4.F.F.	ABOVE FINISHED FLOOR	FIN.	FINISH (ED)	PVC.	POLYVINYL CHLORIDE	1.	PROJECT NAME:	TORRID # 3532
4.F.C. 4C.T.	ABOVE FINISHED CEILING ACOUSTICAL TILE	F.E.	FIRE EXTINGUISHER	P.M.	PROJECT MANAGER	2.	PROJECT DESCRIPTION:	CLOTHING SALES
ADJ.	ADJACENT	FP. F.D.	FIREPROOFING FLOOR DRAIN	R.A.	RETURN AIR			BOWER PLACE
ALT.	ALTERNATE	FLUOR.	FLUORESCENT	R.C.P.	REFLECTED CEILING PLA			4900 MOLLY BA
APPROX.		F.R.T.	FIRE RETARDANT TREATED	REF. REG.	REFERENCE REGISTER			RED DEER, AB
ARCH.	ARCHITECT (URAL)	FURR.	FURRED (ING)	REG. REINF.	REINFORCE (D), (ING)			
BLK.	BLOCK	GA.	GAUGE	REQ'D.	REQUIRED (REQ.)	4.	TENANT:	TORRID
BLKG.	BLOCKING	GALV.	GALVANIZED	REV.	REVISION (S), REVISED			18305 E. SAN
BD.	BOARD	G.C. GYP. BD.	GENERAL CONTRACTOR GYPSUM BOARD	R.O.	ROUGH OPENING			CITY OF INDUST
CLG.	CEILING	H.V.A.C.	HEATING/VENTILATION/	SHT.	SHEET			PHONE # (714) CONTACT: CHRIS
CLG.HT.	CEILING HEIGHT	11.4.7.0.	AIR CONDITIONING	SIM.	SIMILAR			EMAIL: ccammai
CLR. CLO.	CLEAR (ANCE) CLOSET	H.C.	HOLLOW CORE	S.C.	SOLID CORE			
COL.	COLUMN	Н.М.	HOLLOW METAL	S.S.	STAINLESS STEEL	5.	LANDLORD:	.QUADREAL
C.M.U.	CONCRETE MASONRY UNIT	HORIZ.	HORIZONTAL	STD.	STANDARD			308 4 AVE. SW
CONST.	CONSTRUCTION	H.W.	HOT WATER	STL.	STEEL			CALGARY, AB T2
COORD.	COORDINATE	IN.(")	INCH	STO.	STORAGE			PHONE # 403-X CONTACT: RYAN
CORR.	CORRIDOR	INT.	INTERIOR	S.D.	STORM DRAIN			EMAIL: ryan.matl
CTR.	CENTER	JT. MFR.	JOINT MANUFACTURE (R)	STRUCT.	STRUCTURAL			-
C.T.	CERAMIC TILE	MECH.	MECHANIC (AL)	SUSP.	SUSPENDED	6.	TENANT'S ARCHITECT:	ARCVISION
DET.	DETAIL	MTL.	METAL	T.B.D.	TO BE DETERMINED			1950 CRAIG RD.
DIAG.		MEZZ.	MEZZANINE	TEL. TS.	TELEPHONE TUBE STEEL			ST. LOUIS, MO (PHONE # (800)
DIA. DIF.	DIAMETER DIFFUSER	MIN. (')	MINIMUM, MINUTE	TYP.	TYPICAL			CONTACT: KATHE
DIF. DIM.	DIMENSION	MISC.	MISCELLANEOUS	U.N.O.	UNLESS NOTED OTHERW	VISE		.SCHNACKE
DISP.	DISPENSER	N.I.C.	NOT IN CONTRACT	VERT.	VERTICAL	···· /.	TENANT'S ENGINEER:	3035 SOUTH 72
DR.	DOOR	N.T.S. NO. or #	NOT TO SCALE	VEST.	VESTIBULE			OMAHA, NE 681
DWG.	DRAWING			V.C.T.	VINYL COMPOSITION TILE	E		PHONE # (402)
ELEC.	ELECTRICAL	0.F.C.I.	OWNER FURNISHED CONTRACTOR INSTALLED	V.I.F.	VERIFY IN FIELD			CONTACT: JOEL
E.P.	ELECTRIC PANEL	0.F.0.I.	OWNER FURNISHED	W.C. WP.	WATER CLOSET WATERPROOF(ING)		BUILDING DEPARTMENT:	THE CITY
ELEV.	ELEVATION	U.F.U.I.	OWNER INSTALLED	WP. WS.	WEATHER STRIPPING	^{0.}		LICENSING
E.W.C.	ELECTRIC WATER COOLER	0.C.	ON CENTER (S)	w3. W/	WITH			4914 48 AVE.
EXIST	EXISTING	OPP.	OPPOSITE	W/O	WITHOUT			RED DEER, AB
EQUIP.	EQUIPMENT	P. L.	PLASTIC LAMINATE	WD.	WOOD			PHONE # 403-
EXH.	EXHAUST	PLBG.	PLUMBING	11 D.	NOOD			CONTACT: PAUL
-XP. JI.	EXPANSION JOINT	PWD.	PLYWOOD	_		9.	GOVERNING CODES:	ALL WORK SHALL
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etail nu	MBER				on type2			BUILDING:
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HEET WH		ELEVATION	A100					MECHANICAL:
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								ELECTRICAL:
ECTION C	UT <u> (</u>	ROOM NUM	BER ROOM		ION BENCHMARK			ENERGY:
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DISCREP	ANCIES BETWEEN DRAWINGS, NOTIFY THE ARCHITECT IMMEDIA	THF MOST S	TRINGENT NOTE OR CONDITIO)N SHALL A	PPLY AND THE CONTRACTO	OR 15.	MISCELLANEOUS NOTES:	JENANT'S GENER
	ON WILL CONSTITUTE ACCEPTA							CONDITIONS PRIO
PERSON	ALLY SUPERVISE & DIRECT AL	L WORK. BE	RESPONSIBLE FOR ALL CO	, NSTRUCTION	AND INSTALLATION METHOD	DDS,		TENANT'S ARCHIT REQUIREMENTS R
TECHNIG	UES, SEQUENCES, PROCEDURI	ES AND FOR	COORDINATION OF ALL TRA	DES OF REG	QUIRED WORK.			THE LANDLORD.
APPROV	AL OF SHOP DRAWINGS IS FO CHECKED, AND APPROVAL OF	K THE GENE	KAL METHOD OF FABRICATIO	N ONLY. DI	VENSIONS & QUANTITIES M	MAY 16.	FIRE SPRINKLERS:	AN AUTOMATIC FI
DU DE	UNLONED, AND AFFINDIAL OF	JIN DIVA	MINUU DULU NUT NELILVE II	IL CONTRAC	JUN INUM CONTLIANCE W	•/		SHALL REWORK A

NOTE:

FIRE SPRINKLER DRAWINGS AND HYDRAULIC CALCULATIONS

HALL BE SUBMITTED BY THE LICENSED FIRE SPRINKLER

CONTRACTOR TO THE GOVERNING MUNICIPALITY FOR

PPROVAL PRIOR TO ANY WORK BEING PERFORMED.

THE REQUIREMENT OF THE DRAWINGS & SPECIFICATIONS UNLESS SPECIFICALLY INDICATED IN THE APPROVAL.

. DO NOT SCALE DRAWINGS, WRITTEN DIMENSIONS GOVERN. FIELD VERIFY ALL DIMENSIONS AND SITE CONDITIONS. 5. ALL DIMENSIONS ARE TO THE FACE OF GYPSUM BOARD FINISH, UNLESS OTHERWISE NOTED.

3. WHEREVER EXISTING CONDITIONS ARE TO BE CUT OR DISTURBED TO ALLOW INSTALLATION OF NEW WORK, THIS CONSTRUCTION SHALL BE PATCHED TO MATCH THE ORIGINAL CONSTRUCTION METHOD AND FINISH.

. ALL PENETRATIONS THROUGH FIRE RESISTIVE FLOORS, WALLS OR SHAFT WALLS SHALL BE PROTECTED BY MATERIALS AND INSTALLATION METHODS THAT CONFORM TO U.L. STANDARDS FOR FIRESTOP SYSTEMS. THE GC SHALL SUBMIT SHOP DRAWING DETAILS WHICH SHOW COMPLETE CONFORMANCE TO THE U.L. LISTING TO THE ARCHITECT.

ABBREVIATIONS

ALL MANUFACTURED ARTICLES, MATERIALS & EQUIPMENT SHALL BE CONDITIONED, USED, INSTALLED, CONNECTED, ERECTED, & CLEANED IN ACCORDANCE W/ THE MANUFACTURER'S WRITTEN SPECIFICATIONS OR INSTRUCTIONS.

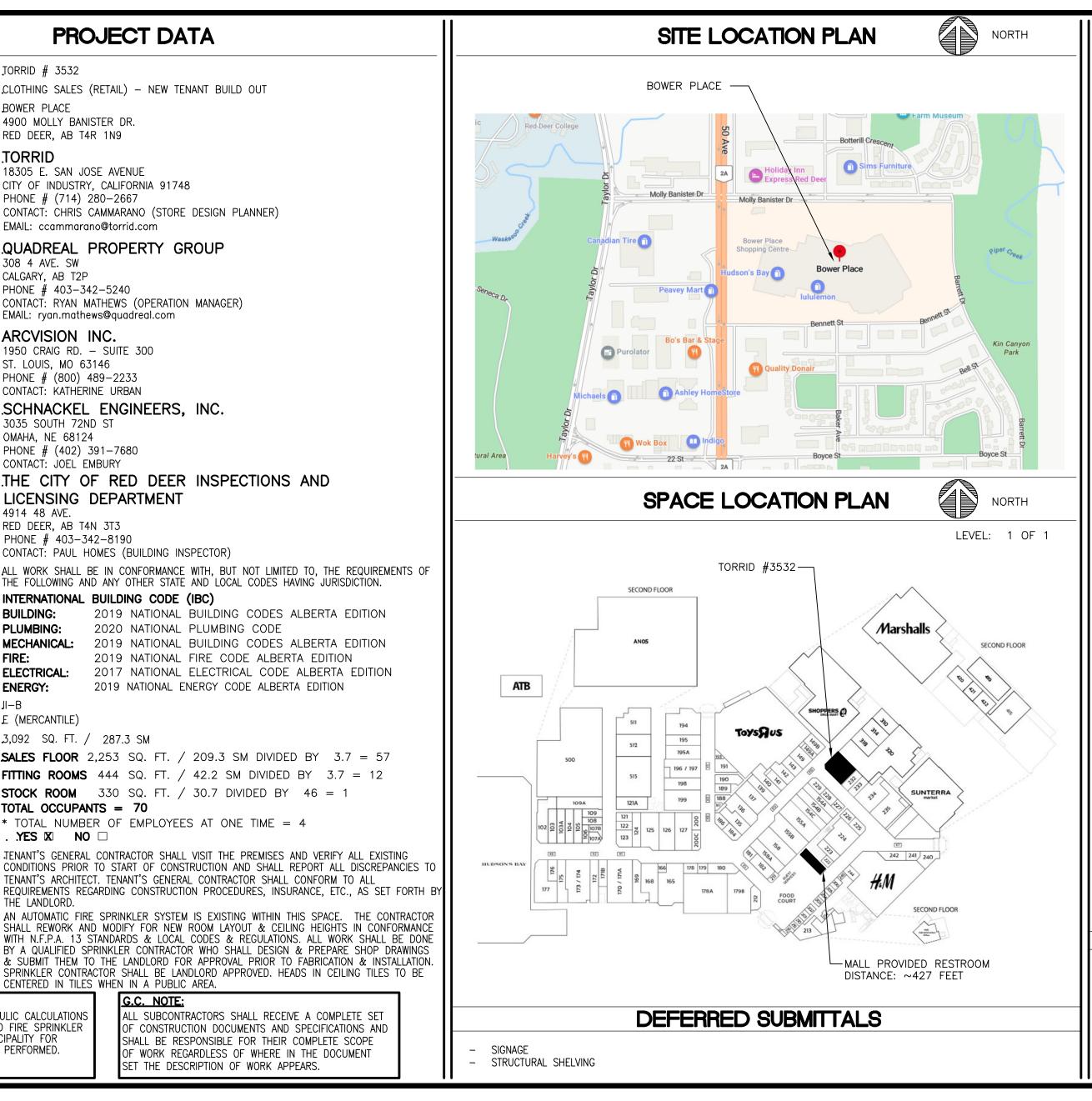
CONTRACTOR'S CARTS, EQUIP. BOXES, ETC., MUST BE EQUIPPED WITH RUBBER WHEELS.

BOWER PLACE

4900 MOLLY BANISTER DR., SPACE NO. 230

RED DEER, AB T4R 1N9

STORE #3532-B



DETAILED SCOPE OF WORK EE SCOPE ME PERESSA, TRAVE SCORE SHILL BELLEN OF THE SELE AF VER CORPARE IN THOMAS AND	1. FR 2. IF 3. GC 4. GC 5. GC	3	2 3 3 3	$\begin{array}{c} 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \end{array}$	$\frac{1}{2}$			
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00700	GENERAL CONDITIONS:
AS INDICATED IN THE AID	DOCUMENT #A201 "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION" 1987 EDITION.

MODIFICATIONS TO GENERAL CONDITIONS:

ARTICLE 4 4.4.1 ADD THE FOLLOWING: UTILITIES SHALL INCLUDE A JOB TELEPHONE TO BE INSTALLED WITHIN FIVE (5) WORKING DAYS AFTER COMMENCEMENT OF THE WORK. COORDINATE WITH TENANT UTILITY MANAGER.

4.10.1 ADD THE FOLLOWING: CONTRACTOR SHALL SUPPLY PROJECT MANAGER WITH A COMPLETE LIST OF ALL SUB-CONTRACTORS INVOLVED WITH THE WORK, (NAME, ADDRESS AND TELEPHONE NUMBER) WITH SECOND APPLICATION FOR PAYMENT . SEND TWO COPIES TO THE HOME OFFICE, ATTENTION STORE PLANNING. HVAC AND H.W. HEATER INFORMATION MUST BE NOTED. REFER TO TENANT FORM.

<u>01010</u> <u>SUMMARY OF WORK:</u>

WORK OF CONTRACT CAN BE SUMMARIZED BY REFERENCE TO THE CONTRACT, GENERAL CONDITIONS, SPECIFICATIONS, DRAWINGS, ADDENDA AND MODIFICATIONS TO THESE DOCUMENTS ISSUED SUBSEQUENT TO THE INITIAL PRINTING OF SAME.

A RESPONSIBILITY SCHEDULE IS INDICATED ON THE PLANS. IT INCLUDES COORDINATION WITH OTHER WORK PERFORMED BY SEPARATE CONTRACTORS OF THE PROJECT.

CONTRACTOR RESPONSIBILITY:

GENERAL CONTRACTOR SHALL PROVIDE AND PAY FOR: LABOR, MATERIAL, EQUIPMENT, TOOLS, CONSTRUCTION EQUIPMENT, MACHINERY, WATER, HEAT AND UTILITIES REQUIRED FOR CONSTRUCTION AS WELL AS ANY OTHER FACILITIES AND SERVICE NECESSARY FOR PROPER EXECUTION AND COMPLETION OF THE WORK.

GENERAL CONTRACTOR SHALL SECURE AND PAY FOR THE FOLLOWING ITEMS, NECESSARY FOR EXECUTION AND COMPLETION OF THE WORK, AND AS APPLICABLE AT THE TIME OF RECEIPT OF BIDS: PERMITS, FEES, LICENSES, BONDS AND INSURANCE'S REQUIRED BY LOCAL AUTHORITIES AND/OR LANDLORD.

REGULATORY AGENCIES:

ALL WORK PERFORMED SHALL BE IN ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES HAVING JURISDICTION, AND IN ACCORDANCE WITH THE "DESIGN CRITERIA FOR TENANT WORK" ISSUED BY THE LANDLORD.

REFERENCE STANDARDS:

COMPLY WITH THE APPLICABLE SPECIFICATIONS AND STANDARDS OF UL, ASTM, ANSI, AWI, NEMA, AIA AND ALL OTHER STANDARDS OF MANUFACTURERS ASSOCIATIONS. QUALITY ASSURANCE:

THE CONTRACTOR ASSUMES OVERALL RESPONSIBILITY FOR THE WORK OF THIS PROJECT TO ASSURE THAT ALL ASSEMBLES, COMPONENTS AND PARTS INDICATED OR REQUIRED COMPLY WITH CONTRACT DOCUMENTS. ANY SUBSTITUTIONS MADE BY THE CONTRACTOR WITHOUT PRIOR WRITTEN APPROVAL OF THE OWNER WILL BE REJECTED AND REPLACED AT THE CONTRACTOR'S EXPENSE

THE CONTRACTOR ALSO ASSURES THAT ALL COMPONENTS, SPECIFIED OR REQUIRED TO SATISFACTORILY COMPLETE THE INSTALLATION ARE COMPATIBLE WITH EACH OTHER, WITH ADJOINING SUBSTRATES, MATERIALS AND WORK BY OTHER TRADES, AND WITH THE CONDITIONS OF INSTALLATION AND EXPECTED USE.

FIRE-RATED CONSTRUCTION:

WHEREVER A FIRE RESISTANCE CLASSIFICATION IS INDICATED OR REQUIRED FOR CONSTRUCTION, PROVIDE MATERIALS, ACCESSORIES AND APPLICATION PROCEDURES WHICH COMPLY WITH THE REQUIREMENTS OF UL "FIRE RESISTANCE INDEX" FOR THE UL DESIGN NUMBERS CORRESPONDING WITH THE CONSTRUCTION ASSEMBLIES INDICATED.

SHORT / DAMAGED FREIGHT:

INDICATED BELOW ARE INSTRUCTIONS ON HOW TO HANDLE SHORT, OR DAMAGED FREIGHT:

- 1. BEFORE SIGNING THE FREIGHT BILL, NOTE SPECIFICALLY THE ITEM(S) DAMAGED OR MISSING i.e., ONE LIGHT FIXTURE, TWO PIECES
- OF SLATWALL, ETC. 2. AFTER DAMAGED OR MISSING ITEMS ARE NOTED ON FREIGHT BILL, HAVE CARRIER'S DRIVER ALSO SIGN IT. THIS WILL VERIFY THAT BOTH PARTIES AGREE TO THE EXTENT OF DAMAGE OR SHORT ITEMS.
- 3. THERE ARE TIMES WHEN DAMAGE IS DISCOVERED ONLY UPON UNPACKING THE FREIGHT. IN ORDER TO RECEIVE PAYMENT FROM FREIGHT COMPANY. WE MUST PROVE THAT THE FREIGHT WAS DELIVERED IN DAMAGED CONDITION. THEREFORE, ALL CARTONS MUST BE INSPECTED FOR SIGNS OF DAMAGE OR ABUSE AND THIS IS TO BE NOTED WITHIN 24 HRS.
- 4. PHONE THE TRAFFIC DEPARTMENT AT LAUREL, BLAIR BUCHANAN (856) 461-6600 EXT. 306, AND ADVISE EXTENT OF DAMAGE OR SHORTNESS AND TO RECEIVE DISPOSITION INSTRUCTIONS. 5. BE SURE TO CONTACT THE PROJECT MANAGER WITHIN 24 HRS. TO INFORM HIM/HER OF THE LOSS SO THAT, IF NECESSARY,

PROTECTION OF MATERIALS / FURNITURE ON SITE:

THE ITEM(S) CAN BE REORDERED.

G.C. IS RESPONSIBLE FOR THE SECURITY, CARE AND DAMAGE PREVENTION OF ALL MATERIALS AFTER DELIVERY TO JOB SITE. G.C. WILL BE BACKCHARGED FOR DAMAGES AND MISSING ITEMS.

EXISTING CONDITIONS: 01500

GENERAL CONTRACTOR IS TO VISIT THE JOB SITE TO INSPECT THE EXISTING CONDITIONS AND TO VERIFY THE AMOUNT OF WORK THAT WILL BE NECESSARY FOR THE PROJECT TO BE COMPLETED ACCORDING TO THE CONSTRUCTION DOCUMENTS.

EXAMINE THE SUBSTRATES AND ADJOINING CONSTRUCTION, AND THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED. DO NOT PROCEED WITH THE WORK UNTIL UNSATISFACTORY CONDITIONS DETRIMENTAL TO THE PROPER AND TIMELY COMPLETION OF THE WORK HAVE BEEN CORRECTED.

BEFORE PERFORMING ANY WORK OR ORDERING ANY MATERIAL, THE GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS OF ANY EXISTING OR NEW WORK AND SHALL BE RESPONSIBLE FOR THEIR ACCURACY. ANY DIFFERENCES FOUND SHALL BE SUBMITTED TO THE OWNER FOR CONSIDERATION BEFORE PROCEEDING WITH WORK.

PRODUCT HANDLING: 01610

DELIVER AND STORE MATERIALS IN SEALED CONTAINERS AND BUNDLES, FULLY IDENTIFIED WITH MANUFACTURER'S NAME, BRAND, TYPE AND GRADE. PROTECT MATERIALS FROM CORROSION AND DAMAGE. STORE IN A DRY VENTILATED SPACE, OFF THE GROUND. COORDINATE ALL DELIVERIES WITH THE MALL LANDLORD AND TENANT SUPPLIED MATERIAL VENDORS.

GENERAL CONTRACTOR WILL RECEIVE AND UNLOAD ALL FIXTURES FROM THE FIXTURE SUPPLIER, ACCORDING TO THE TERMS AND CONDITIONS IMPOSED BY THE MALL DEVELOPER, I.E. SPECIAL TIMES TO UNLOAD, ETC. FIXTURES TO BE SET BY GENERAL CONTRACTOR.

GENERAL CONTRACTOR WILL NOTIFY TENANT IMMEDIATELY OF ANY MISSING OR DAMAGED ITEMS THAT TENANT SUPPLIES AND GENERAL CONTRACTOR INSTALLS. HE WILL OBTAIN AND FILL ALL NECESSARY PAPERWORK REQUIRED IN ORDER TO FACILITATE TENANT IN HIS ABILITY TO PROPERLY FILE CLAIM FOR DAMAGES OR LOSSES. REFER TO TENANT SHORTAGE/DAMAGED GOODS POLICY INCLUDED IN BID INSTRUCTIONS FROM TENANT.

CLEANING/ADJUSTING/MAINTENANCE/WARRANTIES:

EXECUTE PERIODIC CLEANING DURING PROCESS OF WORK, AND AT COMPLETION OF THE WORK, SO THAT ALL FINISHED SURFACES ARE FREE OF ANY FOREIGN MATERIAL. CONDUCT CLEANING AND DISPOSAL OPERATIONS TO COMPLY WITH CODES, ORDINANCES, REGULATIONS, ANTI-POLLUTION LAWS AND LANDLORD REQUIREMENTS. REMOVE GREASE, MASTIC, ADHESIVES, DIRT, STAINS, LABELS AND OTHER FOREIGN MATERIALS FROM SIGHT EXPOSED SURFACES. GENERAL CONTRACTOR SHALL REMOVE ALL CONSTRUCTION DEBRIS FROM JOBSITE, ON A DAILY BASIS.

PROTECT AND MAINTAIN ALL WORK THROUGHOUT CONSTRUCTION SO THAT IT WILL BE FREE OF DAMAGE AT THE TIME OF ACCEPTANCE BY THE TENANT. COMPLETION:

STORE TO BE READY FOR OCCUPANCY - ALL SURFACES CLEAN.

CLEANING/ADJUSTING/MAINTENANCE/WARRANTIES:

PART 1 - GENERAL

- A. FINAL CLEANING 1. GENERAL CONTRACTOR TO PROVIDE A PROFESSIONAL CLEANING SERVICE TO EXECUTE FINAL CLEANING PRIOR TO B. ADJUSTING
- ADJUST OPERATING PRODUCTS AND EQUIPMENT TO ENSURE TURN-OVER. C. OPERATION AND MAINTENANCE DATA
- 1. SUBMIT DATA BOUND IN 8-1/2x11 INCH TEXT PAGES, THREE D PRODUCTS IN QUANTITIES SPECIFIED IN INDIVIDUAL SPECIFICATION SECTIONS.

2. PREPARE BINDER COVER WITH PRINTED TITLE "OPERATION & MAINTENANCE INSTRUCTIONS", TITLE OF PROJECT. SIDE RING BINDER W/ DURABLE PLASTIC COVERS.

PART 2 - PREPARATION / EXECUTION:

FINAL_CLEANING CLEAN INTERIOR AND EXTERIOR GLASS, SURFACES EXPOSED TO VIEW; REMOVE TEMPORARY LABELS, STAINS & FOREIGN SUBSTANCES, POLISH TRANSPARENT AND GLOSSY SURFACES, VACUUM CARPETED AND SOFT SURFACES. 2. CLEAN EQUIPMENT AND FIXTURES TO A SANITARY CONDITION WITH CLEANING MATERIALS APPROPRIATE TO THE SURFACE AND MATERIAL BEING CLEANED. 3. REMOVE WASTE & SURPLUS MATERIALS, RUBBISH & CONSTRUCTION FACILITIES FROM THE SITE.

02050 DEMOLITION:

ANY AND ALL DEMOLITION REQUIRED TO COMPLETE CONSTRUCTION FOR THIS PROJECT MUST BE CONSIDERED PART OF THIS CONTRACT AND SHOULD BE EXECUTED IN ACCORDANCE WITH THE LANDLORD'S REQUIREMENTS. REQUIREMENTS. THE CONSTRUCTION DOCUMENTS INDICATED EXISTING CONDITIONS, WALLS, AREAS TO REMAIN BUT THE ARCHITECT DOES NOT CERTIFY THAT ALL DEMOLITION WORK IS INDICATED ON THE PLANS. ANY ITEMS INDICATED AS EXISTING, TO REMAIN, HAVE TO BE INSPECTED BY THE GENERAL CONTRACTOR TO DETERMINE IF ANY OF THESE ITEMS CAN BE REUSED. AT THE END OF CONSTRUCTION, THE EXISTING WALLS, AREAS, ETC., SHOULD BE LIKE-NEW CONSTRUCTION. ALL DEMOLISHED WORK SHALL BE REMOVED FROM THE PROJECT

SITE AND LEGALLY DISPOSED OF. NO CONSTRUCTION MATERIALS ARE TO BE DISPOSED OF IN THE MALL TRASH RECEPTACLES OR DUMPSTERS WITHOUT LANDLORD'S PRIOR APPROVAL. REFER TO DEMOLITION PLAN NOTES.

1. SCOPE: FURNISH EQUIPMENT AND PERFORM LABOR REQUIRED TO EXECUTE THIS WORK AS INDICATED ON THE DRAWINGS AS SPECIFIED AND AS NECESSARY TO COMPLETE THE CONTRACT, INCLUDING, BUT NOT LIMITED TO, THESE MAJOR ITEMS.

- A. PROTECTION OF EXISTING WORK TO REMAIN.
- C. REMOVAL OF PARTITIONS, DOORS, FLOOR COVERINGS, AND CEILINGS. D. REMOVAL AND CAPPING OF MECHANICAL AND ELECTRICAL FIXTURES AND SERVICES.
- E. DEBRIS REMOVAL AND DISPOSAL.

- G. REMOVAL OF ANY EXISTING STOREFRONT, INCLUDING OVERHEAD ROLL-UP GRILLE.

GENERAL REQUIREMENTS

- USED DURING THE REMOVING OF ALL STRUCTURAL ELEMENTS.
- FOR ANY CONTINGENCY ALLOWANCES.
- CONNECTED WITH IT.
- REMOVAL IS REQUIRED TO PERMIT INSTALLATION OF NEW WORK.
- WORKERS IN NOISE CONTROL PROCEDURES.
- PROTECTION OF PERSONNEL: ERECT SIGNS, BARRICADES AND SUCH OTHER FORMS OF WARNING AS MAY BE REQUIRED TO PREVENT PERSONNEL FROM PUTTING THEMSELVES IN THE WAY OF INJURY.
- 4. MECHANICAL, ELECTRICAL, AND PLUMBING PROTECT LINES TO REMAIN. PROVIDE FOR MINIMUM SERVICE INTERRUPTION OF LINES TO REMAIN.
- THE BACK OF THE FINISH MATERIAL.
- C. REPAIR, REPLACE, OR MAKE GOOD DAMAGE TO EXISTING CONSTRUCTION WHICH OCCURS AS A RESULT OF DEMOLITION ROOFING CONTRACTOR.

<u>CONCRETE:</u>

WHEN THE CONCRETE FLOOR SLAB IS EXISTING, PREPARE THE SLAB TO RECEIVE FINISH AS INDICATED ON THE PLANS. WHEN ON A GROUND FLOOR LOCATION, THE CONCRETE SLAB FLOOR SHALL BE SEALED IN THE AREAS TO RECEIVE CARPETING. WHEN SLAB FLOOR IS TO BE EXECUTED AS PART OF THE CONTRACT, FOLLOW LANDLORD'S DIRECTIONS AND SPECIFICATIONS. FLOOR SLAB MODIFICATIONS:

GENERAL CONTRACTOR SHALL INSPECT THE EXISTING SLAB CONDITIONS TO DETERMINE THE AMOUNT OF CONCRETE FLOOR SLAB TO BE REMOVED AND REPLACED FOR INSTALLATION OF ELECTRICAL, MECHANICAL AND PLUMBING WORK AND STEEL COLUMNS FOR GRILLE SUPPORT. ALL CONCRETE TRENCHING AND REFILLING, AS WELL AS ANY AND ALL PENETRATIONS OF THE SLAB, SHALL BE EXECUTED IN ACCORDANCE WITH THE LANDLORD'S REQUIREMENTS. STRUCTURAL METALS:

THE DESIGN, FABRICATION AND INSTALLATION OF ALL MISCELLANEOUS METAL LINTELS, SUPPORTS AND FRAMING REQUIRED FOR ALL STORE FRONT WORK SHALL BE THE SOLE RESPONSIBILITY OF THE TENANT'S GENERAL CONTRACTOR. <u>ROUGH CARPENTRY:</u>

ALL WOOD FRAMEWORK, WOOD BLOCKING AND PLYWOOD CONSTRUCTION SHALL BE FIRE RETARDANT TREATED AS REQUIRED BY LOCAL CODES AND LANDLORD REQUIREMENTS. PARTICLE BOARD SHALL BE UL CLASS 1 FIRE-RATED, SANDED AND PREPARED TO RECEIVE PLASTIC LAMINATE OR PAINTED METAL I AMINATE

WOOD FRAMING MEMBERS SHALL BE NO. 1 LIGHT FRAMING DOUGLAS FIR OR NO. 2 OR BETTER YELLOW PINE OF THE DIMENSIONS INDICATED ON THE PLANS.

PLYWOOD SHALL BE GRADE B-D DOUGLAS FIR, SANDED AND PREPARED YO RECEIVE PLASTIC LAMINATE, METAL LAMINATE OR PAINT. PLYWOOD BACKING PANELS FOR MOUNTING ELECTRICAL OR TELEPHONE EQUIPMENT SHOULD BE FIRE RETARDANT TREATED PLYWOOD WITH GRADE DESIGNATION, APA C-D NOT LESS THAN 3/4" THICK. PROVIDE FASTENERS AND ANCHORAGE OF THE TYPE. SIZE, MATERIAL AND FINISH AS RECOMMENDED BY APPLICABLE STANDARDS. COMPLYING WITH APPLICABLE FEDERAL SPECIFICATIONS FOR NAILS, STAPLES, SCREWS, BOLTS, NUTS, WASHERS AND ANCHORING DEVICES. PROVIDE BLOCKING AS REQUIRED FOR INSTALLATION OF SHELVING, EQUIPMENT, ACCESSORIES, FIXTURES, AND FINISH HARDWARE OR OTHER HEAVY ITEMS ON WALLS.

<u>06400</u> ARCHITECTURAL WOODWORK:

"ARCHITECTURAL WOODWORK QUALITY STANDARDS" PUBLISHED BY THE ARCHITECTURAL WOODWORD INSTITUTE.

CONDITION WOODWORK TO PREVAILING HUMIDITY CONDITIONS IN INSTALLATION AREAS PRIOR TO INSTALLING. INSTALL WOODWORK PLUMB, LEVEL, TRUE AND STRAIGHT WITH NO DISTORTIONS. SHIM AS REQUIRED USING CONCEALED SHIMS. INSTALL TO A TOLERANCE OF 1/8" IN 8'-0" FOR PLUMB & LEVEL & W/ NO VARIATIONS IN FLUSHNESS OF ADJOINING SURFACES. ANCHOR WOODWORK TO ANCHORS, OR BLOCKING BUILT-IN, OR DIRECTLY ATTACHED TO SUBSTRATE. SECURE W/ CONCEALED FASTENERS.

<u>06410</u> <u>HARDWARE:</u>

SUBSTITUTION APPROVAL. NO OTHERS SHALL BE ACCEPTABLE.

SEALANT: 07900

PART 1 - GENERAL

- A. EXPANSION JOINT MATERIAL, SEALANTS AND JOINT BACKING FOR JOINTS BETWEEN DISSIMILAR MATERIALS.
- 2. JOINT BACKING: ROUND, OPEN CELL POLYETHYLENE FOAM ROD.

PART 2 - PREPARATION / EXECUTION

- REMOVE LOOSE MATERIALS AND FOREIGN MATTER WHICH MIGHT IMPAIR ADHESION OF SEALANT.
- B. CLEAN AND PRIME JOINTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- C. PROTECT ELEMENTS SURROUNDING THE WORK OF THIS SECTION FROM DAMAGE OR DISFIGURATION.
- D. INSTALL SEALANT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- E. INSTALL JOINT BACKING.
- BE APPLIED WITHIN THESE TEMPERATURE RANGES.

WOOD DOORS: <u>08210</u>

ALL INTERIOR WOOD DOORS SHALL BE SOLID CORE (COORDINATE WITH DOOR SCHEDULE) FLUSH CONSTRUCTION. OF THE DIMENSIONS SHOWN, AND SHALL MEET OR EXCEED THE ANSI/NWSA INDUSTRY STANDARD I.S./SERIES & AWI QUALITY STANDARD FOR ARCHITECTURAL FLUSH DOORS.

DOORSKIN FOR PAINTED AND VINYL COVERED SURFACES SHALL BE OF PAINT GRADE. OVERALL THICKNESS OF DOORSKIN SHALL BE 1/8" AND SHOULD BE BELT SANDED FOR PAINT FINISH. FINAL SANDING BY FIELD FINISHER. WHEN REQUIRED BY CODE, FIRE DOORS SHOULD HAVE THE REQUIRED FIRE RATING.

WOOD FRAMES: EXAMINE DOOR FRAMES AND VERIFY THAT THE FRAMES ARE THE CORRECT TYPE AND HAVE BEEN INSTALLED AS REQUIRED FOR PROPER HANGING OF CORRESPONDING DOORS. ALIGN AND FIT THE DOORS IN THE FRAMES WITH THE FOLLOWING UNIFORM CLEARANCES AND BEVELS. TRIM STILES AND RAILS ONLY TO THE EXTENT PERMITTED BY LABELING AGENCY.

B. DEMOLISH EXISTING CONSTRUCTION WHERE INDICATED ON THE DRAWINGS AND WHERE REQUIRED BY JOB CONDITIONS.

REMOVAL OR CORING OF PORTIONS OF THE EXISTING CONCRETE SLAB AS REQUIRED FOR SERVICE AND EQUIPMENT LINE INSTALLATION. PATCHING SHALL BE ACCEPTABLE TO THE POINT THAT THE FINISH WILL ACCEPT SCHEDULED FINISH MATERIAL WITH NO NOTICEABLE EFFECT OF AN ALTERATION HAVING BEEN MADE.

A. THE CONTRACTORS SHALL BE FULLY RESPONSIBLE FOR THE ADEQUACY AND INSTALLATION OF ALL TEMPORARY SHORING SYSTEMS

B. THE DRAWINGS DO NOT NECESSARILY INDICATE THE FULL EXTENT OF THE WORK REQUIRED TO BE PERFORMED. INSPECT THE EXISTING CONSTRUCTION CAREFULLY TO DETERMINE THE FULL EXTENT OF WORK TO BE PERFORMED AND THE PROBLEMS INVOLVED. NO EXTRA COMPENSATION WILL BE ALLOWED BECAUSE OF FAILURE TO ESTIMATE THE FULL EXTENT OF THE WORK OR

ALL WORK SHALL BE PERFORMED BY SKILLED AND PROPERLY EQUIPPED PERSONNEL. DEMOLITION AND REMOVAL OF ITS ITEMS SCAFFOLD HIGH OR HIGHER SHALL BE LOWERED BY CONTROLLED METHODS, NOT BY THROWING OR DROPPING. PERFORM CUTTING AND STRIPPING SO THAT THE WORK TO REMAIN IS UNDAMAGED AND IN SUCH A MANNER THAT NEW WORK CAN BE PROPERLY BE

UNFORESEEN CONDITIONS: INCLUDE IN THE BASE BID MISCELLANEOUS CUTTING AND PATCHING NECESSITATED AS A RESULT OF UNFORESEEN CONDITIONS AND THE REWORKING OF ABUTTING SURFACES AS REQUIRED TO MAKE NEW WORK JOIN AND MATCH EXISTING SURFACES TO REMAIN. NO EXTRA PAYMENTS BASED ON THE PLEA OF UNFORESEEN CONDITIONS WILL BE ALLOWED.

G.C. TO COORDINATE WITH THE LANDLORD ALL WORK THAT MAY EFFECT NORMAL DAILY OPERATIONS OF THE LANDLORD PREMISES AND COMPLY WITH ALL RESTRICTIONS THE LANDLORD MAY HAVE ON DEMOLITION AND/ORCONSTRUCTION SCHEDULES. COOPERATE FULLY TO THE END THAT CERTAIN FACILITIES AND SERVICES ARE MAINTAINED IN OPERATION UNTIL IMMEDIATELY BEFORE THEIR

NOISE CONTROL: CARRY ON ALL WORK IN A MANNER WHICH WILL PRODUCE THE LEAST AMOUNT OF NOISE. INSTRUCT ALL

A. CAREFULLY REVIEW PLANS AND DETERMINE LINES TO BE REMOVED AND THOSETO BE KEPT ACTIVE OR TO BE REACTIVATED.

REMOVE LINES COMPLETELY WHENEVER POSSIBLE. CUT AND CAP OR PLUG TO PREVENT ESCAPE OF GAS, LIQUID, ETC.. BEHIND

OPERATIONS, AT NO ADDITIONAL COST TO OWNER, THE ARCHITECT OF RECORD, OR THE LANDLORD. THESE REPAIRS SHALL INCLUDE ANY ROOF PATCHING REQUIRED DUE TO DEMOLITION AND SHALL BE COORDINATED WITH LANDLORD AND LANDLORD'S

FINISHED WOODS SHALL BE OF THE TYPE SPECIFIED IN THE PLANS AND SHOULD COMPLY WITH PREMIUM GRADE WORK AS DESCRIBED IN

THE WOOD SHALL BE STRAIGHT AND FREE OF BLEMISHES AND OF SUFFICIENT LENGTH TO PERMIT A MINIMUM NUMBER OF JOINTS.

ALL SURFACES SHALL BE SANDED TO A SMOOTH SURFACE, READY FOR STAINING OR FINISH PAINTING AS PER DETAILS AND SCHEDULES.

HARDWARE SHALL BE OF THE TYPE, FINISH AND MANUFACTURER SHOWN. MANUFACTURER'S CATALOG NUMBERS USED HEREIN ARE INTENDED TO INDICATE THE QUALITY REQUIRED. ALTERNATE MANUFACTURERS AND PRODUCTS MAY BE SUBMITTED TO THE TENANT FOR

FURNISH HARDWARE TEMPLATES IN A TIMELY MANNER TO THE VARIOUS AFFECTED TRADES FOR COORDINATION OF THEIR WORK.

1. SILICONE SEALANTS (TYPE S): ASTM C920, SINGLE COMPONENT, NON-SAGGING, NON-STAINING, NON-BLEEDING; FOR USE AS GENERAL CAULKING: COLOR TO MATCH ADJACENT SURFACES, MANUFACTURER BY GE SILICONES OR EQUAL.

F. APPLY SEALANT WITHIN RECOMMENDED APPLICATION TEMPERATURE RANGES. CONSULT MANUFACTURER WHEN SEALANT CANNOT

FOR NON-RATED DOORS, PROVIDE CLEARANCES OF 1/8" AT JAMBS AND HEADS, AND 1/8" FROM THE BOTTOM OF THE DOOR TO THE TOP OF THE FINISH OR COVERING. FOR FIRE-RATED DOORS, PROVIDE CLEARANCES AND CORRESPONDING FIRE-RATED FRAMES IN ACCORDANCE WITH REQUIREMENTS OF NFPA NO. 80

FXISTING DOORS: WHEN EXISTING DOOR IS TO REMAIN IN SERVICE, DOOR AND FRAME MUST BE RAISED 3/8" FROM EXISTING FLOOR TO PROVIDE FOR DOOR CLEARANCE IF OVER NEW CARPET.

- A. KEYING 1. GENERAL CONTRACTOR TO COORDINATE KEYING AND MASTER KEYING WITH CONSTRUCTION MANAGER
- 2. GENERAL CONTRACTOR TO INSTALL CONSTRUCTION CORES DURING CONSTRUCTION AND REPLACE WITH PERMANENT AT END OF JOB PRIOR TO TURN-OVER.
- B. PROVIDE COMMERCIAL GRADE HARDWARE, COMPLYING WITH PROJECT SPECIFICATIONS, IN SETS ACCORDING TO THE SCHEDULE HEREIN AND ON DOOR SCHEDULE DRAWING. REFER TO DOOR SCHEDULE HARDWARE.

PART 2 - PREPARATION / EXECUTION

- A. COORDINATE THE WORK WITH OTHER DIRECTLY AFFECTED SECTIONS INVOLVING FABRICATION OF WALL INT. REINFORCEMENT FOR DOOR HARDWARE & RECESSED ITEMS.
- B. VERIFY THAT DOORS AND FRAMES ARE READY TO RECEIVE WORK AND DIMENSIONS ARE AS INDICATED.
- C. INSTALL HARDWARE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- D. USE TEMPLATES PROVIDED BY HARDWARE ITEM MANUFACTURER.
- WHEREVER CUTTING AND FITTING IS REQUIRED TO INSTALL HARDWARE ONTO OR INTO SURFACES WHICH ARE LATER TO BE PAINTED OR OTHERWISE FINISHED, INSTALL EACH ITEM COMPLETELY, THEN REMOVE AND STORE DURING APPLICATION OF FINISHES. REINSTALL UPON COMPLETION OF FINISHING OPERATIONS. SPACE FASTENERS AND ANCHORAGES AS INDICATED OR IN ACCORDANCE WITH FACTORY STANDARDS.

F. ADJUST HARDWARE FOR SMOOTH OPERATION.

08<u>710</u> <u>DOOR HARDWARE:</u>

- PART 1 GENERAL A. FURNISH & INSTALL FINISH HARDWARE FOR INTERIOR & EXTERIOR DOORS WHEN CALLED FOR ON PLAN
- B. SEE DOOR SCHEDULE FOR SPECIFIC ITEMS, MANUFACTURERS AND MODEL NUMBERS. TEMPLATES SHALL BE FURNISHED FOR USE IN FIELD.
- C. FOLLOW DHI (DOOR AND HARDWARE INSTITUTE) STANDARDS & GUIDELINES AND AWI (AMERICAN WOODWORKING INSTITUTE) STANDARDS FOR HARDWARE INSTALLED ON WOOD DOORS.
- D. FURNISH OWNER WITH MAINTENANCE DATA, MAINTENANCE PROCEDURES, MANUFACTURERS WARRANTIES AND SPECIAL TOOLS.
- E. FINISHES: PER HARDWARE SCHEDULE

<u>GYPSUM DRYWALL SYSTEMS:</u>

PROVIDE ALL GYPSUM DRYWALL MATERIALS THROUGHOUT THE WORK PRODUCED BY ONE MANUFACTURER. PROVIDE METAL STUDS AND FRAMING MEMBERS OF TYPES, GAUGES, SIZES AND CORROSIVE RESISTIVE TREATMENTS AS SHOWN.

STUDS AND FRAMING: ROLL FORMED CHANNEL STUDS AND RUNNERS: ASTM C-645, FABRICATED OF

GALVANIZED STEEL PER ASTM WITH FLANGES NOT LESS THAN 1 1/4" OF THE SIZES AND GAUGES SHOWN.

METAL FURRING CHANNELS: HAT SHAPED, 7/8" HIGH, 25 GAUGE GALVANIZED.

BACKER PLATES: 20 GAUGE GALVANIZED. HANGER WIRE: GALVANIZED, SOFT TEMPER STEEL WIRE, SIZED IN ACCORDANCE WITH ASTM C-754.

HANGER ANCHORAGE: PROVIDE CONCRETE INSERTS, CLIPS, BOLTS, SCREWS AND OTHER DEVICES APPLICABLE TO THE INDICATED METHOD OF STRUCTURAL ANCHORAGE FOR CEILING HANGERS.

FURRING ANCHORAGE'S: 16 GAUGE GALVANIZED WIRE TIES, MANUFACTURER'S STANDARD WIRE-TYPE CLIPS, BOLTS, NAILS OR SCREWS, IN ACCORDANCE WITH ASTM C-754.

METAL TO METAL WITHIN THE DRYWALL SYSTEM: 3/8" TYPE "S" OR S-12, PAN HEAD. ADHESIVES: AS RECOMMENDED BY THE GYPSUM BOARD MANUFACTURER.

TRIM ACCESSORIES:

PROVIDE TRIM ACCESSORIES OF THE SIZES REQUIRED FOR THE DRYWALL APPLICATIONS SHOWN SPECIFIED, FABRICATED FROM GALVANIZED STEEL, & OF THE FOLLOWING TYPE: PROVIDE DRYWALL MOULDING OF THE TYPE AND SIZE INDICATED. PROVIDE METAL CORNER BEAD AT EXTERNAL CORNERS WITH SMOOTH RIGID NOSE AND PERFORATED AND KNURLED FLANGES. CONCEAL FLANGES WITH AT LEAST 2 COATS OF JOINT COMPOUND FEATHERED OUT APPROXIMATELY 9" ON BOTH SIDES OF THE EXPOSED METAL.

WHERE DRYWALL ABUTS OR INTERSECTS DISSIMILAR CONSTRUCTION, PROVIDE SQUARE EDGE SEMI-FINISHING CASING BEAD (NO JOINT COMPOUND TREATMENT NECESSARY).

TAPE AND JOINT MATERIAL SHALL BE APPLIED TO THE JOINTS. THE JOINT COMPOUND SHALL BE SMOOTHED OUT APPROXIMATLEY 4" WIDE, THIS IS TO BE IN THE NORMAL THREE-COAT PROCESS, ALLOWING 24 HOURS DRYING TIME BETWEEN COATS. ALL NAILS. SCREWS, HEADS OR DIMPLES SHALL ALSO RECEIVE A THREE-COAT FINISH USING THE SAME MATERIAL AND MANNER NAILS. SCREWS, HEADS OR DIMPLES SHALL ALSO RECEIVE A THREE-COAT FINISH USING THE SAME MATERIAL AND MANNER AS THAT FOR AS THAT FOR THE JOINTS. SAND SMOOTH ALL JOINTS AND SURFACES AND HAVE THEM READY TO RECEIVE THE WALL FINISH. VERIFY SAND SMOOTH ALL JOINTS AND SURFACES AND HAVE THEM READY TO RECEIVE THE WALL FINISH. VERIFY THAT THE EXISTING WALL THAT THE EXISTING WALL SURFACES, IF ANY, ARE SMOOTH AND SUITABLE, AS A SUBSTRATE FOR THE FINISHES SCHEDULED.

GYPSUM BOARD:

5/8" THICK UNLESS NOTED OTHERWISE. ASTM C36, TAPERED EDGES. PROVIDE "TYPE X" (FIRE RETARDANT) WHERE SHOWN AND AT DEMISING WALLS.

WATER RESISTANT GYPSUM BOARD (GREENBOARD) ASTM C-630 TYPE "W". PROVIDE FOR WET WALLS IN TOILETS. USE "DURLOCK" BEHIND ALL CERAMIC TILE AND MARBLE ON WALLS.

PART 1 - GENERAL FURNISH AND INSTALL ALL GYPSUM DRYWALL AND SYSTEMS COMPLETE WITH PARTITION FRAMING, CEILING SUSPENSION SYSTEMS AND RELATED ACCESSORIES, PARTS, MATERIALS, ETC. AS SHOWN ON DRAWINGS AND AS SPECIFIED, INSTALL ALL MATERIALS PER MANUFACTURERS SPECIFICATIONS AND RECOMMENDATIONS.

- B. GYPSUM DRYWALL: ALL GYPSUM BOARD TO BE 5/8" TYPE "X" AS NOTED ON SHEET A1.0 (CONSTRUCTION PLAN). RESTROOMS TO RECEIVE MOISTURE RESISTANT GYPSUM BOARD.
- C. FASTENERS: DRYWALL SCREWS OF PROPER SIZE AND TYPE PER MANUFACTURERS RECOMMENDATIONS.
- PROVIDE MATERIALS, JOINT COMPOUNDS, TRIM, EDGES, BEADS, ETC. FROM A SINGLE SOURCE SUPPLIER. ALL TRIM SHALL CONSIST OF A TAPERED, GROOVED, AND PREPUNCHED FIN FOR SCREW ATTACHMENT AND TO ACCEPT BONDING AGENT. ALL BUTT JOINTS ARE TO BE NEAT WITH TIGHT JOINTS, AND ALL CORNERS ARE TO BE MITERED. ALL EDGES, BEADS AND TRIM TO BE PRE-FINISH ALUMINUM.

ACCESS PANELS:

- 1. G.C. SHALL PROVIDE AND INSTALL ACCESS PANELS AS REQUIRED BY LANDLORD AND SITE CONDITIONS (COORDINATE SIZE REQUIREMENTS, NUMBER OF PANELS REQUIRED AND LOCATIONS WITH LANDLORD AND ALL MECHANICAL TRADES).
- 2. ACCESS PANELS SHALL BE FLUSH TYPE (NO EXPOSED FLANGES) STYLE "DW" AS MANUFACTURED BY: MILCOR, 1101 EAST KIBBY, LIMA, OHIO, 45804. PHONE NUMBER: 419–227–6899 (SIZE AS REQUIRED)
- 3. PANELS TO BE FACTORY PRIMED (WHITE) READY TO RECEIVE FINAL FINISH (PAINT) BY G.C. <u>PORCELAIN TILE:</u>

09300 SECTION 1-PRODUCTS

- 1.1 CERAMIC TILE SHALL CONFORM TO REQUIREMENTS OF ANSI A137.1-1988
- TYPE: CERAMIC TILE, REFER TO MATERIALS SCHEDULE. SIZE: CERAMIC TILE SHALL BE MANUFACTURED TO SPECIFIC SIZE AFTER FIRING AND SHALL BE NOMINAL SIZE, REFER TO MATERIALS SCHEDULE THICKNESS: CERAMIC TILE SHALL BE MANUFACTURED TO SPECIFIC THICKNESS AFTER FIRING AND SHALL BE NOMINAL, REFER TO MATERIALS SCHEDULE COLOR: REFER TO MATERIALS SCHEDULE.
- 1.2 SETTING MATERIALS: USE APPROPRIATE INSTALLATION MORTARS ACCORDING TO ANSI A118. SERIES OR A136.1992 TYPE 1
- 1.3 GROUTING MATERIALS: SELECT GROUT PER ANSI A118.3, A118.5, A118.6 OR A118.8- 1992. POLYBLEND NON-SANDED GROUT. MANUF. : BONSAL CO. COLOR: HONEY.
- 1.4 WATERPROOFING/ANTI-FRACTURE MEMBRANE: SELECT PER ANSI A118.10–1993 AS REQUIRED.
- 1.5 GROUT SEALER: BONSAL OR EQUAL.
- SECTION 2-INSTALLATION
- 2.1 ACCEPTABILITY OF SURFACES
- A. BEFORE TILING, VERIFY THAT ALL SURFACES TO BE TILED ARE STRUCTURALLY SOUND TRUE TO PLANE, AND FALL WITHIN MAXIMUM VARIATIONS SHOWN BELOW: WALLS FLOORS 1/8" IN 8' 1/8" IN 10'

REPORT ALL UNACCEPTABLE SURFACES TO THE ARCHITECT IN WRITING, AND DO NOT TILE SUCH SURFACES UNTIL THEY ARE LEVELED ENOUGH TO MEET ABOVE REQUIREMENTS.

- B. BEFORE TILING, ALL SURFACES MUST BE FREE OF CURING COMPOUNDS, OIL, GREASE, WAX, DIRT, DUST, FORM RELEASES OR OTHER SUBSTANCES THAT WOULD INTERFERE WITH PROPER BOND OF SETTING MATERIALS. IF TILE IS INSTALLED BY THE THIN-SET METHOD, CONCRETE SLABS SHALL BE STEEL TROWEL OR LIGHT BROOM FINISH.
- 2.2 SETTING METHODS: COMPLY WITH APPROPRIATE ANSI A108 SPECIFICATION CURRENT AND TILE COUNCIL OF AMERICA HANDBOOK FOR APPROPRIATE METHOD OF INSTALLATION FOR EACH SPECIFICATION. FOR ADHESIVE MORTAR APPLICATION USE FOLLOWING: WITH FLAT SIDE OF TROWEL, KEY MORTAR INTO SUBSTRATE, USING THE APPROPRIATE SIZE TROWEL, COMB MORTAR IN ONE DIRECTION WITH NOTCHED SIDE OF TROWEL. SET TILE WITH A SLIDING MOTION. PERPENDICULAR TO THE MORTAR % COVERAGE AS POSSIBLE OF MORTAR TO TILE. RIDGES. OBTAIN AS NEAR AS 100 MORTAR MUST BE SUFFICIENTLY DISTRIBUTED TO GIVE FULL SUPPORT UNDER ALL CORNERS AND EDGES OF THE TILE. PERIODICALLY, REMOVE SHEETS OR INDIVIDUAL TILES TO ASSURE PROPER BOND COVERAGE CONSISTENT WITH INDUSTRY SPECIFICATIONS.

2.3 MAX. GROUT JOINT = $1/8^{\circ}$.

- 2.4 EXPANSION JOINTS: INSTALL ARCHITECTURALLY DESIGNED EXPANSION JOINTS AS PER CURRENT TCA DETAIL EJ171. PREFABRICATED EXPANSION JOINT STRIPS CAN ALSO BE USED WHEN SUITABLE.
- 2.5 GROUTING METHODS: FOLLOW EXACTLY GROUT MANUFACTURES INSTRUCTIONS AND COMPLY WITH APPROPRIATE ANSI A108 SPECIFICATION DEPENDING ON TYPE OF GROUT SELECTED. GROUTING IS NOT COMPLETE UNTIL ALL GROUT HAZE AND RESIDUES ARE REMOVED FROM THE SURFACE OF THE TILE.
- 2.6 GROUT SEALER: COMPLY WITH MANUFACTURES INSTRUCTIONS AND APPROPRIATE ANSI SPECIFICATIONS FOR PRODUCT SELECTED. 2.7 CLEANING AND PROTECTION
- A. LEAVE FINISHED INSTALLATION FREE OF CRACKED, CHIPPED, BROKEN, UNBONDED OR OTHERWISE DEFECTIVE TILE WORK. B. PROTECT ALL FLOOR TILE INSTALLATIONS WITH CLEAN CONSTRUCTION PAPER OR OTHER HEAVY COVERING DURING CONSTRUCTION PERIOD TO PREVENT STAINING OR DAMAGE. NO FOOT OR WHEEL TRAFFIC PERMITTED ON FLOOR FOR AT LEAST THREE (3) DAYS AFTER GROUTING.

<u>09900</u> PAINTING:

PROVIDE PAINTING AS SHOWN OR SPECIFIED. THE TERM "PAINT" INCLUDES ALL OPAQUE OR NATURAL, PRIME, INTERMEDIATE OR FINISH COATS OF FIELD APPLIED COATINGS. APPLY PAINT IN ACCORDANCE WITH MANUFACTURER'S DIRECTIONS. USE APPLICATORS AND TECHNIQUES BEST SUITED FOR SUBSTRATE AND TYPE OF MATERIAL BEING APPLIED. PROVIDE TOP-OF-THE-LINE PAINT PRODUCTS MANUFACTURED BY ONE OF THE FOLLOWING MANUFACTURERS: ALL DESCRIPTIONS BASED ON SHERWIN-WILLIAMS:

BENJAMIN MOORE, PPG INDUSTRIES, SHERWIN-WILLIAMS, PRATT & LAMBERT, GLIDDEN, NAPCO. BUTE

PROVIDE SUITABLE COVERING TO PROTECT WORK, THE WORK OF OTHERS AND ADJACENT SURFACES AND OBJECTS. REMOVE OR PROTECT SUCH ITEMS AS HARDWARE, ACCESSORIES, PLATES, LIGHT FIXTURES AND SIMILAR ITEMS PLACED PRIOR TO PAINTING. REPOSITION OR REMOVE PROTECTION UPON COMPLETION OF EACH SPACE.

PREPARE SURFACES TO RECEIVE PAINT: THOROUGHLY CLEAN OFF GRIME, GREASE, DIRT, CHALK, DUST, LOOSE MATERIAL AND OTHER SUBSTANCES THAT MAY INTERFERE WITH PROPER ADHESION OF PAINT. PAINT DRY SURFACE ONLY. SAND LIGHTLY BETWEEN EACH SUCCEEDING COAT OF PAINT.

FILL DENTS, CRACKS, HOLLOW PLACES, OPEN JOINTS AND OTHER IRREGULARITIES WITH AN APPROVED FILLER SUITABLE FOR THE PURPOSE. AFTER SETTING, SAND TO A SMOOTH, HARD FINISH.

CLEAN OFF ALL PAINT SPLATTER OCCURRING ON ADJACENT WORK. REPAIR OR REPLACE WITH NEW APPROVED MATERIAL ALL SURFACES DEFACED AS A RESULT OF THE WORK OF THIS SECTION AND LEAVE WORK IN A CLEAN, ACCEPTABLE CONDITION.

PRIME GYPSUM BOARD SURFACES WITH A LATEX PRIMER AND APPLY TWO (2) COATS OF ACRYLIC LATEX, "REGAL WALL SATIN" (FLAT). WOODWORK

PRIME WOODWORK SURFACES AND TRIMS WITH A WOOD PRIMER, AND APPLY TWO (2) COATS OF "REGAL AQUAGLO" SATIN FINISH ENAMEL. WHEN TRANSPARENT FINISHES ARE CALLED FOR, USE MULTIPLE COATS TO PRODUCE GLASS-SMOOTH SURFACE FILM OF EVEN LUSTER. PROVIDE SATIN FINISH FOR FINAL COAT.

PRIME METAL SURFACES (AC REGISTERS AND DIFFUSER ACCESS PANELS) WITH AN ADEQUATE PRIMER AND APPLY TWO (2) COATS OF FLAT LATEX TO MATCH CEILING COLOR. PAINT INTERIOR SURFACES O.D. DUCTS WHERE VISIBLE THROUGH REGISTERS OR GRILLES WITH A FLAT, NON SPECULAR BLACK PAINT. OMIT PRIMER ON SURFACES THAT HAVE BEEN SHOP-PRIMED.

PRIME DOOR SURFACES AND TRIM WITH ENAMEL PRIMER AND APPLY TWO (2) COATS OF SATIN FINISH ENAMEL AS SCHEDULED. ILLUMINATED SIGNS AND CEILING ELEMENTS:

SUPPLIED AND INSTALLED BY TENANT'S SIGN CONTRACTOR. GENERAL CONTRACTOR SHALL COORDINATE INSTALLATION TO ASSURE PROPER COMPLIANCE WITH CONSTRUCTION DOCUMENTS AND LANDLORD CRITERIA.

INTERIOR SIGNAGE:

SUPPLIED AND INSTALLED BY GENERAL CONTRACTOR AS PER MANUFACTURER'S INSTRUCTIONS. REFER TO DRAWINGS FOR TYPE AND

DIVISION 011000 - EQUIPMENT: <u>011001 – EQUIPMENT</u>

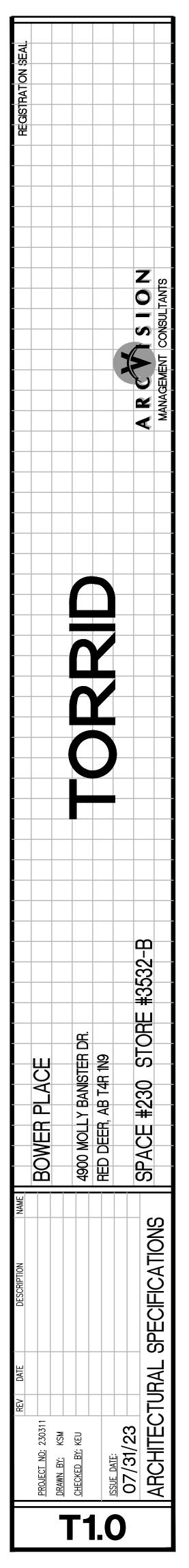
PART 1 - GENERAL

- A. CONTRACTOR SHALL COORDINATE ALL EQUIPMENT WORK AND PLACEMENT WITH THE WORK OF ALL OTHER TRADES AND MAKE ADJUSTMENTS AS REQUIRED TO ACCOMMODATE LOCATIONS OF EQUIPMENT.
- B. ALL EQUIPMENT WORK SHALL COMPLY WITH ALL GOVERNING BUILDING CODES AND LOCAL CODES.
- C. EQUIPMENT SHALL BE FURNISHED, UNLOADED, UNPACKED OR UNCRATED AND PLACED ACCORDING TO THE CONSTRUCTION

PART 2 - PREPARATION / EXECUTION

- A. ALL EQUIPMENT PROVIDED BY OWNER AND INSTALLED BY GENERAL CONTRACTOR IS TO BE INCLUDED IN GENERAL BID.
- B. GENERAL CONTRACTOR SHALL NOTIFY THE OWNER IMMEDIATELY OF ANY DAMAGE TO THE EQUIPMENT PRIOR TO
- C. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FINAL HOOKUP OF ALL EQUIPMENT SUCH AS ALL MECHANICAL WORK, PLUMBING, & ELECTRICAL FOR THE EQUIPMENT LIST.
- D. ALL EQUIPMENT MANUALS, INSTRUCTION BOOKLETS & WARRANTY INFORMATION SHALL BE NEATLY BOUND & TURNED OVER TO THE OWNER BEFORE FINAL APPROVAL OF THE BUILDING.

END OF DIVISION



FINISH SCHEDULE		VENDO
PAINT ALL WALLS: EGGSHELL FLAME SPREAD CLASS 1/A	COMPANY	CONTACT
FITTING DOORS/TRIM/CUSTOM MIRROR FRAMES: HIGH-GLOSS ALKYD FLAME SPREAD CLASS 1/A NON-FITTING DOORS/FRAMES: SEMI-GLOSS FLAME SPREAD CLASS 1/A	APEX SIGN GROUP	DAN MURPHY
ALL CEILING/DECK: FLAT LATEX FLAME SPREAD CLASS 1/A	BOSTON BARRICADE	JOY WILD GARY HUNTER
INSTALLATION: GYPSUM BOARD TO RECEIVE LATEX PAINT TO BE PRIMED WITH (1) COAT OF VINYL PLASTIC SEALER PRIOR TO RECEIVING (2) COATS OF PAINT. WOOD TRIM TO RECEIVE ALKYD OR ENAMEL PAINT TO BE PRIMED W/	MIDWEST LIGHTING	ANO GULASARIAN
INSTALLATION: GYPSUM BOARD TO RECEIVE LATEX PAINT TO BE PRIMED WITH (1) COAT OF VINYL PLASTIC SEALER PRIOR TO RECEIVING (2) COATS OF PAINT. WOOD TRIM TO RECEIVE ALKYD OR ENAMEL PAINT TO BE PRIMED W/ ONE COAT OF ENAMEL UNDERCOATER PRIOR TO RECEIVING (2) COATS OF PAINT. PAINT ALL WIRES, RETURN AIR GRILLE, & SUPPLY AIR GRILLE TO MATCH ADJACENT CEILING AREAS. G.C. TO DO "TOUCH-UP" PAINTING AT DAY OF STORE OPENING.	MOBILE MEDIA	LINDA LUONGO
P-1 SHERWIN WILLIAMS #7005 "PURE WHITE"	ONSITE MEDIA SOLUTION	DANIEL VIGNOLA
P-2 BENJAMIN MOORE #1614 "DELRAY GRAY"	QUAD GROUP SENSORMATIC	
p-3 BENJAWIN MOORE #CC-544. "OVERCOAT" - OUTLET ONLY	SHOPPER TRAK	CECILIA MORENO
<u>CORNER_GUARDS</u>	REEVE	FRANK MACHUCA
CG-1 ALUMINUM CORNER GUARD 94"x1"x1" 90" 060 TYPE 5052 SATIN #4 BRUSHED FINISH	WORLDLINK	DAREN HARVEY
FLOORING	POLLOCK ORORA	MONICA FRANKS
*** IN THE EVENT THAT G.C. IS DIRECTED TO OVERLAY EXISTING FLOOR, NEW FLOORING SHALL HAVE A SMOOTH TROWEL FINISH***	RADIANT FREIGHT KASTON	NATHANIEL BROWN JOHN STEGER
CS–1 SURTECH – #CS–672 W/ #575 CONCRETE SEALER APPLICATION.	MATS INC.	MARY CRANE
 — GRIND FLOOR W/ 80 GRIT DIAMOND PAD — FILL JOINTS AND CRACKS W/ URETHANE BASED CAULK 	CIS INTERNET	TOM BUSHMAN/ NANCY BENNE
 PATCH AREAS OF DAMAGED SLAB W/ "CGM BUILDING PRODUCTS" – LEV-L-ASTIC COMPOUND SAND SMOOTH ANY AREAS THAT WERE PATCHED AND REMOVE DUST 	VISUAL CREATIONS	KRISTEN DUFFY
– APPLY TWO (2) COATS PRIMER AND THREE (3) COATS SEALANT	NCR WEST TECH	RYAN TUCKER
PT-1 CONCEPT SURFACE – ICON "DOVE GREY" – 12"X24" SATIN FINISH. INSTALL IN RUNNING BOND PATTERN. GROUT JOINTS TO BE 1/16" MAX.	SITE CREW INC.	
VF-1 ARMSTRONG CONNECTION, TILE VINYL FLOORING, CORLON #88712 "LIMESTONE", OR APPROVED EQUAL.	STAPLES	YVONNE CARSTEN
SEE DETAIL ON SHEET A3.1. HEAT WELDED SEAMS & 6" COVED SELF BASE – USE MFR'S RECOMMENDED ADHESIVE. FLAME SPREAD CLASS 1/A	BUNZL RETAIL SERVICES	JOSH BALLEW
VF-2 MATS INC PLANK COLLECTION, ASH #W7550 GRAY ASH, 6"X36" PLANK.	GRENEKER	SUSAN ARICA
FURNISHED BY TENANT, INSTALLED BY G.C. FLOOR MOISTURE READING MUST BE COMPLETED PRIOR TO INSTALLATION. SEE MANUFACTURER'S SPECIFICATION SHEETS FOR RECOMMENDED MOISTURE LIMITS.	KOROSEAL FLOR STORE	JESSICA COOPER MELISSA JONGEBLOED
BASE		
-1 HARDWOOD BASE - 6" HIGH. PAINT "P-2" AT SALES AREA U.O.N. AND PAINT "P-1" AT FITTING POOMS AND ALCOVE, SEE DETAIL ON A3.1	KEY DESCRIPTION	
PAINT "P-1" AT FITTING ROOMS AND ALCOVE. SEE DETAIL ON A3.1. -2 JOHNSONITE – #40 "BLACK", 4" HIGH RUBBER COVED BASE. FLAME SPREAD CLASS 1/A		<mark>G GRILLE:</mark> G — REPAIR TO [°] LIKE NEW [°] CONI
PROVIDE 90 DEGREE CORNERS WHERE REQ'D. SEE DETAIL ON A3.1.	GRILLE: 10'W x 8'-5"H ROLI	
	LOCK:	
CT-1 ARMSTRONG - 24"X48"X3/4" WHITE "CORTEGA" SECOND LOOK II ITEM #2767 TEGULAR ANGLED TILE. - WHITE PRELUDE 15/16" EXPOSED TEE GRID - SALES AREA PAINTED "P-2".	SIGNAGE:	THUMB TURN BY G.C., TO FIT 7-
- FLAME SPREAD INDEX OF 25 OR LESS, SMOKE DEVELOPED INDEX OF 50 OR LESS.	PROVIDE - SIGN AB TO REMAIN UNLOCKE	OVE DOOR IN 1" HIGH LETTERS (ED WHEN BUILDING IS OCCUPIED"
<u>WALLCOVERING</u> 61. "DENOVO WALL" POROLO "STEEL BEAM", #QN2-POP06, FURNISHED BY, TENANT, INSTALLED BY 6.C.	2 ACCESSIBLE FITTING	
C-2 "DENOVO WALL" POPOLO "VANINLA ICE" #ON2-POP-OX. FURNISHED BY TENANT, INSTALLED BY C.C.	DOOR: 3'-2" x 5'-0" x 1 3	3/4" DOOR SUPPLIED BY TENANT
/C-3 FRP WAINSCOT – WHITE W/SMOOTH FINISH – INCLUDE ALL REQ'D. TRIM/CAPS. FLAME SPREAD CLASS 3/C	FRAME (BY G.C.): 1" × 3" WOOD CASI	, NG & JAMB. PROVIDE 3 WOOD J.
METAL	HINGES: SCHLAGE RHODES (: 402054 USE #12)	2) SC3P1012F-619E 3.5" X 3.5' X 1 1/4" WD. SCREWS @ DOOR
TL BRAKE METAL PANEL. MINIMUM 18 GA. REQUIRED. POWDER COATED WHITE, RAL #9003, GLOSS FINISH.	LOCKS / LATCHES:	ND80PD - STOREROOM TYPE, #62
IRIM	DOOR STOP: HINGE MOUNTED DOO	·
1x3 HARDWOOD PERIMETER TRIM. PAINT "P-1". SEE ELEVATIONS ON SHEET A4.0 AND DETAIL ON 13/A7.0	NOTES: • (8) KEYS	TO BE FURNISHED PER DOOR, A
		PENING TO BE 38" WIDE. TORRID 30TTOM OF DOOR @ 12" A.F.F.
TOILET ACCESSORIES		G – PROVIDE AS NOTED BELOW
TE: IF ITEMS ARE EXISTING, REPLACE DAMAGED OR MISSING ITEMS AS SHOWN HERE.	3'-0" x 5'-0" x 1 3	3/4" DOOR SUPPLIED BY TENANT NG & JAMB. PROVIDE 3 WOOD J.
C-2 LAVATORY - SEE SHEET P1 F.C.I.C.	HINGES:	
C-3 18" GRAB BAR – BOBRICK #B-6106 X 18 – SURFACE MOUNTED. PROVIDE SOLID BLOCKING IN WALL – F.C.I.C.	402954. USE #12 >	2) SC3P1012F-619E
C-4 36" GRAB BAR – BOBRICK #B-6106 X 36 – SURFACE MOUNTED. PROVIDE SOLID BLOCKING IN WALL – REAR BAR TO EXTEND 12" BEYOND CENTER OF THE WATER CLOSET TOWARD THE SIDE WALL AT LEAST	LOCKS / LATCHES: SCHLAGE – RHODES DOOR STOP:	ND80PD - STOREROOM TYPE, #62
24" TOWARD THE OPEN SIDE OF THE WATER CLOSET AND MOUNTED NO MORE THAN 9" BEHIND THE WATER CLOSET AND MOUNTED NO MORE THAN 9" BEHIND THE WATER CLOSET SEAT. – F.C.I.C.	HINGE MOUNTED DOO	R STOP – F.T.I.C. TO BE FURNISHED PER DOOR, A
2–5 42" GRAB BAR – BOBRICK #B–6106 X 42 – SURFACE MOUNTED.	• •	PENING TO BE 38" WIDE. TORRID OTTOM OF DOOR @ 12" A.F.F.
PROVIDE SOLID BLOCKING IN WALL – F.C.I.C. C-6 TOILET PAPER DISPENSER – CENTERED @ 19" A.F.F., MIN. – SURFACE MOUNTED. – F.T.I.C.	INSTALL B	
GEORGIA-PACIFIC: SOFPUL CENTERPULL DISPENSER – MFG. PART #56501 COLOR: SMOKE GEORGIA-PACIFIC: SOFPUL CENTERPULL ADA NOZZLE – MFG. PART #56505		G – PROVIDE AS NOTED BELOW
–7 WALL MOUNTED 24"X36" MIRROR – WITH BOTTOM OF REFLECTIVE SURFACE AT +40" A.F.F.		-3/4" HOLLOW METAL DOOR. PA
BOBRICK #B-240-2436 - CLEAR CAULK AROUND MIRROR FOR TURNOVER F.C.I.C. -8 AUTOMATED ROLL TOWEL DISPENSER - GEORGIA-PACIFIC: SOFPUL AUTOMATED	3'-0" X 7'-0" HM	DRYWALL FRAME - PAINT "P-1"
DISPENSER – MFG. PART #59010 COLOR: BLACK – F.T.I.C. –9 WATER HEATER MOUNTED ABOVE MOP SINK – SEE SHEET P1. – F.C.I.C.	HINGES: 1-1/2 Pair 4" x 4 Locks / Latches:	4" (3/BOX) - #US26
-9 WATER HEATER MOUNTED ABOVE MOP SINK - SEE SHEET PT F.C.I.C. -10 SHELVING SYSTEM - PROVIDED & INSTALLED BY MOBILE MEDIA	SCHLAGE ND80PD R	RHO – HEAVY DUTY STOCKROOM
C-11 SIGN WITH RAISED BRAILLE LETTERS - MOUNTED AT +60 A.F.F F.C.I.C.	CLOSER: NORTON NO. 1603 / FLOOR STOP:	ALUMINUM DOOR CLOSURE. W/ 9
-12 MOP SINK - SEE SHEET P1 F.C.I.C.		L – #US26 DOOR BUMPER "QUALITY" NO. 302
–13 BRINKING FOUNTAIN – SEE SPIEET P1. – F.C.I.C. –14 SOAP DISPENSER – BRIGHTON PROFESSIONAL (800mL) – MFG. ITEM #26463 COLOR: BLACK – F.T.I.C.	 PROVIDE 3 	00 × 34" STAINLESS STEEL ARMC 0VIDE/INSTALL WIRELESS ENTRY A
-15 TOILET SEAT COVER DISPENSER - BRIGHTON PROFESSIONAL -	STOCK SID	E OF DOOR. CONFIRM LOCATION
MFG. ITEM #BPR24778 - COLOR: WHITE - F.T.I.C.	5 STOCKROOM TO TOIL	ET ROOM DOOR: G — PROVIDE AS NOTED BELOW I
	DOOR:	3/4" HOLLOW METAL DOOR. PAI
	FRAME:	DRYWALL FRAME - PAINT "P-1"
ABBREVIATIONS	HINGES: 1-1/2 PAIR 4" x 4	4" (3/BOX) – #US26
IRNISHED BY TENANT, INSTALLED BY CONTRACTOR – (F.T.I.C.)		EVER TYPE PRIVACY SET - #626
JRNISHED BY CONTRACTOR, INSTALLED BY CONTRACTOR – (F.C.I.C.)		ONAL SYMBOL OF ACCESSIBILITY A
JRNISHED BY LANDLORD, INSTALLED BY CONTRACTOR – (F.L.I.C.)	CLOSER: NORTON NO. 1603 / NOTES: • PROVIDE D	ALUMINUM DOOR CLOSURE. W/ 9
RNISHED BY LANDLORD, INSTALLED BY LANDLORD – (F.L.I.L.)	• PROVIDE 3	000R BUMPER "QUALITY" NO. 302 30" x 34" STAINLESS STEEL ARMC
		ED 🖾 EXISTING - PROVIDE AS
DOOR NOTES	DOOR: 3'-0" x 7'-0" MET	AL DOOR AND FRAME, V.I.F. INST
DOORS SHALL BE OPERABLE FROM WITHIN WITHOUT USE OF ANY SPECIAL KNOWLEDGE OR EFFORT WHEN THE	LOCKS / LATCHES:	D AND WEATHERSTRIPPING TO BE
E IS OCCUPIED. MUM PULL FORCES FOR INTERIOR AND EXTERIOR DOOR SHALL NOT EXCEED: 5 LBS. FOR INTERIOR DOORS $/$ 5	ALARM LOCK #700 ((ALWAYS PROVIDE TH	OR DETEX PANIC/ ALARM HARDW/ HIS UNLESS SUITABLE EXISTS) G.(
OR EXTERIOR DOORS / 15 LBS. FORCE FOR FIRE RATED DOORS. TO USE HARDWARE MOUNTING KIT FOR TORRID R. HANDLED HARDWARE SHOLLD NOT RECHIRE TIGHT CRASPING. FTC. DUILL FORCES SHALL NOT EXCEED: 5 LBS.	SIGNAGE: Label Mall Side W Closer:	TH TENANT'S NAME AND SPACE
R HANDLED HARDWARE SHOULD NOT REQUIRE TIGHT GRASPING, ETC. PULL FORCES SHALL NOT EXCEED: 5 LBS. IT. DOORS / 5 LBS. FOR EXT. DOORS / 15 LBS. FORCE FOR FIRE RATED DOORS.	NORTON NO. 1603 / VIEWER:	ALUMINUM DOOR CLOSURE. W/ 9
M IDENTIFICATION SIGNAGE, WHEN PROVIDED, SHALL COMPLY W/LOCAL AUTHORITY OM 10" AT ALL DOORS, EXCEPT AUTOMATIC DOORS, SHALL HAVE A SMOOTH, UNINTERRUPTED SURFACE.	BLACK OR NICKEL E NOTES:	000R VIEWER @ 5'-0" A.F.F 1
TO SUBMIT SHOP DRAWINGS FOR DOOR HARDWARE TO PROJECT MANAGER FOR APPROVAL PRIOR TO ORDERING. D ACTIVATED DOOR OPENING HARDWARE TO BE MOUNTED AT 38" A.F.F. AND OPERATED WITH A SINGLE EFFORT BY	THAN 90 MIN. WH	HALL MAINTAIN TIGHT FITTING SMOU HEN TESTED. INSTALL GASKET MAT
R TYPE HARDWARE. NMENT OF DOOR HEADS SHALL BE AT A CONSTANT LEVEL AND NOT FOLLOW POTENTIAL VARIATIONS IN THE FLOOR	• PAINT MALL SIDE	OF DOOR AND FRAME TO MATCH REPRESENTATIVE.
	MALE 5 UN-SITE	
	WALL 5 UN-SITE	
ANS. DER CUT DOOR 3/4" MINIMUM.	WALLS UN-SITE	

R	SCHEDULE	
	PHONE NUMBER	EMAIL ADDRESS
	(610) 715–3369	dan.murphy@apexsigngroup.com
	(772) 257–7313	jwild@bostonrs.com
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	(323) 957–6031	ano@midwestlighting.com
	(800) 784–8080	tlteam@mobilemediastorage.com
_	(435) 214–4956	hottopic@onsitemedia.com
	(262) 289–2671	torridsupport@qg.com
	(310) 347–7351	cecilia.moreno@jci.com
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	(949) 861–2830 EXT. 226	construction@worldlinkintegration.com
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		hottopic@radiantdelivers.com
	(866) 943–5334	john@kastongroup.com
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	(818) 357–9842	nick@westechtrading.com
		ht@sitecrewinc.com
	(303) 664–2331	yvonne.carsten@staples.com
	(612) 217–6312	jballew@ddsjit.com
	(323) 263-9000 EXT. 3308	torrid@greneker.com
	(866) 628–2280 EXT. 1	na@koroseal.com
	(312) 350–5853	flororders@flor.com
	SCHEDULE	

NDITION. REPLACE IF DAMAGED OR IRREPARABLE

7-PIN FALCON CORES, BY OWNER

ON A CONTRASTING BACKGROUND STATING "THIS DOOR "WHEN REQUIRED BY CODE

IF EXISTING IS UNSUITABLE.

Γ & INSTALLED BY G.C.

JAMB ANCHORS PER JAMB - PAINT "P-1" - F.C.I.C.

5" SATIN NICKEL, #626, 1/4" RADIUS CORNER MORTISE HINGE, PART #70– R AND #12 (24) X 1/2" MACHINE SCREW © FRAME, SUPPLIED BY TENANT.

ALL DOORS KEYED ALIKE, SUPPLIED BY TENANT.

) G.C. TO PROVIDE DOOR FRAME, DOOR TRIM, BORE AND MORTISE DOOR AND

IF EXISTING IS UNSUITABLE.

「 & INSTALLED BY G.C. JAMB ANCHORS PER JAMB − PAINT "P−1" − F.C.I.C.

5" SATIN NICKEL, #626, 1/4" RADIUS CORNER MORTISE HINGE, PART #70– R AND #12 (24) X 1/2" MACHINE SCREW @ FRAME, SUPPLIED BY TENANT.

ALL DOORS KEYED ALIKE, SUPPLIED BY TENANT.

O G.C. TO PROVIDE DOOR FRAME, DOOR TRIM, BORE AND MORTISE DOOR AND

IF EXISTING IS UNSUITABLE.

AINT "P-1"

LEVER LOCK WITH CYLINDER

90° HOLD OPEN

2. (VERIFY W/ PLAN WHEN DOOR SWINGS TO WALL) IOR PLATE. SEE INTERIOR ELEVATIONS ALERT CHIME WITH RECEIVER BY SAFETY TECHNOLOGY INTERNATIONAL TO OF PLUG IN CHIME @ CASHWRAP WITH PM

IF EXISTING IS UNSUITABLE. AINT "P-1"

AS REQUIRED BY CODE

90° HOLD OPEN 02. (VERIFY W/ PLAN WHEN DOOR SWINGS TO WALL) MOR PLATE AT STOCKROOM/ HALLWAY SIDE ONLY.

S NOTED BELOW IF EXISTING IS UNSUITABLE. STALL DOOR SWEEP ON EXTERIOR SIDE OF DOOR, IF NOT EXISTING. DE REPAIRED OR REPLACED, AS NEEDED.

WARE W/ 7—PIN MORTISE CYLINDER & SATIN CHROME STRIKE. G.C. TO INSTALL PRY PLATE AT EXTERIOR, NO HANDLE ALLOWED.

NO. PER LANDLORD'S REQUIREMENTS

90° HOLD OPEN

FIRE RATED, AS REQUIRED.

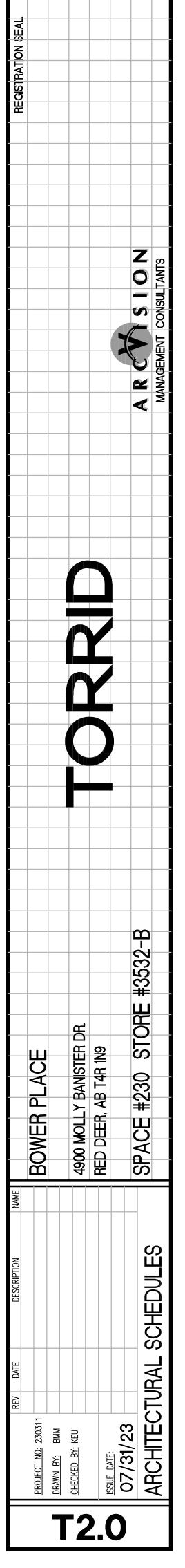
IOKE AND DRAFT CONTROL ASSEMBLY HAVING A FIRE RATING OF NOT LESS ATERIAL AS TO PROVIDE A SEAL WHERE DOOR MEETS THE STOP ON ALL SIDES. CH ADJACENT MALL'S FINISH OR AS DIRECTED BY THE

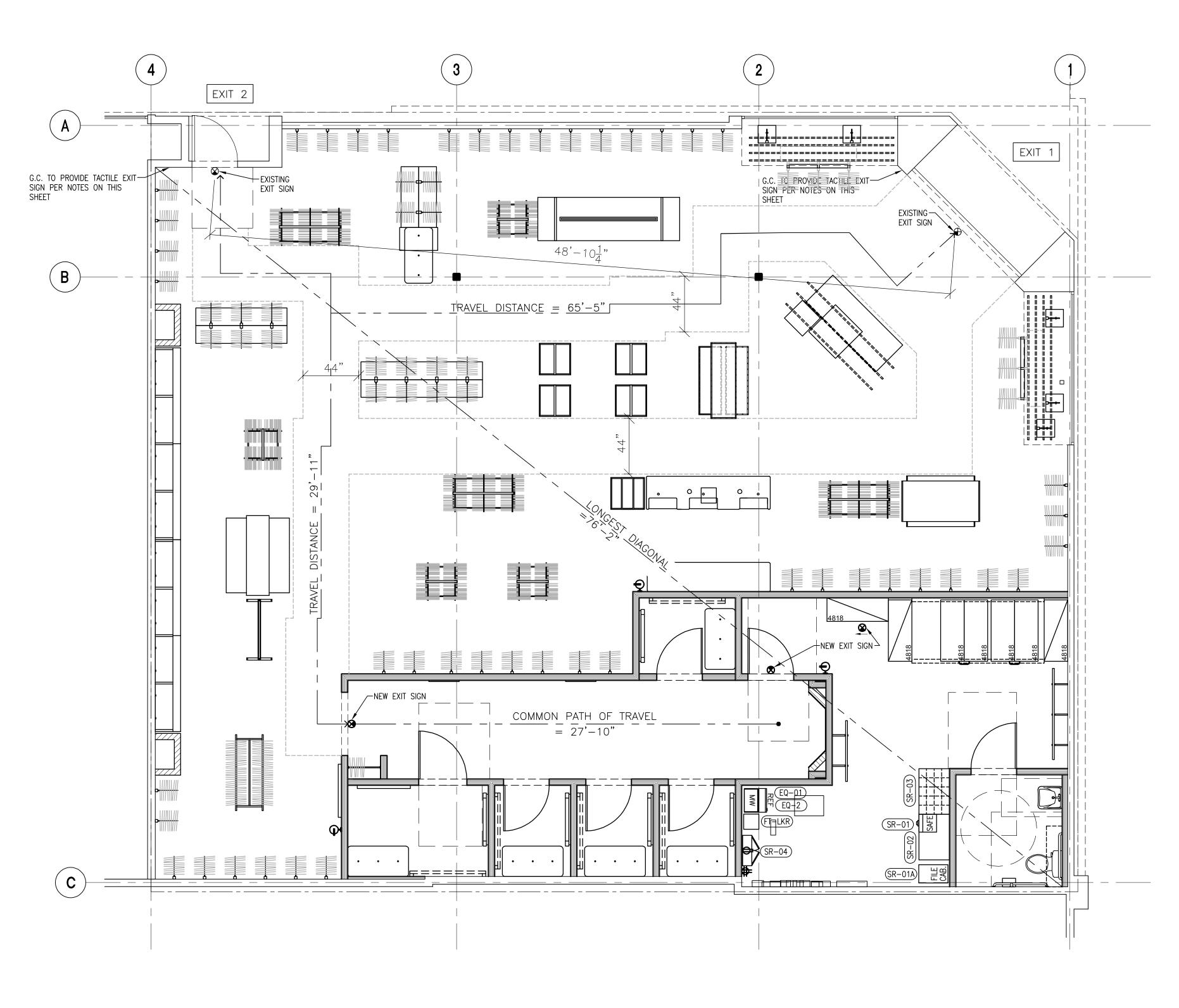
ITEM		NISH		INST	ALLE	D	EXI	ST.	REMARKS
	LANDLORD	١T	OR						
		TENANT	CONTRACTOR	LANDLORD	TENANT	CONTRACTOR	NO CHANGE	SPCL. ACTION	RESPONSIBILITY SCHEDULE IS GENERAL IN NATURE AND DOES NOT REFLECT EVERY COMPONENT OR RESPONSIBILITY. U.O.N. RESPONSIBILITY IS G.C. FURNISHED AND INSTALLED.
SIGNAGE				_					
STOREFRONT ILLUMINATED SIGN									"TORRID" LOGO LETTER SIGN
AWNING XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	XX	\times	$\mathbf{\tilde{\mathbf{A}}}$	$\left \right\rangle$	\boxtimes	$\langle \bullet \rangle$	\bigotimes	$\langle \mathbf{\bullet} \rangle$	G.C. TO RÉPLACE OR REPAIR AS REQUIRED.
BLADE SIGN & BRACKETS	\mathbf{X}	\mathbf{X}	\mathbf{X}	\bigotimes	X	\mathbf{X}	\bigotimes	\bigotimes	REPR LANDLORD'S CRITERIA
REAR DOOR SIGNAGE			•	/		\bullet			PER LANDLORD'S CRITERIA
VINYL WINDOW GRAPHICS									AT 36" A.F.F. AT STOREFRONT
BARRICADE GRAPHICS									PER LANDLORD'S CRITERIA
CODE-RELATED SIGNAGE AT ANY DOOR			•						PER INSPECTOR'S REQUIREMENTS
SIGN PERMIT & APPL.					•				WHEN REQUIRED
EXISTING SIGNAGE REMOVAL	XX	\propto	X	\times	\propto	$\mathbf{\tilde{\mathbf{A}}}$	\sim	\propto	WHEN REQUIRED
TOILET ROOM	L	T	C	L	Ť	C	N	S	
WATER CLOSET			٠						SEE SHEET P1
LAVATORY			•			•			SEE SHEET P1
MORSHIK	\times	\boxtimes	$\mathbf{\tilde{\mathbf{A}}}$	\bigotimes	\boxtimes		\boxtimes	\boxtimes	SEE SHEET PT
DRINKING FOUNTAIN	$\hat{\mathbf{X}}$	\mathbf{X}	Ŵ	\mathbf{X}	X	$\mathbf{\hat{\mathbf{A}}}$	X	\bigotimes	SEE SHEET PL
TOILET PAPER DISPENSER		•		<u> </u>	~~~~~	ě	/		
PAPER TOWEL DISPENSER		٠				٠			
GRAB BARS			٠			•			G.C. TO REPLACE OR REPAIR AS REQUIRED.
MIRROR(S)			•			•			G.C. TO REPLACE OR REPAIR AS REQUIRED.
MARLITE PANELS/J-MOLDING			•			•			REPLACE AS REQUIRED – SEE FINISH SCHED.
BACKING FOR ALL ITEMS LISTED ABOVE AS REQ.			•			\bullet			
TRASH CAN					٠				
SOAP DISPENSER									
SHELVING / HANGING									INCL. SHELVES, STANDARDS AND BRACKETS
TOILET SEAT COVER DISPENSER									
WATER HEATER									SEE SHEET P1
WATERPROOFING			•						PER LANDLORD'S CRITERIA
M.E.P.	L	Т	С	L	Т	С	Ν	S	

SEE MECHANICAL, PLUMBING, AND ELECTRICAL SHEETS FOR ENGINEERING SCHEDULES AND SPECIFICATIONS

PAY PERMIT FEES PROVIDE INFORMATION TO TORRID AND CONSTRUCTION SITE OF STORE OF STOR										
PICK-UP PERMIT PROVIDE INFORMATION TO TORRID AND PROVIDE INFORMATION TO TORRID AND ARCHITECT. PROVIDE AND FAX PROVIDE INFORMATION TO TORRID AND ARCHITECT. PROVIDE AND FAX PROVIDE WEEKLY E-MAIL PHOTOS TO TORRID. DISTAIL C/O APPROVALS IN WRITIKG A WA. PROVIDE WEEKLY E-MAIL PHOTOS TO TORRID. DISTAIL C/O APPROVALS IN WRITIKG A WA. PROVIDE WEEKLY E-MAIL PHOTOS DISTAIL C/O APPROVALS IN WRITIKG A WA. PROVIDE WEEKLY E-MAIL PHOTOS DISTAIL C/O APPROVALS IN WRITIKG A WA. PROVIDE WEEKLY E-MAIL PHOTOS DISTAIL C/O APPROVALS IN WRITIKG A WA. PROVIDE WEEKLY E-MAIL PHOTOS DISTAIL C/O APPROVALS INSURANCE WWERS JANITORAL SERVICE/ PROVIDE WEEKLY E-MAIL'S REQUIRED CONTRACTOR MALL DEPOSIT/ INSURANCE WWERS JANITORAL SERVICE/ TWO CLEANING DAY PRIOR TO UPPOINT. FIRAL CLEANING TRASH REMOVAL/ PROVIDE ENTRA 30 YD DUMPSTER THE DAY DUMPSER RENTAL DIMPSER RENTAL PROVIDE ENTRA 30 YD DUMPSTER THE DAY DUMPSER RENTAL FIRE EXTINGUISHERS AS REQUIRED BY CODE AND LOCAL AUTHORTITES INSPECTIONS AS REQUIRED BY LOCAL AUTHORTITES "COMING SOON" GRAPHIC AS REQUIRED BY LOCAL AUTHORTITES FLOOR PREPARATION INSPECTIONS PROVIDE COORDINATE WITH TENANT AND LANDLORD HAZ-WAT ABATEMENT AS REQUIRED CONTRACTOR										
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PALE FERMIL RES PROVIDE PROVIDE PROVIDE PROVIDE ARCHITECT. PHONE, AND FAX PROVIDE PROVIDE PROVIDE PROVIDE PROVIDE ARCHITECT. PHONE, AND FAX PROVIDE PROVIDE PROVIDE PROVIDE PROVIDE PROVIDE ARCHITECT. ORSTRUCTION SITE PROVIDE PROVIDE </td <td>PICK-UP PERMIT/</td> <td>-</td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td>-</td> <td></td>	PICK-UP PERMIT/	-			-				-	
CONSTRUCTION SITE DIGITAL CAMERA OBTAIN: C/O APPROVALS IN WRITIKG A: W.A. SPRINKLER SYS. PLANS? MODIFY SPRINKLER SYS. MODIFY SPRINKL	CONSTRUCTION SITE									PROVIDE INFORMATION TO TORRID AND
OBTAIN C/O APPROVALS • IN WRITING AWA. • SPRINKLER SYS. PLANS/ PLANS/ PERMIT/ FEES • MODIFY SPRINKLER SYS. • MOLIDFY SPRINKLER SYS. • MALL DEPOSIT/ INSURANCE WAVERS • JANITORIAL SERVICE/ FINAL CLEANING • FINAL CLEANING • VERIFY MALL'S REQUIRED CONTRACTOR JANITORIAL SERVICE/ FINAL CLEANING • FIRE EXTINGUISHERS • INSPECTIONS • INSPECTIONS • *COMIG SOON" GRAPHIC • INSPECTIONS • *COMIG SOON" GRAPHIC • FLOOR PREPARATION • PROVIDE STAUL SEQUIRED • FLOOR PREPARATION • PROVIDE AS REQUIRED • PROVIDE STAUS REQUIRED • PROVIDE AS REQUIRED • PROVIDE TO OWNER AT TURNOVER • PROVIDE TO OWNER AT TURNOVER •	CONSTRUCTION SITE						•		-	PROVIDE WEEKLY E-MAIL PHOTOS
SPRINKLER SYS. PLANS/ PLANS/ PERMIT/ FEES CHANGE_ORDERS NOT PROCESSED WITHOUT AWAG. #S. VERIFY MALL'S REQUIRED CONTRACTOR MODIFY SPRINKLER SYS. VERIFY MALL'S REQUIRED CONTRACTOR WANG. #S. VERIFY MALL'S REQUIRED CONTRACTOR MALL DEPOSIT/ INSURANCE WAVERS VERIFY MALL'S REQUIRED CONTRACTOR WERIFY MALL'S REQUIRED CONTRACTOR TWO CLEANINGS: FIRST AT PUNCHLIST, SECOND CLEANING DAY PRIOR TO OPENING. TRASH REMOVAL PROVIDE EXTRA 30 YD DUMPSTER THE DAY PROVIDE TO AND LOCAL AUTHORITIES INSPECTIONS COMING SOON" GRAPHIC COMOR SOON" GRAPHIC COROPUTATE WITH TENANT AND LANDLORD HAZ-MAT ABATEMENT AS REQUIRED FLOOR PREPARATION VERIFY MALL'S REQUIRED CONTRACTOR PROVIDE STATUS REPORT PROVIDE STATUS REPORT PROVIDE STATUS REPORT PROVIDE TO OWNER AT TURNOVER ADWARANTES PROVIDE TO OWNER AT TURNOVER CORDIVIDAVEL TO AUL	DIGITAL CAMERA			•					•	TO TORRID
PLANS/ PERMIT/ FEES' A.W.A. #'S. MODIFY SPRINKLER SYS. Image: Construction of the second	IN WRITING A.W.A. SPRINKLER SYS. PLANS/			•					•	CHANGE ORDERS NOT PROCESSED WITHOUT
MALL DEPOSIT/ INSURANCE WAIVERS Image: Construct of the second cleaning of the day of	· · ·			•			•			A.W.A. #'S
INSURANCE WAIVERS.				•			•			VERIFY MALL S REQUIRED CONTRACTOR
TRASH REMOVAL/ PROVIDE EXTRA 30 YD DUMPSTER THE DAY DUMPSER RENTAL PRIOR TO TURNOVER FOR TENANT DEBRIS. FIRE EXTINGUISHERS AS REQUIRED BY CODE AND LOCAL AUTHORITIES INSPECTIONS AS REQUIRED BY LOCAL AUTHORITIES "COMING SOON" GRAPHIC AS REQUIRED BY LOCAL AUTHORITIES #AZ-MAT ABATEMENT AS REQUIRED BY LOCAL AUTHORITIES FLOOR PREPARATION AS REQUIRED FLOOR PREPARATION AS REQUIRED ROOF PENETRATIONS AS REQUIRED CONTRACTOR DEMOLITION/ PERMIT AND AS REQUIRED FEES AS REQUIRED PROVIDE (2) COPIES OBTAIN INSPECTIONS/ PROVIDE (2) COPIES PROVIDE AS-BUILT COPY PROVIDE (2) COPIES SUB-CONTRACTOR LIST PROVIDE TO OWNER AT TURNOVER AND WARRANTIES PROVIDE TO OWNER AT TURNOVER TEMPORARY BARRICADE COORDINATE WITH LANDLORD AND MALL. C.C. PROJECT MER. SITE PROVIDE TO TURNOVER MINIMUM (1) AT FIELD YISTS DURING CONST. AS REQUIRED: MINIMUM (1) AT FIELD COMPLIANCE TO TENANT AS REQUIRED: MINIMUM (1) AT FIELD AUDIO SYSTEM PROVIDE TO COSELY WITH TENANTS VENDOR	INSURANCE WÁIVERS			•						TWO CLEANINGS: FIRST AT PUNCHUST
FIRE EXTINGUISHERS AS REQUIRED BY CODE AND LOCAL AUTHORITIES INSPECTIONS AS REQUIRED BY LOCAL AUTHORITIES COORDINATE WITH TENANT AND LANDLORD HAZ-MAT ABATEMENT AS REQUIRED COORDINATE WITH TENANT AND LANDLORD HAZ-MAT ABATEMENT 	FINAL CLEANING			•						SECOND CLEANING DAY PRIOR TO OPENING.
INSPECTIONS AS REQUIRED BY LOCAL AUTHORITIES COMING SOON" GRAPHIC COORDINATE WITH TENANT AND LANDLORD HAZ-MAT ABATEMENT AS REQUIRED COORDINATE WITH TENANT AND LANDLORD HAZ-MAT ABATEMENT AS REQUIRED AS REQUIRED FLOOR PREPARATION VERIFY MALL'S REQUIRED CONTRACTOR ROOF PENETRATIONS VERIFY MALL'S REQUIRED CONTRACTOR PROVIDE STATUS REPORT PROVIDE STATUS REPORT PROVIDE STATUS REPORT PROVIDE STATUS REPORT PROVIDE TO OWNER AT TURNOVER SUB-CONTRACTOR LIST AND WARRANTIES PROVIDE TO OWNER AT TURNOVER CORDINATE WITH LANDLORD AND MALL. GCOMPLIANCET TO TENANT SUB-CONTRACTOR LIST CONPCIANCE TO TENANT CORDURACE TO TENANT CONPLIANCET TO TENANT COMPLIANCET TO TENANT AS REQUIRED: MINIMUM (1) AT FIELD COMPLIANCET TO TENANTS COORDIN SCOPET. COMPLANCET TO TENANTS COMPLANCET TO TENANTS COMPLANCET TO TENANTS COORDIN SCOPET. COMPLANCET TO TENANT				•						PRIOR TO TURNOVER FOR TENANT DEBRIS.
"COMING SOON" GRAPHIC • • COORDINATE WITH TENANT AND LANDLORD HAZ-MAT ABATEMENT • • AS REQUIRED FLOOR PREPARATION • • AS REQUIRED ROOF PENETRATIONS • • VERIFY MALL'S REQUIRED CONTRACTOR DEMOLITION/ PERMIT AND • • VERIFY MALL'S REQUIRED CONTRACTOR PROVIDE STATUS REPORT • • PROVIDE STATUS REPORT PROVIDE AS-BUILT COPY • • PROVIDE (2) COPIES VECEIVE/ UNLOAD ALL • • PROVIDE TO OWNER AT TURNOVER SUB-CONTRACTOR LIST • • PROVIDE TO OWNER AT TURNOVER AND WARRANTIES • • COORDINATE WITH LANDLORD AND MALL. GC. PROJECT MGR. SITE • • COORDINATE WITH LANDLORD AND MALL. GCMPLIANCE TO TENANT • • AS REQUIRED: MINIMUM (1) AT FIELD TURNOVER REQUIREMENTS • • AS REQUIRED: MINIMUM (1) AT FIELD AUDIO SYSTEM • • • COORD. CLOSELY WITH TENANTS VENDOR	FIRE EXTINGUISHERS			•			•			
HAZ-MAT ABATEMENT AS REQUIRED FLOOR PREPARATION AS REQUIRED ROOF PENETRATIONS VERIFY MALL'S REQUIRED CONTRACTOR DEMOLITION/ PERMIT AND Image: Contract of the second s	INSPECTIONS			•			٠			AS REQUIRED BY LOCAL AUTHORITIES
FLOOR PREPARATION • • • ROOF PENETRATIONS • • VERIFY MALL'S REQUIRED CONTRACTOR DEMOLITION/ PERMIT AND • • VERIFY MALL'S REQUIRED CONTRACTOR DEMOLITION/ PERMIT AND • • VERIFY MALL'S REQUIRED CONTRACTOR PROVIDE SA REQUIRED • • • PROVIDE STATUS REPORT • • • PROVIDE AS-BUILT COPY • • • OF JOB SITE PLANS. • • • RECEIVE/ UNLOAD ALL • • • TENANT SUPPLIED ITEMS • • • SUB-CONTRACTOR LIST • • • AND WARRANTIES • • • SUB-CONTRACTOR LIST • • • AND WARRANTIES • • • • SUB-CONTRACTOR LIST • • • • SUB-CONTRACTOR LIST • • • • AND WARRANTIES • • • • COORDINATE WITH LANDLORD AND MALL. • •	"COMING SOON" GRAPHIC		ullet			●				COORDINATE WITH TENANT AND LANDLORD
ROOF PENETRATIONS Image: Construction of the second se	HAZ-MAT ABATEMENT			ullet			ullet			AS REQUIRED
DEMOLITION/ PERMIT AND FEES AS REQUIRED OBTAIN INSPECTIONS/ PROVIDE STATUS REPORT PROVIDE AS-BUILT COPY OF JOB SITE PLANS. RECEIVE/ UNLOAD ALL TENANT SUPPLIED ITEMS SUB-CONTRACTOR LIST AND WARRANTIES TEMPORARY BARRICADE GC. PROJECT MGR. SITE VISITS DURING CONST. COMPLIANCE TO TENANT VISITS DURING CONST. COMPLIANCE TO TENANT AUDIO SYSTEM	FLOOR PREPARATION			•			ullet			
FEES AS RÉQUIRED Image: Constant of the second	ROOF PENETRATIONS			•			•			VERIFY MALL'S REQUIRED CONTRACTOR
OBTAIN INSPECTIONS/ PROVIDE STATUS REPORT • • PROVIDE STATUS REPORT PROVIDE AS-BUILT COPY OF JOB SITE PLANS. • • PROVIDE (2) COPIES RECEIVE/ UNLOAD ALL TENANT SUPPLIED ITEMS • • • SUB-CONTRACTOR LIST AND WARRANTIES • • • TEMPORARY BARRICADE • • • • G.C. PROJECT MGR. SITE VISITS DURING CONST. • • • • COMPLIANCE TO TENANT TURNOVER REQUIREMENTS • • • • AUDIO SYSTEM • • • • •	DEMOLITION/ PERMIT AND FEES AS REQUIRED			lacksquare						
PROVIDE AS - BUILT COPY • PROVIDE (2) COPIES RECEIVE/ UNLOAD ALL • • TENANT SUPPLIED ITEMS • • SUB-CONTRACTOR LIST • • AND WARRANTIES • • TEMPORARY BARRICADE • • G.C. PROJECT MGR. SITE • • VISITS DURING CONST. • • COMPLIANCE TO TENANT • AS REQUIRED: MINIMUM (1) AT FIELD TURNOVER REQUIREMENTS • • COORD. CLOSELY WITH TENANTS VENDOR AUDIO SYSTEM • • • •	OBTAIN INSPECTIONS/			•						
RECEIVE/ UNLOAD ALL Image: Constant of the second seco	PROVIDE AS-BUILT COPY			•						PROVIDE (2) COPIES
SUB-CONTRACTOR LIST AND WARRANTIES PROVIDE TO OWNER AT TURNOVER PROVIDE TO OWNER AT TURNOVER TEMPORARY BARRICADE COORDINATE WITH LANDLORD AND MALL. COORDINATE WITH LANDLORD AND MALL. COORDINATE CONST. COMPLIANCE TO TENANT TURNOVER REQUIREMENTS AUDIO SYSTEM COMPLIANCE TO TENANTS VENDOR FOR INSTALLATION SCOPE. 	RECEIVE/ UNLOAD ALL			•						
TEMPORARY BARRICADE • • COORDINATE WITH LANDLORD AND MALL. G.C. PROJECT MGR. SITE • • • VISITS DURING CONST. • • • COMPLIANCE TO TENANT • • • TURNOVER REQUIREMENTS • • • AUDIO SYSTEM • • •	SUB-CONTRACTOR LIST									PROVIDE TO OWNER AT TURNOVER
VISITS DURING CONST. • AS REQUIRED: MINIMUM (1) AT FIELD COMPLIANCE TO TENANT • AS REQUIRED: MINIMUM (1) AT FIELD TURNOVER REQUIREMENTS • • AUDIO SYSTEM • •				•			•			COORDINATE WITH LANDLORD AND MALL.
COMPLIANCE TO TENANT AS REQUIRED: MINIMUM (1) AT FIELD TURNOVER REQUIREMENTS REPORT. AUDIO SYSTEM O				•						
AUDIO SYSTEM	COMPLIANCE TO TENANT			•						
	AUDIO SYSTEM			-		•				COORD. CLOSELY WITH TENANTS VENDOR
CONDUITS & PULL STRING POWER	CONDUITS & PULL STRING POWER			•		-				G.C TO PROVIDE CONDUIT W/ PULL STRING
AUDIO SYS./DATA/ALARMS/ETC. P.O.S. SYS. (DATA AND TELEPHONE EQUIPMENT) • • • • • • • • • • • • • • • • • • •	P.O.S. SYS. (DATA AND			-			-			G.C. TO ASSIST BY INSTALLING
TÉLÉPHÓNÉ ÉQÜIPMENT) DEZBRANDING OF EXISTING		\times		\propto	XX		\propto	$\times \times$	\times	
TÖRRID STÖRE KAND EXISTING STÖRE CONFIRM	TORRO STORE		\bigotimes	\bigotimes	\bigotimes	\bigotimes	$\left \right\rangle$	\bigotimes	$\langle \rangle$	DEBRAND EXISTING STORE CONFIRM REQUIREMENTS W/ TORRID P.M.

KE	S	P (15	В			Y	SCHEDULE
ITEM		RNISH		-	TALLE			ST.	REMARKS
	LANDLORD	TENANT	CONTRACTOR	LANDLORD	TENANT	CONTRACTOR	NO CHANGE	SPCL. ACTION	RESPONSIBILITY SCHEDULE IS GENERAL IN NATURE AND DOES NOT REFLECT EVERY COMPONENT OR RESPONSIBILITY. U.O.N. RESPONSIBILITY IS G.C. FURNISHED AND INSTALLED.
STOREFRONT		.					ļ		
NEUTRAL PIERS									VERIFY DETAILS WITH LANDLORD
<u>CONTINUOUS REVEALS /</u>	\boxtimes	X	$\not \sim$		X	$\left \bullet \right\rangle$	\bigotimes	XX	3/4* MIETAL REVEAL
STOREFRONT FRAMING							•		SEE SHEET A5.0
PR. ENTRY DRS/ HARDWARE								× ×	SEE DOOR SCHEDULE
FLOORING / BASE	\searrow	<u>{Х</u> т	K C	\mathbb{X}		K <u>K</u> C	$\overset{\times}{\mathbb{N}}$	€ S	<u>CCC_TCCCORD_W/_OWNERS_VENDOR</u>
FLOOR CORING/CONC.				Ĺ		•			G.C. TO COORD. W/ OWNERS VENDOR
INFILL/PATCH ÉXIST. CONCRETE SEALER			•			•			SEE FINISH SCHEDULE
SHT. VINYL @ TOILET RM.			•						SEE FINISH SCHEDULE
FLOOR TRANSITIONS			•			•			
RUBBER BASE			•			•			NON-PUBLIC AREAS ONLY, SEE FINISH SCHEDULE
WOOD BASE			•			•			G.C. TO SCRIBE TO FLOOR, SEE FINISH SCHEDULE
CARPET TILE SALES FLOOR FLOORING		•				•			SEE FINISH SCHEDULE SEE FINISH SCHEDULE
WALLS	L	T	C	L	<u> </u>	C	N	S	SEE TINISIT SCHEDOLE
DEMISING PART. STUDS				Ĺ		-		-	MAINTAIN AND REPAIR AS REQUIRED
DEMISING PART. DRYWALL			•			•		•	PATCH, REPAIR, & REPLACE AS REQUIRED
NEW WALLS FRAMING/ BLOCKING/GYP. BD.			•						
TOILET RÓOM FRAMING/ BLOCKING/GYP. BD. FURRING AROUND									
COLUMNS AT DEMISE			•					•	PATCH, REPAIR, & REPLACE AS REQUIRED
INTERIOR COLUMN FURRING			•						
BLOCKING FOR DOORS			•			•			
WALL PREP. AND PAINT									G.C. TO CUT DOWN IN FIELD AS NEEDED
	L	T	C	L	T	C	N	S	
GYP. BD. CEILINGS			•	<u> </u>		•			
OR SOFFITS PAINT AT EXPOSED DECK AT PUBLIC AREAS			•			•			
THREADED ROD/ UNISTRUT/ AIRCRAFT CABLE			•			•			AS REQUIRED
DEMO/PREP OF EXPOSED DECK READY TO PAINT			•			•			
SUSPENDED ACT CEILING									WHEN REQUIRED
DOORS	L	Т	С	Ĺ	Т	С	N	S	
FITTING ROOM FRAME			•			•			SEE DOOR SCHEDULE
ALCOVE & STOCK ROOM DOOR/FRAME/HARDWARE TOILET ROOM DOOR/			•			•			SEE DOOR SCHEDULE
FRAME/HARDWARE '			•			•			SEE DOOR SCHEDULE
REAR DOOR AND FRAME REAR DOOR PANIC BAR/			•			•	•	•	G.C. TO REPLACE. G.C. TO REPLACE.
REAR DOOR PANIC BAR/ 7 PIN RIM CYLINDER KEY ALL DOORS ALIKE						•			G.C. TO REPLACE.
@ TURNOVER ACCESS PANELS AS REQ'D			•						AS REQUIRED
FOR MOTORS/VAV/ETC. FITTING ROOMS & ALCOVE	L	T	C	L	T	C	N	S	
HOOKS		•							
MIRRORS		•				•			
ADA MIRROR(S) & 3-WAY			•			•			
CAULKS/SILICONES/ MASTICS/ADHESIVES						•			EACH TRADE TO PROVIDE, AS REQUIRED
BENCHES		•				•			
METAL MESH/ FRAMES DOORS/ HARDWARE	<u> </u>					•			
SALES AREA & FIXTURES	L	T	C	L	 T	C	N	S	ļ
FREESTANDING FLOOR	-	•			•	•			G.C. TO ASSEMBLE AS REQUIRED
FIXTURES WALL STANDARDS		•				•			POWDER COATED SCREWS INCLUDED
CASH WRAP/ COUNTERS		•				•			G.C. TO ASSEMBLE AS REQUIRED
WALL & DISPLAY FIXTURES									
MISC. SALES WOOD TRIM			•			•			G.C. TO ASSEMBLE AS REQUIRED
MIRRORS LOOSE HARDWARE AND		-	•	-		•			
SHELVING			-	-		•			G.C. TO CLEAN AND INSTALL
RECEIVING HARDWARE/ FIXTURES INTO STORE UNPACK/ DISPOSE OF FIXTURE WRAPPINGS	-		•	-		•			OFFLOAD FROM TRUCK
FIXTURE WRAPPINGS STOCKROOM	L	 T	C	L	 T	C	N	S	
CORNER GUARDS	_		•		•	•			REQUIREMENTS TO BE DETERMINED IN FIELD
BULLETIN BOARDS AND MISC. ITEMS		•	-	1		•			
STRUCTURAL SUPPORT FOR XFMR. IF REQ D.			•			•			
TABLE/FILE CABINET		•				•			
LOCKER/ MICRO./ FRIG.									
MOBILE SHELVING SYSTEM		•			•				
SHELVING / HANGING BACKING FOR ALL ITEMS		•							VENDOR TO INCL. SHELVES/ STANDARDS/ BRACKE
LISTED ABOVE								<u> </u>	AS REQUIRED FOR SECURE ATTACHMENT
*G.C. NOTE:	~								
	DF l		N <u>G</u> l	JŪĞV		CEIF	<u>0</u> Tr	FAL	L SHIPMENTS. ANY DAMAGES OR
SHORTAGES ARF TO R	EIN	IDIC#	41ED	AI	KFC	EIPT	, OF	S MI	THIN 24 HOURS. FAILURE TO DO I
SHORTAGES ARE TO B SO WILL REQUIRE G.C.	e in To		NTAC	ai CT VI	REC END(eipt Drs	, OF LIST	r wi Ted	L SHIPMENTS. ANY DAMAGES OR THIN 24 HOURS. FAILURE TO DO ABOVE AND PURCHASE SAID
ILEMS AT G.C. COST.									
THE 'RESPONSIBILITY S NOT ALL-INCLUSIVE. A	SCHE	EDUL PERS	LE' I	s in 5 bic	tene)Din(DED GW(to Drk	BE OR	ABOVE AND PURCHASE SAID USED AS A GUIDE ONLY AND IS CONTRACTED FOR WORK ARE ERIA AND THE EXECUTED LEASE S FURNISHED OR INSTALLED BY







REV DATE DESCR	DESCRIPTION		REGISTRATION SEAL
PROJECT NO: 230311			
DRAWN BY: KSM			
CHECKED BY: KEU		4900 MOLLY BANISTER DR.	
		RED DEER, AB T4R 1N9	
07/31/23			
		SPACE #230 STORE #3532-B	

LIFE SAFETY/EGRESS NOTES

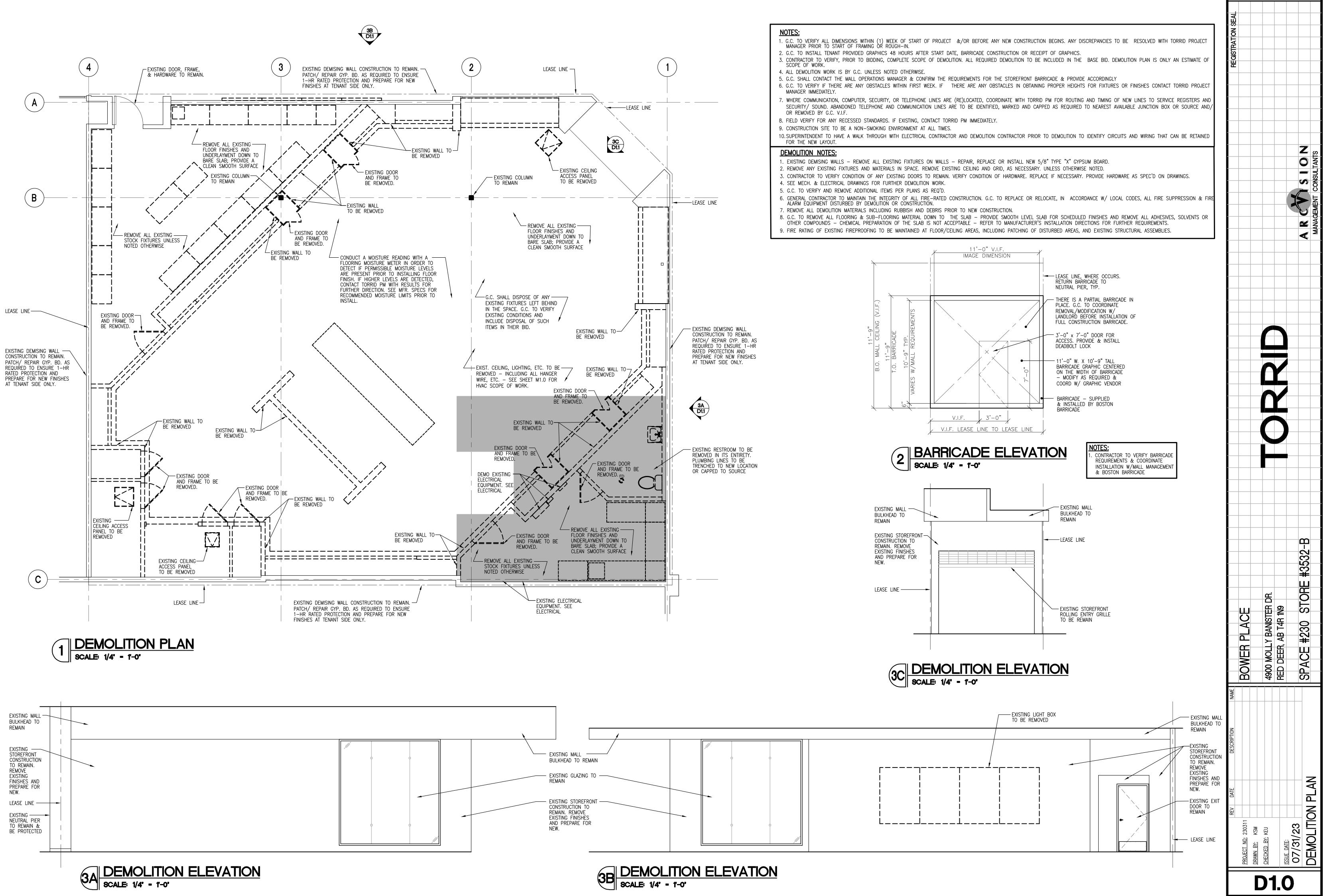
- DUCT SMOKE DETECTOR & THAT IT IS IN COMPLIANCE WITH IBC 2015 MECHANICAL SECTION 606 AND NFPA 90A. SEE MECHANICAL SHEETS FOR ADDITIONAL INFORMATION.
- 2. SEE REFLECTED CEILING PLAN AND ELECTRICAL LIGHTING PLAN FOR DESCRIPTION OF LIGHT FIXTURES SHOWN.
- 3. PROVIDE (1) TYPE-ABC FIRE EXTINGUISHER FOR EACH 2,500 S.F. AND NOT MORE THAN 75 FEET APART.
- 4. FIRE EXTINGUISHERS SHALL BE VISIBLE AND ACCESSIBLE AT ALL TIMES DURING REMODELING.
- 5. ALL EXIT WAYS SHALL BE KEPT FREE AND CLEAR FOR EXITING AND ENTERING PURPOSES.
- 6. REFER TO DOOR SCHEDULE ON A100 FOR MORE INFORMATION ON DOOR HARDWARE ALONG EGRESS ROUTE.
- EXIT SIGNS & EMERGENCY LIGHTING REQUIRED IN ALL ROOMS, INCLUDING RESTROOMS. REFERENCE ELECTRICAL SHEETS FOR MORE INFORMATION.

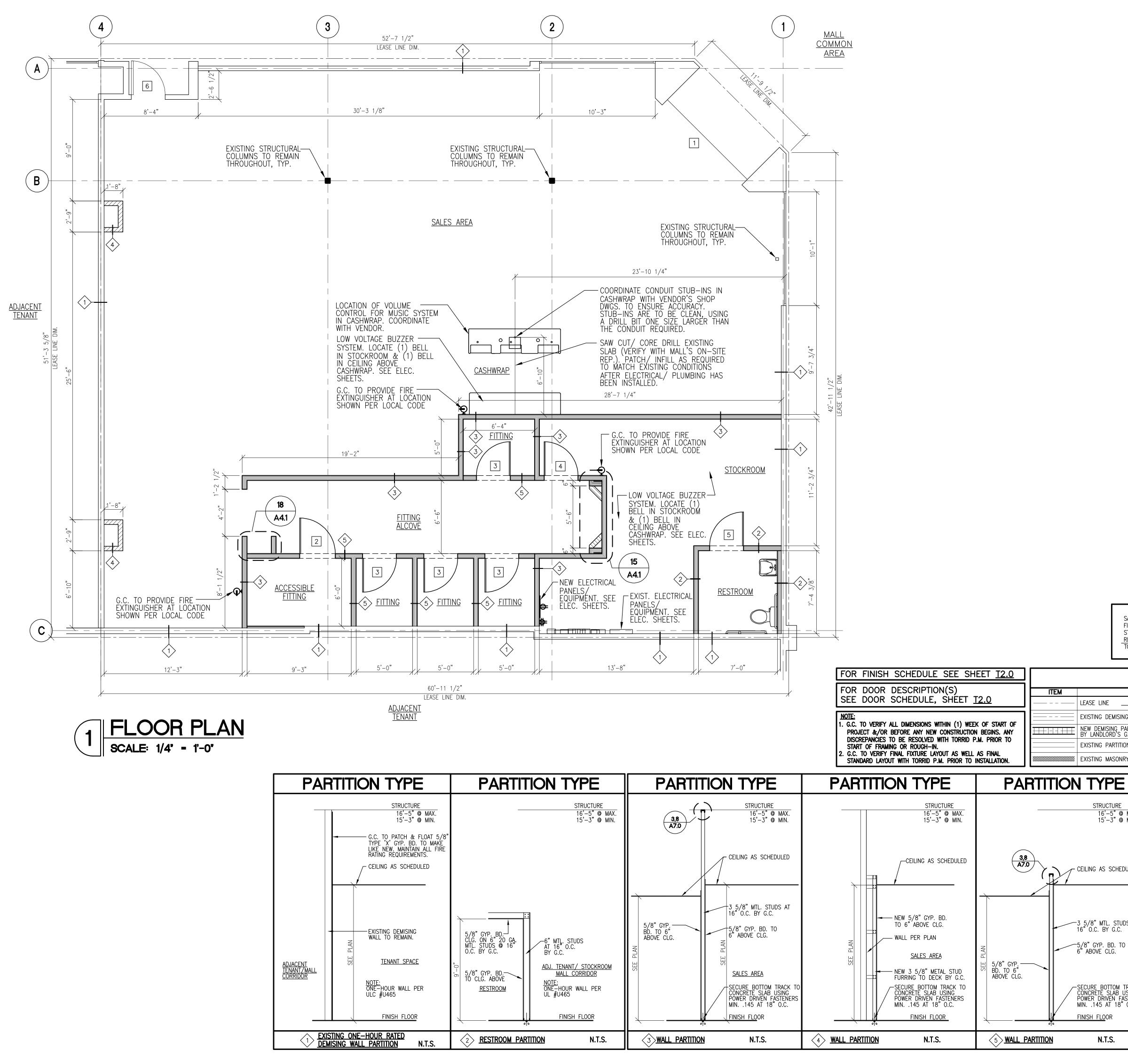
igoplus denotes 5LB ABC fire extinguisher

MEANS OF EGRESS

NO. OF EXITS: (2 req'd by 2019 ibc)	TOTAL: 2
EXIT WIDTH PROVIDED: (exit width req'd:[occ. load x factor (0.2")]:	156" 32" MIN.
MAXIMUM DISTANCE TO EXITS: (maximum allowed – 250')	95'-4"
COMMON PATH OF TRAVEL:	27'-10"
EXIT SEPARATION LONGEST DIAGONAL REQUIRED (NON SPRINKLERED) PROVIDED	76'-2" 38'-1" 48'-10"







	REV	DATE DESCRIPTION	NAME	
	PROJECT NO: 230311			
	DRAWN BY: KSM			
4-	CHECKED BY: KEU			
	ISSUE DATE.			
)	07/31/23			
	FLOOR PLAN	Z		

GENERAL NOTES:

SQUARE FOOTAGES 2,253 SQ SALES: FITTING ROOMS: 444 SQ.F STOCKROOM: 330 SQ.F **RESTROOMS:** 65 5 3,092 SQ. TOTAL BUILDING:

N.T.S.

CONTRACTOR TO INCLUDE IN BASE BID TO PATCH, FLOAT OR REPLACE GYP. BD. ON DEMISING WALLS WHERE DAMAGED, UNSIGHTLY, OR MISSING FOR AN "AS NEW" FINISHED SURFACE.

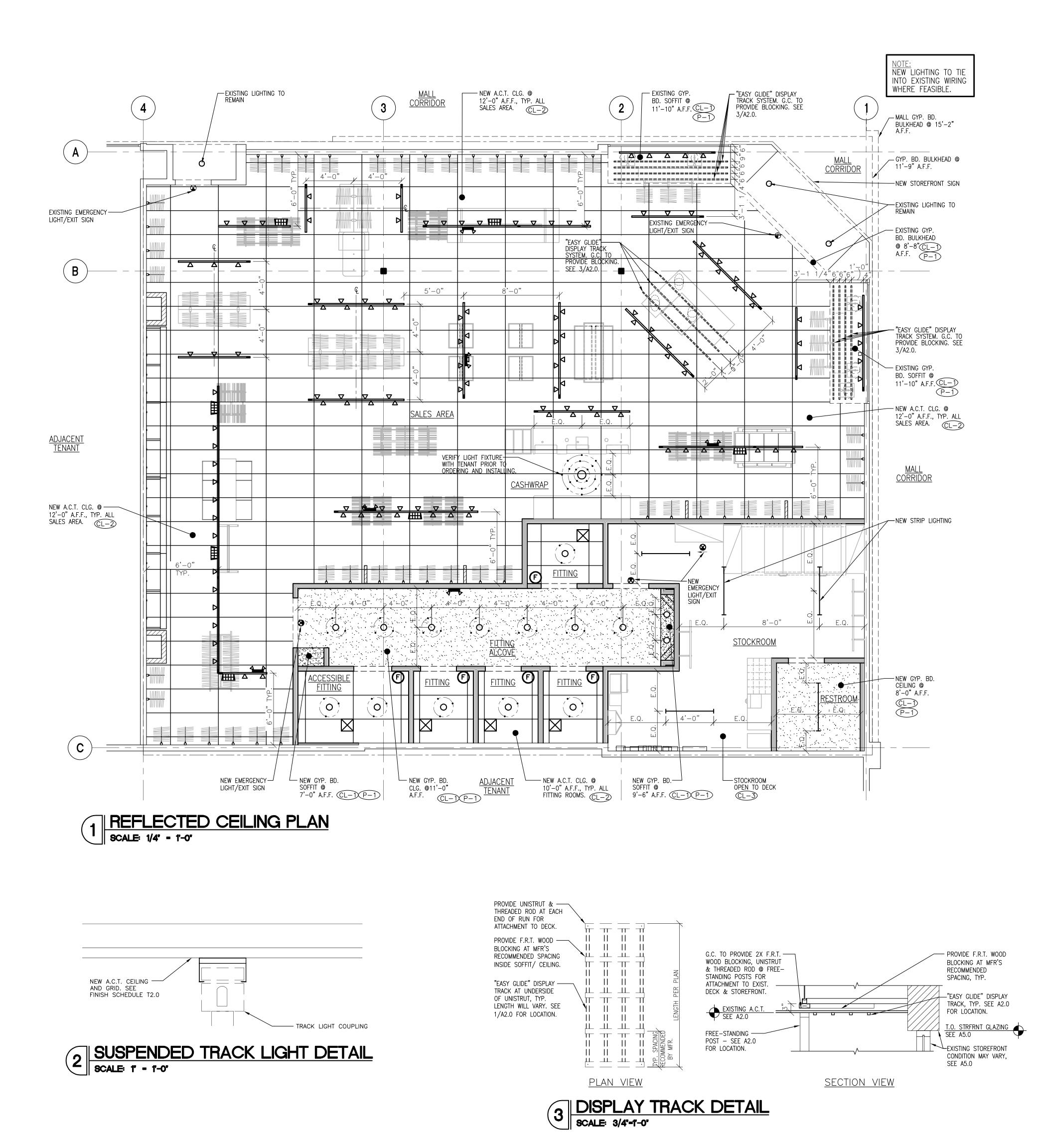
. WRITTEN DIMENSIONS HOLD PREFERENCE OVER SCALED DIMENSIONS. DC NOT SCALE DRAWINGS. CONTRACTORS MUST VISIT JOB SITE TO VERIFY ALL EXISTING CONDITIONS PRIOR TO SUBMITTING BIDS.

WALL PARTITION LEGEND DESCRIPTION

	LEASE LINE		NEW FULL HEIGHT PARTITION, MTL. STUDS & FINISH TO CEILING OR DECK
_	EXISTING DEMISING PARTITION	<u></u>	NEW PARTITION, MTL. STUDS AND GYP. BD. STOPS SHORT OF CEILING OR DECK
E	NEW DEMISING PARTITION – PER MALL CRITERIA BY LANDLORD'S G.C.		NEW ONE-HOUR PARTITION
_	EXISTING PARTITION TO REMAIN	\otimes	PARTITION TYPE – SEE SHEET A1.0
8	EXISTING MASONRY DEMISING PARTITION	X	DOOR TYPE – SEE SHEET T2.0

STUD GA. LIMITING HT. SCHEDULE TABLE BELOW IS BASED ON THE STEEL STUD MANUFACTURERS ASSOCIATION 2015 IBC TECHNICAL INFORMATION CATALOG (INTERIOR WALL LIMITING HEIGHTS - NON-COMPOSITE -FULL BRACED), REQUIREMENT FOR 5 PSF LATERAL PRESSURE AND 1/240 ALLOWABLE DEFLECTION FOR FLEXIBLE FINISHES, WITH 1 LAYER OF GYP. BD. PER SIDE OF STUD. STRUCTURE 16'-5" @ MAX. 15'-3" @ MIN. SCHEDULED HEIGHTS MAY BE INCREASED BY 50% WHERE THE STUDS ARE DIAGONALLY BRACED AT THE MAXIMUM HEIGHT POINT TO THE STRUCTURE ABOVE @ 4'-0" O.C. CAUTION! WHEN USING STUDS MANUFACTURED BY A COMPANY GENERAL CONTRACTOR TO VERIFY MANUFACTURERS STUD STRENGTH AND LIMITING HEIGHT. ADJUST GAUGE AND MAXIMUM HEIGHT RECOMMENDED BY MANUFACTURER'S CURRENT PRINTED SPECIFICATION. CEILING AS SCHEDULED Stud Width Stud Stud Maximum Type Gauge Spacing Height 1-5/8" 162S125-30 20 GA. DRYWALL 16" 8'-5" 16" 162S125-33 20 GA. STRUCTURAL 8'-8" 16" 11'-7" 2-1/2" 250S125-30 20 GA. DRYWALL 16" 12'-0" 250S125-33 20 GA. STRUCTURAL -3 5/8" MTL. STUDS AT 16" O.C. BY G.C. 16" 13'-0" 250S125-43 18 GA. 3-5/8" 362S125-30 20 GA. DRYWALL 16" 15'-6" -5/8" GYP. BD. TO 6" ABOVE CLG. 362S125-33 20 GA. STRUCTURAL 16" 16'-0" 362S125-43 18 GA. 16" 17'–5" 16" 18'-7" 362S125-54 16 GA. 362S125-68 14 GA. 16" 19'-11" 16" 22'-11" 6" 600S125-30 20 GA. DRYWALL -SECURE BOTTOM TRACK TO CONCRETE SLAB USING POWER DRIVEN FASTENERS 23'-9" 600S125-33 20 GA. STRUCTURAL 16" 16" 26'-1" 600S125-43 18 GA. MIN. .145 AT 18" O.C. 27'-11" 600S125-54 16 GA. 16" 30'-0" 600S125-68 14 GA. 16" FINISH FLOOR NESTED STUD COLUMNS: SEE PLAN FOR SIZES AND GAUGE.

NESTED STUD BEAMS: SEE PLANS FOR SIZES AND GAUGE.





INDY

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SLIMLITE

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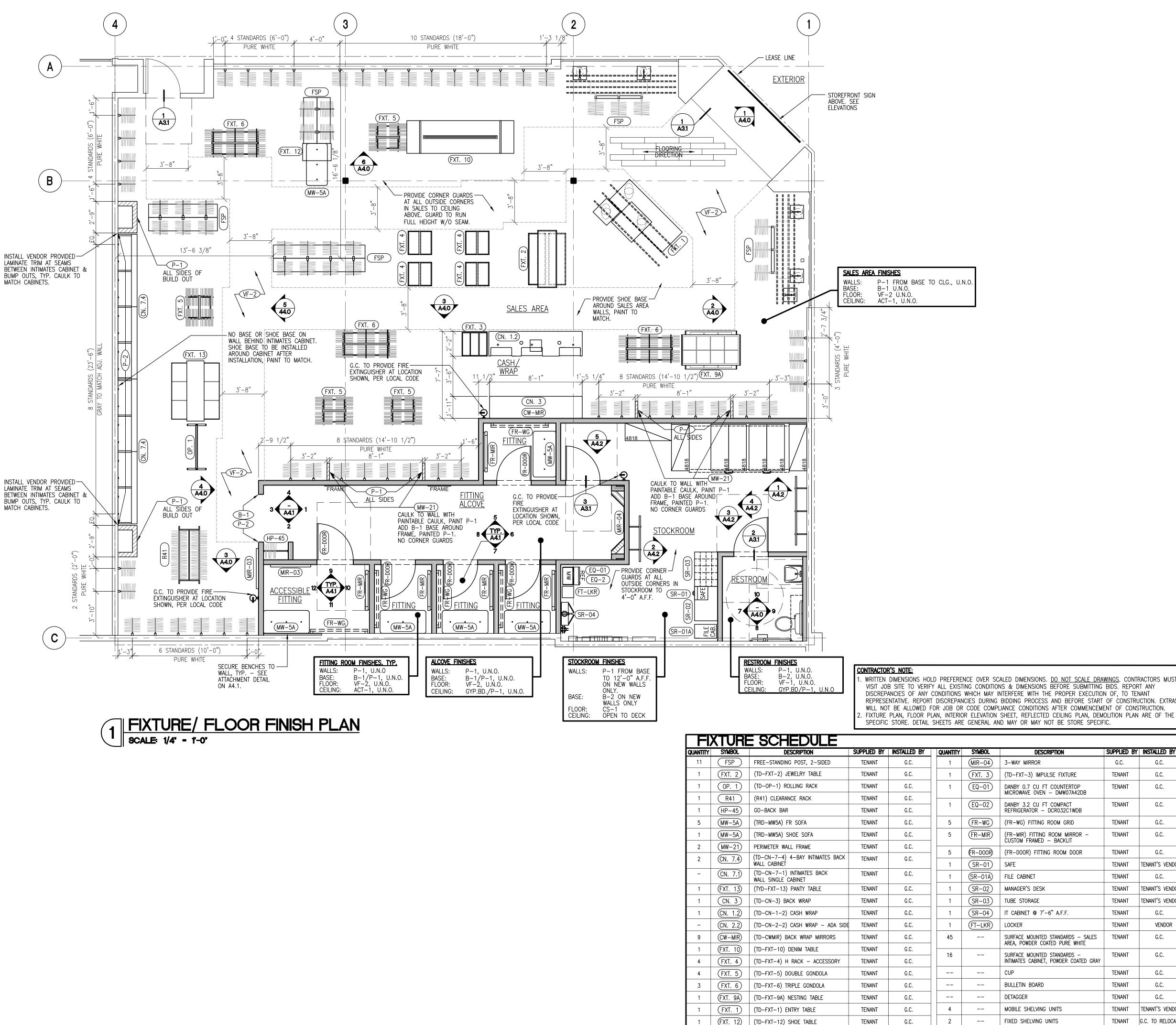
		CEI	ING TYP	E SC	HEDUI E		F					
		SYMBOL			RIPTION		\$EAL					
		CL-D	5/8" GYP. BD. (362S162-43) OTHER FINISHES	OVER 3 5 @ 16" 0.0	/8" X 18 GA. MTL. 2. PREPARE FOR PA D. HEIGHT PER PL4	STUDS INT OR	ATION \$					
		@L-2	ACOUSTICAL CE	ILING SYST	EM. ENSURE GRID A O ORDERING. ALL P C. TO BE ABOVE CE ITS THAT ARE BELO ALLEL & PERPENDIC	ND TILES	REGISTRATION					
		CL-3		EN TO DEC GED, PARAL ALL PIPES, FROM HAN FROS. VERIF	K ABOVE. ALL CONE LEL & PERPENDICU DUCTS & FIXTURES NGRODS, NOT WIRE. TY HEIGHT IN FIELD.	DUITS LAR TO SHALL REMOVE						
		CL-4			/ CEILING. PATCH/)R NEW FINISHES.							
		QL-5	EXISTING ACOUS REPAIR/ REPLA PROVIDE NEW A BEFORE ORDER	ACE AS REC A.C.T. WHEF	ING SYSTEM. PATCH DUIRED TO MATCH E REQUIRED. V.I.F.	/ Xisting. Type					Z	NTS
	1. G.C. TO		CATION OF STOCKR		GENCY LIGHTING LO VERIFY W/ TORRID							CONSULTANTS
	Lighting N 1. Final LC Torrid		L TRACK LIGHTING OORDINATE LOCATIO	IN SALES DNS WITH F	AREA TO BE APPRO FINAL STORE FIXTUR	VED BY E LAYOUT.					K	GEMENT
	1. FIRE SPI STATE C 2. FIRE SP LANDLOF APPROV/ 3. FIRE SP TO COO SYSTEM ELECTRIC 4. IT IS TH	RINKLER/ ALARN RD AND ALL APF AL/ PERMITS. RINKLER/ ALARN RDINATE SPRINK TO AVOID CONF CAL SYSTEMS. F INTENT THAT	CONTRACTOR SH. PLICABLE CODE OFI CONTRACTOR SH. LER HEAD LOCATIC LICTS WITH EXISTIN SPRINKI FR MAIN A	ALL SUBMIT FICIALS, AS ALL USE C NNS AND AI NG CONDITI AND BRANC	BE CONDUCTED BY SHOP DRAWINGS 1 REQUIRED, FOR EILING PLANS FOR ITERATIONS OF EXIS ONS OR MECHANICA ONS OR MECHANICA H LINES WILL NOT AS REQ'D. BY CHAN FPA STANDARDS. WHITE CAPS IN AN XISTING.	TO LAYOUT TING L AND BF						
	 THE REFL LOCATION TO AVOID TENANT O OTHER E PLAN. NO DUE TO PROVIDE ENGINEEF ADJACEN PROVIDE NECESSAI LIGHT FIX TRACK LI TRACK LO TRACK LO C. COLLING O 	IS. MECHANICAL OCONFLICT WITH UPON THE STAR XISTING SYSTEM: OMODIFICATION OF CEILING ACCESS XS & FOR ANY T CEILING FINISH ADEQUATE CLEA RY TO MAINTAIN (TURES ABOVE 1 IGHTS/ BIAX FIX O BE OFFSET 2 COORDINATE EX/ COMPONENTS IN	PLAN SHALL GOVE DUCTWORK & ALL THE REFLECTED T OF PROJECT OF S WILL CONFLICT N TO THE REFLECTIN TO THE REFLECTIN F CONTRACTOR PRO S PANELS IN GYP. EXISTING LANDLOR HES. RANCES FOR DUC THE SPECIFIED HI THE FINISHED FLOC TURES TO BE ALIC PARALLEL TO GR ACT LOCATION OF SALES AREA INCL	ELECTRICA CEILING PL EXISTING WITH THE F ED CEILING OVIDED SYS BD. CEILIN D EQUIPME TS & RELA EIGHTS FOR OR. GNED IN GF RID. AIM PE SPEAKERS UDING A.C.	ILING PENETRATION AL CONDUITS SHALL AN. G.C. SHALL NO DUCTWORK, CONDUIT PROPOSED REFLECTE PLAN WILL BE ACC STEMS OR EQUIPMEN IGS, AS REQUIRED E NT. PAINT TO MATCH R CEILING SYSTEMS RID PATTERN AND LE R TENANT'S DIRECTI WITH VENDOR. T. GRID, MECH. DIFT VATE WITH TENANT.	TIFY F OR ED CEILING EPTED IT. BY H TEMS AND ENGTH OF ON.						
	SCALE DI CONDITIO OF ANY TENANT I BEFORE CODE CC	DIMENSIONS HO <u>RAWINGS</u> . CONTF NS & DIMENSIO CONDITIONS WHI REPRESENTATIVE. START OF CONS OMPLIANCE CONE	RACTORS MUST VIS NS BEFORE SUBMI CH MAY INTERFERE . REPORT DISCREP TRUCTION. EXTRAS DITIONS AFTER COM	IT JOB SITE TTING BIDS E WITH THE ANCIES DU WILL NOT	D DIMENSIONS. <u>DO</u> TO VERIFY ALL EX REPORT ANY DISC PROPER EXECUTIO RING BIDDING PROC BE ALLOWED FOR T OF CONSTRUCTION	ISTING REPANCIES N OF, TO ESS AND JOB OR						
CATALOG NO.		DESCRIPT		BULB	MOUNT	REF NOTES						-
C6VT-126/42T-MVOLT-NDE C6VT-OR-CS-PF	^{3/} 6" VER	TICAL CFL DOWN	NLIGHT		RECESSED	1						
T259L-30K-WH	TRAC-M WASH/	IASTER LED WAL FLOOD	L		TRACK	1	_					
T689-WH		IASTER SPOTLIGI) PAR30 LAMP	HT		TRACK	1					J L J	
	TRAC-M	MASTER SINGLE – WHITE FINISH	CIRCUIT TRACK		SUSPEND @ 12'-0" A.F.F.	1						
	TRAC-M	ASTER SINGLE	CIRCUIT TRACK		SUSPEND @ 12'-0" A.F.F.	1			Ë			
	TRAC-M	ASTER SINGLE	CIRCUIT TRACK		SUSPEND @	1		Щ			L U	ō
	TRAC-M	– WHITE FINISH IASTER SINGLE	CIRCUIT TRACK		12'-0" A.F.F.	1		¥	BANISTER	T4R 1N9		
010 100/70/107 0000		- WHITE FINISH			12'-0" A.F.F. RECESSED	9			۵ ۲			
CV8–126/32/42T–820C–W KF17414, LED4E12B–1127K CANDELABRA	CEILING	PENDANT – PO	DLISHED	(30) 4W LED TORPEDO	SUSPEND B.O. FIXT. @ 7'-9" A.F.F.	1		BOWER	4900 MOLLY	RED DEER,		
KF17414-20-1,			DANT – POLISHED	(8) 15W	SUSPEND B.O. FIXT.	1	NAME					
LED4E12B-1127K CANDELAB		ES STEEL FINIS		È14 CLR	@ 8'-6" A.F.F. SUSPEND @ 13'-0"		_					
MVOLT 30K 80CR1 WH		MIRROR LIGHTI		(2) 58"	A.F.F/ SURFACE PREMOUNTED ON	1	_					
	FITTING	ROOM FAN		(2) 58" XL T5	FIXT.		DESCRIPTION					Ž
	SEE EL	ECTRICAL SHEET			DIRECTLY BELOW	9	DESC					PL/
	SALES /	GN W/ REQUIRE			CLG OR B.O. FIXT. @ 12'-0"	1						Q
ELM6L-UVOLT-LTP-SDRT	WALL F	,	BATTERY BACKUP		CLG OR B.O. FIXT. @ 12'-0"	1,6,7						CEILING PLAN
ELM-LED-803	WALL F	,	M: EMERGENCY BATTERY BACKUP		WALL @ 8'-0" A.F.F.	1,6,7	DATE					Ю
	EXHAUS SEE ME	ST FAN ECHANICAL SHEE	TS		RECESSED/ SURFACE	1	REV					
TENANT'S VENDOR AND INS FOR VERIFYING CORRECT NU AGE ARE TO BE ON A 24-H IRES. COORDINATE WITH ELEC JRES TO BE RELOCATED. CO NCY, OR NIGHT LIGHTING TO EMERGENCY LIGHTS TO HAVE ARE TO BE CLEANED TO "LI ND ORIENTED SO THAT AIR F	IMBER OF FIX R TIMER SET CTRICAL SHEI ORDINATE WI BE ON LOCH E 90 MINUTE KE-NEW" &	XTURES/LAMPS ⁻ BY G.C. COOR ETS. TH ELECTRICAL KOUT CIRCUIT. BATTERY BACK RELAMPED BY	REQUIRED. DINATE REQUIRED SHEETS. UP. G.C. REBALLAST FI	HOURS WIT	H LANDLORD. ILY AS REQUIRED.			T NO:	<u>DRAWN BY:</u> MML <u>CHECKED BY:</u> KEU	ISSUE DATE:	07/31/23	REFLECTI

"N/L" INDICATES NIGHT LIGHT FIXTURES. COORDINATE WITH ELECTRICAL SHEETS.
 "R" INDICATES EXISTING LIGHT FIXTURES TO BE RELOCATED. COORDINATE WITH ELECTRICAL SHEETS.

5. FIXTURES USED FOR EXIT, EMERGENCY, OR NIGHT LIGHTING TO BE ON LOCKOUT CIRCUIT. . ALL FIXTURES USED FOR EXIT, OR EMERGENCY LIGHTS TO HAVE 90 MINUTE BATTERY BACK UP.

8. ALL FIXTURES EXISTING TO REMAIN ARE TO BE CLEANED TO "LIKE-NEW" & RELAMPED BY G.C. REBALLAST FIXTURES ONLY AS REQUIRED. 9. FAN IS TO BE CEILING MOUNTED AND ORIENTED SO THAT AIR FLOW IS DIRECTED TOWARD FITTING ROOM BENCH. PROVIDE BLOCKING IN CLG FOR ADEQUATE SUPPORT OF FAN. REFER TO CUT SHEET ON TORRID PROCORE SITE AND ELECTRICAL SHEETS FOR ADDITIONAL INFORMATION. 10. WHEN REQUIRED - LIGHTING CONTROLS ARE SUPPLIED BY TENANT'S VENDOR AND INSTALLED BY ELECTRICAL CONTRACTOR.

A2.0



FRAMED – NON BACKLIT NOTE: STANDARDS FOR HANGING RODS FURNISHED BY VENDOR. WOOD MOUNTING STRIPS, HANGROD, FASTENERS AND INSTALLATION BY VENDOR.

G.C.

G.C.

G.C.

G.C.

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G.C.

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(MIR-01)

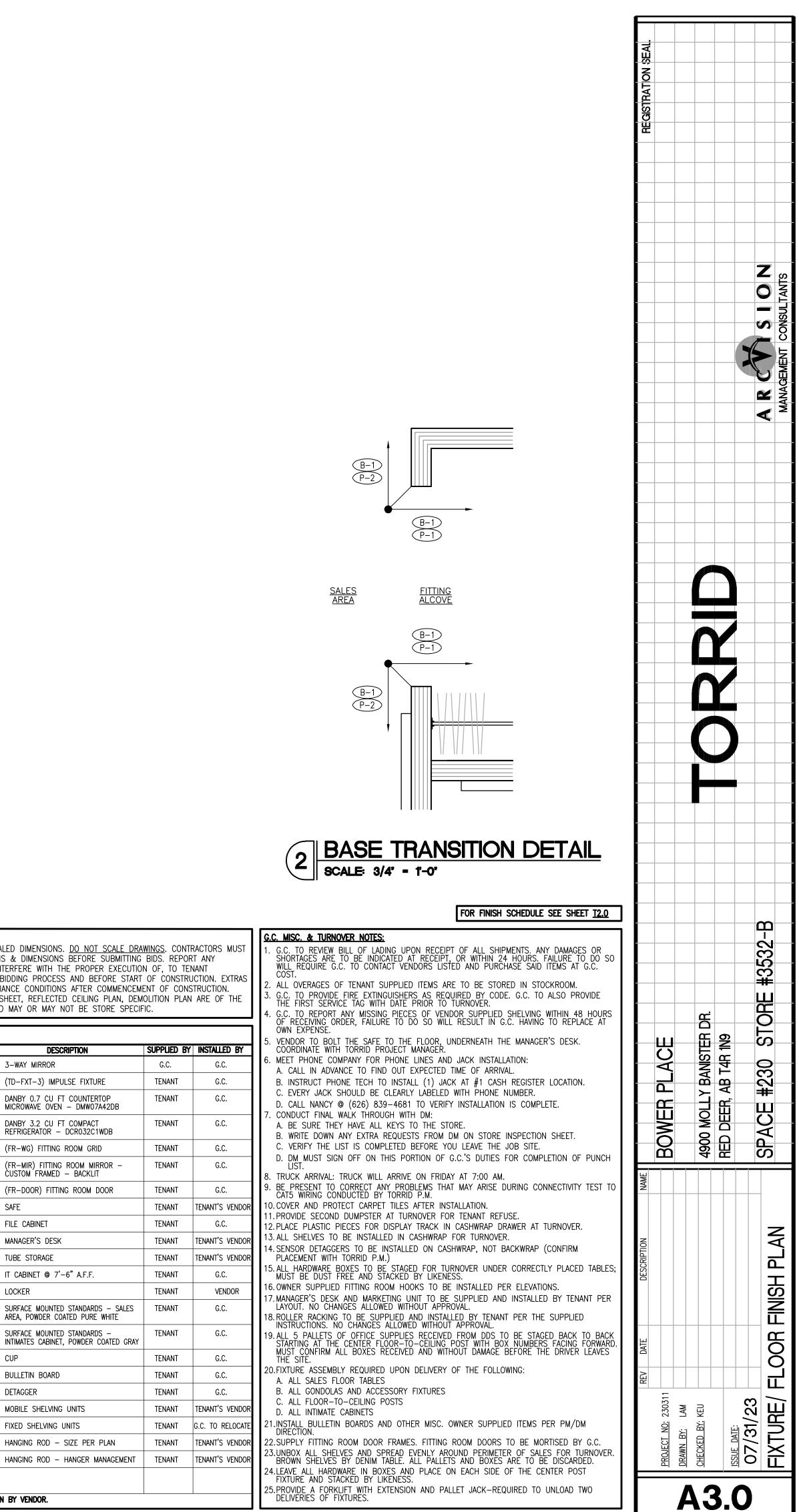
(MIR-02)

(MIR-03)

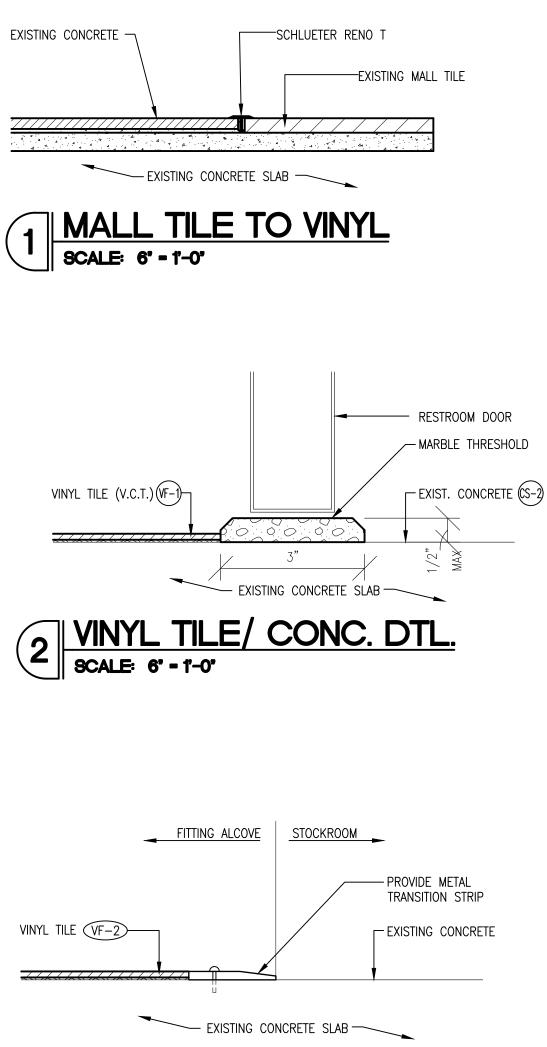
MIRROR - CUSTOM FRAMED

MIRROR - CUSTOM FRAMED

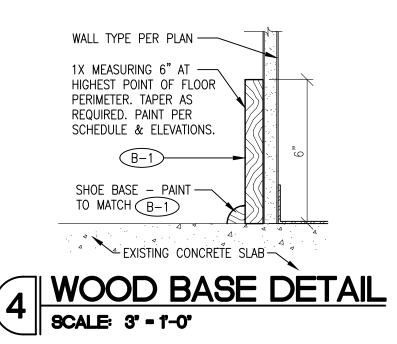
FITTING ROOM MIRROR - CUSTOM

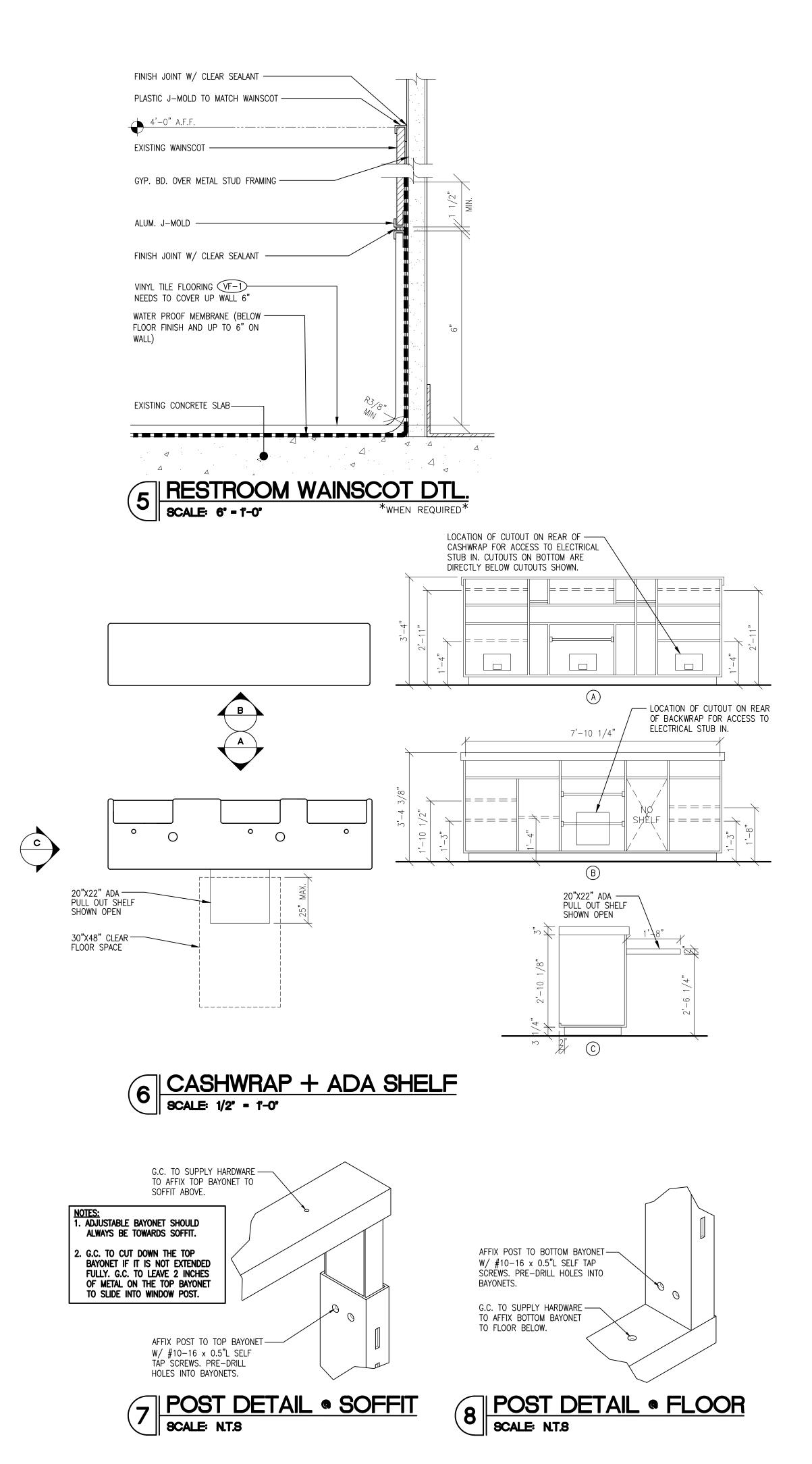


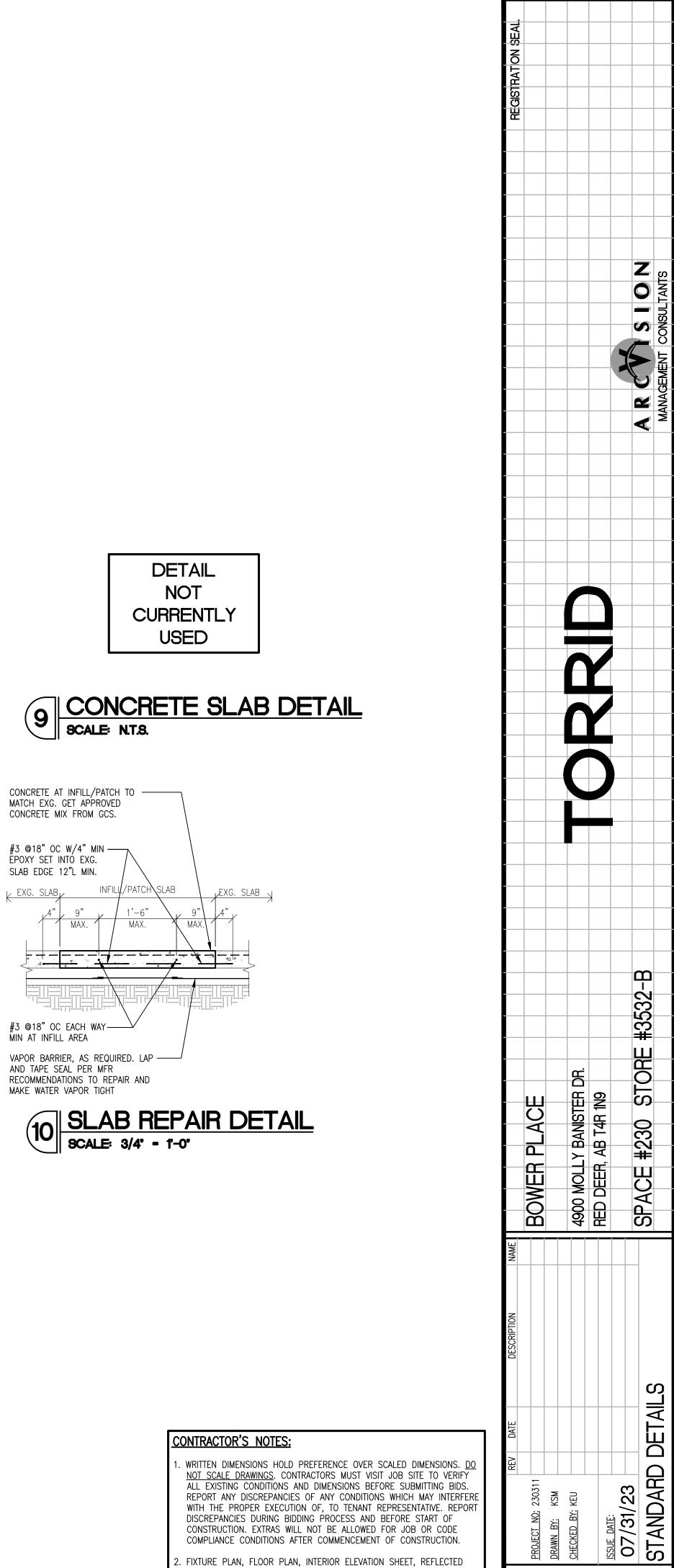
HANGING ROD – SIZE PER PLAN











CEILING PLAN, DEMOLITION PLAN ARE OF THE SPECIFIC STORE. DETAIL SHEETS ARE GENERAL AND MAY OR MAY NOT BE STORE SPECIFIC.

A3.1

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#3532-B

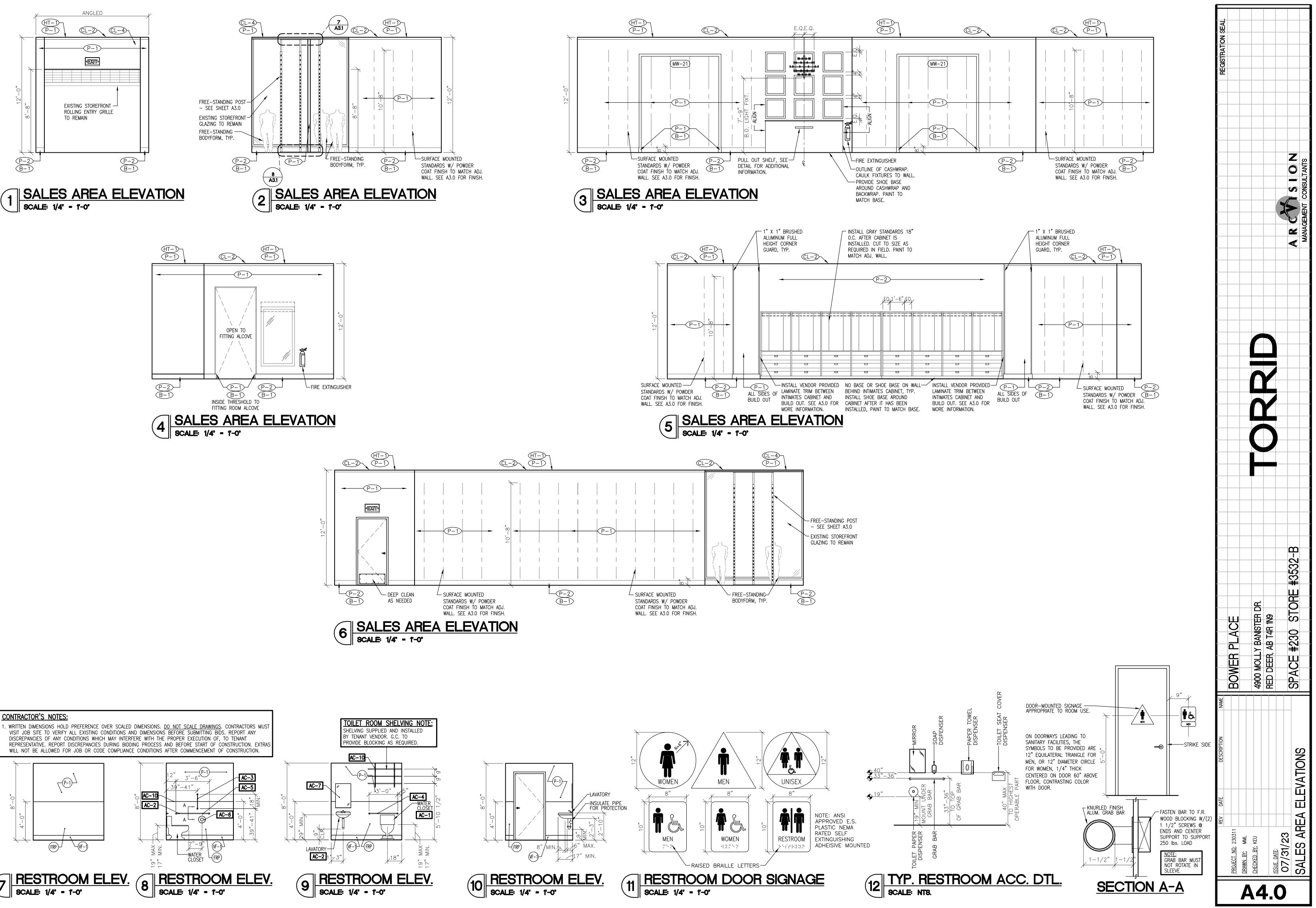
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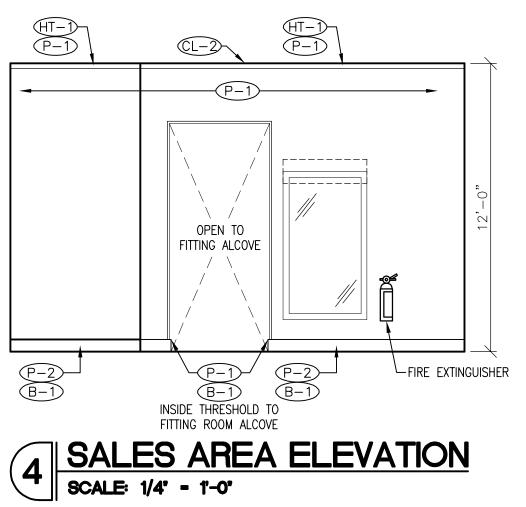
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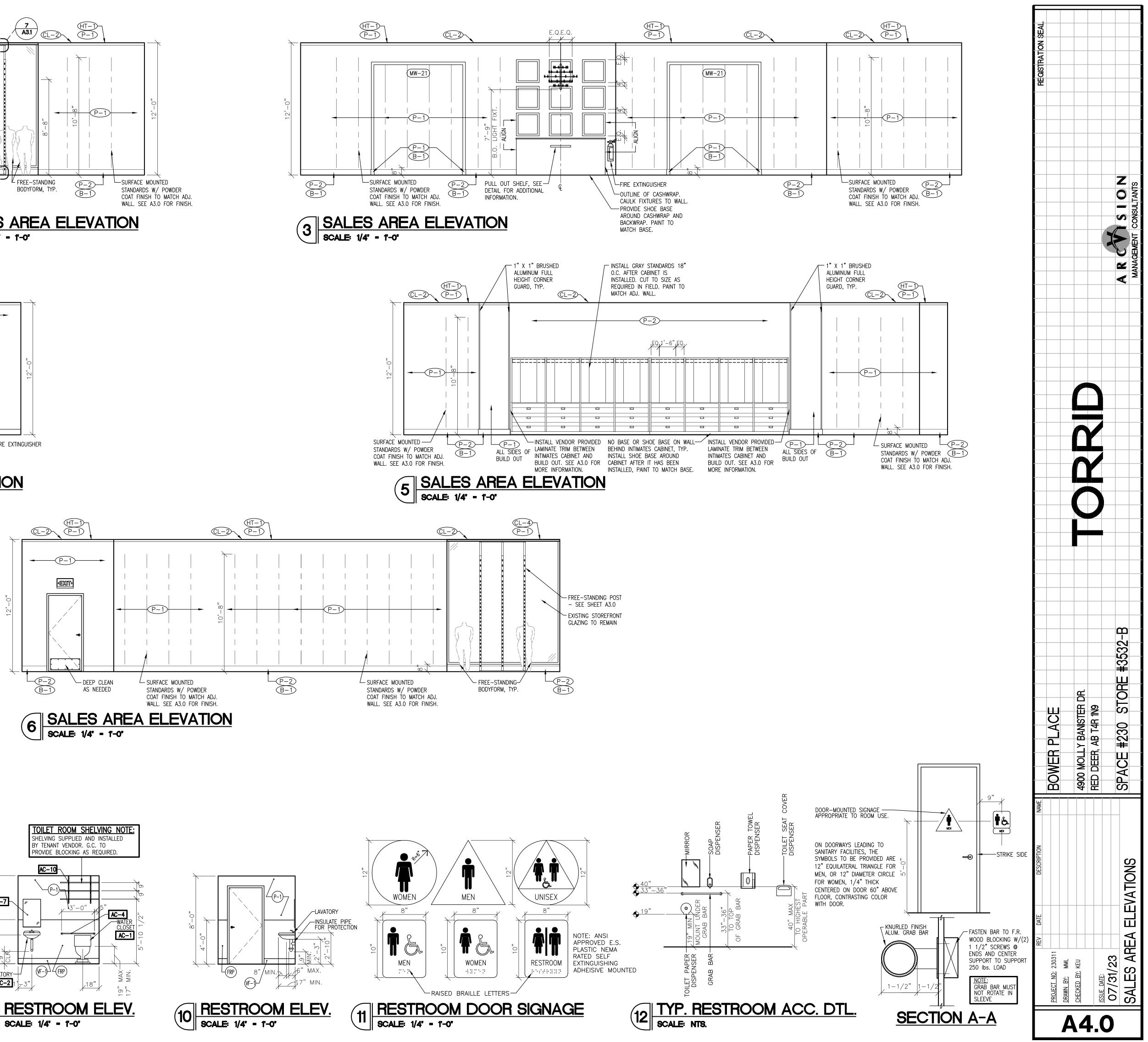
SPACE

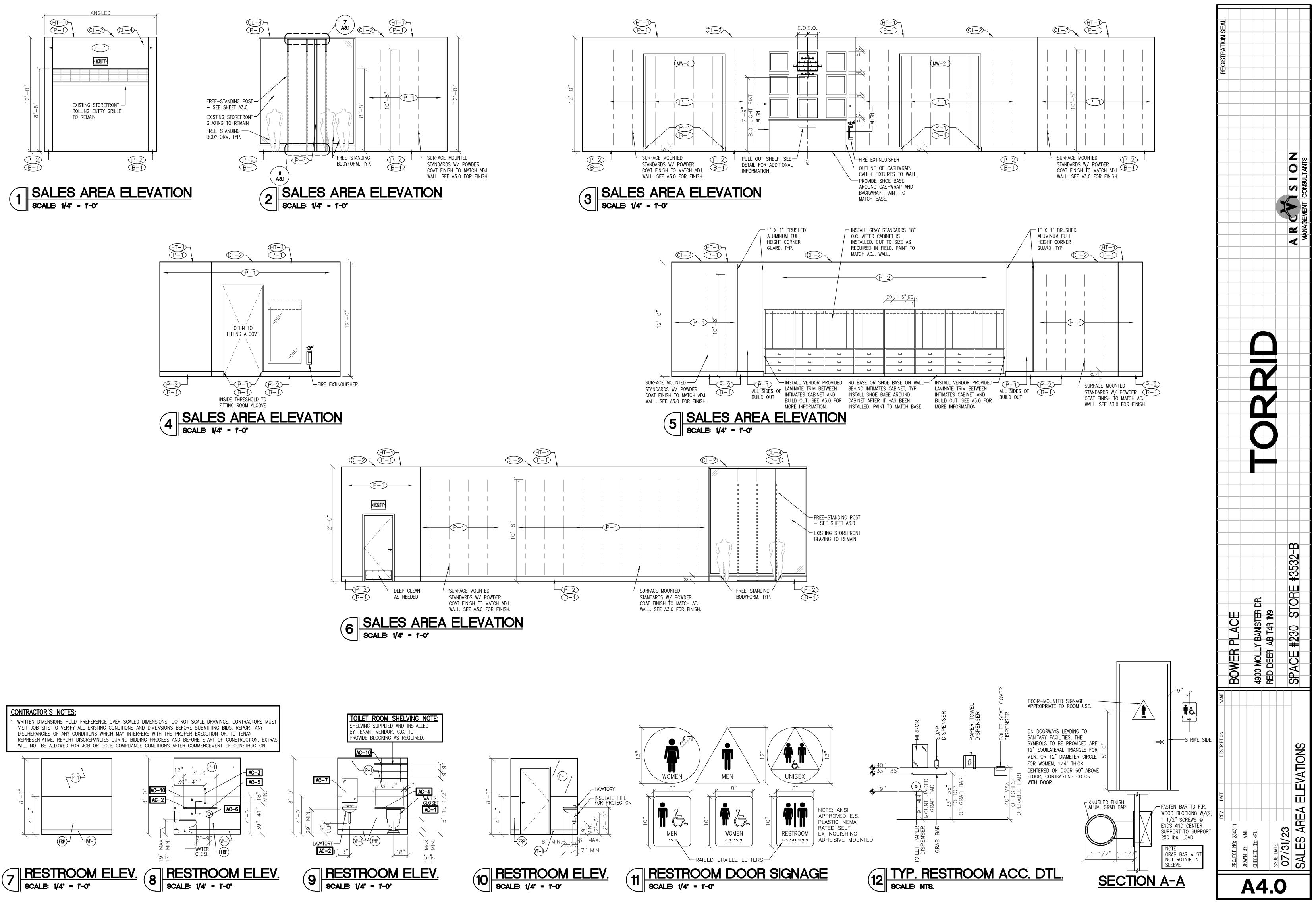
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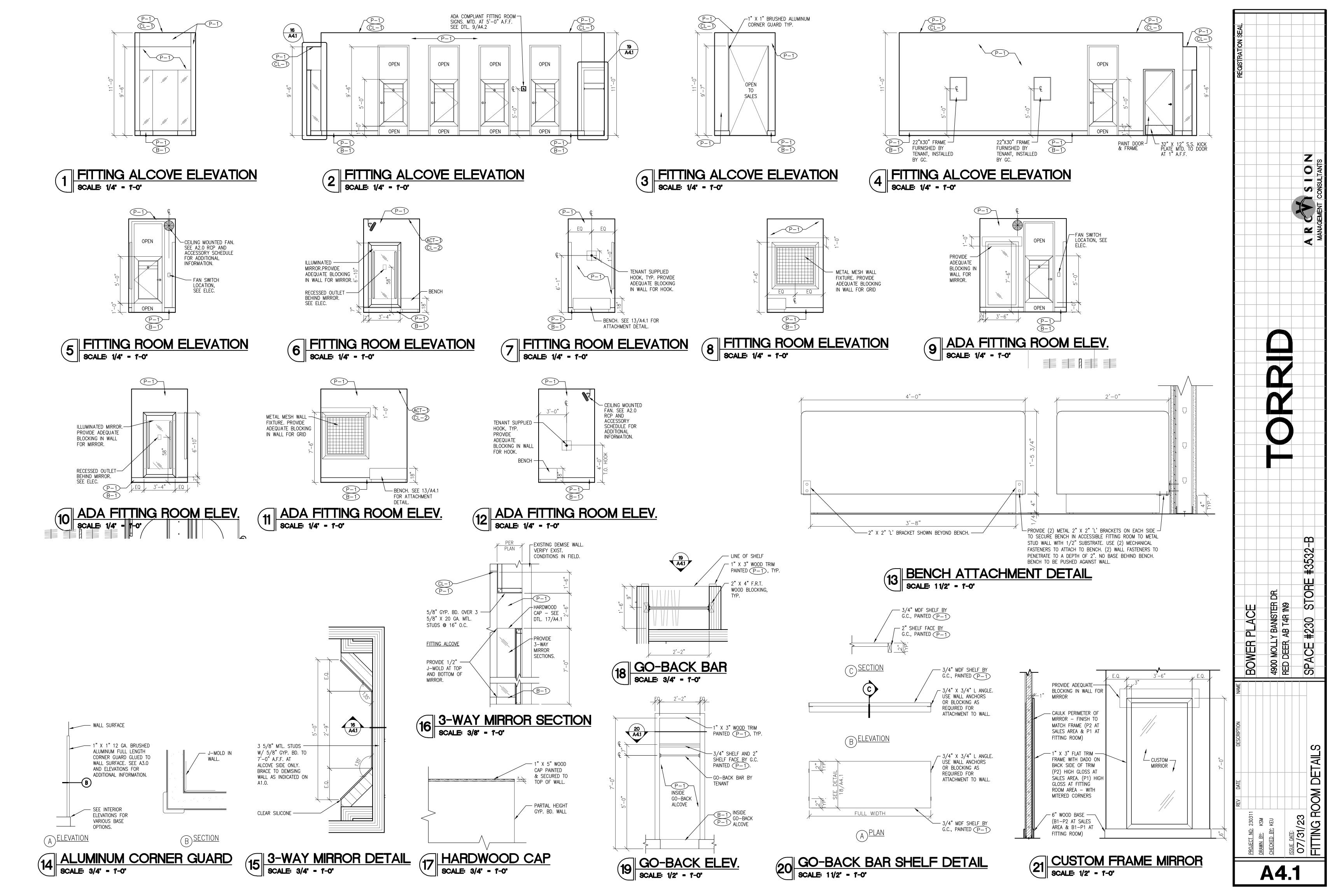
DETAIL

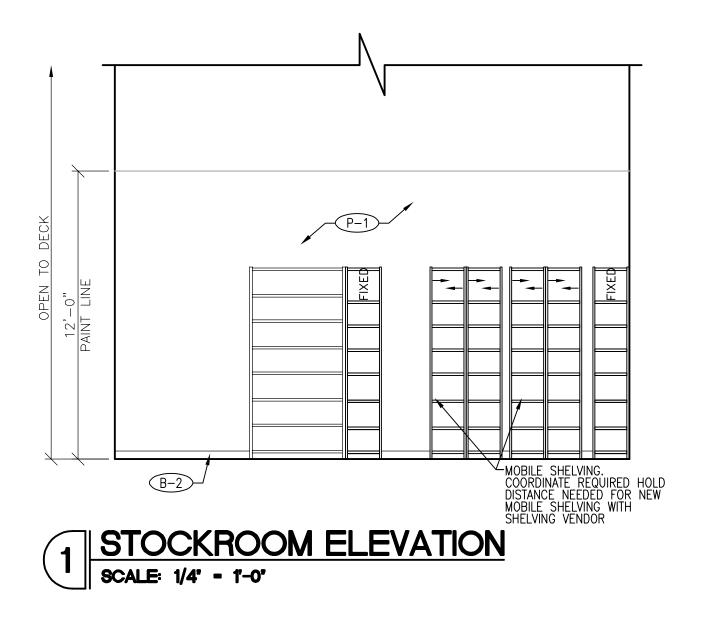


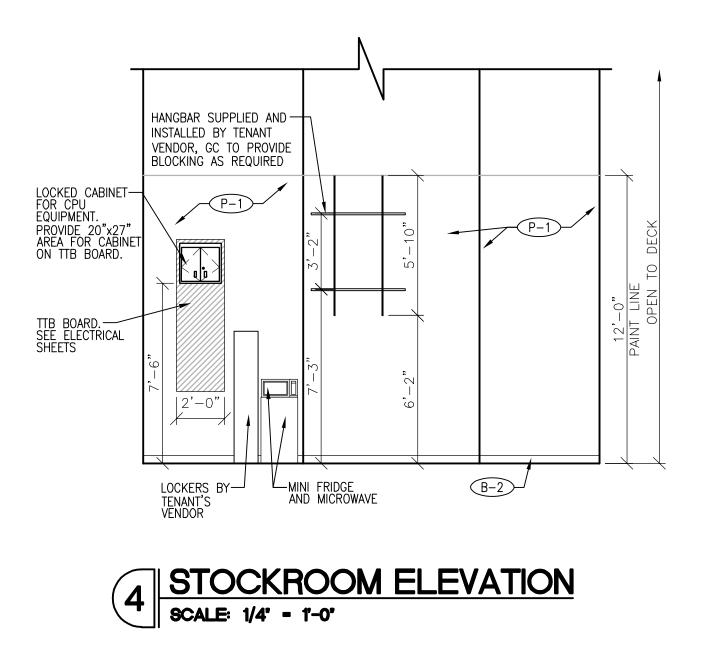


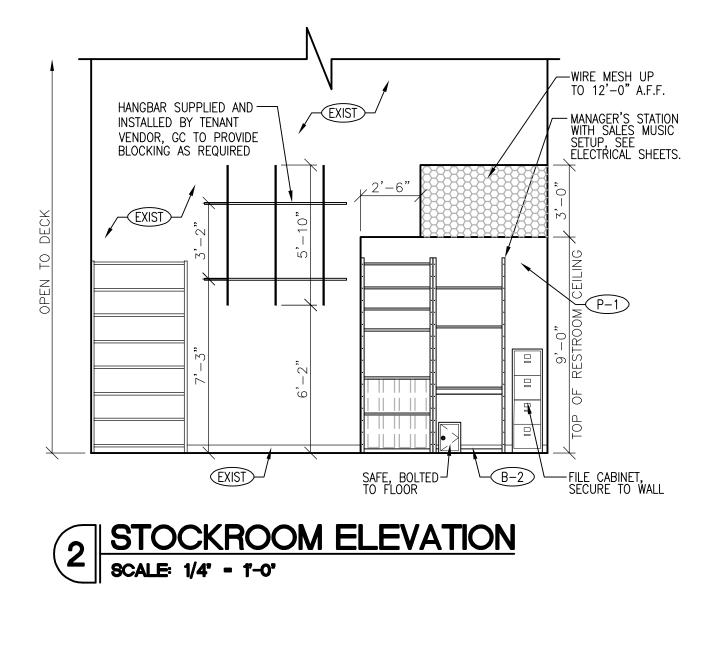


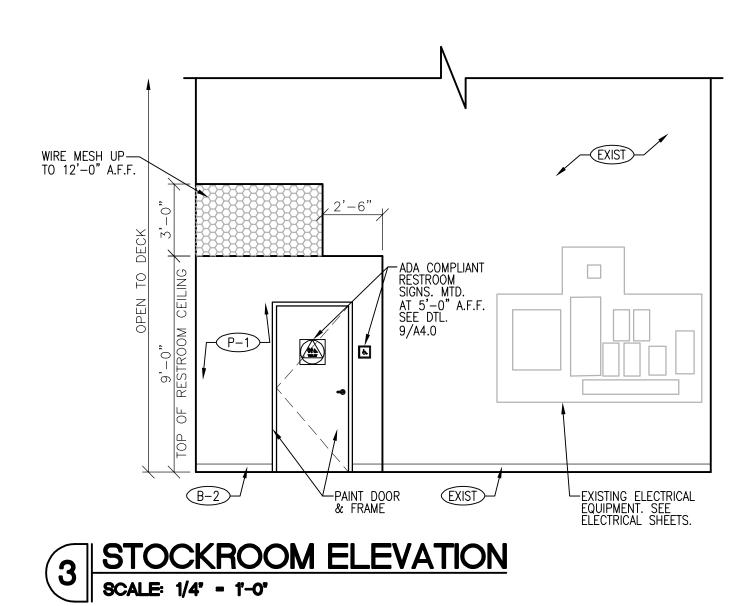


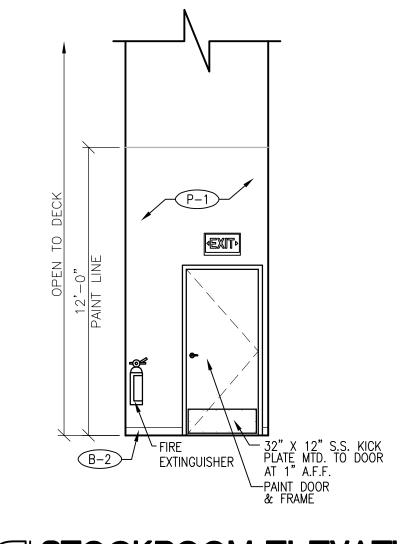




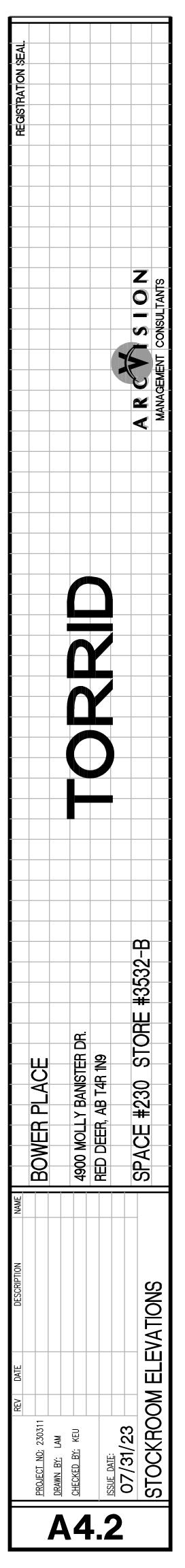






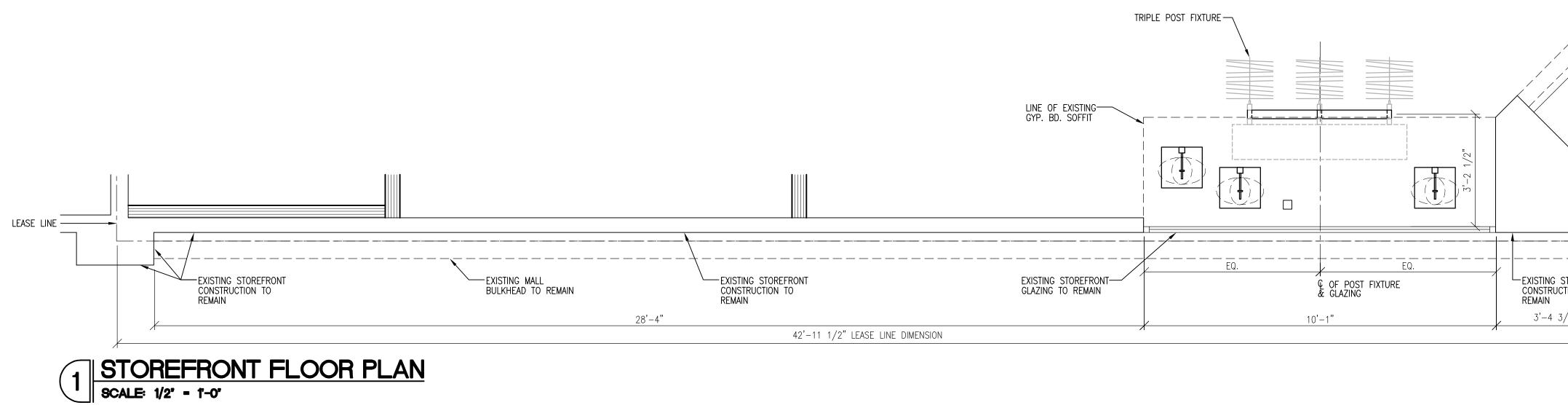




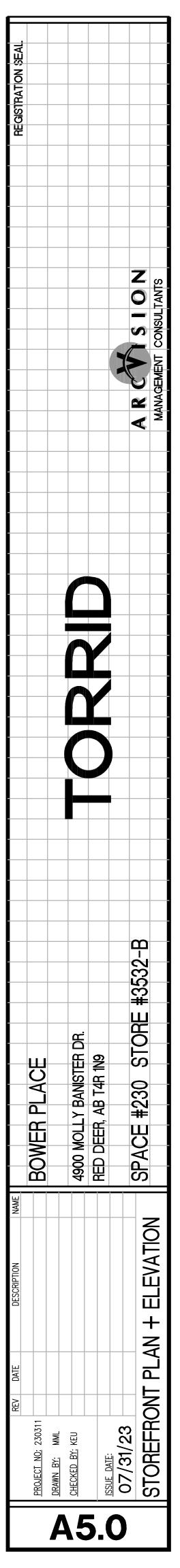


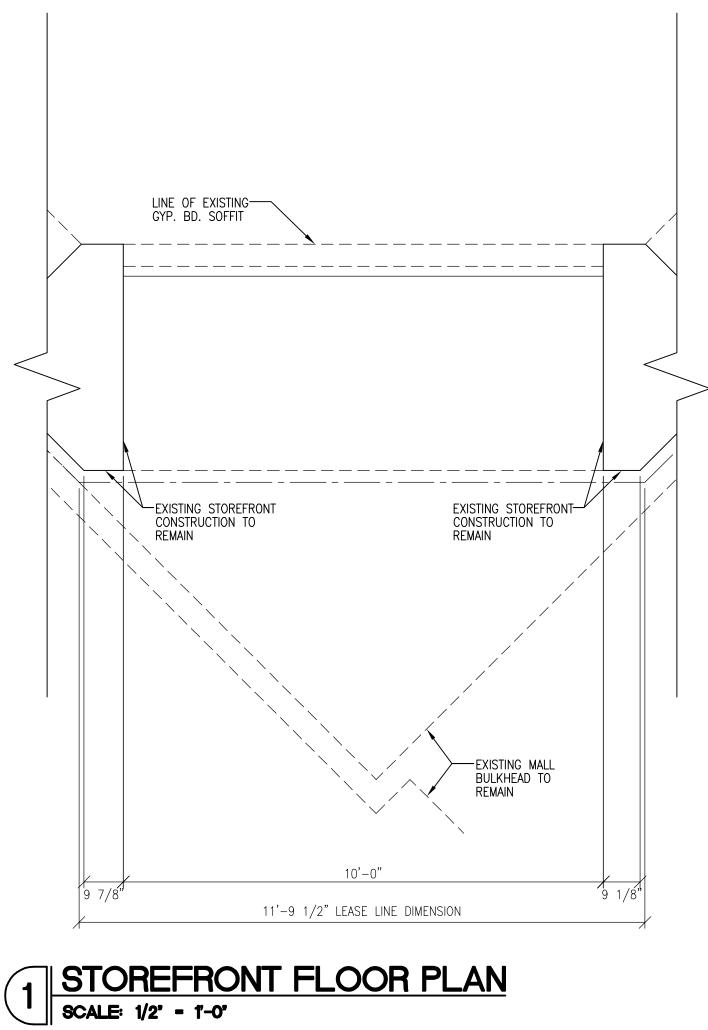


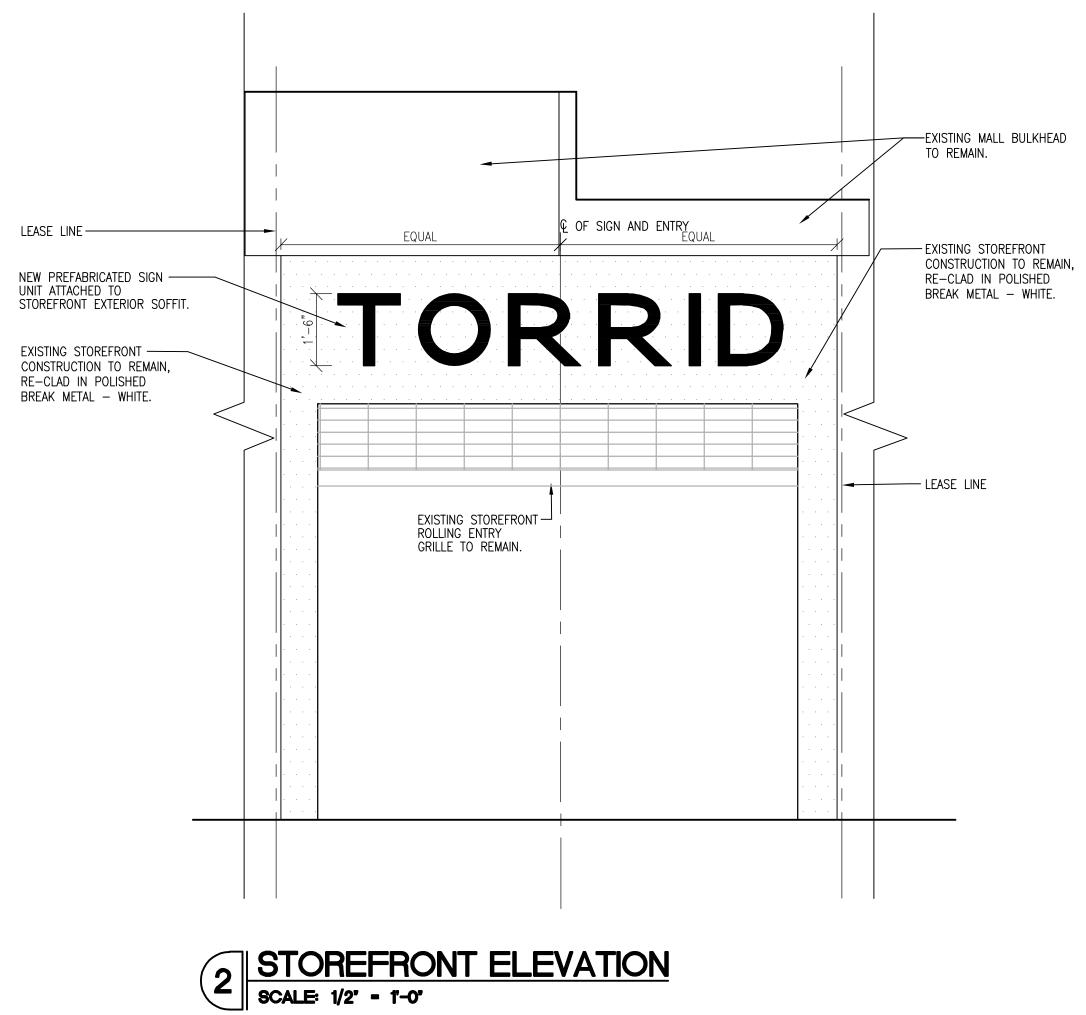




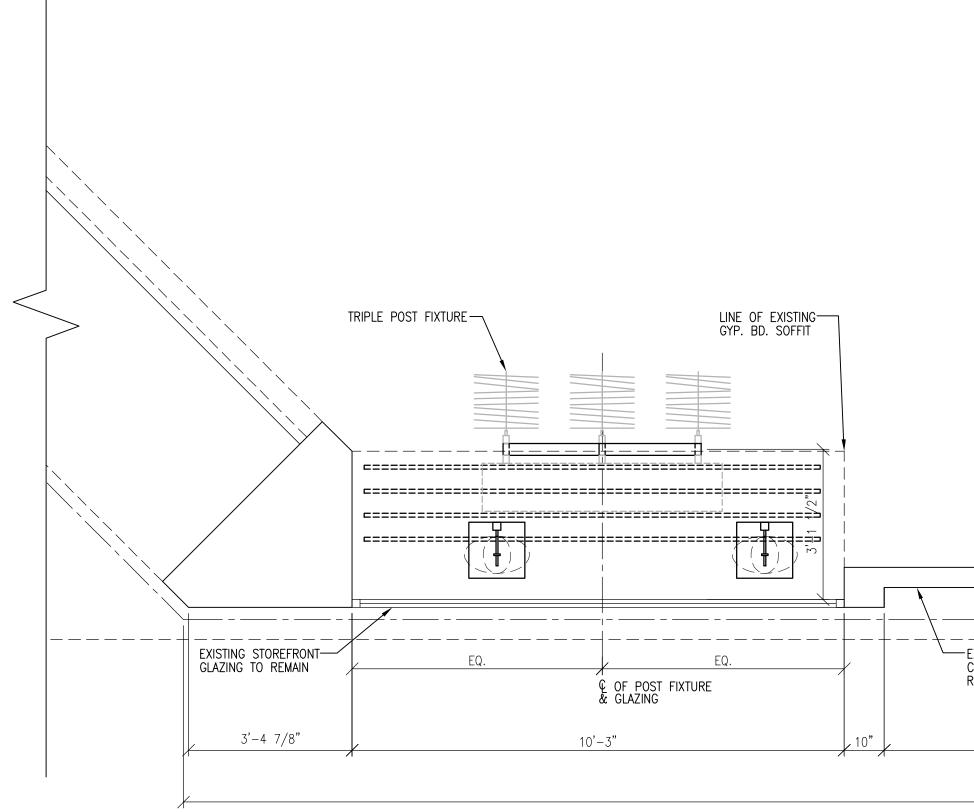
STOREFRONT TION TO		
	EXISTING MALL BULKHEAD TO REMAIN.	
	EXISTING STOREFRONT CONSTRUCTION TO REMAIN, RE-CLAD IN POLISHED BREAK METAL - WHITE.	
	BUTT JOINT. MINIMAL GAP AS REQUIRED. CONSTRUCTION ADHESIVE.	MTL
	SUBSTRATE.	HEMMED EDGE AROUND PERIMETER OF BRAKE METAL PANEL, TYP.
	3 SEAM DETAIL SCALE: 6' - 1'-0'	=



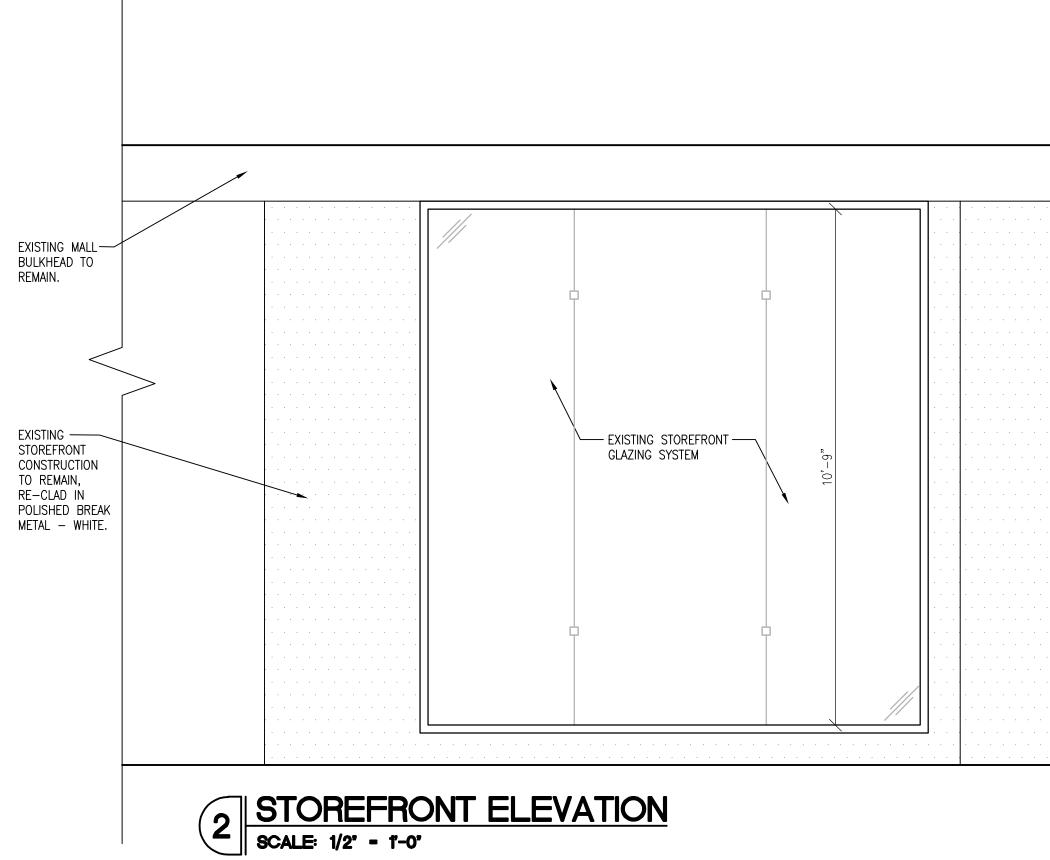




	REV DATE DESCRIPTION NAME	
	PROJECT NO: 230311	
	DRAWN BY: MML	
4	CHECKED BY: KEU	
5.		
1		
	STOREFRONT PLAN + ELEVATION	





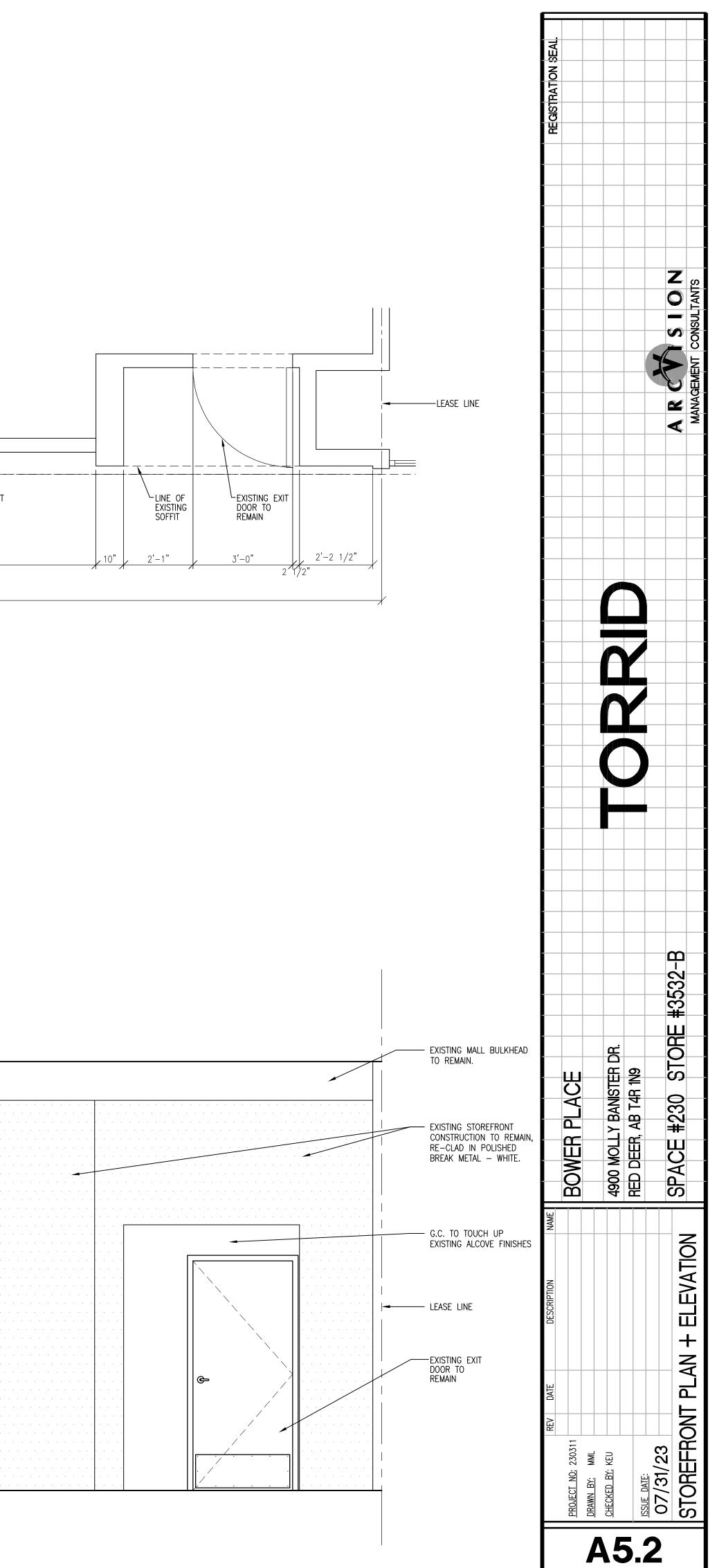


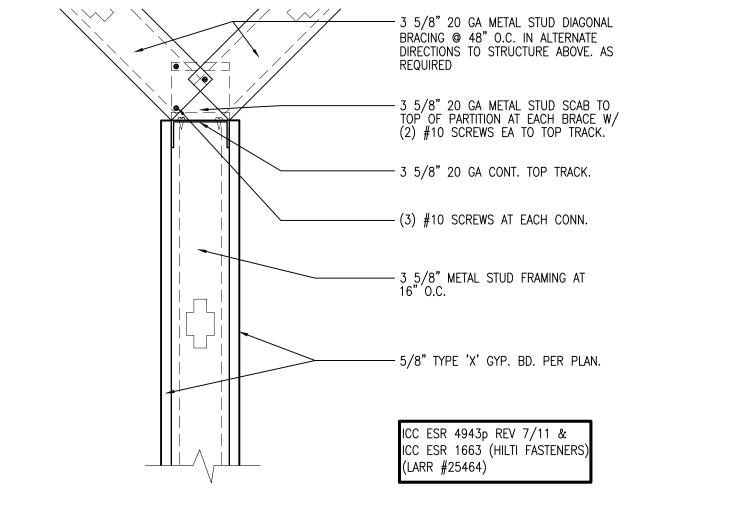
EXISTING STOREFRONT CONSTRUCTION TO REMAIN EXISTING MALL BULKHEAD TO REMAIN EXISTING STOREFRONT CONSTRUCTION TO REMAIN

29'-5 1/8"

52'-7 1/2" LEASE LINE DIMENSION

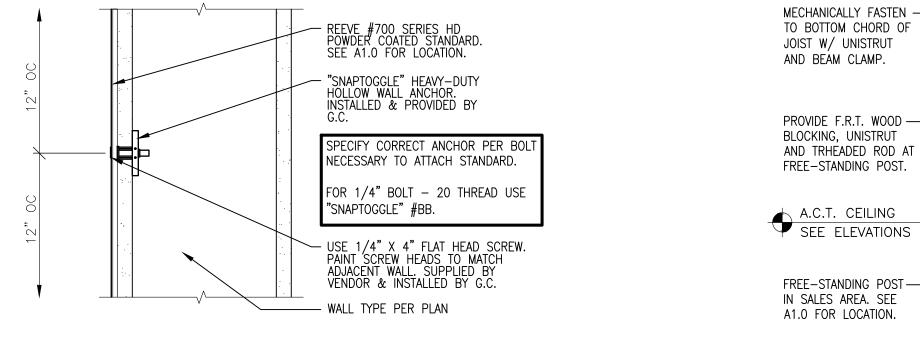
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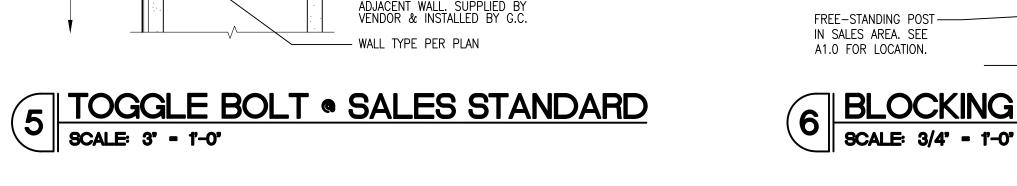


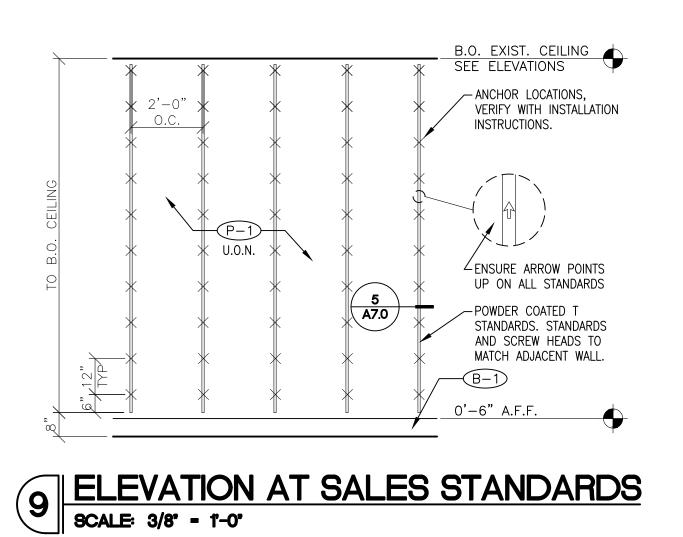


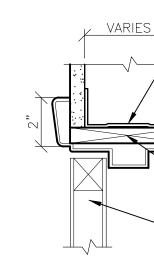


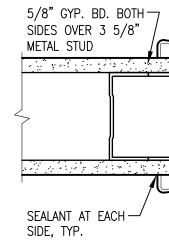




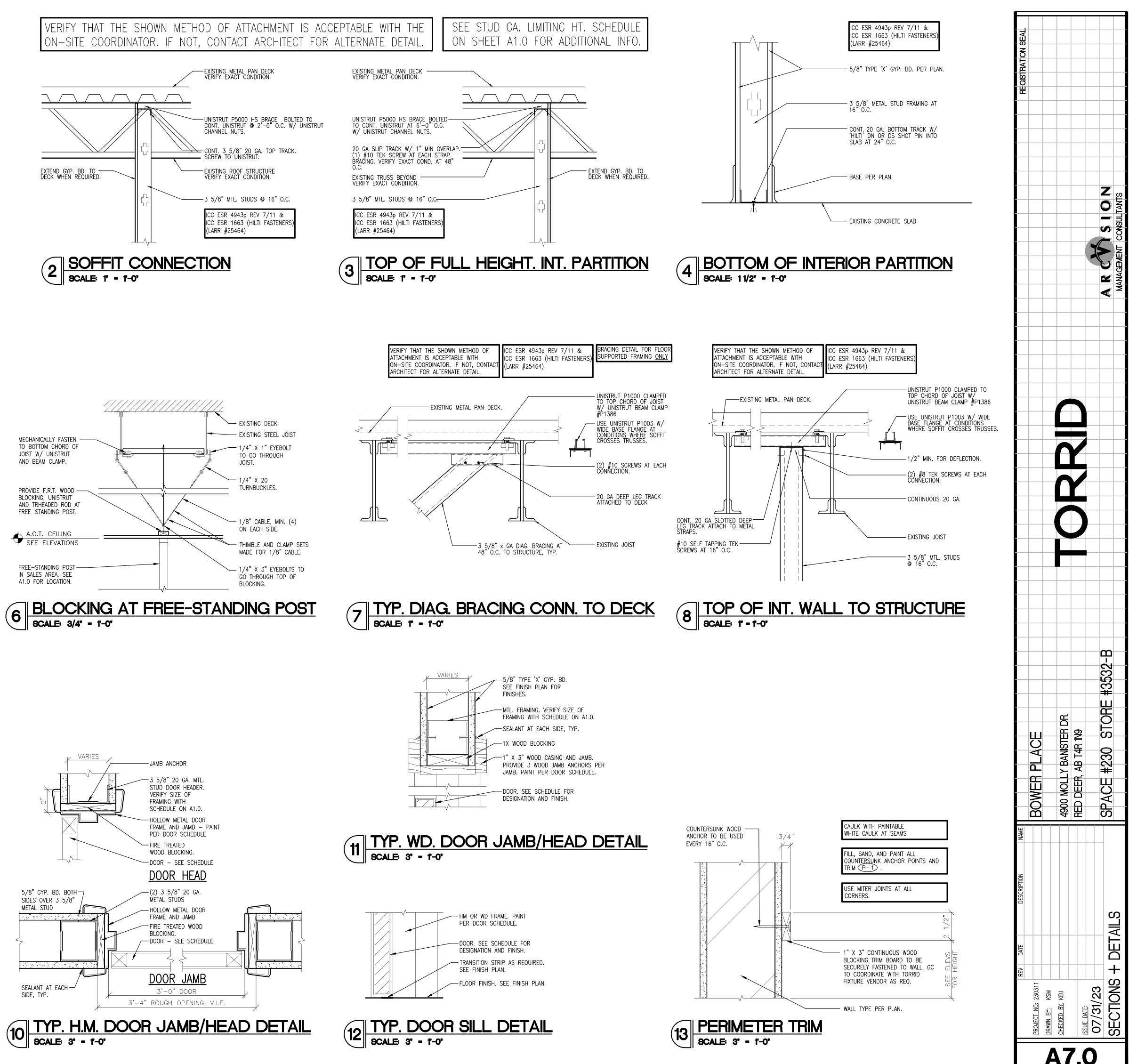


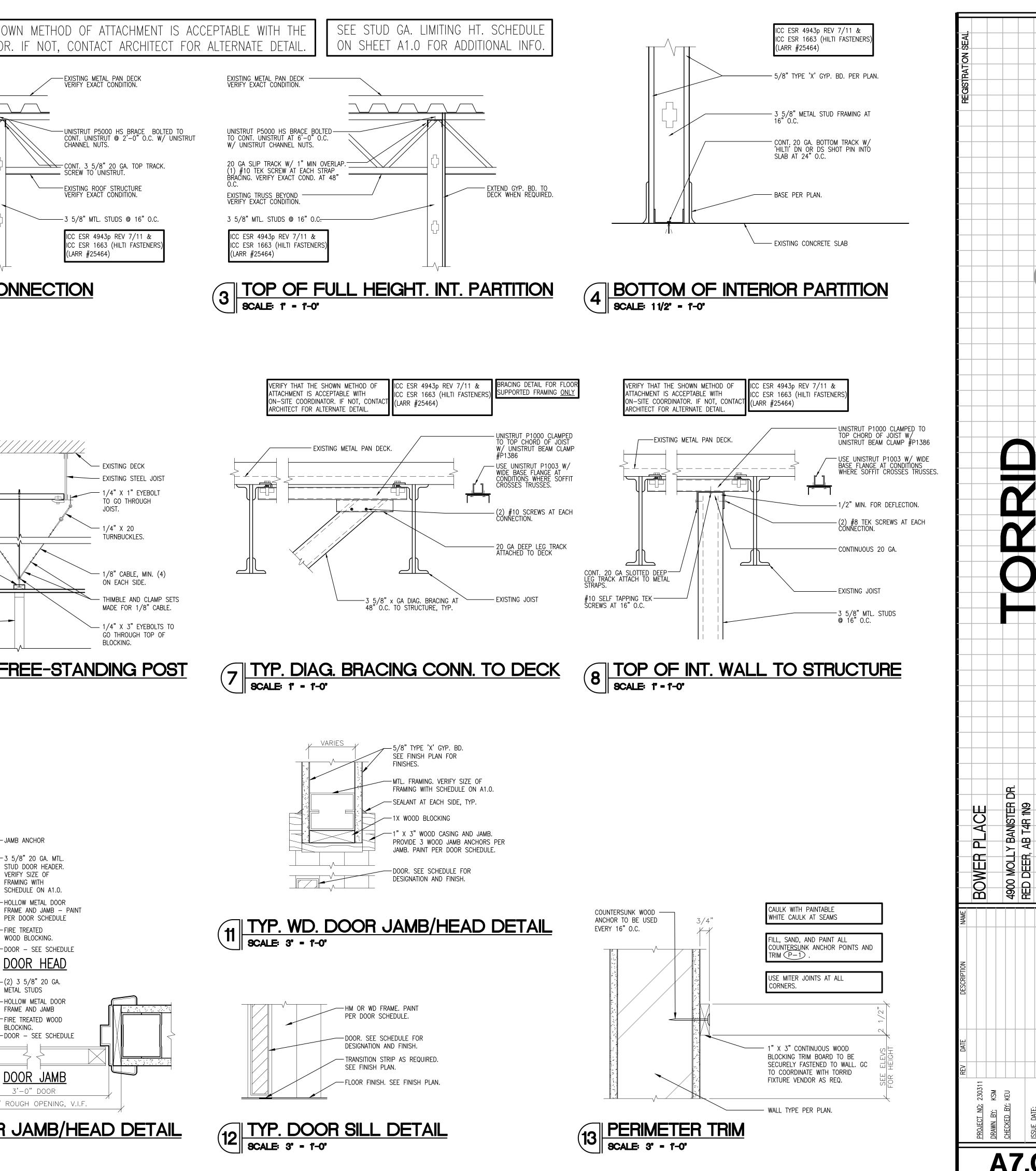












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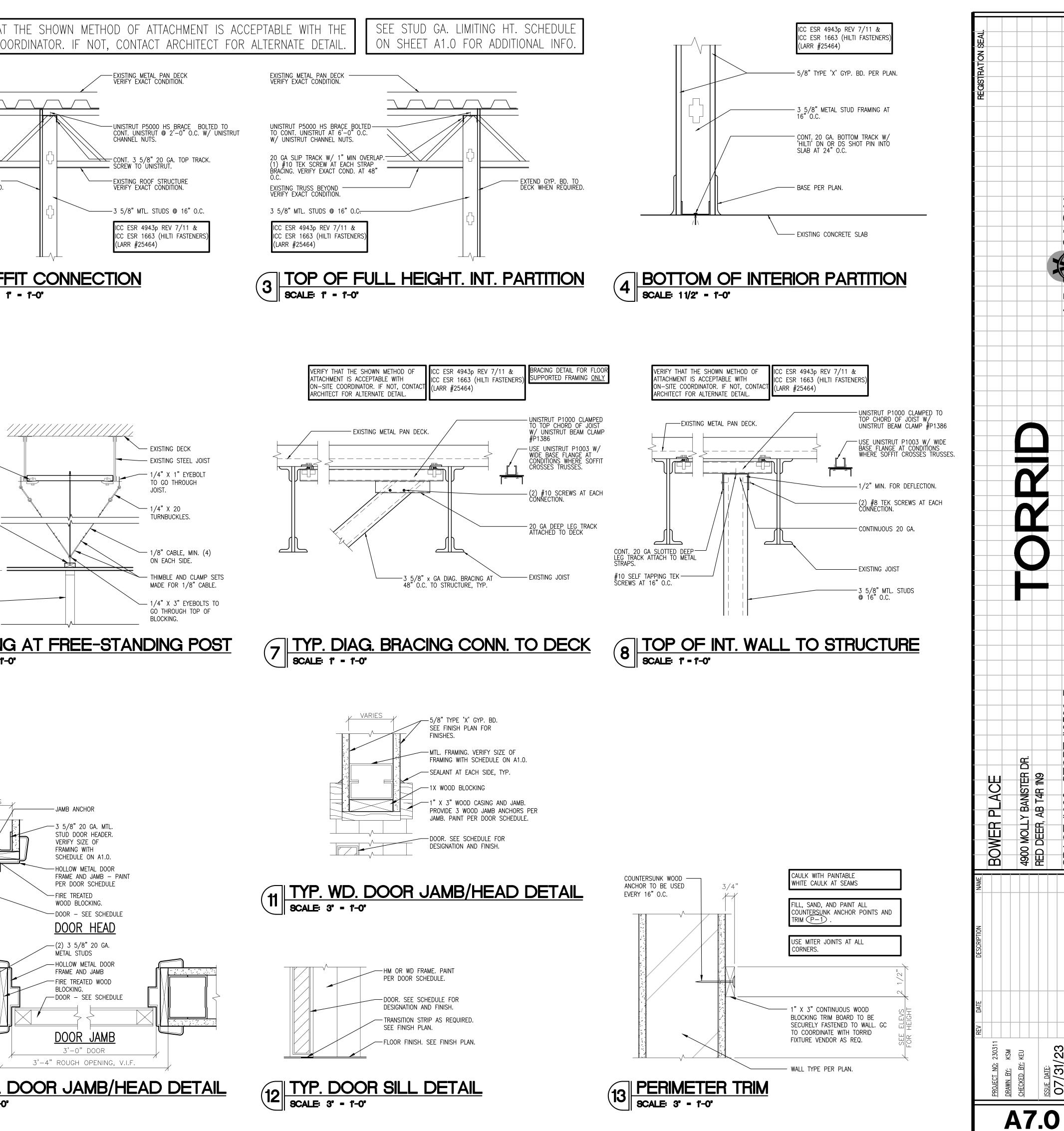
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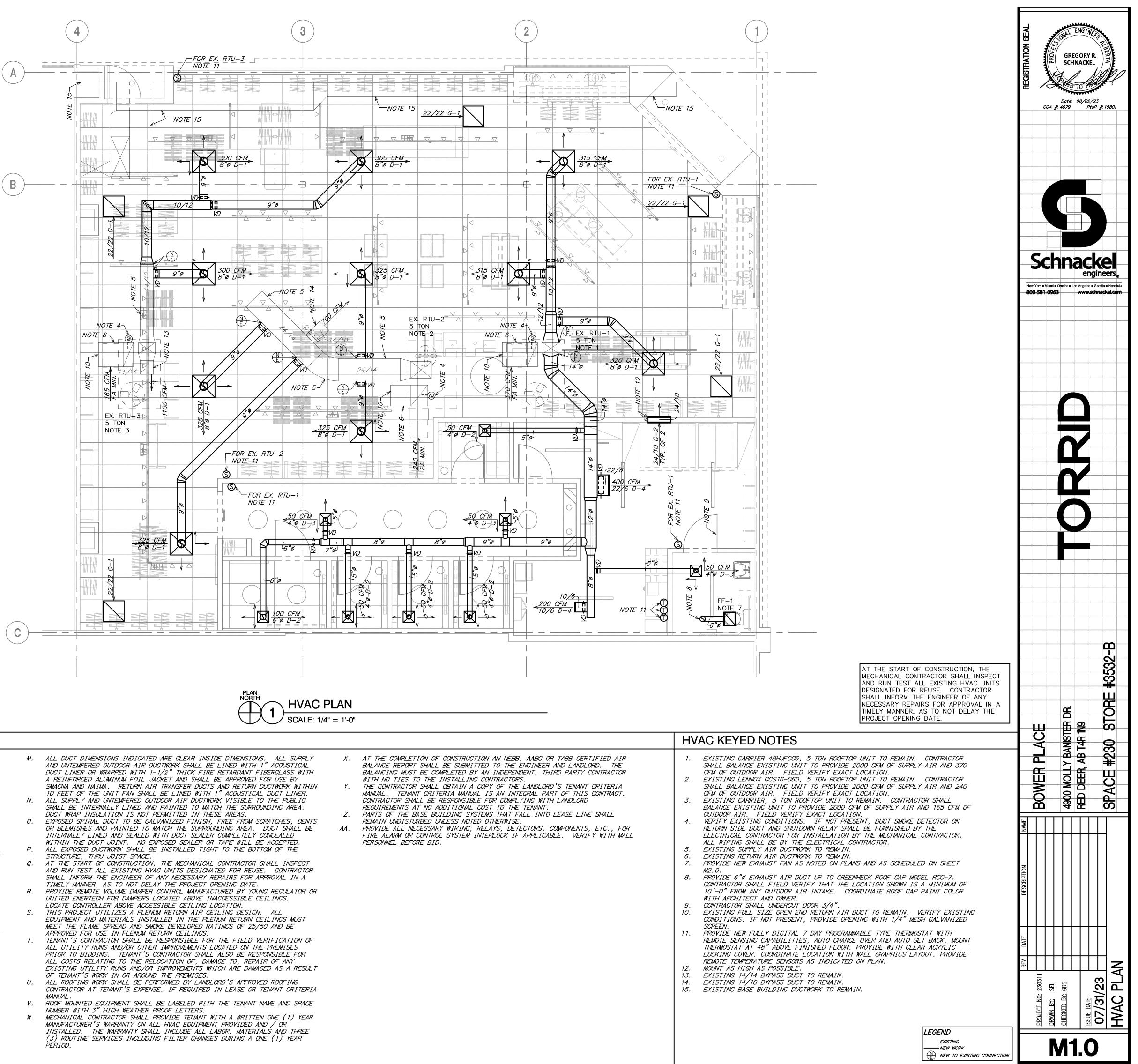
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SPACE

AL

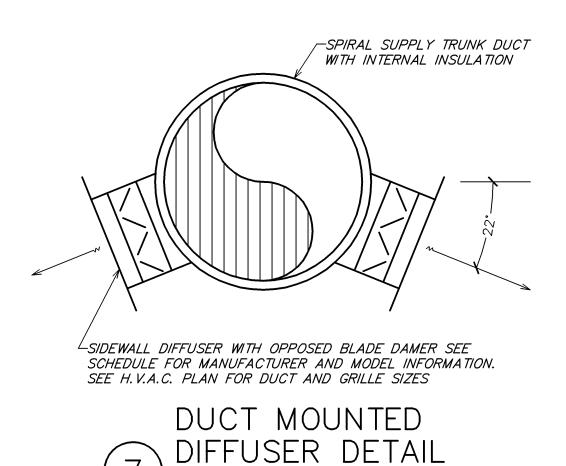
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GENERAL HVAC NOTES

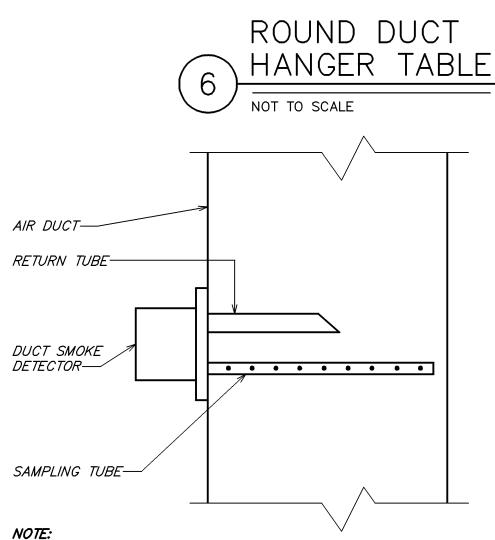
Α.	EXISTING CONDITIONS ARE BASED ON RECORD DRAWINGS PROVIDED BY THE OWNER	М.	ALL DUC
	AND/OR LIMITED FIELD VERIFICATION BY OTHERS. CONTRACTOR SHALL ADJUST		AND UNT
	TO ACTUAL FIELD CONDITIONS AT NO ADDITIONAL EXPENSE TO THE PROJECT.		DUCT LII
В.	CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFICATION OF ALL EXISTING		A REINFO
	CONDITIONS PRIOR TO SUBMITTING THE BID. NO ADDITIONAL COMPENSATION		SMACNA /
	WILL BE PROVIDED FOR ANY EXTRAS DUE TO THE CONTRACTOR'S FAILURE TO		10 FEET
	VISIT THE PROJECT SITE PRIOR TO SUBMITTING THE BID. ANY DISCREPANCIES	Ν.	ALL SUPI
	SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER FOR RESOLUTION.		SHALL BL
С.	ALL CONTRACTORS SHALL REVIEW A COMPLETE SET OF CONSTRUCTION DOCUMENTS.		DUCT WR
D.	CONTRACTORS SHALL FAMILIARIZE THEMSELVES WITH DEMOLITION WORK PRIOR TO	0.	
υ.	BIDDING AND START OF WORK. CONTRACTOR IS RESPONSIBLE TO DEMOLISH ALL	0.	OR BLEM.
	EXISTING AND START OF WORK. CONTRACTOR IS RESPONSIBLE TO DEMOLISH ALL EXISTING AS REQUIRED FOR INSTALLATION/CONSTRUCTION OF NEW WORK.		INTERNAL
E.	ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH ALL APPLICABLE		WITHIN
E.	GOVERNMENT AND LOCAL CODES.	Ρ.	ALL EXPO
~		Γ.	
F.	MECHANICAL CONTRACTOR SHALL FIELD COORDINATE WITH ELECTRICAL CONTRACTOR	0	STRUCTU
~	FOR ALL POWER REQUIREMENTS.	Q.	
G.	ALL CONTRACTORS SHALL REVIEW A COMPLETE SET OF CONSTRUCTION DOCUMENTS		AND RUN
	AND COOPERATE WITH THE OTHER TRADES SO THAT THE INSTALLATION OF ALL		SHALL II
	EQUIPMENT MAY BE PROPERLY COORDINATED.	_	TIMELY
Н.	ALL EQUIPMENT FURNISHED SHALL FIT THE SPACE AVAILABLE WITH CONNECTIONS	<i>R.</i>	
	IN THE REQUIRED LOCATIONS AND WITH ADEQUATE SPACE FOR OPERATING AND		UNITED I
	SERVICING. THE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND INDICATE THE		LOCATE (
	INTENT OF THE INSTALLATION WHILE THE SPECIFICATIONS AND EQUIPMENT LIST	<i>S.</i>	
	DENOTE THE TYPE AND QUALITY OF MATERIAL AND WORKMANSHIP TO BE USED.		EQUIPMEN
	THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENTS. WHERE A		MEET TH
	CONFLICT EXISTS BETWEEN THE DRAWINGS AND THE SPECIFICATIONS, THE HIGHER		APPROVED
	AND/OR MORE COSTLY STANDARD WILL APPLY. THE CONTRACTOR SHALL PROMPTLY	Τ.	TENANT'.
	NOTIFY THE ENGINEER WHOSE DECISION SHALL BE FINAL. NO ALLOWANCE WILL		ALL UTIL
	BE MADE SUBSEQUENTLY IN THIS REGARD ON BEHALF OF THE CONTRACTOR AFTER		PRIOR TO
	AWARD OF THE CONTRACT.		ALL COS
Ι.	COORDINATE DUCT ROUTING AND HEIGHTS WITH GENERAL CONTRACTOR. VERIFY		EXISTIN
-	ALL CLEARANCES BEFORE STARTING WORK.		OF TENA
J.	THE CONTRACTOR SHALL INSTALL ALL PIPING, DUCTWORK AND EQUIPMENT AS	U.	ALL ROOM
	REQUIRED TO CONFORM TO THE STRUCTURE, AVOID OBSTRUCTIONS, PRESERVE	0.	CONTRAC
	CEILING HEIGHTS AND HEADROOM AND MAKE ALL EQUIPMENT REQUIRING		MANUAL.
	MAINTENANCE OR REPAIR ACCESSIBLE.	V.	ROOF MO
к.	ALL DUCT CONNECTIONS TO HVAC EQUIPMENT MUST BE MADE WITH FLEXIBLE	•.	NUMBER I
//•	CONVECTORS.	W.	MECHANI
,	DO NOT ATTACH ANYTHING TO DECK ABOVE. ATTACH TO STRUCTURE (i.e. BEAMS,	".	MANUFAC
L.	JOINT ATTACH ANTIHING TO DECK ABOVE. ATTACH TO STRUCTORE (T.E. BEAMS, JOISTS) ONLY. DUCT HANGERS SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL		INSTALL
	CODE. ALL CONNECTIONS TO JOISTS SHALL BE MADE AT THE TOP CORD.		(3) ROU
			PERIOD.



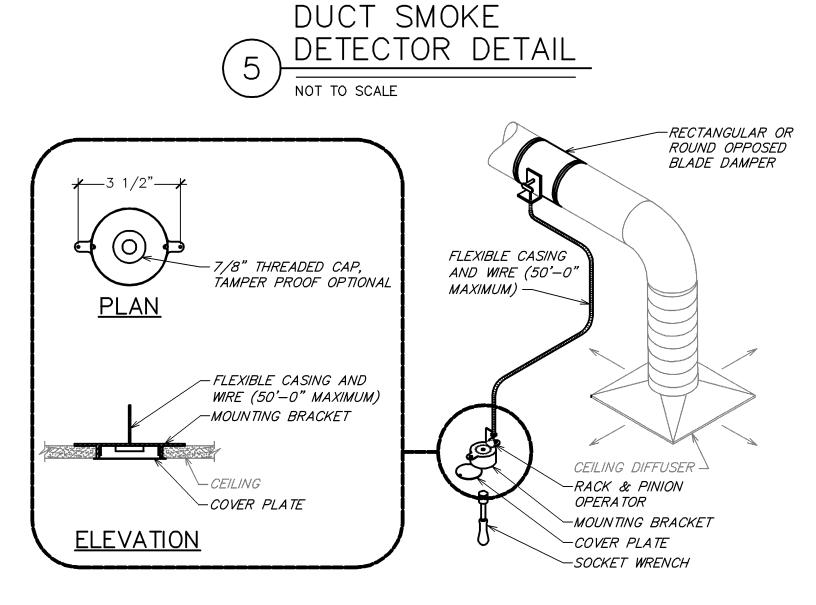
DIA.	WIRE DIA.	ROD	STRAP
10" DN	ONE 12 GA.	1/4"	1" x 22 GA.
11–18"	TWO 12 GA. OR ONE 8 GA.	1/4"	1" x 22 GA.
19–24"	TWO 10 GA.	1/4"	1" x 22 GA.
25-36"	TWO 8 GA.	3/8"	1" x 20 GA.
37-50"	-	TWO 3/8"	TWO 1" x 20 GA.
51–60"	-	TWO 3/8"	TWO 1" x 18 GA.
61-84"	_	TWO 3/8"	TWO 1" x 16 GA.
85-96"	_	TWO 1/2"	TWO 1 1/2" x 16 GA.
NOTES:			

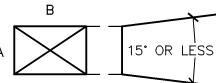
NOT TO SCALE

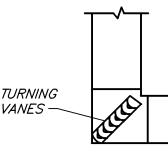
STRAPS ARE GALVANIZED STEEL; RODS ARE UNCOATED OR GALVANIZED STEEL; WIRE IS BLACK ANNEALED, BRIGHT BASIC OR GALVANIZED STEEL. ALL ARE ALTERNATIVES. 2. TABLE ALLOWS FOR CONVENTIONAL WALL THICKNESS, AND JOINT SYSTEMS PLUS ONE LB/SF OF INSULATION WEIGHT. IF HEAVIER DUCTS ARE TO BE INSTALLED, ADJUST HANGER SIZES TO BE WITHIN THEIR LOAD LIMITS.

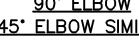


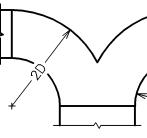
1. DUCT SMOKE DETECTOR ON RETURN AND/OR SUPPLY SIDE DUCT AND SHUTDOWN RELAY SHALL BE FURNISHED BY THE ELECTRICAL CONTRACTOR FOR INSTALLATION BY THE MECHANICAL CONTRACTOR. ALL WIRING SHALL BE BY THE ELECTRICAL CONTRACTOR.

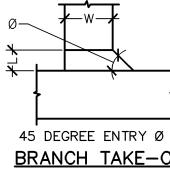


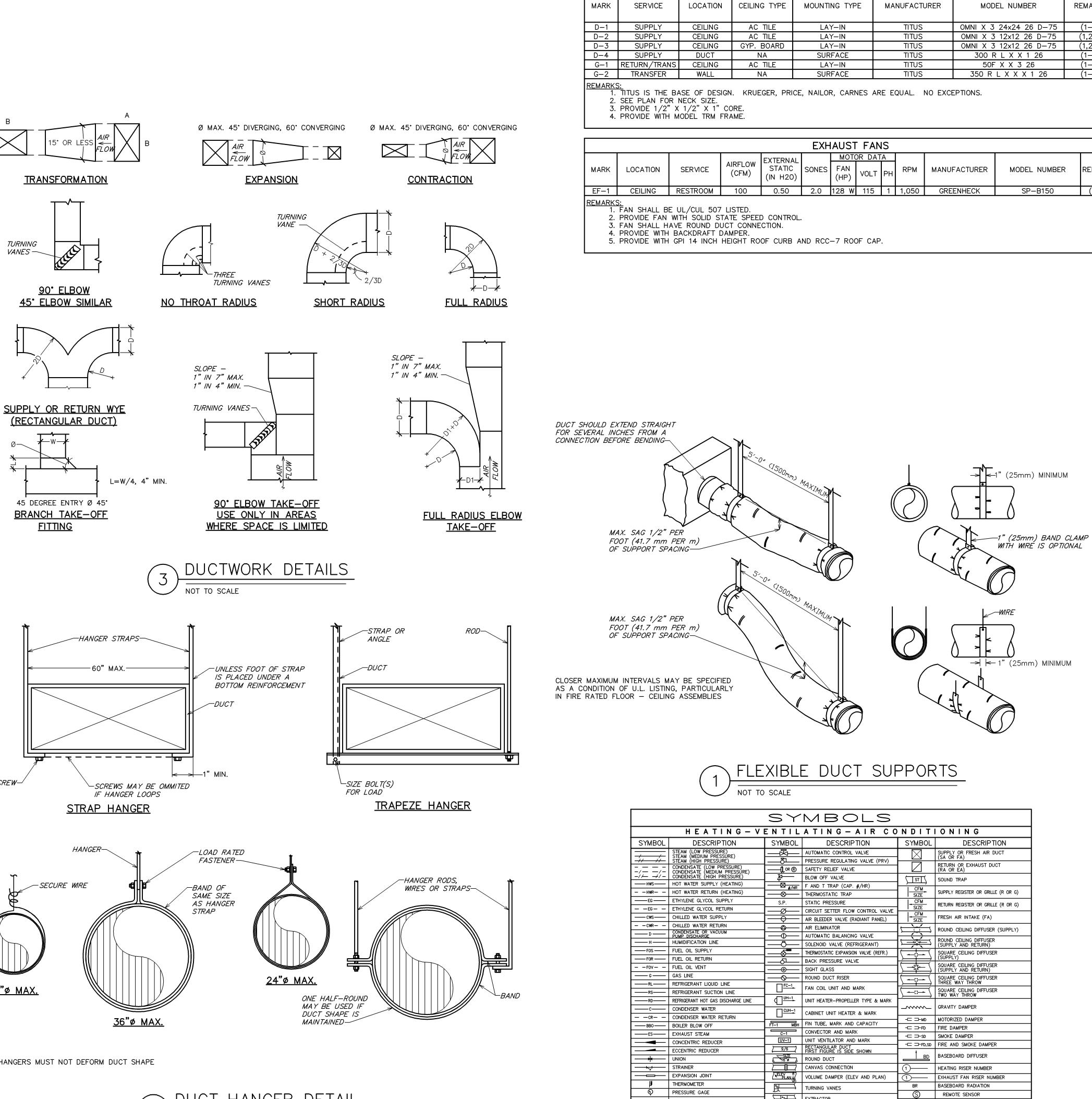


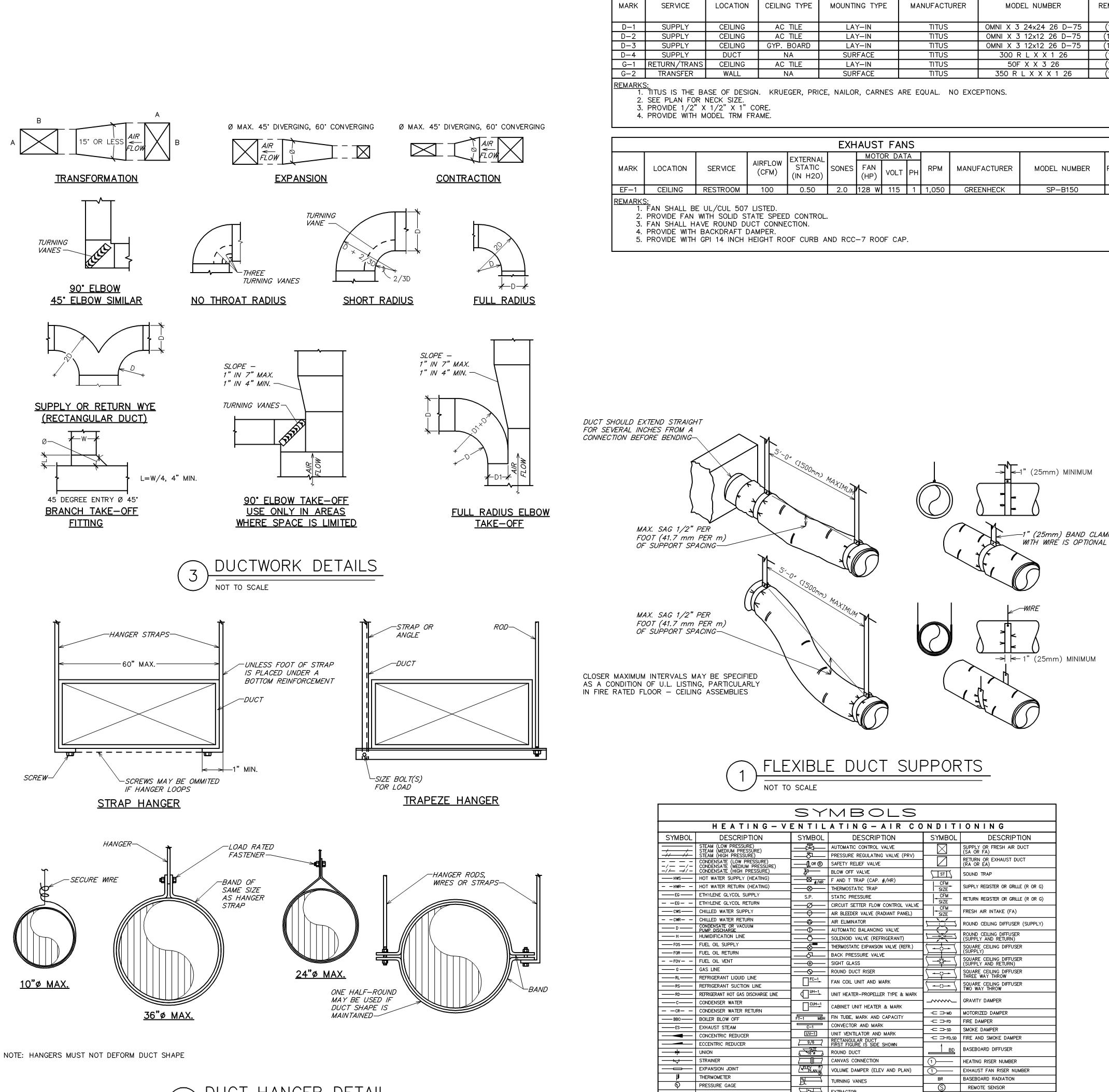












DUCT HANGER DETAIL NOT TO SCALE

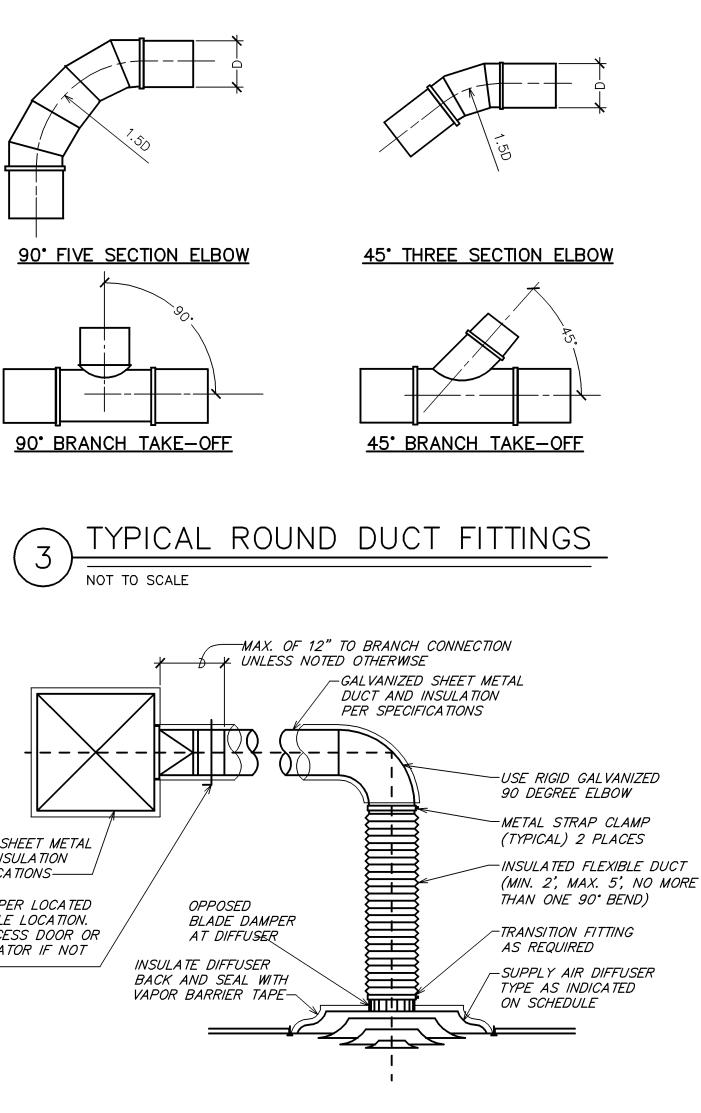
	DIFFUSERS, GRILLES AND REGISTERS									
7	CEILING TYPE	MOUNTING TYPE	MANUFACTURER	MODEL NUMBER	REMARKS					
	AC TILE	LAY-IN	TITUS	OMNI X 3 24x24 26 D-75	(1–2)					
	AC TILE	LAY-IN	TITUS	OMNI X 3 12x12 26 D-75	(1,2,4)					
	GYP. BOARD	LAY-IN	TITUS	OMNI X 3 12x12 26 D-75	(1,2,4)					
	NA	SURFACE	TITUS	300 R L X X 1 26	(1–2)					
	AC TILE	LAY-IN	TITUS	50F X X 3 26	(1–3)					
	NA	SURFACE	TITUS	350 R L X X X 1 26	(1–2)					
IGN	. KRUEGER. PRI	CE. NAILOR. CARNES	ARE EQUAL. NO EXCE	EPTIONS.						

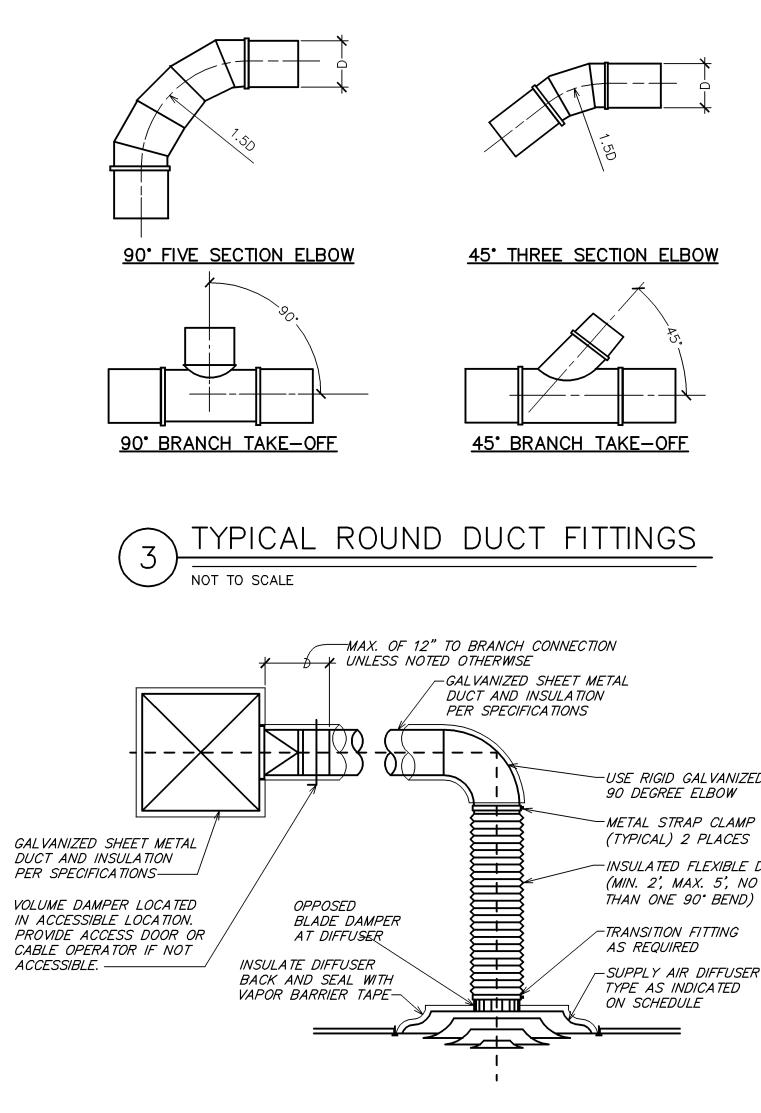
		EXH	AUST	FAN	IS				
	EXTERNAL		MOTO	<u>DR DAT</u>	A				
AIRFLOW (CFM)	STATIC (IN H20)	SONES	FAN (HP)	VOLT	PH	RPM	MANUFACTURER	MODEL NUMBER	REMARKS
100	0.50	2.0	128 W	115	1	1,050	GREENHECK	SP-B150	(1–5)

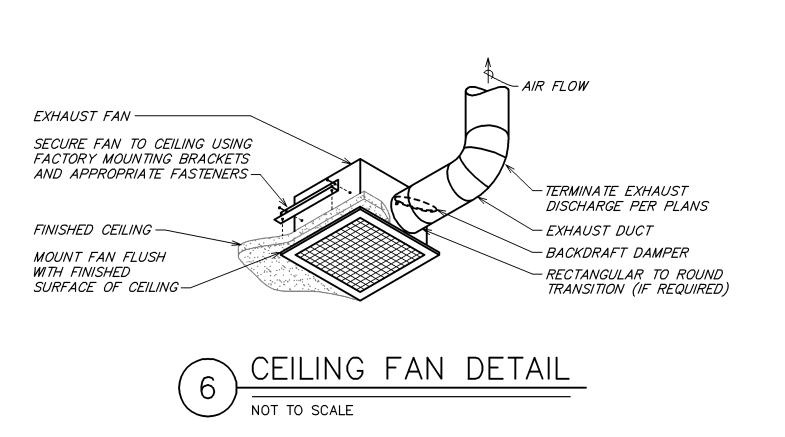
	SY	MBOLS		
I N G - V I	ENTIL	ATING-AIR CO	NDITI	ONING
PTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
JRE) (SSURE)	困	AUTOMATIC CONTROL VALVE	\square	SUPPLY OR FRESH AIR DUCT (SA OR FA)
URE) PRESSURE)		PRESSURE REGULATING VALVE (PRV)		RETURN OR EXHAUST DUCT
M PRESSÚRE)		SAFETY RELIEF VALVE		(RA OR EA)
PRESSURE) (HEATING)		BLOW OFF VALVE	∫ाङा∖	SOUND TRAP
(HEATING)	────⊠/HR ────⊗────	F AND T TRAP (CAP. #/HR) THERMOSTATIC TRAP		SUPPLY REGISTER OR GRILLE (R OR G)
UPPLY		STATIC PRESSURE	I SIZE	
ETURN	Ø	CIRCUIT SETTER FLOW CONTROL VALVE	SIZE	RETURN REGISTER OR GRILLE (R OR G)
PLY	$-\tilde{\diamond}$	AIR BLEEDER VALVE (RADIANT PANEL)		FRESH AIR INTAKE (FA)
JRN JUM	O	AIR ELIMINATOR		ROUND CEILING DIFFUSER (SUPPLY)
UUM	θ	AUTOMATIC BALANCING VALVE		ROUND CEILING DIFFUSER
	Ō	SOLENOID VALVE (REFRIGERANT)		(SUPPLY AND RETURN)
		THERMOSTATIC EXPANSION VALVE (REFR.)	(; (SQUARE CEILING DIFFUSER (SUPPLY)
		BACK PRESSURE VALVE		
		SIGHT GLASS		SQUARE CEILING DIFFUSER (SUPPLY AND RETURN)
LINE		ROUND DUCT RISER		SQUARE CEILING DIFFUSER THREE WAY THROW
DN LINE		FAN COIL UNIT AND MARK	(SQUARE CEILING DIFFUSER TWO WAY THROW
DISCHARGE LINE		UNIT HEATER-PROPELLER TYPE & MARK		
		CABINET UNIT HEATER & MARK		GRAVITY DAMPER
RETURN			-— — мр	MOTORIZED DAMPER
	FT-1 MBH	FIN TUBE, MARK AND CAPACITY CONVECTOR AND MARK	년 나 민	FIRE DAMPER
	C_1	UNIT VENTILATOR AND MARK	-⊏ ⊐-so	SMOKE DAMPER
.R) 9/6)	RECTANGULAR DUCT FIRST FIGURE IS SIDE SHOWN	-⊏ ⊐-FD,SD	FIRE AND SMOKE DAMPER
	SIZE	ROUND DUCT	BD	BASEBOARD DIFFUSER
		CANVAS CONNECTION	(1)	HEATING RISER NUMBER
		VOLUME DAMPER (ELEV AND PLAN)		EXHAUST FAN RISER NUMBER
		TURNING VANES	BR	BASEBOARD RADIATION
			S	REMOTE SENSOR
		EXTRACTOR		THERMOSTAT

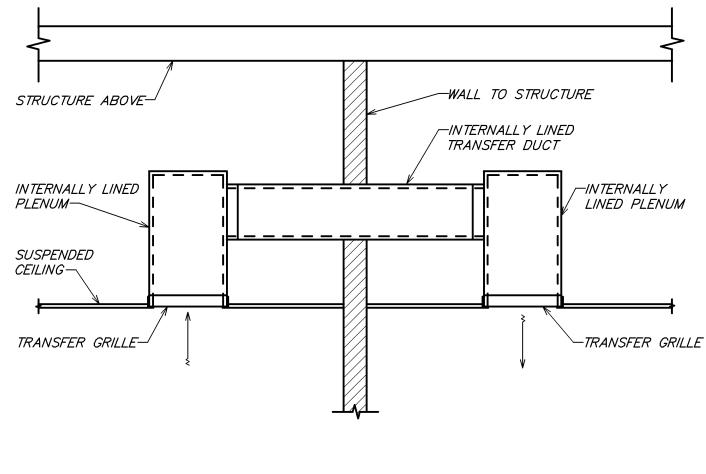
NOTE: 1. NOT EVERY SYMBOL ON THIS SCHEDULE APPEARS ON THIS PROJECT.

		REV DATE	DESCRIPTION	NAME			REGISTRATION SEA	
	PROJECT NO: 230311	1						
	DRAWN BY: SEI						PROFE	
	<u>CHECKED BY:</u> GRS					Date: 679	GR SCI	WAL
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	HVAC SC	HEDULES	HVAC SCHEDULES AND DETAILS			5801		



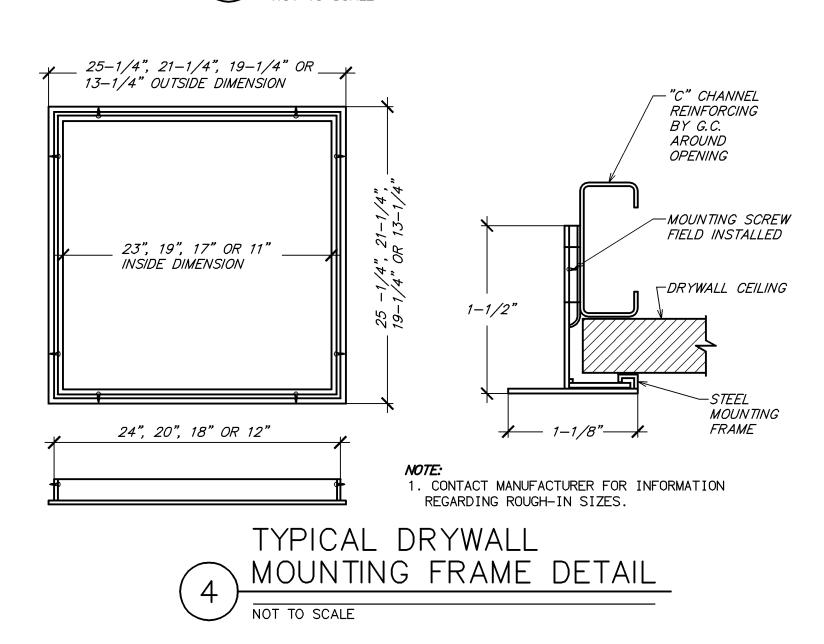






RETURN AIR TRANSFER NOT TO SCALE

5



MAXIMUM HALF OF	PAIR AT 10 FT. SPA		PAIR AT 8 FT. SPAC		PAIR AT 5 FT. SPAC		PAIR AT 4 FT. SPAC		
DUCT PERIMETER	STRAP	WIRE/ ROD	STRAP	WIRE/ ROD	STRAP	WIRE/ ROD	STRAP	WIRE/ ROD	
$\frac{P}{2} = 30"$	1" × 22 GA.	10 GA. (.135")	1" × 22 GA.	10 GA. (.135")	1" x 22 GA.	12 GA. (.106")	1" x 22 GA.	12 GA. (.106")	
$\frac{P}{2} = 72"$	1" x 18 GA.	3/8"	1" x 20 GA.	1/4"	1" x 22 GA.	1/4"	1" x 22 GA.	1/4"	
$\frac{P}{2} = 96"$	1" × 16 GA.	3/8"	1" x 18 GA.	3/8"	1" × 20 GA.	3/8"	1" x 22 GA.	1/4"	
$\frac{P}{2} = 120"$	1 1/2" x 16 GA.	1/2"	1" x 16 GA.	3/8"	1" x 18 GA.	3/8"	1" x 20 GA.	1/4"	
$\frac{P}{2} = 168"$	1 1/2" x 16 GA.	1/2"	1 1/2" × 16 GA.	1/2"	1" x 16 GA.	3/8"	1" x 18 GA.	3/8"	
$\frac{P}{2} = 192" \qquad \qquad 1/2" \qquad 1 \ 1/2" \times 16 \ \text{GA.} \qquad 1/2" \qquad 1" \times 16 \ \text{GA.} \qquad 3/8" \qquad 1" \times 16 \ \text{GA.} \qquad 3/8$									
$\frac{P}{2} = 193" UP$ SPECIAL ANALYSIS REQUIRED									
WHEN STRAPS ARE LAP JOINED SINGLE HANGER MAXIMUM ALLOWABLE LOAD									
USE THESE MINIMUM FASTENERS: STRAP WIRE OR ROD (DIA.)									
1" x 16 GA. 1" x 16 GA.	1" x 18, 20, 22 GA TWO #10 OR ONE 1/4" BOLT 1" x 22 GA 260 LBS. 0.106" - 80 LBS. 1" x 16 GA TWO 3/8" DIA. 1" x 20 GA 320 LBS. 0.106" - 100 LBS. 1" x 18 GA TWO 3/8" DIA. 1" x 18 GA 420 LBS. 0.162" - 160 LBS. PLACE FASTENERS IN SERIES, NOT SIDE BY SIDE. 1" x 16 GA 700 LBS. 1/4" - 270 LBS. 1 1/2" x 16 GA 1100 LBS. 3/8" - 680 LBS. 1/2" - 1250 LBS. 3/4" - 3000 LBS. 3/4" - 3000 LBS.								
 NOTES: 1. DIMENSIONS OTHER THAN GAUGE ARE IN INCHES. 2. TABLES ALLOW FOR DUCT WEIGHT, 1 LB./SF INSULATION WEIGHT AND NORMAL REINFORCEMENT AND TRAPEZE WEIGHT, BUT NO EXTERNAL LOADS. 3. STRAPS ARE GALVANIZED STEEL; OTHER MATERIALS ARE UNCOATED STEEL. 4. ALLOWABLE LOADS FOR P/2 ASSUME THAT DUCTS ARE 16 GA. MAXIMUM, EXCEPT THAT WHEN MAXIMUM DUCT DIMENSION (W) IS OVER 60" THEN P/2 MAXIMUM IS 1.25 W. 5. 12, 10 OR 8 GA. WIRE IS STEEL OF BLACK ANNEALED, BRIGHT BASIC OR GALVANIZED TYPE. 6. DUCTS SHALL BE SUPPORTED AT INTERVALS NOT EXCEEDING 10 FEET. 									

NOT TO SCALE

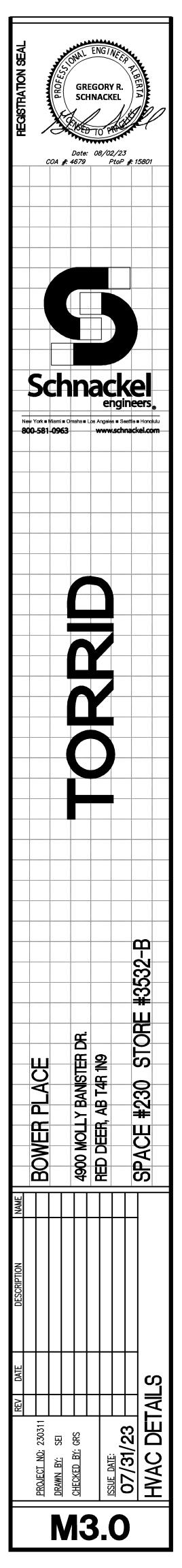
TYPICAL DIFFUSER CONNECTION

NOT TO SCALE

2

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RECTANGULAR DUCT HANGER TABLE



SECTION 230000 - HVAC GENERAL CONDITIONS

PART 1 GENERAL

1.01 APPLICABILITY

- This section supplements all sections of the Specifications for Division 23 and shall apply to all phases of work hereinafter specified, shown on the Drawings, or required to provide a complete installation of approved HVAC systems. 1.02 DEFINITIONS
 - A. "Work" is hereby defined as, "The construction and services required by the Contract Documents whether completed or partially completed and includes all labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The work may constitute the whole or a part of the project
 - "Furnish" is hereby defined as, "To supply and deliver, unload, and inspect for "Install" is hereby defined as, "To unpack, assemble, erect, apply, place, finish,
 - cure, protect, clean, connect, and place into operation into the work. "Provide" is hereby defined as, "To furnish and install
 - "Connect" is hereby defined as, "To bring service to the equipment and make final
 - attachment including necessary ductwork, piping, wiring, etc. "Concealed" is hereby defined as, "Hidden from sight in chases, furred spaces
 - shafts, hung ceilings, embedded in construction, in crawl spaces, or buried. "Exposed" is hereby defined as, "Not installed underground nor concealed as defined by the Specifications.
 - "Drawings" is hereby defined as, "All plans, details, equipment schedules, diagrams, sketches, etc. issued for the construction of the work."
- 1.03 CODES AND STANDARDS Perform work in accordance with the applicable Building Code, Electrical Code, Fire Code, Mechanical Code, Plumbing Code, Energy Code, and all other applicable codes, amendments, and ordinances. Also perform all work in accordance with the Americans
 - with Disabilities Act (ADA) and the Authority Having Jurisdiction (AHJ) including Fire Marshal(s). Perform work in accordance with Landlord requirements, including any Tenant
 - riteria Manuals and Lease Exhibits, where applicable. Perform work in accordance with the applicable utility companies serving the
 - project. Make all arrangements with the utility companies for proper coordination of the work. Recognized Standards: Design, manufacture, testing and method of installation of D.
- all apparatus and materials furnished under the requirements of these Specifications shall conform to the latest publications or standard rules of Underwriters Laboratories, Inc. (U.L.), American Society for Testing and Materials (ASTM), American National Standards Institute (ANSI), and National Electrical Code (NEC), National Fire Protection Association (NFPA), American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), and the Sheet Metal and Air Conditioning Contractors' National Association (SMACNA)
- Ε. The Contract Documents shall take precedence where the Contract Documents exceed code, Landlord, utility, or recognized standards requirements. 1.04 PERMITS AND FEES
- Permits, licenses, fees, inspections and arrangements required for the work under this Contract shall be obtained by the Contractor at his expense, unless otherwise indicated.
- 1.05 CONTRACT DRAWINGS
 - The Contractor is responsible to obtain, fully understand, and coordinate the work with the complete set of Contract Documents. Any required corrections, including all associated costs, arising from issues caused by the Contractor's failure to understand and/or coordinate the work with the complete set of Contract Documents are the Contractor's sole responsibility.
 - Work under these sections is diagrammatic unless indicated otherwise and is intended to convey the scope of work and indicate the general arrangement of ductwork, piping, equipment, and accessories. Follow these drawings in laying out the work and verify spaces for the installation of these materials and equipment. Wherever a question exists as to the exact intended location of ductwork, piping, or equipment, obtain instructions from the Architect before proceeding with the
 - Notify the Architect for resolution if a discrepancy is discovered within the С. Contract Documents. Failure of the Contractor to notify the Architect of discrepancies shall result in the resolution becoming the Contractor's responsibility and subject to the Architect's review and possible rejection Should the Architect reject a discrepancy resolution of which they were not notified, the Contractor is fully responsible to correct the installation, including all associated costs, until approval of the installation is given by the
- Architect 1.06 EXISTING CONDITIONS
- Verify all existing conditions prior to beginning work. Any existing conditions indicated in the Contract Documents are based on information drawings provided by others and possibly limited field verification. The Contractor shall adjust for actual field conditions at no additional expense to
- the Owner. The Contractor shall visit the project site, review existing conditions against the Contract Documents, and familiarize himself with the work prior to bidding and start of the work. By signing the Contract, the Contractor acknowledges the site
- visit has been completed and the existing conditions are accepted. The Contractor shall notify the Architect of major discrepancies in writing so the appropriate modifications to the design can be made without delay to the project. The Contractor assumes full responsibility of adjusting for discrepancies of which the Architect is not informed.
- 1.07 SUBMITTALS A. Shop Drawings
 - Furnish the following submittals to the Architect for review by the Engineer: Provide product data and shop drawings for vibration isolation.
 - Provide balancing firm qualifications and final test report for Testing, Adjusting, and Balancing.
 - Provide product data for duct insulation Provide product data for grease duct fireproofing (if specified).
 - Provide product data for HVAC piping insulation.
 - Provide product data and shop drawings for HVAC ductwork. Provide product data for air duct accessories.
 - Provide product data and shop drawings for HVAC power ventilators. Provide product data and shop drawings for air outlets and inlets.
 - Provide product data and shop drawings for packaged rooftop units. Submittals other than those listed above will not be reviewed and will be
 - returned stating as such. Shop drawings shall be prepared by a manufacturer's representative, and shall contain names of the manufacturer and cut sheets of equipment to be used on the project. Use manufacturer's specification sheets identified by number indicated on drawings or schedules. Indicate catalog number on the cut sheets. As applicable, provide construction data, weight and dimensional
 - data, voltage ratings, performance data, listing data, pump curves, fan curves and sound data as part of the shop drawing submittal. Submittals are reviewed only for general compliance with the Contract Documents. Dimensions, quantities and details are not checked during submittal review. Review of the submittals does not relieve the Contractor of the responsibility for providing all materials, equipment and accessories necessary for a complete and operational system meeting the requirements of
 - the project and the intent of the Contract Documents. The responsibility for coordination of substituted materials and equipment lies solely with the substituting Contractor. Electrical Characteristics: Verify that proper power supply is available 5. prior to ordering equipment. Verify proper voltage, phase and current rating of power supply and inform Engineer of any deviations prior to order, connection of equipment or start-up. Responsibility for verification of
 - proper power supply voltage and any product returns or damage resulting from incorrect connections shall rest with this Contractor. Test Reports: Provide Testing, Adjusting, and Balancing (TAB) and Commissioning reports to the Architect for review by the Engineer. All other reports shall be provided to the Owner.
- 1.08 QUALITY ASSURANCE
- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five years experience. Installer Qualifications: Company specializing in performing the work of this section, with minimum five years experience. Products:
- Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated. All equipment and components shall be free of all rust/corrosion or any visible damage. All items not complying with this requirement shall be replaced without
- any change in the Contract amount. Equipment performance and accessories shall be as scheduled on the Drawings and specified herein. Inclusion in both locations is not a prerequisite to inclusion in the Contract. Equipment and accessories specified in either location shall be included in the Contract. Provide all necessary accessories and connections as required for a complete, functional system, including all required components reasonably inferred to as necessary although such components may or may not be specifically indicated in the Contract Documents.
- F. Code or utility company requirements shall supersede any conflicting requirements of this section. 1.09 DELIVERY, STORAGE, AND HANDLING
- Rooftop Equipment: Protect units from physical damage by storing off site until roof mounting curbs are in place, ready for immediate installation of units. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.
- Protect dampers and accessories from damage to operating linkages, blades and finishes
- D. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation. Protect motors stored on site from weather and moisture by maintaining factory covers and suitable weather-proof covering. For extended outdoor storage, remove motors from equipment and store separately.
- 1.10 WARRANTY AND GUARANTEE Submit manufacturer's warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.
 - Provide one year manufacturer warranty for pumps Provide three year manufacturers warranty for solid state ignition modules. Provide five year manufacturers warranty for compressors, heat exchangers,
 - condensing units, and electronic air cleaners.
- PART 2 PRODUCTS
- 2.01 SUBSTITUTIONS
 - The manufacturers listed are listed to set minimum standards for quality, design, and functionality. The products of other manufacturers may be submitted. at the Contractor's option, during shop drawing review unless indicated otherwise. The products of other manufacturers shall meet or exceed all requirements of the Contract Documents. The Contractor accepts all responsibility for costs and coordination issues arising out of the substitution of materials or equipment, and the coordination of such substitutions with all other contractors and subcontractors.
 - The Contractor may use any of the following ductwork, piping or insulation

materials at his option, provided the selected material meets with the approval of all State, local authorities and any utility company requirements. Verification of compliance of the selected material is the sole responsibility of the installing Contractor.

3.01 COORDINATION OF WORK

PART 3 EXECUTION

D.

Examine the Contract Documents as a whole for the work of other trades. Coordinate all work accordinal Promptly report to the Architect any delay or difficulties encountered in the installation of the work, which might prevent prompt and proper installation, or make it unsuitable to connect with or receive the work of others. Failure to so report shall constitute an acceptance of the work of other trades as being fit and

proper for the execution of this work. Plan, lay out, and coordinate the work with all trades well enough in advance so that it proceeds with a minimum of interference to work that has not been completed and work that is in progress. Inform all trades of openings required for the work and provide all special frames, sleeves, and anchor bolts required. The HVAC system layout may be altered to suit the conditions with engineer approval, prior to the installation of any work and without additional cost to the Owner Conflicts arising from lack of coordination shall be this Contractor's

responsibility Perform all work in conformity with the Contract Documents and afford other trades reasonable opportunity for the execution of their work. Properly connect and coordinate this work with the work of other trades at such time and in such a manner as not to delay or interfere with their work.

All roofing penetrations shall be flashed and weather sealed by the roofing manufacturer's authorized roofing contractor at this Contractor's expense. This Contractor shall contract with the factory authorized roofing contractor for the specific roofing system applicable to this Project. The use of an unauthorized roofing contractor may result in removal and replacement of the penetration systems at this Contractor's expense.

All temperature control wiring, thermostat wiring, damper interlock wiring, control panel interlock wiring and miscellaneous low voltage wiring associated with the equipment furnished or installed under this contract shall be furnished and installed by the mechanical contractor or his sub-contractor. All wiring installed under this contract shall be in full compliance with the National Electrical Code, all State and local codes and requirements of the Electrical Specifications for this project. 3.02 EXAMINATION

> Verify field measurements are as indicated on the Drawings. Verify all equipment locations prior to rough-in. Maintain adequate equipment service clearance per manufacturer and code. Verify routing of all ductwork and piping in field prior to fabrication or

installation. Verify adequate clearance with structure, light fixtures, and ceiling heights. Verify that proper fuel and power supply is available for connection.

3.03 INTERFACE WITH OTHER PRODUCTS Install all ductwork, pipe, equipment, and accessories to preserve fire resistance rating of partitions and other elements, using materials and methods specified. 3.04 FIELD QUALITY CONTROL

Provide tests as necessary to establish the adequacy, quality, safety, completed status, and suitable operation of each system. Tests shall be conducted under the supervision of the Architect 3.05 CLEANING AND REPAIR

> Clean fire suppression parts to remove harmful materials. Clean exposed surfaces of all ductwork pipe, equipment, and accessories of all dirt, debris, splatter, and other deleterious materials. Follow the manufacturer's recommendations for cleaning as applicable.

Repair or replace damaged ductwork, pipe, equipment, and accessories, as directed by and to the satisfaction of the Architect, where marring or disfigurement has occurred. All pipe, equipment, and accessories shall be new. 3.06 PROJECT CLOSEOUT

> Project Record Documents: At project closeout, provide one printed copy and one electronic copy of the project record documents to the Owner. Record documents will not be reviewed by the Engineer

Record Drawings: Information contained on project record drawings shall include, as a minimum: Actual locations of all equipment, ductwork, air inlets/outlets, accessories,

Actual routing of ductwork with sizes and elevations. Actual locations of control devices including valves and volume dampers. Operation and Maintenance Data: Provide descriptive literature, maintenance and operation data for all hvac equipment, control systems, accessories, and materials used. Include maintenance procedures, intervals, and parts list of each item installed under this contract. Include all manufacturer's guarantees and

warranties Maintenance Materials: At project closeout, furnish to the Owner the following: One set of replacement filters for all hvac equipment. The maintenance contract for the hvac system, if applicable.

Test Reports: Submit to the Owner all testing reports. END OF SECTION

SECTION 230501 - MECHANICAL DEMOLITION

1.01 SECTION INCLUDES

A. Mechanical demolition PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

Materials and equipment for patching and extending work: As specified in individual sections of the architectural specifications.

3.01 EXAMINATION

PART 1 GENERAL

PART 3 EXECUTION

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PART 1 GENERAL

PART 2 PRODUCTS

The demolition work indicated on the Drawings is intended to convey the scope of the demolition work involved. Remove all items shown hatched on the Drawings including all miscellaneous appurtenances and accessory items. Remove all incidental items not necessary for the completion of the new work and systems. Cap

all remaining openings in existing systems. Verify field measurements and piping or duct arrangements are as shown on Drawings. Verify that abandoned piping and equipment serve only abandoned facilities. Demolition drawings are based on casual field observation and existing record

documents when available. The existing buildings, structure and utility information indicated on the Drawings are based on as-built information and/or survey documents provided by the Owner. The Contractor shall adjust for minor field variations without additional expense to the project. If major discrepancies are found the Contractor shall advise the Engineer of such deviations in writing so that the appropriate modifications to the design can be made without delay to the Project. Beginning of demolition means installer accepts existing conditions.

3.02 PREPARATION Disconnect mechanical systems in walls, floors, and ceilings to be removed. Coordinate utility service outages with utility company and the Owner.

Provide temporary piping, duct and connections to maintain existing systems in service during construction as required for the sequencing of the work or the Owner's need for continued operations. When work must be performed on active

equipment or systems, use personnel experienced in such operations. Existing Utility Services: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Minimize outgae duration.

Obtain permission from Owner at least 48 hours before partially or completely disabling system. Make temporary connections to maintain service in areas adjacent to work

3.03 DEMOLITION AND EXTENSION OF EXISTING MECHANICAL WORK Remove, relocate, and extend existing installations to accommodate new

construction. Remove abandoned systems to source of supply.

Remove exposed abandoned pipe and ductwork, including abandoned items above accessible ceiling finishes. Cut pipes or ducts flush with walls and floors, and batch surfaces

Disconnect abandoned outlets and remove equipment. Remove abandoned equipment if systems servicing them is abandoned and removed. Disconnect and remove all abandoned mechanical equipment.

Disconnect and remove mechanical devices and equipment serving utilization equipment that has been removed

Repair adjacent construction and finishes damaged during demolition and extension Maintain access to existing installations which remain active. Modify installation or provide access panel as appropriate.

Extend existing installations using materials and methods compatible with the existing systems and materials as specified and required by code. 3.04 CLEANING AND REPAIR

Clean and repair existing materials and equipment which remain or are to be reused. Provide new components or parts as required to restore operating conditions. END OF SECTION

SECTION 230548 - VIBRATION AND SEISMIC CONTROLS FOR HVAC PIPING AND EQUIPMENT

1.01 SECTION INCLUDES Vibration isolators.

Equipment: Fans, axial and centrifuaal Packaged roof top equipment

1.02 SUBMITTALS A. Product Data: Provide schedule of vibration isolator type with location and load on each.

2.01 MANUFACTURERS A. Isolation Technology, Inc.; Kinetics Noise Control, Inc.; Mason Industries. 2.02 VIBRATION ISOLATORS

Restrained Open Spring Isolators: Springs: Minimum horizontal stiffness equal to 75 percent vertical stiffness, with working deflection between 0.3 and 0.6 of maximum deflection. Color code springs for load carrying capacity.

- Rubber or neoprene waffle pads.
- Hardness: 30 durometer Thickness Minimum 1/2 inch
- Maximum Loading: 50 psi. Rib Height: Maximum 0.7 times width.
- Configuration: Single layer Rubber Mount or Hanger: Molded rubber designed for 0.4 inch deflection with

D. threaded insert. E. Glass Fiber Pads: Neoprene jacketed pre-compressed molded glass fiber.

PART 3 EXECUTION

3.01 INSTALLATION

- Install in accordance with manufacturer's instructions. On closed spring isolators, adjust so side stabilizers are clear under normal
- operating conditions. с. Prior to making piping connections to equipment with operating weights
- substantially different from installed weights, block up equipment with tempor shims to final height. When full load is applied, adjust isolators to load to allow shim removal Support piping connections to equipment mounted on isolators using isolators of
- resilient hangers to nearest flexible pipe connector. Provide flexible connections on all piping and ductwork connections to equipme Refer to other sections of this Specification for the acceptable types of flex
- connectors to be used. Selection of type, thickness and deflection of vibration isolation shall be by vibration control manufacturer based on the specific equipment type and size, scheduled on the Drawings and indicated below.
- 3.02 SCHEDULES Equipment Isolation Schedule: (Minimum deflection as sized by the isolation equipment manufacturer.
 - Fans, axial and centrifugal. a. Small fans up to 22" diameter wheel
 - Rubber Mount or Hanger
 - Packaged roof top equipment. Above grade roof structures:
 - Ďase: Roof Curb.
 - Isolation: Full perimeter Neoprene Pad between curb and unit Provide restrained spring vibration isolation curbs when indicated on the Drawings

END OF SECTION

SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 GENERAL

- 1.01 SECTION INCLUDES Testing, adjustment, and balancing of air systems. Air handling units; Packaged heating and/or cooling equipment; Fans. (E and supply); Coils; Terminal equipment; Air inlets and outlets. (Diffuse grilles, louvers, etc.) Measurement of final operating condition of HVAC systems. Independent agency requirements. 1.02 SUBMITTALS
- Qualifications: Submit name of adjusting and balancing agency and TAB supervi for approval within 30 days after award of Contract. Provide TAB Agency gualifications Final Report: Indicate deficiencies in systems that would prevent proper test
- adjusting, and balancing of systems and equipment to achieve specified performance. Submit to the Construction Manager within two weeks after completion of
- testing, adjusting, and balancing. Provide reports in bound manuals, complete with index page and indexing with cover identification at front and side. Include set of reduced dro
- with air outlets and equipment identified to correspond with data sheets indicating thermostat and equipment locations Include actual instrument list, with manufacturer name, serial number, o date of calibration.
- Form of Test Reports: Where the TAB standard being followed recommends report format use that; otherwise, follow ASHRAE Std 111.
- Include the following on the title page of each report: Name, address and telephone number of Testing, Adjusting, and Bala α.
- Project: Name; location; Engineer; Contractor, Report date. Ь.

1.03 WARRANTY The Balancing Contractor shall be prepared to return to the site at no additic cost to re-adjust air quantities as required to provide uniform temperatures, eliminate drafts and objectionable noises during the first year of occupancy, including one full heating and one full cooling season, after the acceptance of final balancing report.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- A. Perform total system balance in accordance with one of the following: AABC MN-1, AABC National Standards for Total System Balance.
- ASHRAE Std 111. Practices for Measurement. Testing. Adjusting and Balance of Building Heating, Ventilation, Air-Conditioning, and Refrigeration
- Svstems NEBB Procedural Standards for Testing Adjusting Balancing of Environment
- SMACNA HVAC Systems Testing, Adjusting, and Balancing.
- Begin work after completion of systems to be tested, adjusted, or balanced and
- complete work prior to Substantial Completion of the Project. Where HVAC systems and/or components interface with life safety systems, inclu fire and smoke detection, alarm, and control, coordinate scheduling and testin inspection procedures with the authorities having jurisdiction.
- D. TAB Agency Qualifications: Company specializing in the testing, adjusting, and balancing of systems
 - specified in this Section with a minimum of five years experience. Certified by one of the following: AABC, Associated Air Balance Council; upon completion submit AABC α. National Performance Guaranty.
 - NEBB, National Environmental Balancing Bureau. TABB, The Testing, Adjusting, and Balancing Bureau of National Ene
 - Management Institute. The TAB Agency must be a completely independent, third party balancing contractor with no financial, common owners or other ties to the instal

contractors. TAB Supervisor and Technician Qualifications: Certified by same organization

TAB agency. 3.02 ADJUSTMENT TOLERANCES A. Air Handling Systems; Air Outlets and Inlets; Hydronic Systems: Adjust to wit

- plus or minus 15 percent of design. 3.03 RECORDING AND ADJUSTING Permanently mark settings of valves, dampers, and other adjustment devices all
- settings to be restored. Set and lock memory stops. Mark on the Drawings the locations where traverse and other critical measureme were taken and cross reference the location in the final report. 3.04 AIR SYSTEM PROCEDURE

3.06 MINIMUM DATA TO BE REPORTED

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3.05 SCOPE

 Spring Nourts: Provide with leveling devices, minimum 0.25 inch thick needer needers can be added to a line chromostapidate branches. Spring Mourts: Spring of minimum deflection of 0.05 inch meet requirements for meeting of human britantial freese and line it 75 percent vertical thirds are set. Int diperd getworks that it for the set of the set o	<u</u	
 Perform total system balance in accordance with one of the following: AABC MN-1, AABC National Standards for Total System Balance. ASHRAE Std 111, Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning, and Refrigeration Systems. NEBB Procedural Standards for Testing Adjusting Balancing of Environmental Systems. SMACNA HVAC Systems Testing, Adjusting, and Balancing. 	 Provide with or without standard vapor barrier jacket. Insulate fittings and joints. Where service access is required, bevel and seal ends of insulation. External Duct Insulation Application: Secure insulation with vapor barrier with wires and seal jacket joints with vapor barrier adhesive or tape to match jacket. Secure insulation without vapor barrier with staples, tape, or wires. Install without sag on underside of duct. Use adhesive or mechanical 	

1.05	FIELD A.	CONDITIONS Do not install duct sealants when temperatures are less than those recommended by sealant manufacturers.		1 GENE	
	В.	Maintain temperatures within acceptable range during and after installation of duct sealants.	1.01	A. B. C.	Air tu Volume Flexit
	2 PRO		DADT	D.	Duct o
2.01	MATER A. B. C.	Galvanized Steel Ducts: Hot-dipped galvanized steel sheet, ASTM A 653/A 653M FS Type B, with G90/Z275 coating. Steel Ducts: ASTM A 1008/A 1008M, Designation CS, cold-rolled commercial steel. Aluminum Ducts: ASTM B 209 (ASTM B 209M); aluminum sheet, alloy 3003-H14.		2 PROI AIR TU A. B.	
	D.	Aluminum Connectors and Bar Stock: Alloy 6061-T651 or of equivalent strength. Insulated Flexible Ducts: 1. The Contractor may use any of the following ductwork materials, at his option, provided the selected material meets with the approval of all State,	2.02	VOLUME A.	constr
		 local authorities and utility company requirements. Verification of compliance of the selected ductwork material is the sole responsibility of the installing Contractor. Two ply vinyl film supported by helically wound spring steel wire; fiberglass 		В. С. D.	Fabric Flexib Single Multi-
		insulation; aluminized vapor barrier film. a. Pressure Rating: 10 inches WG positive and 1.0 inches WG negative. b. Maximum Velocity: 4000 fpm.			x 72 i channe End Be
		c. Temperature Range: -10 degrees F to 160 degrees F. d. Minimum R-Value: 4.2 or greater as required by the applicable energy codes.		F.	On mul bearin The co
		 Black polymer film supported by helically wound spring steel wire; fiberglass insulation; aluminized vapor barrier film. a. Pressure Rating: 4 inches WG positive and 0.5 inches WG negative. b. Maximum Velocity: 4000 fpm. 			systen 1.
		c. Temperature Range: -20 degrees F to 175 degrees F. d. Minimum R-Value: 4.2 or greater as required by the applicable energy codes.			2.
		 Multiple layers of aluminum laminate supported by helically wound spring steel wire; fiberglass insulation; aluminized vapor barrier film. a. Pressure Rating: 10 inches WG positive and 1.0 inches negative. b. Maximum Velocity: 4000 fpm. 	2.03	FLEXIE A.	BLE DUC Fabric
		 c. Temperature Range: -20 degrees F to 210 degrees F. d. Minimum R-Value: 4.2 or greater as required by the applicable energy codes. 		В.	Flexib Flexib 1.
		 UL 181, Class 1, aluminum laminate and polyester film with latex adhesive supported by helically wound spring steel wire; fiberglass insulation; aluminized vapor barrier film. a. Pressure Rating: 10 inches WG positive and 1.0 inches WG negative. 	2.04	DUCT /	2. ACCESS
		 b. Maximum Velocity: 4000 fpm. c. Temperature Range: -20 degrees F to 210 degrees F. d. Minimum R-Value: 4.2 or greater as required by the applicable energy 		А. В.	Manufo Incorp Fabric
		codes. 6. UL 181, Class O, interlocking spiral of aluminum foil; fiberglass insulation; aluminized vapor barrier film.		C.	Flexit Fabric quick
		a. Pressure Rating: 8 inches WG positive or negative. b. Maximum Velocity: 5000 fpm. c. Temperature Range: —20 degrees F to 250 degrees F. d. Minimum R-Value: 4.2 or greater as required by the applicable energy		D.	insulc 1. 2. Access
	E.	Joint Sealers and Sealants: Non-hardening, water resistant, mildew and mold resistant.	PART	3 EXEC	
		 Type: Heavy mastic or liquid used alone or with tape, suitable for joint configuration and compatible with substrates, and recommended by manufacturer for pressure class of ducts. 	3.01	INSTAL A.	LATION Instal follow
		 VOC Content: Not more than 250 g/L, excluding water. Surface Burning Characteristics: Flame spread of zero, smoke developed of zero, when tested in accordance with ASTM E 84. For Use With Flexible Ducts: UL labeled. 		В.	constr Provic coils, damper
		 Ductwork Exposed to the Weather: Hard cast VersaGrip 102, (VG-102), UL 181-AM compliant duct joint sealer, as manufactured by Carlisle, with fiberglass scrim tape reinforcement on all seams and joints, lateral and 		c.	access inch f
0.00	F.	longitudinal. Hanger Rod: ASTM A 36/A 36M; steel; threaded both ends, threaded one end, or continuously threaded. DRC FURIALIAN			avoid contro inch s
2.02	A.	ORK FABRICATION Fabricate, support and seal in accordance with SMACNA HVAC Duct Construction Standards — Metal and Flexible, and as indicated. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.		D.	Provid fabrid Provid branch
	В.	Construct T's, bends, and elbows with radius of not less than 1-1/2 times width of duct on centerline. Where not possible and where rectangular elbows must be used, provide turning vanes. Where acoustical lining is indicated, provide turning vanes		E.	minimu Provid regard
	c.	of perforated metal with glass fiber insulation. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees		F.	regist from t At far
	D.	convergence downstream. Fabricate continuously welded round and oval duct fittings two gages heavier than duct gages indicated in SMACNA Standard. Joints shall be minimum 4 inch cemented slip joint, brazed or electric welded. Prime coat welded joints.		G.	connec At equ immedi
	E. F.	Provide standard 45 degree lateral wye takeoffs unless otherwise indicated where 90 degree conical tee connections may be used. Where ducts are connected to exterior wall louvers and duct outlet is smaller than			
2.03		louver frame, provide blank—out panels sealing louver area around duct. Use same material as duct, painted black on exterior side; seal to louver frame and duct. MANUFACTURERS	PART	1 GENE	ERAL
2.04	A. MANUF A.	Metal-Fab, Inc.; SEMCO Incorporated; United McGill Corporation. ACTURED METAL DUCTWORK AND FITTINGS Manufacture in accordance with SMACNA HVAC Duct Construction Standards – Metal and Flexible, and as indicated. Provide duct material, gages, reinforcing, and sealing	1.01	SECTIO A.	ON INCL Cabine
	в.	for operating pressures indicated. Round Spiral Ducts: Machine made from round spiral lockseam duct with light reinforcing corrugations; fittings manufactured of at least two gages heavier metal		2 PROE MANUF/	ACTUREF
	C.	than duct. Double Wall Insulated Round Ducts: Round spiral lockseam duct with galvanized steel outer wall, 1 inch thick fiberglass insulation, perforated galvanized steel inner wall; fitting with solid inner wall.	2.02	A. POWER A.	Greenh VENTIL Perfor Certif
	D.	Transverse Duct Connection System: SMACNA "E" rated rigidly class connection, interlocking angle and duct edge connection system with sealant, gasket, cleats, and corner clips.		В. С.	Sound Rating Fabric
			2.03	D. CABINE	
3.01	EXAMI A.	NATION Examine drawings for the Architectural, Structural, Electrical and all other trades prior to preparation of ductwork shop drawings and prior to the fabrication of any ductwork		A.	Centri with c discho
	B. C.	ductwork. Resolve any conflicts encountered with the Engineer prior to fabrication. Identify on ductwork shop drawings any deviations in sizes or shapes made necessary by the obstructions of other trades.		В. С. D.	Discor Grille specif Backdr
3.02	INSTA A. B.	LLÁTION Install in accordance with manufacturer's instructions. Duct sizes indicated are inside clear dimensions. For lined ducts, maintain sizes		E.	offset Sheave variat
	C. D.	inside lining. Install and seal metal and flexible ducts in accordance with SMACNA HVAC Duct Construction Standards – Metal and Flexible. Provide openings in ductwork where required to accommodate thermometers and	₽∆DT	3 EXEC	with s bearir CUTION
		controllers. Provide pilot tube openings where required for testing of systems, complete with metal can with spring device or screw to ensure against air leakage. Where openings are provided in insulated ductwork, install insulation material		INSTAL A.	_LATION Instal
	E. F.	inside a metal ring. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities. Use crimp joints with or without bead for joining round duct sizes 8 inch and		В. С.	Provid projed Hung (1.
	F. G. H.	smaller with crimp in direction of air flow. Use double nuts and lock washers on threaded rod supports. Connect flexible ducts to metal ducts with draw bands.			2.
	I. J.	Support flexible duct runs every five feet in the horizontal direction to avoid dips and sags. Connect terminal units to supply ducts with one foot maximum length of flexible		D.	Provic indicc
	К.	duct. Do not use flexible duct to change direction. Connect diffusers to low pressure ducts directly or with 5 feet maximum length of flexible duct held in place with strap or clamp. Longer duct lengths are acceptable if depicted on the design drawings and allowed per local code. A			
	L.	maximum of one 90 degree bend, or equivalent, will be allowed in flexible duct runs. During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.		1 GENE	
	Μ.	All exposed ducts in finished areas must be completely free from all dents or imperfections in the galvanized coating and shall be sealed CAREFULLY AND NEATLY with duct sealer completely contained within the joint. Duct wrap will not be		A. B. C.	Rectar Grid a Wall r
3.03	CLEAN A.	permitted in exposed locations. ING Clean duct system and force air at high velocity through duct to remove accumulated	1.02	SUBMI ⁻ A.	TTALS Produc outlet
3.04	SCHED	dust or clean with high power vacuum machines. To obtain sufficient air, clean half the system at a time. Protect equipment which may be harmed by excessive dirt with temporary filters, or bypass during cleaning. ULES	1.03	QUALI ⁻ A.	Submit access TY ASSU Test c
5.04	A. B.	Ductwork Material: The Contractor may use any of the following ductwork materials, at his option, provided the selected material meets with the approval of all State, local	1.04	A. B. C. QUALIF	Test c Code r ICATIC
		authorities and utility company requirements. Verification of compliance of the selected piping material is the sole responsibility of the installing Contractor. 1. Low Velocity Supply (Heating Systems): Galvanized Steel, Aluminum.		Ă.	Manuf o produc experi
		 Low Velocity Supply (System with Cooling Coils): Galvanized Steel, Aluminum. Return and Relief: Galvanized Steel, Aluminum. General Exhaust: Galvanized Steel, Aluminum. Outside Air Intake: Galvanized Steel. 		2 PROE	
	C.	Ductwork Pressure Class: 1. Low Velocity Supply (Heating Systems): Scheduled System ESP+0.25", round up to next higher pressure class.			Titus; Greenh
		 Low Velocity Supply (Systems with Cooling): Scheduled System ESP +0.5", round up to next higher pressure class. Return and Relief: 1 inch. 	_	Α.	Type: diffus indico
		 General Exhaust: Scheduled System ESP +1.0", round up to next higher pressure class. Outside Air Intake: 1 inch. 		В. С.	Frame: ceilir plaste Fabric
		END OF SECTION		С. D.	Access

UDES turning devices/extractors.

ne control dampers. ble duct connections.

access doors.

DEVICES/EXTRACTORS acturers: Krueger; Ruskin Company; Titus.

-blade device with blades aligned in short dimension; steel or aluminum ruction; with individually adjustable blades, mounting straps. ROL DAMPERS

acturers: Louvers & Dampers, Inc.; Nailor Industries Inc.; Ruskin Company;

cate in accordance with SMACNA HVAC Duct Construction Standards - Metal and ible, and as indicated.

e Blade Dampers: Fabricate for duct sizes up to 6 x 30 inch. -Blade Damper: Fabricate of opposed blade pattern with maximum blade sizes 8 nch. Assemble center and edge crimped blades in prime coated or galvanized el frame with suitable hardware. earings: Except in round ducts 12 inches and smaller, provide end bearings. tiple blade dampers, provide oil-impregnated nylon or sintered bronze

contractor shall provide either a mechanical or electrical cable operated

m wherever dampers are located in non-accessible areas. Mechanical cable operator system shall be similar and equal to Young Regulator Company, "Bowden Cable Control" system including damper, flexible

cable with casing and concealed ceiling regulator control. Electrically operated damper control system shall be similar and equal to United Enertech Corporation, "Power Balance" system including motor operated

damper, RJ-11 plenum rated cabling and flush ceiling or wall mounted RJ-11 jack in remote plate. Include one hand held battery pack operator pack to be delivered to the Owner upon completion of the balancing. JCT CONNECTIONS

cate in accordance with SMACNA HVAC Duct Construction Standards - Metal and ible, and as indicated. ble Duct Connections: Fabric crimped into metal edging strip.

Fabric: UL listed fire-retardant neoprene coated woven glass fiber fabric to NFPA 90A, minimum density 30 oz per są yd. Net Fabric Width: Approximately 2 inches wide.

Netal: 3 inches wide, 24 gage thick galvanized steel.

acturers: Acudor Products Inc.; Nailor Industries Inc.; Ruskin Company; SEMCO porated.

cate in accordance with SMACNA HVAC Duct Construction Standards - Metal and ible, and as indicated. cation: Rigid and close-fitting of galvanized steel with sealing gaskets and fastening locking devices. For insulated ducts, install minimum 1 inch thick

ation with sheet metal cover. Less Than 12 inches Square: Secure with sash locks.

Up to 18 inches Square: Provide two hinges and two sash locks. doors with sheet metal screw fasteners are not acceptable.

I accessories in accordance with manufacturer's instructions, NFPA 90A, and w SMACNA HVAC Duct Construction Standards - Metal and Flexible. Duct ruction and pressure class.

de duct access doors for inspection and cleaning before and after filters, fans, automatic dampers, at fire dampers, combination fire and smoke

ers, and elsewhere as indicated. Provide minimum 8 x 8 inch size for hand 18 x 18 inch size for shoulder access, and as indicated. Provide 4 x 4 or balancing dampers only. Review locations prior to fabrication. e all dampers and control elements in accessible areas wherever possible to access doors. Provide ceiling access doors for access to all dampers and ol elements located above inaccessible ceiling areas. Provide minimum 12 x 12 size for hand access, 18 x 18 inch size for shoulder access, and as indicated. ide 4 x 4 inch for balancing dampers only. Review locations prior to

ide balancing dampers at points on supply, return, and exhaust systems where hes are taken from larger ducts as required for air balancing. Install num 2 duct widths from duct take-off

de balancing dampers on duct take-off to diffusers, grilles, and registers, dless of whether dampers are specified as part of the diffuser, grille, or ter assembly. Do not locate dampers closer than 5 feet or 10 duct diameters the air terminal device, whichever is greater.

ins and motorized equipment associated with ducts, provide flexible duct ections immediately adjacent to the equipment uipment supported by vibration isolators, provide flexible duct connections iately adjacent to the equipment

END OF SECTION

SECTION 233423 - HVAC POWER VENTILATORS

LUDES et and ceiling fans

heck; Loren Cook Company; PennBarry; CaptiveAire.

LATORS - GENERAL mance Ratings: Determined in accordance with AMCA 210 and bearing the AMCA ied Rating Seal Ratings: AMCA 301, tested to AMCA 300, and bearing AMCA Certified Sound a Seal

cation: Conform to AMCA 99. mpliance: UL listed and labeled, designed, manufactured, and tested as ble for the purpose specified and indicated.

CEILING FANS fugal Fan Unit: V-belt or direct driven with galvanized steel housing lined acoustic insulation, resilient mounted motor, gravity backdraft damper in

nnect Switch: Cord and plug in housing for thermal overload protected motor. e: Aluminum with baked white enamel finish or molded white plastic as ied on the Drawings. raft Damper: Gravity actuated, aluminum blade construction, felt edged with et hinge pin, nylon bearings, blades linked. ves: Cast iron or steel, dynamically balanced, bored to fit shafts and keyed;

able and adjustable pitch motor sheaves selected so required rpm is obtained sheaves set at mid-position; fan shaft with self-aligning pre-lubricated ball ings.

I in accordance with manufacturer's instructions. de sheaves required for final air balance at no additional expense to the

Cabinet Fans: Install fans with resilient mountings and flexible electrical leads. Install flexible connections specified between fan and ductwork. Ensure metal bands of connectors are parallel with minimum one inch flex between

ductwork and fan while running. ide gravity backdraft dampers on outlet from cabinet and ceiling fans and as

END OF SECTION

SECTION 233700 - AIR OUTLETS AND INLETS

UDES ingular ceiling diffusers. core exhaust and return grilles.

registers and grilles.

ict Data: Provide data for equipment required for this project. Review ts and inlets as to size, finish, and type of mounting prior to submission. schedule of outlets and inlets showing type, size, location, application, sories, and noise level.

and rate air outlet and inlet performance in accordance with ASHRAE Std 70. and rate louver performance in accordance with AMCA 500-L. requirements shall supersede any conflicting requirements of this Section. acturer Qualifications: Company specializing in manufacturing the type of ucts specified in this Section, with minimum five years of documented

Krueger; Price Industries; Nailor Industries Inc.; Hart & Cooley; Ruskin, CEILING DIFFUSERS

Square, adjustable pattern, stamped, multi-core, or architectural plaque ser to discharge air in 360 degree pattern with sectorizing baffles where ated.

e: Inverted T-bar type. In plaster ceilings, provide plaster frame and ing frame. (To allow lift-out removal of the diffuser without removal of the er frame. cation: Steel with baked enamel off-white finish.

sories: Opposed blade damper and multi-louvered equalizing grid with damper able from diffuser face 2.03 GRID CORE EXHAUST AND RETURN GRILLES Type: Fixed grilles of $1/2 \times 1/2 \times 1$ inch louvers.

Fabrication: Aluminum with factory off-white enamel finish. Frame: 1-1/4 inch margin with countersunk screw mounting.

Frame: Channel lay-in frame for suspended grid ceilings where face size exceeds 18 D. x 18 inch. Damper (if specified on drawings): Integral, gang-operated, opposed blade type

with removable key operator, operable from face 2.04 WALL SUPPLY REGISTERS/GRILLES Type: Streamlined and individually adjustable blades, 3/4 inch minimum depth, 3/4

- inch maximum spacing with spring or other device to set blades, horizontal face, double deflection. Frame: 1-1/4 inch margin with countersunk screw mounting and gasket. Fabrication: Steel with 20 gage minimum frames and 22 gage minimum blades, steel and aluminum with 20 gage minimum frame, or aluminum extrusions, with factory
- off-white enamel finish. Damper: Integral, gang-operated opposed blade type with removable key operator,
- operable from face Rough Service: Provide front pivoted or welded in place blades, securely fastened
- to be immobile. PART 3 EXECUTION

- 3.01 INSTALLATION Install in accordance with manufacturer's instructions. Check location of outlets and inlets and make necessary adjustments in position to
- conform with architectural features, symmetry, and lighting arrangement Install diffusers to ductwork with air tight connection. Provide balancing dampers on duct take-off to diffusers, and grilles and registers,
- despite whether dampers are specified as part of the diffuser, or grille and register assembly.
- E. Paint ductwork visible behind air outlets and inlets matte black.

END OF SECTION

SECTION 237413 - PACKAGED OUTDOOR ROOF TOP UNITS - GAS FIRED - FOR REFERENCE ONLY PART 1 GENERAL

1.01 SECTION INCLUDES Packaged roof top units.

Thermostat controls. Roof mounting curb and base Economizer

PART 2 PRODUCTS

2.01 MANUFACTURERS A. Carrier Corporation; Trane Inc.; Lennox Industries; York; AAON Incorporated. 2.02 AIR CONDITIONING UNITS

- General: Roof mounted units having gas burner and electric refrigeration. Description: Self-contained, packaged, factory assembled and prewired, consisting of cabinet and frame, supply fan, heat exchanger and burner, controls, air filters, refrigerant cooling coil and compressor, dry bulb economizer and power exhaust fan where indicated on the Drawings, condenser coil and condenser fan. Electrical Characteristics: As scheduled on the Drawings.
- Disconnect Switch: Factory mount disconnect switch on equipment.
- 2.03 FABRICATION Cabinet: Steel with baked enamel finish, including access panels with screwdriver Α. operated flush cam type fasteners or doors with piano hinges with locking handles. Structural members shall be minimum 18 gage, with access doors or panels of minimum 20 gage.
 - Insulation: one inch thick neoprene coated glass fiber with edges protected from erosion. с. Heat Exchangers: Aluminized steel or stainless steel where indicated on the
 - Drawings, of welded construction. D. Supply Fan: Forward curved centrifugal type, resiliently mounted with V-belt drive, adjustable variable pitch motor pulley, and rubber isolated hinge mounted motor or direct drive as indicated. Isolate complete fan assembly. Fans for units with a mechanical cooling capacity greater than or equal to 65,000 Btu/h shall have not fewer than two stages of fan control.
- Air Filters: 2 inch thick disposable media in metal frames. Roof Mounting Curb: Galvanized steel, channel frame, insulated with gaskets, nailer strips. Provide roof curb of adequate height to provide a unit mounting height of 12" or greater above the top of the roof surface with the curb mounted to the building structure. Roof curb height must compensate for the roof insulation thickness to meet this requirement. Vibration Isolation Curb: Only when indicated on the Drawings.
- 2.04 BURNER Gas Burner: Induced draft or forced draft type burner with adjustable combustion air supply, pressure regulator, gas valves, manual shut-off, intermittent spark or glow coil ignition, flame sensing device, and automatic 100 percent shut-off
- Gas Burner Safety Controls: Energize ignition, limit time for establishment of flame, prevent opening of gas valve until pilot flame is proven, stop gas flow on ignition failure, energize blower motor, and after air flow proven and slight delay, allow gas valve to open. High Limit Control: Temperature sensor with fixed stop at maximum permissible
- setting, de-energize burner on excessive bonnet temperature and energize burner when temperature drops to lower safe value. Supply Fan Control: Temperature sensor sensing bonnet temperatures and independent
- of burner controls, with provisions for continuous fan operation. 2.05 EVAPORATOR COIL Provide copper tube aluminum fin coil assembly with galvanized drain pan and
- connection. Provide capillary tubes or thermostatic expansion valves for units of 6 tons capacity and less, and thermostatic expansion valves and alternate row circuiting for units 7.5 tons cooling capacity and larger
- 2.06 COMPRESSOR Provide hermetic or semi-hermetic compressors, 3600 rpm maximum, resiliently mounted with positive lubrication, crankcase heater, high and low pressure safety controls, motor overload protection, suction and discharge service valves and gage ports, and filter drier.
- Five minute timed off circuit to delay compressor start. Outdoor thermostat to energize compressor above 35 degrees F ambient.
- 2.07 CONDENSER COIL Provide copper tube aluminum fin coil assembly with subcooling rows and coil guard. Provide direct drive propeller fans, resiliently mounted with fan quard, motor overload protection, wired to operate with compressor.
- 2.08 MIXED AIR CASING Dampers: Provide outside, return, and relief dampers with damper operator and control package to automatically vary outside air quantity. Outside air damper to fail to closed position. Relief dampers may be gravity balanced. Gaskets: Provide tight fitting dampers with edge gaskets maximum leakage 5 percent
- at 2 inches pressure differential. Damper Operator: 24 volt with gear train sealed in oil.
- Damper Operator, Units 7.5 Ton Čooling Capacity and Larger: 24 volt with gear train sealed in oil with spring return on.
- Mixed Air Controls: Maintain selected supply air temperature and return dampers to minimum position on call for heating and above 75 degrees F ambient, or when ambient air temperature exceeds return air temperature. 2.09 INTEGRATED ECONOMIZER:
- Economizer shall be furnished and installed complete with outside air and relief dampers and controls. Provide low-leakage, opposed blade dampers
- Meet all leakage requirements of applicable energy code. Economizer shall be capable of introducing up to 100% outdoor air for minimum
- ventilation as well as free cooling. Damper actuator shall be electronic, fully modulating design.
- Economizer outdoor hood shall be pre-painted and fully integrated with the unit. Dry Bulb Control: Provide dry bulb sensor capable of measuring temperature of outdoor air and controlling economizer cut-in point at the most economical level. High level cutoff shall be set per applicable energy code.
- Provide economizer Fault Detection and Diagnostics (FDD). 2.10 WATER LEVEL MONITORING DEVICE:
- A water-level monitoring device shall be installed inside the primary drain pan. This device shall shut off the equipment served in the event that the primary drain becomes restricted. Devices installed in the drain line shall not be permitted. 2.11 OPERATING CONTROLS
- A. Provide low voltage, adjustable thermostat to control heater stages in sequence with delay between stages, compressor and condenser fan, and supply fan to maintain temperature setting.
- Include system selector switch (off-heat-auto-cool) and fan control switch (auto-on) The Mechanical Contractor shall provide all control wiring between thermostat
- and unit control panel and any required remote sensors. Locate thermostat in room as shown. Electric solid state microcomputer based room thermostat, located as
- indicated. Provide remote sensors when indicated on the Drawings. a. Room thermostat shall incorporate:

immediately prior to scheduled occupancy.

Set-up for four separate temperatures per day.

Automatic switching from heating to cooling.

one hour to 31 days.

b. Room thermostat display shall include:

Actual room temperature.

Programmed temperature.

Stage (heating or cooling) operation.

Mount units on factory built roof mounting curb providing watertight enclosure to

protect ductwork and utility services. Install roof mounting curb level. Install

roof mounting curb so that it bears on the building structure, not on top of the

roof deck or roofing materials. Provide restraints where required by local codes.

Install in accordance with manufacturer's instructions and NFPA 90A.

on-auto.

Time of day

Day of week

fan on.

6.

PART 3 EXECUTION

3.01 INSTALLATION

Short cycle protection.

Preferential rate control to minimize overshoot and deviation from set point Automatic Start Capabilities: Controls shall be capable of

Programming based on weekdays, Saturday and Sunday.

Instant override of set point for continuous or timed period from

Switch selection features including imperial or metric display, 12 or 24 hour clock, keyboard disable, remote sensor, fan

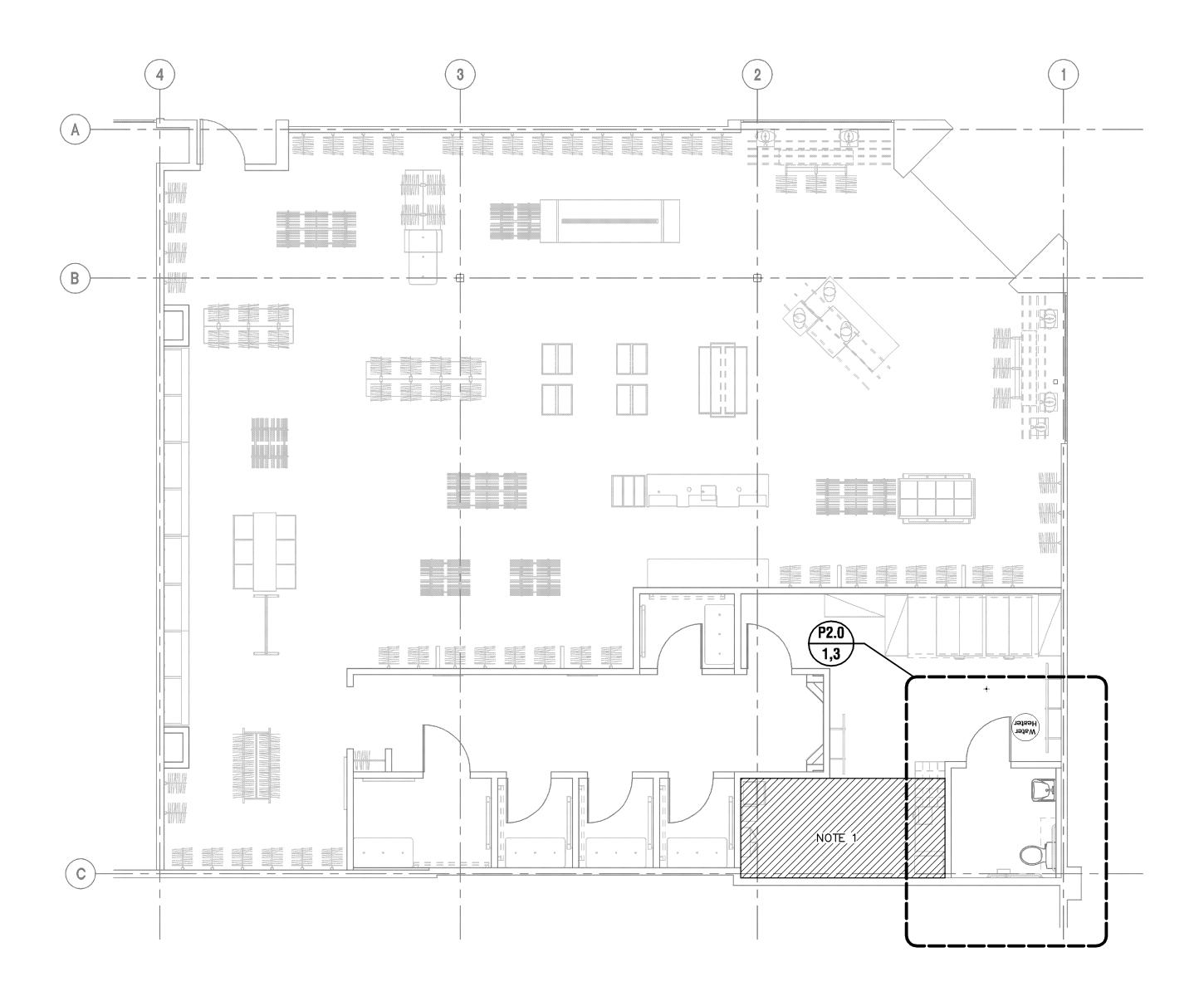
System mode indication: heating, cooling, auto, off, fan auto,

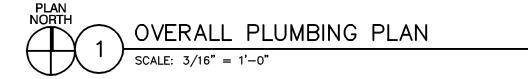
automatically adjusting the daily start time of the HVAC system in order to bring each space to the desired occupied temperature Provide cooling condensate drain piping (and overflow piping if required) to approved location. Condensate piping shall be Schedule 40 galvanized steel pipe, Type L copper tube, or PVC. Contractor shall verify the selected material meets with the approval of all State, local authorities and utility company requirements. Verification of compliance of the selected piping material is the sole responsibility of the installing Contractor.

Condensate piping located within the building shall be insulated with 1/2 inch thick glass fiber or flexible elastomeric cellular foam insulation. Only metallic piping systems will be allowed in return air plenum ceiling

END OF SECTION

space

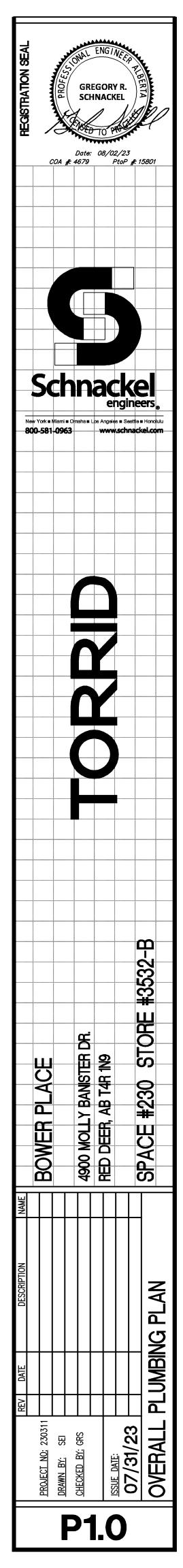


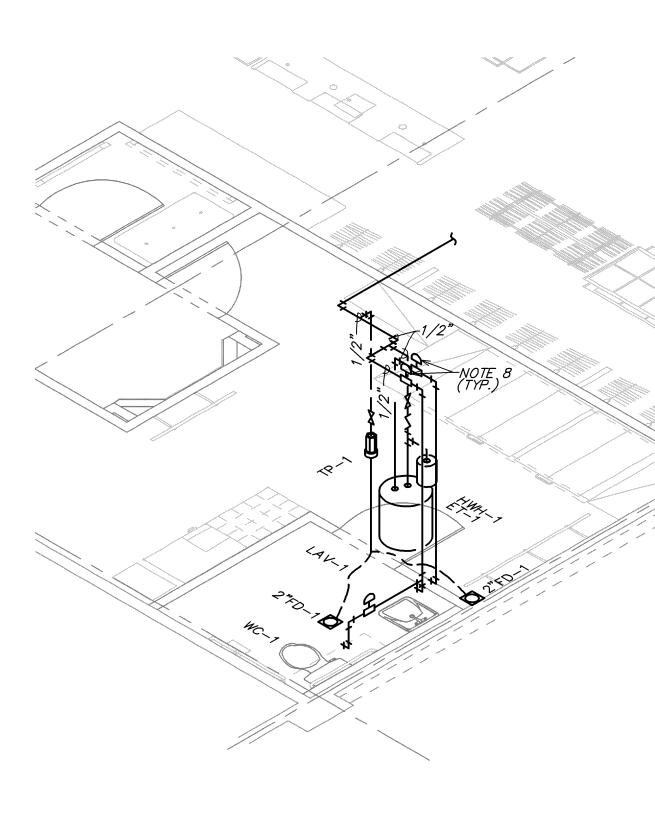


- GENERAL NOTES:
 A. THE EXISTING CONDITIONS ARE BASED ON "AS-BUILT" DRAWINGS AND/OR LIMITED FIELD VERIFICATIONS. THE CONTRACTOR SHALL ADJUST TO ACTUAL FIELD CONDITIONS AT NO ADDITIONAL EXPENSE TO THE PROJECT. NO ADDITIONAL COMPENSATION WILL BE PROVIDED FOR ANY EXTRAS DUE TO THE CONTRACTOR'S FAILURE TO VISIT THE PROJECT SITE AND/OR PREDETERMINATION OF EXISTING CONDITIONS PRIOR TO SUBMITTING THE BID. ANY DISCREPANCIES SHALL BE IMMEDIATELY REPORTED TO THE ARCHITECT/ENGINEER FOR RESOLUTION.
 B. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE INCIDENTAL DEMOLITION WORK PRIOR TO BIDDING AND COMMENCEMENT OF WORK. THE CONTRACTOR IS RESPONSIBLE FOR DEMOLITION OF ALL EXISTING EQUIPMENT AS REQUIRED FOR THE INSTALLATION/CONSTRUCTION OF NEW WORK.
 C. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH ALL APPLICABLE GOVERNMENTAL AND LOCAL CODE REQUIREMENTS.
- D. PROVIDE ACCESS PANELS AS REQUIRED TO ALLOW ACCESS TO VALVES, EQUIPMENT, ETC. LOCATED ABOVE INACCESSIBLE CEILINGS AND WALL CAVITIES. E. ALL SANITARY LINES AND PLUMBING FIXTURES ON THE PROJECT SHALL HAVE AN APPROVED MEANS OF SEWAGE BACKFLOW PREVENTION. FIXTURE SPECIFIC BACKFLOW PREVENTION INCLUDING AIR GAPS AND VACUUM BREAKERS ARE AN ACCEPTABLE MEANS OF BACKFLOW PREVENTION.
- F. PIPE SIZES INDICATED ON THE PLANS ARE MINIMUM. THE CONTRACTOR SHALL PROVIDE PIPE SIZES EQUAL TO OR GREATER THAN THE SPECIFIED SIZES. THE CONTRACTOR MAY INCREASE PIPE SIZES AS REQUIRED AT NO ADDITIONAL EXPENSE TO THE PROJECT.
 G. REFER TO THE PLUMBING FIXTURE SCHEDULE FOR INDIVIDUAL PLUMBING FIXTURE
- CONNECTION SIZE REQUIREMENTS. H. COORDINATE ALL SLAB PENETRATIONS WITH GENERAL CONTRACTOR PRIOR TO CONSTRUCTION. MAINTAIN A MINIMUM OF 2" CLEARANCE FROM THE EDGE OF THE
- SLAB OPENING TO ANY STRUCTURAL MEMBERS AND PIPES. I. SLEEVE OR CORE-DRILL FLOOR SLABS, WALLS, ETC. AS REQUIRED FOR PIPING AND FIRE-STOP OPENING AROUND PIPE. VERIFY LOCATION OF STRUCTURAL BEAMS,
- JOISTS, ETC. BEFORE DRILLING. J. THE CONTRACTOR SHALL OBTAIN A COPY OF THE LANDLORD'S TENANT CRITERIA MANUAL PRIOR TO BIDDING. THE TENANT CRITERIA MANUAL REQUIREMENTS SHALL BE INCLUDED IN THE CONTRACTOR CONTRACT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH THE LANDLORD REQUIREMENTS AT NO ADDITIONAL EXPENSE TO THE PROJECT.
- K. PROVIDE TEMPORARY COVERS, CAPS, OR PLUGS ON SANITARY SEWER SYSTEM THROUGHOUT THE DURATION OF CONSTRUCTION. RAG WADS, DUCT TAPE, OR OTHER SIMILAR METHODS OF TEMPORARY COVERS SHALL NOT BE UTILIZED. UPON COMPLETION OF CONSTRUCTION, COMPLETELY REMOVE ANY AND ALL OBSTRUCTIONS INSIDE THE ENTIRE SYSTEM BY SNAKING, RODING, OR JETTING THE SYSTEM IMMEDIATELY PRIOR TO PROJECT TURNOVER TO THE OWNER.
 L. ALL BELOW GRADE SANITARY LINES SHALL BE A MINIMUM OF 2" OR IN
- ACCORDANCE WITH LOCAL CODE REQUIREMENTS. M. SANITARY TEE FITTINGS SHALL NOT BE INSTALLED IN DRAIN, WASTE, AND VENT (DWV) SYSTEMS.
- N. INSTALL SANITARY PIPING 3" OR SMALLER AT A SLOPE OF 1/4" PER FOOT AND SANITARY PIPING 4" AND LARGER AT A SLOPE OF 1/8" PER FOOT.
 O. INSTALL SANITARY PIPING 2" OR SMALLER AT A SLOPE OF 1/4" PER FOOT AND
- SANITARY PIPING 2 1/2" AND LARGER AT A SLOPE OF 1/8" PER FOOT. P. ALL HANDICAPPED ACCESSIBLE WATER CLOSETS SHALL HAVE THE FLUSHING HANDLE ON THE WIDE SIDE OF THE HANDICAPPED ACCESSIBLE STALL AS REQUIRED BY ADA REQUIREMENTS.
- ALL PUBLIC USE LAVATORY FAUCETS SHALL HAVE AN AUTOMATIC SAFETY WATER Q. MIXING DEVICE IN ACCORDANCE WITH ANSI/ASSE 1017 OR 1070 AS APPLICABLE. THE ENTIRE AREA UNDER CONSTRUCTION SHALL BE PROVIDED WITH A COMPLETE R. FIRE SPRINKLER SYSTEM IN ALL RESPECTS. RELOCATE/ADD NEW SPRINKLER DROPS TO EXISTING SYSTEMS WHERE REQUIRED TO PROVIDE COMPLETE COVERAGE THROUGHOUT THE AREA OF CONSTRUCTION. COORDINATE FIRE SPRINKLER PIPING AND HEAD LOCATIONS WITH ALL TRADES PRIOR TO FABRICATION AND/OR INSTALLATION. IF CONFLICTS OCCUR BETWEEN FIRE SPRINKLER PIPING/HEADS AND LIGHTS, DIFFUSERS, DUCTWORK, ETC., THE FIRE SPRINKLER PIPING/HEADS SHALL BE RELOCATED OR REROUTED AT NO ADDITIONAL EXPENSE TO THE PROJECT. AN ADEQUATE SUPPLY OF EXTRA PIPING AND FITTINGS SHALL BE MAINTAINED ON SITE TO ALLOW FOR FIELD MODIFICATIONS. PERFORM HYDRAULIC CALCULATIONS AS REQUIRED BY NFPA, LOCAL, STATE CODES, AND THE OWNER'S INSURANCE AGENCY. APPROVED SHOP DRAWINGS DO NOT PRECLUDE REROUTING IF SO REQUIRED BY THE ARCHITECT/ENGINEER.

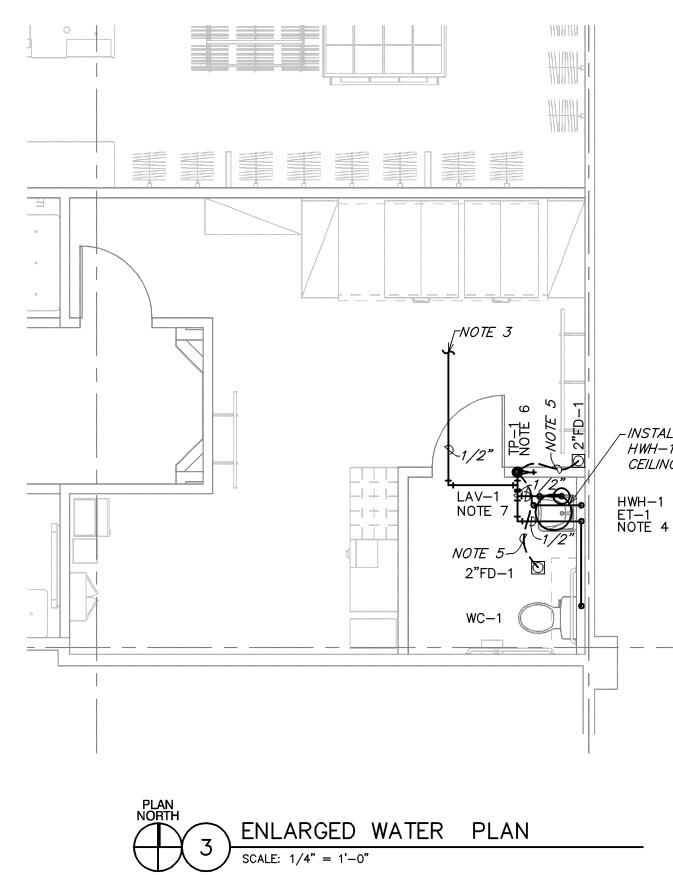
PLUMBING NOTES:

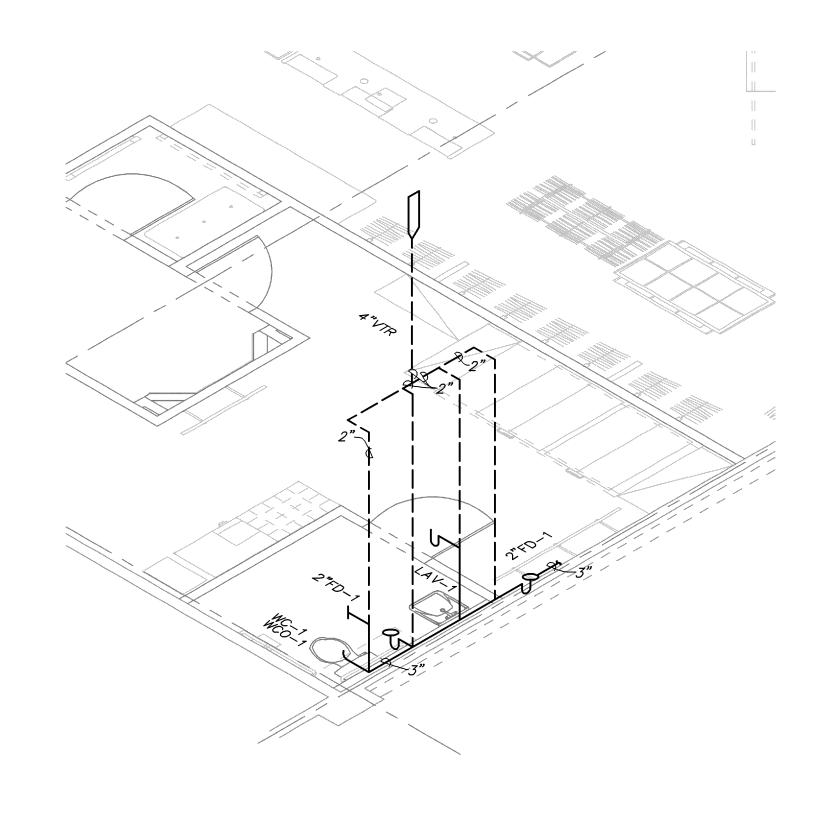
THIS SPACE IS RESERVED FOR ELECTRICAL EQUIPMENT. NO PIPING SHALL PASS BELOW, ABOVE, OR AROUND ELECTRICAL EQUIPMENT. PROVIDE CODE REQUIRED MINIMUM CLEARANCE ABOVE ELECTRICAL EQUIPMENT ACCESS SPACE.



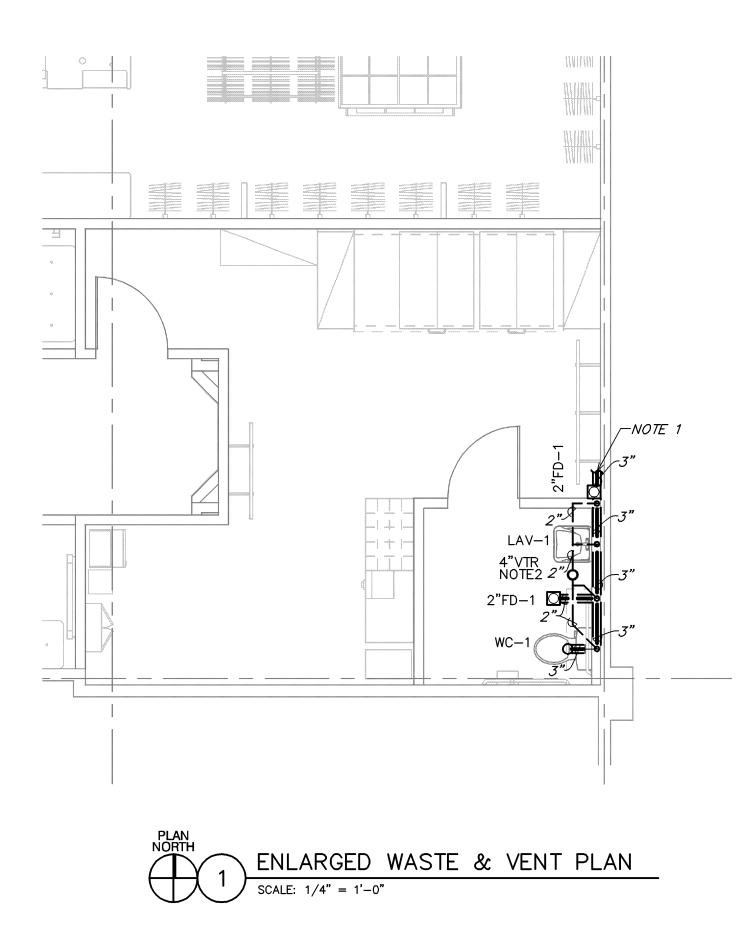








2 SANITARY RISER DIAGRAM

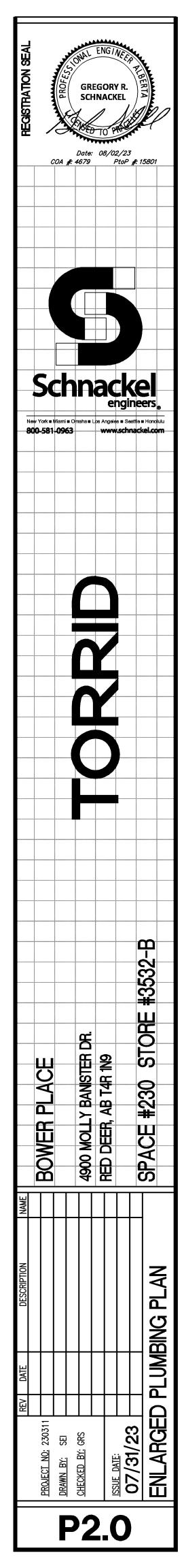


-INSTALL NEW HWH—1 ABOVE CEILING

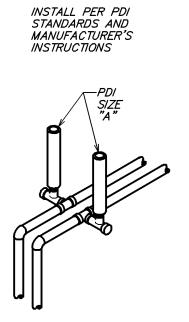
- GENERAL NOTES:
 A. THE EXISTING CONDITIONS ARE BASED ON "AS-BUILT" DRAWINGS AND/OR LIMITED FIELD VERIFICATIONS. THE CONTRACTOR SHALL ADJUST TO ACTUAL FIELD CONDITIONS AT NO ADDITIONAL EXPENSE TO THE PROJECT. NO ADDITIONAL COMPENSATION WILL BE PROVIDED FOR ANY EXTRAS DUE TO THE CONTRACTOR'S FAILURE TO VISIT THE PROJECT SITE AND/OR PREDETERMINATION OF EXISTING CONDITIONS PRIOR TO SUBMITTING THE BID. ANY DISCREPANCIES SHALL BE IMMEDIATELY REPORTED TO THE ARCHITECT/ENGINEER FOR RESOLUTION.
 B. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE INCIDENTAL DEMOLITION WORK PRIOR TO BIDDING AND COMMENCEMENT OF WORK. THE CONTRACTOR IS RESPONSIBLE FOR DEMOLITION OF ALL EXISTING EQUIPMENT AS REQUIRED FOR
- THE INSTALLATION/CONSTRUCTION OF NEW WORK. C. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH ALL APPLICABLE GOVERNMENTAL AND LOCAL CODE REQUIREMENTS.
- D. PROVIDE ACCESS PANELS AS REQUIRED TO ALLOW ACCESS TO VALVES, EQUIPMENT,
- ETC. LOCATED ABOVE INACCESSIBLE CEILINGS AND WALL CAVITIES. E. ALL SANITARY LINES AND PLUMBING FIXTURES ON THE PROJECT SHALL HAVE AN APPROVED MEANS OF SEWAGE BACKFLOW PREVENTION. FIXTURE SPECIFIC BACKFLOW PREVENTION INCLUDING AIR GAPS AND VACUUM BREAKERS ARE AN ACCEPTABLE MEANS OF BACKFLOW PREVENTION.
- F. PIPE SIZES INDICATED ON THE PLANS ARE MINIMUM. THE CONTRACTOR SHALL PROVIDE PIPE SIZES EQUAL TO OR GREATER THAN THE SPECIFIED SIZES. THE CONTRACTOR MAY INCREASE PIPE SIZES AS REQUIRED AT NO ADDITIONAL EXPENSE TO THE PROJECT.
- G. REFER TO THE PLUMBING FIXTURE SCHEDULE FOR INDIVIDUAL PLUMBING FIXTURE CONNECTION SIZE REQUIREMENTS.
 H. COORDINATE ALL SLAB PENETRATIONS WITH GENERAL CONTRACTOR PRIOR TO
- CONSTRUCTION. MAINTAIN A MINIMUM OF 2" CLEARANCE FROM THE EDGE OF THE SLAB OPENING TO ANY STRUCTURAL MEMBERS AND PIPES. I. SLEEVE OR CORE-DRILL FLOOR SLABS, WALLS, ETC. AS REQUIRED FOR PIPING
- AND FIRE-STOP OPENING AROUND PIPE. VERIFY LOCATION OF STRUCTURAL BEAMS, JOISTS, ETC. BEFORE DRILLING. J. THE CONTRACTOR SHALL OBTAIN A COPY OF THE LANDLORD'S TENANT CRITERIA MANUAL PRIOR TO BIDDING. THE TENANT CRITERIA MANUAL REQUIREMENTS SHALL
- BE INCLUDED IN THE CONTRACTOR CONTRACT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH THE LANDLORD REQUIREMENTS AT NO ADDITIONAL EXPENSE TO THE PROJECT.
- K. PROVIDE TEMPORARY COVERS, CAPS, OR PLUGS ON SANITARY SEWER SYSTEM THROUGHOUT THE DURATION OF CONSTRUCTION. RAG WADS, DUCT TAPE, OR OTHER SIMILAR METHODS OF TEMPORARY COVERS SHALL NOT BE UTILIZED. UPON COMPLETION OF CONSTRUCTION, COMPLETELY REMOVE ANY AND ALL OBSTRUCTIONS INSIDE THE ENTIRE SYSTEM BY SNAKING, RODING, OR JETTING THE SYSTEM IMMEDIATELY PRIOR TO PROJECT TURNOVER TO THE OWNER.
 L. ALL BELOW GRADE SANITARY LINES SHALL BE A MINIMUM OF 2" OR IN
- ACCORDANCE WITH LOCAL CODE REQUIREMENTS. M. SANITARY TEE FITTINGS SHALL NOT BE INSTALLED IN DRAIN, WASTE, AND VENT (DWV) SYSTEMS.
- N. INSTALL SANITARY PIPING 3" OR SMALLER AT A SLOPE OF 1/4" PER FOOT AND SANITARY PIPING 4" AND LARGER AT A SLOPE OF 1/8" PER FOOT.
- 0. INSTALL SANITARY PIPING 2" OR SMALLER AT A SLOPE OF 1/4" PER FOOT AND SANITARY PIPING 2 1/2" AND LARGER AT A SLOPE OF 1/8" PER FOOT.
- P. ALL HANDICAPPED ACCESSIBLE WATER CLOSETS SHALL HAVE THE FLUSHING HANDLE ON THE WIDE SIDE OF THE HANDICAPPED ACCESSIBLE STALL AS REQUIRED BY ADA REQUIREMENTS.
 Q. ALL PUBLIC USE LAVATORY FAUCETS SHALL HAVE AN AUTOMATIC SAFETY WATER
- Q. ALL PUBLIC USE LAVATORY FAUCETS SHALL HAVE AN AUTOMATIC SAFETY WATER MIXING DEVICE IN ACCORDANCE WITH ANSI/ASSE 1017 OR 1070 AS APPLICABLE.
 R. THE ENTIRE AREA UNDER CONSTRUCTION SHALL BE PROVIDED WITH A COMPLETE FIRE SPRINKLER SYSTEM IN ALL RESPECTS. RELOCATE/ADD NEW SPRINKLER DROPS TO EXISTING SYSTEMS WHERE REQUIRED TO PROVIDE COMPLETE COVERAGE THROUGHOUT THE AREA OF CONSTRUCTION. COORDINATE FIRE SPRINKLER PIPING AND HEAD LOCATIONS WITH ALL TRADES PRIOR TO FABRICATION AND/OR INSTALLATION. IF CONFLICTS OCCUR BETWEEN FIRE SPRINKLER PIPING/HEADS AND LIGHTS, DIFFUSERS, DUCTWORK, ETC., THE FIRE SPRINKLER PIPING/HEADS SHALL BE RELOCATED OR REROUTED AT NO ADDITIONAL EXPENSE TO THE PROJECT. AN ADEQUATE SUPPLY OF EXTRA PIPING AND FITTINGS SHALL BE MAINTAINED ON SITE TO ALLOW FOR FIELD MODIFICATIONS. PERFORM HYDRAULIC CALCULATIONS AS REQUIRED BY NFPA, LOCAL, STATE CODES, AND THE OWNER'S INSURANCE AGENCY. APPROVED SHOP DRAWINGS DO NOT PRECLUDE REROUTING IF SO REQUIRED BY THE ARCHITECT/ENGINEER.

PLUMBING NOTES:

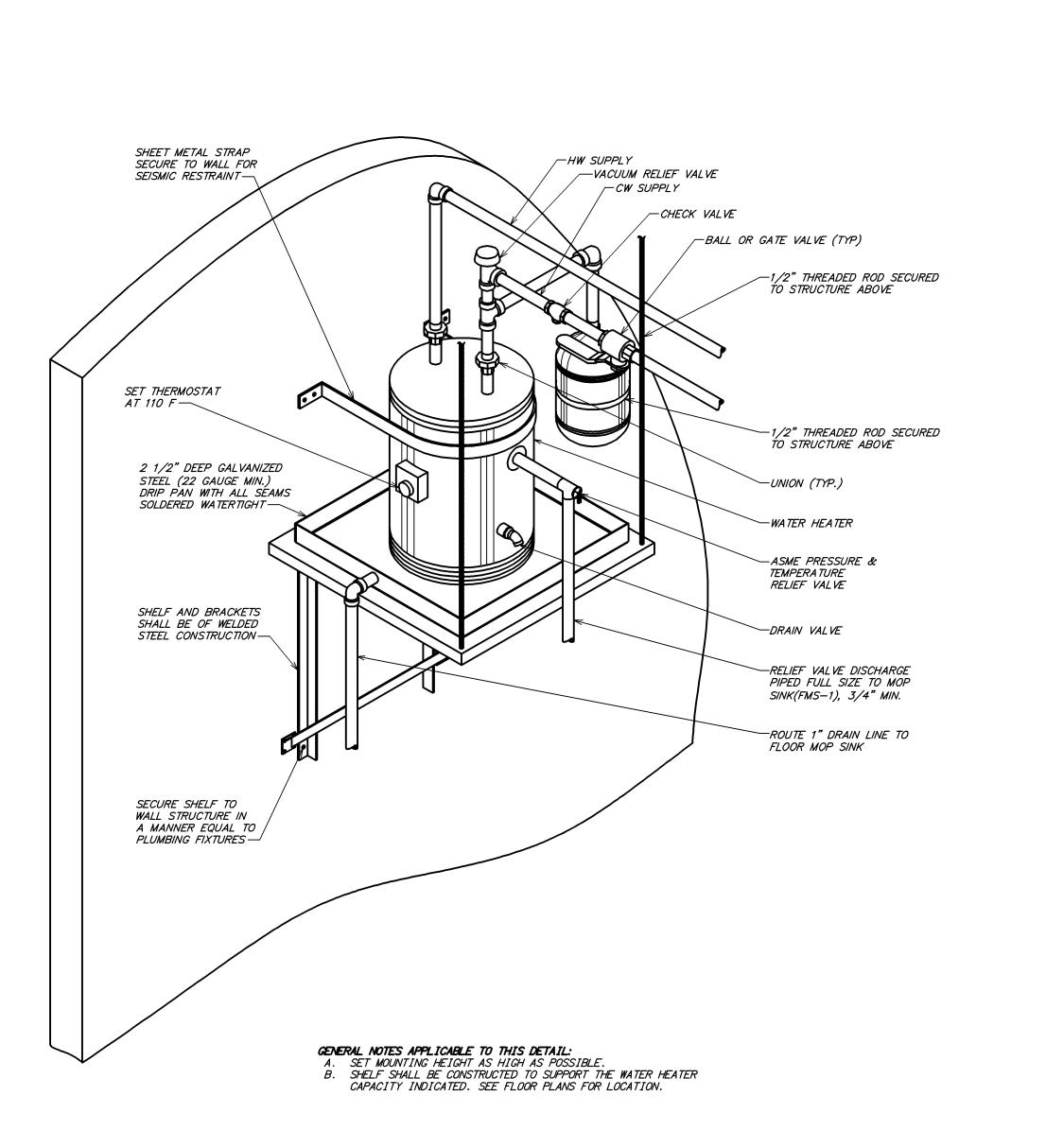
- CONNECT THE NEW SANITARY SEWER TO THE EXISTING SANITARY SEWER OF EQUAL OR GREATER SIZE. FIELD VERIFY THE EXACT LOCATION, SIZE, AND INVERT ELEVATION OF THE EXISTING SANITARY SEWER PRIOR TO CONSTRUCTION. ADJUST THE NEW SANITARY SEWER AS REQUIRED TO ALLOW FOR CONNECTION TO THE EXISTING SANITARY SEWER SYSTEM. MAINTAIN CODE MINIMUM PIPE SLOPES.
 UP TO 4" VENT THROUGH ROOF. INSTALL VENT THROUGH ROOF A MINIMUM
- 2. OF TO 4 VENT THROUGH ROOF. INSTALL VENT THROUGH ROOF A MINIMUM DISTANCE OF 15'-O" FROM ALL FRESH AIR INLETS AND BUILDING OPENINGS. 3. CONNECT THE NEW DOMESTIC COLD WATER LINE TO AN EXISTING COLD WATER LINE OF EQUAL OR GREATER SIZE. FIELD VERIFY THE EXACT LOCATION AND SIZE OF THE EXISTING WATER LINE PRIOR TO CONSTRUCTION. ADJUST THE NEW WATER LAYOUT AS REQUIRED TO ALLOW FOR CONNECTION TO THE EXISTING WATER SYSTEM.
- 4. FURNISH AND INSTALL WATER HEATER AND EXPANSION TANK AS INDICATED ON THE PLANS. REFER TO ARCHITECTURAL PLANS FOR WATER HEATER SHELF REQUIREMENTS AND EXACT LOCATION. PIPE WATER HEATER RELIEF AND SECONDARY DRAIN PAN DISCHARGE TO THE NEAREST MOP SINK OR FLOOR DRAIN BELOW THE WATER HEATER. PROVIDE A CODE APPROVED AIR GAP ON THE DISCHARGE OF THE WATER HEATER RELIEF AND SECONDARY DRAIN. REFER TO DETAILS SHEET FOR ADDITIONAL INFORMATION.
- 1/2" FLEXIBLE CONTINUOUS TYPE "K" COPPER TUBING BELOW GRADE FROM TRAP PRIMER TO FLOOR DRAIN. NO FITTINGS OR SPLICES ARE ALLOWED BELOW GRADE.
 INSTALL TRAP PRIMER PER MANUFACTURER'S REQUIREMENTS. COORDINATE EXACT LOCATION IN THE FIELD. FURNISH AND INSTALL A LOCKABLE, METAL ACCESS
- PANEL AS NECESSARY TO MAINTAIN EQUIPMENT. 7. PROVIDE THERMOSTATIC MIXING VALVE, POWERS #LFE480 OR EQUAL, BELOW FIXTURE. SET TEMPERATURE AS REQUIRED BY LOCAL JURISDICTION. THERMOSTATIC MIXING VALVE SHALL BE IN ACCORDANCE WITH ANSI/ASSE 1070. 8. WATER HANNER APPENDES SHALL BE SIZED AND INSTALLED IN ACCORDANCE WIT
- 8. WATER HAMMER ARRESTORS SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. LOCATIONS SHOWN ARE FOR REFERENCE PURPOSES ONLY.



SINGLE	FIXTURE



FIXTURE FIXTURE VALVE WATER TANK WATER URINAL JANITOR'S SHOWER/BA



WATER HEATER DETAIL 3

RE UNIT	TABUL	ATION	
JRE	COLD	нот	
R CLOSET	10		P P
R CLOSET	5		
AL	5		IF HORIZONTAL BRANCH IS LESS THAN 20'
Y/SINK	1.5	1.5	
S SINK	3	3	
BATHTUB	2	2	
		-HOT OR	PROVIDE ANOTHER WHA IN MIDDLE, EACH SIZED FOR HALF THE FIXTURE UNITS COLD WATER SUPPLY TO FIXTURES TO FIXTURES TO FIXTURES MULTIPLE FIXTURES

PLUMBING CONTRACTOR SHALL PROVIDE WATER HAMMER ARRESTERS BY SIOUX CHIEF, PRECISION PLUMBING PRODUCTS, WATTS OR APPROVED EQUIVALENT WITH PISTON AND O—RING CONSTRUCTION, HAVING PDI #WH—201, ASSE #1010 AND ANSI #A112.26.1M CERTIFICATION. INSTALL IN HORIZONTAL OR VERTICAL POSITION, BUT NEVER UPSIDE DOWN. INSTALL IN LINE WITH WATER FLOW DIRECTION IF POSSIBLE. SIZE THE UNITS AS SHOWN ON THE DRAWINGS AND/OR PER THE TABLES SHOWN ABOVE.

]
	1	PLUMBING FIXTURE SCHEDULE					
Mark		DESCRIPTION	HW	NAL COI	NNECTIOI	vs W	MANUFACTURER MODEL NUMBER
WC-1	WATER CLOSETS	1.28 GALLONS PER FLUSH, FLOOR MOUNTED, BOTTOM OUTLET, 12" ROUGH-IN, LEFT HAND TRIP LEVER, 3/8" CHROME PLATED BRASS TUBING, GRAVITY TANK, 25 PSI MINIMUM WORKING PRESSURE, COLOR: WHITE. PROVIDE RIGHT HAND TRIP LEVER AS REQUIRED TO MEET ADA REQUIREMENTS.	_	3/8"	1 1/2"		AMERICAN STANDARD: CADET 2467.100.020
	WATER CLOSET SEAT	COMMERCIAL HEAVY DUTY, SOLID PLASTIC, STAINLESS STEEL POSTS, SELF-SUSTAINING STAINLESS STEEL CHECK HINGE STOPS SEAT 11 DEG. BEYOND VERTICAL, OPEN FRONT, LESS COVER, COLOR: WHITE					BEMIS: 1955SSCT
	SUPPLIES	CHROME PLATED LEVER TYPE 1/4 TURN BALL ANGLE STOP VALVE					
LAV–1	LAVATORIES	WALL HUNG, VITREOUS CHINA, REAR OVERFLOW, 20" X 18", 3 FAUCET HOLES ON 4" CENTERS, ADA COMPLANT, 34" TOP OF LAVATORY TO FINISHED FLOOR, COLOR: WHITE	3/8"	3/8"	1 1/4"	1 1/4"	AMERICAN STANDARD: COMRADE 0124.024
		CHROME PLATED, BATTERY POWERED SENSOR FAUCET, VANDAL RESISTANT, BELOW DECK THERMOSTATIC MIXING VALVE, 0.5 GPM					SLOAN: EBF—615—BDT
	LAVATORY SUPPLIES	CHROME PLATED ANGLE STOPS WITH LOOSE KEY HANDLE, CHROME PLATED FLEXIBLE BRASS RISER					
	LAVATORY WASTE	GRID DRAIN STRAINER, 1 1/4" OFFSET TAILPIECE, 1 1/4" 17 GAUGE CHROME PLATED ADJUSTABLE BRASS P-TRAP WITH CLEANOUT PLUG, 1 1/4" CHROME PLATED BRASS WASTE TO WALL					AMERICAN STANDARD: 7723.018
	LAVATORY PROTECTIVE PIPE COVERS	ADA COMPLIANT, CHINA WHITE, ANTI-BACTERIA/FUNGAL, MOLDED VINYL, P-TRAP COVER, TWO ANGLE VALVE AND SUPPLY COVERS, 5" OFFSET TAILPIECE WHEEL CHAIR STRAINER COVER					TRUEBRO: 103 E-Z
		PROVIDE THERMOSTATIC MIXING VALVE					
EWC-1		BARRIER FREE DUAL, ELECTRIC WATER COOLER, SELF-CONTAINED, WALL HUNG, ONE PIECE POLISHED STAINLESS STEEL BASIN, EMBOSSED BUBBLER, ONE-PIECE REMOVABLE LOWER SHROUD, LEAD-FREE WATERWAYS, CONTROLS ON THE FRONT AND SIDES, REFRIGERATED UNIT, BASE FLOW RATE OF 8.0 GPH	_	3/8"	1 1/4"	1 1/4"	ELKAY: EZSTLG8WSSK
	SUPPLIES	1/2" COLD WATER SUPPLY WITH CONCEALED STOP WITH WHEEL HANDLE, 1/2" CHROME PLATED FLEXIBLE BRASS RISER					
	WASTE	1 1/4" 17 GAUGE CHROME PLATED BRASS ADJUSTABLE P-TRAP WITH CLEANOUT PLUG, 1 1/4" CHROME PLATED BRASS WASTE TO WALL, CONCEALED IN UNIT					
	MOUNTING HEIGHT	MOUNT ORIFICE OF LOWER UNIT AT 33"					
2"FD-1	FLOOR DRAIN	STANDARD STRAINER, COATED CAST IRON, TWO-PIECE BODY, DOUBLE DRAINAGE FLANGE, ADJUSTABLE EXTENSION, ADJUSTABLE COLLAR WITH SEEPAGE SLOTS, INVERTIBLE NON-PUNCTURING MEMBRANE CLAMP, FLASHING CLAMP WITH 24"X24" 4 LB. LEAD FLASHING FOR FLOOR DRAINS INSTALLED ABOVE SLAB ON GRADE, BOTTOM OUTLET, POLISHED NICKEL BRONZE FINISH, 5" DIAMETER ROUND STRAINER, 1/2" TRAP PRIMER CONNECTION	_	_	1 1/4"	2"	JR SMITH: 2010–NB ZURN: Z415B
WCO-1	WALL CLEANOUT	COATED CAST IRON CLEANOUT TEE, COUNTERSUNK BRONZE PLUG, ROUND STAINLESS STEEL SECURED ACCESS COVER, STANDARD FASTENERS	-	-	-	2"	ZURN: Z1446
TP-1	TRAP PRIMER	AUTOMATIC TRAP PRIMER WITH INTEGRAL VACUUM BREAKER, BRONZE BODY, PISTON OPERATED	-	1/2"	-	_	ZURN: Z1022–XL
	DISTRIBUTION UNIT	DISTRIBUTION UNIT, PROVIDE PLUGS AS REQUIRED BY APPLICATION					ZURN: DU4

				TAI	NK TYPE	ELECTRIC V	VATER	R HEA	TER	S		
		OPERATING	SIZE	(IN)	STORAGE	RECOVERY	ELE	ECTRICA	-			
MARK	LOCATION	WEIGHT (LBS)	DIA	н	CAPACITY (GALLONS)	(GPH (9 100) DEG F RISE)	ĸw	VOLT	PH	MANUFACTURER	MODEL	REMARKS
HWH-1	JANITOR	240	21.75	20	20	12	2	120	1	AO SMITH	DEL-20	

				THERM	AL EXPANS	SION TA	NKS			
			MAXIMUM	WORKING	MINIMUM		X. SIZE			
MARK	LOCATION	SERVICE	ACCEPTANCE (GALLONS)	PRESS. (PSI)	ACCEPTANCE (GALLONS)	DIA (IN)	LENGTH (IN)	MANUFACTURER	MODEL	REMARKS
ET-1	JANITOR	DOM. HW	0.9	150	0.8	8	14	AMTROL	ST-5-C	1,2,3
	7.									

<u>REMARKS:</u> 1. CONTRACTOR SHALL ADJUST PRE-CHARGE OF EXPANSION TANK TO EQUAL THE INCOMING WATER PRESSURE PRIOR TO INSTALLATION.

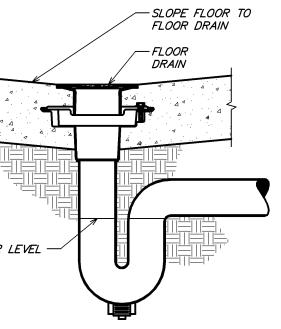
2. TANK SHALL BE ASME RATED.

3. THE TANK PROVIDED SHALL MEET THE MINIMUM SYSTEM ACCEPTANCE CAPACITY IN ALL CASES.

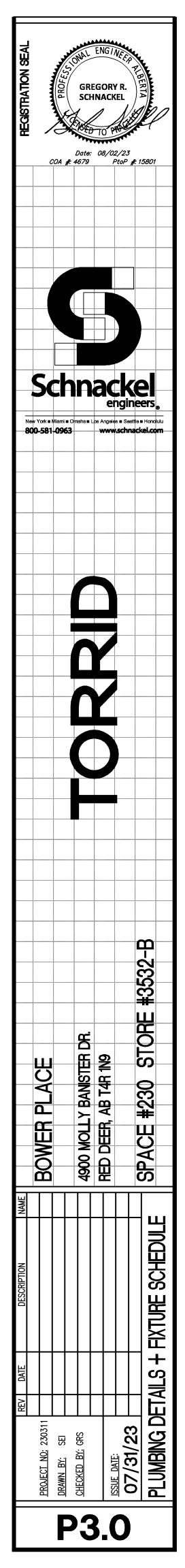


TRAP WATER LEVEL -

WATER HAMMER ARRESTERS 2 NOT TO SCALE



1 FLOOR DRAIN DETAIL NOT TO SCALE



SECTION 21000 - FIRE SUPPRESSION GENERAL CONDITIONS

PART 1 GENERAL

- 1.01 APPLICABILITY

 A. This section supplements all sections of the Specifications for Division 21 and shall apply to all phases of work hereinafter specified, shown on the Drawings, or required to provide a complete installation of approved fire suppression systems.
 B. The Drawings, General Conditions and General Provisions of the Contract apply to this Section and the other Sections of Division 21 of the specifications. Where
- conflicts arise between these documents, the more stringent provision will be applicable, subject to the interpretation of the Engineer.
 C. Furnish all labor, material, services, and skilled supervision necessary for the construction, erection, installation, connections, testing, and adjustment of all materials and electrical equipment specified bergin, or shown or noted on the
- materials and electrical equipment specified herein, or shown or noted on the Drawings, and its delivery to the Owner, complete in all respects and ready for use. D. Products furnished but not installed under this section: 1. Where plans indicate fixtures or equipment will be furnished by this
- Contractor for installation by other Contractors, this Contractor shall furnish all such equipment, complete in all respects and ready for installation.
- Drawings, instructions, and manuals supplied with equipment furnished under Division 21, but installed under other Divisions shall be carefully preserved and turned over to the installing Contractor.
 Products installed but not furnished under this section:
- Where plans indicate fixtures or equipment will be furnished by others, this Contractor shall provide all rough-in and supplies and shall connect such equipment to the fire suppression systems.
- Drawings, instructions, and manuals supplied with equipment furnished under separate Divisions but installed under Division 22 shall be carefully preserved and turned over to the Architect.

1.02 DEFINITIONS

- A. "Work" is hereby defined as, "The construction and services required by the Contract Documents whether completed or partially completed and includes all labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The work may constitute the whole or a part of the project."
 B. "Furnish" is hereby defined as, "To supply and deliver, unload, and inspect for
- damage." C. "Install" is hereby defined as, "To unpack, assemble, erect, apply, place, finish, cure, protect, clean, connect, and place into operation into the work."
- D. "Provide" is hereby defined as, "To furnish and install."
- E. "Connect" is hereby defined as, "To bring service to the equipment and make final attachment including necessary switches, outlets, boxes, terminations, etc."
- Concealed" is hereby defined as, "Hidden from sight in chases, furred spaces, shafts, hung ceilings, embedded in construction, in crawl spaces, or buried."
- . "Exposed" is hereby defined as, "Not installed underground nor concealed as defined by the Specifications."
- H. "Drawings" is hereby defined as, "All plans, details, equipment schedules, diagrams, sketches, etc. issued for the construction of the work."
- I. Subgrade Elevations: 4 inches below finish grade elevations indicated on drawings, unless otherwise indicated. J. Finish Grade Elevations: 4 inches above subgrade elevations indicated on drawings,
- unless otherwise indicated 1.03 CODES AND STANDARDS
- A. Perform work in accordance with the applicable Building Code, Electrical Code, Fire Code, Mechanical Code, Plumbing Code, Energy Code, and all other applicable codes, amendments, and ordinances. Also perform all work in accordance with the Americans with Disabilities Act (ADA) and the Authority Having Jurisdiction (AHJ) including Fire Marshal(s).
- Perform work in accordance with Landlord requirements, including any Tenant Criteria Manuals and Lease Exhibits, where applicable.
- Perform work in accordance with the applicable utility companies serving the project. Make all arrangements with the utility companies for proper coordination of the work.
 Recognized Standards: Design, manufacture, testing and method of installation of
- all apparatus and materials furnished under the requirements of these Specifications shall conform to the latest publications or standard rules of National Fire Protection Association (NFPA), Factory Mutual Global, where applicable (FMG), Underwriters Laboratories, Inc. (U.L.), American Society for Testing and Materials (ASTM), American National Standards Institute (ANSI), National Electrical Code (NEC), and National Electrical Safety Code (NESC)
- E. The Contract Documents shall take precedence where the Contract Documents exceed code, Landlord, utility, or recognized standards requirements.
- 1.04 PERMITS AND FEES A. Permits. Li
- A. Permits, licenses, fees, inspections and arrangements required for the work under this Contract shall be obtained by the Contractor at his expense, unless otherwise indicated.
- B. All fees and scheduling associated with obtaining an accurate water flow test shall be at the Contractor's expense.
 1.05 CONTRACT DRAWINGS
 - . The Contractor is responsible to obtain, fully understand, and coordinate the work with the complete set of Contract Documents. Any required corrections, including all associated costs, arising from issues caused by the Contractor's failure to understand and/or coordinate the work with the complete set of Contract Documents are the Contractor's sole responsibility.
- B. Work under these sections is diagrammatic unless indicated otherwise and is intended to convey the scope of work and indicate the general arrangement of piping, equipment, and accessories. Follow these drawings in laying out the work and verify spaces for the installation of these materials and equipment. Wherever a question exists as to the exact intended location of pipe, sprinklers, or equipment, obtain instructions from the Architect before proceeding with the work.
 C. Notify the Architect/Engineer for resolution if a discrepancy is discovered within the Contract Documents. Failure of the Contractor to notify the Architect/Engineer of discrepancies shall result in the resolution becoming the Contractor's
- responsibility and subject to the Architect/Engineer's review and possible rejection. Should the Architect/Engineer reject a discrepancy resolution of which they were not notified, the Contractor is fully responsible to correct the
- installation, including all associated costs, until approval of the installation is given by the Architect/Engineer.
 1.06 EXISTING CONDITIONS
- A. Verify all existing conditions prior to beginning work.
 B. Any existing conditions indicated in the Contract Documents are based on information drawings provided by others and possibly limited field verification. The Contractor shall adjust for actual field conditions at no additional expense to
- c. The Contractor shall visit the project site, review existing conditions against the Contract Documents, and familiarize himself with the work prior to bidding and start of the work. By signing the Contract, the Contractor acknowledges the site visit has been completed and the existing conditions are accepted.
- visit has been completed and the existing conditions are accepted.
 D. The Contractor shall notify the Architect of major discrepancies in writing so the appropriate modifications to the design can be made without delay to the project. The Contractor assumes full responsibility of adjusting for discrepancies of which the Architect is not informed.
- the Architect is not informed.
 F. The Owner shall have first salvage right on all demolished equipment and materials. The Contractor shall dispose of all demolished equipment and materials the Owner rejects.
- G. The Contractor shall notify the Architect/Engineer of field discrepancies in writing so the appropriate modifications to the design can be made without delay to the project. The Contractor assumes full responsibility of adjusting for discrepancies of which the Architect/Engineer is not informed.
- H. Where connections are made between new work and existing work, the connections shall be made by using materials and methods to suit the actual conditions.
 I. Where existing conditions are shown to be removed, by means of a hatched pattern, on the Drawings, this Contractor shall perform all work required for removal. Existing pipe run-outs shall be removed all the way back to mains and capped using
- appropriate methods. J. Where existing work is to be modified, it shall be done in conformance with these specifications. Materials used shall be same as existing except where specified otherwise.

1.07 SUBMITTALS

- A. Shop Drawings:

 Furnish the Architect/Engineer shop drawing portfolios containing names of manufacturer and cut sheets of equipment to be used on the project. Use manufacturer's specification sheets identified by number indicated on drawings or schedules. Indicate catalog number on the cut sheets. As applicable, provide construction data, weight and dimensional data, performance data and listing data as part of the shop drawing submittal.
 - Provide shop drawings for: a. Fire Protection fixtures and equipment.
 - . Fire Protection materials and accessories.
 - c. Product Data: Provide manufacturers catalogue information. Indicate valve data and ratings.
 Submittals are reviewed only for general compliance with the Contract Documents. Dimensions, quantities and details are not checked during
 - submittal review. Review of the submittals does not relieve the Contractor of the responsibility for providing all materials, equipment and accessories necessary for a complete and operational system meeting the requirements of the project and the intent of the Contract Documents. The responsibility for coordination of substituted materials and equipment lies solely with the substituting Contractor.
- Approval shall not relieve the Contractor from responsibility for errors on the shop drawings.
 If the shop drawings deviate from the contract documents, the Contractor
- shall advise the Engineer of the deviations in writing accompanying the shop drawings, including the reasons for the deviations. Project Record Documents: Record actual locations of components and tag numbering. Operation and Maintenance Data: Include installation instructions and spare parts
- Maintenance Data: Include assembly drawings, bearing data including replacement sizes, and lubrication instructions.
- 1.08 QUALITY ASSURANCE

 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five years experience.
 B. Installer Qualifications: Company specializing in performing the work of this section with minimum five years experience, approved by manufacturer.
 C. Products:
 - Products: 1. Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.
 - Listed and classified by the local Department of Buildings and furnished with an acceptance number, where applicable.

- Listed and classified by the Landlord's and/or Owner's insurance carrier, where applicable.
- All equipment and components shall be free of all rust/corrosion or any visible damage. All items not complying with this requirement shall be replaced without any change in the Contract amount.
- E. Equipment performance and accessories shall be as scheduled on the Drawings and specified herein. Inclusion in both locations is not a prerequisite to inclusion in the Contract. Equipment and accessories specified in either location shall be included in the Contract. Provide all necessary accessories and connections as required for a complete, functional system, including all required components reasonably inferred to as necessary although such components may or may not be
- specifically indicated in the Contract Documents.
 F. Code or utility company requirements shall supersede any conflicting requirements of this section.
 G. Fill Composition Test Reports: Results of laboratory tests on actual materials
- used; Compaction Density Test Reports. 1.09 DELIVERY, STORAGE, AND HANDLING
- Deliver and store valves in shipping containers, with labeling in place.
 B. Provide temporary protective coating on cast iron and steel valves.
- C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- D. Protect motors stored on site from weather and moisture by maintaining factory covers and suitable weather-proof covering. For extended outdoor storage, remove motors from equipment and store separately.
- Equipment: Protect equipment from physical damage by storing off site until the project is ready for immediate installation. Provide temporary caps on all pipes to prevent debris from entering the pipe.

PART 2 PRODUCTS

- 2.01 SUBSTITUTIONS A. The manufacturers listed are listed to set minimum standards for quality, design, and functionality. The products of other manufacturers may be submitted, at the Contractor's option, during shop drawing review unless indicated otherwise. The products of other manufacturers shall meet or exceed all requirements of the Contract Documents. The Contractor accepts all responsibility for costs and coordination issues arising out of the substitution of materials or equipment, and the coordination of such substitutions with all other contractors and subcontractors.
 - B. Sprinkler Systems: Conform work to NFPA 13 and all local requirements.
 C. Standpipe and Hose Systems: Conform to NFPA 14 and all local requirements.
 - D. Welding Materials and Procedures: Conform to ASME Code.

PART 3 EXECUTION

- 3.01 COORDINATION OF WORK
- A. Examine the Contract Documents as a whole for the work of other trades. Coordinate all work accordingly.
 B. Work lines and established heights shall be in strict accordance with architectural drawings and specifications insofar as these drawings and specifications extend. Verify all dimensions shown and establish all elevations and detailed dimensions
- not shown.
 C. Promptly report to the Architect any delay or difficulties encountered in the installation of the work, which might prevent prompt and proper installation, or make it unsuitable to connect with or receive the work of others. Failure to so report shall constitute an acceptance of the work of other trades as being fit and proper for the execution of this work.
- D. Plan, lay out, and coordinate the work with all trades well enough in advance so that it proceeds with a minimum of interference to work that has not been completed and work that is in progress. Inform all trades of openings required for the work and provide all special frames, sleeves, and anchor bolts required. The fire suppression system layout may be altered to suit the conditions, prior to the installation of any work and without additional cost to the Owner. Conflicts arising from lack of coordination shall be this Contractor's responsibility.
- arising from lack of coordination shall be this Contractor's responsibility. E. Wherever pipe runs in or above ceilings or walls, the Contractor shall arrange the run of pipe in such a manner that it does not interfere with grilles, diffusers, outlet boxes, luminaires, or other ceiling mounted items.
- F. Install systems, materials and equipment to provide for maximum headroom, where no ceiling height is established or indicated on the Drawings. Maintain access to equipment requiring service when selecting mounting elevations.
- G. Install systems, materials and equipment level and plumb, parallel and perpendicular to building lines where exposed to view, unless otherwise indicated.
- perpendicular to building lines where exposed to view, unless otherwise indicate Conflicts arising from lack of coordination shall be this Contractor's responsibility. The Fire Suppression Contractor shall pay for all extra cutting and patching made necessary by his failure to properly direct such work at the correct time.
- I. Perform all work in conformity with the Contract Documents and afford other trades reasonable opportunity for the execution of their work. Properly connect and coordinate this work with the work of other trades at such time and in such a manner as not to delay or interfere with their work.
- J. Manufacturer's instruction sheets shall be followed explicitly in the installation of all equipment. Where manufacturer's instruction sheets conflict with requirements of these specifications or the Drawings, such conflicts shall be brought to the attention of the Architect/Engineer for clarification.
- K. All roofing penetrations shall be flashed and weather sealed by the roofing manufacturer's authorized roofing contractor at this Contractor's expense. This Contractor shall contract with the factory authorized roofing contractor for the specific roofing system applicable to this Project. The use of an unauthorized roofing contractor may result in removal and replacement of the penetration systems at this Contractor's expense.
- L. Although all such work is not specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a sound, secure and complete installation.
- M. Verify and coordinate all requirements and installation details of all materials and equipment that are to be furnished under other Divisions and installed or connected under Division 22 prior to rough-in. Conflicts arising from lack of coordination shall be this Contractor's responsibility. As such, the Contractor is responsible to:

 Obtain and review shop drawings, product data, manufacturer's wiring
 - Obtain and review shop a dwrings, product data, manufacturer's wirning diagrams, and manufacturer's instructions for equipment furnished under other sections.
 Determine connection locations and requirements
- Determine connection locations and requirements.
 Sequence rough-in of fire suppression connections to coordinate with installation of equipment.
 COORDINATION DRAWINGS

Prepare coordination drawings to a scale of 1/4"=1'-0" or larger; detailing major elements, components, and systems of fire suppression equipment and materials in relationship with other systems, installations, and building components. Indicate locations where space is limited for installation and access and where sequencing and coordination of installations are of importance to the efficient flow of the work, including (but not necessarily limited to) the following:

- Indicate the proposed locations of conduits, equipment, and materials.
 Include the following:

 a. Clearances required for maintaining Code required working space.
 - . Equipment connections and support details. Exterior wall and foundation penetrations.
- d. Fire-rated wall and floor penetrations.
- e. Sizes and location of required concrete pads and bases.
 f. Indicate scheduling, sequencing, movement, and positioning of large equipment into the building during construction.
 g. Prepare floor plans, elevations, and details to indicate penetrations in floors, walls, and ceilings and their relationship to other
- penetrations and installations. 3.03 EXAMINATION A. Verify field measurements are as indicated on the Drawings. B. Verify all pipe locations and sizes in field prior to fabrication or installation.
- C. Verify all equipment locations in field prior to installation. Coordinate final locations with all trades.
 3.04 INTERFACE WITH OTHER PRODUCTS
 A. Install all pipe equipment and accessories to preserve fire registered ratios.
- A. Install all pipe, equipment, and accessories to preserve fire resistance rating of partitions and other elements, using materials and methods specified.
 3.05 FIELD QUALITY CONTROL
 A. Provide tests as peressary to establish the adequacy quality safety completed
- A. Provide tests as necessary to establish the adequacy, quality, safety, completed status, and suitable operation of each system. Tests shall be conducted under the supervision of the Architect.
 B. Install all equipment, devices, pipe, and materials securely and in a neat and
- workmanlike manner in accordance with all applicable standards and codes.
 Install all equipment, pipe, and materials plumb and level and align and adjust for
- satisfactory operation. D. Install all equipment, pipe, and materials in accordance with the manufacturer's
- instructions and recommendations. E. Inspect all equipment, pipe, and materials for defects.
- 3.06 ERECTION A. Rigging:
 - The Fire Suppression Contractor shall arrange for all labor and equipment required for the proper installation of the fire Suppression equipment in the locations indicated on the Drawings. Where crane rental or other erection is required, such costs shall be included in the Fire Suppression Contract, unless specific arrangements are made with the General Contractor to cover these costs.
 - Supplemental Framing:
 Provide the design, fabrication, and erection of supplementary structural framing required for attachment of hangers or other devices supporting fire Suppression equipment. Provide framing members of standard rolled steel shapes, A-36 steel. Provide members welded to structural members equal to the specification for the main structural member. Provide "simple beam" type framing with end connections welded or bolted for shear loads. Use cantilevers when detailed or specifically approved by the Architect/Engineer. The Architect/Engineer's approval is required for location of supplementary framing. Use only certification for the welders.
- framing. Use only certified welders. Design framing members for their actual loads, with allowable stresses specified by AISC, without excessive deflection and with consideration for rigidity under vibration, in accordance with standard structural practices. Show on shop drawing supplementary framing, including design loads, member size and location. 3.07 CUTTING. PATCHING. AND PIERCING
- A. Cutting of openings and installation of sleeves or frames through walls and surfaces shall be done in a neat workmanlike manner. Openings shall be cut only as large as required for the installation; sleeves and/or frames installed flush with finished surfaces and grouted in place. Surfaces around openings shall be left smooth and finished to match surrounding surface.
- smooth and finished to match surrounding surface. B. Obtain written permission of the Architect/Engineer before cutting or piercing structural members. Use craftsmen skilled in their respective trades for cutting,

- fitting, repairing, patching of plaster, and finishing of materials including carpentry work, metal work or concrete work required for this work.
 C. Do not weaken walls, partitions, or floors with cutting. Holes required to be cut in floors must be drilled without breaking out around the holes. The Architect/Engineer will determine suitability of patching and/or refinishing requirements.
- D. The Fire Suppression Contractor is responsible for patching of all openings resulting from the installation or removal of fire Suppression equipment or materials.
- E. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.
- F. Patch existing finished surfaces and building components using new materials matching existing materials and experienced Subcontractors.
- G. Fire and Smoke Partition Penetrations: The Contractor shall familiarize himself with all fire rated construction and install his work so as to maintain the integrity of the fire code rating. Maintain rating of fire rated and smoke rated
- integrity of the fire code rating. Maintain rating of fire rated and smoke rated construction. Seal annular space around conduits. For fire and smoke rated floors, walls and partitions, use UL listed material that maintains fire rated wall and floor integrity.
 3.08 CLEANING AND REPAIR
- A. Clean fire suppression parts to remove harmful materials.
 B. Clean exposed surfaces of all pipe, equipment, and accessories of all dirt, debris, splatter, and other deleterious materials. Follow the manufacturer's recommendations for cleaning as applicable.
- C. Repair or replace damaged pipe, equipment, and accessories, as directed by and to the satisfaction of the Architect, where marring or disfigurement has occurred. All pipe, equipment, and accessories shall be new.
- 3.09 TESTING AND INSPECTION
 A. Upon completion, the entire system shall be tested under operating conditions.
 1. All equipment shall be tested under service conditions and proven to operate property and poiselessly.
- properly and noiselessly. 2. All additional tests as required throughout this Specification shall be completed with results reported back to the Architect/Engineer for review. B. Operate all equipment, after installation and connection. Inspect for improper
- Operate an equipment, area instantation and connection. Inspection improper connections and operation and correct deficiencies as required.
 C. Inspection:

 Upon completion of the work, the Contractor shall obtain certificates of
- Upon completion of the work, the contractor shall obtain certificates of inspection and approval from all City and State Authorities Having Jurisdiction.
 3 10 PRO.ECT CLOSEDUT
- A. Project Record Documents: At project closeout, provide one printed copy and one electronic copy of project record drawings to the Owner. Information contained on project record drawings shall include, as a minimum,:
- Actual locations of all pipe, equipment, accessories, etc.
 Actual pipe sizes and elevations.

manufacturer's guarantees and warranties. Also include:

3. Actual routing of all underfloor or below grade piping.
4. Hydraulic calculation remote area data and associated flow test information.
B. Operation and Maintenance Data: At project closeout, submit to the Architect two copies of descriptive literature, maintenance and operation data for all piping, equipment, accessories, and materials used. Include maintenance procedures, intervals, and parts list of each item installed under this contract. Include all

END OF SECTION

SECTION 210500 - COMMON WORK RESULTS FOR FIRE SUPPRESSION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pipe, fittings, valves, and connections for systems as applicable to this project. Sprinkler systems: New systems; Dry pipe systems; Wet pipe systems; Standpipe/hose systems; Below ground piping; Above ground piping.

PART 2 PRODUCTS

- 2.01 FIRE PROTECTION SYSTEMS
 - A. Water Supply Testing for All Systems: Perform tests of all supply water sources to determine the potential for corrosion in the fire protection system including tests for microbes most commonly associated with Microbiologically Influenced Corrosion (MIC). Water samples shall be collected as directed by the product literature of the testing organization. Samples shall be delivered to the approved testing laboratory within 72 hours of the time the water sample is obtained. Test results shall be forwarded to the Owner and Engineer along with a report summarizing the recommended corrective action to mitigate the potential for MIC or other types of corrosion.
- B. The Contractor may use any of the following piping materials, at his option, provided the selected material meets with the approval of all State, local authorities and any utility company requirements. Verification of compliance of the selected piping material is the sole responsibility of the installing Contractor.
 2.02 ABOVE GROUND PIPING
- ABOVE GROUND PIPING
 A. Steel Pipe: ASTM A 795 Schedule 10, ASTM A 53 Schedule 40, ASTM A 135 Schedule 10, ASTM A 135 UL listed light wall type, or ASTM A 795 Schedule 40, black: Steel Fittings: ASME B16.9, wrought steel, buttwelded, ASME B16.5, buttweld ends, ASTM A 234/A 234M, wrought carbon steel or alloy steel, ASME B16.5, steel flanges and fittings, or ASME B16.11, forged steel socket welded and threaded; Mechanical Grooved Couplings: Malleable iron housing clamps to engage and lock, "C" shaped elastomeric sealing gasket, steel bolts, nuts, and washers; galvanized for galvanized pipe; Mechanical Formed Fittings: Carbon steel housing with integral pipe stop and 0-ring pocked and 0-ring, uniformly compressed into permanent
- mechanical engagement onto pipe; Schedule 10 steel pipe will not be allowed on any dry pipe sprinkler systems, no exceptions; Threaded or cut groove fittings will not be allowed on any Schedule 10 system, no exceptions.
 B. Copper Tube: ASTM B 75 (ASTM B 75M) or ASTM B 88 (ASTM B 88M), H58 drawn temper: Type: Type M (C); Fittings: ASME B16.18, cast copper alloy or ASME B16.22,
- wrought copper and bronze solder joint, pressure type; Joints: AWS A5.8 Classification BCuP-3 or BCuP-4 copper/silver braze or ASTM B 32, alloy Sn95 solder. C. CPVC Pipe: ASTM F 442/F 442M, SDR 13.5. (Not permitted in plenum return air
- ceiling spaces.): Fittings: ASTM F 438 Schedule 40, or ASTM F 439 schedule 80, CPVC; Joints: Solvent welded, using ASTM F 493 cement. 2.03 PIPE HANGERS AND SUPPORTS
- A. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron, adjustable swivel, split ring.
 B. Hangers for Pipe Sizes 2 inches and Over: Carbon steel, adjustable, clevis.
- Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
 Wall Support for Pipe Sizes to 3 inches: Cast iron hook.
 Wall Support for Pipe Sizes 4 inches and Over: Welded steel bracket and wrought
- steel clamp. F. Vertical Support: Steel riser clamp. G. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange,
- G. Floor support: Cast from adjustable pipe sadale, lock nut, hipple, floor f and concrete pier or steel support.
 H. Conner Pine Support: Carbon steel ring adjustable conner plated
- H. Copper Pipe Support: Carbon steel ring, adjustable, copper plated. 2.04 GATE VALVES
- A. Up to and including 2 inches: Bronze body, bronze trim, rising stem, handwheel, solid wedge or disc, threaded ends.
 B. Over 2 inches: Iron body, bronze trim, sining stem pro grouped for mounting tem
- B. Over 2 inches: Iron body, bronze trim, rising stem pre-grooved for mounting tamper switch, handwheel, OS&Y, solid bronze or cast iron wedge, flanged or grooved ends.
 C. Over 4 inches: Iron body, bronze trim, non-rising stem with bolted bonnet, solid
- C. Over 4 inches: Iron body, bronze trim, non-rising stem with bolted bonnet, solid bronze wedge, flanged ends, iron body indicator post assembly.
 2.05 BUTTERFLY VALVES
- A. Bronze Body: Stainless steel disc, resilient replaceable seat, threaded or grooved ends, extended neck, handwheel and gear drive and integral indicating device, and built-in tamper proof switch rated 10 amp at 115 volt AC.
 B. Cast or Ductile Iron Body: Cast or ductile iron, chrome or nickel plated ductile iron or aluminum bronze disc, resilient replaceable EPDM seat, wafer, lug, or
- grooved ends, extended neck, handwheel and gear drive and integral indicating device, and internal tamper switch rated 10 amp at 115 volt AC. 2.06 CHECK VALVES
- A. Up to and including 2 inches: Bronze body and swing disc, rubber seat, threaded ends.
 B. Over 2 inches: Iron body, bronze trim, swing check with rubber disc, renewable
- disc and seat, flanged ends. C. 4 inches and Over: Iron body, bronze disc, stainless steel spring, resilient seal, threaded, wafer, or flanged ends. 2.07 DRAIN VALVES
- A. Compression Stop: Bronze with hose thread nipple and cap.
 Ball Valve: Brass with cap and chain, 3/4 inch hose thread.
- PART 3 EXECUTION
- 3.01 PREPARATION
- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe. Remove scale and foreign material, from inside and outside, before assembly. Prepare piping connections to equipment with flanges or unions.
 3.02 INSTALLATION
 - A. Install sprinkler system and service main piping, hangers, and supports in accordance with NFPA 13.
- B. Install standpipe piping, hangers, and supports in accordance with NFPA 14.
 C. Comply with all materials, design and installation requirements of Factory Mutual
- Compty with all materials, design and installation requirements of ractory watual.
 Route piping in orderly manner, plumb and parallel to building structure. Maintain gradient.
 E. Install piping to conserve building space, to not interfere with use of space and
- other work. F. Group piping whenever practical at common elevations.
- G. Sleeve pipes passing through partitions, walls, and floors.
- H. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
 I. Inserts: Provide inserts for placement in concrete formwork; Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams; Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches; Where concrete slabs form finished ceiling, locate inserts flush with slab surface; Where inserts are omitted, drill through concrete slab
- from below and provide through-bolt with recessed square steel plate and nut recessed into and grouted flush with slab.
 J. Pipe Hangers and Supports: Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work; Place hangers within 12 inches of each horizontal elbow; Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe; Support vertical piping at every other floor. Support riser piping independently of connected

horizontal piping; Where several pipes can be installed in parallel and at same

elevation, provide multiple or trapeze hangers; Provide copper plated hangers and supports for copper piping. K. Slope piping and arrange systems to drain at low points. Use eccentric reducers to

- maintain top of pipe level. L. Where exposed to view in finished areas, prepare pipe, fittings, supports, and accessories for finish painting. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich
- primer to welding. M. Do not penetrate building structural members unless indicated or where approval
- from the project Structural Engineer has been given in writing. N. Provide sleeves when penetrating footings and floors. Seal and fire stop pipe and
- sleeve penetrations to achieve fire resistance equivalent to fire separation required.
- 0. When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are
- consistently provided. P. Install valves with stems upright or horizontal, not inverted. Remove protective
- coatings prior to installation. Q. Provide drain valves at main shut-off valves, low points of piping and apparatus.

END OF SECTION

SECTION 210548 - VIBRATION AND SEISMIC CONTROLS FOR FIRE SUPPRESSION PIPING AND EQUIPMENT PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete housekeeping pads; Inertia bases for fire pumps; Vibration isolators; Seismic restraints.

PART 2 PRODUCTS

2.01 MANUFACTURERS A. Isolation Technology, Inc; Kinetics Noise Control, Inc; Mason Industries.

- 2.02 SEISMIC RESTRAINTS A. Type: Non-directional and double acting unit consisting of interlocking steel members restrained by neoprene elements.
- B. Elements: Replaceable neoprene, minimum of 0.75 inch thick with minimum 1/8 inch air gap.
- Capacity: 4 times load assigned to mount groupings at 0.4 inch deflection.
 Attachment Points and Fasteners: Capable of withstanding 3 times rated load capacity of seismic snubber.
- PART 3 EXECUTION
- 3.01 INSTALLATION
- A. Install in accordance with manufacturer's instructions.
- B. On closed spring isolators, adjust so side stabilizers are clear under normal operating conditions.
 C. Support piping connections to equipment mounted on isolators using isolators or resilient hangers for scheduled distance: Up to 4 Inches Pipe Size: First three points of support; 5 to 8 Inches Pipe Size: First four points of support; 10 inches Pipe Size and Over: First six points of support; Select three hangers closest to vibration source for minimum 1.0 inch static deflection of isolated equipment. Select remaining isolators for minimum 1.0 inch
- static deflection or 1/2 static deflection of isolated equipment. 3.02 FIELD QUALITY CONTROL A. Inspect isolated equipment after installation and submit report. Include static
- deflections. 3.03 SCHEDULES

ULES		
Pipe	Isolation Schedule.	
1.	1 Inch Pipe Size:	Isolate 120 diameters from equipment
2.	2 Inch Pipe Size:	Isolate 90 diameters from equipment
3.	3 Inch Pipe Size:	Isolate 80 diameters from equipment
4.	4 Inch Pipe Size:	Isolate 75 diameters from equipment
5.	6 Inch Pipe Size:	Isolate 60 diameters from equipment
6.	8 Inch Pipe Size:	Isolate 60 diameters from equipment

END OF SECTION

SECTION 210553 - IDENTIFICATION FOR FIRE SUPPRESSION PIPING AND EQUIPMENT

PART 1 GENERAL

- 1.01 SECTION INCLUDES A. Nameplates; Tags; Stencils; Pipe Markers.
- PART 2 PRODUCTS
- 2.01 MANUFACTURERS
- A. Brady Corporation; Champion America, Inc; Seton Identification Products.
- 2.02 NAMEPLATES
 A. Description: Laminated three-layer plastic with engraved letters: Letter Color: White; Letter Height: 1/4 inch; Background Color: Black.
- 2.03 TAGS

 A. Plastic Tags: Laminated three-layer plastic with engraved black letters on light contrasting background color. Tag size minimum 1-1/2 inch diameter.
 B. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch diameter with smooth edges.

 2.04 STENCILS
- A. Stencils: With clean cut symbols and letters of following size:
 3/4 to 1-1/4 inch Outside Diameter of Insulation or Pipe: 8 inch long color
 - field, 1/2 inch high letters. 2. 1-1/2 to 2 inch Outside Diameter of Insulation or Pipe: 8 inch long color
 - field, 3/4 inch high letters.
 - 2-1/2 to 6 inch Outside Diameter of Insulation or Pipe: 12 inch long color field, 1-1/4 inch high letters.
 - 4. 8 to 10 inch Outside Diameter of Insulation or Pipe: 24 inch long color
- field, 2-1/2 inch high letters. 5. Equipment: 2-1/2 inch high letters.
- B. Semi-gloss enamel, colors conforming to ASME A13.1. 2.05 PIPE MARKERS
- PIPE MARKERS
 A. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed
 to fit around pipe or pipe covering: minimum information indication flow direction
- to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.
- B. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.
- PART 3 EXECUTION

PART 1 GENERAL

PART 2 PRODUCTS

2.02 MATERIALS

PART 3 EXECUTION

PART 1 GENERAL

3.01 PREPARATION AND INSTALLATION

3.02 CLEANING AND PROTECTION

1.01 SECTION INCLUDES

indicated

2.01 FIRESTOPPING ASSEMBLIES

- 3.01 INSTALLATION A. Install plastic and plastic tape pipe markers in accordance with manufacturer's instructions
- B. Identify pumps and valves with plastic nameplates. Small devices, such as in-line pumps, may be identified with tags.
 - Identify valves in main and branch piping with tags.

Firestopping materials and Firestopping of all penetrations and interruptions to

fire rated assemblies, whether indicated on the Drawings, and other openings

A. Firestopping: Any material meeting requirements: Fire Ratings: Use any system

A. Elastomeric Silicone Firestopping: Single or multiple component silicone

Rating and that meets all other specified requirements.

Products; Specified Technologies, Inc.

Products: Specified Technologies, Inc.

Products; Specified Technologies, Inc

Technologies, Inc; USG.

manufacturer's instructions.

Install labeling required by code.

A. Clean adjacent surfaces of firestopping materials.

listed by UL or FM or tested in accordance with ASTM E 814 or ASTM E 119 that has F

Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F

elastomeric compound and compatible silicone sealant; conforming to the following:

following: Durability and Longevity: Permanent; Color: Manufacturer's standard

Fiber Packing Material: Mineral or ceramic fiber packing insulation; conforming to

Protection Systems Inc; 3M Fire Protection Products; Pecora Corporation; Specified

Durability and Longevity: Permanent; Manufacturers: A/D Fire Protection Systems

Inc; Grace Construction Products; 3M Fire Protection Products; Nelson Firestop

the following: Durability and Longevity: Permanent; Manufacturers: A/D Fire

Firestop Pillows: Formed mineral fiber pillows; conforming to the following:

Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other

Install materials in manner described in fire test report and in accordance with

natter which may affect bond of firestopping material.

Protect adjacent surfaces from damage by material installation.

END OF SECTION

SECTION 211300 - FIRE-SUPPRESSION SPRINKLER SYSTEMS

Durability and Longevity: Permanent; Color: Manufacturer's standard color;

Manufacturers: A/D Fire Protection Systems Inc; 3M Fire Protection

B. Foam Firestoppping: Single or multiple component foam compound; conforming to the

color; Manufacturers: A/D Fire Protection Systems Inc; 3M Fire Protection

END OF SECTION

Section 210595 - Fire Stopping for Fire suppression systems

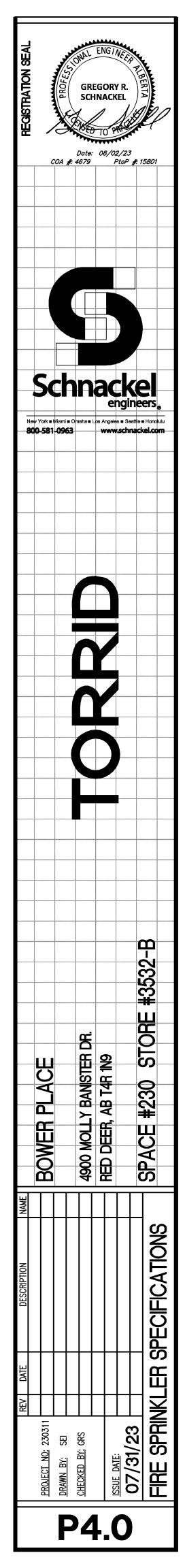
SECTION INCLUDES
 A. Wet-pipe sprinkler system; System design, installation, and certification.

PART 2 PRODUCTS

- 2.01 SPRINKLER SYSTEM
- A. Sprinkler System: Provide coverage for entire building unless noted otherwise on the Drawings.
- B. Occupancy: As required by NFPA hazard classifications or as indicated on the Drawings whichever is more stringent.
- C. Water Supply: Determine volume and pressure from water flow test data.
- Interface system with building fire and smoke alarm system.
 Provide fire department connections in the location(s) indicated on the Drawings and as approved by the local authority.
- 2.02 SPRINKLERS A. ALL S
- A. All Sprinkler Fusible Links: Fusible solder link type or glass bulb type, temperature rated for specific area hazard.
 B. Suspended Acoustical Ceiling Type: Semi-recessed pendant type with matching push on escutcheon plate; Finish: Chrome plated; Escutcheon Plate Finish: Chrome
- C. Hard Surface Ceiling Type: Recessed pendant type with flush cover plate; Finish: Brass, Chrome or Enamel; Cover and Escutcheon Plate Finish: Chrome or Enamel, color as selected from manufacturer's colors; Adjustment: 1/2" minimum.
- D. Exposed Area Type: Standard upright type; Finish: Brass.
 E. Sidewall Type: Semi-recessed horizontal sidewall type with matching push on escutcheon plate; Finish: Chrome plated or Enamel, color as selected from manufacturer's standard colors; Escutcheon Plate Finish: Chrome plated.
 F. Guards: Finish to match sprinkler finish.
- 2.03 PIPING SPECIALTIES
 A. Water Flow Switch: Vane type switch for mounting horizontal or vertical, with two contacts; rated 10 amp at 125 volt AC and 2.5 amp at 24 volt DC.
 B. Supervisory Switches: As required by NFPA and Local Authorities.
- PART 3 EXECUTION
- 3.01 INSTALLATION
 - A. Install in accordance with referenced NFPA design and installation standard.
 B. Install equipment in accordance with manufacturer's instructions.
 B. Provide approved backflow preventer assembly at sprinkler system water source
 - connection.
 - G. Place pipe runs to minimize obstruction to other work.
 H. Place piping in concealed spaces above finished ceilings.
 - . Center sprinklers in two directions in ceiling tile and provide piping offsets as required.
- J. Center all sprinklers symmetrically with respect to all soffits, light fixtures, air diffusers and other ceiling features. Approval of the Architect and Engineer at shop drawing review will be required for all sprinkler head layouts. Provide offsets and adjustments as required by the Architect/Engineer's review comments.
 K. Apply masking tape or paper cover to ensure concealed sprinklers, cover plates, and sprinkler escutcheons do not receive field paint finish. Remove after painting.
- Replace painted sprinklers.
- L. Flush entire piping system of foreign matter.
- M. Install guards on sprinklers where exposed to damage. N. Hydrostatically test entire system.
- 0. Require test be witnessed by Fire Marshal and authority having jurisdiction.
 3.02 INTERFACE WITH OTHER PRODUCTS

 A. Ensure required devices are installed and connected as required to fire alarm
- system.
 B. Verify that proper power supply is available prior to ordering equipment. Verify proper voltage, phase and current rating of power supply and inform Engineer of any deviations prior to order, connection of equipment or start-up. Responsibility for verification of proper power supply voltage and any product returns or damage resulting from incorrect connections shall rest with this Contractor.

END OF SECTION



SECTION 220000 - PLUMBING GENERAL CONDITIONS

PART 1 GENERAL 1.01 SUMMARY

- A. This section supplements all sections of the Specifications for this Division and shall apply to all phases of work hereinafter specified, shown on the Contract Documents, or required to provide a complete installation of approved plumbing
- All drawings and specifications, including drawings and specifications related to other divisions, apply to the work. Where conflicts arise between documents, the more stringent requirement shall apply, subject to the interpretation of the
- Engineer C. Furnish all labor, material, services, and skilled supervision necessary for the construction, erection, installation, connections, testing, and adjustment of all materials and plumbing equipment specified herein, or shown or noted on the Drawings, and its delivery to the Owner, complete in all respects and ready for
- Products furnished but not installed under this section: Where plans indicate fixtures or equipment will be furnished by this Contractor for installation by other Contractors, this Contractor shall furnish all such equipment, complete in all respects and ready for
- installation. 2. Drawings, instructions, and manuals supplied with equipment furnished under this Division, but installed under other Divisions shall be carefully preserved and turned over to the installing Contractor.
- Products installed but not furnished under this section: Where plans indicate fixtures or equipment will be furnished by others, this
- Contractor shall provide all rough-in and supplies and shall connect such equipment to the plumbing systems. Drawings, instructions, and manuals supplied with equipment furnished under 2 separate Divisions but installed under this Division shall be carefully

preserved and turned over to the Architect. 1.02 DEFINITIONS The following definitions apply throughout the drawings and specifications

- associated with the work performed under this Division Authority Having Jurisdiction: All regulatory agencies, including but not limited to, plans examiners, fire marshals, inspectors, insurance carriers. and utility companies.
- Concealed: Hidden from sight in chases, furred spaces, shafts, hung
- ceilings, embedded in construction, in crawl spaces, or underground. Conduit: Conduit or tubing and all required fittings, pull boxes, hangers,
- and other supports and accessories related to such. Code: All applicable codes, including but not limited to the administrative code, building code, electrical code, energy conservation code, existing building code, fire code, fuel gas code, mechanical code, plumbing code, and
- residential code. Code, Administrative: The administrative code, including all local amendments and reference standards, adopted and enforced by the Authority Havina Jurisdiction.
- Code, Building: The administrative code, including all local amendments and 6. reference standards, adopted and enforced by the Authority Having Jurisdiction
- Code, Electrical: The electrical code, including all local amendments and 7. reference standards, adopted and enforced by the Authority Having Jurisdiction
- Code, Energy Conservation Code: The energy conservation code, including all local amendments and reference standards, adopted and enforced by the Authority Having Jurisdiction. Code, Existing Building: The existing building code, including all local
- amendments and reference standards, adopted and enforced by the Authority Having Jurisdiction Code, Fire: The fire code, including all local amendments and reference 10.
- standards, adopted and enforced by the Authority Having Jurisdiction. Code, Fuel Gas: The fuel gas code, including all local amendments and reference standards, adopted and enforced by the Authority Having
- Jurisdiction 12. Code, Mechanical: The mechanical code, including all local amendments and reference standards, adopted and enforced by the Authority Having Jurisdiction
- 13. Code, Plumbing: The plumbing code, including all local amendments and reference standards, adopted and enforced by the Authority Having
- Jurisdiction. Code, Residential: The residential code, including all local amendments and reference standards, adopted and enforced by the Authority Having Jurisdiction
- Connect: To bring service to the equipment and make final attachment 15. including necessary switches, outlets, boxes, terminations, etc.
- 16. Contract Documents: All drawings, specifications, specified reference standards, applicable codes, manufacturer's installation instructions, and executed legal documents related to the project.
- Contractor: The contractor(s) or subcontractor(s) responsible for performing the work associated with Divisions 26, 27, and 28, and ultimately the General Contractor. 18. Drawings: All plans, details, equipment schedules, diagrams, sketches, etc.
- issued for the construction of the work. Exposed: Not concealed. Furnish: To supply and deliver, unload, and inspect for damage.
- 21. Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, connect, and place into operation into the work. Uwner: Ine entity, including authorized representatives, to which the work
- is being provided. Provide: To furnish and install.
- Work: The construction and services, including all labor, materials, and equipment, required by the contract documents to fulfill the Contractor's obligations. The work may constitute the whole or a part of the project. 1.03 CODES AND STANDARDS
 - Perform work in accordance with code requirements. Perform work in accordance with:
 - Occupational Safety and Health Administration (OSHA) Regulations. Americans with Disabilities Act (ADA)
 - The Authority Having Jurisdiction (AHJ)
 - Landlord requirements including Tenant Criteria Manuals and Lease Exhibits. Utility company requirements. Make all arrangements with the utility companies for proper coordination of the work.
 - All Referenced Standards identified in the specifications apply to the work as if they were incorporated into the specifications in their entirety. It shall not be necessary to specifically reference one of these Referenced Standards for the requirements of the Referenced Standards to apply to the work. If there is a conflict between the requirements of a Referenced Standard and the drawings or specifications, it is the responsibility of this Contractor to notify the Engineer of the discrepancy and obtain direction as to which standard applies prior to
 - proceeding D. Code, Landlord, and utility company requirements supersede any requirements of the contract documents. The contract documents take precedence where the contract documents exceed code,
- Landlord, utility, or referenced standards requirements. 1.04 PERMITS AND FEES
- Permits, licenses, fees, inspections and arrangements required for the work under this Contract shall be obtained by the Contractor at his expense, unless otherwise indicated. B. All fees and scheduling associated with obtaining an accurate water flow test shall
- be at the Contractor's expense. 1.05 PREPARATION
 - The Contractor is responsible to obtain, fully understand, and coordinate the work with the complete set of Contract Documents. Any required corrections, including all associated costs, arising from issues caused by the Contractor's failure to understand and/or coordinate the work with the complete set of Contract Documents are the Contractor's sole responsibility
 - Work under these sections is diagrammatic unless indicated otherwise and is intended to convey the scope of work and indicate the general arrangement of piping, equipment, and accessories. Follow these drawings in laying out the work and verify spaces for the installation of these materials and equipment. Wherever a question exists as to the exact intended location of pipe, sprinklers, or equipment, obtain instructions from the Architect before proceeding with the work. Notify the Architect/Engineer for resolution if a discrepancy is discovered within the Contract Documents. Failure of the Contractor to notify the Architect/Engineer of discrepancies shall result in the resolution becoming the Contractor's
 - responsibility and subject to the Architect/Engineer's review and possible rejection. Should the Architect/Engineer reject a discrepancy resolution of which they were not notified, the Contractor is fully responsible to correct the installation, including all associated costs, until approval of the installation is given by the Architect/Engineer.
- 1.06 EXISTING CONDITIONS
 - Verify all existing conditions prior to beginning work. Any existing conditions indicated are based on information provided by others and possible limited field verification. Visit the project site, review existing conditions against the contract documents, and become familiar with the work prior to bidding and start of the work.
 - Adjust for actual field conditions at no additional expense to the Owner If major discrepancies are found, the Contractor shall advise the Architect/Engineer of such deviations in writing so that the appropriate
 - modifications to the design can be made without delay to the project. a. The Contractor assumes full responsibility of adjusting for discrepancies of which the Architect/Engineer is not informed.
 - Signing the contract is an acknowledgement that the site visit has been completed and the existing conditions are accepted.
 - Verify field measurements are as indicated.
 - Verify all pipe locations and sizes in field prior to fabrication or installation. Verify all equipment locations in field prior to installation. Coordinate final locations with all trades The Owner shall have first salvage right on all demolished equipment and materials.
 - The Contractor shall dispose of all demolished equipment and materials the Owner rejects.

- Where connections are made between new work ar shall be made by using materials and methods Where existing conditions are shown to be remo
- on the Drawings, this Contractor shall perform Existing pipe run-outs shall be removed all th appropriate methods.
- Where existing work is to be modified, it shal specifications. Materials used shall be same otherwise.
- 1.07 SUBMITTALS Furnish the Architect/Engineer product data an the individual specification sections, for rev Only submittals specifically required to
- review within the individual specificat Engineer
- Indicate the corresponding equipment tag on ea equipment. Indicate all proposed catalog numbers.
- Product data shall consist of manufacturer's cut-sheets.
- Submittals shall be concise and to the point Ε. parameters indicated in the contract document the materials used to manufacture the product the specific requirements of the contract doc superfluous information such as non-applicabl sheets, and/or sales brochures. Submittals th and/or non-specific to the requirements of the
- without Engineer review. The Architect/Engineer's review shall not reli responsibility for errors within the submitta If a submittal deviates from the requirements
- Contractor shall advise the Architect/Enginee accompanying the submittal, including the reas Submittals are reviewed only for general compl Dimensions, quantities and details are not ch
- of the submittals does not relieve the Contrac providing all materials, equipment and accesso operational system meeting the requirements of Contract Documents. The responsibility for co and equipment lies solely with the substituti
- 1.08 QUALITY ASSURANCE Manufacturer Qualifications: Company special specified in this section with minimum five y
- Installer Qualifications: Company specializi в. section with minimum five years' experience. С. All Products:
- Listed and classified by Underwriters Lo purpose specified and indicated. Listed and classified by the local Depar
- an acceptance number, where applicable Listed and classified by the Landlord's
- where applicable. All equipment and components shall be free of damage. All items not complying with this red additional cost to the Owner.
- Equipment performance and accessories shall be specified herein. Inclusion in both locations in the Contract. Equipment and accessories so included in the Contract. Provide all necess required for a complete, functional system,
- reasonably inferred to as necessary although specifically indicated on the Drawings or with Code or utility company requirements shall sup of this section.
- Fill Composition Test Reports: Results of lab used: Compaction Density Test Reports 1.09 DELIVERY, STORAGE, AND HANDLING
- Receive, inspect, handle, and store products instructions. Protect products from physical Provide temporary protective coating on cast
- Provide temporary end caps and closures on pip until installation. Protect motors stored on site from weather and
- covers and suitable weatherproof covering. motors from equipment and store separately. 1.10 WARRANTY AND GUARANTEE
- Provide a complete parts and labor warranty ar for a period of one year from Owner acceptance warranty and guarantee shall cover all failur
- installation, unless such failure is directly other than defects in material or workmanship. Additional warranty and guarantee terms in exc within the individual sections of Division 22.

PART 2 PRODUCTS 2.01 SUBSTITUTIONS

- The manufacturers listed are listed to set min and functionality. The products of other manu Contractor's option, during shop drawing revie products of other manufacturers shall meet o Contract Documents. The Contractor accepts al coordination issues arising out of the substi the coordination of such substitutions with a subcontractors.
- 2.02 Source Limitations: Furnish equipment and associate by a single manufacturer and obtained from a single
- PART 3 EXECUTION 3.01 COORDINATION OF WORK
 - A. Examine the Contract Documents as a whole for all work accordingly. Work lines and established heights shall be in
 - documents. Verify all dimensions shown and est dimensions not shown.
 - Promptly report to the Architect any delay or installation of the work, which might prevent make it unsuitable to connect with or receive report shall constitute an acceptance of the proper for the execution of this work. Plan, lay out, and coordinate the work with a
 - that it proceeds with a minimum of interferenc and work that is in progress. Inform all trades of openings required
 - frames, sleeves, and anchor bolts requi The plumbing system layout may be alter the installation of any work and without Perform all work in compliance with the
 - trades reasonable opportunity for the e> Properly connect and coordinate this wor such time and in such a manner as not t
 - 5. Conflicts arising from lack of coordinat responsibility.
 - The Contractor shall pay for all α. necessary by his failure to proper
 - Wherever pipe runs in or above ceilings or wal run of pipe in such a manner that it does not outlet boxes, luminaires, or other ceilina mou
 - Install systems, materials and equipment to p access to equipment requiring service when sel G. Install plumbing equipment to facilitate servi
 - replacement of equipment components. As much ease of disconnecting, with minimum of interfe Install systems, materials and equipment level perpendicular to building lines where exposed
 - Manufacturer's instruction sheets shall be fol of all equipment. Where manufacturer's instru requirements of these specifications or the Dr
 - brought to the attention of the Architect/Engi All roofing penetrations shall be flashed and manufacturer's authorized roofing contractor Contractor shall contract with the factory aut
 - specific roofing system applicable to this Pr roofing contractor may result in removal and at this Contractor's expense. Although all such work is not specifically ind supplementary or miscellaneous items, appurter
 - necessary for a sound, secure and complete ins Verify and coordinate all requirements and ins and equipment that are to be furnished under connected under this Division prior to rough-i
 - coordination shall be this Contractor's respon responsible to: Obtain and review shop drawings, product
 - diagrams, and manufacturer's instruction sections. Determine connection locations and requi
 - Sequence rough-in of plumbing connection equipment.
 - Utilize galvanized steel hangers and supports environments, including all exterior locations Where crane rental or other erection is requir the plumbing contract, unless specific arrange

and existing work, the connections s to suit the actual conditions. emoved, by means of a hatched pattern,	Contractor to cover these costs. O. Verify that mounting surfaces are ready to receive support and attachment components.	mm), and debris. C. Granular Fill – Gravel : Pit run stone; free of shale, clay, friable material and debris.
orm all work required for removal. the way back to mains and capped using	P. Verify that conditions are satisfactory for installation prior to starting work. 3.02 COORDINATION DRAWINGS	 D. Granular Fill - Pea Gravel : Natural stone; free of clay, shale, organic matter. E. Sand: Natural river or bank sand; free of silt, clay, loam, friable or soluble
hall be done in conformance with these me as existing except where specified	A. Prepare coordination drawings to a scale of 1/4"=1'-0" or larger; detailing major elements, components, and systems of plumbing equipment and materials in relationship with other systems, installations, and building components. Indicate locations where space is limited for installation and access and where sequencing	materials, and organic matter. F. Topsoil: Topsoil excavated on-site. 1. Select. 2. Free of roots, rocks larger than 1/2 inch (12mm), subsoil, debris, large weeds and foreign matter.
and/or shop drawings, as specified in review.	and coordination of installations are of importance to the efficient flow of the work, including (but not necessarily limited to) the following: 1. Indicate the proposed locations of conduits, equipment, and materials.	3. Acidity range (pH) of 5.5 to 7.5. 4. Containing a minimum of 4 percent and a maximum of 25 percent inorganic
to be provided for Architect/Engineer ation sections will be reviewed by the	Include the following: a. Clearances required for maintaining Code required working space.	matter. 2.02 ACCESSORIES
each unique component or piece of	 Equipment connections and support details. Exterior wall and foundation penetrations. Fire-rated wall and floor penetrations. 	A. Geotextile Fabric: Non-biodegradable, woven, standard grade. PART 3 EXECUTION
s standard catalog pages and/or	e. Sizes and location of required concrete pads and bases. f. Indicate scheduling, sequencing, movement, and positioning of large equipment into the building during construction.	3.01 EXAMINATION A. Identify required lines, levels, contours, and datum locations. B. Locate, identify, and protect utilities and construction that remains and protect
t, demonstrating the key performance nts, major dimensions, and identifying	g. Prepare floor plans, elevations, and details to indicate penetrations in floors, walls, and ceilings and their relationship to other	from damage. 3.02 TRENCHING
cts. Submittals shall directly address ocuments without unnecessary, ble catalog pages, non-applicable cut	penetrations and installations. 2. Coordination drawings are for use between the different construction trades and will not be reviewed by the Architect/Engineer.	 A. Notify Engineer of unexpected subsurface conditions and discontinue affected work in area until notified to resume work. B. Slope banks of excavations deeper than 4 feet (1.2 meters) to angle of repose or
that are deemed overly voluminous the contract documents will be returned	3.03 INTERFACES A. Install all pipe, equipment, and accessories to preserve fire resistance rating of	less until shored. C. Do not interfere with 45 degree bearing splay of foundations.
elieve the Contractor from tals.	partitions and other elements, using materials and methods specified. 3.04 FIELD QUALITY CONTROL A. Provide tests as necessary to establish the adequacy, quality, safety, completed	 D. Cut trenches wide enough to allow inspection of installed utilities. E. Hand trim excavations. Remove loose matter. F. Remove large stones and other hard matter which could damage piping or impede
ts of the contract documents, the eer of the deviation in writing eason for the deviation.	status, and suitable operation of each system. B. Install all equipment, devices, pipe, and materials securely and in a neat and workmanlike manner in accordance with all applicable standards and codes.	consistent backfilling or compaction. G. Remove lumped subsoil, boulders, and rock up to 1/3 cu yd (0.25 cu m) measured by volume.
mpliance with the Contract Documents. checked during submittal review. Review	C. Install all equipment, pipe, and materials plumb and level and align and adjust for satisfactory operation.	H. Remove excavated material that is unsuitable for re-use from site. I. Stockpile excavated material to be re-used in area designated on site .
ractor of the responsibility for ssories necessary for a complete and of the project and the intent of the	 D. Install all equipment, pipe, and materials in accordance with the manufacturer's instructions and recommendations. E. Inspect all equipment, pipe, and materials for defects. 	J. Remove excess excavated material from site. 3.03 PREPARATION FOR UTILITY PLACEMENT A. Cut out soft areas of subgrade not capable of compaction in place. Backfill with
coordination of substituted materials ting Contractor.	3.05 ERECTION A. Rigging:	general fill. B. Compact subgrade to density equal to or greater than requirements for subsequent
alizing in manufacturing the Products years'experience.	1. The Plumbing Contractor shall arrange for all labor and equipment required for the proper installation of the plumbing equipment in the locations indicated on the Drawings. Where crane rental or other erection is required,	fill material. C. Until ready to backfill, maintain excavations and prevent loose soil from falling into excavation.
zing in performing the work of this . Approved by manufacturer.	such costs shall be included in the Plumbing Contract, unless specific arrangements are made with the General Contractor to cover these costs. B. Supplemental Framing:	3.04 BACKFILLING A. Backfill to contours and elevations indicated using unfrozen materials. B. Fill up to finish grade or slab elevations unless otherwise indicated.
Laboratories Inc. as suitable for the	 Provide the design, fabrication, and erection of supplementary structural framing required for attachment of hangers or other devices supporting 	C. Employ a placement method that does not disturb or damage other work. D. Systematically fill to allow maximum time for natural settlement. Do not fill over
partment of Buildings and furnished with e. 's and/or Owner's insurance carrier,	plumbing equipment. Provide framing members of standard rolled steel shapes, A-36 steel. Provide members welded to structural members equal to the specification for the main structural member. Provide "simple beam" type	porous, wet, frozen or spongy subgrade surfaces. E. Maintain optimum moisture content of fill materials to attain required compaction density.
of all rust/corrosion or any visible	framing with end connections welded or bolted for shear loads. Use cantilevers when detailed or specifically approved by the Architect/Engineer.	F. Granular Fill: Place and compact materials in equal continuous layers not exceeding 8 inches (200 mm) compacted depth.
requirement shall be replaced at no be as scheduled on the Drawings and	The Architect/Engineer's approval is required for location of supplementary framing. Use only certified welders. Design framing members for their actual loads, with allowable stresses specified by AISC, without excessive	G. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches (200 mm) compacted depth. H. Slope grade away from building minimum 2 inches in 10 ft (50 mm in 3 m), unless
ons is not a prerequisite to inclusion specified in either location shall be	deflection and with consideration for rigidity under vibration, in accordance with standard structural practices. Show on shop drawing supplementary	noted otherwise. Make gradual grade changes. Blend slope into level areas. I. Correct areas that are over-excavated.
ssary accessories and connections as including all required components h such components may or may not be	framing, including design loads, member size and location. 3.06 CUTTING, PATCHING, AND PIERCING A. Cutting of openings and installation of sleeves or frames through walls and	J. Thrust bearing surfaces: Fill with concrete. K. Other areas: Use general fill, flush to required elevation, compacted to minimum 95 percent of maximum dry density.
ithin the Specifications. supersede any conflicting requirements	surfaces shall be done in a neat workmanlike manner. Openings shall be cut only as large as required for the installation; sleeves and/or frames installed flush with finished surfaces and grouted in place. Surfaces around openings shall be left	L. Compaction Density Unless Otherwise Specified or Indicated: 1. Under paving, slabs-on-grade, and similar construction: 97 percent of maximum dry density.
laboratory tests on actual materials	smooth and finished to match surrounding surface. B. Obtain written permission of the Architect/Engineer before cutting or piercing	2. At other locations: 95 percent of maximum dry density. M. Reshape and re-compact fills subjected to vehicular traffic.
s in accordance with manufacturer's I damage.	structural members. Use craftsmen skilled in their respective trades for cutting, fitting, repairing, patching of plaster, and finishing of materials including carpentry work, metal work or concrete work required for this work.	3.05 BEDDING AND FILL AT SPECIFIC LOCATIONS A. Use general fill unless otherwise specified or indicated. B. Utility Piping, Conduits, and Duct Bank :
t iron and steel valves. piping and fittings. Maintain in place	C. Do not weaken walls, partitions, or floors with cutting. Holes required to be cut in floors must be drilled without breaking out around the holes. The	1. Bedding: Use granular fill. 2. Cover with general fill.
and moisture by maintaining factory For extended outdoor storage, remove	Architect/Engineer will determine suitability of patching and/or refinishing requirements. D. The Plumbing Contractor is responsible for patching of all openings resulting from	 Fill up to finish grade elevation. Compact in maximum 8 inch (200 mm) lifts to 95 percent of maximum dry density.
and guarantee on all systems installed	the installation or removal of plumbing equipment or materials. E. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.	C. Over Subdrainage Piping at Foundation Perimeter and Under Slabs: 1. Drainage fill and geotextile fabric. 2. Cover drainage fill with general fill.
nce of the completed facility. This ures of any equipment, materials or	F. Patch existing finished surfaces and building components using new materials matching existing materials and experienced Subcontractors.	 Fill up to finish grade elevation. Compact to 95 percent of maximum dry density.
ly attributable to vandalism, or causes ip. excess of this requirement are specified	G. Fire and Smoke Partition Penetrations: The Contractor shall familiarize himself with all fire rated construction and install his work so as to maintain the integrity of the fire code rating. Maintain rating of fire rated and smoke rated	3.06 TOLERANCES A. Top Surface of General Backfilling: Plus or minus 1 inch (25 mm) from required elevations.
22.	construction. Seal annular space around conduits. For fire and smoke rated floors, walls and partitions, use UL listed material that maintains fire rated wall and floor integrity.	B. Top Surface of Backfilling Under Paved Areas: Plus or minus 1 inch (25 mm) from required elevations. 3.07 FIELD QUALITY CONTROL
minimum standards for quality, design,	3.07 CLEANING AND REPAIR A. Clean plumbing parts to remove harmful materials.	A. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, ASTM D2922, or ASTM D3017.
anufacturers may be submitted, at the view unless indicated otherwise. The or exceed all requirements of the	B. Clean exposed surfaces of all pipe, equipment, and accessories of all dirt, debris, splatter, and other deleterious materials. Follow the manufacturer's recommendations for cleaning as applicable.	B. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D 698 ("standard Proctor"), ASTM D 1557 ("modified Proctor"), or AASHTO T 180.
all responsibility for costs and titution of materials or equipment, and all other contractors and	C. Repair or replace damaged pipe, equipment, and accessories, as directed by and to the satisfaction of the Architect, where marring or disfigurement has occurred.	C. If tests indicate work does not meet specified requirements, remove work, replace and retest. D. Frequency of Tests: Every two feet.
ated components and accessories produced	All pipe, equipment, and accessories shall be new. 3.08 TESTING AND INSPECTION A. Upon completion, the entire system shall be tested under operating conditions.	3.08 CLEAN-UP A. Leave unused materials in a neat, compact stockpile.
le supplier.	 All equipment shall be tested under service conditions and proven to operate properly and noiselessly. All additional tests as required throughout this Specification shall be 	 B. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water. C. Leave borrow areas in a clean and neat condition. Grade to prevent standing
or the work of other trades. Coordinate	completed with results reported back to the Architect/Engineer for review. B. Operate all equipment, after installation and connection. Inspect for improper connections and operation and correct deficiencies as required.	surface water. END OF SECTION
in strict accordance with the contract establish all elevations and detailed	C. Inspection: 1. Upon completion of the work, the Contractor shall obtain certificates of	SECTION 220516 - EXPANSION FITTINGS AND LOOPS FOR PLUMBING PIPING
or difficulties encountered in the nt prompt and proper installation, or	inspection and approval from all City and State Authorities Having Jurisdiction. 3.09 PROJECT CLOSEOUT	PART 1 GENERAL 1.01 SUBMITTALS A. Provide the following for Architect/Engineer review:
ve the work of others. Failure to so e work of other trades as being fit and	 A. Project Record Documents: 1. Provide one printed copy and one electronic copy of project record drawings 	1. Product Data: a. Flexible Pipe Connectors: Indicate maximum temperature and pressure
all trades well enough in advance so ence to work that has not been completed	to the Owner. 2. These drawings shall remain at the construction site throughout construction and shall be updated on a daily basis.	rating, face-to-face length, live length, hose wall thickness, hose convolutions per foot (meter) and per assembly, fundamental frequency of assembly, braid structure, and total number of wires in braid.
d for the work and provide all special uired.	 These drawings shall be available for review by the Architect/Engineer at all times. Include information required in the individual specification sections. 	 Expansion Joints: Indicate maximum temperature and pressure rating, and maximum expansion compensation. Design Data: Indicate locations and calculations.
ered to suit the conditions, prior to out additional cost to the Owner.	 B. Operation and Maintenance Data: 1. Provide one printed copy and one electronic copy of operation and maintenance 	B. Provide the following to the Owner upon project closeout: 1. Manufacturer's Instructions: Indicate manufacturer's installation
he contract documents and afford other execution of their work. work with the work of other trades at	data to the Owner, including: a. All submittals required in the individual specification sections. b. All manufacturers' warranty information.	instructions, special procedures, and external controls. 2. Maintenance Data: Include adjustment instructions. 3. Project Record Documents: Record installed locations of flexible pipe
to delay or interfere with their work. nation shall be the Contractor's	c. All certificates of compliance with testing or regulatory requirements. d. All test reports. 2. Organize all information by specification section.	connectors, expansion joints, anchors, and guides.
l extra cutting and patching made perly direct such work at the correct	END OF SECTION	2.01 FLEXIBLE PIPE CONNECTORS - STEEL PIPING A. Inner Hose: Carbon steel.
walls, the Contractor shall arrange the ot interfere with grilles, diffusers,	SECTION 220501 - TRENCHING AND BACKFILL FOR PLUMBING SYSTEMS PART 1 GENERAL	B. Exterior Sleeve: Single braided, stainless steel. C. Pressure Rating: 125 psi and 450 degrees F (862 kPa and 232 degrees C). D. Joint: Flanged.
mounted items. provide for maximum headroom. Maintain	1.01 DEFINITIONS A. Subgrade Elevations: 4 inches (100 mm) below finish grade elevations indicated on	E. Size: Use pipe sized units. F. Maximum offset: 3/4 inch (20mm) on each side of installed center line. 2.02 FLEXIBLE PIPE CONNECTORS - COPPER PIPING
selecting mounting elevations. rvicing, maintenance, and repair or ch as practical, connect equipment for	drawings, unless otherwise indicated. B. Finish Grade Elevations: 4 inches (100 mm) above subgrade elevations indicated on drawings, unless otherwise indicated.	A. Inner Hose: Bronze. B. Exterior Sleeve: Braided bronze.
rference with other installations. vel and plumb, parallel and ed to view, unless otherwise indicated.	1.02 SUBMITTALS A. Submittals for Architect/Engineer review are not required. B. Provide the following to the Owner upon project closeout:	C. Pressure Rating: 125 psi and 450 degrees F (862 kPa and 232 degrees C). D. Joint: Flanged. E. Size: Use pipe sized units.
followed explicitly in the installation truction sheets conflict with	 Fill Composition Test Reports: Results of laboratory tests on actual materials used. 	F. Maximum offset: 3/4 inch (20 mm) on each side of installed center line. G. Application: Copper piping.
Drawings, such conflicts shall be ngineer for clarification. nd weather sealed by the roofing	 Compaction Density Test Reports. 1.03 PROJECT CONDITIONS A. Provide sufficient quantities of fill to meet project schedule and requirements. 	PART 3 EXECUTION 3.01 INSTALLATION
r at this Contractor's expense. This authorized roofing contractor for the Project. The use of an unauthorized	When necessary, store materials on site in advance of need. B. When fill materials need to be stored on site, locate stockpiles where designated. 1. Separate differing materials with dividers or stockpile separately to prevent	A. Install in accordance with EJMA (Expansion Joint Manufacturers Association) Standards. B. Install flexible pipe connectors on pipes connected to vibration isolated
d replacement of the penetration systems	intermixing. 2. Prevent contamination.	equipment. Provide line size flexible connectors. C. Install flexible connectors at right angles to displacement. Install one end
indicated, furnish and install all tenances and devices incidental to or installation.	 Protect stockpiles from erosion and deterioration of materials. Verify that survey bench marks and intended elevations for the Work are as indicated. 	immediately adjacent to isolated equipment and anchor other end. Install in horizontal plane unless indicated otherwise. D. Anchor pipe to building structure where indicated and as required to control
installation details of all materials r other Divisions and installed or h-in. Conflicts arising from lack of	 D. Protect plants, lawns, rock outcroppings, existing construction, and other features to remain. E. Protect bench marks, survey control points, existing structures, fences, sidewalks, 	detrimental movement of piping. Provide pipe guides so movement is directed along axis of pipe only. Erect piping such that strain and weight is not on connections or apparatus.
ponsibility. As such, the Contractor is	paving, and curbs from excavating equipment and vehicular traffic. F. Code requirements shall supersede any conflicting requirements of this section.	E. Provide support and equipment required to control expansion and contraction of piping. Provide loops, pipe offsets, and swing joints, or expansion joints where
uct data, manufacturer's wiring ions for equipment furnished under other	PART 2 PRODUCTS 2.01 FILL MATERIALS	required. F. Contractor may substitute grooved piping for vibration isolated equipment instead of flexible connectors. Grooved piping need not be anchored.
quirements. ions to coordinate with installation of	A. General Fill: Subsoil excavated on-site. 1. Graded. 2. Free of lumps larger than 3 inches (75 mm), rocks larger than 2 inches (50	END OF SECTION SECTION 220719 - PLUMBING PIPING INSULATION
ts in all wet, damp, and corrosive ons.	mm), and debris. B. Structural Fill: Subsoil excavated on-site.	PART 1 GENERAL
uired, such costs shall be included in ngements are made with the General	1. Graded. 2. Free of lumps larger than 3 inches (75 mm), rocks larger than 2 inches (50	1.01 SUBMITTALS A. Provide the following for Architect/Engineer review:

GREGORY R

SCHNACKEL

Date: 08/02/23

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- Product Data: Provide product description, thermal characteristics, list of 1.02 FIELD CONDITIONS materials and thickness for each service, and locations. A. Do not install underground piping when be Provide the following to the Owner upon project closeout: Β. Manufacturer's Instructions: Indicate installation procedures that ensure PART 2 PRODUCTS 2.01 GENERAL REQUIREMENTS acceptable workmanship and installation standards will be achieved. 1.02 FIELD CONDITIONS Maintain ambient conditions required by manufacturers of each product. and fittings. 2.02 THE CONTRACTOR MAY USE ANY OF THE FOLLOWING PIF Maintain temperature before, during, and after installation for minimum of 24 hours SELECTED MATERIAL MEETS WITH THE APPROVAL OF A COMPANY REQUIREMENTS. VERIFICATION OF COMPLIAN PART 2 PRODUCTS LOCAL REQUIREMENTS IS THE SOLE RESPONSIBILITY 2.01 REGULATORY REQUIREMENTS A. Surface Burning Characteristics: Flame spread index/Smoke developed index of USE OF PLASTIC PIPING SYSTEMS WITH THE LOCAL JU 25/50, maximum, when tested in accordance with ASTM E84 or UL 723. MAY NOT BE USED IN ANY RETURN AIR PLENUM CEILIN The Contractor may use any of the following insulating/jacketing materials, at his LOCATIONS. NO EXCEPTIONS. 2.03 SANITARY SEWER PIPING, BURIED WITHIN 5 FEET (15 option, provided the selected material meets with the approval of all State, local authorities and utility company requirements. Verification of compliance of the selected insulating/jacketing material is the sole responsibility of the installing Contractor. 2.02 GLASS FIBER A. Insulation: ASTM C547 and ASTM C795; rigid molded, noncombustible.
 1. K (Ksi) Value: ASTM C177, 0.24 at 75 degrees F (0.035 at 24 degrees C). Maximum Service Temperature: 850 degrees F (454 degrees C). Maximum Moisture Absorption: 0.2 percent by volume. Insulation: ASTM C547 and ASTM C795; semi-rigid, noncombustible, end grain adhered to jacket. K (Ksi) Value: ASTM C177, 0.24 at 75 degrees F (0.035 at 24 degrees C). Maximum Service Temperature: 650 degrees F (343 degrees C). Maximum Moisture Absorption: 0.2 percent by volume. C. Vapor Barrier Jacket: White Kraft paper with glass fiber yarn, bonded to C. ABS Pipe: ASTM D2661 aluminized film; moisture vapor transmission when tested in accordance with ASTM E96/E96M of 0.02 perm-inches (0.029 ng/Pa s m). Vapor Barrier Lap Adhesive: Compatible with insulation. Insulating Cement/Mastic: ASTM C195; hydraulic setting on mineral wool Fibrous Glass Fabric: Cloth: Untreated; 9 oz/sq yd (305 g/sq m) weight. 2.04 SANITARY SEWER PIPING, ABOVE GRADE Blanket: 1.0 lb/cu ft (16 kg/cu m) density. Weave: 5 bv 5. Indoor Vapor Barrier Finish: G. Vinyl emulsion type acrylic, compatible with insulation, white color. Η. Outdoor Vapor Barrier Mastic: Vinyl emulsion type acrylic or mastic, compatible with insulation, black color. Outdoor Breather Mastic: Vinyl emulsion type acrylic or mastic, compatible with insulation, black color. Insulating Cement: ASTM C449. 2.03 FLEXIBLE ELASTOMERIC CELLULAR INSULATION С. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C 534 Grade 1; use molded tubular material wherever possible. Minimum Service Temperature: Minus 40 degrees F (Minus 40 degrees C). 2.05 DOMESTIC WATER PIPING, ABOVE GRADE Maximum Service Temperature: 220 degrees F (104 degrees C). Connection: Waterproof vapor barrier adhesive. Elastomeric Foam Adhesive: Air dried, contact adhesive, compatible with в. insulation. 2.04 JACKETS A. PVC Plastic. Jacket: One piece molded type fitting covers and sheet material, off-white color. 2.06 FLANGES, UNIONS, AND COUPLINGS Minimum Service Temperature: O degrees F (Minus 18 degrees C). A. Unions for Pipe Sizes 3 Inches (80 mm) an Maximum Service Temperature: 150 degrees F (66 degrees C) Moisture Vapor Permeability: 0.002 perm inch (0.0029 ng/Pa s m), maximum, when tested in accordance with ASTM E96/E96M. Thickness: 10 mil (0.25 mm). Connections: Brush on welding adhesive. Covering Adhesive Mastic: Compatible with insulation. B. ABS Plastic: Jacket: One piece molded type fitting covers and sheet material, off-white color. Minimum Service Temperature: Minus 40 degrees F (Minus 40 degrees C). Maximum Service Temperature: 180 degrees F (82 degrees C) Moisture Vapor Permeability: 0.012 perm inch (0.018 ng/Pa s m), when tested in accordance with ASTM E96/E96M. Thickness: 30 mil (0.76 mm). Connections: Brush on welding adhesive. Aluminum Jacket: ASTM B209 (ASTM B209M) formed aluminum sheet. Thickness: 0.016 inch (0.40 mm) sheet. Finish: Embossed. Joining: Longitudinal slip joints and 2 inch (50 mm) laps. Fittings: 0.016 inch (0.4 mm) thick die shaped fitting covers with factory attached protective liner. Metal Jacket Bands: 3/8 inch (10 mm) wide; 0.015 inch (0.38 mm) thick aluminum. Metal Jacket Bands: 3/8 inch (10 mm) wide; 0.010 inch (0.25 mm) thick stainless steel. Stainless Steel Jacket: ASTM A666, Type 304 stainless steel. Thickness: 0.010 inch (0.25 mm). Finish: Smooth. Metal Jacket Bands: 3/8 inch (10 mm) wide; 0.010 inch (0.25 mm) thick stainless steel PART 3 EXECUTION 3.01 EXAMINATION Verify that piping has been tested before applying insulation materials. Verify that surfaces are clean and dry, with foreign material removed. Verify that the installation of all heat trace systems have been completed and tested before applying insulation materials. 3.02 INSTALLATION Install in accordance with North American Insulation Manufacturers Association (NAIMA) National Insulation Standards. Exposed Piping: Locate insulation and cover seams in least visible locations. Insulated pipes conveying fluids below ambient temperature: Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints. Glass fiber insulated pipes conveying fluids below ambient temperature: D. Provide vapor barrier jackets, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples and vapor barrier Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor barrier adhesive or PVC fitting covers. Vapor barriers shall be continuous at all joints, fittings, valves, equipment and end caps. Seal all exposed ends or edges of insulation at all locations including hangers and supports with insulating cement to prevent water vapor from entering insulation material beneath the vapor barrier jacket. For hot piping conveying fluids 140 degrees F (60 degrees C) or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation. For hot piping conveying fluids over 140 degrees F (60 degrees C), insulate flanges and unions at equipment G. Glass fiber insulated pipes conveying fluids above ambient temperature: Provide standard jackets, with or without vapor barrier, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers. Inserts and Šhields: Application: Piping 2 inches (50 mm) diameter or larger. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and inserts. 3. Insert Location: Between support shield and piping and under the finish Insert Configuration: Minimum 6 inches (150 mm) long, of same thickness and contour as adjoining insulation; may be factory fabricated. Insert Material: Hydrous calcium silicate insulation or other heavy density insulating material suitable for the planned temperature range. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions. At fire separations, fire stop penetrations to meet local code requirements. Pipe Exposed in Finished Spaces (less than 10 feet (3 meters) above finished floor): Finish with Aluminum, Stainless Steel, ABS or PVC jacket and fitting covers. 3.03 SCHEDULES A. Plumbing Systems: Domestic Cold Water: Glass Fiber Insulation: а.
 - degrees F (minus 34 degrees C) to 2 Bolts and Nuts: Hot dipped galvani When pipe is field grooved, provide 2.07 PIPE HANGERS AND SUPPORTS Conform to MSS SP-58. С. Conform to MSS SP-58.

Dielectric Connections: Union with galvo solder end, water impervious isolation bo Provide hangers and supports that comply Plumbing Piping - Drain, Waste, and Vent: Hangers for Pipe Sizes 1/2 Inch (15 iron, adjustable swivel, split rind Hangers for Pipe Sizes 2 Inches (50 Multiple or Trapeze Hangers: Steel Wall Support for Pipe Sizes to 3 In Wall Support for Pipe Sizes 4 Inch and wrought steel clamp. Vertical Support: Steel riser clam Floor Support: Cast iron adjustab flange, and concrete pier or steel Copper Pipe Support: Carbon steel Plumbing Piping - Water and Gas: Hangers for Pipe Sizes 1/2 Inch (15 iron, adjustable swivel, split ring Hangers for Cold Pipe Sizes 2 Inche adiustable, clevis, Hangers for Hot Pipe Sizes 2 Inches steel, adjustable, clevis. 5. Hangers for Hot Pipe Sizes 6 Inches yoke, cast iron pipe roll, double h Multiple or Trapeze Hangers: Steel and hanger rods. Multiple or Trapeze Hangers for Hot Steel channels with welded supports Wall Support for Pipe Sizes to 3 In Wall Support for Pipe Sizes 4 Inche and wrought steel clamp. Wall Support for Hot Pipe Sizes 6 bracket and wrought steel clamp wit

- Vertical Support: Steel riser clam Floor Support for Cold Pipe: Cast nipple, floor flange, and concrete 13. Floor Support for Hot Pipe Sizes t
- pipe saddle, locknut, nipple, floor Floor Support for Hot Pipe Sizes 6 14. iron pipe roll and stand, steel scr Copper Pipe Support: Carbon steel
- Hanger Fasteners: Attach hangers to stru Utilize galvanized steel pipe hangers and environments, including all exterior loca
- 2.08 BALL VALVES Construction, 4 Inches (100 mm) and Small kPa) CWP, bronze or ductile iron body, 30 ball, regular port, teflon seats and stuf

handle with balancing stops, threaded or PART 3 EXECUTION 3.01 EXAMINATION

- A. Verify that excavations are to required g 3.02 PREPARATION Ream pipe and tube ends. Remove burrs.
- Remove scale and dirt, on inside and outs Prepare piping connections to equipment w 3.03 INSTALLATION Provide non-conducting dielectric connect
 - Route piping in orderly manner and mainta perpendicular to walls. Install piping to maintain headroom, conse С.
 - Group piping whenever practical at common Install piping to allow for expansion and
 - joints, or connected equipment. Refer to Provide clearance in hangers and from str installation of insulation and access to
 - G. Locate all valves and control elements i avoid access doors. Provide access where located in accessible areas. Provide ceil and control elements located above inacce x 12 inch (300 x 300 mm) size for hand ac shoulder access, and as indicated. Provi valves only. Provide rated access doors w
 - Review locations prior to fabrication. Establish elevations of buried piping outside the building to ensure not less than the maximum local frost depth cover. Install tracer wire on all plastic piping outside the building.
 - Install vent piping penetrating roofed areas to maintain integrity of roof

Valves: Manufacturer's name and pressure rating marked on valve body. Welding Materials and Procedures: Comply with ASME BPVC-IX and applicable state

Thickness: 1/2 inch (13 mm).

Thickness: 1/2 inch (13 mm).

END OF SECTION

SECTION 221005 - PLUMBING PIPING

labor regulations. Welder Qualifications: Certified in accordance with ASME BPVC-IX.

Pipe Size Range: All Sizes.

b. Flexible Elastomeric Cellular Foam Insulation:

Pipe Size Range: All Sizes.

Identify pipe with marking including size, ASTM material classification, ASTM specification, potable water certification, and pressure rating.

IELD CONDITIONS . Do not install underground piping when bedding is wet or frozen.	assembly. J. All sanitary vent system terminations shall be a minimum of ten feet from any fresh air intake and twenty-five feet on medical facilities (hospitals, clinics, etc.)	E. Install approved potable water protection devices on plumbing lines where contamination of domestic water may occur; on boiler feed water lines, janitor rooms, fire sprinkler systems, premise isolation, irrigation systems, flush valves,
PRODUCTS ENERAL REQUIREMENTS . Potable Water Supply Systems: Provide piping, pipe fittings, and solder and flux	 K. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc-rich primer to welding. L. Provide support for utility meters in accordance with requirements of utility 	drink mixing stations, interior and exterior hose bibbs and all other locations required by Codes. F. Pipe relief from backflow preventer to nearest drain.
(if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings. HE CONTRACTOR MAY USE ANY OF THE FOLLOWING PIPING MATERIALS, AT HIS OPTION, PROVIDED THE	companies. M. Prepare exposed, unfinished pipe, fittings, supports, and accessories ready for	G. Install water hammer arrestors complete with accessible isolation valve on hot and cold water supply piping to lavatory sinks, washing machine outlets, or
ELECTED MATERIAL MEETS WITH THE APPROVAL OF ALL STATE AND LOCAL AUTHORITIES AND UTILITY OMPANY REQUIREMENTS. VERIFICATION OF COMPLIANCE OF THE SELECTED PIPING MATERIAL WITH	finish painting. N. Paint all exterior above grade piping with a minimum of two coats of paint, color to match roof or wall surface to which it is attached.	quick-closing valves. END OF SECTION
OCAL REQUIREMENTS IS THE SOLE RESPONSIBILITY OF THE INSTALLING CONTRACTOR. VERIFY THE SE OF PLASTIC PIPING SYSTEMS WITH THE LOCAL JURISDICTION. NON-METALLIC PIPING SYSTEMS AY NOT BE USED IN ANY RETURN AIR PLENUM CEILING SPACES. FIRE-RATED OR NON-COMBUSTIBLE	 Copper pipe Apply vinyl etch primer immediately following cleaning. EXT 5.5A Alkyd: Vinyl Wash Primer MPI #80, Alkyd MPI #8, 9 or 94, Semi-gloss. Steel pipe: Apply alkyd metal primer immediately following cleaning. EXT 5.1D 	SECTION 223000 – PLUMBING EQUIPMENT PART 1 GENERAL
OCATIONS. NO EXCEPTIONS. ANITARY SEWER PIPING, BURIED WITHIN 5 FEET (1500 MM) OF BUILDING . Cast Iron Pipe: ASTM A74 service weight.	Alkyd: Alkyd Metal Primer MPI #79, Alkyd MPI # 94, semi-gloss. 3. Plastic pipe: Apply alkyd bonding primer immediately following cleaning. EXT 6.8B Alkyd: Bonding Primer MPI #17 or 69, Alkyd MPI #8, 9 or 94.	1.01 ADMINISTRATIVE REQUIREMENTS A. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.
1. Fittings: Cast iron. 2. Joints: Hub-and-spigot, CISPI HSN compression type with ASTM C564 neoprene	0. Excavate, bedding and backfill shall be in accordance with applicable sections of this Specification.	1.02 SUBMITTALS A. Provide the following for Architect/Engineer review:
gaskets or lead and oakum. 3. Encasement: Provide 8 mil minimum polyethylene encasement pipe wrap on all cast iron pipe installed in corrosive soils.	 P. The use of sanitary tee fittings will not be permitted. Utilize wye fittings in lieu of tee fittings for all intersections of drainage piping. Q. Sleeve pipes passing through partitions, walls, and floors. 	 Product Data: a. Provide dimension drawings of water heaters indicating components and connections to other equipment and piping.
 Cast Iron Pipe: ASTM A 888 and CISPI 301, hubless. 1. Fittings: Cast iron. 2. Joints: ASTM A 74 or CISPI 310, neoprene gasket and stainless steel clamp 	R. Provide sleeves when penetrating footings, masonry walls and floors. Seal and fire stop pipe and sleeve penetrations to achieve fire resistance equivalent to fire separation required. All penetrations through footings and floors shall be sealed	 b. Indicate pump type, capacity, power requirements. c. Provide certified pump curves showing pump performance characteristics with pump and system operating point plotted. Include NPSH curve when
and shield assemblies. 3. Encasement: Provide 8 mil minimum polyethylene encasement pipe wrap on all	water tight. S. If piping is located within 1.5 inches (38 mm) of the nearest edge of studs,	applicable. d. Provide electrical characteristics and connection requirements.
cast iron pipe installed in corrosive soils. 4. Markings: All pipe and fittings shall be marked with CISPI and NSF trademark. . ABS Pipe: ASTM D2661.	joists, rafters or similar members, provide minimum 0.062 inch (1.6 mm) thick steel protective shield plates extending 2" above and below the pipe being protected. Shield plates may be omitted on cast iron piping only.	 B. Provide the following to the Owner upon project closeout: 1. Project Record Documents: Record actual locations of components. 2. Operation and Maintenance Data: Include operation, maintenance, and
 Fittings: ABS. Joints: Solvent welded with ASTM D2235 cement. PVC Pipe: ASTM D 2665 or ASTM F 679. 	 T. Inserts: 1. Provide inserts for placement in concrete formwork. 2. Provide inserts for suspending hangers from reinforced concrete slabs and 	inspection data, replacement part numbers and availability, and service depot location and telephone number. 1.03 QUALITY ASSURANCE
 Fittings: PVC. Joints: Solvent welded, with ASTM D2564 solvent cement or Push-on, using ASTM F477 elastomeric gaskets. 	sides of reinforced concrete beams. 3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches (100 mm).	A. Certifications: 1. Water Heaters: NSF approved. 2. Gas Water Heaters: Certified by CSA International to ANSI Z21.10.1, as
ANITARY SEWER PIPING, ABOVE GRADE . Cast Iron Pipe: ASTM A74, service weight.	 Where concrete slabs form finished ceiling, locate inserts flush with slab surface. 	applicable, in addition to requirements specified elsewhere. 3. Electric Water Heaters: UL listed and labeled to UL 174.
 Fittings: Cast iron. Joint Seals: ASTM C564 neoprene gaskets, or lead and oakum. Cast Iron Pipe: ASTM A 888 and CISPI 301, hubless, service weight. 	 Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut above slab. U. Pipe Hangers and Supports: 	 Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.
 Fittings: Cast iron. Joints: ASTM A 74 or CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies. 	 Install in accordance with ASME B31.9. Support horizontal piping as indicated. Install hangers to provide minimum 1/2 inch (15 mm) space between finished 	B. Identification: Provide equipment with manufacturer's name, model number, and rating/capacity identified by permanently attached label. C. Performance: Ensure pumps operate at specified system fluid temperatures without
3. Markings: All pipe and fittings shall be marked with CISPI and NSF trademark. . PVC Pipe: ASTM D2665.	covering and adjacent work. 4. Place hangers within 12 inches (300 mm) of each horizontal elbow.	vapor binding and cavitation, are non-overloading in parallel or individual operation, operate within 25 percent of midpoint of published maximum efficiency
1. Fittings: PVC. 2. Joints: Solvent welded, with ASTM D2564 solvent cement. OMESTIC WATER PIPING, ABOVE GRADE	 Use hangers with 1-1/2 inch (40 mm) minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe. Support vertical piping at every other floor. Support riser piping 	curve. 1.04 WARRANTY A. Provide five year manufacturer warranty for domestic water heaters, water storage
 Copper Tube: ASTM B88 (ASTM B88M), Type L (B), Drawn (H). 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze. 	independently of connected horizontal piping. 7. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.	tanks, and packaged water heating systems. B. Provide one year manufacturer warranty for pumps.
2. Joints: ASTM B32, alloy Sn95 solder. 3. Joints: Grooved mechanical couplings.	 8. Provide copper plated hangers and supports for copper piping. 9. Prime coat exposed steel hangers and supports. Hangers and supports located 	PART 2 PRODUCTS 2.01 ELECTRICAL WORK
 Mechanical Press Sealed Fittings: Double-pressed type, NSF 61 and NSF 372 approved or certified, utilizing EPDM, nontoxic, synthetic rubber sealing elements. 	in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed. 10. Provide hangers adjacent to motor-driven equipment with vibration isolation;	 Provide electrical motor driven equipment specified complete with motors, motor starters, controls, and wiring. B. Electrical characteristics to be as specified or indicated.
LANGES, UNIONS, AND COUPLINGS . Unions for Pipe Sizes 3 Inches (80 mm) and Under: 1. Ferrous Pipe: Class 150 malleable iron threaded unions.	refer to Section 22 0548. 11. Support cast iron drainage piping at every joint. V. Manufactured Sleeve-Seal Systems:	 Furnish motor starters complete with thermal overload protection and other appurtenances necessary for the motor control specified. D. Supply manual or automatic control and protective or signal devices required for
 Copper Tube and Pipe: Class 150 bronze unions with soldered joints. Flanges for Pipe Size Over 1 Inch (25 mm): Ferrous Pipe: Class 150 malleable iron threaded or forged steel slip-on 	 Install manufactured sleeve-seal systems in sleeves located in grade slabs and exterior concrete walls at piping entrances into building. Provide sealing elements of the size, quantity, and type required for the 	the operation specified, and any control wiring required for controls and devices not shown.
flanges; preformed neoprene gaskets. 2. Copper Tube and Pipe: Class 150 slip-on bronze flanges; preformed neoprene	piping and sleeve inner diameter or penetration diameter. 3. Locate piping in center of sleeve or penetration.	PART 3 EXECUTION 3.01 INSTALLATION
gaskets. . Mechanical Couplings for Grooved and Shouldered Joints: Two or more curved housing segments with continuous key to engage pipe groove, circular C-profile gasket, and	 Install field assembled sleeve-seal system components in annular space between sleeve and piping. Tighten bolting for a watertight seal. 	 Provide concrete equipment bases for all floor mounted plumbing equipment. B. Coordinate with plumbing piping and related fuel piping, gas venting, and electrical work as applicable to achieve operating system.
bolts to secure and compress gasket. 1. Dimensions and Testing: In accordance with AWWA C606. 2. Housing Material: Provide ASTM A47/A47M malleable iron or ductile iron,	6. Install in accordance with manufacturer's recommendations. W. When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary	END OF SECTION SECTION 224000 - PLUMBING FIXTURES
galvanized. 3. Gasket Material: EPDM suitable for operating temperature range from minus 30 degrees F (minus 34 degrees C) to 230 degrees F (110 degrees C).	joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided. 3.04 APPLICATION	PART 1 GENERAL 1.01 SUBMITTALS
4. Bolts and Nuts: Hot dipped galvanized or zinc-electroplated steel. 5. When pipe is field grooved, provide coupling manufacturer's grooving tools. Dielectric Connections: Union with galvanized or plated steel threaded end, copper	 A. Use grooved mechanical couplings and fasteners only in accessible locations. B. Install unions downstream of valves and at equipment or apparatus connections. C. Install brass male adapters each side of valves in copper piped system. Solder 	A. Provide the following for Architect/Engineer review: 1. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.
solder end, water impervious isolation barrier. IPE HANGERS AND SUPPORTS . Provide hangers and supports that comply with MSS SP-58.	adapters to pipe. D. Install ball or butterfly valves for shut-off and to isolate equipment, part of systems, or vertical risers.	 B. Provide the following to the Owner upon project closeout: 1. Manufacturer's Instructions: Indicate installation methods and procedures. 2. Maintenance Data: Include fixture trim exploded view and replacement parts
 Plumbing Piping - Drain, Waste, and Vent: Conform to MSS SP-58. 	E. Install globe, ball, or butterfly valves for throttling, bypass, or manual flow control services.	lists.
 Hangers for Pipe Sizes 1/2 Inch (15 mm) to 1-1/2 Inches (40 mm): Malleable iron, adjustable swivel, split ring. Hangers for Pipe Sizes 2 Inches (50 mm) and Over: Carbon steel, adjustable, 	 F. Provide lug end butterfly valves adjacent to equipment when provided to isolate equipment. G. Provide spring-loaded check valves on discharge of water pumps. 	PART 2 PRODUCTS 2.01 GENERAL REQUIREMENTS A. Potable Water Systems: Provide plumbing fittings and faucets that comply with NSF
clevis. 4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.	H. Provide automatic flow controls valves in water recirculating systems where indicated. Utilize 0.5 gpm flow unless otherwise indicated on the drawings. 3.05 TOLERANCES	61 and NSF 372 for maximum lead content; label pipe and fittings. 2.02 FIXTURES AND ACCESSORIES SHALL BE AS SCHEDULED ON THE DRAWINGS.
5. Wall Support for Pipe Sizes to 3 Inches (80 mm): Cast iron hook. 6. Wall Support for Pipe Sizes 4 Inches (100 mm) and Over: Welded steel bracket and wrought steel clamp.	A. Interior Drainage Piping: Establish invert elevations within 1/2 inch (10 mm) vertically of location indicated and slope to drain at minimum of 1/4 inch per foot (1:50) slope, unless noted otherwise on the Drawings.	PART 3 EXECUTION 3.01 EXAMINATION A. Verify that walls and floor finishes are prepared and ready for installation of
 Vertical Support: Steel riser clamp. B. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support. 	B. Water Piping: Slope at minimum of 1/32 inch per foot (1:400) and arrange to drain at low points. 3.06 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM	fixtures. B. Verify that electric power is available and of the correct characteristics. C. Confirm that millwork is constructed with adequate provision for the installation
 9. Copper Pipe Support: Carbon steel ring, adjustable, copper plated. Plumbing Piping - Water and Gas: 1. Conform to MSS SP-58. 	 Prior to starting work, verify system is complete, flushed, and clean. Ensure acidity (pH) of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric). 	of counter top lavatories and sinks. 3.02 PREPARATION A. Rough-in fixture piping connections in accordance with minimum sizes indicated in
2. Hangers for Pipe Sizes 1/2 Inch (15 mm) to 1–1/2 Inches (40 mm): Malleable iron, adjustable swivel, split ring.	 C. Inject disinfectant, free chlorine in liquid, powder, tablet, or gas form throughout system to obtain 50 to 80 mg/L residual. D. Bleed water from outlets to ensure distribution and test for disinfectant residual 	fixture rough—in schedule for particular fixtures. 3.03 INSTALLATION
 Hangers for Cold Pipe Sizes 2 Inches (50 mm) and Over: Carbon steel, adjustable, clevis. Hangers for Hot Pipe Sizes 2 Inches (50 mm) to 4 Inches (100 mm): Carbon 	at minimum 15 percent of outlets. E. Maintain disinfectant in system for 24 hours.	 A. Install each fixture with trap, easily removable for servicing and cleaning. B. Install each fixture using brass angle ball stop valves for hot and cold water connections as applicable. Non-metallic valves or non-ball valve type stops will
steel, adjustable, clevis. 5. Hangers for Hot Pipe Sizes 6 Inches (150 mm) and Over: Adjustable steel yoke, cast iron pipe roll, double hanger.	F. If final disinfectant residual tests less than 25 mg/L, repeat treatment. G. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.	not be accepted. C. Provide chrome plated rigid or flexible supplies to fixtures with specified stops, reducers, and escutcheons.
 Multiple or Trapeze Hangers: Steel channels with welded supports or spacers and hanger rods. Multiple or Trapeze Hangers for Hot Pipe Sizes 6 Inches (150 mm) and Over: 	H. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C651. 3.07 SCHEDULES	D. Install components level and plumb. E. Install and secure fixtures in place with wall carriers, wall supports and bolts. F. Solidly attach floor mounted water closets to floor with lag screws. Lead
Steel channels with welded supports or spacers and hanger rods, cast iron roll. 8. Wall Support for Pipe Sizes to 3 Inches (80 mm): Cast iron hook.	A. Pipe Hanger Spacing: 1. Metal Piping: a. Pipe Size: 1/2 inches (15 mm) to 1-1/4 inches (32 mm):	flashing is not intended hold fixture in place. G. Install each fixture with trap, easily removable for servicing and cleaning. H. Install fixtures and fittings in accordance with the manufacturer's instructions
 Wall Support for Pipe Sizes 4 Inches (100 mm) and Over: Welded steel bracket and wrought steel clamp. Wall Support for Hot Pipe Sizes 6 Inches (150 mm) and Over: Welded steel 	1. Maximum Hanger Spacing: 6.5 ft (2 m). 2. Hanger Rod Diameter: 3/8 inches (9 mm). b. Pipe Size: 1-1/2 inches (40 mm) to 2 inches (50 mm):	and in accordance with the ICC (IPC). I. When fixtures require both hot water and cold water supplies, provide the hot water supply to the left of the cold water supply.
bracket and wrought steel clamp with adjustable steel yoke and cast iron pipe roll.	1. Maximum Hanger Spacing: 10 ft (3 m). 2. Hanger Rod Diameter: 3/8 inch (9 mm).	J. Install off-the-floor supports to conform to ASME A112.6.1M. K. For floor drain/sink installations above slab on grade, provide adjustable collar
 Vertical Support: Steel riser clamp. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support. 	c. Pipe Size: 2-1/2 inches (65 mm) to 3 inches (75 mm): 1. Maximum Hanger Spacing: 10 ft (3 m). 2. Hanger Rod Diameter: 1/2 inch (13 mm).	with seepage slots, invertible non-puncturing membrane clamp, and 24" x 24" waterproof membrane. 3.04 INTERFACE WITH WORK OF OTHER SECTIONS
13. Floor Support for Hot Pipe Sizes to 4 Inches (100 mm): Cast iron adjustable pipe saddle, locknut, nipple, floor flange, and concrete pier or steel support.	d. Pipe Size: 4 inches (100 mm) to 6 inches (150 mm): 1. Maximum Hanger Spacing: 10 ft (3 m). 2. Hanger Rod Diameter: 5/8 inch (15 mm).	A. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation. 3.05 ADJUSTING
14. Floor Support for Hot Pipe Sizes 6 Inches (150 mm) and Over: Adjustable cast iron pipe roll and stand, steel screws, and concrete pier or steel support. 15. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.	 Plastic Piping: a. Pipe size: 1/2 inches (15 mm) to 6 inches (150 mm): 1. Maximum Hanger Spacing: 6 ft (1.8 m). 	A. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow. 3.06 CLEANING
 Hanger Fasteners: Attach hangers to structure using appropriate fasteners. Utilize galvanized steel pipe hangers and supports in all wet, damp and corrosive environments, including all exterior locations 	2. Hanger Rod Diameter: 3/8 inch (9 mm). END OF SECTION	 A. Clean plumbing fixtures and equipment. 3.07 PROTECTION A. Protect installed products from damage due to subsequent construction operations.
ALL VALVES . Construction, 4 Inches (100 mm) and Smaller: MSS SP-110, Class 150, 400 psi (2760	SECTION 221006 - PLUMBING PIPING SPECIALTIES	 B. Do not permit use of fixtures by construction personnel. C. Repair or replace damaged products before date of Substantial Completion.
kPa) CWP, bronze or ductile iron body, 304 stainless steel or chrome plated brass ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, threaded or grooved ends with union.	PART 1 GENERAL 1.01 SUBMITTALS A. Provide the following for Architect/Engineer review:	3.08 FIELD INSPECTION A. Continue inspection during installation and testing. B. A final inspection of the equipment shall be performed prior to installation to
EXECUTION XAMINATION . Verify that excavations are to required grade, dry, and not over—excavated.	 Product Data: Provide component sizes, rough-in requirements, service sizes, and finishes. B. Provide the following to the Owner upon project closeout: 	determine conformity to the type, class, grade, size, capacity, and other characteristics specified or indicated on the drawings. C. Correct or replace all rejected equipment prior to installation.
REPARATION . Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe. . Remove scale and dirt, on inside and outside, before assembly.	 Manufacturer's Instructions: Indicate Manufacturer's Installation Instructions: Indicate assembly and support requirements. Operation Data: Indicate frequency of treatment required for interceptors. 	D. Engineer or Architect reserves the right to inspect any and all equipment and fixtures prior to final occupancy and reject any fixtures which have been damaged, marred or otherwise defaced.
 Prepare piping connections to equipment with flanges or unions. NSTALLATION Provide non-conducting dielectric connections wherever jointing dissimilar metals. 	 Maintenance Data: Include installation instructions, spare parts lists, exploded assembly views. Project Record Documents: Record actual locations of equipment, cleanouts, 	END OF SECTION
 Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls. Install piping to maintain headroom, conserve space, and not interfere with use of 	PART 2 PRODUCTS	
space. Group piping whenever practical at common elevations.	2.01 GENERAL REQUIREMENTS A. Specialties in Potable Water Supply Systems: Provide products that comply with NSF	
 Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment. Refer to Section 22 0516. Provide clearance in hangers and from structure and other equipment for 	61 and NSF 372 for maximum lead content. B. Fixtures and accessories shall be as scheduled on the Drawings. 2.02 WATER HAMMER ARRESTORS	
 installation of insulation and access to valves and fittings. Locate all valves and control elements in accessible areas wherever possible to avoid access doors. Provide access where valves and fittings are not exposed or 	A. Stainless steel or copper construction, bellows type sized in accordance with PDI-WH 201, precharged suitable for operation in temperature range 34 to 250 degrees F (1 to 120 degrees C) and maximum 150 psi (1000 kPa) working pressure.	
located in accessible areas. Provide ceiling access doors for access to all valves and control elements located above inaccessible ceiling areas. Provide minimum 12 x 12 inch (300 x 300 mm) size for hand access, 18 x 18 inch (450 x 450 mm) size for	PART 3 EXECUTION 3.01 INSTALLATION A. Provide cleanouts as shown on construction documents and per local code	
shoulder access, and as indicated. Provide 4 x 4 inch (100 x 100 mm) for shut off valves only. Provide rated access doors where installed in fire rated construction. Review locations prior to fabrication.	requirements. B. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Ensure clearance at cleanout for	
. Establish elevations of buried piping outside the building to ensure not less than	rodding of drainage system.	

rodding of drainage system. Encase exterior cleanouts in concrete flush with grade. Install floor cleanouts at elevation to accommodate finished floor for a completely flush installation

Schnacke New York = Miami = Omaha = Lps Angeles = Seattle = Hor 800-581-0963

GREGORY R

SCHNACKEL

Date: 08/02/23

COA #: 4679 PtoP #: 1580

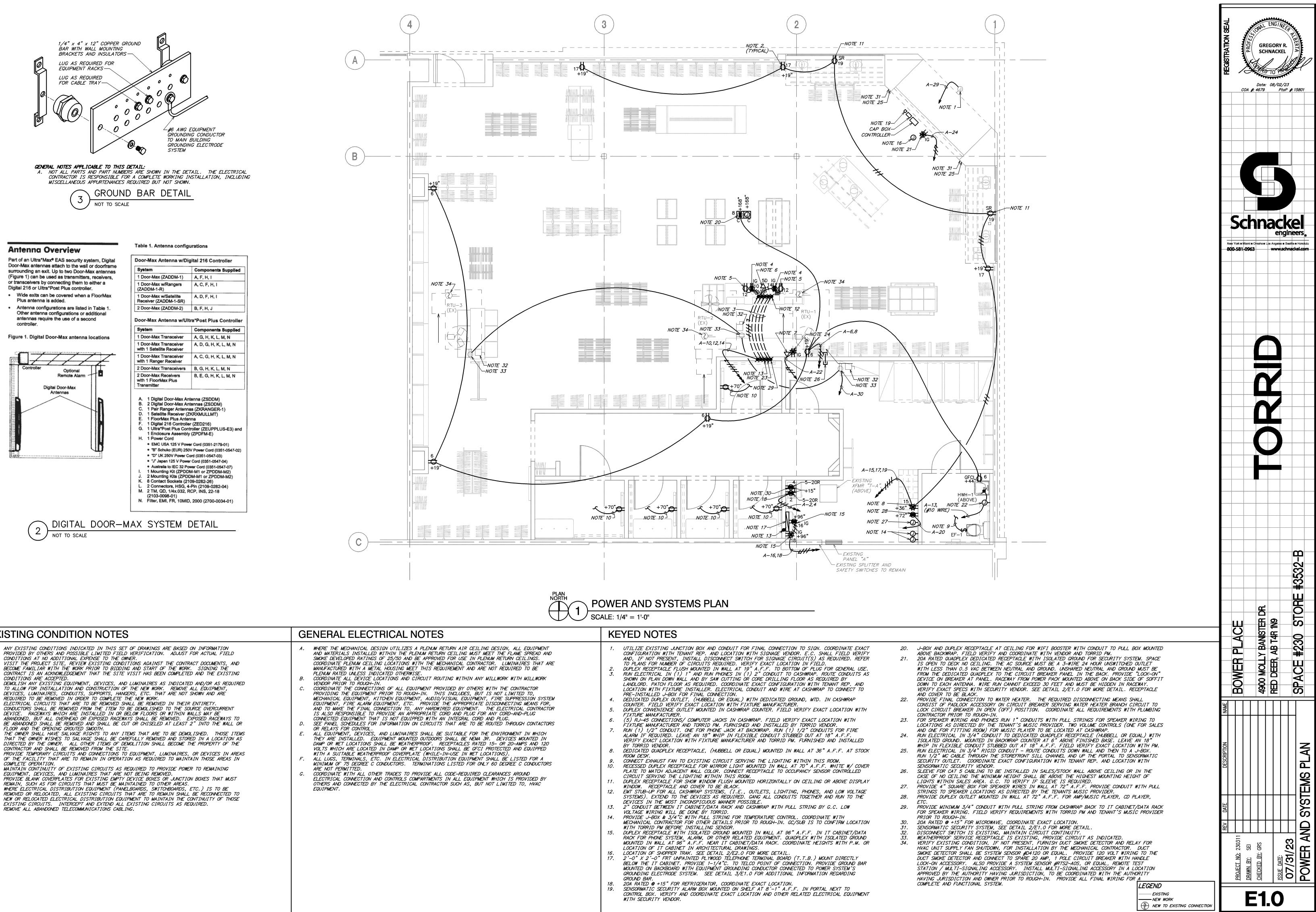
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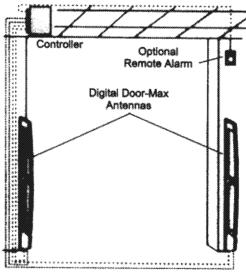
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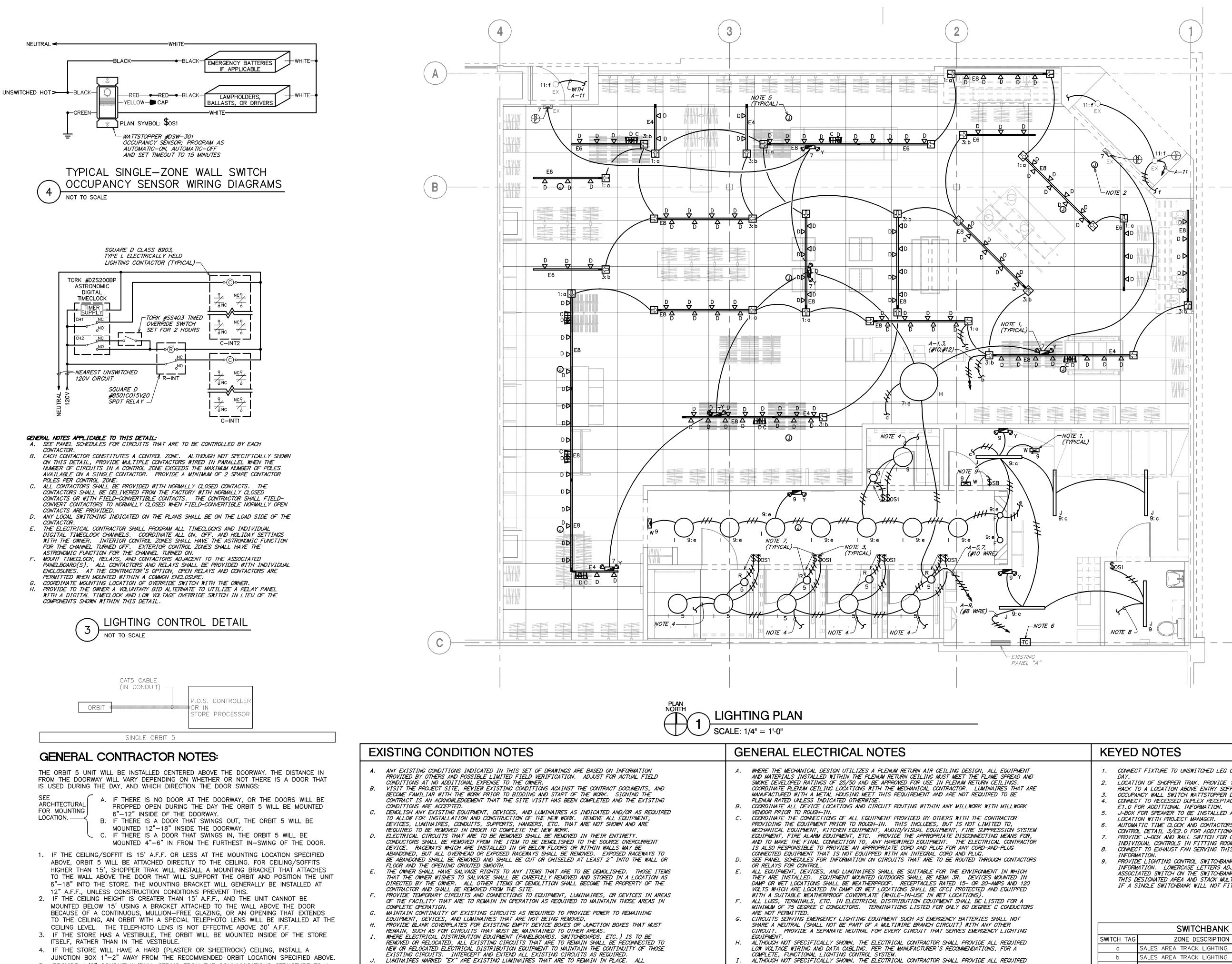
P5.1





A, F, H, I
A, C, F, H, I
A, D, F, H, I
B, F, H, J
ra*Post Plus Controller
Components Supplied
A, G, H, K, L, M, N
A, D, G, H, K, L, M, N
A, C, G, H, K, L, M, N
B, G, H, K, L, M, N
B, E, G, H, K, L, M, N
tenna (ZSDDM) tennas (ZSDDM) ts (ZKRANGER-1) KRXMULLMT) na r (ZED216) roller (ZEUPPLUS-E3) and (ZPDFM-E) or Cord (0351-2179-01) V Power Cord (0351-0547-02) ord (0351-0547-03) • Cord (0351-0547-04) wer Cord (0351-0547-07)

 A. ANY EXISTING CONDITIONS INDICATED IN THIS SET OF DRAWINGS ARE BASED ON INFORMATION PROVIDED BY OTHERS AND POSSIBLE LIMITED FIELD VERIFICATION. ADJUST FOR ACTUAL FIELD CONTITIONS INDICATED LIMITED FIELD VERIFICATION. ADJUST FOR ACTUAL FIELD CONTITIONS INDICATED LIMITED FIELD VERIFICATION. ADJUST FOR ACTUAL FIELD CONTRACT IS AND ADJUSTICATION ADJUST FOR ACTUAL FIELD CONTRACT IS AND ADJUSTICATION ADJUST FOR ACTUAL FIELD CONTRACT IS AND ADJUSTICATION ADJUST FOR ACTUAL FIELD CONTRACT IS AN ADJUSTICATION ADJUST FOR ACTUAL FIELD CONTRACT IS AN ADJUSTICATION ADJUSTICATION ADJUST FOR ACTUAL FIELD CONTRACT IS AN ADJUSTICATION ADJUSTICATION ADJUST FOR ACTUAL FIELD CONTRACT IS AN ADJUSTICATION ADJUSTICATION ADJUSTICATION ADJUST CONTRACT IS AN ADJUSTICATION ADJUST CONNECTION SAILL BE CONTRACT ADJUSTICATION ADJUSTICATION ADJUST CONNECTION SAILL BE CONTRACT ADJUSTICATION ADJUSTICATION ADJUST CONNECTION SAILL BE CONTRALING ADJUSTICATION ADJUSTICATION ADJUST CONNECTION SANDUSTIC
J. REMOVE ALL ABANDONED TELECOMMUNICATIONS CABLING.



^{5.} PROVIDE 1/2" CONDUIT W/PULL STRING FROM THE COMMUNICATIONS STRUCTURE TO A LOCATION ABOVE ENTRY SOFFIT. LOOP CONDUIT TO OTHER DOORS AS REQUIRED.

COMMUNICATION WORK:

- 1. FOR SINGLE ORBIT 5 INSTALLATIONS, A CATEGORY 5 CABLE MUST BE RUN FROM THE STORE CONTROLLER/SP TO THE FRONT DOOR (MAIN CUSTOMER ENTRANCE). IF A STORE HAS MULTIPLE CONTROLLERS, PLEASE CALL SHOPPER TRAK OR THE CLIENTS STORES SYSTEMS GROUP TO DETERMINE WHICH ONE WILL BE USED. 2. PROVIDE 15'-20' OF CABLE COILED UP AT EACH END OF THE RUN. AT THE FRONT DOOR LEAVE THE CABLE COIL IN A LOCATION THAT CAN BE REACHED
- USING AN 8' LADDER. SHOPPER TRAK DETAIL

- EXISTING LUMINAIRES WITHIN THE LIMITS OF CONSTRUCTION SHALL BE REPAIRED TO A LIKE-NEW CONDITION, THOROUGHLY CLEANED, AND RELAMPED. ANY EXISTING LUMINAIRES THAT ARE DAMAGED BEYOND REPAIR SHALL BE REPLACED WITH AN IDENTICAL LUMINAIRE.

- WIRING AND DATA CABLING, INCLUDING ALL 0-10V CONTROL WIRING WHERE APPLICABLE, PER THE MANUFACTURER'S RECOMMENDATIONS FOR A COMPLETE, FUNCTIONAL DIMMING SYSTEM.

KEYED NOTES	5
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- CONNECT FIXTURE TO UNSWITCHED LEG OF CIRCUIT INDICATED TO RENDER OPERATIONAL 24HRS A
- 2. LOCATION OF SHOPPER TRAK. PROVIDE 1/2" CONDUIT W/PULL STRING FROM THE IT CABINET/DATA RACK TO A LOCATION ABOVE ENTRY SOFFIT. SEE DETAIL 2/E2.0 FOR MORE DETAIL. OCCUPANCY WALL SWITCH WATTSTOPPER DSW-301B SUPPLIED BY VENDOR INSTALLED BY E.C.
- CONNECT TO RECESSED DUPLEX RECEPTACLE FOR MIRROR LIGHT WITHIN THIS ROOM. REFER TO SHEET 5. J-BOX FOR SPEAKER TO BE INSTALLED AT 13'-O" A.F.F. TO BOTTOM OF J-BOX. FIELD VERIFY
- 6. AUTOMATIC TIME CLOCK AND CONTACTORS FOR AUTOMATIC SHUT-OFF REQUIREMENTS. SEE LIGHTING
- CONTROL DETAIL 3/E2.0 FOR ADDITIONAL INFORMATION.
- PROVIDE J-BOX AND WALL SWITCH FOR CEILING MOUNTED OSCILLATING FANS. FANS TO HAVE INDIVIDUAL CONTROLS IN FITTING ROOMS.
- CONNECT TO EXHAUST FAN SERVING THIS ROOM. REFER TO SHEET E1.0 FOR ADDITIONAL
- PROVIDE LIGHTING CONTROL SWITCHBANK(S). SEE SWITCHBANK SCHEDULE(S) FOR ADDITIONAL INFORMATION. LOWERCASE LETTERS ADJACENT TO LUMINAIRES ON PLANS CORRESPOND TO THE ASSOCIATED SWITCH ON THE SWITCHBANK SCHEDULE. CONFIRM SWITCHBANK(S) WILL FIT WITHIN THIS DESIGNATED AREA AND STACK MULTIPLE SWITCHBANKS, WITH FEWER GANGS, AT THIS LOCATION IF A SINGLE SWITCHBANK WILL NOT FIT WITHIN THIS DESIGNATED AREA.

	SWITCHBANK "	'SB" S	CHEDULE	
SWITCH TAG	ZONE DESCRIPTION		CONTROL TYPE	
a	SALES AREA TRACK LIGHTING		SPST TOGGLE SWITCH	
b	SALES AREA TRACK LIGHTING SPST TOGGLE SWITCH			
с	STOCKROOM LIGHTING	STOCKROOM LIGHTING SPST TOGGLE SWITCH		
d	CASHWRAP ACCENT LIGHTING	CASHWRAP ACCENT LIGHTING SPST TOGGLE SWITCH		
е	FITTING ROOM AREA LIGHTING SPST TOGGLE SWITCH			
f	ENTRY LIGHTING		SPST TOGGLE SWITCH	

GENERAL NOTES: A. PROVIDE BOX PARTITIONS BETWEEN CONTROLS OF DIFFERING VOLTAGES.

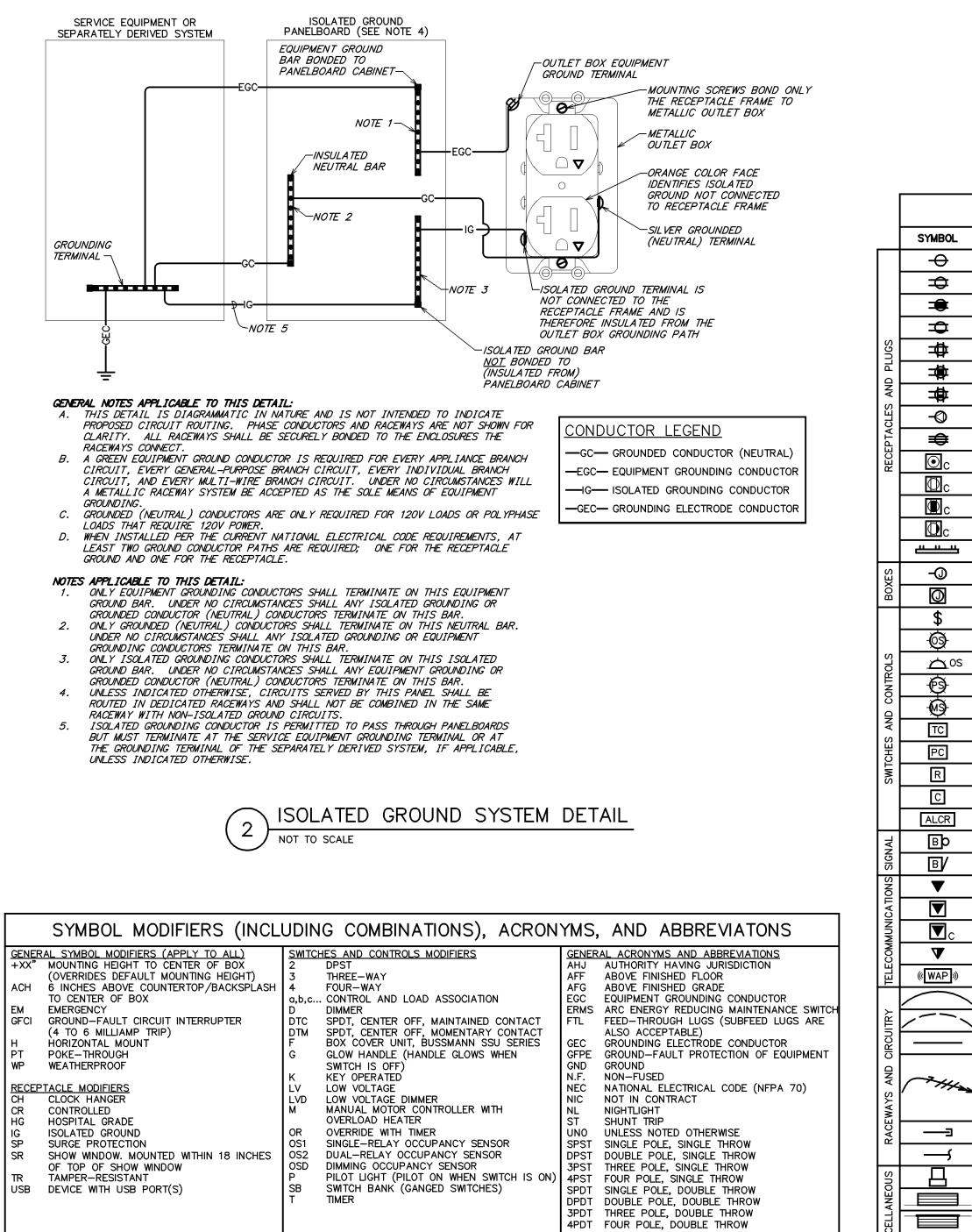
LEGEND

— EXISTING - NEW WORK

(N) NEW TO EXISTING CONNECTION

I SEAL	A CONTRACT	ONAL	ENG7/	NEER	A A A	e.
EGISTRATION SEAL	PROFES			No.	BENIA	
	COA #:		08/02 F		f <u>#: 1:</u>	5801
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		EP B.	ll9			
	<u>S</u>	4900 MOLLY BANISTER DR.	RED DEER, AB T4R 1N9		TUCU	
ROWER		4900 MOL	RED DEEI			
NAME						1
DESCRIPTION						
DES(
V DATE						_AN
0: 230311		<u>II</u> : GRS		 1/ع	27	LIGHTING PLAN
PROJECT NO: 230311	DRAWN BY: SEI	CHECKED BY: GRS	ISSUE DATE.	07/24/02	2	LIGH.
	E	2	2.(-	_

	LUMINAIRE SCHEDULE								TENANT V	WIREWAY LOAD CALCS	PER CEC SECTIO	N 8				
MARK	MANUFACTURER	CATALOG NUMBER	VOLTAGE	WATTS	MOUNTING	LIGHT SOURCE	LAMP QTY.	LAMP DESCRIPTION	SUPPORTED DIMMING	SELECTED BY	REMARKS	EQUIPMENT NAME: OCCUPANCY TYPE:	TENANT WIREWAY STORE OR RESTAURANT			
С	JUNO	T259L-G2-30K-80CRI-PDIM-WH	120	41	TRACK	LED	N/A	N/A	ELV	OTHERS		AREA:		(464.52 SQ. METRES)		
D	JUNO	T689-WH	120	15	TRACK	LED	1	15W MAX PAR30 LED	NON	OTHERS		BASIC LOAD POWER DENSITY: VOLTAGE SYSTEM:	30 WATTS/SQ. METRE 347/600V, 3 PHASE, 4 WI	RE		
E4	JUNO	R-4FT-WH	120	N/A	TRACK	N/A	N/A	N/A	N/A	OTHERS	NOTE 1	CIRCUIT TYPE:	FEEDER			
E6	JUNO	R-6FT-WH	120	N/A	TRACK	N/A	N/A	N/A	N/A	OTHERS	NOTE 1					
E8	JUNO	R-8FT-WH	120	N/A	TRACK	N/A	N/A	N/A	N/A	OTHERS	NOTE 1	LOAD TYPE	LOAD DUTY	CONNECTED LOAD	DEMAND FACTOR	DEMAND LOAD
Н	TROY LIGHTING	CUSTOM, FK17414	120	450	CEILING, SUSPENDED	LED	30	15W MAX	NON	OTHERS		BASIC LOAD:	NONCONTINUOUS	13935 VA	100%	13935 VA
								CANDELABRA				AIR-CONDITIONING:	CONTINUOUS	20266 VA	100%	20266 VA
1	TROY LIGHTING	CUSTOM, FK17414-20-1	120	120	CEILING, SUSPENDED	LED	8	15W MAX CANDELABRA	NON	OTHERS		WATER HEATING:	NONCONTINUOUS	2000 VA	N/A	2000 VA
.1	LITHONIA	ZL1N-L48-5000LM-FST-MV0LT-30K-80CRI-WH	120	34	CEILING, SUSPENDED	LED	N/A	N/A	0-10V	OTHERS		SIGNAGE:	CONTINUOUS	1200 VA	N/A	1200 VA
0	MATTHEWS FAN			54	1		,	,				OTHER NON-CONTINUOUS LOADS:	NONCONTINUOUS	2250 VA	N/A	2250 VA
R	COMPANY	KAYE KC-CR	120	48	CEILING, SURFACE	N/A	N/A	N/A	N/A	OTHERS		OTHER CONTINUOUS LOADS:	CONTINUOUS	7186 VA	N/A	7186 VA
W	EMERGI-LITE	EAE-1-TA-UI	120	4	WALL, SURFACE	LED	N/A	N/A	NON	OTHERS			TOTALS:	46837 VA		46837 VA
Y	LITHONIA	ELM6L-UVOLT-LTP-SDRT	120	3	CEILING, SUSPENDED		N/A	N/A	NON	OTHERS			TOTAL CONTINUOUS LOAD:	28652 VA		
													TOTAL NONCONTINUOUS LOAD:	18185 VA		
	LED = LIGHT EM	LIGHT SOURCE CODES	_		SU NOT DIMMABLE	PORIED		$\frac{\text{NG CODES}}{3 - \text{WIRE}} = \text{FL}$				LOAD FOR SIZI	NG 80% RATED OCPD CIRCUIT:	54000 VA		
	FL = LINEAR FLL			0 - 10V = 10				S = WIRE = FL ECO = LUTRO					EQUIVALENT AMPS:	52.0 AMPS		
	CFL = COMPACT							$DMX = DMX5^{\circ}$.171						
	IND = INCANDES				AGNETIC LOW VOLTAG	E / TRIA				G EDGE						
	MH = METAL HA	ALIDE		ELV = E	LECTRONIC LOW VOLTA	GE / RE	EVERSE	: PHASE / TRA	AILING EDGE							
	HPS = HIGH PRE	ESSURE SODIUM		DALI = [DIGITAL ADDRESSABLE	LIGHTING	; INTEF	FACE								
А. В. С.	ORIGINATING AT SPECIFICATIONS I PROPOSED SUBS	OLS THAT ARE SHOWN HALF-SHADED, OR LABELED AN EMERGENCY PANELBOARD OR CENTRAL LIGHTING FOR MINIMUM EMERGENCY BATTERY PERFORMANCE R STITUTIONS FOR LUMINAIRES THAT ARE SELECTED BY LAMPS ARE FURNISHED BY TENANT'S VENDOR FOR	INVERTER, EQUIREMEN OTHERS RI	EMERGEN TS. EQUIRE TH	CÝ LIGHTING LUMINAIR IE APPROVAL OF THE	INDIVIDU	L BE F	PROVIDED WITH	AN EMERGE	NCY BATTER						



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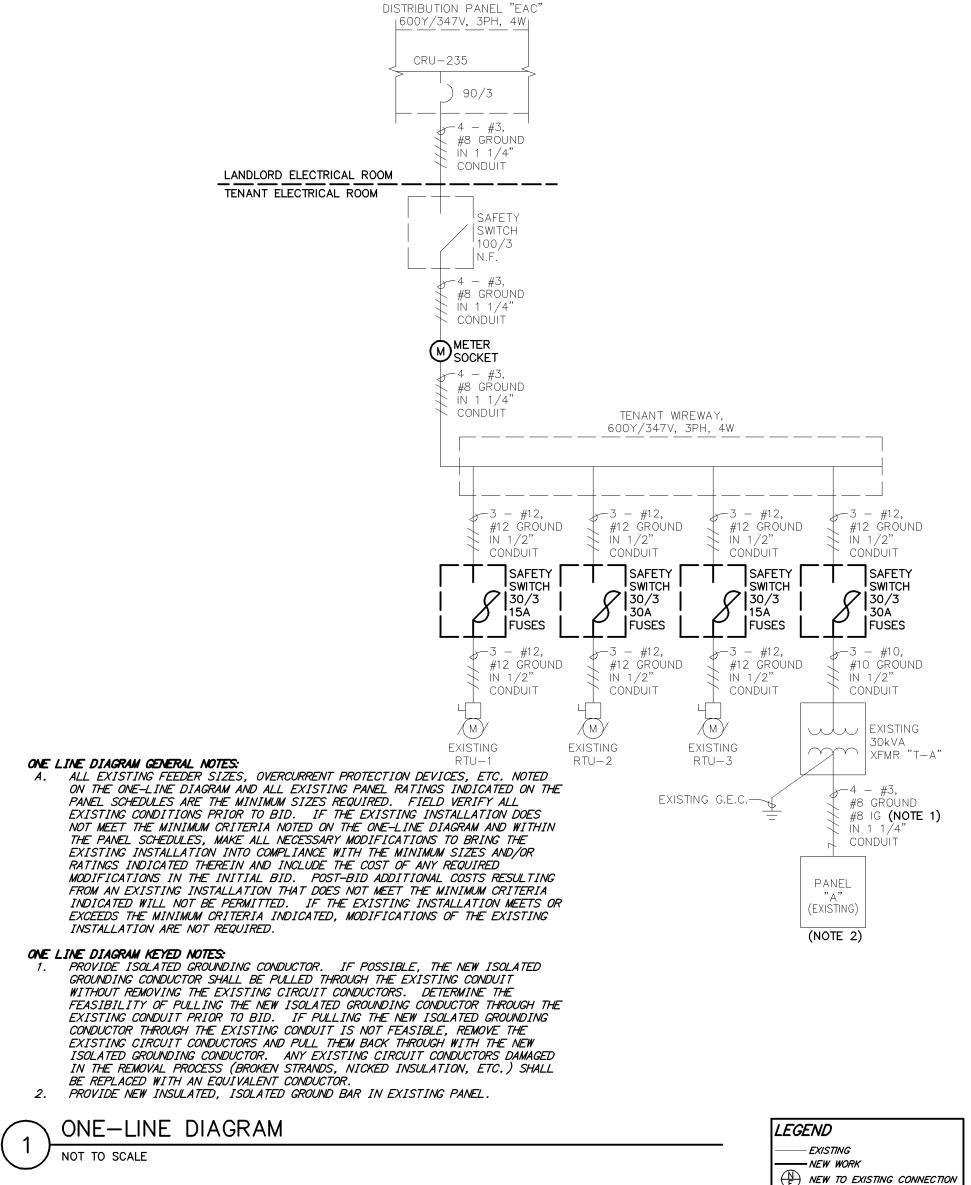
	EXISTING PANEL "A" FED FROM: PANEL "TENANT WIREWAY" MOUNTING: SURFACE MOUNTED												
	VOLTA BUS M BUS L	AGE: 208Y/120V, 3 Material: Existing Load: 58 AMPS Rating: 125 AMPS	5 PHASE,				EI F. A	NCLOSUI AULT CL	RE: JRRENT: RATING	NEMA EXIS G: MATO		IND BA	RS
			L	oad (va)		_	L	oad (va	4)			
S	CKT.	LOAD DESCRIPTION	A	В	С	BREAKER	BREAKER	А	В	С	LOAD DESCRIPTION	CKT.	NOTES
Г	1	SALES TRACK LIGHTING	1590			20/1	20/1	750			REFRIGERATOR	2	
Г	3	SALES TRACK LIGHTING		1373		20/1	20/1		1500		MICROWAVE	4	
Г	5	FITTING/BOH LIGHTING			1710	20/1	20/1			900	RECEPT.	6	
Г	7	SALES ACCENT LIGHTING	583			20/1	20/1	180			WIFI BOOSTER	8	
Г	9	FITTING LIGHTING		1780		20/1	20/1		180		CASHWRAP IG RECEPT.	10	
Т	11	STOREFRONT LTG			150	20/1	20/1			360	CASHWRAP RECEPT.	12	
	13	HWH-1	2000			25/1	20/1	180			CASHWRAP IG RECEPT.	14	
	15	DESK RECEPT.		360		20/1	20/1		180		IT CABINET	16	
	17	RECEPT.			540	20/1	20/1			360	TELECOM BOARD	18	
	19	SHOW WINDOW REC.	360			20/1	20/1	180			SOUND SYSTEM	20	
	21	SPARE / SPARE				15 / 15	20/1		360		BACKWRAP RECEPT.	22	
	23	SPARE / SPARE				15 / 15	20/1			360	SECURITY SYSTEM	24	
	25	SPARE / SPARE				15 / 15	15 / 15				SPARE / SPARE	26	
	27	SPARE / SPARE				15 / 15	15/1				SPARE	28	
т	29	SIGN			1200	20/1	15/1			540	EX ROOF RECEPT	30	

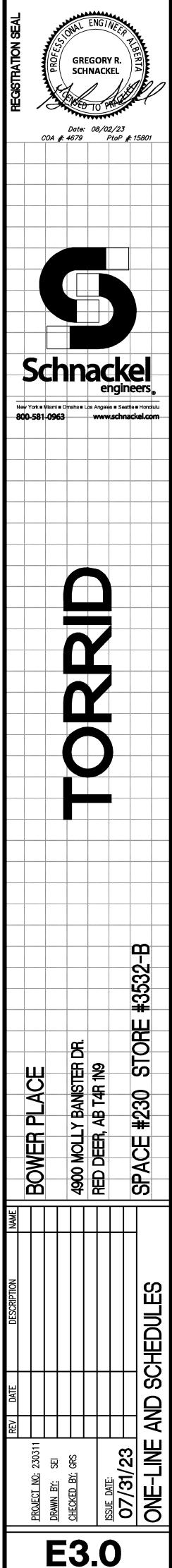
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LOAD ANAL	LOAD ANALYSIS FOR PANEL "A" (INCLUDING SUBFEEDS)								
	DEMAND	PHASE	A (VA)	PHASE	B (VA)	PHASE	C (VA)	TOTAL	. (VA)
LOAD DESCRIPTION		CONNECT.	DEMAND	CONNECT.	DEMAND	CONNECT.	DEMAND	CONNECT.	DEMAND
LIGHTING:	125%	2173	2717	3153	3942	1860	2325	7186	8983
RECEPTACLE:	100%	900	900	1080	1080	3060	3060	5040	5040
OTHER CONTINUOUS:	125%	0	0	0	0	1200	1500	1200	1500
OTHER NONCONTINUOUS:	100%	750	750	1500	1500	0	0	2250	2250
WATER HEATING:	100%	2000	2000	0	0	0	0	2000	2000
	TOTAL:	5823	6367	5733	6522	6120	6885	17676	19773
EQUIVALEN	EQUIVALENT AMPS:			48	55	51	58	50	55
PHASE E	PHASE BALANCE:				-1.06%		4.46%		

L	DESCRIPTION	SYMBOL	DESCRIPTION
_	WALL MOUNTED SINGLE RECEPTACLE, NEMA 5-20R	O	FLUSH FLOOR MOUNTED SINGLE RECEPTACLE, NEMA 5-20R
	WALL MOUNTED DUPLEX RECEPTACLE		FLUSH FLOOR MOUNTED DUPLEX RECEPTACLE
	WALL MOUNTED DEDICATED DUPLEX RECEPTACLE		FLUSH FLOOR MOUNTED DEDICATED DUPLEX RECEPTACLE
	WALL MOUNTED DUPLEX RECEPTACLE, ONE RECEPTACLE SWITCHED OR SPLIT-WIRED		FLUSH FLOOR MOUNTED DUPLEX RECEPTACLE, SPLIT-WRED
	WALL MOUNTED QUADRUPLEX RECEPTACLE		FLUSH FLOOR MOUNTED QUADRUPLEX RECEPTACLE
	WALL MOUNTED DEDICATED QUADRUPLEX RECEPTACLE		FLUSH FLOOR MOUNTED DEDICATED QUADRUPLEX RECEPTACLE
	WALL MOUNTED QUADRUPLEX RECEPTACLE, SPLIT-WRED		FLUSH FLOOR MOUNTED QUADRUPLEX RECEPTACLE.
	WALL MOUNTED SPECIAL RECEPTACLE, NEMA CONFIGURATION AS NOTED		SPLIT-WIRED FLUSH FLOOR MOUNTED SPECIAL RECEPTACLE, NEMA CONFIGURATION AS NOTED
	NEMA CONFIGURATION AS NOTED WALL MOUNTED RANGE RECEPTACLE, NEMA 14-50R UNLESS INDICATED OTHERWISE	<u> </u>	NEMA CONFIGURATION AS NOTED ABOVE FLOOR SERVICE FITTING, HUBBELL #SC3098A OR EQUAL; NEMA CONFIGURATION AS NOTED
			EQUAL; NEMA CONFIGURATION AS NOTED " CEILING MOUNTED QUADRUPLEX RECEPTACLE (C=FLUSH CEILING, DC=DROPCORD)
	CEILING MOUNTED SINGLE RECEPTACLE, NEMA 5–20R (C=FLUSH CEILING, DC=DROPCORD) CEILING MOUNTED DUPLEX RECEPTACLE		
	CEILING MOUNTED DUPLEX RECEPTACLE (C=FLUSH CEILING, DC=DROPCORD) CEILING MOUNTED DEDICATED DUPLEX RECEPTACLE	E c	CEILING MOUNTED DEDICATED QUADRUPLEX RECEPTACLE (C=FLUSH CEILING, DC=DROPCORD) CEILING MOUNTED QUADRUPLEX RECEPTACLE SPLIT-WRED
	CEILING MOUNTED DEDICATED DUPLEX RECEPTACLE (C=FLUSH CEILING, DC=DROPCORD)	C	CEILING MOUNTED QUADRUPLEX RECEPTACLE, SPLIT-WRED (C=FLUSH CEILING, DC=DROPCORD)
	CEILING MOUNTED DUPLEX RECEPTACLE, SPLIT-WIRED (C=FLUSH CEILING, DC=DROPCORD)	©c	CEILING MOUNTED SPECIAL RECEPTACLE, NEMA CONFIGURATION AS NOTED (C=FLUSH CEILING, DC=DROPCORD)
5	MULTI-OUTLET ASSEMBLY	<u>~</u> #	CORD AND PLUG
	WALL MOUNTED JUNCTION/OUTLET BOX	O c	CEILING MOUNTED JUNCTION/OUTLET BOX
	FLUSH FLOOR MOUNTED JUNCTION/OUTLET BOX	0	JUNCTION BOX MOUNTED ABOVE CEILING
	SWITCH, SPST UNLESS INDICATED OTHERWISE, HORSEPOWER RATED WHEN USED IN CONJUNCTION WITH MOTORS	D	PUSHBUTTON STATION, ONE BUTTON
	CEILING MOUNTED OCCUPANCY SENSOR	•	PUSHBUTTON STATION, TWO BUTTON
s	WALL MOUNTED OCCUPANCY SENSOR	•••	PUSHBUTTON STATION, THREE BUTTON
	CEILING MOUNTED PHOTOSENSOR		SAFETY SWITCH, CHARACTERISTICS AS INDICATED
	CEILING MOUNTED MOTION SENSOR	41	DISCONNECT SWITCH PROVIDED BY EQUIPMENT MANUFACTURER
	AUTOMATIC TIMECLOCK	Чсв	ENCLOSED CIRCUIT BREAKER, CHARACTERISTICS AS INDICATED
	PHOTOCELL		MAGNETIC MOTOR STARTER
	RELAY	<u> </u>	COMBINATION MAGNETIC MOTOR STARTER AND DISCONNECT SWITCH, CHARACTERISTICS AS INDICATED
	CONTACTOR		VARIABLE FREQUENCY DRIVE
	UL 924 AUTOMATIC LOAD CONTROL RELAY; HUBBELL CONTROL SYSTEMS #ALCR1277 OR EQUAL	 GTD	UL 1008 BRANCH CIRCUIT EMERGENCY LIGHTING TRANSFER SWITCH; BODINE #GTD20A OR EQUAL
	BELL	 ₽₽	CHIME
	BUZZER	(x)	ROTATING BEACON
	WALL MOUNTED TELEPHONE OUTLET; *P DENOTES NUMBER OF TELEPHONE PORTS	∇	WALL MOUNTED DATA OUTLET; *D DENOTES NUMBER OF DATA PORTS
	FLUSH FLOOR MOUNTED TELEPHONE OUTLET;		FLUSH FLOOR MOUNTED DATA OUTLET;
	*P DENOTES NUMBER OF TELEPHONE PORTS CEILING MOUNTED TELEPHONE OUTLET; *P DENOTES NUMBER OF TELEPHONE PORTS	<u> </u>	*D DENOTES NUMBER OF DATA PORTS CEILING MOUNTED DATA OUTLET; *D DENOTES NUMBER OF DATA PORTS
	WALL MOUNTED COMBINATION TELEPHONE AND DATA OUTLET; *P/*D DENOTES NUMBER OF TELEPHONE/DATA PORTS		FLUSH FLOOR MOUNTED COMBINATION TELEPHONE AND DATA OUTLET; *P/*D DENOTES NUMBER OF TELEPHONE/DATA PORTS CEILING MOUNTED COMBINATION TELEPHONE AND DATA OUTLET;
»		▼ c	*P/*D DENOTES NUMBER OF TELEPHONE/DATA PORTS
	CIRCUITRY, CONCEALED IN WALL OR CEILING	P	POWER POLE
`	CIRCUITRY, CONCEALED IN OR UNDER FLOOR	T	TELECOMMUNICATIONS POLE
-	CIRCUITRY, EXPOSED	TP	TWO-CHANNEL TELECOMMUNCATIONS AND POWER POLE
	CIRCUIT HOMERUN. THE NUMBER OF ARROWS INDICATES THE NUMBER OF CIRCUITS. TWO WIRES UNLESS NOTED OTHERWISE:	UCP	UNDERCARPET FLAT CONDUCTOR CABLE WIRING SYSTEM, POWER
< <u></u>	CIRCUIT HOMERUN. THE NUMBER OF ARROWS INDICATES THE NUMBER OF CIRCUITS. TWO WIRES UNLESS NOTED OTHERWISE; SLASHES INDICATE NUMBER OF WIRES. EQUIPMENT GROUND WIRE IS REQUIRED BUT NOT INDICATED. A 7 INDICATES ISOLATED GROUND CONDUCTOR.	UCT	UNDERCARPET FLAT CONDUCTOR CABLE WIRING SYSTEM, TELEPHONE
	ISULATED GROUND CONDUCTOR.	UCD	UNDERCARPET FLAT CONDUCTOR CABLE WIRING SYSTEM, DATA
	CONDUIT STUB		WIRE LOOP FOR FUTURE CONNECTION, 10'-0" MINIMUM SLACK
	CONDUIT/CIRCUIT BREAK AND CONTINUED ELSEWHERE	ø	VERTICAL CONDUIT/CIRCUIT
	METER AND SOCKET	/M/	MOTOR
]	LIGHTING AND APPLIANCE PANELBOARD, SURFACE MOUNTED	XXRPS	REMOTE LIGHTING POWER SUPPLY/TRANSFORMER; (XX = WATT RATING)
anningar.	LIGHTING AND APPLIANCE PANELBOARD, FLUSH MOUNTED	×x⊨>	TRACK LIGHTING END FEED; (XX = CURRENT LIMITER RATING, IF APPLICABLE)
	•		

ELECTRICAL SYMBOL LEGEND (SOME MAY NOT BE USED)





		SECTION 260000 - ELECTRICAL GENERAL CONDITIONS		power supply is available prio voltage, phase, and current re
	1 GENE SUMMA A.			order, connection of equipmen power supply voltage and any this Contractor and any confl Contractor's responsibility.
	Β.	Drawings, or required to provide a complete installation of approved electrical systems. The Drawings, General Conditions and General Provisions of the Contract apply to this Section and the other Sections of Division 26, Division 27, and Division 28 of the specifications. Where conflicts arise between these documents, the more stringent provision will be applicable, subject to the interpretation of the Engineer.		ACCESS TO EQUIPMENT: Install all en all parts are easily accessible for access doors, fire rated where requ CUTTING, PATCHING, AND PIERCING
	с.	Furnish all labor, material, services, and skilled supervision necessary for the construction, erection, installation, connections, testing, and adjustment of all materials and electrical equipment specified herein, or shown or noted on the Drawings, and its delivery to the Owner, complete in all respects and ready for use.		installation, and leave surfaces surface. B. Patch existing finished surface existing materials.
	D.	Where plans indicate fixtures or equipment will be furnished by this Contractor for installation by other Contractors, this Contractor shall furnish all such equipment, complete in all respects and ready for installation. Drawings, instructions, and manuals supplied with equipment shall be carefully preserved and turned over to the installing Contractor.	3.04	C. Fire and/or Smoke Rated Assem construction and install work D. Roof Penetrations: Coordinate penetrations. FIELD QUALITY CONTROL
1 02	E.	Where plans indicate fixtures or equipment will be furnished by others, this Contractor shall provide all rough-in and supplies and shall connect such equipment to the electrical system. Drawings, instructions, and manuals supplied with equipment shall be carefully preserved and turned over to the Architect. ITIONS		 A. Install all equipment, devices neat and workmanlike manner in NECA, and NEMA standards. B. Adjust all flush mounted equip flush with finished wall or f
1.02	A. B. C.	Work: The construction and services required by the Contract Documents whether completed or partially completed and includes all labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The work may constitute the whole or a part of the project. Furnish: To supply and deliver, unload, and inspect for damage. Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, connect,		 C. Replace or refinish damaged ex marring or disfigurement has of D. Clean electrical parts to reme equipment, devices, luminaires and cabinets of all foreign me E. Paint all electrical equipment
	D. E. F <i>.</i>	and place into operation into the work. Provide: To furnish and install. Connect: To bring service to the equipment and make final attachment including necessary switches, outlets, boxes, terminations, etc. Concealed: Hidden from sight in chases, furred spaces, shafts, hung ceilings, embedded in	3.05	exposed to view, where visible exposed conduit to match the Architect. TESTING AND INSPECTION A. Testing: Test the entire syst
	G. H. I.	construction, in crawl spaces, or buried. Exposed: Not installed underground nor concealed as defined. Drawings: All plans, details, equipment schedules, diagrams, sketches, etc. issued for the construction of the work. Conduit: Conduit, and all required fittings, pull boxes, hangers, and other supports and	3.06	time to establish the adequace of all equipment, devices, sys B. Inspection: Obtain all requir PROJECT CLOSEOUT A. Project Record Documents: Pro
1.03	CODES A.	accessories related to such conduit. AND STANDARDS Perform work in accordance with the applicable Building Code, Electrical Code, Fire Code, Mechanical Code, Plumbing Code, Energy Code, and all other applicable codes, amendments, and ordinances. Also perform all work in accordance with:		record drawings to the Owner. conditions and shall include circuiting arrangements, rout than 50 mm, locations and moun locations of all items requir
	в.	 Canadian Centre for Occupational Health and Safety (CCOHS) Regulations. The Authority Having Jurisdiction. Landlord requirements including Tenant Criteria Manuals and Lease Exhibits. Utility company requirements. Recognized Standards: Design, manufacture, testing and method of installation of all 		and circuiting and switching of B. Operation and Maintenance Date operation and maintenance date Operation and maintenance date procedures, recommended maintenance
		apparatus and materials furnished under the requirements of these Specifications shall conform to the latest publications or standard rules of Institute of Electrical and Electronic Engineers (IEEE), National Electrical Manufacturers Association (NEMA), Underwriters Laboratories, Inc. (UL), National Fire Protection Association (NFPA), American Society for Testing and Materials (ASTM), American National Standards Institute (ANSI), Standards Council of Canada (SCC), Canadian Standards Association (CSA), National		 manufacturers' warranties, cer C. Maintenance Materials: Provide cabinet, including panelboards puller. D. Test Reports: Provide one pr reports to the Owner.
	c.	Electrical Contractors Association (NECA), and Canadian Electrical Contractors Association (CECA). Code, Landlord, and utility company requirements supersede any requirements of the Drawings and/or Specifications. The Contract Documents take precedence where the Contract		SECTION 2
	under	Documents exceed code, Landlord, utility, or recognized standards requirements. TS AND FEES: Permits, licenses, fees, inspections and arrangements required for the work this Contract shall be obtained by the Contractor at his expense. RARY SERVICES FOR CONSTRUCTION Provide a temporary electrical service, including all required equipment such as	PART	 GENERAL - NOT USED PRODUCTS MATERIALS AND EQUIPMENT: Materials in individual Sections.
		transformers, generators and fuel, panelboards, etc. as required by all trades. Coordinate power requirements for the temporary service with the General Contractor and the utility company prior to the start of construction. The Contractor is responsible to develop all temporary service plans and specifications as required by the Authority Having Jurisdiction, submit those plans and specifications as required by the Authority Having Jurisdiction, and to pay for all temporary service energy consumption.		 3 EXECUTION EXAMINATION A. Visit the project site, review familiarize himself with the project site, review
1.06	B. CONTR A.	Provide all temporary lighting necessary to provide lighting levels in compliance with CCOHS Regulations and as required by all trades. ACT DRAWINGS Obtain, fully understand, and coordinate the work with the complete set of Contract Documents. Any required corrections, including all associated costs, arising from lack of		abandoned wiring and equipment the Contractor acknowledges th are accepted. B. Promptly report any field dise adjusting for discrepancies of
	Β.	coordination with the complete set of Contract Documents is the Contractor's sole responsibility. Work under these Sections is diagrammatic and is intended to convey the scope of work and indicate the general arrangement of equipment, conduit, and outlets. Obtain instructions from the Architect/Engineer prior to rough-in wherever a question exists as to the exact		 C. Any demolition work indicated demolition work involved. If Contractor is responsible to construction of the work. D. Commencement of work means Contractor
	C.	intended location of outlets or equipment. Promptly report and discrepancies discovered within the Contract Documents. Failure of the Contractor to report discrepancies shall result in the resolution becoming the Contractor's responsibility and subject to the Architect/Engineer's review and possible rejection. Should the Architect/Engineer reject a discrepancy resolution of which they	3.02	PREPARATION A. Disconnect electrical systems B. Protect and safeguard any exis C. Coordinate utility service our D. Provide temporary wiring and
1.07	SUBMI A.	were not notified, the Contractor is fully responsible to correct the installation, including all associated costs, until approval of the installation is given by the Architect/Engineer. TTALS FOR ENGINEER REVIEW: Furnish the following submittals to the Architect for review by the Engineer:		required for the sequencing o E. Maintain all existing power, is fully operational, tested, Authority Having Jurisdiction partially or completely disab
		 Product data for contactors and relays. Product data and shop drawings for lighting control devices. Shop drawings for low voltage transformers. Shop drawings for panelboards. Product data for interior lighting. 	3.03	connections, and minimize all DEMOLITION AND EXTENSION OF EXISTIN A. Maintain continuity of circui or equipment not being remove B. Remove, relocate, and extend
	B. C. D.	6. Product data and shop drawings for telephone and data systems. Use manufacturer's specification sheets identified by number indicated on drawings or schedules. Indicate catalog number on the cut sheets. Submittals other than those listed above will not be reviewed and will be returned stating		construction. Extend existing existing electrical installat C. Remove all abandoned wiring, voltage cabling, to source of D. Remove exposed abandoned condu
	Ε.	such. Submittals are reviewed only for general compliance with the Contract Documents. Dimensions, quantities and details are not checked during submittal review. Review of the submittals does not relieve the Contractor of the responsibility for providing all materials, equipment and accessories necessary for a complete and operational system		abandoned concealed conduit f E. Disconnect and remove all dev associated mounting hardware of F. Maintain access to existing e installation or provide access
1.08	QUALI A.	meeting the requirements of the project and the intent of the Contract Documents. The responsibility for coordination of substituted materials and equipment lies solely with the substituting Contractor. TY ASSURANCE All components shall be listed and classified by Underwriters Laboratories, Inc. as	3.04	 G. Dispose of all equipment not a salvage rights on all materia CLEANING AND REPAIR A. Repair construction and finish B. Patch all openings resulting
	в.	suitable for the purpose and free of all rust/corrosion or any visible damage. All items not complying with this requirement shall be replaced without any change in the Contract amount. Unless otherwise specified, all equipment, devices, luminaires, and materials of the same type or classification and used for the same purpose shall be products of the same		 materials. C. Clean and repair existing materials. D. Existing and Relocated Panelby from interiors, check tightney breakers, and provide closure
	C.	manufacturer. Use only new, un-weathered, and unused material, except as specifically noted. Equipment performance and accessories shall be as indicated on the Drawings and/or specified herein. Inclusion in both locations is not a prerequisite to inclusion in the		E. Existing and Relocated Lumina manufacturer's recommendations and repair any broken electric luminaire for any existing lum
4 99		Contract; equipment and accessories specified in either location shall be included in the Contract. Provide all necessary accessories and connections as required for a complete, functional system, including all required components reasonably inferred to as necessary although such components may or may not be specifically indicated in the Contract Documents.	PART	SECTION 20
	prote manuf WARRA syste and g	ERY, STORAGE, AND HANDLING: Accept all materials on site and inspect for damage and ct from corrosion and entrance of debris. Handle all materials in accordance with acturer's instructions to avoid damage to internal components, enclosures, and finishes. NTY AND GUARANTEE: Provide a complete parts and labor warranty and guarantee on all ms for a period of one year from Owner acceptance of the completed facility. This warranty uarantee shall cover all failures unless such failure is directly attributable to vandalism uses other than defects in material or workmanship.		 PRODUCTS BUILDING WIRE AND CABLES A. Provide single conductor build otherwise permitted, or otherwise B. All conductors shall be RW90 of C. Metal Clad Cable (Type MC): 1
2.01	all e	CTOR TERMINATIONS: Provide conductor terminations rated at a minimum of 75 degrees C in quipment.		only when approved by applical Jurisdiction. Exposed MC Cab 1. All MC Cable sheaths sh 2. All MC Cable shall be en
2.02	for t Other revie requi	ITUTIONS: The products specified in the Contract Documents constitute the Basis of Design he Construction Documents and set minimum standards for quality, design, and functionality. products are permitted to be submitted, at the Contractor's option, during shop drawing w unless indicated otherwise. Any substitute products shall meet or exceed all rements specified. Any costs and coordination issues arising out of any substitution, ding according to a with all other contractors and public tractors.		exceptions. D. Nonmetallic-Sheathed Cable (T concealed locations within in codes and amendments and the used outside individual dwell
	is th 3 EXEC			 E. Use solid or stranded conductor conductors for all conductors F. Wire Sizes: Use 12 AWG conductors, modified as follows:
٥.01	COORD A. B.	INATION OF WORK Work lines and established heights shall be in strict accordance with architectural drawings and specifications. Verify all dimensions shown and establish all elevations and detailed dimensions not shown prior to rough-in. Promptly report any difficulties encountered in the installation of the work which might prevent prompt and proper installation.		modified as follows: a. 20A, 120V circuit: b. 20A, 120V circuit: c. 20A, 277V circuit: 2. Wire sizes indicated on entire circuit to the fi
	C.	prevent prompt and proper installation. Failure to report shall constitute an acceptance of the work of other trades as being fit and proper for the execution of this work. Coordinate the work with all trades so that it proceeds without delay and minimizes interference to work that is in progress or has not been completed. Conflicts arising from lack of coordination shall be this Contractor's responsibility. The Electrical Contractor shall pay for all extra cutting and patching necessary by any lack of	2.02	entire circuit to the for otherwise. a. Where a circuit sp through the entire unless indicated of CONTROL CABLES

Contractor shall pay for all extra cutting and patching necessary by any lack of coordination. Arrange all conduit runs in such a manner that it does not interfere with grilles. diffusers, outlet boxes, luminaires, or other items while providing for maximum headroom. Maintain access to equipment requiring service when selecting mounting elevations.

Afford other trades reasonable opportunity for the execution of their work and connect the work of other trades as to not delay or interfere with their work.

- Explicitly follow all manufacturer's installation instructions and promptly report any conflicts between the manufacturer's installation instructions and the Contract Documents.
- G. Provide all supplementary or miscellaneous items, appurtenances, and devices incidental to or necessary for a sound, secure and complete installation.
- H. Verify and coordinate all requirements and installation details of all materials and equipment prior to rough-in. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other Sections. Determine connection locations and requirements, sequence rough-in of electrical connections to coordinate with installation of equipment, sequence electrical connections to coordinate with start-up of equipment, and verify that proper

3.02 COLOR CODING A. Color code conductors as follows and maintain consistent color coding throughout project including branch circuit conductors.

2.04 WIRING CONNECTORS

PART 3 EXECUTION

and cables.

ilable prior to subcontractor's ordering equipment. Verify proper current rating of power supply and report any discrepancies prior to equipment, or start-up. Responsibility for verification of proper and any damage resulting from incorrect connections shall rest with any conflicts arising from lack of coordination shall be this

tall all equipment, starters, switches, receptacles, and boxes so that ssible for inspection, operation, maintenance, and repair. Provide where required, for concealed equipment.

a neat workmanlike manner, only as large as required for the eave surfaces around openings smooth and finished to match surrounding shed surfaces and building components using new materials matching

ated Assemblies: Become familiar with all fire and/or smoke rated stall work to maintain the integrity of those ratings. Coordinate with the Roofing Contractor to provide any required roof

nt, devices, luminaires, and materials plumb, level, securely, and in a manner in accordance with CSA C22.1 PART 1 and all applicable CECA,

unted equipment, boxes, cabinets, and enclosures such that they are wall or flooring material. damaged equipment, devices, luminaires, materials, and surfaces where

ement has occurred. rts to remove harmful materials. Clean exposed surfaces of all luminaires, and materials and the interior of all boxes, enclosures foreian materials.

equipment and materials located on exterior walls, on the roof where ere visible from 6'-O" above grade from any property line, and all natch the surrounding surfaces. Coordinate paint color with the

entire system under operating conditions over a sufficient period of he adequacy, quality, safety, completed status, and suitable operation evices, systems, etc all required certificates of inspection and approval.

ments: Provide one printed copy and one electronic copy of project the Owner. Project record drawings shall reflect the actual "as-built" include locations of all equipment, devices, and luminaires, ents, routing of all underfloor conduits, routing of conduits larger ns and mounting heights of all outlet, pull, and junction boxes, ems requiring maintenance and inspection, and locations of components

switching arrangements of lighting controls. enance Data: Provide one printed copy and one electronic copy of enance data for all equipment, devices and luminaires to the Owner. enance data shall include manufacturer's cut sheets, maintenance nded maintenance intervals, wiring diagrams, parts lists, unties, certificates, and test reports of each item installed. Is: Provide to the Owner two keys for each different enclosure and

panelboards, two spare fuses of each type and size, and one fuse ide one printed copy and one electronic copy of all completed test

END OF SECTION

SECTION 260501 - ELECTRICAL DEMOLITION

Materials and equipment for patching and extending work as specified

ite. review existing conditions against the Contract Documents, and with the work prior to bidding and start of the work. Verify existing easurements, and circuiting arrangements are as indicated and that equipment serve only abandoned facilities. By signing the Contract, owledges the site visit has been completed and the existing conditions

field discrepancies. The Contractor assumes full responsibility for epancies of which the design team is not informed. indicated on the Drawings is intended to convey the scope of the olved. If demolition plans are not included with the Drawinas, the nsible to demolish existing as required to allow for installation and

means Contractor accepts existing conditions.

al systems in walls, floors, and ceilings that are removed. d any existing service lines and utility structures.

service outages with utility company and the Owner. iring and connections to maintain existing systems in service as

muencing of the work or the Owner's need for continued operations. ng power, telephone, and fire alarm systems in service until new system tested, and ready for service. Notify all stakeholders (Owner, isdiction, utility company, Landlord, etc.) at least 48 hours before tely disabling system, disable systems only to make switchovers and imize all outage durations.

OF EXISTING ELEČTRICAL WORK of circuits as needed to provide power to remaining devices, fixtures, ing removed. nd extend existing installations as required to accommodate new

nd existing installations using materials and methods compatible with installations or as specified and required by Code. wiring, including all abandoned telecommunications and other low source of supply.

doned conduit and abandoned conduit above accessible ceilings. Cut conduit flush with walls and floors. e all devices, boxes, distribution equipment, luminaires, and all hardware and appurtenances that are not required to remain.

existing electrical installations that remain active. Modify /ide access panel as appropriate. oment not reused as part of the work. The Owner shall have first Il materials and equipment.

and finishes damaged during demolition and extension work.

esulting from the installation or removal of electrical equipment or isting materials and equipment that remain or that are to be reused. ted Panelboards: Clean exposed surfaces, remove all foreign material

ck tightness of electrical connections, replace damaged circuit de closure plates for vacant positions. ted Luminaires: Clean luminaire reflectors and lenses per nmendations, replace all lamps with new, replace any expired ballasts,

en electrical parts. Replace any existing luminaires with identical isting luminaires that are damaged beyond repair. END OF SECTION

SECTION 260519 - CONDUCTORS AND CABLES

uctor building wire installed in raceway unless indicated otherwise, or otherwise required. be RW90 copper conductors

(pe MC): Permitted only for branch circuits in concealed locations and by applicable codes and amendments and the Authority Having ed MC Cable is not permitted; no exceptions.

sheaths shall be listed and identified for grounding. shall be equipped with copper equipment grounding conductor. No

Cable (Type NM): Type NM-B permitted only for branch circuits in within individual dwelling units and only when approved by applicable and the Authority Having Jurisdiction. Exposed NM Cable and NM Cable dual dwelling units is not permitted; no exceptions. ed conductors for all conductors 10 AWG and smaller. Use stranded conductors 8 AWG and larger.

nductors, minimum, for all circuits unless indicated otherwise or as DV circuits longer than 75 feet: 10 AWG to offset voltage drop. DV circuits longer than 150 feet: 8 AWG to offset voltage drop.

7V circuits longer than 150 feet: 10 AWG to offset voltage drop dicated on the Drawinas or indicated above shall be carried through the to the furthest outlet box on the associated circuit unless indicated

circuit splits into multiple branches, the wire size shall be carried the entirety of each branch to the furthest outlet box on each branch unless indicated otherwise.

A. All control cable conductor sizes, quantities, stranding, and shielding as recommended by the manufacturer and required for the installation but no smaller than 18 AWG. Horizontal Applications in Conduit: Type CL2 unless otherwise required. Horizontal Applications not in Conduit: Type CL2P unless otherwise required. Riser Applications: Type CL2R unless otherwise required. 2.03 COMMUNICATIONS CABLES: See Section 271005.

Use twist-on insulated spring connectors, mechanical connectors, or compression connectors for conductor sizes 8 AWG and smaller. Do not use push-in wire connectors as a substitute for twist-on insulated spring connectors. Use mechanical connectors or compression connectors for conductor sizes 6 AWG and larger. C. Use crimped terminals for all control circuit conductor connections.

3.01 PREPARATION: Clean raceways thoroughly to remove foreign materials before installing conductors

208Y/120 V, 3 phase, 4 Wire System

Phase A: Black Phase B: Red

Phase C: Blue Neutral/Grounded: White 600Y/347 V, 3 Phase, 4 Wire System

Phase A: Orange

Phase B: Brown Phase C: Yellow

Neutral/Grounded: White with black stripe Equipment Ground: Green

Isolated Ground: Green with yellow stripe 3.03 INSTALLATION

Circuit routing indicated is diagrammatic. Arrange circuiting to minimize splices and include circuit lengths required to install connected devices within 3 meters of location

Combining branch circuits in a single raceway is permitted under the following conditions: Provide no more than six current-carrying conductors in a single raceway. Dedicated neutral conductors are considered current-carrying conductors. Increase size of conductors as required to account for ampacity derating. Size raceways, boxes, etc. to accommodate conductors.

C. Neutral Conductors:

Provide separate neutral conductors for: a. Branch circuits protected by ground fault circuit interrupter (GFCI) circuit breakers. Branch circuits protected by arc fault circuit interrupter (AFCI) circuit

breakers. Branch circuits protected by shunt trip circuit breakers.

Branch circuits fed from feed-through protection of GFCI receptacles. Branch circuits with dimming controls.

Branch circuits that serve emergency lighting equipment such as emergency batteries or emergency lighting unit equipment.

Where indicated by the wire counts shown on the Drawings. Multiwire branch circuits (shared neutrals) are permitted where not otherwise indicated

Locate all multiwire branch circuits in vertically adjacent panelboard pole spaces and provide circuit breaker handle ties to simultaneously disconnect all ungrounded circuit conductors.

D. Pull all conductors together into raceway at same time, do not damage conductors or exceed manufacturer's recommended maximum pulling tension or sidewall pressure, and use suitable wire pulling lubricant where recommended by the manufacturer. Secure and support conductors and cables in accordance with CSA C22.1 PART 1 using

supports and methods approved by the Authority Having Jurisdiction. Provide independent support from building structure; do not support from raceways, piping, ductwork, suspended ceiling support systems, or other systems and do not allow conductors or cables to lay on ceiling tiles. Cut all cables per the manufacturer's recommendations and terminate using suitable

fittings including anti-short, insulated bushings where applicable.

Provide a minimum of 305 mm of slack at each outlet. Provide a minimum of 1.5 meters of slack where conductors are installed in enclosures for future termination by others. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment

- enclosures. Make wiring connections using specified wiring connectors and make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit
- bodies. Do not remove conductor strands to facilitate insertion into connector. Provide J. connectors suitable for reducing to appropriate size, but not less than required for the
- rating of the overcurrent protective device, where conductors are larger than the equipment terminations can accommodate. Insulate splices and taps that are made with uninsulated connectors using insulating covers specifically designed for the connectors, or electrical tape for dry or damp
- locations. Use heat shrink tubing for wet locations. Provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.
- Provide all control wiring and communications cabling, whether or not shown on the Drawings, per manufacturer's recommendations and as required for a complete and operational system.

END OF SECTION

SECTION 260526 - GROUNDING AND BONDING

- PART 1 GENERAL 1.01 MAXIMUM GROUNDING SYSTEM RESISTANCE: 5 ohms.
- PART 2 PRODUCTS
- 2.01 ROD ELECTRODES: Copper, 20 mm diameter, 3 meter long solid rods. Sectional rods are not
- permitted. CONCRETE ENCASED ELECTRODES: 4 AWG, 6 meter long bare copper wire.
- 2.03 WIRE: Copper wire sized to meet CSA C22.1 PART 1 requirements. 2.04 CONNECTORS AND ACCESSORIES: Copper, copper alloy, or bronze mechanical connectors.
- PART 3 EXECUTION
- 3.01 INSTALLATION OF GROUNDING ELECTRODE SYSTEM
- As applicable to the project, provide all components required for a complete grounding electrode system including bonding of metal underground water pipe, metal frame of the building, concrete-encased electrode, metal aboveground water piping system, metal aboveground gas piping system, and rod electrode(s) per CSA C22.1 PART 1 requirements. 3.02 INSTALLATION OF EQUIPMENT GROUNDING SYSTEM
- A. Without exception, provide insulated equipment grounding conductor sized per CSA C22.1 PART 1 requirements within each feeder and branch circuit raceway and terminate each end on suitable lug, bus, or bushing. INSTALLATION OF ISOLATED GROUNDING SYSTEM
- A. Provide an additional isolated grounding conductor for circuits serving isolated ground receptacles. Isolated grounding conductors shall be isolated from the isolated grounding receptacle to the isolated ground bus in the upstream panelboard. 3.04 TESTING
- A. Measure grounding resistance using Fall of Potential Method or Signal Injection Method. Provide additional rod electrodes as required to reduce grounding resistance to less than the specified maximum permitted value. END OF SECTION

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

- PART 1 GENERAL NOT USED
- PART 2 PRODUCTS

2.01 HANGERS AND SUPPORTS A. Corrosion-resistant materials of size and type adequate to carry the supported weight, including the weight of wire in conduit; do not use perforated pipe straps as a means of

2.02 ANCHORS AND FASTENERS A. Use precast inserts, preset inserts, expansion anchors, or self-drilling anchors as approved by the Structural Engineer for concrete elements.

- Use beam clamps, steel spring clips, steel ramset fasteners, or welded fasteners for steel elements
- с. Use toggle bolts or hollow wall fasteners for hollow masonry, plaster, and gypsum board partitions.
- Use expansion anchors or preset inserts for solid masonry walls. Use sheet metal screws for sheet metal elements and wood screws for wood elements.
- PART 3 EXECUTION
- 3.01 INSTALLATION A. Provide all required blocking and supplemental framing required to securely support all
 - materials. Fasten supports to building structure and surfaces only. Do not fasten supports to pipes, ducts, mechanical equipment, conduit, or ceiling suspension wires.
 - Obtain permission from Structural Engineer before drilling or cutting structural members or before using powder-actuated anchors.
 - Rigidly weld support members or use hex-bolts to present neat appearance with adequate
 - strength and rigidity. Provide lock washers under all nuts. Install surface-mounted cabinets and panelboards with minimum of four anchors.
 - Provide steel channel supports behind all cabinets and panelboards located in damp or wet locations to stand enclosures 25 mm off wall Provide supports for all low voltage wiring not routed in conduit. END OF SECTION

SECTION 260534 - CONDUIT AND WIREWAYS

different conduit type is used.

conduit. Conduits shall be galvanized or PVC coated.

2.02 FITTINGS: Provide listed fittings identified for use with the conduit

minimum liquidtight flexible metal conduit.

PART 1 GENERAL - NOT USED

or PVC coated.

above grade.

flexible metal conduit.

or electrical metallic tubing.

conductor fill and bending radius requirements.

PART 2 PRODUCTS

PART 3 EXECUTION

3.01 INSTALLATION

2.01 CONDUIT A. Size: As required by CSA C22.1 PART 1 for the conductors installed but no smaller than specified.

- Sizes Indicated on the Drawings: Any conduit sizes indicated to a utility transformer are based on Schedule 80 PVC conduit
- Any conduit sizes indicated to the primary or secondary of a dry-type transformer are based on Flexible Metal Conduit (FMC).

Underground: 21 mm minimum rigid metal conduit, intermediate metal conduit, Schedule 80

Outdoor Locations above Grade: 16 mm minimum rigid metal conduit or intermediate metal

conduit. Nonmetallic conduit is not permitted above grade. Conduits shall be galvanized

Within Slabs above Grade: 21 mm minimum rigid metal conduit, intermediate metal conduit,

or Schedule 80 PVC. Metal conduits shall be galvanized or PVC coated. Coordinate with

the Structural Engineer for restrictions and limitations on conduits installed in slabs

Exposed Wet and Damp Locations: 16 mm minimum rigid metal conduit or intermediate metal

Connections to Vibrating Equipment and Luminaires in Dry Locations: 16 mm minimum

Connections to Vibrating Equipment and Luminaires in Damp and Wet Locations: 16 mm

H. All Other Dry Locations: 16 mm minimum rigid metal conduit, intermediate metal conduit,

damp and wet locations unless indicated otherwise; size as required by CSA C22.1 PART 1 based on

Conceal all conduit in all interior and exterior areas, including exposed structure areas, unless the Architect provides specific approval permitting the use of exposed conduit.

2.03 WIREWAYS: Square D Class 5100 Type LDB for dry locations or Square D Class 5100 Type LDR for

PVC, or Schedule 40 PVC. Metal conduits shall be galvanized or PVC coated.

All other conduit sizes are based on Electrical Metallic Tubing (EMT).

The Contractor is responsible to adjust conduit sizes as required when a

- Route any exposed conduit parallel and perpendicular to walls. Subject to the Architect's approval, conduit located above ceilings is permitted to be routed point-to-point provided it is secured and supported per CSA C22.1 PART 1 requirements and complies with all applicable Codes and other requirements of the specifications. Do not embed conduit in slabs-on-grade. Locate conduit a minimum of 50 mm below the bottom surface of the slab to avoid future damage from cutting of the floor slab. Route conduit in slabs-above-grade from point-to-point. Do not cross conduits embedded in F. Route underground conduit from point-to-point and at a burial depth in compliance with CSA C22.1 PART 1, local code, and utility company requirements. Arrange conduit to maintain headroom and present neat appearance and arrange supports to prevent misalignment during wiring installation. Secure and support all conduit in compliance with CSA C22.1 PART 1 requirements and group adjacent conduits on steel channel racks and trapezes. Provide 305 mm of clearance between conduit and piping or surfaces with temperatures exceeding 40 degrees C. Install no more than equivalent of three 90 degree bends between boxes. Provide sleeves when penetrating footings, masonry walls and floors and seal all penetrations through footings and floors water tight. Provide suitable fittings to accommodate expansion and deflection where conduit crosses seismic, control, and expansion joints. Provide suitable pull string in each empty conduit except sleeves and nipples.
- Provide caps to protect installed conduit against entrance of dirt and moisture. Secure wireway to building surfaces and close ends of wireway and unused conduit openings. Ground and bond conduit and wireways as required by CSA C22.1 PART 1. END OF SECTION

SECTION 260537 - BOXES

PART 1 GENERAL - NOT USED

PART 2 PRODUCTS 2.01 ALL BOXES

- A. Nonmetallic boxes are not permitted unless indicated otherwise or without specific written approval from the Architect в. Provide all required box hangers and supports, extension rings, mud rings, etc. for a
- complete and secure installation. Use gang boxes where more than one device is mounted together; do not use sectional boxes. 2.02 OUTLET AND SMALL JUNCTION BOXES A. Dry and Damp Locations: Galvanized NEMA OS 1 stamped steel box rated for the weight of
- the equipment supported and sized per CSA C22.1 PART 1 requirements for the device(s) and conductors installed within. Wet Locations: Galvanized cast metal NEMA FB 1 Type FD box with gasketed cover and threaded hubs and sized per CSA C22.1 PART 1 requirements for the device(s) and conductors installed within.
- 2.03 PULL AND LARGE JUNCTION BOXES Dry and Damp Locations: Galvanized NEMA OS 1 stamped steel box sized per CSA C22.1 PART 1 requirements for the conductors installed within. Wet Locations: Galvanized NEMA 250 Type 4 cast iron or cast aluminum box with ground
- flange, neoprene gasket, and stainless steel cover screws and sized per CSA C22.1 PART 1 requirements for the conductors installed within.

PART 3 EXECUTION 3.01 INSTALLATION

- Install in locations indicated and as required for splices, taps, wire pulling, equipment connections, and as required by CSA C22.1 PART 1. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas Install outlet boxes for all wall-mounted wiring devices at heights indicated in Section 262726 unless indicated otherwise. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes prior to rough-in Use flush boxes in finished areas. Do not install flush boxes back-to-back in walls;
- provide minimum 153 mm and one stud separation. Locate flush boxes in masonry walls to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening. Install all wall-mounted boxes plumb and level.
- Install all ceiling-mounted boxes level and oriented parallel with building lines and ceiling grid tees where applicable.
- Install all floor boxes level and oriented parallel with building lines and tile grout lines where applicable.
- Vertically align adjacent wall mounted outlet boxes for switches, thermostats, similar
- Install concealed boxes within 153 mm from ceiling access panels, air distribution
- diffusers, or removable recessed luminaires. Support boxes independently of conduit; do not support boxes from ceiling support wires. Install knockout closures in unused box openings. Install cover plates on boxes; see Section 262726 for cover plate specifications.
- Ground and bond boxes as required by CSA C22.1 PART 1 END OF SECTION

SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL - NOT USED

- PART 2 PRODUCTS 2.01 NAMEPLATES: Engraved laminated plastic with 4 mm letters on contrasting background. 2.02 LABELS: As required by regulatory agencies.
- 2.03 WIRE MARKERS: Cloth, tape, split sleeve, or tubing type.

PART 3 EXECUTION

- 3.01 NAMEPLATES: Provide nameplates with the unique equipment designation at each electrical distribution and control equipment enclosure, communication cabinet, and control device
- station 3.02 WARNING LABELS: Provide all regulatory required and industry standard warning labels on all
- electrical equipment, including high-voltage, tested series rated combination, and arc flash hazard labeling
- 3.03 WIRE MARKERS: Provide wire and cable markers at panelboard gutters, pull boxes, outlet boxes, and junction boxes for each load connection. Indicate branch circuit or feeder number indicated on Drawings and control wire number indicated on shop drawings. 3.04 COLOR CODE LEGEND: Provide identification label identifying conductor color codes at each piece of feeder or branch-circuit distribution equipment.
- 3.05 INSTALLATION Install nameplates and labels parallel to equipment lines.
- Secure nameplates for distribution equipment visible to the public to the inside surface of door Secure nameplates for distribution equipment not visible to the public to the front of the enclosure using screws, rivets, or adhesive.
 - END OF SECTION

SECTION 260595 - FIRE STOPPING

- PART 1 GENERAL 1.01 PREPARATION: Examine the complete set of Drawings and identify all fire rated partitions, floors and assemblies and identify appropriate firestopping method for the assembly.
- PART 2 PRODUCTS 2.01 FIRESTOPPING ASSEMBLIES: Use only systems listed by UL or FM or tested in accordance with ASTM E 814 or ASTM E 119 that have F Rating equal to fire rating of penetrated assembly and minimum T Ratina Equal to F Ratina. 2.02 MATERIALS: Elastomeric silicone firestopping, foam firestopping, fibered compound firestopping, fiber packing material, mechanical firestop devices, intumescent putty, and firestop pillows are

PART 3 EXECUTION 3.01 INSTALLATION

permitted.

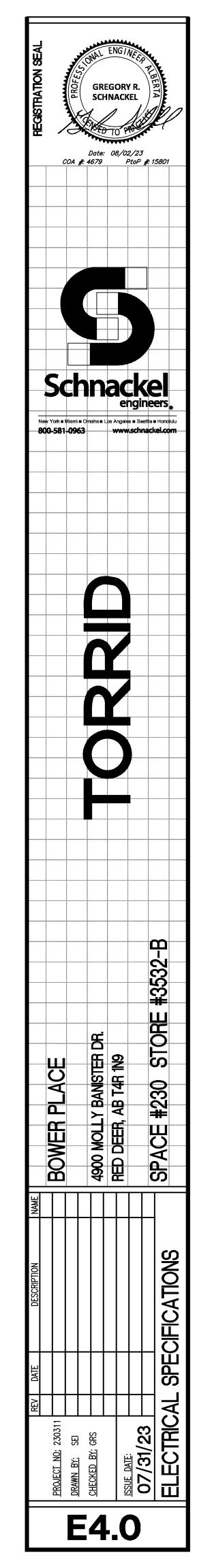
- Comply with firestopping manufacturer's recommendations for temperature and other environmental conditions before, during, and after installation. Provide ventilation in areas where solvent-cured materials are being installed.
- Protect adjacent surfaces from damage by material installation.
- Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter which may affect bond of firestopping material. Remove incompatible materials which may affect bond. Install backing materials to arrest liquid material leakage
- Apply the appropriate fire stopping materials and systems to maintain the fire rating of the partition, floor, or ceiling assembly being penetrated.
- Install materials in manner described in fire test report and in accordance with
- manufacturer's instructions, completely closing openings Do not cover installed firestopping until inspected by Authority Having Jurisdiction.
- Install any labeling required by Code. Clean adjacent surfaces of firestopping materials. END OF SECTION

SECTION 260919 - CONTACTORS AND RELAYS

PART 1 GENERAL - NOT USED

PART 2 PRODUCTS 2.01 CONTACTORS

- A. Description: Square D Class 8903, Type L or Type S unless indicated otherwise or otherwise required в.
- Contacts: Provide with quantity of normally open and normally closed contacts as required and a minimum of two spare poles. Provide multiple contactors connected in parallel with one another when the number of contacts required exceeds the maximum capability of a single
- contactor Coordinate contact rating to match branch circuit overcurrent protection,
- considering derating for continuous loads, but no less than 30 amps. Coil: Coordinate with the voltage of the control circuit.
- Enclosure: Manufacturer's standard enclosure suitable for the environment in which the
- contactor is installed. 2.02 RELAYS
- Description: Square D Class 8501 Type C unless indicated otherwise or otherwise required. Contacts: Form C contacts rated at 30 amperes unless indicated otherwise. Coil: Coordinate with the voltage of the control circuit. Enclosure: Manufacturer's standard enclosure suitable for the environment in which the relav is installed.
- PART 3 EXECUTION 3.01 INSTALLATION
 - Install individual controls and relays in enclosures adjacent to panelboard serving controlled circuits and make electrical wiring interconnections. Provide all relays, contactors, interposing relays, and controls that are required but may
- not be shown to switch the loads in the manner indicated on the Drawings. C. Provide nameplate for contactors indicating contactor number.
 - END OF SECTION



PART 1 GENERAL 1.01 PREPARATION

- A. Hold meeting with the Owner prior to commencing work.
 - Review zoning and make adjustments requested by the Owner. Determine all timeclock settings such as ON and OFF times for each day of the week,
 - holiday settings, latitude and longitude of the project site for astronomic features, etc. Determine all control settings such as on and off triggers, blink warnings, sweep settings, switch programming, etc.
- PART 2 PRODUCTS
- 2.01 ALL LIGHTING CONTROL DEVICES
- A. Provide all required conduit, wiring, connectors, hardware, components, accessories, etc. as required for a complete operating system. All sensors shall be suitable for the geometrical and environmental characteristics of the associated space and be suitable for the floor area to be covered. Provide multiple sensors when necessary to meet the required room coverage.
- 2.02 INDOOR OCCUPANCY SENSORS A. Wall Switch
- Single-Relay: Wattstopper #DSW-301 unless indicated otherwise. Dual-Relay: Wattstopper #DSW-302 unless indicated otherwise.
- Finish: As selected by the Architect.
- Combination Wall Switch / Dimmer 0-10V Dimming: Wattstopper #DW-311 unless indicated otherwise; finish as selected
- by the Architect
- Wall-Mounted: Sensor: Wattstopper #DT-200 unless indicated otherwise.
- Power Pack: Wattstopper #BZ-150 unless indicated otherwise. Finish: White
- D. Ceiling-Mounted:
- Šensor: Wattstopper #DT-300 unless indicated otherwise. Power Pack: Wattstopper #BZ-150 unless indicated otherwise.
- Finish: White. Accessories: Provide heavy duty coated steel wire protective guards compatible with specified occupancy sensors where subject to impact.
- 2.03 TIMECLOCKS Tork DZS series unless indicated otherwise.
- Input Voltage: Coordinate with the voltage of the control circuit. Enclosure: Manufacturer's standard enclosure suitable for the environment in which the imeclock is installed 2.04 TIMER SWITCHES: Tork #SS403 unless indicated otherwise.
- PART 3 EXECUTION 3.01 GENERAL INSTALLATION REQUIREMENTS
- Provide all control wiring and communications cabling, whether or not shown on the Drawings, per manufacturer's recommendations and as required for a complete and operational system.
- Program the entire system as established in meeting with the Owner. 3.02 INSTALLATION OF TIMECLOCKS
- Install timeclocks adjacent to panelboard serving controlled circuits and make electrical wiring interconnections. Provide all relays, contactors, interposing relays, and controls that are required but may not be shown to switch the loads in the manner indicated on the Drawings.
- Provide nameplate for timeclocks indicating timeclock number. 3.03 INSTALLATION OF OCCUPANCY SENSORS AND MOTION SENSORS A. Location Adjustments: Locations indicated are diagrammatic and only intended to indicate
- which rooms or areas require devices. Provide quantity and locations as required for complete coverage of respective room or area based on manufacturer's recommendations for installed devices Install ultrasonic and dual technology occupancy sensors a minimum of 1.2 meters from air
- supply ducts or other sources of heavy air flow and as per manufacturer's recommendations, in order to minimize false triggers. Program occupancy sensors as MĂŇUAL-ON, AUTOMATIC-OFF unless indicated otherwise.
- Mask sensor lenses using the manufacturer's masking material as required to prevent false triggers. E. Adjust position of directional occupancy sensors and outdoor motion sensors to achieve
- optimal coverage as required. 3.04 INSTALLATION OF POWER PACKS A. Install power packs on junction box in accessible location above ceiling at the associated B. Do not switch power serving power packs. All required switching shall occur on the load
- side of the power pack relay. 3.05 CLOSEOUT A. Demonstrate proper operation of lighting control devices to the Owner and correct
- deficiencies or make adjustments as directed. Train Owner's personnel on operation, adjustment, programming, and maintenance of lighting
- control devices C. Provide a written report of all program settings and photosensor settings to the Owner END OF SECTION

SECTION 262416 - PANELBOARDS

- PART 1 GENERAL NOT USED
- PART 2 PRODUCTS 2.01 LIGHTING AND APPLIANCE PANELBOARDS
- A. Circuit Breakers:
 - Bolt-on thermal-magnetic molded case circuit breakers with common trip handle for all poles. a. Provide Type SWD for lighting circuits.
 - Provide Type HACR for heating, air-conditioning, and refrigeration equipment circuits.
 - c. Provide Class A ground-fault circuit interrupter (GFCI) where indicated or otherwise required
 - Provide ground-fault protection of equipment (GFPE) where serving heat tracing d.
 - or otherwise required. Provide combination type arc-fault circuit interrupter (AFCI) where indicated
 - or otherwise required. Provide dual-rated combination type arc-fault circuit interrupter (AFCI) and Class A ground-fault circuit interrupter (GFCI) where indicated or otherwise
 - required. Accessories:
 - Provide handle ties for circuit breakers serving multiwire branch circuits. Provide Square D #HL01 handle clamps for circuit breakers denoted as "HLO" and for all fire protection and fire alarm equipment and all circuits serving emergency lighting
 - Provide Square D #QO*PAF fixed handle padlock attachment for circuit breakers denoted as "HPL" and for appliances without a local disconnecting means. Provide shunt trip were denoted as "ST" or otherwise required. Amp Interrupting Capacity (AIC) Rating: No less than the available fault current; fully rated or manufacturer tested series combination. The Contractor shall
- determine the available fault current where not indicated on the Drawings. Do not use multi-pole circuit breakers that mount in a 1-pole circuit breaker space (i.e. half-size circuit breakers). 2.02 LOAD CENTERS
- A. Circuit Breakers:
 - 1. Plug-on thermal-magnetic molded case circuit breakers with common trip handle for all poles. a. Provide Class A ground-fault circuit interrupter (GFCI) where indicated or
 - otherwise required.
 - Provide combination type arc-fault circuit interrupter (AFCI) where indicated or otherwise required. Provide dual-rated combination type arc-fault circuit interrupter (AFCI) and
 - Class A ground-fault circuit interrupter (GFCI) where indicated or otherwise required Accessories:
 - Provide handle ties for circuit breakers serving multiwire branch circuits. Provide Square D #HL01 handle clamps for circuit breakers denoted as "HLO" and for all fire protection and fire alarm equipment and all circuits serving
 - Provide Square D #QO*PAF fixed handle padlock attachment for circuit breakers с. denoted as "HPL" and for appliances without a local disconnecting means. Provide shunt trip were denoted as "ST" or otherwise required.
 - Amp Interrupting Capacity (AIC) Rating: No less than the available fault current; fully rated or manufacturer tested series combination. The Contractor shall determine the available fault current where not indicated on the Drawings. Do not use multi-pole circuit breakers that mount in a 1-pole circuit breaker space (i.e. half-size circuit breakers).

PART 3 EXECUTION 3.01 INSTALLATION

- Install panelboards 1.8 meters to top of panelboard but no less than 100 mm above floor. Provide 100 mm thick concrete housekeeping pad for surface-mounted panelboards installed within 100 mm of the floor.
- Provide filler plates for unused spaces in panelboards. Provide typed circuit directory and nameplate for each panelboard. Revise directory to reflect circuiting changes required to balance phase loads.
- Provide five 27 mm spare conduits out of each flush-mounted panelboard to an accessible location above ceiling. Identify each as SPARE.
- Measure steady state load currents at each panelboard feeder and rearrange circuits as required to balance the phase loads to within 10 percent maximum imbalance. Maintain
- proper phasing for multiwire branch circuits. Provide nameplate indicating panelboard equipment designation for each panelboard.

END OF SECTION SECTION 262717 - EQUIPMENT WIRING

- PART 1 GENERAL 1.01 COORDINATION WITH OTHER TRADES
 - A. Meet with all other trades before commencing any work and obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other Sections.
 - Determine all equipment connection locations and requirements and verify that proper power supply is available prior to subcontractor's ordering equipment. Calculate the available fault current at any equipment required to carry a short-circuit current rating (SCCR) and communicate the minimum SCCR required to the

 - 4. Sequence electrical connections to coordinate with start-up of equipment

	Ε.	Any conflicts arising from lack of coordination shall be this Contractor's responsibility.
	2 PRO	
2.01	CORDS	
	Α.	Description: Multi-conductor flexible cord Type SO for dry and damp locations or Type SOW in wet locations.
	в.	Conductor Quantity: As required for the load served; include identified equipment arounding conductor.
	C.	Conductor Insulation Rating: As required for the voltage of the load served.
	D.	Conductor Ampacity: No less than the rating of the overcurrent protection device
	~~~~	protecting the circuit.
		CAPS: Match cord cap to receptacle configuration at outlet provided for equipment.
2.03		MATERIALS: Provide all disconnect switches, wiring devices, conduit, wire and cable, and
	boxes	required.
DADT		
3.01		RICAL CONNECTIONS
	Α.	Make electrical connections in accordance with equipment manufacturer's instructions.
	В.	Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.
	C.	Connect heat producing equipment using wire and cable with insulation suitable for
		temperatures encountered.
	D.	Provide receptacle outlet to accommodate connection with attachment plug.
	Ε.	Provide cord and cap where field-supplied attachment plug is required.
	F.	Install suitable strain-relief clamps and fittings for cord connections at outlet boxes
		and equipment connection boxes.
	G.	Install disconnect switches, controllers, control stations, and control devices to
		complete equipment wiring requirements.
	н.	Install terminal block jumpers to complete equipment wiring requirements.
	Ι.	Install interconnecting conduit and wiring between devices and equipment to complete
		anviewant wining requirements

equipment prior to rough-in

any discrepancies.

- Provide tamper-resistant receptacles where denoted "TR" on the Drawings and otherwise required. Provide ground-fault circuit interrupter receptacles where denoted "GFCI" on the Drawings and otherwise required. Provide receptacles with factory-applied permanent controlled receptacle marking where denoted "CR" on the Drawings and where controlled by automatic shutoff controls. Field-applied controlled receptacle markings, such as those made by a label maker, are not acceptable. Provide NEMA receptacle indicated with two integral Type A, 5 ampere, 5 volt USB ports where denoted "USB" on the Drawings. Provide identified weather-resistant receptacles for receptacles installed outdoors. NEMA 5-15R unless indicated otherwise. Standard NEMA 5-15R Duplex: Hubbell #BR15 unless indicated otherwise. Standard NEMA 5-20R Duplex: Hubbell #BR20 unless indicated otherwise. Interior GFCI Duplex: Hubbell #GF20 unless indicated otherwise. Provide GFCI receptacles with audible alarm when the receptacle serves a sump pump. Exterior GFCI Duplex: Hubbell #GFTR20 unless indicated otherwise. Isolated Ground Duplex: Hubbell #IG20CR unless indicated otherwise. Surge Protection Receptacles: Hubbell #HBL5362SA unless indicated otherwise Clock Hanger Receptacles: Hubbell #HBL5235 unless indicated otherwise. Other NEMĂ Configurations: As required by the load served. 2.02 FACELESS GFCI: Hubbell #GFBFST20; color as selected by Architect. 2.03 WALL SWITCHES A. All Switches: Color as selected by Architect. Horsepower rated when used as motor disconnecting means. Single Pole Toggle: Hubbell #1221 unless indicated otherwise. Three-Way Toggle: Hubbell #1223 unless indicated otherwise. Four-Way Toggle: Hubbell #1224 unless indicated otherwise. Single Pole Toggle with Pilot Light: Hubbell #HBL1221PLC unless indicated otherwise. Single Pole Keyed: Hubbell #HBL1221L unless indicated otherwise. Three-Way Keved: Hubbell #HBL1223L unless indicated otherwise. Four-Way Keyed: Hubbell #HBL1224L unless indicated otherwise. 2.04 WALLBOX DIMMERS A. All Wallbox Dimmers: Color as selected by Architect. Incandescent Dimmers:
- Between 600 and 1000 Watts: Lutron Maestro #MA-1000 unless indicated otherwise Between 1000 and 1920 Watts: Lutron Maestro[®] #MAF-6AM with Lutron #PHPM-WBX-120-WH power interface unless indicated otherwise. C. Fluorescent 2-Wire Dimmers: 120 Volts, Up_to 5 Amps: Lutron Diva #DVFTU-5A3P unless indicated otherwise. Elucrescent 3-Wire Dimmers 120 Volts, Up to 6 Amps: Lutron Maestro #MAF-6AM unless indicated otherwise. 120 Volts, Between 6 and 16 Amps: Lutron Maestro #MAF-6AM with Lutron #PHPM-3F-120-WH power interface unless indicated otherwise. 277 Volts, Up to 6 Amps: Lutron Maestro #MAF-6AM-277 unless indicated otherwise. 277 Volts, Between 6 and 16 Amps: Lutron Maestro #MAF-6AM with Lutron #PHPM-3F-DV-WH power interface unless indicated otherwise. E. Fluorescent 0-10 Volt Dimmers: Up to 16 Amps: Lutron Maestro #MAF-6AM with Lutron #GRX-TVI power interface unless indicated otherwise. Magnetic Low Voltage Dimmers: Up to 450 Watts: Lutron Maestro #MALV-600 unless indicated otherwise.
- Between 450 and 800 Watts: Lutron Maestro #MALV-1000 unless indicated otherwise. Between 800 and 1920 Watts: Lutron Maestro #MAF-6AM with Lutron #PHPM-WBX-DV-WH power interface unless indicated otherwise. G. Electronic Low Voltage Dimmers: Up to 600 Watts: Lutron Maestro #MAELV-600 unless indicated otherwise. Between 600 and 1920 Watts: Lutron Maestro #MAF-6AM with Lutron #PHPM-WBX-DV-WH power interface unless indicated otherwise.
- H. LED Dimmers: All LED Dimmers: Dimmer utilized shall be tested and listed by the LED manufacturer as a compatible dimmer.
- 0-10 Volt Dimmers: Up to 16 Amps: Lutron Maestro #MAF-6AM with Lutron #GRX-TVI power interface unless indicated otherwise.
- Electronic Low Voltage Dimmers: Up to 16 Amps: Lutron Maestro #MAF-6AM with Lutron #PHPM-WBX-DV-WH power interface unless indicated otherwise.
- Magnetic Low Voltage Dimmers
- interface unless indicated otherwise.
- device installed within unless indicated otherwise. 2.06 POKE-THROUGH FITTINGS: Wiremold Evolution 6AT series unless indicated otherwise with wiring devices indicated; color as selected by Architect.
- complete installation.
- 2.08 COVER PLATES A. All Cover Plates:
- Color and material as selected by Architect Provide cover plates appropriate for the wiring devices installed within the box. Use combination plates when wiring devices are ganged together. B. Wall Plates:
- Provide standard-size nylon wall plates unless indicated otherwise; mid-size or jumbo wall plates are not permitted.
- Provide stainless steel coverplates where requested by the Architect. Provide galvanized steel cover plates on outlet boxes and junction boxes located in unfinished areas, above accessible ceilings, and on surface mounted outlets. Provide gasketed, cast metal, hinged cover plates for all exterior locations, where denoted "WP" on the Drawings, and where otherwise required. Provide weatherproof while-in-use covers which are listed and identified as

- PART 3 EXECUTION
- 3.02 PREPARATION
- Provide extension rings to bring wall-mounted outlet boxes flush with finished surface. Adjust floor boxes to bring floor boxes flush with finished floor. 3.03 MOUNTING HEIGHTS
- General: All mounting heights are to the centerline of the outlet box. Receptacles:
- Install receptacles at 457 mm above finished floor unless indicated otherwise. Install receptacles at countertops at the lesser of 1118 mm above finished floor or 75 mm above any sidesplashes or backsplashes unless indicated otherwise. Wall Switches: Install wall switches including wallbox dimmers, wall switch occupancy sensors, and low voltage switches associated with programmable relay panels and room controllers at 1168 mm above finished floor unless indicated otherwise.
- Telecommunications Outlets:
- Install telecommunications outlets including telephone, data, and television outlets 457 mm above finished floor unless indicated otherwise. Install telephone outlets for side-reach and forward-reach wall telephone 1168 mm above finished floor unless indicated otherwise.
- Modify mounting heights in masonry walls as required to locate the outlet box at the joint in the masonry unit to avoid multiple or split-cut masonry units.

- contractor supplying the equipment prior to the equipment being ordered. Sequence rough-in of electrical connections to coordinate with installation of
- equipment

PART 1 GENERAL

PART 2 PRODUCTS

2.01 RECEPTACLES

A. All Receptacles:

equipment wiring requirements. J. Cut and seal conduit openings in freezer and cooler walls, floors, and ceilings where applicable. END OF SECTION

# B. Verify and coordinate all requirements and installation details of all materials and

Verify proper voltage, phase, and current rating of power supply and immediately report Responsibility for verification of proper power supply voltage and any damage resulting from incorrect connections shall rest with this Contractor.

- ment using wire and cable with insulation suitable for accommodate connection with attachment plug.
- eld-supplied attachment plug is required. f clamps and fittings for cord connections at outlet boxes controllers, control stations, and control devices to
- uirements. 's to complete equipment wiring requirements. it and wiring between devices and equipment to complete

### SECTION 262726 - WIRING DEVICES

1.01 PREPARATION: Contact the Architect to determine colors of all wiring devices, cover plates, and carpet and tile flanges, locations where stainless steel cover plates are required, and locations where carpet and tile flanges are required.

# Color as selected by Architect.

# Up to 600 Watts: Lutron Maestro #MA-600 unless indicated otherwise.

- Up to 16 Amps: Lutron Maestro #MAF-6AM with Lutron #PHPM-WBX-DV-WH power
- 2.05 ABOVE-FLOOR SERVICE FITTINGS: Hubbell #SC3098A housing with plates as required for the wiring
- 2.07 POWERPOLES: Wiremold AMDTP series unless indicated otherwise with wiring devices indicated. Provide lengths, device covers, ceiling trim plates, and mounting foot as required for a

  - "extra-duty" for all receptacles installed in wet locations.
- 3.01 EXAMINATION: Verify that outlet boxes are installed at proper heights and that openings are neatly cut and will be completely covered by the coverplates or flanges

### 3.04 INSTALLATION Install wall switches with OFF position down. Install receptacles vertically with ground pin on bottom unless indicated otherwise. Ground-Fault Circuit Interrupter (GFCI) Receptacles: Provide a separate GFCI receptacle for every instance where denoted "GFCI" on the Drawinas and otherwise required by Code; do not GFCI-protect receptacles from the load side of an upstream GFCI receptacle.

- Install all GFCI receptacles in in a readily accessible location. Provide faceless GFCI device in a readily accessible location when the
- receptacle will not be readily accessible and connect receptacle to load side of faceless GFCI.
- D. Wallbox Dimmers: Install wallbox dimmers to achieve full rating; do not break heatsink fins off. Install power interfaces in concealed accessible location.
  - Provide a separate neutral conductor for each branch circuit serving wallbox
  - dimmers: do not connect wallbox dimmers to multiwire branch circuits. Provide all control wiring and communications cabling including all 0-10V control wiring, whether or not shown on the Drawings, per manufacturer's recommendations and
- as required for a complete and operational system. Install wiring devices in outlet boxes and connect wiring device grounding terminal to branch circuit equipment grounding conductor.
- Connect wiring devices by wrapping conductor around screw terminal; do not use back-wired push-in terminals.
- Install cover plates on all outlet boxes including blank outlets. Use flat-head screws, clips, and straps to fasten multi-outlet assembly channel to surfaces and use suitable insulating bushings and inserts at connections to outlets and corner fittings.

## END OF SECTION

### SECTION 262813 - FUSES

- PART 1 GENERAL NOT USED
- PART 2 PRODUCTS 2.01 FUSES:
  - A. Up to 600 Amps: Dual-element time-delay Class RK1 unless indicated otherwise or otherwise required for the switch in which the fuse is installed. Greater than 600 Amps: Dual-element time-delay Class L unless indicated otherwise ndicated otherwise or otherwise required for the switch in which the fuse is installed. C. Site Lighting: Class CC with in-line fuseholder.
- PART 3 EXECUTION
- 3.01 INSTALLATION
  - A. Install fuses with label oriented such that manufacturer, type, and size are easily read. END OF SECTION

### SECTION 262818 - ENCLOSED SWITCHES

- PART 1 GENERAL NOT USED PART 2 PRODUCTS
- 2.01 SAFETY SWITCHES

installed.

- 240 Volt Class: Square D Class 3130 general duty unless indicated otherwise. 600 Volt Class: Square D Class 3110 heavy duty unless indicated otherwise.
- Voltage, Phase, and Current Ratings: As indicated or otherwise required.
- Fuse Clips: Class R cartridge fuse clips where fuses are installed. Enclosure: Manufacturer's standard enclosure suitable for the environment in which the
- switch is installed. Accessories: Provide grounding kit for all enclosed switches.
- 2.02 BOX COVER UNITS: Bussmann #SSU unless indicated otherwise.
- PART 3 EXECUTION 3.01 INSTALLATION
  - A. All Enclosed Switches: Install in locations that provide all working space required by CSA C22.1 PART 1
    - Install 1.5 meters to the operating handle. Install fuses in fusible disconnect switches. Provide nameplate indicating equipment designation, NEMA fuse class, and fuse size

### END OF SECTION SECTION 265100 - INTERIOR LIGHTING

- PART 1 GENERAL
- 1.01 QUALITY ASSURANCE
  - Verify all ceiling systems for proper coordination of luminaires and accessories including any drywall frames, bar hangers, flanges, trim rings, etc. required for a complete, finished installation.
  - B. Provide only luminaires that are listed for the environment in which they are installed. Luminaires shall carry damp location and/or wet location ratings as required. Luminaires shall be insulated ceiling (IC) rated when recessed into insulated ceilings; coordinate locations of all insulated ceilings with the Architectural
  - Coordinate exact locations of all luminaires with the Architectural Reflected Ceiling
  - Plan(s); luminaire locations on the Architectural Reflected Ceiling Plan(s) take precedence over locations indicated on the electrical lighting plans.
  - Coordinate mounting heights of all wall-mounted luminaires with the Architect prior to
  - Confirm all luminaire and accessory finishes with the Architect prior to ordering Coordinate luminaire dimensions with the wall and/or ceiling thickness prior to ordering. Coordinate mounting location, number of faces, and directional arrows of exit signs as
  - required to mark paths of egress to the satisfaction of the Authority Having Jurisdiction.
- PART 2 PRODUCTS

2.05 LAMPS

2.06 ACCESSORIES

PART 3 EXECUTION

3.01 INSTALLATION

- 2.01 LUMINAIRES
- Provide as indicated on the Drawings. The acceptability of any substitute fixtures lies solely with the Architect and Engineer. The specified luminaire shall be provided at no additional cost where a substitute fixture is not accepted by the Architect or Engineer.
- 2.02 NON-DIMMING BALLASTS, TRANSFORMERS, AND DRIVERS LED Drivers: As required for and compatible with the associated LED module.
- 2.03 DIMMING BALLASTS AND DRIVERS

catalog number

- A. All Dimming Ballasts and Drivers: Provide appropriate dimming ballasts/drivers in all fluorescent and LED luminaires controlled by wallbox dimmer switches or dimming systems whether or not specifically
- indicated within the specified luminaire's catalog number. All dimming ballasts/drivers shall be compatible with associated wallbox dimmer

A. Provide appropriate emergency battery in all fluorescent and LED luminaires indicated as

A. Provide all supplementary items, appurtenances, and devices incidental to or necessary for

Dimming ballasts for fluorescent and LED luminaires that are served by wallbox

Emergency power supplies for fluorescent and LED luminaires indicated as emergency

Multiple ballasts for fluorescent luminaires where indicated to have multi-level

All trim rings, extensions, stems, canopies, cords, pendant feeds, connectors, bar

All necessary low-voltage transformers, connectors, mounting hardware, etc. for a

All necessary connectors, feeds, end caps, pendants, mounting hardware, fittings,

Drywall frames for all linear fluorescent luminaires that are recessed into drywall

Fire-rated luminaire covers (tents) for luminaires installed in fire-rated ceiling

Wireguards for any wall-mounted luminaires, including emergency lighting unit

assemblies; coordinate locations of fire-rated ceiling assemblies with the

Install luminaires in locations shown on the Architectural Reflected Ceiling Plan(s);

Support all luminaires completely independent of any suspended ceiling systems.

luminaire locations on the Architectural Reflected Ceiling Plan(s) take precedence over

Install luminaires plumb and level and align with building lines and adjacent luminaires.

Do not use multiwire branch circuits for circuits serving emergency lighting

Install all remote ballasts, low voltage transformers, and drivers in concealed accessible areas in close proximity to the associated luminaires and connect to the associated luminaires per the manufacturer's recommendations, including adjusting wire sizes for

equipment such as emergency batteries or emergency lighting unit equipment.

Provide all additional emergency lighting and/or exit signs determined necessary by the

Circuit all exit signs, emergency lights, and nightlights ahead of any switching.

11. Any seismic bracing and/or restraints required by the Authority Having Jurisdiction.

equipment and exit signs, located in gymnasiums or where otherwise exposed to

hangers, fittings, hold-down clips, alignment clips/joiners, etc. necessary to mount

a sound, secure, and complete installation including, but not limited to:

Chain hangers for all suspended luminaires in unfinished areas.

emergency fixtures whether or not specifically indicated within the specified luminaire's

Battery Type: Sealed nickel calcium (NiCad) with 7-year, minimum, life expectancy.

Lamp Operation: Two-lamp operation for luminaries equipped with more than one lamp.

Not less than 50 percent of the luminaire's lumen rating for luminaires

20 watt minimum power rating for luminaires rated at greater than 2000

- switches or centralized dimming system control units. Dimming Range: 100 percent to 5 percent.
- Voltage: Universal (120 through 277 volts). Power Factor: Greater than 0.95.

Illumination Time: 90 minutes minimum.

Minimum Initial Illumination Rating:

dimmer switches or dimming systems.

complete low-voltage lighting system.

etc. for a complete track lighting system.

locations indicated on the electrical lighting plans.

Authority Having Jurisdiction during inspections.

Luminaires with LEDs:

A. LED: As indicated on the Drawings.

fixtures.

switchina.

ceilings.

physical damage.

Architectural plans.

Connect luminaires to branch circuit.

voltage drop if required.

Voltage: Universal (120 through 277 volts).

rated 2000 lumens or less.

the luminaires in a proper and approved method.

Test Switch: Two-wire with LED indicator.

Sound Level Rating: Class A.

B. LED Dimming Drivers: Advance Xitanium series or equal. 2.04 EMERGENCY POWER SUPPLIES

Total Harmonic Distortion: Less than 10 percent.

- G. Prevent insulation from being installed above or within 75 mm away from any luminaire that is recessed into an insulated ceiling but is not insulated ceiling (IC) rated. Install fire-rated luminaire covers (tents) for luminaires installed in fire-rated ceiling assemblies; provide fire-rated boxes around luminaires when fire-rated luminaire covers (tents) are not available. Burn-in all fluorescent lamps controlled by wallbox dimmers or dimming systems for a minimum of 100 hours prior to connecting to dimmer.
- 3.02 3.02 CLOSEOUT Replace any lamps and ballasts that expire before the Owner's acceptance of the project. Aim and adjust all luminaires to provide illumination levels, focusing, and distribution patterns to the Owner's satisfaction END OF SECTION

### SECTION 271005 - TELEPHONE AND DATA SYSTEMS

### PART 1 GENERAL 1.01 PREPARATION

- Coordinate all demarcation locations with the serving utility and/or the Landlord. Hold meeting with the Owner prior to commencing work
- Determine Scope of Work and Division of Responsibility.
- Determine quantities of phone drops and data drops are required at each outlet box. Confirm all cabling, termination, cross-connection equipment, enclosure, and jack requirements.

### PART 2 PRODUCTS 2.01 ENCLOSURES

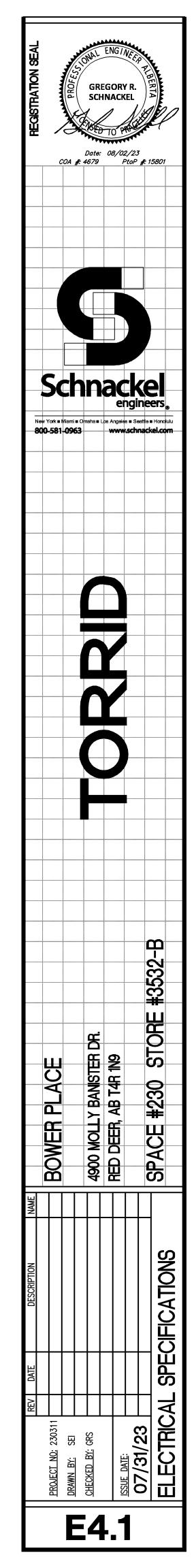
- Backboards: Provide 19 mm thick UL-labeled, fire-retardant, interior grade plywood; size Α. as indicated on the Drawings. Equipment Racks: Only if required pursuant to meeting with the Owner:
- Wall-Mounted Racks: Chatsworth Products Standard Swing Gate series; 483 mm wide, depth as required for installed components, and height as required for installed components plus 50 percent.
- Floor-Mounted Racks: Chatsworth Products 50120 QuadraRack series with vertical and horizontal cable management, top and bottom cable troughs, and grounding lug; 483 mm wide, 737 mm deep, and height as required for installed components plus 50 percent.
- 2.02 OUTLET BOXES A. Wall: 4-square by 54 mm deep outlet box with single gang mud ring and cover plate unless indicated otherwise or otherwise required. Floor: As indicated on the Drawings or within Section 260537 unless indicated otherwise
  - or otherwise required. Wall Plates:
    - Provide standard-size nylon blank wall plates unless indicated otherwise; color as selected by the Architect. Mid-size or jumbo wall plates are not permitted. When cabling is to be provided by this Contractor, provide standard-size nylon modular keystone jack cover plates compatible with the associated modular keystone jacks and with appropriate number of jacks unless indicated otherwise; color as selected by the Architect.
- 2.03 PATHWAYS A. All Pathways:

в.

- See Section 260534 for permitted conduit types.
- Provide pullstring in each conduit. Service Entrance: Conduit with extended radius sweeps; size as indicated or otherwise Branch Wiring: Provide 21 mm minimum conduit from all outlet boxes to accessible ceiling space unless indicated otherwise.
- 2.04 COPPER CABLES, PLUGS, AND JACKS: Only if required pursuant to meeting with the Owner Data:
  - 1. All Data Cabling: Unshielded twisted pair (UTP) Category 6A unless indicated
  - otherwise or otherwise required. Backbone (Riser) Cabling: Type CMR when installed in conduit and Type CMP when not
  - installed in conduit; gray jacket unless indicated otherwise or otherwise reauired. Horizontal Cabling: Type CM when installed in conduit and Type CMP when not
  - installed in conduit; blue jacket unless indicated otherwise or otherwise required.
  - Plugs: Category 6A UTP non-keyed 8-wire modular plugs unless indicated otherwise or otherwise required. Jacks: Category 6A UTP non-keyed 8-wire RJ45 modular keystone jack unless indicated
  - otherwise or otherwise required; color as selected by the Owner. Telephone: All Telephone Cabling: Unshielded twisted pair (UTP) Category 3 unless indicated
  - otherwise or otherwise required. Horizontal Cabling: Type CM when installed in conduit and Type CMP when not
  - installed in conduit; blue jacket unless indicated otherwise or otherwise required. Plugs: Category 3 UTP non-keyed 8-wire modular plugs unless indicated otherwise or otherwise required.
- Jacks: Category 3 UTP non-keyed 8-wire RJ45 modular keystone jack unless indicated otherwise or otherwise required; color as selected by the Owner. 2.05 CROSS-CONNECTION EQUIPMENT: Only if required pursuant to meeting with the Owner:
  - A. Connector Blocks for Category 3 Cabling: Type 66 insulation displacement connectors unless indicated otherwise or otherwise required with capacity sufficient for cables to be terminated plus 25 percent spare. Connector Blocks for Category 5e Cabling: Type 110 insulation displacement connectors
  - unless indicated otherwise or otherwise required with capacity sufficient for cables to be terminated plus 25 percent spare. Patch Panels for Copper Cabling: Panduit DP5e series UTP patch panel unless indicated otherwise or otherwise required with quantity of ports sufficient for cables to be
  - terminated plus 25 percent spare. Patch Cords: Provide one Category 5e patch cord for each pair of patch panel ports.

### PART 3 EXECUTION 3.01 INSTALLATION OF ENCLOSURES

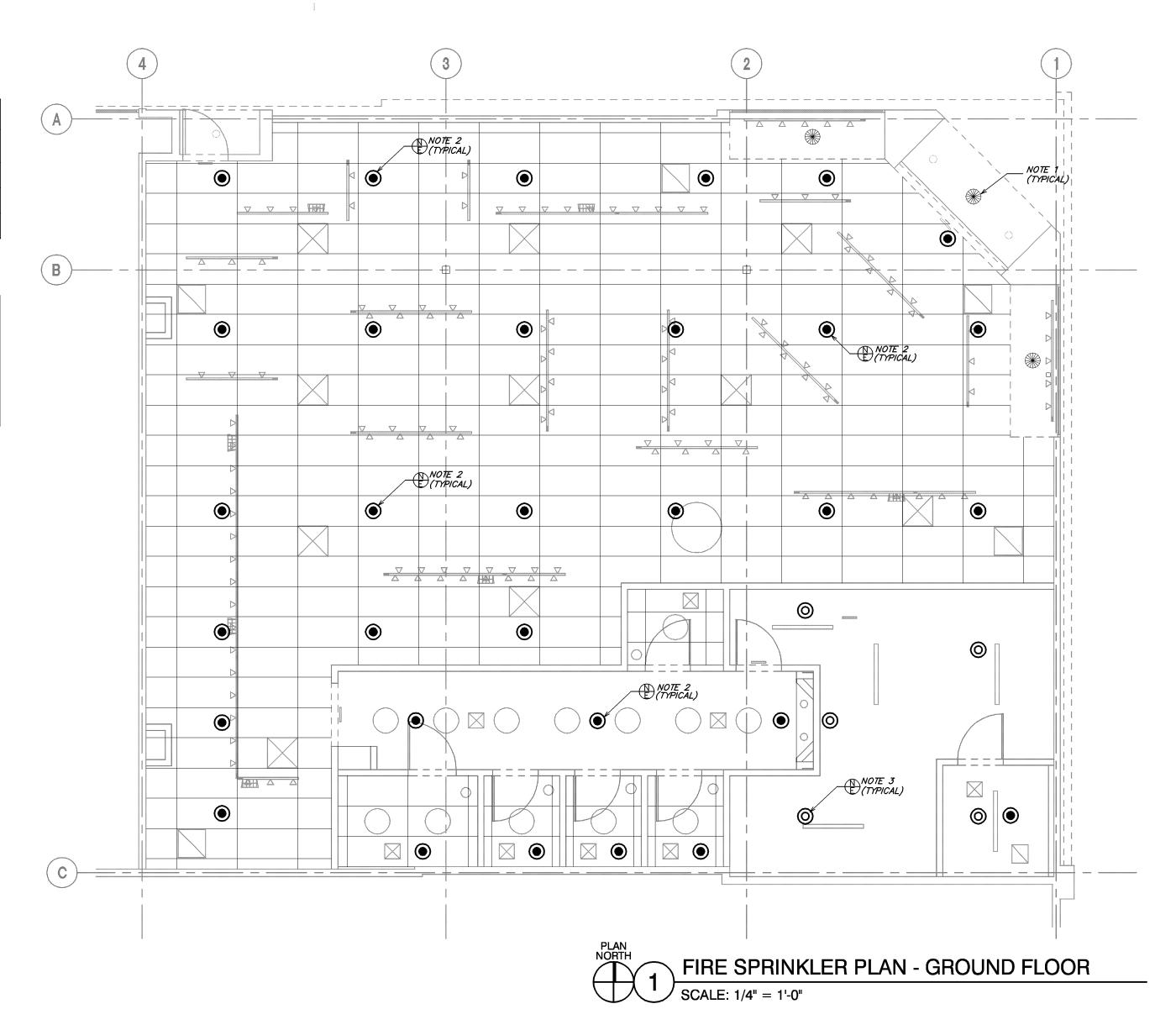
- Backboards: Install at locations indicated on the Drawings If required pursuant to meeting with the Owner:
- Wall-Mounted Racks: Install to plywood backboard at locations directed by the
- Floor-Mounted Racks: Permanently anchor to floor in accordance with manufacturer's recommendations at locations directed by the Owner, connect adjacent racks together, and remove interior side panels.
- 3.02 INSTALLATION OF OUTLET BOXES Install in compliance with Section 260537.
- Mounting Heights: See Section 262726.
- 3.03 INSTALLATION OF PATHWAYS A. All Pathways:
  - 1. Install all pathways with the following minimum clearances:
  - 1.2 meters from motors, generators, frequency converters, transformers, x-ray equipment, and uninterruptible power systems. 305 mm from power conduits and cables and panelboards.
  - 127 mm from fluorescent and high frequency lighting fixtures. 153 mm from flues, hot water pipes, and steam pipes.
  - B. Conduit:
    - Install conduit in compliance with Section 260534 unless indicated otherwise. Do not install more than two 90 degree bends in a single horizontal cable run. Leave pull cords in place where cables are not initially installed. Under floor slabs, locate conduit at 305 mm minimum below vapor retarder and seal penetrations of vapor retarder around conduit.
  - Underground Service Entrance: Install conduit at least 457 mm below finish arade and encase in at least 75 mm thick concrete for at least 1.5 meters out from the building line. Grounding and Bonding: Perform in accordance with ANSI/J-STD-607 and CSA C22.1 PART 1
- 3.04 INSTALLATION OF CABLES, PLUGS, AND JACKS
  - Only if required pursuant to meeting with the Owner: Install cables from outlet to cross-connection equipment as directed by the Owner. Do not exceed 91 meters from outlet to switch.
  - Do not bend cable tighter than the greater of the manufacturer's recommended bend radius or 4 times the cable diameter
  - Do not exceed the greater of the manufacturer's recommended cable pull tension or 25 Use only lubricants approved by cable manufacturer when installing cables in conduit
  - and do not chafe or damage outer jacket. Install plugs and jacks as required.
  - Provide the following minimum extra length of cable, looped neatly:
  - At Patch Panels: 3 meters. At Outlets: 305 mm.
  - Install labels complying with TIA/EIA-606 using coded identifiers:
  - Cables: Color coded labels on each end. Outlets: Label each jack on its cover plate with a unique numerical
  - identifier as to its type and function. Patch Panels: Label each jack with a unique numerical identifier as to its type and function.
  - Patch Cords: Label with jack identifier corresponding to initial d.
- installation. 3.05 INSTALLATION OF CROSS-CONNECTION EQUIPMENT
  - A. Only if required pursuant to meeting with the Owner:
    - Install connector blocks at backboards as directed by the Owner. Install patch panels in equipment racks as directed by the Owner.
    - Install labels complying with TIA/EIA-606 using coded identifiers: Patch Panels: Label each jack with a unique numerical identifier as to its type and function.
    - Patch Cords: Label with jack identifier corresponding to initial installation.
- 3.06 TESTING General: Comply with inspection and testing requirements of specified installation
- standards В.
  - Visual Inspection: Inspect cable jackets for certification markings.
  - Inspect cable terminations for color coded labels of proper type. Inspect outlet plates and patch panels for complete labels.
  - Inspect patch cords for complete labels. Testing of Copper Cabling and Associated Equipment:
  - Test backbone cables after termination but before cross-connection.
  - Test backbone cables for DC loop resistance, shorts, opens, intermittent faults, and polarity between connectors and between conductors and shield, if cable has overall
  - Test operation of shorting bars in connection blocks. Category 3 Backbone: Perform attenuation test.
  - Category 3 Links: Test each pair for short circuit continuity, short to ground,
  - crosses, reversed polarity, operational and rina-back, and dial tone. Category 5e/6 Backbone: Perform near end cross talk (NEXT) and attenuation tests
  - Category 5e/6 Links: Perform tests for wire map, length, attenuation, NEXT, and propagation delay.
- D. Final Testing: After all work is complete, including installation of telecommunications outlets, and telephone dial tone service is active, test each voice jack for dial tone. END OF SECTION



		SPRI	NKLER	HEAD	TYPES			
MANUF.	MODEL	TYPE	ORIFICE	"K" FACTOR	TEMP. (DEG. F.)	SYMBOL	FINISH	ESCUTCHEON
EXISTING	EXISTING	PENDENT	_	—	_	(	WHITE	CONCEALED
VIKING	VK302	PENDENT	1/2	5.6	155°		WHITE	CONCEALED
VIKING	VK300	UPRIGHT	1/2	5.6	155°	$\bigcirc$	BRASS	NONE

# FOR REFERENCE ONLY:

FIRE SPRINKLER PLANS, DETAILS, AND SPECIFICATIONS PROVIDED BY SCHNACKEL ENGINEERS, INC. ARE CONTRACT DOCUMENTS ONLY. SAID DOCUMENTS ARE NOT INTENDED TO BE SUBMITTED FOR FIRE SPRINKLER WORK PERMITTING. THE LICENSED INSTALLING FIRE SPRINKLER CONTRACTOR SHALL PREPARE AND SUBMIT COMPLETE SHOP DRAWINGS TO THE AUTHORITY HAVING JURISDICTION, INCLUDING HYDRAULIC CALCULATIONS, AS REQUIRED FOR APPROVAL UNDER A DEFERRED SUBMITTAL. CONTRACTOR IS RESPONSIBLE FOR FINAL SPRINKLER HEAD QUANTITIES, LOCATIONS, AND TEMPERATURES.

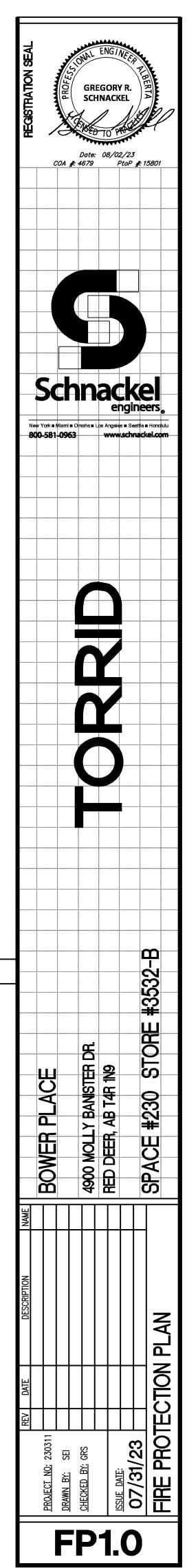


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# FIRE SPRINKLER GENERAL NOTES

- A. FIRE SPRINKLER CONTRACT DOCUMENTS FOUND HEREWITH ARE TO ESTABLISH THE SCOPE OF WORK AND PERFORMANCE SPECIFICATIONS OF THE SYSTEM ONLY. DETAILED FIRE SPRINKLER SHOP DRAWINGS AND HYDRAULIC CALCULATIONS SHALL BE PROVIDED BY THE INSTALLING CONTRACTOR UNDER
  - ITTAL. ACCORDANCE WITH LANDLORD CONSTRUCTION NCLUDING ANY TENANT CRITERIA MANUALS AND LEASE
  - APPLICABLE. FIRE SPRINKLER CONTRACTOR SHALL ICABLE MANUALS PRIOR TO BIDDING. ARE BASED ON CENTERLINE OF PIPE UNLESS NOTED
  - VATIONS ARE APPROXIMATE. CONTRACTOR IS FINAL PIPE LOCATION.
  - SYSTEM SHALL BE INSTALLED IN STRICT CONFORMITY TREQUIREMENTS OF THE STATE BUILDING CODE, THE ARTMENT, ALL LOCAL RULES AND REGULATIONS AS DEFINED TY HAVING JURISDICTION AND THE NATIONAL FIRE DCIATION (NFPA).
  - EM SHALL BE IN ACCORDANCE WITH NFPA REQUIREMENTS. L RUN AND PAY FOR ALL TESTS REQUIRED TO ENSURE THE WATE FLOW AND PRESSURE.
  - NATE FLOW AND FRESSORE. NE REQUIRED SIGNAGE FOR FIRE SPRINKLER SYSTEM. NETS SHALL BE PROVIDED WITH THE APPROPRIATE NUMBER ND WRENCHES IN ACCORDANCE WITH NFPA REQUIREMENTS.
  - E REQUIRED CLEARANCE ABOVE AND AROUND ELECTRICAL NKLER HEAD LOCATIONS WITH ALL TRADES PRIOR TO INSTALLATION. LOCATIONS OF FIRE SPRINKLER HEADS HOWN FOR GRAPHICAL REPRESENTATION ONLY.
  - RESPONSIBLE FOR PROVIDING COMPLETE FIRE SPRINKLER ON ACTUAL CONDITIONS AT NO ADDITIONAL COST TO THE .ER PIPINIG SHALL ROUTE AROUND, PROVIDE PROPER AND AVOID CONFLICT WITH BUILDING EQUIPMENT AND
  - RINKLER SYSTEM SHALL BE INSTALLED LEVEL OR SLOPED /ICE ENTRANCE TO FACILITATE DRAIN DOWN UNLESS NOTED AINS SHALL BE SIZED AND INSTALLED IN ACCORDANCE NFPA CODES. ALL FLOATING MAINS SHALL BE PROVIDED ARY DRAIN ROUTED TO THE EXTERIOR.
  - INES 2" AND SMALLER SHALL BE SCHEDULE 40 WITH IGS OR ROLL GROVED CONNECTIONS. ALL SPRINKLER 2-1/2" AND LARGER SHALL BE SCHEDULE 10 WITH ROLL IONS UNLESS NOTED OTHERWISE. THE USE OF ACCEPTABLE. UNDERGROUND PIPING SHALL BE DUCTILE IRAP TO PROVIDE PROTECTION FROM CORROSIVE SOILS.

- L. SEE ELECTRICAL/FIRE ALARM PLANS FOR FIRE ALARM BELL LOCATION AND INFORMATION.
- M. SPRINKLER HEAD DEFLECTORS SHALL BE INSTALLED SO THAT THE DISTANCE MEASURED FROM THE DEFLECTOR TO TOP OF STRUCTURE IS IN ACCORDANCE WITH THE AUTHORITY HAVING JURISDICTION AND NFPA REQUIREMENTS.
   N. AUTOMATIC SPRINKLERS SHALL BE OF THE OPERATING TEMPERATURE AS REQUIRED BY THE SPRINKLER LOCATION. FINAL HEAD TEMPERATURES
- REQUIRED BY THE SPRINKLER LOCATION. FINAL HEAD TEMPERATURES SHALL BE IN ACCORDANCE WITH NFPA 13 TO COMPENSATE FOR FIELD CONDITIONS. O. SPRINKLER DESIGN IS BASED ON LIMITED FIELD INFORMATION.
- CONTRACTOR IS RESPONSIBLE FOR VERIFYING ACTUAL FIELD CONDITIONS AND PROVIDING A FULLY COMPLIANT SPRINKLER SYSTEM AT NO ADDITIONAL EXPENSE TO THE OWNER.
- P. THE CUMULATIVE HORIZONTAL LENGTH OF AN UNSUPPORTED ARMOVER TO A SPRINKLER, SPRINKLER DROP, OR SPRIG-UP SHALL NOT EXCEED THE LIMITS AS ALLOWED FOR BY NFPA 13.
- Q. THE UNSUPPORTED LENGTH BETWEEN THE END SPRINKLER AND THE LAST HANGER ON THE LINE SHALL NOT BE GREATER THAN THE DISTANCES SPECIFIED IN NFPA 13.
- R. THE DISTANCE BETWEEN A HANGER AND THE CENTERLINE OF AN UPRIGHT SPRINKLER SHALL NOT BE LESS THAN 3 INCHES.
- S. ANY EXISTING SPRINKLER HEAD OUTLETS THAT ARE NO LONGER REQUIRED SHALL BE PLUGGED.
- NO MORE THAN TWO SPRINKLER HEADS SHALL BE FED FROM ANY ONE EXISTING SPRINKLER OUTLET.
   U. THE ENTIRE AREA UNDER CONSTRUCTION SHALL BE PROVIDED WITH A
- U. THE ENTIRE AREA UNDER CONSTRUCTION SHALL BE PROVIDED WITH A COMPLETE FIRE SPRINKLER SYSTEM IN ALL RESPECTS. RELOCATE/ADD NEW SPRINKLER DROPS TO EXISTING SYSTEMS WHERE REQUIRED TO PROVIDE COMPLETE COVERAGE THROUGH THE AREA OF CONSTRUCTION. COORDINATE FIRE SPRINKLER PIPING AND HEAD LOCATIONS WITH ALL TRADES PRIOR TO FABRICATION OR INSTALLATION. IF CONFLICTS OCCUR BETWEEN FIRE SPRINKLER PIPING/HEADS AND LIGHTS, DIFFUSERS, DUCTWORK, ETC., THE FIRE SPRINKLER PIPING/HEADS SHALL BE RELOCATED OR REROUTED AT NO ADDITIONAL EXPENSE TO THE PROJECT. AN ADEQUATE SUPPLY OF EXTRA
- PIPING AND FITTINGS SHALL BE MAINTAINED ON SITE TO ALLOW FOR FIELD MODIFICATIONS. APPROVED SHOP DRAWINGS DO NOT PRECLUDE REROUTING IF SO REQUIRED BY THE ARCHITECT/ENGINEER.
- V. PROVIDE ALARM TEST CONNECTION IN ACCORDANCE WITH NEPA REQUIREMENTS.
- W. PROVIDE MAIN DRAIN AT RISER SIZED IN ACCORDANCE WITH NFPA 13 AND LOW POINT DRAINS ON ALL TRAPPED SECTIONS OF PIPING.
   X. PROVIDE PRESSURE RELIEF VALVE AT FIRE SPRINKLER WATER ENTRY IN ACCORDANCE WITH NFPA 13 AND THE AUTHORITY HAVING JURISDICTION.



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# FIRE SPRINKLER PLAN NOTES

- 1. EXISTING PENDENT SPRINKLER HEADS AT CEILING TO REMAIN AS-IS. FIRE SPRINKLER CONTRACTOR SHALL FIELD VERIFY ALL EXISTING LOCATIONS, TYPES, AND TEMPERATURES AND MAKE
- ADJUSTMENTS AS REQUIRED FOR A CODE COMPLIANT SYSTEM. 2. NEW PENDENT SPRINKLER HEAD FOR PROPER COVERAGE. USE NEW 1" PIPE AND FITTINGS TO CONNECT NEW SPRINKLER HEAD TO EXISTING PIPE AS NECESSARY. COORDINATE HEAD LOCATIONS WITH CEILING PLAN AND THE DUCT DISTRIBUTION SYSTEM ABOVE AS NECESSARY. FIRE SPRINKLER CONTRACTOR SHALL FIELD VERIFY ALL EXISTING LOCATIONS, TYPES, AND TEMPERATURES AND MAKE ADJUSTMENTS AS
- REQUIRED FOR A CODE COMPLIANT SYSTEM. 3. NEW UPRIGHT SPRINKLER HEAD FOR PROPER COVERAGE. USE NEW 1" PIPE AND FITTINGS TO CONNECT NEW SPRINKLER HEAD TO EXISTING PIPE AS NECESSARY. COORDINATE HEAD LOCATIONS WITH CEILING PLAN AND THE DUCT DISTRIBUTION SYSTEM ABOVE AS NECESSARY. FIRE SPRINKLER CONTRACTOR SHALL FIELD VERIFY ALL EXISTING LOCATIONS, TYPES, AND TEMPERATURES AND MAKE ADJUSTMENTS AS REQUIRED FOR A CODE COMPLIANT SYSTEM.

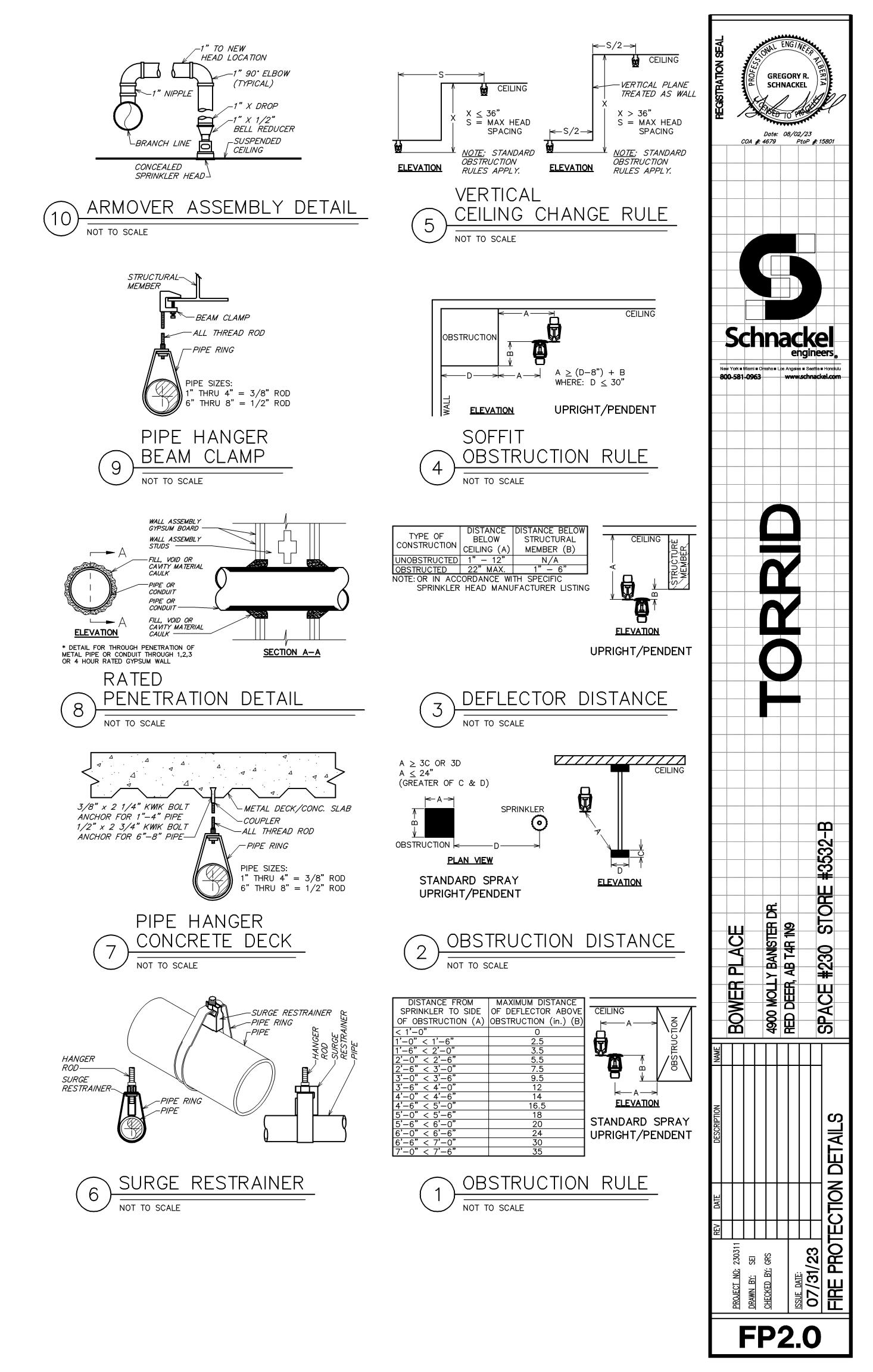
	<	1 Y 2	ABDLS	>	
	F	IRE	PROTECTION	l	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	ELE∨ATION CHANGE	X	BALL VALVE	<b>Й</b> ЕН	FIRE HYDRANT
	PIPE CAP	Į	CHECK VALVE	ţ	VALVE IN RISE
	PIPE COUPLING	Å	PRESSURE REGULATING	C.I.	CAST IRDN
<b>(</b>	HYDRAULIC NODE POINT	$\square$	VALVE (PRV)	I.E.	INVERT ELEVATION
$\boxtimes$		₩	POST INDICATOR VALVE		FIRE DEPARTMENT CONNECTION
X'-X"	FINISHED CEILING ELE∨ATION	$\varphi$	RISER NIPPLE (RN)	⊾ NHN	FIRE HOSE VALVE
A.F.F.					

S	PARE SPR	RINKLER CA	BINET CO	NTENTS	
SIZE OF FACILITY	MIN HEAD QTY	MIN HEADS PER TYPE	WRENCH PER HEAD TYPE	LIST OF SPRINKLERS INSTALLED	SPRINKLER ESCUTCHEONS PER TYPE
0-300 SPRINKLERS	6	2	1	1	2
300-1000 SPRINKLERS	12	2	1	1	2
+1000 SPRINKLERS	24	2	1	1	2

NOTE: SPRINKLERS SHALL BE KEPT WHERE TEMPERATURE DOES NOTE EXCEED 100°F.

MAXIMUM PROTE STANDARD		S AND MAXIMUI RIGHT & PENDEI		FOR
CONSTRUCTION TYPE	SYSTEM TYPE	PROTECTION AREA MAX (SQ.FT.)	MAX SPACING	MAX DISTANCE TO WALL (FT)
	LIGHT	HAZARD:		
NONCOMBUSTIBLE OBSTRUCTED + UNOBSTRUCTED & COMBUSTIBLE	PIPE SCHEDULE	200	15'-0"	7'-6"
UNOBSTRUCTED WITH MEMBERS 3FT OR MORE O.C.	HYD. CALC.	225	15'—0"	7'-6"
COMBUSTIBLE OBSTRUCTED WITH MEMBERS 3FT OR MORE O.C.	ALL	168	15'–0"	7'-6"
COMBUSTIBLE OBSTRUCTED + UNOBSTRUCTED WITH MEMBERS LESS THAN 3FT O.C.	ALL	130	15'-0"	7'-6"
COMBUSTIBLE CONCEALED SPACE UNDER A PITCHED ROOF HAVING COMBUSTIBLE WOOD JOIST OR WOOD TRUSS CONSTRUCTION WITH MEMBERS	ALL	120	15'-0" PARALLEL TO SLOPE	7'–6" PARALLEL TO SLOPE
LESS THAN 3FT O.C. WITH SLOPES HAVING A PITCH OF 4:12 OR GREATER			10'-0" PERP. TO SLOPE	5'-0" PERP. TO SLOPE
	ORDINAR	Y HAZARD:		
ALL	ALL	130	15'-0"	7'-6"
	EXTRA	HAZARD:		
	PIPE SCHEDULE	90	12'-0"	6'-0"
ALL	HYD. CALC. DENSITY=.25+	100	12'-0"	6 <b>'</b> —0"
	HYD. CALC. DENSITY<.25	130	15'-0"	7'-6"

HANGER LOCATI (MAX PRESSURE < 10		Пн	ANGE	R R	DD SI	ZES			NGER PRESS			
PIPE SIZE A (MAX) A (MIN)	В (МАХ	i) P	IPE SI	ZE	DIAME	TER	PIPE	SIZE	A (MA	X) A (	MIN) B	(MAX)
1" <u>36</u> " <u>3</u> "	24"	1 υ	IP TO	4"	3/8	3"		1"	12"	3	5"	12"
1 1/4" 48" 3"	24"	5	5" ТО	8"	1/2	2"	1	1/4"	12"	3	5"	12"
≥1 1/2" 60" 3"	24"	1 1(	D"& 1	2"	5/8	3"	≥1	1/2"	12"	3	5"	12"
										)		
MAXIMUN	<u>I DIS</u>	TANC	E BE	ETWE				•	<u> </u>	.)		
PIPE TYPE						AL PIF	PE SIZE	E (IN)				
	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8
STEEL PIPE EXCEPT THREADED LIGHT-WALL	N/A	12—0	12–0	15–0	15–0	15–0	15–0	15–0	15–0	15–0	15–0	15—0
THREADED LIGHT WALL STEEL PIPE	N/A	12—0	12–0	12–0	12–0	12–0	12–0	N/A	N/A	N/A	N/A	N/A



### SECTION 21000 - FIRE SUPPRESSION GENERAL CONDITIONS

# PART 1 GENERAL

- 1.01 APPLICABILITY A. This section supplements all sections of the Specifications for Division 21 and shall apply to all phases of work hereinafter specified, shown on the Drawings, or required to provide a complete installation of approved fire suppression systems The Drawings, General Conditions and General Provisions of the Contract apply to
  - this Section and the other Sections of Division 21 of the specifications. Where conflicts arise between these documents, the more stringent provision will be applicable, subject to the interpretation of the Engineer. Furnish all labor, material, services, and skilled supervision necessary for the
  - construction, erection, installation, connections, testing, and adjustment of all materials and electrical equipment specified herein, or shown or noted on the Drawings, and its delivery to the Owner, complete in all respects and ready for
- D. Products furnished but not installed under this section: Where plans indicate fixtures or equipment will be furnished by this
- Contractor for installation by other Contractors, this Contractor shall furnish all such equipment, complete in all respects and ready for installation.
- Drawings, instructions, and manuals supplied with equipment furnished under Division 21, but installed under other Divisions shall be carefully preserved and turned over to the installing Contractor.
- Products installed but not furnished under this section: Where plans indicate fixtures or equipment will be furnished by others, this Contractor shall provide all rough-in and supplies and shall connect such
- equipment to the fire suppression systems. Drawings, instructions, and manuals supplied with equipment furnished under separate Divisions but installed under Division 22 shall be carefully preserved and turned over to the Architect.
- 1.02 DEFINITIONS "Work" is hereby defined as, "The construction and services required by the Contract Documents whether completed or partially completed and includes all labor materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The work may constitute the whole or a part f the project
- "Furnish" is hereby defined as, "To supply and deliver, unload, and inspect for
- "Install" is hereby defined as, "To unpack, assemble, erect, apply, place, finish, cure, protect, clean, connect, and place into operation into the work.
- "Provide" is hereby defined as, "To furnish and install."
- "Connect" is hereby defined as, "To bring service to the equipment and make final attachment including necessary switches, outlets, boxes, terminations, etc.
- "Concealed" is hereby defined as, "Hidden from sight in chases, furred spaces, shafts, hung ceilings, embedded in construction, in crawl spaces, or buried.
- "Exposed" is hereby defined as, "Not installed underground nor concealed as defined by the Specifications.
- "Drawings" is hereby defined as, "All plans, details, equipment schedules, н.
- digarams, sketches, etc. issued for the construction of the work. Subgrade Elevations: 4 inches below finish grade elevations indicated on drawings, unless otherwise indicated.
- J. Finish Grade Elevations: 4 inches above subgrade elevations indicated on drawings, unless otherwise indicated. 1.03 CODES AND STANDARDS
- Perform work in accordance with the applicable Building Code, Electrical Code, Fire Code, Mechanical Code, Plumbing Code, Energy Code, and all other applicable codes, amendments, and ordinances. Also perform all work in accordance with the Americans with Disabilities Act (ADA) and the Authority Having Jurisdiction (AHJ) including Fire Marshal(s).
- B. Perform work in accordance with Landlord requirements, including any Tenant Criteria Manuals and Lease Exhibits, where applicable. C. Perform work in accordance with the applicable utility companies serving the project. Make all arrangements with the utility companies for proper coordination
- of the work. Recognized Standards: Design, manufacture, testing and method of installation of all apparatus and materials furnished under the requirements of these Specifications shall conform to the latest publications or standard rules o National Fire Protection Association (NFPA). Factory Mutual Global, where
- applicable (FMG). Underwriters Laboratories, Inc. (U.L.). American Society for Testing and Materials (ASTM). American National Standards Institute (ANSI National Electrical Code (NEC), and National Electrical Safety Code (NESC) The Contract Documents shall take precedence where the Contract Documents exceed
- code, Landlord, utility, or recognized standards requirements. 1.04 PERMITS AND FEES
- A. Permits, licenses, fees, inspections and arrangements required for the work under this Contract shall be obtained by the Contractor at his expense, unless otherwise indicated.
- B. All fees and scheduling associated with obtaining an accurate water flow test shall be at the Contractor's expense
- 1.05 CONTRACT DRAWINGS A. The Contractor is responsible to obtain, fully understand, and coordinate the work with the complete set of Contract Documents. Any required corrections, including all associated costs, arising from issues caused by the Contractor's failure to understand and/or coordinate the work with the complete set of Contract Documents are the Contractor's sole responsibility.
- Work under these sections is diagrammatic unless indicated otherwise and is intended to convey the scope of work and indicate the general arrangement of piping, equipment, and accessories. Follow these drawings in laying out the worl and verify spaces for the installation of these materials and equipment. Wherever a question exists as to the exact intended location of pipe, sprinklers, or equipment, obtain instructions from the Architect before proceeding with the work.
- Notify the Architect/Engineer for resolution if a discrepancy is discovered within the Contract Documents. Failure of the Contractor to notify the Architect/Engineer of discrepancies shall result in the resolution becoming the Contractor's responsibility and subject to the Architect/Engineer's review and possible rejection. Should the Architect/Engineer reject a discrepancy resolution of which they were not notified, the Contractor is fully responsible to correct the installation, including all associated costs, until approval of the installation is
- given by the Architect/Engineer. 1.06 EXISTING CONDITIONS Verify all existing conditions prior to beginning work.
- Any existing conditions indicated in the Contract Documents are based on information drawings provided by others and possibly limited field verification.
- The Contractor shall adjust for actual field conditions at no additional expense to C. The Contractor shall visit the project site, review existing conditions against the
- Contract Documents, and familiarize himself with the work prior to bidding and start of the work. By signing the Contract, the Contractor acknowledges the site visit has been completed and the existing conditions are accepted. The Contractor shall notify the Architect of major discrepancies in writing so the
- appropriate modifications to the design can be made without delay to the project. The Contractor assumes full responsibility of adjusting for discrepancies of which the Architect is not informed.
- The Owner shall have first salvage right on all demolished equipment and materials. The Contractor shall dispose of all demolished equipment and materials the Owner The Contractor shall notify the Architect/Engineer of field discrepancies in
- writing so the appropriate modifications to the design can be made without delay to the project. The Contractor assumes full responsibility of adjusting for discrepancies of which the Architect/Engineer is not informed.
- H. Where connections are made between new work and existing work, the connections shall be made by using materials and methods to suit the actual conditions. Where existing conditions are shown to be removed, by means of a hatched pattern, on the Drawings, this Contractor shall perform all work required for removal.
- appropriate methods Where existing work is to be modified, it shall be done in conformance with these specifications. Materials used shall be same as existing except where specified

1.07 SUBMITTALS

- Furnish the Architect/Engineer shop drawing portfolios containing names of manufacturer and cut sheets of equipment to be used on the project. Use manufacturer's specification sheets identified by number indicated on drawings or schedules. Indicate catalog number on the cut sheets. As applicable, provide construction data, weight and dimensional data, performance data and listing data as part of the shop drawing submittal. Provide shop drawings for:
- a. Fire Protection fixtures and equipment. Fire Protection materials and accessories.
- Product Data: Provide manufacturers catalogue information. Indicate valve data and ratings. 2. Submittals are reviewed only for general compliance with the Contract
- Documents. Dimensions, quantities and details are not checked during submittal review. Review of the submittals does not relieve the Contractor of the responsibility for providing all materials, equipment and accessories necessary for a complete and operational system meeting the requirements of the project and the intent of the Contract Documents. The responsibility for coordination of substituted materials and equipment lies solely with the substituting Contractor. Approval shall not relieve the Contractor from responsibility for errors on
- the shop drawings. If the shop drawings deviate from the contract documents, the Contractor shall advise the Engineer of the deviations in writing accompanying the shop
- drawings, including the reasons for the deviations. Project Record Documents: Record actual locations of components and tag numbering. Operation and Maintenance Data: Include installation instructions and spare parts
- Maintenance Data: Include assembly drawings, bearing data including replacement sizes, and lubrication instructions. 1.08 QUALITY ASSURANCE
- Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five years experience. Installer Qualifications: Company specializing in performing the work of this section with minimum five years experience, approved by manufacturer.
- C. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for the
- purpose specified and indicated. Listed and classified by the local Department of Buildings and furnished with 2.

- an acceptance number, where applicable. Listed and classified by the Landlord's and/or Owner's insurance c
- where applicable. All equipment and components shall be free of all rust/corrosion or any damage. All items not complying with this requirement shall be replaced any change in the Contract amount Equipment performance and accessories shall be as scheduled on the Drawi
- specified herein. Inclusion in both locations is not a prerequisite to in the Contract. Equipment and accessories specified in either location included in the Contract. Provide all necessary accessories and connect required for a complete, functional system, including all required compo reasonably inferred to as necessary although such components may or may
- specifically indicated in the Contract Documents. Code or utility company requirements shall supersede any conflicting req of this section. Fill Composition Test Reports: Results of laboratory tests on actual mat
- used: Compaction Density Test Reports. 1.09 DELIVERY, STORAGE, AND HANDLING Deliver and store valves in shipping containers, with labeling in place.
- Provide temporary protective coating on cast iron and steel valves. Provide temporary end caps and closures on piping and fittings. Maintain intil installation.
- Protect motors stored on site from weather and moisture by maintaining f covers and suitable weather-proof covering. For extended outdoor storage
- motors from equipment and store separately. Equipment: Protect equipment from physical damage by storing off site unt project is ready for immediate installation. Provide temporary caps on to prevent debris from entering the pipe.

PART 2 PRODUCTS

- 2.01 SUBSTITUTIONS The manufacturers listed are listed to set minimum standards for qualit and functionality. The products of other manufacturers may be submitted Contractor's option, during shop drawing review unless indicated otherwi products of other manufacturers shall meet or exceed all requirements of Contract Documents. The Contractor accepts all responsibility for costs coordination issues arising out of the substitution of materials or equ the coordination of such substitutions with all other contractors and
- subcontractors. Sprinkler Systems: Conform work to NFPA 13 and all local requirements. Standpipe and Hose Systems: Conform to NFPA 14 and all local requirement Welding Materials and Procedures: Conform to ASME Code.
- PART 3 EXECUTION
- 3.01 COORDINATION OF WORK Examine the Contract Documents as a whole for the work of other trades.
  - all work accordingly Work lines and established heights shall be in strict accordance with arc drawings and specifications insofar as these drawings and specifications Verify all dimensions shown and establish all elevations and detailed di
  - not shown. Promptly report to the Architect any delay or difficulties encountered installation of the work, which might prevent prompt and proper installa make it unsuitable to connect with or receive the work of others. Failu report shall constitute an acceptance of the work of other trades as be
- proper for the execution of this work. Plan, lay out, and coordinate the work with all trades well enough in adv that it proceeds with a minimum of interference to work that has not be and work that is in progress. Inform all trades of openings required for and provide all special frames, sleeves, and anchor bolts required. The suppression system layout may be altered to suit the conditions, prior installation of any work and without additional cost to the Owner. Cor
- arising from lack of coordination shall be this Contractor's responsibil Wherever pipe runs in or above ceilings or walls, the Contractor shall run of pipe in such a manner that it does not interfere with grilles, di outlet boxes, luminaires, or other ceiling mounted items.
- Install systems, materials and equipment to provide for maximum headroom ceiling height is established or indicated on the Drawings. Maintain acc equipment requiring service when selecting mounting elevations.
- Install systems, materials and equipment level and plumb, parallel and perpendicular to building lines where exposed to view, unless otherwise
- Conflicts arising from lack of coordination shall be this Contractor's responsibility. The Fire Suppression Contractor shall pay for all extra and patching made necessary by his failure to properly direct such work correct time.
- Perform all work in conformity with the Contract Documents and afford ot reasonable apportunity for the execution of their work. Properly connect coordingte this work with the work of other trades at such time and in s manner as not to delay or interfere with their work.
- Manufacturer's instruction sheets shall be followed explicitly in the i of all equipment. Where manufacturer's instruction sheets conflict with requirements of these specifications or the Drawings, such conflicts sha brought to the attention of the Architect/Engineer for clarification.
- All roofing penetrations shall be flashed and weather sealed by the roof manufacturer's authorized roofing contractor at this Contractor's expens Contractor shall contract with the factory authorized roofing contractor specific roofing system applicable to this Project. The use of an unaul roofing contractor may result in removal and replacement of the penetr at this Contractor's expense.
- Although all such work is not specifically indicated, furnish and instal supplementary or miscellaneous items, appurtenances and devices incident necessary for a sound, secure and complete installation. Verify and coordinate all requirements and installation details of all m
- and equipment that are to be furnished under other Divisions and instal connected under Division 22 prior to rough-in. Conflicts grising from coordination shall be this Contractor's responsibility. As such, the C responsible to:
- Obtain and review shop drawings, product data, manufacturer's wiri diagrams, and manufacturer's instructions for equipment furnished sections.
- Determine connection locations and requirements. Sequence rough-in of fire suppression connections to coordinate wit installation of equipment.
- 3.02 COORDINATION DRAWINGS A. Prepare coordination drawings to a scale of 1/4"=1'-0" or larger; detail elements, components, and systems of fire suppression equipment and mate relationship with other systems, installations, and building components. locations where space is limited for installation and access and where s
  - and coordination of installations are of importance to the efficient flo work, including (but not necessarily limited to) the following: Indicate the proposed locations of conduits, equipment, and materi Include the following:
  - Clearances required for maintaining Code required working spo Equipment connections and support details.
  - Exterior wall and foundation penetrations. Fire-rated wall and floor penetrations.
  - Sizes and location of required concrete pads and bases. Indicate scheduling, sequencing, movement, and positioning (
  - equipment into the building during construction. Prepare floor plans, elevations, and details to indicate pen in floors, walls, and ceilings and their relationship to oth penetrations and installations.
- 3.03 EXAMINATION Verify field measurements are as indicated on the Drawings. Verify all pipe locations and sizes in field prior to fabrication or ins Verify all equipment locations in field prior to installation. Coordinat
- locations with all trades 3.04 INTERFACE WITH OTHER PRODUCTS Install all pipe, equipment, and accessories to preserve fire resistance
- partitions and other elements, using materials and methods specified. 3.05 FIELD QUALITY CONTROL Provide tests as necessary to establish the adequacy, quality, safety, c
- status, and suitable operation of each system. Tests shall be conducted supervision of the Architect. Install all equipment, devices, pipe, and materials securely and in a ne
- workmanlike manner in accordance with all applicable standards and codes Install all equipment, pipe, and materials plumb and level and align and satisfactory operation.
- Install all equipment, pipe, and materials in accordance with the manufo instructions and recommendations.
- Inspect all equipment, pipe, and materials for defects. 3.06 ERECTION A. Riggino
  - The Fire Suppression Contractor shall arrange for all labor and eq required for the proper installation of the fire Suppression equip locations indicated on the Drawings. Where crane rental or other required, such costs shall be included in the Fire Suppression Con unless specific arrangements are made with the General Contractor these costs.
  - B. Supplemental Framing: Provide the design, fabrication, and erection of supplementary str framing required for attachment of hangers or other devices suppor Suppression equipment. Provide framing members of standard rolle shapes, A-36 steel. Provide members welded to structural members the specification for the main structural member. Provide "simple framing with end connections welded or bolted for shear loads. U
- cantilevers when detailed or specifically approved by the Archite The Architect/Engineer's approval is required for location of supp framing. Use only certified welders. Design framing members for actual loads, with allowable stresses specified by AISC, without deflection and with consideration for rigidity under vibration, in with standard structural practices. Show on shop drawing suppleme framing, including design loads, member size and location. 3.07 CUTTING, PATCHING, AND PIERCING
- Cutting of openings and installation of sleeves or frames through walls surfaces shall be done in a neat workmanlike manner. Openings shall be large as required for the installation: sleeves and/or frames installed finished surfaces and grouted in place. Surfaces around openings shall be left smooth and finished to match surrounding surface.

Existing pipe run-outs shall be removed all the way back to mains and capped using otherwise. A. Shop Drawings:

carrier,		B. Obtain written permission of the Architect/Engineer before cutting or piercing structural members. Use craftsmen skilled in their respective trades for cutting,	
y visible		fitting, repairing, patching of plaster, and finishing of materials including carpentry work, metal work or concrete work required for this work.	
ed without wings and		C. Do not weaken walls, partitions, or floors with cutting. Holes required to be cut in floors must be drilled without breaking out around the holes. The Architect/Engineer will determine suitability of patching and/or refinishing	
inclusion on shall be		requirements. D. The Fire Suppression Contractor is responsible for patching of all openings	
ctions as conents		resulting from the installation or removal of fire Suppression equipment or materials.	
y not be		E. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.	
equirements		F. Patch existing finished surfaces and building components using new materials matching existing materials and experienced Subcontractors.	
naterials		G. Fire and Smoke Partition Penetrations: The Contractor shall familiarize himself with all fire rated construction and install his work so as to maintain the integrity of the fire code rating. Maintain rating of fire rated and smoke rated	
Э.		construction. Seal annular space around conduits. For fire and smoke rated floors, walls and partitions, use UL listed material that maintains fire rated wall	
in in place	3.08	and floor integrity. CLEANING AND REPAIR	
factory age, remove		<ul> <li>A. Clean fire suppression parts to remove harmful materials.</li> <li>B. Clean exposed surfaces of all pipe, equipment, and accessories of all dirt, debris,</li> </ul>	
until the		splatter, and other deleterious materials. Follow the manufacturer's recommendations for cleaning as applicable.	
n all pipes		C. Repair or replace damaged pipe, equipment, and accessories, as directed by and to the satisfaction of the Architect, where marring or disfigurement has occurred.	PA
	3.09	All pipe, equipment, and accessories shall be new. TESTING AND INSPECTION A. Upon completion, the entire system shall be tested under operating conditions.	1.
ty, design,		<ol> <li>All equipment shall be tested under service conditions and proven to operate properly and noiselessly.</li> </ol>	
ed, at the wise. The		<ol> <li>All additional tests as required throughout this Specification shall be completed with results reported back to the Architect/Engineer for review.</li> </ol>	PA
of the ts and		<ul> <li>B. Operate all equipment, after installation and connection. Inspect for improper connections and operation and correct deficiencies as required.</li> <li>C. Inspection:</li> </ul>	2.
uipment, and		C. Inspection: 1. Upon completion of the work, the Contractor shall obtain certificates of inspection and approval from all City and State Authorities Having	2.
ents.	3.10	Jurisdiction. PROJECT CLOSEOUT	
		A. Project Record Documents: At project closeout, provide one printed copy and one electronic copy of project record drawings to the Owner. Information contained on	
		project record drawings shall include, as a minimum,: 1. Actual locations of all pipe, equipment, accessories, etc.	
. Coordinate		<ol> <li>Actual pipe sizes and elevations.</li> <li>Actual routing of all underfloor or below grade piping.</li> <li>Hydraulic calculation remote area data and associated flow test information.</li> </ol>	PA
architectural ns extend.		<ul> <li>B. Operation and Maintenance Data: At project closeout, submit to the Architect two copies of descriptive literature, maintenance and operation data for all piping,</li> </ul>	3.
dimensions		equipment, accessories, and materials used. Include maintenance procedures, intervals, and parts list of each item installed under this contract. Include all	
in the lation, or		manufacturer's guarantees and warranties. Also include:	
lure to so eing fit and		END OF SECTION	
advance so	DADT	SECTION 210500 - COMMON WORK RESULTS FOR FIRE SUPPRESSION	
een completed for the work ne fire		SECTION INCLUDES	3.
to the onflicts		<ul> <li>A. Pipe, fittings, valves, and connections for systems as applicable to this project.</li> <li>Sprinkler systems: New systems; Dry pipe systems; Wet pipe systems; Standpipe/hose</li> </ul>	3.
ility. arrange the		systems; Below ground piping; Above ground piping.	
diffusers,		2 PRODUCTS	
om, where no access to	2.01	FIRE PROTECTION SYSTEMS A. Water Supply Testing for All Systems: Perform tests of all supply water sources to determine the patential for correction in the fire protection system including tests	
e indicated.		determine the potential for corrosion in the fire protection system including tests for microbes most commonly associated with Microbiologically Influenced Corrosion (MIC). Water samples shall be collected as directed by the product literature of	
a cutting		the testing organization. Samples shall be delivered to the approved testing laboratory within 72 hours of the time the water sample is obtained. Test results	
< at the		shall be forwarded to the Owner and Engineer along with a report summarizing the recommended corrective action to mitigate the potential for MIC or other types of	PA
other trades ect and		corrosion. B. The Contractor may use any of the following piping materials, at his option,	1.
such a installation		provided the selected material meets with the approval of all State, local authorities and any utility company requirements. Verification of compliance of the selected piping material is the sole responsibility of the installing	PA
th th	2.02	Contractor. ABOVE GROUND PIPING	2.
ofing	2.02	A. Steel Pipe: ASTM A 795 Schedule 10, ASTM A 53 Schedule 40, ASTM A 135 Schedule 10, ASTM A 135 UL listed light wall type, or ASTM A 795 Schedule 40, black: Steel	2.
nse. This or for the		Fittings: ASME B16.9, wrought steel, buttwelded, ASME B16.5, buttweld ends, ASTM A 234/A 234M, wrought carbon steel or alloy steel, ASME B16.5, steel flanges and	
uthorized ation systems		fittings, or ASME B16.11, forged steel socket welded and threaded; Mechanical Grooved Couplings: Malleable iron housing clamps to engage and lock, "C" shaped	2.
all all		elastomeric sealing gasket, steel bolts, nuts, and washers; galvanized for galvanized pipe; Mechanical Formed Fittings: Carbon steel housing with integral	
ntal to or materials		pipe stop and O-ring pocked and O-ring, uniformly compressed into permanent mechanical engagement onto pipe; Schedule 10 steel pipe will not be allowed on any dry pipe sprinkler systems, no exceptions; Threaded or cut groove fittings will not	2.
lled or lack of		be allowed on any Schedule 10 system, no exceptions. B. Copper Tube: ASTM B 75 (ASTM B 75M) or ASTM B 88 (ASTM B 88M), H58 drawn temper:	
Contractor is		Type: Type M (C); Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze solder joint, pressure type; Joints: AWS A5.8	
ing d under other		Classification BCuP-3 or BCuP-4 copper/silver braze or ASTM B 32, alloy Sn95 solder.	
		C. CPVC Pipe: ASTM F 442/F 442M, SDR 13.5. (Not permitted in plenum return air ceiling spaces.): Fittings: ASTM F 438 Schedule 40, or ASTM F 439 schedule 80,	
with	2.03	CPVC; Joints: Solvent welded, using ASTM F 493 cement. PIPE HANGERS AND SUPPORTS A. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron, adjustable swivel, split	2.
iling major terials in		ring. B. Hangers for Pipe Sizes 2 inches and Over: Carbon steel, adjustable, clevis.	2.
s. Indicate sequencing		C. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods. D. Wall Support for Pipe Sizes to 3 inches: Cast iron hook.	
low of the		E. Wall Support for Pipe Sizes 4 inches and Over: Welded steel bracket and wrought steel clamp.	
-ials.		<ul> <li>F. Vertical Support: Steel riser clamp.</li> <li>G. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.</li> </ul>	PA 3.
space.	2 04	H. Copper Pipe Support: Carbon steel ring, adjustable, copper plated. GATE VALVES	э.
	2.07	A. Up to and including 2 inches: Bronze body, bronze trim, rising stem, handwheel, solid wedge or disc, threaded ends.	
of large		B. Over 2 inches: Iron body, bronze trim, rising stem pre-grooved for mounting tamper switch, handwheel, OS&Y, solid bronze or cast iron wedge, flanged or grooved ends.	
enetrations ther	<b>•</b>	C. Over 4 inches: Iron body, bronze trim, non-rising stem with bolted bonnet, solid bronze wedge, flanged ends, iron body indicator post assembly.	
	2.05	BUTTERFLY VALVES A. Bronze Body: Stainless steel disc, resilient replaceable seat, threaded or grooved and extended neak bandwheel and near drive and integral indicating device, and	<b>.</b>
nstallation. nate final		ends, extended neck, handwheel and gear drive and integral indicating device, and built-in tamper proof switch rated 10 amp at 115 volt AC. B. Cast or Ductile Iron Body: Cast or ductile iron, chrome or nickel plated ductile	PA 1.
		iron or aluminum bronze disc, resilient replaceable EPDM seat, wafer, lug, or grooved ends, extended neck, handwheel and gear drive and integral indicating	1.
ce rating of	2.06	device, and internal tamper switch rated 10 amp at 115 volt AC. CHECK VALVES	
completed		A. Up to and including 2 inches: Bronze body and swing disc, rubber seat, threaded ends.	PA
ed under the		<ul> <li>B. Over 2 inches: Iron body, bronze trim, swing check with rubber disc, renewable disc and seat, flanged ends.</li> <li>C. 4 inches and Over: Iron body, bronze disc, stainless steel spring, resilient seal,</li> </ul>	2.
neat and es. nd adjust for	2.07	threaded, wafer, or flanged ends.	
facturer's	,	A. Compression Stop: Bronze with hose thread nipple and cap. B. Ball Valve: Brass with cap and chain, 3/4 inch hose thread.	2.
	PART	3 EXECUTION	
	3.01	PREPARATION	
equipment ipment in the recetion is		A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe. Remove scale and foreign material, from inside and outside, before assembly. Prepare piping connections to equipment with flagnes or unions.	
r erection is ontract, r to cover	3.02	piping connections to equipment with flanges or unions. INSTALLATION A. Install sprinkler system and service main piping, hangers, and supports in	
		<ul> <li>accordance with NFPA 13.</li> <li>B. Install standpipe piping, hangers, and supports in accordance with NFPA 14.</li> </ul>	
tructural orting fire		C. Comply with all materials, design and installation requirements of Factory Mutual. D. Route piping in orderly manner, plumb and parallel to building structure. Maintain	
ed steel s equal_to		gradient. E. Install piping to conserve building space, to not interfere with use of space and	
le beam"type Jse st/Engineer		other work. F. Group piping whenever practical at common elevations.	<b>D</b> •
ect/Engineer. oplementary their		<ul> <li>G. Sleeve pipes passing through partitions, walls, and floors.</li> <li>H. Install piping to allow for expansion and contraction without stressing pipe, inints, or connected equipment</li> </ul>	PA 3
- their excessive in accordance		joints, or connected equipment. I. Inserts: Provide inserts for placement in concrete formwork; Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete	3.
mentary		beams; Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches; Where concrete slabs form finished ceiling, locate inserts	
s and		flush with slab surface; Where inserts are omitted, drill through concrete slab from below and provide through—bolt with recessed square steel plate and nut	3.
e cut only as d flush with		recessed into and grouted flush with slab. J. Pipe Hangers and Supports: Install hangers to provide minimum 1/2 inch space	
l be left		between finished covering and adjacent work; Place hangers within 12 inches of each horizontal elbow; Use hangers with 1-1/2 inch minimum vertical adjustment. Design	

hangers for pipe movement without disengagement of supported pipe; Suppor piping at every other floor. Support riser piping independently of connection horizontal piping; Where several pipes can be installed in parallel and at elevation, provide multiple or trapeze hangers; Provide copper plated hanged supports for copper piping.

- Slope piping and arrange systems to drain at low points. Use eccentric re maintain top of pipe level. L. Where exposed to view in finished areas, prepare pipe, fittings, supports, accessories for finish painting. Where pipe support members are welded to
- structural building framing, scrape, brush clean, and apply one coat of zi primer to welding M. Do not penetrate building structural members unless indicated or where app
- from the project Structural Engineer has been given in writing. Provide sleeves when penetrating footings and floors. Seal and fire stop sleeve penetrations to achieve fire resistance equivalent to fire separat
- required. 0. When installing more than one piping system material, ensure system compon compatible and joined to ensure the integrity of the system. Provide nec joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.
- P. Install valves with stems upright or horizontal, not inverted. Remove prot coatings prior to installation Q. Provide drain valves at main shut-off valves, low points of piping and app

# END OF SECTION

SECTION 210548 - VIBRATION AND SEISMIC CONTROLS FOR FIRE SUPPRESSION PIPING AND EQU

- PART 1 GENERAL
- 1.01 SECTION INCLUDES A. Concrete housekeeping pads; Inertia bases for fire pumps; Vibration isolat Seismic restraints
- PART 2 PRODUCTS
- 2.01 MANUFACTURERS
- Isolation Technology, Inc; Kinetics Noise Control, Inc; Mason Industries 2.02 SEISMIC RESTRAINTS A. Type: Non-directional and double acting unit consisting of interlocking members restrained by neoprene elements.
- Elements: Replaceable neoprene, minimum of 0.75 inch thick with minimum Capacity: 4 times load assigned to mount groupings at 0.4 inch deflection
- Attachment Points and Fasteners: Capable of withstanding 3 times rated lo capacity of seismic snubber. PART 3 EXECUTION
- 6.01 INSTALLATION Install in accordance with manufacturer's instructions. B. On closed spring isolators, adjust so side stabilizers are clear under nor
- operating conditions. С. Support piping connections to equipment mounted on isolators using isolate resilient hangers for scheduled distance: Up to 4 Inches Pipe Size: First
- points of support; 5 to 8 Inches Pipe Size: First four points of support; inches Pipe Size and Over: First six points of support; Select three han closest to vibration source for minimum 1.0 inch static deflection or stat deflection of isolated equipment. Select remaining isolators for minimum static deflection or 1/2 static deflection of isolated equipment.
- 3.02 FIELD QUALITY CONTROL A. Inspect isolated equipment after installation and submit report. Include deflections. 3.03 SCHEDULES

0	latio	on Scl	nedule.					
	Inch	Pipe	Size:	Isolate	120	) diameters	s from	n equipment.
	Inch	Pipe	Size:	Isolate	90	diameters	from	equipment.
	Inch	Pipe	Size:	Isolate	80	diameters	from	equipment.
				Isolate	75	diameters	from	equipment.
	Inch	Pipe	Size:	Isolate	60	diameters	from	equipment.
,	Inch	Pipe	Size:	Isolate	60	diameters	from	equipment.
	TUCU	ripe	Size:	Isolate	00	alameters	T I	-om
		Inch Inch Inch Inch Inch	Inch Pipe Inch Pipe Inch Pipe Inch Pipe Inch Pipe	olation Schedule. Inch Pipe Size: Inch Pipe Size: Inch Pipe Size: Inch Pipe Size: Inch Pipe Size: Inch Pipe Size:	Inch Pipe Size: Isolate Inch Pipe Size: Isolate Inch Pipe Size: Isolate Inch Pipe Size: Isolate Inch Pipe Size: Isolate	Inch Pipe Size: Isolate 120 Inch Pipe Size: Isolate 90 Inch Pipe Size: Isolate 80 Inch Pipe Size: Isolate 75 Inch Pipe Size: Isolate 60	Inch Pipe Size: Isolate 120 diameters Inch Pipe Size: Isolate 90 diameters Inch Pipe Size: Isolate 80 diameters Inch Pipe Size: Isolate 75 diameters Inch Pipe Size: Isolate 60 diameters	Inch Pipe Size: Isolate 120 diameters from Inch Pipe Size: Isolate 90 diameters from Inch Pipe Size: Isolate 80 diameters from Inch Pipe Size: Isolate 75 diameters from Inch Pipe Size: Isolate 60 diameters from

### END OF SECTION

SECTION 210553 - IDENTIFICATION FOR FIRE SUPPRESSION PIPING AND EQUIPMENT PART 1 GENERAL

1.01 SECTION INCLUDES A. Nameplates; Tags; Stencils; Pipe Markers.

### PART 2 PRODUCTS

- 2.01 MANUFACTURERS A. Brady Corporation; Champion America, Inc; Seton Identification Products.
- 0.02 NAMEPLATES
- A. Description: Laminated three-layer plastic with engraved letters: Letter Color: White; Letter Height: 1/4 inch; Background Color: Black.
- 2.03 TAGS Plastic Tags: Laminated three-layer plastic with engraved black letters on light contrasting background color. Tag size minimum 1–1/2 inch diameter. Metal Tags: Brass with stamped letters; tag size minimum 1–1/2 inch diameter with smooth edges.
- 2.04 STENCILS A. Stencils: With clean cut symbols and letters of following size:
  - 3/4 to 1-1/4 inch Outside Diameter of Insulation or Pipe: 8 inch long color field. 1/2 inch high letters.
  - 2. 1-1/2 to 2 inch Outside Diameter of Insulation or Pipe: 8 inch long color field, 3/4 inch high letters.
  - 3. 2-1/2 to 6 inch Outside Diameter of Insulation or Pipe: 12 inch long color
  - field, 1-1/4 inch high letters. 4. 8 to 10 inch Outside Diameter of Insulation or Pipe: 24 inch long color
  - field, 2-1/2 inch high letters. Equipment: 2-1/2 inch high letters.
  - Semi-gloss enamel, colors conforming to ASME A13.1.
- 2.05 PIPE MARKERŠ A. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed. B. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.
- PART 3 EXECUTION

# 3.01 INSTALLATION

- A. Install plastic and plastic tape pipe markers in accordance with manufacturer's instructions
- B. Identify pumps and valves with plastic nameplates. Small devices, such as in-line
- pumps, may be identified with taas. C. Identify valves in main and branch piping with tags.

# END OF SECTION

SECTION 210595 - FIRE STOPPING FOR FIRE SUPPRESSION SYSTEMS

- PART 1 GENERAL
- 1.01 SECTION INCLUDES Firestopping materials and Firestopping of all penetrations and interruptions to fire rated assemblies, whether indicated on the Drawings, and other openings indicated.
- PART 2 PRODUCTS
- 2.01 FIRESTOPPING ASSEMBLIES
- Firestopping: Any material meeting requirements: Fire Ratings: Use any system listed by UL or FM or tested in accordance with ASTM E 814 or ASTM E 119 that has F Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F Rating and that meets all other specified requirements
- 2.02 MATERIALS A. Elastomeric Silicone Firestopping: Single or multiple component silicone elastomeric compound and compatible silicone sealant; conforming to the following: Durability and Longevity: Permanent; Color: Manufacturer's standard color; Manufacturers: A/D Fire Protection Systems Inc; 3M Fire Protection
- Products; Specified Technologies, Inc. Foam Firestoppping: Single or multiple component foam compound; conforming to the following: Durability and Longevity: Permanent; Color: Manufacturer's standard color; Manufacturers: A/D Fire Protection Systems Inc; 3M Fire Protection
- Products; Specified Technologies, Inc. C. Fiber Packing Material: Mineral or ceramic fiber packing insulation; conforming to the following: Durability and Longevity: Permanent; Manufacturers: A/D Fire
- Protection Systems Inc; 3M Fire Protection Products; Pecora Corporation; Specified Technologies, Inc; USG. D. Firestop Pillows: Formed mineral fiber pillows; conforming to the following: Durability and Longevity: Permanent; Manufacturers: A/D Fire Protection Systems Inc; Grace Construction Products; 3M Fire Protection Products; Nelson Firestop
- Products; Specified Technologies, Inc. PART 3 EXECUTION
- 3.01 PREPARATION AND INSTALLATION
- Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter which may affect bond of firestopping material. Install materials in manner described in fire test report and in accordance with manufacturer's instructions.
- C. Install labeling required by code. 3.02 CLEANING AND PROTECTION
- Clean adjacent surfaces of firestopping materials. B. Protect adjacent surfaces from damage by material installation.

END OF SECTION

rt vertical ected	SECTION 211300 - FIRE-SUPPRESSION SPRINKLER SYSTEMS
at same	JEGITOR ZIJOU - FINE-JUFFNEDDIUR OFNIMLEN SIJIERD
ngers and	PART 1 GENERAL
reducers to	1.01 SECTION INCLUDES A. Wet-pipe sprinkler system; System design, installation, and certification.
s, and to zinc rich	PART 2 PRODUCTS
	2.01 SPRINKLER SYSTEM
pproval	A. Sprinkler System: Provide coverage for entire building unless noted otherwise on the Drawings.
pipe and tion	B. Occupancy: As required by NFPA hazard classifications or as indicated on the Drawings whichever is more stringent.
onents are	C. Water Supply: Determine volume and pressure from water flow test data. D. Interface system with building fire and smoke alarm system.
cessary e	E. Provide fire department connections in the location(s) indicated on the Drawings and as approved by the local authority.
-	2.02 SPRINKLERS
otective	A. All Sprinkler Fusible Links: Fusible solder link type or glass bulb type, temperature rated for specific area hazard.
pparatus.	B. Suspended Acoustical Ceiling Type: Semi-recessed pendant type with matching push on escutcheon plate; Finish: Chrome plated; Escutcheon Plate Finish: Chrome plated.
QUIPMENT	C. Hard Surface Ceiling Type: Recessed pendant type with flush cover plate; Finish: Brass, Chrome or Enamel; Cover and Escutcheon Plate Finish: Chrome or Enamel, color as selected from manufacturer's colors; Adjustment: 1/2" minimum.
	D. Exposed Area Type: Standard upright type; Finish: Brass. E. Sidewall Type: Semi-recessed horizontal sidewall type with matching push on escutcheon plate; Finish: Chrome plated or Enamel, color as selected from
ators;	manufacturer's standard colors; Escutcheon Plate Finish: Chrome plated. F. Guards: Finish to match sprinkler finish.
	2.03 PIPING SPECIALTIES A. Water Flow Switch: Vane type switch for mounting horizontal or vertical, with two contacts; rated 10 amp at 125 volt AC and 2.5 amp at 24 volt DC. B. Supervisory Switches: As required by NFPA and Local Authorities.
	PART 3 EXECUTION
steel	
1/8 inch	3.01 INSTALLATION A. Install in accordance with referenced NFPA design and installation standard.
70 mon	B. Install equipment in accordance with manufacturer's instructions.
on.	D. Provide approved backflow preventer assembly at sprinkler system water source
load	connection. G. Place pipe runs to minimize obstruction to other work.
	H. Place piping in concealed spaces above finished ceilings.
	I. Center sprinklers in two directions in ceiling tile and provide piping offsets as required.
	J. Center all sprinklers symmetrically with respect to all soffits, light fixtures, air diffusers and other ceiling features. Approval of the Architect and Engineer
ormal	at shop drawing review will be required for all sprinkler head layouts. Provide offsets and adjustments as required by the Architect/Engineer's review comments.
tors or rst three t; 10	K. Apply masking tape or paper cover to ensure concealed sprinklers, cover plates, and sprinkler escutcheons do not receive field paint finish. Remove after painting. Replace painted sprinklers.
ngers	L. Flush entire piping system of foreign matter.
atic m 1.0 inch	M. Install guards on sprinklers where exposed to damage. N. Hydrostatically test entire system.
	0. Require test be witnessed by Fire Marshal and authority having jurisdiction.
a atatic	3.02 INTERFACE WITH OTHER PRODUCTS
e static	A. Ensure required devices are installed and connected as required to fire alarm system.
	B. Verify that proper power supply is available prior to ordering equipment. Verify

proper voltage, phase and current rating of power supply and inform Engineer of any deviations prior to order, connection of equipment or start-up. Responsibility for verification of proper power supply voltage and any product returns or damage resulting from incorrect connections shall rest with this Contractor.

END OF SECTION

	REV DATE DESCRIPTION	PTION NAME		REGISTRATION SEA
	PROJECT NO: 230311			
	DRAWN BY: SEI			PROFESS
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