



**RE-BID USC AIKEN MAINTENANCE BUILDING  
UNIVERSITY OF SOUTH CAROLINA AIKEN  
STATE PROJECT NO.: H29-9552/50003331-2  
JCS PROJECT NO: 18103**

**ADDENDUM #02  
December 4, 2019**

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**GENERAL INFORMATION:**

1. The mezzanine relocation will be by Owner and will be coordinated with the successful general contractor to occur before the Certificate of Occupancy will be issued.
2. Furniture for this project will be handled under a separate contract.
3. Detail 1/601 shows a custom door height of 64." This should be changed to reflect a standard door height of 58."
4. *Do the endwalls need to be bypass girts as drawings appear to show, or do they need to be flush?* Per the metal building manufacturer, either way is acceptable.
5. *Are the endwall frames of both buildings supposed to be main frames or can they be post and beam?* Per the metal building manufacturer, either way is acceptable.
6. *Sheet A701 section 4 is showing a liner panel to 16' on the low side of the larger building portion. Does this only apply at the low side, or will it apply at the endwalls, and non-common high side areas also?* Section 4 applies to end wall of warehouse space also.
7. *What is the height of the interior walls on the office side of the building?* The interior walls shall be 20" above ceiling. All walls at all offices, toilets, conference rooms, work rooms, electrical rooms, corridors and copy room shall be filled solid with 4" sound batt insulation.
8. *Do the east and west sides of the warehouse section receive metal stud framing?* Metal purlins by the metal building manufacturer.
9. *What is the estimated start date?* February 1, 2020
10. *Is the temporary barrier fence supposed to go around the entire jobsite or just a portion?* Not required
11. *What is the duct height from the bottom of the floor?* Field coordinate
12. *Will landscaping be a part of the contract?* No, landscaping is not a part of this project
13. *It appears the telephone, data, security, fire alarm and access control cabling and hardware are provided by Owner. Please confirm.* Yes these items are by Owner
14. *What are the overhead projections on the low eave and high eave of the building?* Sheet A701, Wall Section for typical overhang at the high eave and low eave shall be 3'-0" typical at Warehouse and Administration
15. *Is there a particular manufacturer for the translucent panel types "C" and "D" noted on drawing A501?* See Section 08 4500 in the Project Manual
16. *The plans call for a utility brick for the veneer, but the specs give a modular brick dimension and a brick name of USC Aiken red. Which one should we quote?* Face brick shall be modular size as specified. Color and texture shall match Ortega by Meridian.
17. *There is not enough information on the drawings to bid the CMU at the exterior ramp, loading dock, and exterior steps (A502). Can you provide additional information or can we get dimensions of each area?* Sheet S101, Foundation plan, loading dock area - all loading dock walls shall be constructed of concrete as detailed on sheet S102, Sections 12 & 13. Wing walls shall extend 65' from face of loading dock. Loading dock is 12'-0" deep x 18'-0" wide.

18. Is the 6" CMU in restrooms 115/116 only for the (4) 5'-0" walls and the (2) 2'-0" walls (A601)? Please clarify location for the 6" CMU in these areas. Sheet A601, Wall Section at toilet compartment is not applicable to this project. Walls in toilet are to be constructed of metal studs and 5/8" moisture resistant gypsum board.
19. The spec allows exposed EMT in unfinished spaces (storage rooms, equipment rooms, janitor's closet), but requires Wiremold in finished areas. Please clarify which spaces are unfinished. Electrician should run concealed conduit where possible in finished spaces. The warehouse space is considered a finished space.
20. The specs are for a coiling door type and the drawings lead you to believe the doors on plan are sectional steel by the detail H5 and H6 that show the track curling back like sectional doors as well as the J5 and J6 detail which shows sectional door track. Sheet A301 Floor Plan; doors 121.2, 121.3, 121.4 and 122.2 are to be coiling doors as specified. H-5 and J-5 on sheet A502 will be modified accordingly.

#### **DRAWINGS:**

21. **SHEET A701, Wall Section 4** - This wall section (or similar) applies to all exterior walls of the warehouse space.
22. **SHEET A701, Wall Section 1** - All interior gypsum board partition walls shall be 4" metal studs, 16" OC with 5/8" gypsum board on each side and shall extend a minimum of 20" above finished ceiling. All walls at all offices, toilets, conference rooms, work rooms, electrical rooms, corridors and copy room shall be filled solid with 4" sound batt insulation. The gypsum board at all toilets and janitor closets shall be moisture resistant. Metal stud walls shall be braced to structure 4'-0" OC diagonally with 4" metal studs and slip track to allow for building movement.
23. **SHEET M201** – Delete sheet M201 and replace with attached sheet M201. The ductless unit was deleted from the server room, but the unit schedule did not get erased from the original plan.

#### **SPECIFICATIONS:**

24. Table of Contents - Delete section in its entirety and replace with section Table of Contents attached
25. 10 2116.17 Solid Phenolic Toilet Compartments – Add this section as attached
26. 28 3100 Fire Alarm System – Delete section in its entirety and replace with section 28 3100 Fire Alarm System attached

#### **SUBSTITUTION REQUESTS:**

<b><u>Division</u></b>	<b><u>Item</u></b>	<b><u>Approved</u></b>
04200	Unit Masonry	Augusta Concrete Block Company
08 3215	Aluminum Fixed and Sliding Window Systems	US Alum Series 451T
23 0500	Packaged A/C Units	Tempmaster OmniPlus 100

#### **END OF ADDENDUM #02**

AIR DISTRIBUTION SCHEDULE									
TAG	DESCRIPTION	MANUFACTURER	MODEL	FRAME	CFM	NECK SIZE	FACE SIZE	MAX NC	REMARKS
(A)	UNI-FLOW SUPPLY	PRICE	ASPD	LAY-IN	0-125	6"ø	24"x24"	30	1, 2
(B)	UNI-FLOW SUPPLY	PRICE	ASPD	LAY-IN	126-250	8"ø	24"x24"	30	1, 2
(C)	UNI-FLOW SUPPLY	PRICE	ASPD	LAY-IN	251-350	10"ø	24"x24"	30	1, 2
(D)	UNI-FLOW SUPPLY	PRICE	ASPD	LAY-IN	351-500	12"ø	24"x24"	30	1, 2
(E)	PERFORATED RETURN	PRICE	APDDR	LAY-IN	0-1,000	22"x22"	24"x24"	30	1, 2
1. PROVIDE WITH STANDARD WHITE FINISH. 2. PROVIDE ALUMINUM OR ALUMINIZED STEEL CONSTRUCTION.									

PACKAGE AIR CONDITIONING UNIT SCHEDULE										
TAG	TRANE MODEL NO.	AIRFLOW CFM	OUTDOOR AIR-CFM	ESP IN. WG.	SUPPLY FAN H.P.	DX COOLING CAPACITY @ 95°F TOTAL/SENSIBLE	EER	ELECTRIC HEAT (KW)	REMARKS	
PAC-1	TSH210	5,500	600	2.0	7.5	199.3/151.4	11.0	36.0	1, 2, 3, 4	
1. PROVIDE INTERNAL VIBRATION ISOLATION, ENTHALPY ECONOMIZER, BAROMETRIC RELIEF, VARIABLE FREQUENCY DRIVE ON SUPPLY FAN, AND FACTORY MOUNTED FUSED DISCONNECT. 2. PROVIDE STAND ALONE MICROPROCESSOR CONTROLS INCLUDING DISCHARGE TEMPERATURE AND DUCT STATIC PRESSURE SENSORS. UNIT SHALL INCLUDE AUXILIARY CONTACTS FOR START AND STOP CONTROL FROM BUILDING MANAGEMENT SYSTEM. 3. INSTALL DUCT SMOKE DETECTORS IN RETURN WIRED TO SHUT DOWN THE UNIT. 4. PROVIDE 1 YEAR PARTS AND LABOR WARRANTY AND 5 YEAR COMPRESSOR WARRANTY.										

VARIABLE VOLUME BOX SCHEDULE											
TAG	TRANE MODEL	AIR INLET (NOM. DIA.)	COOLING		HEATING			MAX. A.P.D. INCHES W.C.	REMARKS		
			MAX CFM	MIN CFM	CFM	KW	STAGES				
1-1	VCCE	12"ø	1,600	480	480	10.0	2	0.15	1, 2, 3		
1-2	VCCE	8"ø	600	180	200	4.0	2	0.15	1, 2, 3		
1-3	VCCE	8"ø	800	240	240	4.0	2	0.15	1, 2, 3		
1-4	VCCE	8"ø	700	210	210	4.0	2	0.15	1, 2, 3		
1-5	VCCE	10"ø	1,000	300	300	4.0	2	0.15	1, 2, 3		
1-6	VCCE	10"ø	1,200	360	360	5.0	2	0.15	1, 2, 3		
1. PROVIDE HEATING COIL ON BOX DISCHARGE WITH 4" STRAIGHT PLENUM BEFORE FITTINGS OR TAKEOFFS. 2. PROVIDE 1" FOIL FACED INSULATION. 3. CONTROLS SHALL BE PROVIDED BY THE CONTROL CONTRACTOR AND FACTORY MOUNTED.											

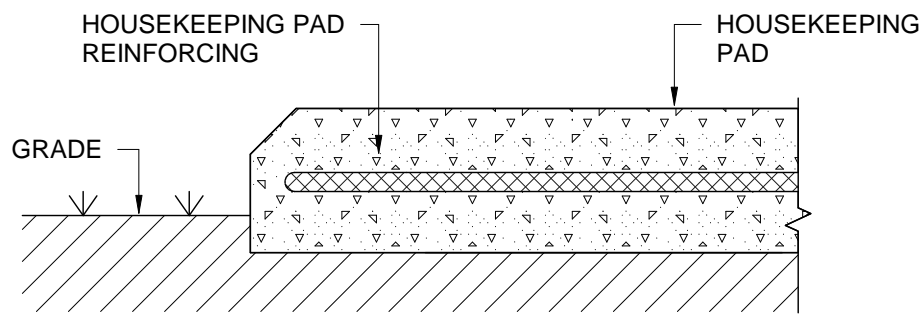
FAN SCHEDULE							
TAG	GREENHECK MODEL NO.	TYPE	CFM	ESP	MOTOR H.P./W.	SONES (MAX.)	REMARKS
EF-1	SP-A390	CEILING	260	0.375	135W	3.7	1, 4
EF-2	SP-B150	CEILING	120	0.375	128W	2.1	1, 4
EF-3	SP-B150	CEILING	100	0.375	128W	2.2	1, 3
EF-4	AER-E30C-310-A20	WALL	8,500	0.25	2HP	30	2, 5
EF-5	SEC3-42-615-C20	WALL	17,000	0.25	2HP	22	2, 5
VF-1	SP-A410	CEILING	400	0.125	121W	2.5	1, 6
VF-2	SP-A410	CEILING	400	0.125	121W	2.5	1, 6
1. PROVIDE WITH CEILING GRILLE, BACKDRAFT DAMPER, DISCONNECT SWITCH, AND FAN MOUNTED SPEED CONTROL. 2. PROVIDE SIDEWALL EXHAUST FAN WITH MOTOR SIDE GUARD, WALL HOUSING, AND ALUMINUM BACKDRAFT LOUVER. CUSTOM COLOR BY ARCHITECT. 3. INTERLOCK WITH WALL SWITCH, PROVIDED AND WIRED BY ELECTRICAL CONTRACTOR. 4. INTERLOCK WITH LIGHT SWITCH, WIRED BY ELECTRICAL CONTRACTOR. 5. INTERLOCK OPERATION WITH INTAKE LOUVER. PROVIDE STARTER WITH PUSH BUTTON START AND STOP. 6. PROVIDE LINE VOLTAGE COOLING THERMOSTAT WIRED BY ELECTRICAL CONTRACTOR.							

UNIT HEATER SCHEDULE				
TAG	REZNOR MODEL	INPUT BTU/HHR	FUEL	REMARKS
UH-1	F-75	75,000	NAT. GAS	1, 2
UH-2	F-75	75,000	NAT. GAS	1, 2
UH-3	F-50	50,000	NAT. GAS	1, 2
1. PROVIDE THERMOSTAT, DRAFT INDUCER, AND EXHAUST HOOD. 2. INSTALL HEATER APPROXIMATELY 10'-0" A.F.F.				

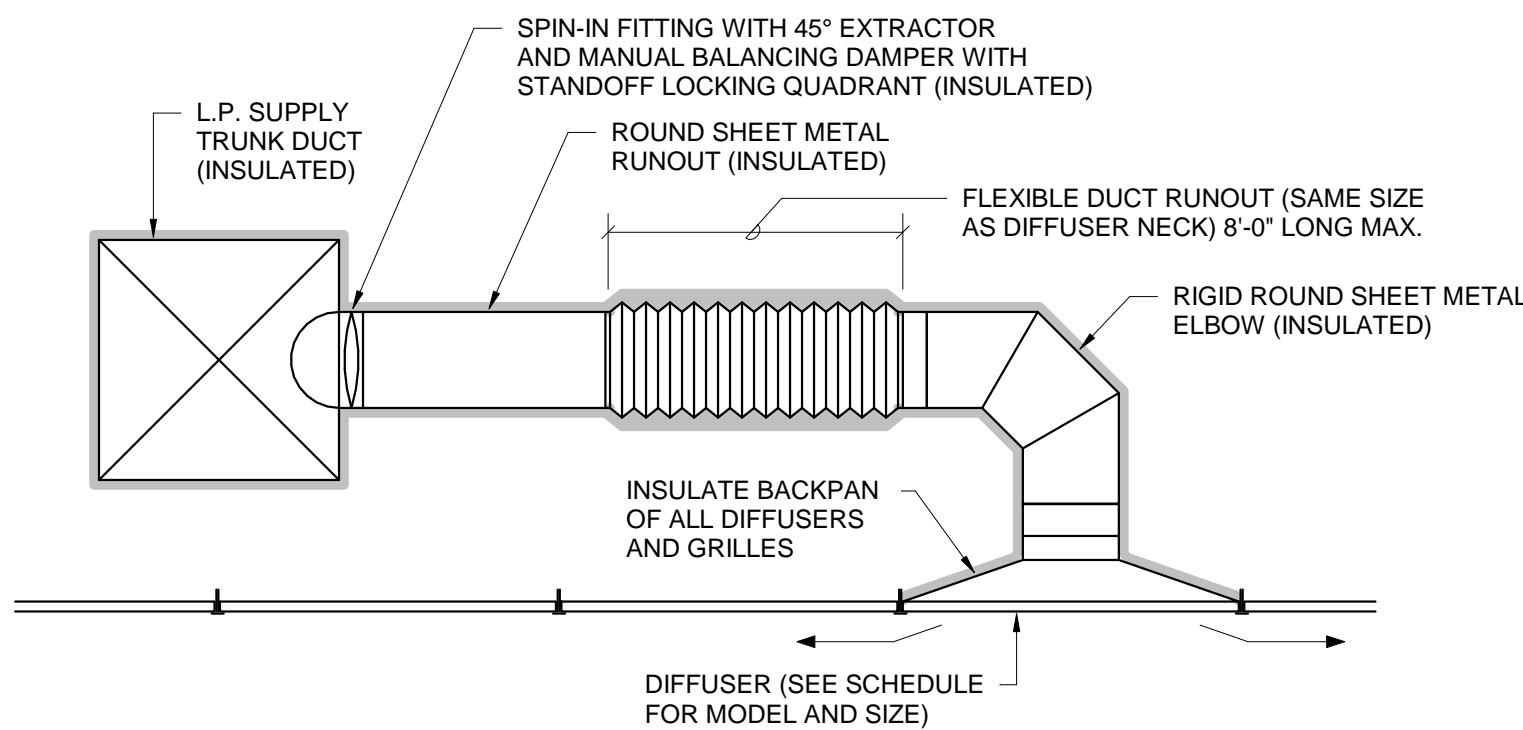
DESIGN CONDITIONS		
SEASON	OUTSIDE	INSIDE
SUMMER	97° FDB / 78° FWB	75° FDB / 50% - 60% RH
WINTER	22° FDB	70° FDB

GENERAL NOTES		
1.	ALL WORK SHALL BE IN ACCORDANCE WITH THE 2015 INTERNATIONAL MECHANICAL CODE, 2015 INTERNATIONAL FUEL GAS CODE, ASHRAE 90.1-2007, AND 2005 SMACNA HVAC DUCT CONSTRUCTION STANDARD. ALL LOCAL CODES OR REQUIREMENTS STILL APPLY.	
2.	DO NOT SCALE DRAWINGS. SEE ARCHITECTURAL DRAWINGS AND REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF DOORS, WINDOWS, AIR DISTRIBUTION, ETC.	
3.	DO NOT SCALE DRAWINGS. THIS CONTRACTOR SHALL VERIFY ALL EXISTING ITEMS AND LOCATIONS IN THE FIELD.	
4.	ALL PIPING AND DUCTWORK LOCATIONS SHALL BE COORDINATED WITH WORK UNDER OTHER DIVISIONS OF THE SPECIFICATIONS TO AVOID INTERFERENCE.	
5.	THIS CONTRACTOR SHALL COORDINATE STEEL OPENINGS AND EQUIPMENT SUPPORT WITH STEEL SHOP DRAWINGS TO CONFIRM DIMENSIONS MATCH WITH EQUIPMENT SUPPLIED.	
6.	ALL PIPING AND DUCTWORK INSULATION SHALL BE RUN CONTINUOUSLY THROUGH FLOORS, ROOFS AND PARTITIONS.	
7.	ALL MECHANICAL ITEMS EXTENDING THROUGH WALLS AND ROOF SHALL BE FLASHED AND COUNTERFLASHED. COORDINATE WITH ROOFING CONTRACTOR.	
8.	ALL PIPING IS SHOWN DIAGRAMMATIC. HOWEVER, THIS CONTRACTOR SHALL PROVIDE ALL REQUIRED FITTINGS, PIPING AND INSULATION FOR ALL OFFSETS AND/OR CHANGES IN ELEVATION.	
9.	EXTEND ALL DRAIN LINES TO NEAREST FLOOR DRAIN OR AS INDICATED - SO ROUTED AS TO AVOID INTERFERENCE WITH PASSAGEWAYS AND MAINTENANCE. DRAINS FROM AIR HANDLING UNITS SHALL BE TRAPPED PER STATIC PRESSURE REQUIREMENTS.	
10.	ALL WATER PIPING SHALL PITCH DOWN IN DIRECTION OF FLOW ONE-INCH PER FIFTY FEET WITH MANUAL AIR VENTS AT ALL HIGH POINTS AND 3/4-INCH DRAIN VALVES WITH STANDARD HOSE CONNECTION AT ALL LOW POINTS.	
11.	MINIMUM PIPE SIZE SHALL BE 3/4-INCH UNLESS INDICATED OTHERWISE.	
12.	ALL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE SPECIFICATIONS AND FURTHER SUPPORTS OR HANGERS SHALL BE PROVIDED TO PREVENT WEIGHT OF PIPING BEING PLACED ON EQUIPMENT.	
13.	ALL DUCTWORK SPECIFIED TO BE LINED SHALL BE INCREASED IN SIZE TO ALLOW FOR LINER.	
14.	DUCTWORK TO AIR CONDITIONING UNIT, OUTSIDE OF BUILDING, DUCTS SHALL BE WRAPPED WITH ALUMINUM JACKET AND SEALED WEATHER TIGHT.	
15.	TURNING VANES SHALL BE PROVIDED AT ALL DUCTWORK ELBOWS AND CHANGES OF DIRECTION TO PROVIDE EVEN FLOW THROUGH DUCT SYSTEM.	
16.	SPACE ABOVE CEILING TO BE USED AS RETURN AIR PLENUM WHERE DUCT IS NOT INDICATED ABOVE RETURN AIR GRILLES.	
17.	ALL OPEN END DUCTS SHALL HAVE 1/4-INCH MESH GALVANIZED SCREEN IN REMOVABLE FRAME.	
18.	WHERE 2'X2' LAY IN GRILLES ARE SPECIFIED IN HARD CEILINGS, A PLASTER FRAME SHALL BE PROVIDED SO THE GRILLE CAN LAY IN THE CEILING.	
19.	ALL ITEMS OF EQUIPMENT ON GRADE SHALL BE LOCATED ON REINFORCED CONCRETE FOUNDATIONS. MINIMUM 6-INCH THICK OR AS DETAILED ON THESE PLANS AND SPECIFICATIONS AND 6 INCHES LARGER THAN EQUIPMENT IN EACH DIRECTION. PADS SHALL BE REINFORCED PER THE HOUSEKEEPING PAD SECTION OF THE ASHRAE PRACTICAL GUIDE FOR SEISMIC RESTRAINT. ALL UNITS SHALL BE SECURED TO THE HOUSEKEEPING PAD WITH SEISMIC RESTRAINTS. PROVIDE 1-INCH CHAMFERS ON ALL SIDES.	
20.	PROVIDE FOR ACCESS TO ALL EQUIPMENT REQUIRING CLEANING OR ADJUSTMENT PER MANUFACTURER'S INSTRUCTIONS. PROVIDE FULL SPACE FOR COIL REMOVAL AND REPLACEMENT FOR ALL HOT WATER AND CHILLED WATER AIR HANDLING UNITS.	
21.	INSTALL ALL VAV BOXES WITHIN 24" OF CEILING TO ALLOW FOR SERVICE ACCESS.	
22.	THIS CONTRACTOR SHALL PROVIDE ALL ITEMS OF MISCELLANEOUS STEEL AS REQUIRED FOR INSTALLATION OF ALL MECHANICAL ITEMS.	
23.	THIS CONTRACTOR SHALL INCLUDE ALL CONTROLS. DIVISION 26 WILL DO ALL POWER WIRING. ALL WIRING SHALL BE IN ACCORDANCE WITH NATIONAL ELECTRIC CODE. CONTROL WIRING SHALL BE CONCEALED WITHIN WALL AND ALL CONTROL WIRING SHALL BE ROUTED IN EMT CONDUIT. DUCT DETECTORS PROVIDED BY DIVISION 26 SHALL BE INSTALLED BY DIVISION 23. POWER WIRING AND FIRE ALARM CONNECTIONS SHALL BE BY DIVISION 26. CONTROL WIRING FOR UNIT SHUTDOWN AND SMOKE DAMPER CONTROL SHALL BE BY DIVISION 23.	
24.	LOCATE ALL SPACE CONTROL INSTRUMENTS 4'-0" ABOVE FINISHED FLOOR. COORDINATE LOCATIONS WITH ARCHITECTURAL ELEVATIONS TO AVOID ITEMS INCLUDING BUT NOT LIMITED TO CUSTOM FINISHES, FIXED CASEWORK, FURNITURE, AND DOOR SWINGS. IN THE EVENT OF CONFLICTS IN THE FIELD, THE CONTRACTOR SHALL BRING THIS TO THE ATTENTION OF THE A/E FOR FINAL APPROVAL OF LOCATION.	
25.	ALL ACTUATORS SHALL BE FURNISHED WITH END SWITCHES TO PROVIDE FEEDBACK TO CONTROLS WHEN FULLY OPENED OR CLOSED.	
26.	CORRECT SETTINGS ON ALL BALANCING FITTINGS SHALL BE PERMANENTLY MARKED. PROVIDE ORANGE FLAGGING RIBBON ON EACH DAMPER HANDLE FOR EASY IDENTIFICATION.	
27.	THE HVAC SYSTEMS SHALL NOT BE OPERATED DURING HEAVY CONSTRUCTION OPERATIONS INCLUDING MASONRY, GYPSUM BOARD SANDING, HEAVY CLEANUP ACTIVITIES, OR OTHER ACTIVITIES THAT CREATE AIRBORNE PARTICLES OR DEBRIS. ALL SYSTEMS SHALL BE CLEAN OF CONSTRUCTION DEBRIS, DUST AND DIRT AT FINAL COMPLETION. DUCT CLEANING AND UNIT/COIL CLEANING SHALL BE PERFORMED IF REQUIRED. IF EQUIPMENT OPERATES DURING CONSTRUCTION PROVIDE FILTER MEDIA OVER ALL RETURN GRILLES AND RETURN DUCT OPENINGS TO PROTECT DUCTS AND EQUIPMENT.	

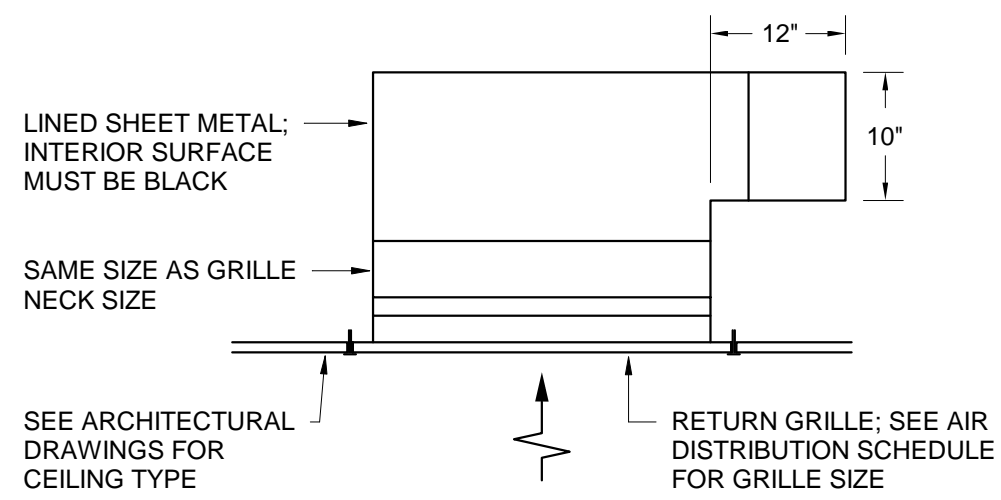
LEGEND	
SYMBOL	DESCRIPTION
(A) 100	TYPE "A" DIFFUSER, 100 CFM
⊖	THERMOSTAT
MBD	MANUAL OPPOSED BLADE BALANCING DAMPER
⊠	RECTANGULAR SUPPLY DUCTWORK
⊠	RETURN AND FRESH AIR DUCTWORK
⊠	EXHAUST DUCTWORK
48x24	48"x24" RECTANGULAR DUCT
AFF	ABOVE FINISHED FLOOR



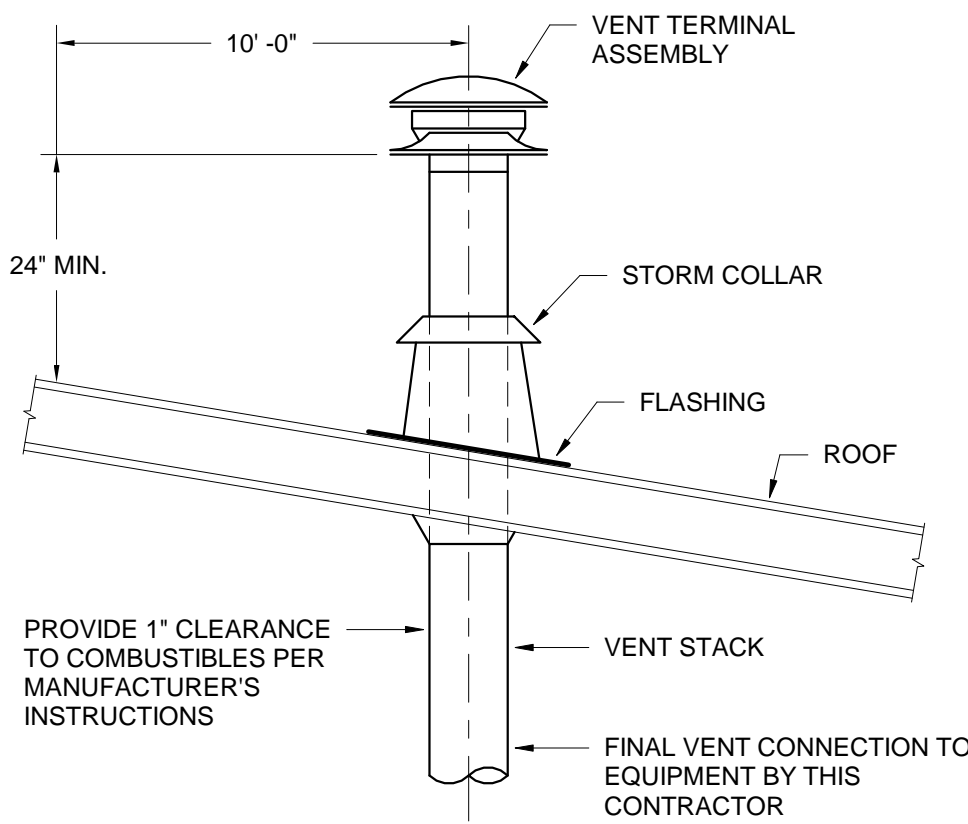
HOUSEKEEPING PAD DETAIL  
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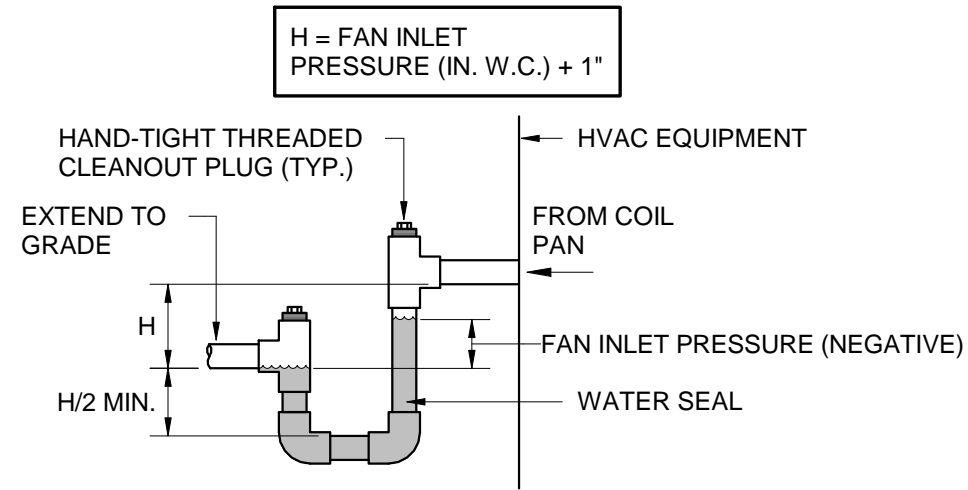
CEILING DIFFUSER DETAIL  
NO SCALE



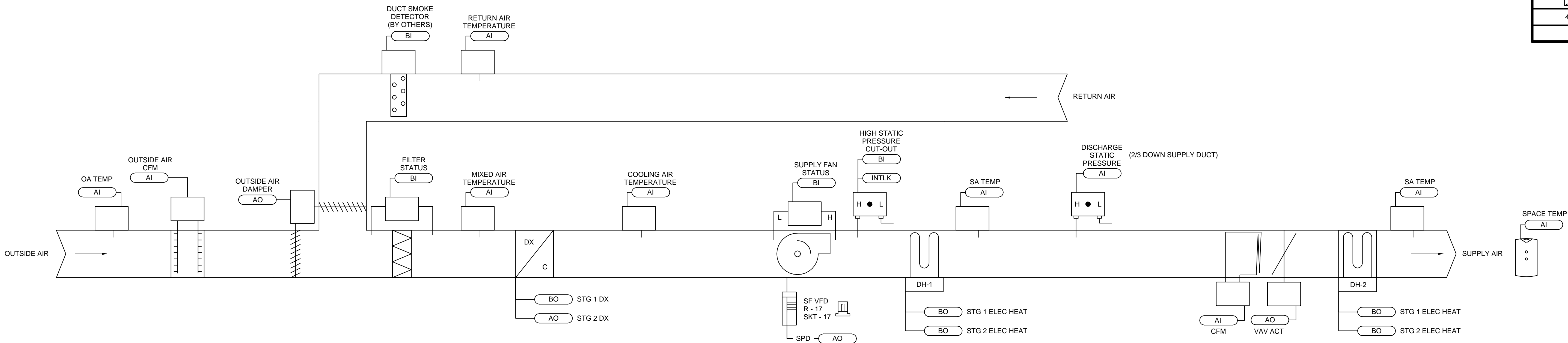
PLENUM RETURN GRILLE DETAIL  
NO SCALE



VENT THROUGH ROOF DETAIL  
NO SCALE



CONDENSATE DRAIN DETAIL  
NO SCALE



VAV PACKAGE CONTROL DIAGRAM  
NO SCALE

VAV BOX CONTROL DIAGRAM (TYPICAL)  
NO SCALE

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**PROJECT NUMBER:** H29-9552/50003331-2

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## PART 1 GENERAL

### 1.01 SECTION INCLUDES:

- A. Toilet compartment partitions with doors.
- B. Urinal screens.
- C. Attachment and operating hardware.

### 1.02 RELATED REQUIREMENTS

- A. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Material
- B. ASTM D6578 Standard Practice for Determination of Graffiti Resistance
- C. ASTM D1037 Direct Screw Withdrawal Test
- D. ASTM D570 Standard Test Method for Water Absorption
- E. ASTM A167, 18-8, Type 304 Cast Stainless Steel
- F. ADA, Accessibility Guidelines for Buildings and Facilities.
- G. Latest Edition 2005 LD-3 NEMA Standard Test, Chemical Resistance, Modulus of Elasticity, Shear Strength and Compression Strength.

### 1.03 QUALITY ASSURANCE:

- A. Dimensions: Verify dimensions by field measurements before fabrication, wherever possible without delaying the project.
- B. Inserts and Anchorages: Furnish inserts and anchoring devices which must be built into other work for installation of toilet partitions and related work. Coordinate delivery with other work to avoid delay.
- C. Flame Spread: When tested in accordance with ASTM E84, Toilet Partition and Urinal/Entrance Screen materials shall meet or exceed all requirements for Class A Flame Spread Rating and Smoke Developed and shall carry a Class A Fire Rating Certification in accordance with the requirements of NFPA and ICC.
  - 1. Flame Spread shall not exceed 25.
  - 2. Smoke Developed shall not exceed 450
- D. Graffiti Resistance Requirements: When tested in accordance with ASTM D6578, partition materials shall prove resistant to all chemicals tested for a period of 1 to 10 minutes and shall leave no mar or blemish on the surface when cleaned. Partition materials shall have guaranteed surface cleanability from permanent markers and shall have Non-Ghosting properties.
- E. Scratch Resistance Requirements: When tested in accordance with ASTM D2197, partition materials shall prove to be scratch resistant when the maximum Load Value exceeds 10 kilograms.
- F. Impact Resistance Requirements: When tested in accordance with ASTM D2794, partition materials shall withstand an Impact Force Value in excess of 45 inch-lbs.
- G. Screw Holding Strength: When tested in accordance with ASTM D1037, Direct Screw Withdrawal Test, partition materials shall withstand a direct pull force that exceeds 2,500 lbs per fastener.
- H. Tensile Strength: Partition materials shall have a Modulus of Elasticity of 1.55 Million PSI.



- I. Shear Strength: Partition materials shall have a Shear Strength of 2,000 PSI minimum.
- J. Compression Strength: Partition materials shall have a Compression Strength of 24,000 PSI minimum.
- K. Water Absorption Requirements: When tested in accordance with ASTM D570 partition materials shall have a Water Absorption Rate of less than 0.37%.

#### 1.04 DELIVERY AND STORAGE:

- A. Protect units during delivery and storage to avoid damage.
- B. Store according to manufacturer's recommendations.

#### 1.05 SUBMITTALS:

- A. See Section 01 3300 - Submittal Procedures, for submittal procedures.
- B. LEED Submittals:
  - 1. Product Data for Credit MR-4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
  - 2. Product Certificates for Credit MR 5: For products and materials required to comply with requirements for regional materials, certificates indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating distance to Project, cost for each regional material, and fraction by weight that is considered regional.
- C. Manufacturer's Data: For information only, submit manufacturer's detailed specifications and installation instructions. Include catalog cuts of hardware, anchors, fastenings and other data as required. Transmit copy of each instruction to Installer.
- D. Shop Drawings: Submit shop drawings for the fabrication and erection of toilet partition assemblies, to the extent not fully described by the manufacturer's data sheets. Include plans and elevations at not less than 3/8" to 1'-0" scale. Show all anchorage and accessory items and finishes. Provide location template drawings for bolt hole locations in supporting members for attachment of partitions.
- E. Samples: Submit three sets of color samples to be reviewed by the Architect for color, texture and surface. Compliance with all other requirements is exclusive responsibility of Contractor. If requested, furnish a sample of each type of hardware.
- F. Maintenance Instructions: Provide manufacturer's printed Instructions for Cleaning and Maintenance of Installed Work.

#### 1.06 FIELD CONDITIONS

- A. Field Measurements: Verify dimensions in areas of installation by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
  - 1. Established Dimensions: Where field measurements cannot be made without delaying the work, establish dimensions and proceed with fabricating units without field measurements. Coordinate supports, adjacent construction, and fixture locations to ensure actual dimensions correspond to Established Dimensions.

#### 1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in manufacturer's original packaging to protect from damage.

- B. Store materials in manufacturer's original packaging in accordance with manufacturer's instructions. Store materials indoors, protected from the elements and construction hazards.
- C. Handle materials in a manner that will protect the finished product.

#### 1.08 WARRANTY

- A. Provide manufacturer's Twenty-Five (25) year written limited warranty on its Panels, Pilasters and Doors, against chipping, breakage, corrosion, delamination and defects in workmanship; to be replaced without charge excluding labor.
- B. Provide manufacturer's Ten (10) year written limited warranty on all Cast Stainless Steel Hardware, Hinges and Mounting Brackets, as well as on all full high aluminum mounting brackets, against defects in material and workmanship. All other hardware will be provided with a manufacturer's One (1) year written limited warranty, against all defects in material and workmanship.

### PART 2 PRODUCTS

#### 2.01 MANUFACTURERS:

- A. Basis of Design: Class A Fire Rated Phenolic Toilet Partitions, Urinal/Entrance Screens, Shower Dividers and Dressing Compartments shall be Series 70833, manufactured by COLUMBIA PARTITIONS®, a Division of PSiSC®, P.O. Box 181, Columbia, S.C. 29202, 866-337-7286, Fax: 866-337-7291 or approved equal.
- B. Acceptable Manufacturers:
  - 1. Columbia Partitions, a Division of PSiSC, Columbia, SC; telephone 866.337.7291, estimating@psisc.com; www.psisc.com
  - 2. General Partitions Mfg. Corp., Erie, PA; telephone 814.833.1154, fax 814.838.3473, www.generalpartitions.com.
  - 3. Global Steel Products Corp, Eastanollee, GA; telephone 706.827.2700, fax: 706.827.2710, www.globalpartitions.com.
  - 4. Sanymetal, A Crane Plumbing Company, Mansfield, OH; telephone 800.546.5476, fax 419.521.3188, www.sanymetal.com.
- C. Substitutions: Section 01-6000 - Product Requirements.

#### 2.02 GENERAL

- A. Toilet Partitions, Shower Dividers and Dressing Compartments shall be floor-mounted type, overhead braced with doors. Urinal screens shall be wall hung with pilaster or post type unless otherwise noted on drawings.

#### 2.03 MATERIALS AND COMPONENTS:

- A. Panels, Pilasters and Benches: Fabricated of solid phenolic cores with matte finish high pressure Melamine fusion welded to surfaces of core to perform one-piece unit; laminated surfaces are not acceptable. Edges shall be dark brown solid phenolic material. Panels shall be 1/2" thick; doors shall be 3/4" thick minimum; pilasters shall be 1" thick. Pilasters shall have heavy duty leveling device.
- B. Panels, doors and pilasters shall carry a Class "A" fire rating as per ASTM E-84.
  - 1. Class A Fire Rated Phenolic shall meet or exceed all requirements for Class A Flame Spread Rating and Smoke Developed calculated according to ASTM E84, and shall carry a Class A Fire Rating Certification.
- C. Colors and Patterns: Colors shall be as selected by the Architect from manufacturer's full range

of colors.

- D. Pilaster Shoes: AISI Type 302/304 stainless steel, as follows:
  - 1. Height: 3" unless otherwise indicated.
  - 2. Thickness: Not less than 18 gauge.
  - 3. Finish: No. 3 stainless.
- E. Headrails: Extra heavy-duty extruded alloy 6063-T5 aluminum with no-grip top, end closures where ends will be exposed to view.
- F. Standard Hardware and Fittings: Following items of hardware and fittings shall be used for installing partitions and screens. Aluminum hardware and fittings shall be bright dip anodized.
  - 1. Continuous Hinge: Continuous Hinge (57.5") shall be made of Type 304, 14 Gauge Stainless Steel and shall have a Polished Satin Finish. Hinge shall be 3" wide and shall have cam knuckles for gravity type self-closing action. Pivot pin shall be .250" in diameter, and shall be made of Type 304 Stainless Steel. Hinges shall provide emergency access by lifting the door. Inswinging Hinges shall be preset to hold Door open at 15 degrees and Outswinging Hinges shall be preset to hold Doors in the closed position when unlatched. Hinges shall be pre-drilled for mounting to door and pilaster. Mounting holes shall be at 9" O.C. for mounting to door and pilaster with Theft Proof Stainless Steel Torx Head with Pin Through-Bolts. Brass inserts are unacceptable. Each Hinge is to be labeled by stock number, manufacturer, and left or right hand. Furnish one Hinge per door.
  - 2. Slide Latch: Slide Latch shall be Heavy Duty Type 304 Cast Stainless Steel with a Polished Satin Finish. The Slide Latch shall be surface mounted and shall require less than five (5) lbs to operate. The slide bar shall be .150" (3.81 mm) thick, 1.020" wide and 3.720" long. Latch shall have an internal Stainless Steel buffering spring to prevent damage when door is inadvertently slammed against the Latch. Mounting holes are to be spaced at 3.50" O.C. Latch knob is to be riveted to the slide bar and then welded to insure that the knob will not come off. The Slide Latch shall be mounted to the Door with Theft Proof Stainless Steel Torx Head with Pin Through-Bolts. Stamped Stainless Steel Slide Latches (with or without plastic or nylon parts) are unacceptable. The stock number shall be molded into the back of the Slide Latch for ease in identification. Furnish one per door.
  - 3. Strike and Keeper: Strike and Keeper shall be Heavy Duty Type 304 Cast Stainless Steel with a Polished Satin Finish. The Strike and Keeper shall provide emergency egress by lifting of the door. The Strike and Keeper shall be 2.50" high, with the mounting holes at 1.50" O.C. The wall thickness shall be a minimum of .125". The Strike and Keeper shall be mounted to the Pilaster with Theft Proof Stainless Steel Torx Head with Pin Through-Bolts. The Strike and Keeper shall have an integral rubber bumper Door Stop. The integral bumper Door Stop shall be rated and able to withstand a sudden impact of 350 lbs. Extra door stops that encumber the door opening and create a hazard are unacceptable. Stamped Stainless Steel Strike and Keepers are unacceptable. The stock number shall be molded into the back of the Strike and Keeper for ease in identification. Furnish one per door.
  - 4. Coat Hook: Coat Hook shall be made of Heavy Duty Type 304 Cast Stainless Steel with a Polished Satin Finish. Coat Hook and Bumper shall be 2.340" high, 1.230" wide and shall protrude out from the door 3.05". The hook portion shall have a finished diameter of .250". Coat Hooks shall be mounted to the Door with Theft Proof Stainless Steel Torx Head with Pin Through-Bolts. Stamped Stainless Steel Coat Hooks are unacceptable. The stock number shall be molded into the back of the Coat Hook and Bumper for ease in identification. Furnish one per door.
  - 5. Pull Handle: Pull Handle shall be made of Heavy Duty Type 304 Cast Stainless Steel with a Polished Satin Finish. Chrome Plated Zamac and Stamped Stainless Steel Door Pulls are unacceptable. Pull Handle shall protrude from the face of the door .940" and shall be 4.735" long. The Pull Handle shall have mounting holes drilled and tapped for 10/24

- threads at 3.50" O.C. The Pull Handle shall be .655" wide. The stock number shall be molded into the back of the Pull Handle for ease in identification. Furnish two for each Disabled Accessible door.
6. Door Stop: Door Stop shall be Heavy Duty Type 304 Cast Stainless Steel with a Polished Satin Finish. Chrome Plated Zamac and Stamped Stainless Steel Door Stops are unacceptable. Door Stop shall have a 2.125" base diameter and shall protrude 1.80" from the wall. The bumper at the end of the Door Stop shall be .250" thick. The diameter of the shaft shall be .6875". The stock number shall be molded into the back of the Door Stop for ease in identification. Furnish one for each Disabled Accessible or outswing door.
  7. Continuous Brackets: Brackets shall be Full High (57.5"), Extruded 6063-T5 Aluminum with a Satin Anodized finish. The minimum weight shall be 1.685 pounds per lineal foot. Each Bracket is to have a minimum wall thickness of .125". Continuous Double Ear and Single Ear Brackets shall be used to mount panel/pilaster to wall. Continuous 'U' Brackets shall be used to mount panel to pilaster. Inside opening of Bracket shall be .50" for panels and 1.00" for pilasters. All holes in Brackets for mounting to wall and panel/pilaster shall be pre-drilled. Holes are to be spaced at 9" O.C. along the full length of the Bracket for a total of fourteen (14) holes for mounting to wall, and seven (7) for mounting to panel or pilaster. Panels and Pilasters shall be secured to Brackets with Theft Proof Stainless Steel Torx Head with Pin Through-Bolts. Attachments made with screws into core material are unacceptable.
  8. Overhead Bracing (Headrail): Continuous Heavy Duty Extruded 6063-T5 Aluminum Headrail with Anti-Grip profile. Headrail shall have a Satin Anodized finish and shall have integral reinforcing channel and curtain track. Provide Headrail Corner Brackets, Wall Brackets, and Headrail End Caps as required. The Headrail and Aluminum Headrail Corner Brackets shall have a minimum wall height of 2". The minimum wall thickness of the Headrail and Headrail Corner Brackets shall be .125". The Headrail Wall Brackets shall be made of Type 304, 18 Gauge Stainless Steel.
  9. Pilaster Shoes: Pilaster Shoes shall be Type 304, 18 Gauge Stainless Steel and shall have a #4 Polished Satin Finish. Shoes shall be 3" high and shall have an integral heel for structural connection to the floor with Stainless Steel fasteners.. Shoes shall be attached to Pilasters with Theft Proof Stainless Steel Torx Head with Pin Screws. Zinc Plated fasteners for connection to the floor are unacceptable.
  10. Anchorages and Fasteners: All Fasteners shall be Type 304 Stainless Steel and shall have Theft Proof Torx Heads with Pin. Stainless Steel Through-Bolts shall withstand a direct pull force in excess of 2000 lbs. each. All Fasteners shall be Through-Bolted unless noted otherwise. Chrome Plated Steel, Zinc Plated Steel and Brass Fasteners are not acceptable.
- G. Anchorage and Fasteners: Manufacturer's standard exposed fasteners of stainless steel or chrome plated steel finish to match hardware. Use theft-resistant (one-way) type heads and nuts for exposed screws. For concealed anchors, use hot-dip galvanized or cadmium-plated steel.

#### 2.04 FABRICATION:

- A. General: Provide Doors, Panels, Pilasters and Urinal/Entrance Screens fabricated for the partition system, complete with all accessories and hardware listed above and as required for installation of a fully functional system, unless otherwise noted. Provide units with cutouts and drilled holes to receive partition-mounted hinges, accessories, and grab bars as indicated.
- B. Pilasters: Each Pilaster shall have zinc plated threaded insert(s) threaded into the base of the Pilaster to receive 5/16" X 2.5" Type 304 Stainless Steel Jack Bolt(s) for leveling purposes. Pilaster Shoe shall be 3" high Type 304, 18 Gauge Stainless Steel and shall have an integral heel for structural connection to the floor with Stainless Steel fasteners.
- C. Doors: Unless otherwise indicated, provide 24" (610 mm) wide in-swinging doors for standard

Toilet Partitions and 36" (914 mm) wide out-swinging doors with a minimum 32" (813 mm) wide clear opening for Partitions indicated to be Handicapped Accessible.

- D. Overhead-Braced Compartments: Furnish galvanized steel supports and leveling bolts at pilasters as recommended by manufacturer to suit floor conditions. Make provisions for setting and securing continuous, extruded, aluminum anti-grip, overhead bracing at top of each pilaster. Provide shoe at each pilaster to conceal supports and leveling mechanism.
- E. Floor Anchored Privacy Screens: Furnish Privacy Screens consisting of a pilaster and a panel of the same construction and finish as the Toilet Partitions. Furnish in accordance with the drawings.
- F. Hardware: Furnish hardware for each compartment to comply with ANSI A117.1-1998 and ADA Accessibility Guidelines for handicapped accessibility.

### PART 3 EXECUTION

#### 3.01 EXAMINATION OF CONDITIONS:

- A. Verify that room dimensions are in accordance with Toilet Partitions, Doors, Panels, Pilasters and Urinal/Entrance Screen and , Shower Divider, and Dressing Compartment Shop Drawings. Inspect walls to insure that they are plumb and suitable for the Wall Brackets.
- B. Check location of entrance doors and location of plumbing fixtures. Verify that these are in accordance with Toilet Partition Shop Drawings and that there is adequate clearance between plumbing fixtures and dividing panels or screens.
- C. Installer must examine areas and conditions under which toilet partitions, urinal screens, and related items are to be installed and notify Contractor in writing of conditions detrimental to proper and timely completion of the work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to installer.

#### 3.02 INSTALLATION:

- A. Comply with manufacturer's written installation instructions. Install Partitions rigid, straight, plumb, and level. Provide clearances of not more than .50" (13 mm) between pilasters and panels, and not more than 1.0" (25 mm) between pilasters/panels and walls. No evidence of drilling, cutting and patching shall be visible in finished work.
- B. Installers Qualifications: All toilet compartment partitions shall be installed by the manufacturer's personnel or by personnel trained by the manufacturer and certified in writing to the Architect that they are factory approved installers. No exceptions!
- C. Overhead-Braced Floor Supported Partitions: Secure Pilasters to floor and level, plumb, and tighten. Maintain proper Door Openings and secure continuous Overhead Brace (Headrail) to each pilaster with not less than two (2) Theft Proof Stainless Steel Torx Head with Pin Through-Bolts. Hang Doors and adjust so that tops of Doors are parallel with Overhead Brace and are the same height as the panels when doors are in closed position.
- D. Hardware Adjustment: Adjust and lubricate hardware for proper operation after installation.
  - 1. Set hinges on in-swing doors to hold doors open approximately 30 degrees from closed position when unlatched.
  - 2. Set hinges on out-swing doors to return to fully closed position.
- E. Floor Supported Screens: Attach with anchoring devices according to manufacturer's written instructions and to suit supporting structure. Set units level and plumb. Attach panel to wall with one full length support bracket.

### 3.03 ACCESSORIES

- A. Mount accessories to Partition units in accordance with accessory manufacturer's instructions.

### 3.04 PROTECTION, CLEANING AND FINAL ADJUSTMENTS:

- A. Protection: Protect units after erection so that there will be no indication of use or damage at the time of acceptance by the Owner. Small defects in finish shall be touched up in field using same quality materials as used in factory, if approved by Architect. Damage that cannot be corrected to satisfaction of the Architect shall be replaced.
- B. Provide final protection and maintain conditions that ensure Toilet Partitions and Screens are without damage or deterioration at the time of Substantial Completion.
- C. Hardware Adjustment: Adjust hardware according to manufacturer's written instructions for proper operation. Adjust cam on all out-swinging doors to hold doors in closed position when unlatched. Adjust cam on all in-swinging doors to hold doors in open position when unlatched.
- D. Cleaning: Clean exposed surface of the partitions, hardware, fittings and accessories, using materials recommended by the partition manufacturer.

### 3.05 REPLACEMENT:

- A. Replace damaged units which cannot be satisfactorily repaired with new units, as directed by Architect.

END OF SECTION

## **PART 1 - GENERAL REQUIREMENTS**

### **1-01 GENERAL SYSTEM REQUIREMENTS:**

**CODE COMPLIANCE:** The complete installation is to conform to Local Code Requirements and to the requirements of the AHJ enforced editions of the following publications including amendments:

- a) NFPA 13: Standard for the installation of sprinkler systems(applicable sections)
- b) NFPA 70: National Electrical Code (with particular attention to ARTICLE 760)
- c) NFPA 72: National Fire Alarm Code
- d) NFPA 101: Life Safety Code
- e) IBC: International Building Code
- f) Americans With Disabilities Act Guidelines

**UNDERWRITERS LABORATORIES:** Each and all items of the Fire Alarm System shall be listed as a product of a SINGLE Fire Alarm System manufacturer under the appropriate category by Underwriters' Laboratories, Inc. (UL), and shall bear the "UL" label. All control equipment is to be listed under UL category UOJZ as a single control unit. Partial listing shall NOT be acceptable. The fire alarm system shall be manufactured by an ISO 9001 certified company and meet the requirements of BS EN9001: ANSI/ASQC Q9001-1994. Visual signaling appliances shall be listed under UL 1971.

### **1-02 DESCRIPTION OF WORK:**

The work includes the installation of a complete fire alarm system including associated equipment and appurtenances, complete and ready for operation. Equipment, materials, installation, workmanship, review, and testing shall be in strict accordance with the required and advisory provisions of "NFPA 72: National Fire Alarm Code". Devices and equipment for fire alarm service shall be listed by Underwriters Laboratories Inc. The system and its components shall be Underwriters Laboratories, Inc. listed under the appropriate UL testing standard as listed herein for fire alarm applications and the installation shall be in compliance with the UL listing.

**WARRANTY:** All work performed and all material and equipment furnished under this contract shall be free from defects and shall remain so for a period of at least one (1) year from the date of acceptance. The full cost of maintenance, labor and materials required to correct any defect during this one year period shall be included in the submittal bid. The Contractor shall repair or replace any deficiencies reported in the guarantee period promptly after notification, without any additional compensation from the Owner.

#### **BASIC PERFORMANCE:**

- a. Alarm, trouble and supervisory signals from all intelligent reporting devices shall be encoded on NFPA Class B Signaling Line Circuits (SLC).
- b. Initiation Device Circuits (IDC) shall be wired Class B as part of an addressable device connected by the SLC Circuit.
- c. Notification Appliance Circuits (NAC) shall be wired Class B as part of an addressable device connected by the SLC Circuit.
- d. Alarm signals arriving at the FACP shall not be lost following a primary power failure (or outage) until the alarm signal is processed and recorded.
- e. All panels and peripheral devices shall be the standard product of a single manufacturer and shall display the manufacturer's name on each component.

**BASIC SYSTEM FUNCTIONAL OPERATION:** When a fire alarm condition is detected and reported by one of the system initiating devices, the following functions shall immediately occur:

- a. The system alarm LED on the system display shall flash.

- b. A local piezo electric signal in the control panel shall sound.
- c. A backlit LCD display shall indicate all information associated with the fire alarm condition, including the type of alarm point and its location within the protected premises.
- d. Printing and history storage equipment shall log the information associated each new fire alarm control panel condition, along with time and date of occurrence.
- e. All system output programs assigned via control-by-event interlock programming to be activated by the particular point in alarm shall be executed, and the associated system outputs (notification appliances and/or relays) shall be activated.

**SURGE PROTECTIVE DEVICE (SPD):** Provide 2-line telephone surge protector for incoming DACT telephone lines. Surge protector shall be DiTek DTK-MRJ31XSCP-RUV, or approved equivalent of Innovative Technology, EPT, MCG Electronics, or APC. Unit shall be listed per UL 497A, rated for 130 volts, 9000 amps, 76 joules, with a 5 nanosecond response time. Unit shall be provided with RJ45 modular plugs.

**1-03 SUBMITTALS:** Prior to ordering any equipment or devices:

Submit Manufacturer's Data for all equipment, device and wiring: for approval.

**INPUT OUTPUT MATRIX:** Provide descriptions of all system operations.

**SHOP DRAWINGS:** Fire Alarm Shop Drawings shall comply with the requirements of Chapter 9 of the International Fire Code. Provide drawings that clearly and completely indicate the function of the control panel and devices connected thereto. Indicate termination points of devices and indicate the interconnection of modules required for proper operation of the system and connections to other systems including HVAC systems and fire protection systems. Provide battery calculations and voltage drop calculations of notification circuits.

**1-04 RECORD DRAWINGS:**

Redline construction drawings with all changes made during construction and submit to engineer. Provide up-dated shop drawings to reflect changes made during construction and provide hard copies and electronic files to the Owner.

**1-05 SPARE PARTS:**

Spare parts shall be directly interchangeable with the corresponding components of the installed system. Spare parts shall be suitably packaged and identified by nameplate, stamping, or tagging. Keys and locks for equipment shall be identical where possible. Furnish the following:

- a. Four keys or tools for resetting manual stations
- b. Four keys for locks of control panels or cabinets

**PART 2 - PRODUCTS**

**2-01 BATTERIES:** The battery shall have sufficient capacity to power the fire alarm system for not less than twenty-four hours plus 5 minutes of alarm upon a normal AC power failure. The batteries are to be completely maintenance free. No liquids are required. Fluid level checks for refilling, spills, and leakage shall not be required. If necessary to meet standby requirements, external battery and charger systems may be used.

**2-02 MAIN FIRE ALARM CONTROL EQUIPMENT:** Main FACP or network node shall be a NOTIFIER Model NFS "ONYX" SERIES, or approved equal as manufactured by Gamewell-FCI or Firelite. Other fire alarm manufacturers may submit to the Project Manager at the University of South Carolina – Aiken Campus for review and approval.



Control panel shall contain a microprocessor based Central Processing Unit (CPU) and power supply in an economical space saving single board design. The CPU shall communicate with and control the following types of equipment used to make up the system: intelligent addressable smoke and thermal (heat) detectors, addressable modules, printer, annunciators, and other system controlled devices. The FAC panel shall be networkable and shall include the manufacturer's fiber-ready network option. The FAC shall bear the name of the manufacturer.

Determination of any substituted system's equality shall be based upon review by the engineer and the University of South Carolina (Owner). The Owner's acceptance or rejection shall be final. Materials and equipment shall be the standard products of one manufacturer regularly engaged in the production of such equipment and shall be listed by Underwriter's Laboratories (UL).

#### 2-03 NOTIFICATION APPLIANCES

SYNCHRONIZED STROBE AUDIO/VISUAL AND VISUAL ALARMS: UL Listed to Standard 1971 and tested for 75 candela on-axis. Semi-flush mounted combination horn-lamp assembly suitable for use on an electrically supervised circuit. Horn shall be electronic type with a 3-pulse temporal audible signal and shall have a sound rating of 88db at 10 ft, and shall include a minimum of three settings (high/medium/low). All horns in corridors and in spaces larger than 2,000sf shall be set to "high". All other horns shall be set to "low". Lamps shall be synchronized flashing Xenon type with field selectable 15/30/75/110 candela effective intensity and a flash rate of 1 Hz, and shall be protected by a clear plastic lens. Device housings shall be white. Provide flush-mount backboxes as required. Strobe setting shall be indicated on the drawings.

#### 2-04 INITIATING DEVICES

INTELLIGENT MANUAL STATIONS: Pull stations shall be dual action. The front of the station is to be hinged to a backplate assembly and must be opened with a key to reset the station.

INTELLIGENT PHOTOELECTRIC SMOKE DETECTORS: UL 268. Low profile type detectors shall be plug-in units that mount to a twist-lock base. . A detector disconnected from the base shall indicate a "Trouble" condition. Detector shall utilize an LED that blinks when device is polled and glows steady when device is in alarm.

INTELLIGENT PHOTOELECTRIC TYPE DUCT SMOKE DETECTORS: UL 268A. Detectors in ducts shall comply with UL requirements for sensing of products of combustion in air handling/duct systems for each air handler. Provide power on LED and relay for AHU shut down. The relay must be capable of being logically controlled independent of the detector head. To minimize nuisance alarms, detectors shall have an insect screen and be designed to ignore invisible particles or smoke densities that are below the factory set point. No radioactive material shall be used. The 24VDC intelligent analog duct detector shall communicate actual smoke chamber values to the system control. For maintenance purposes, it shall be possible to clean the duct housing sampling tubes by accessing them through the duct housing front cover. Provide a remote indicator with integrated key-activated remote test station for each duct smoke detector.

CARBON MONOXIDE DETECTORS WITH ALARM: UL 2075. Carbon Monoxide detectors shall be either intelligent detectors connected to fire alarm control panel or shall be conventional detectors connected to fire alarm control panel via monitoring modules. Detector shall be listed for use with fire alarm control panel installed as part of this work. Detector shall be capable of local alarm, transmission of alarm signal to control panel, transmission of trouble signal to control panel and transmission of end-of-life signal to control panel. Provide each conventional type carbon monoxide detector with monitoring module and all appurtenances required to connect to fire alarm control panel. Carbon monoxide detectors shall be capable of mounting on ceilings or walls depending on application.

INTELLIGENT MODULES: Monitoring and Control modules must be listed for installation with specified control panel and must be capable of providing the function for which it is intended.

2-05    WIRE: Furnish and install in accordance with NFPA 70 and NFPA 72. Wiring shall be in accordance with local, state and national codes (e.g., NEC Article 760) and as recommended by the manufacturer of the fire alarm system. Conductors for 120-volt circuits shall be No. 12 AWG minimum. Number and size of conductors shall be as recommended by the fire alarm system manufacturer.

2-06    RACEWAYS

Galvanized rigid conduit (GRC) or Intermediate grade metallic conduit (IMC) with screwed fittings, or Electrical metallic tubing (EMT) with compression type fittings or all-steel set screw fittings. See Section 260500, Basic Materials and Methods.

All circuits shall be in metal conduit, unless noted otherwise. All raceways shall be run concealed in walls or ceilings in EMT, GRC, or IMC, unless noted otherwise. Where surface raceway is required and is approved in writing by the Architect and the Owner, use Wiremold ivory surface metal raceway with red surface metal boxes compatible with fire alarm devices, except that EMT with steel boxes may be used in storage rooms, etc. requiring surface raceway. No high voltage wiring will be permitted in the same raceway or electrical box with any wiring of the fire alarm system except where there is a direct interface such as programmable relay controlling an external device. Where this occurs, the box must be clearly marked to indicate the presence of high voltage.

All wiring shall be run in EMT, GRC, or IMC conduit. All junction box covers shall be spray painted red and labeled "Fire Alarm". Conduit used for Fire Alarm System wiring shall be red, similar to Allied Fire Alarm EMT. Conductors shall be color coded as follows:

**PART 3 - INSTALLATION**

3-01    WORKMANSHIP

All work shall be installed in a neat and orderly manner. Devices, cabinets, covers, fixtures, exposed raceways, etc., shall be aligned parallel or perpendicular to the building walls, ceiling and floor. Plaster, gypsum board, acoustical tile, and other ceiling and wall finish material shall not be used for support.

3-02    MANUFACTURER'S REPRESENTATIVE

The services of a qualified manufacturer's representative or technician, experienced in the installation, operation, testing, and servicing of the type of system being installed, shall supervise the installation, connecting, software documentation, testing, and adjusting of the system, and train the Owner's personnel in operation of the system. Certified test reports of the final satisfactory test shall be submitted to the Architect-Engineer. Upon completion of work, the entire system shall be completely operational and tested for conformance with these specifications and drawings, and reviewed by the Architect-Engineer. Test shall be performed in accordance with the fire alarm system manufacturer's instructions and per NFPA 72 requirements. All defects in workmanship and material shall be immediately corrected without additional compensation to the Contractor.

RECORD OF COMPLETION: Complete and submit the NFPA-72 Record of Completion form.

3-03    INSTRUCTION

Instruction shall be provided to the owner as required for operating the system. Hands-on demonstrations of the operation of all system components and the entire system including program changes and functions shall be provided.

The contractor and/or the systems manufacturer's representatives shall provide a typewritten "Sequence of Operation."

3-04    CLEAN-UP

Upon completion of all installations and prior to final acceptance by the Owner, all debris shall be removed from the site. Cabinets, enclosures, cover plates, etc., shall be cleaned and paint touched up.

END OF SECTION 283100