## PART 1 - GENERAL

<u>SUMMARY</u> REQUIREMENTS OF THIS SECTION APPLY TO DIVISION 22 SECTIONS FURNISH SERVICES. SKILLED AND COMMON LABOR. AND APPARATUS AND MATERIALS REQUIRED FOR THE COMPLETE INSTALLATION AS SHOWN AND WITHIN THE INTENT OF THE DRAWINGS AND THESE SPECIFICATIONS. AND IN ACCORDANCE WITH REQUISITE LOCAL

- PLUMBING CODES. THE FOLLOWING REQUIREMENTS ARE MINIMUM: PREPARE COORDINATION DRAWINGS, SHOP DRAWINGS, SUBMITTALS, AS-BUILT DRAWINGS, AND OPERATING AND
- MAINTENANCE INSTRUCTIONS. DETERMINE ITEMS AND QUANTITIES REQUIRED.
- PROVIDE COMPLETE, CONTINUOUS, OPERATIONAL, AND 1.2 FUNCTIONING SYSTEMS. FULLY COORDINATE WITH WORK OF OTHER SECTIONS. INCLUDING FIELD VERIFICATION OF ELEVATIONS, DIMENSIONS,
- CLEARANCE, AND ACCESS REPAIR OF ALL DAMAGE DONE TO PREMISES AS A RESULT OF THIS INSTALLATION AND REMOVAL OF DEBRIS LEFT BY THOSE
- ENGAGED IN THIS INSTALLATION. RIGGING, HOISTING, TRANSPORTATION, AND ASSOCIATED WORK NECESSARY FOR PLACEMENT OF EQUIPMENT IN THE
- DISASSEMBLY AND RE-ASSEMBLY OF EQUIPMENT FURNISHED UNDER THIS SECTION, SHOULD THIS BE REQUIRED IN ORDER TO MOVE EQUIPMENT INTO FINAL LOCATION SHOWN ON THE
- TEMPORARY SCAFFOLDING NECESSARY FOR PERFORMANCE OF THE WORK IN THIS DIVISION.
- 9. CUTTING AND CORE DRILLING REQUIRED 10. PIPE SLEEVES FOR ALL HOLES IN WALLS, FLOORS, AND CEILINGS, AND CUTTING OF FLOOR SLABS AND SLABS ON
- 11. WATERPROOFING WHERE NECESSARY FOR INSTALLATION UNDER THIS DIVISION.
- 12. COOPERATION WITH AND ASSISTANCE TO THE BUILDING MANAGEMENT SYSTEM CONTRACTOR AS REQUIRED TO PROVIDE A COMPLETE AND FUNCTIONAL PLUMBING SYSTEM.
- 13. COUNTERFLASHING OF ROOF PENETRATIONS FOR WORK OF DIVISION 22. 14. SIZES, AND LOCATIONS FOR INSTALLATION OF ANY CURBS AND
- PADS FOR WORK OF DIVISION 22 TEMPORARY AND PERMANENT STANDS AND SUPPORTS FOR EQUIPMENT REQUIRING THEM INCLUDING VIBRATION
- 16. TEMPORARY PROTECTION OF EXISTING INSTALLATION.
- 17. PIPING, VALVES AND EQUIPMENT IDENTIFICATION. 18. FIRESTOPPING OF PENETRATIONS OF PIPING, THROUGH WALLS, FLOORS, AND CEILING ASSEMBLIES.
- 19. TEMPORARY UTILITIES AS REQUIRED TO INSTALL WORK ON DIVISION 22 INCLUDING LIGHTING, WATER, GAS, ELECTRICITY,
- 20. FEES, PERMITS, INSPECTIONS, TAXES, AND APPROACH FROM AGENCIES THAT HAVE JURISDICTION OVER INSTALLATION OF

a. CLEARANCES FOR INSTALLING AND MAINTAINING

MAINTENANCE.

AND BASES.

f. VALVE STEM MOVEMENT.

STRUCTURAL DRAWINGS.

RECORD DOCUMENT REQUIREMENTS.

CLEARANCES FOR SERVICING AND MAINTAINING

c. EQUIPMENT CONNECTIONS AND SUPPORT DETAILS.

SIZES AND LOCATIONS OF NEW AND EXISTING

SIZES AND LOCATIONS OF NEW OPENINGS. EITHER

MAINTAIN ONE COMPLETE SET OF COMPOSITE COORDINATION

SLEEVED, CUT, OR CORE-DRILLED, IN NEW CONCRETE

CONSTRUCTION UNLESS SPECIFICALLY SHOWN ON THE

EQUIPMENT SUPPORT CURBS ON ROOF.

DRAWINGS AT THE JOB SITE. PERIODICALLY UPDATE

SUBMIT FINAL COORDINATION DRAWINGS AS PART OF

AS WORK PROGRESSES AND FOR DURATION OF CONTRACT, MAINTAIN

COMPLETE AND SEPARATE SET OF PRINTS OF CONTRACT DRAWINGS

AT JOB SITE AT ALL TIMES. RECORD WORK COMPLETED AND ALL

CHANGES FROM ORIGINAL CONTRACT DRAWINGS. SUCH CHANGES

SHALL INCLUDE, BUT NOT BE LIMITED TO, THOSE RESULTING FROM

INCLUDE ACTUAL LOCATION OF EXISTING UTILITIES IF THEY DIFFER

FROM DESIGN DOCUMENTS. AT COMPLETION OF PROJECT

CONTRACTOR SHALL INCORPORATE ALL CHANGES INTO RECORD AS-

BUILT DRAWINGS IN ELECTRONIC FORMAT AND SUBMIT FOR REVIEW

A. COMPLY WITH DIVISION 01 SECTION "GENERAL REQUIREMENTS - SPECIFIED ITEMS AND SUBSTITUTES."

REI'S FIELD CONDITIONS AND MODIFICATIONS AND ADDITIONS

DRAWINGS BASED ON ACTUAL FIELD CONDITIONS.

d. FIRE-RATED WALL AND FLOOR PENETRATIONS.

EQUIPMENT, INCLUDING SPECIFIC CEILING TILE OR

EQUIPMENT DISASSEMBLY REQUIRED FOR PERIODIC

SIZES AND LOCATION OF REQUIRED CONCRETE PADS

CEILING ACCESS PANEL ACCESS AND SPACE FOR

- DIVISION 22. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION. PERFORM WORK IN ACCORDANCE WITH ALL LEGAL REQUIREMENTS AND WITH SPECIFICATIONS. DRAWINGS, ADDENDA AND CHANGE ORDERS, ALL OF WHICH
- ARE PART OF CONTRACT DOCUMENTS. 21. POTABLE WATER DISINFECTION REPORT
- 22. PARTICIPATION IN AND COORDINATION WITH THE COMMISSIONING PROCESS.

#### WARRANTY <u>DEFINITIONS</u>

- A. "PROVIDE" MEANS "FURNISH AND INSTALL." "FURNISH" MEANS "TO PURCHASE AND DELIVER TO THE PROJECT SITE
- COMPLETE WITH EVERY NECESSARY APPURTENANCE AND SUPPORT," "INSTALL" MEANS "TO UNLOAD AT THE DELIVERY POINT AT THE SITE AND PERFORM EVERY OPERATION NECESSARY TO ESTABLISH SECURE MOUNTING AND CORRECT OPERATION AT THE PROPER LOCATION IN THE PROJECT.
- 'POS' MEANS PROVIDED UNDER OTHER SPECIFICATION SECTION. "ARCHITECT" MEANS THE "PRIME DESIGN CONSULTANT." IF R.G. VANDERWEIL ENGINEERS, LLP IS NOT THE PRIME DESIGN
- CONSULTANT, THE ARCHITECT MAY AUTHORIZE R.G. VANDERWEIL ENGINEERS, LLP TO ACT ON THE ARCHITECT'S BEHALF IN MATTERS CONCERNING THE ALL SECTIONS OF SPECIFICATIONS. CONTRACT DOCUMENTS
- REFER TO ARCHITECTURAL, FIRE PROTECTION, PLUMBING, HVAC. ELECTRICAL, STRUCTURAL, TELE/DATA AND ALL OTHER DRAWINGS AND OTHER SECTIONS THAT INDICATE TYPES OF CONSTRUCTION IN WHICH WORK SHALL BE INSTALLED AND WORK OF OTHER TRADES
- WITH WHICH WORK OF THIS SECTION MUST BE COORDINATED EXCEPT WHERE MODIFIED BY A SPECIFIC NOTATION TO THE CONTRARY, IT SHALL BE UNDERSTOOD THAT THE INDICATION AND/OR DESCRIPTION OF AN ITEM. IN THE DRAWINGS OR SPECIFICATIONS OR BOTH, CARRIES WITH IT THE INSTRUCTION TO FURNISH AND INSTALL THE ITEM. REGARDLESS OF WHETHER OR NOT THIS INSTRUCTION IS
- EXPLICITLY STATED AS PART OF THE INDICATION OR DESCRIPTION. ITEMS REFERRED TO IN SINGULAR NUMBER IN CONTRACT DOCUMENTS SHALL BE PROVIDED IN QUANTITIES NECESSARY TO COMPLETE WORK. DATA THAT MAY BE FURNISHED ELECTRONICALLY (ON COMPACT DISK
- (CD), ELECTRONIC MAIL, OR OTHERWISE) IS DIAGRAMMATIC. ELECTRONICALLY FURNISHED INFORMATION IS SUBJECT TO THE SAME LIMITATION OF PRECISION DESCRIBED ABOVE. IF FURNISHED. ELECTRONIC DATA IS FOR CONVENIENCE AND GENERALIZED REFERENCE, AND SHALL NOT SUBSTITUTE FOR SEALED OR STAMPED CONSTRUCTION DOCUMENTS.
- ELECTRONIC CAD FILES ELECTRONIC CAD FILES FOR PLUMBING DRAWINGS WILL BE FURNISHED BY ENGINEER AT CONTRACTOR'S REQUEST. ENGINEER WILL FORWARD THE 'RELEASE OF LIABILITY' FORM TO CONTRACTOR

FOR COMPLETION/SIGNATURE. CONTRACTOR TO RETURN FORM TO

ENGINEER PRIOR TO ENGINEER'S ISSUANCE OF ELECTRONIC CAD

B. THE INSTALLING CONTRACTOR SHALL CERTIFY RECORD DRAWINGS

C. AT COMPLETION OF WORK, PREPARE A COMPLETE SET OF RECORD

RESPONSIBILITY OF THE CONTRACTOR.

D. AFTER APPROVAL, DELIVER THE FOLLOWING:

FINAL EQUIPMENT INSTALLATION.

APPROPRIATE SUBCONTRACTORS.

ARCHITECT FOR APPROVAL.

FOR ACCURACY. THE ARCHITECT/ENGINEER WILL NOT CERTIFY THE

ACCURACY OF THE RECORD DRAWINGS - THIS IS THE SOLE

DRAWINGS IN ELECTRONIC FORMAT. DELIVER THESE TO THE

DRAWINGS SHALL SHOW RECORD CONDITION OF DETAILS.

ORIGINAL (NOT SCANNED) ELECTRONIC VERSION OF

DRAWINGS IN APPROVED FORMAT, NOTATED AS "RECORD

DRAWINGS," AND CONFORMED TO INCORPORATE ALL

CHANGES TO THE ORIGINAL DESIGN NOTED ABOVE. THE

IDENTIFIED. DELIVER ONE COPY EACH TO THE GENERAL

CHANGES SHALL BE CLOUDED AND APPROPRIATELY

DELIVER TO THE OWNER ONE SET OF BLACKLINE RECORD

ELECTRONIC VERSION OF CONTRACT SPECIFICATIONS WITH

PROVIDE ELECTRONICALLY FORMATTED (SEARCHABLE PDF)

FILES OF MANUFACTURER'S OPERATING AND MAINTENANCE

INSTRUCTIONS FOR EACH PIECE OF EQUIPMENT AND SYSTEM.

COMPILE RESPECTIVE WORK OF EACH DISCIPLINE INTO A

SINGLE FILE FOR EACH DISCIPLINE. PROVIDE, WITHIN THE

ELECTRONIC FILE, TABLE OF CONTENTS/INDEX LISTING.

PROVIDE VALVE DIRECTORY FOR ALL ISOLATION VALVES

A. IN ADDITION TO MATERIAL AND EQUIPMENT SPECIFIED, PROVIDE INCIDENTAL MATERIALS TO EFFECT A COMPLETE INSTALLATION. SUCH INCIDENTAL MATERIALS INCLUDE SOLDERS, TAPES, CAULKING, MASTICS, GASKETS AND SIMILAR ITEMS.

ADDENDA INCORPORATED, WILL BE PROVIDED BY

DRAWINGS STAMPED "RECORD" AND SIGNED BY THE

CONTRACTOR, OWNER, ARCHITECT, AND ENGINEER.

VANDERWEIL AS THE RECORD SPECIFICATIONS.

BULLETINS, MANUALS, AND OPERATING INSTRUCTIONS - ELECTRONIC

SECTIONS, RISER DIAGRAMS, CONTROL CHANGES AND

CORRECTIONS TO SCHEDULES. SCHEDULES SHALL SHOW ACTUAL MANUFACTURER AND MAKE AND MODEL NUMBERS OF

1.5 <u>DISCREPANCIES IN DOCUMENTS</u>

- WHERE DRAWINGS OR SPECIFICATIONS CONFLICT OR ARE UNCLEAR. SUBMIT CLARIFICATION REQUEST IN WRITING BEFORE AWARD OF CONTRACT. OTHERWISE, ARCHITECT'S INTERPRETATION OF CONTRACT DOCUMENTS SHALL BE FINAL, AND NO ADDITIONAL COMPENSATION SHALL BE PERMITTED DUE TO DISCREPANCIES OR UN-
- WHERE DRAWINGS OR SPECIFICATIONS DO NOT COINCIDE WITH MANUFACTURERS' RECOMMENDATIONS OR WITH APPLICABLE CODES AND STANDARDS, SUBMIT CLARIFICATION REQUEST IN WRITING BEFORE INSTALLATION. OTHERWISE, MAKE CHANGES IN INSTALLED WORK REQUIRED FOR COMPLIANCE WITH MANUFACTURER

CLARITIES THUS RESOLVED.

IT IS THE REQUIREMENT OF THESE CONTRACT DOCUMENTS TO REQUIRE PROVISION OF SYSTEMS AND COMPONENTS THAT ARE FULLY COMPLETE AND OPERATIONAL AND FULLY SUITABLE FOR THE INTENDED USE. THERE MAY BE SITUATIONS IN THE DOCUMENTS WHERE INSUFFICIENT INFORMATION EXISTS TO PRECISELY DESCRIBE A CERTAIN COMPONENT OR SUBSYSTEM, OR THE ROUTING OF A COMPONENT OR ITS COORDINATION WITH OTHER BUILDING ELEMENTS. IN THESE CASES, WHERE NOTIFICATION REQUIRED BY PARAGRAPH (A) ABOVE HAS NOT BEEN SUBMITTED. PROVIDE THE SPECIFIC COMPONENT OR SUBSYSTEM WITH ALL PARTS NECESSARY FOR THE INTENDED USE FULLY COMPLETE AND OPERATIONAL AND INSTALLED IN WORKMANLIKE MANNER EITHER CONCEALED OR

INSTRUCTIONS OR CODES AND STANDARDS WITHIN CONTRACT PRICE.

- EXPOSED IN ACCORDANCE WITH THE DESIGN INTENT. IN CASES COVERED BY PARAGRAPH (C) ABOVE. WHERE THE CONTRACTOR BELIEVES ENGINEERING GUIDANCE IS NEEDED THE CONTRACTOR SHALL. SUBMIT A SKETCH IDENTIFYING PROPOSED SOLUTION, ARCHITECT SHALL REVIEW, NOTE IF NECESSARY, AND APPROVE THE SKETCH.
- WHERE DISCREPANCIES EXIST BETWEEN THE MECHANICAL, PLUMBING, FIRE PROTECTION, ELECTRICAL AND TELE/DATA DRAWINGS IN REGARDS TO WHAT TRADE OWNS EQUIPMENT SUCH AS DISCONNECTS, STARTERS, ETC., SUBMIT RFI TO THE ARCHITECT
- REGARDING SUCH DISCREPANCY. MODIFICATIONS IN LAYOUT TO OBTAIN THE INTENDED AESTHETICS IN SPACES USED BY BUILDING OCCUPANTS, PRIOR TO INSTALLATION OF VISIBLE MATERIAL AND EQUIPMENT (INCLUDING ACCESS PANELS), REVIEW ARCHITECTURAL

DRAWINGS FOR DESIRED LOCATIONS AND WHERE NOT DEFINITIVELY

- INDICATED, REQUEST INFORMATION FROM ARCHITECT. CHECK CONTRACT DRAWINGS, AS WELL AS SHOP DRAWINGS, TO VERIFY AND COORDINATE SPACES IN WHICH WORK OF THIS SECTION
- MAINTAIN MAXIMUM HEADROOM AT ALL LOCATIONS. ALL PIPING, DUCT, CONDUIT, AND ASSOCIATED COMPONENTS TO BE AS TIGHT TO UNDERSIDE OF STRUCTURE AS POSSIBLE. MAKE REASONABLE MODIFICATIONS IN LAYOUT AND COMPONENTS
- NEEDED TO PREVENT CONFLICT WITH WORK OF OTHER TRADES. SYSTEMS SHALL BE RUN IN A RECTILINEAR FASHION.
- REQUEST FOR INFORMATION (RFI'S) WHERE AN RFI IS A REQUEST TO RESOLVE A CONFLICT OR AN UN-CLARITY, OR A REQUEST FOR ADDITIONAL DETAIL, CONTRACTOR'S RFI SHALL INCLUDED SKETCH OR EQUIVALENT DESCRIPTION OF CONTRACTOR'S PROPOSED SOLUTION, IN ACCORDANCE WITH PARAGRAPHS "DISCREPANCIES IN DOCUMENTS; AND "MODIFICATIONS IN LAYOUT" ABOVE.
- TO EXPEDITE THE PROCESSING OF RFI'S, THE CONTRACTOR SHALL SUBMIT AN ELECTRONIC CORRESPONDENCE WITH THE FOLLOWING

RECORD DOCUMENTS: UPON COMPLETION OF THE WORK COVERED

BY THIS CONTRACT. INCLUDE CHANGES INSTALLED UNDER THIS

CONTRACT WHICH ARE NOT IN ACCORDANCE WITH THE CONTRACT

ON THE CONTRACT DRAWINGS. IN ADDITION, SUBMIT FINAL COPIES OF

INTENT OF ARCHITECT'S SUBMITTAL REVIEW IS TO CHECK FOR

CAPACITY, RATING, AND CERTAIN CONSTRUCTION FEATURES.

CONTRACTOR SHALL ENSURE THAT WORK MEETS REQUIREMENTS OF

CONTRACT DOCUMENTS REGARDING INFORMATION THAT PERTAINS

TO FABRICATION PROCESSES OR MEANS, METHODS, TECHNIQUES,

SEQUENCES AND PROCEDURES OF CONSTRUCTION; AND FOR

COORDINATION OF WORK OF THIS AND OTHER SECTIONS. WORK SHALL COMPLY WITH SUBMITTALS MARKED "REVIEWED" TO EXTENT THAT

THEY AGREE WITH CONTRACT DOCUMENTS. SUBMITTAL REVIEW SHALL

NOT DIMINISH RESPONSIBILITY LINDER THIS CONTRACT FOR

DIMENSIONAL COORDINATION, QUANTITIES, INSTALLATION, WIRING,

SUPPORTS AND ACCESS FOR SERVICE NOR SHOP DRAWING ERRORS

OR DEVIATIONS FROM REQUIREMENTS OF CONTRACT DOCUMENTS.

NOTING OF SOME ERRORS WHILE OVERLOOKING OTHERS WILL NOT

EXCUSE PROCEEDING IN ERROR. CONTRACT DOCUMENTS

SCHEDULE: INCORPORATE SHOP DRAWING REVIEW PERIOD INTO

CONSTRUCTION SCHEDULE SO THAT WORK IS NOT DELAYED.

CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR DELAYS

CAUSED BY NOT INCORPORATING THE FOLLOWING SHOP DRAWING REVIEW TIME REQUIREMENTS INTO HIS PROJECT SCHEDULE. WORKING

DAYS LISTED REFERENCE THE TIME IN THE ENGINEER'S OFFICE. IT

DOES NOT INCLUDE TRANSMITTAL OR REVIEW TIME OF OTHERS.

PREPARE A FORMAL TRAINING PROGRAM FOR OPERATING STAFF

PRIOR TO THE SCHEDULED START-UP DATE. THE PROGRAM WILL

PLUMBING SYSTEMS. COORDINATE THE TRAINING PROGRAM WITH

THE PRODUCTION OF THE OPERATION AND MAINTENANCE MANUALS.

CONSIST OF THE DESIGN, START-UP, AND OPERATION OF THE

PROVIDE INDEXED BINDER AND TRAINING MATERIALS TO EACH

REQUIREMENTS ARE NOT LIMITED, WAIVED NOR SUPERSEDED BY

DRAWINGS. NOTE THAT THESE AS-BUILT DRAWINGS ARE TO BE BASED

THE SHOP DRAWINGS AND COORDINATION DRAWINGS.

RESPONSIBILITY

START-UP TRAINING

PARTICIPANT.

INFORMATION CONTAINED WITHIN, AT THE MINIMUM, AS WELL AS THE CONTRACTOR'S PROPOSED SOLUTION, WITH SKETCHES AS REQUIRED:

- PROJECT NAME AND RFI NUMBER DATE OF RFI SUBMISSION / DATE OF REQUIRED RFI RESPONSE (3-DAY MINIMUM) NAME OF CONTRACTING COMPANY SUBMITTING RFI AND
- NAME OF PERSON SUBMITTING RFI SPECIFICATION SECTION CITED AND DRAWING NUMBER
- REFERENCED CONTRACTOR EMAIL ADDRESS AND FAX NUMBER (FOR
- RESPONSE) CONTRACTOR FIELD QUESTION (PROVIDE A NARRATIVE WITH
- CONTRACTOR PROPOSED SOLUTION (PROVIDE A NARRATIVE WITH SUPPLEMENTAL SKETCH)
- 8. RESPONDENT NARRATIVE BOX (FOR ENGINEER'S RESPONSE) CODES, STANDARDS, AUTHORITIES AND PERMITS
- PERFORM WORK IN ACCORDANCE WITH RULES, REGULATIONS, STANDARDS, CODES, ORDINANCES, AND LAWS OF LOCAL, STATE, AND FEDERAL GOVERNMENTS, AND OTHER AUTHORITIES THAT HAVE LEGAL JURISDICTION OVER THE SITE. PRIOR TO WORK COMMENCEMENT OF WORK, NOTIFY STATE AND

SUPPLEMENTAL SKETCH)

NOTIFICATIONS FOR CONSTRUCTION, OPERATION AND/OR DEMOLITION. MATERIALS AND EQUIPMENT SHALL BE MANUFACTURED. INSTALLED AND TESTED AS SPECIFIED IN LATEST EDITIONS OF APPLICABLE

APPLICABLE AUTHORITIES AND SUBMIT ALL OF THE APPLICABLE

PUBLICATIONS, STANDARDS, RULINGS AND DETERMINATIONS

1.12 GUARANTEE

A. A. GUARANTEE THE WORK OF THIS SECTION IN WRITING FOR ONE YEAR FOLLOWING THE DATE OF SUBSTANTIAL COMPLETION. IF THE EQUIPMENT IS USED FOR VENTILATION, TEMPORARY HEAT, OR OTHER USE PRIOR TO INITIAL BENEFICIAL OCCUPANCY BY THE OWNER. THE BID PRICE SHALL INCLUDE AN EXTENDED PERIOD OF WARRANTY COVERING THE ONE-YEAR OF BENEFICIAL OCCUPANCY BY THE OWNER. THE GUARANTEE SHALL REPAIR OR REPLACE DEFECTIVE MATERIALS. EQUIPMENT. WORKMANSHIP AND INSTALLATION THAT DEVELOP WITHIN THIS PERIOD, PROMPTLY AND TO ARCHITECT'S SATISFACTION AND CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEE WITHIN CONTRACT PRICE.

- SUBMIT UNDER PROVISIONS OF DIVISION 01 SECTIONS "GENERAL REQUIREMENTS", AND DIVISION 01 SECTION "SPECIAL PROCEDURES."
- PRODUCT DATA: SUBMIT MANUFACTURER'S TECHNICAL PRODUCT SPECIFICATION SHEETS FOR EACH SYSTEM COMPONENT AND DEVICE TO BE PROVIDED THAT INCLUDES DATA NEEDED TO PROVE COMPLIANCE WITH THIS SPECIFICATION. CLEARLY INDICATE THE EXACT MODEL OF EACH COMPONENT TO BE PROVIDED. SHOP DRAWINGS SHALL BE DRAWN TO A SCALE OF 1/4 INCH = 1 FOOT (1:25) OR LARGER. AND SHALL INCLUDE COMPLETE DIMENSIONS. LOCATIONS, ELEVATIONS, AND CLEARANCES FOR PLUMBING, PIPING, DUCTWORK, EQUIPMENT, AND VALVE NUMBERS. IDENTIFY **EQUIPMENT USING DESIGNATIONS SHOWN ON THE CONTRACT** DOCUMENTS

- ALL SHOP DRAWINGS SHALL CLEARLY CALL OUT IN BOLD LETTERS AND CLOUD SYMBOLS DEVIATIONS FROM THE SPECIFICATIONS AND CONTRACT DOCUMENTS, NO MATTER HOW MINOR.
- SHOP DRAWINGS SHALL BE SUBMITTED WITH A SEPARATE COVER SHEET COMPLETED FOR EACH PRODUCT, RATHER THAN ONE COVER SHEET FOR MULTIPLE PRODUCTS, WHETHER OR NOT SUPPLIED BY ONE MANUFACTURER OR VENDOR.

		SHOP DRAWING CO	VER SHEE	T				
PROJECT:		CONTRA		CTOR:				
DIVISION NO.:		SECTION		NO.:				
DESCRIPTION:			•		<u> </u>			
CONTR	RACT DRAWING RE	EFERENCE NO:						
EQUIP	MENT TAG:							
SUBMI	SSION (CIRCLE OF	NE): FIRST, SECOND, THIRE	, FOURTH					
DATE:								
INFORMATION AND CHECKLIST								
1.	Contractor's Log #ID							
2.	Name, address, and phone number of supplier.							
3.	Are all specified or scheduled items included and exactly match scheduled/specified items?				No			
4.	Is this item a substitution?				No			
5.	Are deviations clearly identified?				No			
6.	Does equipment fit space shown on construction documents, coordination drawings, and actual field conditions?				No			
7.	Has support, erection, weights, and installation been coordinated with all trades?			Yes	No			
8.	Does the proposed installation void warranties and/or violate UL or code requirements?			Yes	No			
9.	Does this material/equipment add expense to other trades or project costs?			Yes	No			
10.		s equipment require interface with other trades? List sions and specifics requiring coordination?			No			
11.	Is control interface	ace coordinated?			No			
12.	List electrical characteristics (Voltage/Phase/Hz/Amps)							

SUBMITTAL PROCEDURES, CONTENTS, AND FORMAT

 CONSTRUCTION MANAGER OR GENERAL CONTRACTOR SHALL FIRST REVIEW SUBMITTAL PACKAGES FOR COMPLIANCE WITH CONTRACT DOCUMENTS. UPON REVIEW BY THE G.C. THE SUBMITTALS WILL THEN BE SUBMITTED FOR REVIEW BY ARCHITECT. REVIEW BY CONSTRUCTION MANAGER OF CONTRACTOR IS INTENDED TO ENSURE THAT THE SUBMITTALS INCLUDE THE FOREGOING COVER SHEET, ARE IN THE CORRECT ELECTRONIC FORMAT AS SPECIFIED BELOW. AND THAT THE DEVICES/EQUIPMENT/ITEMS FIT INTO THE SPACE PROVIDED. ALSO, THAT THE SUBMITTAL CONTAINS ADEQUATE INFORMATION TO VERIFY SPECIFICATION REQUIREMENTS AS WELL AS THE PERFORMANCE AND DIMENSIONAL REQUIREMENTS SHOWN ON THE DRAWINGS. IF A SHOP DRAWING IS RETURNED WITH A SUBMITTAL STATUS OF SHOP DRAWING WAS NOT ADEQUATELY REVIEWED BY THE CONTRACTOR. SUBSEQUENT SUBMITTALS SHALL INCLUDE A WRITTEN RESPONSE TO PREVIOUS ITEMS.

- SUBMITTALS WILL BE PROVIDED TO ENGINEER IN ELECTRONIC (PDF) FORMAT. A SINGLE PDF FILE SHALL BE SUBMITTED FOR EACH RESPECTIVE SUBMITTAL. THE PDF FILE WILL BE FORMATTED IN THE FOLLOWING WAY:
- a. FIRST PAGE: CONTRACTOR TRANSMITTAL
- SECOND PAGE: SHOP DRAWING COVER SHEET (ILLUSTRATED ABOVE) FILLED OUT/COMPLETED BY SUBMITTING CONTRACTOR.
- c. SUBSEQUENT PAGES: EQUIPMENT/DEVICE SUBMITTAL INFORMATION, DIAGRAMS, MANUFACTURER
- SUBMITTALS WILL BE 'EMAILED' TO THE MECHANICAL/ELECTRICAL TEAM VIA THE ARCHITECT:

#### 1.11 COORDINATION DRAWINGS: A. A SINGLE SET OF COORDINATION DRAWINGS SHALL BE MUTUALLY

HAVE BEEN REVIEWED.

REQUIREMENTS, ETC.

- PREPARED BY ALL MECHANICAL, PLUMBING, FP AND ELECTRICAL B. THE INITIATION OF THESE DRAWINGS BEGINS WITH THE SHEET METAL
- SUBCONTRACTOR. C. FABRICATION SHALL NOT START UNTIL COPIES OF COMPLETED COORDINATION DRAWINGS ARE RECEIVED BY THE ARCHITECT AND
- REVIEW BY ENGINEER OF COORDINATION DRAWINGS IS LIMITED TO CONFIRMING THAT REQUIREMENTS FOR COORDINATION AND PREPARATION OF PLANS HAVE BEEN COMPLIED WITH BY THE CONSTRUCTION MANAGER OR GENERAL CONTRACTOR AND SHALL NOT DIMINISH RESPONSIBILITY UNDER THIS CONTRACT FOR FINAL COORDINATION OF INSTALLATION AND MAINTENANCE CLEARANCES OF ALL SYSTEMS AND EQUIPMENT WITH ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL AND OTHER RELATED WORK.
- E. HOLD REGULAR COORDINATION SESSIONS WITH TRADES UNTIL COORDINATION ISSUES ARE RESOLVED.
- PREPARE SEPARATE COMPOSITE COORDINATION DRAWINGS TO A SCALE OF 1/4 INCH = 1 FOOT (1:25) OR LARGER. SHOWING WORK OF DIVISIONS TO DEMONSTRATE COORDINATION CLEARANCE ACCESS ETC. BETWEEN DUCTWORK, EQUIPMENT, TEMPERATURE CONTROLS, CABLE TRAYS. CONDUITS. LIGHT FIXTURES. PIPING. PLUMBING STRUCTURAL ELEMENTS, ARCHITECTURAL ELEMENTS, ETC. THESE DRAWINGS ARE TO BE THE BASIS FOR THE DETAILED SHOP DRAWINGS AND NEED NOT BE SUBMITTED, BUT ARE TO BE AVAILABLE FOR REVIEW UPON REQUEST.
- PREPARE FLOOR PLANS, ELEVATIONS, AND DETAILS TO INDICATE PENETRATIONS IN FLOORS, WALLS, AND CEILINGS AND THEIR RELATIONSHIP TO OTHER PENETRATIONS AND INSTALLATIONS.
- EACH TRADE IS TO ADJUST THEIR SHOP DRAWINGS BASED ON THE OUTCOME OF COORDINATION SESSIONS.
- 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. INDICATE SCHEDULING, SEQUENCING, MOVEMENT, AND
- POSITIONING OF LARGE EQUIPMENT INTO THE BUILDING DURING CONSTRUCTION.
- INDICATE THE PROPOSED LOCATIONS, OF PIPING, DUCTWORK, EQUIPMENT, AND MATERIALS. INCLUDE THE FOLLOWING:

**FABRICATION OR JOINTING METHOD VALVES** WATER PIPING SERVICES MATERIAL ASTM SOLDER FILLER MATERIAL SHALL BE LEAD FREE TO COMPLY WITH THE FEDERAL MANDATE OF POTABLE HOT, COLD, HWR DOMESTIC TYPE L SEAMLESS COPPER 2 " AND SMALLER - ALL BRONZE LEAD FREE, 2-PIECE, FULL PORT, 316STST BALL AND STEM, PTFE SEATS, PRESS END TUBING, CONFORMING TO ASTM | 2014. HW CONNECTIONS. 600 PSIG WOG. VIEGA ASTM B-813 LIQUID OR PASTE FLUX. SOLDERING PROCEDURES SHALL COMPLY WITH ASTM B-828. HWR PRESS FITTINGS 1/2" THROUGH 4" SHALL BE JOINED USING CERTIFIED VIEGA PROPRESS TOOLS. 2-1/2" THROUGH 4". INSTALLERS SHALL BE TRAINED AND CERTIFIED BY MANUFACTURER'S REPRESENTATIVE. 1. JOINTS MADE BETWEEN DISSIMILAR MATERIALS SHALL BE JOINED WITH PROPER ADAPTERS AND TRANSITION FITTINGS ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

"REJECTED" OR "REVISE AND RESUBMIT", IT INDICATES THE

DRAINAGE PIPING SERVICES	CODE	PIPE MATERIAL	FABRICATION OR JOINTING METHOD
INDIRECT WASTE	IW	SCHEDULE 40 GALVANIZED STEEL TYPE L COPPER	THREAD SOLDER
GREASE WASTE	GW	EPOXY COATED CAST IRON NO-HUB PIPE CONFORMING TO CISPI 301, CHARLOTTE EDGE HP.	HEAVY DUTY CISPI APPROVED STAINLESS STEEL NO-HUB PATTERN, TO SUIT PIPE MATERIAL. COUPLING, NEOPRENE GASKET, STAINLESS STEEL 4-BAND CLAMPS SHALL BE HUSKY SD4000
SANITARY VENT	V	CAST IRON NO-HUB PIPE CONFORMING TO CISPI 301	HEAVY DUTY CISPI APPROVED STAINLESS STEEL NO-HUB PATTERN, TO SUIT PIPE MATERIAL. COUPLING, NEOPRENE GASKET, STAINLESS STEEL 4-BAND CLAMPS SHALL BE HUSKY SD4000

# PIPE IDENTIFICATION

- PROVIDE COLOR-CODED PIPE IDENTIFICATION MARKERS AT INTERVALS NO LONGER THAN 20'-0". PIPE MARKERS SHALL BE SNAP-ON LAMINATED PLASTIC PROTECTED BY CLEAR ACRYLIC COATING. PIPE MARKERS SHALL BE APPLIED AFTER ARCHITECTURAL PAINTING
- WHERE SUCH IS REQUIRED. PROVIDE ARROW MARKER WITH EACH PIPE IDENTIFICATION MARKER TO INDICATE DIRECTION OF FLOW. IF FLOW CAN BE IN EITHER
- DIRECTION, USE DOUBLE-HEADED ARROW MARKER. PROVIDE PVC JACKETS COVERS OVER ASJ IN ALL FOOD SERVICE AREAS. IN ADDITION, PROVIDE PVC COVERS ON ALL EXPOSED PIPING LOWER THAN 8 FEET THROUGHOUT
- VALVE TAGS: UPON COMPLETION OF WORK, ATTACH ENGRAVED LAMINATED PLASTIC TAGS TO ALL VALVES. TAGS SHALL HAVE BLACK CHARACTERS ON WHITE FACE. CONSECUTIVELY NUMBERED AND PREFIXED WITH LETTER P FOR GENERAL VALVES. TAGS SHALL BE AT LEAST 1" DIAMETER WITH NUMERALS AT LEAST 3/8" HIGH AND ATTACHED BY AN "S" HOOK. WHERE VALVES ARE INSTALLED IN AN EXISTING BUILDING,
- SYNCHRONIZE AND CONTINUE VALVE TAG NUMBERING SYSTEM. COORDINATE WITH OWNER. <u>INSULATION</u> INSULATE ALL HOT, COLD, AND RE-CIRCULATING PIPING. HOT, COLD,
- AND RE-CIRCULATING PIPING WITHIN FOOD SERVICE AREAS SHALL BE FLEXIBLE ELASTOMERIC INSULATION CONFORMING TO ASTM C 534 TYPE 1. MATERIALS SHALL HAVE A MAXIMUM THERMAL CONDUCTIVITY OF 0.27 BTU-IN./H-FT2-DEG F AT A 75 DEG F MEAN TEMPERATURE WHEN TESTED IN ACCORDANCE WITH ASTM E84.
- INSULATION, JACKETS AND ADHESIVES SHALL BE FLAME RETARDANT AND SHALL HAVE ASTM E-84 FIRE HAZARD RATINGS OF 25 FLAME SPREAD, 50 SMOKE DEVELOPED AND 50 FUEL CONTRIBUTED. ALL INSULATED HOT, COLD, AND RE-CIRCULATED PIPING SHALL BE
- PROVIDED WITH ALL SERVICE JACKETS. ALL INSULATED HOT, COLD,

- AND RE-CIRCULATED PIPING BELOW CEILINGS IN FOOD SERVICE AREAS SHALL BE PROVIDED WITH PVC JACKETS. COLD WATER PIPING INSULATION SHALL BE 1/2" THICKNESS. HOT AND RE-CIRCULATED WATER PIPING INSULATION SHALL BE 1" FOR PIPING LESS THAN 1-1/2".
- HANGERS, ANCHORS, CLAMPS AND INSERTS PROVIDE ADJUSTABLE CLEVIS HANGERS FOR PIPING 4" & LARGER, AND
- CAST BRASS SPLIT-RING HINGED HANGERS FOR SMALLER PIPING. SUPPORT PIPING FROM BUILDING STRUCTURE TO MAINTAIN REQUIRED GRADE AND PITCH OF PIPE LINES, PREVENT VIBRATION, SECURE PIPING IN PLACE. SECURE HANGERS TO INSERTS WHERE PRACTICAL. HANGER RODS SHALL HAVE MACHINE THREADS.

HANGER RODS SHALL BE CONNECTED TO BEAM CLAMP, UL-APPROVED

- CONCRETE INSERTS OR PHILLIPS OR APPROVED EQUAL EXPANSION SHIELDS. RAMSET OR POWER DRIVEN INSERTS WILL NOT BE ALLOWED. COVER INSERTS WITH JACKET MATERIAL MATCHING ADJACENT PIPE INSULATION. INSTALL SHIELDS OVER JACKET, ARRANGED TO PROTECT JACKET FROM TEAR OR PUNCTURE BY HANGER, SUPPORT, AND
- PROVIDE SUPPORT MATERIALS: HANGER STRAPS, HANGER RODS, SADDLES, SUPPORT RINGS, AND HIGH DENSITY INSERTS. HANGER SPACING SHALL MEET REQUIREMENTS OF STATE AND LOCAL
- **SLEEVES AND PENETRATIONS**
- PROVIDE SLEEVES FOR ALL PENETRATIONS. PIPE SLEEVES THROUGH FIRE-RATED CONSTRUCTION SHALL BE SCHEDULE 40 STEEL. SLEEVES THROUGH PARTITIONS AND NON-FIRE-RATED CONSTRUCTION SHALL BE 26 GAUGE GALVANIZED STEEL WITH LOCK LONGITUDINAL SEAMS. AS SPECIFIED IN THIS SECTION OF THE SPECIFICATIONS. GIVE NOTICES. FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS

B. FIRE STOP PENETRATION SEALS IN FIRE-RATED CONSTRUCTION SHALL BE CERAMIC FIBER, MINERAL FIBER, OR SILICONE FOAM. PROVIDE MINERAL FIBER BOARD, MATTING OR PUTTY INSTALL NEW ELECTRIC WATER HEATERS, ELECTRIC WATER COOLERS, KITCHEN SINKS, FOR DAMMING AND FORMING. FINISH SEALS FLUSH TO WALL SURFACE AND FILL GAPS WITH SILICONE ADHESIVE SEALANT CAULKING.

C. COORDINATE PROPER FIRE SEAL STOPPING OF THERMOPLASTIC PIPE

PENETRATIONS: PROVIDE A PROPER ENGINEERED UL FIRESTOPPED

- PENETRATION PRODUCT EQUAL TO THE WALL OR FLOOR THROUGH WHICH IT PASSES, SUBMIT PROPER HILTI, 3M FOR FIRESPEC UL DETAILS FOR EACH PENETRATION. PACKING FOR SLEEVES THAT DO NOT REQUIRE MAINTENANCE OF FIRE
- RATING SHALL BE OAKUM, SILICATE FOAM, CERAMIC FIBER OR MINERAL FIBER WITH APPROVED SEALANT.
- PACK OR FOAM TO WITHIN ONE INCH OF BOTH WALL SURFACES. SEAL PENETRATION PACKING WITH APPROVED CAULKING AND PAINTABLE WATERPROOF MASTIC SURFACE FINISH OR SILICONE CAULKING.

### PART 3 - EXECUTION EXAMINATION OF SITE

A. VISIT AND EXAMINE THE SITE AND BECOME FAMILIAR WITH CONDITIONS THAT MAY AFFECT THE WORK COVERED BY THIS DIVISION OF THE SPECIFICATIONS. TAKE MEASUREMENTS, EXAMINE AREAS WHERE WORK IS TO BE PERFORMED AND GET SUCH OTHER INFORMATION NECESSARY FOR PROPER EXECUTION OF THE WORK ASCERTAIN AND CHECK CONDITIONS WITH THE DRAWINGS AND SPECIFICATIONS, OTHER TRADES, EXISTING CONDITIONS AND BY WHAT MEANS THE WORK IS TO BE PERFORMED. NO ALLOWANCE SHALL SUBSEQUENTLY BE MADE FOR EXTRA EXPENSE DUE TO FAILURE OR NEGLECT TO MAKE SUCH EXAMINATION AND CORRELATION. WHERE REVISIONS OR CHANGES IN THE EXISTING WORK ARE REQUIRED TO PERMIT THE INSTALLATION OF NEW WORK, THEY SHALL BE MADE AT NO ADDITIONAL COST NO ALLOWANCE

SHALL BE SUBSEQUENTLY MADE FOR ERROR OR OMISSION.

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REVISIONS

BIDDING &

**CROCKFORDS** -

888 resorts World Di

**JCJ**ARCHITECTURE

120 HUYSHOPE AVENUE

HARTFORD, CT 06106

R.G. Vanderweil Engineers, LLP 617.423.7423 TE

. 617.423.7401 FAX

: vanderweil.com

SUITE 400

860.247.9226

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CONSULTANT:

274 Summer Street

Boston, MA 02210

Monticello. NY 1270

PLUMBING SPECIFICATIONS

A. REFER TO ARCHITECTURAL AND PLUMBING DRAWINGS FOR QUANTITIES, LOCATIONS AND MOUNTING HEIGHTS OF FIXTURES PROVIDED UNDER THIS SECTION B. FIXTURE TRIM, TRAPS, FAUCETS, ESCUTCHEONS AND WASTE PIPES EXPOSED TO VIEW IN FINISHED SPACES SHALL BE I.P.S. BRASS WITH POLISHED CHROMIUM PLATING OVER NICKEL FINISH. C. PRODUCT INSTALLATION SHALL ADHERE TO MANUFACTURER'S RECOMMENDATIONS.

D. FIXTURE FITTINGS INTENDED TO DELIVER POTABLE WATER FOR HUMAN CONSUMPTION SHALL BE CERTIFIED FOR "LEAD-FREE" AND SHALL COMPLY WITH THE NEW FEDERAL MANDATE KNOWN AS THE "REDUCTION OF LEAD IN DRINKING WATER ACT-PIPE, FITTINGS AND VALVES

B. MATERIALS AND EQUIPMENT SHALL BE UNIFORM THROUGHOUT THE INSTALLATION. EQUIPMENT OF THE SAME TYPE SHALL BE OF THE SAME MANUFACTURER. MATERIALS AND EQUIPMENT SHALL BE NEW.

A. ALL PIPE, FITTINGS, AND VALVES USED IN POTABLE WATER DISTRIBUTION SYSTEM MUST COMPLY WITH THE NEW FEDERAL MANDATE KNOWN AS THE "REDUCTION OF LEAD IN DRINKING WATER ACT-2014". B. PLASTIC PIPING SYSTEMS: DO NOT USE PLASTIC PIPING SYSTEMS IN RETURN AIR PLENUMS. ALL PIPING USED IN PLENUM APPLICATIONS SHALL BE SO RATED.

C. PIPE MATERIALS

1.12 <u>RECORD DRAWINGS</u>

AND APPROVAL.

MATERIALS AND SUBSTITUTIONS

**GENERAL** 

2.2