

06 VCT BASE FINISH

1" = 80'-0"

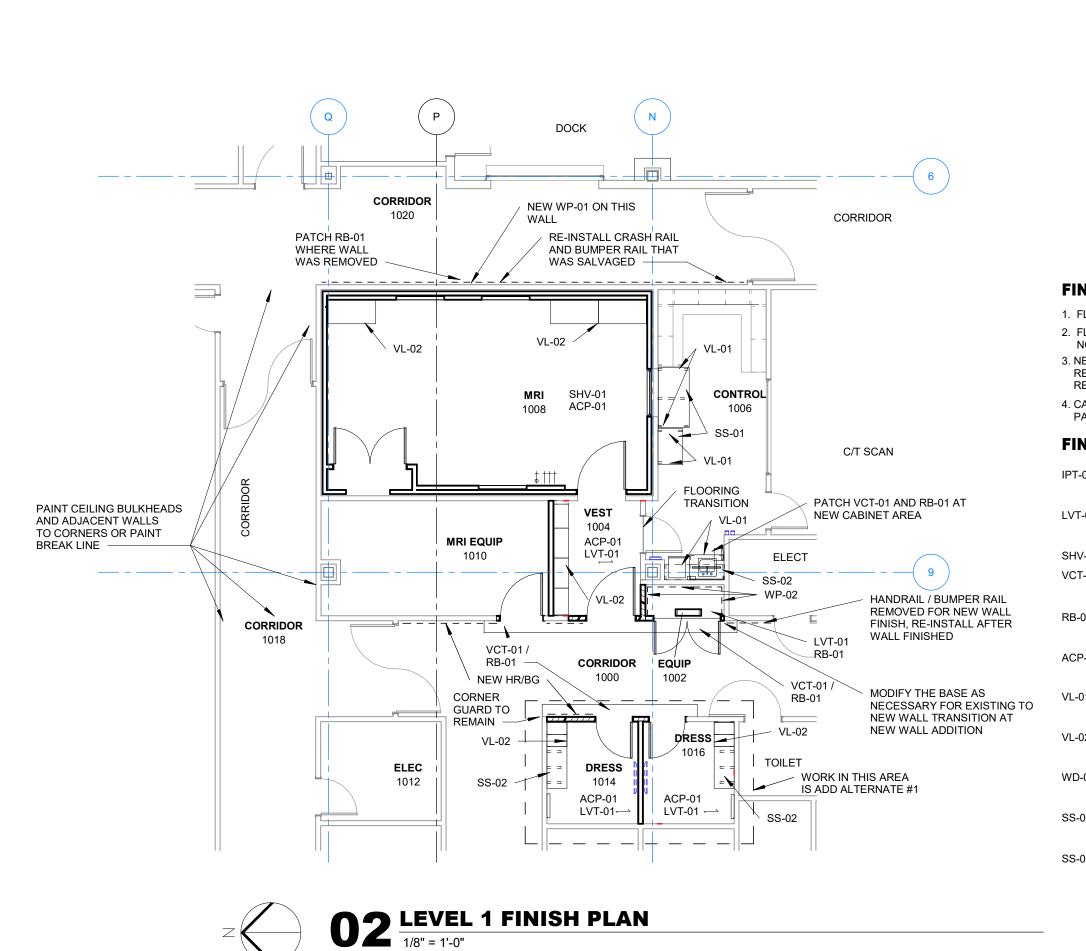


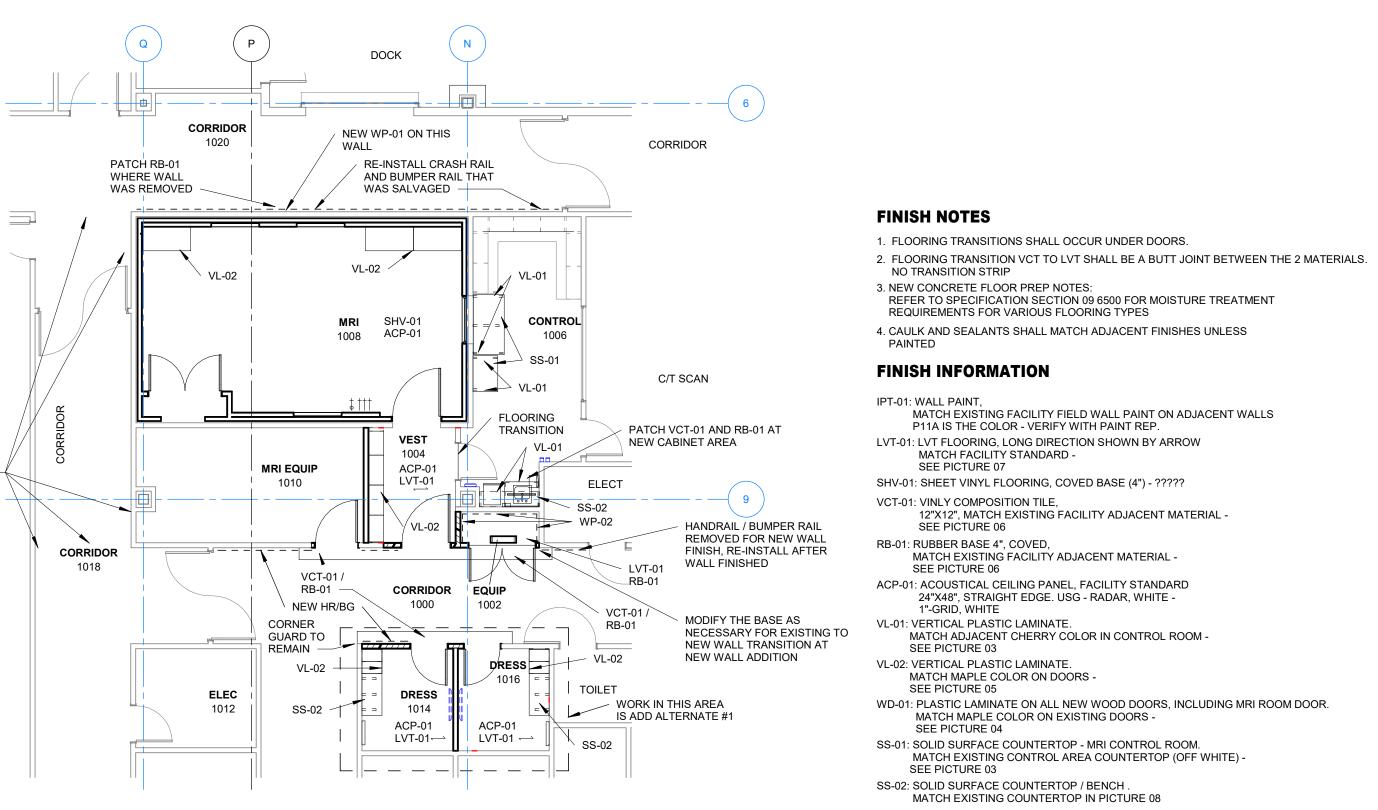
07 FLOORING LVT FINISH

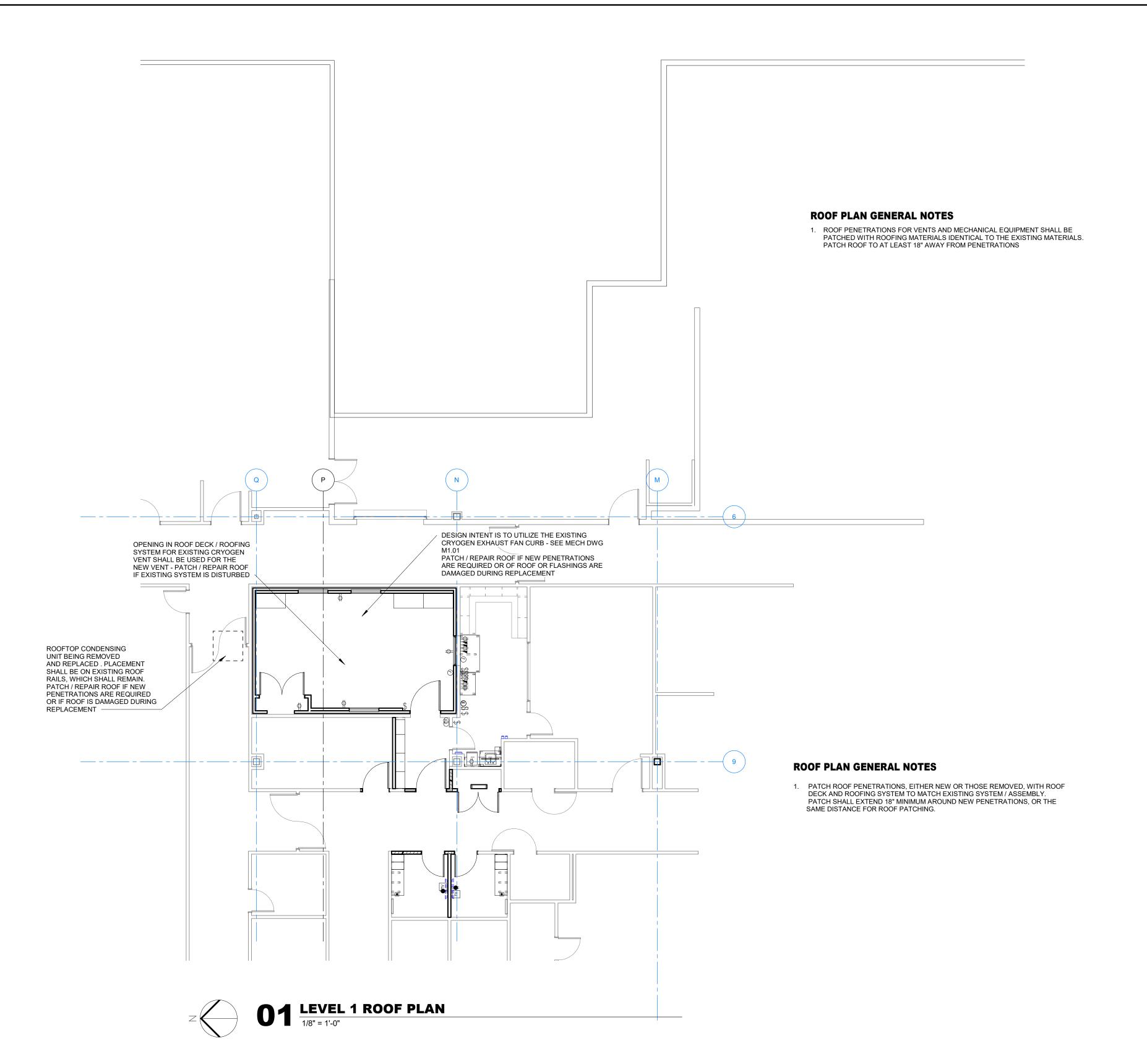
1" = 80'-0"













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VBFA INC.

MURRAY, UTAH

SPECTRUM ENGINEERS

SALT LAKE CITY, UTAH

90 SOUTH 400 WEST, SUITE 110 SALT LAKE CITY, UT 84101

MECHANICAL ENGINEER

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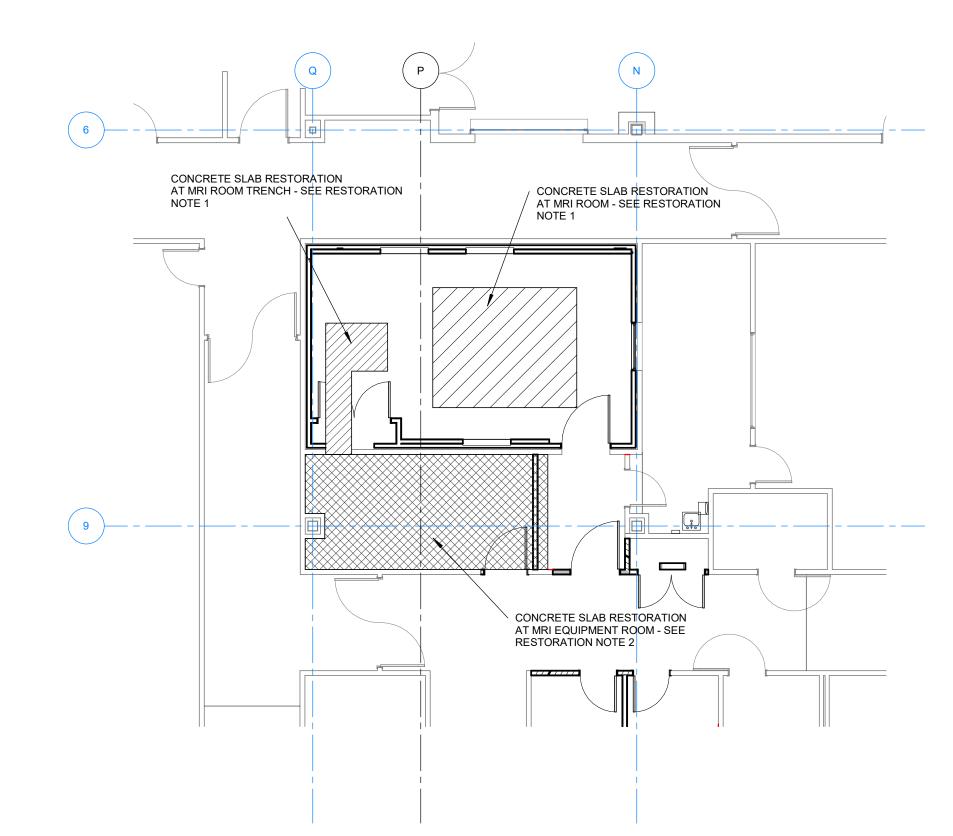
KEY PLAN

REVISIO	DN	
NO.	DESCRIPTION	

HKS PROJECT NUMBER 23798.000 03/23/20

CONSTRUCTION **DOCUMENTS** SHEET TITLE

ROOF PLAN / FINISH PLAN / SITE SHEET NO.



CONCRETE RESTORATION NOTES

- 1. CONCRETE HATCHED AREA IN MRI ROOM INDICATES APPROXIMATE AREA OF CONCRETE SLAB ON GRADE REPAIR. REPAIR SHALL BE 12" OF 4,000 PSI CONCRETE, WITH NO REINFORCING BARS JOINING THE EXISTING SLAB TO THE NEW SLAB. PROVIDE SLAB WITH FIBERMESH REINFORCING SIMILAR TO THE DESCRIPTION ON THE EXISTING SLAB DETAIL / SECTION. SLAB SHALL FINISH AT SAME RECESSED DEPTH AS REMAINDER OF EXISTING SLAB (APPROX 7/8" RECESSED)
- REFER TO PICTURES 02 AND 03 ON SHEET A2.03

 2. CONCRETE HATCHED AREA IN MRI EQUIPMENT ROOM INDICATES APPROXIMATE AREA OF CONCRETE SLAB ON GRADE REPAIR. REPAIR SHALL BE 4" OF 4,000 PSI CONCRETE, WITH #4 BARS AT 24" O.C. AT PERIMETER OF EXISTING TO NEW CONCRETE. 12" LONG, EMBED 6" INTO EXISTING SLAB.

 12" DEEP RECESS SHALL BE FILLED WITH GRAVEL TO LEVEL OF 4" SLAB REFER TO PICTURES 02 AND 03 ON SHEET A2.03
- CONCRETE RESTORATION NOTED ABOVE SHALL BE MADE TO THE CONSTRUCTION TOLERANCES NOTED IN THE MRI STRUCTURAL NOTES AND MRI PRE-INSTALLATION MANUAL

ARCHITECT

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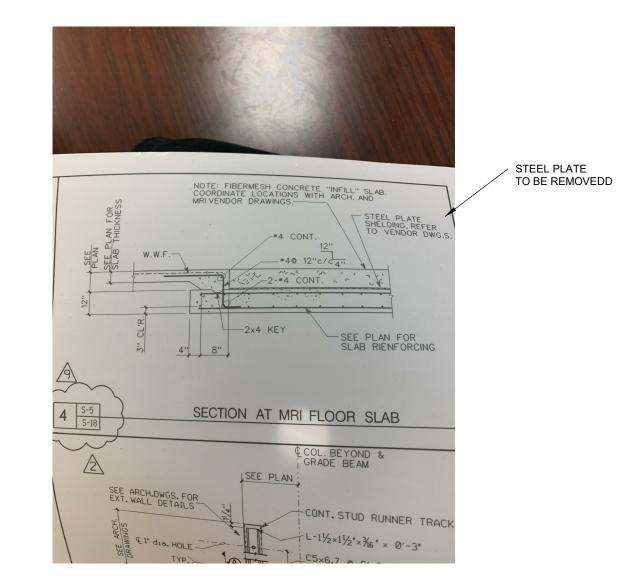
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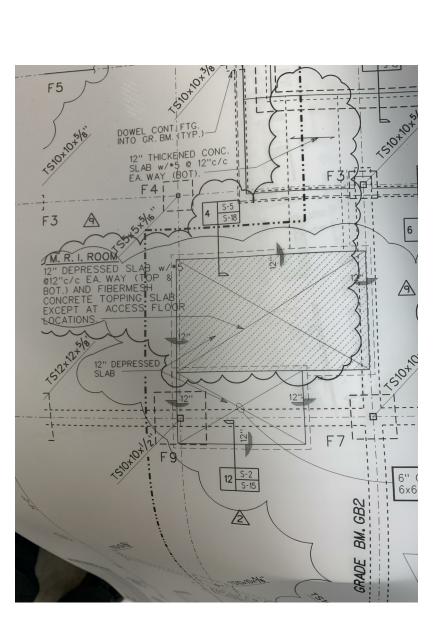
1 LEVEL 1 CONCRETE RESTORATION PLAN



SECTION AT MRI FLOOR SLAB

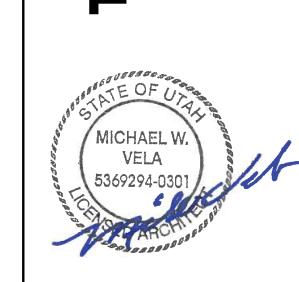
1" = 400'-0"

SECTION THRU MRI FLOOR SLAB SHOWING LOCATION OF EXISTING STEEL PLATE AND EXISTING FLOOR CONSTRUCTION



02 EXISTING FLOOR SLAB PLAN

1" = 40'-0" MRI AND MRI EQUIPMENT ROOM EXISTING SLAB PLAN



05

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KEY PLAN

REVISION

DATE

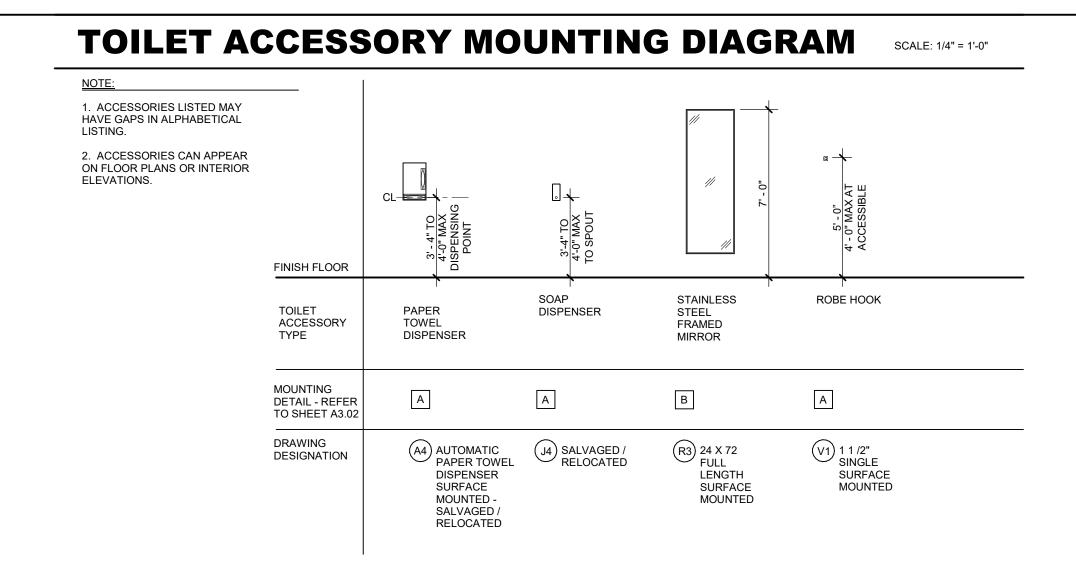
HKS PROJECT NUMBER
23798.000
DATE

03/23/20
ISSUE
CONSTRUCTION
DOCUMENTS

CONCRETE
RESTORATION
PLAN / MRI

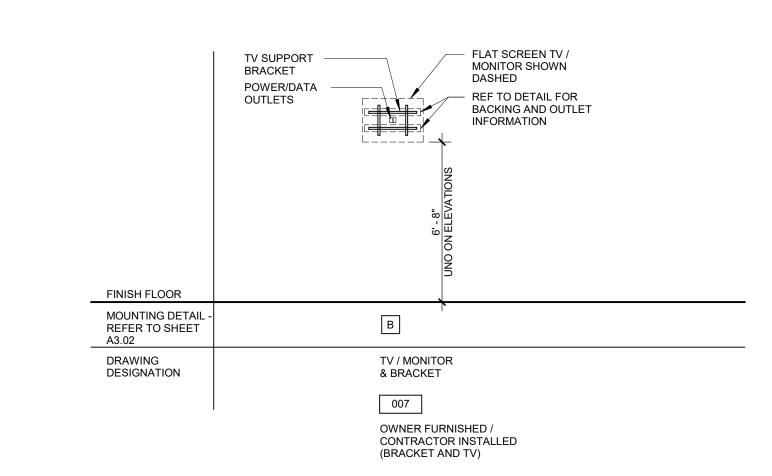
SECTION A2.03

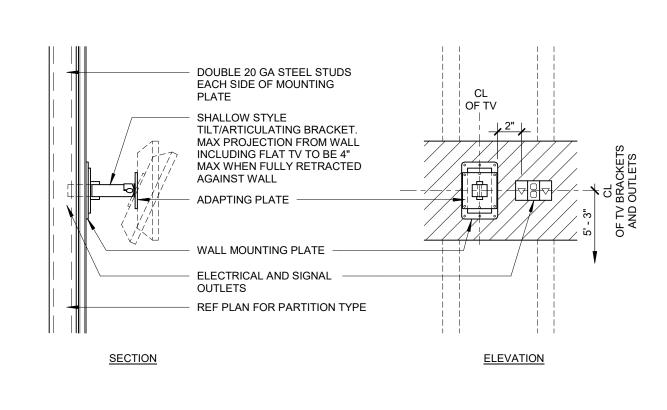
WALL AND CORNER GUARDS SCHEDULE SCALE: 3" = 1'-0" HANDRAILAS SCHEDULED HANDRAIL OR CRASH RAIL AS SCHEDULED WAINSCOT MOULDING WALL PROTECTION PANEL JOINT MOULDING MATCH EXISTING CRASH RAIL OR HANDRAIL HEIGHT - FIELD VERIFY BUMPER GUARD AS SCHEDULED - BUMPER GUARD AS SCHEDULED BASE AS SCHEDULED WP-01 WAINSCOT HEIGHT BETWEEN CRASH RAIL AND BUMPER RAIL - MATCH EXIST HEIGHT BASE AS SCHEDULED **WP-02** 48" HIGH (FROM FLOOR) FINISH FLOOR MOUNTING DETAIL - REFER TO SHEET A3.01 **BUMPER GUARD** DRAWING DESIGNATION HANDRAIL WALL PROTECTION STANDARD MOUNTING



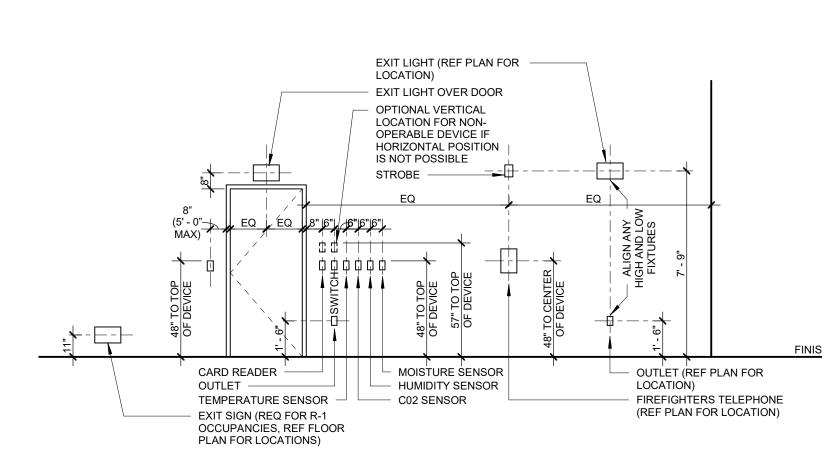
HR

EQUIPMENT MOUNTING DIAGRAM SCALE: 1/4" = 1'- 0" DRAWING DESIGNATION 009





DEVICE MOUNTING DIAGRAM



GENERAL NOTES FOR DEVICE MOUNTING

- . REFERENCE SECURITY, MEP, AND ARCHITECTURAL FOR MOUNTING LOCATIONS OF CARD READERS AND
- 3. DEVICES ABOVE COUNTERS SHALL BE MOUNTED IN THE VERTICAL POSITION. OTHER DEVICES SHALL

2. DIMENSIONS SHOWN ARE TO CENTERLINE OR TO EDGE OF FACEPLATE (REFER TO TYPICAL DEVICE

- ALSO BE VERTICAL UNLESS OTHERWISED NOTED.
- 4. WHERE THERE IS INSUFFICIENT SPACE TO MOUNT ALL DEVICES, DEVICES MAY BE LOCATED VERTICALLY
- 5. WHERE MULTIPLE SWITCHES ARE LOCATED ADJACENT TO EACH OTHER, PROVIDE A SINGLE COVER
- 6. ALL DEVICE COVER PLATES SHALL BE THE SAME COLOR. COORDINATE WITH ARCHITECT WHERE DISCREPANCIES OCCUR.

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ELECTRICAL ENGINEER SPECTRUM ENGINEERS 324 STATE STREET, SUITE 400 SALT LAKE CITY, UTAH

REGION **0 Z**

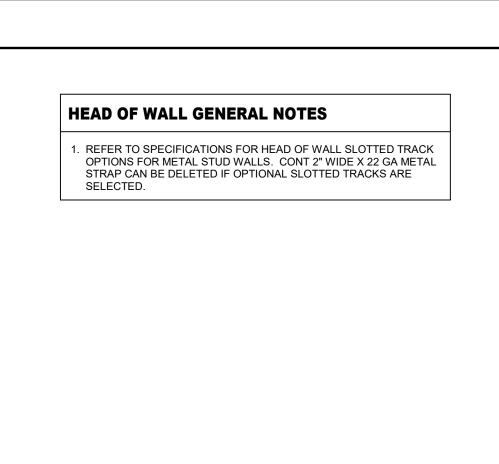


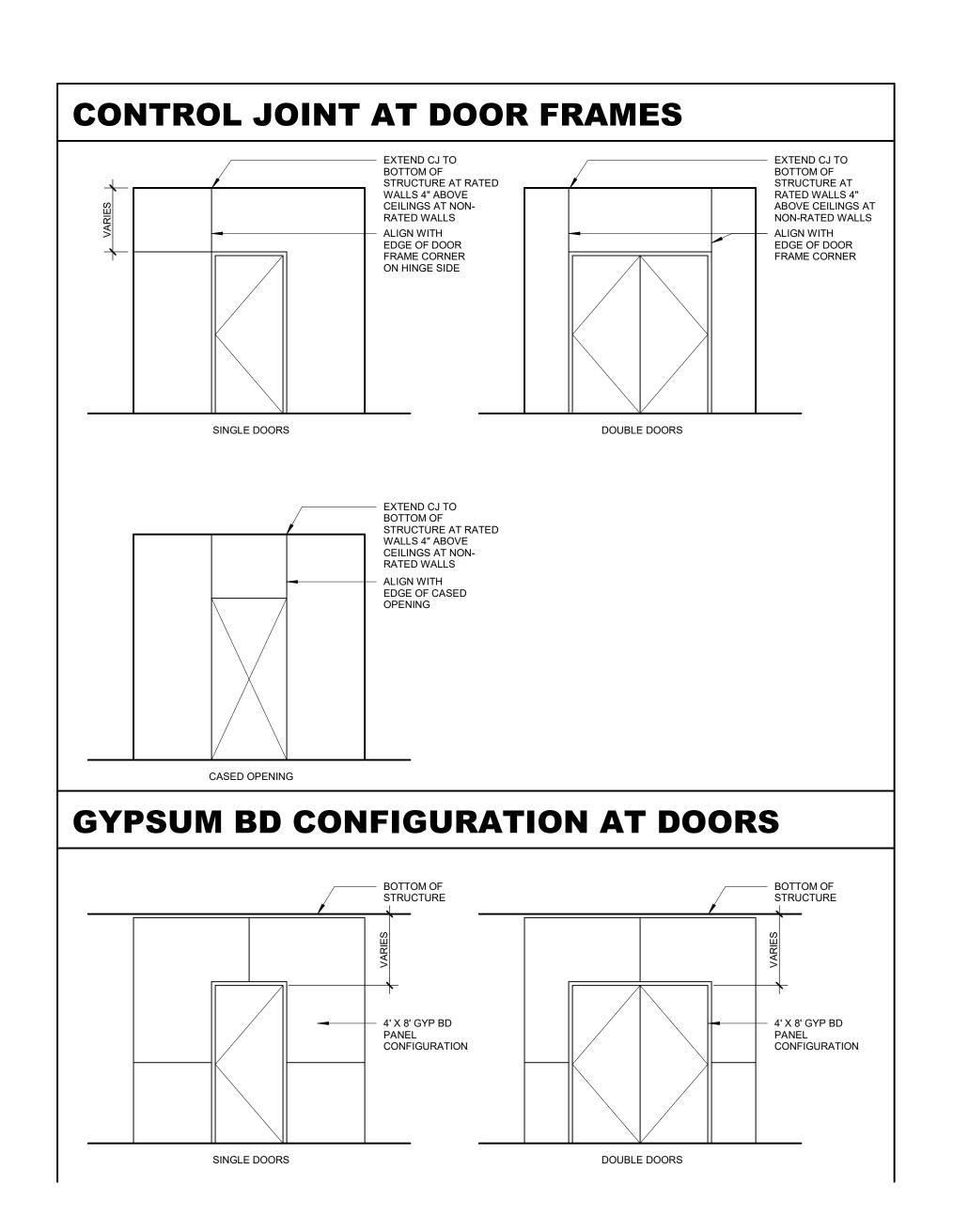
KEY PLAN

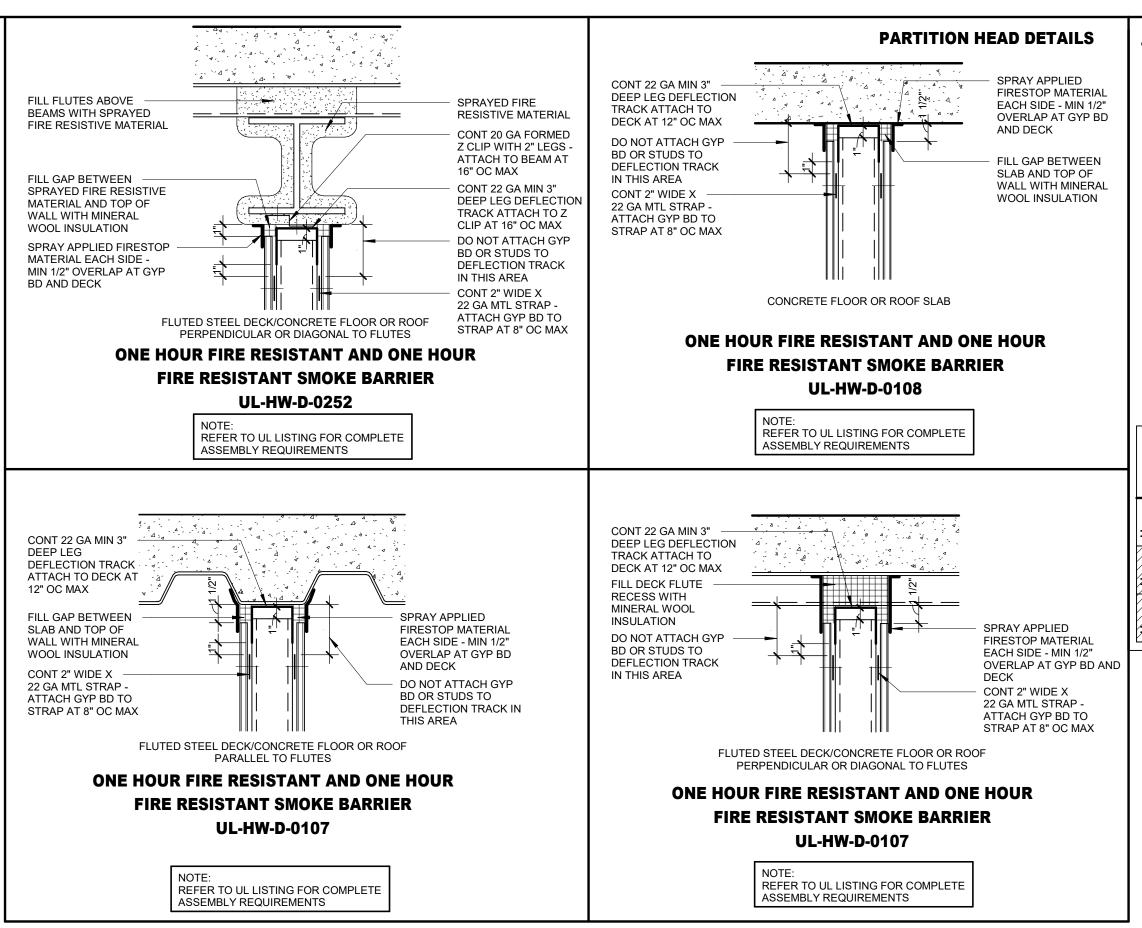
HKS PROJECT NUMBER 23798.000

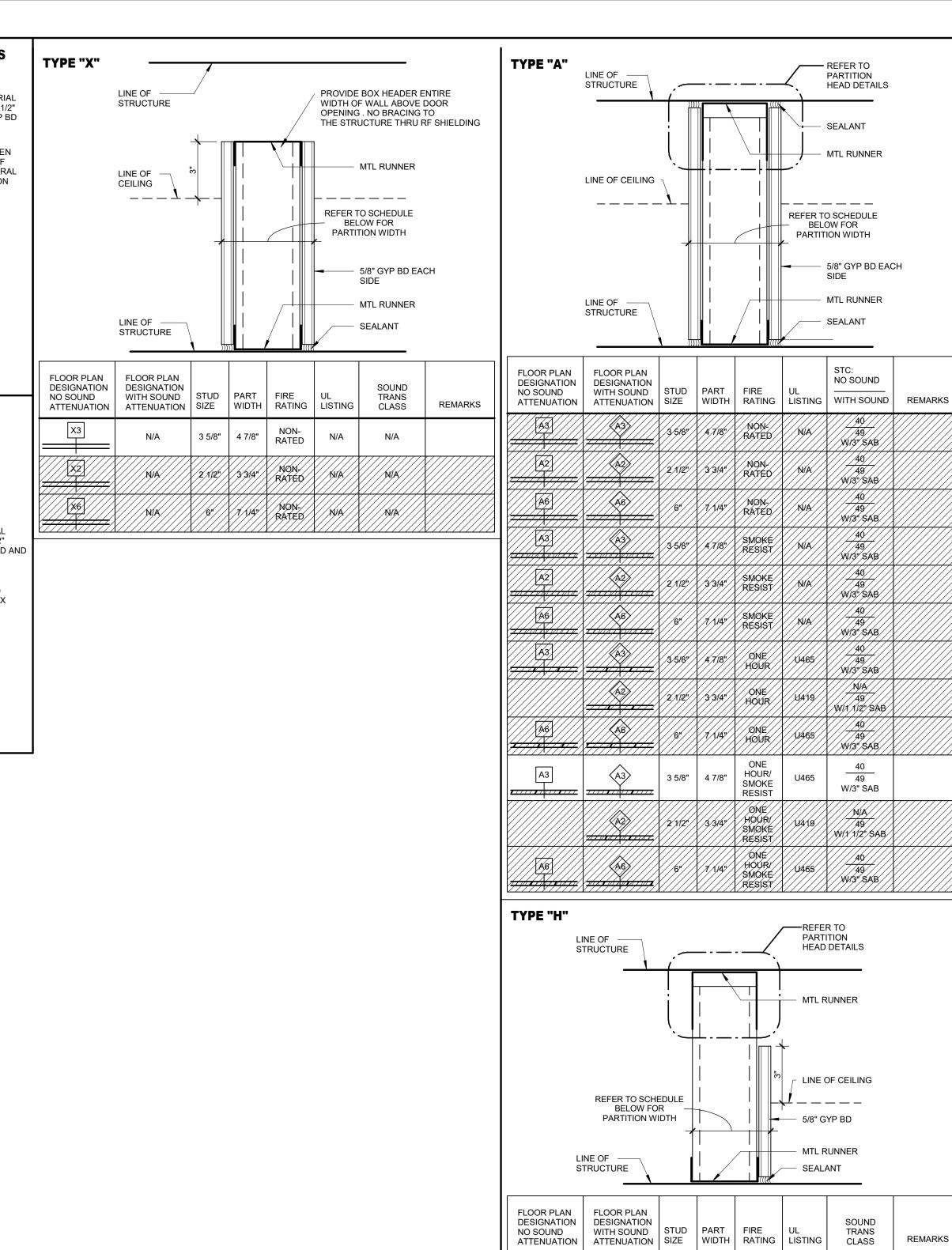
03/23/20 CONSTRUCTION **DOCUMENTS** WALL PROTECTION /

EQUIPMENT









PARTITION NOTES

1. PARTITIONS ARE DISTINGUISHED ON FLOOR PLANS BY SYMBOL DESIGNATION, GRAPHIC DESIGNATION OR A COMBINATION OF BOTH DESIGNATIONS. 2. THERE ARE TWO TYPES OF SYMBOL DESIGNATIONS, ONE FOR PARTITONS NOT REQUIRING SOUND ATTENUATION

SYMBOL DESIGNATION

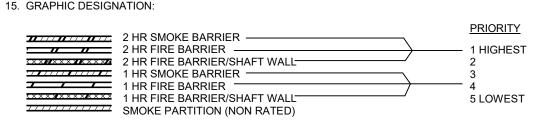
N/A

3 5/8" 4 1/4"

AND ANOTHER FOR PARTITIONS WHICH REQUIRE SOUND ATTENUATIONS. REFER TO PARTITION MATRICES FOR SOUND ATTENUATION BLANKET (SAB) MINIMUM THICKNESS FOR STC INDICATED. X# SYMBOL DESIGNATION (NO SOUND ATTENUATION)

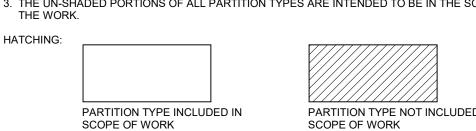
(WITH SOUND ATTENUATION) 3. THE SYMBOL DESIGNATION HAS TWO CHARACTERS, THE FIRST CHARACTER IS A LETTER INDICATING THE PARTITION TYPE. THE SECOND CHARACTER IS A NUMERIC INDICATING THE STUD OR CMU WIDTH. REFER TO LEGEN

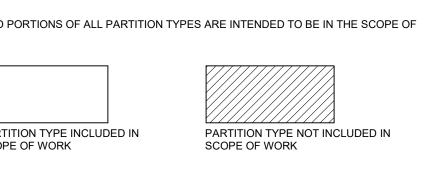
- 4. IF NO SYMBOL DESIGNATION IS PROVIDED, THE STUD SIZE WILL BE 3 5/8". 5. THE GRAPHIC DESIGNATION IS INCORPORATED FOR PARTITIONS REQUIRED TO BE SMOKE RESISTANT, FIRE RESISTANT, OR BOTH FIRE AND SMOKE RESISTANT. REFER TO NOTE 17. 6. "LINE OF STRUCTURE" INDICATED FOR EACH PARTITION IS DIAGRAMMATIC ONLY AND DOES NOT INDICATE EXACT CONSTRUCTION CONDITIONS OR GEOMETRY. 7. ALL DIMENSIONS ARE FROM FACE OF GYPSUM BOARD TO FACE OF GYPSUM BOARD. REFER TO PARTITION MATRICES FOR PARTITION WIDTH DIMENSIONS UNLESS INDICATED TO BE SHOWN ON PLAN.
- 1. FIRE RESISTANCE RATED PARTITIONS SHALL USE RATED FIRE/SMOKE FIRE STOPPING SYSTEM. 2. NON-RATED PARTITIONS AND NON-RATED SMOKE RESISTANT PARTITIONS SHALL USE ACOUSTICAL
- 9. INSULATION: HEAD CONDITIONS AT FLOOR/ROOF DECK 1. FIRE RESISTANCE RATED PARTITIONS SHALL USE MINERAL WOOL INSULATION. 2. NON-RATED PARTITIONS REQUIRING SOUND ATTENUATION SHALL USE SOUND ATTENUATION
- 10. REFER TO SPECIFICATIONS FOR MINIMUM STUD THICKNESS, MAXIMUM SPACING AND ALLOWABLE LIMITING HEIGHTS DEFLECTION CRITERIA FOR GYPSUM BOARD ASSEMBLIES. 11. FOR PARTITIONS INDICATED TO RECEIVE SOUND ATTENUATION BLANKETS (SAB), EXTEND SAB TO FULL HEIGHT OF PARTITION UNLESS OTHERWISE INDICATED. FLOOR TRACK TO BE SÉT IN A CONT BED OF
- 12. FIRE RESISTANT AND FIRE RESISTANT SMOKE BARRIER RATINGS ARE TO SURROUND ALL OPENINGS IN RATED PARTITIONS. 13. EACH PARTITION SHOWN ON THE DRAWINGS TO HAVE A FIRE AND OR SMOKE RESISTANT RATING SHALL BE
- IDENTIFIED AS SUCH WITH A LABEL ABOVE THE CEILING ON EACH SEGMENT OF THE WALL AND 20'-0" OC MAX EACH SIDE OR AS REQUIRED BY THE AHJ, SEE SPECIFICATION SECTION 09 9100. 14. REFER TO TOILET ACCESSORIES SHEET AND CASEWORK SHEET FOR MOUNTING DETAIL INFORMATION 15. GRAPHIC DESIGNATION: <u>PRIORITY</u>



NOTE:

- 1. NOT ALL PARTITION TYPES SHOWN ON THIS SHEET ARE USED ON THIS PROJECT.
- 2. THE SHADED PORTIONS OF A PARTITION TYPE ARE NOT INCLUDED IN THE SCOPE OF THE
- 3. THE UN-SHADED PORTIONS OF ALL PARTITION TYPES ARE INTENDED TO BE IN THE SCOPE OF





HKS PROJECT NUMBER 23798.000 03/23/2020 CONSTRUCTION **DOCUMENTS** PARTITION TYPES, **HEAD AND** FRAMING DETAILS

ARCHITECT

MURRAY, UTAH

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KEY PLAN

NO. DESCRIPTION

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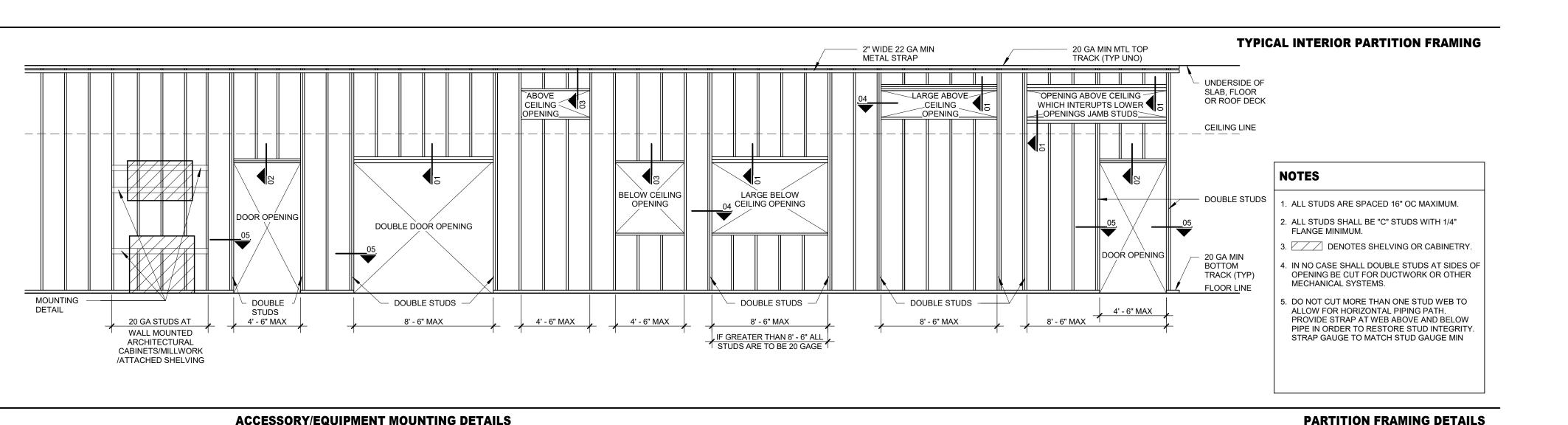
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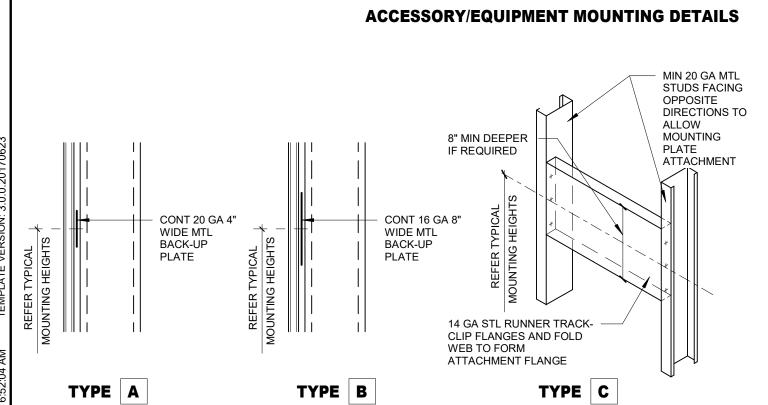
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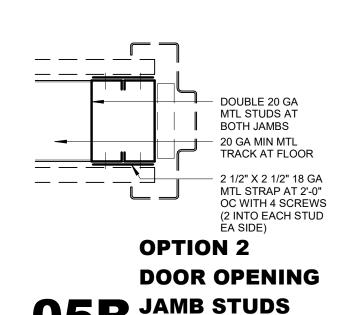
MECHANICAL ENGINEER

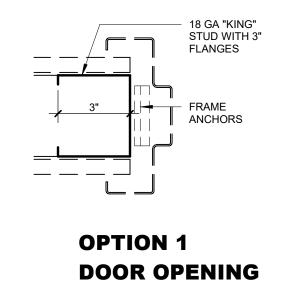
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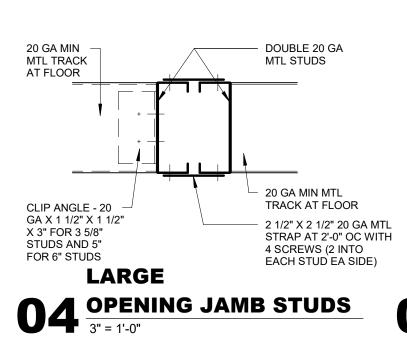
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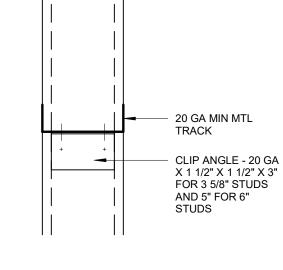


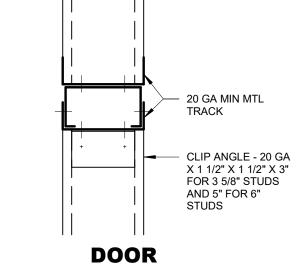


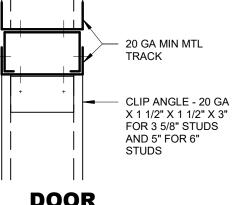














AND 5" FOR 6" STUDS EACH SIDE MTL STUDS

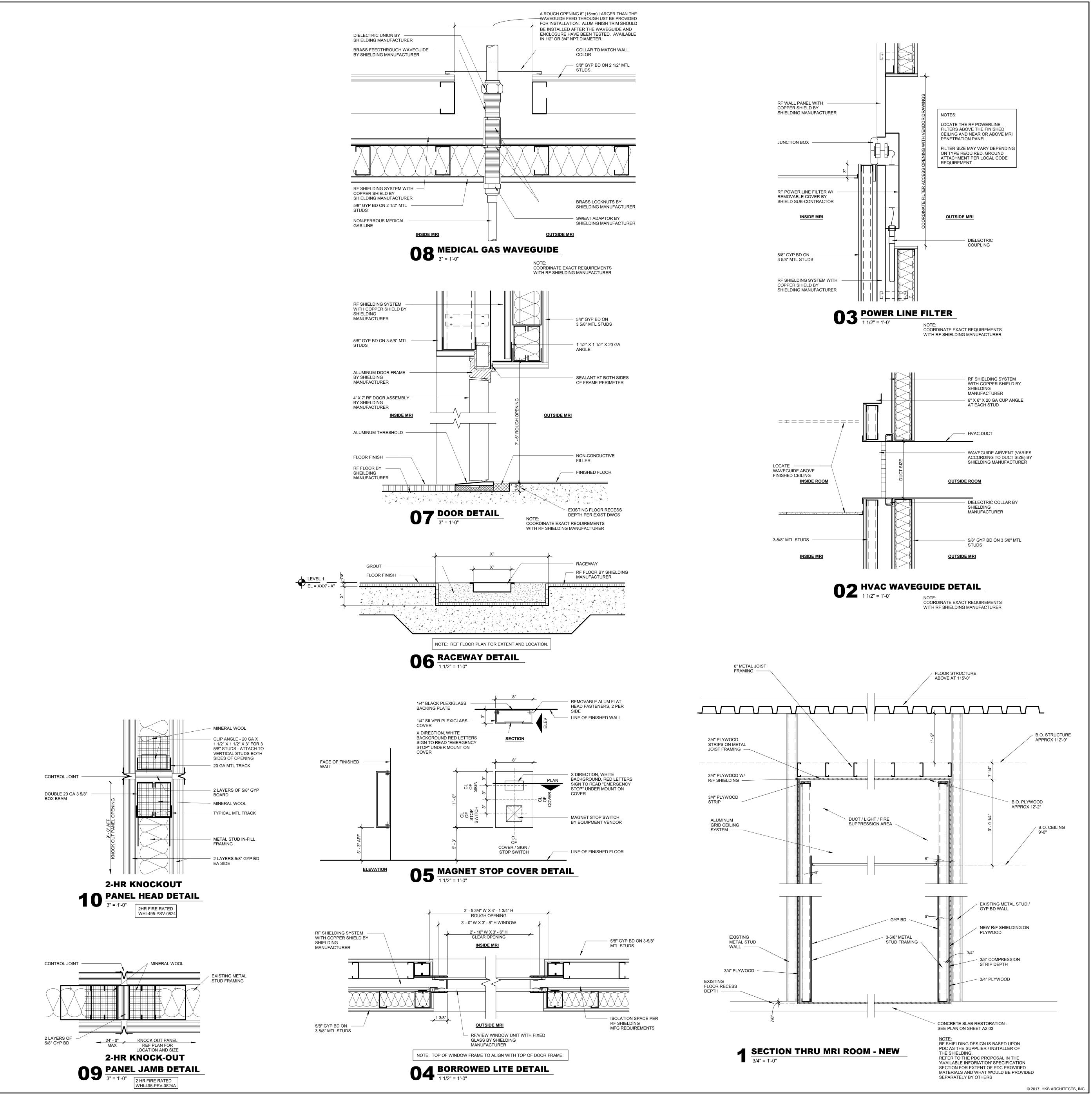
CLIP ANGLE - 20 GA X 1 1/2" X 1 1/2" X 3" 20 GA MIN MTL FOR 3 5/8" STUDS DOUBLE 20 GA 20 GA MTL TRACK CLIP ANGLE - 20 GA X 1 1/2" X 1 1/2" X 3" FOR 3 5/8" STUDS AND 5" FOR 6" STUDS EACH SIDE

DOUBLE DOOR/LARGE O1 OPENING HEADER
3" = 1'-0"

DOOR OPENING JAMB STUDS

02 OPENING HEADER
3" = 1'-0"

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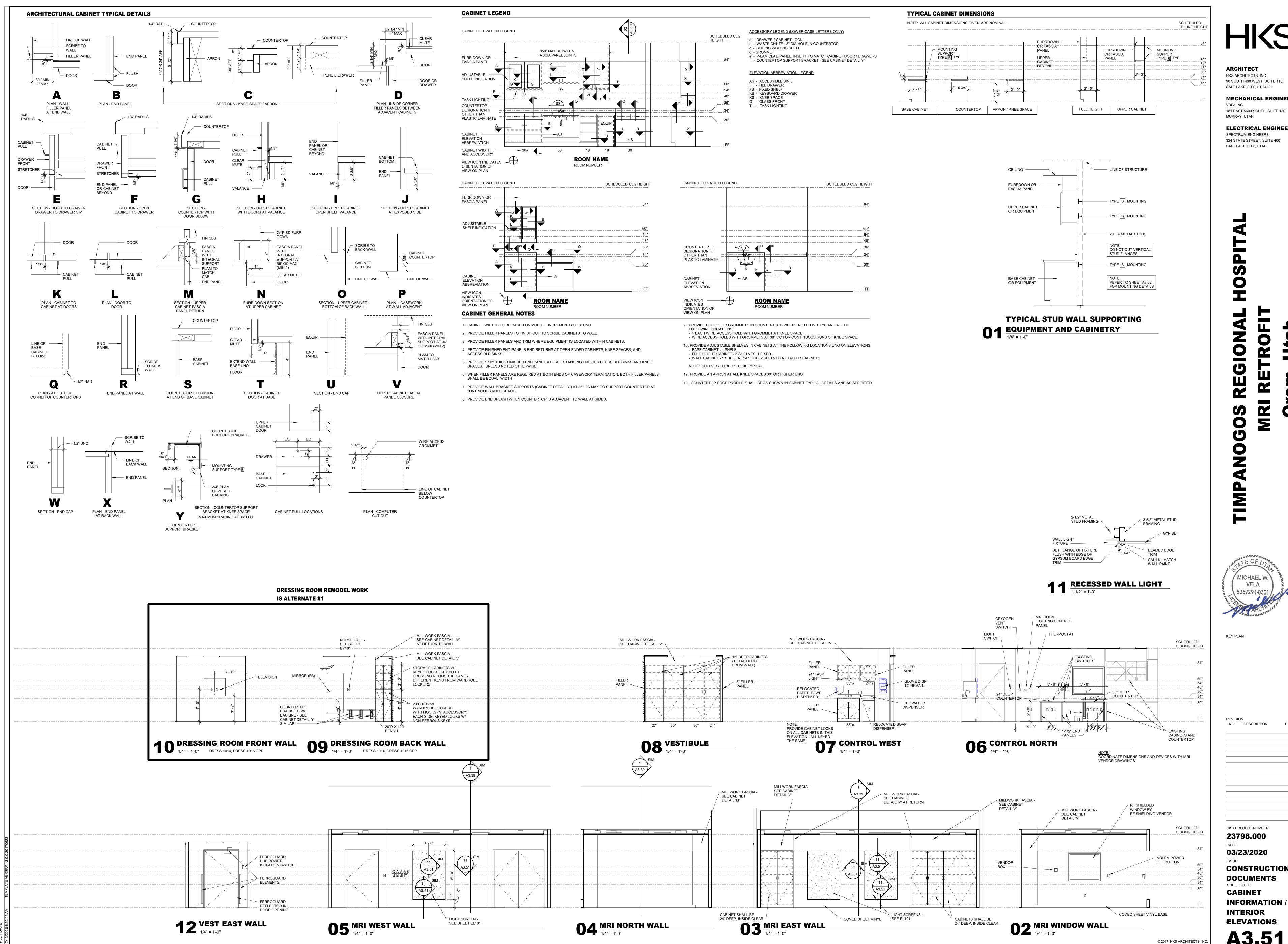


KEY PLAN

REVISION NO. DESCRIPTION

HKS PROJECT NUMBER 23798.000 03/23/2020 CONSTRUCTION **DOCUMENTS MRI SHIELDING**

SECTION / DETAILS SHEET NO.



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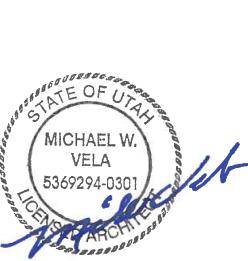
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ELECTRICAL ENGINEER SPECTRUM ENGINEERS

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KEY PLAN

NO. DESCRIPTION

HKS PROJECT NUMBER 23798.000 03/23/2020 CONSTRUCTION

DOCUMENTS CABINET INFORMATION /

INTERIOR ELEVATIONS

A3.51

LEGEND OF MECHANICAL SYMBOLS AND ABBREVIATIONS

JCTWORK/GRIL	<u>LES</u>		<u>PLUMBING</u>	
	POSITIVE PRESSURE DUCT - RISE			ARROW INDICATES DIRECTION OF FLOW IN
X	POSITIVE PRESSURE DUCT - DROP			PIPE ATC - 2 WAY VALVE
	NEGATIVE PRESSURE DUCT - RISE		<u></u>	BRANCH - BOTTOM CONNECTION
	NEGATIVE PRESSURE DUCT - DROP			BRANCH - TOP CONNECTION
	ROUND DUCT - RISE			BRANCH - SIDE CONNECTION
				RISE OR DROP
<u></u>	ROUND DUCT - DROP			
<u> </u>	UNDER FLOOR DUCT		C	RISER - DOWN (ELBOW)
12742	TURNING VANES		0	RISER - UP (ELBOW)
12X12 200	CEILING SUPPLY DIFFUSER		O VTR	VENT THRU ROOF
22X22 200	CEILING RETURN REGISTER CEILING EXHAUST REGISTER,			WATER HAMMER ARRESTOR
12X12 200	(BALANCE TO MATCH SUPPLY IF RETURN CFM IS NOT SHOWN)			CLEAN-OUT
24X10 200	SIDEWALL SUPPLY \nearrow N	OP FIGURES INDICATE NECK SIZE. BOTTOM FIGURE INDICATES CFM.	$\rightarrow \Phi \leftarrow OR \rightarrow \Box$	BALL VALVE (PIPE SIZES 2" AND SMALLER) BUTTERFLY VALVE (PIPE SIZES 2-1/2" AND LARGER)
24X10 200	SIDEWALL EXHAUST OR RETURN REGISTER		Jø.	VALVE IN RISE
12X12 200	CEILING SUPPLY DIFFUSER WITH FLEXIBLE DUCT			HOSE BIBB
12X12 200	CEILING AIR GRILLE WITH FLEXIBLE DUCT			PIPE CAP
	CEILING RETURN AIR GRILE W/ SOUND BOOT		(NAME)	FIXTURE FROM LEVEL ABOVE
	FLEXIBLE DUCT CONNECTION		F&T	STEAM TRAP, F&T=FLOAT & THERMOSTATIC
	FLEXIBLE DUCT		OR	B=BUCKET, T=THERMOSTATIC 90° ELBOW
71111117 12/8 FO	FLAT OVAL DUCT WITH NET INSIDE			45° ELBOW
	DIMENSIONS SHOWN IN INCHES. RECTANGULAR DUCT WITH NET INSIDE			
12/8	DIMENSIONS SHOWN IN INCHES. ROUND DUCT WITH NET INSIDE DIMENSION	ONS		DEMOLITION
120	SHOWN IN INCHES.		<u></u>	THERMOSTATIC MIXING VALVE
DN }	INCLINED RISE WITH RESPECT TO NOMINAL INCLINE TURNS=DEPTH OF	WITH RADIUS		
W R	R/W=1. ROUND DUCT SIMILAR TO RECTA	NGULAR	<u>SYMBOLS</u>	
\$ 12/12 \[8/8 \]	RECTANGULAR TO RECTANGULAR OR RODUCT TRANSFORMATION MAXIMUM 15° II		<u>P-1</u> /	PLUMBING FIXTURES
7 12/12 12ø	EXCEPT WHERE SHOWN OTHERWISE. RECTANGULAR TO ROUND DUCT TRANS	FORMATION	6	POINT OF CONNECTION
R	BRANCH DUCT SPLIT WITH 6" WIDTH AND R=WIDTH OF BRANCH DUCT DOWNSTRE	O MIN.	(EF)	EQUIPMENT IDENTIFICATION
7 1.5D 1.25D 7	ELBOW TURNING VANE OPTIONAL. TAP ENTRY AREA EQUALS 150% OF BRAN		(1)	KEYED NOTE IDENTIFICATION
45° D D D		VOITANLA	T)	THERMOSTAT
	HIGH EFFICIENCY FITTING		<u> </u>	
FD, ,	MANUAL VOLUME DAMPER			
	FIRE DAMPER IN DUCT, W/ ACCESS PANE	EL REQD.	<u>FIRE</u>	
FSD	COMBINATION FIRE/SMOKE DAMPER W/ A	ACCESS PANEL	©	SPRINKLER HEAD
SD SD	SMOKE DAMPER W/ ACCESS PANEL			
BDD	BACK DRAFT DAMPER			
ATC D	ATC DAMPER			
₹ D }	ACCESS PANEL IN DUCT OR PLENUM			
	HEATING OR COOLING COIL IN DUCT			
	SINGLE DUCT AIR TERMINAL BOX VARIAE			
	CONSTANT VOLUME. MIN. 1-1/2 TERMINAL SIZE STRAIGHT DUCT AT TERMINAL INLE			
	4-WAY BLOW PATTERN			
	3-WAY BLOW PATTERN			
	2-WAY BLOW PATTERN			
	2-WAY BLOW PATTERN			

<u>LINETYPES</u>

	DOMESTIC COLD WATER (DCW)
	DOMESTIC HOT WATER (DHW)
	DOMESTIC HOT WATER RETURN (DHWR)
	SEWER (BELOW GRADE)
	SEWER (ABOVE GRADE)
	VENT (SEWER)
E (NAME)	EXISTING PIPING
————(NAME)———	EXISTING PIPING TO BE REMOVED
——GCHWR——	GLYCOL CHILLED WATER RETURN
——GCHWS——	GLYCOL CHILLED WATER SUPPLY
———HPC———	HIGH PRESSURE CONDENSATE
——HPS——	HIGH PRESSURE STEAM
——HWR——	HEATING HOT WATER RETURN
HWS	HEATING HOT WATER SUPPLY
—— O2 ——	MEDICAL OXYGEN
——— MA ———	MEDICAL AIR
MV	MEDICAL VACUUM

HKS

ARCHITECT

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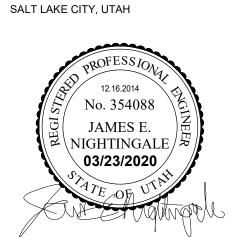
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TIMPANOGOS MRI REMODEL

KEY PLA



23798.000
DATE
03/23/2020
ISSUE
CONSTRUCTION
DOCUMENTS
SHEET TITLE
MECHANICAL
SYMBOLS AND
LEGEND

MO-00

SHEET NO.

GENERAL NOTES

1. ALL WORK SHALL BE DONE WITH WATER CONTROL IN MIND. CONTAINMENT OF WATER IS NECESSARY TO PREVENT WATER FROM DAMAGING OTHER AREAS OF THE BUILDING.

2. NEW DUCTWORK, PIPING AND EQUIPMENT SHALL BE COORDINATED WITH STRUCTURE, LIGHTS, REFLECTED CEILING PLANS, CABLE TRAY, ELECTRICAL CONDUIT, PLUMBING, MECHANICAL AND FIRE PROTECTION PIPING, ALL OTHER TRADES AND ALL OTHER EXISTING CONDITIONS.

3. THE CONTRACTOR SHALL INFORM THE DESIGNER OF ANY PROPOSED DEVIATIONS FROM THE CONTRACT DOCUMENTS.

4. NOT ALL INFORMATION IS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING INFORMATION ON ALL OTHER CONSTRUCTION DOCUMENTS INCLUDING ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS. THE CONTRACTOR WILL BE FAMILIAR WITH THE DRAWINGS, SPECIFICATIONS, AND ADDENDUMS.

5. THE WORKING DRAWINGS ARE DIAGRAMMATIC (DRAWINGS ARE NOT TO BE SCALED). BECAUSE OF THE SMALL SCALE OF THE DRAWINGS, THEY DO NOT SHOW EVERY OFFSET, BEND OR ELBOW NECESSARY FOR THE COMPLETE INSTALLATION IN THE SPACE PROVIDED. ALL LOCATIONS FOR EQUIPMENT SHALL BE CHECKED AND COORDINATED WITH THE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS.

6. SPACE ABOVE ALL CEILINGS IS EXTREMELY LIMITED. CAREFUL COORDINATION IS REQUIRED WITH ALL TRADES BEFORE ANY PIPE, DUCT, OR EQUIPMENT IS ORDERED AND/OR INSTALLED. ANY CONFLICTS AND/OR CHANGES FOUND DURING INSTALLATION THAT RESULT FROM LACK OF COORDINATION BY THE CONTRACTORS DURING THE SHOP DRAWING PROCESS ARE THE RESPONSIBILITY OF THE CONTRACTOR

7. THE DRAWINGS AND SPECIFICATION HAVE BEEN PREPARED TO SUPPLEMENT EACH OTHER AND THEY SHALL BE INTERPRETED AS AN INTEGRAL UNIT WITH THE ITEMS SHOWN ON ONE AND NOT THE OTHER BEING FURNISHED AND INSTALLED AS THOUGH SHOWN AND CALLED OUT IN BOTH.

8. ANY PART OF THIS INSTALLATION THAT FAILS, IS UNFIT, OR BECOMES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

9. THE CONTRACTOR IS RESPONSIBLE FOR ALL EQUIPMENT (INCLUDED IN THIS BID)

10. IF FOR ANY REASON THE ROUTING OF PIPE OR DUCTWORK DEVIATED FROM THAT SHOWN ON THE DRAWING THE BLDG AND MECHANICAL CONTRACTOR AND OR TIER SUBS SHALL BE RESPONSIBLE FOR ANY ADDITIONAL COST RELATED TO EXTRA HANGERS OR SEISMIC SUPPORTS.

MEDICAL GAS GENERAL NOTES

1. MEDICAL GAS PIPING IS TO BE RUN ABOVE THE CEILING, UNLESS NOTED OTHERWISE. COORDINATE PIPING ROUTING WITH ALL OTHER POSSIBLE CONFLICTS SUCH AS DUCTWORK, DIFFUSERS, OTHER PIPING, LIGHTS, CONDUIT, STRUCTURE, ETC.

2. ALL PIPE AND DUCT SIZES SHALL REMAIN THE SAME SIZE SHOWN, IN THE

4. MEDICAL GAS PIPING IS SCHEMATIC IN NATURE. FIELD VERIFY EXACT PIPE

5. NO PIPING TO RUN OVER ELECTRICAL PANELS, VFD'S OR MCC'S. PROTECT EQUIPMENT WITH A 42" DEEP ZONE IN FRONT OF PANELS, VFD'S, AND MCC'S.

6. MOUNT ALL SERVICE VALVES NEAR CEILING HEIGHT FOR ACCESSIBILITY.

3. SLEEVE PIPING THRU WALLS/FOUNDATIONS WHERE REQUIRED.

DIRECTION OF FLOW, UNTIL SHOWN OTHERWISE.

ROUTING AND COORDINATE WITH ALL OTHER TRADES.

PLUMBING GENERAL NOTES

1. UNLESS OTHERWISE NOTED, SLOPE PIPE AS FOLLOWS: WASTE BRANCHES: 1/4" PER FOOT; WASTE MAINS: 1/4" PER FOOT.

2. ALL WORK DONE SHALL BE PERFORMED WITH WATER CONTROL IN MIND. CONTAINMENT OF WATER IS NECESSARY TO PREVENT WATER FROM DAMAGING AREAS ON FLOORS BELOW.

3. PLUMBING DRAWINGS ARE SCHEMATIC IN NATURE. FIELD VERIFY EXACT PIPE ROUTING AND COORDINATE WITH ALL OTHER TRADES.

4. NO PIPING TO RUN OVER ELECTRICAL PANELS, VFD'S OR MCC'S. PROTECT EQUIPMENT WITH A 42" DEEP ZONE IN FRONT OF PANELS, VFD'S, AND MCC'S.

5. CONTRACTOR TO PROVIDE VALVE IDENTIFICATION AND LOCATION ON ALL CEILING TILES WHERE VALVES ARE LOCATED.

6. PIPING AND ROUTING SHOWN, INCLUDING ALL BELOW FLOOR DECK PIPING, IS APPROXIMATE. IT IS UP TO THE CONTRACTOR TO FIELD VERIFY THE EXACT LOCATION AND SIZE OF ALL PIPING.

7. INSTALL ALL DOMESTIC WATER LINES BELOW DUCTWORK.

8. INSTALL A 24" X 24" ACCESS DOOR BELOW ALL ISOLATION VALVES, BALANCING VALVES AND WATER HAMMER ARRESTORS WHERE MOUNTED ABOVE HARD CEILINGS.

9. MOUNT ALL ISOLATION VALVES, CONTROL VALVES, BALANCING VALVES, ETC. NEAR CEILING HEIGHT FOR ACCESSIBILITY.

10. INSTALL ALL EQUIPMENT WITH SUFFICIENT CLEARANCE FOR MAINTENANCE PER MANUFACTURERS RECOMMENDATION.

11. COORDINATE EXACT LOCATION OF PLUMBING WITH STRUCTURAL MEMBERS, LIGHTS, REFLECTED CEILING, CABLE TRAY, DUCTWORK, MECHANICAL PIPING, FIRE PROTECTION AND OTHER TRADES, TYPICAL.

12. SEE PLUMBING FIXTURE SCHEDULE FOR PIPE SIZES OF WASTE, VENT AND DOMESTIC WATER TO/FROM SINGLE FIXTURE.

13. COORDINATE EXACT LOCATION OF PLUMBING PIPING WITH STRUCTURAL MEMBERS, LIGHTS, REFLECTED CEILING PLANS, CABLE TRAY, ELECTRICAL CONDUITS, DUCTWORK, MECHANICAL AND FIRE PROTECTION PIPING, AND ALL OTHER TRADES AND ALL EXISTING CONDITIONS.

14. ALL PIPE AND DUCT SIZES SHALL REMAIN THE SAME SIZE SHOWN, IN THE DIRECTION OF FLOW, UNTIL SHOWN OTHERWISE.

15. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PERTAINING TO THE PLUMBING SYSTEMS AND COORDINATE ALL DEMOLITION WORK WITH THE OWNER PRIOR TO ANY SYSTEM SHUT-DOWN.

16. EXISTING SYSTEMS TO REMAIN SHOWN LIGHT.

17. PATCH AND REPAIR ALL EXISTING FLOORS DAMAGED BY DEMOLITION TO MATCH EXISTING, OR SUBCONTRACTOR TO COORDINATE REPAIRS WITH GENERAL CONTRACTOR.

MECHANICAL PIPING GENERAL NOTES

1. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE PIPING SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.

2. UNLESS OTHERWISE NOTED: ALL MECHANICAL PIPING IS OVERHEAD TO RUN ABOVE DUCTWORK AND TIGHT TO UNDERSIDE OF STRUCTURE.

3. WHERE VALVING OR EQUIPMENT IS LOCATED ABOVE HARD CEILINGS PROVIDE AN ACCESS DOOR IN CEILING. MINIMUM ACCESS DOOR SIZE OF 24"X24".

4. NO PIPING TO RUN OVER ELECTRICAL PANELS, VFD'S OR MCC'S. PROTECT

EQUIPMENT WITH A 42" DEEP ZONE IN FRONT OF PANELS, VFD'S, AND MCC'S.5. SLEEVE PIPING THRU WALLS/FOUNDATIONS WHERE REQUIRED.

6. INSTALL PIPING SO THAT ALL VALVES, STRAINERS, UNIONS, TRAPS, FLANGES,

AND OTHER APPURTENANCES REQUIRING ACCESS ARE ACCESSIBLE.

7. ALL VALVES SHALL BE INSTALLED SO THAT VALVE REMAINS IN SERVICE WHEN

EQUIPMENT OR PIPING ON EQUIPMENT SIDE OF VALVE IS REMOVED.

8. PROVIDE AN AIR VENT AT THE HIGH POINT OF EACH DROP IN THE HEATING AND

CHILLED WATER PIPING SYSTEM.9. INSTALL ALL PIPING WITHOUT FORCING OR SPRINGING.

10. ALL VALVES SHALL BE ADJUSTED FOR SMOOTH AND EASY OPERATION.

11. PROVIDE ISOLATION VALVES AT EACH EXIT/ENTRANCE INTO SHAFT WHETHER OR

12. ALL PIPE AND DUCT SIZES SHALL REMAIN THE SAME SIZE SHOWN, IN THE

13. MOUNT THERMOSTAT AT HEIGHT OF 42".

DIRECTION OF FLOW, UNTIL SHOWN OTHERWISE.

14. CONTRACTOR TO PROVIDE VALVE IDENTIFICATION AND LOCATION ON ALL CEILING TILES WHERE VALVES ARE LOCATED.

MECHANICAL GENERAL NOTES

1. PROVIDE BALANCING DAMPER AT ALL BRANCH DUCTS SERVING SINGLE DIFFUSER, REGISTER OR GRILLE, TYPICAL.

2. COORDINATE EXACT PLACEMENT OF DIFFUSERS, GRILLES AND REGISTERS WITH ARCHITECTURAL REFLECTED CEILING PLAN, TYPICAL.

3. SEE DETAIL FOR DIFFUSER CONNECTIONS TO DUCTWORK, TYPICAL.

4. BRANCH DUCTWORK SHALL BE SIZED TO MATCH THE NECK SIZE OF THE DIFFUSERS, REGISTER OR GRILLE IT SERVES UNLESS NOTED OTHERWISE, TYPICAL.

5. COORDINATE EXACT LOCATION OF DUCTWORK WITH STRUCTURAL MEMBERS, LIGHTS, REFLECTED CEILING, CABLE TRAY, PLUMBING, MECHANICAL PIPING, FIRE PROTECTION AND OTHER TRADES, TYPICAL.

6. CONTRACTOR TO CAULK ALL PENETRATIONS IN FIRE WALLS AND SMOKE WALLS TO MAINTAIN RATING. SEE SPECIFICATION, TYPICAL.

7. INSTALL TURNING VANES IN ALL SQUARE LOW PRESSURE DUCTWORK AT ELBOWS OR TEES, TYPICAL.

8. FIELD VERIFY THE FIT OF ALL DUCTWORK BEFORE FABRICATION, TYPICAL.9. CONTRACTOR SHALL OFF-SET DUCTWORK AS REQUIRED WHERE STRUCTURE,

LIGHTING OR PIPING CONFLICTS EXIST, TYPICAL.

10. DUCTWORK SIZES ARE FREE AREA SIZES, TYPICAL.

11. IN HARD CEILING AREAS, INSTALL REMOTE DAMPER OPERATOR IN CEILING, SEE SPECIFICATION, TYPICAL.

12. VERIFY ALL DUCT ROUTING WITH MECHANICAL PLAN AND SPACE LIMITATIONS PRIOR TO INSTALLING DUCTS. INFORM MECHANICAL DESIGNER OF ALL NECESSARY DEVIATIONS TO DESIGN, TYPICAL.

13. FOR ALL FIRE RATED WALLS WHERE THERE ARE DUCT PENETRATIONS THE CONTRACTOR SHALL FILL ANNULAR SPACE AROUND THE DUCTWORK WITH NON COMBUSTIBLE MATERIAL PER LISTED THROUGH PENETRATION FIRE STOP ASSEMBLY.

FIRE PROTECTION GENERAL NOTES

1. DRAWING SHOULD NOT BE CONSIDERED AS A SHOP DRAWING. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS AND COORDINATE ALL PIPING WITH STRUCTURAL, MECHANICAL AND ELECTRICAL. SUBMIT SHOP DRAWINGS FOR FINAL REVIEW.

2. OFFSETS ARE TO BE ANTICIPATED IN BRANCH LINES AND ARE TO BE COORDINATED BY THE CONTRACTOR WITH EXISTING CONDITIONS AND OTHER TRADES. MAKE ADDITIONAL OFFSETS AS REQUIRED.

3. HANGERS AND BRACING ARE NOT SHOWN ON THIS DRAWING. REFER TO THE SPECIFICATION REQUIREMENTS AND INSTALL ACCORDINGLY.

4. ALL HEADS ARE TO BE STANDARD RESPONSE SPRINKLERS.

5. CONTRACTOR IS TO DEVELOP SHOP DRAWINGS CONFORMING TO NFPA 16. ADDITIONAL HEADS AND/OR PIPING REQUIRED TO MEET SAID STANDARDS IS THE RESPONSIBILITY OF THE CONTRACTOR. LOCATION OF ADDITIONAL HEADS ARE TO BE COORDINATED WITH ARCHITECT AND ENGINEER AND SUBMITTED FOR THEIR REVIEW. PIPE SIZES SHOWN ON DRAWING ARE FOR ILLUSTRATION PURPOSES ONLY FOR GENERAL COORDINATION.

6. NO FIRE PROTECTION LINE SHALL BE DESIGNED OR INSTALLED PRIOR TO CLOSE COORDINATION WITH ALL OTHER DISCIPLINES. DUCTWORK, MECHANICAL PIPING AND PLUMBING TAKE SPACE PRECEDENCE OVER FIRE PROTECTION PIPING. FAILURE TO COMPLY WILL RESULT IN THE FIRE PROTECTION REMOVAL AND REINSTALLATION AT THE FIRE PROTECTION CONTRACTORS EXPENSE.

7. FIRE SPRINKLER CONTRACTOR TO PROVIDE DESIGN FOR OCCUPANCIES SHOWN ON THE PLAN PER NFPA 16.

8. ALL WORK DONE SHALL BE PERFORMED WITH WATER CONTROL IN MIND. CONTAINMENT OF WATER IS NECESSARY TO PREVENT WATER FROM DAMAGING SURROUNDING AREA.

9. COORDINATE EXACT LOCATION OF PIPING WITH STRUCTURAL MEMBERS, LIGHTS, REFLECTED CEILING PLANS, CABLE TRAY, ELECTRICAL CONDUITS, DUCTWORK, MECHANICAL AND PLUMBING PIPING, AND ALL OTHER TRADES AND ALL EXISTING CONDITIONS.

10. FIRE SPRINKLERS TO BE INSTALLED TO MEET NFPA-13-2016 EDITION REQUIREMENTS

11. IF MECHANICAL TEES ARE USED, THEY ARE TO BE VICTAULIC 920 OR 920N SERIES OR ENGINEER APPROVED EQUAL.

12. MATERIAL AND SHOP DRAWINGS OF THE REMODELED AREA ARE TO BE SUBMITTED FOR REVIEW BY THE ENGINEER.

13. ALL NEW STEEL SPRINKLER PIPE SHALL BE SCHEDULE 40, UNLESS OTHERWISE

14. A WARRANTY, FOR PRODUCT AND SYSTEM OPERATION SHALL BE PROVIDED FOR ONE YEAR, UPON SYSTEM ACTIVATION AND ACCEPTANCE.

HKS

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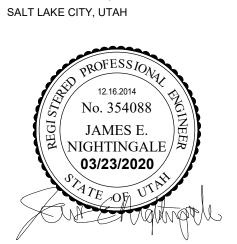
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MECHANICAL ENGINEER

VBFA INC. 181 EAST 5600 SOUTH, SUITE 130 MURRAY, UTAH

ELECTRICAL ENGINEER
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324 STATE STREET, SUITE 400



TIMPANOGOS MRI REMODEL

KEY PLAN

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NO. DESCRIPTION DATE

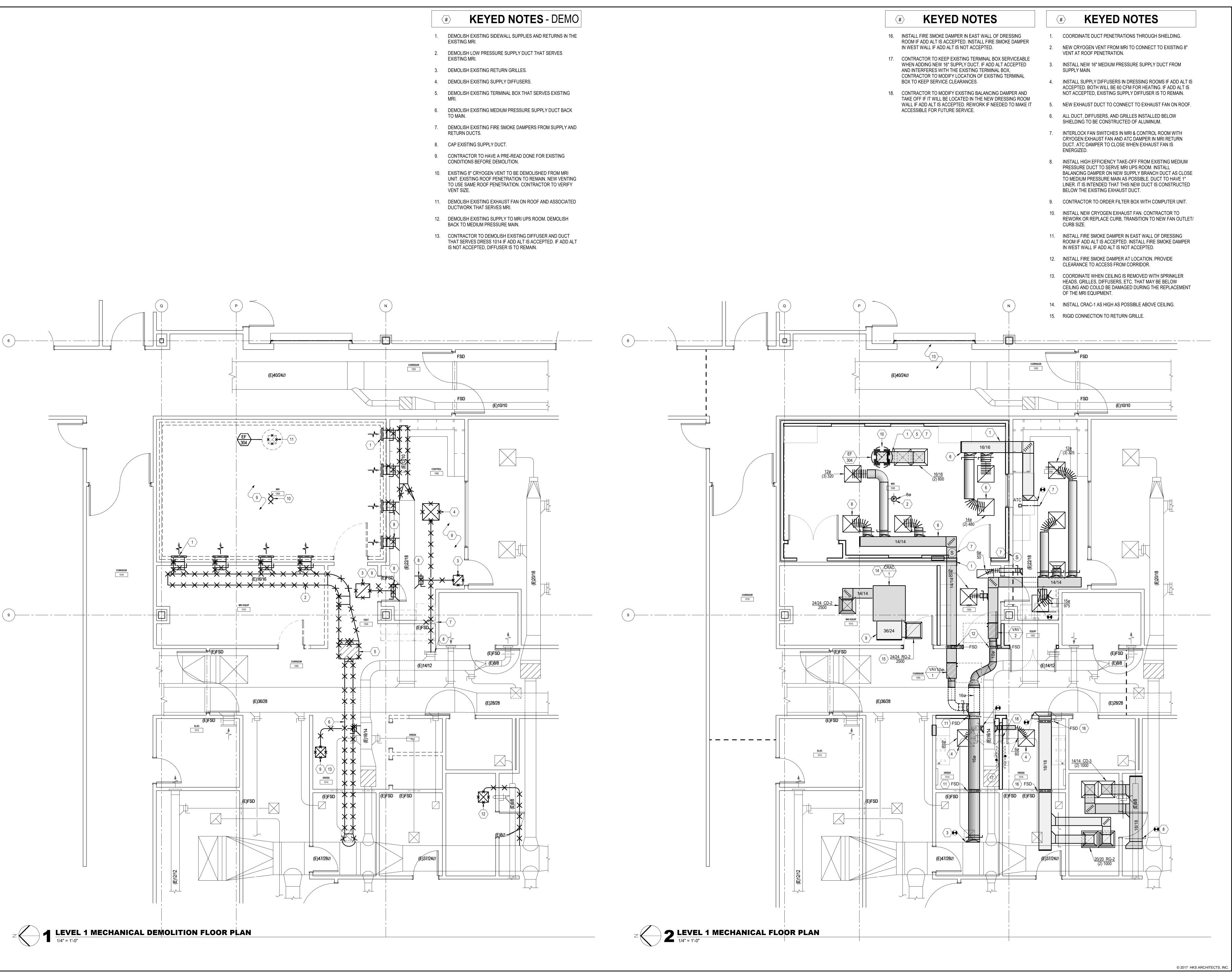
23798.000
DATE
03/23/2020
ISSUE
CONSTRUCTION
DOCUMENTS
SHEET TITLE
MECHANICAL
GENERAL NOTES

HKS PROJECT NUMBER

SHEET NO.

OT DATE.

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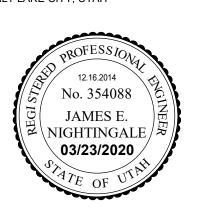
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TIMPANOGOS MRI REMODEL

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REVISION NO. DESCRIPTION

HKS PROJECT NUMBER
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CONSTRUCTION
DOCUMENTS
SHEET TITLE
LEVEL 1

LEVEL 1
MECHANICAL
FLOOR PLANS

SHEET NO.

M1.01

KEYED NOTES - DEMO

- DEMOLISH EXISTING CONDENSATE PIPING.
- 2. DEMOLISH EXISTING REFRIGERANT PIPING THAT SERVES
- 3. DEMOLISH EXISTING CONDENSER UNIT ON ROOF THAT SERVES CRAC-1.
- DEMOLISH EXISTING CRAC-1.
- 5. DISCONNECT EXISTING HEATING HOT WATER SUPPLY AND RETURN IN PREPARATION TO CONNECT TO NEW HEATING COIL.
- 6. DEMOLISH EXISTING THERMOSTAT THAT SERVES V3-4. THERMOSTAT LOCATED IN RETURN DUCT ABOVE CONTROL ROOM.
- 7. DEMOLISH EXISTING PC-1 CHWS & CHWR AND ASSOCIATED EQUIPMENT IN EQUIPMENT ROOM AS WELL AS PENTHOUSE.
- 8. CAP HEATING HOT WATER ROOM SUPPLY AND RETURN.
- 9. EXISTING PIPE SIZING FROM ORIGINAL DRAWINGS.

KEYED NOTES

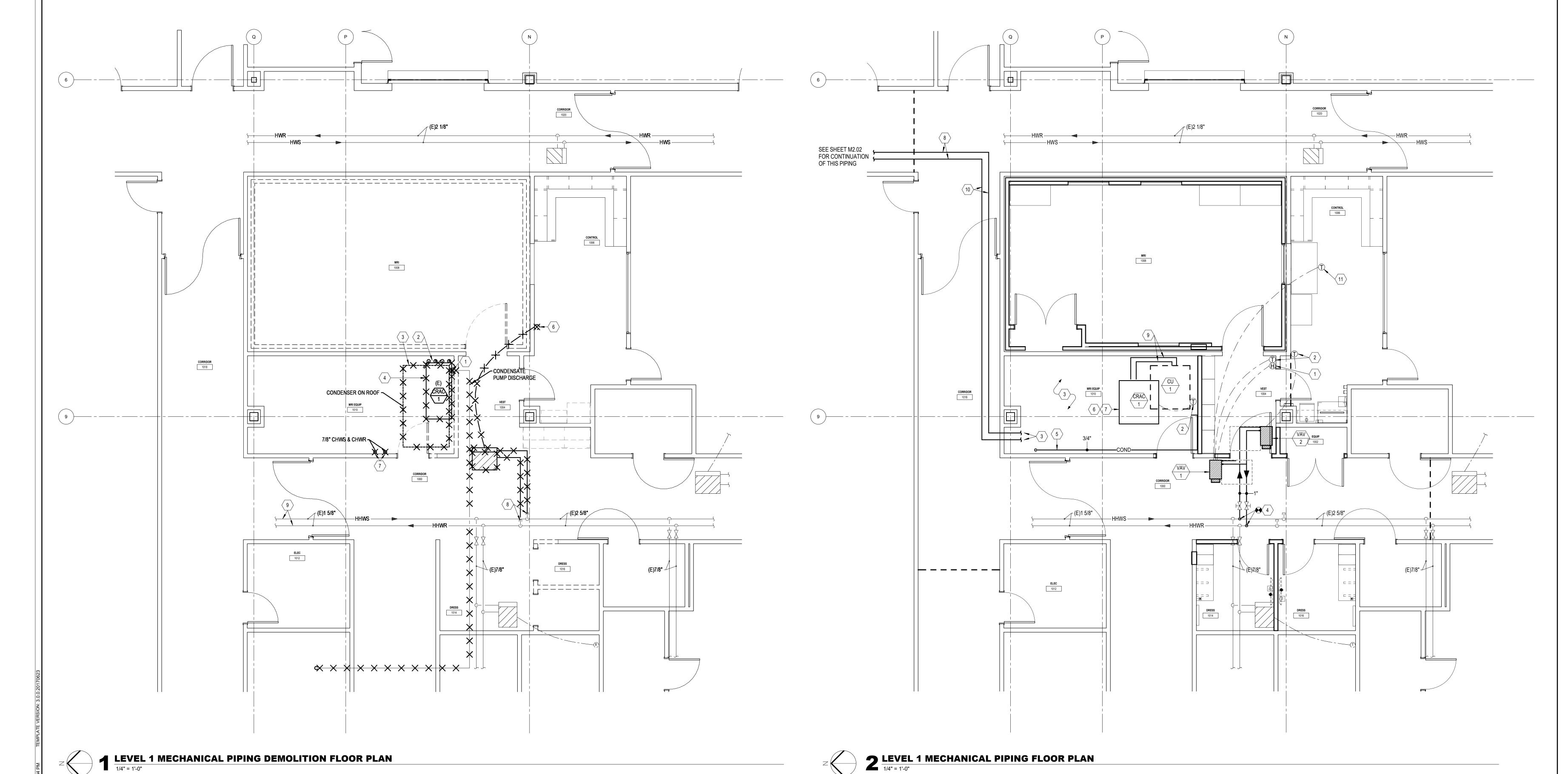
- 1. LOCATION FOR HUMIDITY DISPLAY THAT SERVES MRI ROOM. MOUNTING HEIGHT FOR HUMIDITY DISPLAY TO BE 42".
- 2. LOCATION FOR THERMOSTAT. SEE ARCHITECTURAL DRAWINGS FOR HEIGHT. MOUNTING HEIGHT FOR THERMOSTAT TO BE 42".
 - 3. CONNECT 2" COPPER GLYCOL CHILLED WATER SUPPLY AND RETURN PIPING TO MRI HEAT EXCHANGER CABINET IN ACCORDANCE WITH MRI MANUFACTURER'S REQUIREMENTS. PROVIDE ISOLATION VALVES FOR SHUT-OFF. VENDOR PROVIDING EQUIPMENT ONLY. INSTALLING CONTRACTOR PROVIDES COMPLETE PIPING SYSTEM.
 - 4. NEW CONNECTION FOR HEATING HOT WATER THAT SERVES VAV-1 & VAV-2.
 - 5. ROUTE CONDENSATE PIPING FROM CRAC-1 TO NEW FLOOR
 - 6. CONTRACTOR TO PIPE REFRIGERANT PIPINGTO CONDENSATE UNIT ON ROOF. USE MANUFACTURER'S RECOMMENDATIONS
 - FOR PIPING SIZE. 7. CONTRACTOR TO PROVIDE SECONDARY PAN AND WATER BUG

FOR COMPUTER ROOM UNIT. CONNECT TO BMS AND ALARM IF

- WATER IS DETECTED. 8. 2" COPPER GLYCOL CHILLED WATER SUPPLY AND RETURN TO BE ROUTED ABOVE CEILING IN EXISTING CORRIDORS. ROUTE TO NEW DIMPLEX CHILLER LOCATED ON THE NORTH SIDE OF
- 9. CONTRACTOR TO PIPE REFRIGERANT PIPING TO CONDENSING UNIT ON ROOF. USE MANUFACTURER'S RECOMMENDATIONS FOR PIPING SIZE.
- 10. TRANSITION GLYCOL CHILLED WATER PIPING TO BE IN 3" LOWERED CEILING.

CENTRAL UTILITY PLANT ON THE GROUND.

11. THERMOSTATIC SENSOR FOR MRI ROOM IS CONTAINED IN THE RETURN DUCTWORK ON THE EXTERIOR OF THE MRI SHIELDING 68 DEGREE TEMPERATURE ADJUSTABLE.

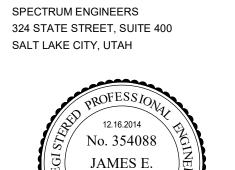


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KEY PLAN

NO. DESCRIPTION

HKS PROJECT NUMBER 23798.000 03/23/2020

CONSTRUCTION **DOCUMENTS**

LEVEL 1 **MECHANICAL PIPING FLOOR** PLANS

M2.01

JACKET WHERE OUTSIDE.

- LOCATION OF NEW MRI DIMPLEX CHILLER IN MECHANICAL EQUIPMENT YARD. CONTRACTOR TO PROVIDE REINFORCED CONCRETE EQUIPMENT PAD FOR VENDOR'S RECOMMENDATIONS.
- 2. PROVIDE NEW 2" COPPER PIPING WITH SHUT-OFF VALVES AND UNIONS PER VENDOR'S REQUIREMENT FOR DIMPLEX CHILLER. SEE DETAIL. MUST INSULATE PIPING AND INSTALL ALUMINUM
- 3. INSTALL NEW PIPING RAISED ABOVE GRADE. SUPPORT FROM BLOCKING ON SUPPORT FROM EXISTING CONDENSER WATER PIPING ROUTED TO COOLING TOWERS.
- 4. SEAL NEW PIPING PENETRATION WEATHER TIGHT WITH FLASHING AND SEALANTS.
- 5. NEW GLYCOL PIPING FROM DIMPLEX CHILLER TO BE INSTALLED HIGH IN SPACE FROM EITHER EXISTING PIPING RACKS OR CONTRACTOR TO PROVIDE NEW ROUTE COORDINATED WITH OWNER FOR BEST SERVICABILITY. OFFSETS ARE EXPECTED BUT NEED TO BE MINIMIZED FOR CHILLER PRESSURE DROP.
- 6. NO CEILING IN THIS AREA.
- 7. LAY IN, ACOUSTICAL CEILING AND T-BAR IN THIS AREA.
- 8. VERY CONGESTED AREA ABOVE CEILING. CONTRACTOR MAY RACK NEW GLYCOL CHILLED WATER PIPING IN EXISTING RACKS OR PROVIDE NEW SUPPORTS FOR BEST PATH. PIPING MUST BE INSULATED ITS ENTIRE RUN.
- 9. ALTERNATE GLYCOL PIPING ROUTE WHICH IS THROUGH BOILER ROOM THAT HAS NO ARCHITECTURAL CEILING. CONTRACTOR TO SUGGEST/COORDINATE FINAL ROUTE OF CHILLER PIPING.
- 10. SEE SHEET M2.01 FOR CONTINUATION.

ANOGOS

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\03/23/2020

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KEY PLAN

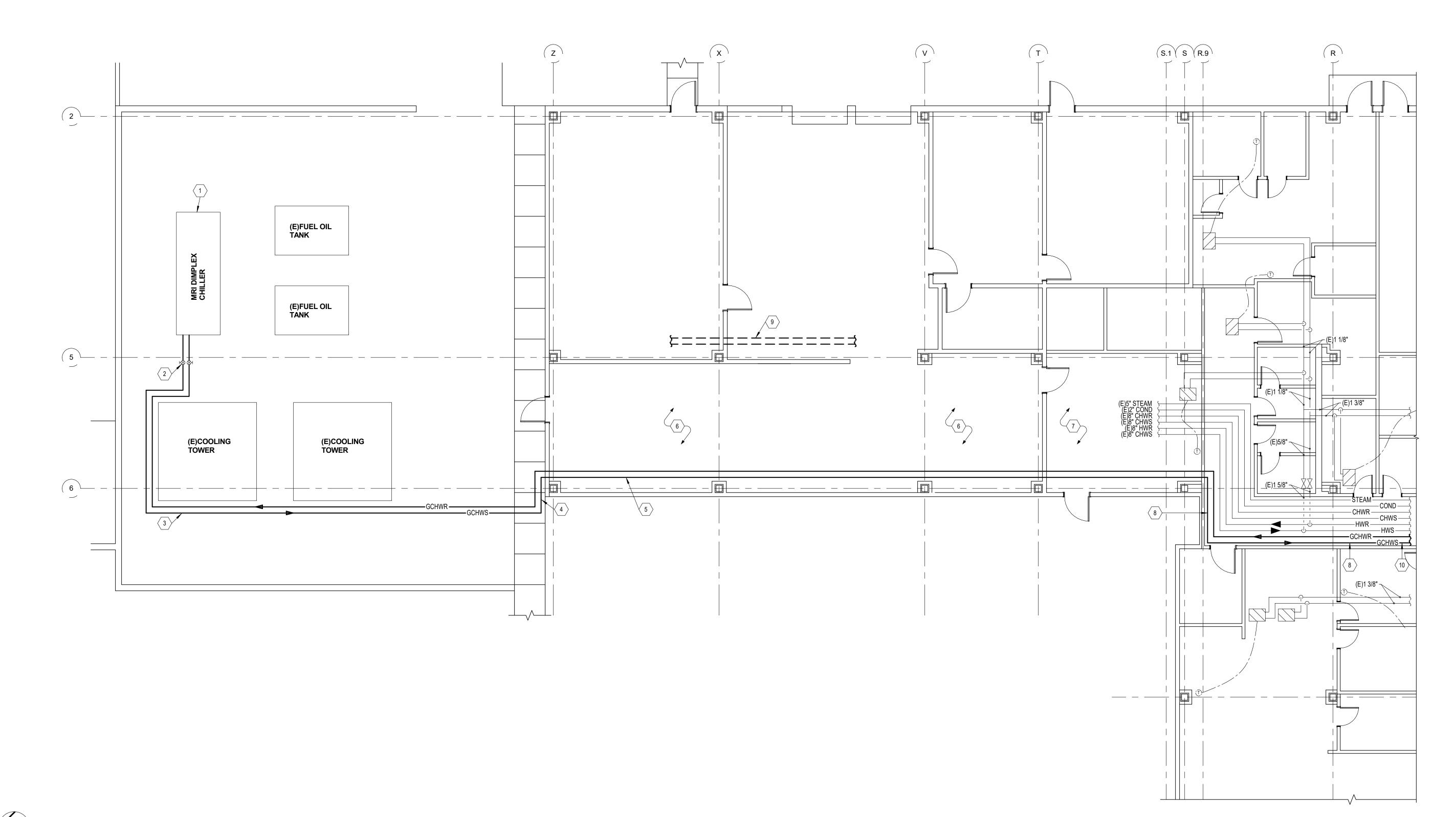
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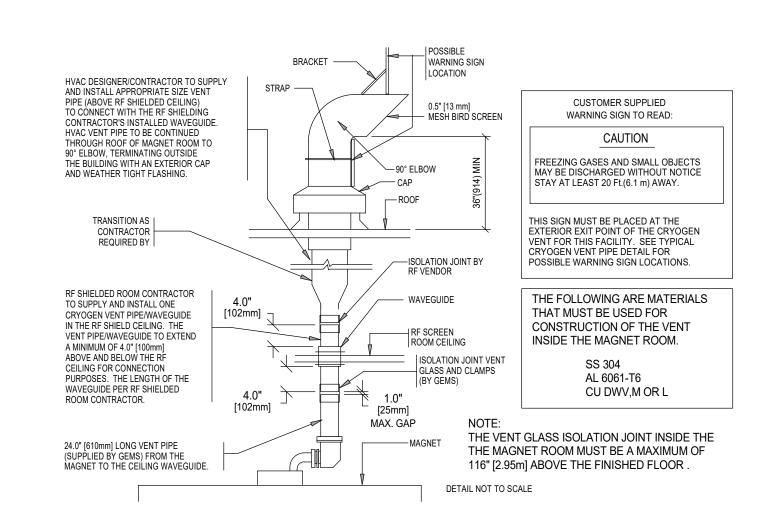
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23798.000
DATE
03/23/2020

CONSTRUCTION
DOCUMENTS
SHEET TITLE

LEVEL 1 & CUP MECHANICAL PIPING FLOOR PLAN

M2.02





12 TYPICAL CRYOGEN VENT PIPE DETAIL

M5.01 NO SCALE

	C VENT SYSTEM PRESSURE RIX FOR A MAGNET WITH 8" [2	03mm] VENT.	PRESSURE DROP PER ELBOW USED ANYWHERE WITHIN 20 ft. VENT SEGMENT							
INSIDE DIAMETER OF VENT PIPE in.(mm)	DISTANCE OF VENT SYSTEM COMPONENT FROM MAGNET ft.(m)	PRESSURE DROP STRAIGHT VENT PIPE WITH SMOOTH INSIDE SURFACE psi/ft (KPa/m)	STANDARD SWEEP 45° ELBOW psi (KPa)	STANDARD SWEEP 90° ELBOW psi (KPa)	LONG SWEEP 45° ELBOW psi (KPa)	LONG SWEEP 90° ELBOW psi (KPa)				
8(203)	0-20 (0-6.1)	0.10 (2.26)	1.10 (7.58)	2.06 (14.20)	0.55 (3.79)	1.03 (7.10)				
	20-40 (6.1-12.2)	0.21 (4.75)	2.10 (14.48)	3.70 (25.51)	1.03 (7.10)	1.85 (12.76)				
	40-60 (12.2-18.3)	0.30 (6.79)	2.88 (19.86)	5.21 (35.92)	1.44 (9.93)	2.60 (17.92)				
	60-80 (18.3-24.4)	0.38 (8.60)	3.70 (25.51)	6.71 (46.27)	1.85 (12.76)	3.36 (23.17)				
	80-100 (24.4-30.5)	0.47 (10.63)	4.52 (31.17)	8.22 (56.68)	2.26 (15.58)	4.11 (28.34)				
10(254)	0-20 (0-6.1)	0.03 (0.68)	0.55 (3.79)	0.82 (5.56)	0.27 (1.86)	0.41 (2.83)				
	20-40 (6.1-12.2)	0.07 (1.58)	0.82 (5.56)	1.51 (10.41)	0.41 (2.83)	0.75 (5.17)				
	40-60 (12.2-18.3)	0.10 (2.26)	1.23 (8.48)	2.19 (15.10)	0.62 (4.27)	1.10 (7.58)				
	60-80 (18.3-24.4)	0.12 (2.71)	1.51 (10.41)	2.74 (18.89)	0.75 (5.17)	1.37 (9.45)				
	80-100 (24.4-30.5)	0.16 (3.62)	1.92 (13.24)	3.43 (23.65)	0.96 (6.62)	1.71 (11.79)				
12(305)	0-20 (0-6.1)	0.013 (0.29)	0.27 (1.86)	0.41 (2.83)	0.14 (0.97)	0.21 (1.45)				
	20-40 (6.1-12.2)	0.027 (0.61)	0.41 (2.83)	0.82 (5.65)	0.21 (1.45)	0.41 (2.83)				
	40-60 (12.2-18.3)	0.041 (0.93)	0.55 (3.79)	1.10 (7.58)	0.27 (1.86)	0.55 (3.79)				
	60-80 (18.3-24.4)	0.054 (1.22)	0.69 (4.76)	1.37 (9.45)	0.34 (2.34)	0.69 (4.76)				
	80-100 (24.4-30.5)	0.069 (1.56)	0.96 (6.62)	1.51 (10.41)	0.48 (3.31)	0.75 (5.17)				
	100-120 (30.5-36.6)	0.08 (1.81)	1.09 (7.52)	1.77 (12.20)	0.55 (3.79)	0.88 (6.07)				
	120-140 (36.6-42.7)	0.10 (2.26)	1.27 (8.76)	2.07 (14.27)	0.63 (4.34)	1.04 (7.17)				
	140-160 (42.7-48.8)	0.11 (2.49)	1.43 (9.86)	2.36 (16.27)	0.72 (4.96)	1.19 (8.20)				
	160-180 (48.8-54.9)	0.12 (2.71)	1.60 (11.03)	2.53 (17.44)	0.80 (5.52)	1.27 (8.76)				
	180-200 (54.9-61.0)	0.17 (3.85)	1.75 (12.07)	2.93 (20.20)	0.88 (6.07)	1.47 (10.14)				

NOTE 1: ELBOWS WITH ANGLES GREATER THAN 90 9MUST NOT BE USED.

NOTE 2: THE TABLE DATA IS BASED ON THE FOLLOWING:

A. INITIAL FLOW CONDITIONS AT MAGNET INTERFACE.

B. GAS TEMPERATURE STARTING AT 4.5 KELVIN (-452° F OR -268° C).
 C. HELIUM GAS FLOW RATE OF 2,737 CUBIC FEET (77.5 CUBIC METERS) PER MINUTE
 D. 45° STANDARD SWEEP ELBOW K = 15 F .

E. 90° STANDARD SWEEP ELBOW K = 30 F
 F. 45° LONG SWEEP ELBOW K = 7.5 F
 G. 90° LONG SWEEP ELBOW K = 15 F

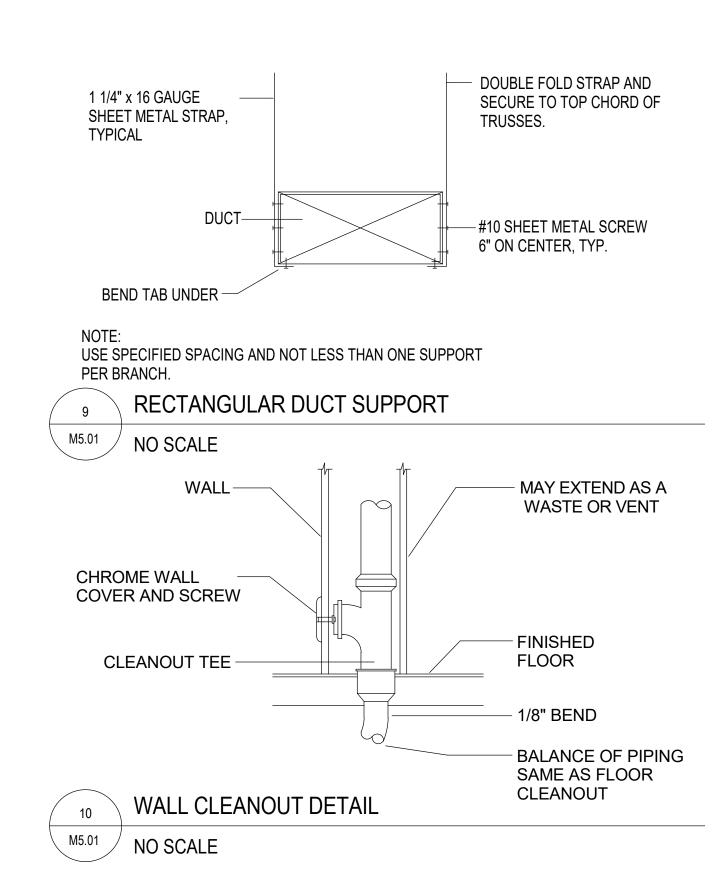
NOTE 3: THE TOTAL PRESSURE DROP OF THE ENTIRE CRYOGENIC VENT SYSTEM MUST BE LESS THAN 17 PSI (117.2 KPa).

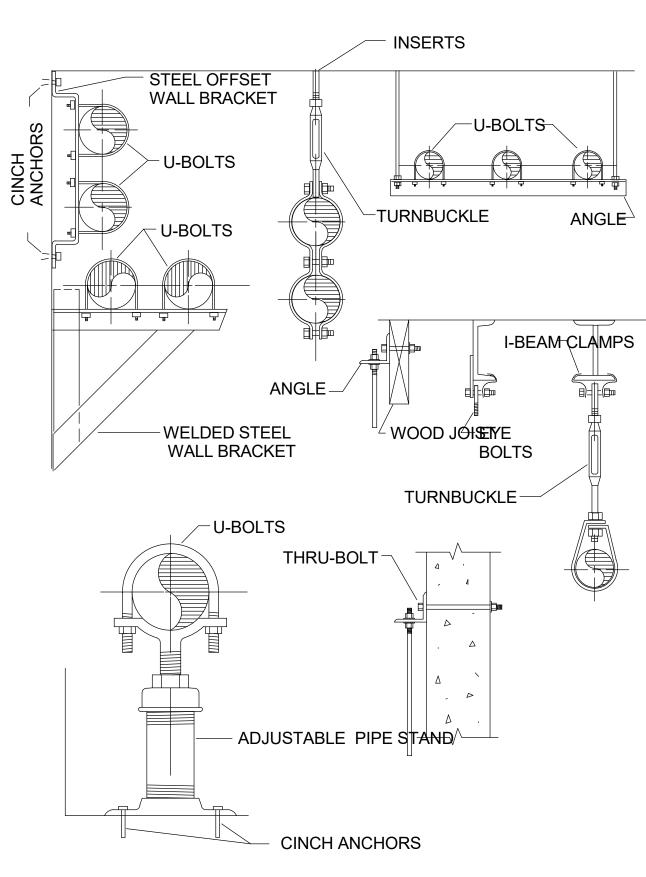
THE CALCULATION STARTS AT THE MAGNET VENT INTERFACE AND ENDS AT THE TERMINATION POINT OUTSIDE THE BUILDING.

NOTE 4: FOR 14 IN. [356mm] AND 16 IN. [406mm] VENT PIPE DIAMETERS REFER TO PRE-INSTALLATION MANUAL REFERENCED ON SHEET C1.

CRYOGEN VENT SYSTEM PRESSURE DROP MATRIX (A)

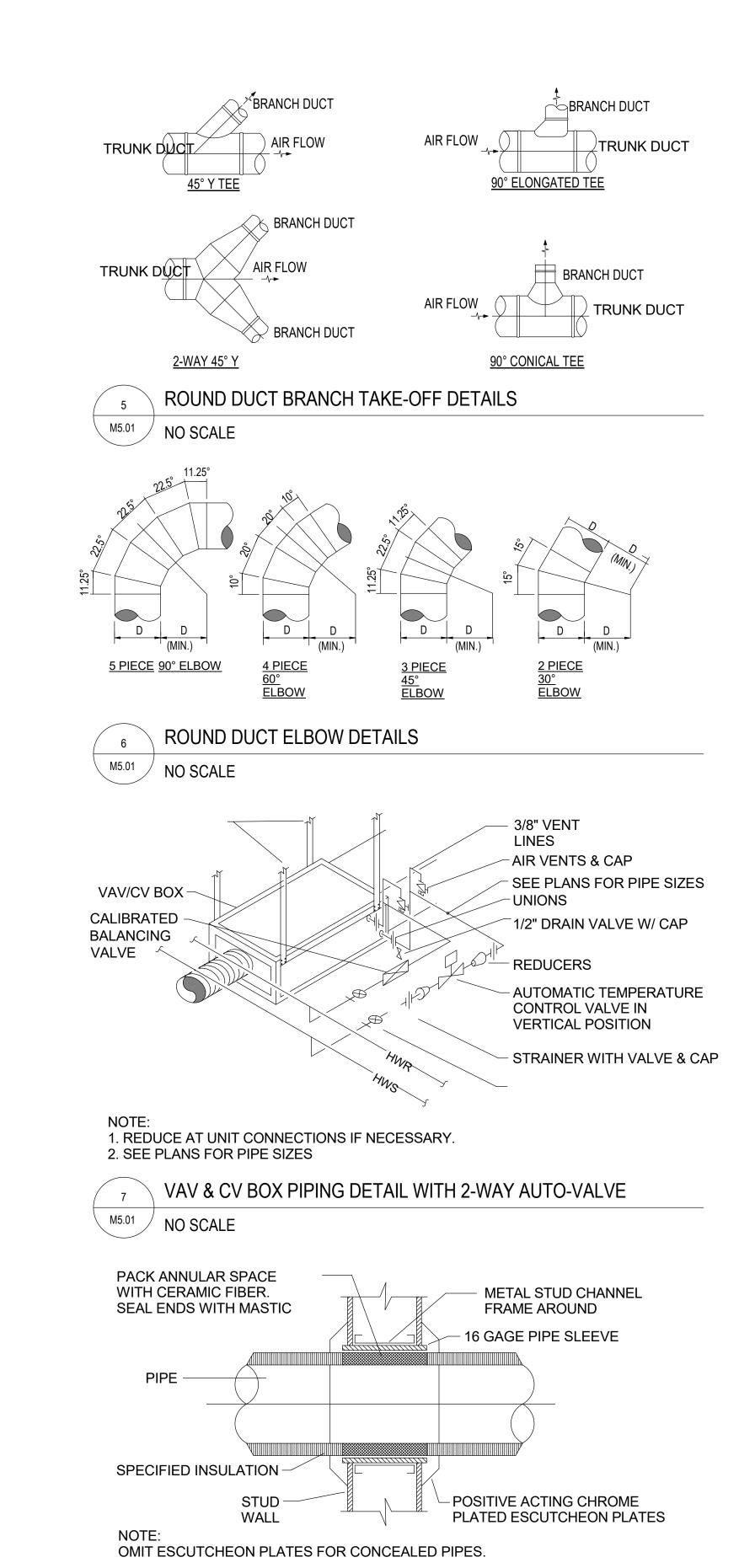
NO SCALE





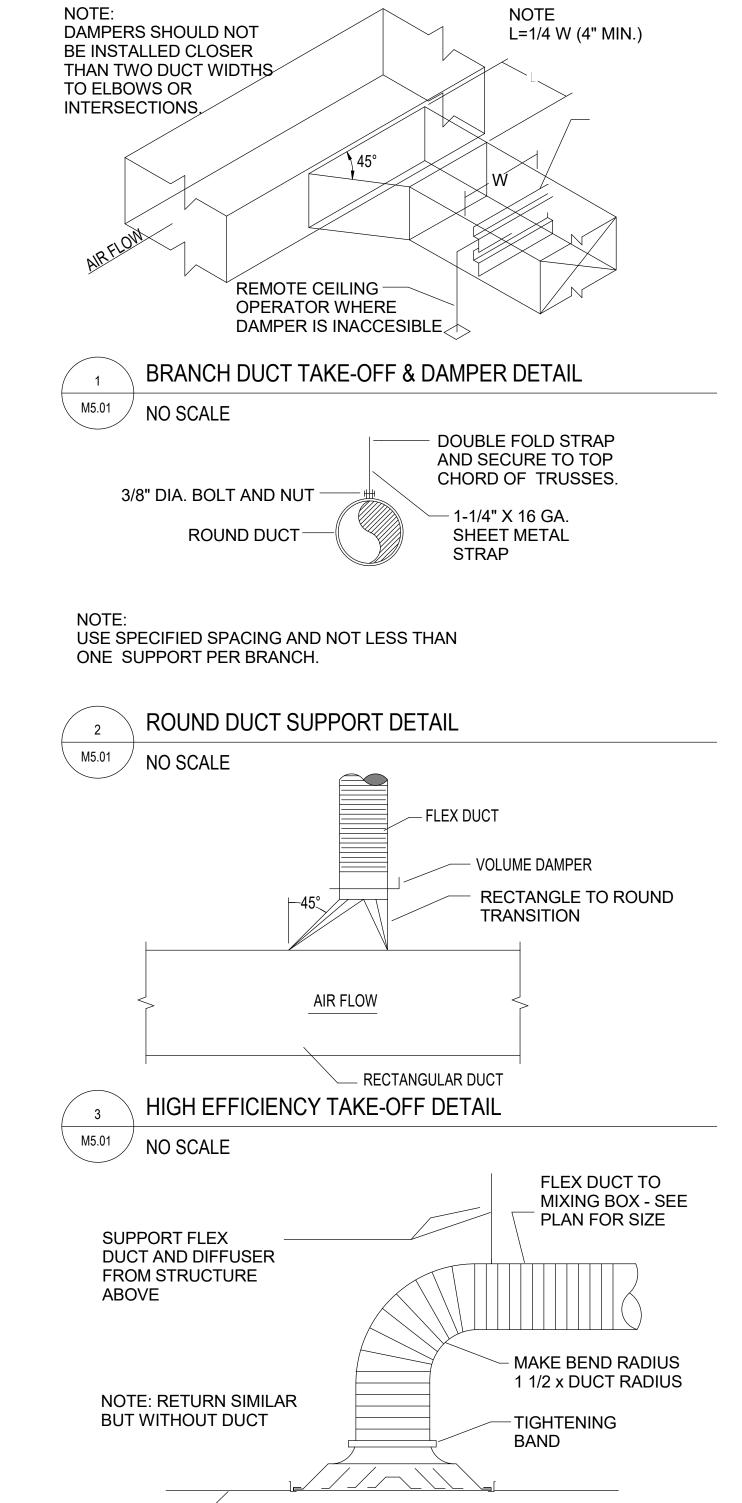
TYPICAL PIPE SUPPORT DETAIL

M5.01 NO SCALE



PIPE THROUGH STUD WALL DETAIL

NO SCALE



CEILING-

NO SCALE

M5.01

DIFFUSER CONNECTION DETAIL

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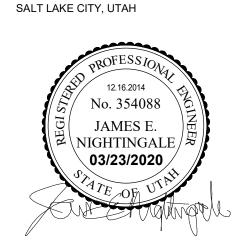
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TIMPANOGOS MRI REMODEL

KEY PLAN

REVISION NO. DESCRIPTION DA

HKS PROJECT NUMBER

23798.000

DATE

03/23/2020

ISSUE

CONSTRUCTION

DOCUMENTS

SHEET TITLE

SHEET NO.

MECHANICAL

DETAILS

M5

PLOT DATE:

*FOUR CABLES REQUIRED, ONE AT EACH CORNER. EACH CABLE TO BE INSTALLED 45
 TO HORIZONTAL AND 45 TO LONGITUDINAL DIRECTION.

**CABLE SYSTEMS TO BE EQUAL TO AMBER BOOT C/W THIMBLES, CLAMPS AND GROMMETS.

NOTE: THE SEISMIC DETAILS SHOWN HERE ARE FOR REFERENCE ONLY TO ILLUSTRATE TYPICAL SEISMIC REQUIREMENTS. REFER TO SPECIFICATIONS FOR REQUIRED SEISMIC DESIGN AND APPLICATION.

PIPE BRACING GENERAL NOTES

- DETAILS SHOWN PROVIDE GENERAL GUIDELINES FOR A LATERAL BRACING SYSTEM.
 A TYPICAL VERTICAL SUPPORT SYSTEM MUST ALSO BE USED.
- 2 BRACE ALL PIPES 1-1/2" I.D. AND LARGER.
- CABLE RESTRAINTS AND BRACING NOT TO EXCEED 30'-0" CENTERS AND SHALL BE PROVIDED AT ALL CHANGES IN DIRECTION OF PIPE. ALL DROPS TO EQUIPMENT, AND ON EACH SIDE OF FLEXIBLE CONNECTIONS. BRACE POINTS SHALL NOT EXCEED 15'-0" FROM FLEXIBLE CONNECTION.
- 4 ALL HOLES IN ANGLES ARE TO BE 1/16 INCH OVERSIZED. PLACE STANDARD CUT WASHERS BETWEEN SHEET METAL ANGLES AND NUT.
- 5 EQUIPMENT WHICH ATTACHES TO THE PIPING SYSTEM SHALL BE BRACED INDEPENDENTLY OF THE PIPES.
- ALL SHEET METAL FOR BRACING TO BE FY=33 KSI MINIMUM. GAUGE FOR SHEET METAL BRACING SHALL BE AS FOLLOWS:

16 GA = (0.0598 INCH) 14 GA = (0.0747 INCH) 12 GA = (0.1046 INCH)

7 MINIMUM DISTANCE FROM EDGE OF ANGLE TO BOLTS SHALL BE AS FOLLOWS:

BOLT DIAMETER	DISTANCE FROM EDGE
1/4" TO 1/2"	1"
5/8"	1
3/4"	1/8"
7/8"	1/4"

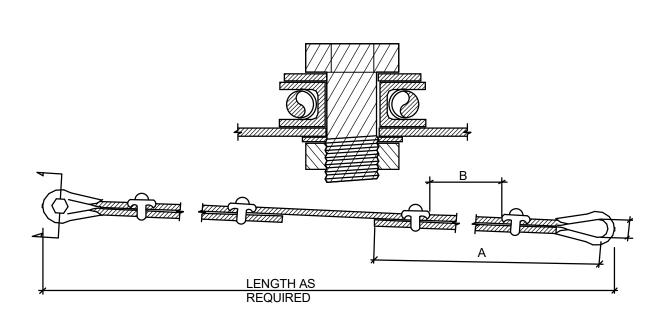
- DO NOT FASTEN RESTRAINT SYSTEM TO TWO DISSIMILAR PARTS OF A BUILDING THAT MAY RESPOND IN A DIFFERENT MODE DURING AN EARTHQUAKE. FOR EXAMPLE, A WALL AND A ROOF.
- 9 PROVIDE LARGE ENOUGH PIPE SLEEVES THROUGH WALLS OR FLOORS TO ALLOW FOR ANTICIPATED DIFFERENTIAL MOVEMENTS.
- 10 DO NOT FASTEN ONE RIGID PIPING SYSTEM TO TWO DISSIMILAR PARTS OF A BUILDING THAT MAY RESPOND IN A DIFFERENT MODE DURING AN EARTHQUAKE. FOR EXAMPLE, A WALL AND A ROOF.
- BRACING DETAILS, SCHEDULE AND NOTES ARE TO BE USED WITH THE FOLLOWING TYPES OF PIPE: STEEL PIPE SCHEDULE 40 AND 80, COPPER PIPE TYPE K,L,M (ONLY SILVER SOLDERED BRAZED JOINTS TO BE USED WITH COPPER PIPE).
- FOR GAS PIPING, THE BRACING DETAILS, SCHEDULES AND NOTES MAY BE USED EXCEPT THAT RESTRAINTS SHALL BE INSTALLED AT EVERY 20'-0" O.C. ALSO ALL PIPE 1 INCH AND LARGER SHALL BE BRACED.
- 13 WASTE, VENT AND ROOF DRAINAGE PIPING SYSTEMS ARE EXCLUDED FROM THE RESTRAINT GUIDELINES.
- 14 ALTERNATE EVERY OTHER CABLE RESTRAINT IN OPPOSITE DIRECTION (SHOWN DOTTED).

NOTE: THE SEISMIC DETAILS SHOWN HERE ARE FOR REFERENCE ONLY TO ILLUSTRATE TYPICAL SEISMIC REQUIREMENTS. REFER TO SPECIFICATIONS FOR REQUIRED SEISMIC DESIGN AND APPLICATION.

	DUCT CABLE BRACING LIST													
DUCT SIZE (MAX.)	*WT/ LIN FT (MAX)		HORIZONTAL ANGLE	CABLE DIA.**	CABLE DES.	ANCHOR CONN. TYPE								
12"	5#	3/8"	2 X 2 X 16 GA	2 X 2 X 12 GA	1/8"	7x19 GALV	I							
18"	8#	3/8"	2 X 2 X 16 GA	2-1/2 X 2-1/2 X 12 GA	1/8"	7x19 GALV	I							
24"	10#	3/8"	2 X 2 X 16 GA	2-1/2 X 2-1/2 X 12 GA	1/8"	7x19 GALV	I							
30"	13#	3/8"	2 X 2 X 16 GA	2-1/2 X 2-1/2 X 12 GA	1/8"	7x19 GALV	I							
42"	20#	3/8"	2-1/2 X 2-1/2 X 16 GA	4 X 4 X 12 GA	3/16"	7x19 GALV	II							
54"	27#	3/8"	2-1/2 X 2-1/2 X 16 GA	4 X 4 X 12 GA	3/16"	7x19 GALV	II							
60"	36#	3/8"	3 X 3 X 16 GA	4 X 4 X 12 GA	3/16"	7x19 GALV	II							
84"	53#	3/8"	4 X 4 X 14 GA	4 X 4 X 1/4	1/4"	7x19 GALV	III							
96"	80#	1/2"	4 X 4 X 12 GA	5 X 3 X 1/4	5/16"	7x19 GALV	IV							

* MAXIMUM WEIGHT OF DUCTS OR COMBINATIONS OF DUCTS PER LINEAR FOOT. THE DUCTS MAXIMUM DIMENSION SHALL GOVERN WHAT BRACING IS REQUIRED. FOR ANCHOR CONNECTIONS SEE LIST. SEE DUCT BRACING DETAILS.

** TWO CABLES REQUIRED AT EACH RESTRAINT POINT, EACH CABLE TO BE INSTALLED 45~ TO HORIZONTAL AND 45~ TO LONGITUDINAL DIRECTION OF DUCT.



NOTES:
1. CABLES, THIMBLES, CLIPS, GROMMETS & FLAT WASHERS ARE TO
BE FURNISHED BY RESTRAINT MANUFACTURER. ALL OTHER HARDWARE TO
BE PROVIDED BY CONTRACTOR.

2. ENTIRE SYSTEM TO BE EQUAL TO AMBER BOOTH.

3. CABLE CLIPS MUST BE ORIENTED AS SHOWN WITH SHORT END OF CABLE ON THE CURVED PART OF THE CLIP.

		С	ABLE S	CHEDUI	LE		
CABLE DIA.	CABLE DESIGN	A	0	•	BOLT SIZE	ALLOWABLE LOAD (lbf)	BREAKING STRENGTH (lbf)
			В	С			
1/8"	7X19 GALV.	5-1/4"	1-5/8"	5/8"	3/8"	660	2000
3/16"	7X19 GALV.	5-3/4"	1-7/8"	5/8"	3/8"	1400	4200
1/4"	7X19 GALV.	6-3/4"	2-3/8"	11/16"	3/8"	2330	7000
5/16"	7X19 GALV.	7-3/8"	2-5/8"	13/16"	5/8"	3260	9800
3/8"	7X19 GALV.	8-7/8"	3-1/4"	1"	5/8"	4800	14400
7/16"	6X19 IWRC	17"	3-5/8"	1"	5/8"	5920	17800
1/2"	6X19 IWRC	18"	3-7/8"	1-1/8"	3/4"	7660	23000

		PIPE S	SEISMIC	BRACI	NG SCH	EDULE		
PIPE SIZE	HANGER ROD SIZE	MAX. ROD LENGTH	HANGER TYPE	BOLTS TO ANGLE	ANGLE CLIP	ANGLE BRACE	ANCHOR CONN. TYPE	ANCHOR BOLT OR INSERT
1-1/2"	1/2"	25"	CLEVIS	3/8"	3x3x1/4	2x2x16GA	1	3/8"
2"	1/2"	25"	CLEVIS	3/8"	3x3x1/4	2x2x16GA	ı	3/8"
2-1/2"	5/8"	31"	CLEVIS	3/8"	3x3x1/4	2x2x16GA	ı	3/8"
3"	5/8"	31"	CLEVIS	3/8"	3x3x1/4	2-1/2x2-1/2x 16 GA	II	1/2"
3-1/2"	5/8"	31"	CLEVIS	3/8"	3x3x1/4	2-1/2x2-1/2x 16 GA	II	1/2"
4"	3/4"	37"	CLEVIS	3/8"	3x3x1/4	2-1/2x2-1/2x 16 GA	II	1/2"
5"	3/4"	37"	CLEVIS	1/2"	5x3x1/2	2-1/2x2-1/2x 16 GA	III	3/4"
6"	3/4"	37"	CLEVIS	5/8"	5x3x1/2	2-1/2x2-1/2x 16 GA	IV	3/4"
8"	7/8"	43"	CLEVIS	5/8"	2- 5x3x1/2	3x3x12 GA	V	2-5/8"
10"	7/8"	43"	CLEVIS	3/4"	2- 5x3x1/2	3x3x12 GA	VI	2-5/8"

DUCT BRACING GENERAL NOTES

1 DETAILS SHOWN PROVIDE GENERAL GUIDELINES FOR A LATERAL BRACING SYSTEM. A TYPICAL VERTICAL SUPPORT SYSTEM MUST ALSO BE USED.

2 BRACE ALL RECTANGULAR DUCTS OF AREA 6 SQ. FT. AND LARGER. BRACE ALL ROUND DUCTS 28" IN DIAMETER AND LARGER.

3 CABLE RESTRAINTS AND BRACING NOT TO EXCEED 30'-0" CENTERS AND SHALL BE PROVIDED AT EACH TURN, AT THE END OF EACH DUCT RUN, AND ON EACH SIDE OF FLEXIBLE CONNECTIONS. BRACE POINTS SHALL NOT EXCEED 15'-0" FROM FLEXIBLE CONNECTION.

4 WHEN COMBINING DUCT GROUPS ON COMMON BRACING SYSTEMS, USE WEIGHTS AND DIMENSIONS FROM BRACING LIST.

5 ALL HOLES IN ANGLES ARE TO BE 1/16 INCH OVERSIZED. PLACE STANDARD CUT WASHERS BETWEEN SHEET METAL ANGLES AND NUT.
 6 DUCTS NOT BRACED SHALL BE INSTALLED WITH A 6" MIN. CLEARANCE TO VERTICAL

7 REHEAT BOXES AND OTHER ITEMS WHICH ATTACH TO THE DUCT SYSTEM SHALL BE

BRACED INDEPENDENTLY OF THE DUCTS.

8 ALL SHEET METAL FOR BRACING TO BE FY = 33 KSI MINIMUM. GAUGE FOR SHEET METAL BRACING SHALL BE AS FOLLOWS:

16 GA =(0.0598 INCH) 14 GA = (0.0747INCH)

CEILING HANGER WIRES.

FOR ANCHOR CONNECTIONS SEE LIST.

1-5/8"x1-5/8"x12 GA CHANNEL MAY BE USED

SEE PIPE BRACING DETAIL

12 GA= (0.1046 INCH)

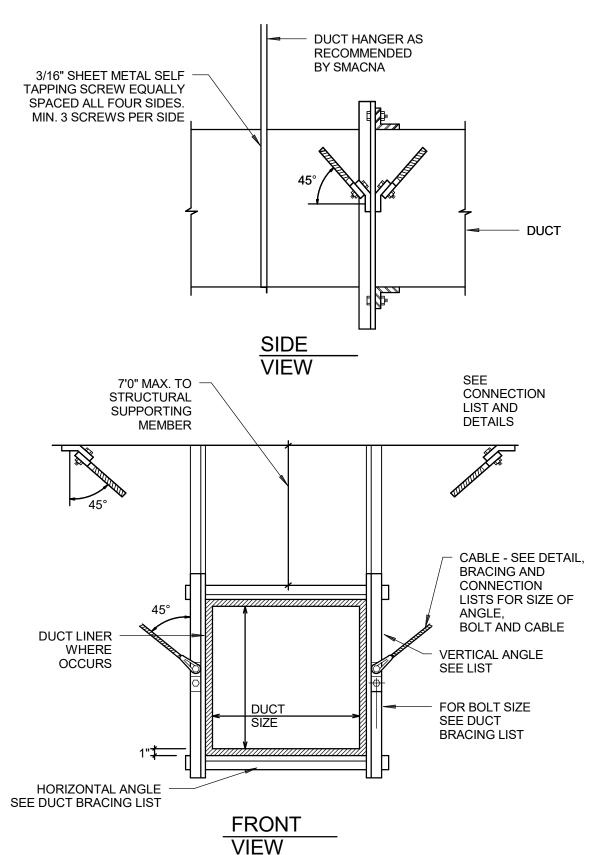
9 MINIMUM DISTANCE FROM EDGE OF ANGLE TO BOLTS SHALL BE AS FOLLOWS:

BOLT DIAMETER	DISTANCE FROM EDGE
1/4" TO 1/2"	1"
5/8"	1
3/4"	1/8" 1
7/8"	1/4" 1
	1/2"

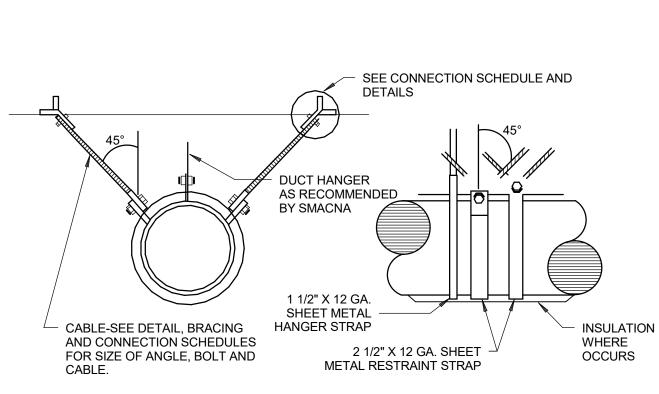
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11 ALTERNATE EVERY OTHER CABLE RESTRAINT IN OPPOSITE DIRECTION (SHOWN

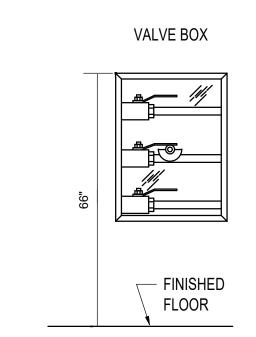
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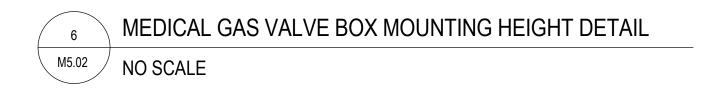
CABLE BRACING FOR RECTANGULAR DUCTS

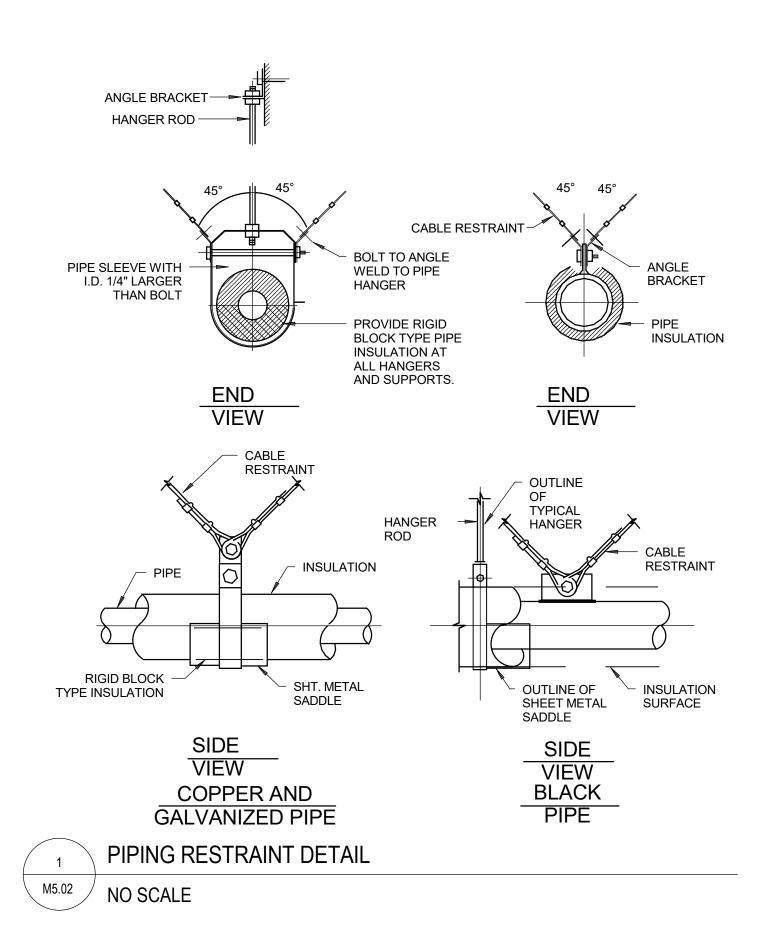


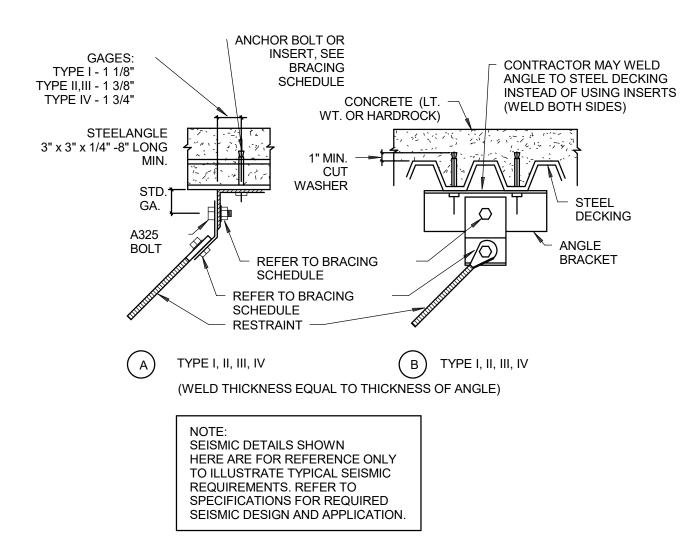
CABLE BRACING FOR ROUND OVAL DUCTS



MOUNTING HEIGHTS UNLESS NOTED OTHERWISE

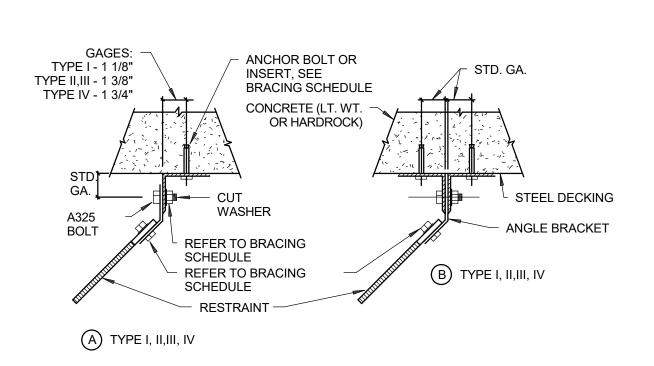






RESTRAINT CONNECTIONS TO STEEL

M5.02 NO SCALE



RESTRAINT CONNECTIONS TO CONCRETE

NO SCALE

HI(S

ARCHITECT

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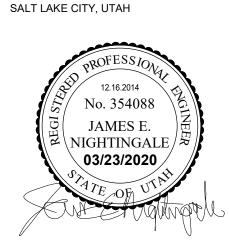
90 SOUTH 400 WEST, SUITE 110

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VBFA INC.
181 EAST 5600 SOUTH, SUITE 130

ELECTRICAL ENGINEER
SPECTRUM ENGINEERS
324 STATE STREET, SUITE 400



TIMPANOGOS MRI REMODEL

KEY PLAN

REVISION

NO. DESCRIPTION DATE

HKS PROJECT NUMBER
23798.000
DATE
03/23/2020
ISSUE
CONSTRUCTION

CONSTRUCTION
DOCUMENTS
SHEET TITLE
MECHANICAL
DETAILS

SHEET NO.

								VAV BO	OX SCHED	ULE								
			AIR							FLUID (2)					COIL			
			COOLING	HEATING		ENTERING	LEAVING	S.P. LOSS	NC AT		TOTAL	ENT.		MAX. FLUID			BALANCING	
	MANUFACTURER	INLET	MAXIMUM	MAXIMUM	MINIMUM	AIR TEMP.	AIR TEMP.	AT MAX	1" H2O	HEAT	FLUID	FLUID		PRESSURE	MIN.	PIPE	VALVE	
	AND	SIZE	AIR (5)	AIR	AIR (3)	DB	DB	CFM (4)	(1)	LOAD	FLOW	TEMP	WORKING	DROP	COIL	SIZE	SIZE	
ID	MODEL NUMBER	(IN)	(CFM)	(CFM)	(CFM)	(DEG. F)	(DEG. F)	(IN H20)	S.P.	(MB)	(GPM)	(DEG. F)	FLUID	(FT)	ROWS	(IN)	(IN)	REMARKS
VAV-1	TITUS-ESV-3	10	950	570	550	52	95		28	5.8		110	H. WATER	1	2	3/4	1/2	1,2,3,4,5,6,7
VAV-2	TITUS-ESV-3	10	975	585	550	52	95		28	3.6		110	H. WATER	1	2	3/4	1/2	1,2,3,4,5,6,7

1. MAXIMUM DISCHARGE NC AT BOX DIFFENTIAL PRESSURE BASED ON ARI STANDARD 880-89

2. COIL HEATING CAPACITY BASED ON HEATING MAIXIMUM AIR FLOW (60% OF MAXIMUM COOLING CFM).

MINIMUM CFM IS LOWEST CONTROLLABLE CFM SETTING (BASED ON 400 FPM INLET VELOCITY).
 MAXIMUM STATIC PRSSURE DROP PERMISSABLE ACROSS BOX AND COIL AT MAXIMUM COOLING CFM.

5. BOX COOLING MAXIMUM IS THE SUM OF DIFFUSERS CFM VALUES AS SHOWN IN THE DRAWINGS. BOX MINIMUM CFM TO BE SET AT 30% OF THIS MAXIMUM.

BOX HEATING CFM TO BE SET AT 60% OF THIS SAME MAXIMUM. TYPICAL UNLESS OTHERWISE NOTED.

6. PRESSURE INDEPENDENT TYPE BOX.

7. THESE TERMINAL BOXES REQUIRE THE CONTROL CONTRACTOR TO EXTEND 24VAC POWER FROM THE EXISTING SOURCE TO EACH VAV BOX.

	FAN SCHEDULE														
		AIR		FAN	FAN ELECTRICAL					PHYSICAL					
					MAXIMUM				FAN						
	MANUFACTURER				AIRFLOW	STATIC	OUTLET	FAN	WHEEL	STATIC	MOTOR	MOTOR		WIDTH/	
	AND			AIR	RATE	PRESSURE	VELOCITY	SPEED	DIAMETER	EFFICIENCY	SIZE	ВНР		HEIGHT	
ID	MODEL NUMBER	LOCATION	TYPE	TYPE	(CFM)	(IN. WATER)	(FPM)	(RPM)	(IN)	(%)	(HP)	(HP)	VOLT/PH/HZ	(IN)	NOTES
EF-304	COOK ACRUD 135R15D	ROOF	DIRECT	UPBLAST	1200	0.4	774	1071	13.5	56	0.5	0.13	120/1/60	31/29	1-3

1. CONTRACTOR TO PROVIDE FAN SPEED CONTROLER.

2. PROVIDE A DISCONNECT.

3. INTERLOCK SWITCH IN CONTROL ROOM WITH EF-304 AND MRI. WHEN SWITCH IS ACTIVATED IT WILL TURN ON/OFF FAN.

						COMPUTE	R ROOM UNIT	SCHEDUL	E							
			SUPPLY FAN		COOLING				HUMID	FILTERS	ELECTRICAL					
				EXTERNAL	SENSIBLE	ROOM	LEAVING									
				STATIC	MINIMUM	AIR	AIR					SUPPLY		HEIGHT/		
	MANUFACTURER		AIR FLOW	PRESSURE	COOLING	TEMPERATURE	TEMPERATURE				FLA /	FAN		LENGTH/		
	AND		RATE	DROP	LOAD	DB/% RH	DB/WB	WORKING	CAPACITY	FILTER	WSA /	MOTOR		WIDTH	WEIGHT	
ID	MODEL NUMBER	LOCATION	(CFM)	(IN H20)	(BTUH)	(DEG. F)	(DEG. F)	FLUID	(LB/HR)	EFFICIENCY	OPD	(HP)	V/PH	(IN)	(LBS)	NOT
CRAC-1	LIEBERT MMD60E	EQUIPMENT CLOSET	2500	0.05	51,500	75/44.6	51.6	R-407C	8	MERV 8	7.2/9/15	1.5	460/3	24/46.5/51	498	1-

1. SELECTION BASED ON 4735 FT

2. UNIT WITH CONDENSATE PUMP, PIPE TO NEAREST FLOOR DRAIN

3. SEE SPECIFICATIONS FOR REQUIRED COMPONENTS & INFARED HUMIDIFIER

4. UNIT ON EMERGENCY POWER

5. PROVIDE DIGITAL-SCROLL COMPRESSOR & EC PLUG FANS

6. 18" DISCHARGE SUPPLY BOX WITH GRILLE

	CONDENSING UNIT SCHEDULE - AIR COOLED													
				AMBIENT			ELECTRICAL							
				AIR			WIRE		CONDENSER	OVERLOAD		HEIGHT /		
	MANUFACTURER		TOTAL	TEMP.	PAIRED		SIZE		FAN FULL	PROTECTION		WIDTH /		
	AND		CAPACITY	DB/WB	INDOOR	NO.	AMPS	MCA	LOAD AMPS	DRAW	VOLTS/	DEPTH	WEIGHT	
ID	MODEL NUMBER	REFRIGERANT	(BTUH)	(°F)	UNIT	CIRCUITS	(WSA)	(AMPS)	(FLA)	(OPD)	PHASE	(IN)	(LBS)	NOTES
CU-1	LIEBERT PFH067A-YH7	R-407C	51,500	105	CRAC-1	1	14.2	-,-	11.7	20	460/3	41.75/36/53	488	1-3

1. PERFORMANCE AT DESIGN ELEVATION OF 4,735' ASL.

2. UNIT SHALL BE CAPABLE OF LOW AMBIENT OPERATION DOWN TO-20°F

3. PROVIDE 18" LEG STANDS MOUNTED ON ROOF CURB

	PLUMBING FIXTURE SCHEDULE											
		CW	HW	W	V	DESCRIPTION						
ID	FIXTURE	(IN)	(IN)	(IN)	(IN)		NOTES					
S-1	WORK SINK	1/2	1/2	2	2	COUNTER MOUNTED, STAINLESS STEE, WITH WRISTBLADES	SINK (STAINLESS STEEL, COUNTER MOUNTED, SINGLE COMPARTMENT): JUST SL-2119-A-GR 18 GA. TYPE 304 STAINLESS STEEL SINK, 16" X 7 1/2" DEEP BASIN, SELF RIMMING, WITH INTEGRA DRAIN AND 8" CENTERS DRILLING. CHICAGO 786-GN8FCXKABCP FAUCET, WITH WRISTBLADE HANDLES. GN8FC RIGID/SWING GOOSENECK SPOUT WITH 1.5 LAMINAR FLOW CONTROL IN SPOUT. FLEXIBLE STAINLESS STEEL SUPPLIES WITH WITH LOOSE KEY ANGLE STOPS. CAST BRASS P-TRAP WITH CLEAN OUT PLUG, AND JUST J-35-FS OPEN GRID STRAINER MOUNTED FLUSH WITH SINK BOTTOM.					
FS-1	FLOOR SINK	-	-	3	2	FLOOR SINK	FLOOR SINK: SMITH FIGURE 3100Y CAST IRON FLANGED RECEPTOR WITH ACID RESISTANT INTERIOR COATING, NICKEL BRONZE RIM AND SECURED 1/2 GRATE AND ALUMINUM DOME BOTTOM STRAINER. FLOOR SINK TO BE INSTALLED IN ELEVATED CONCRETE.					

			GRILLES, REGISTERS AND DIFFUSE	RS
CD-1	EH PRICE	SPD	FACE STYLE: SQUARE PLAQUE DIFFUSER FACE SIZE: 12" x 12", 24" x 24" AS REQUIRED TO FIT CEILING TILE SPACE AVAILABLE APPLICATION: ENGINEERED FAN COIL SYSTEM MATERIAL: STEEL/ALUMINUM CONSTRUCTION FOR MRI FINISH: COORDINATE COLOR WITH ARCHITECT	MOUNTING-FRAME: LAY-IN, SURFACE MOUNTED (C/W CEILING TYPE.) PATTERN: 360° RADIAL HORIZONTAL AIR PATTERN DAMPER: OPPOSED BLADE MAX NC - 30 DAMPER: NONE REMOVABLE FACE
RG-1 EG-1	EH PRICE	PDDR	FACE STYLE: PERFORATED RETURN AIR UNIT FACE SIZE: 12" x 12", 24" x 24" AS REQUIRED TO FIT CEILING TILE SPACE AVAILABLE. APPLICATION: AIR RETURN MATERIAL: STEEL/ALUMINUM CONSTRUCTION FOR MRI FINISH: COORDINATE COLOR WITH ARCHITECT	MOUNTING-FRAME: LAY-IN, SURFACE MOUNTED (C/W CEILING TYPE.) DAMPER: NONE MAX NC - 30 REMOVABLE FACE & CORE
CD-2	EH PRICE	80	FACE STYLE: CRATE SUPPLY AIR UNIT FACE SIZE: 24" x 24" AS REQUIRED TO FIT CEILING TILE SPACE AVAILABLE APPLICATION: PRESSURIZED AIR SUPPLY MATERIAL: ALUMINUM FINISH: COORDINATE COLOR WITH ARCHITECT	MOUNTING-FRAME: RIDGID DUCT CONNECTION (C/W CEILING TYPE.) DAMPER: OPPOSED BLADE MAX NC - 30 REMOVABLE FACE & CORE
RG-2	EH PRICE	80	FACE STYLE: CRATE RETURN AIR UNIT FACE SIZE: 24" x 24" AS REQUIRED TO FIT CEILING TILE SPACE AVAILABLE APPLICATION: PRESSURIZED AIR RETURN MATERIAL: ALUMINUM FINISH: COORDINATE COLOR WITH ARCHITECT	MOUNTING-FRAME: RIDGID DUCT CONNECTION (C/W CEILING TYPE.) DAMPER: OPPOSED BLADE MAX NC - 30 REMOVABLE FACE & CORE
SWR-1	EH PRICE	635	FACE STYLE: SIDE WALL RETURN AIR GRILLE ARRANGEMENT: STATIONARY HORIZONTAL BLADE ORIENTATION: 45 DEG DEFLECTION VANES SPACED AT 1/2 INCH CENTERS. FRONT BLADES PARALLEL TO SHORT DIMENSION. MATERIAL: ALUMINUM CONSTRUCTION FOR MRI FINISH: COORDINATE COLOR WITH ARCHITECT	FRAME: 1.25 INCH FLAT / BORDER MOUNTING: SURFACE PATTERN: PERMANENT 45 DEGREE DEFLECTION DAMPER: OPPOSED BLADE MAX NC - 30

1. DEFAULT SUPPLY AND RETURN GRILLES ARE LISTED AS CD-1 & RG-1.

MEDICAL GAS VALVE SCHEDULE										
		PIPE SIZE (INCHES	3)							
ID	AREA SERVED	O2	MA	MV	NOTES					
MV-1	MRI	3/4	3/4	1	1					

1. ALL VALVE BOXES TO COME WITH GAUGES.

		MED	ICAL GAS	OUILEI	S SCHEDU	LE		
		# OF OUTLETS			PIPE DROP SIZE	TO OUTLET(S)		
ID	ROOM TYPE	02	MA	MV	02	MA	MV	NOTES
MO-1	MRI	1	1	1	1/2	1/2	3/4	1,2

UNLESS NOTED OTHERWISE, ALL OUTLETS ARE OHMEDA STYLE PIN INDEX TYPE CONNECTION
REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT LOCATION AND PLACEMENT OF OUTLETS.

1. PIPE DROP SIZES ARE FOR ONE SET OF OUTLETS

2. WALL MOUNTED OUTLETS

HKS

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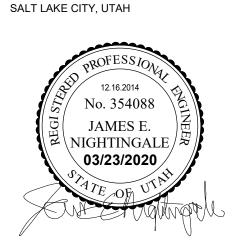
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MECHANICAL ENGINEER

VBFA INC. 181 EAST 5600 SOUTH, SUITE 130 MURRAY, UTAH

ELECTRICAL ENGINEER
SPECTRUM ENGINEERS
324 STATE STREET, SUITE 400



TIMPANOGOS MRI REMODEL

KEY PLAN

REVISION

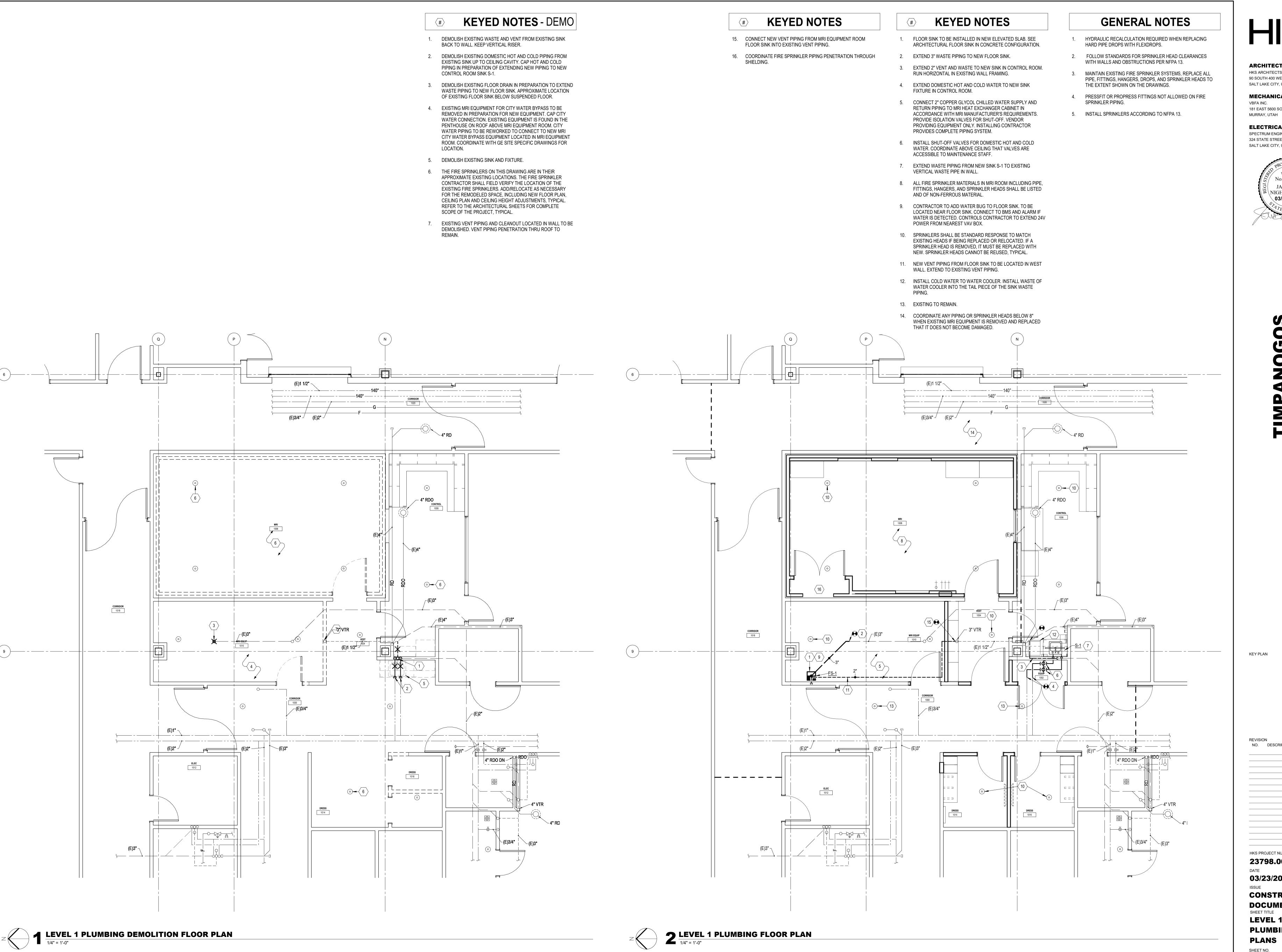
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
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ISSUE
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DOCUMENTS
SHEET TITLE

SHEET NO.

MECHANICAL

SCHEDULES

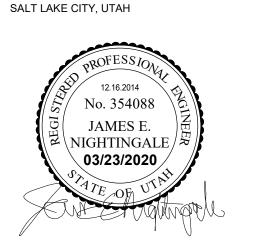


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MECHANICAL ENGINEER VBFA INC. 181 EAST 5600 SOUTH, SUITE 130

ELECTRICAL ENGINEER SPECTRUM ENGINEERS 324 STATE STREET, SUITE 400



HKS PROJECT NUMBER

23798.000 03/23/2020 CONSTRUCTION

DOCUMENTS LEVEL 1 **PLUMBING FLOOR**

PLANS SHEET NO.

KEYED NOTES - DEMO

- 1. DEMOLISH EXISTING MEDICAL OXYGEN AND VACUUM OUTLET. DEMOLISH PIPING ON WALL UP TO CEILING SPACE. DEMOLISH 1/2" MEDICAL VACUUM BACK TO TEE.
- 2. CONTRACTOR TO PROVIDE LINE ITEM PRICING FOR ADD ALTERNATE OF REWORKING MEDICAL GAS VALVE BOX TO BE
- WITH OWNER BEFORE SHUT DOWN OF GASES AND DEMOLITION
- 4. DEMOLISH EXISTING MEDICAL OXYGEN AND VACUUM OUTLET AND CAP PIPING BACK AT MAIN. DEMOLITION ONLY OCCURS IF

KEYED NOTES

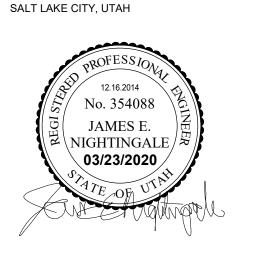
- 1. CONTRACTOR TO COORDINATE WITH OWNER FOR SHUT DOWN OF MEDICAL AIR TO EXTEND TO VALVE BOX.
- 2. CERITIFICATION EXPENSE OF MEDICAL GASES TO BE BY THE CONTRACTOR AFTER CONNECTION AND VALVE BOX REWORK HAVE BEEN COMPLETED.
 - 3. IF ADD ALT FOR DRESSING ROOMS ARE ACCEPTED, NEW MEDICAL GAS VALVE BOX WOULD BE MOVED TO THIS LOCATION. ACCESS WOULD BE LOCATED ON CORRIDOR SIDE.
 - 4. EXTEND MEDICAL OXGEN AND VACUUM TO MRI.
 - 5. STUB OUT MEDICAL AIR 3/4" PIPING WITH SHUT-OFF VALVE FOR FUTURE USE.
 - 6. MEDICAL GAS PIPING TO BE ROUTED THRU CONNECTION "PATH-
 - 7. IF ADD ALT FOR DRESSING ROOMS ARE NOT ACCEPTED, NEW MEDICAL GAS VALVE BOX TO BE INSTALLED WITH ACCESS FROM TO CORRIDOR SIDE.
 - 8. INSTALL NEW 3/4" MEDICAL GAS PIPING FOR MRI.

ARCHITECT HKS ARCHITECTS, INC. 90 SOUTH 400 WEST, SUITE 110 SALT LAKE CITY, UT 84101

MECHANICAL ENGINEER VBFA INC. 181 EAST 5600 SOUTH, SUITE 130

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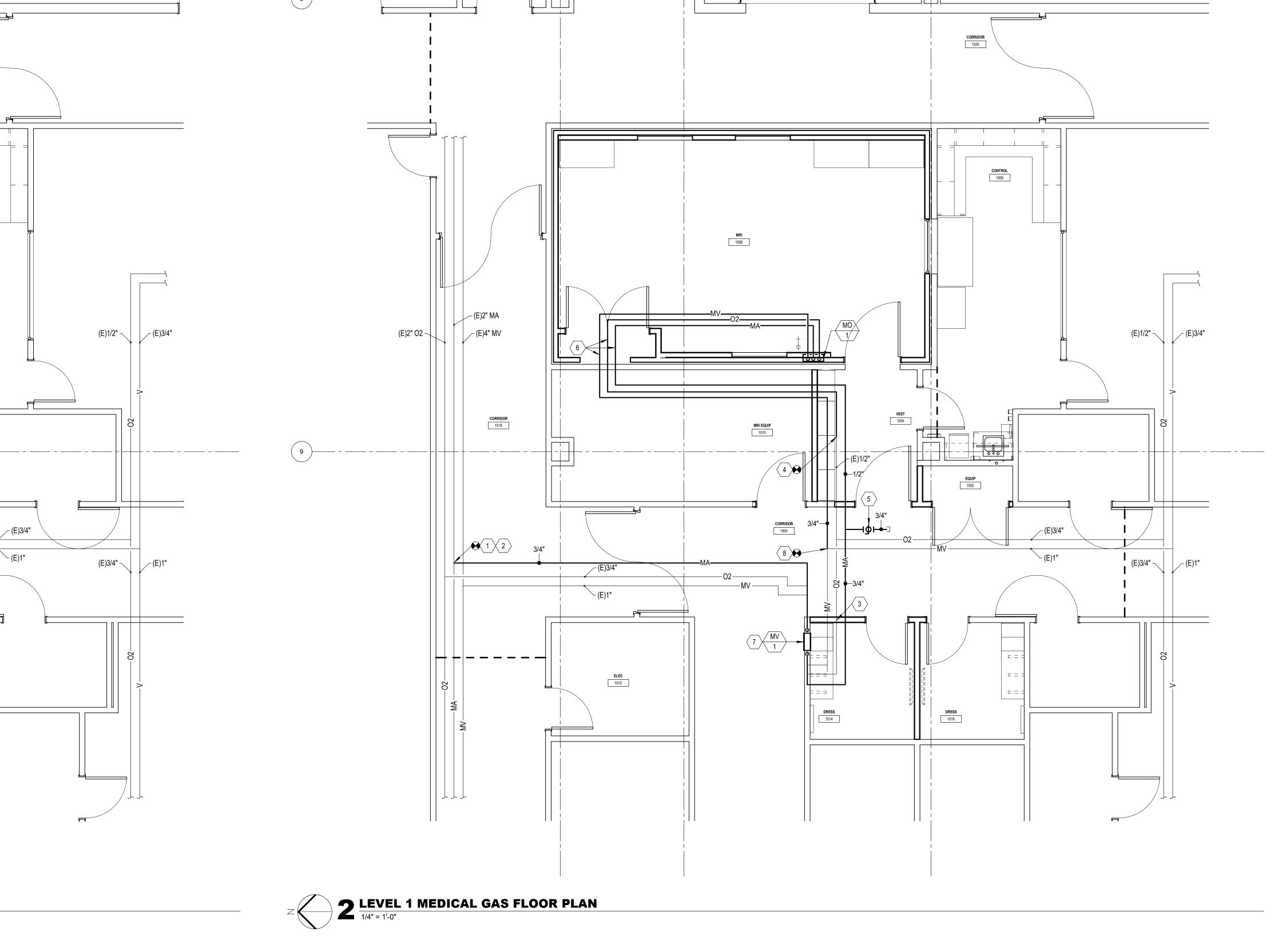


KEY PLAN

HKS PROJECT NUMBER 23798.000 03/23/2020

CONSTRUCTION **DOCUMENTS LEVEL 1 MEDICAL**

GAS FLOOR PLANS SHEET NO. **P2.01**



ADD ALT FOR THE DRESSING ROOMS ARE BUILT.

(E)1/2" –

MRI 1008 __(E)4" MV

2 3

CORRIDOR 1000

1 LEVEL 1 MEDICAL GAS DEMOLITION FLOOR PLAN

9 ------

SYMBOL	SYMBOLS LEGEND DESCRIPTION
REFERENC	E AND LINE SYMBOLS
01 A5	DETAIL INDICATOR: A5 INDICATES DETAIL NUMBER, E-501
E-501	INDICATES DRAWING SHEET WHERE DETAIL IS SHOWN.
02	
A5 E-201	ELEVATION OR SECTION INDICATOR, EXTERIOR: A5 INDICATES ELEVATION OR SECTION NUMBER, E-201 INDICATES DRAWING SHEET WHERE ELEVATION OR SECTION IS SHOWN.
L-201	SHEET WHERE ELEVATION OR SECTION IS SHOWN.
03 A5	ELEVATION OR SECTION INDICATOR, INTERIOR: A5 INDICATES
E-201	ELEVATION OR SECTION NUMBER, E-201 INDICATES DRAWING SHEET WHERE ELEVATION OR SECTION IS SHOWN.
ROOM NAME	ROOM IDENTIFIER WITH ROOM NAME AND NUMBER.
04 100 05 (1)	KEYNOTE INDICATOR.
06	REVISION INDICATOR.
07 CU-1 >	EQUIPMENT INDICATOR.
08	MECHANICAL EQUIPMENT INDICATOR. "X-X" INDICATES
X-X XMDP	EQUIPMENT MARK SHOWN ON EQUIPMENT SCHEDULE. "XMDP" IDENTIFIES PANEL EQUIPMENT IS CIRCUITED TO. REFER TO EQUIPMENT SCHEDULE FOR ADDITIONAL INFORMATION.
09	BREAK, STRAIGHT: TO BREAK PARTS OF DRAWING
10 /	BREAK, ROUND
12	NEW LINE: MEDIUM LINE.
14	
15	EXISTING TO REMAIN LINE: THIN LINE.
	DEMOLITION LINE: DASHED, MEDIUM LINE
WIRING ME	
04	WIRING.
	BRANCH CIRCUIT HOME RUN TO PANELBOARD: NUMBER OF ARROWS INDICATES NUMBER OF CIRCUITS. LETTER AND NUMBER NOTATIONS IDENTIFY PANEL AND CIRCUIT NUMBERS.
A-1,3,5	NUMBER NOTATIONS IDENTIFY PANEL AND CIRCUIT NUMBERS. USE #12 CONDUCTORS, EXCEPT #10 CONDUCTORS SHALL BE INSTALLED IF DISTANCES EXCEED THOSE SPECIFIED IN THE
05	ELECTRICAL SPECIFICATIONS.
	BRANCH CIRCUIT HOME RUN TO PANELBOARD: NUMBER OF ARROWS INDICATES NUMBER OF CIRCUITS. LETTER AND
1	NUMBER NOTATIONS IDENTIFY PANEL AND CIRCUIT NUMBERS. NUMBER IN BOX REFERS TO THE CONDUCTOR AND CONDUIT
A-1,3,5	SCHEDULE. FOR BRANCH WIRING USE #12 CONDUCTORS, EXCEPT #10 CONDUCTORS SHALL BE INSTALLED IF DISTANCES EXCEED THOSE SPECIFIED IN THE ELECTRICAL
07	SPECIFICATIONS.
07	FLEXIBLE WIRING.
08	WIRING AND/OR RACEWAY: THIN LINE. WHERE "X" = :
	CATV = CABLE TELEVISION NC = NURSE CALL CCTV = CLOSED CIRCUIT P = POWER
— x —	TELEVISION RC = RIGID CONDUIT FA = FIRE ALARM S = SOUND FO = FIRER OPTICS T = TELEPHONE
	FO = FIBER OPTICS T = TELEPHONE I = INTERCOM TV = TELEVISION
	OTHERS AS NOTED IN OTHER SCHEDULES. RACEWAYS AND WIRING SHALL BE SIZED AS SHOWN AND/OR SPECIFIED.
09	LOW VOLTAGE WIRING: DIVIDE, MEDIUM LINE.
10	CONDUIT STUB. DIMENSION RECORD DRAWINGS AND MARK.
11 1	CONDUCTOR & CONDUIT ("CC") SCHEDULE INDICATOR. REFER TO ONE-LINE DIAGRAM.
12 (HC)	ADA ACCESS PUSH PLATE
13 O	JUNCTION BOX.
¹⁴	JUNCTION BOX, SYSTEMS FURNITURE COMMUNICATION CONNECTION.
15 O _{SE}	JUNCTION BOX, SECURITY SYSTEM. PROVIDE CONDUIT AND ROUGH-IN PER SECURITY DRAWINGS.
	CABLE TRAY ABOVE ACCESSIBLE CEILING.
20 W W	WIREWAY.
21	EARTH GROUND (ONE-LINE DIAGRAM).
± 22	JUNCTION BOX, CEILING.
23 111111	LADDER RACK.
25	MECHANICAL EQUIPMENT CONNECTION. REFER TO EQUIPMENT
00	SCHEDULE FOR REQUIREMENTS. REFER TO FIXTURE SCHEDULE FOR SYMBOLS)
01	L. TO TIXTONE GOLIEDULE FOR STIMBULS)
(W-3)	FIXTURE IDENTIFICATION: (W-3) INDICATES FIXTURE TYPE AS SCHEDULED.
02	
(W-3)	FIXTURE IDENTIFICATION, EMERGENCY WITH BATTERY PACK, CONNECTED TO GENERATOR AS INDICATED: (W-3) INDICATES FIXTURE TYPE AS SCHEDULED.
03	
EM	EMERGENCY.
NL 05	NIGHT LIGHT: DO NOT SWITCH.
05 ↑ 07 →	EGRESS DIRECTION ARROW (EXIT SIGNS).
08	EXIT SIGN: SINGLE FACE; CEILING MOUNTED
09	EXIT SIGN: SINGLE FACE; WALL MOUNTED
10 0	EXIT SIGN: DOUBLE FACE; CEILING MOUNTED
<u> </u>	EXIT SIGN: DOUBLE FACE; WALL MOUNTED
LIGHTING (
01 *<	OCCUPANCY SENSOR, DUAL TECHNOLOGY, OMNI-DIRECTIONAL, CEILING.
02 学	OCCUPANCY SENSOR, DUAL TECHNOLOGY, WALL.
06	VACANCY SENSOR, DUAL TECHNOLOGY, OMNI-DIRECTIONAL, CEILING.
07	VACANCY SENSOR, DUAL TECHNOLOGY, WALL.
₽	PHOTOCELL.
08 P a,b	LOW VOLTAGE DIGITAL LIGHTING CONTROL SWITCH: LETTER
08 P	LOW VOLTAGE DIGITAL LIGHTING CONTROL SWITCH: LETTER "a,b" INDICATES ZONING WHERE SHOWN (REFER TO PLANS, SCHEDULES, AND DETAILS FOR EXACT BUTTON CONFIGURATION AND PROGRAMMING REQUIREMENTS)
08 P 18 a,b	"a,b" INDICATES ZONING WHERE SHOWN (REFER TO PLANS, SCHEDULES, AND DETAILS FOR EXACT BUTTON CONFIGURATION
08 P a,b	"a,b" INDICATES ZONING WHERE SHOWN (REFER TO PLANS, SCHEDULES, AND DETAILS FOR EXACT BUTTON CONFIGURATION AND PROGRAMMING REQUIREMENTS)

S	SYMBOL	SYMBOLS LEGEND DESCRIPTION	SY	′MBOL	SYMBOLS LEGEN DESCRIPTION
00 W	IRING DE	EVICES	00 ELE	CTRICA	AL POWER AND DISTRIBUTION
01	ф	RECEPTACLE, SINGLE: NEMA 5-20R. EMERGENCY, HOSPITAL GRADE.	01		FUSE WITH RATING (ONE-LINE DIAGRAM).
02		RECEPTACLE, DUPLEX: NEMA 5-20R.	02	<u></u>	
03		RECEPTACLE, DUPLEX, ABOVE COUNTER: NEMA 5-20R.		H	DISCONNECT, FUSED (ONE-LINE DIAGRAM).
06	ΨΑ	RECEPTACLE, DUPLEX WITH GROUND FAULT CIRCUIT INTERRUPTER, DRINKING FOUNTAIN: CONCEAL WATER COOLER	03	<u> </u>	DISCONNECT, NONFUSED (ONE-LINE DIAGRA
	\bigoplus_{DF}	RECEPTACLE BEHIND WATER COOLER. SEE MECHANICAL/PLUMBING SHOP DRAWINGS FOR INSTALLATION	04	<u> </u>	
12	Ш	REQUIREMENTS. RECEPTACLE, DUPLEX, HOSPITAL GRADE: NEMA 5-20R.		7	
13				보	
14	<u> </u>	RECEPTACLE, DUPLEX ON EMERGENCY POWER: NEMA 5-20R. RECEPTACLE, DUPLEX, HOSPITAL GRADE ON EMERGENCY		Ţ	DISCONNECT WITH FUSE AND MOTOR STAR' (ONE-LINE DIAGRAM).
15	<u> </u>	POWER: NEMA 5-20R.		\int	
16	<u> </u>	RECEPTACLE, DUPLEX, CONNECTED TO UPS: NEMA 5-20R.			
17		RECEPTACLE, DUPLEX WITH GROUND FAULT CIRCUIT INTERRUPTER: NEMA 5-20R.	05		
18		RECEPTACLE, DUPLEX WITH GROUND FAULT CIRCUIT INTERRUPTER, HOSPITAL GRADE: NEMA 5-20R.		5	OVERLOAD RELAY (ONE-LINE DIAGRAM).
10	Щ	RECEPTACLE, DUPLEX WITH GROUND FAULT CIRCUIT INTERRUPTER, HOSPITAL GRADE ON EMERGENCY POWER:	06	十	STARTER (ONE-LINE DIAGRAM).
00		NEMA 5-20R.	0.7	5	,
22	#	RECEPTACLE, QUADRAPLEX: NEMA 5-20R.	07	1	CIRCUIT BREAKER, MOLDED CASE (ONE-LINE
23	#	RECEPTACLE, QUADRAPLEX ON EMERGENCY POWER: NEMA 5-20R.		1	ONCON BREAKER, MOLDED CAGE (ONE-EINE
24	#	RECEPTACLE, QUADRAPLEX, HOSPITAL GRADE: NEMA 5-20R.	08	ا	CIRCUIT BREAKER, MOLDED CASE WITH SHU
25	#	RECEPTACLE, QUADRAPLEX, HOSPITAL GRADE ON EMERGENCY POWER: NEMA 5-20R.			(ONE-LINE DIAGRAM).
27	#	RECEPTACLE, QUADRAPLEX WITH GROUND FAULT CIRCUIT INTERRUPTER: NEMA 5-20R.	10	ا	
28	$\frac{\bullet}{\Diamond}$	RECEPTACLE, SPECIAL PURPOSE. PROVIDE RECEPTACLE TO MATCH EQUIPMENT PLUG.		(CIRCUIT BREAKER, SOLID STATE (ONE-LINE I
29	${\downarrow}$	RECEPTACLE, SPECIAL PURPOSE ON EMERGENCY POWER.	11	1	
32		PROVIDE RECEPTACLE TO MATCH EQUIPMENT PLUG. RECEPTACLE, CLOCK HANGER: NEMA 5-15R.		-(CIRCUIT BREAKER, SOLID STATE WITH GROUP PROTECTION (ONE-LINE DIAGRAM).
33		MULTI-OUTLET ASSEMBLY: NEMA 5-20R.	12		MOTOR.
34			16		INIOTOIX.
36	(D)	DROP CORD. SEE DETAIL. FLUSH FLOOR BOX. "#" SHOWN ON DRAWINGS. REFER TO	<u> </u>	<u>Ш</u>	TRANSFORMER (ONE-LINE DIAGRAM).
	FB#	WIRING DEVICE SCHEDULE IN THE ELECTRICAL SPECIFICATIONS	20		
37		FOR CONFIGURATION AND DEVICES.	21 ,	Δ	DELTA CONNECTION (ONE-LINE DIAGRAM).
37	PP#	POWER POLE. "#" SHOWN ON DRAWINGS. REFER TO WIRING DEVICE SCHEDULE IN THE ELECTRICAL SPECIFICATIONS FOR		\	WYE CONNECTION (ONE-LINE DIAGRAM).
		CONFIGURATION AND DEVICES.		=	,
38	PT#	FLUSH FIRE RATED POKE THRU. "#" SHOWN ON DRAWINGS. REFER TO WIRING DEVICE SCHEDULE IN THE ELECTRICAL	23	25/3	
	1 1#	SPECIFICATIONS FOR CONFIGURATION AND DEVICES.		"1H"	PANELBOARD WITH MAIN LUGS ONLY. BUS S SHOWN (ONE-LINE DIAGRAM).
39	ф	SWITCH, DIMMER.			
40	X \$	SWITCH, SINGLE POLE ("x" INDICATES FIXTURES CONTROLLED).	24		
42	X \$3	SWITCH, THREE-WAY ("x" INDICATES FIXTURES CONTROLLED).	I IY	225/3 "1H"	PANELBOARD WITH MAIN CIRCUIT BREAKER AS
43	X \$4	SWITCH, FOUR-WAY ("x" INDICATES FIXTURES CONTROLLED).			SHOWN (ONE-LINE DIAGRAM).
45	**************************************	SWITCH, KEY OPERATED.	25		
47	•	SWITCH, MOMENTARY.		225/3	
53	\$M	RECEPTACLE, QUADRAPLEX WITH GROUND FAULT CIRCUIT		"1H"	PANELBOARD WITH MAIN AND SUB FEED CIF (ONE-LINE DIAGRAM).
54	*	INTERRUPTER, HOSPITAL GRADE: NEMA 5-20R.		• • • • • • • • • • • • • • • • • • •	
	#	RECEPTACLE, QUADRAPLEX WITH GROUND FAULT CIRCUIT INTERRUPTER, HOSPITAL GRADE ON EMERGENCY POWER:	26 _	0/3)	
56	1.1	NEMA 5-20R.	(•	25/3	DANIEL DO ADD WITH MAIN LLICE ONLY AND C
57	<u> </u>	RECEPTACLE, SINGLE PLEX, WITH USB OUTLET		"1H" _•••	PANELBOARD WITH MAIN LUGS ONLY AND S WITH CIRCUIT BREAKER (ONE-LINE DIAGRAN
01	₩	RECEPTACLE, DULEX, RECESSED, NEMA 5-20R, AUTOMATICALLY CONTROLLED THROUGH TIME OR OCCUPANCY BASED	17	5/3	
58		CONTROLS (REFER TO PLANS FOR CONTROL METHOD)	225/3 "1H'		PANELBOARD WITH SUB FEED LUGS (ONE-LI
36	#	RECEPTACLE, QUADRAPLEX, RECESSED, NEMA 5-20R, AUTOMATICALLY CONTROLLED THROUGH TIME OR OCCUPANCY			,
	₩	BASED CONTROLS (REFER TO PLANS FOR CONTROL METHOD)	28 2225 "1H		PANELBOARD WITH CIRCUIT BREAKER AND
59	11	INDICATES A RECEPTACLE IS AUTOMATICALLY CONTROLLED		_] ```]	(ONE-LINE DIAGRAM).
	#	THROUGH TIME OR OCCUPANCY BASED CONTROLS (REFER TO PLANS FOR CONTROL METHOD)	29	_L-¬	
00 ST	RUCTUF	RED CABLING			CT CABINET PER UTILITY'S REQUIREMENTS (
01	abla	COMMUNICATIONS DEVICE (1 DATA).			
02	₩	COMMUNICATIONS DEVICE (1 DATA / 1 ANALOG).	31		
03	 ▼	, , , , , , , , , , , , , , , , , , ,			TRANSFER SWITCH (ONE-LINE DIAGRAM).
04		COMMUNICATIONS DEVICE (2 DATA)	33	_H ∪	SEDVICE ENTRANCE CURSE PROFESSION
05	<u></u>	COMMUNICATIONS DEVICE (2 DATA).	34	<u> </u>	SERVICE ENTRANCE SURGE PROTECTION (C
06	▼ 3	COMMUNICATIONS DEVICE (3 DATA).	35	<u>©</u>	GENERATOR, ANNUNCIATOR (ONE-LINE DIAC
	▼4	COMMUNICATIONS DEVICE (4 DATA).	(<u>G</u>	GENERATOR, POWER (ONE-LINE DIAGRAM).
07	▼ 6	COMMUNICATIONS DEVICE (6 DATA).	36	M	METER.
80	\triangle_{M}	COMMUNICATIONS DEVICE PHYSIOLOGICAL MONITOR (1 DATA).	VFC	VFD	VARIABLE FREQUENCY MOTOR CONTROLLE DIAGRAM).
09	▼WAP	COMMUNICATIONS DEVICE WIRELESS ACCESS POINT (2 DATA).	41		DISCONNECT SWITCH, FUSED.
°CL	OCK		42	□	DISCONNECT SWITCH, UNFUSED.
01	нC	CLOCK.	43	X 7	STARTER, COMBINATION WITH DISCONNECT
02	+© _G	CLOCK, SURFACE WITH WIRE GUARD.	44		STARTER OR MOTOR CONTROLLER.
	JRSE CA	LL.	45	•	PUSHBUTTON.
01	©	JUNCTION BOX.	46	:	PUSHBUTTONS, MOTOR CONTROL.
02		CORRIDOR LIGHT.	47		·
03	$\frac{\triangle}{\blacksquare}$		48		PANELBOARD CABINET, FLUSH MOUNTED.
04	B	BATHROOM PULL CORD STATION.		77	PANELBOARD CABINET, SURFACE MOUNTED
05	<u></u>	DUTY STATION.			PANELBOARD CABINET, SURFACE MOUNTED
	Ē	EMERGENCY ASSISTANCE CALL STATION.			DISTRIBUTION PANEL OR SWITCHBOARD.
06	Е св	EMERGENCY ASSISTANCE CODE BLUE CALL STATION.		P#	
07	P	PATIENT STATION.	51	LP	LIGHTING RELAY, CONTACTOR PANEL, OR D
80	s	STAFF STATION.	52		LIGHTING CONTROL STATION.
09	NCM	TOUCH SCREEN NURSE CALL MASTER STATION.	55	\$ST	SWITCH, TOGGLE MOTOR STARTER WITH OVER PROTECTION.
10	ZLC	ZONE LIGHT CONTROLLER.	56	75	TRANSFORMER: NUMBER INDICATES kVA.
11	cu	NURSE CALL AREA CONTROL UNIT & POWER SUPPLIES.	<u> </u>		<u> </u>

	SYMBOLS LEGEND
SYMBOL	DESCRIPTION
©LECTRICA	L POWER AND DISTRIBUTION
01 ———	FUSE WITH RATING (ONE-LINE DIAGRAM).
02	DISCONNECT FLISED (ONE LINE DIACRAM)
	DISCONNECT, FUSED (ONE-LINE DIAGRAM).
03	DISCONNECT, NONFUSED (ONE-LINE DIAGRAM).
04	
Ŧ	DISCONNECT WITH FUSE AND MOTOR STARTER COMBINATION
5	(ONE-LINE DIAGRAM).
05	OVERLOAD RELAY (ONE-LINE DIAGRAM).
⁰⁶ $\frac{\bot}{\top}$	STARTER (ONE-LINE DIAGRAM).
07	
(CIRCUIT BREAKER, MOLDED CASE (ONE-LINE DIAGRAM).
08	
(,	CIRCUIT BREAKER, MOLDED CASE WITH SHUNT TRIP (ONE-LINE DIAGRAM).
▼ 1 10 1	·
[-(<u> </u>	CIRCUIT BREAKER, SOLID STATE (ONE-LINE DIAGRAM).
11	
-(CIRCUIT BREAKER, SOLID STATE WITH GROUND FAULT PROTECTION (ONE-LINE DIAGRAM).
12 ()	MOTOR.
16	
<u> </u>	TRANSFORMER (ONE-LINE DIAGRAM).
20	DELTA CONNECTION (ONE-LINE DIAGRAM).
21	, ,
-	WYE CONNECTION (ONE-LINE DIAGRAM).
23	
225/3 "1H"	PANELBOARD WITH MAIN LUGS ONLY. BUS SIZE AND PHASE AS SHOWN (ONE-LINE DIAGRAM).
	SHOWN (SHE ENVERSE WIN).
24	
"1H"	PANELBOARD WITH MAIN CIRCUIT BREAKER. SIZE AND PHASE AS
	SHOWN (ONE-LINE DIAGRAM).
25	
)225/3 "1H"	PANELBOARD WITH MAIN AND SUB FEED CIRCUIT BREAKER
	(ONE-LINE DIAGRAM).
60/3	
225/3	
"1H"	PANELBOARD WITH MAIN LUGS ONLY AND SURGE PROTECTION WITH CIRCUIT BREAKER (ONE-LINE DIAGRAM).
25/3	
225/3 "1H" 225/3 "1H"	PANELBOARD WITH SUB FEED LUGS (ONE-LINE DIAGRAM).
28	
) "1H" "1H"	PANELBOARD WITH CIRCUIT BREAKER AND SUB FEED LUGS (ONE-LINE DIAGRAM).
29	·
	OT CADINET DED LITH ITWO DECLUBERS FOR COME THE FOREST
	CT CABINET PER UTILITY'S REQUIREMENTS (ONE-LINE DIAGRAM).
31 - -	
	TRANSFER SWITCH (ONE-LINE DIAGRAM).
33 <u>- I</u>	SERVICE ENTRANCE SURGE PROTECTION (ONE LINE DISCRASS)
34 G	SERVICE ENTRANCE SURGE PROTECTION (ONE-LINE DIAGRAM). GENERATOR, ANNUNCIATOR (ONE-LINE DIAGRAM).
35 (G)	GENERATOR, ANNUNCIATOR (ONE-LINE DIAGRAM). GENERATOR, POWER (ONE-LINE DIAGRAM).
36 (M)	METER.
38 VFC VFD	VARIABLE FREQUENCY MOTOR CONTROLLER (ONE-LINE
41 Zr	DISCONNECT SWITCH, FUSED.
42	DISCONNECT SWITCH, UNFUSED.
43 X h	STARTER, COMBINATION WITH DISCONNECT SWITCH.
44	STARTER OR MOTOR CONTROLLER.
45	PUSHBUTTON.
46	PUSHBUTTONS, MOTOR CONTROL.
47	PANELBOARD CABINET, FLUSH MOUNTED.
48	PANELBOARD CABINET, SURFACE MOUNTED, 1 SECTION.
49	PANELBOARD CABINET, SURFACE MOUNTED, 2 SECTION.
50	
//// DP#	DISTRIBUTION PANEL OR SWITCHBOARD.
51 LP	LIGHTING RELAY, CONTACTOR PANEL, OR DIMMING ENCLOSURE.
52	LIGHTING CONTROL STATION.
-	
55 \$ST	SWITCH, TOGGLE MOTOR STARTER WITH OVERLOAD PROTECTION.

		SYMBOLS LEGEND
	SYMBOL CCTV	
	01—P	CCTV CABLE, POWER.
	02V	CCTV CABLE, VIDEO SIGNAL.
	03 CCTV	CCTV HEADEND EQUIPMENT.
	04 M	CCTV MONITOR.
	05	CCTV CAMERA/ENCLOSURE WITH LENS, TYPICAL. SEE SCHEDULE.
	06 PTZ>	CCTV CAMERA WITH PAN, TILT AND ZOOM.
N	07 360°	PANNING CAMERA TRANSVERSE ANGLE.
	SECURITY	
	01—X	SECURITY CABLE. SEE EQUIPMENT SCHEDULE FOR CABLE TYPE.
	02 ACC	ACCESS CONTROL HEADEND EQUIPMENT.
	O3 CTR	SECURITY CONTROL PANEL.
	05 SEC	INTRUSION DETECTION HEADEND EQUIPMENT.
	06 #1	CARD ACCESS DOOR TYPE #1 OR AS NOTED. SEE SCHEDULE.
	07 CR	CARD READER.
	07 KCR	KEYPAD/CARD READER COMBINATION.
	00 09	DOOR SWITCH, BALANCED MAGNETIC CONTROL.
	● ER	EXIT REQUEST.
	10 RL	REMOTE DOOR RELEASE BUTTON.
	21 P	PANIC DURESS SWITCH.
	TV DISTRIE	BUTION
	01T	TV DISTRIBUTION CABLE, INDIVIDUAL DROPS.
	02—TR	TV DISTRIBUTION CABLE, TRUNK.
	O3 CMB	COMBINER.
	04 DC	DIRECTIONAL COUPLER.
	DA DA	DISTRIBUTION AMPLIFIER (ONE-LINE DIAGRAM).
\S	06 SPL	SPLITTER (ONE-LINE DIAGRAM).
	07	TV OUTLET.
	08	SATELLITE ANTENNA.
	09	TV ANTENNA (ONE-LINE DIAGRAM).
	¹⁰ -⁄W/-	TERMINATOR, 75 OHM (TV DISTRIBUTION).
		DGY SYSTEMS
	01	TECHNOLOGY SYSTEM CABLE. SEE SPECIFIC JOB EQUIPMENT LIST FOR APPLICABLE DESIGNATIONS. EXAMPLES:
		C = CONTROL CABLE G = GROUND CABLE, 10 AWG, 1 CONDUCTOR, GREEN INSULATED
		M = MICROPHONE CABLE S = SPEAKER CABLE, 70 VOLT SYSTEM
N	02	Z = SPEAKER CABLE, 8 OHM SYSTEM
	(S) _#	SPEAKER, CEILING MOUNTED.
	03 +S) _#	SPEAKER, WALL MOUNTED.
	40	EQUIPMENT CABINET.
	CP#	CONNECTION PANEL.
	OI FEAT	
	O2 FCD	FIRE SYSTEM ANNUNCIATOR.
AM).	O3 FDS	FIRE ALARM CONTROL PANEL, SEMI-RECESSED.
	07 FPS	FIRE ALARM NOTIFICATION POWER SUPPLY.
	08 CM	CONTROL MODULE.
	09 MM	MONITOR MODULE.
	11 _	FIRE ALARM MANUAL PULL STATION.
M).	∫ ₽	MAGNETIC DOOR HOLDER.
M).	15	
М).	15	DETECTOR, SMOKE.
M).	15 22	DETECTOR, SMOKE. DETECTOR, SMOKE, DUCT WITH HOUSING AND SAMPLING TUBE.
M).	15 2 22 2 23 (2)	
М).	15 2 22 23 3	DETECTOR, SMOKE, DUCT WITH HOUSING AND SAMPLING TUBE. DETECTOR, HEAT.
M).	22 23 25 27	DETECTOR, SMOKE, DUCT WITH HOUSING AND SAMPLING TUBE. DETECTOR, HEAT. STROBE.
M).	22 23 25 M 27 MP	DETECTOR, SMOKE, DUCT WITH HOUSING AND SAMPLING TUBE. DETECTOR, HEAT. STROBE. ALARM, HORN/SPEAKER, WEATHERPROOF.
М).	22 23 1 WP	DETECTOR, SMOKE, DUCT WITH HOUSING AND SAMPLING TUBE. DETECTOR, HEAT. STROBE. ALARM, HORN/SPEAKER, WEATHERPROOF. ALARM, HORN/STROBE, ONE ASSEMBLY.
M).	22 23 25 27 WP	DETECTOR, SMOKE, DUCT WITH HOUSING AND SAMPLING TUBE. DETECTOR, HEAT. STROBE. ALARM, HORN/SPEAKER, WEATHERPROOF.
M).	22 23 25 27 WP	DETECTOR, SMOKE, DUCT WITH HOUSING AND SAMPLING TUBE. DETECTOR, HEAT. STROBE. ALARM, HORN/SPEAKER, WEATHERPROOF. ALARM, HORN/STROBE, ONE ASSEMBLY. DETECTOR, FLOW SWITCH: FLOW SWITCHES SHALL BE PROVIDED AND INSTALLED WITH FIRE SPRINKLER SYSTEM AND SHALL BE CONNECTED TO LOCATIONS SHOWN ON THE FIRE SPRINKLER SHOP DRAWINGS. DETECTOR, TAMPER SWITCH WITH VALVE: TAMPER SWITCHES
M).	23 () 25 () 27 () WP 28 () 35 ()	DETECTOR, SMOKE, DUCT WITH HOUSING AND SAMPLING TUBE. DETECTOR, HEAT. STROBE. ALARM, HORN/SPEAKER, WEATHERPROOF. ALARM, HORN/STROBE, ONE ASSEMBLY. DETECTOR, FLOW SWITCH: FLOW SWITCHES SHALL BE PROVIDED AND INSTALLED WITH FIRE SPRINKLER SYSTEM AND SHALL BE CONNECTED TO LOCATIONS SHOWN ON THE FIRE SPRINKLER SHOP DRAWINGS.

SMOKE DAMPER.

75 ALAKIVI, FIORIN, GEIEII CANDELA RATING.

FIRE AND SMOKE DAMPER.

INDICATES CANDELA RATING.

ALARM, HORN/STROBE, ONE ASSEMBLY, CEILING MOUNTED. SUBSCRIPT INDICATES CANDELA RATING.

ALARM, STROBE, CEILING MOUNTED. SUBSCRIPT

ALARM, HORN, CEILING MOUNTED. SUBSCRIPT INDICATES

GENERAL ELECTRICAL NOTES **ABBREVIATIONS**

NOTE: ALL ABBREVIATIONS MAY NOT BE USED.

kV KILOVOLT

kW KILOWATT

LTG LIGHTING

MAX MAXIMUM

MH MANHOLE

MIN MINIMUM

NA

BUCK-BOOST TRANSFORMER NEMA NATIONAL ELECTRICAL

CCBA CUSTOM COLOR AS SELECTED NIC NOT IN CONTRACT

MC METAL CLAD

LV LOW VOLTAGE

kVA KILOVOLT AMPERE

kWh KILOWATT HOUR

LED LIGHT EMITTING DIODE

LFNC LIQUID TIGHT FLEXIBLE

LPS LOW PRESSURE SODIUM

MCA MINIMUM CIRCUIT AMPS

MCB MAIN CIRCUIT BREAKER

MG MOTOR GENERATOR

MLO MAIN LUGS ONLY

MCC MOTOR CONTROL CENTER

MDP MAIN DISTRIBUTION PANEL

MOCP MAXIMUM OVERCURRENT

NOT APPLICABLE

NC NORMALLY CLOSED

MTS MANUAL TRANSFER SWITCH

NEC NATIONAL ELECTRICAL CODE

MANUFACTURERS

NFPA NATIONAL FIRE PROTECTION

ASSOCIATION

ASSOCIATION

NORMALLY OPEN

OCP OVER CURRENT PROTECTION

OF/OI OWNER FURNISHED/ OWNER

OH DR OVERHEAD (COILING) DOOR

CONTRACTOR INSTALLED

NFC NATIONAL FIRE CODE

NIGHT LIGHT

ON CENTER

OF/CI OWNER FURNISHED/

INSTALLED

OVERLOAD

PHASE

PANEL

PTZ PAN/TILT/ZOOM

REMOVE

QTY QUANTITY

S/S START/STOP

OFP OBTAIN FROM PLANS

PUSHBUTTON

POWER FACTOR

PT POTENTIAL TRANSFORMER

RCP REFLECTED CEILING PLAN

RPM REVOLUTIONS PER MINUTE

RR REMOVE AND RELOCATE

SELECTED BY ARCHITECT

SELECTED BY ARCHITECT

SPD SURGE PROTECTIVE DEVICE

SPDT SINGLE POLE, DOUBLE THROW

SPST SINGLE POLE, SINGLE THROW

TELEPHONE POLE

TTB TELEPHONE TERMINAL BOARD

TVSS TRANSIENT VOLTAGE SURGE

UPS UNINTERRUPTIBLE POWER

CONTROLLER

VFC/VF VARIABLE FREQUENCY MOTOR

TWISTED PAIR

SUPPRESSER

SCA SHORT CIRCUIT AMPS

SCBA STANDARD COLOR AS

SF SQUARE FOOT (FEET)

SFBA STANDARD FINISH AS

SPEC SPECIFICATION

ST SINGLE THROW

SWBD SWITCHBOARD

SWGR SWITCHGEAR

TL TWIST LOCK

TYP TYPICAL

V VOLTS

W/ WITH

W/O WITHOUT

UF UNDERFLOOR

VA VOLT AMPERE

WP WEATHERPROOF

XFMR TRANSFORMER

UGND UNDERGROUND

RMC RIGID METAL CONDUIT RNC RIGID NONMETAL CONDUIT

NTS NOT TO SCALE

PROTECTION

MCP MOTOR CIRCUIT PROTECTION

LRA LOCKED ROTOR AMPS

kVAR KILOVOLT AMPERE REACTIVE

LFMC LIQUID TIGHT FLEXIBLE METAL

NONMETALLIC CONDUIT

MATV MASTER ANTENNA TELEVISION

1P SINGLE POLE

1WAY ONE-WAY

2WAY TWO-WAY

3WAY THREE-WAY

4W FOUR-WIRE

4WAY FOUR-WAY

ADJ ADJACENT

ALUM ALUMINUM

OUTLET

AC ARMORED CABLE

1PH SINGLE-PHASE

2/C TWO-CONDUCTOR

3/C THREE-CONDUCTOR

40UT QUADRUPLE RECEPTACLE

4PDT FOUR-POLE DOUBLE THROW

4PST FOUR-POLE SINGLE THROW

AMERICANS WITH DISABILITIES

ABOVE COUNTER

AFF ABOVE FINISHED FLOOR

ANNUNCIATOR

ASC AMPS SHORT CIRCUIT

AUDIO VISUAL

CATY COMMUNITY ANTENNA

TELEVISION

BY ARCHITECT

CCTV CLOSED CIRCUIT TELEVISION

CONTRACTOR INSTALLED

CF/CI CONTRACTOR FURNISHED/

CF/OI CONTRACTOR FURNISHED/

BY ARCHITECT

CKT CIRCUIT

CND CONDUIT

OWNER INSTALLED

CFBA CUSTOM FINISH AS SELECTED

CONSTRUCTION MANAGER

CONTRACTING OFFICER'S

CURRENT TRANSFORMER

DOUBLE POLE, DOUBLE

DISCONNECT SWITCH

EMT ELECTRICAL METALLIC TUBING

ENT ELECTRIC NONMETALLIC

EPO EMERGENCY POWER OFF

FURNITURE MOUNTED

FCP FIRE ALARM CONTROL PANEL

FMC FLEXIBLE METAL CONDUIT

NON-REVERSING

FVR FULL VOLTAGE REVERSING

GFCI GROUND FAULT INTERRUPTER

GFP GROUND FAULT PROTECTION

HID HIGH INTENSITY DISCHARGE

HOA HAND-OFF-AUTOMATIC

HPF HIGH POWER FACTOR

HPS HIGH PRESSURE SODIUM

HIGH VOLTAGE

INPUT/ OUTPUT

ISOLATED GROUND

INTERMEDIATE METAL

CONVENIENCE OUTLET

REPRESENTATIVE

CABLE TELEVISION

dBA UNIT OF SOUND LEVEL

COPPER

EM EMERGENCY

EQUIP EQUIPMENT

FA FIRE ALARM

FLA FULL LOAD AMPS

FVNR FULL VOLTAGE

GEN GENERATOR

HD HEAVY DUTY

HP HORSE POWER

HERTZ

CONDUIT

IR INFRARED

J-BOX JUNCTION BOX

IN/IS INSULATED/ ISOLATED

FOB FREIGHT ON BOARD

GROUND

EX EXISTING

CONTROL PANEL

CB CIRCUIT BREAKER

SWITCH

XFMR

CAPACITY

AMPERE

AR AS REQUIRED

ABOVE FINISHED GRADE

AMPERE INTERRUPTING

ACCESS POINT (WIRELESS

AUTOMATIC TRANSFER

AMERICAN WIRE GAGE

CEILING MOUNTED

CLARIFICATION METHODS: AT THE TIME OF BIDDING, BIDDERS SHALL FAMILIARIZE THEMSELVES WITH THE DRAWINGS AND SPECIFICATIONS. ANY QUESTIONS, MISUNDERSTANDINGS, CONFLICTS, DELETIONS, DISCONTINUED PRODUCTS, CATALOG NUMBER DISCREPANCIES, DISCREPANCIES BETWEEN THE EQUIPMENT SUPPLIED AND THE INTENT OR FUNCTION OF THE EQUIPMENT, ETC, SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER IN WRITING FOR CLARIFICATION PRIOR TO ISSUANCE OF THE FINAL ADDENDUM AND BIDDING OF THE PROJECT. WHERE DISCREPANCIES OR MULTIPLE INTERPRETATIONS OCCUR. THE MOST STRINGENT (WHICH IS GENERALLY RECOGNIZED AS THE MOST COSTLY) THAT MEETS THE INTENT OF THE DOCUMENTS SHALL BE ENFORCED.

OWNER FURNISHED ITEMS: THE OWNER WILL FURNISH MATERIAL AND EQUIPMENT AS INDICATED IN THE CONTRACT DOCUMENTS TO BE INCORPORATED INTO THE WORK. THESE ITEMS ARE ASSIGNED TO THE INSTALLER AND COSTS FOR RECEIVING, HANDLING, STORAGE, IF REQUIRED, AND INSTALLATION ARE INCLUDED IN THE CONTRACT SUM.

> A. THE INSTALLER'S RESPONSIBILITIES ARE THE SAME AS IF THE INSTALLER FURNISHED THE MATERIALS OR EQUIPMENT.

B. THE OWNER WILL ARRANGE AND PAY FOR DELIVERY OF OWNER FURNISHED ITEMS FREIGHT ON BOARD JOB SITE AND THE INSTALLER WILL INSPECT DELIVERIES FOR DAMAGE. IF OWNER FURNISHED ITEMS ARE DAMAGED, DEFECTIVE OR MISSING, DOCUMENT DAMAGED ITEMS WITH THE TRANSPORT COMPANY AND THE OWNER WILL ARRANGE FOR REPLACEMENT. THE OWNER WILL ALSO ARRANGE FOR MANUFACTURER'S FIELD SERVICES, AND THE DELIVERY OF MANUFACTURER'S WARRANTIES AND BONDS TO THE INSTALLER.

C. THE INSTALLER IS RESPONSIBLE FOR DESIGNATING THE DELIVERY DATES OF OWNER FURNISHED ITEMS AND FOR RECEIVING, UNLOADING AND HANDLING OWNER FURNISHED ITEMS AT THE SITE. THE INSTALLER IS RESPONSIBLE FOR PROTECTING OWNER FURNISHED ITEMS FROM DAMAGE, INCLUDING DAMAGE FROM EXPOSURE TO THE ELEMENTS, AND TO REPAIR OR REPLACE ITEMS DAMAGED AS A RESULT OF HIS OPERATIONS.

EXPOSED STRUCTURE AREAS (EXCLUDING MECHANICAL, ELECTRICAL, AND COMMUNICATION SPACES): INSTALL RACEWAYS BETWEEN DECK AND STRUCTURE WHEREVER POSSIBLE IN EXPOSED STRUCTURE CEILING AREAS. ROUTE RACEWAYS IN CONCEALED AREAS WHEREVER POSSIBLE. REFER ALL CONDITIONS WHERE RACEWAYS MUST BE INSTALLED WHICH CANNOT COMPLY WITH THESE REQUIREMENTS TO THE ARCHITECT.

BOOKMARKED (EACH SECTION AND PRODUCT), AND HIGHLIGHTED. JOB NAME AND SUBCONTRACTOR SHALL BE ON THE FRONT COVER. PREPARE INDEX OF EQUIPMENT SUBMITTED IN EACH TAB.

SUBMITTALS: PROVIDE ORIGINAL ELECTRONIC PDF FORMAT, BOUND.

WITH THE ARCHITECTURAL REFLECTED CEILING PLANS. REFER ALL DISCREPANCIES TO THE ARCHITECT AND ENGINEER.

REFLECTED CEILING PLANS: COORDINATE THE LOCATION OF LIGHT FIXTURES

ALL WORK SHALL BE DONE ACCORDING TO THE CURRENT NATIONAL ELECTRIC CODE (NEC), IBC, NFPA, AND IFC. COMPLIANCE AND FINAL APPROVAL IS SUBJECT TO THE ON SITE FIELD INSPECTION OF THE AHJ.

PROVIDE A \$5,000 ALLOWANCE TO COVER ANY REQUIRED RELOCATION OF ELECTRICAL CONDUIT OR WIRING THAT MAY CONFLICT WITH NEW DUCTWORK.

DEFINITIONS

NOTE: ALL DEFINITIONS MAY NOT BE USED.

INDICATED: THE TERM "INDICATED" REFERS TO GRAPHIC REPRESENTATIONS, NOTES, OR SCHEDULES ON THE DRAWINGS, OTHER PARAGRAPHS OR SCHEDULES IN THE SPECIFICATIONS, AND SIMILAR REQUIREMENTS IN THE CONTRACT DOCUMENTS. WHERE TERMS SUCH AS "SHOWN", "NOTED", "SCHEDULED", AND "SPECIFIED" ARE USED, IT IS TO HELP THE READER LOCATE THE REFERENCE, NO LIMITATION ON LOCATION IS INTENDED.

DIRECTED: TERMS SUCH AS "DIRECTED", "REQUESTED", AUTHORIZED", "SELECTED", "APPROVED", "REQUIRED", AND "PERMITTED" MEAN "DIRECTED BY THE ENGINEER", "REQUESTED BY THE ENGINEER", AND SIMILAR PHRASES. APPROVED: THE TERM "APPROVED", WHERE USED IN CONJUNCTION WITH THE ENGINEER'S ACTION ON THE CONTRACTOR'S SUBMITTALS, APPLICATIONS, AND REQUESTS, IS LIMITED TO THE ENGINEER'S DUTIES AND RESPONSIBILITIES AS STATED IN GENERAL AND SUPPLEMENTARY CONDITIONS.

FURNISH: THE TERM "FURNISH" IS USED TO MEAN "SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION, AND SIMILAR OPERATIONS."

PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, AND SIMILAR OPERATIONS."

INSTALL: THE TERM "INSTALL" IS USED TO DESCRIBE OPERATIONS AT PROJECT

SITE INCLUDING THE ACTUAL "UNLOADING, UNPACKING, ASSEMBLY, ERECTION,

PROVIDE: THE TERM "PROVIDE" MEANS "TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE."

INSTALLER: AN "INSTALLER" IS THE CONTRACTOR OR AN ENTITY ENGAGED BY THE CONTRACTOR, EITHER AS AN EMPLOYEE, SUBCONTRACTOR, OR SUB-SUBCONTRACTOR, FOR PERFORMANCE OF A PARTICULAR CONSTRUCTION ACTIVITY, INCLUDING INSTALLATION, ERECTION, APPLICATION, AND SIMILAR OPERATIONS. INSTALLERS ARE REQUIRED TO BE EXPERIENCED IN THE OPERATIONS THEY ARE ENGAGED TO PERFORM.

TECHNOLOGY SYSTEMS: THE TERM "TECHNOLOGY SYSTEMS" IS USED TO DESCRIBE ALL LOW VOLTAGE SYSTEMS GENERALLY REFERRED TO AS "SPECIAL SYSTEMS". THESE SYSTEMS INCLUDE BUT ARE NOT NECESSARILY LIMITED TO ALL SYSTEMS WHICH UTILIZE VOLTAGES OF LESS THAN 71 VOLTS SUCH AS SOUND SYSTEMS, VIDEO SYSTEMS, TV SYSTEMS, SECURITY SYSTEMS, VOICE AND DATA CABLING SYSTEMS, ETC...

ELECTRICAL SHEET INDEX

EE001 SHEET INDEX, ABBREVIATIONS, AND GENERAL NOTES EE501 ELECTRICAL DETAILS EE502 TYPICAL MOUNTING HEIGHT DETAILS EE701 MRI VENDOR ELECTRICAL DRAWINGS

EE702 MRI VENDOR ELECTRICAL DRAWINGS ED101 LEVEL 1 DEMOLITION PLANS EP100 LEVEL 1 OVERALL POWER PLAN EP101 LEVEL 1 POWER PLAN

ET602 TELECOM DETAILS

EY101 LEVEL 1 AUXILIARY PLAN

EP601 ONE-LINE DIAGRAM EL101 LEVEL 1 LIGHTING PLAN EL601 INTERIOR LIGHTING FIXTURE SCHEDULE ET001 TELECOMM SYMBOLS ET601 VOICE/ DATA CONDUIT RISER DIAGRAM

ARCHITECT HKS ARCHITECTS, INC. 90 SOUTH 400 WEST, SUITE 110 SALT LAKE CITY, UT 84101

MURRAY, UTAH

MECHANICAL ENGINEER 181 EAST 5600 SOUTH, SUITE 130

ELECTRICAL ENGINEER SPECTRUM ENGINEERS 324 STATE STREET, SUITE 400 SALT LAKE CITY, UTAH



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KEY PLAN

NO. DESCRIPTION

HKS PROJECT NUMBER 23798.000 05/08/20 CONSTRUCTION

DOCUMENTS SHEET INDEX, ABBREVIATIONS,

AND GENERAL

NOTES

ARCHITECT HKS ARCHITECTS, INC.

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90 SOUTH 400 WEST, SUITE 110 SALT LAKE CITY, UT 84101

MECHANICAL ENGINEER

181 EAST 5600 SOUTH, SUITE 130

ELECTRICAL ENGINEER

KEY PLAN

NO. DESCRIPTION

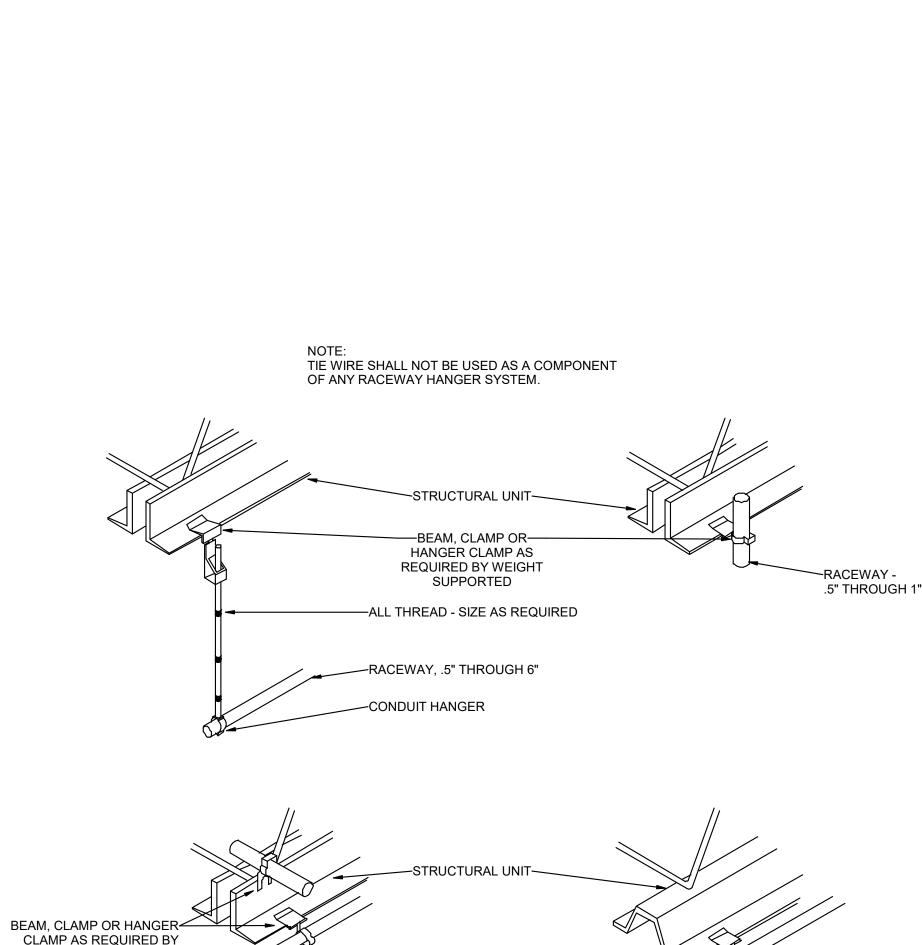
HKS PROJECT NUMBER

23798.000 05/08/20

CONSTRUCTION **DOCUMENTS ELECTRICAL**

DETAILS

SHEET NO.



PROVIDE CONDUIT SUPPORTS IN ACCORDANCE WITH NEC SPACING REQUIREMENTS FOR

TYPE OF RACEWAY REQUIRED.

AS REQUIRED FOR TYPE

OUTLET BOX

OF CONSTRUCTION.

OUTLETS

BAR STRAPS

NOTES:

OUTLET BOX

3. LOCATE ALL OUTLET BOXES IN ACCORDANCE WITH ARCHITECTURAL AND

MECHANICAL DRAWINGS AND WITH ALL APPLICABLE SHOP DRAWINGS.

4. IN ACCORDANCE WITH IBC 714.3.2 EXCEPTION 1, OUTLETS ON OPPOSITE SIDES OF

WALL MUST BE SEPARATED BY A MINIMUM OF 24" HORIZONTAL DISTANCE OR

5. IN NON-RATED WALLS, OUTLETS ON OPPOSITE SIDES OF WALLS OR PARTITIONS

MUST BE SEPARATED BY 16" OR PUTTY PADS PROVIDED FOR SOUND

TYPICAL ROUGH-IN REQUIREMENTS DETAIL

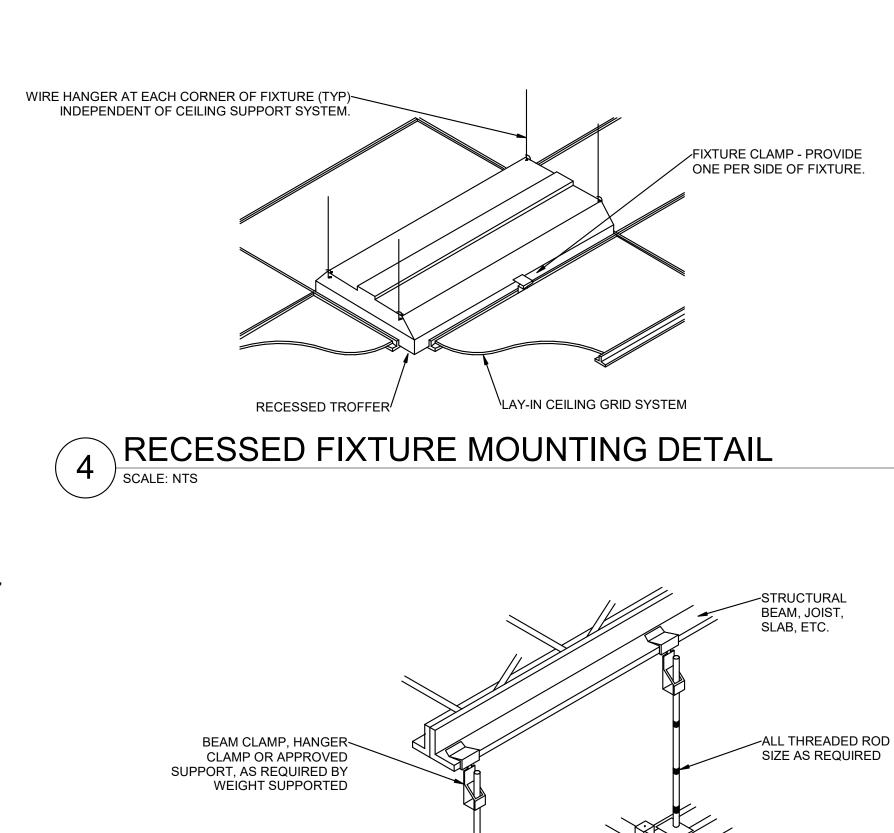
SCALE: NTS

LISTED, SOUND AND FIRE RATED PUTTY PADS SHALL BE USED ON THE OUTLET

WALLS OR PARTITIONS IN THE SAME STUD SPACE IN A RATED FIRE SEPARATION

1. TYPICAL FOR WOOD AND METAL STUD ROUGH-IN.

2. PLASTER RINGS NOT SHOWN.



ALL THREADED ROD -SIZE AS REQUIRED CONDUIT CLAMP - .5" TO 1"-UNISTRUT 2 PIECE CHANNEL PIPE STRAPS - 1.25" TO 6" RACEWAY .5" TO 6" (TYP) UNISTRUT CHANNEL - SIZE AS-REQUIRED BY WEIGHT SUPPORTED

TYPICAL CONDUIT RACK DETAIL

SCALE: NTS

FIRE RATED CONCRETE/ CONCRETE BLOCK WALL DAMMING MATERIAL (BACKER ROD, FIBERGLASS OR MINERAL WOOL) /INSULATED CABLES NONMETALLIC SLEEVE-MAY EXTEND A MAXIMUM 2" (51 mm) BEYOND THIS WALL SURFACE CP 25WB CAULK OR APPROVED EQUAL, ON BOTH SIDES OF WALL

TYPICAL FIRE STOP FOR

6 CONCRETE FLOORING

CABLES/CONDUIT THROUGH

2 HOUR FIRE RATED GYPSUM WALL BOARD

METALLIC CONDUIT—

SCALE: NTS

FIRE RATED CONCRETE \
FLOOR SLAB

INSULATED CABLES

.25" MIN DIAMETER— BEAD OF 3M FIRE BARRIER CP 25 CAULK,

MP MOLDABLE PUTTY OR APPROVED /WOOD OR STEEL STUD

—ALUMINUM FOIL TAPE

—ONE WRAP OF 3M BARRIER FS-195 WRAP/STRIP 2" WIDE, INSTALLED FOIL SIDE OUT

CP 25WB CAULK OR APPROVED EQUAL

-DAMMING MATERIAL

(BACKER ROD, FIBERGLASS OR MINERAL WOOL)

FIRE STOP FOR METAL CONDUIT

THROUGH GYPSUM WALL BOARD

TYPICAL FIRE STOP FOR CABLES/CONDUIT THROUGH 5 CONCRETE WALLS

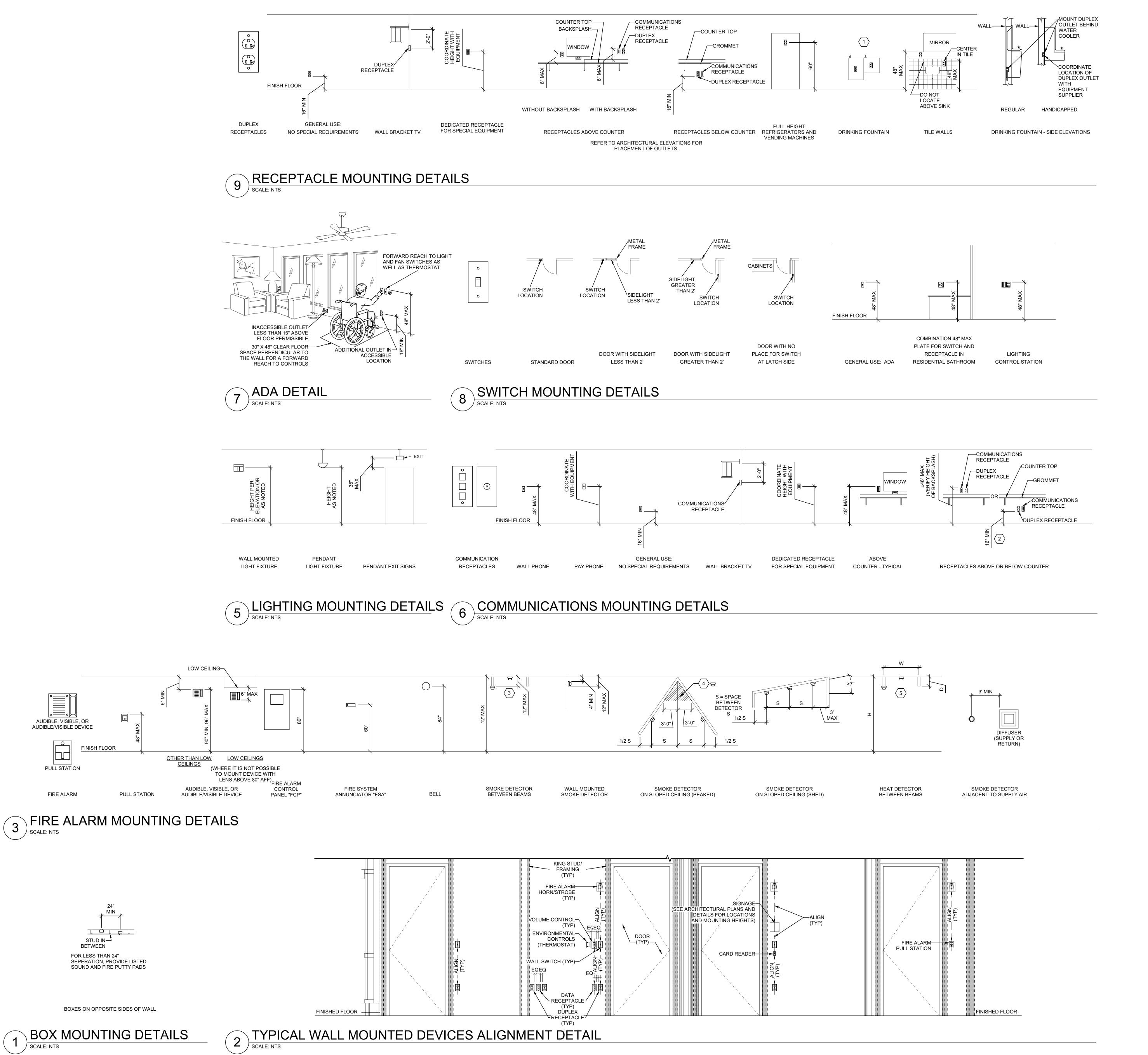
TYPICAL RACEWAY SUPPORT METHODS DETAIL

SCALE: NTS

CLAMP AS REQUIRED BY

WEIGHT SUPPORTED

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GENERAL SHEET NOTES

- DETERMINE MOUNTING HEIGHTS OF ELECTRICAL AND ELECTRONIC EQUIPMENT IN THE FOLLOWING ORDER OF PRIORITY:
- 1 ELEVATIONS (ARCHITECTURAL, ELECTRICAL, MECHANICAL, ETC). 2 - EQUIPMENT SHOP DRAWINGS.
- 3 FIELD INSTRUCTIONS.

INSTALLING SWITCHES.

- LOCATE RECEPTACLES SERVING THE SAME TYPE OF USE AT A UNIFORM HEIGHT UNLESS DIRECTED OTHERWISE.
- MECHANICAL, ELECTRICAL, AND COMMUNICATION ROOMS: COORDINATE LOCATION OF LIGHTING AND POWER RECEPTACLES WITH EQUIPMENT, PIPING, AND DUCTWORK. DO NOT INSTALL RECEPTACLES BEHIND EQUIPMENT OR WHERE OTHERWISE INACCESSIBLE. POSITION LIGHTING REGARDLESS OF WHERE SHOWN ON DRAWING TO PROVIDE PROPER ILLUMINATION.
- MOUNT RECEPTACLE BOXES FOR SWITCHES AND RECEPTACLES WITH LONG AXIS OF THE DEVICE VERTICAL UNLESS OTHERWISE INDICATED.
- SET BOXES WITH PLASTER RINGS FLUSH WITH FINISHED SURFACE.
- LOCATE BOX COVERS OR DEVICE PLATES SO THEY WILL NOT SPAN DIFFERENT TYPES OF BUILDING FINISHES EITHER VERTICALLY OR HORIZONTALLY.
- VERIFY ALL DOOR CONDITIONS ON ARCHITECTURAL DRAWINGS PRIOR TO
- LOCATE WIREING DEVICES WHICH ARE ADJACENT AND ARE COMPATIBLE VOLTAGES IN ONE PLATE.
- WHERE DEVICES ARE LOCATED IN CLOSE PROXIMITY OF THE SAME VERTICAL PLANE, ALIGN DEVICES VERTICALLY PER THE TYPICAL WALL MOUNTED DEVICES ALIGNMENT DETAIL, UNLESS OTHERWISE INDICATED.

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TRO

ARCHITECT HKS ARCHITECTS, INC.

VBFA INC.

MURRAY, UTAH

SPECTRUM ENGINEERS

SALT LAKE CITY, UTAH

90 SOUTH 400 WEST, SUITE 110

MECHANICAL ENGINEER

181 EAST 5600 SOUTH, SUITE 130

ELECTRICAL ENGINEER

324 STATE STREET, SUITE 400

SALT LAKE CITY, UT 84101

○ SHEET KEYNOTES

LOCATE RECEPTACLES BEHIND DRINKING FOUNTAINS.

REFER TO NFPA 72.

- REFER TO ARCHITECTURAL ELEVATIONS FOR PLACEMENT OF OUTLETS
- LOCATE AT BOTTOM OF BEAMS (OR JOISTS) OR AT CEILING. (REDUCE SPACING BY .5 PERPENDICULAR TO BEAM OR JOIST DIRECTION.) FOR OTHER CONDITIONS,
- LOCATE DETECTOR ANYWHERE IN SHADED AREA BUT NOT IN TOP 4" OF PEAK.
- LOCATE AT BOTTOM OF BEAMS IF D/H < .1 OR W/H < .4; OTHERWISE, LOCATE IN BEAM POCKET. FOR D > 4 REDUCE SPACING .33 PERPENDICULAR TO BEAMS.

KEY PLAN

REVISION

NO. DESCRIPTION

HKS PROJECT NUMBER 23798.000

05/08/20 CONSTRUCTION **DOCUMENTS**

TYPICAL MOUNTING HEIGHT DETAILS

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LIGHTING REQUIREMENTS

- All lighting fixtures and associated components must meet all RF shielded room and RF grounding
- requirements (e.g., track lighting is not recommended due to possible RF noise).
 All removable lighting fixtures and associated components must be non-magnetic.
- All lighting must use direct current (the DC must have less than 5% ripple).
- 300 lux must be provided at the front of the magnet for patient access and above the magnet for servicing.
- Fluorescent lighting must not be used in the magnet room.
- Lighting must be adjusted using a discrete switch or a variable DC lighting controller.
- SCR dimmers or rheostats must not be used.
- DC LED lighting may be used if the DC power converter and RF sources are all located outside the magnet
- NOTE: LED lighting could cause image quality issues due to RF interference. Make sure a MR-compatible LED lighting solution is chosen.
- MR-compatible LED lighting solution is chosen.

 Battery chargers (e.g., used for emergency lighting) must be located outside the magnet room.
- Short filament length bulbs are recommended.
- Linear lamps are not recommended due to the high burnout rate.

CONNECTIVITY REQUIREMENTS

Broadband Connections are necessary during the installation process and going forward to ensure full support from the Engineering Teams for the customers system. Maximum performance and availability for the customers system is maintained and closely monitored during the lifetime of the system. Proactive and reactive maintenance is available utilising the wide range of digital tools using the connectivity solutions listed below:

- Site-to-Site VPN/GE Solution
- Site-to-Site VPN/Customer Solution
 Connection through Dedicated Service Network
- Internet Access connectivity for InSite 2.0

The requirements for these connectivity solutions are explained in the broadband solutions catalogue (separate document).

All wires specified shall be copper stranded, flexible, thermo-plastic, color coded, cut 10 foot long at outlet boxes, duct termination points or stubbed conduit ends. All conductors, power, signal and ground, must be run in a conduit or duct system. Electrical contractor shall ring out and tag all wires at both ends. Wire runs must be continuous copper stranded and free from splices.
 Aluminum or solid wires are not allowed.

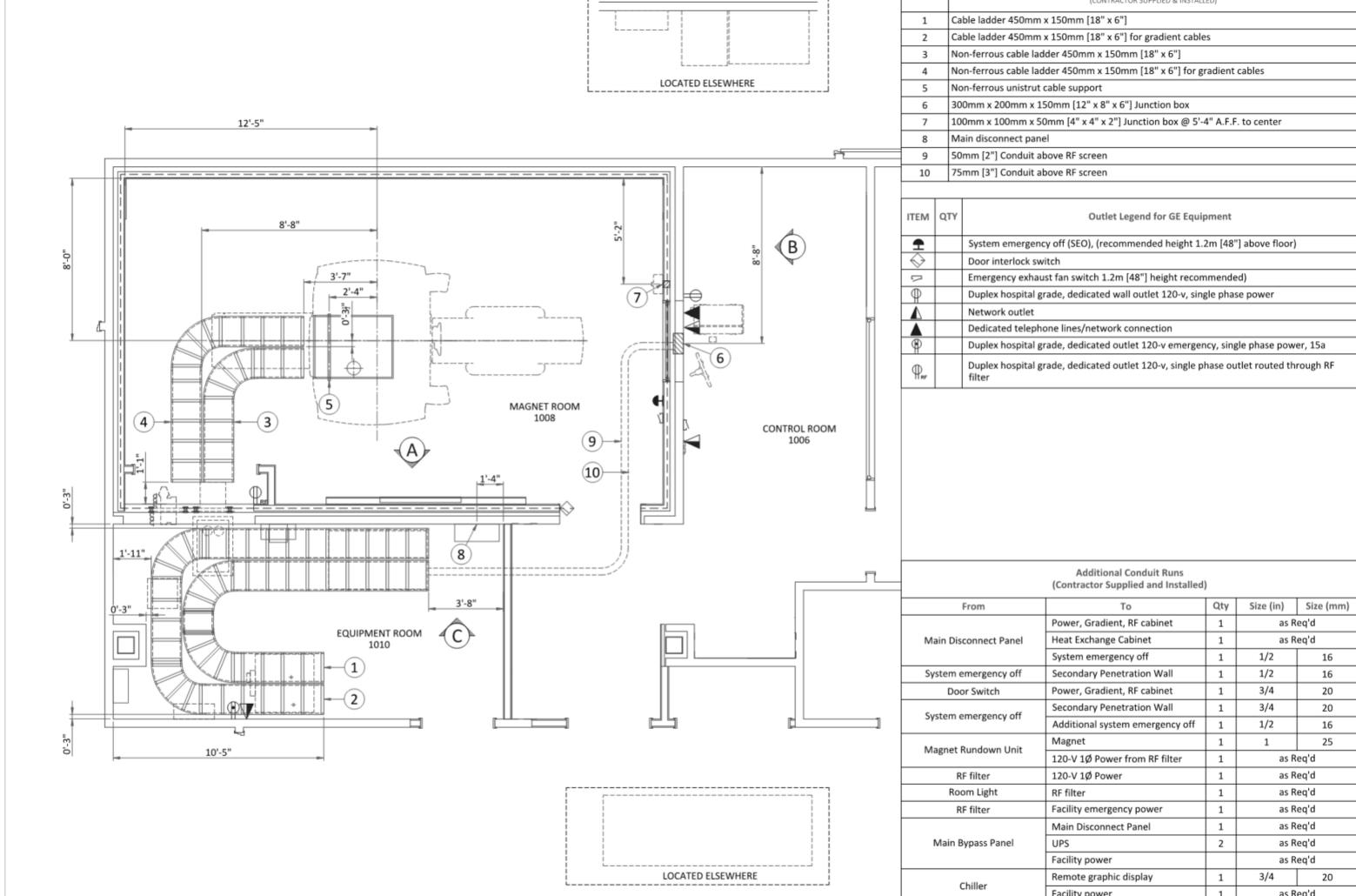
ELECTRICAL NOTES

- 1.1. Aluminum or solid wires are not allowed.
 2. Wire sizes given are for use of equipment. Larger sizes may be required by local codes.
 3. It is recommended that all wires be color coded, as required in accordance with national and local electrical
- codes.
 4. Conduit sizes shall be verified by the architect, electrical engineer or contractor, in accordance with local or
- national codes.
 Convenience outlets are not illustrated. Their number and location are to be specified by others. Locate at least one convenience outlet close to the system control, the power distribution unit and one on each wall of
- the procedure room. Use hospital approved outlet or equivalent.
 General room illumination is not illustrated. Caution should be taken to avoid excessive heat from overhead spotlights. Damage can occur to ceiling mounting components and wiring if high wattage bulbs are used.
 Recommend low wattage bulbs no higher than 75 watts and use dimmer controls (except MR). Do not mount
- lights directly above areas where ceiling mounted accessories will be parked.

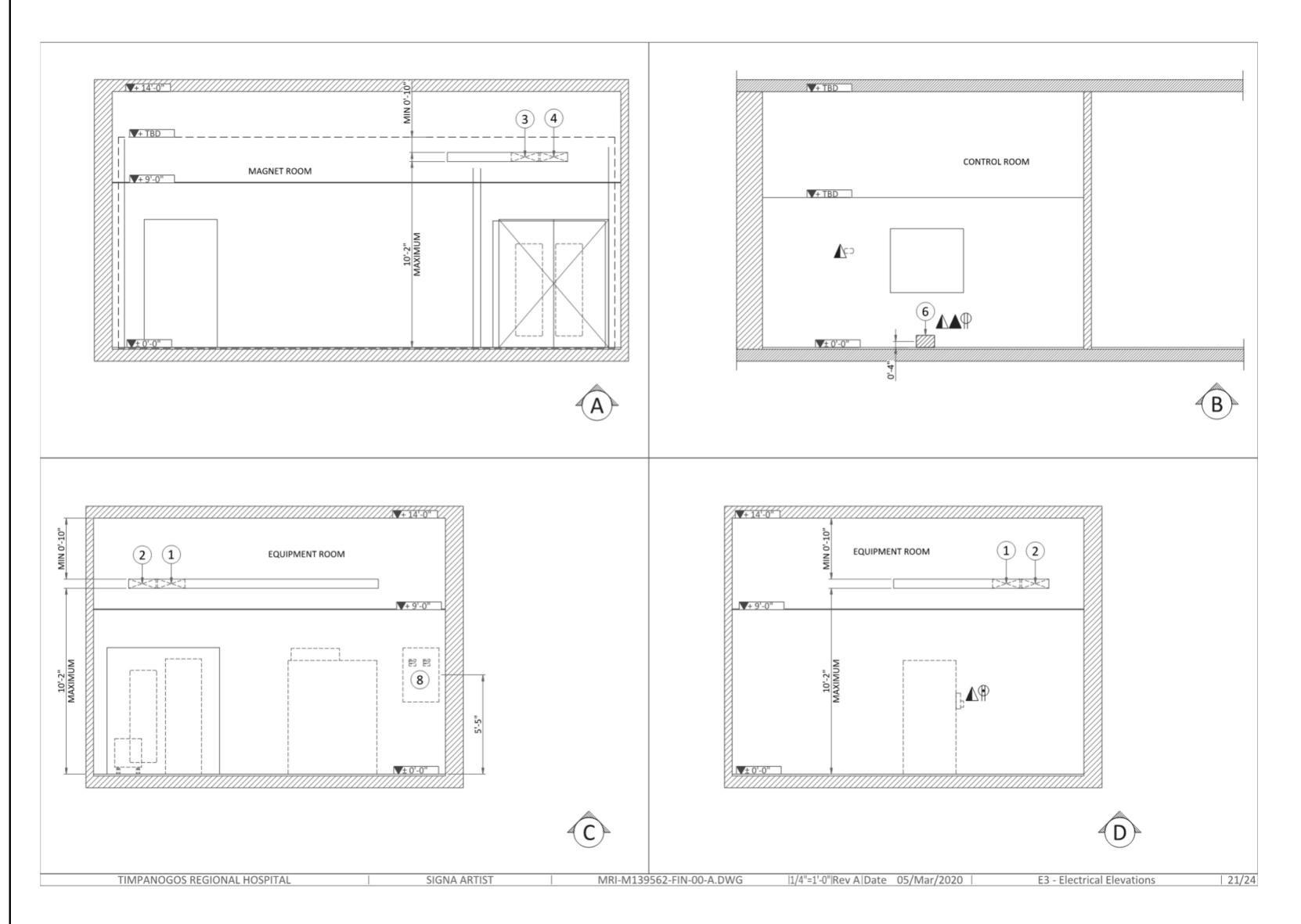
 7. Routing of cable ductwork, conduits, etc., must run direct as possible otherwise may result in the need for greater than standard cable lengths (refer to the interconnection diagram for maximum usable lengths point
- 8. Conduit turns to have large, sweeping bends with minimum radius in accordance with national and local
- electrical codes.
 A special grounding system is required in all procedure rooms by some national and local codes. It is recommended in areas where patients might be examined or treated under present, future, or emergency conditions. Consult the governing electrical code and confer with appropriate customer administrative
- personnel to determine the areas requiring this type of grounding system.
 10. The maximum point to point distances illustrated on this drawing must not be exceeded.
 11. Physical connection of primary power to GE equipment is to be made by customers electrical contractor with the supervision of a GE representative. The GE representative would be required to identify the physical
- connection location, and insure proper handling of GE equipment.

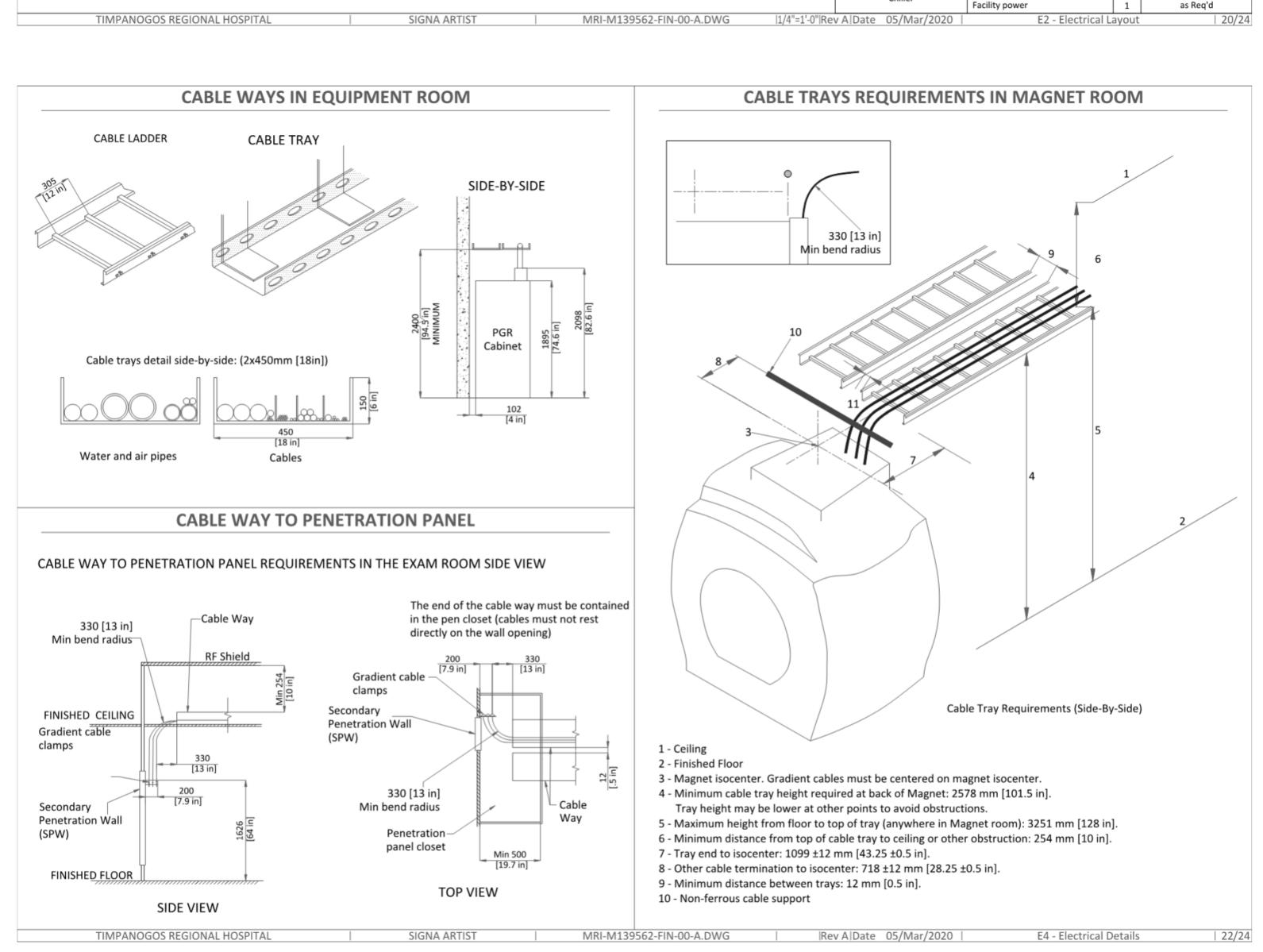
 12. GEHC conducts power audits to verify quality of power being delivered to the system. The customer's electrical contractor is required to be available to support this activity.
- All junction boxes, conduit, duct, duct dividers, switches, circuit breakers, cable tray, etc., are to be supplied
 and installed by systematical contractor.
- and installed by customers electrical contractor.
 Conduit and duct runs shall have sweep radius bends
- Conduits and duct above ceiling or below finished floor must be installed as near to ceiling or floor as possible
 to reduce run length.
- Ceiling mounted junction boxes illustrated on this plan must be installed flush with finished ceiling.
- All ductwork must meet the following requirements:
 1.Ductwork shall be metal with dividers and have removable, accessible covers.
- 2.Ductwork shall be certified/rated for electrical power purposes.3.Ductwork shall be electrically and mechanically bonded together in an approved manner.
- 4.PVC as a substitute must be used in accordance with all local and national codes.
 All openings in access flooring are to be cut out and finished off with grommet material by the customers
- General contractor to insert pull cords for all cable run conduits between the equipment room and the operators control room.
- 10 foot pigtails at all junction points.
- Grounding is critical to equipment function and patient safety. Site must conform to wiring specifications shown on this plan.

TIMPANOGOS REGIONAL HOSPITAL | SIGNA ARTIST | MRI-M139562-FIN-00-A.DWG | |Rev A|Date | 05/Mar/2020 | E1 - Electrical Notes | 19/24



DESCRIPTION





HKS

ARCHITECT

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SPECTRUM ENGINEERS
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TIMPANOGOS MRI RETROFIT

KEY PLAN

REVISION

NO. DESCRIPTION

HKS PROJECT NUMBER
23798.000
DATE

05/08/20
ISSUE
CONSTRUCTION
DOCUMENTS
SHEET TITLE
MRI VENDOR
ELECTRICAL

EE701

DRAWINGS

POWER REQUIREMENTS

POWER SUPPLY 380/400/415/480V ±10%, THREE-PHASE + N + G FREQUENCIES 50/60Hz ± 3Hz

STAND-BY POWER

 < 17kVA

 Power input must be separated from any others which may generate transients (elevators, air conditioning,

123kVA

99kVA

0.9

- radiology rooms equipped with high speed film changers...).
- Total harmonic distortion less than 2.5%.
 Phase imbalance must not exceed 2%

MAXIMUM INPUT POWER (5 sec MAX)

POWER FACTOR

INSTALLED LOAD

Lock-out/Tag-out: The Main Disconnect Panel (MDP) shall provide an external single point lock-out/tag-out
feature for the entire system and a means to externally lock-out/tag-out each output breaker independently.
Each lock-out/tag-out feature shall accommodate a standard sized lock hasp..

SPECIFICATIONS OF BACK-UP POWER SUPPLY

MAGNET MONITOR REQUIRES A 110/220 VAC, 50/60 HZ, 2.0 A FACILITY SUPPLIED OUTLET. POWER AT THE OUTLET MUST BE CONTINUOUSLY AVAILABLE.

FOR CRYOCOOLER COMPRESSOR	
POWER INPUT	380/400/415/480V, THREE-PHASE + G
POWER REQUIREMENT	MIN 9kVA
POWER CONSUMPTION	MAX 7.2kW / STEADY STATE 6.5kW at 50Hz MAX 8.3kW / STEADY STATE 7.5kW at 60Hz
FREQUENCY	50/60Hz ± 3Hz

CABLES

- Power and cable installation must comply with the distribution diagram.
- Size of the Main power input cable is determined by the customer, taking its length and admissible voltage drops into consideration.
- All cables must be isolated and flexible, cable color codes must comply with standards for electrical installation.
 The cables from signaling and remote control (Y,Emergency Off Buttons,L...) will go to Main Panel with a pigtail
- length of 1.5m [60in], and will be connected during installation.
 Each conductor will be identified and isolated (screw connector).

GROUND SYSTEM

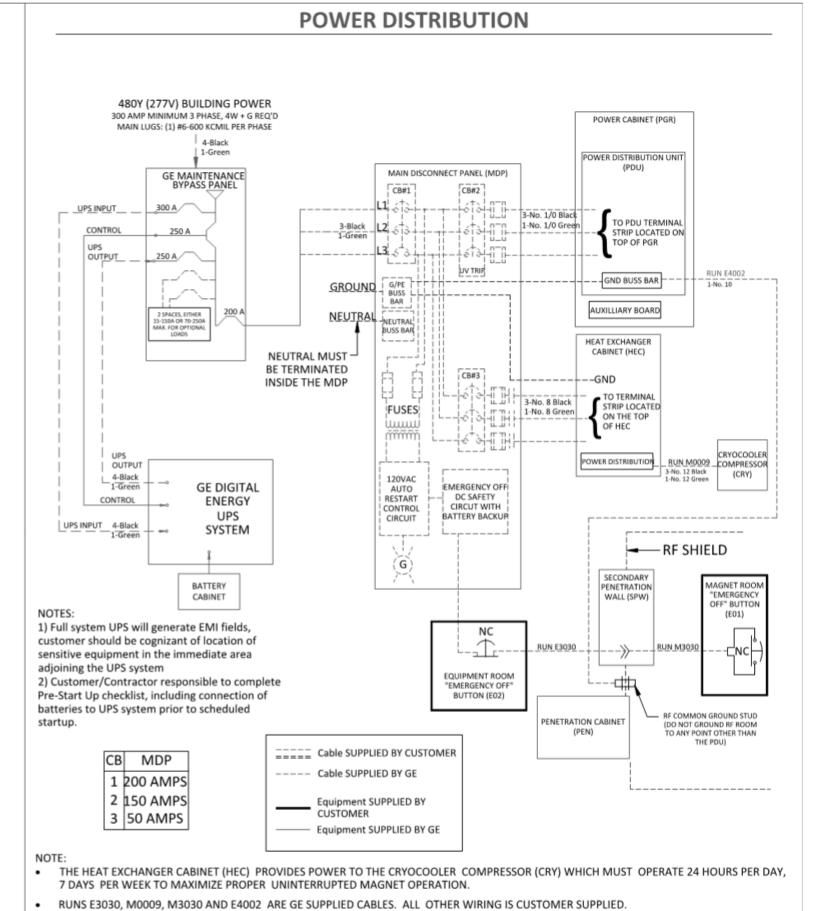
• The equipotential link will be by means of an equipotential bar.

TIMPANOGOS REGIONAL HOSPITAL

The grounding point of MDP is directly connected to the building's ground by an isolated copper cable.
The impedance of the earth bar should be less than or equal to 2 ohms.

The impedance of the				•						
			FEEDER T	ABLE						
MIN. FEEDER WIRE SIZE,	MINIMUM FEEDER WIRE LENGTH - ft (m)									
AWG OR MCM (sq. M)/VAC	100 (30.5)	150 (46)	200 (61)	250 (76)	300 (92)	350 (107)	400 (122)	450 (13		
480 VAC	3/0 (85)	3/0 (85)	3/0 (85)	3/0 (85)	3/0 (85)	3/0 (85)	3/0 (85)	3/0 (85		
GROUND REQ'D	4	4	4	4	4	4	2	2		
			GENERAL I	NOTES						
In all cases qualified personr	nel must verify	that the feede	r (at the point of stated in th		d the run to th	ne MR system	meet all the re	equiremer		
For a single unit installation,	, the minimum		ze is 225KVa. R over a period o			required unle	ss voltage cha	nges exce		
Grounding conductor will rur	from the equi	pment back to	the power sou	-	ınding point a	nd always trav	el in the same	conduit w		

SIGNA ARTIST



TWO REMOTE FLUSH WALL MOUNTED EMERGENCY OFF BUTTONS ARE SUPPLIED WITH THE MDP.

|Rev A|Date 05/Mar/2020 |

EMERGENCY OFF LOCKS OUT ALL CONTRACTORS.

GE MDP IS UL AND CUL LABELED.

ALL CIRCUITS REQUIRE GROUND WIRES.

MRI-M139562-FIN-00-A.DWG

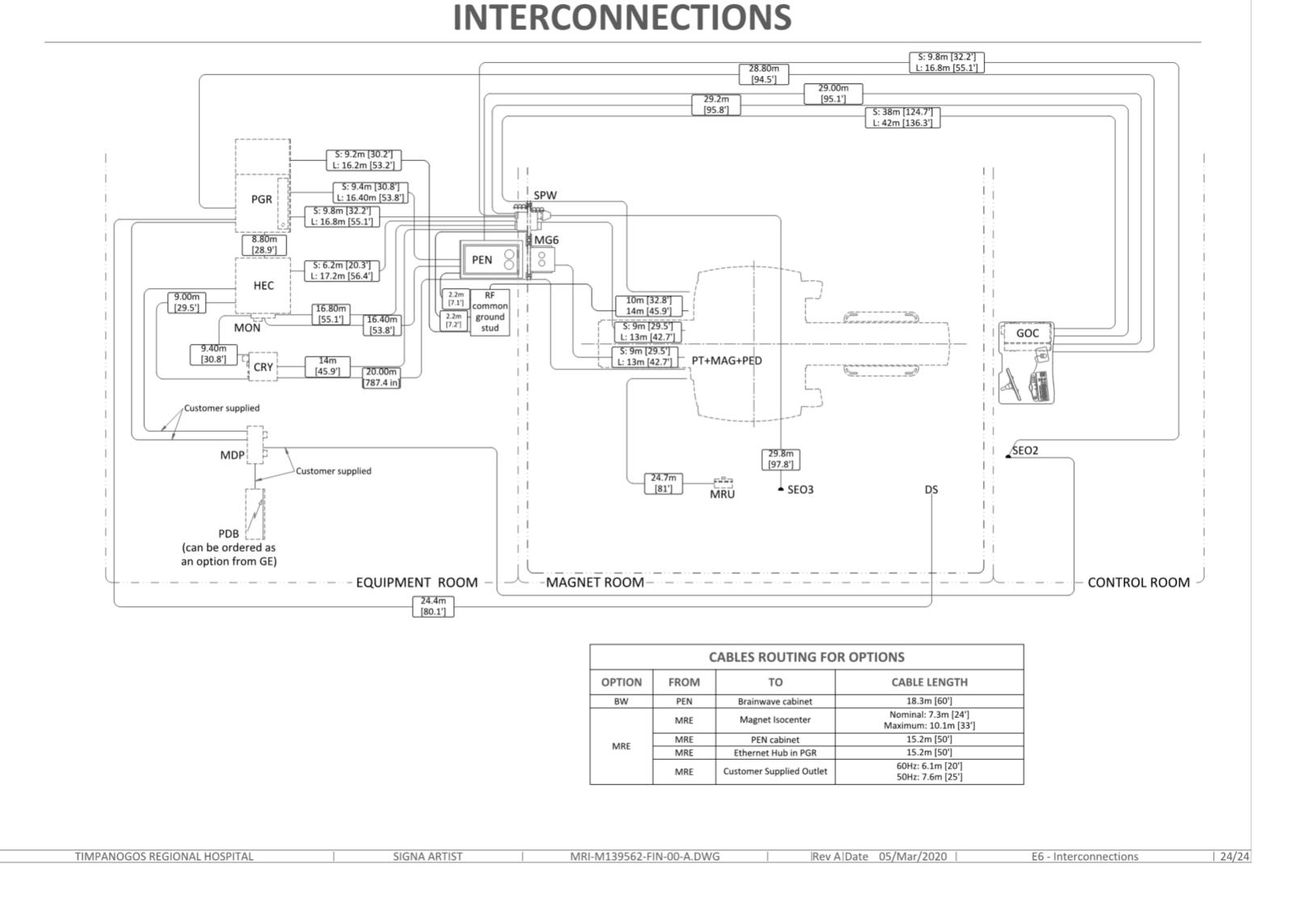
GE MDP SHORT CIRCUIT CURRENT RATING IS 25,000 AMPERES AT 480 VAC.

THE WIRE SIZE FOR THE EMERGENCY-OFF CIRCUIT IS 12-22 AWG CUSTOMER SUPPLIED

MDP PROVIDES CIRCUIT BREAKERS FOR PDU (LOCATED IN THE POWER CABINET (PGR)) AND THE HEAT EXCHANGER CABINET (HEC).

ALL MDP OUTPUT CIRCUITS DROP OUT ON LOSS OF POWER. THE HEC CIRCUIT WILL AUTOMATICALLY RESTART UPON RESTORATION OF POWER.

E5 - Power Requirements





ARCHITECT

HKS ARCHITECTS, INC.

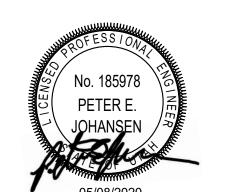
90 SOUTH 400 WEST, SUITE 110

SALT LAKE CITY, UT 84101

MECHANICAL ENGINEER
VBFA INC.
181 EAST 5600 SOUTH, SUITE 130

ELECTRICAL ENGINEER
SPECTRUM ENGINEERS
324 STATE STREET, SUITE 400
SALT LAKE CITY, UTAH

MURRAY, UTAH



TIMPANOGOS MRI RETROFIT

KEY PLAN

REVISION

HKS PROJECT NUMBER
23798.000

05/08/20
ISSUE
CONSTRUCTION
DOCUMENTS
SHEET TITLE
MRI VENDOR
ELECTRICAL

DRAWINGS

EE702

GENERAL SHEET NOTES

- UNLESS NOTED OTHERWISE REMOVE ALL LIGHTING FIXTURES DEVICES AND EQUIPMENT SHOWN DASHED. REMOVE CONDUIT AND WIRING BACK TO PANELBOARD OF ORIGIN OR TO FIRST ACTIVE DEVICE THAT REMAINS.
- SALVAGE ALL LIGHT FIXTURES, TWIST-LOCK RECEPTACLES AND WALLPLATES, CEILING SPEAKERS AND SECURITY AND FIRE ALARM DEVICES TO OWNER. PROTECT SALVAGED EQUIPMENT FROM DAMAGE.
- PRIOR TO SUBMITTING BID, VISIT THE SITE AND FIELD VERIFY THE EXTENT OF ELECTRICAL DEMOLITION WORK TO MEET THE INTENT OF THE BID DOCUMENTS AND INCLUDE ALL COSTS IN BID.
- PRIOR TO REMOVAL OF ANY ELECTRICAL EQUIPMENT OR WIRING, FIELD VERIFY THAT THE EQUIPMENT OR WIRING IS INACTIVE OR NO LONGER IN USE.
- REMOVE ALL DEVICES, RACEWAYS AND WIRING FROM WALLS TO BE REMOVED. WHERE ACTIVE RACEWAYS OCCUR IN WALLS TO BE REMOVED, RE-ROUTE THE RACEWAY WITH

ASSOCIATED WIRING TO KEEP THE CIRCUIT OPERATIONAL.

- REMOVE ALL FIRE ALARM DEVICES WHERE EXISTING WALLS AND CEILINGS ARE BEING REMOVED, WITH ASSOCIATED CONDUIT AND WIRING. EXISTING FIRE ALARM DEVICES AND SYSTEM NOT INDICATED FOR REMOVAL SHALL REMAIN ACTIVE THROUGHOUT DEMOLITION AND CONSTRUCTION UNTIL THE NEW SYSTEM IS TESTED AND OPERATIONAL. MAINTAIN ALL CLASS A FIRE ALARM INITIATING AND INDICATING LOOPS WHERE EXISTING DEVICES ARE REMOVED.
- REMOVE ALL ABANDONED RACEWAY, CONDUIT, WIRING AND CABLING WHETHER ABANDONED PREVIOUS TO THIS PROJECT OR AS A RESULT OF THIS PROJECT. NOT ALL ABANDONED ITEMS ARE SHOWN ON THESE PLANS AND FIELD VERIFICATION OF DEMOLITION SCOPE EXTENT IS REQUIRED.
- 8 DEVICES MARKED "RR" ARE TO BE REMOVED AND RELOCATED PER NEW PLANS. EXTEND CIRCUITING AS REQUIRED FOR RELOCATION.
- REFER TO ARCHITECTURAL DRAWINGS FOR REMOVAL OF MOTORS, CONDUIT, CONDUCTOR AND CONTROL WIRING ASSOCIATED WITH EXISTING MOTORIZED DOORS, PARTITIONS AND LIGHTING.
- 11 REMOVE FEEDERS FOR ALL DEMOLISHED PANELS, DISCONNETS, ETC. BACK TO SOURCE
- CONSTRUCTION.

12 ALL ITEMS INDICATED TO REMAIN SHALL BE PROTECTED DURING ALL PHASES OF

- 13 CONTRACTOR TO TRACE AND LABEL ALL EXISTING LOADS TO REMAIN, THAT ARE CURRENTLY FED FROM PANELS THAT ARE BEING DEMOLISHED IN THIS PHASE. THESE LOADS TO BE RE-FED FROM NEW PANELS IN NEXT PHASE.
- 14 ALL HVAC UNITS TO BE REMOVED BY MECHANICAL CONTRACTOR UNLESS NOTED OTHERWISE. REMOVE ALL ASSOCIATED RACEWAYS AND CONDUCTORS BACK TO

○ SHEET KEYNOTES

- REMOVE AND REINSTALL PER NEW PLANS AS REQUIRED TO FACILITATE
- INSTALLATION OF DUCTWORK.
- THE DEMOLITION OF ALL FIXTURES AND DEVICES IN THIS AREA TO BE INCLUDED IN ADD ALTERNATE #1. BASE BID SHALL INCLUDE THE DEMOLITION AND REINSTALLATION OF ALL OF THE CEILING MOUNTED DEVICES IN THIS AREA.

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KEY PLAN

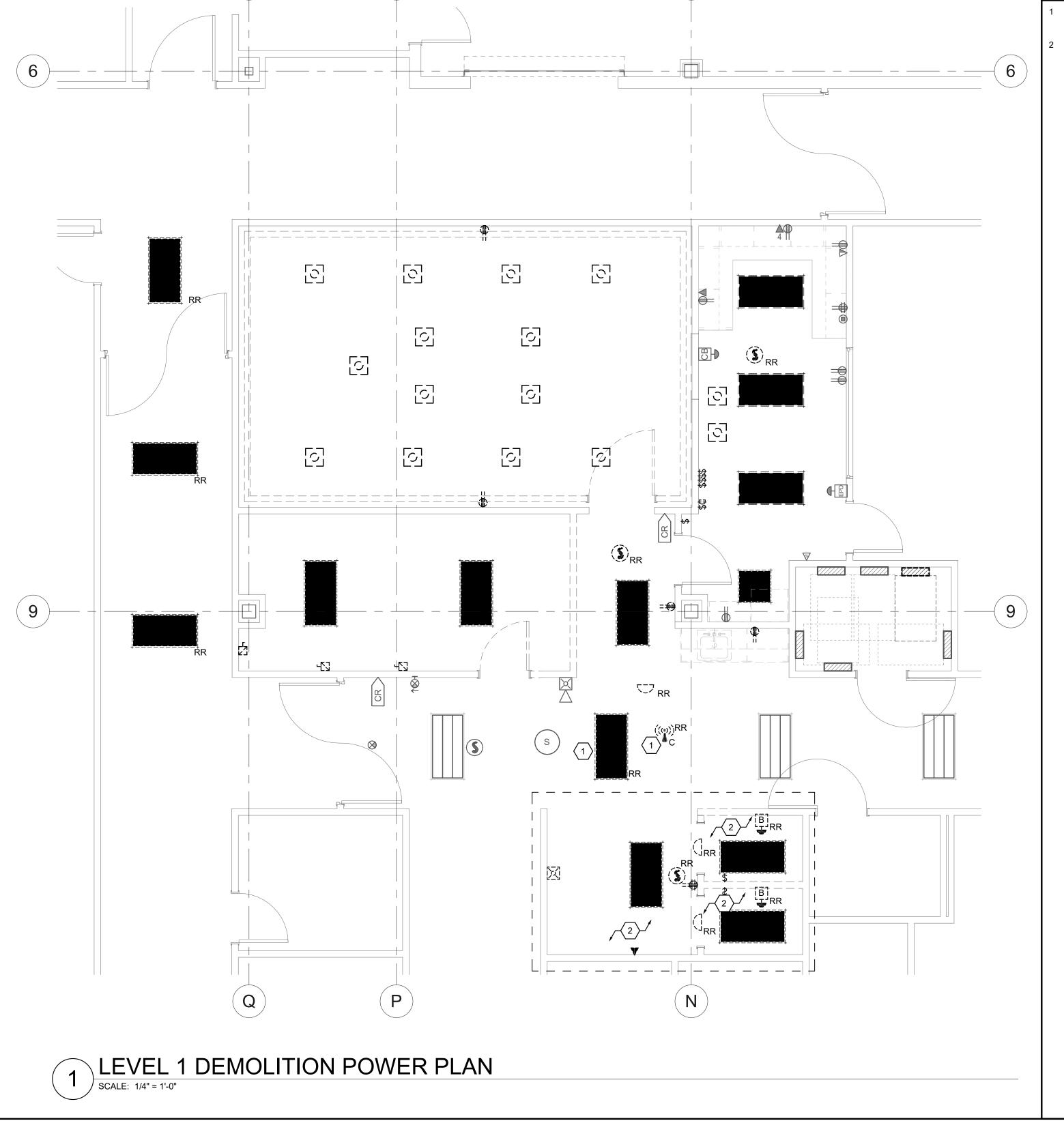
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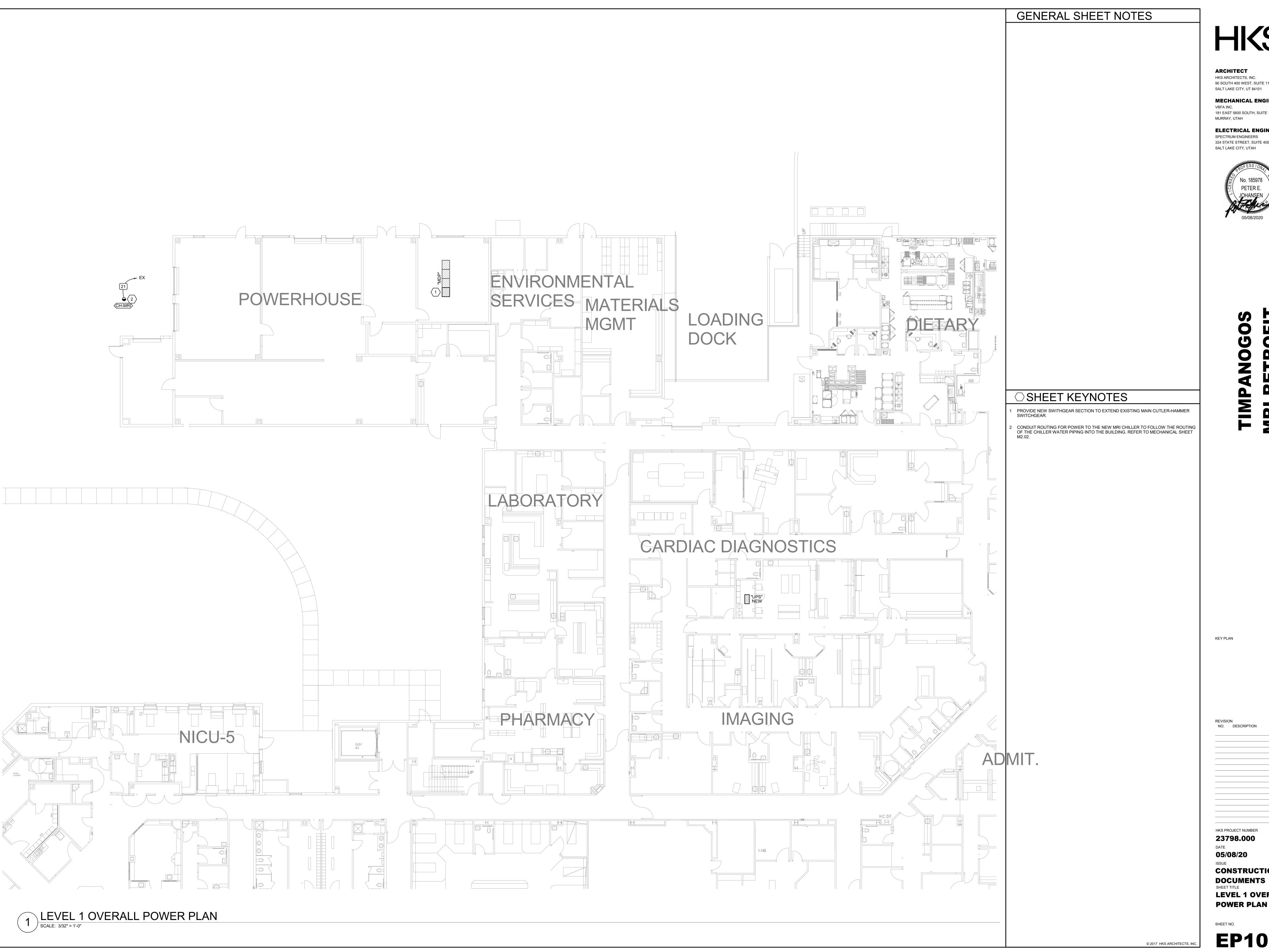
23798.000 05/08/20

CONSTRUCTION **DOCUMENTS**

LEVEL 1 **DEMOLITION PLANS**

ED101



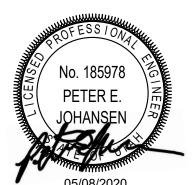


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HKS PROJECT NUMBER 23798.000

05/08/20 CONSTRUCTION

DOCUMENTS LEVEL 1 OVERALL