THE EQUIPMENT AND SYSTEMS. INSTRUCTION BOOKS, CARDS, MANUALS FURNISHED WITH THE EQUIPMENT SHALL BE

RECORD DOCUMENTS

MAINTAIN AT THE JOB SITE A SEPARATE AND COMPLETE SET OF MECHANICAL, PLUMBING AND FIRE PROTECTION DRAWINGS AND SPECIFICATIONS WITH ALL

MADE DRAWINGS TO INDICATE APPROVED SUBSTITUTIONS: CHANGES MADE TO THE SYSTEMS CLEARLY AND PERMANENTLY MARKED IN COMPLETE DETAIL. MARK DRAWINGS TO INDICATE APPROVED SUBSTITUTIONS; CHANGE ORDERS, AND ACTUAL EQUIPMENT AND MATERIALS USED. ALL CHANGE ORDERS, RFI RESPONSES, CLARIFICATIONS AND OTHER SUPPLEMENTAL INSTRUCTIONS SHALL BE MARKED ON THE DOCUMENTS. RECORD DOCUMENTS THAT MERELY REFERENCE THE EXISTENCE OF THE ABOVE ITEMS ARE NOT ACCEPTABLE. RECORD CHANGES DAILY AND KEEP THE MARKED DRAWINGS AVAILABLE FOR THE ARCHITECT/ENGINEER'S EXAMINATION AT ANY NORMAL WORK

THOROUGHLY CLEAN ALL EQUIPMENT AND SYSTEMS PRIOR TO THE OWNER'S FINAL ACCEPTANCE OF THE PROJECT. CLEAN ALL FOREIGN PAINT, GREASE, OIL, DIRT, LABELS, STICKERS, ETC. FROM ALL EQUIPMENT. REMOVE ALL RUBBISH, DEBRIS, ETC., ACCUMULATED DURING CONSTRUCTION FROM THE PREMISES.

MECHANICAL DEMOLITION FOR REMODELING
THE DRAWINGS ARE INTENDED TO INDICATE THE GENERAL SCOPE OF WORK AND DO NOT SHOW EVERY PIPE, DUCT, OR PIECE OF EQUIPMENT THAT MUST BE REMOVED. THE CONTRACTOR SHALL VISIT THE SITE AND VERIFY CONDITIONS PRIOR TO SUBMITTING A BID. BID SUBMITTAL SHALL MEAN THE CONTRACTOR HAS VISITED THE PROJECT SITE AND VERIFIED EXISTING CONDITIONS AND SCOPE OF WORK.

PREPARATION
DISCONNECT MECHANICAL SYSTEMS IN WALLS, FLOORS, AND CEILINGS SCHEDULED FOR REMOVAL.
PROVIDE TEMPORARY CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. WHEN WORK MUST BE PERFORMED ON OPERATING

## EQUIPMENT, USE PERSONNEL EXPERIENCED IN SUCH OPERATIONS.

DEMOLITION AND EXTENSION OF EXISTING MECHANICAL WORK
DEMOLISH AND EXTEND EXISTING MECHANICAL WORK UNDER PROVISIONS OF DIVISION 2 AND THIS SECTION. REMOVE, RELOCATE, AND EXTEND EXISTING INSTALLATIONS TO ACCOMMODATE NEW CONSTRUCTION. REMOVE ABANDONED DUCTS AND PIPING TO SOURCE OF SUPPLY AND/OR MAIN LINES. REMOVE EXPOSED ABANDONED PIPES AND DUCTS, INCLUDING ABANDONED PIPES AND DUCTS ABOVE ACCESSIBLE CEILINGS. CUT DUCTS FLUSH WITH WALLS AND FLOORS, CAP DUCT THAT REMAINS, AND PATCH SURFACES. CUT PIPES ABOVE CEILINGS, BELOW FLOORS AND BEHIND WALLS. CAP REMAINING LINES. REPAIR

BUILDING CONSTRUCTION TO MATCH ORIGINAL. REMOVE ALL CLAMPS, HANGERS, SUPPORTS, ETC. ASSOCIATED WITH PIPE AND DUCT REMOVAL.

TUBING: TYPE L HARD DRAWN SEAMLESS COPPER TUBE, ASTM B88.

### 2. JOINTS: SOLDER WITH 100% LEAD-FREE SOLDER AND FLUX, ASTM B32. 3. FITTINGS: WROUGHT COPPER SOLDER JOINT, ANSI B16.22.

<u>DOMESTIC WATER BALL VALVES:</u>
3" AND UNDER, 150 PSI SATURATED STEAM, 600 PSI CWP, FULL PORT, SCREWED OR SOLDER ENDS (ACCEPTABLE ONLY IF RATED FOR SOLDERING IN LINE WITH 470F MELTING POINT OF LEAD-FREE SOLDER), BRONZE BODY OF A COPPER ALLOY CONTAINING LESS THAN 15% ZINC, STAINLESS STEEL BALL AND TRIM, TEFLON SEATS AND SEALS. APOLLO #77C 140, STOCKHAM #S 255-FB-P-UL BR1 R, MILWAUKEE #BA-400, WATTS, NIBCO #585-70-66, NATIONAL UTILITIES CO., RUB. NOTES: PROVIDE EXTENDED SHAFT FOR ALL VALVES IN INSULATED PIPING. PROVIDE LOCK OUT TRIM FOR ALL VALVES OPENING TO ATMOSPHERE INSTALLED IN DOMESTIC WATER PIPING OVER 120F, HEATING WATER PIPING OVER 120F, STEAM, CONDENSATE, BOILER FEED WATER PIPING, COMPRESSED AIR PIPING AND GASOLINE/KEROSENE PIPING, AND AS INDICATED ON THE DRAWINGS. SOLID EXTENDED SHAFT IS NOT REQUIRED ON VALVES WITH LOCK OUT TRIM.

# COPPER PIPE WROUGHT COPPER FITTING GROUND JOINT.

BLACK STEEL (SCHEDULE 40) PIPE MALLEABLE IRON, GROUND JOINT. 150 PSI. BRONZE TO BRONZE SEAT. GALVANIZED STEEL PIPE \_ GALVANIZED MALLEABLE IRON, GROUND JOINT, 150 PSI, BRONZE TO BRONZE SEAT.

ONNECTIONS BETWEEN DISSIMILAR METALS SHALL BE INSULATING DIELECTRIC TYPES THAT PROVIDE A WATER GAP BETWEEN THE CONNECTED METALS, AND THAT EITHER ALLOW NO METAL PATH FOR ELECTRON TRANSFER OR THAT PROVIDE A WIDE WATER GAP LINED WITH A NON-CONDUCTIVE MATERIAL TO IMPEDE FLECTRON TRANSFER THROUGH THE WATER PATH JOINTS SHALL BE RATED FOR THE TEMPERATURE, PRESSURE, AND OTHER CHARACTERISTICS OF THE SERVICE IN WHICH THEY ARE USED, INCLUDING TESTING

INSTALL ALL PRODUCTS PER MANUFACTURER'S RECOMMENDATIONS. REAM PIPE AND TUBE ENDS. REMOVE BURRS. BEVEL PLAIN END FERROUS PIPE. REMOVE SCALE AND DIRT, ON INSIDE AND OUTSIDE, BEFORE ASSEMBLY. CONNECT TO EQUIPMENT WITH FLANGES OR UNIONS.

UNLESS OTHERWISE INDICATED, BRANCH TAKE-OFFS SHALL BE FROM TOP OF MAINS OR HEADERS AT EITHER A 45 OR 90 ANGLE FROM THE HORIZONTAL PLANE FOR AIR LINES, AND FROM TOP, BOTTOM OR SIDE FOR LIQUIDS.

# EQUIPMENT DRAINS AND OVERFLOWS COPPER TUBING: DQV DRAWN TEMPER SEAMLESS COPPER DRAINAGE TUBE, ASTM B306.

1. FITTINGS: ASME b16.23 CAST BRASS, OR ASME B16.29 SOLDER WROUGHT COPPER.

# 2. JOINTS: SOLDER WITH TYPE 95-5 SOLDER. 50-50 SOLDER IS NOT ACCEPTABLE.

AIR VENTS
PROVIDE MEANS FOR VENTING AIR AT ALL HIGH POINTS IN THE PIPING SYSTEM AND AT ALL OTHER POINTS WHERE AIR MAY BE TRAPPED.

NATED FOR 125 PSI WORKING PRESSURE AND 250F OPERATING TEMPERATURE, TAPS FOR DETERMINING FLOW WITH A PORTABLE METER, POSITIVE SHUTOFF VALVES FOR EACH METER CONNECTION, MEMORY FEATURE, TIGHT SHUTOFF, AND A PERMANENT PRESSURE DROP BETWEEN 1' AND 2' WATER COLUMN AT FULL FLOW WITH VALVE 100% OPEN. FURNISH WITH MOLDED, REMOVABLE INSULATION COVERS.

BEFORE ASSEMBLING PIPE SYSTEMS, REMOVE ALL LOOSE DIRT, SCALE, OIL AND OTHER FOREIGN MATTER ON INTERNAL OR EXTERNAL SURFACES BY MEANS CONSISTENT WITH GOOD PIPING PRACTICE SUBJECT TO APPROVAL OF THE ARCHITECT/ENGINEER'S REPRESENTATIVE. BLOW CHIPS AND BURRS FROM MACHINERY OR THREAD CUTTING OPERATION OUT OF PIPE BEFORE ASSEMBLY. WIPE CUTTING OIL FROM INTERNAL AND EXTERNAL SURFACES.

GENERAL INSTALLATION REQUIREMENTS
PROVIDE DIELECTRIC CONNECTIONS BETWEEN DISSIMILAR METALS. ROUTE PIPING IN ORDERLY MANNER AND MAINTAIN GRADIENT. INSTALL TO CONSERVE BUILDING SPACE. GROUP PIPING WHENEVER PRACTICAL AT COMMON ELEVATIONS. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR EQUIPMENT. SLOPE WATER PIPING AND ARRANGE TO DRAIN AT LOW POINTS.

PROVIDE VALVE POSITION INDICATOR ON ALL VALVES 10'-0" OR GREATER ABOVE FINISH FLOOR AND NOT LOCATED ABOVE CEILING. 2. PROVIDE CLEARANCE FOR INSTALLATION OF INSULATION AND ACCESS TO VALVES AND FITTINGS.

# 3. PROVIDE ACCESS DOORS WHERE VALVES ARE NOT EXPOSED.

4. INSTALL BALANCING VALVES WITH THE MANUFACTURER'S RECOMMENDED STRAIGHT UPSTREAM AND DOWNSTREAM DIAMETERS OF PIPE. 5 PREPARE PIPE FITTINGS SUPPORTS AND ACCESSORIES FOR FINISH PAINTING

# 6 INSTALL VALVES WITH STEMS UPRIGHT OR HORIZONTAL NOT INVERTED.

7. ARRANGE PIPING AND PIPING CONNECTIONS SO EQUIPMENT MAY BE SERVICED OR TOTALLY REMOVED WITHOUT DISTURBING PIPING BEYOND FINAL CONNECTIONS AND ASSOCIATED SHUTOFF VALVES.

NSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. PACKAGE TO BE MOUNTED ON HOUSEKEEPING PAD AND 1" VIBRATION ISOLATOR PAD.

YPE A: GLASS FIBER: ANSI/ASTM C547: 0.24 MAXIMUM 'K' VALUE AT 75E: NON-COMBUSTIBLE. ALL PURPOSE, WHITE KRAET JACKET BONDED TO ALUMINUM FOIL AND REINFORCED WITH FIBERGLASS YARN, 25/50 FLAME SPREAD/SMOKE DEVELOPED RATING WHEN TESTED IN ACCORDANCE WITH ASTM E84 (UL 723).

TYPE B: FLEXIBLE ELASTOMERIC FOAM INSULATION: CLOSED-CELL, SPONGE, OR EXPANDED RUBBER (POLYETHYLENE TYPE IS NOT PERMITTED): ANSI/ASTM C534, GRADE 1 TYPE 1 FOR TUBULAR MATERIALS; FLEXIBLE PLASTIC; 0.25 MAXIMUM 'K' VALUE AT 75F, LISTED AND LABELED AT MORE THAN 25/50 FLAME SPREAD/SMOKE DEVELOPED RATING WHEN TESTED PER ASTM E84 OR UL 723 AS REQUIRED BY CODE. MAXIMUM 1" THICK PER LAYER WHERE MULTIPLE LAYERS ARE SPECIFIED.

(RAFT REINFORCED FOIL VAPOR BARRIER WITH SELF-SEALING ADHESIVE JOINTS. BEACH PUNCTURE RESISTANCE RATIO OF AT LEAST 50 UNITS. TENSILE STRENGTH: 35 PSI MINIMUM. SINGLE, SELF-SEAL ACRYLIC ADHESIVE ON LONGITUDINAL JACKET LAPS AND BUTT STRIPS.

NSTALL INSULATION AFTER PIPING HAS BEEN TESTED. PIPE SHALL BE CLEAN, DRY AND FREE OF RUST BEFORE APPLYING INSULATION.

GENERAL INSTALLATION REQUIREMENTS
INSTALL MATERIALS PER MANUFACTURER'S INSTRUCTIONS, BUILDING CODES AND INDUSTRY STANDARDS. NEATLY FINISH INSULATION AT SUPPORTS, PROTRUSIONS, AND INTERRUPTIONS.

ON ALL INSULATED PIPING, PROVIDE AT EACH SUPPORT AN INSERT OF SAME THICKNESS AND CONTOUR AS ADJOINING INSULATION, BETWEEN THE PIPE AND INSULATION JACKET, TO PREVENT INSULATION FROM SAGGING AND CRUSHING. THE INSERT SHALL BE SUITABLE FOR PLANNED TEMPERATURES, BE SUITABLE FOR USE WITH SPECIFIC PIPE MATERIAL, AND SHALL BE A 180 CYLINDRICAL SEGMENT THE SAME LENGTH AS METAL SHIELDS. NSTALL METAL SHIELDS BETWEEN ALL HANGERS OR SUPPORTS AND THE PIPE INSULATION. SHIELDS SHALL BE GALVANIZED SHEET METAL, HALF ROUND WITH FLARED EDGES. ADHERE SHIELDS TO INSULATION. ON COLD PIPING, SEAL THE SHIELDS VAPOR-TIGHT TO THE INSULATION AS REQUIRED TO MAINTAIN THE VAPOR BARRIER, OR ADD SEPARATE VAPOR BARRIER JACKET. SHIELDS SHALL BE AT LEAST THE FOLLOWING LENGTHS AND GAUGES:

### <u>PIPE SIZE:</u> <u>SHIELD SIZE:</u> 1/2" TO 3" PIPE 12" LONG X 18 GAUGE 4" PIPE 12" LONG X 16 GAUGE

ALL BALANCE VALVES WITH FLUID OPERATING ABOVE 140F SHALL BE INSULATED AND AN OPENING SHALL BE LEFT IN THE INSULATION TO ALLOW FOR READING AND ADJUSTING THE VALVE.

### NSULATION INSTALLATION

ALL SERVICE JACKETS: SEAL ALL LONGITUDINAL JOINTS WITH SELF SEAL LAPS USING A SINGLE PRESSURE SENSITIVE ADHESIVE SYSTEM. DO NOT 2. INSULATION WITHOUT SELF-SEAL LAP MAY BE USED IF INSTALLED WITH BENJAMIN FOSTER 85\_20 OR EQUIVALENT CHICAGO MASTIC, 3M OR CHILDERS LAP 3. APPLY INSULATION WITH LAPS ON TOP OF PIPE.

4. FITTINGS, VALVE BODIES AND FLANGES: FOR 4" AND SMALLER PIPES, INSULATE WITH 1 LB. DENSITY INSULATION WRAPPED UNDER COMPRESSION TO A THICKNESS EQUAL TO THE ADJACENT PIPE INSULATION. FOR PIPES OVER 4", USE MITERED SEGMENTS OF PIPE INSULATION. FINISH WITH PREFORMED PLASTIC FITTING COVERS. SECURE FITTING COVERS WITH PRESSURE SENSITIVE TAPE AT EACH END. OVERLAP TAPE AT LEAST 2" ON ITSELF. FOR PIPES OPERATING BELOW 60F, SEAL FITTING COVERS WITH VAPOR RETARDER MASTIC IN ADDITION TO TAPE.

### INSULATION TYPE/THICKNESS: DOMESTIC HOT WATER/ CIRCULATING (UP TO 1-1/2") DOMESTIC HOT WATER/ CIRCULATING (>1-1/2")

DOMESTIC COLD WATER

HANGER RODS FOR SINGLE ROD HANGERS SHALL CONFORM TO THE FOLLOWING:

### HANGER ROD COLUMN #1 PIPE SIZE 2" AND SMALLER 3/8" 2-1/2" THROUGH 3-5/8" 1/2" 1/2"

RODS FOR DOUBLE ROD HANGERS MAY BE REDUCED ONE SIZE. MINIMUM ROD DIAMETER IS 3/8 INCHES.

ON ALL INSULATED PIPING, PROVIDE A SEMI-CYLINDRICAL METALLIC SHIELD AND FIRE RESISTANT VAPOR BARRIER JACKET

HANGER RODS AND ACCESSORIES USED IN MECHANICAL SPACES OR OTHERWISE DRY AREAS SHALL HAVE ASTM B633 ELECTRO-PLATED ZINC FINISH.

### <u>PIPE HANGERS AND SUPPORTS</u> ALL PIPE HANGERS, CLAMPS, AND SUPPORTS SHALL CONFORM TO MANUFACTURERS STANDARDIZATION SOCIETY MSS SP 58 AND 127 (WHERE APPLICABLE). OVERSIZE ALL HANGERS, CLÁMPS, AND SUPPORTS ON INSULATED PIPING TO ALLOW INSULATION AND JACKET TO PASS THROUGH UNBROKEN. THIS APPLIES TO BOTH HOT AND COLD PIPES

ICHEONS TO ALL INSULATED OR UNINSULATED EXPOSED PIPES PASSING THROUGH WALLS, FLOORS, OR CEILINGS OF FINISHED ROOMS. ESCUTCHEONS SHALL BE HEAVY GAUGE, COLD ROLLED STEEL, COPPER COATED UNDER A CHROMIUM PLATED FINISH, HEAVY SPRING CLIP, RIGID HINGE AND INSTALL GALVANIZED STEEL (UNLESS OTHERWISE INDICATED) TRIM STRIP TO COVER VACANT SPACE AND RAW CONSTRUCTION EDGES OF ALL

THAN 25 AND 450. RESPECTIVELY AS DETERMINED PER ASTM F 84

RECTANGULAR OPENINGS IN FINISHED ROOMS. THIS INCLUDÉS PIPE OPENINGS.

HVAC SUPPORTS AND ANCHORS INSTALLATION
INSTALL ALL ITEMS PER MANUFACTURER'S INSTRUCTIONS. COORDINATE THE LOCATION AND METHOD OF SUPPORT OF PIPING SYSTEMS WITH ALL INSTALLATIONS UNDER OTHER DIVISIONS AND SECTIONS OF THE SPECIFICATIONS.

<u>SUPPORT REQUIREMENTS</u> WHERE BUILDING STRUCTURAL STEEL IS FIREPROOFED, ALL HANGERS, CLAMPS, AUXILIARY STEEL, ETC., WHICH ATTACH TO IT SHALL BE INSTALLED PRIOR INSTALL HANGERS AND SUPPORTS COMPLETE WITH LOCK NUTS, CLAMPS, RODS, BOLTS, COUPLINGS, SWIVELS, INSERTS AND REQUIRED ACCESSORIES. HANGERS FOR HORIZONTAL PIPING SHALL HAVE ADEQUATE MEANS OF VERTICAL ADJUSTMENT FOR ALIGNMENT.

INSTALLER QUALITY ASSURANCE
INDIVIDUALS PERFORMING WORK SHALL BE CERTIFIED BY THE MANUFACTURER OF THE SYSTEM SELECTED FOR INSTALLATION. FOR RENOVATION PROJECTS, INSTALLER SHALL COORDINATE WITH BUILDING ENGINEER AND BUILDING STANDARDS TO MATCH MAKE/MODEL OF FIRESTOPPING USED THROUGHOUT BUILDING.

### PERFORMANCE REQUIREMENTS FOR PENETRATIONS THROUGH THE FOLLOWING FIRE-RESISTANCE-RATED CONSTRUCTIONS, INCLUDING BOTH EMPTY OPENINGS AND OPENINGS CONTAINING PENETRATING ITEMS. PROVIDE THROUGH-PENETRATION FIRESTOP SYSTEMS THAT ARE PRODUCED AND INSTALLED TO RESIST SPREAD OF FIRE ACCORDING TO REQUIREMENTS INDICATED, RESIST PASSAGE OF SMOKE AND OTHER GASES, AND MAINTAIN ORIGINAL FIRE-RESISTANCE RATING OF CONSTRUCTION

I. FIRE-RESISTANCE-RATED WALLS INCLUDING FIRE PARTITIONS, FIRE BARRIERS, AND SMOKE BARRIERS. 2. FIRE-RESISTANCE-RATED HORIZONTAL ASSEMBLIES INCLUDING FLOORS, FLOOR/CEILING ASSEMBLIES, AND CEILING MEMBRANES OF ROOF/CEILING ASSEMBLIES. FOR THROUGH-PENETRATION FIRESTOP SYSTEMS EXPOSED TO VIEW, PROVIDE PRODUCTS WITH FLAME-SPREAD AND SMOKE-DEVELOPED INDEXES OF LESS

# FOR THROUGH-PENETRATION FIRESTOP SYSTEMS IN AIR PLENUMS. PROVIDE PRODUCTS WITH FLAME-SPREAD AND SMOKE-DEVELOPED INDEXES OF LESS THAN 25 AND 50, RESPECTIVELY, AS DETERMINED PER ASTM E 84. PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE THROUGH-PENETRATION FIRESTOP SYSTEMS INDICATED FOR EACH

### APPLICATION THAT ARE PRODUCED BY ONE OF THE FOLLOWING MANUFACTURERS. ALL FIRESTOPPING SYSTEMS INSTALLED SHALL BE PROVIDED BY A SINGLE MANUFACTURER. 1. 3M; FIRE PROTECTION PRODUCTS DIVISION.

### THROUGH PENETRATION FIRESTOP SYSTEMS PROVIDE MATERIALS AND SYSTEMS CLASSIFIED BY OR LISTED BY WARNOCK HERSEY TO PROVIDE FIRESTOPPING EQUAL TO TIME RATING OF CONSTRUCTION BEING PENETRATED

FIRESTOPPING SYSTEMS FOR PLUMBING AND WET PIPE SPRINKLER PIPING SHALL BE MOISTURE RESISTANT.

PROVIDE FIRESTOPPING SYSTEMS CAPABLE OF SUPPORTING FLOOR LOADS WHERE SYSTEMS ARE EXPOSED TO POSSIBLE FLOOR LOADING OR TRAFFIC. PROVIDE FIRESTOPPING SYSTEMS ALLOWING CONTINUOUS INSULATION FOR ALL INSULATED PIPES.

PROVIDE FIRESTOPPING SYSTEMS CLASSIFIED BY UL OR LISTED BY WARNOCK HERSEY FOR PENETRATIONS THROUGH ALL FIRE RATED CONSTRUCTION. FIRESTOPPING SYSTEMS SHALL BE SELECTED FROM THE UL OR LISTED BY WARNOCK HERSEY FIRE RESISTANCE DIRECTORY CATEGORY XHEZ BASED ON SUBSTRATE CONSTRUCTION AND PENETRATING ITEM SIZE AND MATERIAL AND SHALL FALL WITHIN THE RANGE OF NUMBERS LISTED: 1. COMBUSTIBLE FRAMED FLOORS AND CHASE WALLS - 1 OR 2 HOUR RATED F RATING = FLOOR/WALL RATING T RATING = FLOOR/WALL RATING

### L RATING = PENETRATING ITEM NO PENETRATING ITEM UL SYSTEM NO. FC 0000-0999\* METALLIC PIPE OR CONDUIT FC 1000-1999 NON-METALLIC PIPE OR CONDUIT FC 2000-2999 ELECTRICAL CABLES FC 3000-3999 CABLE TRAYS FC 4000-4999 **INSULATED PIPES** FC 5000-5999 BUS DUCT AND MISC. ELECTRICAL FC 6000-6999 DUCT WITHOUT DAMPER AND MISC. MECHANICAL FC 7000-7999 MULTIPLE PENETRATIONS FC 8000-8999

# 2. NON-COMBUSTIBLE FRAMED WALLS - 1 OR 2 HOUR RATED

F RATING = WALL RATING T RATING = 0 L RATIN PENET NO PE

I RATING = 0		
L RATING =		
PENETRATING ITEM		<u>UL SYSTEM NO.</u>
NO PENETRATING ITEM		WL 0000-0999*
METALLIC PIPE OR CONDU	IT	WL 1000-1999
NON-METALLIC PIPE OR CO	ONDUIT	WL 2000-2999
ELECTRICAL CABLES		WL 3000-3999
CABLE TRAYS		WL 4000-4999
INSULATED PIPES		WL 5000-5999
BUS DUCT AND MISC. ELEC	CTRICAL	WL 6000-6999
DUCT WITHOUT DAMPER A	ND MISC. MECHANICAL	WL 7000-7999
MULTIPLE PENETRATIONS		WL 8000-8999

INSTALLATION
INSTALL PENETRATION SEAL MATERIALS IN ACCORDANCE WITH PRINTED INSTRUCTIONS OF THE UL OR WARNOCK HERSEY FIRE RESISTANCE DIRECTORY

# DUCTWORK GALVANIZED DUCTWORK

DUCT AND REINFORCEMENT MATERIALS SHALL CONFORM TO ASTM A653 AND A924.

INTERIOR DUCTWORK AND REINFORCEMENTS: G60 GALVANIZED (0.60 OUNCES PER SQUARE FOOT TOTAL ZINC COATING FOR TWO SIDES PER ASTM A90) UNI ESS NOTED OTHERWISE DUCTWORK REINFORCEMENT SHALL BE OF GALVANIZED STEEL.

DUCTWORK SUPPORTS SHALL BE OF GALVANIZED OR PAINTED STEEL. SLIP CABLE HANGERS ARE ACCEPTABLE. ACCEPTABLE MANUFACTURERS ARE GRIPPLE, DUCTMATE, DURO DYNE, OR ARCHITECT/ENGINEER APPROVED. ALL FASTENERS SHALL BE GALVANIZED OR CADMIUM PLATED.

DUCTWORK REINFORCEMENT
ALL REINFORCEMENT SHALL BE EXTERNAL TO THE DUCT EXCEPT THAT TIE RODS MAY BE USED WITH THE FOLLOWING LIMITATIONS. DUCTS MUST BE OVER 18"WIDE.

DUCT DIMENSIONS MUST BE INCREASED 2" IN ONE DIMENSION (H OR W) FOR EACH ROW OF TIE RODS INSTALLED. TIE RODS MUST NOT EXCEED 1/2" DIAMETER.

MANUFACTURER OF TIE ROD SYSTEM MUST CERTIFY PRESSURE CLASSIFICATIONS OF VARIOUS ARRANGEMENTS, AND THIS MUST BE IN THE SHOP

ONE PART JOINT SEALERS SHALL BE WATER-BASED MASTIC SYSTEMS THAT MEET THE FOLLOWING REQUIREMENTS: MAXIMUM 48-HOUR CURE TIME, SERVICE TEMPERATURE OF -20F TO +175F, RESISTANT TO MOLD, MILDEW AND WATER, FLAME SPREAD RATING BELOW 25 AND SMOKE-DEVELOPED RATING BELOW 50 WHEN TESTED IN ACCORDANCE WITH ASTM E84, SUITABLE FOR ALL SMACNA SEAL CLASSES AND PRESSURE CLASSES. JOINT SEALERS FOR USE ON EXTERIOR WEATHER EXPOSED DUCTWORK SHALL BE RATED FOR -30F TO +175F AND 2000 HOUR MINIMUM UV RESISTANCE PER ASTM G-53.

RECTANGULAR DUCT - SINGLE WALL
ALL DUCTWORK GAUGES AND REINFORCEMENTS SHALL BE AS LISTED IN SMACNA DUCT CONSTRUCTION STANDARDS CHAPTER 2. WHERE NECESSARY TO FIT IN CONFINED SPACES, FURNISH HEAVIEST DUCT GAUGE AND LEAST SPACE CONSUMING REINFORCEMENT TRANSITIONS SHALL NOT EXCEED THE ANGLES IN FIGURE 4-7.

EXCEPTIONS AND MODIFICATIONS TO THE 2005 HVAC DUCT CONSTRUCTION STANDARDS ARE: 1. ALL DUCTS SHALL BE CROSS-BROKEN OR BEADED.

2. TURNING VANES SHALL BE USED IN ALL 90° MITERED ELBOWS, UNLESS CLEARLY NOTED OTHERWISE ON THE DRAWINGS. VANES SHALL BE AS FOLLOWS: 1) DESCRIPTION: SINGLE WALL TYPE WITH 22-GAUGE (0.029") OR HEAVIER VANES, 3-1/4" BLADE SPACING, AND 4" TO 4-1/2" RADIUS. VANES HEMMED IF RECOMMENDED BY RUNNER MANUFACTURER. RUNNERS SHALL HAVE EXTRA LONG LOCKING TABS. C-VALUE INDEPENDENTLY TESTED AT BELOW 0.26. EZ RAIL II BY SHEET METAL CONNECTORS OR EQUAL. 2) USAGE: LIMITED TO 3,000 FPM AND VANE LENGTHS 36" AND UNDER.

ROUND AND FLAT OVAL DUCTWORK - SINGLE WALL
CONFORM TO APPLICABLE PORTIONS OF RECTANGULAR DUCT SECTION. ROUND OR FLAT OVAL DUCTWORK MAY BE SUBSTITUTED FOR RECTANGULAR DUCTWORK WHERE APPROVED BY THE ARCHITECT/ENGINEER. THE SPIRAL SEAM DUCTWORK SHALL MEET THE STANDARDS SET FORTH IN THIS SPECIFICATION. THE DUCTWORK SHALL MEET OR EXCEED THE SPECIFIED CROSS-SECTIONAL AREA AND INSULATION REQUIREMENTS. THE SUBSTITUTION SHALL BE COORDINATED WITH ALL OTHER TRADES PRIOR TO INSTALLATION. SNAP LOCK SEAMS ARE NOT PERMITTED.

90 ELBOWS SHALL BE SMOOTH RADIUS OR HAVE A MINIMUM OF FIVE SECTIONS WITH MITERED JOINTS AND R/D OF AT LEAST 1.5.

DUCT AND FITTINGS SHALL MEET THE REQUIRED MINIMUM GAUGES LISTED IN CHAPTER 3 OF THE SMACNA REQUIREMENTS FOR THE SPECIFIED PRESSURE CLASS, RIBBED AND LIGHTWEIGHT DUCT ARE NOT PERMITTED. DUCTWORK SHALL BE SUITABLE FOR VELOCITIES UP TO 5,000 FPM.

DIVIDED FLOW FITTINGS MAY BE MADE AS SEPARATE FITTINGS OR FACTORY INSTALLED TAPS WITH SOUND, AIRTIGHT, CONTINUOUS WELDS AT INTERSECTION OF FITTING BODY AND TAP. SPOT WELD AND BOND ALL FITTING SEAMS IN THE PRESSURE SHELL. COAT GALVANIZING DAMAGED BY WELDING WITH CORROSION RESISTANT PAINT TO DUCTS WITH MINOR AXIS LESS THAN 22" SHALL BE SPIRAL SEAM TYPE. LARGER DUCTS MAY BE ROLLED, LONGITUDINAL WELDED SEAM TYPE. SMACNA

### FLEXIBLE DUCT FLEXIBLE DUCT SHALL BE LISTED AND LABELED AS UL 181 CLASS 1 AIR DUCT MATERIAL, AND SHALL COMPLY WITH NFPA 90A AND 90B, AND MEET GSA, FHA AND OTHER U.S. GOVERNMENT AGENCY STANDARDS. FLEXIBLE DUCT SHALL BEAR THE ADC SEAL OF CERTIFICATION. FLAME SPREAD/SMOKE DEVELOPED: NOT OVER 25/50.

FLEXIBLE DUCT SHALL HAVE CORROSION\_RESISTANT WIRE HELIX, BONDED TO AN INNER LINER THAT PREVENTS AIR FROM CONTACTING THE INSULATION, COVERED WITH MINIMUM 1-1/2", 3/4 LB/CF DENSITY FIBERGLASS INSULATION BLANKET, SHEATHED IN A VAPOR BARRIER OF METALIZED POLYESTER FILM INNER LINER SHALL BE AIRTIGHT AND SUITABLE FOR 6" WC STATIC PRESSURE THROUGH 16" DIAMETER THROUGH 10" DIAMETER AND SHALL BE AIRTIGHT AND SUITABLE FOR 4" WC STATIC PRESSURE 12" THROUGH 16" DIAMETER. OUTER JACKET SHALL ACT AS A VAPOR BARRIER ONLY WITH PERMEANCE NOT OVER 0.1 PERM PER ASTM E96, PROCEDURE A. "R" VALUE SHALL NOT BE LESS THAN 4.0 FT2\*°F\*HR/BTUH. TEMPERATURE RANGE OF AT LEAST 0-180°. MAXIMUM VELOCITY OF 4,000 FPM.

LOCATE DUCTS WITH SPACE AROUND EQUIPMENT FOR NORMAL OPERATION AND MAINTENANCE. INSTALL MANUAL VOLUME DAMPERS IN BRANCH SUPPLY DUCTS SO ALL OUTLETS CAN BE ADJUSTED. DO NOT INSTALL DAMPERS AT AIR TERMINAL DEVICE OR IN OUTLETS, UNLESS SPECIFICALLY SHOWN. INSTALL FLEXIBLE DUCT IN ACCORDANCE WITH THE ADC FLEXIBLE DUCT PERFORMANCE AND INSTALLATION STANDARDS. SUPPORT ALL DUCT SYSTEMS IN ACCORDANCE WITH THE SMACNA HVAC DUCT CONSTRUCTION STANDARDS: METAL AND FLEXIBLE AND THE SMACNA

SEISMIC RESTRAINT MANUAL: GUIDELINES FOR MECHANICAL SYSTEMS. WHERE APPLICABLE, REFER TO SECTION 23 05 50 FOR SEISMIC REQUIREMENTS.

ADHESIVES. SEALANTS, TAPES, VAPOR RETARDERS, FILMS, AND OTHER SUPPLEMENTARY MATERIALS ADDED TO DUCTS, PLENUMS, HOUSING PANELS,

# **DUCTWORK SEALING**OPENINGS, SUCH AS ROTATING SHAFTS, SHALL BE SEALED WITH BUSHINGS OR SIMILAR.

ALL CONNECTIONS SHALL BE SEALED INCLUDING, BUT NOT LIMITED TO, TAPS, OTHER BRANCH CONNECTIONS, ACCESS DOORS, ACCESS PANELS, AND DUCT CONNECTIONS TO EQUIPMENT. SEALING THAT WOULD VOID PRODUCT LISTINGS IS NOT REQUIRED. SPIRAL LOCK SEAMS NEED NOT BE SEALED.

MANUAL VOLUME DAMPERS FABRICATE IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARDS. AND AS INDICATED.

FABRICATE SINGLE BLADE DAMPERS FOR DUCT SIZES TO 9-1/2 X 30 INCHES. FABRICATE MULTI BLADE DAMPER OF OPPOSED BLADE PATTERN WITH MAXIMUM BLADE SIZES 12" X 72".

ASSEMBLE CENTER AND EDGE CRIMPED BLADES IN PRIME COATED OR GALVANIZED CHANNEL FRAME WITH SUITABLE HARDWARE. EXCEPT IN ROUND DUCTWORK 12 INCHES AND SMALLER, PROVIDE END BEARINGS. ON MULTIPLE BLADE DAMPERS, PROVIDE MOLDED SYNTHETIC OR OIL-IMPREGNATED NYLON OR SINTERED BRONZE BEARINGS

PROVIDE LOCKING QUADRANT REGULATORS ON SINGLE AND MULTI-BLADE DAMPERS. ON INSULATED DUCTS, MOUNT QUADRANT REGULATORS ON STAND\_OFF MOUNTING BRACKETS, BASES, OR ADAPTERS. IF BLADES ARE IN OPEN POSITION AND EXTEND INTO THE MAIN DUCT, MOUNT DAMPER SO BLADES ARE PARALLEL TO AIRFLOW

SILENCERS, ETC. SHALL HAVE FLAME SPREAD/SMOKE DEVELOPED RATINGS OF UNDER 25/50 PER ASTM E84, NFPA 255, OR UL 723.

INSTALLATION
INSTALL ACCESSORIES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. WHERE DUCT ACCESS DOORS ARE LOCATED ABOVE INACCESSIBLE CEILINGS, PROVIDE CEILING ACCESS DOORS. COORDINATE LOCATION WITH THE ARCHITECT/ENGINEER COORDINATE AND INSTALL ACCESS DOORS PROVIDED BY OTHERS.

MANUAL VOLUME DAMPER:
PROVIDE MANUAL VOLUME DAMPERS AT POINTS ON LOW PRESSURE SUPPLY, RETURN, AND EXHAUST SYSTEMS WHERE BRANCHES ARE TAKEN FROM

PROVIDE ACCESS DOORS FOR ALL EQUIPMENT REQUIRING MAINTENANCE OR ADJUSTMENT ABOVE AN INACCESSIBLE CEILING. MINIMUM SIZE SHALL BE 24"

# LARGER DUCTS WHERE INDICATED ON DRAWINGS AND AS REQUIRED FOR AIR BALANCING. USE SPLITTER DAMPERS ONLY WHERE INDICATED.

INSULATION MATERIALS
TYPE A: FLEXIBLE FIBERGLASS OUTSIDE WRAP; ANSI/ASTM C553; COMMERCIAL GRADE; 0.28 MAXIMUM 'K' VALUE AT 75F; FOIL SCRIM KRAFT FACING, 1.0 LB./CU. FT. DENSITY. EXPOSED EXTERIOR DUCT TO BE INSULATED WITH TYPE A, 2" THICK & COVER WITH 0.016" THICK ALUMINUM JACKET & SEALED

VAPOR BARRIER JACKETS

KRAFT REINFORCED FOIL VAPOR BARRIER WITH SELF-SEALING ADHESIVE JOINTS. BEACH PUNCTURE RESISTANCE RATIO OF AT LEAST 25 UNITS. TENSILE STRENGTH: 35 PSI MINIMUM. SINGLE, SELF-SEAL ACRYLIC ADHESIVE ON LONGITUDINAL JACKET LAPS AND BUTT STRIPS.

GENERAL INSTALLATION REQUIREMENTS
INSTALL MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, CODES, AND INDUSTRY STANDARDS. INSTALL MATERIALS AFTER DUCTWORK HAS BEEN TESTED.

CLEAN SURFACES FOR ADHESIVES. PROVIDE INSULATION WITH VAPOR BARRIER WHEN AIR CONVEYED MAY BE BELOW AMBIENT TEMPERATURE.

GRILLES AND REGISTERS HE TYPE OF UNIT, MARGIN, MATERIAL, FINISH, ETC., SHALL BE AS SHOWN ON THE DRAWING SCHEDULE AND SUITABLE FOR THE INTENDED USE. REFER TO THE DRAWINGS FOR CONSTRUCTION MATERIAL, COLOR AND FINISH, MARGIN STYLE, DEFLECTION, AND SIZES OF GRILLES AND REGISTERS. ACCEPTABLE MANUFACTURERS: TUTTLE & BAILEY, TITUS, PRICE, NAILOR, CARNES, METALAIRE, KRUEGER.

PROVIDE MANUAL VOLUME DAMPERS ON DUCT TAKE OFF TO DIFFUSERS WHEN THERE ARE MULTIPLE CONNECTIONS TO A COMMON DUCT. LOCATE

VOLUME DAMPERS AS FAR AS POSSIBLE FROM THE AIR INLET OR OUTLET INSTALLATION INSTALL IN ACCORDANCE WITH MANUFACTURERS' INSTRUCTIONS.

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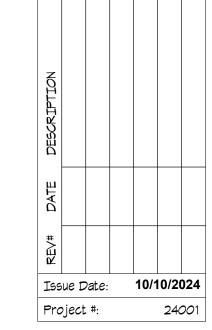












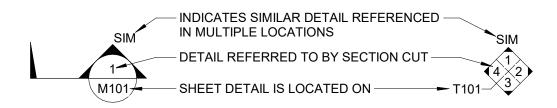
SHEET NUMBER

	ELEC		SYMBOL LIST
SYMBOL:	TAG:	SPEC SECTION:	DESCRIPTION:
GB	<u>GB</u>	26 05 26	GROUND BUS
IBT	<u>IBT</u>	26 05 26	INTERSYSTEM BONDING TERMINATION
	<u>ECONN</u>	26 05 33	ELECTRICAL CONNECTION
<u> </u>	<u>JB</u>	26 05 33	JUNCTION BOX
	<u>FB-#</u> or <u>PT-#</u>	26 27 26	FLOOR BOX or POKE THROUGH
RI <b>W</b>	<u>RI-TECH</u>	26 05 33	TECHNOLOGY OUTLET ROUGH-IN
<b>♥</b> RI	RI-TECH-C	26 05 33	TECHNOLOGY ROUGH-IN, CEILING
W/RI	RI-TECH-W	26 05 33	TECHNOLOGY ROUGH-IN, WALL PHONE
TV	<u>RI-TV</u>	26 05 33	TV ANTENNA OUTLET ROUGH-IN
<del></del>	<u>WM-#</u>	26 05 35	MULTI OUTLET SYSTEM
•	<u>WW-#</u>	26 05 35	ELECTRICAL WIREWAY w/ DEVICES SHOWN
DEM	<u>DEM</u>	26 09 13	ENERGY METER
DPM	<u>DPM</u>	26 09 13/ 26 24 13	DIGITAL POWER METER
ITDM	<u>ITDM</u>	26 24 13	IMPULSE-TOTALIZING DEMAND
EEM	<u>EEM</u>	26 09 13	EXTERNAL ENERGY METER
PQM	<u>PQM</u>	26 09 13	POWER QUALITY METER
CPC	<u>CPC</u>	26 09 16	CONTROL POWER CABINET
<u>一</u> 合	<u>EPO</u>	26 09 16	EMERGENCY STOP / POWER OFF
ES	<u>ES</u>	26 32 13 26 09 16	(N.C. AND N.O CONTACT)  EMERGENCY STOP, N.C. CONTACT
LA	<u>LS</u> FA-LA	26 09 16	LAMP ANNUNCIATOR
PB	<u>——</u> РВ	26 09 16	MOMENTARY PUSHBUTTON OPERATOR
	 PANEL '###'	26 24 16	PANELBOARD - RECESS MOUNT
	PANEL '###'	26 24 16	PANELBOARD - SURFACE MOUNT
	MX-#/MS-# /CB-#/CS-# /MD-#/FS-# /AS-#/SS-#/ MCS-#/ AMS-#	26 24 19 26 28 16	SURFACE OR RECESS MOUNTED MANUAL SWITCH / STARTER / COMBINATION STARTER/ CIRCUIT BREAKER. MANUAL DISCONNECT / FUSED SWITCH (PLUG FUSE) / AUTOMATIC STARTER / SOLID STATE - SOFT STARTER / COMBINATION STARTER / MOTOR CIRCUIT PROTECTOR / ASSEMBLED MOTOR STARTER. REFER TO DISC/STA SCHEDULE.
	FCS-#	26 28 16	FUSED COMBINATION STARTER REFER TO DISC/STA STARTER
	<u>IPP-#</u>	26 24 21	ISOLATED POWER PANEL
MG	<u>MG</u>	26 24 21	MASTER GROUND STATION MODULE
РМ	<u>PM</u>	26 24 21	OPERATING ROOM POWER MODULE
RIM	<u>RIM</u>	26 24 21	REMOTE LINE ISOLATION MONITOR
RAS	RAS	26 24 21	REMOTE ANNUNCIATOR STATION
	<u>IPC-#</u>	26 24 22	INTEGRATED POWER CENTER
$\boxtimes$	<u>TR-#/DTR-#</u>	26 22 00	TRANSFORMER. REFER TO TRANSFORMER SCHEDULE
	MPC-#	26 24 23	PACKAGED POWER CENTER
	DS-#/FDS-#/DSS-#	26 28 16	DISCONNECT SWITCH FUSED DISCONNECT SWITCH INTERLOCKED RECEPTACLE DISCONNECT. REFER TO DISC/STA SCHEDULE
	MD-SD-#	26 28 16	MOBILE DIAGNOSTICS SERVICE DISCONNECT. REFER TO DISC/STA SCHEDULE
ВВВВ	BD-#	26 25 00	BUSWAY
	BCS-#	26 25 00	BUSS PLUG - COMBINATION STARTER. REFER TO DISC/STA SCHEDULE
	BP-#	26 25 00	BUSS PLUG - CIRCUIT BREAKER. REFER TO DISC/STA SCHEDULE
	BFP-#	26 25 00	BUSS PLUG - FUSIBLE DISCONNECT.
R <sub>1#</sub>	BD-REC-#	26 25 00	REFER TO DISC/STA SCHEDULE BUSSWAY RECEPTACLE UNIT.
GANN 🗀	GANN-#	26 32 13	REFER TO DISC/STA SCHEDULE GENERATOR ANNUNCIATOR PANEL
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GAININ L	OAININ-#	20 32 13	PANEL
DB	<u>DB</u>	ARCH	DOOR BELL
HEAL1		QUIPME	NT ABBREVIATION KEY
ABBR:	DESCRIPTION	N:	
AED	AUTOMATIC EXTE	ERNAL DEFIBRII	LLATOR - CRASH CART
BSC	BIOSAFETY CABI	NET	
BW	BLANKET WARME	ER .	
DIS	MEDICAL EQUIPM	IENT DISINFEC	TOR
INF	INFUSION PUMP		
LIFT	PATIENT LIFT		
MAB	MEDICAL ANESTH	HESIA BOOM	
MEB	MEDICAL EQUIPM	IENT BOOM	
MED	MEDICATION DISF	PENSING CABIN	IETS
MEL	MEDICAL EXAM L	IGHT (BOOM LIC	GHT)
PASS	MEDICAL PASS T	HRU CABINET	
PEG	PORTABLE MEDIC	CAL EQUIPMEN	T (X-RAY)
PNTU	PNEUMATIC TUBE	≣	
SSK	SURGICAL SCRU	B SINK	
STER	MEDICAL EQUIPM	IENT STERILIZE	ER
UCL	MEDICAL ULTRAS	SONIC CLEANER	₹
	HEALT ABBR:  AED BSC BW DIS INF LIFT MAB MEB MED MEL PASS PEG PNTU SSK STER	HEALTHCARE E  ABBR: DESCRIPTION  AED AUTOMATIC EXTERMINE BSC BIOSAFETY CABIN BW BLANKET WARME DIS MEDICAL EQUIPM INF INFUSION PUMP LIFT PATIENT LIFT MAB MEDICAL ANESTH MEB MEDICAL EQUIPM MED MEDICAL EQUIPM MED MEDICAL EXAM L PASS MEDICAL PASS TO PEG PORTABLE MEDIC PNTU PNEUMATIC TUBE SSK SURGICAL SCRUE STER MEDICAL EQUIPM	HEALTHCARE EQUIPME  ABBR: DESCRIPTION:  AED AUTOMATIC EXTERNAL DEFIBRIT  BSC BIOSAFETY CABINET  BW BLANKET WARMER  DIS MEDICAL EQUIPMENT DISINFECT  INF INFUSION PUMP  LIFT PATIENT LIFT  MAB MEDICAL ANESTHESIA BOOM  MED MEDICAL EQUIPMENT BOOM  MED MEDICAL EQUIPMENT BOOM  MED MEDICAL EXAM LIGHT (BOOM LICE  PASS MEDICAL PASS THRU CABINET  PEG PORTABLE MEDICAL EQUIPMENT  PNTU PNEUMATIC TUBE  SSK SURGICAL SCRUB SINK  STER MEDICAL EQUIPMENT STERILIZE

SYMBOL:         TAG:         SPEC SECTION:         DESCRIPTION:           HD         HD         ARCH         HAND DRYER           PP         PP         ARCH         PUSH PAD           ⊕ O         REC-DUP-Q         26 27 26         DUPLEX RECEPTACLE CONTROLLED BY OCCUPANCY           ⊕ REC-DUP         26 27 26         DUPLEX RECEPTACLE CONTROLLED BY OCCUPANCY           ⊕ REC-DUP-GFI         26 27 26         DUPLEX RECEPTACLE, 125V           ⊕ REC-DUP-GFI-R         26 27 26         DUPLEX GFI RECEPTACLE, 125V           ⊕ REC-DUP-WP         26 27 26         DUPLEX GFI RECEPTACLE, 125V           ⊕ X         REC-DUP-WP         26 27 26         DUPLEX RECEPTACLE, EXPLOSION PROOF           ⊕ X         REC-BUP-WP         26 27 26         DUPLEX RECEPTACLE, EXPLOSION PROOF           ⊕ X         REC-ISO-SUR         26 27 26         ISOLATED GROUND RECEPTACLE WITH SI SUPPRESSION, 125V           ⊕ S         RECISO-SUR-QUAD         26 27 26         ISOLATED GROUND QUAD RECEPTACLE VISURGE SUPPRESSION, 125V           ⊕ V         REC-BOS-SUR-QUAD         26 27 26         ARC FAULT CIRCUIT INTERRUPTER RECEPTACLE VISURGE SUPPRESSION, 125V           ⊕ V         REC-AFGF         26 27 26         REC AFCI, GFCI, TAMPER RESISTANT           ⊕ REC-SIM-550R         26 27 26         RECEPTACLE, 125V	
PP	
## O REC-DUP-O 26 27 26 DUPLEX RECEPTACLE CONTROLLED BY OCCUPANCY  ## O REC-DUP 26 27 26 DUPLEX RECEPTACLE CONTROLLED BY OCCUPANCY  ## REC-DUP 26 27 26 DUPLEX RECEPTACLE, 125V  ## REC-DUP-GFI 26 27 26 DUPLEX GFI RECEPTACLE, 125V  ## REC-DUP-GFI-R 26 27 26 DUPLEX GFI RECEPTACLE, 125V  ## REC-DUP-WP 26 27 26 DUPLEX GFI WEATHERPROOF RECEPTAC  ## REC-ISO 26 27 26 DUPLEX GFI WEATHERPROOF RECEPTAC  ## REC-ISO 26 27 26 DUPLEX RECEPTACLE, EXPLOSION PROOF  ## REC-ISO 26 27 26 ISOLATED GROUND RECEPTACLE, 125V  ## S REC-ISO 26 27 26 ISOLATED GROUND RECEPTACLE WITH SI SUPPRESSION, 125V  ## S REC-ISO 26 27 26 ISOLATED GROUND QUAD RECEPTACLE V SURGE SUPPRESSION, 125V  ## S REC-ISO 26 27 26 DUPLEX RECEPTACLE, USB CHARGING  ## REC-USB 26 27 26 DUPLEX RECEPTACLE, USB CHARGING  ## REC-ARC 26 27 26 REC AFCI, GFCI, TAMPER RESISTANT  ## REC-AFGF 26 27 26 RECEPTACLE, 125V  ## REC-SIM-520R 26 27 26 RECEPTACLE, 125V  ## REC-SIM-530R 26 27 26 RECEPTACLE, 125V  ## REC-SIM-620R 26 27 26 RECEPTACLE, 125V  ## REC-SIM-630R 26 27 26 RECEPTACLE, 125V  ## REC-SIM-630R 26 27 26 RECEPTACLE, 6-30R, 250V  ## REC-SIM-730R 26 27 26 RECEPTACLE, 6-30R, 250V  ## REC-SIM-750R 26 27 26 RECEPTACLE, 7-30R, 277V  ## REC-SIM-1420R 26 27 26 RECEPTACLE, 1-20R, 277V  ## REC-SIM-1420R 26 27 26 RECEPTACLE, 1-20R, 277V  ## REC-SIM-1430R 26 27 26 RECEPTACLE, 1-20R, 277V  ## REC-SIM-1450R 26 27 26 RECEPTACLE, 1-20R, 277V  ## REC-SIM-1450R 26 27 26 RECEPTACLE, 1-20R, 125/250V  ## REC-SIM-1530R 26 27 26 RECEPTACLE, 1-5-0R, 250V, 3PH  ## REC-SIM-1530R 26 27 26 RECEPTACLE, 1-5-0R, 250V, 3PH	
□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	
REC-DUP  REC-DUP-GFI	
REC-DUP-GFI	
REC-DUP-GFLR   26 27 26   GROUND FAULT DEVICE	
## REC-DUP-WP	
## REC-ISO ## RECISO ## RECIPIACLE ## REC-ISO ## REC-ISO ## RECIPIACLE	
## REC-ISO	LE 125
## S   REC-ISO-SUR   26 27 26   ISOLATED GROUND RECEPTACLE WITH SI SUPPRESSION, 125V    ## S   REC-ISO-SUR-QUAD   26 27 26   ISOLATED GROUND QUAD RECEPTACLE V SURGE SUPPRESSION, 125V    ## S   REC-ISO-SUR-QUAD   26 27 26   ISOLATED GROUND QUAD RECEPTACLE V SURGE SUPPRESSION, 125V    ## B   REC-USB   26 27 26   DUPLEX RECEPTACLE, USB CHARGING    ## AF   REC-AFGF   26 27 26   ARC FAULT CIRCUIT INTERRUPTER RECEPTACE    ## REC-SIM-520R   26 27 26   REC AFCI, GFCI, TAMPER RESISTANT    ## REC-SIM-550R   26 27 26   RECEPTACLE, 125V    ## REC-SIM-650R   26 27 26   RECEPTACLE, 125V    ## REC-SIM-630R   26 27 26   RECEPTACLE, 6-20R, 250V    ## REC-SIM-650R   26 27 26   RECEPTACLE, 6-30R, 250V    ## REC-SIM-720R   26 27 26   RECEPTACLE, 7-20R, 277V    ## REC-SIM-750R   26 27 26   RECEPTACLE, 7-30R, 277V    ## REC-SIM-1420R   26 27 26   RECEPTACLE, 14-20R, 125/250V    ## REC-SIM-1440R   26 27 26   RECEPTACLE, 14-30R, 125/250V    ## REC-SIM-1450R   26 27 26   RECEPTACLE, 14-50R, 125/250V    ## REC-SIM-1460R   26 27 26   RECEPTACLE, 14-50R, 125/250V    ## REC-SIM-1460R   26 27 26   RECEPTACLE, 14-50R, 125/250V    ## REC-SIM-1450R   26 27 26   RECEPTACLE, 14-50R, 125/250V    ## REC-SIM-1460R   26 27 26   RECEPTACLE, 14-60R, 125/250V    ## REC-SIM-1460R   26 27 26   RECEPTACLE, 14-50R, 250V, 3PH    ## REC-SIM-1530R   26 27 26   RECEPTACLE, 15-30R, 250V, 3PH    ## REC-SIM-1530R   26 27 26   RECEPTACLE, 15-30R, 250V, 3PH    ## REC-SIM-1530R   26 27 26   RECEPTACLE, 15-30R, 250V, 3PH    ## REC-SIM-1530R   26 27 26   RECEPTACLE, 15-30R, 250V, 3PH    ## REC-SIM-1530R   26 27 26   RECEPTACLE, 15-30R, 250V, 3PH    ## REC-SIM-1530R   26 27 26   RECEPTACLE, 15-30R, 250V, 3PH    ## REC-SIM-1530R   26 27 26   RECEPTACLE, 15-30R, 250	F, 125\
SUPPRESSION, 125V  REC-ISO-SUR-QUAD  REC-USB  REC-ARC  REC-ARC  REC-AFGF  REC-SIM-520R  REC-SIM-620R  REC-SIM-620R  REC-SIM-620R  REC-SIM-650R  REC-SIM-730R  REC-SIM-750R  REC-SIM-750R  REC-SIM-750R  REC-SIM-750R  REC-SIM-1430R  REC-SIM-1450R  REC-SIM-1450R  REC-SIM-1450R  REC-SIM-1520R  REC-SIM-1520R  REC-SIM-1520R  REC-SIM-1520R  REC-SIM-1520R  REC-SIM-1520R  REC-SIM-1520R  REC-SIM-1520R  REC-SIM-1520R  REC-SIM-750R  REC-SIM-750R  REC-SIM-750R  REC-SIM-1450R  REC-SIM-1450R  REC-SIM-1450R  REC-SIM-1450R  REC-SIM-1520R  REC-SIM-1520R  REC-SIM-1520R  REC-SIM-1520R  REC-SIM-1520R  REC-SIM-1520R  REC-SIM-1530R  REC-SIM-1530R  REC-SIM-1530R  REC-SIM-1530R  REC-SIM-1520R  REC-SIM-1520R  REC-SIM-1520R  REC-SIM-1530R  REC-SIM-1530R  REC-SIM-1530R  REC-SIM-1530R  REC-SIM-1530R  REC-SIM-1530R  REC-SIM-1520R  REC-SIM-1530R  REC-	
SURGE SUPPRESSION, 125V  □ U  REC-USB REC-ARC REC-ARC REC-AFGF REC-SIM-520R REC-SIM-550R REC-SIM-630R REC-SIM-630R REC-SIM-650R REC-SIM-730R REC-SIM-730R REC-SIM-730R REC-SIM-750R REC-SIM-1420R REC-SIM-1420R REC-SIM-1450R REC-SIM-1450R REC-SIM-1450R REC-SIM-1450R REC-SIM-1550R RECEPTACLE, 15-30R, 250V, 3PH REC-SIM-1550R	JRGE
→         REC-ARC         26 27 26         ARC FAULT CIRCUIT INTERRUPTER RECEPTACE           ★⊕ AF         REC-AFGF         26 27 26         REC AFCI, GFCI, TAMPER RESISTANT           ←         REC-SIM-520R         26 27 26         SIMPLEX RECEPTACLE, 125V           ←         REC-SIM-530R         26 27 26         RECEPTACLE, 125V           ♠         REC-SIM-550R         26 27 26         RECEPTACLE, 125V, 50A, 125V           ♠         REC-SIM-620R         26 27 26         RECEPTACLE, 6-20R, 250V           ♠         REC-SIM-630R         26 27 26         RECEPTACLE, 6-30R, 250V           ♠         REC-SIM-650R         26 27 26         RECEPTACLE, 7-20R, 277V           ♠         REC-SIM-720R         26 27 26         RECEPTACLE, 7-30R, 277V           ♠         REC-SIM-750R         26 27 26         RECEPTACLE, 7-50R, 277V           ♠         REC-SIM-1420R         26 27 26         RECEPTACLE, 14-20R, 125/250V           ♠         REC-SIM-1430R         26 27 26         RECEPTACLE, 14-30R, 125/250V           ♠         REC-SIM-1450R         26 27 26         RECEPTACLE, 14-60R, 125/250V           ♠         REC-SIM-1450R         26 27 26         RECEPTACLE, 14-60R, 125/250V           ♠         REC-SIM-1520R         26 27 26         RECEPTACLE, 15	√ITH
→         REC-ARC         26 27 26         ARC FAULT CIRCUIT INTERRUPTER RECEPTACE           ★⊕ AF         REC-AFGF         26 27 26         REC AFCI, GFCI, TAMPER RESISTANT           ←         REC-SIM-520R         26 27 26         SIMPLEX RECEPTACLE, 125V           ←         REC-SIM-530R         26 27 26         RECEPTACLE, 125V           ♠         REC-SIM-550R         26 27 26         RECEPTACLE, 125V, 50A, 125V           ♠         REC-SIM-620R         26 27 26         RECEPTACLE, 6-20R, 250V           ♠         REC-SIM-630R         26 27 26         RECEPTACLE, 6-30R, 250V           ♠         REC-SIM-650R         26 27 26         RECEPTACLE, 7-20R, 277V           ♠         REC-SIM-720R         26 27 26         RECEPTACLE, 7-30R, 277V           ♠         REC-SIM-750R         26 27 26         RECEPTACLE, 7-50R, 277V           ♠         REC-SIM-1420R         26 27 26         RECEPTACLE, 14-20R, 125/250V           ♠         REC-SIM-1430R         26 27 26         RECEPTACLE, 14-30R, 125/250V           ♠         REC-SIM-1450R         26 27 26         RECEPTACLE, 14-60R, 125/250V           ♠         REC-SIM-1450R         26 27 26         RECEPTACLE, 14-60R, 125/250V           ♠         REC-SIM-1520R         26 27 26         RECEPTACLE, 15	
⊕         REC-SIM-520R         26 27 26         SIMPLEX RECEPTACLE, 125V           ⊕         REC-SIM-530R         26 27 26         RECEPTACLE, 125V           ⊕         REC-SIM-550R         26 27 26         RECEPTACLE 125V, 50A, 125V           ⊕         REC-SIM-620R         26 27 26         RECEPTACLE, 6-20R, 250V           ⊕         REC-SIM-630R         26 27 26         RECEPTACLE, 6-30R, 250V           ⊕         REC-SIM-650R         26 27 26         RECEPTACLE, 6-50R, 250V           ⊕         REC-SIM-720R         26 27 26         RECEPTACLE, 7-20R, 277V           ⊕         REC-SIM-730R         26 27 26         RECEPTACLE, 7-30R, 277V           ⊕         REC-SIM-1420R         26 27 26         RECEPTACLE, 14-20R, 125/250V           ⊕         REC-SIM-1430R         26 27 26         RECEPTACLE, 14-30R, 125/250V           ⊕         REC-SIM-1450R         26 27 26         RECEPTACLE, 14-50R, 125/250V           ⊕         REC-SIM-1460R         26 27 26         RECEPTACLE, 14-60R, 125/250V           ⊕         REC-SIM-1520R         26 27 26         RECEPTACLE, 15-20R, 250V, 3PH           ⊕         REC-SIM-1530R         26 27 26         RECEPTACLE, 15-30R, 250V, 3PH	PT 125\
⊕         REC-SIM-520R         26 27 26         SIMPLEX RECEPTACLE, 125V           ⊕         REC-SIM-530R         26 27 26         RECEPTACLE, 125V           ⊕         REC-SIM-550R         26 27 26         RECEPTACLE 125V, 50A, 125V           ⊕         REC-SIM-620R         26 27 26         RECEPTACLE, 6-20R, 250V           ⊕         REC-SIM-630R         26 27 26         RECEPTACLE, 6-30R, 250V           ⊕         REC-SIM-650R         26 27 26         RECEPTACLE, 6-50R, 250V           ⊕         REC-SIM-720R         26 27 26         RECEPTACLE, 7-20R, 277V           ⊕         REC-SIM-730R         26 27 26         RECEPTACLE, 7-30R, 277V           ⊕         REC-SIM-1420R         26 27 26         RECEPTACLE, 14-20R, 125/250V           ⊕         REC-SIM-1430R         26 27 26         RECEPTACLE, 14-30R, 125/250V           ⊕         REC-SIM-1450R         26 27 26         RECEPTACLE, 14-50R, 125/250V           ⊕         REC-SIM-1460R         26 27 26         RECEPTACLE, 14-60R, 125/250V           ⊕         REC-SIM-1520R         26 27 26         RECEPTACLE, 15-20R, 250V, 3PH           ⊕         REC-SIM-1530R         26 27 26         RECEPTACLE, 15-30R, 250V, 3PH	
REC-SIM-550R REC-SIM-620R REC-SIM-620R REC-SIM-620R REC-SIM-630R REC-SIM-650R REC-SIM-650R REC-SIM-650R REC-SIM-720R REC-SIM-730R REC-SIM-730R REC-SIM-730R REC-SIM-750R REC-SIM-1420R REC-SIM-1420R REC-SIM-1430R REC-SIM-1450R REC-SIM-1520R RECEPTACLE, 14-60R, 125/250V REC-SIM-1530R RECEPTACLE, 15-20R, 250V, 3PH REC-SIM-1530R RECEPTACLE, 15-30R, 250V, 3PH REC-SIM-1530R	
REC-SIM-630R REC-SIM-630R REC-SIM-650R REC-SIM-650R REC-SIM-720R REC-SIM-730R REC-SIM-750R REC-SIM-750R REC-SIM-1420R REC-SIM-1430R REC-SIM-1430R REC-SIM-1450R REC-SIM-1520R REC-SIM-1530R REC-SIM-1530R REC-SIM-1530R REC-SIM-1530R RECEPTACLE, 15-30R, 250V, 3PH REC-SIM-1530R RECEPTACLE, 15-30R, 250V, 3PH REC-SIM-1530R	
REC-SIM-620R         26 27 26         RECEPTACLE, 6-20R, 250V           REC-SIM-630R         26 27 26         RECEPTACLE, 6-30R, 250V           REC-SIM-650R         26 27 26         RECEPTACLE, 6-50R, 250V           REC-SIM-720R         26 27 26         RECEPTACLE, 7-20R, 277V           REC-SIM-730R         26 27 26         RECEPTACLE, 7-30R, 277V           REC-SIM-750R         26 27 26         RECEPTACLE, 7-50R, 277V           REC-SIM-1420R         26 27 26         RECEPTACLE, 14-20R, 125/250V           REC-SIM-1430R         26 27 26         RECEPTACLE, 14-30R, 125/250V           REC-SIM-1450R         26 27 26         RECEPTACLE, 14-50R, 125/250V           REC-SIM-1460R         26 27 26         RECEPTACLE, 14-60R, 125/250V           REC-SIM-1520R         26 27 26         RECEPTACLE, 15-20R, 250V, 3PH           REC-SIM-1530R         26 27 26         RECEPTACLE, 15-30R, 250V, 3PH	
## REC-SIM-630R 26 27 26 RECEPTACLE, 6-30R, 250V  ## REC-SIM-650R 26 27 26 RECEPTACLE, 6-50R, 250V  ## REC-SIM-720R 26 27 26 RECEPTACLE, 7-20R, 277V  ## REC-SIM-730R 26 27 26 RECEPTACLE, 7-30R, 277V  ## REC-SIM-750R 26 27 26 RECEPTACLE, 7-50R, 277V  ## REC-SIM-1420R 26 27 26 RECEPTACLE, 14-20R, 125/250V  ## REC-SIM-1430R 26 27 26 RECEPTACLE, 14-30R, 125/250V  ## REC-SIM-1450R 26 27 26 RECEPTACLE, 14-50R, 125/250V  ## REC-SIM-1460R 26 27 26 RECEPTACLE, 14-60R, 125/250V  ## REC-SIM-1460R 26 27 26 RECEPTACLE, 14-60R, 125/250V  ## REC-SIM-1520R 26 27 26 RECEPTACLE, 15-20R, 250V, 3PH  ## REC-SIM-1530R 26 27 26 RECEPTACLE, 15-30R, 250V, 3PH	
REC-SIM-650R       26 27 26       RECEPTACLE, 6-50R, 250V         ⊕       REC-SIM-720R       26 27 26       RECEPTACLE, 7-20R, 277V         ⊕       REC-SIM-730R       26 27 26       RECEPTACLE, 7-30R, 277V         ⊕       REC-SIM-750R       26 27 26       RECEPTACLE, 7-50R, 277V         →       REC-SIM-1420R       26 27 26       RECEPTACLE, 14-20R, 125/250V         →       REC-SIM-1430R       26 27 26       RECEPTACLE, 14-30R, 125/250V         ➡       REC-SIM-1450R       26 27 26       RECEPTACLE, 14-50R, 125/250V         ➡       REC-SIM-1460R       26 27 26       RECEPTACLE, 14-60R, 125/250V         ➡       REC-SIM-1520R       26 27 26       RECEPTACLE, 15-20R, 250V, 3PH         ➡       REC-SIM-1530R       26 27 26       RECEPTACLE, 15-30R, 250V, 3PH	
⊕         REC-SIM-720R         26 27 26         RECEPTACLE, 7-20R, 277V           ⊕         REC-SIM-730R         26 27 26         RECEPTACLE, 7-30R, 277V           ⊕         REC-SIM-750R         26 27 26         RECEPTACLE, 7-50R, 277V           ⊕         REC-SIM-1420R         26 27 26         RECEPTACLE, 14-20R, 125/250V           ⊕         REC-SIM-1430R         26 27 26         RECEPTACLE, 14-30R, 125/250V           ⊕         REC-SIM-1450R         26 27 26         RECEPTACLE, 14-50R, 125/250V           ⊕         REC-SIM-1460R         26 27 26         RECEPTACLE, 14-60R, 125/250V           ⊕         REC-SIM-1520R         26 27 26         RECEPTACLE, 15-20R, 250V, 3PH           ⊕         REC-SIM-1530R         26 27 26         RECEPTACLE, 15-30R, 250V, 3PH	
⊕         REC-SIM-730R         26 27 26         RECEPTACLE, 7-30R, 277V           ⊕         REC-SIM-750R         26 27 26         RECEPTACLE, 7-50R, 277V           ⊕         REC-SIM-1420R         26 27 26         RECEPTACLE, 14-20R, 125/250V           ⊕         REC-SIM-1430R         26 27 26         RECEPTACLE, 14-30R, 125/250V           ➡         REC-SIM-1450R         26 27 26         RECEPTACLE, 14-50R, 125/250V           ➡         REC-SIM-1460R         26 27 26         RECEPTACLE, 14-60R, 125/250V           ➡         REC-SIM-1520R         26 27 26         RECEPTACLE, 15-20R, 250V, 3PH           ➡         REC-SIM-1530R         26 27 26         RECEPTACLE, 15-30R, 250V, 3PH           ➡         REC-SIM-1530R         26 27 26         RECEPTACLE, 15-30R, 250V, 3PH	
→       REC-SIM-1420R       26 27 26       RECEPTACLE, 14-20R, 125/250V         →       REC-SIM-1430R       26 27 26       RECEPTACLE, 14-30R, 125/250V         ⇒       REC-SIM-1450R       26 27 26       RECEPTACLE, 14-50R, 125/250V         →       REC-SIM-1460R       26 27 26       RECEPTACLE, 14-60R, 125/250V         →       REC-SIM-1520R       26 27 26       RECEPTACLE, 15-20R, 250V, 3PH         →       REC-SIM-1530R       26 27 26       RECEPTACLE, 15-30R, 250V, 3PH	
REC-SIM-1430R         26 27 26         RECEPTACLE, 14-30R, 125/250V           REC-SIM-1450R         26 27 26         RECEPTACLE, 14-50R, 125/250V           REC-SIM-1460R         26 27 26         RECEPTACLE, 14-60R, 125/250V           REC-SIM-1520R         26 27 26         RECEPTACLE, 15-20R, 250V, 3PH           REC-SIM-1530R         26 27 26         RECEPTACLE, 15-30R, 250V, 3PH	
REC-SIM-1450R       26 27 26       RECEPTACLE, 14-50R, 125/250V         REC-SIM-1460R       26 27 26       RECEPTACLE, 14-60R, 125/250V         REC-SIM-1520R       26 27 26       RECEPTACLE, 15-20R, 250V, 3PH         REC-SIM-1530R       26 27 26       RECEPTACLE, 15-30R, 250V, 3PH	
REC-SIM-1460R       26 27 26       RECEPTACLE, 14-60R, 125/250V         REC-SIM-1520R       26 27 26       RECEPTACLE, 15-20R, 250V, 3PH         REC-SIM-1530R       26 27 26       RECEPTACLE, 15-30R, 250V, 3PH	
REC-SIM-1520R         26 27 26         RECEPTACLE, 15-20R, 250V, 3PH           REC-SIM-1530R         26 27 26         RECEPTACLE, 15-30R, 250V, 3PH	
REC-SIM-1530R 26 27 26 RECEPTACLE, 15-30R, 250V, 3PH	
REC-SIM-1550R 26 27 26 RECEPTACLE, 15-50R, 250V, 3PH	
<b>←I</b> <u>REC-SIM-1560R</u> 26 27 26 RECEPTACLE, 15-60R, 250V, 3PH	
→I <u>REC-SIM-L520R</u> 26 27 26 RECEPTACLE, LOCKING TYPE, L5-20R, 125	V
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☐ REC-SIM-L620R 26 27 26 RECEPTACLE, LOCKING L6-20R, 250V	
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→ REC-SIM-L720R 26 27 26 RECEPTACLE, LOCKING L7-20R, 277V	
⊕I <u>REC-SIM-L730R</u> 26 27 26 RECEPTACLE, LOCKING L7-30R, 277V	
→I <u>REC-SIM-L1420R</u> 26 27 26 RECEPTACLE, LOCKING L14-20R, 125/250V	
→ I <u>REC-SIM-L1430R</u> 26 27 26 RECEPTACLE, LOCKING L14-30R, 125/250V	
- <b>⊞I</b> <u>REC-SIM-L1520R</u> 26 27 26 RECEPTACLE, LOCKING L15-20R, 250V, 3PI	Н
REC-SIM-L1530R 26 27 26 RECEPTACLE, LOCKING L15-30R, 250V, 3PI	Н
➡I <u>REC-SIM-L1620R</u> 26 27 26 RECEPTACLE, L16-20R, 480V, 3PH	
<b>■ REC-SIM-L1630R</b> 26 27 26 RECEPTACLE, L16-30R, 480V, 3PH	
→ REC-SIM-L2120R 26 27 26 RECEPTACLE, LOCKING L21-20R, 120/208V	
→I         REC-SIM-L2130R         26 27 26         RECEPTACLE, LOCKING L21-30R, 120/208V	, 3PH
→ X REC-SIM-XP 26 27 26 RECEPTACLE, EXPLOSION PROOF, 125V	
REC-TAMP 26 27 26 DUPLEX RECEPTACLE, TAMPER RESISTAN	
REC-TAMP-GFI 26 27 26 GFI DUPLEX RECEPTACLE, TAMPER RESISTANT, 125V	, 3PH

VIEW	/ KEY
NAME — LEVEL NAME  10'-0" — HEIGHT ABOVE  PROJECT 0'-0"	KEYNOTE: INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL
	NDICATES DIRECTION OF TRUE NORTH
P	PLAN OR DETAIL NUMBER
P	PLAN OR DETAIL NAME
1/8" = 1'-0"	PLAN OR DETAIL SCALE
INDICATES SIMIL IN MULTIPLE LOC	AR DETAIL REFERENCED —



LINE TYPE AND TAG KEY:

NEW WORK BY THIS CONTRACTOR (WIDE LINE)

---- EXISTING TO BE REMOVED (SHORT DASHED PATTERN)

— — NEW UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

EXISTING TO REMAIN OR WORK BY OTHERS (NARROW LINE)

---- EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN) — — EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

HALFTONING DOES NOT MODIFY SCOPE.

'TAG'-E TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING

UNDERLINED TAG INDICATES OBJECT IS IN-SCOPE. IF NEW, ADDITIONAL

INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST

INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

	ELEC	TRICAL	SYMBOL LIST
SYMBOL:	TAG:	SPEC SECTION:	DESCRIPTION:
<b>=∰</b> >	REC-TAMP-QUAD	26 27 26	QUAD RECEPTACLE, TAMPER RESISTANT, 125V
₩	REC-QUAD	26 27 26	QUAD RECEPTACLE, 125V
*	REC-QUAD-GFI	26 27 26	QUAD GFI RECEPTACLE, 125V
<b>=⊕</b> ∪	REC-QUAD-USB	26 27 26	QUAD RECEPTACLE, USB 125V
₩ <sub>W</sub>	REC-QUAD-WP	26 27 26	QUAD GFI WEATHERPROOF RECEPTACLE, 125V
$\bigcirc$	REC-DUP-PED	26 27 26	RECEPTACLE - PEDESTAL STYLE
	REC-PED-QUAD	26 27 26	RECEPTACLE - PEDESTAL STYLE
# <sup>©</sup>	REC-Z#	26 27 26	IEC PIN AND SLEEVE RECEPTACLE, 600V
 <b>=</b>	PP#	26 27 23	POWER POLE

TAG:	DESCRIPTION:	RELATED SPECIFICATION
ATS-#	AUTOMATIC TRANSFER SWITCH, REFER TO TRANSFER SWITCH SCHEDULE	26 36 00
BAT-#	BATTERY RACK	26 32 13
C-#	GENERAL PURPOSE CONTACTOR	26 28 21
CR-#	CORD REEL	26 27 26
CT-#	CABLE TRAY	26 05 36
CUP-#	CUSTOM UTILITY PEDESTAL	26 27 16
DIM-#	DC DIMMING PANEL	26 09 33
DP-#	DISTRIBUTION PANEL	26 24 16
<u>DR-#</u>	DIMMING RACK	26 09 33
<u>DT-#</u>	GENERATOR DAY TANK	26 32 13
DTR-#	TRANSFORMER - DISTRIBUTION TYPE	26 12 19
	REFER TO TRANSFORMER SCHEDULE	26 12 13 26 12 16
		26 12 10
EVCS-#	ELECTRICAL VEHICLE CHARGING STATION	26 27 29
GCC-#	TEMP. GENERATOR/LOAD BANK CONNECTION CABINET	26 36 00
GCP-#	GENERATOR CONTROL PANEL	26 32 13
GEN-#	GENERATOR	26 32 13
GPS-#	GENERATOR PARALLELING AND DISTRIBUTION SWITCHBOARD	26 24 14 26 13 35
GANN-#	GENERATOR REMOTE RADIATOR	26 32 13
<u>HH-#</u>	HANDHOLE	26 05 33
HT-#	HEAT TAPE	26 05 17
<u>INV-#</u>	LIGHTING INVERTER	26 52 00
<u>M-#</u>	METER DISTRIBUTION CENTER	26 20 00
MC-#	EXTERIOR MOUNTED METERING CABINET	26 20 00
MCC-#	MOTOR CONTROL CENTER, REFER TO MOTOR CONTROL SCHEDULE	26 14 19
MH-#	MANHOLE DOWER CENTER	26 05 37
MPC-#	PACKAGED POWER CENTER	26 24 23
MTS-#	MANUAL TRANSFER SWITCH, REFER TO TRANSFER SWITCH SCHEDULE	26 36 00
MVSG-#	MEDIUM VOLTAGE SWITCHGEAR	26 13 13 26 13 34
<u>MX-#</u>	MANUAL SWITCH, REFER TO DISCONNECT AND STARTER SCHEDULE	26 24 19
PDU-#	POWER DISTRIBUTION UNIT	26 26 00
<u>PS-#</u>	PAD-MOUNT MEDIUM VOLTAGE SWITCH	26 13 15
<u>R-#</u>	RELAY	26 09 39
	REMOTE ANNUNCIATOR FOR ATS	26 36 00
RFFS-#	REMOTE FUEL FILL STATION	26 32 13
<u>SB-#</u>	SWITCHBOARD SECTIONALIZING CABINET	26 24 13 26 13 14
<u>SC-#</u> SG-#	SWITCHGEAR	26 23 00
<u>50-#</u> SMP-#	SNOW MELT CONTROL PANEL	26 05 17
SMS-#	PAVEMENT MOUNTED DEICING CONTROLLER	26 05 17
SPD-#	SURGE PROTECTION DEVICE	26 43 00
UD-#	UNDERFLOOR DUCT - TRENCH DUCT - CELLULAR FLOOR DUCT	26 05 38
UPS-#	UNINTERRUPTIBLE POWER SUPPLY	26 33 53
US-#	UNIT SUBSTATION	26 11 00
VFD-#	VARIABLE FREQUENCY DRIVE - REFER TO VFD SCHEDULE	26 29 23
WD-#	WALL DUCT	26 05 38

ABBR:	DESCRIPTION:
ABV	ABOVE
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
ASR	ARCHITECTURAL SURFACE RACEWAY
ВС	BELOW COUNTER
С	CONDUIT (BRANCH CIRCUIT OR FEEDER CONTEXT)
со	CONDUIT AND BOX ROUGH-IN ONLY (ROUGH-IN ONLY)
EG	EQUIPMENT GROUND
EGC	EQUIPMENT GROUNDING CONDUCTOR
EOL	END OF LINE
EPO	EMERGENCY POWER OFF
GFR	GROUND FAULT REMOTE
НОА	HAND/OFF/AUTO
ITR	IT RACK MOUNTED RECEPTACLE
NC	NORMALLY CLOSED
NEMA#	NEMA RATING
NIC	NOT IN CONTRACTED SCOPE
NO	NORMALLY OPEN
ROOF	EQUIPMENT LOCATED ON ROOF ABOVE
SM	SURFACE MOUNTED
TYP	TYPICAL
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED

**ELECTRICAL ABBREVIATION KEY** 

# **ELECTRICAL RENOVATION NOTES:**

THESE NOTES APPLY TO ALL ELECTRICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO. LIGHTING, POWER, FIRE ALARM, AND OTHER LOW VOLTAGE SYSTEMS. 1. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS.

EXISTING BUILDING DOCUMENTS. CONTRACTOR SHALL REVIEW EXISTING CONDITIONS AND REPORT CONFLICTS. 2. NOT ALL EXISTING EQUIPMENT, LUMINAIRES, AND CONDUIT ARE SHOWN. CONTRACTOR SHALL

REVIEW EXISTING CONDITIONS AND REPORT CONFLICTS. 3. ELECTRICAL CONTRACTOR SHALL REVIEW EXISTING CONDITIONS TO VERIFY ACCESSIBILITY TO THE AREAS OF THEIR WORK INCLUDING WALLS, FLOOR, CEILINGS, CEILING TILES/GRID, AND ROOF. ELECTRICAL CONTRACTOR IS RESPONSIBLE TO PROVIDE CUTTING, REMOVAL, PATCHING, AND REINSTALLATION OF AFFECTED AREAS ASSOCIATED WITH THEIR WORK BY

COORDINATING WITH THE GENERAL CONTRACTOR OR QUALIFIED CONTRACTOR. CONTRACTOR

SHALL NOTIFY THE PRIME CONTRACTOR OF AFFECTED AREAS PRIOR TO BIDDING. . WHERE EXISTING ELECTRICAL SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT, PIPING, OR DUCTWORK TO BE INSTALLED, EACH CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, CONDUIT, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING ELECTRICAL SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK.

# **ELECTRICAL PHASING NOTES:**

THESE NOTES APPLY TO ALL ELECTRICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, LIGHTING, POWER, FIRE ALARM, AND OTHER LOW VOLTAGE SYSTEMS.

REFER TO ARCHITECTURAL DRAWINGS FOR GENERAL DESCRIPTION OF PHASES. REFER TO ARCHITECT'S INSTRUCTIONS FOR MORE DETAILS AND PHASING SCHEDULES AND FOR CONCURRENT WORK. MECHANICAL, ELECTRICAL AND TECHNOLOGY DRAWINGS DEPICT THE INTENT OF THE FINAL DESIGN. THE MECHANICAL, ELECTRICAL, AND TECHNOLOGY DRAWINGS DO NOT DEPICT THE MEANS AND METHODS TO MEET THE REQUIREMENTS OF THE PHASING CRITERIA.

3. REVIEW PROJECT PHASING PLANS TO COORDINATE DEMOLITION WORK, OUTAGES, ETC. WITH AFFECTED ADJACENT AREAS.

4. PROVIDE TEMPORARY LIGHTING, POWER, FIRE ALARM, AND OTHER LOW VOLTAGE SYSTEMS, ETC. AS NEEDED TO MAINTAIN SERVICE TO ALL AREAS DURING ALL PHASES OF PROJECT.

# **ELECTRICAL INSTALLATION NOTES:**

1. THE COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE ADA STANDARDS FOR ACCESSIBLE DESIGN. REFER TO THE ADA GUIDELINES FOR ALL CONFIGURATION DETAILS ON THIS PAGE FOR ADDITIONAL INFORMATION.

2. CIRCUIT NUMBERS ARE SHOWN FOR CIRCUIT IDENTIFICATION. CIRCUITING SHALL AGREE WITH NUMBERING ON THE PANEL PROVIDED. COMMON NEUTRALS MAY NOT BE USED FOR BRANCH CIRCUITS. BALANCE THE LOAD ON PANEL AS EVENLY AS POSSIBLE BETWEEN EACH PHASE.

3. FLUSH MOUNT ALL LIGHTING CONTROL DEVICES AT +42" FROM FLOOR (CENTERLINE DIMENSION). EXCEPT WHERE OTHERWISE NOTED. 4. FLUSH MOUNT ALL DUPLEX RECEPTACLES AND TECHNOLOGY OUTLETS AT +18" FROM FLOOR

(CENTERLINE DIMENSION), EXCEPT WHERE OTHERWISE NOTED. RECEPTACLES AND OUTLETS MAY BE SURFACE MOUNTED WHEN CONDUIT IS SPECIFIED EXPOSED. MOUNT EXTERIOR LOCATED RECEPTACLES WITH WHILE-IN-USE COVERS AT +20" FROM FINISHED GRADE (CENTER DIMENSIONS) TO MAINTAIN INSTALLATION ADA COMPLIANCE.

ALL MATERIALS USED TO SEAL PENETRATIONS OF FIRE RATED WALLS AND FLOORS SHALL BE TESTED AND CERTIFIED AS A SYSTEM PER ASTM E814 STANDARDS FOR FIRE TESTS OF THROUGH-PENETRATION FIRESTOPS. REFER TO DIVISION 7 FOR ADDITIONAL INFORMATION

AND REQUIREMENTS SPECIFIC TO FIRESTOPPING. CONNECTION FOR ELECTRIC WATER COOLERS (EWC) SHALL BE A JUNCTION BOX CONCEALED BEHIND WATER COOLER ACCESS PLATE OR BE A GFI RECEPTACLE LOCATED DIRECTLY BELOW AND CENTERED ON EWC. CONTRACTOR SHALL VERIFY TYPE OF EWC TO BE INSTALLED. 7. MOUNT ALL FIRE ALARM PULL STATIONS AT +42" FROM FLOOR (CENTERLINE DIMENSION)

EXCEPT WHERE OTHERWISE NOTED. 8. INSTALL ALL WALL MOUNTED FIRE ALARM NOTIFICATION DEVICES AT 90" ABOVE FINISHED FLOOR OR 6" BELOW THE CEILING, WHICHEVER IS LOWER, EXCEPT WHERE OTHERWISE NOTED. HEIGHT SHALL BE MEASURED TO THE TOP OF THE DEVICE.

9. CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL CEILING MOUNTED DEVICES AND EQUIPMENT WITH LUMINAIRES, SPRINKLER, AND CEILING DIFFUSERS. CENTER ALL DEVICES IN CEILING TILE PATTERN. SMOKE DETECTORS, CARBON MONOXIDE DETECTORS, AND OCCUPANCY/VACANCY SENSORS SHALL BE LOCATED NO CLOSER THAN 3 FEET TO AN AIR SUPPLY DIFFUSER OR RETURN GRILLE. CARBON MONOXIDE DETECTORS SHALL BE LOCATED 10

PLUS FT FROM FIRE PLACES, COOKING, AND SIMILAR FUEL-BURNING APPLIANCES 10. CONTRACTOR SHALL VERIFY ALL FURNITURE, MODULAR FURNITURE, AND EQUIPMENT LOCATIONS WITH ARCHITECTURAL PLANS, ELEVATIONS, AND REVIEWED SHOP DRAWINGS. PRIOR TO MAKING THE ACTUAL ELECTRICAL INSTALLATION, THIS CONTRACTOR SHALL ADJUST RECEPTACLES, OUTLETS, OR CONNECTION LOCATIONS TO ACCOMMODATE FURNITURE

AND/OR EQUIPMENT. 11. ELECTRICAL AND TECHNOLOGY EQUIPMENT SHALL BE MOUNTED TO AVOID IMPEDANCE OF, OPERATION OF, AND/OR ACCESS TO ELECTRICAL AND MECHANICAL EQUIPMENT. ALL MOUNTING OF ELECTRICAL AND TELECOMMUNICATIONS EQUIPMENT, ON EQUIPMENT SUPPLIED BY ANOTHER CONTRACTOR, SHALL BE APPROVED IN ADVANCE BY THE OTHER

12. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OPENINGS REQUIRED IN WALLS. ALL OPENINGS SHALL BE REPAIRED TO MATCH EXISTING BY A QUALIFIED CONTRACTOR AT THE EXPENSE OF THIS CONTRACTOR. ALL CONDUITS THROUGH WALLS SHALL BE GROUTED OR SEALED INTO OPENINGS.

13. EACH CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO THE WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH. 14. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL, TECHNOLOGY AUDIO/VISUAL, AND OTHER ELECTRICAL PLANS FOR EXACT LOCATIONS OF ALL CEILING

MOUNTED DEVICES. OTHER THAN SPRINKLERS. 15. ELECTRICAL IDENTIFICATION. REFER TO SPECIFICATION SECTION 26 05 53 FOR COLOR/LABEL REQUIREMENTS FOR CONDUIT, BOX, CABLE/WIRE, AND EQUIPMENT.

# **RECEPTACLE SUBSCRIPT KEY:**

DEVICE # = MOUNTING (IF APPLICABLE)
1 = CIRCUIT NUMBER \*IF LABEL IS ORIENTED HORIZONTALLY A SLASH WILL SEPARATE THIS INFORMATION. EX: A / 1 ELECTRICAL MOUNTING SUBSCRIPT KEY: MOUNT AT +6" TO CENTERLINE ABOVE COUNTER OR BACKSPLASH MOUNT AT CEILING (DEVICE OR ROUGH-IN CONTEXT) MOUNT ORIENTED HORIZONTALLY MOUNT IN CASEWORK MOUNT IN MODULAR FURNITURE WIRING DEVICE, OCCUPANCY CONTROLLED MOUNT IN SURFACE RACEWAY SURFACE MOUNTED

	ELECTRICAL SHEET INDEX
E000	ELECTRICAL COVERSHEET
E101	LEVEL 01 PLANS - LIGHTING
E111	LEVEL 01 PLANS - POWER
E121	LEVEL 01 PLANS - SYSTEMS
E400	ELECTRICAL DETAILS
E500	ELECTRICAL DIAGRAMS
E900	ELECTRICAL SPECIFICATIONS
E901	ELECTRICAL SPECIFICATIONS
GRAND TOTAL:	8

WEATHERPROOF WIRING DEVICE, NEMA 3R WHILE-IN-USE COVER, WR LISTED

WG WIRE GUARD WP WEATHERPROOF



CONSTRUCTION As Noted on Plans Review



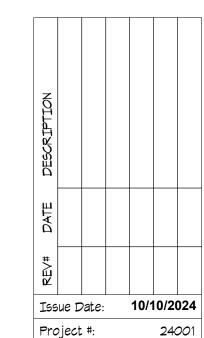




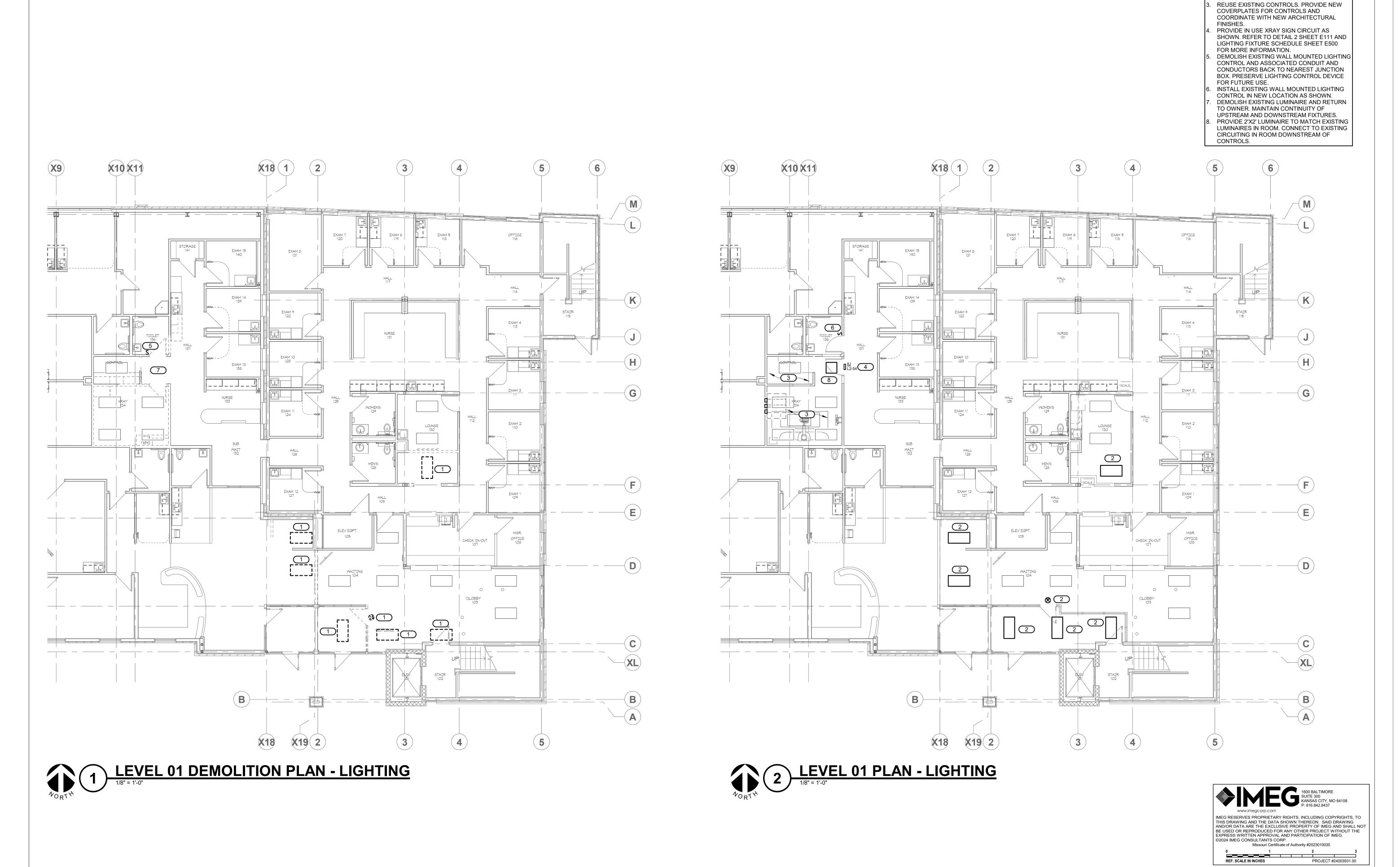








SHEET NUMBER



KEYNOTES:

NEW WORK.

CONDUIT.

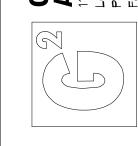
REMOVE EXISTING LUMINAIRE/EXIT SIGN AND PRESERVE FOR REUSE IN NEW WORK. EXISTING BRANCH LIGHTING CIRCUIT TO REMAIN TO SERVE LUMINAIRES SHOWN IN

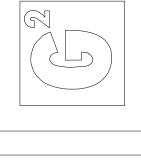
REUSE EXISTING LUMINAIRE/ EXIT SIGN IN LOCATION SHOWN. COORDINATE EXACT LOCATION WITH CEILING GRID. EXTEND

EXISTING CIRCUIT AND CONTROLS TO REUSED LUMINAIRE USING 2#12 & 1#12 GND IN 3/4"

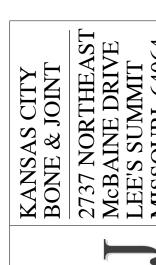
CONSTRUCTION As Noted on Plans Review

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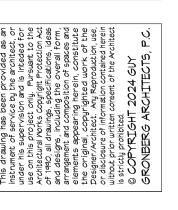


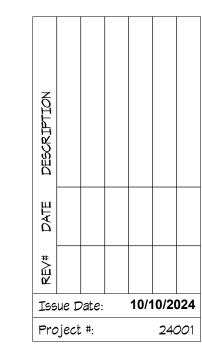












SHEET NUMBER

# SHEET NOTES:

BRANCH CIRCUITS, 208/120 VOLT SERVED BY PANEL L2 IN ELECTRICAL ROOM 208 UNLESS OTHERWISE NOTED. REFER TO X-RAY DRAWINGS FROM KONICA MINOLTA FOR MORE INFORMATION.

## **KEYNOTES:**

- RACEWAY SYSTEMS SHALL BE CONCEALED IN EXISTING WALLS IN THIS SPACE. CONNECT RECEPTACLE TO EXISTING NORMAL CIRCUIT SERVING THAT ROOM USING MINIMUM
- 2#12 & 1#12 IN 3/4" CONDUIT. PROVIDE 8"X8" JUNCTION BOX AT 18" AFF. PROVIDE 2" CHASE NIPPLE IN THE CENTER OF
- COVER. PROVIDE 6"X6" JUNCTION BOX AT 48" AFF, FLUSH WITH THE WALL. PROVIDE 2" CHASE NIPPLE IN THE CENTER OF COVER.
- PROVIDE 8"X8"X4" JUNCTION BOX AT 18" AFF. PROVIDE A 2" CHASE NIPPLE IN THE CENTER OF COVER. PROVIDE SURFACE MOUNTED JUNCTION BOX
- FOR TABLE BASE OPENING. SURFACE MOUNTED RACEWAY FROM JUNCTION BOX ON WALL WILL BE PROVIDED BY CLIENT AT THE TIME OF THE X-RAY EQUIPMENT INSTALLATION. PROVIDE 2" CONDUIT FROM "JB1" TO "JB4". PROVIDE 2" CONDUIT FROM "JB2" TO "JB4". PROVIDE 3/4" CONDUIT RUN FROM X-RAY
- WARNING LIGHT TO "JB5". 0. EPO TO BE CONNECTED TO 3 POLE BREAKER RUN CONDUIT AS SHOWN BETWEEN EPO AND
- AT "JB3". 12. PROVIDE WIRE AND CONDUIT FROM 3 POLE

1. (2) 120VAC/20A BREAKERS AT 44" AFF FOR SÚPPLY TO "JB5" AND "JB3". LEAVE 6FT PIGTAIL

- 13. DEMOLISH ALL ELECTRICAL DEVICES AND REMOVE CONDUIT AND CONDUCTORS TO
  - UPSTREAM PANELBOARDS. . DEMOLISH ALL ELECTRICAL DEVICES ON
- WALLS AND DEMOLISH CONDUIT AND CONDUCTORS TO NEAREST JUNCTION BOX. 5. DISCONNECT PROVIDED WITH X-RAY. INSTALL DISCONNECT AND CIRCUIT TO 480V/3 PHASE CIRCUIT IN PANEL H2. REFER TO PANEL
- SCHEDULE FOR WIRE SIZES. 6. DEMOLISH ELECTRICAL DEVICES INDICATED AND REMOVE CONDUIT AND CONDUCTORS TO UPSTREAM PANELBOARDS.

7. PROVIDE JUNCTION BOX FOR X-RAY PANEL.

1600 BALTIMORE
SUITE 300
KANSAS CITY, MO 64108
P: 816.842.8437

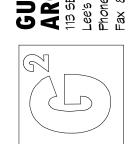
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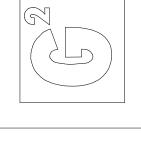
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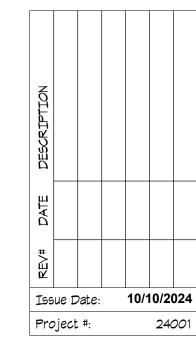






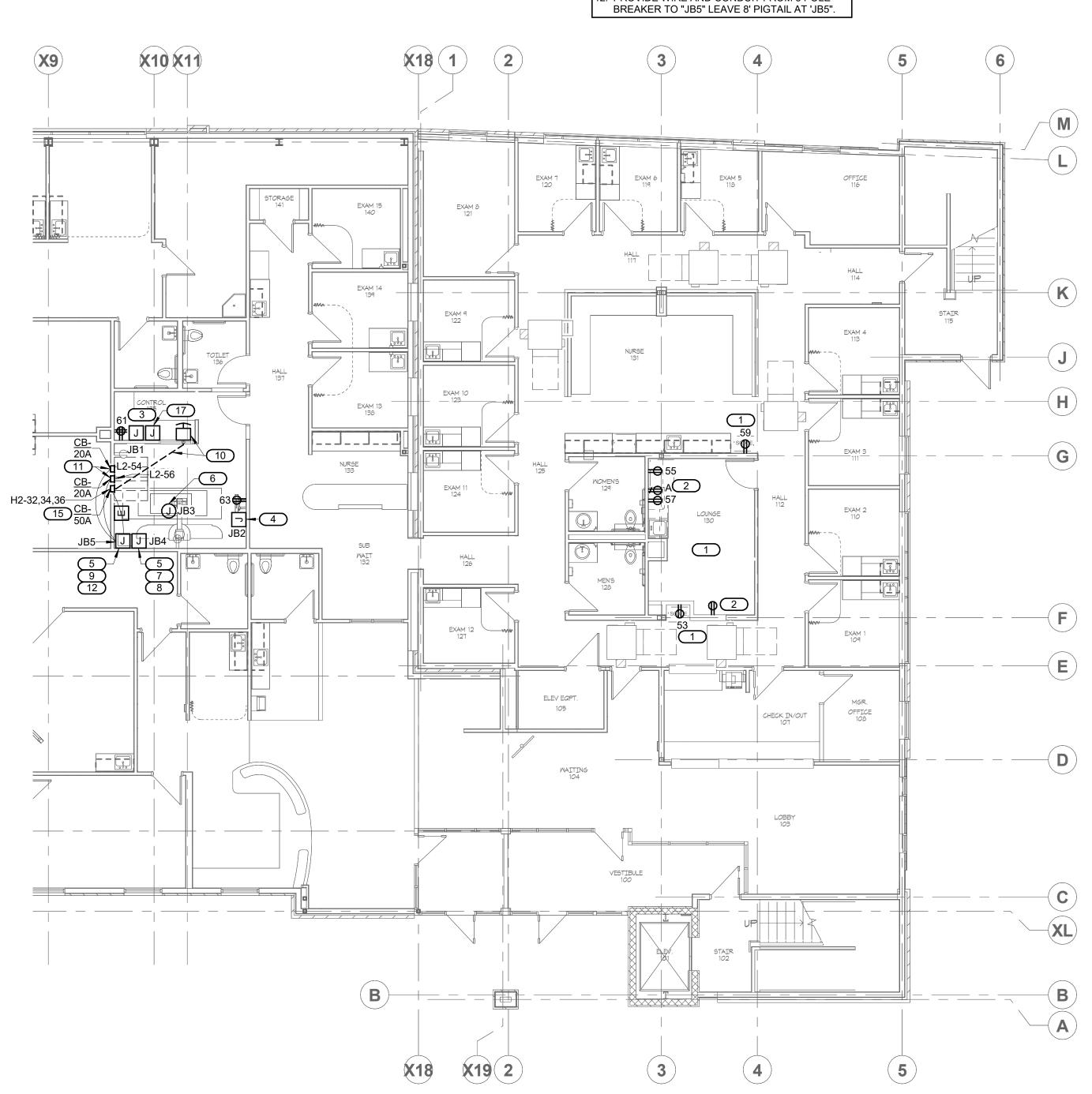






SHEET NUMBER

E111







1------

EXAM 8 121

X10 X11

16



OFFICE

EXAM 4

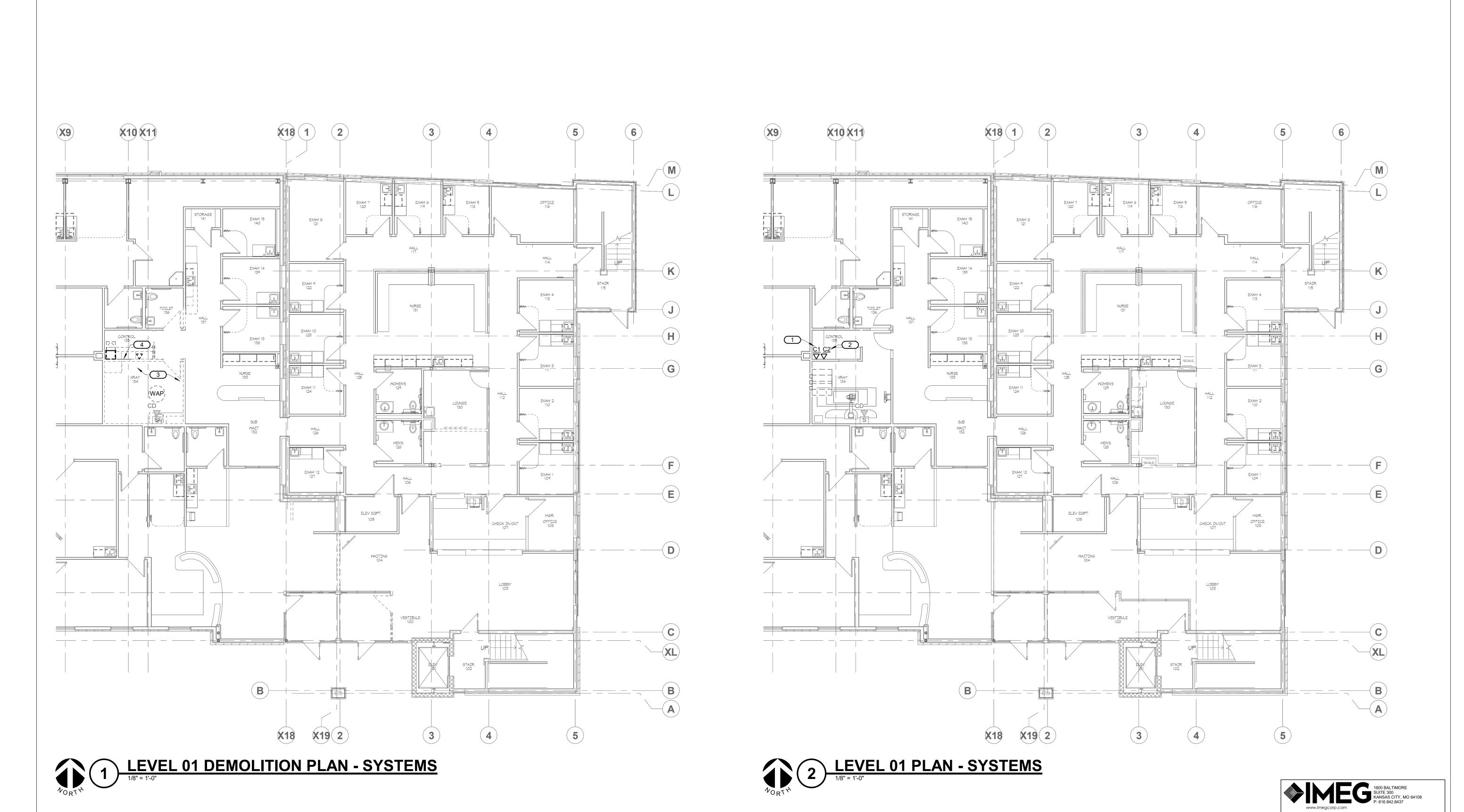
ELEV EQPT

VESTIBULE 100

<del>\_</del>14

4

13



CONSTRUCTION
As Noted on Plans Review

**KEYNOTES:** 

EQUIPMENT.

TELECOM ROOM.

TELECOM EQUIPMENT.

PROVIDE ONE OUTLET WITH (1) RJ-45 JACK FOR REMOTE DIAGNOSTICS. RUN ETHERNET

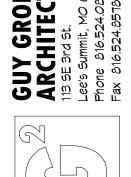
PROVIDE ONE OUTLET WITH (2) RJ-45 JACKS. RUN CAT6 CABLES BACK TO THE NEAREST

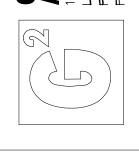
DEMOLISH ALL DATA DEVICES INCLUDING WIRELESS ACCESS POINT AND REMOVE CONDUIT AND CABLES TO UPSTREAM

DEMOLISH ALL ELECTRICAL DEVICES ON WALLS AND AND REMOVE CONDUIT AND CABLES TO UPSTREAM TELECOM EQUIPMENT.

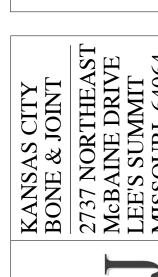
CABLE BACK TO INTERNET SERVICE

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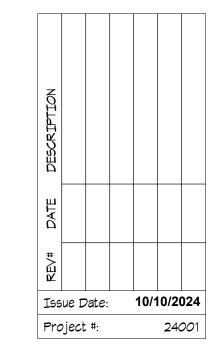












SHEET NUMBER E121

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REF. SCALE IN INCHES

# **ELECTRICAL DISTRIBUTION AND PANEL SCHEDULE NOTES:**

1. BRANCH PANEL KEY:

a. \*A = ARC FAULT CIRCUIT INTERRUPT

b. \*G = GROUND FAULT CIRCUIT INTERRUPT

c. \*I = ISOLATED GROUND d. \*P = PADLOCK HASP

e. \*R = RED HANDLE f. \*S = SHUNT TRIP

g. \*NB = NEW BREAKER h. \*RB = REPLACE EXISTING BREAKER WITH NEW BREAKER

i. \*EB = EXISTING BREAKER j. \*M = [CBM] CIRCUIT BREAKER METER - PROVIDE \*EM WHEN NOT AVAILABLE

(SPECIFICATION 26 09 13) k. \*EM = [DEM] DIGITAL ENERGY METER - ADD ON (SPECIFICATION 26 09 13)

PANEL H2 (EXISTING) MOUNTING: SURFACE **ENCLOSURE**: NEMA 1 **SOLID NEUTRAL** FED FROM: 225 A/3P @ H1 **GROUND BUS** LOCATION:

MAIN: 225 A MCB **VOLTS**: 480/277 Wye PHASE: 3 WIRE: 4 **SCCR:** EXISTING ISC UNKNOWN 0.00 kA

**NOTES:** EXISTING PANEL

K E	СКТ		OCF	PD		WIRE SIZE		VD		A		В		С			WIRE SIZE		OCPD			СКТ	K
Υ	NO.	LOAD DESCRIPTION	AMPS	Р	Н	N	G	%							%	G	N	Н	Р	AMPS	LOAD DESCRIPTION	NO.	Υ
	1	LTG - SECOND FLOOR EAST	20 A	1					0	0									3	20 A	ELEVATOR	2	
	3	LTG - SECOND FLOOR WEST	20 A	1							0	0										4	ı
	5	LTG - FIRST FLOOR EAST	20 A	1									0	0								6	
	7	LTG - FIRST FLOOR WEST	20 A	1					0	0									3	20 A	RTU-1	8	
	9	FCU-1	20 A	1							0	0										10	
	11	FCU-2	20 A	1									0	0								12	
	13	FCU-3	20 A	1					0	0									3	20 A	RTU-2	14	
	15	FPB-1	20 A	1							0	0										16	
	17	FPB-2	20 A	1									0	0								18	
	19	FPB-3	20 A	1					0	0									1	20 A	FPB-12	20	
	21	FPB-4	20 A	1							0	0							3	20 A	FPB-13	22	
	23	FPB-6	20 A	3									0	0								24	
	25								0	0												26	
	27										0	0							1	20 A	FPB-14	28	
	29	FPB-7	20 A	1									0						1		SPACE	30	
	31	FPB-8	20 A	1					0	11.09					0.53	10	4	4	3	50 A	X-RAY	32	NB
	33	FPB-9	20 A	1							0	11.09										34	
	35	FPB-10	20 A	3									0	11.09								36	
	37								0	1.76					0.1				3	175 A	TR-T2	38	
	39										0	1.56										40	
	41	FPB-11	20 A	1									0	0.56								42	
						To	otal L	_oad:	12.8	5 kVA	12.6	5 kVA	11.6	kVA									
						To	tal A	mps:	46	.93	46	3.21	42	.04									

LOAD SUMMARY													
LOAD CLASSIFICATION	CONNECTED LOAD	CONNECTED LOAD DEMAND FACTOR ESTIMATED DEMAND											
Lighting	0 kVA	0.00%	0 kVA	TOTALS*									
Power	33.255 kVA	100.00%	33.255 kVA	TOTAL CONNECTED LOAD:	36.74 kVA								
Receptacles	3.48 kVA	100.00%	3.48 kVA	TOTAL ESTIMATED DEMAND LOAD:	36.735 kVA								
				TOTAL CONNECTED AMPS:	44.19 A								
				TOTAL ESTIMATED DEMAND AMPS:	44.2 A								

\*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL. CIRCUIT KEY NOTES: 1. PERFORM 30 DAY METERING PRIOR TO CONNECTION OF X-RAY PANEL. IF LOAD EXCEEDS 175A, CONNECT X-RAY TO PANEL H1-PB IN ADJACENT TENANT SPACE AND ADD METER TO X-RAY LOAD AT THE PANEL.

MOUNTING: SURFACE **ENCLOSURE**: NEMA 1 FED FROM: 225 A/3P @ TR-T2 LOCATION:

**CIRCUIT KEY NOTES:** 

PANEL L2 (EXISTING) DOUBLE TUB

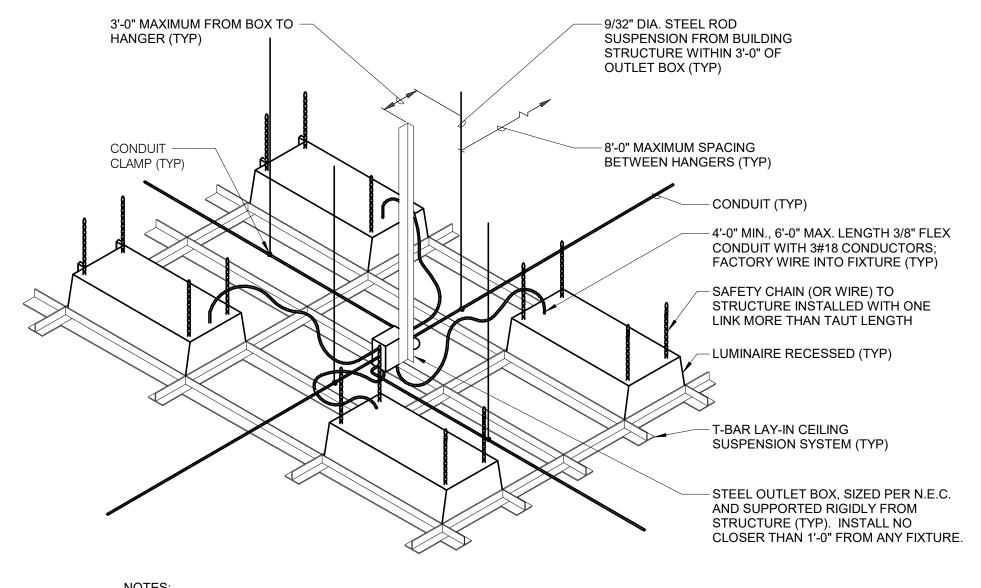
**SOLID NEUTRAL GROUND BUS** 

MAIN: 225 A MCB **VOLTS:** 120/208 Wye **PHASE**: 3 WIRE: 4 **SCCR:** EXISTING

ISC UNKNOWN 0.00 kA

															1						T	
K E	СКТ		OCF	סי		NIRE SIZE		VD	ļ	4	E	3			VD		NIRE Size		0	CPD		CK
Y	NO.	LOAD DESCRIPTION	AMPS	Р	Н	N	G	%							%	G	N	Н	Р	AMPS	LOAD DESCRIPTION	NC
-		REC - RM 116 &118	20 A	1					0	0									1		REC - RM 119 & 120	2
-		REC - RM 121 & 122	20 A	1							0	0							1		REC - RM 120 & 124	4
-		REC - RM 127 & RR'S 128, 129	20 A	1									0	0					1	20 A	REC - RM 131 (DESKS, XRAY)	6
-		REC - RM 130 & 131	20 A	1					0	0									1		REC - RM 131 'REFRIG.'	8
-	9	REC - RM 109, 110, & 132	20 A	1							0	0							1	20 A	REC - RM 107 & 108	10
-		REC - RM 104 & 106	20 A	1									0	0					1		JBOX/REC - RM 103 'WATER	12
-	13	REC - RM 103	20 A	1					0	0									1		REC - RM 104 'WATER COOLER'	14
-		REC/LTG - RM 105	20 A	1							0	0							1	20 A	REC/LTG - RM 101	16
-		REC - RM 202	20 A	1									0	0					1	20 A	REC - RM 200, 210, 206, 207, 208, 209	18
-	19	REC - RM 203	20 A	1					0	0						-			1	20 A	REC - RM 204, PART 205	20
-	21	REC - RM 211, PART 205	20 A	1							0	0							1	20 A	REC - RM 209	22
-	23	REC - RM 209	20 A	1									0	0		-			1	20 A	REC - RM 210 'WASHING MACHINE'	24
-	25	REC- RM 210 'DRYER'	20 A	2					0	0									1	20 A	REC - RM 211 'REFRIGERATOR'	26
-	27										0	0							1	20 A	REC - RM 211 'REFRIGERATOR'	28
-	29	REC - RM 211 'GARBAGE DISP.'	20 A	1									0	0					1	20 A	REC - RM 211 'MICROWAVE'	30
-	31	REC - RM 211 'DISHWASHER'	20 A	1					0	0									1	20 A	REC - RM 211 'MICROWAVE'	32
-	33	SPARE	20 A	1							0	0							1	20 A	LTG - RM 103 'PENDANTS'	34
-	35	ELEVATOR MISC.	20 A	1									0	0					1	20 A	REC - RM 202	30
-	37	REC - RM 205 'COPY MACHINE'	20 A	1					0	0									1	20 A	REC - RM 211	38
-	39	J-BOX - RM 205 'FURNITURE'	20 A	1							0	0							1	20 A	REC -ROOF	40
-	41	J-BOX - RM 205 'FURNITURE'	20 A	1									0	0					1	20 A	VAV -1, 2, &3	42
-	43	J-BOX - RM 205 'FURNITURE'	20 A	1					0	0									1	20 A	EF-1, EF-EL & EF-IT	44
-	45	J-BOX - RM 205 'FURNITURE'	20 A	1							0	0							1	20 A	J-BOX - EAST EXT. SIGNAGE	46
-	47	J-BOX - RM 205 'FURNITURE'	20 A	1									0	0					1	20 A	J-BOX - WEST EXT. SIGNAGE	48
-	49	J-BOX - RM 205 'FURNITURE'	20 A	1					0	0									2	15 A	CU-1	50
-	51	REC - RM 131	20 A	1							0	0										52
В	53	REC - RM 106 'SCALE'	20 A	1	12	12	12	0.42					0.18	0.2	1.77	6	6	6	1	20 A	SINGLE POLE DISCONNECT 1	54
3	55	REFRIGERATOR	20 A	1	12	12	12	2.49	1.2	0.2					1.77	6	6	6	1	20 A	SINGLE POLE DISCONNECT 2	56
3	57	DISHWASHER	20 A	1	12	12	12	2.58			1.2	0							1	20 A	SPARE	58
В	59	REC - RM 112 'SCALE'	20 A	1	12	12	12	0.32					0.18	0					1	20 A	SPARE	60
В	61	OPERATOR WORKSTATION	20 A	1	12	_	_	1.23	0.36	0									1	20 A	SPARE	62
В		REC - ROOM 134	20 A	1	12		_	1.16			0.36	0							1		SPARE	64
_		SPACE		1															1		SPACE	66
_		SPACE		1															1		SPACE	68
_		SPACE		1															1		SPACE	70
_		SPACE		1															1		SPACE	72
_		SPACE		1															1		SPACE	74
_		SPACE		1															1		SPACE	76
_		SPACE		1															1		SPACE	78
_		SPACE		1															1		SPACE	80
_		SPACE		1															1		SPACE	82
_		SPACE		1															1		SPACE	84
		0.7.52		-		To	∟ ∆tal I	_oad:	1.76	k\/Δ	1.56	k\/Δ	0.56	k\/Δ					-			
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		ASSIFICATION		C				.OAD	DEMA		ACTO	R  ES	TIMAT		EMAN	ID					TOTALS*	
	ting			-		0 kV				0.009				) kVA			<b>T</b>	A		IFA==	D. LOAD: 10.101111	
OW	er eptacl			-		0 kV				0.00% 100.00				0 kVA 48 kV							<b>D LOAD:</b> 3.48 kVA <b>DEMAND LOAD:</b> 3.48 kVA	
000	antacl	86		1	- 3	71 12 1	Λ/Δ		1	21 11 11 (1) (1) (1)	10/-							A 1 C		* A TED		

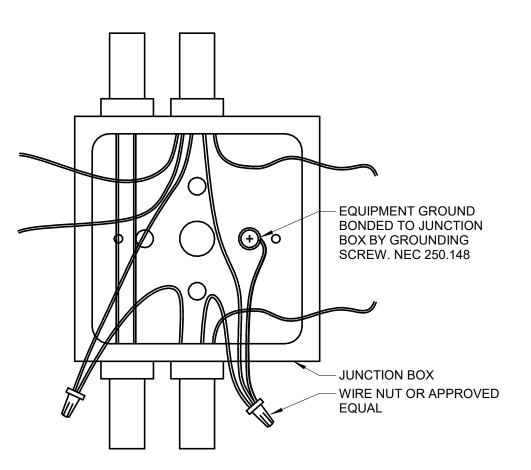
\*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.



ADDITIONAL INFORMATION.

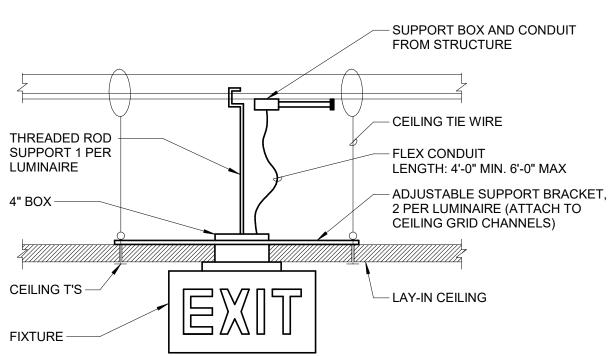
1. DO NOT SUPPORT CONDUIT OR BOXES FROM CEILING GRID HANGERS. 2. PROVIDE A MINIMUM OF TWO INDEPENDENT #12 GAUGE SUSPENDED CEILING SUPPORT WIRES LOCATED ON DIAGONAL CORNERS OF THE LUMINAIRES. LUMINAIRES WEIGHING 56 LBS OR GREATER REQUIRE FOUR SUPPORT WIRES. REFER TO SPECIFICATIONS FOR

RECESSED LUMINAIRE DETAIL (SAFETY CHAIN)
NO SCALE

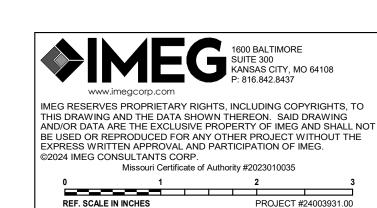


JUNCTION BOX GROUNDING DETAIL

NO SCALE



3 EXIT SIGN MOUNTING DETAIL
NO SCALE

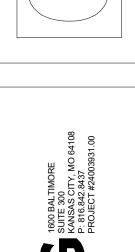


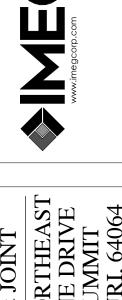
As Noted on Plans Review

CONSTRUCTION





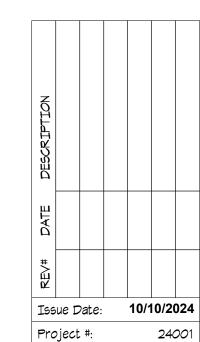




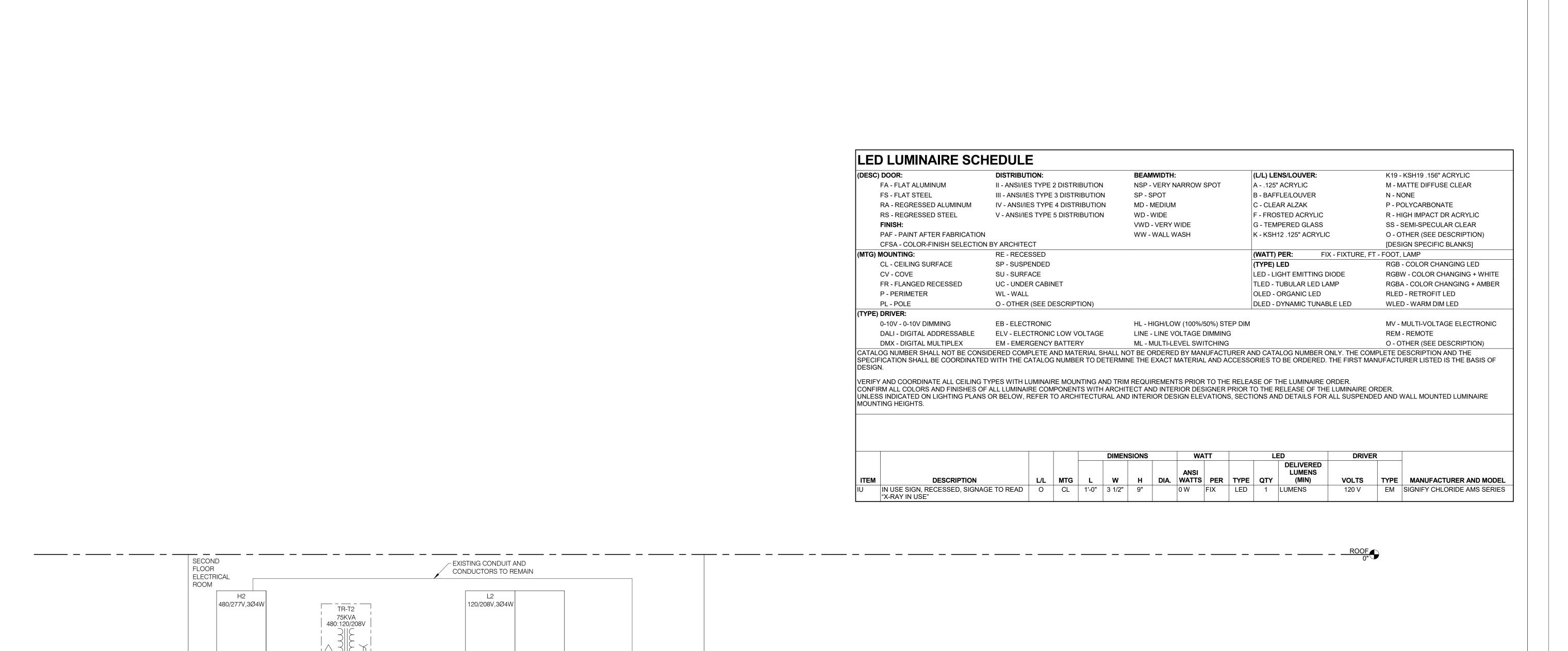








SHEET NUMBER E400



**ELEVATOR** 

CONTROL

ROOM

225A MCB

H1

480/277V,3Ø4W

225A MCB

- EXISTING CONDUIT AND CONDUCTORS TO REMAIN

EXISTING CONDUIT AND

CONDUCTORS TO REMAIN

TR-T1

75KVA 480:120/208V

480/277V SECONDARY | FIRST FLOOR

- EXISTING

CONDUIT AND

CONDUCTORS

TO REMAIN ----

EXISTING RISER DIAGRAM
NO SCALE

ELECTRICAL

ROOM

225A MCB

L1

225A MCB

120/208V,3Ø4W

- EXISTING CONDUIT AND

- EXISTING CONDUIT AND

CONDUCTORS TO REMAIN

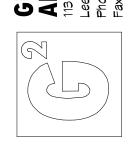
CONDUCTORS TO REMAIN

Development Services Department
Lee's Summit, Missouri

OF MOVELOPMENT OF MOVELOP

CONSTRUCTION

GUY GRONBERG
ARCHITECTS, P.C.
113 SE 3rd St.
Lee's Summit, MO 64063
Phone 816.524.0878
Fax 816.524.8578

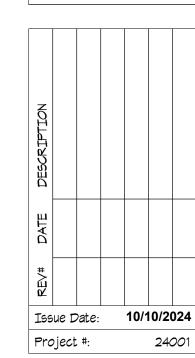




KANSAS CITY
BONE & JOINT
2737 NORTHEAST
McBAINE DRIVE
LEE'S SUMMIT



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SHEET NUMBER

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Missouri Certificate of Authority #2023010035

PROJECT #24003931.00

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REF. SCALE IN INCHES PR

### SCOPE OF WORK

THE CONTRACTOR SHALL FURNISH AND INSTALL ALL NEW MATERIALS AS INDICATED ON THE DRAWINGS, AND/OR IN THESE SPECIFICATIONS, AND ALL ITEMS REQUIRED TO MAKE ASSOCIATED PORTION OF THE ELECTRICAL WORK A FINISHED AND WORKING SYSTEM.

TELECOMMUNICATIONS CABLING WILL BE BY OTHERS, IN RACEWAYS AND CONDUITS FURNISHED AND INSTALLED AS PART OF THE ELECTRICAL WORK.

TEMPERATURE CONTROL WIRING FOR PLUMBING AND HVAC EQUIPMENT WILL BE BY OTHER CONTRACTORS.

ALL WORK THAT WILL PRODUCE EXCESSIVE NOISE OR INTERFERENCE WITH NORMAL BUILDING OPERATIONS, AS DETERMINED BY THE OWNER, SHALL BE SCHEDULED WITH THE OWNER.

### CODES AND STANDARDS

CONFORM TO ALL REQUIREMENTS OF THE CITY OF LEES SUMMIT CODES, LAWS, ORDINANCES, AND OTHER REGULATIONS HAVING JURISDICTION OVER THIS INSTALLATION

IF THE CONTRACTOR NOTES, AT THE TIME OF BIDDING, THAT ANY PARTS OF THE DRAWINGS OR SPECIFICATIONS DO NOT COMPLY WITH THE CODES OR REGULATIONS, CONTRACTOR SHALL INFORM THE ARCHITECT/ENGINEER IN WRITING, REQUESTING A CLARIFICATION.

# PERMITS AND FEES

PROCURE ALL APPLICABLE PERMITS AND LICENSES. ABIDE BY LOCAL AND STATE LAWS, REGULATIONS, AND ORDINANCES. PAY ALL CHARGES FOR PERMITS OR LICENSES. PAY ALL FEES AND TAXES IMPOSED BY STATE, MUNICIPAL, AND OTHER REGULATORY BODIES. PAY ALL CHARGES ARISING OUT OF REQUIRED INSPECTIONS BY AN AUTHORIZED BODY. PAY ALL CHARGES ARISING OUT OF REQUIRED CONTRACT DOCUMENT REVIEWS ASSOCIATED WITH THE PROJECT AND AS INITIATED BY THE OWNER OR AUTHORIZED AGENCY/CONSULTANT.

WHERE APPLICABLE, ALL FIXTURES, EQUIPMENT AND MATERIALS SHALL BE LISTED BY UNDERWRITER'S LABORATORIES, INC. OR A NATIONALLY RECOGNIZED TESTING ORGANIZATION.

### DRAWINGS

THE DRAWINGS FOR THE ELECTRICAL WORK ARE DIAGRAMMATIC, INTENDED TO CONVEY THE SCOPE OF THE WORK AND TO INDICATE THE GENERAL ARRANGEMENTS AND LOCATIONS OF EQUIPMENT, OUTLETS, ETC., AND THE APPROXIMATE SIZES OF EQUIPMENT.

CONTRACTOR SHALL DETERMINE THE EXACT LOCATIONS OF EQUIPMENT AND ROUGH-INS, AND THE EXACT ROUTING OF RACEWAYS SO AS TO BEST FIT THE LAYOUT OF THE JOB. CONDUIT ENTRY POINTS FOR ELECTRICAL EQUIPMENT INCLUDING, BUT NOT LIMITED TO, PANELBOARDS, SWITCHBOARDS, SWITCHGEAR AND UNIT SUBSTATIONS, SHALL BE DETERMINED BY THE CONTRACTOR UNLESS NOTED IN THE CONTRACT DOCUMENTS.

CONSTRUCTION DRAWINGS FOR THIS PROJECT HAVE BEEN PREPARED UTILIZING AUTOCAD MEP REVIT. CONTRACTORS AND SUBCONTRACTORS MAY REQUEST ELECTRONIC MEDIA FILES OF THE CONTRACT DRAWINGS. THE ELECTRONIC CONTRACT DOCUMENTS CAN BE USED FOR PREPARATION OF SHOP DRAWINGS AND AS-BUILT DRAWINGS ONLY. THE INFORMATION MAY NOT BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT.

VERIFY ALL PERTINENT DIMENSIONS AT THE JOB SITE BEFORE ORDERING ANY CONDUIT, CONDUCTORS, WIREWAYS, BUS DUCT, FITTINGS, ETC.

### SUBMITTALS

SUBMITTALS SHALL BE REQUIRED WHERE REQUIRED IN THE SPECIFICATIONS OR ON THE DRAWINGS. THE CONTRACTOR SHALL SUBMIT ELECTRONIC COPIES OF EACH SHOP DRAWING FOR REVIEW BY THE ARCHITECT/ENGINEER BEFORE RELEASING ANY EQUIPMENT FOR MANUFACTURE OR SHIPMENT.

THE CONTRACTOR SHALL THOROUGHLY REVIEW AND APPROVE ALL SHOP DRAWINGS BEFORE SUBMITTING THEM TO THE ARCHITECT/ENGINEER. CONTRACTOR SHALL CLEARLY MARK ALL DEVIATIONS FROM THE CONTRACT DOCUMENTS ON ALL SUBMITTALS. ASSEMBLE ALL SUBMITTALS IN SETS, SUCH AS PANELBOARDS, FIRE ALARM, LIGHTING, OR MOTOR CONTROL. ALL SETS SHALL BE IDENTICAL AND CONTAIN AN INDEX OF THE ITEMS ENCLOSED WITH A GENERAL TOPIC DESCRIPTION ON THE COVER. WHERE MORE THAN ONE MODEL IS SHOWN ON A MANUFACTURER'S SHEET, CLEARLY INDICATE EXACTLY WHICH ITEM AND WHICH DATA IS RELEVANT TO THE WORK. REFER TO SUBSECTIONS FOR SPECIFIC SUBMITTAL REQUIREMENTS.

### NETWORK / INTERNET CONNECTED EQUIPMENT

THESE SPECIFICATIONS MAY REQUIRE CERTAIN EQUIPMENT OR SYSTEMS TO HAVE NETWORK, INTERNET AND/OR REMOTE ACCESS CAPABILITY ("NETWORK CAPABILITY"). ANY REQUIREMENT FOR NETWORK CAPABILITY SHALL BE INTERPRETED ONLY AS A FUNCTIONAL CAPABILITY AND IS NOT TO BE CONSTRUED AS AUTHORITY TO CONNECT OR ENABLE ANY NETWORK CAPABILITY. NETWORK CAPABILITY MAY ONLY BE CONNECTED OR ENABLED WITH THE EXPRESS WRITTEN CONSENT OF THE OWNER.

### WARRANTY

PROVIDE MINIMUM ONE-YEAR WARRANTY FOR ALL FIXTURES, EQUIPMENT, MATERIALS, AND WORKMANSHIP. REFER TO SUBSECTIONS FOR ADDITIONAL WARRANTY REQUIREMENTS.

### MATERIAL SUBSTITUTION

WHERE SEVERAL MANUFACTURERS' NAMES ARE GIVEN, THE MANUFACTURER FOR WHICH A CATALOG NUMBER IS GIVEN IS THE BASIS OF DESIGN AND ESTABLISHES THE QUALITY REQUIRED. EQUIVALENT EQUIPMENT MANUFACTURED BY THE OTHER NAMED MANUFACTURERS MAY BE USED. CONTRACTOR SHALL ENSURE THAT ALL ITEMS SUBMITTED BY THESE OTHER MANUFACTURERS MEET ALL REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS, AND FIT IN THE ALLOCATED SPACE. THE ARCHITECT/ENGINEER SHALL MAKE THE FINAL DETERMINATION OF WHETHER A PRODUCT IS EQUIVALENT.

ANY MATERIAL, ARTICLE, OR EQUIPMENT OF OTHER UNNAMED MANUFACTURERS WHICH WILL ADEQUATELY PERFORM THE SERVICES AND DUTIES IMPOSED BY THE DESIGN AND IS OF A QUALITY EQUAL TO OR BETTER THAN THE EQUIPMENT IDENTIFIED BY THE DRAWINGS MAY BE USED IF APPROVAL IS SECURED IN WRITING FROM THE ARCHITECT/ENGINEER VIA ADDENDUM.

# OBSERVATION OF WORK

THE CONTRACTOR SHALL PROVIDE SEVEN (7) CALENDAR DAYS' NOTICE TO THE ARCHITECT/ENGINEER PRIOR TO COVERING INTERIOR PARTITIONS AND CHASES AND INSTALLING HARD OR SUSPENDED CEILINGS AND SOFFITS.

ALL WORK ABOVE THE CEILINGS MUST BE COMPLETE PRIOR TO THE ARCHITECT/ENGINEER'S REVIEW. THIS INCLUDES, BUT IS NOT LIMITED TO: ALL JUNCTION BOXES ARE CLOSED AND IDENTIFIED (CONDUIT INCLUDED) IN ACCORDANCE WITH ELECTRICAL IDENTIFICATION, FIRE ALARM JUNCTION BOXES ARE PAINTED RED, LUMINAIRES INCLUDING EXIT AND EMERGENCY FIXTURES ARE INSTALLED AND OPERATIONAL, FLEXIBLE CONDUIT IS SUPPORTED ABOVE AND INDEPENDENTLY OF THE CEILING, AND ALL WALL PENETRATIONS ARE SEALED.

IN ORDER TO PREVENT THE FINAL JOBSITE OBSERVATION FROM OCCURRING TOO EARLY, THE CONTRACTOR SHALL REVIEW THE COMPLETION STATUS OF THE PROJECT AND CERTIFY IN WRITING THAT THE JOB IS READY FOR THE FINAL JOBSITE OBSERVATION.

# PROJECT CLOSEOU

SUBMIT THE FOLLOWING: OPERATION AND MAINTENANCE MANUALS INCLUDING BOUND COPIES OF APPROVED SHOP DRAWINGS, RECORD DOCUMENTS, SPARE PARTS AND EXTRA MATERIALS IN QUANTITIES SPECIFIED IN THESE SPECIFICATIONS, INSPECTION AND TESTING REPORT BY THE FIRE ALARM SYSTEM

PROVIDE CUSTOM UPDATED/NEW TYPED CIRCUIT DIRECTORY FOR EACH EXISTING/NEW BRANCH CIRCUIT PANELBOARD INCLUDED IN THE SCOPE OF WORK.

LABEL SHALL INCLUDED EQUIPMENT NAME OR FINAL APPROVED ROOM NAME, ROOM NUMBER, AND LOAD TYPE FOR EACH CIRCUIT (EXAMPLES: SUMP PUMP
SP-1 OR ROOM 101 RECEPT). PRINTED COPIES OF THE BID DOCUMENT PANEL SCHEDULES ARE NOT ACCEPTABLE AS CIRCUIT DIRECTORIES.

# OPERATION AND MAINTENANCE INSTRUCTIONS

OPERATION AND MAINTENANCE DATA SHALL CONSIST OF WRITTEN INSTRUCTIONS FOR THE CARE, MAINTENANCE, AND OPERATION OF THE EQUIPMENT AND SYSTEMS. INSTRUCTION BOOKS, CARDS, AND MANUALS FURNISHED WITH THE EQUIPMENT SHALL BE INCLUDED.

PROVIDE BOUND MANUALS WITH COPIES OF APPROVED SHOP DRAWINGS WITH TITLE PAGE AND INDEX SYSTEM SIMILAR TO OPERATION AND MAINTENANCE

# RECORD DOCUMENTS

MAINTAIN AT THE JOB SITE A SEPARATE AND COMPLETE SET OF ELECTRICAL DRAWINGS AND SPECIFICATIONS WITH ALL CHANGES MADE TO THE SYSTEMS CLEARLY AND PERMANENTLY MARKED IN COMPLETE DETAIL. MARK DRAWINGS TO INDICATE APPROVED SUBSTITUTIONS, CHANGE ORDERS, AND ACTUAL EQUIPMENT AND MATERIALS USED. ALL CHANGE ORDERS, RFI RESPONSES, CLARIFICATIONS, AND OTHER SUPPLEMENTAL INSTRUCTIONS SHALL BE MARKED ON THE DOCUMENTS. RECORD DOCUMENTS THAT MERELY REFERENCE THE EXISTENCE OF THE ABOVE ITEMS ARE NOT ACCEPTABLE. RECORD CHANGES DAILY AND KEEP THE MARKED DRAWINGS AVAILABLE FOR THE ARCHITECT/ENGINEER'S EXAMINATION AT ANY NORMAL WORK TIME.

UPON COMPLETING THE JOB AND BEFORE FINAL PAYMENT IS MADE, PROVIDE REPRODUCIBLE DRAWINGS COMPLETED IN AUTOCAD TO THE ARCHITECT/ENGINEER.

### CLEANING THOROUGH

MANUAL.

THOROUGHLY CLEAN ALL EQUIPMENT AND SYSTEMS PRIOR TO THE OWNER'S FINAL ACCEPTANCE OF THE PROJECT. CLEAN ALL FOREIGN PAINT, GREASE, OIL, DIRT, LABELS, STICKERS, ETC. FROM ALL EQUIPMENT. REMOVE ALL RUBBISH, DEBRIS, ETC., ACCUMULATED DURING CONSTRUCTION FROM THE PREMISES.

# 26 05 03 THROUGH PENETRATION FIRESTOPPING

# QUALITY ASSURANCI

MANUFACTURER: COMPANY SPECIALIZING IN MANUFACTURING PRODUCTS SPECIFIED IN THIS SECTION.

INSTALLER: INDIVIDUALS PERFORMING WORK SHALL BE CERTIFIED BY THE MANUFACTURER OF THE SYSTEM SELECTED FOR INSTALLATION.

# PERFORMANCE REQUIREMENTS

THROUGH-PENETRATION FIRESTOP SYSTEMS WITH RATINGS DETERMINED PER UL 1479.

PROVIDE AT FIRE-RESISTANCE-RATED WALLS INCLUDING FIRE PARTITIONS, FIRE BARRIERS, AND SMOKE BARRIERS.

PROVIDE AT FIRE-RESISTANCE-RATED HORIZONTAL ASSEMBLIES INCLUDING FLOORS, FLOOR/CEILING ASSEMBLIES, AND CEILING MEMBRANES OF ROOF/CEILING ASSEMBLIES.

FOR FIRESTOP SYSTEMS EXPOSED TO LIGHT, TRAFFIC, MOISTURE, OR PHYSICAL DAMAGE, PROVIDE PRODUCTS THAT, AFTER CURING, DO NOT DETERIORATE WHEN EXPOSED TO THESE CONDITIONS BOTH DURING AND AFTER CONSTRUCTION.

FOR FIRESTOP SYSTEMS EXPOSED TO VIEW, PROVIDE PRODUCTS WITH FLAME-SPREAD AND SMOKE-DEVELOPED INDEXES OF LESS THAN 25 AND 450, AS DETERMINED PER ASTM E 84.

FOR FIRESTOP SYSTEMS IN AIR PLENUMS, PROVIDE PRODUCTS WITH FLAME-SPREAD AND SMOKE-DEVELOPED INDEXES OF LESS THAN 25 AND 50, AS DETERMINED PER ASTM E 84.

### WARRANTY

WARRANTY SHALL COVER REPAIR OR REPLACEMENT OF FIRESTOP SYSTEMS WHICH FAIL IN JOINT ADHESION, COHESION, ABRASION RESISTANCE, WEATHER RESISTANCE, EXTRUSION RESISTANCE, MIGRATION RESISTANCE, STAIN RESISTANCE, GENERAL DURABILITY, OR APPEAR TO DETERIORATE IN ANY MANNER NOT CLEARLY SPECIFIED BY THE MANUFACTURER AS AN INHERENT QUALITY OF THE MATERIAL.

### APPROVED MANUFACTURERS

3M, HILTI, RECTORSEAL METACAULK, TREMCO, JOHNS-MANVILLE, STI, SPEC SEAL, AD, LEGRAND FLAMESTOPPER.

### PRODUCTS

ALL FIRESTOPPING MATERIALS SHALL BE FREE OF ASBESTOS, LEAD, PCB'S, AND OTHER MATERIALS THAT WOULD REQUIRE HAZARDOUS WASTE REMOVAL.

FIRESTOPPING SHALL BE FLEXIBLE TO ALLOW FOR NORMAL PENETRATING ITEM MOVEMENT DUE TO EXPANSION AND CONTRACTION.

PROVIDE FIRESTOPPING SYSTEMS CAPABLE OF SUPPORTING FLOOR LOADS WHERE SYSTEMS ARE EXPOSED TO POSSIBLE FLOOR LOADING OR TRAFFIC.

PROVIDE FIRESTOPPING SYSTEMS CLASSIFIED BY UL OR LISTED BY WARNOCK HERSEY FOR PENETRATIONS THROUGH ALL FIRE RATED CONSTRUCTION.
FIRESTOPPING SYSTEMS SHALL BE SELECTED FROM THE UL OR LISTED BY WARNOCK HERSEY FIRE RESISTANCE DIRECTORY CATEGORY XHEZ BASED ON SUBSTRATE CONSTRUCTION AND PENETRATING ITEM SIZE AND MATERIAL.

IN EXISTING CONSTRUCTION, PROVIDE FIRESTOPPING OF OPENINGS PRIOR TO AND AFTER INSTALLATION OF PENETRATING ITEMS.

CLEAN EXCESS FILL MATERIALS ADJACENT TO OPENINGS AS WORK PROGRESSES BY METHODS AND WITH CLEANING MATERIALS THAT ARE APPROVED IN WRITING BY THROUGH-PENETRATION FIRESTOP SYSTEM MANUFACTURERS AND THAT DO NOT CAUSE DAMAGE.

ALL PENETRATIONS SHALL BE INSPECTED BY THE MANUFACTURER'S REPRESENTATIVE TO ENSURE PROPER INSTALLATION.

PROVIDE AND INSTALL LABELS ADJACENT TO EACH FIRESTOPPING LOCATION. LABEL SHALL BE PROVIDED BY THE FIRESTOP SYSTEM SUPPLIER AND CONTAIN THE FOLLOWING INFORMATION IN A CONTRASTING COLOR:

1. THE WORDS "WARNING - THROUGH PENETRATION FIRESTOP SYSTEM - DO NOT DISTURB. NOTIFY BUILDING MANAGEMENT OF ANY DAMAGE."

2. FIRESTOP SYSTEM SUPPLIER; UL OR LISTED BY INTERTEK / WARNOCK HERSEY SYSTEM NUMBER; DATE INSTALLED; CONTRACTOR NAME AND PHONE NUMBER; MANUFACTURER'S REPRESENTATIVE NAME, ADDRESS, AND PHONE NUMBER.

### 26 05 05 ELECTRICAL DEMOLITION FOR REMODELING

THE DRAWINGS ARE INTENDED TO INDICATE THE SCOPE OF WORK REQUIRED AND DO NOT INDICATE EVERY BOX, CONDUIT, OR WIRE THAT MUST BE REMOVED. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING A BID AND VERIFY EXISTING CONDITIONS.

WHERE WALLS, CEILINGS, STRUCTURES, ETC., ARE INDICATED AS BEING REMOVED ON GENERAL OR ELECTRICAL DRAWINGS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL ELECTRICAL EQUIPMENT, DEVICES, FIXTURES, RACEWAYS, WIRING, SYSTEMS, ETC., FROM THE REMOVED AREA.

WHERE CEILINGS, WALLS, STRUCTURES, ETC., ARE TEMPORARILY REMOVED AND REPLACED BY OTHERS, THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL, STORAGE, AND REPLACEMENT OF EQUIPMENT, DEVICES, FIXTURES, RACEWAYS, WIRING, SYSTEMS, ETC.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISCONNECTING EQUIPMENT REMOVED BY OTHER TRADES AND REMOVING ALL ASSOCIATED STARTERS, CONTROLLERS, RACEWAYS, WIRING, ETC.

VERIFY THAT ABANDONED WIRING AND EQUIPMENT SERVE ONLY ABANDONED EQUIPMENT OR FACILITIES. EXTEND CONDUIT AND WIRE TO FACILITIES AND

EQUIPMENT THAT WILL REMAIN IN OPERATION FOLLOWING DEMOLITION. EXTENSION OF CONDUIT AND WIRE TO EQUIPMENT SHALL BE COMPATIBLE WITH THE

SURROUNDING AREA. EXTENDED CONDUIT AND CONDUCTORS SHALL MATCH EXISTING SIZE AND MATERIAL.

COORDINATE SCOPE OF WORK WITH ALL OTHER CONTRACTORS AND THE OWNER AT THE PROJECT SITE. SCHEDULE REMOVAL OF EQUIPMENT AND

ELECTRICAL SERVICE TO AVOID CONFLICTS.

BID SUBMITTAL SHALL MEAN THE CONTRACTOR HAS VISITED THE PROJECT SITE AND HAS VERIFIED EXISTING CONDITIONS AND SCOPE OF WORK.

### DDEDADATION

PREPARATION

COORDINATE ALL OUTAGES WITH OWNER. COORDINATE UTILITY SERVICE OUTAGES WITH UTILITY COMPANY.

PROVIDE TEMPORARY WIRING AND CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. WHEN WORK MUST BE PERFORMED ON ENERGIZED EQUIPMENT OR CIRCUITS, USE PERSONNEL EXPERIENCED IN SUCH OPERATIONS. ASSUME ALL EQUIPMENT AND SYSTEMS MUST REMAIN OPERATIONAL UNLESS SPECIFICALLY NOTED OTHERWISE ON DRAWINGS.

MAINTAIN EXISTING ELECTRICAL SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR SERVICE. MAKE TEMPORARY CONNECTIONS TO MAINTAIN SERVICE IN AREAS ADJACENT TO WORK AREA. SERVICE CHANGEOVER SHALL BE COMPLETED ON AN OVERTIME BASIS.

MAINTAIN EXISTING FIRE ALARM SYSTEM IN SERVICE UNTIL NEW SYSTEM IS ACCEPTED. MAKE TEMPORARY CONNECTIONS TO MAINTAIN SERVICE IN AREAS ADJACENT TO WORK AREA.

REMOVE ABANDONED WIRING AND RACEWAY TO SOURCE OF SUPPLY. EXISTING CONDUIT IN GOOD CONDITION MAY BE REUSED IN PLACE BY INCLUDING AN EQUIPMENT GROUND CONDUCTOR IN REUSED CONDUIT. REUSED CONDUIT AND BOXES SHALL HAVE SUPPORTS REVISED TO MEET CURRENT CODES. RELOCATING CONDUIT SHALL NOT BE ALLOWED.

REMOVE EXPOSED ABANDONED RACEWAY, INCLUDING ABANDONED RACEWAY ABOVE ACCESSIBLE CEILING FINISHES. CUT EMBEDDED RACEWAY FLUSH WITH WALLS AND FLOORS, AND PATCH SURFACES. REMOVE ALL ASSOCIATED CLAMPS, HANGERS, SUPPORTS, ETC.

DISCONNECT AND REMOVE OUTLETS AND DEVICES THAT ARE TO BE DEMOLISHED. REMOVE CONDUIT, SUPPORTS, AND CONDUCTORS BACK TO SOURCE. BACK BOX AND CONDUIT MOUNTED IN WALLS THAT ARE TO REMAIN CAN BE ABANDONED IN PLACE. PROVIDE APPROPRIATE COVER PLATE FOR ALL ABANDONED BACK BOXES PER WIRING DEVICES SPECIFICATION.

DISCONNECT AND REMOVE ABANDONED LUMINAIRES. REMOVE BRACKETS, STEMS, HANGERS, AND OTHER ACCESSORIES. BALLASTS IN LIGHT FIXTURES INSTALLED PRIOR TO 1980 SHALL BE INCINERATED IN EPA-APPROVED INCINERATOR OR DISPOSED OF IN EPA-CERTIFIED CONTAINERS AND DEPOSITED IN AN EPA LANDFILL CERTIFIED FOR PCB DISPOSAL OR RECYCLED BY PERMITTED BALLAST RECYCLER.

HID AND FLUORESCENT LAMPS DETERMINED BY THE TOXICITY CHARACTERISTIC LEACHATE PROCEDURE (TCLP) TO BE HAZARDOUS WASTE SHALL BE DISPOSED OF IN AN EPA-PERMITTED HAZARDOUS WASTE DISPOSAL FACILITY OR BY A PERMITTED LAMP RECYCLER.

REPAIR ADJACENT CONSTRUCTION AND FINISHES DAMAGED DURING DEMOLITION AND EXTENSION WORK. PATCH OPENINGS TO MATCH EXISTING SURROUNDING FINISHES. MAINTAIN ACCESS TO EXISTING ELECTRICAL INSTALLATIONS THAT REMAIN ACTIVE. MODIFY INSTALLATION OR PROVIDE JUNCTION BOXES AND ACCESS PANEL AS APPROPRIATE. EXTEND EXISTING INSTALLATIONS USING MATERIALS AND METHODS COMPATIBLE WITH EXISTING ELECTRICAL INSTALLATIONS.

FLOOR SLABS MAY CONTAIN CONDUIT SYSTEMS. THIS CONTRACTOR IS RESPONSIBLE FOR TAKING ANY MEASURES REQUIRED TO ENSURE NO CONDUITS OR OTHER SERVICES ARE DAMAGED. THIS INCLUDES X-RAY OR SIMILAR NON-DESTRUCTIVE MEANS. WHERE CONDUIT IS IN CONCRETE SLAB, CUT CONDUIT FLUSH WITH FLOOR, PULL OUT CONDUCTORS, AND PLUG CONDUIT ENDS.

THIS CONTRACTOR IS RESPONSIBLE FOR ALL COSTS INCURRED IN REPAIR, RELOCATIONS, OR REPLACEMENT OF ANY CABLES, CONDUITS, OR OTHER SERVICES IF DAMAGED WITHOUT PROPER INVESTIGATION.

# CLEAN AND REPAIR EXISTING MATERIALS AND EQUIPMENT THAT REMAIN OR ARE TO BE REUSED.

PROVIDE TYPED PANEL DIRECTORIES SHOWING REVISED CIRCUITING ARRANGEMENTS. CLEAN EXPOSED PANEL SURFACES AND CHECK TIGHTNESS OF ELECTRICAL CONNECTIONS. REPLACE DAMAGED CIRCUIT BREAKERS AND PROVIDE CLOSURE PLATES FOR VACANT POSITIONS.

EXISTING LUMINAIRES THAT ARE TO REMAIN OR BE REINSTALLED AS INDICATED ON THE DRAWINGS SHALL BE CLEANED WITH MILD DETERGENT ON ALL EXTERIOR AND INTERIOR SURFACES. REPLACE LAMPS, BALLASTS, AND BROKEN ELECTRICAL PARTS. REPLACEMENT PARTS SHALL MATCH SPECIFIED COMPONENTS FOR NEW LUMINAIRES OF SAME TYPE WHEN APPLICABLE. REINSTALL LUMINAIRE AND CONNECT TO CIRCUITING AS INDICATED ON DRAWINGS.

ELECTRICAL ITEMS REMOVED REMAIN THE PROPERTY OF THE OWNER. CONTRACTOR SHALL PLACE ITEMS RETAINED BY THE OWNER IN A LOCATION COORDINATED WITH THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF MATERIAL THE OWNER ABANDONS.

# 26 05 13 WIRE AND CABLE

FEEDERS AND BRANCH CIRCUITS 8 AWG AND LARGER SHALL BE COPPER, STRANDED, 600 VOLT INSULATION, THHN.

FEEDERS AND BRANCH CIRCUITS 10 AWG AND SMALLER: COPPER, SOLID OR STRANDED, 600 VOLT INSULATION, THHN/THWN. NOTED ON THE DRAWINGS. MINIMUM SIZE #12 AWG.

CONTROL CABLE FOR CLASS 1, CLASS 2, AND CLASS 3 CIRCUITS SHALL BE COPPER, 600 VOLT INSULATION, RATED 60°C, INDIVIDUAL CONDUCTORS TWISTED TOGETHER, SHIELDED, AND COVERED WITH PVC. MINIMUM SIZE #14 AWG.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DERATING AND SIZING CONDUCTORS AND CONDUITS TO EQUAL OR EXCEED THE AMPACITY OF NEC TABLE B.310.15(B)(2)(7), IF METHODS OR MATERIALS OTHER THAN THE BASIS OF DESIGN ARE USED.

USE # 10 AWG CONDUCTORS FOR 20 AMPERE, 120 VOLT BRANCH CIRCUIT HOME RUNS LONGER THAN 75 FEET, AND FOR 20 AMPERE, 277 VOLT BRANCH

CIRCUIT HOME RUNS LONGER THAN 200 FEET.

ALL WIRES IN OUTLET BOXES NOT CONNECTED TO FIXTURES OR OTHER DEVICES SHALL BE ROLLED UP, SPLICED IF CONTINUITY OF CIRCUIT IS REQUIRED, AND

OPEN CABLE SHALL BE SUPPORTED BY THE APPROPRIATE SIZE BRIDLE RINGS OR OTHER MEANS IF CALLED FOR ON THE DRAWINGS. WIRE AND CABLE FROM DIFFERENT SYSTEMS SHALL NOT BE INSTALLED IN THE SAME BRIDLE RINGS. BRIDLE RING SUPPORTS SHALL BE INSTALLED AT A MINIMUM OF FIVE FOOT (5') INTERVALS.

OPEN CABLE INSTALLED ABOVE SUSPENDED CEILINGS SHALL NOT REST ON THE SUSPENDED CEILING CONSTRUCTION, NOR UTILIZE THE CEILING SUPPORT SYSTEM FOR WIRE AND CABLE SUPPORT. SPLICE AND TAP ONLY IN ACCESSIBLE JUNCTION BOXES.

USE SOLDERLESS, TIN-PLATED COPPER LUGS APPLIED WITH CIRCUMFERENTIAL CRIMP FOR COPPER TERMINATIONS #8 AWG AND LARGER. USE INDENTER CRIMP #10 AWG AND SMALLER.

AC/MC CABLE SHALL BE SUPPORTED BY AN APPROVED MEANS EVERY 4.5' AND WITHIN 12" OF OUTLET BOXES, JUNCTION BOXES, CABINETS, OR FITTINGS.

TEST WIRE AND CABLE INSULATION WITH DEVICE SUCH AS A "MEGGER", USING NOT LESS THAN 500 VOLTS D.C. TEST POTENTIAL.

USE ANTIOXIDANT JOINT COMPOUND ON ALL ALUMINUM CONDUCTOR TERMINATIONS. APPLY ANTIOXIDANT JOINT COMPOUND PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE DOCUMENTATION OF THE MANUFACTURER'S RECOMMENDED LUG TORQUE VALUE FOR ALUMINUM CONDUCTORS, THE DATE THE LUGS WERE TORQUED, AND INSTALLED TORQUE READINGS.

### 26 05 33 CONDUIT AND BOXES

<u>CONDUIT</u>

ACCEPTABLE CONDUIT MANUFACTURERS: ALLIED, LTV, STEELDUCT, WHEATLAND TUBE CO, O-Z GEDNEY.

ACCEPTABLE FITTINGS MANUFACTURERS: APPLETON ELECTRIC, O-Z GEDNEY, ELECTROLINE, RACO, BRIDGEPORT, MIDWEST, REGAL, THOMAS & BETTS, CROUSE-HINDS, KILLARK

ELECTRICAL METALLIC TUBING (EMT), MINIMUM 3/4" AND 1" FOR LOW VOLTAGE RACEWAYS, SHALL BE USED IN FINISHED SPACES FOR ALL BRANCH CIRCUITS AND TELECOMMUNICATIONS SYSTEMS.

INTERMEDIATE METALLIC CONDUIT (IMC), MINIMUM 3/4", SHALL BE USED FOR EXPOSED MECHANICAL AND PUMP FEEDERS, AND ELECTRICAL DISTRIBUTION FOLIPMENT

RIGID METALLIC CONDUIT (RMC) SHALL BE USED IN WET OR DAMP LOCATIONS,

FLEXIBLE METALLIC CONDUIT (FMC) SHALL BE USED FOR CONNECTIONS TO MOTORS AND LIGHT FIXTURES. LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT (LFMC) WITH WATERTIGHT FITTINGS SHALL BE USED IN EXTERIOR OR WET/DAMP LOCATIONS. LENGTH OF CONDUIT SHALL NOT EXCEED 6'.

EMT AND IMC CONDUIT FITTINGS SHALL BE COMPRESSION TYPE.

CONDUIT AND CONDUCTOR SIZING SHALL BE COORDINATED TO LIMIT CONDUCTOR FILL TO LESS THAN 40%, MAINTAIN CONDUCTOR AMPERE CAPACITY AS REQUIRED BY THE NATIONAL ELECTRICAL CODE.

CONDUIT SHALL NOT CONTAIN MORE FOUR (4) QUARTER BENDS (360°) BETWEEN PULL BOX POINTS. TELECOMMUNICATIONS CONDUITS SHALL HAVE NO MORE THAN TWO (2) 90° BENDS BETWEEN PULL BOX POINTS AND CONTAIN NO CONTINUOUS SECTIONS LONGER THAN 100 FEET.

ALL CONDUITS THROUGH WALLS SHALL BE GROUTED OR SEALED INTO OPENINGS. WHERE CONDUIT PENETRATES FIREWALLS AND FLOORS, SEAL WITH A ULLISTED SEALANT. SEAL INTERIOR OF CONDUIT AT EXTERIOR ENTRIES.

PROVIDE A POLYPROPYLENE PULL CORD WITH 2000 LBS. TENSILE STRENGTH IN EACH EMPTY CONDUIT.

EXPOSED CONDUIT ON EXTERIOR WALLS OR ABOVE ROOF WILL NOT BE ALLOWED

# BOXES OUTLET BOXES FOR LUMINAIRES TO BE MINIMUM 1-1/2" DEEP.

LIGHT CONTROL SWITCHES, DIMMERS AND OCCUPANCY SENSOR BOXES SHALL BE 4 INCHES SQUARE BY 2-1/8 INCHES DEEP

MULTIPLE GANG SWITCH OUTLETS SHALL CONSIST OF THE REQUIRED NUMBER OF GANG BOXES APPROPRIATE TO THE QUANTITY OF SWITCHES COMPRISING THE GANG. PROVIDE PLASTER RINGS AND COVERS AS NEEDED.

RECEPTACLE OUTLET BOXES SHALL BE 4 INCHES SQUARE WITH RAISED COVER TO FIT FLUSH WITH FINISHED WALL LINE.

PROVIDE FIRE-RATED MOLDABLE PADS.

GALVANIZED STEEL BOXES MAY BE USED IN CONCEALED OR EXPOSED INTERIOR LOCATIONS, ABOVE CEILINGS, AND MIN RECESSED STUDDED PARTITIONS.

CAST BOXES SHALL BE USED IN EXTERIOR LOCATIONS, HAZARDOUS LOCATIONS, WET LOCATIONS, CONCRETE SLAB ON GRADE.

[ECONN]: ELECTRICAL CONNECTION TO EQUIPMENT AND MOTORS, SIZED PER NEC.

[JB]: PULL AND JUNCTION BOXES, GALVANIZED STEEL, SIZED PER NEC CBC.

LABEL WITH BLACK LETTERS.

26 05 53 ELECTRICAL IDENTIFICATION

COLORED ADHESIVE MARKING TAPE FOR BANDING RACEWAYS, WIRES, AND CABLES: 3 MILS THICK BY 2" WIDTH.

PRETENSIONED FLEXIBLE WRAPAROUND COLORED PLASTIC SLEEVES FOR CABLE IDENTIFICATION.

WIRE/CABLE DESIGNATION TAPE MARKERS: VINYL OR VINYL-CLOTH, SELF-ADHESIVE, WRAPAROUND, WITH PREPRINTED NUMBERS AND LETTER.

CABLE TIES: NYLON, 0.18" WIDTH, 50-LB MINIMUM TENSILE STRENGTH.

ALUMINUM, WRAPAROUND MARKER BANDS: 1" WIDTH, 0.014 INCH THICK ALUMINUM BANDS WITH STAMPED OR EMBOSSED LEGEND, AND FITTED WITH SLOTS OR EARS FOR PERMANENTLY SECURING AROUND WIRE OR CABLE JACKET OR AROUND GROUPS OF CONDUCTORS.

ENGRAVED, PLASTIC-LAMINATED LABELS, SIGNS AND INSTRUCTION PLATES: BLACK LETTERS ON WHITE FACE FOR NORMAL POWER.

SAFETY SIGNS: COMPLY WITH 29 CFR, CHAPTER XVII, PART 1910.145.

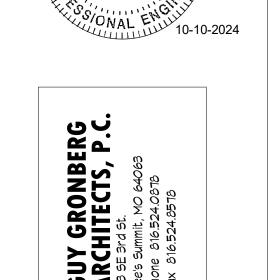
JUNCTION, PULL AND CONNECTION BOXES: PERMANENT MARKER.

APPLY DESIGNATION LABELS OF ENGRAVED PLASTIC LAMINATE FOR PUSHBUTTONS, PILOT LIGHTS, ALARM/SIGNAL COMPONENTS, AND SIMILAR ITEMS, EXCEPT WHERE LABELING IS SPECIFIED ELSEWHERE.

COVER PLATES FOR RECEPTACLES: INDICATE SOURCE AND CIRCUIT NUMBER SERVING THE DEVICE: 3/8-INCH KROY TAPE OR BROTHER SELF-LAMINATING VINYL

CONDUIT IDENTIFICATION: PERMANENT MARKER AT 20 FOOT INTERVALS TO IDENTIFY ALL CONDUITS EXPOSED OR LOCATED ABOVE ACCESSIBLE CEILINGS.

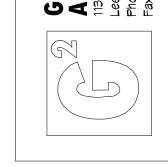
PAINT JUNCTION BOX COVERS AS FOLLOWS: FIRE ALARM: RED.



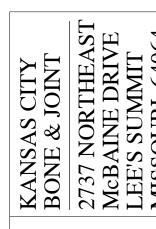
OF M/S

BRUCE ELDON 2

**CONSTRUCTION**As Noted on Plans Review

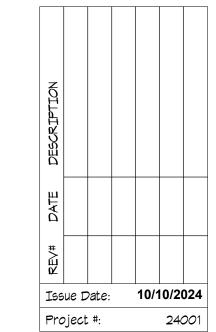








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26 27 26 WIRING DEVICES

SUBMIT SHOP DRAWING PRODUCT DATA INCLUDING ALL DEVICES AND ACCESSORIES.

ALL SWITCH, RECEPTACLE, OUTLET, AND COVERPLATE COLORS SHALL BE WHITE, VERIFIED WITH ARCHITECT, UNLESS INDICATED OTHERWISE.

ALL SWITCHES, RECEPTACLES, AND OUTLET FACEPLATES SHALL BE COMPLETE WITH THERMOPLASTIC COVERPLATES IN FINISHED SPACES WHERE WALLS ARE FINISHED. PROVIDE #302 STAINLESS STEEL COVERPLATES IN UNFINISHED SPACES FOR FLUSH BOXES, AND GALVANIZED STEEL COVERPLATES IN UNFINISHED SPACES FOR SURFACE MOUNTED BOXES.

WHERE SEVERAL DEVICES ARE GANGED TOGETHER, THE COVERPLATE SHALL BE OF THE GANGED STYLE FOR THE NUMBER OF DEVICES USED.

MODULAR CONNECTORS: CONTRACTOR OPTION TO PROVIDE EQUIVALENT MODULAR CONNECTOR-TYPE DEVICES (HUBBELL SNAP CONNECT, PASS & SEYMOUR PLUG TAIL, LEVITON LEV-LOCK, COPPER ARROWLINK) WHERE APPLICABLE.

INSTALL RECEPTACLES VERTICALLY WITH GROUND SLOT UP.

INSTALL DECORATIVE PLATES ON SWITCH, RECEPTACLE, AND BLANK OUTLETS IN FINISHED AREAS, USING JUMBO SIZE PLATES FOR OUTLETS INSTALLED IN MASONRY WALLS. INSTALL GALVANIZED STEEL PLATES ON OUTLET BOXES AND JUNCTION BOXES IN UNFINISHED AREAS, ABOVE ACCESSIBLE CEILINGS, AND ON SURFACE MOUNTED OUTLETS.

INSTALL NAMEPLATE IDENTIFICATION TO RECEPTACLE COVER PLATES INDICATED. IDENTIFICATION SHALL IDENTIFY PANEL NAME AND CIRCUIT NUMBER.

TEST RECEPTACLES FOR PROPER POLARITY, GROUND CONTINUITY, AND COMPLIANCE WITH REQUIREMENTS.

REFER TO ELECTRICAL SYMBOLS LIST FOR DEVICE TYPE.

DEVICES THAT ARE SHADED ON THE DRAWINGS SHALL BE RED.

[REC-DUP]: NEMA 5-20R DUPLEX RECEPTACLE: HUBBELL 5352, LEVITON 5362-S, PASS & SEYMOUR 5362, COOPER 5362.

26 28 16 DISCONNECT SWITCHES

SUBMIT SHOP DRAWINGS INCLUDING PRODUCT DATA, DIMENSIONS, WEIGHTS, PERFORMANCE, RATINGS, ENCLOSURE TYPE, CURRENT, VOLTAGE, AND SHORT-

REFER TO DISCONNECT SCHEDULE ON DRAWINGS FOR ADDITIONAL INFORMATION.

MOLDED CASE CIRCUIT BREAKERS

ACCEPTABLE MANUFACTURERS: SQUARE D, EATON, ABB, SIEMENS

[CB-#]: MOLDED CASE CIRCUIT BREAKER, INTERRUPTING CAPACITY TO MEET AVAILABLE FAULT CURRENTS.

THERMAL MAGNETIC CIRCUIT BREAKERS SHALL HAVE INVERSE TIME-CURRENT ELEMENT FOR LOW-LEVEL OVERLOADS AND INSTANTANEOUS MAGNETIC TRIP ELEMENT FOR SHORT CIRCUITS. PROVIDE ADJUSTABLE MAGNETIC TRIP SETTING FOR CIRCUIT-BREAKER FRAME SIZES 250 A AND LARGER.

ADJUSTABLE INSTANTANEOUS TRIP CIRCUIT BREAKERS: MAGNETIC TRIP ELEMENT WITH FRONT-MOUNTED, FIELD-ADJUSTABLE TRIP SETTINGS.

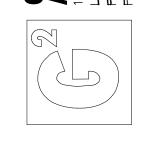
ELECTRONIC TRIP UNIT CIRCUIT BREAKERS: RMS SENSING; FIELD-REPLACEABLE RATING PLUG; WITH THE FOLLOWING FIELD-ADJUSTABLE SETTINGS: INSTANTANEOUS TRIP, LONG- AND SHORT-TIME PICKUP LEVELS, LONG- AND SHORT-TIME ADJUSTMENTS, GROUND-FAULT PICKUP LEVEL, TIME DELAY, AND 12T RESPONSES.

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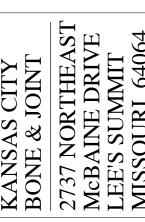
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CONSTRUCTION

GUY GRONBERG ARCHITECTS, P.C.

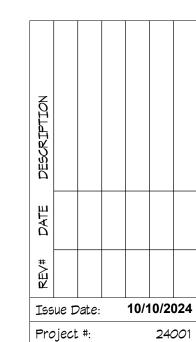












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