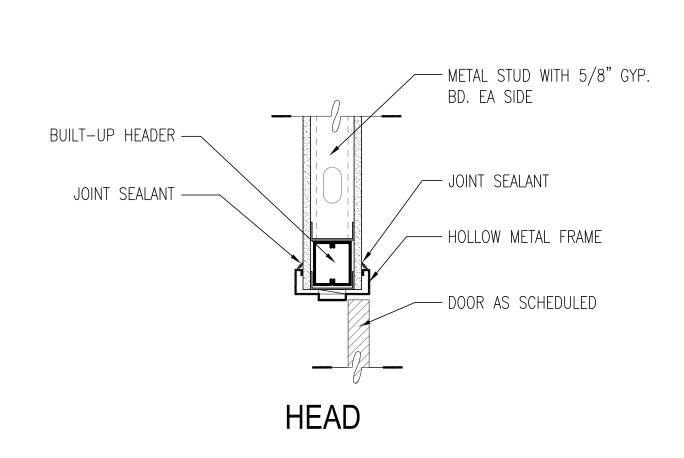
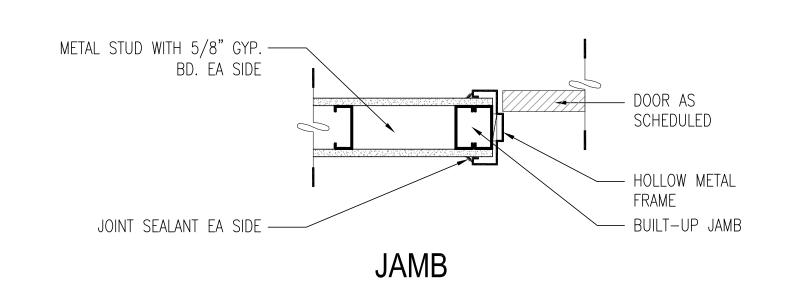


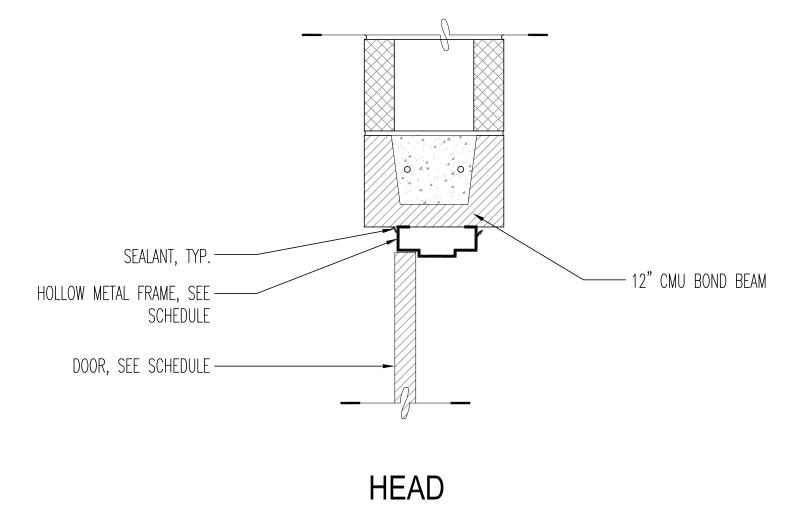
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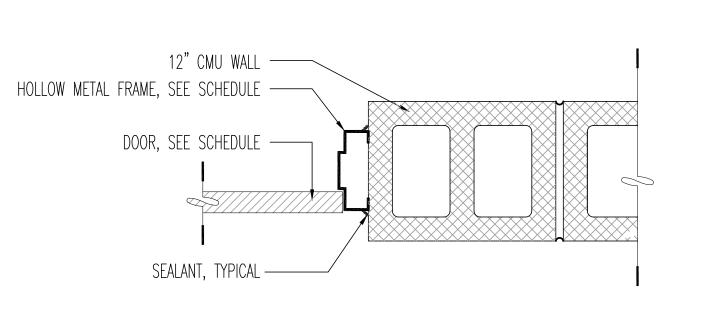


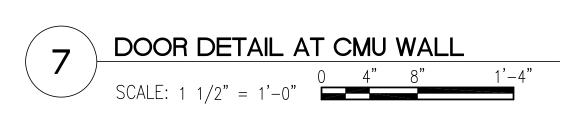




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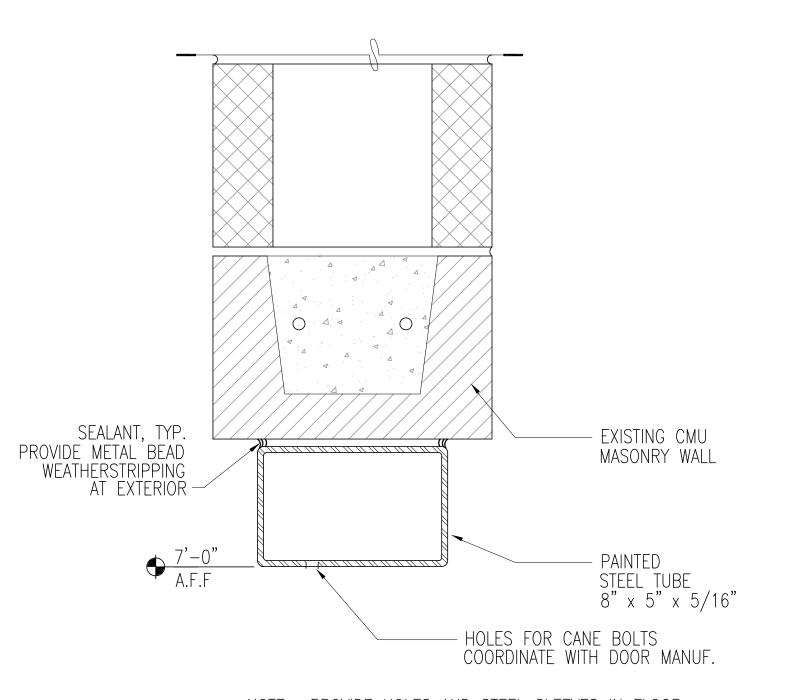






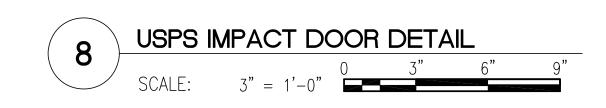
JAMB

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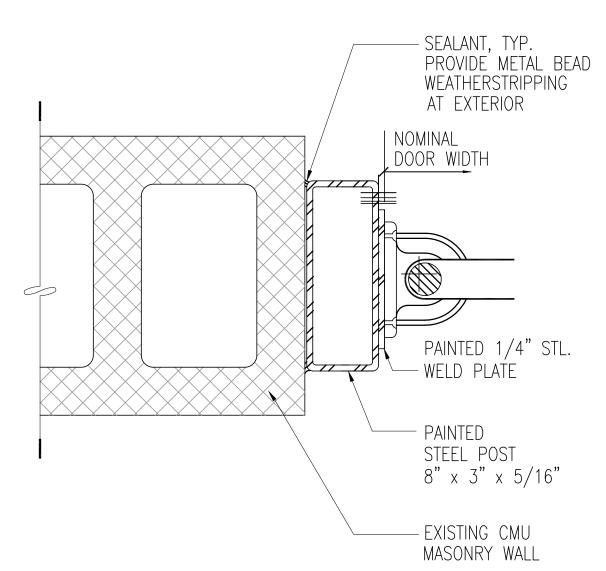


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NOTE: PROVIDE HOLES AND STEEL SLEEVES IN FLOOR FOR CANE BOLTS — COORDINATE WITH DOOR MANUF. HEAD



1 1



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NOTE: PROVIDE WALL BUMPERS AND IMPACT DOOR
BOLLARDS AS REQUIRED. CONTRACTOR TO VERIFY
BUMPER AND BOLLARD LOCATIONS/SIZES WITH OWNER
PRIOR TO CONSTRUCTION AND INSTALL PER USPS GUIDELINES

JAMB

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G2-7-0 d

G2-7-1 n2

G2-4-3 a

| |

| |

P-LAM. BACKSPLASH —

WIRE PULLS ----

3/4" MCP BD. -

CONT. 1"X2" SHELF

BASE AS SCHEDULED —

CLEATS-3 SIDES CONCEALED HINGES, TY

SHELVES

-MINERAL WOOL PACKED

BETWEEN FLUTES OF METAL DECK AND TOP

OF PARTITION

- METAL DECK

-CUT CMU TO

COURSING

−CMU WALL

BOTTOM OF ROOF SLAB OR DECK

- DEFLECTION SPACE AS REQUIRED

- CEILING AS SCHEDULED BOTH SIDES

- FINISH BEAD OR CHANNEL AS REQUIRED

- 1 LAYER 5/8" TYPE "X" GYP. BD. BOTH SIDES

BY SCHEDULED CEILING SYSTEM

- 3-5/8" MTL. STUDS @ 16" O.C.

BASE AS SCHEDULED BOTH SIDES

FINISH AS SCHEDULED

- SEALANT BOTH SIDES

- PARTITION TYPE AS SCHEDULED

WITH SLOPED TOP

2x WOOD BLOCKING IN-WALL AS REQUIRED, TYP.

——— CONTINUOUS 'Z' BASE—PROVIDE END CLOSURE AT OPEN END

-DOUBLE TIER WARDROBE LOCKER SYSTEM

1. CONVENTIONAL STEEL MEMBERS SHALL BE A MINIMUM OF 20 GAUGE (0.0296 INCH, 0.752 MM).

(1 HOUR UL #U465) - 3 5/8" METAL STUDS

IN COMPLIANCE WITH ASTM C754-15 LIMITING HEIGHT TABLES.

1. PROVIDE FINISHED PANELS @ ALL EXPOSED ENDS OF LOCKERS

SUPPORT AREAS -

2. PROVIDE FINISHED FILLER PIECES AS REQUIRED FOR CONTINUOUS FLUSH RUNS, TYP.

.\usps\library\details\G2-4-3a.dwg|\frac{|\sigma color:}{11/2" = 1'-0" |\frac{1}{2} - \frac{1}{2} -

SECTION • WARDROBE LOCKERS

INTERIOR PARTITIONS - TYPE N2

EMBOSSED STEEL MEMBERS SHALL BE A MINIMUM OF 20 GAUGE (0.0190 INCH TO 0.0209 INCH, 0.483 MM TO 0.531 MM). THE THICKNESS OF STEEL MEMBERS SHALL BE INCREASED AS REQUIRED

ile: 10/1/201 Last Revised: 7/19/201 Last Revised: 7/19/201

- SEALANT BOTH SIDES

ROOF/FLOOR

CONSTRUCTION

16 GA. METAL ANGLE —CONT.

DECK ONLY -

ATTACH TO METAL

VERTICAL WALL

REINFORCING

AS REQUIRED —

6

INTERIOR PARTITIONS -

DETAIL @ TOP OF CMU PARTITION



WALL TO HEIGHT OF 12'-0" FROM FLOOR OR TO CEILING HEIGHT WHICHEVER IS LESS.

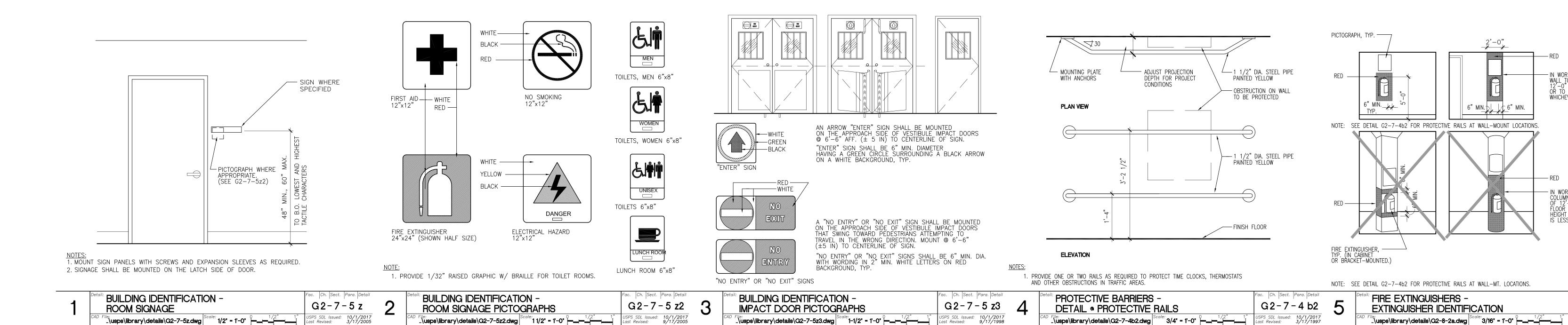
- IN WORKROOM PAINT

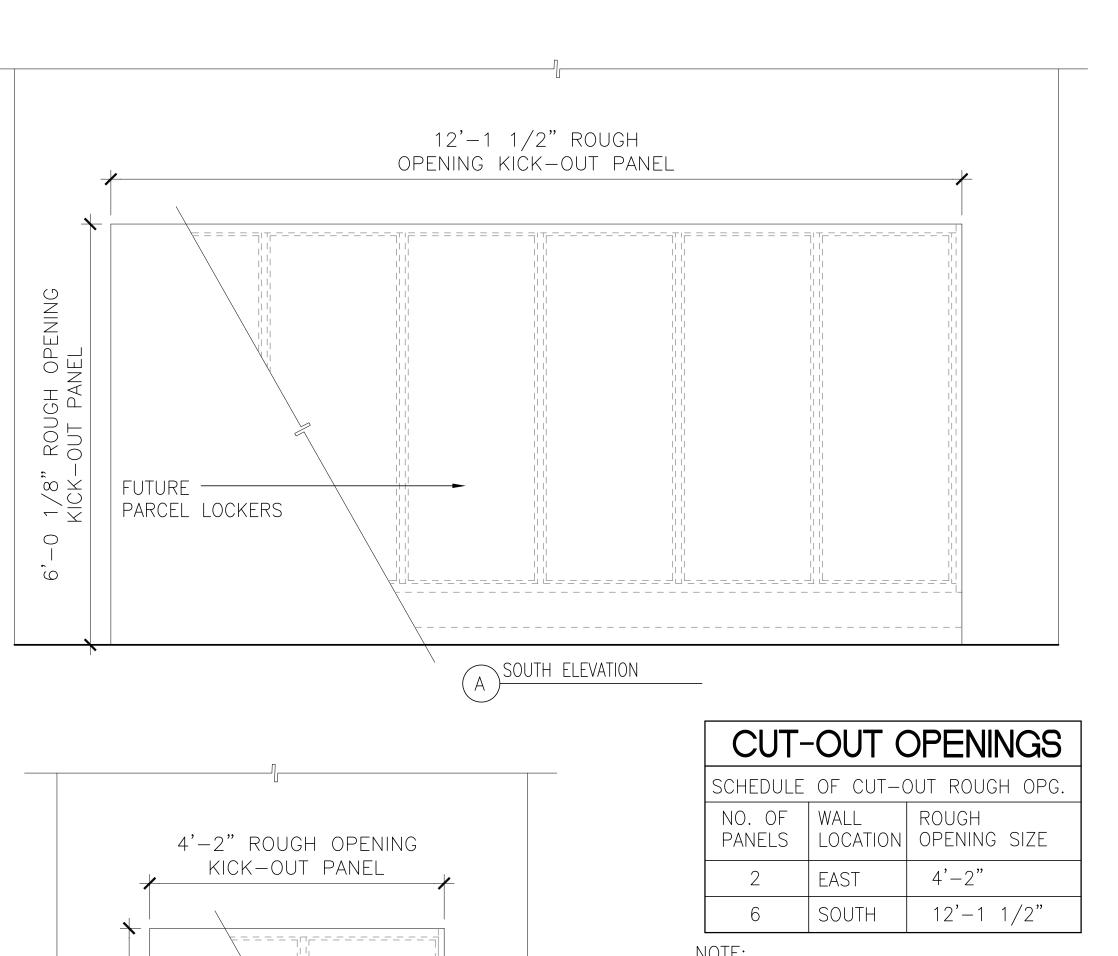
COLUMNS TO HEIGHT OF 12'-0" FROM FLOOR OR TO CEILING HEIGHT WHICHEVER IS LESS (ALL SIDES).

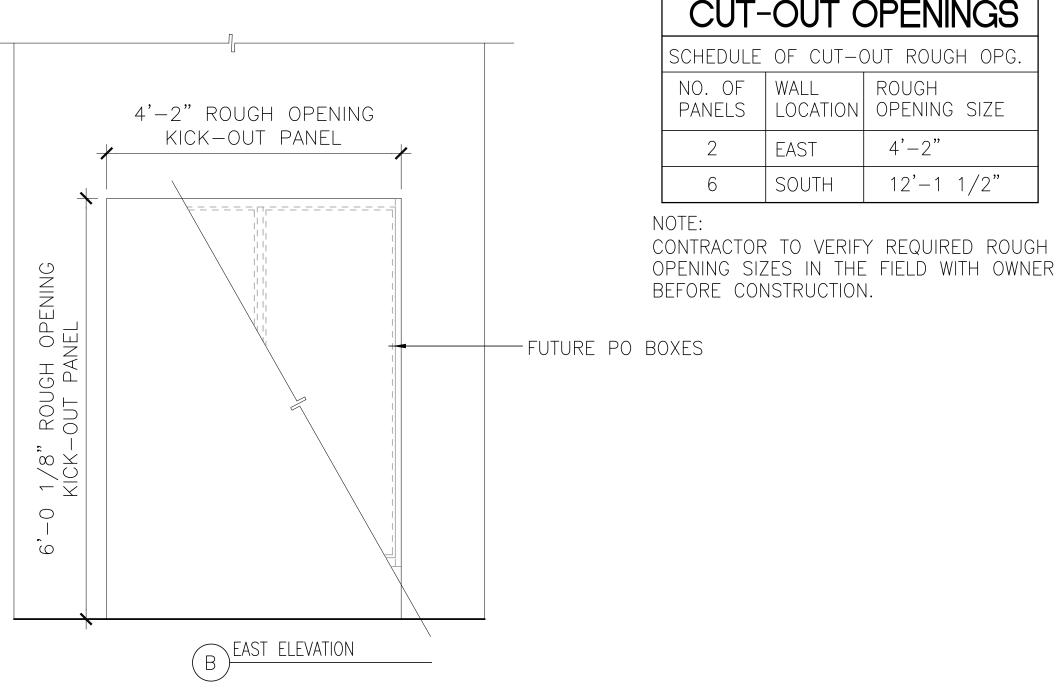
ac. Ch. Sect. Para. Detail

G2-8-2 a

USPS SDL Issued: 10/1/2017 Last Revised: 9/17/2000

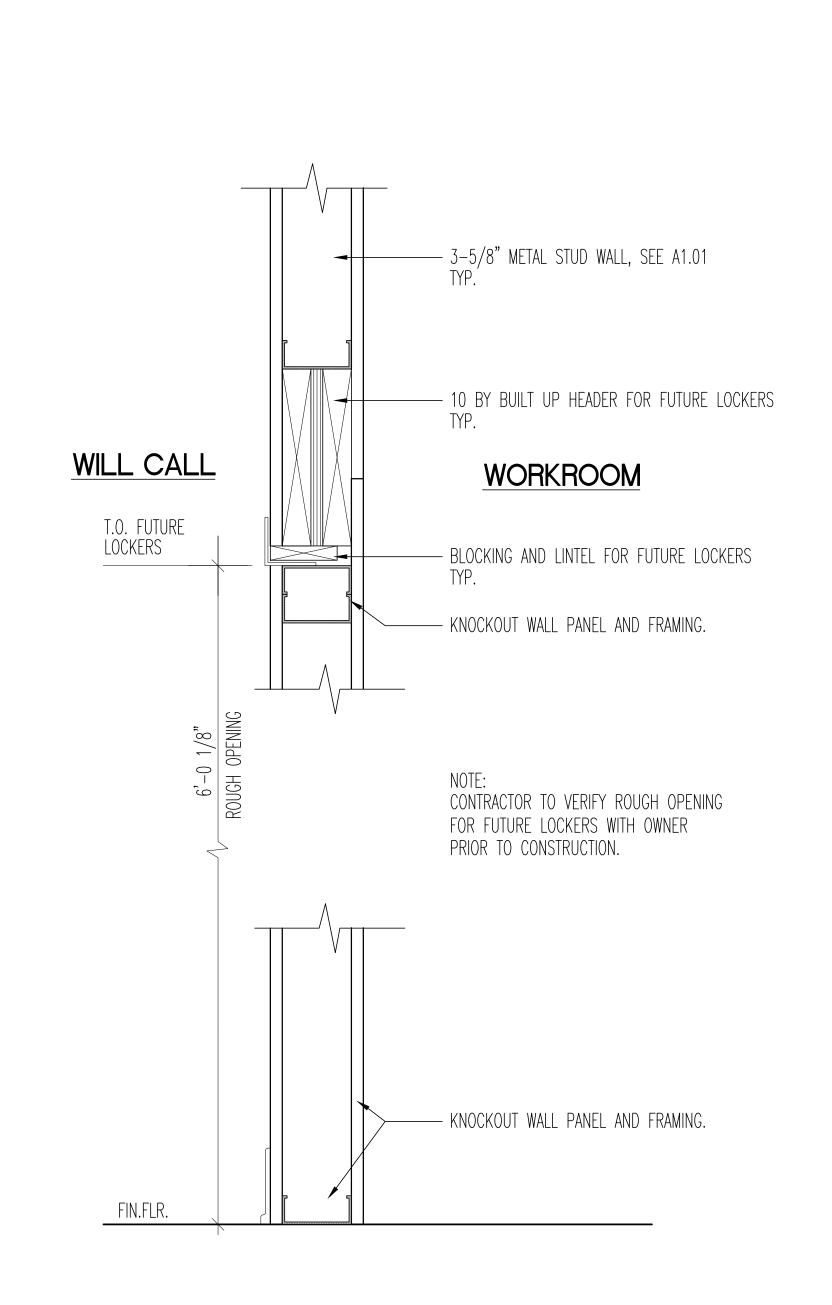








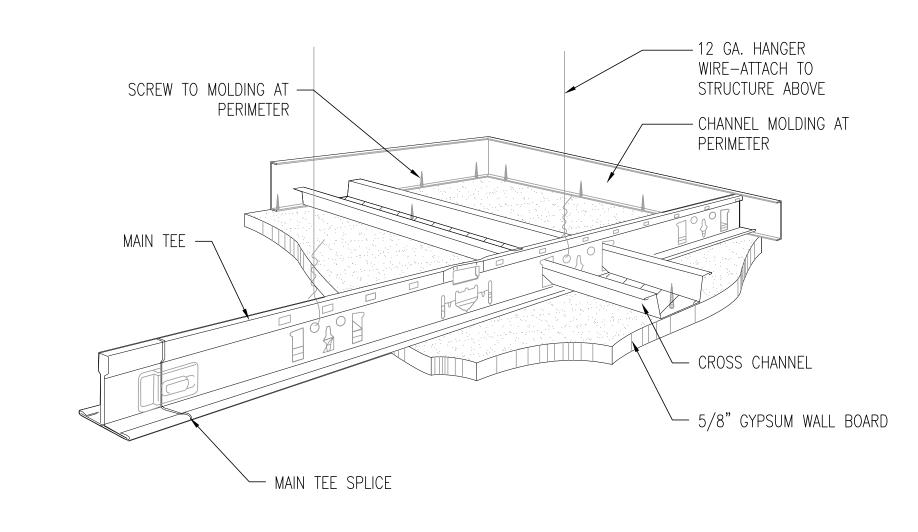
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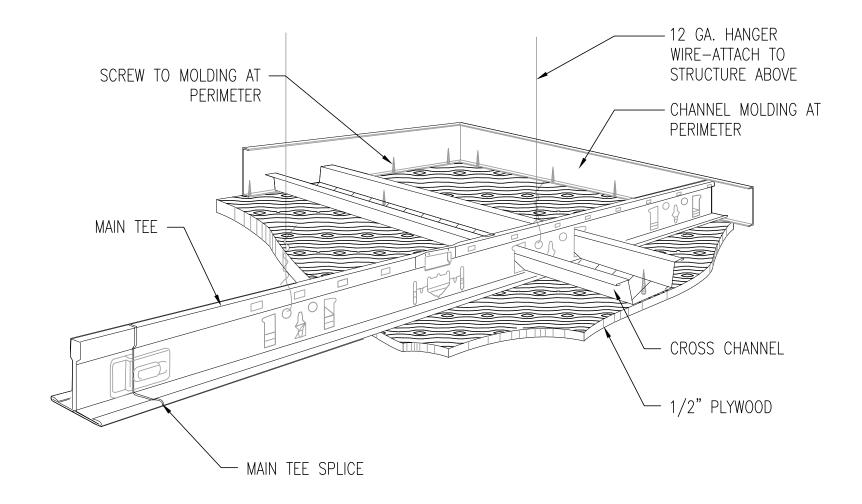
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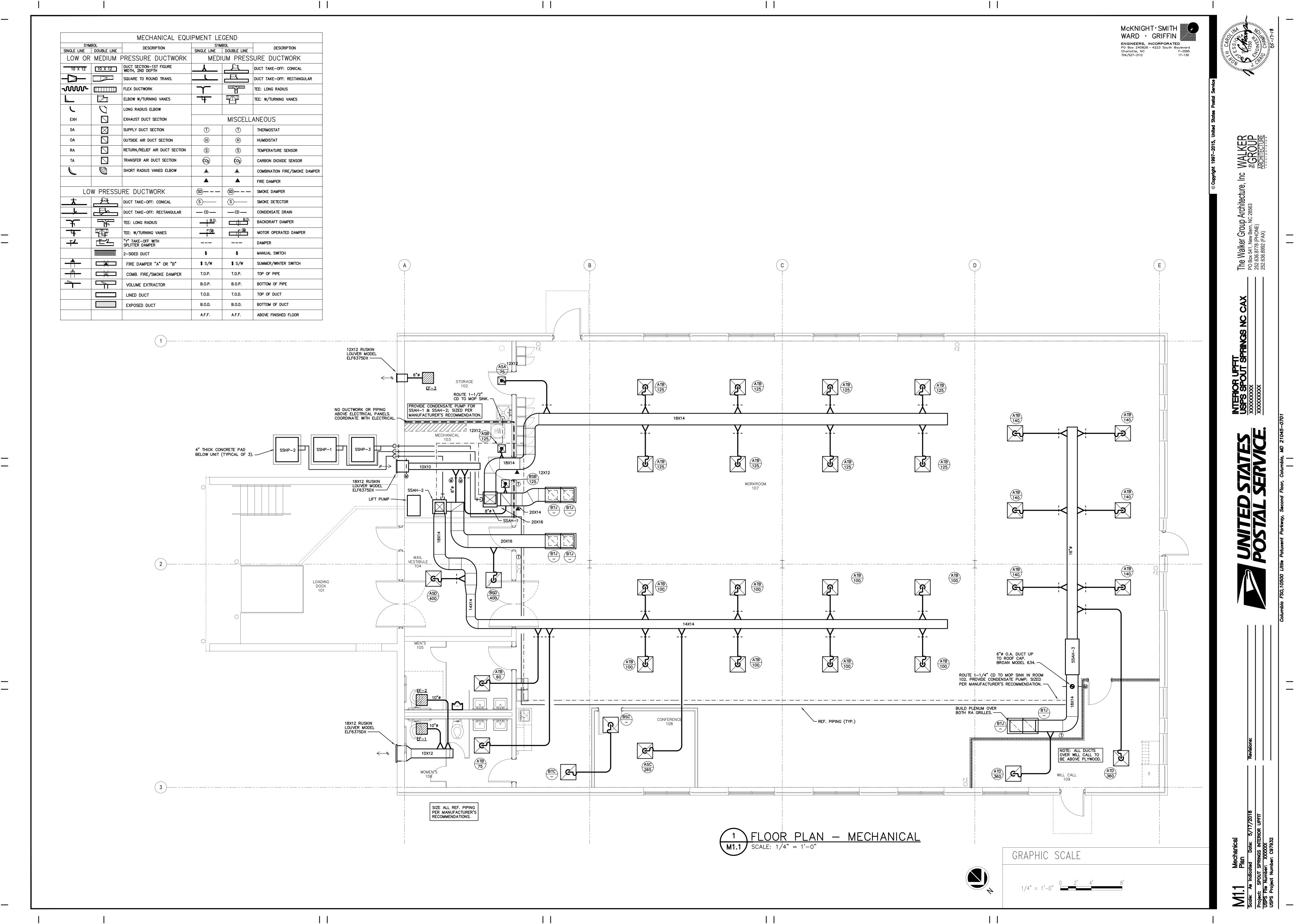
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CAPULLING SESSION SESS	
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SPLIT SYSTEM COOLING UNIT SCHEDULE-R410a (W ELECTRIC HEATER)																															
Unit Tag	Area Served	Nom.	SEER	CFA	$I \mid O.A$	(. E	SP		Ele	ctric Heating	Coil		Air Handling Unit DX Coil Performance			Electrical Data (Outdoor Unit)						Remarks									
SSAH-XX/SSAC-XX		Tons	(EER))				MBH	kW	Volts/	EAT	LAT	Fa	n Motor	ı	MCA MOCP	Approx. Weight	Model	EAT	MBH	MBH	Fan	Con	pressor	·]	Volts I	Phase N	ACA MOC	P Approx. Weight	Model	
(INDOOR/OUTDOOR)								Max		Phase			HP	Volts P	hase		(lbs.)			Total	Sens. Λ	o. FL	No. L	$RA \mid R$	LA				(lbs.)		
SSAH-1/SSHP-1	SEE PLANS	3	15	120	0 170	0 0	0.8	32.6	7.2	208/3	55	95	1/2	208	1	30 30	150	TEM6A0C36H31	80/67	35.2	25.9	1 0.8	1 2	0 9	9.9	208	3 1	3.0 20	250	4TWA4036A3	1-5, 7-9
SSAH-2/SSHP-2	SEE PLANS	4	15	160	0 173	5 0	0.8	42.5	10.8	208/3	55	95	3/4	208	1	45 45	200	TEM6A0C48H41	80/67	48.3	33.7	1 1.1	1 82	2.1 1.	3.7	208	3 1	8.0 30	315	4TWA4048A3	1-5, 7-9
SSAH-3/SSHP-3	SEE PLANS	3	15	120	0 113	5 0	0.8	32.6	7.2	208/3	55	95	1/2	208	1	30 30	150	TEM6A0C36H31	80/67	35.2	25.9	1 0.8	1 7	0 9	0.0	208	3	3.0 20	250	4TWA4036A3	1-6, 9

1. MODEL NUMBERS BASED ON TRANE. EQUALS BY CARRIER AND YORK.

2. CONTRACTOR SHALL VERIFY SERVICE CLEARANCES FOR ALL SUBSTITUTIONS.

3. REFRIGERANT LINES AND ACCESSORIES PER UNIT MFG. RECOMMENDATIONS. 4. PROVIDE OVERFLOW DRAIN PAN BELOW UNIT WITH MICROSWITCH TO SHUT OFF UNIT PRIOR TO PAN OVERFLOW.

5. MFG. SUPPLIED WALL MOUNTED T-STAT.

6. AIR HANDLER HAS HORIZONTAL CONFIGURATION. 7. AIR HANDLER HAS VERTICAL CONFIGURATION.

8. UNIT ON ANGLE IRON STAND.

9. PROVIDE CONDENSATE PUMP PER MFG. RECOMMENDATIONS.

	FAN SCHEDULE												
Unit	Area Served	CFM	ESP	Fan	Sones	Drive	Amps	Volts	Phase	Туре	Model	Detail	Remarks
Tag			(IN.)	RPM									
EF-1	SEE PLANS	150	0.3	890	2.8	DIRECT	3.4	115	1	CEILING	SP-A510-VG	6/M-1	1,2,4
EF-2	SEE PLANS	150	0.3	890	2.8	DIRECT	3.4	115	1	CEILING	SP-A510-VG	6/M-1	1,2,4
EF-3	SEE PLANS	100	0.3	940	0.5	DIRECT	0.2	115	1	CEILING	SP-110-VG	6/M-1	1,2,3

1. MODEL NUMBERS BASED ON GREENHECK. EQUALS BY CARNES, COOK.

2. DISCONNECT BY MFG.

3. FAN CONTROLLED BY WALL SWITCH. CONNECTION BY E.C. SWITCH BY M.C.

4. FAN CONTROLLED BY LIGHT SWITCH. CONNECTION AND SWITCH BY E.C.

MECHANICAL SYSTEMS, SERVICE SYSTEMS
AND EQUIPMENT METHOD OF COMPLIANCE

AND EQUILINE	VI METHOD OF COMI LIANCE	」 Ⅰ	~	
Prescriptive	Energy Cost Budget			
Thermal Zone: 4A			A	
			В	
Exterior Design Conditions		-	C-	S
Winter Dry Bulb: 22				
Summer Dry Bulb: 94			D-	S
Interior Design Conditions			REMAI	RKS
			1. EQU	ALS
Winter Dry Bulb: 65			OR, C	CAR
Summer Dry Bulb: 78			USED). PA
Relative Humidity: 55%		,	2. SYM	BO
D '11' II	my.		XXX/	CFI
Building Heating Load: 60.8 N	ИВН	1	3. FRA	ME
D '11' - C - 1' - 1 - 1 - 0 2 T			S = F	LUS
Building Cooling Load: 8.2 To	ons		PLAS	
Machanical Space Conditioning S	water.		CEILI	
Mechanical Space Conditioning S	ystem		NOTE	
Unitary:			4. OVE	
Description of Unit:	Split System Heat Pumps	,	5. LOU	
Heating Efficiency:	Refer to HVAC Equipment Schedules		<u>NO.</u>	RO
Cooling Efficiency:	Refer to HVAC Equipment Schedules			NI
Heat Output of Unit:	Refer to HVAC Equipment Schedules		A	6"
-	t: Refer to HVAC Equipment Schedules		В	8"
\mathcal{E}			C D	10 12
List Equipment Efficiencies:	Refer to HVAC Equipment Schedules		E	14
	• •		F	16
Equipment Schedules with Motors	(Mechanical Systems)		G	18
Motor Horsepower: Comp	ly w/ 2012 NCECC		NOTE:	
Number of Phases: Comp	ly w/ 2012 NCECC		6. ADЛ	
Minimum Efficiency: Comp	ly w/ 2012 NCECC		7. "B" &	
	ly w/ 2012 NCECC		NO.	R
Number of Poles: Comp	ly w/ 2012 NCECC		1,0,	NI
		1		1 ()

To the best of my knowledge and belief, the design of this building complies with the

mechanical systems, service systems and equipment requirements of the 2012 NC Energy Conservation Code. Section 506 is met by subsection

506.2.2: Reduced Lighting Power Density.

Designer Statement:

	GRILLE & DIFFUSER SCHEDULE										
SYM	TYPE	USE	CFM	NECK	OVER-	FINISH	FRAME	PRICE	REMARKS		
			RANGE	SIZE	ALL			MODEL			
					SIZE			NO			
A	LOUVER	SUPPLY	SEE PLANS	RMK 5	RMK 4	OFF	RMK 3	SMDA	1-6		
	FACE	4-WAY	& RMK 5			WHITE					
В	PERF.	RETURN/	SEE PLANS	RMK 7	RMK 4	OFF	RMK 3	PDDR	1-4, 7-10		
		EXHAUST	& RMK 7			WHITE					
C-	SIDEWALL	SUPPLY	SEE PLANS	SEE	RMK 4	RMK 12	SEE	520D	1-4, 9, 11-13		
				PLANS			PLANS				
D-	SIDEWALL	RETURN/	SEE PLANS	SEE	RMK 4	RMK 12	SEE	530	1-4, 9, 12, 13		
		EXHAUST		PLANS			PLANS				

ALS: METALAIRE, TITUS, KRUEGER, TUTTLE & BAILEY, NAIL-ARNES. SCHEDULE IS GENERAL, SOME MAY NOT BE PAINT ALL INSIDE VISIBLE SURFACES FLAT BLACK. BOL EXPLANATION:

CFM = SYMBOL, FRAME (RMK 3), NECK (RMK 5,7)/CFM T = T-BAR

LUSH SURF. MTD.. E = DUCT MOUNTED: V-BEVELED TER FRAME FOR DROP SURF. (TYPE "A" DIFFUSER)

E: VERIFY FRAME/CEILING COMPATIBILITY. RALL SIZE: LAY-IN = 2'x2', OTHER GRILLES = NECK + 2''+/-.

T. OVL	TOTLL SIZE.		AZ, OTTILIC	ORTELES TREET	<u>~</u> 1/
5. LOU	VER FACE S	SUPPLY NE	CK SIZES		
NO.	ROUND	<u>CFM</u>	<u>NO.</u>	SQUARE	<u>CFM</u>
	NK SIZE			NK SIZE	
A	6"	100	H	6x6	125
В	8"	175	I	9x9	280
C	10"	275	J	12x12	500
D	12"	400	K	15x15	780
E	14"	535	L	18x18	1125
\mathbf{F}	16"	700	M	21x21	1530
G	18"	885	N	24x24	2000
NOTE:	VERIEV CEI	M / NECK S	SIZE		

/ERIFY CFM / NECK SIZE. USTABLE: HORIZONTAL/VERTICAL - "PIANO HINGE" DEVICE.

0.1120	COLLIDED. II		J VEIGITOIN	I IIII (O IIII (OL I	DE TICE.
7. "B" 8	& "E" EXH/R	ETURN NEC	K SIZES ("I	E'' = SQ. NK. ONLY	_
<u>NO.</u>	ROUND	<u>CFM</u>	<u>NO.</u>	SQUARE	<u>CFM</u>
	NK SIZE			NK SIZE	
A	6"	100	G	8x8	220
В	8"	175	H	10x10	345
C	10"	275	I	12x12	500
D	12"	400	J	14x14	680
E	14"	535	K	16x16	885
F	16"	700	L	18x18	1125
NOTE:	VERIFY		M	22x22	1680
CFM /]	NECK SIZE.		N	22x46	2600

DUCTED, LAY-IN PANEL. 9. OBD IF USED AS SUPPLY OR EXHAUST. 10. ALL ALUM. CONSTRUCTION (INCLUDING

8. NO NECK SIZE INDICATES NON-

BACKPAN) IF SHOWN ON PLANS. 11. VOLUME EXTRACTOR WHERE SHOWN ON PLANS. 12. PAINT TO MATCH WALL.

13. VERTICAL FRONT BLADES.



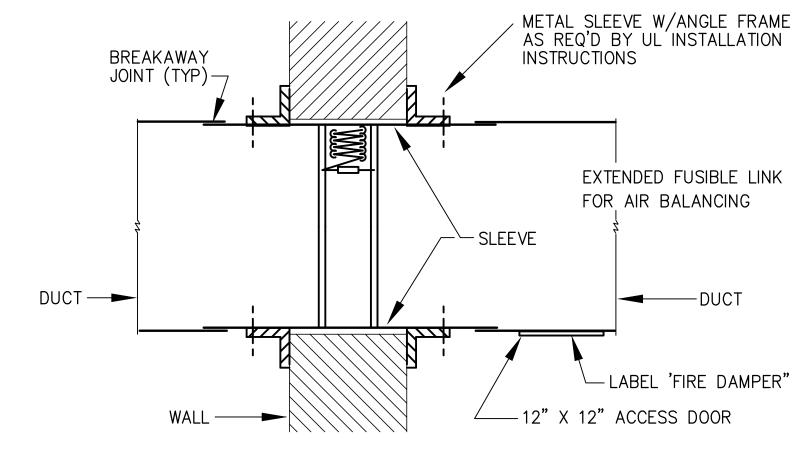
A UPFIT POUT SPR USPS SE

DOSTAL SERVICE

M3.1

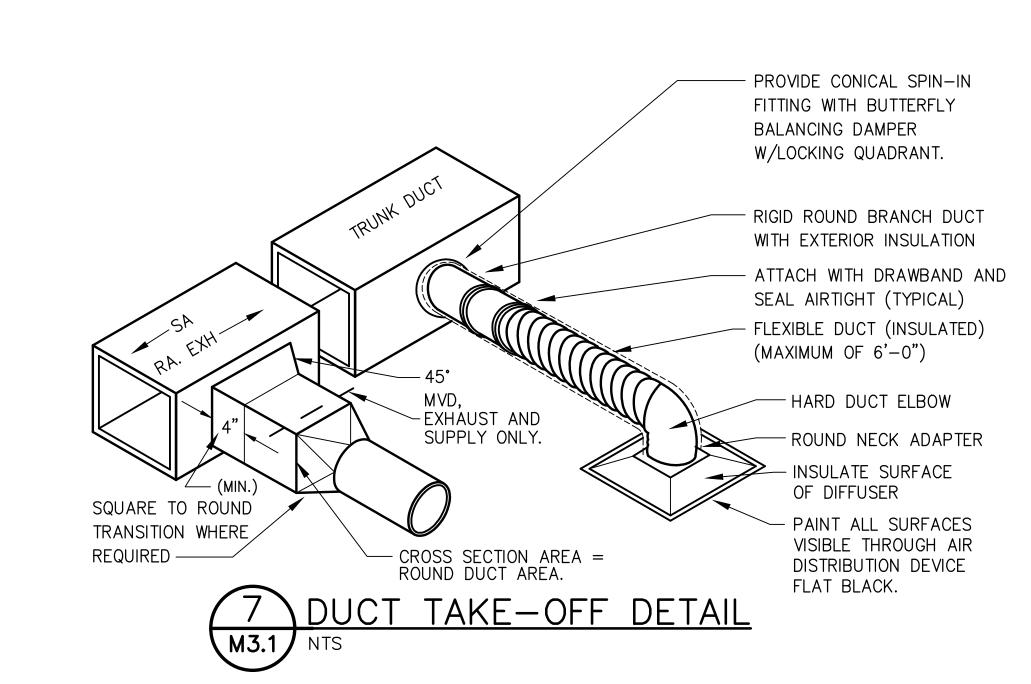
CURB CAP: TURN UP ON DUCT. WATERTIGHT SEAL COVER W/1"THICK STYROFOAM W/TWO LAYERS OF WHITE MASTIC & GLASFAB. ROOF DECK -┌ CURB BY M.C., SEE DETAIL DUCT

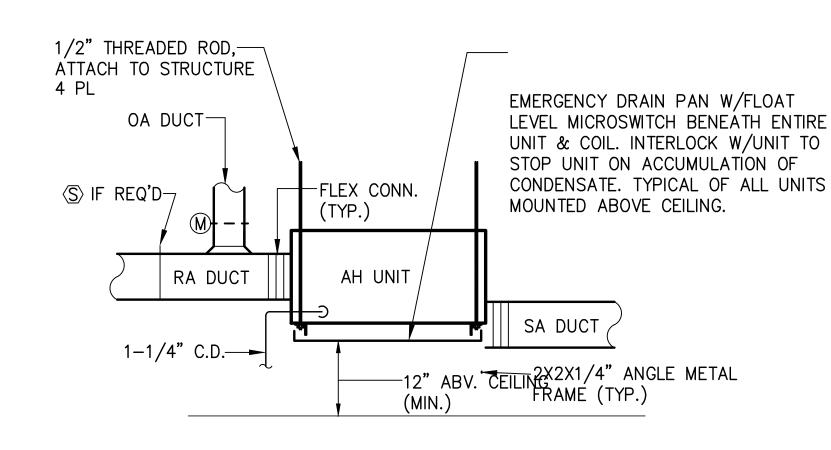
11 DUCT THROUGH ROOF DETAIL M3.1 NTS NOTE: M.C. & G.C. TO COORDINATE SIZE & LOCATION OF ROOF OPENING.



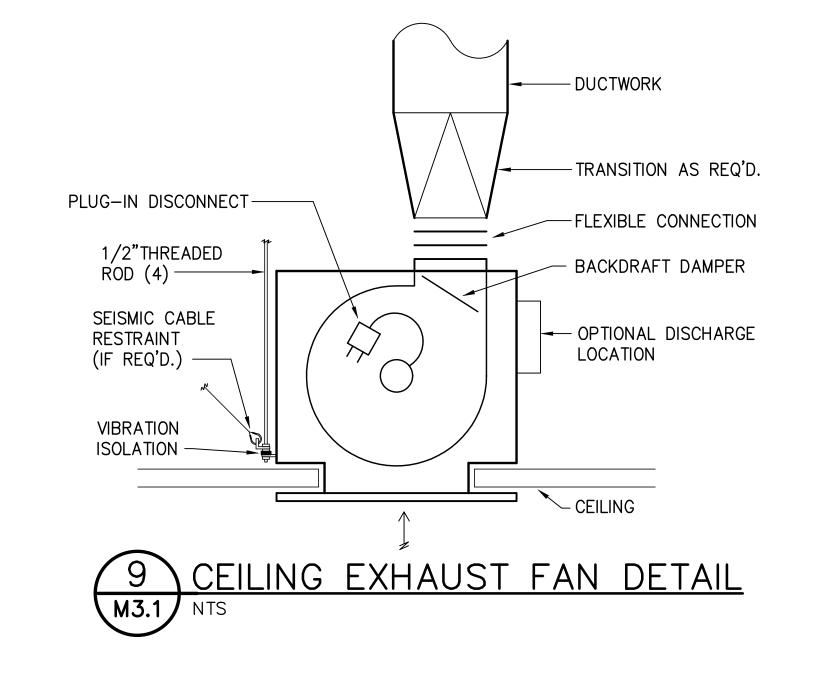
FIRE DAMPER DETAIL
(IN AIR STREAM) TYPE "A" M3.1 NTS

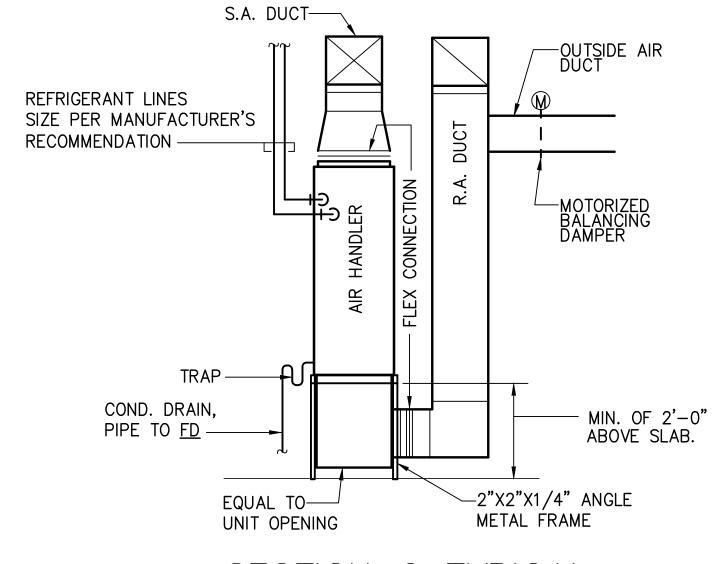
FIRE-RATED WALLS (SEE SPECS FOR "LOW PRESSURE DUCT" DEFINITION). 2. FIRE-RATED WALL'S ARE SHOWN ON PLANS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE NUMBER AND SIZE OF ALL DUCT PENETRATIONS THRU FIRE-RATED WALLS. 3. PLAN SYMBOL = 4. THIS TYPICAL FIRE DAMPER DETAIL IS GENERIC GUIDANCE ONLY. INSTALL FIRE DAMPER IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION DETAILS. DO NOT VARY FROM THOSE INSTRUCTIONS IN ANY WAY. DO NOT FIRE STOP THE GAP BETWEEN THE FIRE DAMPER SLEEVE AND THE PENETRATION UNLESS SPECIFICALLY REQUIRED BY THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.



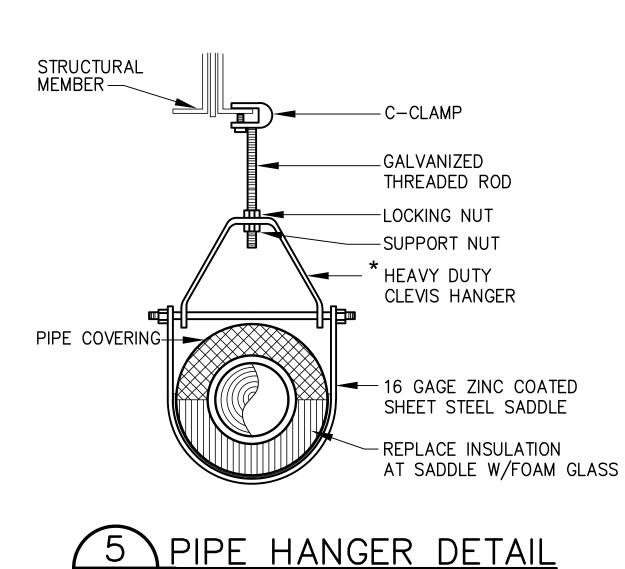


6 SECTION AT AHU
M3.1 NTS



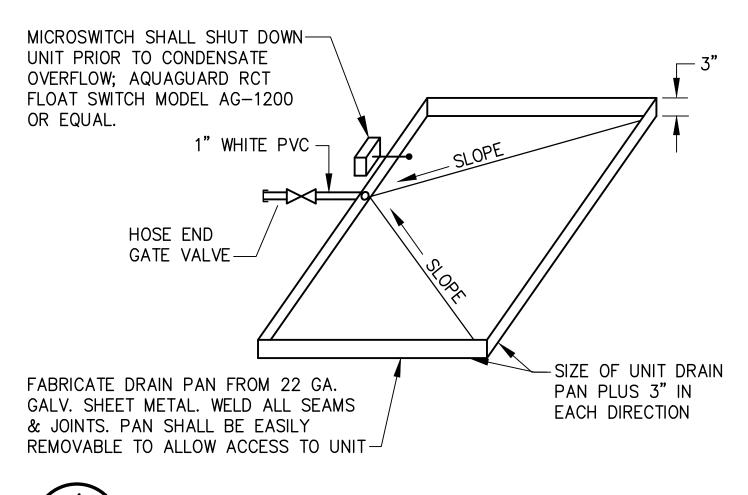




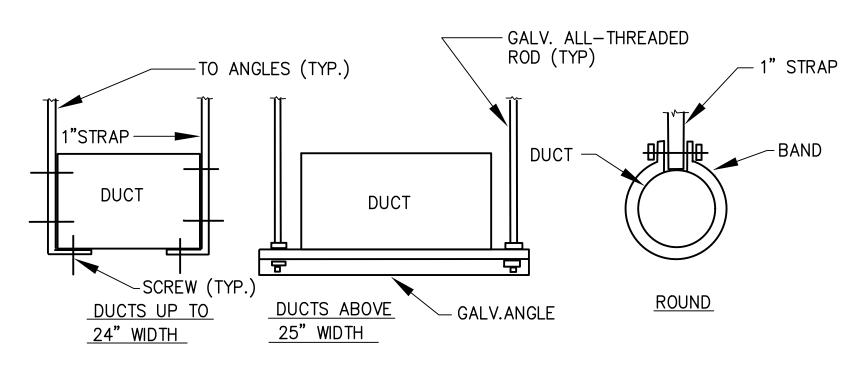


M3.1 NTS

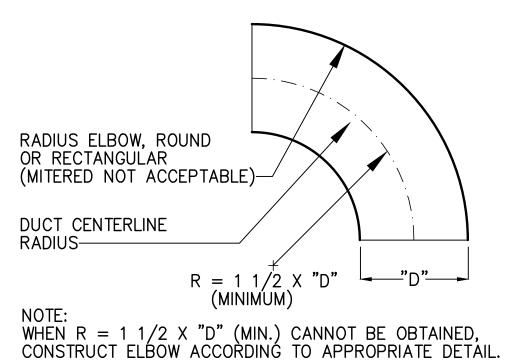
* CONTRACTOR OPTION:
MICHIGAN HANGER #403



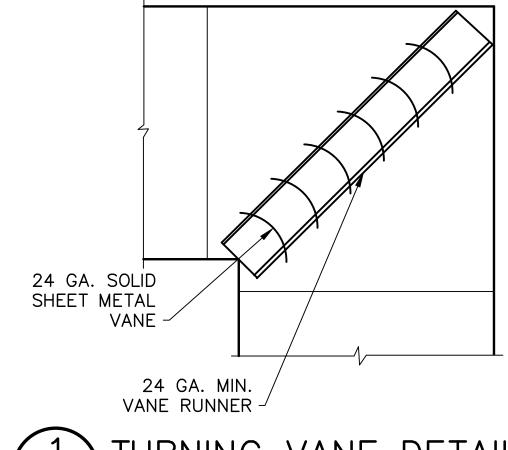








2 RADIUS ELBOW DETAIL M3.1 NTS



TURNING VANE DETAIL M3.1 NTS PERMITTED ONLY WHERE RADIUS ELL WILL NOT FIT.

(a) This specification covers work done by the HVAC Contractor. It is the contractor's responsibility to determine which portion is applicable to his trade.

(b) The Contractor shall coordinate the work and equipment of this Division with the work and equipment specified elsewhere in order to assure a complete and satisfactory installation. Work such as flashing, wiring, etc., which is required by the work of this Section shall be performed in accordance with the requirements of the applicable Section of the

specifications.

(c) It is the intention of these specifications and drawings to call for finished work, tested and ready for operation. Whenever the word "provide" is used, it shall mean "furnish and install complete and ready for

(d) Minor details not usually shown or specified, but necessary for the proper installation and operation, shall be included in the work, the same as if herein specified or shown.

(e) This Contractor is referred to the General Conditions Of The Contract For Construction. This document shall form a part of this specification and shall be binding on this Contractor by reference.

(f) Some items of equipment are specified in the singular; however, the Contractor shall provide and install the number of items of equipment as indicated on the drawings, and as required for complete systems.

(2) Contractor's Qualifications

(a) It is assumed that the Contractor has had sufficient general knowledge and experience to anticipate the needs of a construction of this nature. The Contractor shall furnish all items required to complete the construction in accordance with reasonable interpretation of the intent of the drawings and specifications. Any minor items required by code, law or regulations shall be provided whether or not specified or not specifically shown where it is a part of a major item of equipment, or of the control system specified or shown on the plans.

(3) Duties of Contractor

(a) Contractor shall furnish and install all materials called for in these specifications and accompanying drawings, and must furnish the apparatus complete in every respect. Anything called for in the specifications and not shown on the drawings or shown on the drawings and not called for in the specifications, must be furnished by the Contractor.

(b) Contractor is responsible for familiarizing himself with the details of the construction of the building. Work under these specifications installed improperly or which requires changing due to improper readings or interpretation of building plans shall be corrected and changed as directed by the Architect without additional cost to the Owner.

(c) The Contractor shall follow drawings in laving out work, check drawings of other trades to verify spaces in which work will be installed and maintain maximum headroom and space conditions at all points. Where headroom or space conditions appear inadequate, Architect shall be notified before proceeding with installation.

(d) The plans are diagrammatic and are not intended to show each and every fitting or a complete detail of all the work to be done; but are for the purpose of illustrating the type of system, showing duct sizes, etc., and special conditions considered necessary for the experienced mechanic to take off his materials and lay out his work. This Contractor shall be responsible for taking such measurements as may be necessary at he job and adapting his work to local conditions.

(e) Contractor shall determine the schedule of work as determined by the General Contractor and must schedule his work to maintain the building construction schedule so as not to interfere with or hold up any other Contractors.

(4) Codes, Rules, Permits and Fees

(a) The Contractor shall give all necessary notices, obtain all permits and pay all sales taxes, fees and other costs, including utility connections or extensions, in connection with his work; file all necessary plans, prepare all documents and obtain all necessary approvals of all authorities having jurisdiction, obtain all required certificates of inspection for his work and deliver same to the Architect before request for acceptance and final payment of the work.

(b) The Contractor shall include in his work, without extra cost to the Owner, any labor, materials, service. apparatus, drawings, in order to comply with all applicable laws, ordinances, rules and regulations whether or not shown on drawings and/or specified.

(c) All materials furnished and all work installed shall comply with the National Fire Codes of the National Fire Protection Association, and with the requirements of all governmental departments having jurisdiction.

(d) All work shall be done in accordance with the North Carolina State Building Code, and requirements of governmental agencies having jurisdiction.

(5) Guarantee

(a) The Contractor shall guarantee the complete mechanical system against defect due to faulty materials, faulty workmanship or failure due to negligence of the Contractor. This guarantee will exclude normal wear and tear, maintenance lubrication, replacement of expendable components, or abuse. The guarantee period shall begin on the date of the final acceptance and shall continue for a period of 12 months during which time the Contractor shall make good such defective workmanship and materials and any damage resulting therefrom, within a reasonable time of notice given by the Owner. Refrigeration compressor shall have a five year warranty.

(6) Record Drawings

(a) The Contractor shall furnish record drawings indicating any and all changes in locations of ductwork or equipment from that shown on the Contract Drawings. The drawings shall consist of clean, legible prints of the Contract Drawings, available from the Architect on which the Contractor shall mark all notes, dimensions, sizes and information required. The prints shall be kept for this purpose only. Before final inspection the Contractor shall submit the Record Drawings to the Architect.

(7) Safety Requirements

(a) Comply with all O.S.H.A. requirements.

(8) Materials and Workmanship

(a) All materials and apparatus required for the work, except as specified otherwise, shall be new, of firstclass quality, and shall be furnished, delivered, erected, connected and finished in every detail, and shall be so selected and arranged as to fit properly into the building space. Where no specific kind or quality of material is given, a first-class standard article as approved by the Architect shall be furnished.

(b) All work must be done by first-class and experienced mechanics properly supervised and it is understood that the Architect has the right to stop any work that is not being properly done and has the right to demand that any workman deemed incompetent by the Architect be removed from the job and a competent workman substituted therefor.

(9) Equipment Deviations

(a) The Contractor must use the equipment specified in the plans and specifications or equal equipment as supplied by those manufacturers specifically named as equa

(10) Shop Drawings

(a) The Contractor shall submit for approval four (4) sets of detailed shop drawings of all equipment and all material required to complete the project, and no materials or equipment may be delivered to the job site or installed until the Contractor has in his possession the approved shop drawings for the particular material or equipment. The shop drawings shall be complete as described herein. The Contractor shall furnish the number of copies required by the General and Special Conditions of the Contract, but in no case less than six (6) copies. Shop drawings shall bear approval of

(b) Approval rendered on shop drawings shall not be considered as a guarantee of quantities, measurements, or building conditions. Where drawings are approved. said approval does not in anyway relieve the Contractor from his responsibilities or necessity of furnishing material or performing work as required by the Contract Drawings and specifications.

(11) Observation

(a) The project will be observed periodically as construction progresses. The contractor will be responsible for notifying the Architect at least 72 hours in advance when any work to be covered up is ready for inspection. No work will be covered up until after observation has been completed on such items as piping and insulation, etc.

(12) Accessibility

(a) Contractor shall be responsible for the adequate clearance in hung ceilings for the proper installation of his work. He shall cooperate with the General Contractor and all other Contractors whose work is in the same space, and shall advise the General Contractor of his requirements. Such spaces and clearances shall;, however, be kept to the minimum size required.

(b) The Contractor shall locate all equipment which must be serviced, operated or maintained in fully accessible positions. If required for better accessibility, furnish access doors for this purpose. Minor deviations from drawings may be allowed for better accessibility and any change shall be submitted for approval.

(13) Protection

(a) The Contractor shall protect all work and material from damage, and shall be liable for all damage during construction.

(14) Foundations, Supports, Piers, Attachments.

(a) All equipment, unless otherwise shown, shall be securely attached to the building structure in an approved manner by this contractor. Attachments shall be of a strong and durable nature and any attachments that are, in the opinion of the architect/engineer not strong enough shall be replaced as directed.

HVAC SPECIFICATIONS

Low Pressure Ductwork:

Ductwork shall be constructed of zinc coated sheet steel and shall conform to the 1st edition of SMACNA HVAC duct construction standards —metal and flexible, 1985 as follows:

<u>Duct Hangers and Supports:</u>

<u>Duct Leakage Test:</u>

the system.

<u>Duct Insulation:</u>

Controls:

Testing and Balancing:

scheduled value.

acceptance date.

scheduled auantities.

interference from adjacent units.

and smoke developed -50.

Duct hangers and supports shall conform to those shown in tables

perform in the presence of the engineer a duct leakage test on all

rigid medium pressure duct. Contractor shall notify the engineer

contractor may at his option test portions of the duct system in

The installed medium pressure duct system shall be tested to 3"

calibrated office type flow meter. Total allowable leakage of the

system shall not exceed 1/2 of 1% of the air handling capacity of

The air leakage at the test pressure shall be measured by a

If the system is tested in sections, the leakage rates shall be

Leakage concentrated at one point may result in objectionable

sources must be corrected to the satisfaction of the engineer.

calibrated against a primary standard, and this calibrated curve

Insulation shall be owens—corning, certain—teed/st. Gobain, manville

or approved equivalent. Adhesives shall be as manufactured by

composite (insulation, jacket and adhesive) fire and smoke hazard

rating as tested by astm e-84, not exceeding flame spread -25

insulation. All weld joints shall be wire brushed and give one (1)

coat of red lead before insulating. Staples will not be permitted in

All supply duct shall be shall be externally insulated with fiberglass

ductwrap. Duct insulation system shall meet requirements of nfpa

90a and shall have ul fire hazard classification not to exceed the

with 100% coverage. On horizontal runs, tops of ducts over 12" in

width and sides of 16" in height shall be additionally secured with

placed at midpoints. On vertical runs, fasteners shall be placed on

ductwrap insulation, 2" thick, 1.5# density. Ductwrap shall be

provided by manufacturer with a white exterior jacket to match

existing ductwrap, mechanical contractor to field verify existing

following: flame spread - 25; fuel contributed - 50; smoke

generated -50. Insulation shall be applied to the sheet metal

mechanical fasteners. On spans over 30", fasteners are to be

over 12". Fasteners shall be flush with the surface. All ductwork

Work shall be performed by technicians competent in the trade of

testing and balancing environmental systems and shall be done in

an organized manner utilizing appropriate test and balance forms.

Instruments for use in the test and balancing procedures shall be

field instruments used in the balance should have been calibrated

Starting date for mechanical system shall be scheduled well in

be in full operation with all equipment functional prior to

Performance readings shall be taken and recorded on all air

duct dampers and only minor adjustments made with grille

All controls shall be calibrated by qualified personnel prior to

All units shall be checked out thoroughly and the information

recorded on each machine. Check sheets shall be included in

operating and maintenance instructional manual

acceptance date. Thermostats shall be in close calibration with one another and shall operate their respective units without

advance of expected completion date and shall be established a

minimum of two weeks prior to acceptance date. The system shall

distribution devices and the system shall be balanced out prior to

acceptance. Balancing of the system shall be accomplished with

dampers. Record and submit results in table form along side of

of first quality and be accurately calibrated at the time of use. All

shall be covered with an 8 oz. Canvas jacket or an embossed

paint grip metal jacket to accept final painting by the g.C.

Provide 7 day programmable thermostat for each system.

All equipment shall be balanced to within $\pm -10\%$ of the

at least within the previous three months.

a maximum of 15" centers on all width dimensions

3-m foster or insulation manufacturer. Insulation shall have

All vapor barriers and joints shall be sealed to prevent

condensation. Clean and dry all ductwork before installing

The orifice flow measurement device must have individually

noise even if the system passes the leakage rate criteria. Noise

added to give the performance of the whole system.

permanently attached to the orifice tube assembly.

4-1 and 4-2 of smacna hvac ductwork 1985, 1st edition.

After installation and prior to insulating, the contractor shall

72 hours in advance when this test shall be applied. The

lieu of testing the entire system at once.

Rectangular duct: 1" w.G. Pressure class — table 1—4.

All ductwork must be sealed in accordance with seal class c as

Round duct: 2" w.G. Pressure class — table 3—2.

defined in SMACNA HVAC duct construction standards—metal and flexible, 1985.

Duct hangers and supports shall conform to those shown in tables 4-1 and 4-2 of SMACNA HVAC ductwork 1985, 1st edition.

Round Ductwork:

Round ductwork shall be prefabricated spiral lock seam conduit with prefabricated fittings as manufactured by united sheet metal co., inc. Or equal. Construction shall be airtight and shall be manufactured from galvanized steel meeting astm a-517-67. Fittings shall be manufactured to published standards for dimensions and construction details. Installation manuals shall be supplied to the contractor to provide detailed instructions on methods and procedures for assembly. All seams in all fittings are to be continuously welded. Galvanized areas that have been damaged by welding shall be coated with corrosion resistant aluminum paint. Openings for grille mounting shall be factory cut and framed for the grille mounting bracket and the framing shall not have excessive welding that will be noticeable beyond the grille frame. All joints shall be sealed using Benjamin Foster 30-02 sealed between screwed metal seams banded with fiberglass tape.

Double Wall Spiral Duct:

Duct shall be prefabricated spiral lock seam conduit with prefabricated fittings as manufactured by United Sheet Metal co., inc. Or equal.

Construction shall be an airtight, outer pressure shell, a 1" insulation layer, and a perforated metal inner liner that completely covers the insulation throughout the system. The outer shell shall be manufactured from galvanized steel meeting ASTM a-517-67.

Fittings shall be manufactured to published standards for dimensions and construction details. Installation manuals shall be supplied to the contractor to provide detailed instructions on methods and procedures for assembly.

All seams in the pressure shell of all fittings are to be continuously welded. Galvanized areas that have been damaged by welding shall be coated with corrosion resistant gluminum paint.

Inner liners of both duct and fittings are to be adequately supported by metal spacers welded in position to maintain spacing and concentricity.

Provide an inner coupling to glian the inner lining to maintain good air flow conditions equivalent to standard round high pressure duct

Openings shall be factory cut and framed for the grille mounting bracket and the framing shall not have excessive welding that will be noticeable beyond the grille frame.

All exposed duct shall be mill phosphatized so as to accept painting by the general contractor.

90 degrees elbows shall be 5 piece gored elbows.

All joints shall be sealed using benjamin foster 30-02 sealed between screwed metal seams banded with fiberglass tape.

<u>Ductwork Installation:</u>

All ductwork shall be provided in a neat workmanlike manner. The ducts shall be properly braced and reinforced. All slip joints shall be made in the direction of flow. All ducts shall be true to the dimension indicated and shall be straight and smooth on the inside with neatly finished airtight joints. The ducts shall be securely anchored into the building construction in an approved manner and shall be completely free from vibration under all conditions of operation. All supply, return fresh—air and exhaust systems shall be completely balanced.

No duct transformation shall be of a ratio less than four to one and where possible, shall be of a ratio of six to one. No less than three vertical splitters shall be provided where these ratios cannot be met. No elbow shall have a throat center line radius of less that one and one—half times the duct width at the turn. All turns of less than this amount in rectangular duct shall be provided with duct turning vanes of standard design. Splitters or multi-blade volume dampers, where indicated, shall be provided in

Turning vanes shall be provided at all tees and square elbows. Turning vanes shall be factory fabricated and designed in accordance with the smacna or ashrae guide for formed vanes. The first set of turning vanes on the leaving side of fans shall be of the acoustical type to aid in the elimination of unit noise with the exception of room fan coil units.

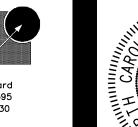
Splitter dampers and volume extractors shall be provided in all low velocity ductwork for proper air distribution. Each damper shall be provided, lubricated bearings at both ends of the shafts, adjustments quadrant, and locking devices and shall be constructed of galvanized iron or steel sheet one gauge heavier than the duct in which they are installed. Access doors shall be located at all splitter dampers.

Handholes of not less than 6" x 6" shall be provided at all points where access is required. Manholes of not less than 18" x 24" shall be provided at all points where it is necessary to clean or remove parts of equipment. All access doors and handholes shall be rubber gasketed insulated type with frame and latches.

Install access doors at each fire damper and smoke detector. Label all access doors.

All ductwork must be sealed in accordance with seal class c as defined in smacna hvac duct construction standards — metal and flexible, 1995.

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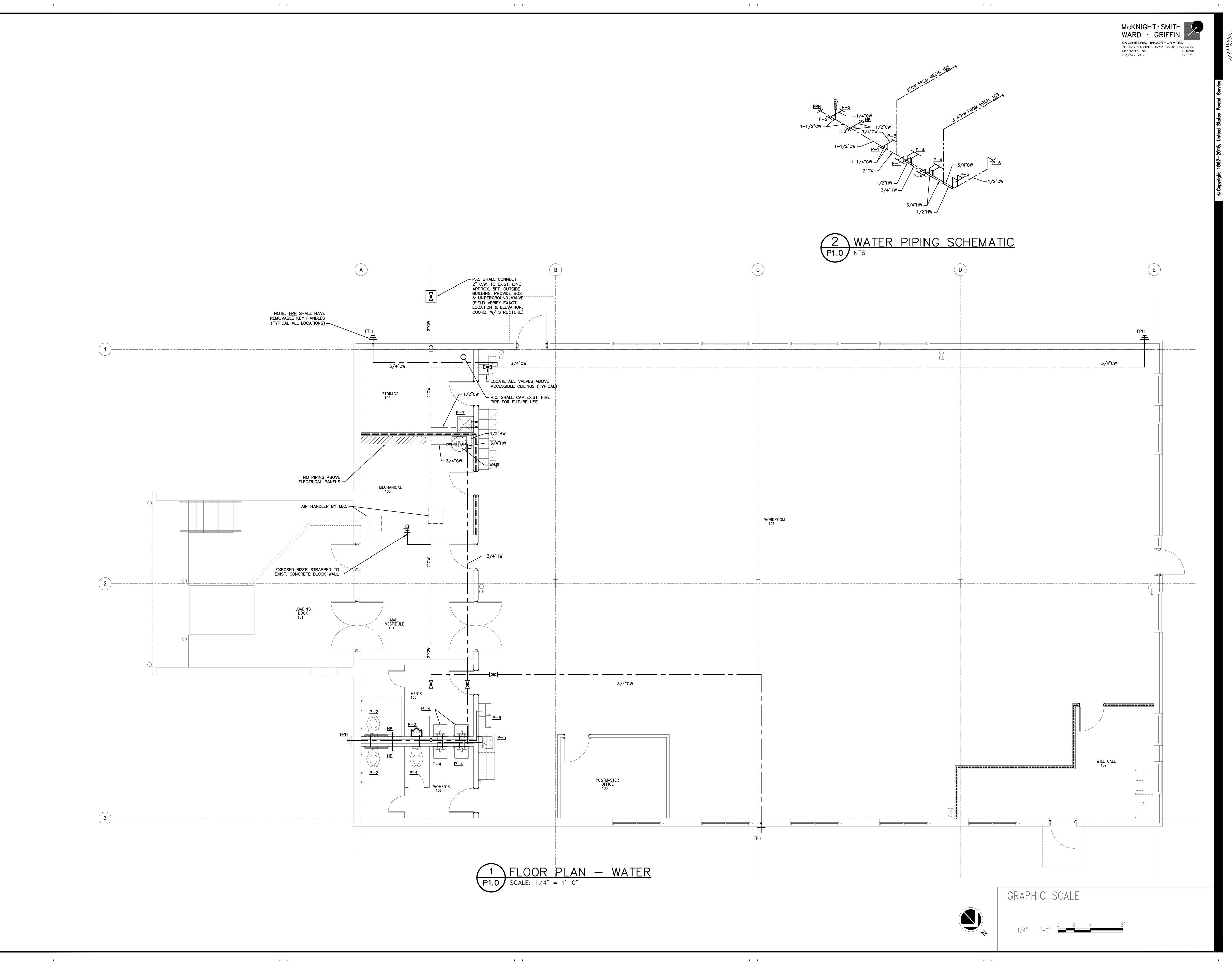


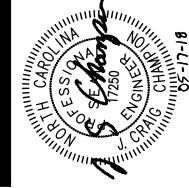
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