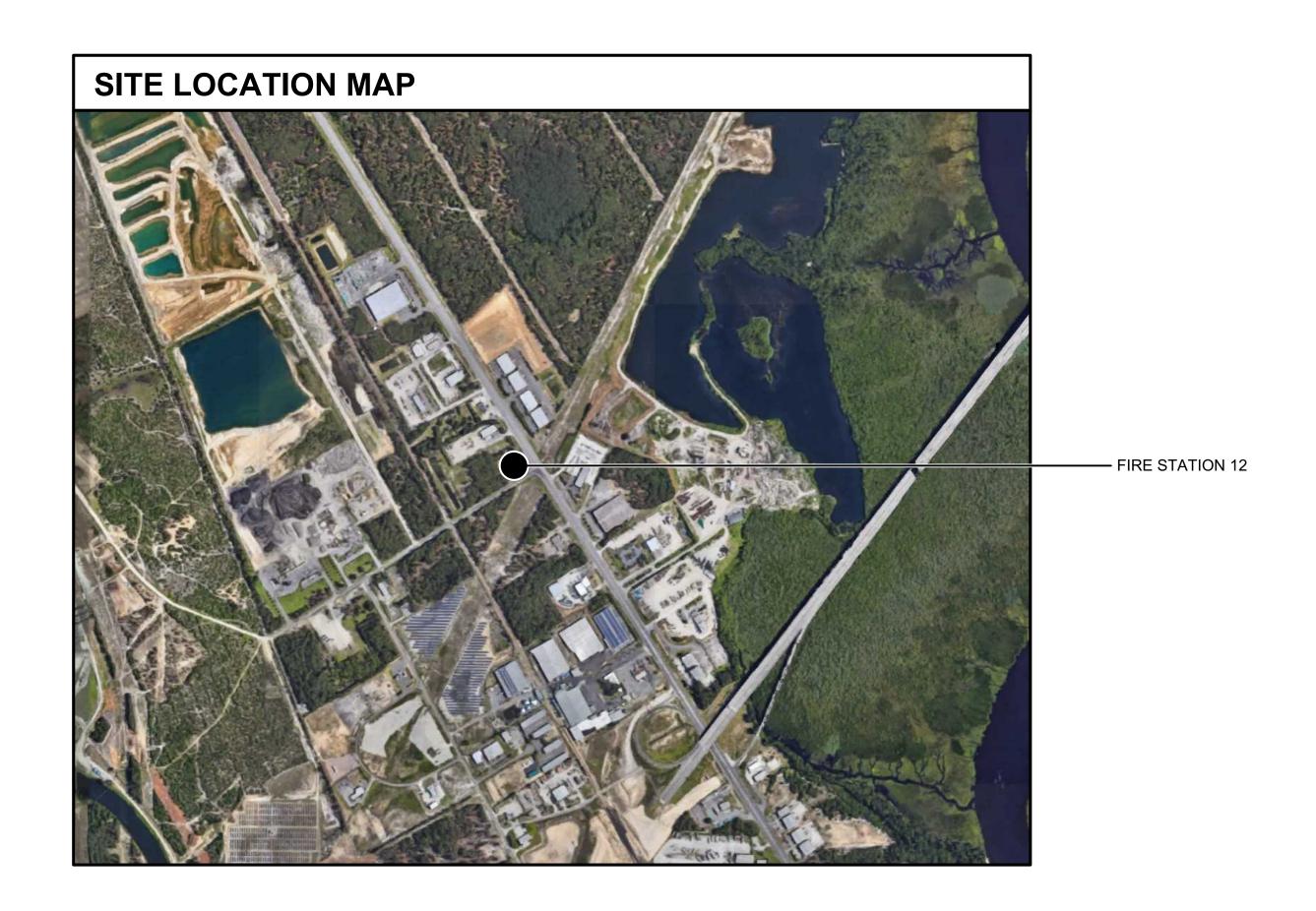
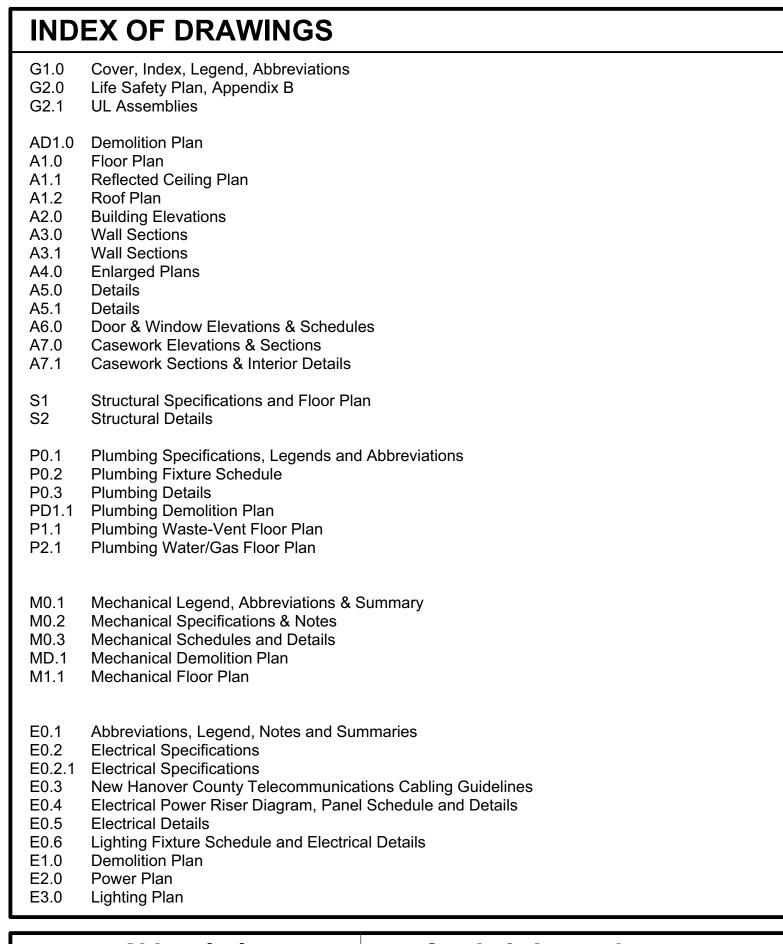
ATTACHMENT I

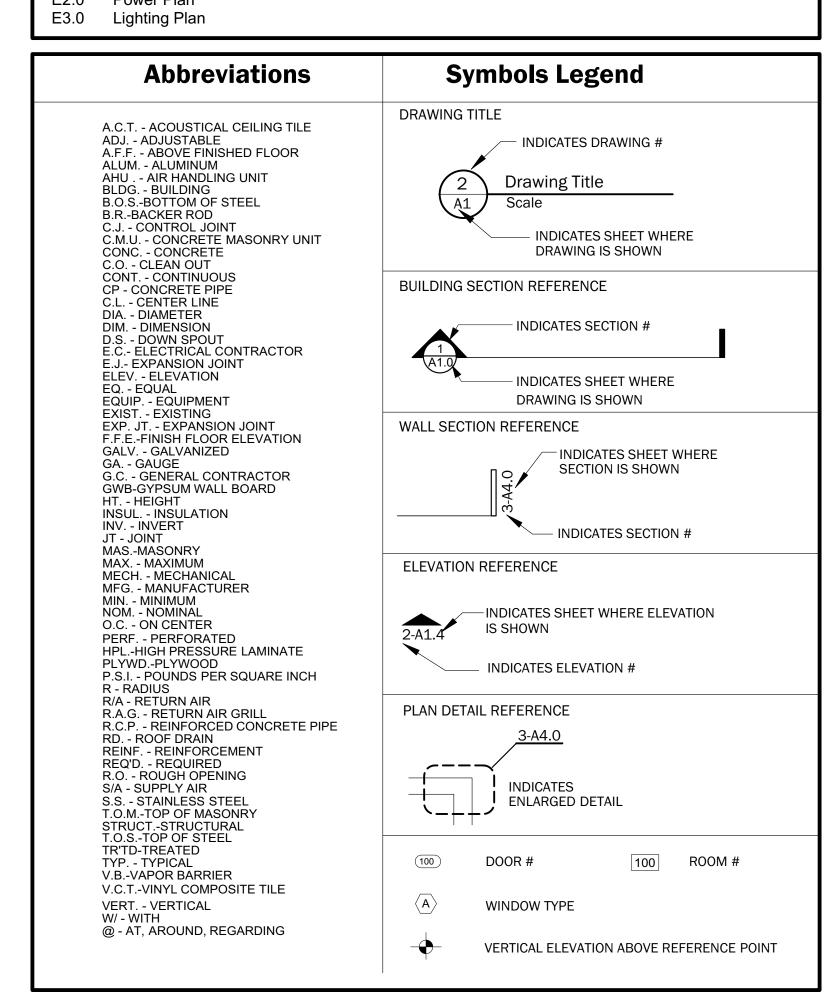
Hurricane Florence Repairs New Hanover County Fire Station 12

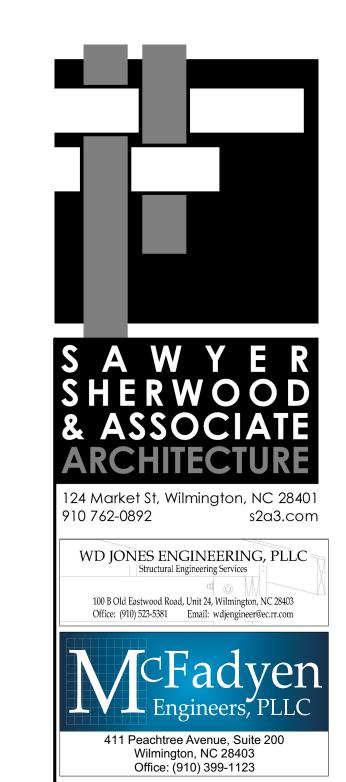
3805 US-421 Wilmington, NC 28401

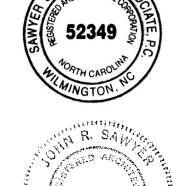
Construction Drawings 1 May, 2020













Florence Repairs New Hanover County Fire Station 12

3805 US-421 Wilmington, NC

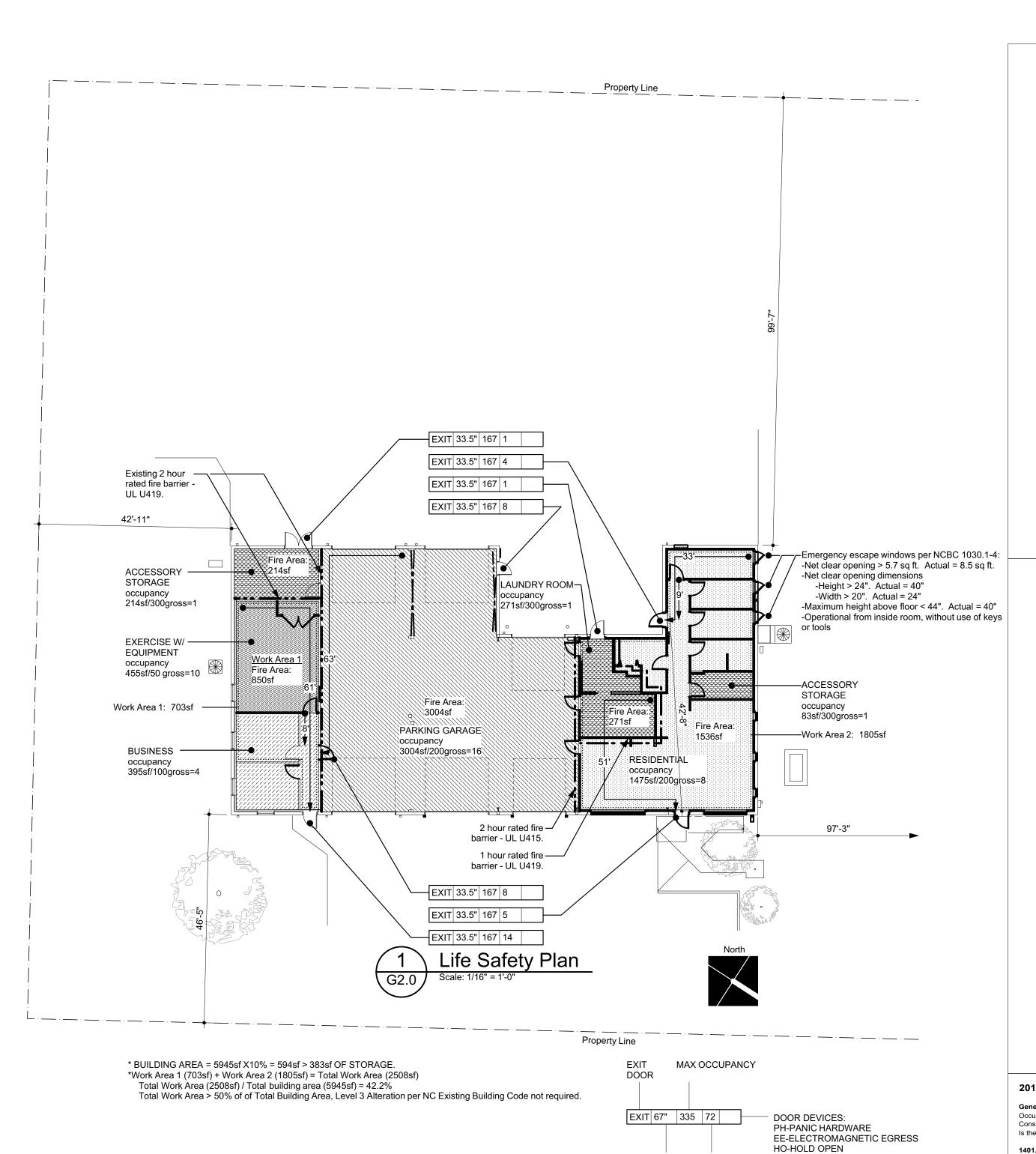
Construction Drawings 1 May, 2020

Revisions:

Cover

G1.0

l of 3

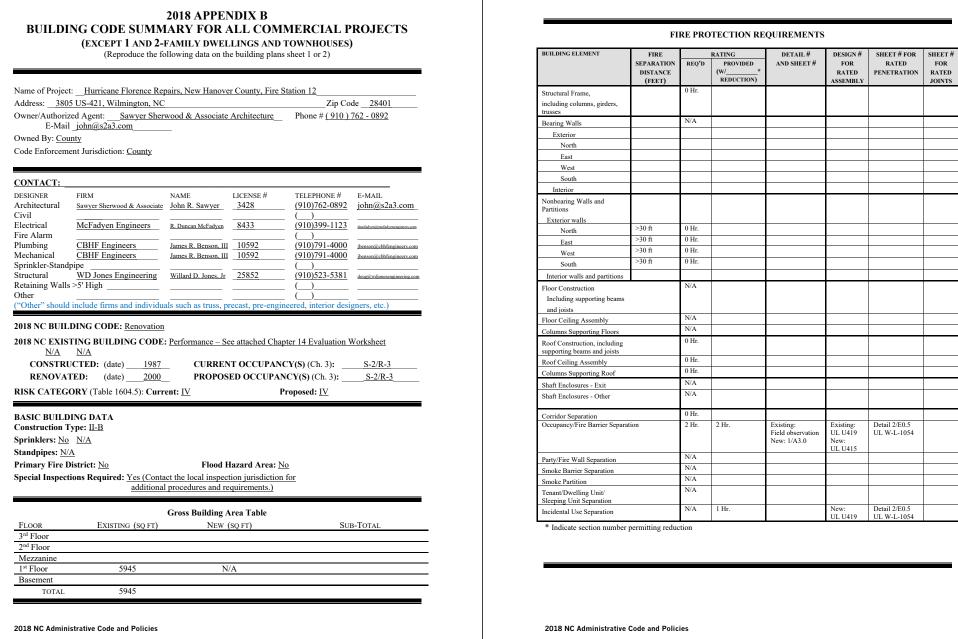


CLEAR ACTUAL

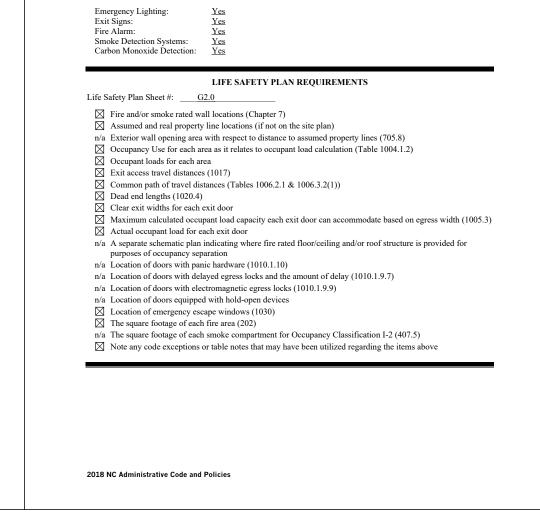
WIDTH OCCUPANCY

ATTACHMENT I

2018 NC Administrative Code and Policies

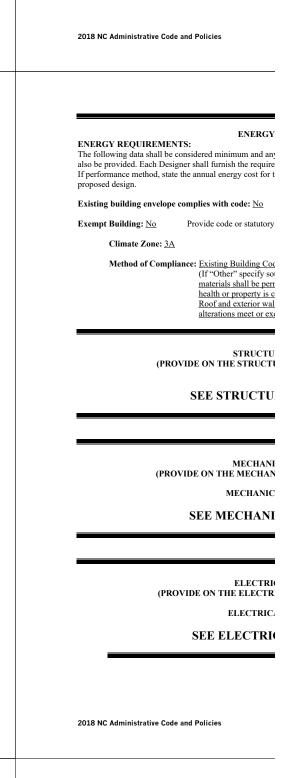


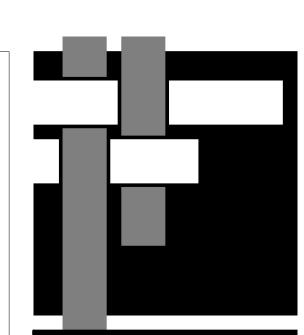
	ALLOWABLE AREA				PERCENTAGE OF WA	LL OPENING CALC
rimary Occupancy Classification(s): Re		age - S-2 Sel	lect one Select one	FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINES	DEGREE OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)
ccessory Occupancy Classification(s): §		<u> </u>		>30 ft	Unprotected, nonsprinklered	No Limit
ncidental Uses (Table 509): Laundry	Room over 100sf					
pecial Uses (Chapter 4 – List Code Secti	,					
pecial Provisions: (Chapter 5 – List Cod						
lixed Occupancy: Yes Separation: 2 Hi	r. Exception:				T TEN O L PROMIT OF LOWER	
Select one Actual Area of Occupancy A	+ Actual Area of Oc	cupancy B			LIFE SAFETY SYSTEM	A REQUIREMENTS
Allowable Area of Occupancy A	Allowable Area of O			Emergency Lighting:	Yes	
	_		= ≤1.00	Exit Signs:	Yes	
				Fire Alarm: Smoke Detection Systems:	Yes Yes	
	(A) (B)	(C)	(D)	Carbon Monoxide Detection:		
	AREA PER TABLE 506.24 (ACTUAL) AREA		ALLOWABLE AREA PER STORY OR UNLIMITED ^{2,3}			
1 Fire Station 5945	26.000		26.000		LIFE SAFETY PLAN RI	EOUIREMENTS
R-3 / S-2			.,	Life Safety Plan Sheet #:	G2.0	
				•		
				Fire and/or smoke rated	wall locations (Chapter 7) rty line locations (if not on the s	uita mlam)
					ea with respect to distance to as	
Frontage area increases from Section 506. a. Perimeter which fronts a public was a	3 are computed thus: ay or open space having 20 =(P)	feet minimum width =	=(F)		area as it relates to occupant lo area	
c. Ratio (F/P) =	$00[F/P - 0.25] \times W/30 =$ as of Section 507. of stories in the building x	D (maximum 3 stories)	(506.2).	Dead end lengths (1020.Clear exit widths for each	h exit door	
c. Ratio (F/P) =	$00[F/P - 0.25] \times W/30 =$ so of Section 507. of stories in the building x ges must comply with Table	D (maximum 3 stories) e 406.5.4.	(506.2).	Dead end lengths (1020.Clear exit widths for each	4) h exit door cupant load capacity each exit d	
c. Ratio (F/P) =(F/P) d. W = Minimum width of public wa e. Percent of frontage increase $I_f = 1$ Unlimited area applicable under condition	$00[F/P - 0.25] \times W/30 =$ so of Section 507. of stories in the building x ges must comply with Table	D (maximum 3 stories) e 406.5.4.	(506.2).	Dead end lengths (1020. □ Clear exit widths for eac □ Maximum calculated oc □ Actual occupant load for n/a A separate schematic pla	4) h exit door cupant load capacity each exit d each exit door in indicating where fire rated flo	loor can accommodate
c. Ratio (F/P) =	$00[F/P - 0.25] \times W/30 =$ so of Section 507. of stories in the building x ges must comply with Table	D (maximum 3 stories) e 406.5.4. 506.2.	(506.2).	Dead end lengths (1020. □ Clear exit widths for eac □ Maximum calculated oc. □ Actual occupant load for n/a A separate schematic pla purposes of occupancy s n/a Location of doors with p	4) h exit door cupant load capacity each exit do each exit door in indicating where fire rated fle eparation anic hardware (1010.1.10)	loor can accommodate
c. Ratio (F/P) =	00[F/P - (1.25] x W/30 = 1 s of Section 507. of stories in the building x tes must comply with Table stered area value in Table 5	D (maximum 3 stories) e 406.5.4. 506.2.	(506.2). CODE REFERENCE ¹	Dead end lengths (1020. □ Clear exit widths for eac □ Maximum calculated oc □ Actual occupant load for n/a A separate schematic pla purposes of occupancy s n/a Location of doors with p n/a Location of doors with d	4) h exit door cupant load capacity each exit d each exit door in indicating where fire rated fle eparation anic hardware (1010.1.10) elayed egress locks and the ame	oor/ceiling and/or roof
c. Ratio (F/P) =	00[F/P - (1.25] x W/30 = 1 so f Section 507. so f Section 507. fest must comply with Table dered area value in Table :	D (maximum 3 stories) 2 406.5.4. 506.2.		Dead end lengths (1020. □ Clear exit widths for eac □ Maximum calculated oc □ Actual occupant load for n/a A separate schematic pla purposes of occupancy s n/a Location of doors with p n/a Location of doors with d	4) h exit door cupant load capacity each exit do reach exit door in indicating where fire rated floe paration anic hardware (1010.1.10) clayed egress locks and the ame lectromagnetic egress locks (10	oor/ceiling and/or roof
c. Ratio (F/P) =	00[F/P - (1.25] x W/30 = 1 so f Section 507. so f Section 507. fest must comply with Table dered area value in Table : ALLOWABLE HEIGH	D (maximum 3 stories) 2 406.5.4. 506.2.		Dead end lengths (1020. □ Clear exit widths for eac □ Maximum calculated oc □ Actual occupant load for n/a A separate schematic pla purposes of occupancy s n/a Location of doors with p n/a Location of doors with e	4) h exit door cupant load capacity each exit do each exit door in indicating where fire rated fle eparation anic hardware (1010.1.10) clayed egress locks and the am electromagnetic egress locks (10 ed with hold-open devices escape windows (1030)	oor/ceiling and/or roof



	FI	RE PRO	DTECTION RI	EQUIREMENTS	3		
	FIRE SEPARATION DISTANCE (FEET)	REQ'D	PROVIDED (W/* REDUCTION)	DETAIL# AND SHEET#	DESIGN # FOR RATED ASSEMBLY	SHEET # FOR RATED PENETRATION	SHEET # FOR RATED JOINTS
ers,		0 Hr.					
3,		N/A					
		N/A					
_							
	>30 ft	0 Hr.					
	>30 ft	0 Hr.					
	>30 ft	0 Hr.					
	>30 ft	0 Hr.					
ıs							
		N/A					
ıs							
		N/A					
		N/A					
g		0 Hr.					
		0 Hr.					
		0 Hr.					
		N/A					
		N/A					
		0 Hr.					
parat	ion	2 Hr.	2 Hr.	Existing: Field observation New: 1/A3.0	Existing: UL U419 New: UL U415	Detail 2/E0.5 UL W-L-1054	
		N/A					
		N/A					
		N/A					
		N/A					
		NI/A	1 11.	1	Marri	Datail 2/E0.5	1

PASS! PASS! PASS!





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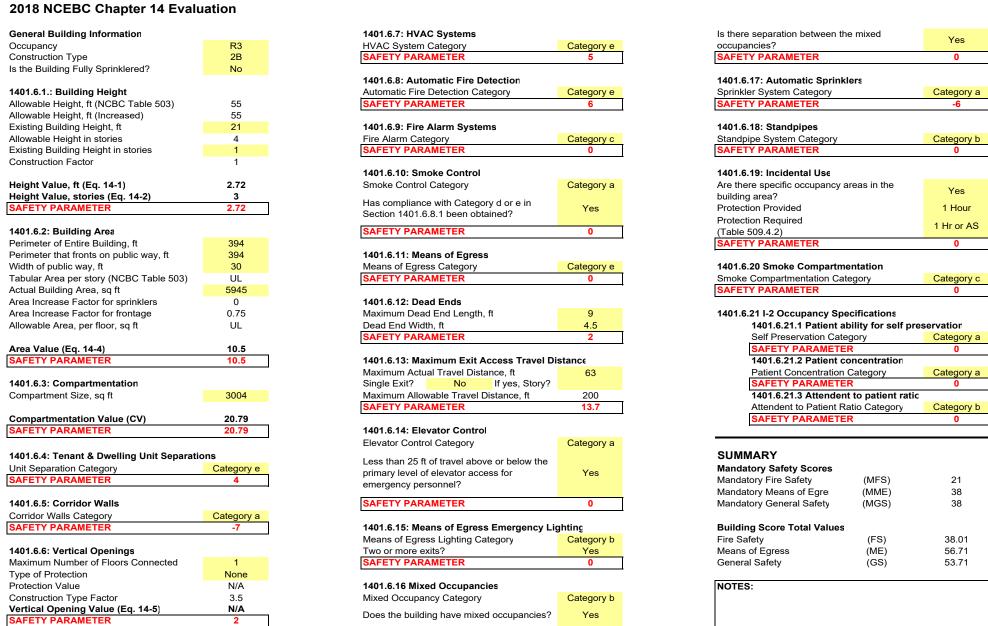
3805 US-421 Wilmington, NC

Construction Drawings 1 May, 2020

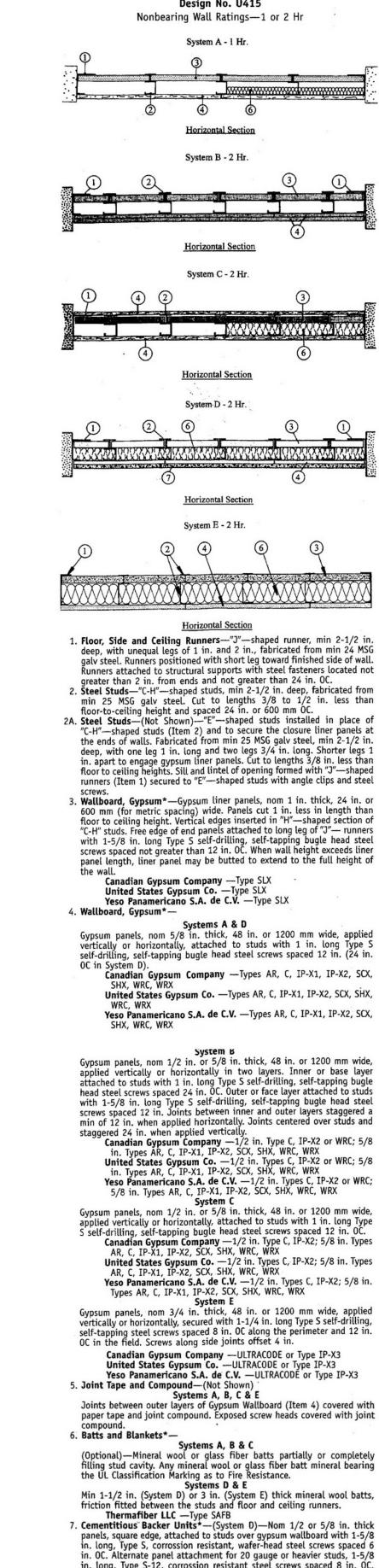
Revisions:

Life Safety Plan

2 of 3



ATTACHMENT I	



Nonbearing Wall Ratings-1 or 2 Hr System A - 1 Hr. Horizontal Section System B - 2 Hr. Horizontal Section System C - 2 Hr. Horizontal Section System D - 2 Hr. Horizontal Section System E - 2 Hr.

Design No. U415

Horizontal Section

1. Floor, Side and Ceiling Runners-"J"-shaped runner, min 2-1/2 in. deep, with unequal legs of 1 in. and 2 in., fabricated from min 24 MSG galv steel. Runners positioned with short leg toward finished side of wall. Runners attached to structural supports with steel fasteners located not greater than 2 in. from ends and not greater than 24 in. OC. 2. Steel Studs—"C-H"—shaped studs, min 2-1/2 in. deep, fabricated from

min 25 MSG galv steel. Cut to lengths 3/8 to 1/2 in. less than floor-to-ceiling height and spaced 24 in. or 600 mm OC.

2A. Steel Studs—(Not Shown)—"E"—shaped studs installed in place of "C-H"—shaped studs (Item 2) and to secure the closure liner panels at the ends of walls. Fabricated from min 25 MSG galv steel, min 2-1/2 in. deep, with one leg 1 in. long and two legs 3/4 in. long. Shorter legs 1 in. apart to engage gypsum liner panels. Cut to lengths 3/8 in. less than floor to ceiling heights. Sill and lintel of opening formed with "J"—shaped runners (Item 1) secured to "E"—shaped studs with angle clips and steel

3. Wallboard, Gypsum*—Gypsum liner panels, nom 1 in. thick, 24 in. or 600 mm (for metric spacing) wide. Panels cut 1 in. less in length than floor to ceiling height. Vertical edges inserted in "H"—shaped section of "C-H" studs. Free edge of end panels attached to long leg of "J" — runners with 1-5/8 in. long Type S self-drilling, self-tapping bugle head steel screws spaced not greater than 12 in. OC. When wall height exceeds liner panel length, liner panel may be butted to extend to the full height of

Canadian Gypsum Company —Type SLX United States Gypsum Co. —Type SLX Yeso Panamericano S.A. de C.V. —Type SLX

Systems A & D

Gypsum panels, nom 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally, attached to studs with 1 in. long Type S self-drilling, self-tapping bugle head steel screws spaced 12 in. (24 in. Canadian Gypsum Company — Types AR, C, IP-X1, IP-X2, SCX, United States Gypsum Co. —Types AR, C, IP-X1, IP-X2, SCX, SHX, Yeso Panamericano S.A. de C.V. —Types AR, C, IP-X1, IP-X2, SCX,

Gypsum panels, nom 1/2 in. or 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally in two layers. Inner or base laver applied vertically of norizontally in two layers. Inner of base layer attached to studs with 1 in. long Type S self-drilling, self-tapping bugle head steel screws spaced 24 in. OC. Outer or face layer attached to studs with 1-5/8 in. long Type S self-drilling, self-tapping bugle head steel screws spaced 12 in. Joints between inner and outer layers staggered a min of 12 in, when applied horizontally. Joints centered over studs and staggered 24 in. when applied vertically.

Gered 24 in. when appued vertically.

Canadian Gypsum Company —1/2 in. Type C, IP-X2 or WRC; 5/8 in. Types AR, C, IP-X1, IP-X2, SCX, SHX, WRC, WRX

United States Gypsum Co. —1/2 in. Types C, IP-X2 or WRC; 5/8 in. Types AR, C, IP-X1, IP-X2, SCX, SHX, WRC, WRX

Yeso Panamericano S.A. de C.V. —1/2 in. Types C, IP-X2 or WRC; 5/8 in. Types AR, C, IP-X1, IP-X2, SCX, SHX, WRC, WRX

System C

S self-drilling, self-tapping bugle head steel screws spaced 12 in. OC.

Canadian Gypsum Company —1/2 in. Type C, IP-X2; 5/8 in. Types

AR, C, IP-X1, IP-X2, SCX, SHX, WRC, WRX United States Gypsum Co. —1/2 in. Types C, IP-X2; 5/8 in. Types AR, C, IP-X1, IP-X2, SCX, SHX, WRC, WRX Yeso Panamericano S.A. de C.V. —1/2 in. Types C, IP-X2; 5/8 in. Types AR, C, IP-X1, IP-X2, SCX, SHX, WRC, WRX Gypsum panels, nom 3/4 in. thick, 48 in. or 1200 mm wide, applied

vertically or horizontally, secured with 1-1/4 in. long Type S self-drilling, self-tapping steel screws spaced 8 in. OC along the perimeter and 12 in. OC in the field. Screws along side joints offset 4 in.

Canadian Gypsum Company —ULTRACODE or Type IP-X3
United States Gypsum Co. —ULTRACODE or Type IP-X3
Yeso Panamericano S.A. de C.V. —ULTRACODE or Type IP-X3 5. Joint Tape and Compound—(Not Shown)

Systems A, B, C & E Joints between outer layers of Gypsum Wallboard (Item 4) covered with paper tape and joint compound. Exposed screw heads covered with joint

Systems A, B & C (Optional)—Mineral wool or glass fiber batts partially or completely filling stud cavity. Any mineral wool or glass fiber batt mineral bearing the UL Classification Marking as to Fire Resistance.

Systems D & E

Min 1-1/2 in. (System D) or 3 in. (System E) thick mineral wool batts, friction fitted between the studs and floor and ceiling runners.

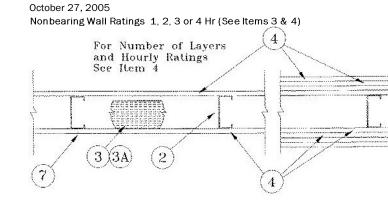
Thermafiber LLC —Type SAFB

7. Cementitious Backer Units*—(System D)—Nom 1/2 or 5/8 in. thick panels, square edge, attached to study over gypsum wallboard with 1-5/8 in. long, Type S, corrossion resistant, wafer-head steel screws spaced 6 in. OC. Alternate panel attachment for 20 gauge or heavier studs, 1-5/8 in. long, Type S-12, corrossion resistant steel screws spaced 8 in. OC. Joints covered with glass fiber mesh tape. Vertical joints staggered one

stud cavity from gypsum wallboard joints. Horizontal joints staggered a min of 12 in. from the gypsum wallboard joints.

United States Gypsum Co. — DUROCK Exterior Cement Board, DUROCK Cement Board or DUROCK WMB (Water Managed Board). 8. Laminating Adhesive*—(Optional, Not Shown)—Used to bond outer layer of Cementitious Backer Units (Item 7) to inner layers of Gypsum Wallboard (Item 4) in System D. ANSI A136.1 Type 1 organic adhesive applied with 1/4 in. square notched trowel. See Adhesives (BYWR) in the Fire Resistance Directory or Adhesives (BJLZ) in the Building Materials Directory for names of Classified companies. 'Bearing the UL Classification Marking

Design No. U419



1. Floor and Ceiling Runners (Not shown) Channel shaped, fabricated from min 25 MSG corrosion-protected steel, min width to accommodate stud size, with min 1 in. long legs, attached to floor and ceiling with fasteners 24 in. OC max.

2. Steel Studs Channel shaped, fabricated from min 25 MSG corrosion-protected steel, min width as indicated under Item 4, min 1-1/4 in. flanges and 1/4 in. return, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height. 3. Batts and Blankets* (Required as indicated under Item 4) Mineral wool batts, friction fitted between studs and runners. Min nom thickness as indicated under Item 4. See Batts and Blankets (BKNV or BZJZ) Categories for names of Classified companies. 3A. Batts and Blankets* (Optional) Placed in stud cavities, any glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. See Batts and Blankets (BKNV or BZJZ)

Categories for names of Classified companies. 4. Gypsum Board * Gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Vertical joints in adjacent layers (multilayer systems) staggered one stud cavity. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered. Horizontal edge joints and horizontal butt joints in adjacent layers (multilayer systems) staggered a min of 12 in. The thickness and number of layers for the 1 hr, 2 hr, 3 hr and 4 hr ratings are as follows:

Wallboai	d Protection	on Each Side of Wall	
Rating	Min Stud	No. of Layers &	Min Thkns of
	Depth	Thkns of Panel	Insulation (Item 3)
1	3 1/2	1 layer, 5/8 in. thick	Optional
1	2 1/2	1 layer, 1/2 in. thick	
1	1 5/8	1 layer, 3/4 in. thick	
2	1 5/8	2 layer, 1/2 in. thick	
2	1 5/8	2 layers, 5/8 in. thick	
2	3 1/2	1 layer, 3/4 in. thick	
3	1 5/8	3 layer, 1/2 in. thick	
3	1 5/8	2 layers, 3/4 in. thick	
3	1 5/8	3 layers, 5/8 in. thick	
4	1 5/8	4 layers, 5/8 in. thick	
4	1 5/8	4 layers, 1/2 in. thick	

4 2 1/2 2 layer, 3/4 in. thick CANADIAN GYPSUM COMPANY 1/2 in. thick Type C Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WR

or ULTRACODE UNITED STATES GYPSUM CO 1/2 in. thick Type C, If Type SCX, SHX, WRX, IP-X1, AR, C, WRC, FRX-G, IP-AR IP-X3 or ULTRACODE USG MEXICO S A DE C V 1/2 in. thick Type C, IP-X2, AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRX, WF

ULTRACODE When Item 6B, Steel Framing Members*, is used, No Hr. Min. stud depth is 3-1/2 in., min. thickness of ins layers of gypsum board panels (1/2 in. or 5/8 in. thic channels as described in Item 5. One layer of gypsun thick) attached to opposite side of stud without furring 4A. Gypsum Board * (As an alternate to Item 4) 5/8 groove edge, applied horizontally as the outer layer to

Secured as described in Item 5. Joint covering (Item CANADIAN GYPSUM COMPANY Type SHX. UNITED STATES GYPSUM CO Type SHX.

USG MEXICO S A DE C V Type SHX. 5. Fasteners (Not shown) Type S or S-12 steel screv (Item 2) or furring channels (Item 6). Single layer sys in. thick panels or 1-1/4 in. long for 3/4 in. thick pan are applied horizontally, or 8 in. OC along vertical and in the field when panels are applied vertically. Two la for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. th in. thick panels, spaced 16 in. OC with screws offset systems: First layer- 1 in. long for 1/2 in., 5/8 in. thic Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick layer- 2-1/4 in. long for 1/2 in., 5/8 in. thick panels c panels, spaced 12 in. OC. Screws offset min 6 in. from First layer- 1 in. long for 1/2 in., 5/8 in. thick panels, 1-5/8 in. long for 1/2 in., 5/8 in. thick panels, space long for 1/2 in. thick panels or 2-5/8 in. long for 5/8 Fourth layer- 2-5/8 in. long for 1/2 in. thick panels or spaced 12 in. OC. Screws offset min 6 in. from layer 6. Furring Channels (Optional, not shown, for single furring channels fabricated from min 25 MSG corrosi vertically a max of 24 in. OC. Flange portion attached in. long Type S-12 steel screws. Not for use with Item 6A. Steel Framing Members (Not Shown)* (Optional for single or double layer systems) As an alternate to Framing Members as described below: a. Furring Channels Formed of No. 25 MSG galv ste spaced max. 24 in. OC perpendicular to studs. Chanr

use with Item 4A. b. Steel Framing Members* Used to attach furring (2). Clips spaced max. 48 in. OC., and secured to stud

in Item b. Gypsum board attached to furring channels

self-drilling, S-12 steel screw through the center gron fitted into clips. PAC INTERNATIONAL INC Type RSIC-1. 6B. Steel Framing Members (Optional, Not Shown) channels and Steel Framing Members on only one si-

a. Furring Channels Formed of No. 25 MSG galv ste to studs. Channels secured to studs as described in I in stud cavity as described in Item 4. Two layers of gy channels as described in Item 4. Not for use with Iter b. Steel Framing Members* Used to attach furring (studs (Item 2) only. Clips spaced 48 in. OC., and secu in. coarse drywall screws, one through the hole at ea

are friction fitted into clips. KINETICS NOISE CONTROL INC Type Isomax

*Bearing the UL Classification Mark

7. Joint Tape and Compound Vinyl or casein, dry or premixed joint compound applied in two coats to joints and screw heads of outer layers. Paper tape, nom 2 in. wide, embedded in first layer of compound over all joints of outer layer panels. Paper tape and joint compound may be omitted when gypsum panels are supplied with a square

8. Siding, Brick or Stucco (Optional, not shown) Aluminum, vinyl or steel siding, brick veneer or stucco, meeting the requirements of local code agencies, installed over gypsum panels. Brick veneer attached to studs with corrugated metal wall ties attached to each stud with steel screws, not more than each sixth course of brick. 9. Caulking and Sealants* (Optional, not shown) A bead of acoustical sealant applied around the partition perimeter for sound control. UNITED STATES GYPSUM CO Type AS

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WD JONES ENGINEERING, PLLC Structural Engineering Services 100 B Old Eastwood Road, Unit 24, Wilmington, NC 28403 Office: (910) 523-5381 Email: wdjengineer@ec.rr.com







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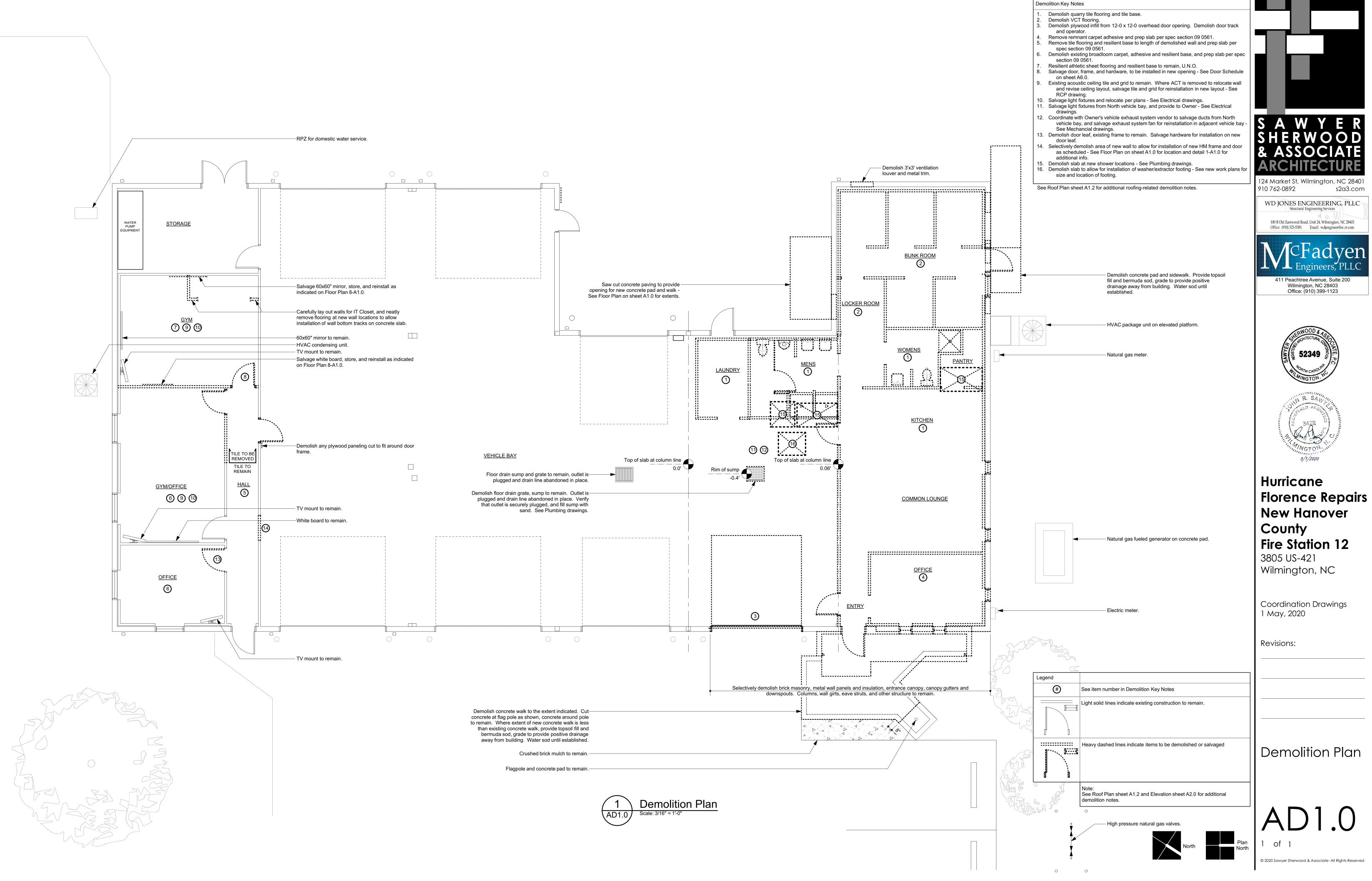
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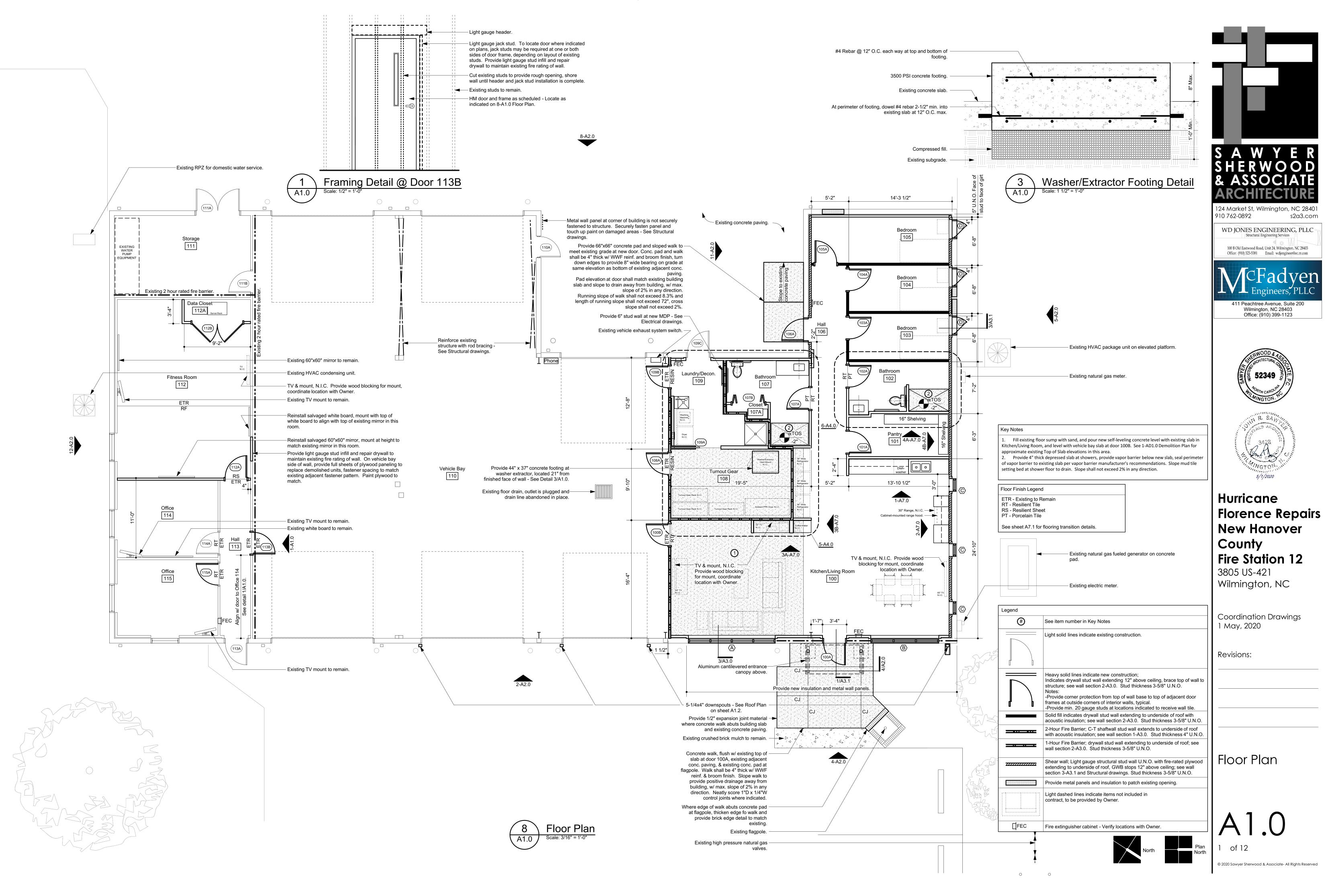
Construction Drawings 1 May, 2020

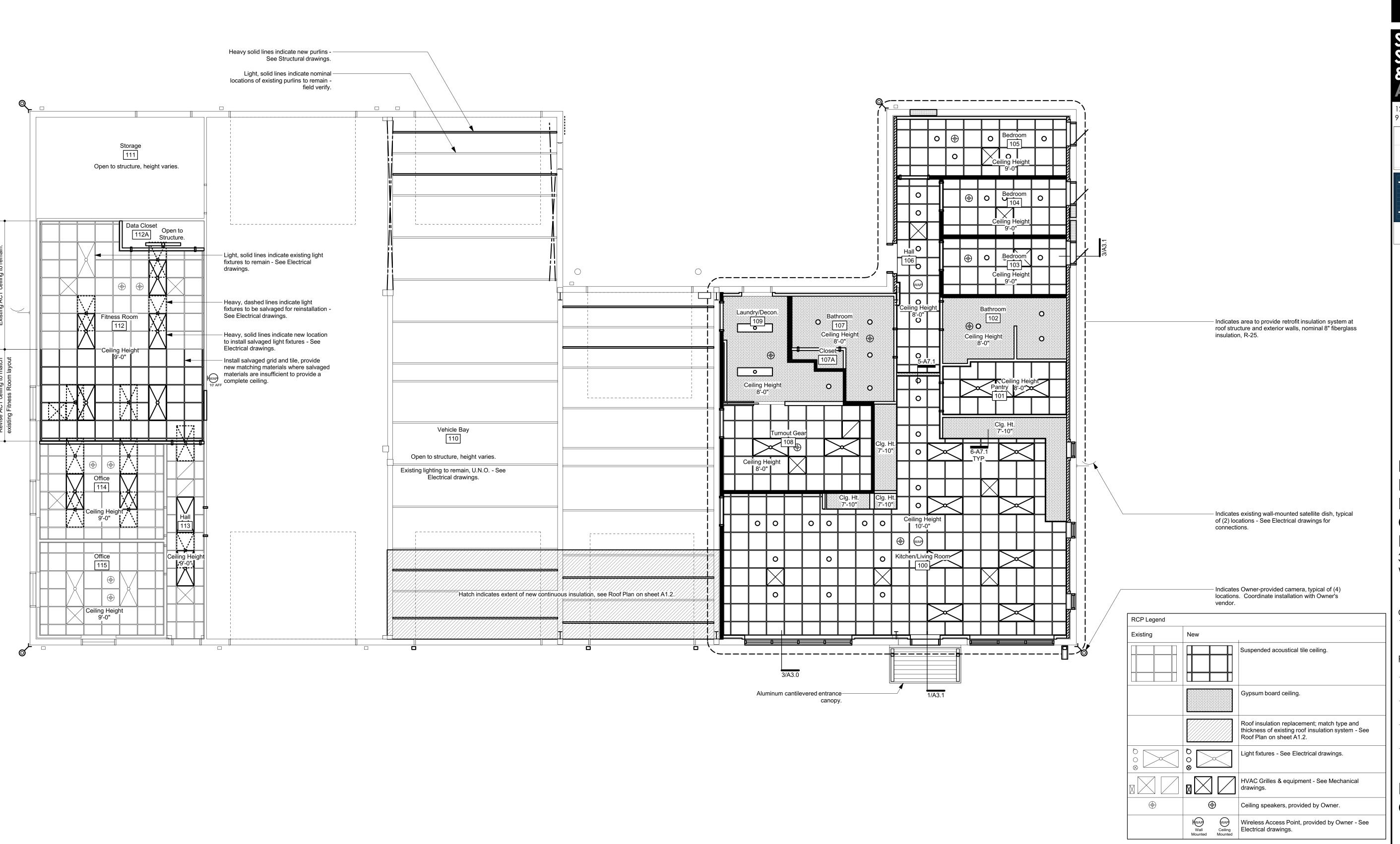
Revisions:

UL Assemblies

3 of 3

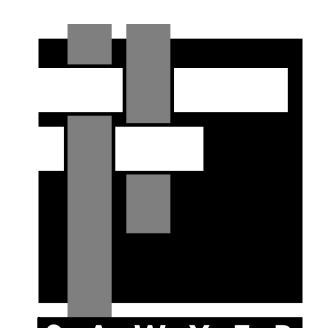






Reflected Ceiling Plan

Scale: 3/16" = 1'-0"



S A W Y E R SHERWOOD & ASSOCIATE ARCHITECTURE

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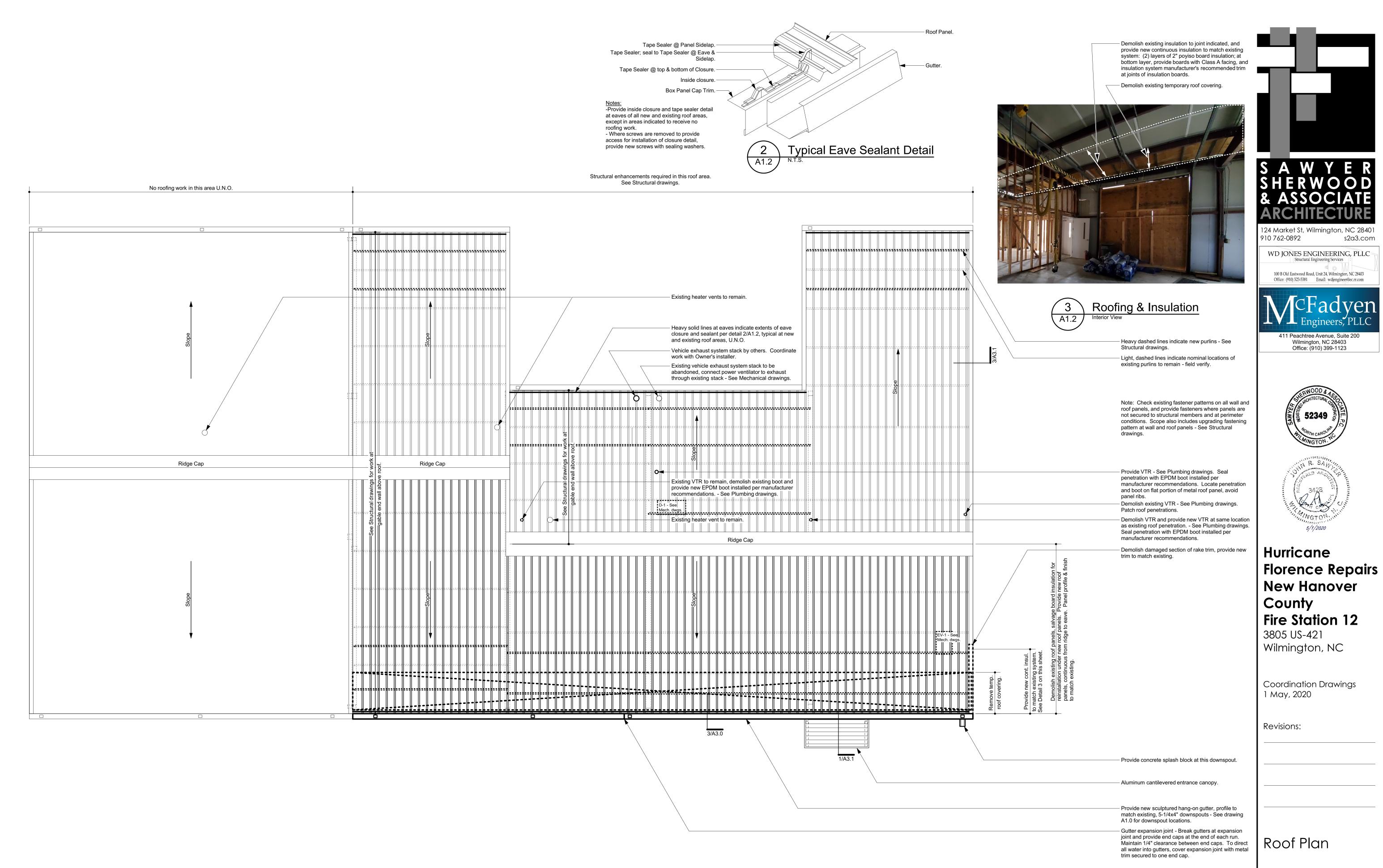
Revisions:

Reflected Ceiling Plan

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Plan North 2 of 12

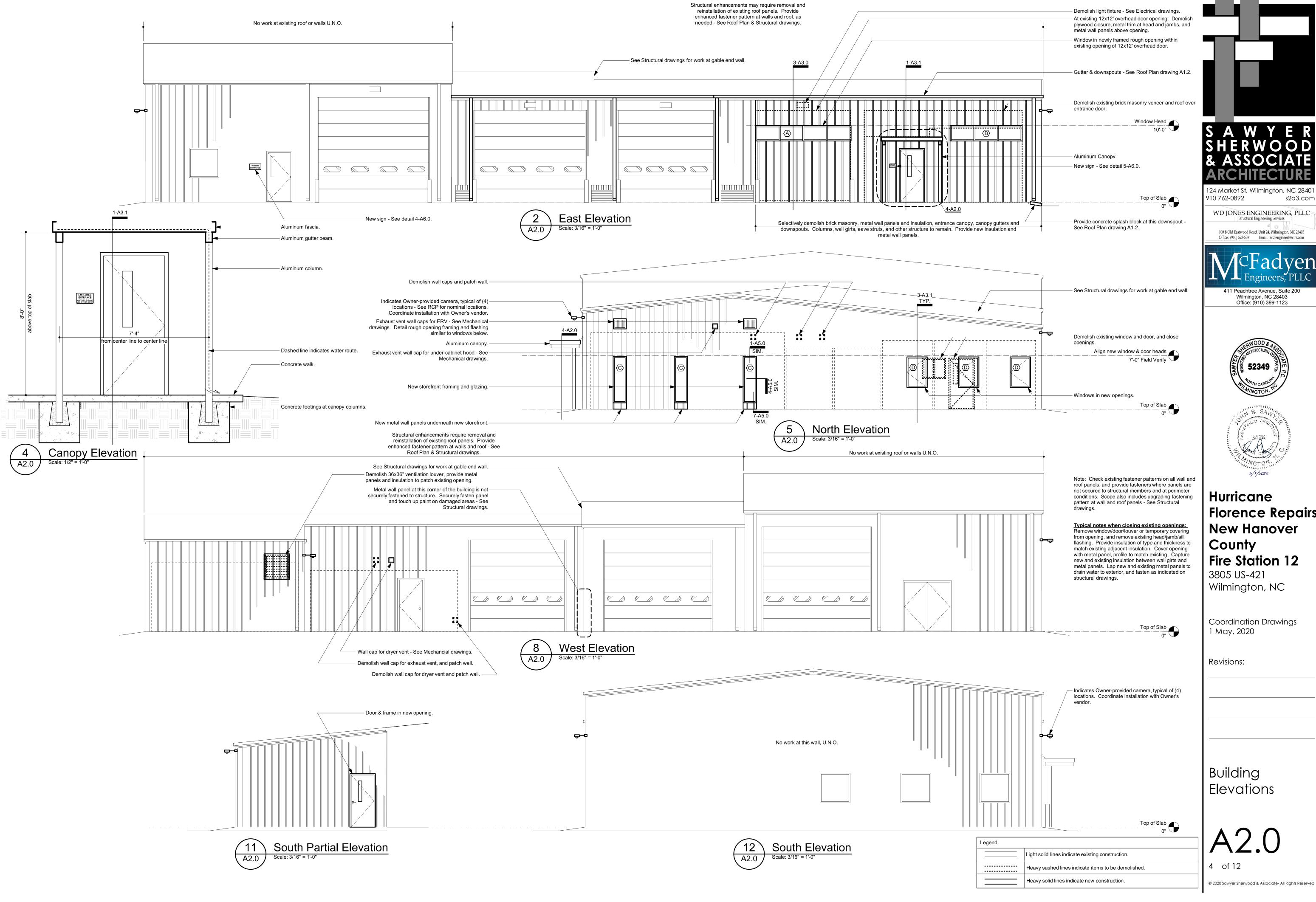


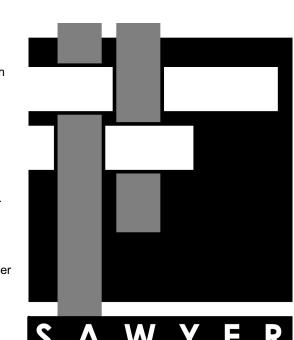
8 Roof Plar
A1.2 Scale: 3/16" = 1'-0"





A1.2





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411 Peachtree Avenue, Suite 200

Wilmington, NC 28403 Office: (910) 399-1123



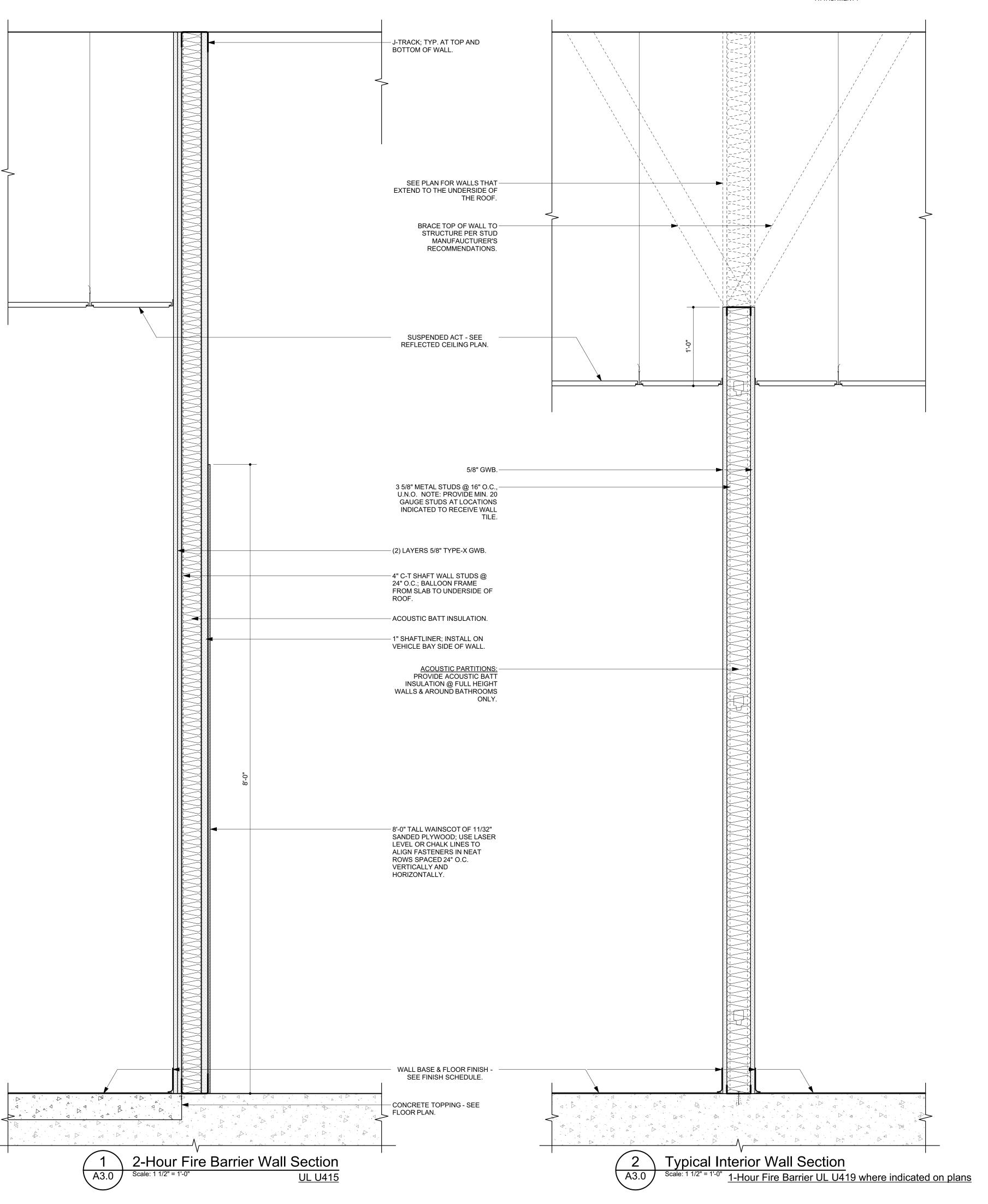


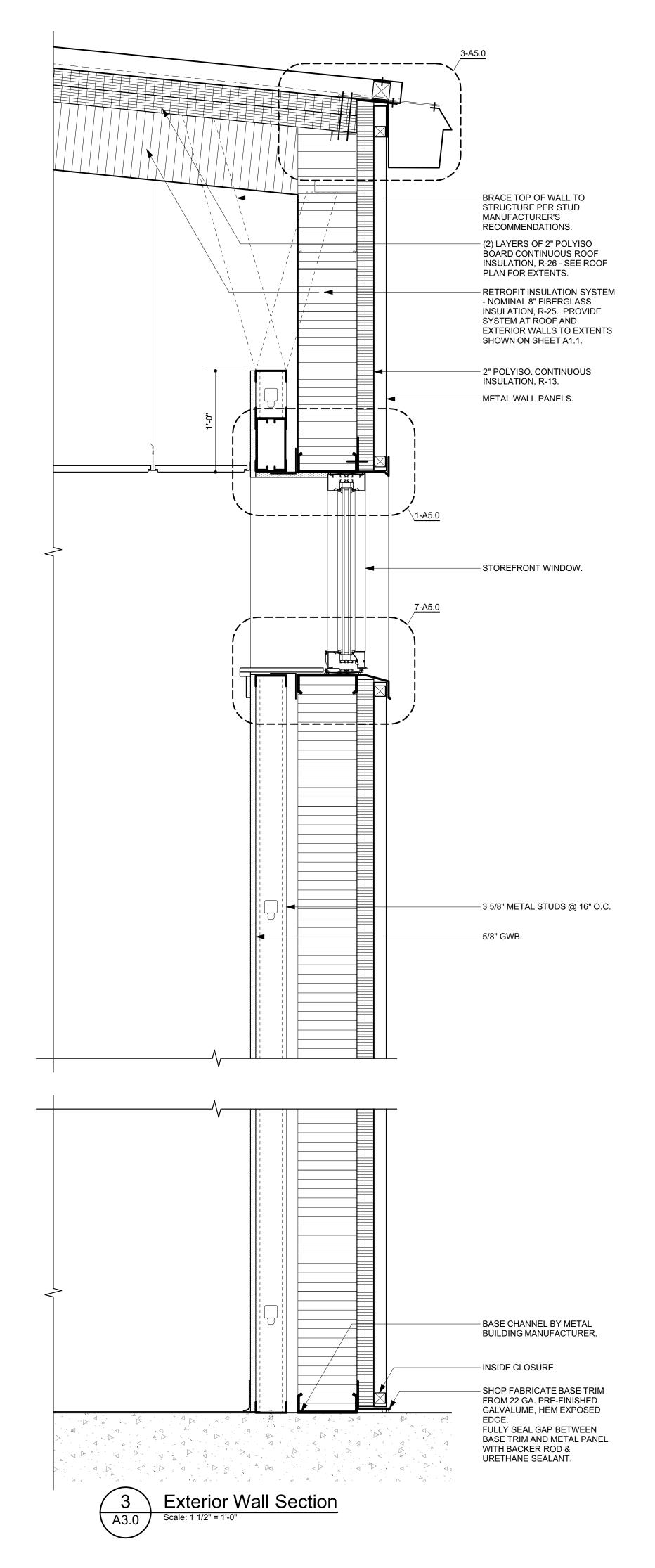
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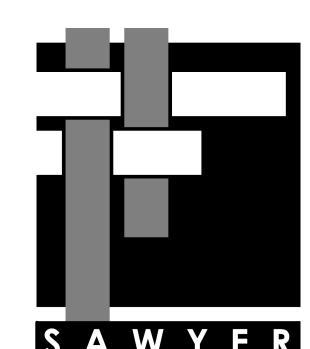
Wilmington, NC

Coordination Drawings 1 May, 2020

Elevations







A W Y E R
HERWOOD
ASSOCIATE
ARCHITECTURE

910 762-0892 s2a3.com WD JONES ENGINEERING, PLLC

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411 Peachtree Avenue, Suite 200 Wilmington, NC 28403 Office: (910) 399-1123





Hurricane Florence Repairs New Hanover County Fire Station 12

3805 US-421 Wilmington, NC

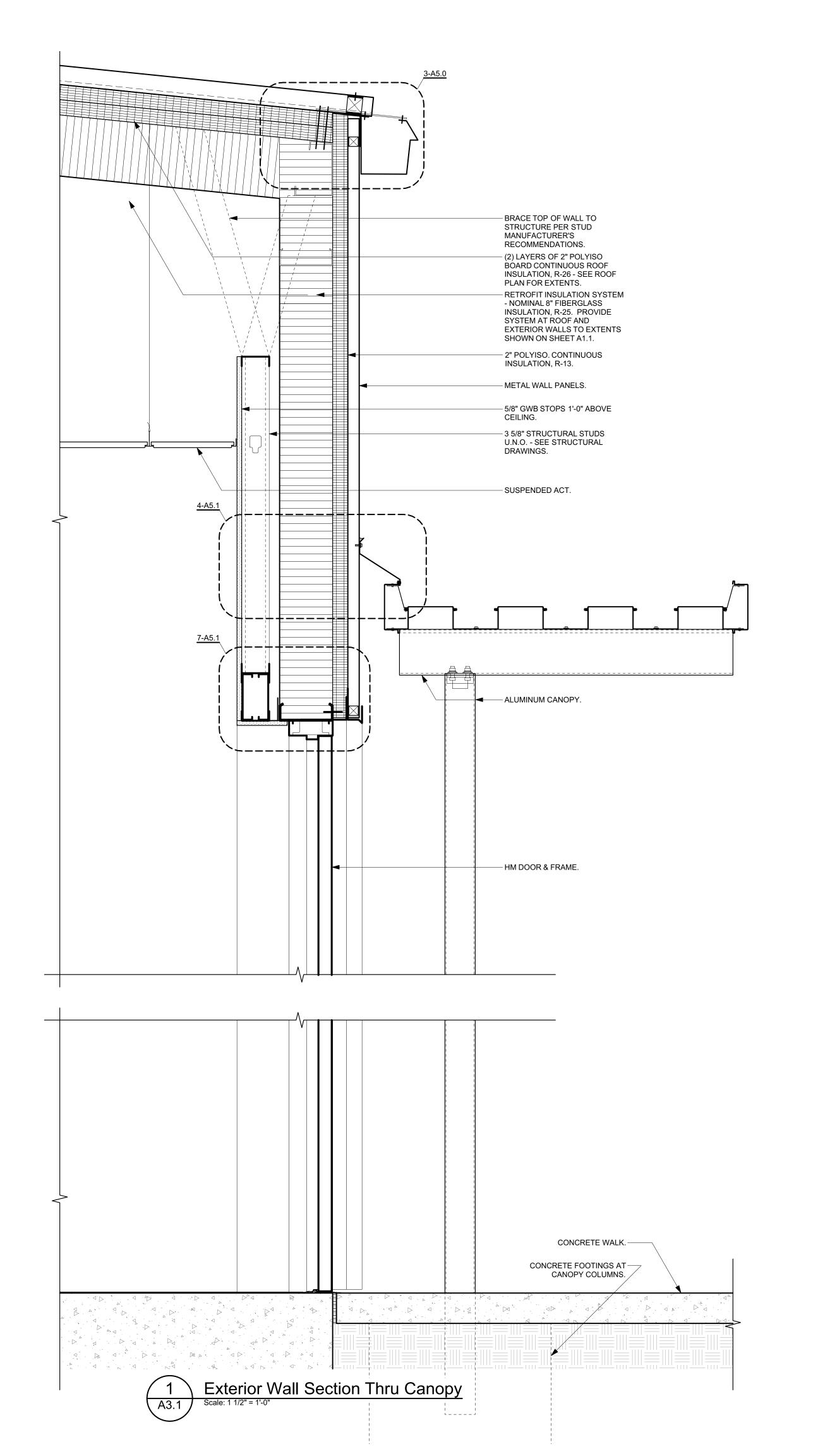
Coordination Drawings 1 May, 2020

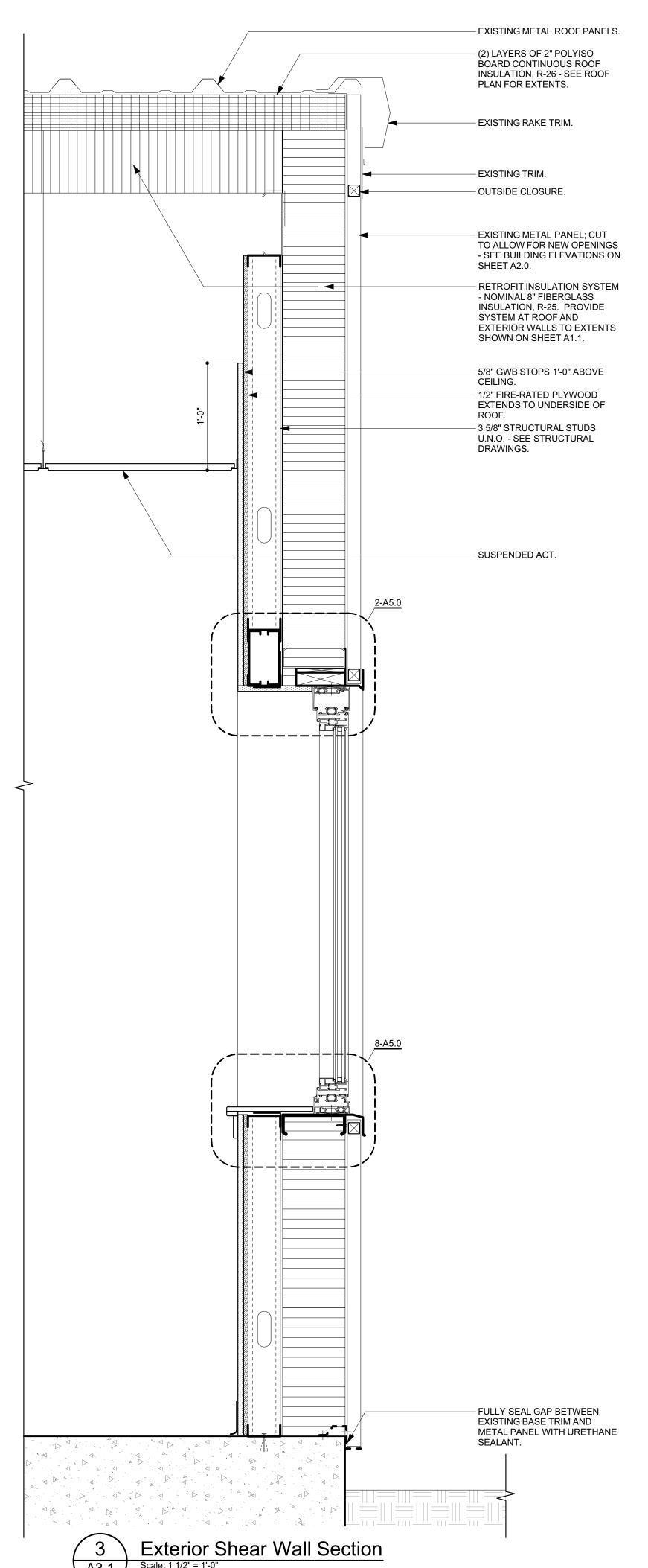
Revisions:

Wall Sections

A3.0

5 of 12







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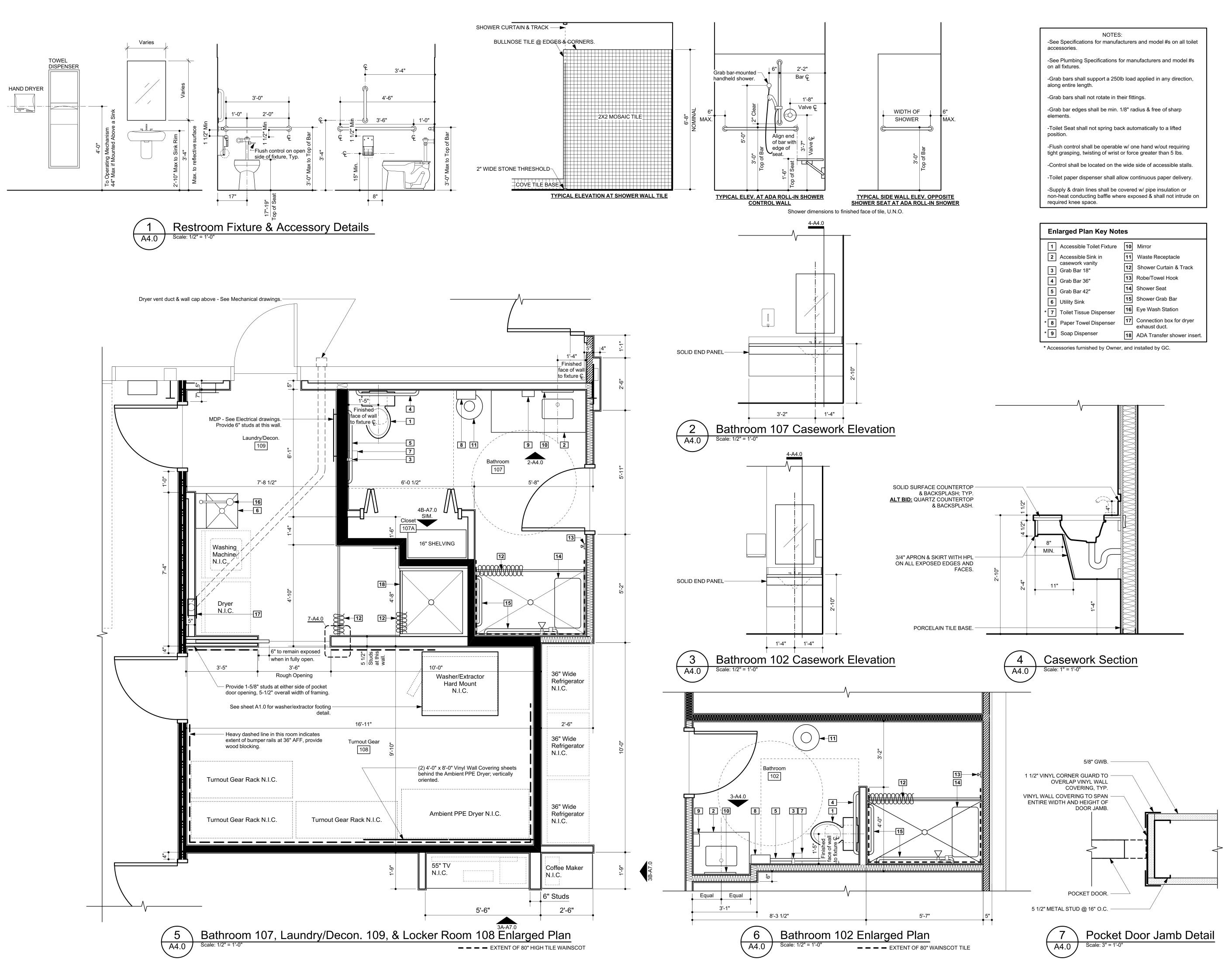
Coordination Drawings 1 May, 2020

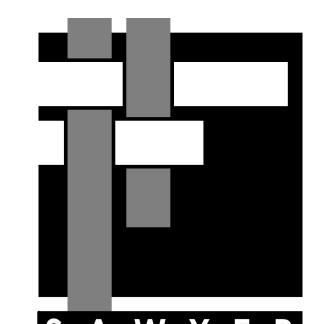
Revisions:

Wall Sections

A3.1

6 of 12





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Hurricane
Florence Repairs
New Hanover
County
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3805 US-421 Wilmington, NC

Coordination Drawings 1 May, 2020

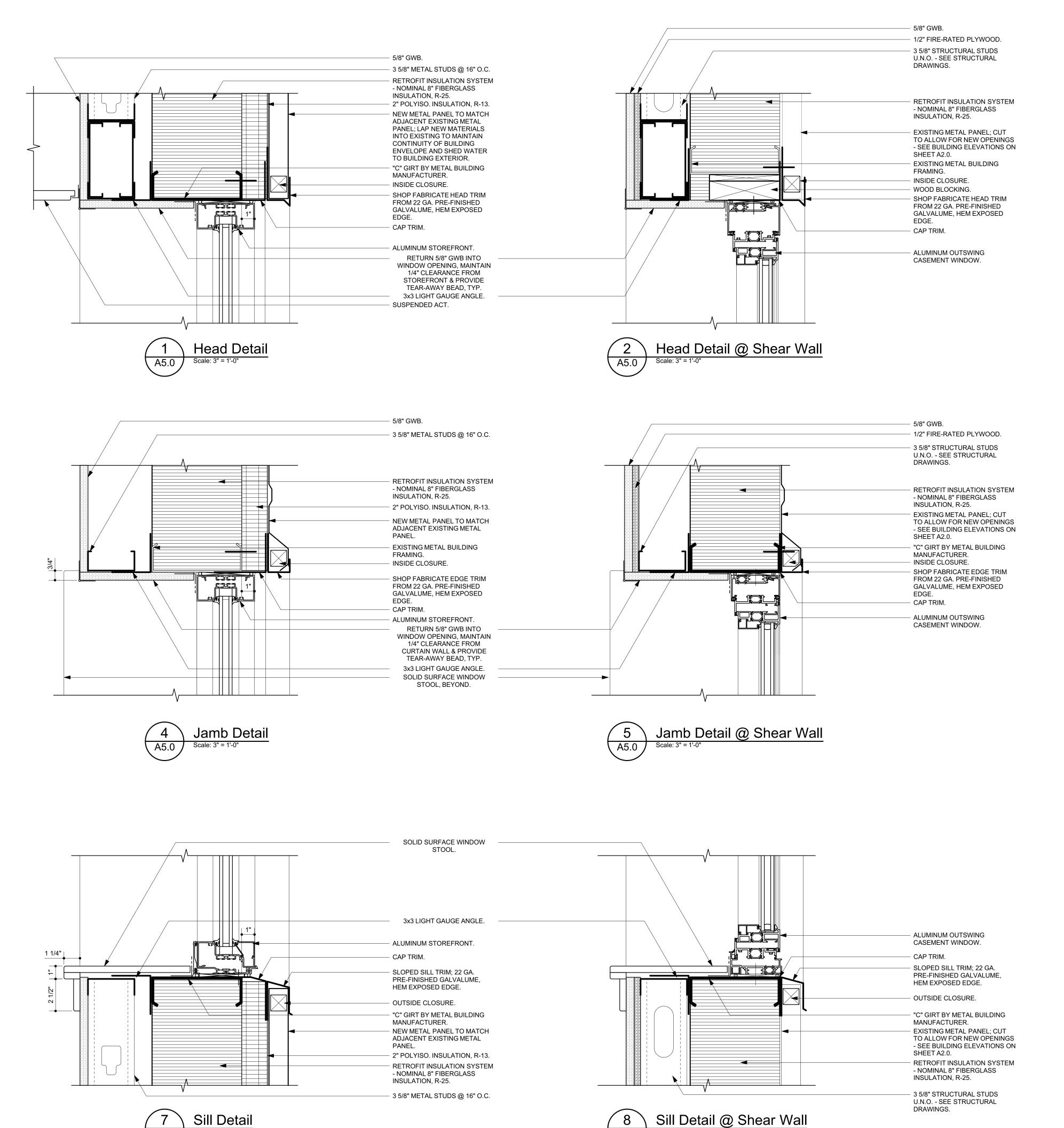
Revisions:

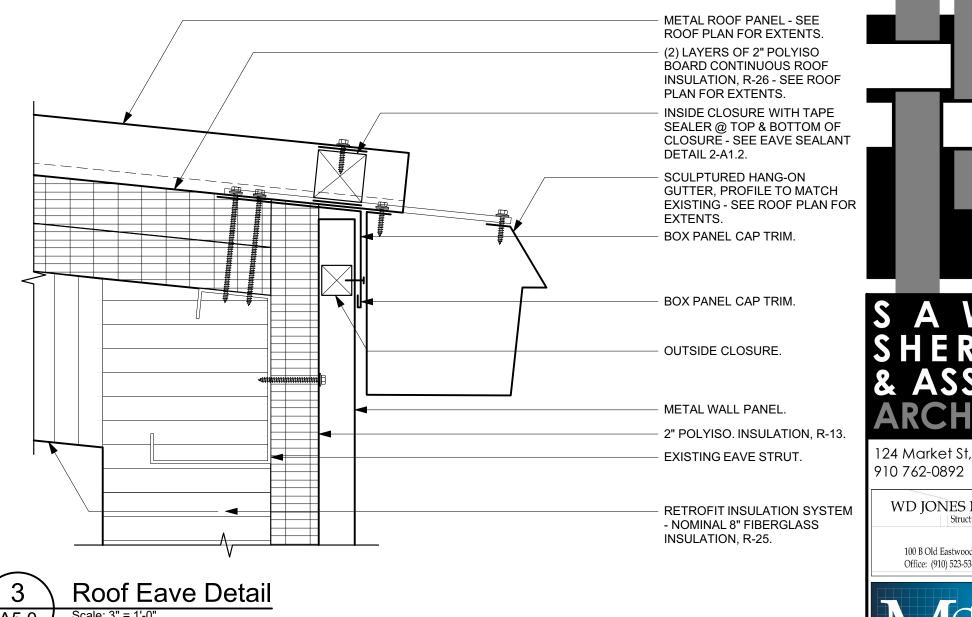
Enlarged Plans

A4.0

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7 of 12





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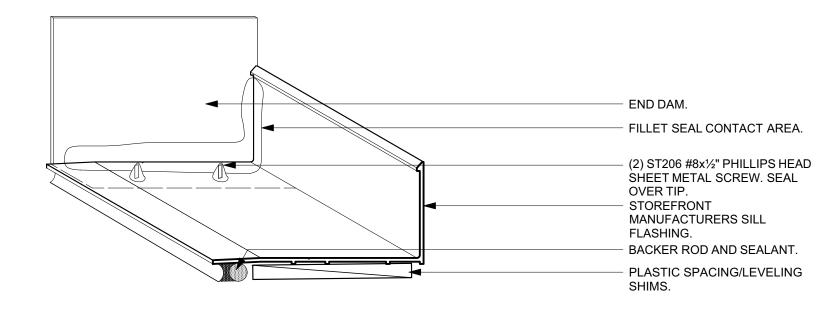
Revisions:

Details

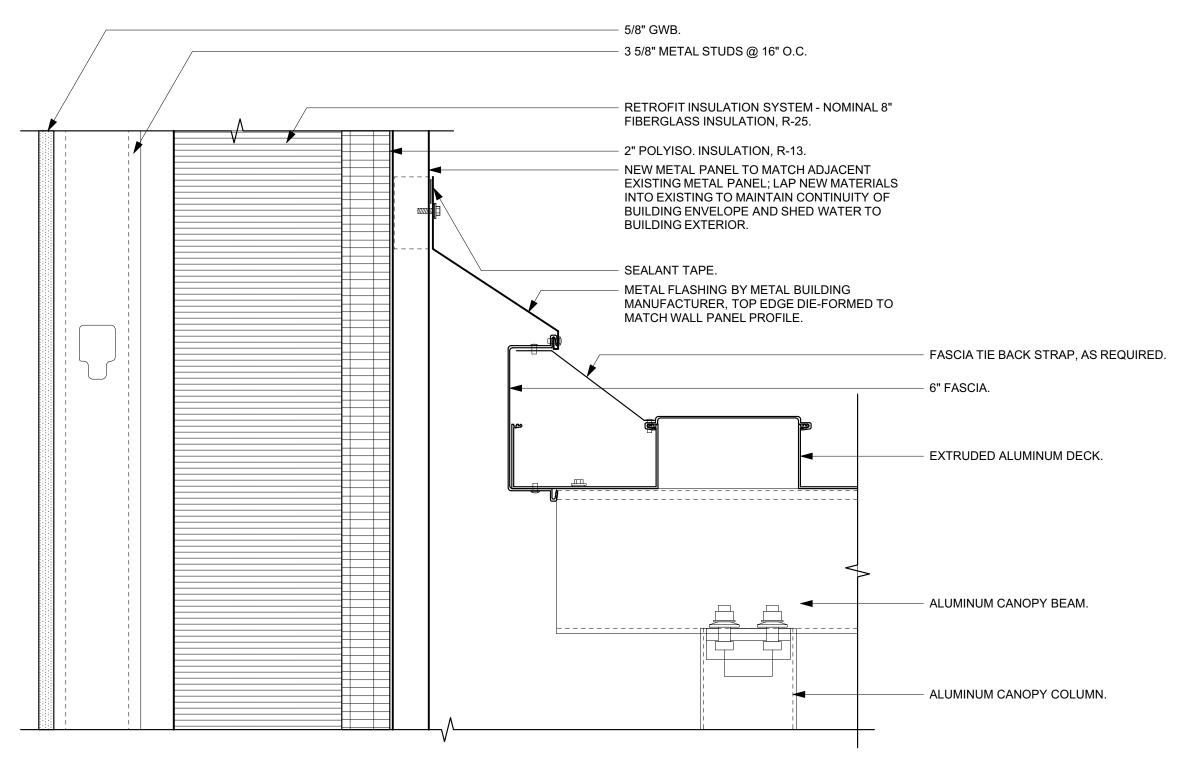
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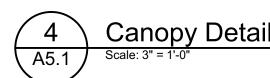
8 of 12

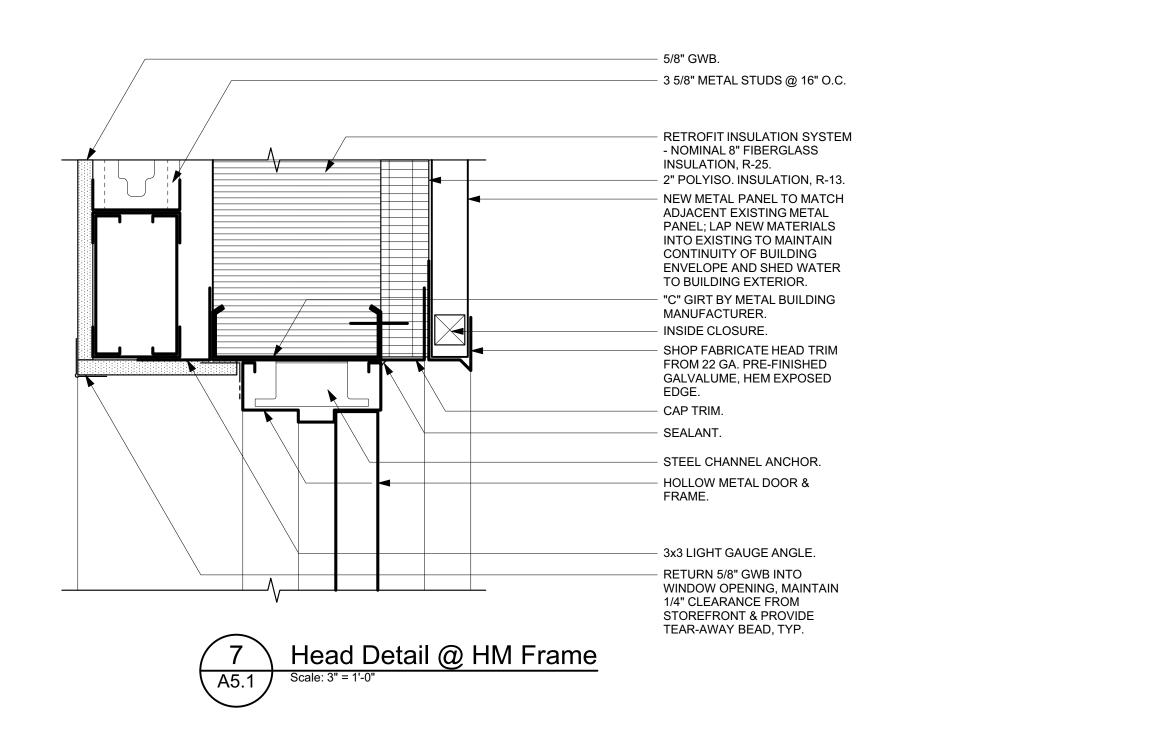
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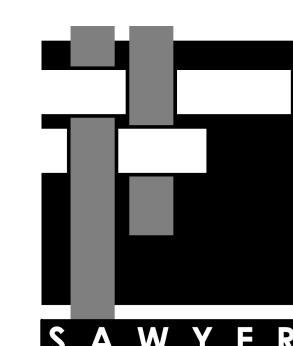


9 Storefront Sill Pan Detail
A5.0 Scale: Half Actual Size









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Coordination Drawings 1 May, 2020

Revisions:

Details

A5.1

9 of 12

sh Schedule													Door Schedule							
	ROOM NAME Kitchen/Living Room	FLOOR FINISH Resilient Tile	BASE MATERIAL 4" Vinyl Cove	. NORTH WALL FINI	ISH EAST WALL FINIS GWB - Painted	SH	SOUTH WALL FINISH GWB - Painted	WEST WALL FINISH GWB - Painted	CEILING ACT	CEILING HT	T REMARKS		Door	Type Material	Frame Type		Jamb Depth	n Remarks		
	Pantry Bathroom	Resilient Tile Porcelain Tile	4" Vinyl Cove 6" Porcelain Tile	GWB - Painted GWB - Epoxy Painte	GWB - Painted ed GWB - Epoxy Pain	nted & Tile at Shower	GWB - Painted GWB - Epoxy Painted	GWB - Painted GWB - Epoxy Painted	ACT d GWB - Painted	See RCP			100A 3-0 x 6-10 100B 3-0 x 6-10	B HM C HM	1	HM HM	5 3/4" 6-1/4"		door & frame. Provide frame prepped fed; Sign: "Living Quarters"	for electronic strike.
	Bedroom Bedroom	Resilient Tile Resilient Tile	4" Vinyl Cove 4" Vinyl Cove	GWB - Painted GWB - Painted	GWB - Painted GWB - Painted		GWB - Painted GWB - Painted	GWB - Painted GWB - Painted	ACT ACT	See RCP			101A 3-0 x 6-10	A Wood	1	НМ	5-7/8"	oo wiii ato rata	ou, oign. Living Quartoro	
	Bedroom	Resilient Tile	4" Vinyl Cove	GWB - Painted	GWB - Painted		GWB - Painted	GWB - Painted	ACT	See RCP			102A 3-0 x 6-10 103A 3-0 x 6-10	A Wood A Wood	1	HM HM	5-7/8" 5-7/8"			
	Hall Bathroom	Resilient Tile Porcelain Tile	4" Vinyl Cove 6" Porcelain Tile	GWB - Painted GWB - Epoxy Painte	GWB - Painted ed GWB - Epoxy Paint	nted & Tile at Shower	GWB - Painted GWB - Epoxy Painted	GWB - Painted GWB - Epoxy Painted	ACT d GWB - Painted	See RCP See RCP			104A 3-0 x 6-10	A Wood A Wood	1	HM HM	5-7/8" 5-7/8"			
	Closet Turnout Gear	Porcelain Tile Resinous Flooring	6" Porcelain Tile	GWB - Epoxy Painte		nted nted & Vinyl Wall Covering	GWB - Epoxy Painted	GWB - Epoxy Painted GWB - Epoxy Painted		See RCP			105A 3-0 x 6-10 106A 3-0 x 6-10	В НМ	1	HM	5-3/4"	Galvannealed	door & frame. Provide frame prepped f	for electronic strike.
	Laundry/Decon.	Resinous Flooring	-	GWB - Epoxy Painte	ed GWB - Epoxy Pain		GWB - Epoxy Painted	GWB - Epoxy Painted	d GWB - Painted	See RCP	See sheet A4.0 for extent of prot	ective waii covering.	107A 3-0 x 6-10 107B 2-3 x 6-10 PR	A Wood A Wood	1	HM HM	5-7/8" 5-7/8"	Bi-Folding Doo	ors	
	Vehicle Bay Storage	Concrete, ETR Concrete, ETR	- 4" Vinyl Cove, ETI	-	GWB - ETR		Plywood/GWB - ETR Open to structure, ETR		•	e -			108A 3-0 x 6-10	A HM	1	HM	6-1/4"	90 Minute Rate	ed; Sign: "Turnout Gear"	
	Fitness Room Data Closet	Resilient Sheet Resilient Sheet	4" Vinyl Cove 4" Vinyl Cove	GWB - Painted GWB - ETR, Painted	GWB - Painted d GWB - Painted		GWB - ETR, Painted GWB - Painted	GWB - ETR, Painted GWB - ETR, Painted			See RCP for extents of existing a		109A 3-0 x 6-10 109B 3-0 x 6-10	A Wood A HM	1	HM	6-1/4	Pocket door 90 Minute Rate	ed; Sign: "Laundry"	
	Hall Office	Porcelain tile, ETR Resilient Tile	4" Vinyl Cove, ETI	GWB - Painted, ETF			GWB - Painted, ETR GWB - ETR, Painted	GWB - Painted GWB - Painted	ACT, ETR	See RCP			109C 3-0 x 6-10	ETR HM ETR HM	ETR ETR		ETR ETR	Existing frame	is prepped for electronic strike.	
	Office	Resilient Tile	4" Vinyl Cove 4" Vinyl Cove	GWB - ETR, Painted			GWB - ETR, Painted	GWB - Painted GWB - ETR, Painted		See RCP				ETR HM	ETR	НМ	ETR		receive electronic strike.	
SCHEDULE LE	EGEND:	SEE SHE	ET A7.1 FOR FLO	OR TRANSITION DETA	JLS.									ETR HM ETR Flush wood, painter	ETR d ETR		ETR ETR	90 Minute Rate	ed d door & frame in new opening.	
Acoustical Ceilir													112B 3-6 x 6-10 PR	D Flush wood, painted	d 1	НМ	5 7/8"	Paint grade flu	sh wood door	
Existing to Rema	nain											i de la companya de	113A 3-0 x 6-10 113B 3-0 x 6-10	ETR HM C HM	ETR 1	HM HM	9-3/8" - VIF	· ·	receive electronic strike. ed; Sign: "Office"	
Gypsum Wall E	Board						6"						114A 3-0 x 6-10	ETR Flush wood, painted			ETR			
												[115A 3-0 x 6-10	B Flush wood, painted	d ETR ı	НМ	ETR	Paint grade flu	sn wood door	
						122		, <u> </u>						or locations requiring room						
						123	SHOW BRAILLE HERE						signs, U.N.OSee details 1-5/A6.0 for -Provide ADA signage at	sign info. t all doors to restrooms.						
													-Final Room Names to be	be determined at a later date.						
						_													j WALL j	
						⊢ R(MOC											1/2'	THICKNESS 1/2"	
								<u>*</u> 4												
							AME												[4]	
						SHOW	BRAILLE HERE												VARIES 1 1/2" 1 15/16"	OOR WIDTH
						$\sqrt{1}$ S	ianaga Data	.:I											JAMB DEPTH	
						$\left(\begin{array}{c} 1 \\ A6.0 \end{array}\right)$ Sca	ignage Deta	<u> </u>											HM Frame Profile	
							12'-0"	21.2.1.21			21.44	9'-5"								
				2"	2'-9 1/2"	2'-9 1/2"	2'-9 1/2"	2'-9 1/2"	12"		2" 2'-11"	2'-11"	2'-11"	1 2"						
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			10P															A.F.		A.F.F
			0- 10-															70'	Note:	7:-0,
			Ω																Note: (D) windows are required for egress. that submitted windows meet the follo	Verify lowing
																			code requirements: -Min. clear area of 5 sq ft -Min. net clear opening height of 24 in	inches 5
																		<u> </u>	-Min. net clear opening width of 20 in -Bottom of clear opening 44" or less A	nches
																	Š	0		
2 -	Tuniaal Ciau	naga Dat	_:I			A STOREFRO	ONT WINDOW ELEVATION 1 LOCATION	<u> 1</u>			B	STOREFRONT WINDOW E	<u>LEVATION</u>		(0	STOREFRO	ONT WINDOW 3 LOCATIONS	ELEVATION	CASEMENT WINDOW ELEVATIONS TYPICAL OF 3 LOCATIONS	ION
6.0 S	Typical Sign	nage Det	<u> </u>																	
											2" As Scheduled	2"	A Cabadulad		2-6			A o Cobodulad	A. Cahadulad	
	1'-6"		•									-5	As Scheduled	Ass	Scheduled		•	As Scheduled	As Scheduled	—
														10" 6"	<u>'</u>		10"	3"	11" 1'-4" =	
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	<i>.</i>					•		•												
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	ITR/	411C			3/4 Inch tall I	'etters.	SITORS PLE	ASE												!
	NIKA	411/			3/4 Inch tall		SITORS PLE E OTHER D							Тур.	. . -4"		Тур.	<u>-</u> 4-	4" Typ.	

HM Door Frame '1'

Door Type 'A'

Door Type 'C'

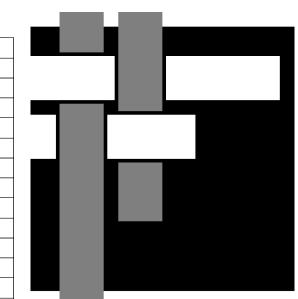
Door Type 'D'

Door Type 'B'

Wall-Mounted Sign Detail

Scale: 3" = 1'-0"

Wall-Mounted Sign Detail
Scale: 3" = 1'-0"



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3805 US-421 Wilmington, NC

Coordination Drawings 1 May, 2020

Revisions:

Door & Window Elevations & Schedules

10 of 12



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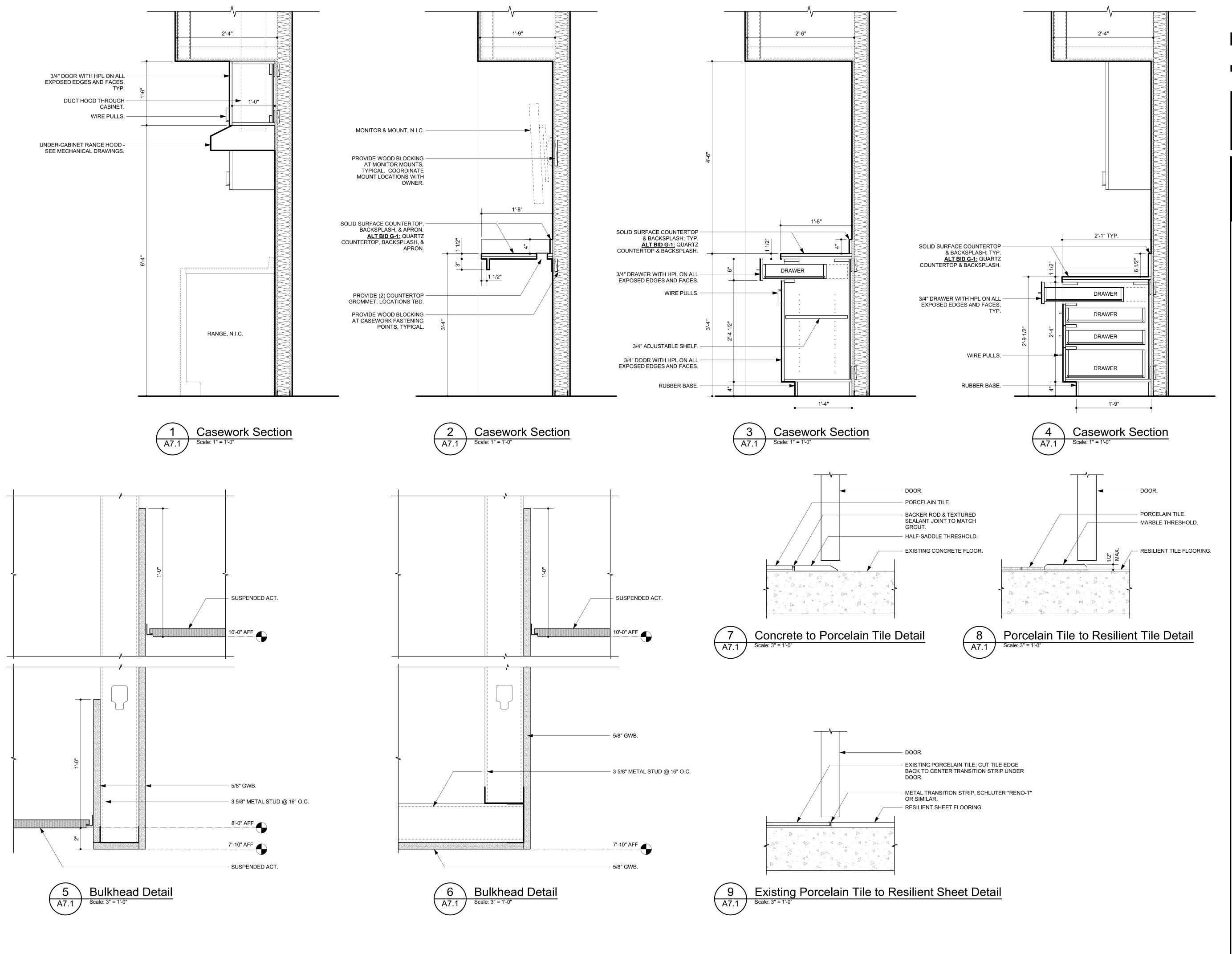
Coordination Drawings 1 May, 2020

Revisions:

Casework
Elevations &
Sections

A7.0

11 of 12



ATTACHMENT I

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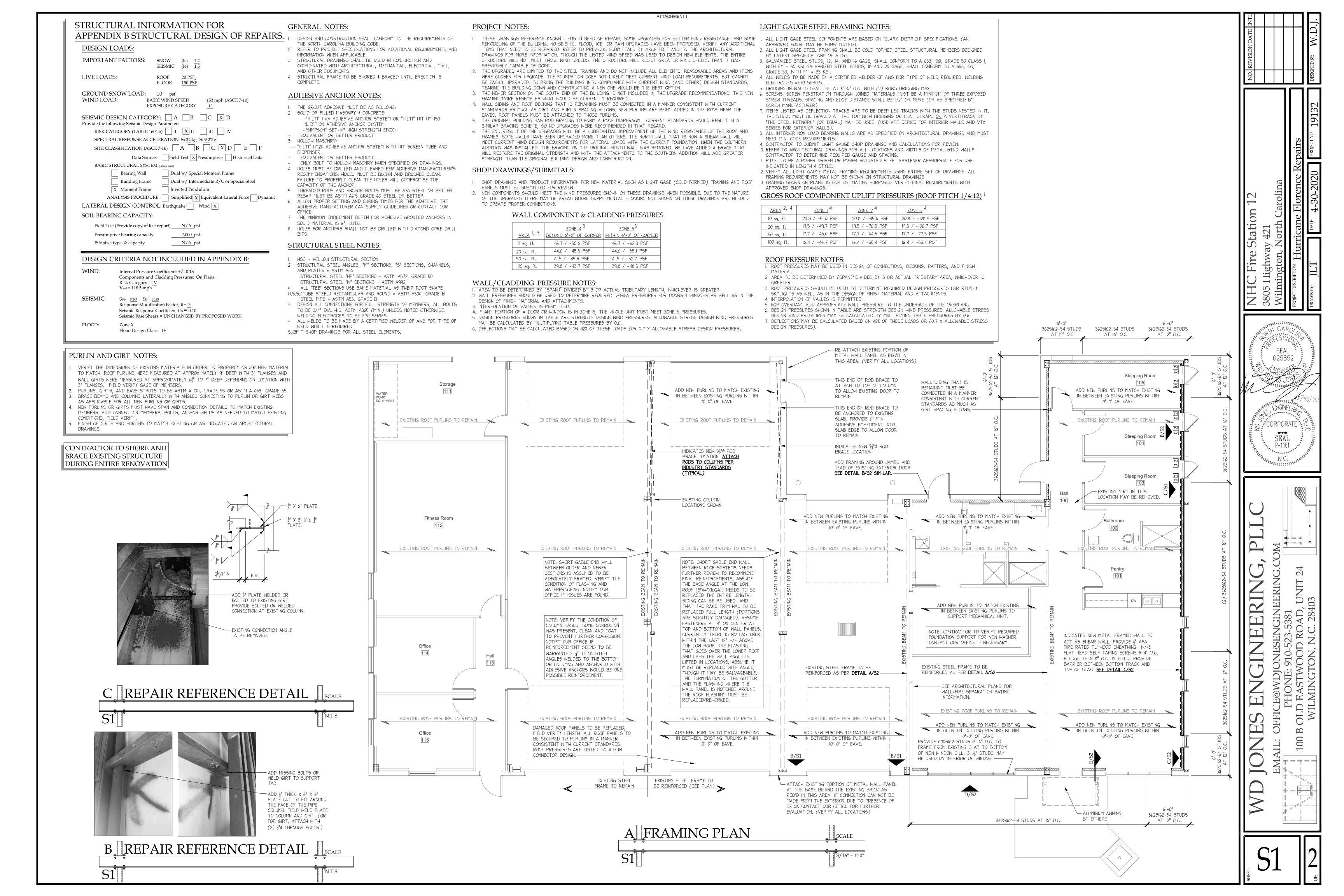
Coordination Drawings 1 May, 2020

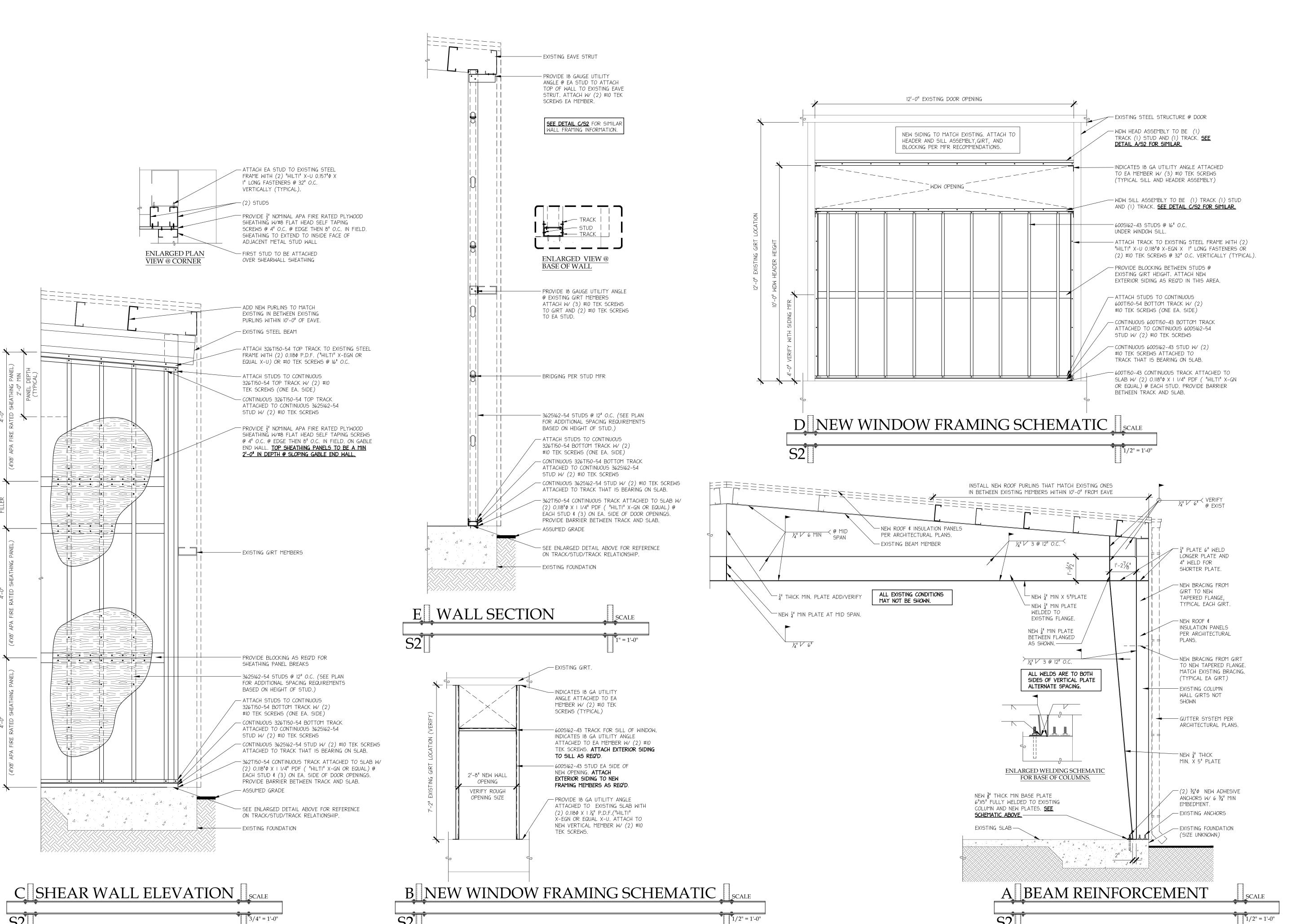
Revisions:

Casework
Sections &
Interior Details

A7.

12 of 12





: OFFICE@WDJONESENGINEERINC PHONE: 910-523-5381 0 B OLD EASTWOOD ROAD, UNIT 2 WILMINGTON, N.C. 28403

H

PLUMBING SPECIFICATIONS:

PART 1 GENERAL

- SCOPE OF WORK: THESE DRAWINGS AND SPECIFICATIONS DESCRIBE THE SCOPE OF WORK REQUIRED FOR PROJECT PLUMBING SYSTEMS. PROVIDE ALL LABOR AND MATERIAL REQUIRED FOR COMPLETE, FULLY FUNCTIONING PLUMBING SYSTEMS COMPLYING WITH THE INTENT OF THE DRAWINGS AND SPECIFICATIONS. COMPLY WITH ALL PROVISION OF GENERAL CONDITIONS, SUPPLEMENTAL GENERAL CONDITIONS AND DIVISION ONE SPECIFICATIONS
- .2 CONTRACTOR: THE WORD "CONTRACTOR", "PLUMBING CONTRACTOR", AND "P.C." AS USED HEREIN SHALL MEAN THE PLUMBING INSTALLER UNLESS OTHERWISE QUALIFIED.
- DRAWINGS: DRAWINGS ARE DIAGRAMMATIC AND MAY NOT COMPLETELY DESCRIBE EVERY DETAIL OF THE INSTALLATION. HOWEVER, CONTRACTOR IS RESPONSIBLE FOR FURNISHING COMPLETE SYSTEMS INCLUDING ALL REQUIRED EQUIPMENT AND ACCESSORIES TO OBTAIN FULLY FUNCTIONING PLUMBING SYSTEMS
- 1.4 CODE COMPLIANCE: COMPLY WITH THE LATEST EDITIONS OF THE FOLLOWING STANDARDS AND CODES, INSOFAR AS THEY APPLY:
 - NORTH CAROLINA STATE BUILDING CODE (CODE), LATEST EDITION AND REVISIONS.
 - LOCAL JURISDICTION REQUIREMENTS.
 - PERMITS AND INSPECTIONS: OBTAIN ALL PERMITS, LICENSES, INSPECTIONS, ETC., REQUIRED FOR THE WORK AND PAY FOR SAME. FURNISH A FINAL CERTIFICATE OF INSPECTION AND APPROVAL FROM THE AUTHORITY HAVING JURISDICTION PRIOR TO ACCEPTANCE OF THE WORK.
- 1.6 SUPERVISION: PROVIDE SKILLED SUPERINTENDENTS TO SUPERVISE THE WORK FROM THE BEGINNING TO COMPLETION AND FINAL INSPECTION.
- PROGRESS OF WORK: PERFORM WORK IN ACCORDANCE WITH SCHEDULE AND REQUIREMENTS OF THE GENERAL CONTRACTOR. UNDER NO CIRCUMSTANCES SHALL THIS CONTRACTOR DELAY THE OVERALL PROJECT SCHEDULE.
- 1.8 COORDINATION: COORDINATE PLUMBING WORK WITH THE WORK OF OTHER TRADES. LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE UNLESS SPECIFICALLY DIMENSIONED. ARRANGE PLUMBING SO AS NOT TO INTERFERE WITH THE WORK OF OTHER TRADES. VERIFY ACTUAL BUILDING STRUCTURE PRIOR TO PIPE FABRICATION AND ADJUST LAYOUT AS REQUIRED. INCLUDE ALL OFFSETS IN PIPING, FITTINGS, ETC. AS REQUIRED TO PROPERLY INSTALL FOLIDMENT.
- 1.9 EQUIPMENT LOCATIONS: DETERMINE EXACT EQUIPMENT AND MATERIALS LOCATIONS TO PROVIDE BEST ARRANGEMENT AND TO FACILITATE PROPER MAINTENANCE AND SERVICING OF EQUIPMENT.
- 1.10 LISTING AND LABELING: ALL EQUIPMENT SHALL BE LABELED OR LISTED BY UL OR OTHER APPROVED TESTING AGENCY WHERE REQUIRED.
- 1.11 STORAGE SPACE: CONSULT WITH THE GENERAL CONTRACTOR REGARDING JOB SITE STORAGE FOR PLUMBING MATERIALS TO BE INSTALLED UNDER THIS
- PROJECT. STORAGE SPACE MUST BE SECURED AND CONTRACTOR'S REPRESENTATIVE MUST BE ON JOB BEFORE ANY MATERIAL MAY BE RECEIVED.

 1.12 CLEANUP: REMOVE ALL DEBRIS GENERATED IN THE ACCOMPLISHMENT OF WORK UNDER THIS PROJECT. CLEAN, REPLACE OR REPAIR ALL SURFACES SOILED OR DAMAGED DURING THE COURSE OF THE WORK. REMOVE DEBRIS DAILY SO TO MAINTAIN SAFE WORKING CONDITIONS.

1.13 ELECTRICAL WORK:

- A. PERFORM ELECTRICAL WORK FOR PLUMBING EQUIPMENT IN COMPLIANCE WITH PROJECT ELECTRICAL REQUIREMENTS. ELECTRICAL WORK FOR PLUMBING EQUIPMENT NOT SPECIFICALLY INDICATED TO BE PROVIDED BY THE ELECTRICAL CONTRACTOR IN THE ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT SHALL BE FURNISHED BY THE PLUMBING CONTRACTOR AS PART OF HIS WORK.
- B. ELECTRICAL DRAWINGS ARE BASED ON ELECTRICAL CHARACTERISTICS INDICATED IN DRAWING PLUMBING EQUIPMENT SCHEDULES. ANY EQUIPMENT FURNISHED BY THE PLUMBING CONTRACTOR WHICH DOES NOT MATCH THE ELECTRICAL CHARACTERISTICS INDICATED IN THE DRAWING SCHEDULES SHALL BE COORDINATED WITH THE ELECTRICAL CONTRACTOR. ANY ADDITIONAL COSTS FOR ELECTRICAL INSTALLATION REQUIRED FOR EQUIPMENT NOT MATCHING THE DRAWING SCHEDULES SHALL BE BORNE BY THE PLUMBING CONTRACTOR.
- 1.14 PLUMBING WORK IN CONNECTION WITH OTHER CONTRACTS
 - PROVIDE PLUMBING SERVICES AS REQUIRED FOR ITEMS FURNISHED BY OTHER CONTRACTORS OR VENDORS AS SHOWN ON THE PLUMBING DRAWINGS. INCLUDE ROUGH-INS AND FINAL CONNECTIONS TO EQUIPMENT. LOCATIONS OF CONNECTIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SOME ADJUSTMENT OF ACTUAL CONNECTION LOCATIONS SHOULD BE ANTICIPATED. COORDINATE EXACT CONNECTION REQUIREMENTS. MAKE FINAL CONNECTIONS ONLY AFTER APPROVAL OF THE OTHER CONTRACTOR OR VENDOR, IN THE CONTRACTOR'S OR VENDOR'S PRESENCE.
 - B. NATURAL GAS SYSTEM- PROVIDE COMPLETE GAS PIPING SUPPLY FROM NATURAL GAS METER. COORDINATE EQUIPMENT GAS REQUIREMENTS WITH SUPPLIER. CONTRACTOR IS RESPONSIBLE FOR CONTACTING NATURAL GAS SUPPLIER AND COMPLYING WITH SUPPLIER CONNECTION AND SERVICE PIPING REQUIREMENTS. PROVIDE ALL REQUIRED VALVES, REGULATORS, ACCESSORIES AS SHOWN ON DRAWINGS.
 - C. SITE UTILITIES- IN GENERAL, WORK UNDER THIS DIVISION COVERS WORK TO FIVE FEET OUTSIDE BUILDINGS. EXTEND AND CONNECT WORK UNDER THIS DIVISION TO SITE UTILITIES AS REQUIRED.
 - D. OWNER FURNISHED EQUIPMENT- OBTAIN EXACT PLUMBING REQUIREMENTS AND ROUGH-IN LOCATIONS FOR OWNER FURNISHED EQUIPMENT. PROVIDE COMPLETE PLUMBING INSTALLATION FOR PROPER OPERATION OF EQUIPMENT.
 - E. KITCHEN EQUIPMENT- OBTAINING EXACT PLUMBING REQUIREMENTS AND ROUGH-IN LOCATIONS FOR KITCHEN EQUIPMENT. PROVIDE COMPLETE PLUMBING INSTALLATION FOR PROPER OPERATION OF EQUIPMENT.
- 1.15 SUBSTITUTIONS: MAJOR FIXTURES, EQUIPMENT, DEVICES, AND SPECIALTIES SHALL BE AS SCHEDULED ON THE DRAWINGS. MANUFACTURERS SHOWN OR NOTED ARE INTENDED FOR REFERENCE AS TO THE QUALITY AND TYPE OF EQUIPMENT DESIRED. COMPARABLE FIXTURES BY OTHER MANUFACTURERS MAY BE ACCEPTED IF, IN THE OPINION OF THE ENGINEER, THE LEVEL OF QUALITY IS EQUIVALENT TO SCHEDULED FIXTURES.

1.16 SUBMITTALS:

- A. EQUIPMENT SUBMITTALS: SUBMIT ONE (1) ELECTRONIC COPY OF DESCRIPTIVE DATA FOR PLUMBING EQUIPMENT AND MATERIALS FOR APPROVAL BY THE ENGINEER. CLEARLY IDENTIFY ALL ITEMS.
- B. OPERATING AND MAINTENANCE MANUALS: SUBMIT TWO HARD COPIES AND ONE ELECTRONIC COPY OF COMPLETE OPERATING AND MAINTENANCE INSTRUCTIONS FOR ALL EQUIPMENT, INCLUDING NECESSARY CUT SHEETS, CHARTS, WRITTEN INSTRUCTIONS, WIRING DIAGRAMS, FINAL RECORD DRAWINGS, ETC. BIND IN SUITABLE HARD BACK RING BINDERS, PROPERLY INDEXED, AND DELIVER TO THE OWNER PRIOR TO BUILDING OCCUPANCY. IN ADDITION, AFFIX A FOLDER WITH TYPICAL "OWNER'S INSTRUCTIONS" AND "MAINTENANCE INFORMATION" INSIDE THE MECHANICAL EQUIPMENT AS APPLICABLE. THE FOLDER SHALL ALSO INCLUDE A COMPLETE STARTUP LOG FOR THE EQUIPMENT.
- 1.17 RECORD DRAWINGS: MAINTAIN ONE SET OF "RED-LINED" RECORD DRAWINGS ON SITE AT ALL TIMES AND PROVIDE DRAWINGS TO ENGINEER PRIOR TO FINAL INSPECTION.
- 1.18 WARRANTY: WARRANTY THE MATERIALS AND WORKMANSHIP COVERED BY THESE DRAWINGS AND SPECIFICATIONS FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER. REPAIR AND/OR REPLACE ANY PARTS OF THE WORK THAT MAY PROVE TO BE DEFECTIVE AT NO ADDITIONAL COST TO THE OWNER WITHIN THE WARRANTY PERIOD.
- 1.19 EXISTING BUILDINGS AND CONSTRUCTION:
 - A. WORK UNDER THIS CONTRACT IS TO BE PERFORMED IN AN EXISTING BUILDING. BUILDING LAYOUT INDICATED IS DEVELOPED FROM LIMITED FIELD VERIFICATION FOR THE PURPOSES OF DESCRIBING THE WORK. VERIFY ALL EXISTING CONDITIONS AND ADJUST WORK AS REQUIRED TO SUIT ACTUAL FIELD CONDITIONS.
 - B. PERFORM ALL WORK IN ACCORDANCE WITH SAFETY REGULATIONS.
 - C. DO NOT CUT ANY STRUCTURAL MEMBERS WITHOUT EXPRESS WRITTEN INSTRUCTIONS FROM ARCHITECT. PROVIDE CUTTING AND PATCHING FOR EXISTING FINISHES AS REQUIRED.
 - D. COORDINATE INSTALLATION OF NEW PLUMBING SYSTEMS WITH EXISTING BUILDING SYSTEMS. ADJUST ARRANGEMENTS AS REQUIRED TO ACCOMMODATE INTERFERENCES.

PART 2 MATERIALS

- 2.1 GENERAL: ALL PLUMBING MATERIALS SHALL CONFORM TO APPLICABLE CODE REQUIREMENTS. UNLESS SPECIFICALLY INDICATED OTHERWISE, PROVIDE ALL NEW MATERIALS.
- 2.2 VALVES:
 - A. BALL VALVES, 3" AND SMALLER: ASTM B 62, 200 PSI WOG, TWO-PIECE CONSTRUCTION, BRASS BODY, STANDARD PORT, CHROME-PLATED BRASS BALL, REPLACEABLE "TFE" SEATS AND SEALS, VINYL-COVERED HANDLE, SOLDER ENDS.
 - B. CHECK VALVES, 3" AND SMALLER: MSS-SP-80, 125 PSI CWP, BRONZE BODY, Y-PATTERN, SOLDER ENDS.

2.3 HANGERS, SUPPORTS AND ANCHORS:

A. HANGERS, SUPPORTS AND ANCHORS - B-LINE, GRINNELL, PHD OR EQUAL, MANUFACTURED PRODUCTS. USE CLEVIS OR CLAMP HANGERS WITH THREADED ROD SUPPORTS AND SUITABLE FASTENERS TO BUILDING STRUCTURE. CHAIN, STRAP, PERFORATED STRAP, WIRE HANGERS OR WOOD PLUGS ARE PROHIBITED.

- 2.4 PIPI
 - A. DOMESTIC WATER PIPING (INTERIOR ABOVE GROUND): ASTM F876, CROSSED LINK POLYETHYLENE (PEX) PLASTIC TUBING AND COMPATIBLE BRASS/BRONZE FITTINGS
 - B. DOMESTIC WATER PIPING (BELOW GROUND OR SLAB): ASTM F876, CROSSED LINK POLYETHYLENE (PEX) PLASTIC TUBING AND COMPATIBLE BRASS/BRONZE FITTINGS.
 - C. DRAIN, WASTE & VENT PIPING: ASTM D2665 PVC-DWV W/ PLAIN ENDS, SCHEDULE 40; SOCKET TYPE FITTINGS; PVC SOLVENT-CEMENTED JOINTS (COMBINATION SOLVENT CEMENTS ARE UNACCEPTABLE). NOT TO BE USED IN PLENUMS.
 - D. GAS PIPING: ASTM A53; TYPE E OR S; GRADE B; SCHEDULE 40; BLACK STEEL WITH MALLEABLE-IRON, ASME B16.3, CLASS 150, STANDARD PATTERN, THREADED ENDS PRE ASME B1.20.1. FLEXIBLE CONNECTORS SHALL BE ANSI Z21.24, COPPER ALLOY.
- 2.5 PIPE INSULATION:
 - A. PIPE INSULATION MANSVILLE, KNAUF, OWENS-CORNING OR EQUAL, ASTM C547-77 CLASS 1 PREFORMED GLASS FIBER, 10 PCF MAX DENSITY WITH ALL
 - B. WHERE DOMESTIC WATER PIPING IS EXPOSED TO VIEW, PROVIDE PVC JACKETING W/ PVC ELBOW JACKETS. PROVIDE VAPOR BARRIER ON ALL PIPE INSULATION
- C. INSULATION SCHEDULE:
 - DOMESTIC HOT AND COLD WATER
 PIPE SIZE THICKNESS
 <1 INCH 1.0 INCH
 1-1/4 THROUGH 2 INCHES 1.5 INCH
- 2.6 SPECIALITIES:
 - A. UNIONS PROVIDE UNIONS TO PERMIT DISASSEMBLY FOR EQUIPMENT SERVICE, REPAIRS, OR REPLACEMENT. PROVIDE DIELECTRIC UNIONS FOR CONNECTIONS BETWEEN DISSIMILAR METALS.
 - B. ESCUTCHEONS PROVIDE CHROME PLATED BRASS ESCUTCHEONS ON ALL EXPOSED PIPING PASSING THROUGH WALLS, FLOORS, OR CEILINGS.
- BACKFLOW PREVENTERS PROVIDE VACUUM BREAKER BACKFLOW PREVENTERS ON ALL HOSE OUTLETS AND OTHER LOCATIONS AS REQUIRED BY LOCAL AUTHORITY.
- PLUMBING FIXTURES: PROVIDE FIXTURES AS SCHEDULED ON DRAWINGS OR EQUAL. INCLUDE ALL OPTIONS AND ACCESSORIES INDICATED OR AS REQUIRED FOR PROPER INSTALLATION.

PART 3 EXECUTION

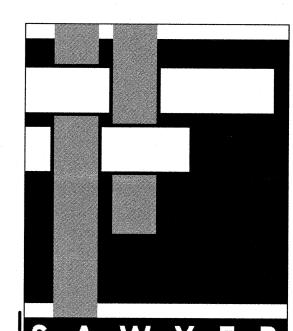
- PREPARATION: VERIFY EXISTING CONDITIONS. COMPARE DRAWINGS WITH EXISTING CONDITIONS AND ADJUST INSTALLATION TO SUIT. NOTIFY ENGINEER OF ANY CONDITIONS WHICH WOULD PREVENT INSTALLATION OF PLUMBING WORK IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
- DEMOLITION: DEMOLISH EXISTING PLUMBING WORK ONLY AS REQUIRED TO INSTALL RENOVATIONS. PROTECT EXISTING EQUIPMENT TO REMAIN.
- 3.3 INSTALLATION: INSTALL ALL PLUMBING WORK IN ACCORDANCE WITH CODE, MANUFACTURER'S RECOMMENDATIONS AND GOOD INDUSTRY PRACTICE. ARRANGE WORK TO ALLOW EASY ACCESS TO EQUIPMENT FOR SERVICE AND MAINTENANCE.
- 3.4 INSTALL PLUMBING PIPING PER ACCEPTED INDUSTRY METHODS. PROVIDE PIPE SLEEVES WHERE PIPES PASS THROUGH WALLS.
- 3.5 PROVIDE ZONE SHUTOFF VALVES FOR WATER SUPPLIES ON BRANCH LINES AS PRESCRIBED BY CODE. LOCATE VALVES SO AS TO BE ACCESSIBLE.
- 6 INSTALL EQUIPMENT LEVEL AND PLUMB, PARALLEL AND PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS IN EXPOSED INTERIOR SPACES, EXCEPT WHERE OTHERWISE INDICATED.
- 3.7 SLOPE WASTE PIPING AT 1/4"/FT FOR PIPE SIZES 2-1/2" AND LESS, AND 1/8"/FT FOR PIPE SIZES 3" AND LARGER. COORDINATE FINAL CONNECTIONS W/ GENERAL CONTRACTOR.
- EXCAVATION PERFORM ALL EXCAVATION, TRENCHING AND BACKFILLING NECESSARY TO INSTALL PLUMBING WORK. COMPLY WITH CODE. EXCAVATE TRENCHES OF UNIFORM WIDTHS TO PROVIDE A WORKING CLEARANCE ON EACH SIDE OF PIPE. EXCAVATE TRENCH WALLS VERTICALLY FROM TRENCH BOTTOM TO 12" HIGHER THAN TOP OF PIPE. SHAPE TRENCH BOTTOMS TO PROVIDE UNIFORM BEARING AND SUPPORT OF PIPES. SHAPE SUBGRADE TO PROVIDE CONTINUOUS SUPPORT FOR BELLS, JOINTS, AND BARRELS OF PIPES. REMOVE STONES AND SHARP OBJECTS TO AVOID POINT LOADING. SUPPORT PIPE ON UNDISTURBED SUBGRADE. BACKFILL WITH MATERIALS FREE OF PARTICLES LARGER THAN 1 INCH. BACKFILL AND COMPACT IN 12" LAYERS. BACKFILL AND COMPACT IN MANNER WHICH AVOIDS DAMAGE OR DISPLACEMENT.
- 3.9 SUPPORT AND FASTEN ALL ABOVE GROUND HORIZONTAL AND VERTICAL PIPING, EQUIPMENT ETC., SECURELY IN PLACE. SPACE, SECURE AND ADJUST HANGERS WITHOUT DEFLECTION OR SAG.
- PROVIDE STEEL SUPPORTS, ANCHORS, FRAMES, BRACING, PLATES, BOLTS, NUTS, WASHERS, RODS, HANGERS, UPPER ATTACHMENTS, ETC., INCIDENTAL TO INSTALLATION OF WORK AS SPECIFIED OR REQUIRED. USE HANGERS COMPATIBLE TO COPPER PIPE WHERE BARE COPPER PIPE IS SUPPORTED.
- 3.11 SUPPORT EQUIPMENT FROM THE STRUCTURE IN AN APPROVED MANNER. NO PORTION OF THE STRUCTURE SHALL BE OVER STRESSED BY THE HANGING OPERATION OR BY THE FINAL SUPPORTS. PROVIDE AUXILIARY STRUCTURAL MEMBERS, SUCH AS 3"X3"X1/4" ANGLES, WHERE REQUIRED BETWEEN MEMBERS OF THE STRUCTURE AND SUPPORT EQUIPMENT OR DEVICE OFF ANGLES. ATTACHMENTS THAT ARE INADEQUATE, IN THE OPINION OF THE ENGINEER, SHALL BE REPLACED AS DIRECTED.
 - A. PIPE SUPPORT SPACING AS FOLLOWS OR PER CODE IF MORE STRINGENT:
 - PVC 4 FT INTERVALS FOR HORIZONTAL AND VERTICAL RUNS PEX - 4 FT INTERVALS FOR HORIZONTAL AND VERTICAL RUNS
- PROVIDE CLEVIS STYLE HANGERS FOR INDIVIDUAL PIPE RUNS. ARRANGE HANGERS FOR WASTE PIPING SUCH THAT REQUIRED PIPE SLOPE IS MAINTAINED ALONG ENTIRE RUN OF PIPE.
- ROUGH-INS VERIFY FINAL LOCATION FOR ROUGH-INS W/ FIELD MEASUREMENTS AND WITH THE REQUIREMENTS OF THE ACTUAL EQUIPMENT TO BE CONNECTED. DETERMINE EXACT EQUIPMENT AND MATERIALS LOCATIONS TO PROVIDE BEST ARRANGEMENT AND TO FACILITATE PROPER MAINTENANCE AND SERVICING OF EQUIPMENT. DO NOT SCALE DRAWINGS. COORDINATE CLOSELY WITH G.C.
- 3.14 FLOOR MOUNT WATER CLOSETS FIRMLY AFFIX FLOOR MOUNTED WATER CLOSETS TO FLOOR AND CAULK TO FLOOR USING WHITE SILICON CAULK.
- 3.15 FIRE RATINGS WHERE PIPING PENETRATES FIRE-RATED CONSTRUCTION, PROVIDE SUITABLE PROTECTION TO MAINTAIN RATING.
- 3.16 CUTTING & PATCHING THIS CONTRACTOR IS RESPONSIBLE FOR ANY CUTTING AND PATCHING REQUIRED WHICH IS INCIDENTAL TO THE INSTALLATION OF HIS WORK. CUT, CHANNEL, CHASE, AND DRILL FLOORS, WALLS, PARTITIONS, CEILINGS, AND OTHER SURFACES NECESSARY FOR PLUMBING INSTALLATIONS. PERFORM CUTTING BY SKILLED MECHANICS OF THE TRADES INVOLVED. REPAIR CUT SURFACES USING MATERIALS MATCHING SPECIFIED MATERIALS AND METHODS REQUIRED FOR SURFACE.
- 3.17 CLEAN-UP: CONTRACTOR SHALL REMOVE ALL DEBRIS DUE TO THIS WORK AND SHALL REPAIR, CLEAN AND REPLACE ALL DAMAGED OR SOILED SURFACES AS A RESULT OF THIS WORK AT NO ADDITIONAL EXPENSE TO THE OWNER. REMOVAL OF DEBRIS SHALL BE DAILY AS REQUIRED TO MAINTAIN SAFE WORKING CONDITIONS.
- 3.18 TESTING AND START-UP
 - ALL COSTS OF TESTS SHALL BE BORNE BY THIS CONTRACTOR. SHOULD TEST REVEAL ANY DEFECTIVE MATERIAL OR WORKMANSHIP, SUCH WORK SHALL BE REPLACED AND TESTS REPEATED. ALL CORRECTIONS IN PIPING SHALL BE MADE USING NEW MATERIALS.
 - B. TESTING TEST ALL PLUMBING SYSTEMS PER REQUIREMENTS OF CODE AND LOCAL AUTHORITY. PROVIDE DOCUMENTATION OF ACCEPTANCE.
 - C. DISINFECTION DISINFECT POTABLE WATER SYSTEMS IN ACCORDANCE WITH CODE AND LOCAL AUTHORITY. PROVIDE WRITTEN DOCUMENTATION OF DISINFECTION ACCEPTANCE.
 - D. START-UP: START-UP, CHECK OUT AND ADJUST ALL PLUMBING WORK FOR PROPER OPERATION. DEMONSTRATE TO ENGINEER AND LOCAL AUTHORITY THAT ALL SYSTEMS ARE IN COMPLETE SERVICEABLE CONDITION AND WILL FUNCTION AS INTENDED.
 - CLEANING: AFTER ALL FIXTURES, EQUIPMENT, ETC., HAVE BEEN INSTALLED, THE ENTIRE SYSTEM SHALL BE THOROUGHLY CLEANED. ALL PIPE FITTINGS, EQUIPMENT, ETC., SHALL BE CLEANED OF PIPE JOINT COMPOUND, GREASE, METAL SHAVINGS, ETC., WHICH HAVE ACCUMULATED THEREON. ALL DAMAGE OR DISCOLORATION OF FIXTURES OR BUILDING DUE TO FAILURE TO CLEAN UP THOROUGHLY OR FLUSH OUT PIPING PROPERLY SHALL BE CORRECTED WITHOUT ADDITIONAL COST TO THE OWNER.

PLUMI	BING ABBREVIATIONS
(X)	EXISTING
AAV	AIR ADMITTANCE VALVE
A.F.F.	ABOVE FINISHED FLOOR
A.R.C.I.	ACID RESISTANT CAST IRON
ADA	AMERICANS WITH DISABILITIES ACT
BRZ.	BRONZE
BT	BATHTUB
C.I.	CAST IRON
CO	CLEANOUT
CONC.	CONCRETE
DCW	DOMESTIC COLD WATER
DHW	DOMESTIC HOT WATER
DIA.	DIAMETER
E.C.I.	ENAMELED CAST IRON
EC	ELECTRICAL CONTRACTOR
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FS	FLOOR SINK
GA.	GALLON
GAL.	GALLON
GC	GENERAL CONTRACTOR
GCO CDE	GRADE CLEANOUT
GPF	GALLONS PER FLUSH
GPH	GALLONS PER HOUR
GPM GWH	GALLONS PER MINUTE
HB	GAS-FIRED WATER HEATER HOSE BIBB
INCL.	INCLUDED
KS	KITCHEN SINK
LAV	LAVATORY
LP	LIQUID PROPANE
MS	MOP SERVICE BASIN
NAT.	NATURAL GAS
NKL.	NICKEL
NON SIMULT.	NON SIMULTANEOUS
O.F.L.C.	OPEN FRONT LESS COVER
OB	OUTLET BOX
OC	ON CENTER
ORDL	OVERFLOW ROOF DRAIN LEADER
PC	PLUMBING CONTRACTOR
PRESS. BAL.	PRESSURE BALANCED
RCVY.	RECOVERY
RDL	ROOF DRAIN LEADER
SA	WATER HAMMER ARRESTOR
SH	SHOWER
SK	SINK
SLD.	SLIDE
SS	STAINLESS STEEL
TDH	TOTAL DYNAMIC HEAD
UR	URINAL
V	VENT
VB	VACUUM BREAKER
VC .	VITREOUS CHINA
VR	VANDAL RESISTANT
VTR	VENT THROUGH ROOF
W	WASTE
WC	WATER CLOSET
	WATER CLOSET WALL CLEANOUT

C C	CONDENSATE PIPING
140°F ———140°F ———	DOMESTIC 140°F WATER PIPING
140R	DOMESTIC 140°F RETURN WATER PIPING
	 DOMESTIC COLD WATER PIPING DOMESTIC HOT WATER CIRCULATION PIPING
	- DOMESTIC HOT WATER CIRCULATION PIPING - DOMESTIC HOT WATER PIPING
F F	- FILTERED WATER PIPING
SP	FIRE SPRINKLER PIPING
FM	- FORCE MAIN PIPING GAS PIPING (NAT. OP.L.D.)
	- GAS PIPING (NAT. OR LP) - GREASE WASTE PIPING
N2 ————————————————————————————————————	- NITROUS OXIDE PIPING
	O2 (0XYGEN) PIPING
	OVERFLOW ROOF DRAIN PIPING
RD-	ROOF DRAIN PIPING - SANITARY VENT PIPING
	- SANITARY VENT PIPING - SANITARY WASTE PIPING
T	- TEPID WATER PIPING
VAC	- VACUUM PIPING
	- BACKFLOW PREVENTION DEVICE
——————————————————————————————————————	- BALL VALVE
	- CHECK VALVE
	- CIRCUIT SETTER (BALANCING VALVE)
	- CIRCULATION PUMP
	- CONTROL VALVE
	EXTENT OF DEMOLITION
FCO ©	- FLOOR CLEANOUT
	I LOUN OLEANOU!
FD @G	FLOOR DRAIN
FS 🚾	- FLOOR SINK
	CAS DECIHATOD VALVE
A	GAS-REGULATOR VALVE
×	GATE VALVE
> 0+	- GATE VALVE IN RISER
200 El	
GCO 🖸	- GRADE CLEANOUT
——————— HB	HOSE BIBB
	PIPE CAP
	PIPE ELBOW
—	PIPE ELBOW DOWN
	PIPE ELBOW UP
T	PIPE TEE
—-—- 	PIPE TEE DOWN
	PIPE TEE UP
	The Links VI
SP (P)	SUMP PUMP
1	DEMOLITION KEYED NOTE TAG
	NEW WORK KEVED NOTE
	NEW WORK KEYED NOTE
	POINT OF CONNECTION - NEW TO EXISTING
	PRESSURE REDUCING VALVE
	SOLEMOID VALVE
W	SOLENOID VALVE
140°F	THERMOSTATIC MIXING VALVE
VCO 11	WALL CLEANOUT
——————————————————————————————————————	WALL HYDRANT
	WASHING MACHINE BOX
	WATER HAMMER ARRESTOR

PLUMBING LEGEND

DESCRIPTION	BTUH RATING	QUANTITY	TOTAL
GAS-FIRED WATER HEATER	199,000	1	199,00
GAS-FIRED WATER HEATER	199,000	1	199,00
)			398,00
	D (1) ELECTRIC GENERATOR (LOADS UNKNO	1
	GAS-FIRED WATER HEATER	GAS-FIRED WATER HEATER 199,000	GAS-FIRED WATER HEATER 199,000 1



S A W Y E R S H E R W O O D & ASSOCIATE ARCHITECTURE

910 762-0892



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Hurricane
Florence Repairs
New Hanover
County
Fire Station 12

Construction Drawing

Wilmington, NC

3805 US-421

Revisions:

23 April, 2020

Plumbing Specs, Leg

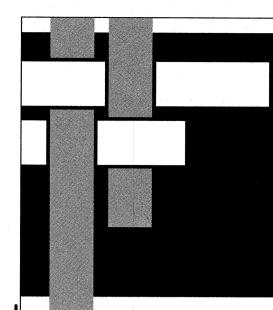
PO 1

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1 of 6

RAWING ODE	FIXTURE		DESCRIPTION	MANUFACTURER	MODEL	ALTERNATE APPROVED	NOTES	PIPE SIZE			
ODE						MANUFACTURERS		DCW	DHW	WASTE	VENT
/C1	TANK TYPE WATER CLOSET, FLOOR MTD,	BOWL	16.5" HIGH BOWL, ELONGATED, V.C., 2-1/8" TRAPWAY; CADET PRO	AMERICAN STANDARD	215AA.004	ZURN, KOHLER	10-	1			
	1.6GPF, ADA	SEAT	OFLC w/ SELF-SUSTAINING S.S. CHECK HINGE; HEIGHT 17-19" AFF	CHURCH	295SSCT	BEMIS, OLSONITE	6,7	1/2"	-	4"	2"
		BOWL	19x14 VITREOUS CHINA, UNDERMOUNT, 34"A.F.F., MAX.	AMERICAN STANDARD	0330.000	ZURN, CRANE		<u> </u>			
AV1	COUNTERTOP LAVATORY, 0.5GPM, ADA	FAUCET	4" CENTERSET, SINGLE LEVER HANDLE, SOLID BRASS CONSTRUCTION, CERAMIC CARTRIDGE, HIGH TEMP LIMIT STOP	MOEN	8413F05	ZURN, DELTA					
• •		DRAIN	GRID STRAINER	MCGUIRE	155A	DEARBORN, DELTA	2,4,5,7	1/2"	1/2"	2"	2"
·		MIXING VALVE	LEAD FREE THERMOSTATIC MIXING VALVE - SETPOINT = 110°F INSTALL ON HOT WATER SUPPLY, ASSE 1070	CASH ACME	HG-135	LEONARD, WATTS					
		BOWL	30x18x5.5, UNDERMOUNT, 18 GA S.S.	ELKAY	LR3322	JUST, ACORN		<u> </u>			1
K 1	2-COMPARTMENT COUNTERTOP SINK, 7.5" DEEP (ADA FRONT APPROACH)	FAUCET	180° HI-ARC PULLDOWN, SINGLE LEVER HANDLE, 1 HOLE, 1.5GPM, SOLID BRASS CONSTRUCTION, CHROME FINISH	MOEN	CA87011	DELTA, ZURN	2,4,5,7,9	1/2"	1/2"	2"	2"
		DRAIN	BASKET STRAINER	ELKAY	LK35	ZURN, MOEN					
1	FLOOR MOUNT LAUNDRY SINK	SINK	24x20x12 MOLDED STONE w/ GRID DRAIN	FIAT	FL-7	SWANSTONE, MUSTEE	7.0			1	
		FAUCET	CHROME PLATED BRASS, 4" WRIST BLADE HANDLES, VANDAL RESISTANT, CERAMIC CARTRIDGE	MOEN	74998	DELTA, ZURN	7,8	1/2"	1/2"	2"	2"
1	DECK MOUNT EYE WASH	FIXT	EYE WASH / DRENCH HOSE UNIT	GUARDIAN	G5022	-	1	1/2"	1/2"	-	1-
		ENCLOSURE	36x36 ACRYLIC- 1/2" CURB MAX. w/ GRAB BARS, FOLD-UP SEAT, CENTER DRAIN, CURTAIN ROD AND SHOWER CURTAIN	AQUATIC	3636BFS	ACRYLINE, AQUARIUS					-
I1	PREFAB TRANSFER SHOWER, ADA	VALVE	PRESS. BALANCED MIXING VALVE, LEVER HANDLE, HAND SHOWER, FLEXIBLE METAL HOSE, IN-LINE VAC. BREAKER, 36"SLIDE/GRAB BAR, 1.5GPM	MOEN	8370 / 52136GBM25	DELTA, SYMMONS		1/2"	1/2"	2"	-
		DRAIN	4-3/8" DIA. NICKEL BRONZE STRAINER, PVC	SIOUX CHIEF	821	SMITH, ZURN					-
		ENCLOSURE	JOB-BUILT BY G.C. W/ GRAB BARS per ADA	-	-	-					1
2	JOB-BUILT SHOWER, ADA	VALVE	PRESS. BALANCED MIXING VALVE, LEVER HANDLE, HAND SHOWER, FLEXIBLE METAL HOSE, IN-LINE VAC. BREAKER, 36"SLIDE/GRAB BAR, 1.5GPM	MOEN	8370 / 52136GBM25	DELTA, SYMMONS		1/2"	1/2"	2"	2"
		DRAIN	4-3/8" DIA. NICKEL BRONZE STRAINER, PVC	SIOUX CHIEF	821	SMITH, ZURN					
/H1	INSTANTANEOUS GAS-FIRED WATER HEATER	FIXT	CONDENSING, NAT. GAS, 199 MBH WITH INTERNAL BUFFER TANK AND CIRCULATION PUMP	NAVIEN	NPE-240A			3/4"	3/4"	-	-
VH2	INSTANTANEOUS GAS-FIRED WATER HEATER	FIXT	CONDENSING, NAT. GAS, 199 MBH WITH INTERNAL BUFFER TANK AND CIRCULATION PUMP	NAVIEN	NPE-240A			3/4"	3/4"	-	-
0	GRADE CLEANOUT	FIXT	C.I. BODY, RECESSED BRONZE PLUG.	SIOUX CHIEF	877	ZURN, SMITH		-	-	MATCH	-
0	WALL CLEANOUT	FIXT	ROUND S/S ACCESS COVER & SCREW, RECESS BRONZE THRD. PLUG	SIOUX CHIEF	870	ZURN, SMITH		-	1-	MATCH	1-
	EXTERIOR HOSE BIBB	FIXT	FREEZELESS, POWDER COATED, 3/4"HOSE THREAD, ANTI-SIPHON	WOODFORD	19	ZURN, WATTS		3/4"	-	-	
)	INTERIOR HOSE BIBB	FIXT	VACUUM BREAKER, WHEEL HANDLE, 3/4" HOSE THREAD	WOODFORD	24	ZURN, WATTS		3/4"	-	-	1
1	ICE MAKER BOX	FIXT	ABS HOUSING, 1/4 TURN BALL VALVE, CHROME PLATED BRASS, SHOCK ARRESTORS	SIOUX CHIEF	696	OATEY, IPS		1/2"	-	-	+
2	WASHER CONNECTION BOX	FIXT	ABS HOUSING, 1/4 TURN BALL VALVE, CHROME PLATED BRASS, SHOCK ARRESTORS	SIOUX CHIEF	696	OATEY, IPS		1/2"	1/2"	2"	+

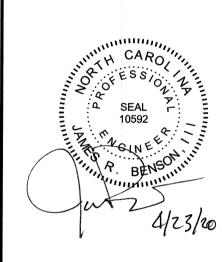
1. PROVIDE AND INSTALL THERMOSTATIC MIXING VALVE MODEL G3600LF



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124 Market St, Wilmington, NC 28401 910 762-0892 s2a3.com





Hurricane Florence Repairs New Hanover County Fire Station 12

3805 US-421 Wilmington, NC

Construction Drawings 23 April, 2020

Revisions:

Plumbing Fixture Schedule

P0.2

^{2.} PROVIDE BRASS 1-1/2" TAILPIECE, CAST BRASS SLIP JOINT P-TRAP WITH CLEANOUT; PROVIDE ADA OFFSET ARRANGEMENT WHERE REQUIRED.

^{3.} NOT USED.

^{4.} COORDINATE WITH MILLWORK.

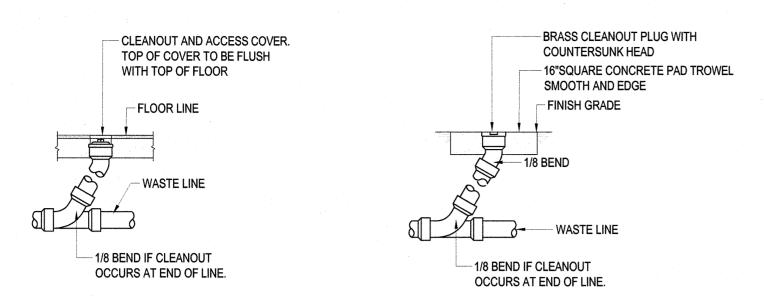
^{5.} COORDINATE ADA MILLWORK ENCLOSURE FOR WATER AND DRAIN PIPING UNDER SINK.

^{6.} TRIP LEVER OR FLUSH HANDLE TO BE LOCATED ON WIDE SIDE OF STALL OR TOILET ROOM.

^{7.} PROVIDE 1/2" IPS X 3/8" OD ANGLE BRASS STOP(S) WITH RIGID COPPER RISERS. ALL EXPOSED PIPING SHALL BE CHROME PLATED.

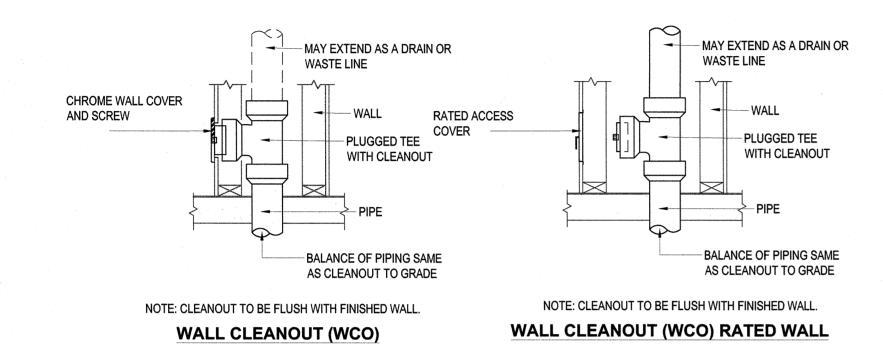
^{8.} PROVIDE INLINE CHECK VALVES FOR WATER SUPPLY LINES.

PROVIDE DISHWASHER CONNECTION.



FLOOR CLEANOUT

GRADE CLEANOUT (GCO)



GAS PIPING

GAS PIPING

GAS APPROVED

GAS VALVE

PRESSURE REGULATOR

AGA APPROVED FLEXIBLE CONNECTOR

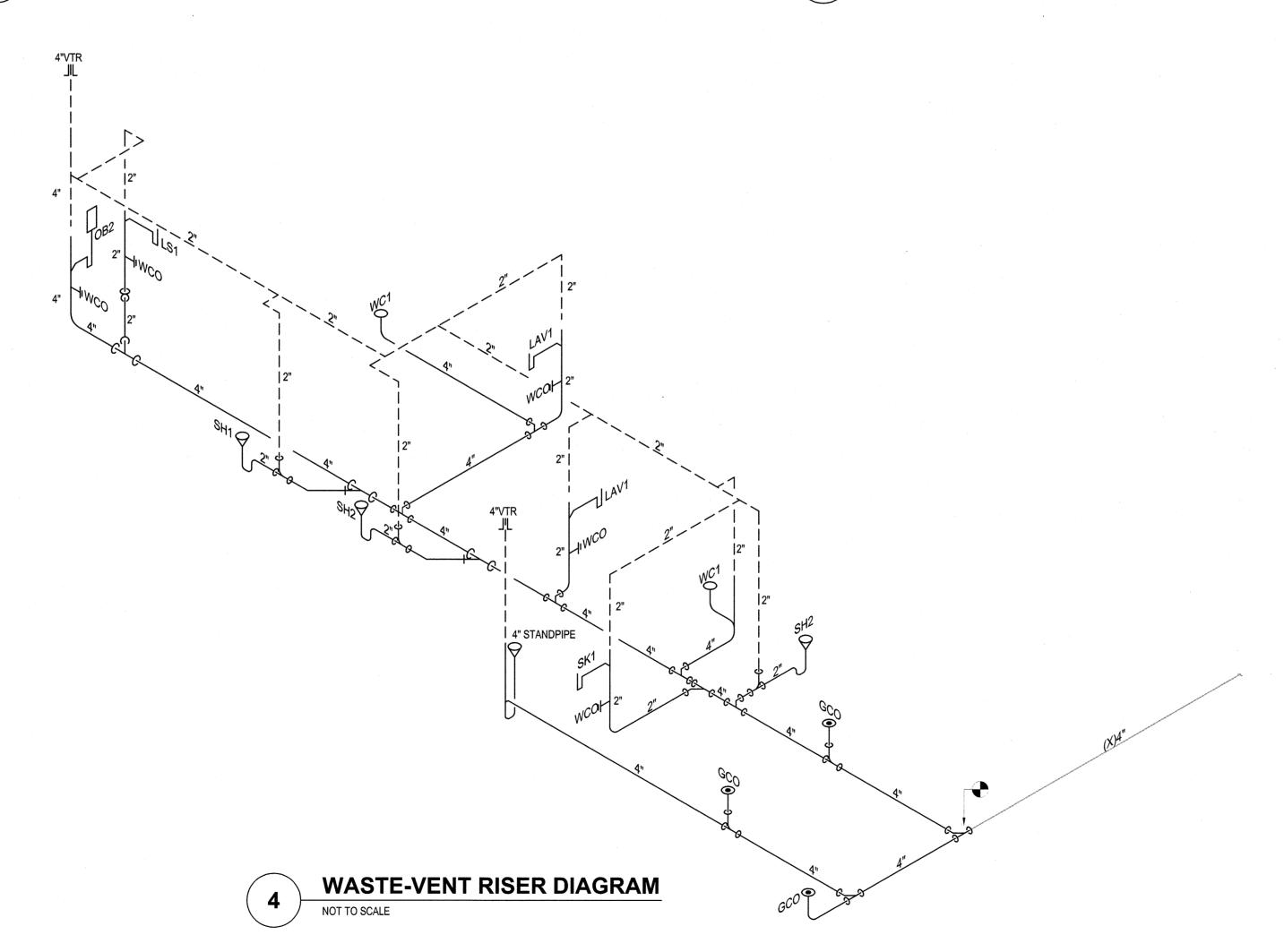
AGA APPROVED GAS VALVE

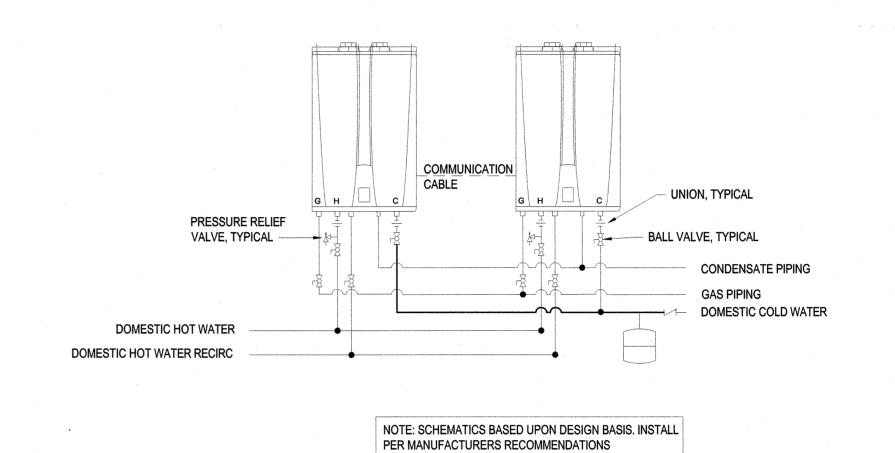
1 CLEANOUT DETAILS

NOT TO SCALE

GAS APPLIANCE CONNECTION DETAIL

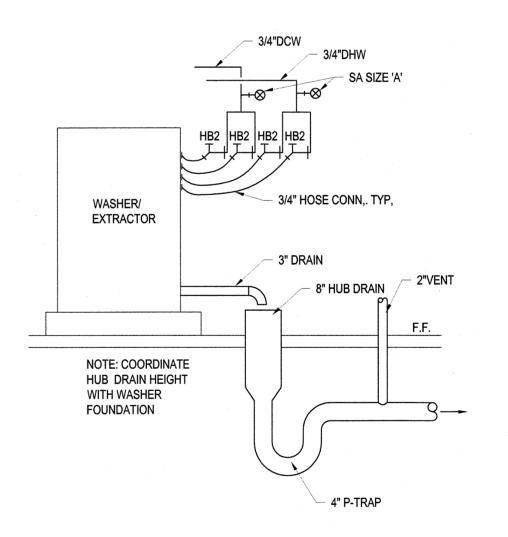
NOT TO SCALE





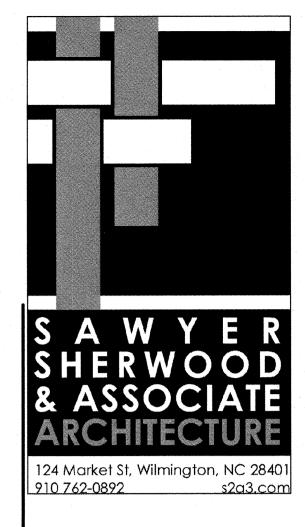
GAS FIRED INSTANTANEOUS WATER HEATER DETAILS

NOT TO SCALE



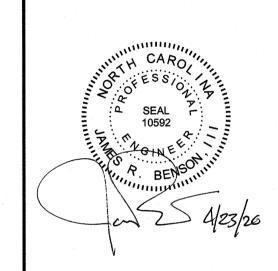
5 WASHER/EXTRACTOR DETAIL

NOT TO SCALE



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Hurricane
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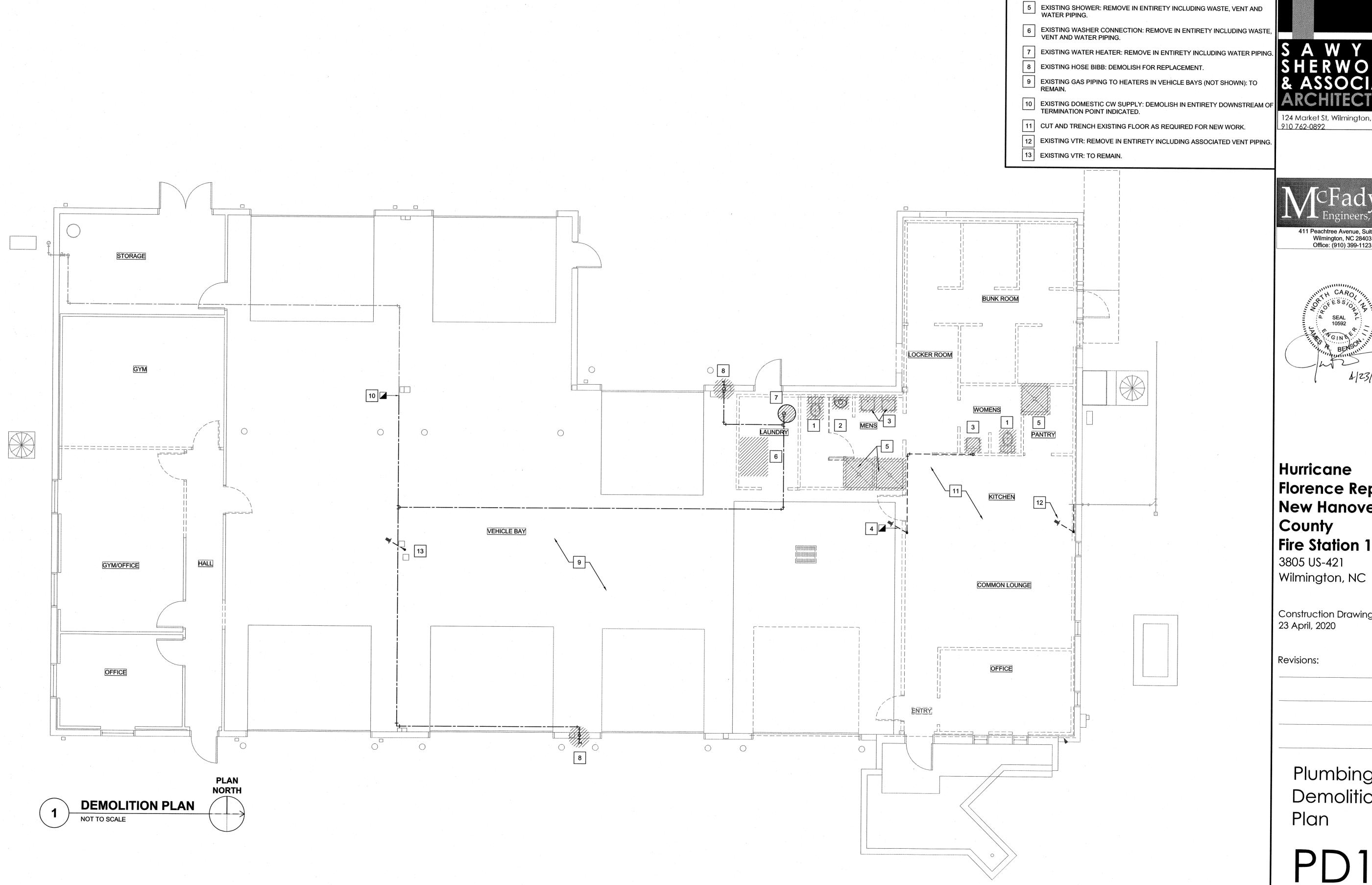
Wilmington, NC

Construction Drawings 23 April, 2020

Revisions:

Plumbing Details

P0.3

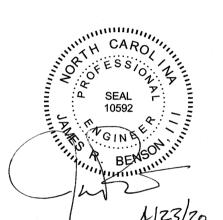


1 EXISTING WATER CLOSET: REMOVE IN ENTIRETY INCLUDING WASTE, VENT AND WATER PIPING. 2 EXISTING URINAL: REMOVE IN ENTIRETY INCLUDING WASTE, VENT AND WATER PIPING. 3 EXISTING LAVATORY: REMOVE IN ENTIRETY INCLUDING WASTE, VENT AND WATER PIPING. 124 Market St, Wilmington, NC 28401

KEYED NOTES-DEMOLITION

4 EXISTING VTR: TO REMAIN. REMOVE ASSOCIATED VENT PIPING .

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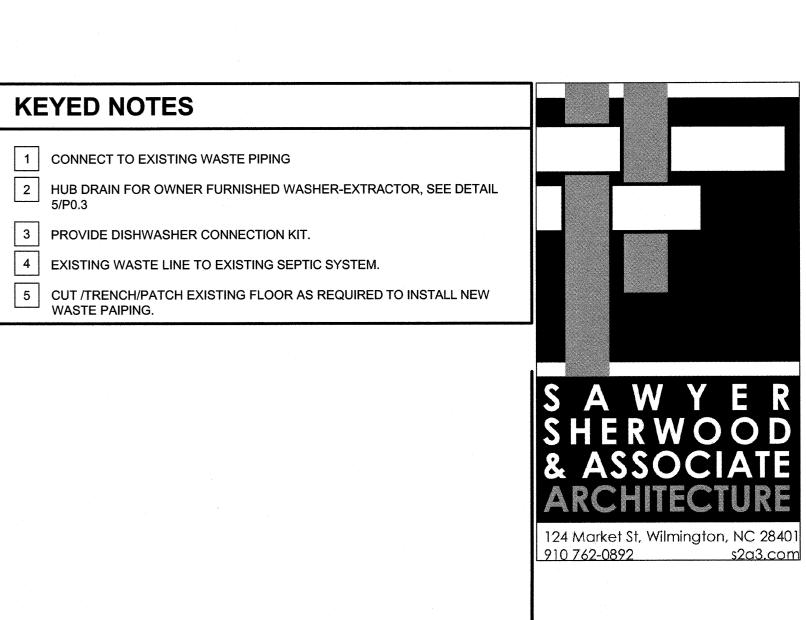


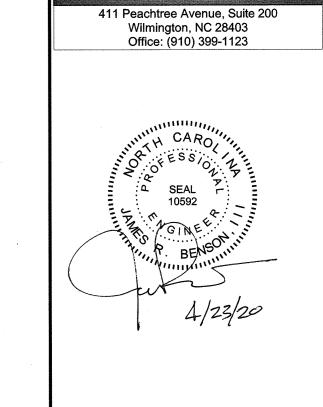
Hurricane Florence Repairs **New Hanover** Fire Station 12

Construction Drawings 23 April, 2020

Plumbing Demolition

4 of 6





Hurricane Florence Repairs New Hanover County Fire Station 12

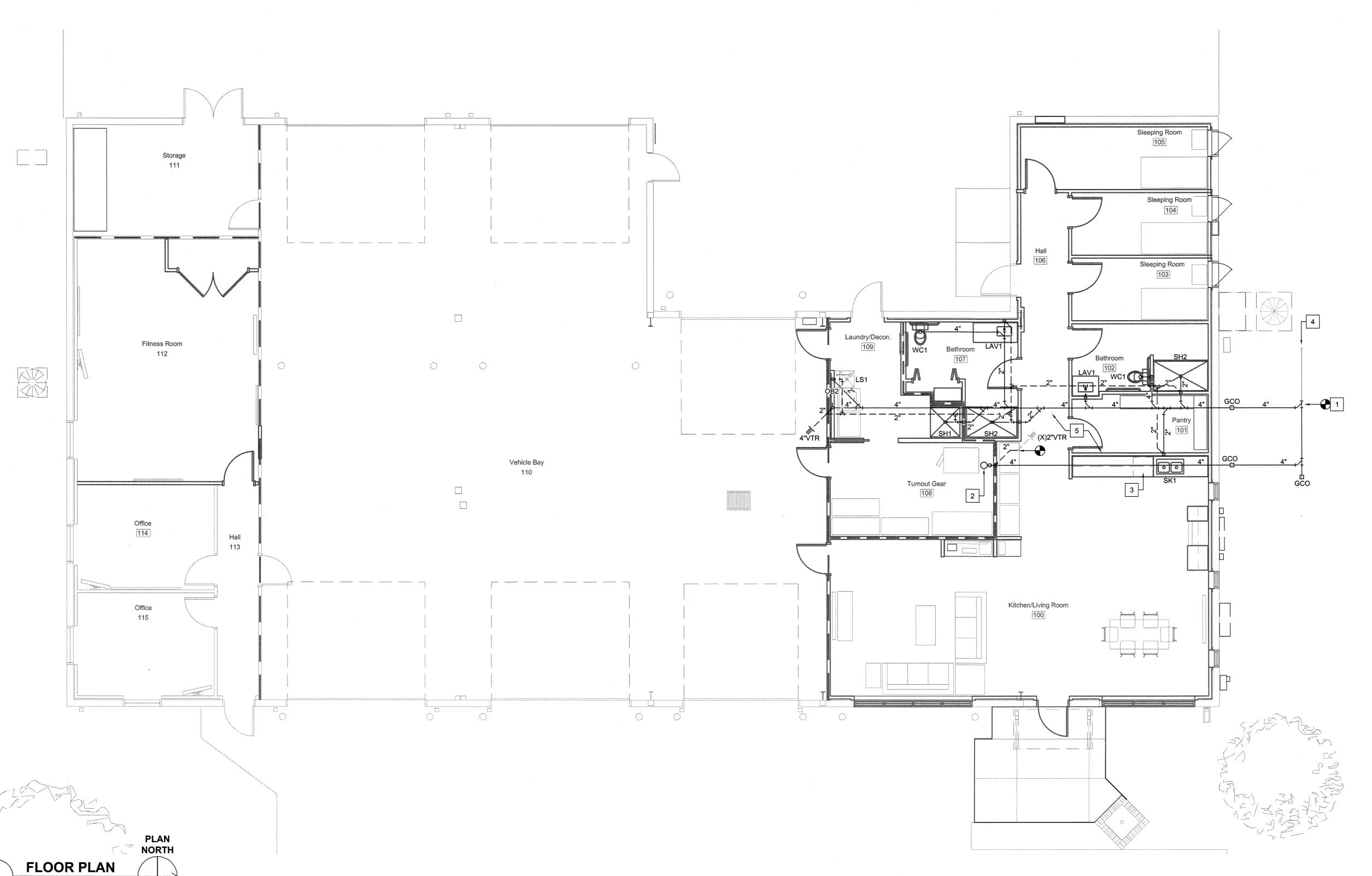
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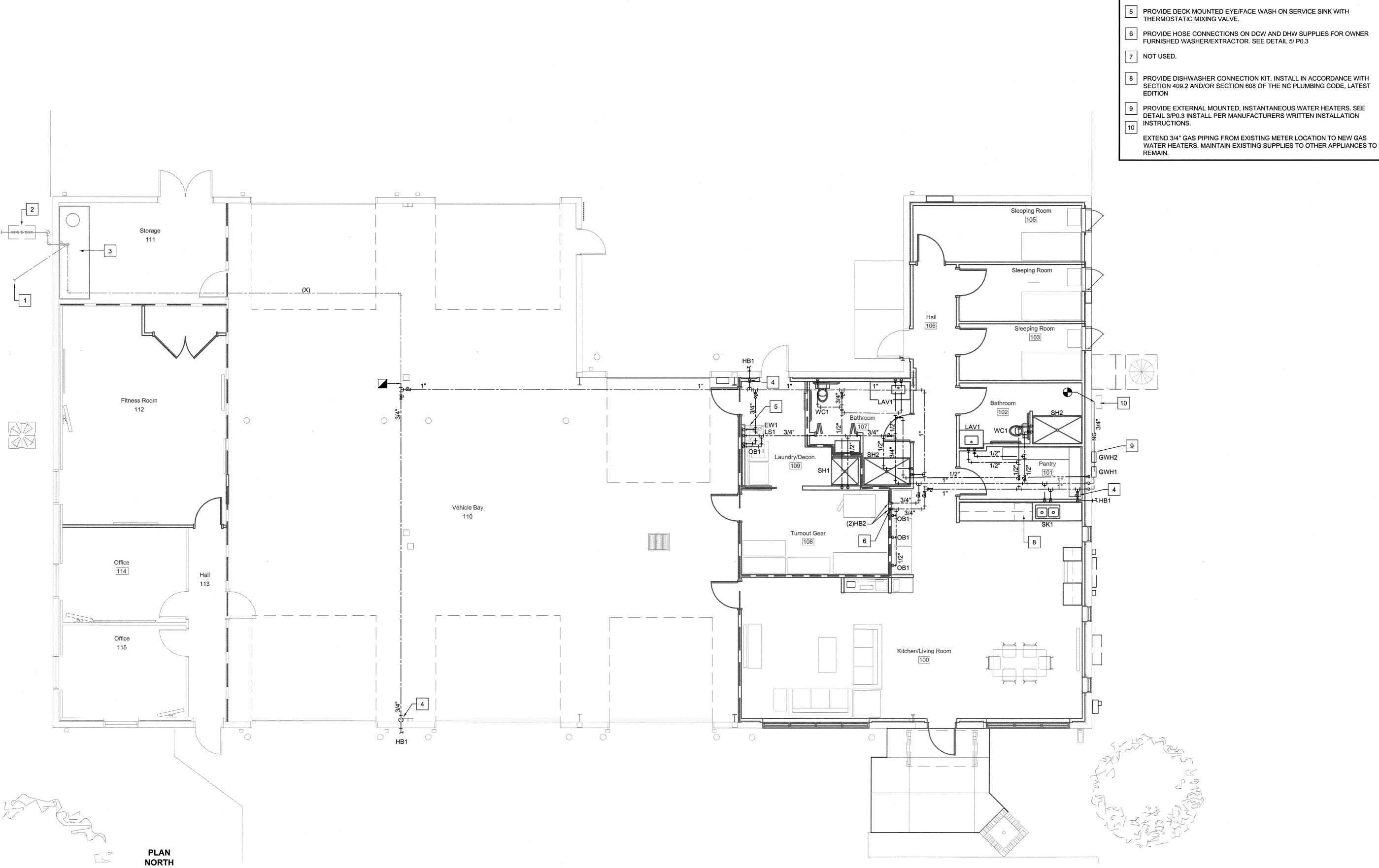
Construction Drawings 23 April, 2020

Revisions:

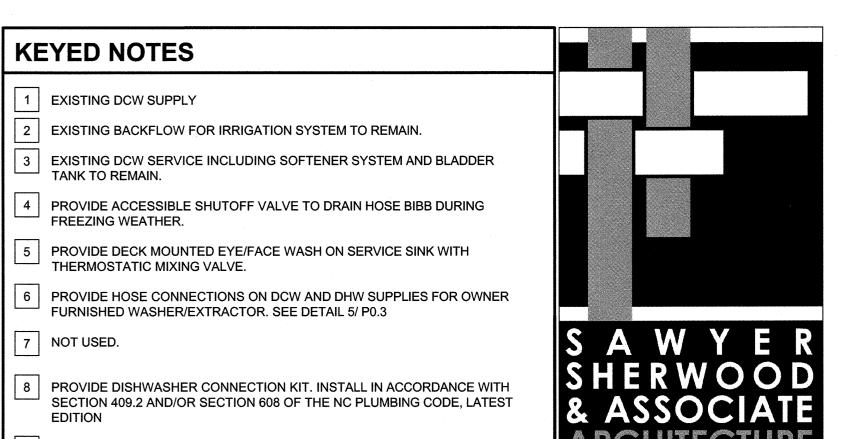
Plumbing Waste-Vent Floor Plan

P1.1





FLOOR PLAN





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Hurricane Florence Repairs New Hanover County Fire Station 12

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Revisions:

Plumbing Water/Gas Floor Plan

P2.1

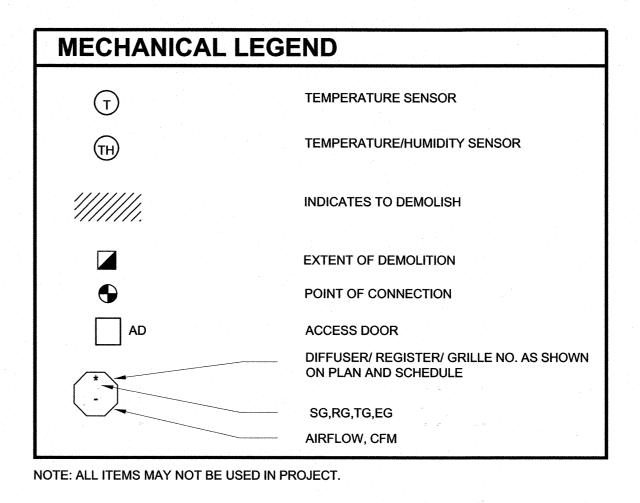
── BD	BALANCING DAMPER
	CEILING RETURN OR
	TRANSFER REGISTER/GRILLES
	EXHAUST GRILLES
	CEILING SUPPLY DIFFUSERS
A	CONICAL TEE
→ FD	HORIZONTAL FIRE DAMPER VERTICAL FIRE DAMPER
— ⊲ SD	VERTICAL FIRE DAMPER VERTICAL SMOKE DAMPER
→ F/SD	VERTICAL FIRE/SMOKE DAMPER
	FLEXIBLE DUCT CONNECTION
	DECLINED DROP WITH RESPECT TO AIRFLOW
DROP 	INCLINED RISE WITH RESPECT TO AIRFLOW
Ø	INDICATES ROUND DUCTWORK
	MITERED ELBOW WITH TURNING VANES
M	MOTORIZED CONTROL DAMPER
	RADIUS ELBOW
	SUPPLY DUCT TURNING UP (ROUND OR RECTANGULAR)
	RETURN DUCT TURNING UP (ROUND OR RECTANGULAR)
	EXHAUST DUCT TURNING UP (ROUND OR RECTANGULAR)
	OUTSIDE AIR DUCT TURNING UP (ROUND OR RECTANGULAR)
	SUPPLY DUCT TURNING DOWN (ROUND OR RECTANGULAR)
	RETURN DUCT TURNING DOWN (ROUND OR RECTANGULAR)
	EXHAUST DUCT TURNING DOWN (ROUND OR RECTANGULAR)
	OUTSIDE AIR DUCT TURNING DOWN (ROUND OR RECTANGULAR)
10X10	SQUARE OR RECTANGULAR DUCTWORK
	VOLUME DAMPER
	TAKEOFF WITH 45° THROAT
	RETURN, EXHAUST OR TRANSFER AIR FLOW
	SUPPLY AIR FLOW
	DUCT CROSSING
	RECTANGULAR DUCT TURNING DOWN WITH CHANGE OF DIRECTION
	ROUND DUCT TURNING DOWN WITH CHANGE OF DIRECTION
刘 库	TERMINATION OF DUCT WITH BRANCH CONNECTIONS
	RECTANGULAR TO ROUND DUCT TRANSITION
SA	SUPPLY AIR DUCTWORK
RA	RETURN AIR DUCTWORK
EA	EXHAUST AIR DUCTWORK
OA	OUTSIDE AIR DUCTWORK
MA	MAKEUP AIR DUCTWORK

ABBREVIATION	TERM
ADJ	ADJUSTABLE
AMCA	AIR MOVEMENT AND CONTROL ASSOCIATION
AMP	AMPERE (AMP, AMPS)
ASTM	AMERICAN SOCIETY OF TESTING AND MATERIALS
CFM	CUBIC FEET PER MINUTE
CIP	CAST IN PLACE
CMU	CONCRETE MASONRY UNIT
COP	COEFFICIENT OF PERFORMANCE
DB	DRY BULB
DEG OR °	DEGREE
EA	EXHAUST AIR
EG	EXHAUST GRILLE
EAT	ENTERING AIR TEMPERATURE
ECM	ELECTRONICALLY COMMUTATED MOTOR
EER	ENERGY EFFICIENCY RATIO
ESP	EXTERNAL STATIC PRESSURE
F	FAN
• •F	FAHRENHEIT
FLA	FULL LOAD AMPS
FT	FEET
HC	HOT WATER COIL
HGT OR H	HEIGHT
HP	HORSEPOWER
HR	HOUR(S)
IN.	INCH
INWG	INCHES WATER GAUGE
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
L	LOUVER
MAX	MAXIMUM
MBH	1000 BTUH
MCA	MINIMUM CIRCUIT AMPACITY
MCWB	MEAN COINCIDENT WET BULB
MIN.	MINIMUM
MOCP	MAXIMUM OVER CURRENT PROTECTION
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
OZ	OUNCE
OA OA	OUTSIDE AIR
%	PERCENT
	RETURN AIR
RA RG	RETURN GRILLE
RPM	REVOLUTIONS PER MINUTE
RTU	ROOF TOP UNIT
SA	SUPPLY AIR
SF	SQUARE-FEET
SG	SUPPLY GRILLE
SQ	SQUARE
TG	TRANSFER GRILLE
TYP	TYPICAL
UH	UNIT HEATER
V/PH/HZ	VOLT/PHASE/HERTZ
VTR	VENT THROUGH ROOF
W	WIDTH

NOTE: ALL ABBREVIATIONS MAY NOT BE USED IN PROJECT.

ATTACHMENT I

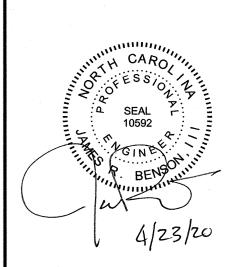
MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMEN	NT
CLIMATE ZONE	3A - WARM/HUMID
WINTER DRY BULB:	23°F
SUMMER DRY BULB	91°F
INTERIOR DESIGN CONDITIONS	
WINTER DRY BULB	70°DF
SUMMER DRY BULB	75°F
RELATIVE HUMIDITY	60°RH*
	*DESIGN- NOT CONTROLLE
BUILDING HEATING LOAD:	EXISTING EQUIPMENT
BUILDING COOLING LOAD:	EXISTING EQUIPMENT
w/ SUPF	PLEMENTAL DEHUM 12MBH
MECHANICAL SPACING CONDITIONING SYSTEM	
UNITARY	
DESCRIPTION OF UNIT:	SEE SCHEDULE
HEATING EFFICIENCY:	SEE SCHEDULE
COOLING EFFICIENCY:	SEE SCHEDULE
SIZE CATEGORY OF UNIT:	SEE SCHEDULE
BOILER	
SIZE CATEGORY, IF OVERSIZED STATE REASON:	N/A
CHILLER	
SIZE CATEGORY, IF OVERSIZED STATE REASON:	N/A
LIST EQUIPMENT EFFICIENCIES:	SEE SCHEDULE



SHERWOOD
& ASSOCIATE
ARCHITECTURE

124 Market St, Wilmington, NC 28401
910 762-0892 \$233.com





Hurricane Florence Repairs New Hanover County Fire Station 12

3805 US-421 Wilmington, NC

Construction Drawings 23 April, 2020

Revisions:

Mechanical Legend, Abbr. & Summary

MO.1

MECHANICAL SPECIFICATIONS:

PART 1 GENERAL

- 1.1 SCOPE OF WORK: THESE DRAWINGS AND SPECIFICATIONS DESCRIBE THE SCOPE OF WORK REQUIRED FOR PROJECT MECHANICAL HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS. PROVIDE ALL LABOR AND MATERIAL REQUIRED FOR COMPLETE, FULLY FUNCTIONING MECHANICAL SYSTEMS COMPLYING WITH THE INTENT OF THE DRAWINGS AND SPECIFICATIONS. COMPLY WITH ALL PROVISION OF GENERAL CONDITIONS, SUPPLEMENTAL GENERAL CONDITIONS AND DIVISION ONE SPECIFICATIONS REQUIREMENTS.
- 1.2 CONTRACTOR: THE WORD "CONTRACTOR" AS USED HEREIN SHALL MEAN THE HVAC INSTALLER UNLESS OTHERWISE QUALIFIED.
- 1.3 DRAWINGS: DRAWINGS ARE DIAGRAMMATIC AND MAY NOT COMPLETELY DESCRIBE EVERY DETAIL OF THE INSTALLATION. HOWEVER, CONTRACTOR IS RESPONSIBLE FOR FURNISHING COMPLETE SYSTEMS INCLUDING ALL REQUIRED EQUIPMENT AND ACCESSORIES TO OBTAIN FULLY FUNCTIONING HVAC SYSTEMS.
- 1.4 CODE COMPLIANCE: COMPLY WITH THE LATEST EDITIONS OF THE FOLLOWING STANDARDS AND CODES, INSOFAR AS THEY APPLY:
- A. NORTH CAROLINA STATE BUILDING CODE, LATEST EDITION AND REVISIONS
- B. LOCAL JURISDICTION REQUIREMENTS: INCLUDE ALL WORK TO COMPLY WITH CODES WHETHER INDICATED ON DRAWINGS OR NOT. NOTIFY ENGINEER OF DISCREPANCIES BETWEEN DRAWINGS AND CODES PRIOR TO BEGINNING WORK.
- 1.5 PERMITS AND INSPECTIONS: OBTAIN ALL PERMITS, LICENSES, INSPECTIONS, ETC., REQUIRED FOR THE WORK AND PAY FOR SAME. FURNISH A FINAL CERTIFICATE OF INSPECTION AND APPROVAL FROM THE AUTHORITY HAVING JURISDICTION PRIOR TO ACCEPTANCE
- 1.6 MANUFACTURER'S RECOMMENDATIONS: INSTALL ALL EQUIPMENT IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS
- 1.7 WORKMANSHIP: UTILIZE SKILLED MECHANICS TO OBTAIN A HIGH QUALITY PROFESSIONAL FINISH INSTALLATION WHEN COMPLETED. WORK OF UNACCEPTABLE QUALITY SHALL BE REMOVED AND REWORKED AT NO ADDITIONAL COST. ENGINEER SHALL BE THE JUDGE OF WORKMANSHIP AND THEIR OPINION WILL BE FINAL. IN ADDITION, ANY EXISTING CONSTRUCTION DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE ENGINEER BY THE CONTRACTOR AT NO ADDITIONAL COST.
- 1.8 SUPERVISION: PROVIDE SKILLED SUPERINTENDENTS TO SUPERVISE THE WORK FROM THE BEGINNING TO COMPLETION AND FINAL INSPECTION.
- 1.9 PROGRESS OF WORK: PERFORM WORK IN ACCORDANCE WITH SCHEDULE AND REQUIREMENTS OF THE OWNER. UNDER NO CIRCUMSTANCES SHALL THIS CONTRACTOR DELAY THE OVERALL PROJECT SCHEDULE.
- 1.10 COORDINATION: COORDINATE MECHANICAL WORK WITH THE WORK OF OTHER TRADES. LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE UNLESS SPECIFICALLY DIMENSIONED. LAYOUT MECHANICAL WORK SO AS NOT TO INTERFERE WITH THE WORK OF OTHER TRADES. VERIFY ACTUAL BUILDING STRUCTURE PRIOR TO DUCT FABRICATION AND ADJUST ARRANGEMENT AS REQUIRED. INCLUDE ALL OFFSETS IN DUCTS, FITTINGS, PIPING, ETC. AS REQUIRED TO PROPERLY INSTALL EQUIPMENT.
- 1.11 EQUIPMENT LOCATIONS: DETERMINE EXACT EQUIPMENT AND MATERIALS LOCATIONS TO PROVIDE BEST ARRANGEMENT AND TO FACILITATE PROPER MAINTENANCE AND SERVICING OF EQUIPMENT.
- 1.12 LISTING AND LABELING: ALL EQUIPMENT SHALL BE LABELED OR LISTED BY UL OR OTHER APPROVED TESTING AGENCY WHERE REQUIRED.
- 1.13 STORAGE SPACE: CONSULT WITH THE OWNER REGARDING JOB SITE STORAGE FOR MECHANICAL MATERIALS TO BE INSTALLED UNDER THIS PROJECT. STORAGE SPACE MUST BE SECURED AND CONTRACTOR'S REPRESENTATIVE MUST BE ON JOB BEFORE ANY MATERIAL MAY BE RECEIVED.
- 1.14 CLEANUP: REMOVE ALL DEBRIS GENERATED IN THE ACCOMPLISHMENT OF WORK UNDER THIS PROJECT. CLEAN, REPLACE OR REPAIR ALL SURFACES SOILED OR DAMAGED DURING THE COURSE OF THE WORK. REMOVE DEBRIS DAILY SO TO MAINTAIN SAFE WORKING CONDITIONS.

1.15 ELECTRICAL WORK

- A. PERFORM ELECTRICAL WORK FOR MECHANICAL EQUIPMENT IN COMPLIANCE WITH PROJECT ELECTRICAL REQUIREMENTS. ELECTRICAL WORK FOR MECHANICAL EQUIPMENT NOT SPECIFICALLY INDICATED TO BE PROVIDED BY THE ELECTRICAL CONTRACTOR IN THE ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AS PART OF HIS WORK.
- B. ELECTRICAL DRAWINGS ARE BASED ON ELECTRICAL CHARACTERISTICS INDICATED IN DRAWING MECHANICAL EQUIPMENT SCHEDULES. ANY EQUIPMENT FURNISHED BY THE MECHANICAL CONTRACTOR WHICH DOES NOT MATCH THE ELECTRICAL CHARACTERISTICS INDICATED IN THE DRAWING SCHEDULES SHALL BE COORDINATED WITH THE ELECTRICAL CONTRACTOR. ANY ADDITIONAL COSTS FOR ELECTRICAL INSTALLATION REQUIRED FOR EQUIPMENT NOT MATCHING THE DRAWING SCHEDULES SHALL BE BORNE BY THE MECHANICAL CONTRACTOR.
- C. LOW VOLTAGE CONTROL WIRING FOR MECHANICAL SYSTEMS SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR.
- 1.16 SUBMITTALS: SUBMIT ONE (1) ELECTRONIC COPY OF DESCRIPTIVE DATA FOR MECHANICAL EQUIPMENT AND MATERIALS INCLUDING GRILLES AND DAMPERS FOR APPROVAL BY THE ENGINEER. CLEARLY IDENTIFY ALL ITEMS.
- 1.17 OPERATING AND MAINTENANCE MANUALS: SUBMIT TWO HARD COPIES AND ONE ELECTRONIC COPY OF COMPLETE OPERATING AND MAINTENANCE INSTRUCTIONS FOR ALL EQUIPMENT, INCLUDING NECESSARY CUT SHEETS, CHARTS, WRITTEN INSTRUCTIONS, WIRING DIAGRAMS, FINAL AS-BUILT DRAWINGS WITH BALANCED AIRFLOWS INDICATED, ETC. BIND IN SUITABLE HARD BACK RING BINDERS, PROPERLY INDEXED, AND DELIVER TO THE OWNER PRIOR TO BUILDING OCCUPANCY. IN ADDITION, AFFIX A FOLDER WITH TYPICAL "OWNER'S INSTRUCTIONS" AND "MAINTENANCE INFORMATION" INSIDE THE MECHANICAL EQUIPMENT AS APPLICABLE. THE FOLDER SHALL ALSO INCLUDE A COMPLETE STARTUP LOG FOR THE EQUIPMENT.
- 1.18 RECORD DRAWINGS: MAINTAIN ONE SET OF "RED-LINED" RECORD DRAWINGS ON SITE AT ALL TIMES AND PROVIDE DRAWINGS TO ENGINEER PRIOR TO FINAL INSPECTION.
- 1.19 WARRANTY: WARRANTY THE MATERIALS AND WORKMANSHIP COVERED BY THESE DRAWINGS AND SPECIFICATIONS FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER. REPAIR AND/OR REPLACE ANY PARTS OF ANY SYSTEM THAT MAY PROVE TO BE DEFECTIVE AT NO ADDITIONAL COST TO THE OWNER WITHIN THE WARRANTY PERIOD. PROVIDE 5 YEAR WARRANTY FOR ALL AIR CONDITIONING COMPRESSORS. FURNISH WARRANTY CERTIFICATES FOR ALL MECHANICAL EQUIPMENT. WARRANTY TO COMMENCE UPON DATE OF ACCEPTANCE OF WORK BY OWNER.

1.20 EXISTING BUILDINGS AND CONSTRUCTION

- A. WORK UNDER THIS CONTRACT IS TO BE PERFORMED IN AN EXISTING BUILDING. BUILDING LAYOUT INDICATED IS DEVELOPED FROM EXISTING RECORD DOCUMENTS AND LIMITED FIELD VERIFICATION FOR THE PURPOSES OF DESCRIBING THE WORK. VERIFY ALL EXISTING CONDITIONS AND ADJUST WORK AS REQUIRED TO SUIT ACTUAL FIELD CONDITIONS.
- B. PERFORM ALL WORK IN ACCORDANCE WITH SAFETY REGULATIONS.
- C. DO NOT CUT ANY STRUCTURAL MEMBERS WITHOUT EXPRESS WRITTEN INSTRUCTIONS FROM ENGINEER. PROVIDE CUTTING AND PATCHING FOR EXISTING FINISHES AS REQUIRED.
- D. COORDINATE INSTALLATION OF NEW MECHANICAL SYSTEMS WITH EXISTING BUILDING SYSTEMS. ADJUST ARRANGEMENTS AS REQUIRED TO ACCOMMODATE INTERFERENCES.

PART 2 MATERIALS

2.1 EQUIPMENT

- A. MANUFACTURERS/MODELS AS SCHEDULED ON THE DRAWINGS. MANUFACTURERS INDICATED ARE INTENDED TO ESTABLISH THE QUALITY AND TYPE OF EQUIPMENT DESIRED. COMPARABLE EQUIPMENT WILL BE CONSIDERED FOR APPROVAL BY THE ARCHITECT/ENGINEER IN ACCORDANCE WITH PROJECT SUBSTITUTION REQUIREMENTS.
- B. INCLUDE ALL ACCESSORIES INDICATED OR AS RECOMMENDED BY THE MANUFACTURER FOR PROPER OPERATION.

2.2 DUCTWORK

- A. DUCT CONSTRUCTION (SINGLE WALL): GALVANIZED STEEL CONSTRUCTED, BRACED, SUPPORTED AND INSTALLED ACCORDING TO SMACNA HVAC DUCT CONSTRUCTION STANDARDS, 1" PRESSURE CLASS, SEAL CLASS A. SEAL USING APPROVED TYPE DUCT SEALING MASTIC OR TAPE DIPPED IN OR BRUSHED WITH ADHESIVE ("HARDCAST" DT-TAPE W/FTA-20 ADHESIVE OR "UNITED MCGILL" MTD TAPE W/MTD-20 ADHESIVE). "DUCT TAPE" IS UNACCEPTABLE FOR DUCT SEALING. "DUCT-MATE" OR EQUAL TRANSVERSE JOINT CONNECTION METHODS WILL BE ACCEPTABLE ONLY IF A LETTER FROM THE MANUFACTURER IS PRESENTED TO THE ENGINEER STATING THAT THE CONTRACTOR'S INSTALLATION METHODS ARE APPROVED BY THE MANUFACTURER AND THAT ALL MANUFACTURER'S RECOMMENDATIONS WILL BE FOLLOWED. THERE WILL BE NO EXCEPTIONS TO THIS STIPULATION.
- B. DUCT SIZES INDICATED ARE INSIDE FREE AREA DIMENSIONS. DUCT DIMENSIONS SHALL BE ADJUSTED TO SUIT FIELD CONDITIONS USING EQUIVALENT SIZE PER ASHRAE STANDARD. RECTANGULAR OR ROUND DUCTWORK MAY BE USED AT CONTRACTOR OPTION PROVIDED EQUIVALENT SIZE PER ASHRAE STANDARD IS USED.
- C. BRANCH DUCTS: PROVIDE MANUFACTURED TAKE-OFF FITTINGS WITH EXTRACTOR AND VOLUME DAMPER WITH LOCKING QUADRANT OPERATOR AND INSULATION GUARD, GENERAL ENVIRONMENT CORPORATION OR EQUAL, FOR ALL BRANCH RUNOUTS TO SUPPLY REGISTERS AND DIFFUSERS. UNLESS OTHERWISE NOTED, MATCH SUPPLY BRANCH DUCT SIZE TO DIFFUSER SIZE.

D. ELBOWS: ALL SQUARE BENDS OR ELBOW FITTINGS SHALL BE FITTED WITH APPROVED TYPE DOUBLE THICKNESS TURNING VANES.

ATTACHMENT

- E. FLEXIBLE DUCT: FACTORY INSULATED, R-8, MINIMUM, UL 181 CLASS 1. MAXIMUM FLEX DUCT RUNOUT LENGTH NOT TO EXCEED 8' UNLESS OTHERWISE NOTED. INSTALL AND SUPPORT FLEXIBLE DUCTS IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- F. FLEXIBLE CONNECTIONS: PROVIDE FLEXIBLE CONNECTOR, VENTFABRICS OR EQUAL, AT ALL MECHANICAL EQUIPMENT CONNECTIONS TO DUCT SYSTEM.
- G. FIRE DAMPERS: PROVIDE SUITABLY LISTED FIRE DAMPERS IN DUCTS PENETRATING FIRE RATED CONSTRUCTION WHERE REQUIRED BY CODE. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF FIRE RATED CONSTRUCTION.
- H. PROVIDE REMOVABLE ACCESS PANELS IN CEILINGS AND ACCESS DOORS (WITH AIR TIGHT GASKETS) IN DUCTWORK AS REQUIRED FOR ACCESS TO DAMPERS OR OTHER DUCT MOUNTED EQUIPMENT.

2.3 AIR DISTRIBUTION

- A. DIFFUSERS AND REGISTERS: MODELS AS SCHEDULED ON THE DRAWINGS. MANUFACTURERS INDICATED ARE INTENDED TO ESTABLISH THE QUALITY AND TYPE OF EQUIPMENT DESIRED. COMPARABLE EQUIPMENT WILL BE CONSIDERED FOR APPROVAL BY THE ENGINEER. INCLUDE FINISH AND ACCESSORIES AS INDICATED.
- B. LOUVERS: MODELS AS SCHEDULED ON THE DRAWINGS OR EQUAL.

2.4 PIPING

- A. REFRIGERANT PIPING: TYPE ACR COPPER WITH WROUGHT COPPER FITTINGS AND BRAZED JOINTS. SIZE & INSTALL IN STRICT ACCORDANCE W/ REFRIGERATION EQUIPMENT MANUFACTURER RECOMMENDATIONS.
- B. REFRIGERANT ACCESSORIES: PROVIDE FOR EACH REFRIGERANT CIRCUIT:
- SIGHT GLASS WITH MOISTURE INDICATOR, FILTER DRYER, SOLENOID VALVE AND EXPANSION VALVE.
 GAUGES, CHARGING VALVES, RELIEF VALVES, LOW LIMIT CONTROLS, AND SPECIALTIES REQUIRED FOR A COMPLETE AND SAFE INSTALLATION.
- 3. ALL ACCESSORIES AS RECOMMENDED BY THE REFRIGERATION EQUIPMENT MANUFACTURER.
- 4. VALVES AND SPECIALTIES SHALL BE AS MADE BY MUELLER, HENRY, ALCO, OR EQUAL.
- C. CONDENSATE PIPING: SCH 40 PVC W/ SOLVENT WELD JOINTS. PROVIDE TRAP AT COOLING COIL DRAIN CONNECTION. PROVIDE CLEANOUTS AT CHANGE IN DIRECTION. EXTEND CONDENSATE PIPING TO APPROVED DISCHARGE LOCATION.

2.5 INSULATION

- A. DUCT INSULATION: R-8 MINIMUM, 2" FIBERGLASS BLANKET INSULATION, ASTM C553, TYPE II, 0.75 PCF CLASS F-1, ASTM 84E FLAME SPREAD/SMOKE DEVELOPED RATING LESS THAN 25/50. PROVIDE WITH FACTORY APPLIED ALL-PURPOSE, LAMINATED GLASS-FIBER-REINFORCED, FLAME-RETARDANT KRAFT PAPER AND ALUMINUM FOIL JACKET. INSTALL ON ALL CONCEALED HVAC SUPPLY, RETURN, MAKE-UP AIR DUCTS AND PLENUMS.
- B. REFRIGERANT PIPING INSULATION: ELASTOMERIC CLOSED CELL PIPE INSULATION, ARMAFLEX AP OR EQUAL, 1½" THICK. PROTECT ALL EXTERIOR, EXPOSED PIPE INSULATION WITH ARMAFLEX WB FINISH.
- C. CONDENSATE DRAIN PIPING INSULATION: ELASTOMERIC CLOSED CELL PIPE INSULATION, ARMAFLEX AP OR EQUAL, 1/2" THICK. PROTECT ALL EXTERIOR, EXPOSED PIPE INSULATION WITH ARMAFLEX WB FINISH.

2.6 CONTROLS

- A. HVAC TEMPERATURE/HUMIDITY CONTROLS: SEE DRAWING SCHEDULES AND DETAILS.
- B. EXHAUST FANS: SEE DRAWING SCHEDULES AND DETAILS.

2.7 SUPPORTS

- A. HANGERS, SUPPORTS, AND ANCHORS: SUPPORT AND FASTEN ALL DUCTWORK, PIPING, EQUIPMENT, ETC., SECURELY IN PLACE USING APPROVED STEEL HANGERS AND FASTENERS. CHAIN, STRAP, PERFORATED STRAP, WIRE HANGERS, OR WOOD PLUGS ARE PROHIBITED.
- B. INCLUDE STEEL SUPPORTS, ANCHORS, FRAMES, BRACING, PLATES, BOLTS, NUTS, WASHERS, ETC. INCIDENTAL TO INSTALLATION OF WORK.
- C. PROVIDE AUXILIARY STRUCTURAL MEMBERS WHERE REQUIRED BETWEEN MEMBERS OF THE STRUCTURE.
- 2.8 REFRIGERANT: FURNISH A FULL CHARGE OF REFRIGERANT FOR EACH SYSTEM AND MAINTAIN THE CHARGE FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE AND REPLACE ANY THAT MAY BE LOST (UNLESS LOSS IS DETERMINED TO BE CAUSED BY THE OWNER).

PART 3 EXECUTION

- 3.1 PREPARATION: REVIEW CONSTRUCTION DOCUMENTS AND VERIFY ARRANGEMENT WITH FIELD CONDITIONS. COORDINATE PROPOSED MECHANICAL EQUIPMENT AND SYSTEMS WITH ASSOCIATED WORK OF OTHER TRADES.
- 3.2 INSTALLATION: INSTALL ALL MECHANICAL WORK IN ACCORDANCE WITH CODE, MANUFACTURER'S RECOMMENDATIONS AND GOOD INDUSTRY PRACTICE. ARRANGE WORK TO ALLOW EASY ACCESS TO EQUIPMENT FOR SERVICE AND MAINTENANCE.
- 3.3 DUCTWORK: LAYOUT DUCTWORK TO AVOID INTERFERENCES AND MAXIMIZE USABLE SPACE IN THE BUILDING.
- 3.4 FIRE DAMPERS: INSTALL STRICTLY IN ACCORDANCE TO MANUFACTURER INSTRUCTIONS TO MAINTAIN RATING. KEEP ONE (1) HARD COPY OF INSTRUCTIONS ON SITE FOR INSPECTOR REVIEW. PROVIDE ACCESS FOR INSPECTION AND MAINTENANCE.
- 3.5 PIPING: ROUTE PIPING NEATLY, PARALLEL TO BUILDING WALLS. WHERE REQUIRED, SLOPE PIPING FOR PROPER DRAINAGE.
- 3.6 DUCT INSULATION: INSTALL BLANKET INSULATION TIGHT AND SMOOTH. OVERLAP JOINTS 3 INCHES. SEAL JOINTS, BREAKS, AND PUNCTURES WITH VAPOR BARRIER COMPOUND.
- 3.7 PIPING INSULATION: INSTALL INSULATION NEATLY. APPLY ADHESIVE TO BOTH FACES OF JOINT TO OBTAIN FULLY ADHERED, VAPOR TIGHT INSTALLATION. FINISH ALL INSULATION EXPOSED TO WEATHER WITH MANUFACTURE APPROVED WEATHERPROOF COATING.
- 3.8 CONTROLS: INSTALL AND WIRE ALL CONTROLS COMPLETE TO OBTAIN INTENDED SEQUENCE OF OPERATION. EXTEND POWER SUPPLIES FROM ELECTRICAL SOURCES PROVIDED AS NEEDED.
- 3.9 HANGERS AND SUPPORTS: HANG AND SUPPORT EQUIPMENT, DUCTS AND PIPING IN A SUBSTANTIAL MANNER FROM THE BUILDING STRUCTURE. SPACE HANGERS IN ACCORDANCE WITH CODE AND SO AS TO AVOID EXCESS DEFLECTION OR SAG. PROVIDE SEISMIC DESIGN HANGERS WHERE REQUIRED. NO PORTION OF THE STRUCTURE SHALL BE OVER STRESSED BY THE HANGING OPERATION OR BY THE FINAL SUPPORTS. ATTACHMENTS DEEMED INADEQUATE BY THE ENGINEER SHALL BE REWORKED AS DIRECTED. PROVIDE VIBRATION ISOLATION FOR MOVING MACHINERY.
- 3.10 REFRIGERANT PIPING TESTS: PLACE REFRIGERANT PIPING UNDER A TEST PRESSURE USING ANHYDROUS CARBON DIOXIDE OR NITROGEN BEFORE DEHYDRATING WITH A VACUUM PUMP TO A VACUUM OF 26 INCHES HG. SEE CONDENSING UNIT, COMPRESSOR OR COMPRESSOR UNIT NAME PLATE FOR TEST PRESSURES. MAINTAIN VACUUM FOR A MINIMUM OF 24 HOURS. REFRIGERATION COMPRESSOR SHALL NOT BE USED FOR THIS PURPOSE. AFTER SYSTEM IS VACUUM TESTED, CHARGE WITH SYSTEM REFRIGERANT AND LEAK TEST ENTIRE CIRCUIT WITH ELECTRONIC TESTER.
- 3.11 LABELS: LABEL ALL EQUIPMENT AND DEVICES WITH BAKELITE ENGRAVED PLATES SCREWED IN PLACE. "TAPEWRITER" AND ADHESIVE LABELS ARE UNACCEPTABLE.
- 3.12 START-UP: VERIFY INSTALLATION IS COMPLETE AND READY FOR START-UP. START-UP ALL EQUIPMENT IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS USING FACTORY CERTIFIED MECHANICS. AFTER START-UP, VERIFY AND DOCUMENT THAT EQUIPMENT IS OPERATING PROPERLY WITHIN MANUFACTURER'S SPECIFIED TOLERANCES.
- 3.13 TESTING AND BALANCING: BALANCE AIR FLOWS TO OBTAIN AIR QUANTITIES SHOWN ON DRAWINGS. ADJUST DAMPERS FOR ALL AIR OUTLETS AND RECORD VELOMETER READINGS WHICH CORRESPOND TO DESIGN FLOW RATES AT EACH OUTLET. RECORD DESIGN AND FINAL READINGS ON APPROVED FORMS. SUBMIT TWO COPIES FOR REVIEW AND APPROVAL BY ENGINEER. UPON COMPLETION OF ALL BALANCING AND TESTING, SCHEDULE A TIME FOR ENGINEER TO PERFORM RANDOM CHECKING OF TYPICAL OUTLETS. CONTRACTOR SHALL PROVIDE TECHNICIANS AND MEASURING DEVICES FOR THIS TESTING.
- THE PRESENCE OF THE ENGINEER. INCLUDE ALL TESTS, TRIAL OPERATIONS, ETC. AS REQUIRED TO PROVE THAT ALL SYSTEMS ARE IN COMPLETE SERVICEABLE CONDITION AND WILL FUNCTION AS INTENDED. ALL COSTS OF COMMISSIONING SHALL BE BORNE BY THIS CONTRACTOR.

3.14 COMMISSIONING: DEMONSTRATE AND DOCUMENT OPERATION OF ALL MECHANICAL SYSTEMS INSTALLED UNDER THIS CONTRACT IN

- 3.15 TRAINING: TRAIN OWNER PERSONNEL IN THE PROPER OPERATION AND MAINTENANCE OF MECHANICAL SYSTEMS. PROVIDE WRITTEN DOCUMENTATION INCLUDING NAMES OF OWNER PERSONNEL ATTENDING TRAINING.
- 3.16 CLEAN-UP: CLEAN ALL EQUIPMENT AND DEVICES AND INSTALL NEW FILTERS IN EQUIPMENT IMMEDIATELY PRIOR TO OWNER ACCEPTANCE AND OCCUPANCY.

MECHANICAL GENERAL NOTES:

- 1. MECHANICAL CONTRACTOR SHALL WORK UNDER DIRECTION OF GENERAL CONTRACTOR AND IS RESPONSIBLE FOR COMPLIANCE WITH ALL ALL PROJECT REQUIREMENTS.
- 2. ALL DIMENSIONS AND ELEVATIONS FOR NEW EQUIPMENT, DUCTWORK, PIPING AND APPARATUS ARE APPROXIMATE AND ARE ONLY FOR CONTRACTOR'S GUIDANCE. CONTRACTOR SHALL SUBMIT DIMENSIONS AND ELEVATIONS VERIFIED IN THE FIELD. DUCTWORK AND PIPING INDICATED ON THE DRAWINGS, SECTIONS AND PROSPECTIVE VIEWS ARE SHOWN DIAGRAMMATICALLY. DUCT AND PIPE ELEVATIONS IN EXACT LOCATIONS SHALL BE DETERMINED BY THE INSTALLING CONTRACTOR AND DETAILED ON THE SHOP DRAWINGS.
- 3. ALL DUCT DIMENSIONS INDICATED ON PLAN ARE CLEAR INSIDE DIMENSIONS. CONTRACTOR MUST ACCOUNT FOR THE THICKNESS OF EXTERIOR INSULATION WHEN DETERMINING INSTALLATION CLEARANCES.
- 4. THE CONTRACTOR SHALL TEMPORARILY COVER ALL EXPOSED DUCT AND PIPE OPENINGS WITH A NON-COMBUSTIBLE MATERIAL, AND SEAL THEM AIR TIGHT TO PREVENT CONTAMINATION OF THE RESPECTIVE SYSTEMS DURING CONSTRUCTION.
- CONTRACTOR SHALL REMOVE AND DISPOSE OF OFFSITE ALL DEMOLISHED WORK IN ACCEPTABLE AND SAFE MANNER AND SHALL KEEP ALL NON-WORK AREAS CLEAN AND SAFE.
- 6. ALL EXISTING EQUIPMENT AND CONNECTIONS THAT NEED TO BE TEMPORARILY DEMOLISHED FOR RIGGING AND / OR INSTALLATION SHALL BE REINSTALLED AND BROUGHT BACK TO ORIGINAL CONDITIONS PRIOR TO TEMPORARY REMOVAL.
- INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.

MECHANICAL DEMOLITION NOTES

THE CONTRACTING OFFICER FOR ASSISTANCE.

- 1. THE CONTRACTOR SHALL REVIEW THE DRAWINGS AND SPECIFICATIONS FOR DEMOLITION REQUIREMENTS AND LAYOUT HIS WORK IN A COMPATIBLE AND COMPLEMENTARY MANNER. REMOVE ALL EQUIPMENT, DUCTWORK, SUPPORTS, CONTROLS, ACCESSORIES, ETC..., AND MECHANICAL ITEMS MADE OBSOLETE BY THESE ALTERATIONS AS SHOWN IN THE MECHANICAL DRAWINGS. ALL ITEMS TO BE REMOVED OR MODIFIED MAY NOT BE SHOWN, HOWEVER, THIS CONTRACTOR SHALL REMOVE ANY MECHANICAL WORK AS REQUIRED BY THE CONSTRUCTION OR AS DIRECTED BY THE GOVERNMENT CONTRACTING OFFICER. SURVEY THE AFFECTED AREAS BEFORE SUBMITTING A BID.
- SCHEDULING OF DEMOLITION COORDINATE SCHEDULING OF MECHANICAL DEMOLITION WORK WITH THE
 CONTRACTING OFFICER SO AS TO MINIMIZE DISRUPTION OF THE GOVERNMENT'S USE OF THE FACILITIES AND MAINTAIN
 THE CONSTRUCTION SEQUENCE. SEE DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL INSTRUCTIONS CONCERNING
 PHASING AND SEQUENCE OF WORK.
- DEMOLISHED MATERIALS UNLESS SPECIFICALLY REQUESTED BY THE GOVERNMENT, ALL DEMOLISHED MECHANICAL MATERIALS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE AND DISPOSED OF PROPERLY.
- 4. CUTTING AND PATCHING PERFORM CUTTING AND PATCHING FOR MECHANICAL WORK SO AS TO MINIMIZE DAMAGE TO CEILINGS, FLOORS AND WALLS.
- 5. THESE DRAWINGS ARE COMPILED BY THE ENGINEER FROM THE GOVERNMENT'S AS-BUILT RECORD DRAWINGS AND LIMITED FIELD VERIFICATION OF EXISTING CONDITIONS FOR THE PURPOSE OF INDICATING THE WORK REQUIRED AND ARE BELIEVED TO BE CORRECT. NOTWITHSTANDING, THE CONTRACTOR SHALL VERIFY ALL DUCTWORK, EQUIPMENT LOCATIONS, DIMENSIONS AND ALL FIELD CONDITIONS AFFECTING HIS WORK.
- 6. WHERE MECHANICAL SYSTEMS PASS THROUGH THE DEMOLITION AREAS TO SERVE OTHER PORTIONS OF THE PREMISES, THEY SHALL REMAIN OR BE SUITABLY RELOCATED AND THE SYSTEM RESTORED TO NORMAL OPERATION. ADVISE THE CONTRACTING OFFICER IMMEDIATELY IF SUCH CONDITIONS ARE UNCOVERED BEFORE PROCEEDING WITH ADDITIONAL WORK.
- 7. PROTECT ALL EXISTING LIFE SAFETY SYSTEMS, FIRE ALARM AND PUBLIC ADDRESS SYSTEMS AND MAINTAIN THEM IN OPERATION THROUGHOUT THE PROGRESS OF THE WORK. NOTIFY THE CONTRACTING OFFICER IN WRITING OF SHUTDOWNS ARE REQUIRED PRIOR TO ANY OUTAGE OF SERVICE. WHERE THE DURATION OF A PROPOSED OUTAGE CANNOT BE TOLERATED BY THE GOVERNMENT, PROVIDE TEMPORARY CONNECTIONS AS REQUIRED MAINTAINING

. IF ANY UNUSUAL STRUCTURAL OR ARCHITECTURAL CONDITIONS ARE ENCOUNTERED DURING DEMOLITION, CONTACT

 SURVEY THE AFFECTED AREAS BEFORE STARTING DEMOLITION AS ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DEPICTED ON THE DRAWINGS AND SOME UNUSUAL CONDITIONS EXIST.







Hurricane
Florence Repairs
New Hanover
County
Fire Station 12
3805 US-421

Construction Drawings
23 April, 2020

Wilmington, NC

Revisions:

Mechanical Specification

M0.2

2 of 5

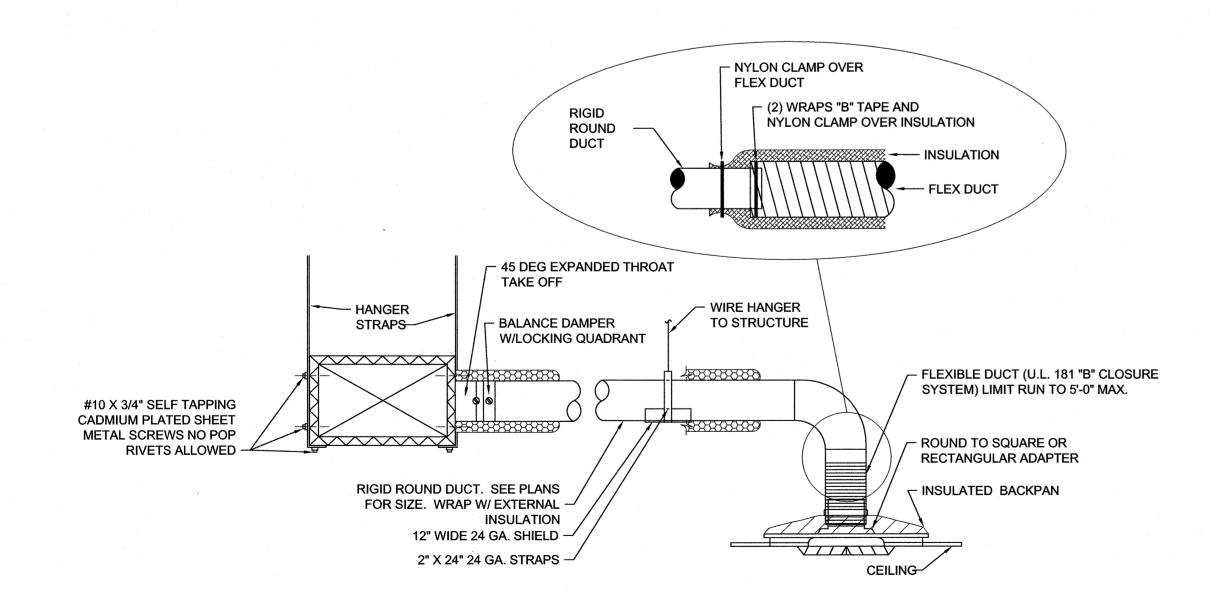
EXHAUST	RECOVERY	VENTIL	_ATOR							es t									-					
DRAWING CODE	DESIGN BASIS	MODEL	ALTERNATE APPROVED MFRS	CONFIGURATION	SUPPLY F	AN	-		EXHAUST I	AN			HEAT WHE	EL CORE-SI	JMMER	HEAT W	HEEL COR	E-WINTE	ERVOLTAGE	FLA	MOCP	WEIGH	NOTES	ACCESSORIES
	MANUFACTURER				AIRFLOW	E.S.P.	DRIVE	MOTOR	AIRFLOW	E.S.P.	DRIVE	MOTOR	OA EAT	OA LAT	EA EAT	OA EAT	OA LAT	EA EAT						
				The state of the s	(CFM)	(IN. WG.)		HP	(CFM)	(IN. WG.)		(HP)	°Fdb/°Fwb	°Fdb/°Fwb	°Fdb	°Fdb	°Fdb	°Fdb	(V/PH/HZ)	(AMPS)	(AMPS)	(LBS.)		
ER1	RENEWAIRE	EV300	GREENHECK, AIRXCHANGE	HORIZ. FIXED CORE	30	0 0.4	DIRECT	0.2	30	0.	DIRECT	NOTE 2	91.0/79.0	79/8/73.0	75.0/65.0	23.0	55.8	70.0	120/1/60	3.3	3 15	115	1,2	Α
NOTES:	1. REFER TO SPECIFICA	ATIONS FOR A	DDITIONAL INFORMATION.					- ' -									-				-			
	2. SINGLE DOUBLE SHA	FT MOTOR US	SED FOR SUPPLY AND EXHAUST.																					
ACCESSORIES:	A. INTEGRAL DISCONNE	ECT.	4																					

				· .						·						
LOUVER	SCHEDUL	.E			:											
DRAWING CODE	BASIS OF DESIGN	BASIS OF DESIGN	ALTERNATE APPROVED	TYPE	FRAME	DESCRIPTION	MATERIAL	LOUVER	SIZE (W x	SERVICE	AIRFLOW	PERFORMAN	CE RATINGS		NOTES	ACCESSORIES
	MANUFACTURER	MODEL	MANUFACTURERS					DEPTH	H)		(CFM)	FREE AREA	S.P. LOSS	WATER PENETRATION		
								(IN.)	(IN.)			(SF)	(IN.H20)	(OZ./SF)		
L1	RUSKIN	EME6625D	GREENHECK, POTTORFF	FIXED	CHANNEL	VERTICAL, HURRICANE	ALUMINUM	6	20 x16	INTAKE	300	0.36	0.06	-	1,2	A
_2	RUSKIN	EME6625D	GREENHECK, POTTORFF	FIXED	CHANNEL	VERTICAL, HURRICANE	ALUMINUM	6	20 x16	EXHAUST	300	0.36	0.07	-	1,2	Α
NOTES:	1. REFER TO SPE	CIFICATIONS FOR F	URTHER INFORMATION.													
	2. FINISH AS SELI	ECTED BY ARCHITE	CT FROM MANUFACTURER'S	FULL RANGE OF COL	OR AND GLOSS.											
CCESSORIES:	A. BIRD SCREENI	NG (MATERIAL TO N	MATCH LOUVER MATERIAL)													

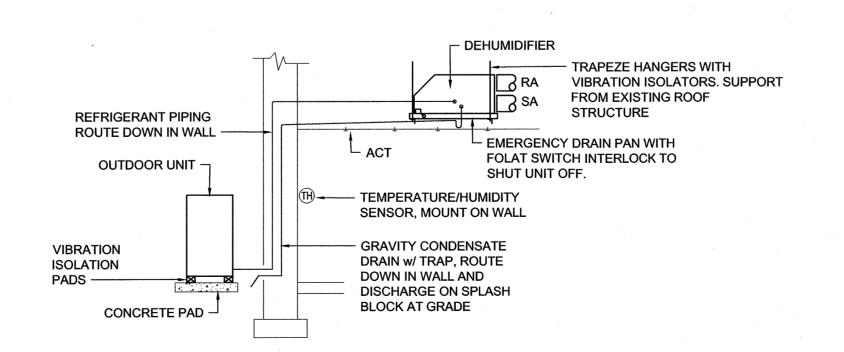
DRAWING CODE	BASIS OF DESIGN		ALTERNATE APPROVED	FAN TYPE	SERVICE	CAPACITIES	CAPACITIES				ELECTRIC	AL				SONES	1	T NOTES	ACCESSORIES
	MANUFACTURER	DESIGN MODEL	MANUFACTURERS			AIRFLOW (CFM)	ESP (IN. WG.)		1	MOTOR RPM	MOTOR TYPE	MOTOR SIZE (W)	V/PH/HZ	FLA	MOCP		(LBS.)		
PV1	GREENHECK	SP-700A	TWIN CITY, PENNBARRY	CEILING-MOUNTED VENTILATORS	EXHAUST	500	0.90	DIRECT	1,100	110	ODP	350	120/1/60	D	3.0 15	6.5	3	9 1,	2 A
NOTES:	2 CONTROLLED VIA	ON/OFF SWITCH w	RTHER INFORMATION. V/TIMED SHUTOFF. REFER TO SCHARGE CAP (VEHICLE EXH/																
ACCESSORIES:	A BACKDRAFT DAMP B INTEGRAL DISCON																		

DRAWING CODE	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL	ALTERNATE APPROVED MANUFACTURERS	TYPE	SERVICE	NECK SIZE (IN.)	BRANCH CONN. SIZE (IN.)		MATERIAL	FINISH	MOUNTING	NOTES	ACCESSORIES
S1	PRICE	640	METALAIRE, TITUS	RECTANGULAR CEILING DIFFUSER	SUPPLY	6x12	6Ø		ALUMINUM	WHITE	CEILING SURFACE	1, 2	**************************************
S2	PRICE	ASCD	METALAIRE, TITUS	SQUARE CEILING DIFFUSER	SUPPLY	6Ø	6Ø	24 x 24	ALUMINUM	WHITE	T-BAR	1, 2	
S3	PRICE	ASCD	METALAIRE, TITUS	SQUARE CEILING DIFFUSER	SUPPLY	8Ø	8Ø	24 x 24	ALUMINUM	WHITE	T-BAR	1, 2	
S4	PRICE	ASCD	METALAIRE, TITUS	SQUARE CEILING DIFFUSER	SUPPLY	10Ø	8Ø	24 x 24	ALUMINUM	WHITE	T-BAR	1, 2	
R1	PRICE	630	METALAIRE, TITUS	FIXED FACE GRILLE	RETURN	20 x 20	-	-	ALUMINUM	WHITE	T-BAR	1, 2	
E1	PRICE	630	METALAIRE, TITUS	FIXED FACE GRILLE	EXHAUST	12 x 12	_		ALUMINUM	WHITE	T-BAR	1, 2	
NOTES:	1 REFER TO SPECIF	CATION SEC	CTION 233713 - DIFFUS	ERS, REGISTERS, AND GRILLES FOR FURTHER INFORM	ATION.		***************************************						
	2 DUCT BRANCH CO	NNECTION S	SIZE TO BE EQUAL TO	THE NECK SIZE OF DIFFUSER UNLESS NOTED OTHERW	SE ON PLANS	S.							

DAOKA	OED DE	11 184	IDICICD COL	EDILLE										i				
PACKA	GED DE		IDIFIER SCH	IEDULE														
DRAWING	DESIGN BASIS	MODEL	1	DEHUMID. CAPACITY	INDOOR S	ECTION						OUTDOOR	SECTION				NOTES	ACCESSORIES
CODE	MFR		APPROVED MFRS.	@ 80°F/60%RH	FAN			ELECTRICA	۸L		WEIGH	SENSIBLE	ELECTRIC	AL		WEIGHT		
		·			SA	OA	ESP	VOLTAGE	MCA	MOCP	(LBS)	COOLING	VOLTAGE	MCA	МОСР	(LBS)		
				(PINTS/DAY)	(CFM)	(CFM)	(IN H2O)	(V/PH/HZ)	(AMPS	(AMPS)		(BTUH)	(V/PH/HZ)	(AMPS)	(AMPS)			
D1	ULTRA-AIRE	SD12	NOVELAIRE, APRILAIRE	184.0	340	0	0.40	120/1/60	3.5	15	110	4300	120/1/60	12.1	20	75	1,2	A,B
NOTES:	1. REFER TO S	PECIFIC	ATIONS FOR FURTHER I	NFORMATION.					•			,						
	2. INDOOR UN	T PLUG	CONNECTED, OUTDOOF	R UNIT HARD-WIRED.														
	3. ALT. MFRS.	EQUIPM	ENT REQUIRES DIFFERE	ENT CONFIGURATION A	ND CONNE	CTIONS. C	ONTRACTO	R IS RESPO	NSIBLE	FOR AN	Y REDES	IGN REQUI	RED. NO EX	TRAS WII	LL BE ALL	OWED FO	R REVISIOI	NS TO BUILDING
	INFRASTRUCT	JRE TO	SUPPORT ALT. EQUIPME	ENT INSTALLATION.			· · · · · · · · · · · · · · · · · · ·											
ACCESSORIES	S: A. DUCT ADAP	TOR AN	D MATCHING DEH3000 V	VALL MOUNT HUMIDITY	CONTROL.													



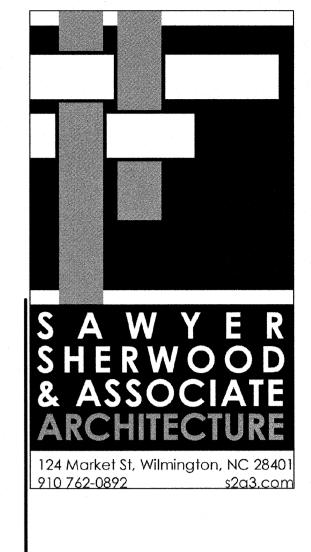




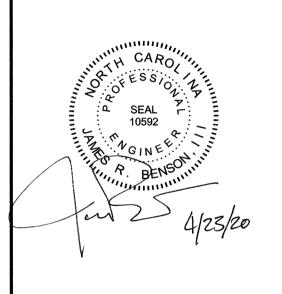
B. REFRIGERANT LINESET- 1/1/4"LIQ., 3/8" GAS, 50 FT. MAX.

2 DEHUMIDIFIER DETAIL

NOT TO SCALE







Hurricane Florence Repairs New Hanover County Fire Station 12

3805 US-421 Wilmington, NC

Construction Drawings 23 April, 2020

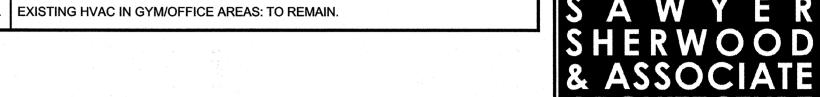
Revisions:

Mechanical Schedules and Details

M0.3

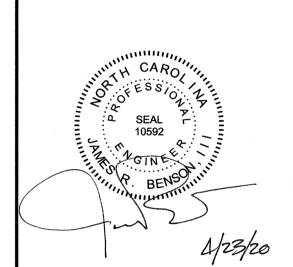
MECHANICAL KEYED NOTES

- EXISTING PACKAGED HEAT PUMP: TO REMAIN, DEMOLISH INTERIOR AIR DISTRIBUTION IN ENTIRETY.
- EXISTING CONDENSING UNIT: TO REMAIN.
- EXISTING UNIT HEATERS, DUCTWORK AND NATURAL GAS PIPING IN BAYS TO
- EXISTING HVAC DUCTWORK, ACCESSORIES AND HANGERS TO BE REMOVED IN HATCHED AREA.
- EXISTING ERV: DEMOLISH IN ENTIRETY.
- EXISTING VEHICLE EXHAUST FAN AND DUCTWORK: TO BE RELOCATED BY OWNER. EXISTING EXHAUST VENT THROUGH ROOF TO REMAIN FOR REUSE.
- EXISTING VEHICLE EXHAUST PANEL: TO REMAIN.



124 Market St, Wilmington, NC 28401 910 762-0892





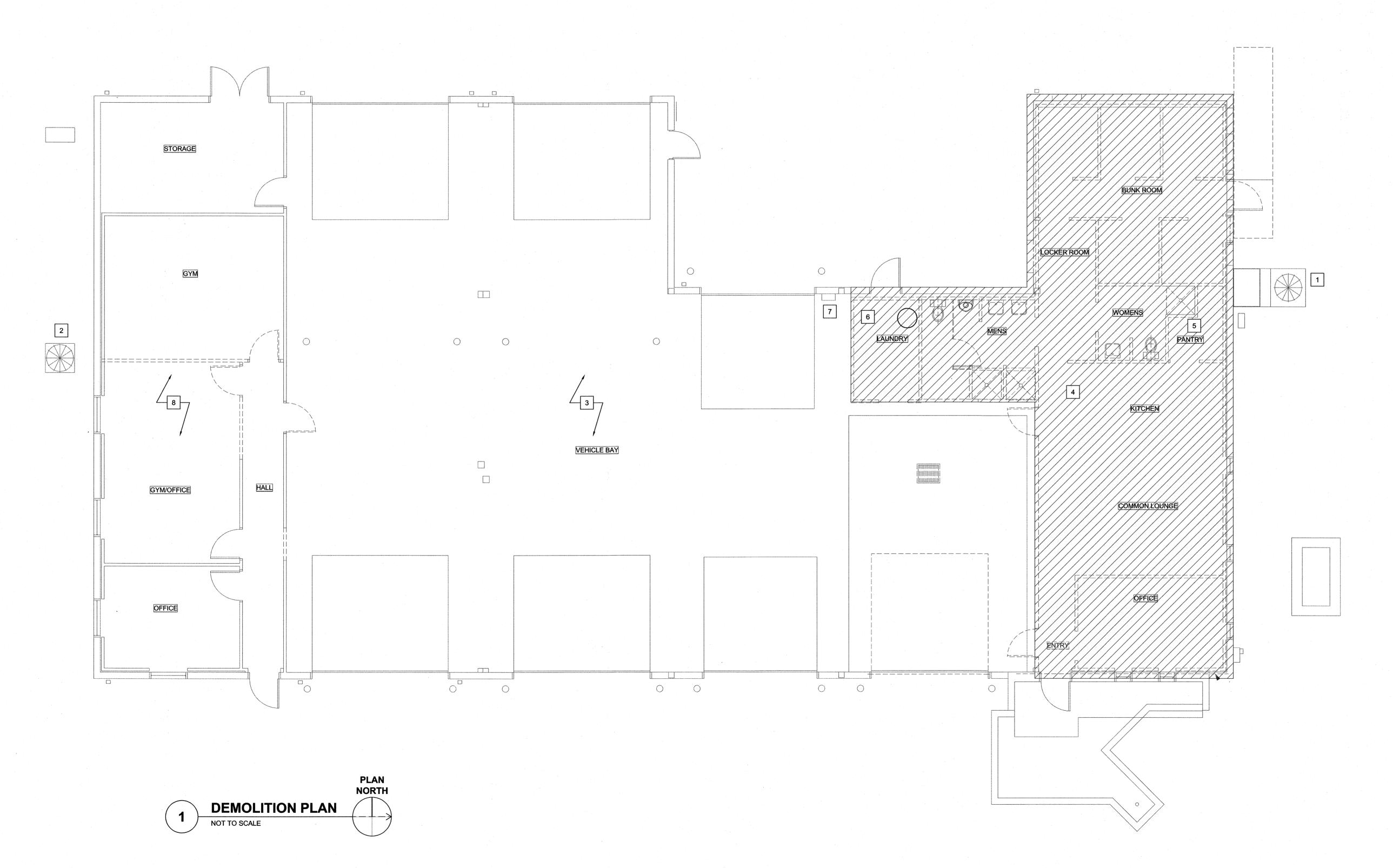
Hurricane Florence Repairs **New Hanover** County Fire Station 12

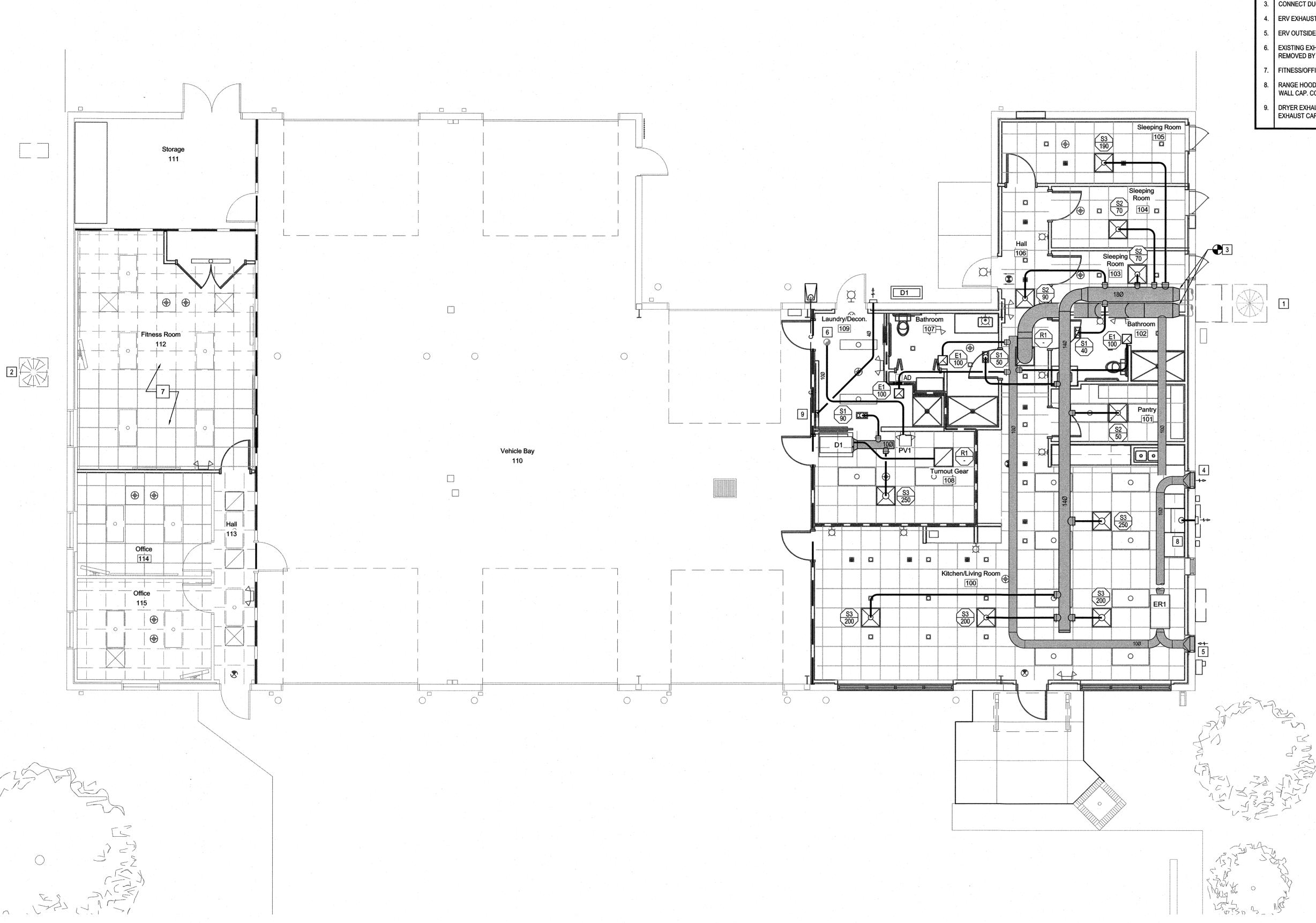
3805 US-421 Wilmington, NC

Construction Drawings 23 April, 2020

Revisions:

Mechanical Demolition Plan





PLAN NORTH

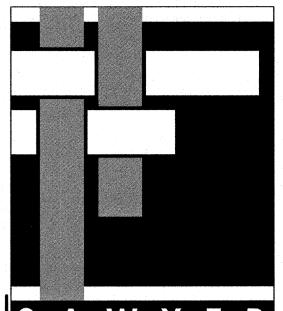
FLOOR PLAN

MECHANICAL KEYED NOTES

- 1. EXISTING PACKAGED HEAT PUMP: TO REMAIN.
- 2. EXISTING CONDENSING UNIT: TO REMAIN.
- ERV EXHAUST FAN WALL CAP: MOUNT AS HIGH AS POSSIBLE.

- RANGE HOOD (BY G.C.): MECHANICAL CONTRACTOR TO INSTALL MATCHING EXHAUST DUCT AND WALL CAP. COORDINATE WITH G.C.

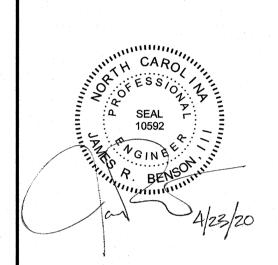
9. DRYER EXHAUST: PROVIDE RECESSED WALL BOX (DRYERBOX DB-350 OR SIMILAR) AND WALL EXHAUST CAP. MOUNT HIGH AS POSSIBLE.





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Hurricane Florence Repairs New Hanover County Fire Station 12

3805 US-421 Wilmington, NC

Construction Drawings 23 April, 2020

Revisions:

Mechanical Floor Plan

Abbrev	iations
A	AMPERES
AC	ALTERNATING CURRENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
ALUM	ALUMINUM
AMP ATS	AMPERE AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC TRAINSPER SWITCH
AWG	AMERICAN WIRE GAUGE
BLDG	BUILDING
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CLG	CEILING
CU	COPPER
DN	DOWN EXISTING
E EC	ELECTRICAL CONTRACTOR
EG	EQUIPMENT GROUND
ELECT	ELECTRICAL
ELEV .	ELEVATION
EM	EMERGENCY
ENCL	ENCLOSURE
EQUIP	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
FLEX	FLEXIBLE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GEN	GENERATOR GROUND FAULT INTERRUPTING
GFI G, GRD	GROUND FAULT INTERRUPTING GROUND
GRS	GALVANIZED RIGID STEEL
HDSS	HEAVY DUTY SAFETY SWITCH
HP	HORSEPOWER
нт	HEIGHT
HZ	HERTZ
IDU	INDOOR UNIT
INSTR	INSTRUMENT
MC	MECHANICAL CONTRACTOR
MECH	MECHANICAL
MFR	MANUFACTURER
MTD MTG	MOUNTED MOUNTING
NO	NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
ODU	OUTDOOR UNIT
Р	POLE
PC	PLUMBING CONTRACTOR OR PHOTOCELL
Ø	PHASE
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY EXISTING TO REMAIN
R RECEPT	RECEPTACLE
RGC	RIGID GALVANIZED CONDUIT
RL	RELOCATE OR RELOCATED
RM	ROOM
SPECS	SPECIFICATIONS
SS	STAINLESS STEEL
SW	SWITCH
TEL	TELEPHONE
TS	TIME SWITCH
TYP	TYPICAL
UG	UNDERGROUND
UNO V	UNLESS NOTED OTHERWISE
w W	VOLTS WATTS
WP	WEATHERPROOF
XFMR	TRANSFORMER

Legend	
Legenu	
	RACEWAY CONCEALED ABOVE CEILING OR IN WALLS
	RACEWAY EXPOSED ON WALLS OR CEILING
PPA-1,3	RACEWAY CONCEALED BELOW OR IN SLAB/FLOOR HOMERUN TO PANEL, ARROWS INDICATE NO. OF CIRCUITS
~~~~	FLEXIBLE METAL CONDUIT OR LIQUIDTIGHT FLEX AS APPLICABLE
3/4" C.	CONDUIT: SIZE AND FILL AS NOTED
3 #12 & 1 #12 EG	THREE NO. 12 AWG CONDUCTORS AND ONE NO. 12 AWG
<u></u>	GROUND AS PRESCRIBED BY CODES, OR AS SHOWN
<del>-</del> \$	SINGLE POLE SWITCH, 48" AFF, UNO
\$3	THREE WAY SWITCH, 48" AFF, UNO
\$4	FOUR WAY SWITCH, 48" AFF, UNO
\$0	WALL BOX OCCUPANCY SENSOR, 48" AFF UNO, SEE SPECS SECTION 262726
2\$0	WALL BOX OCCUPANCY SENSOR, 48" AFF UNO WITH TWO SINGLE POLE SWITCHES FOR BI-LEVEL CONTROL, 48" AFF UNO, SEE SPECS SECTION 262726
_D \$ ₀	WALL BOX COMBINATION OCCUPANCY SENSOR/DIMMER SWITCH, 48" AFF, UNO, SEE SPECS SECTION 262726
D\$3	WALL BOX THREE WAY DIMMER SWITCH, 48" AFF, UNO
\$ _{WP}	WEATHERPROOF SINGLE POLE SWITCH, 48" AFF, UNO
\$ _{2P}	MOTOR RATED 2 POLE, 208 VOLT SNAP SWITCH
6	FLUSH CEILING MOUNTED OCCUPANCY SENSOR AND POWER PACK, SEE SPECS SECTION 262726.
<b>O</b>	JUNCTION BOX, SIZE AS SPECIFIED OR REQUIRED
P	DUPLEX RECEPTACLE, 18" AFF, UNO
•	DUPLEX RECEPTACLE, 42" AFF, UNO
GFI <b>₽</b>	GROUND FAULT RECEPTACLE, 18" AFF
Q <b>P</b>	GROUND FAULT RECEPTACLE, 42" AFF  QUADRAPLEX RECEPTACLE, 18" AFF, UNO
 Q <b>P</b>	QUADRAPLEX RECEPTACLE, 42" AFF, UNO
WP <b>P</b>	WEATHERPROOF DUPLEX RECEPTACLE, 18" AFF, UNO
WP 👚	WEATHERPROOF DUPLEX RECEPTACLE, 42" AFF, UNO
	TELECOMMUNICATIONS OUTLET, 18" AFF, UNO, WITH 1" C. TO ACCESSIBLE CEILING CAVITY AND TWO CAT 6 CABLES TO TELECOM/DATA RACK IN DATA CLOSET 112A. SEE NEW HANOVER COUNTY TELECOMMUNICATIONS CABLING GUIDELINES, SHEET E0.2.1 AND FUNCTIONAL TELECOMMUNICATION/CATV RISER DIAGRAM 1/E0.6
WAP T	CEILING MOUNTED WRELESS ACCESS POINT WITH TWO CAT 6 CABLES TO TELECOM/DATA RACK IN DATA CLOSET 112A. SEE NEW HANOVER COUNTY TELECOMMUNICATIONS CABLING GUIDELINES, SHEET E0.2.1 AND FUNCTIONAL TELECOMMUNICATION/CATV RISER DIAGRAM 1/E0.6
$oldsymbol{ abla}$	DIRECT TV OUTLET, 18" AFF, UNO, WITH 1-1" C. TO ACCESSIBLE CEILING CAVITY. CABLES PROVIDED AND INSTALLED BY OWNERS VENDOR
$\nabla$	VIDEO OUTLET, 18" AFF, UNO, WITH 1-1" EMPTY C. TO ADJACENT VIDEO OUTLET FOR HDMI CABLE. PROVIDE TERMINATED HDMI CABLE LENGTH AS REQUIRED FOR INSTALLATION.
<u>rs</u>	TIME SWITCH, SEE SPECS.  PHOTOCELL, SEE SPECS
	ELECTRICAL DISTRIBUTION PANELBOARD, SEE PANEL SCHEDULE
30	ENCLOSED CIRCUIT BREAKER OR FUSIBLE HEAVY DUTY SAFETY SWITCH, 250 OR 600 VOLT AS APPLICABLE, NEMA-1 ENCLOSURE, 3P, 4W, UNO
SAF. SW. SAF. SW. PLAN ELEVATION	"30" INDICATES RATING IN AMPERES "CB" INDICATES ENCLOSED CIRCUIT BREAKER "30" INDICATES OF THE AMPERICAN A
CIRC. BKR. CIRC. BKR. PLAN ELEVATION	"2P" INDICATES 2 POLE, 3 WIRE "3P" INDICATES 3 POLE, 3 WIRE "NF" INDICATES NON-FUSIBLE SAFETY SWITCH "SE" INDICATES U.L. SERVICE ENTRANCE LABEL "3R" INDICATES NEMA-3R ENCLOSURE
LX	RECESS MOUNTED LED LIGHTING FIXTURE, LETTER INDICATES FIXTURE TYPE, SEE LIGHTING FIXTURE SCHEDULE
LX O	SURFACE/PENDANT MOUNTED LED LIGHTING FIXTURE. LETTER INDICATES FIXTURE TYPE, SEE LIGHTING FIXTURE SCHEDULE
LX 🔼	RECESSED LED DOWNLIGHTING FIXTURE. LETTER INDICATES FIXTURE TYPE, SEE LIGHTING FIXTURE SCHEDULE
IX O	CEILING OUTLET AND LED TYPE LIGHTING FIXTURE. LETTER INDICATES FIXTURE TYPE, SEE LIGHTING FIXTURE SCHEDULE
Югх	WALL OUTLET AND LED TYPE LIGHTING FIXTURE. LETTER INDICATED FIXTURE TYPE, SEE LIGHTING FIXTURE SCHEDULE
<b>⊗</b> X1	CEILING OUTLET AND SINGLE FACE EXIT SIGN WITHOUT CHEVRONS, SEE LIGHTING FIXTURE SCHEDULE
<b>⊗</b> X1	CEILING OUTLET AND SINGLE FACE EXIT SIGN WITH CHEVRONS AS INDICATES, SEE LIGHTING FIXTURE SCHEDULE
<b>⊗</b> X2	WALL OUTLET AND SINGLE FACE EXIT SIGN WITHOUT CHEVRONS, SEE LIGHTING FIXTURE SCHEDULE
<b>\\D</b> x2	WALL OUTLET AND SINGLE FACE EXIT SIGN WITH CHEVRONS AS INDICATED, SEE LIGHTING FIXTURE SCHEDULE
<b>₩</b> E1	WALL OUTLET AND EMERGENCY LIGHTING FIXTURE, SEE LIGHTING FIXTURE SCHEDULE

### **Electrical General Notes**

- 1. ALL EQUIPMENT SHOWN DOTTED OR DASHED IS BY OTHERS OR IS EXISTING, AS NOTED.
- 2. THE DRAWINGS INDICATE THE NUMBER OF BRANCH CIRCUIT HOMERUN PHASE CONDUCTORS VIA ARROWHEADS. PROVIDE NEUTRAL AND EQUIPMENT GROUND CONDUCTORS AS REQUIRED. ADDITIONAL CONDUCTORS REQUIRED FOR CONTROL SHALL BE INCLUDED EVEN IF NOT EXPLICITLY SHOWN.
- 3. ALL MOTORS AND OTHER VIBRATING EQUIPMENT SHALL BE CONNECTED TO THE CONDUIT SYSTEM BY MEANS OF A SHORT SECTION (18 INCH MINIMUM) OF FLEXIBLE CONDUIT UNLESS OTHERWISE INDICATED. AN EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED INSIDE THE FLEXIBLE CONDUIT AND TERMINATE AT THE LOAD END WITH AN APPROVED GROUNDING CLAMP OR LUG.
- 4. CEILING MOUNTED DEVICES INSTALLED IN ACOUSTICAL TILE CEILING AREAS SHALL BE SUPPORTED FROM THE STRUCTURE ABOVE WITH RODS OF SUFFICIENT SIZE TO PREVENT VERTICAL MOVEMENT OF THE OUTLET BOX. BRIDGES ALONE ARE NOT ADEQUATE UNLESS SPECIFICALLY APPROVED. CEILING MOUNTED EXIT LIGHT FIXTURES SHALL BE INSTALLED LEVEL. DO NOT SUPPORT DEVICES FROM ACOUSTICAL CEILING TILE.
- 5. PROVIDE GROUND FAULT CIRCUIT—INTERRUPTER (GFCI) PROTECTION FOR PERSONNEL IN ACCORDANCE WITH THE NEC INCLUDING ALL ELECTRIC WATER COOLERS, EXTERIOR RECEPTACLES AND RECEPTACLES IN AREAS SUBJECT TO POSSIBLE WET CONDITIONS. ALL RECEPTACLES INSTALLED WITHIN 6 FEET OF A SINK SHALL BE GFI PROTECTED. ALL RECEPTACLES IN NON—RESIDENTIAL KITCHENS SHALL BE GFI PROTECTED.
- 6. GFCI RECEPTACLES SHALL BE READILY ACCESSIBLE AFTER INSTALLATION. IF CONDITIONS OF THE INSTALLATION TO NOT ALLOW FOR READY ACCESS, PROVIDE A STANDARD RECEPTACLE AND PROVIDE A GFCI CIRCUIT BREAKER TO FEED THE CIRCUIT.
- 7. PROVIDE ARC FAULT CIRCUIT BREAKERS FOR BRANCH CIRCUITS AS SHOWN AND AS REQUIRED BY THE NEC.
- 8. ADJACENT SWITCHES SHALL BE GANGED. IN AREAS IN WHICH DUAL LEVEL SWITCHING IS INDICATED (TYPICALLY BY 2 OR MORE ADJACENT, GANGED SWITCHES), PROVIDE THE APPROPRIATE NUMBER OF CONDUCTORS TO FACILITATE THIS FUNCTION (AS TYPICALLY SHOWN).
- CONNECT BATTERY PACK TYPE EMERGENCY AND EXIT LIGHTING FIXTURES TO THE UNSWITCHED LIGHTING CIRCUIT SERVING THE SPACE LIGHTED BY THE EMERGENCY AND EXIT FIXTURES. THESE CONNECTIONS ARE INTENTIONALLY NOT SHOWN TO MAINTAIN DRAWING CLARITY.
- 10. COORDINATE LIGHTING FIXTURE LOCATIONS WITH THE ARCHITECTURAL REFLECTED CEILING PLAN. IF CONFLICTS ARE NOTED, REQUEST CLARIFICATION FROM THE ARCHITECT/ENGINEER BEFORE PROCEEDING.
- 11. ADJACENT RECEPTACLES AND DATA/TELEPHONE OUTLETS SHALL BE INSTALLED 6 INCHES CENTER TO CENTER AND SHALL BE AT
- THE SAME ELEVATION.

12. SEPARATE NEUTRALS ARE REQUIRED FOR ALL DIMMED LIGHTING CIRCUITS.

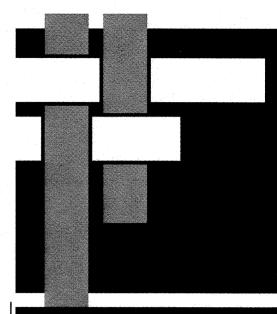
- 13. WHERE THE DRAWINGS INDICATE A LIGHTING FIXTURE IS TO BE PROVIDED WITH SPECIAL FEATURES/SWITCHING (DIMMING, MULTI-LEVEL, ETC), THE CONTRACTOR SHALL PROVIDE THESE FIXTURES WITH THE APPROPRIATE BALLASTING TO ACCOMMODATE THE SPECIAL FEATURE. THE CONTRACTOR SHALL PROVIDE THE FIXTURES AS INDICATED IN THE LIGHTING FIXTURE SCHEDULE WITH MODIFICATIONS AS REQUIRED BY DRAWING NOTES.
- 14. INSTALLATION INFORMATION PACKED WITH LIGHTING FIXTURES, DEVICES AND EQUIPMENT SHALL BE RETAINED FOR INCLUSION IN THE OPERATIONS AND MAINTENANCE MANUALS.
- 15. WHERE ELECTRICAL SYSTEMS PASS THROUGH THE DEMOLITION AREAS TO SERVE OTHER PORTIONS OF THE PREMISES, THEY SHALL BE PROTECTED FROM DAMAGE AND REMAIN OR BE SUITABLY RELOCATED UTILIZING MATCHING SIZE AND TYPE MATERIALS AND THE SYSTEM RESTORED TO NORMAL OPERATION. ADVISE THE ARCHITECT/ENGINEER IMMEDIATELY IF SUCH CONDITIONS ARE UNCOVERED BEFORE PROCEEDING WITH ADDITIONAL WORK.
- 16. DELIVER ALL REMOVED AND SALVAGED LIGHTING FIXTURES, WIRING DEVICES, FIRE ALARM DEVICES, SPEAKERS, ETC., TO THE OWNER, OR AT THE OWNER'S OPTION, DISPOSE OF PROPERLY OFF SITE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL ENVIRONMENTAL REGULATIONS. FEES ASSOCIATED WITH DISPOSAL SHALL BE INCLUDED IN THE CONTRACTOR'S BASE BID.
- 17. THE CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF ALL LAMPS CONTAINING MERCURY IN A LINED LANDFILL IN ACCORDANCE WITH NC GEN STATUTE 309.10M.

## **Existing Electrical System Notes**

- 1. THE ELECTRICAL DISTRIBUTION SYSTEM IN THE MAIN (NORTH) PORTION OF THE BUILDING, WITH THE EXCEPTION OF SOME BRANCH CIRCUITS, WILL BE REPLACED WITH A NEW SYSTEM. THE ADDITION AT THE SOUTH END OF THE BUILDING REMAINS WITH ONLY MINOR ELECTRICAL MODIFICATIONS.
- 2. THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH THE EXISTING ELECTRICAL SYSTEMS, EXISTING ELECTRICAL AND MECHANICAL EQUIPMENT LOADS AND THE EXISTING BUILDING CONSTRUCTION. THE SUBMISSION OF THE PROPOSAL BY THE CONTRACTOR SHALL BE CONSIDERED EVIDENCE THAT HE OR HIS REPRESENTATIVE HAS VISITED THE SITE AND BUILDINGS AND NOTED THE LOCATION AND CONDITIONS UNDER WHICH THE WORK WILL BE PERFORMED AND THAT HE TAKES FULL RESPONSIBILITY OF ALL FACTORS GOVERNING HIS WORK. NO EXTRAS WILL BE CONSIDERED BECAUSE OF ADDITIONAL WORK NECESSITATED BY EXISTING JOB CONDITIONS THAT ARE NOT INDICATED ON THE DRAWINGS.
- 3. THE EXISTING ELECTRICAL SERVICE, MAIN CIRCUIT BREAKER, ENGINE—GENERATOR SET, AUTOMATIC TRANSFER SWITCH, WIRING TROUGH AND ENCLOSED CIRCUIT BREAKERS (SERVING THE TWO EXISTING PANELBOARDS), ALL LOCATED ON THE BUILDING EXTERIOR, SHALL REMAIN.
- 4. REMOVE THE EXISTING 200A MAIN PANELBOARD AND FEEDER FROM THE 200A ENCLOSED CIRCUIT BREAKER AT THE WIRING TROUGH AND PROVIDE A NEW FEEDER TO NEW PANEL MDP AS SHOWN.
- 5. SOME EXISTING BRANCH CIRCUITS WILL REMAIN AND BE REFED BY NEW PANELBOARD MDP.
- THE EXACT QUANTITY, ROUTINGS, LOADS AND CONDITION OF THE EXISTING BRANCH CIRCUITS TO REMAIN IS UNKNOWN. THE CONTRACTOR SHALL INVESTIGATE/TRACE AND FIELD VERIFY ALL EXISTING ELECTRICAL EQUIPMENT, HVAC AND PLUMBING EQUIPMENT, RECEPTACLES, LIGHTING, PUMPS, ETC. BRANCH CIRCUITS TO REMAIN PRIOR TO DEMOLITION AND DETERMINE WHICH FEED EXISTING LOADS TO REMAIN, INCLUDING LOADS NOT SHOWN ON THESE DRAWINGS. DISCONNECT EXISTING BRANCH CIRCUITS TO REMAIN AT THE EXISTING 200A PANELBOARD, EXTEND THESE BRANCH CIRCUITS TO NEW PANELBOARD MDP BRANCH CIRCUIT BREAKERS WITH MATCHING CONDUCTORS AND RACEWAYS, OR AS MC CABLE WHERE PERMITTED, IN THE CEILING CAVITY. DEDICATED AND SPARE CIRCUIT BREAKERS ARE PROVIDED IN NEW PANELBOARD MDP FOR THIS PURPOSE.
- 6. MAINTAIN CONTINUITY OF ALL EXISTING CIRCUITS TO REMAIN OR PORTIONS THEREOF AFFECTED BY THIS WORK.
- 7. TRACE OUT EXISTING WIRING THAT IS TO BE RELOCATED, EXTENDED OR REMOVED AND PERFORM THE RELOCATION, EXTENSION OR REMOVAL WORK AS REQUIRED FOR A COMPLETE OPERATING AND SAFE SYSTEM.
- 8. ABANDONED POWER WIRING, RACEWAYS AND CONDUCTORS, SHALL BE REMOVED BACK TO THEIR SOURCE. REMOVE ABANDONED FEEDER CONDUCTORS AND CUT THE EXISTING FEEDER RACEWAYS FLUSH WITH THE FLOOR (AND CEILING, IF APPLICABLE) AND SEAL. REMOVE EXPOSED FEEDER RACEWAYS. REMOVE EXPOSED ABANDONED BRANCH CIRCUIT RACEWAYS.
- 9. THE ACCESSIBLE PORTIONS OF ABANDONED FREE RUN CABLES (VOICE, DATA, VIDEO, ALARM, ETC.) SHALL BE REMOVED. VERIFY THAT ABANDONED WIRING AND EQUIPMENT SERVE ONLY ABANDONED FACILITIES.
- 10. INSOFAR AS POSSIBLE, MATCH EXISTING EXPOSED DEVICES IN FINISHED AREAS IN TYPE, COLOR AND FINISH.
- 11. SOME EXISTING RECEPTACLE, LIGHTING OR OTHER LOADS MAY BE SERVED BY CIRCUITS INDICATED TO BE REMOVED. IF SUCH CONDITIONS ARE DISCOVERED, REQUEST THE ARCHITECT/ENGINEER PROVIDE A NEW SOURCE CIRCUIT FOR THE LOAD. DO NOT INDISCRIMINATELY CONNECT TO THE NEAREST CIRCUIT.

MAXIMUM HISTORICAL DEMAND FROM DUKE ENGERY RECORDS (9/20/18)  X 1.25 PER NEC ART. 220.87	21.000 KW 26.250 KW
X 1.25 PER NEC ART. 220.07	20.230 NW
REMOVED LOADS: ELECTRIC WATER HEATER (REPLACED BY GAS WATER HEATER)	-4.500 KW
NEW LOADS:	
REFRIGERATOR	1.000 KVA
REFRIGERATOR	1.000 KVA
ER1	0.396 KVA
GAS WATER HEATER GWH1	0.050 KVA
GAS WATER HEATER GWH2	0.050 KVA
WASHER/EXTRACTOR	1.800 KVA
PPE DRYER	1.920 KVA
EXHAUST FAN PVI	0.360 KVA
DEHUMIDIFIER D1 IDU	0.336 KVA
DEHUMIDIFIER D1 ODU	1.162 KVA
	3.574 KVA
TOTAL EXISTING LOAD X 1.25 + NEW LOADS	29.824 KVA
	124.267 A
CONCLUSION: THE EXISTING 200A, 120/240V, SINGLE PHASE PANEL MDP FEEDI	ED CIDCUIT

Electri	cal Syst	em and Equ	uipment	
Method	d of Cor	mpliance		
Prescriptive	X Pe	rformance	Energy Cost Budget	_
		•	designated points for check metering. ch identifies different enduse loads.	
Lighting Sch				
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	Total interior v	wattage: 1,901 Watts	·	
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	Exterior Allowa	ance:		
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	(Non-tradeable	e Surfaces: )		
	Allowed =	N/A Watts		
	Specified =	N/A Watts		
<b></b>	chedules with m	notors (not used for m	nechanical systems):	
Equipment s	motor horse p	<u>*</u>		
Equipment's				
Equipment s	number of pho			
Equipment s		iency: N/A		



S A W Y E R S H E R W O O D & ASSOCIATE ARCHITECTURE

910 762-0892 s2a3.com

WD JONES ENGINEERING, PLLC
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Hurricane
Florence Repairs
New Hanover
County
Fire Station 12

Wilmington, NC

3805 US-421

Construction Drawings 23 April, 2020

Revisions:

Abbreviations, Legend, Notes and Summaries

=0.1

### **Electrical Specifications**

#### 260500 GENERAL ELECTRICAL

- A. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE FOLLOWING CODES AND STANDARDS INSOFAR AS THEY APPLY.
- 1. THE NATIONAL ELECTRICAL CODE, 2017 EDITION
- 2. THE NATIONAL ELECTRICAL SAFETY CODE
- 3. UNDERWRITER'S LABORATORIES, INC., STANDARDS AND APPROVED LISTINGS 4. ELECTRICAL TESTING LABORATORIES STANDARDS
- 5. NORTH CAROLINA STATE BUILDING CODE, LATEST EDITION AND REVISIONS 6. ALL LOCAL CODES AND ORDINANCES
- 7. NFPA 72 8. ADA
- B. SAFETY: 1. COMPLY WITH OSHA AND NEC ARC FLASH HAZARD PROTECTION REQUIREMENTS.
- 2. FOR EQUIPMENT BEING REMOVED AND REPLACED, THE CONTRACTOR SHALL DE-ENERGIZE THE EQUIPMENT AND MAKE IT SAFE PRIOR TO REMOVAL AND COMPLY WITH OSHA REQUIREMENTS FOR LOCKING-OUT AND TAGGING EQUIPMENT TO PREVENT INADVERTENT RE-ENERGIZING.
- 3. WHERE EQUIPMENT IS BEING REMOVED, BUT NOT REPLACED, REMOVE THE CONDUCTORS FEEDING THE EQUIPMENT BACK TO THE POINT WHERE THEY RECEIVE POWER. REMOVE ACCESSIBLE CONDUITS. ABANDON IN PLACE INACCESSIBLE CONDUITS. AFTER REMOVAL OF EQUIPMENT, REPAIR ANY OPENING LEFT TO MATCH SURROUNDING WALLS, CEILINGS, OR FLOORS TO THE ENGINEER'S SATISFACTION.
- 4. COORDINATE WITH THE OTHER TRADES, PRIOR TO BID, AND INCLUDE IN THE BASE BID THE ELECTRICAL DISCONNECTION OF ANY EQUIPMENT BEING DEMOLISHED, EVEN IF NOT EXPLICITLY SHOWN. UNLESS NOTED OTHERWISE, REMOVE ALL DEMOLISHED EQUIPMENT FROM THE PROPERTY.
- THESE DRAWINGS ARE COMPILED BY THE ENGINEER FROM LIMITED FIELD VERIFICATION OF EXISTING CONDITIONS FOR THE PURPOSE OF INDICATING THE WORK REQUIRED AND ARE BELIEVED TO BE CORRECT. NOTWITHSTANDING, THE CONTRACTOR SHALL VERIFY ALL CIRCUITS, WIRING, CONDUIT, DIMENSIONS, POINTS OF ACCESS AND ALL FIELD CONDITIONS AFFECTING HIS WORK. BEGINNING OF DEMOLITION MEANS THE CONTRACTOR ACCEPTS EXISTING CONDITIONS.
- D. THE CONTRACTOR SHALL REVIEW THE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR WORK REQUIREMENTS, THE AMOUNT OF SPACE AVAILABLE FOR ELECTRICAL EQUIPMENT, AND LAYOUT HIS WORK IN A COMPATIBLE AND COMPLEMENTARY MANNER.
- SEE ELECTRICAL GENERAL NOTES FOR ADDITIONAL REQUIREMENTS, CONDITIONS AND RESTRICTIONS. UNLESS SPECIFICALLY NOTED OTHERWISE, SYSTEMS PROVIDED OR INSTALLED BY THE CONTRACTOR SHALL BE COMPLETE AND FULLY-FUNCTIONING AFTER INSTALLATION. INCIDENTAL COMPONENTS MAY NOT BE SHOWN, AND ALL WORK WHICH MAY BE REASONABLY IMPLIED AS BEING INCIDENTAL TO THIS WORK, BUT REQUIRED FOR THE PROPER OPERATION OF THE EQUIPMENT OR SYSTEM, SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER. ADDITIONAL CIRCUITS SHALL BE INSTALLED WHEREVER NEEDED TO CONFORM TO THE SPECIFIC REQUIREMENTS OF EQUIPMENT.
- G. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THOROUGHLY FAMILIARIZING HIMSELF WITH ANY CONTRACTUAL REQUIREMENTS AS MAY BE SET FORTH IN THE OTHER DIVISIONS OF THE PROJECT SPECIFICATIONS.
- H. THE CONTRACTOR SHALL OBTAIN ALL PERMITS, LICENSES, INSPECTIONS, ETC., REQUIRED FOR THE WORK AND SHALL PAY FOR SAME. IF ANY. WORK SHALL NOT BE COVERED UP OR ENCLOSED UNTIL IT HAS BEEN INSPECTED, TESTED AND APPROVED BY THE ARCHITECT, ENGINEER AND AUTHORITIES HAVING JURISDICTION OVER THIS WORK. SHOULD ANY OF THE WORK BE ENCLOSED OR COVERED UP BEFORE SUCH INSPECTION AND TEST, THE CONTRACTOR SHALL UNCOVER THE WORK AT THE CONTRACTOR'S EXPENSE; AFTER IT HAS BEEN INSPECTED, TESTED AND APPROVED, THE CONTRACTOR SHALL RESTORE THE WORK TO ITS ORIGINAL CONDITION.
- BIDDERS SHALL HAVE A WORKING KNOWLEDGE OF LOCAL CODES AND ORDINANCES AND SHALL INCLUDE IN THEIR BIDS THE COSTS FOR ALL WORK INSTALLED IN STRICT ACCORDANCE WITH GOVERNING CODES, THE CONSTRUCTION DOCUMENTS
- NOTWITHSTANDING. J. ALL WORK SHALL BE DONE BY SKILLED MECHANICS AND SHALL PRESENT A NEAT, TRIM AND WORKMANLIKE FINISH WHEN
- K. DO NOT SCALE ELECTRICAL DRAWINGS. FIELD VERIFY ALL DIMENSIONS AS LOCATIONS SHOWN ARE APPROXIMATE. UNLESS DIMENSIONED, WIRING DEVICE AND TELECOM OUTLET LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE. EXACT DEVICE AND OUTLET LOCATIONS SHALL BE AS INDICATED ON THE ARCHITECTURAL DRAWINGS OR AS DIMENSIONED. IF NOT

SHOWN ON THE ARCHITECTURAL DRAWINGS OR DIMENSIONED ON THE ELECTRICAL DRAWINGS, VERIFY EXACT LOCATION WITH

- THE ARCHITECT/ENGINEER AND/OR THE OWNER PRIOR TO ROUGH-IN. M. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT MEASUREMENTS IN THE PLACEMENT OF
- EQUIPMENT, FIXTURES, ETC. N. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING COMPLETE ELECTRICAL CONNECTIONS AS THE DRAWINGS DO NOT PROVIDE EXACT DETAILS AS TO ELEVATIONS AND LOCATIONS OF VARIOUS FITTINGS, CONDUIT, ETC., AND DO NOT SHOW ALL OFFSETS AND OTHER INSTALLATION DETAILS, ALL WHICH MAY BE REQUIRED. ADJUST LOCATIONS AS REQUIRED TO SERVE THE
- INTENDED PURPOSE AND TO AVOID CONFLICTS AND INTERFERENCES WITH OTHER TRADES. O. UNLESS NOTED OTHERWISE, THE EXACT ROUTING OF FEEDER AND BRANCH CIRCUIT RACEWAYS AND CABLES IS THE RESPONSIBILITY OF THE CONTRACTOR. RISER AND GENERAL CIRCUIT ARRANGEMENTS ARE SHOWN SCHEMATICALLY/DIAGRAMMATICALLY ONLY. THE CONTRACTOR SHALL ROUTE CONDUITS AND CABLES AS REQUIRED BY THE CONDITIONS OF THE INSTALLATION
- P. COORDINATION 1. COORDINATE LOCATIONS OF PLUMBING, MECHANICAL, FOOD SERVICE, DATA AND TELEPHONE, AUDIO/VISUAL EQUIPMENT AND OF OWNER-PROVIDED EQUIPMENT WITH THE RESPECTIVE CONTRACTORS AND VENDORS AND THE OWNER BEFORE ROUGH-IN. ADJUST LIGHTING FIXTURES, RECEPTACLES AND ELECTRICAL EQUIPMENT TO ACCOMMODATE THIS EQUIPMENT. ADVISE THE
- ARCHITECT/ENGINEER OF CONFLICTS BEFORE ROUGH-IN. 2. ENERGIZE EQUIPMENT ONLY AFTER OBTAINING PERMISSION FROM THE CONTRACTOR OR ENTITY PROVIDING THE EQUIPMENT. 3. UNLESS SPECIFICALLY NOTED OTHERWISE, THE CONTRACTOR PROVIDING THE EQUIPMENT SHALL MAKE FINAL CONNECTIONS TO HIS EQUIPMENT. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL, PLUMBING AND GENERAL CONTRACTORS, PRIOR TO ORDERING OR INSTALLATION OF ANY EQUIPMENT. TO VERIFY MECHANICAL, PLUMBING AND GENERAL CONTRACTOR PROVIDED EQUIPMENT REQUIREMENTS ARE PROVIDED IN THE ELECTRICAL DESIGN. IF ELECTRICAL REQUIREMENTS DIFFER FROM THOSE SHOWN ON THE DRAWINGS, THE CONTRACTOR PROVIDING THE EQUIPMENT SHALL BE RESPONSIBLE FOR DESIGN AND CONSTRUCTION COSTS ASSOCIATED WITH CHANGING THE ELECTRICAL SYSTEM TO MATCH
- UTILIZATION EQUIPMENT. 4. THE MECHANICAL AND PLUMBING CONTRACTORS SHALL FURNISH ALL STARTERS AND CONTROLS FOR THEIR EQUIPMENT. THE ELECTRICAL CONTRACTOR SHALL PROVIDE SAFETY SWITCHES AND CIRCUIT BREAKERS AND PROVIDE WIRING AND CONNECTIONS TO THE LINE SIDE OF SAFETY SWITCHES AND/OR CIRCUIT BREAKERS. THE CONTRACTOR PROVIDING THE EQUIPMENT SHALL PROVIDE LOAD SIDE WIRING AND CONNECTIONS TO EQUIPMENT. THE MECHANICAL AND PLUMBING CONTRACTORS SHALL PROVIDE ALL CONTROL WIRING AND CONNECTIONS AND CONTROL DEVICES FOR THEIR EQUIPMENT. 5. THE CONTRACTOR SHALL COORDINATE ALL EQUIPMENT TERMINATIONS, PLUGS AND CORDSETS WITH VENDOR EQUIPMENT AND
- VERIFY ALL DEVICE LOCATIONS FOR SPECIALTY EQUIPMENT WITH CASEWORK PRIOR TO ROUGH-IN. 6. INSTALL WIRING DEVICES AT HEIGHTS AS SHOWN ON THE DRAWINGS. ALSO COORDINATE MOUNTING HEIGHTS WITH THE ARCHITECTURAL DRAWINGS AND CASEWORK DETAILS. IF CONFLICTING, ARCHITECTURAL DRAWINGS AND DETAILS SHALL
- 7. BEFORE COMMENCING WORK OR ORDERING MATERIALS, THE CONTRACTOR SHALL COORDINATE WITH OTHER TRADES AND VERIFY THE NAMEPLATE RATINGS OF ALL EQUIPMENT (MOTORS, HEATERS, COMPRESSORS, ETC.) AND ADJUST THE RATINGS OF THE ELECTRICAL EQUIPMENT (SWITCHES, FUSES, CIRCUIT BREAKERS, CONDUCTORS, RACEWAYS, ETC.) AS APPROPRIATE TO SERVE THIS EQUIPMENT.
- Q. MATERIALS: ALL MATERIALS SHALL BE NEW AND SHALL BEAR THE MANUFACTURER'S NAME AND TRADE NAME. MATERIALS SHALL BE THE STANDARD PRODUCTS OF MANUFACTURERS REGULARLY ENGAGED IN THE MANUFACTURE OF THE REQUIRED TYPE OF EQUIPMENT AND THE MANUFACTURER'S LATEST APPROVED DESIGN. OTHER MATERIALS AND EQUIPMENT TO BE AS SHOWN ON THE DRAWINGS. WHERE NO SPECIFIC MATERIAL TYPE IS MENTIONED, A HIGH QUALITY PRODUCT OF A REPUTABLE MANUFACTURER MAY BE USED PROVIDED IT CONFORMS TO THE REQUIREMENTS OF THESE SPECIFICATIONS.
- ALL ELECTRICAL EQUIPMENT AND MATERIAL SHALL BE LISTED BY A QUALIFIED THIRD PARTY TESTING AGENCY ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION, FOR THE CONDITIONS OF INSTALLATION. ACCEPTABLE QUALIFIED THIRD PARTY TESTING LABORATORIES/AGENCIES SHALL BE AMONGST THOSE ACCREDITED BY THE NCBCC (NORTH CAROLINA BUILDING CODE COUNCIL) TO LABEL ELECTRICAL & MECHANICAL EQUIPMENT. EQUIPMENT AND MATERIALS SHALL BEAR THE APPROPRIATE TESTING AGENCY'S LISTING MARK OR CLASSIFICATION MARKING. EQUIPMENT, MATERIALS, ETC. UTILIZED NOT BEARING A THIRD PARTY TESTING AGENCY CERTIFICATION SHALL BE FIELD OR FACTORY THIRD PARTY TESTING AGENCY CERTIFIED PRIOR TO EQUIPMENT ACCEPTANCE AND USE. FIELD CERTIFICATIONS SHALL BE AT THE CONTRACTOR'S EXPENSE.
- S. EQUIPMENT SHALL BE SUITABLE FOR ITS APPLICATION (E.G. WHEN INSTALLED IN THE EXTERIOR, IT SHALL BE WEATHERPROOF, ETC.) ALL EXTERIOR WIRING DEVICES, BOXES, ETC. SHALL BE WEATHERPROOF. LIGHTING FIXTURES SHALL BE APPROPRIATELY RATED AND LISTED FOR THE ENVIRONMENT.
- T. TEMPORARY POWER CONNECTIONS AS REQUIRED SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER. ALL TEMPORARY EQUIPMENT WIRING SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. THE CONTRACTOR SHALL PROVIDE DETAILS, METHODS, MATERIALS, ETC. TO THE ARCHITECT/ENGINEER PRIOR TO MAKING TEMPORARY CONNECTIONS. FURNISH AND INSTALL ALL EQUIPMENT AND MATERIALS INCLUDING CONTROL EQUIPMENT, MOTOR STARTERS, BRANCH AND FEEDER CIRCUIT BREAKERS, PANELBOARDS, TRANSFORMERS, ETC. FOR TEMPORARY POWER. COORDINATE WITH THE ELECTRICAL UTILITY COMPANY AS REQUIRED.
- U. ALL ELECTRICAL EQUIPMENT SHALL, AT ALL TIMES DURING CONSTRUCTION, BE ADEQUATELY PROTECTED AGAINST MECHANICAL INJURY, OR DAMAGE BY WATER AND/OR THE ELEMENTS. ELECTRICAL EQUIPMENT SHALL BE STORED IN DRY PERMANENT SHELTERS. PROVIDE HEATING FOR EQUIPMENT SUBJECT TO MOISTURE DAMAGE OR DAMAGE FROM CONDENSATION. IF AN APPARATUS HAS BEEN DAMAGED, OR HAS BEEN SUBJECT TO POSSIBLE INJURY BY WATER OR THE ELEMENTS, SUCH EQUIPMENT SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.
- WIRING METHODS: MATCH EXISTING WIRING METHODS. ANY NEC APPROVED WIRING METHOD IS ACCEPTABLE. EXPOSED WORK SHALL BE IN CONDUIT. OBSERVE NEC CLASSIFIED AREA REQUIREMENTS.

W. EXISTING ELECTRICAL SERVICE: COORDINATE POWER OUTAGES WITH THE OWNER AND UTILITY COMPANY. MAINTAIN EXISTING SYSTEMS IN SERVICE. DISABLE SYSTEMS ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN WRITTEN PERMISSION FROM THE OWNER BEFORE PARTIALLY OR COMPLETELY DISABLING SYSTEM. MINIMIZE OUTAGE DURATION. MAKE TEMPORARY CONNECTIONS TO MAINTAIN SERVICE IN AREAS ADJACENT TO WORK AREA.

ATTACHMENT

- X. CONTINUOUS SERVICE IS REQUIRED ON ALL ACTIVE CIRCUITS AND OUTLETS AFFECTED BY THESE CHANGES, EXCEPT WHERE THE OWNER WILL PERMIT AN OUTAGE FOR A SPECIFIC TIME. OBTAIN OWNER'S WRITTEN PERMISSION BEFORE REMOVING ANY ACTIVE CIRCUIT FROM CONTINUOUS SERVICE.
- PROTECT ALL EXISTING TELEPHONE, DATA, LIFE SAFETY SYSTEMS, SECURITY, ACCESS CONTROL AND PUBLIC ADDRESS SYSTEMS AND MAINTAIN THEM IN OPERATION THROUGHOUT THE PROGRESS OF THE WORK. NOTIFY THE OWNER AND ARCHITECT/ENGINEER IN WRITING IF SHUTDOWNS ARE REQUIRED OBTAIN OWNER'S WRITTEN PERMISSION PRIOR TO ANY OUTAGE OF SERVICE. WHERE THE DURATION OF A PROPOSED OUTAGE CANNOT BE TOLERATED BY THE OWNER, PROVIDE TEMPORARY CONNECTIONS AS REQUIRED TO MAINTAIN SERVICE.
- 1. THE WORK SHALL INCLUDE COMPLETE TESTING OF ALL EQUIPMENT AND WIRING DURING CONSTRUCTION AND/OR AT THE COMPLETION OF WORK AND ANY MINOR CORRECTIONS, CHANGES OR ADJUSTMENTS NECESSARY FOR THE PROPER FUNCTIONING OF THE SYSTEM AND EQUIPMENT.

2. ALL CURRENT CARRYING PHASE CONDUCTORS AND NEUTRALS SHALL BE TESTED AS INSTALLED, AND BEFORE CONNECTIONS

- ARE MADE, FOR INSULATION RESISTANCE AND ACCIDENTAL GROUNDS. THIS SHALL BE DONE WITH A 500 VOLT MEGGER. a. MINIMUM READINGS SHALL BE ONE MILLION (1,000,000) OR MORE OHMS FOR #6 WIRE AND SMALLER, 250,000 OHMS OR MORE FOR #4 WIRE OR LARGER BETWEEN CONDUCTORS AND BETWEEN CONDUCTOR AND THE GROUNDED METAL RACEWAY. b. AFTER ALL FIXTURES, DEVICES AND EQUIPMENT ARE INSTALLED AND ALL CONNECTIONS COMPLETED TO EACH PANEL, THE CONTRACTOR SHALL DISCONNECT THE NEUTRAL FEEDER CONDUCTOR FROM THE NEUTRAL BAR AND TAKE A MEGGER READING BETWEEN THE NEUTRAL BAR AND GROUNDED ENCLOSURE. IF THIS READING IS LESS THAN 250,000 OHMS, THE CONTRACTOR SHALL DISCONNECT THE BRANCH CIRCUIT NEUTRAL WIRES FROM THIS NEUTRAL BAR. HE SHALL THEN TEST EACH ONE SEPARATELY TO THE PANEL AND UNTIL THE LOW READING ONES ARE FOUND. THE CONTRACTOR SHALL
- GROUNDED PANEL CAN BE ACHIEVED WITH ONLY THE NEUTRAL FEEDER DISCONNECTED. c. THE CONTRACTOR SHALL CERTIFY IN WRITING THE ABOVE HAS BEEN DONE AND TABULATE THE MEGGER READINGS FOR

CORRECT TROUBLES, RECONNECT AND RETEST UNTIL AT LEAST 250,000 OHMS FROM THE NEUTRAL BAR TO THE

- 3. TEST ALL SYSTEMS MODIFIED OR DISTURBED BY THIS CONSTRUCTION FOR PROPER OPERATION AND FUNCTION IN A MANNER APPROVED BY THE SYSTEM MANUFACTURER. PROVIDE WRITTEN CERTIFICATION OF ALL TESTS. AA. EXISTING BUILDINGS AND CONSTRUCTION
- 1. THE CONTRACTOR IS CAUTIONED THAT WORK TO BE PERFORMED UNDER THIS CONTRACT IS TO BE ACCOMPLISHED IN AN EXISTING BUILDING. ALL SUCH WORK SHALL BE SCHEDULED AND ARRANGED TO BE DONE AT THE CONVENIENCE OF THE OWNER SO AS NOT TO INTERFERE WITH, DISRUPT, OR DISTURB ACTIVE SYSTEMS IN THE BUILDING. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE OWNER BEFORE PROCEEDING WITH WORK IN EXISTING BUILDINGS AND SHALL WORK IN EXISTING BUILDINGS ON SCHEDULE AS AGREED UPON WITH THE OWNER.
- 2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL DAMAGE TO THE EXISTING BUILDINGS, GROUNDS, WALKWAYS, PAVING, ETC., CAUSED BY THE WORK, THE CONTRACTOR AND/OR HIS PERSONNEL, AND/OR HIS EQUIPMENT IN THE ACCOMPLISHMENT OF THIS WORK. SUCH DAMAGES SHALL BE REPAIRED AND/OR REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER, TO FINISH EQUAL TO THAT FINISH PRIOR TO DAMAGE. THE OWNER'S REPRESENTATIVE SHALL BE THE JUDGE AS TO EQUAL FINISHES, ETC.
- BB. SUBMITTALS: SUBMITTALS SHALL INCLUDE PRODUCT DATA FOR EACH PANELBOARD, SAFETY SWITCH, ENCLOSED CIRCUIT BREAKER, LIGHTING FIXTURE, RACEWAY FITTINGS, WIRING DEVICES AND ACCESSORIES. INCLUDE DIMENSIONS AND MANUFACTURERS TECHNICAL DATA ON FEATURES, PERFORMANCE, ELECTRICAL CHARACTERISTICS, RATINGS AND FINISHES. IN LIEU OF SUBMITTALS, THE CONTRACTOR MAY PROVIDE A CERTIFICATION OF PRODUCT COMPLIANCE FOR COMMODITY MATERIALS SUCH AS CONDUIT, CONDUCTORS, BOXES, FITTINGS, HANGARS, HARDWARE, ETC. ATTESTING NAMED PRODUCTS COMPLY WITH THE DRAWINGS AND SPECIFICATIONS. COMPLIANCE FORM SHALL BE ACCEPTABLE TO THE ARCHITECT/ENGINEER. ALL SHOP DRAWINGS AND SUBMITTALS SHALL BE SUBMITTED AT THE SAME TIME. PARTIAL SHOP DRAWING AND SUBMITTALS WILL BE REJECTED AND NOT PROCESSED. MATERIALS AND EQUIPMENT WITH LONG LEAD TIMES OR OTHER MATERIALS AND EQUIPMENT REQUIRING SPECIAL HANDLING, IF IDENTIFIED AND REQUESTED BY THE CONTRACTOR, WILL BE PROCESSED SEPARATELY.
- CC. GUARANTEE: THE CONTRACTOR SHALL GUARANTEE THE MATERIALS AND WORKMANSHIP COVERED BY THESE DRAWINGS AND SPECIFICATIONS FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER. THE CONTRACTOR SHALL REPAIR AND/OR REPLACE ANY PARTS OF ANY SYSTEM THAT MAY PROVE TO BE DEFECTIVE AT NO ADDITIONAL COST TO THE OWNER WITHIN THE GUARANTEE PERIOD.

#### 260519 CONDUCTORS

- A. CONDUCTORS SHALL BE COPPER, MINIMUM SIZE #12 AWG. SIZES #10 AWG AND #12 AWG SHALL BE SOLID, #8 AWG AND LARGER, STRANDED. CONDUCTORS SHALL MEET THE LATEST REQUIREMENTS OF NEMA AND IPCEA AND SHALL BE THIRD PARTY TESTING AGENCY APPROVED.
- B. MC CABLE MAY BE USED FOR INTERIOR CONCEALED BRANCH CIRCUITS FOR RECEPTACLE AND LIGHTING CIRCUITS. MC CABLE SHALL BE OF STEEL OR ALUMINUM INTERLOCKED ARMOR CONSTRUCTION WITH COPPER CONDUCTORS AND AN INTERNAL GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR. CONDUCTOR CHARACTERISTICS, COLOR CODING, ETC. SHALL BE AS HEREIN SPECIFIED FOR BUILDING WIRE. PROVIDE MC CABLE WITH INDIVIDUAL NEUTRAL CONDUCTORS S REQUIRED. CONNECTORS SHALL BE ZINC PLATED MALLEABLE IRON OR STEEL BODY WITH LOCKNUT, DUAL CABLE GRIPPING SADDLE DESIGN WITH SET SCREW AND INSULATED THROAT. PRESSURE CAST (POT METAL) CONNECTORS ARE NOT PERMITTED.
- C. CONDUCTOR SIZING IS BASED ON 75 DEGREE C. COPPER NEC RATINGS, UNLESS NOTED OTHERWISE. THE CONTRACTOR SHALL VERIFY, PRIOR TO INSTALLATION OF CONDUCTORS OR CONDUIT FEEDING ANY EQUIPMENT, THE ELECTRICAL EQUIPMENT IS RATED FOR USE WITH 75 DEGREE C. WIRING. IF ANY EQUIPMENT IS RATED FOR USE WITH LESS THAN 75 DEGREE C. CONDUCTORS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER IMMEDIATELY FOR EVALUATION/CORRECTION.
- D. CONDUCTORS SHALL BE COLOR CODED THROUGHOUT, SIZES #10 AWG AND #12 AWG SHALL BE FACTORY CODED, SIZES #8 AWG AND LARGER MAY BE COLOR TAPED ON THE JOB. COLOR CODING SHALL BE: PHASE A — BLACK, PHASE B — RED, NEUTRAL - WHITE, GROUND - GREEN FOR 120/240 VOLT SYSTEMS.
- E. FEEDER CONDUCTORS SHALL BE CONTINUOUS WITHOUT SLICE FROM SOURCE TO LOAD, UNLESS SPLICING IS SPECIFICALLY APPROVED BY THE ARCHITCT/ENGINEER. KEEP BRANCH CIRCUIT CONDUCTOR SPLICES TO A MINIMUM. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE CONTINUOUS WITHOUT SPLICE BETWEEN JUNCTION, OUTLET, DEVICE BOXES, ETC., UNLESS NOTED OTHERWISE. NO SPLICING WILL BE PERMITTED IN PANELBOARD CABINETS, SAFETY SWITCHES, ETC. WHERE REQUIRED AND PERMITTED, INSTALL SPLICES AND TAPES THAT POSSESS EQUIVALENT OR BETTER MECHANICAL STRENGTH AND INSULATION
- RATINGS THAN CONDUCTORS BEING SPLICED. USE SPLICE AND TAP CONNECTORS COMPATIBLE WITH CONDUCTOR MATERIAL. F. INSTALL CONDUCTORS AT EACH OUTLET WITH AT LEAST 6 INCHES OF SLACK. CONNECT OUTLETS AND COMPONENTS TO WIRING AND TO GROUND AS INDICATED AND INSTRUCTED BY THE MANUFACTURER.
- G. DO NOT PULL CONDUCTORS UNTIL THE CONDUIT SYSTEM IS COMPLETE IN EVERY DETAIL. H. WHERE SIZE IS NOT SHOWN ON THE DRAWINGS, BRANCH CIRCUITS SHALL CONSIST OF #12 AWG OR #10 AWG MINIMUM PHASE, NEUTRAL AND EQUIPMENT GROUND CONDUCTORS IN 1/2" MINIMUM RACEWAY OR AS MC CABLE. REFER TO THE "MINIMUM" CONDUCTORS SIZE CHART" ON THE DRAWINGS AND INCREASE CONDUCTORS SIZES AS REQUIRED TO MAINTAIN A MAXIMUM OF 3% VOLTAGE DROP.
- COMMON NEUTRAL BRANCH CIRCUITS ARE NOT PERMITTED. PROVIDE SEPARATE, INDIVIDUAL NEUTRAL CONDUCTORS FOR ALL BRANCH CIRCUITS. J. MC CABLE SHALL BE SUPPORTED IN STRAIGHT LINES USING APPROVED SUPPORTING MEANS AND IN COMPLIANCE WITH THE NEC. DEDICATED SUPPORT WIRES MAY BE USED ABOVE FINISHED CEILINGS AND SHALL BE PAINTED RED PRIOR TO
- LIGHTING FIXTURES, CONDUIT, DUCTWORK, PIPING OR EQUIPMENT. K. DO NOT SPLICE BRANCH CIRCUIT HOMERUNS WITHOUT THE PERMISSION OF THE ARCHITECT/ENGINEER. HOMERUNS SHALL BE CONTINUOUS FROM THE LAST OUTLET BOX TO THE SERVING PANELBOARD.

INSTALLATION. DO NOT SUPPORT CABLE WITH CEILING GRID SUPPORTS WIRES. DO NOT DRAPE CABLE OVER CEILINGS,

- DO NOT COMBINE BRANCH CIRCUIT HOMERUNS UNLESS SPECIFICALLY INDICATED ON THE DRAWINGS.
- M. DO NOT CHANGE CIRCUITING SHOWN WITHOUT PERMISSION OF THE ARCHITECT/ENGINEER.

### N. TROUGH TAPS SHALL BE AT SWITCH/CIRCUIT BREAKER AMPACITY, UNLESS NOTED OTHERWISE.

#### 260526 GROUNDING

- A. THE EARTH ELECTRODE IS EXISTING AND SHALL REMAIN. B. ALL GROUNDING SHALL BE IN ACCORDANCE WITH ARTICLE 250 OF THE NEC. IN ADDITION, THE FOLLOWING REQUIREMENTS
- SHALL BE MET: 1. GROUNDING CONDUCTORS SHALL BE INSTALLED AS TO PERMIT THE SHORTEST AND MOST DIRECT PATH FROM EQUIPMENT TO GROUND. ALL GROUND CONNECTIONS TO GROUND CONDUCTORS SHALL BE ACCESSIBLE. 2. EQUIPMENT GROUND CONTINUITY SHALL BE MAINTAINED THROUGH FLEXIBLE METAL CONDUIT
- 3. ALL WIRING DEVICES EQUIPPED WITH GROUNDING CONNECTION SHALL BE SOLIDLY GROUNDED TO GROUND SYSTEM WITH GROUNDING CONDUCTORS.
- 4. THE FRAME OF ALL LIGHTING FIXTURES SHALL BE SECURELY GROUNDED TO THE EQUIPMENT GROUND SYSTEM WITH GROUNDING CONDUCTORS.
- 5. GROUNDING TYPE CONVENIENCE OUTLETS AND SWITCHES SHALL BE SOLIDLY GROUNDED TO EQUIPMENT GROUNDING SYSTEM WITH A GREEN COLORED INSULATED CONDUCTOR. ELECTRICAL CONNECTIONS SHALL BE CONTINUOUS FROM EQUIPMENT GROUND BUS IN PANELBOARD TO THE HEX NUT ON THE CONVENIENCE OUTLET OR SWITCH.
- 6. ALL CIRCUITS SHALL CONTAIN AN INSULATED, GREEN, COPPER GROUNDING CONDUCTOR, SIZED IN ACCORDANCE WITH THE NEC. GROUNDING CONDUCTORS SHALL BE CONNECTED TO EQUIPMENT GROUND BUS IN PANELBOARD AND SECURELY ATTACHED AND GROUNDED TO THE DEVICE OR ENCLOSURE AT THE OTHER END.
- 7. ALL EQUIPMENT ENCLOSURES, AND NON-CURRENT METALLIC PARTS OF ELECTRICAL EQUIPMENT, RACEWAY SYSTEMS, ETC., SHALL BE EFFECTIVELY AND ADEQUATELY BONDED TO GROUND.

- C. GROUNDING TYPE INSULATED BONDING BUSHINGS AND JUMPERS SHALL BE PROVIDED WHERE CONCENTRIC, ECCENTRIC OR OVER-SIZED KNOCKOUTS ARE ENCOUNTERED. THE JUMPERS SHALL BE SIZED PER THE NEC.
- D. ALL METALLIC RACEWAYS ENTERING OR LEAVING PANELBOARDS (BRANCH CIRCUITS LESS THAN 30 AMPERES IN LIGHTING AND APPLIANCE BRANCH CIRCUIT PANELBOARDS EXCEPTED), SHALL BE PROVIDED WITH INSULATED GROUNDING AND BONDING BUSHINGS AND EACH SEPARATE PIECE OF RACEWAY SHALL BE INDIVIDUALLY BONDED TO THE EQUIPMENT GROUND BUS OR METALLIC ENCLOSURE, AS APPLICABLE, AT EACH END BY MEANS OF COPPER CONDUCTOR SIZED IN ACCORDANCE WITH THE

#### 260529 SUPPORTING DEVICES

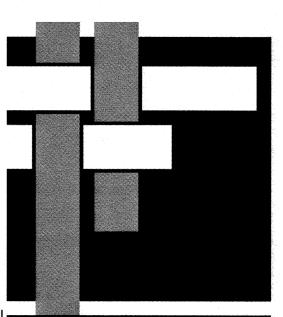
- A. PROVIDE MATERIALS, SIZES, AND TYPES OF ANCHORS, FASTENERS AND SUPPORTS TO CARRY THE LOADS OF EQUIPMENT AND CONDUIT. CONSIDER WEIGHT OF WIRE IN CONDUIT WHEN SELECTING PRODUCTS. PROVIDE ADEQUATE CORROSION RESISTANCE.
- B. ANCHORS AND FASTENERS:
- 1. CONCRETE STRUCTURAL ELEMENTS: USE EXPANSION ANCHORS.
- 2. STEEL STRUCTURAL ELEMENTS: USE BEAM CLAMPS. 3. CONCRETE SURFACES: USE SELF_DRILLING ANCHORS AND EXPANSION ANCHORS.
- 4. HOLLOW MASONRY, PLASTER, AND GYPSUM BOARD PARTITIONS: USE TOGGLE BOLTS. 5. SOLID MASONRY WALLS: USE EXPANSION ANCHORS.
- 6. SHEET METAL: USE SHEET METAL SCREWS OR BOLTS 7. WOOD ELEMENTS: USE WOOD SCREWS.
- C. INSTALL PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- PROVIDE ANCHORS, FASTENERS, AND SUPPORTS IN ACCORDANCE WITH NECA "STANDARD OF INSTALLATION".
- DO NOT FASTEN SUPPORTS TO PIPES, DUCTS, MECHANICAL EQUIPMENT, AND CONDUIT. F. DO NOT USE POWDER_ACTUATED ANCHORS.
- G. OBTAIN PERMISSION FROM ARCHITECT/ENGINEER BEFORE DRILLING OR CUTTING STRUCTURAL MEMBERS. H. FABRICATE SUPPORTS FROM STRUCTURAL STEEL OR STEEL CHANNEL. RIGIDLY WELD MEMBERS OR USE HEXAGON HEAD BOLTS TO PRESENT NEAT APPEARANCE WITH ADEQUATE STRENGTH AND RIGIDITY. USE SPRING LOCK WASHERS UNDER ALL NUTS.
- INSTALL SURFACE_MOUNTED CABINETS AND PANELBOARDS WITH MINIMUM OF FOUR ANCHORS. J. IN WET AND DAMP LOCATIONS USE STEEL CHANNEL SUPPORTS TO STAND CABINETS AND PANELBOARDS ONE INCH (25 MM)
- K. CONDUITS INSTALLED ON THE INTERIOR OF EXTERIOR BUILDING WALLS SHALL BE SPACED AWAY FROM THE WALL SURFACE A
- MINIMUM OF 1/4 INCH (65MM) USING "CLAMP-BACKS" OR STRUTS. L. USE SHEET METAL CHANNEL TO BRIDGE STUDS ABOVE AND BELOW CABINETS AND PANELBOARDS RECESSED IN HOLLOW PARTITIONS.

#### 260533 RACEWAYS AND FITTINGS

- A. RACEWAYS SHALL BE RIGID GALVANIZED STEEL CONDUIT, INTERMEDIATE METAL CONDUIT, ELECTRICAL METALLIC TUBING AND/OR SCHEDULE 40 PVC CONDUIT WITH APPROPRIATE FITTINGS. EMT FITTINGS SHALL BE HEX NUT STEEL COMPRESSION TYPE WITH INSULATED THROATS.
- B. SIZE: CONDUIT SHALL BE SIZED IN ACCORDANCE WITH THE LATEST EDITION OF THE NEC UNLESS SHOWN OTHERWISE, WITH MINIMUM CONDUIT SIZE BEING 1/2 INCH, EXCEPT HOMERUNS MINIMUM SIZE SHALL BE 3/4". FLEXIBLE METAL AND LIQUIDTIGHT FLEXIBLE METAL CONDUIT IN SIZE 1/2 INCH AND LARGER ARE ACCEPTABLE FOR MOTOR, APPLIANCE AND FIXTURE CONNECTIONS PROVIDED GREEN EQUIPMENT GROUND CONDUCTOR IS INSTALLED (SEE SECTION 260526) AND NEC IS FOLLOWED.
- C. EMT AND MC CABLE SHALL NOT BE INSTALLED: a. WHERE CABLE, TUBING, COUPLINGS, ELBOWS AND FITTINGS WOULD BE IN DIRECT CONTACT WITH THE EARTH. b. UNDERGROUND (IN/BELOW SLAB-ON-GRADE OR IN EARTH).
  - c. WHERE SUBJECT TO CORROSIVE INFLUENCE.
- d. WHERE SUBJECT TO PHYSICAL DAMAGE. EXTERIOR EXPOSED RACEWAYS AND INTERIOR EXPOSED RACEWAYS INSTALLED AT OR BELOW 8 FEET AFF/AFG SHALL BE RIGID GALVANIZED STEEL WITH CAST MALLEABLE BOXES AND FITTINGS. EMT MAY BE USED ABOVE 8 FEET AFF IN INTERIOR
- LOCATIONS. PVC MAY BE USED FOR UNDERGROUND WORK ONLY. E. FLEXIBLE METAL CONDUIT AND LIQUIDTIGHT FLEXIBLE METAL CONDUIT: UL APPROVED AND LABELED WITH HEX NUT MALLEABLE FITTINGS. ALL FLEXIBLE METAL CONDUIT INSTALLED AT OR BELOW 12 FEET AFF/AFG SHALL BE LIQUIDTIGHT.
- F. RACEWAY LAYOUTS ARE NOT INTENDED TO SHOW THE NUMBER OF FITTINGS, OR OTHER INSTALLATION DETAILS. G. RACEWAYS, BOXES, FITTINGS, ETC., SHALL BE SOLIDLY FASTENED TO MASONRY WITH LEAD ANCHORS AND MACHINE SCREWS OR TOGGLE BOLTS. RACEWAYS SHALL BE FASTENED TO STRUCTURAL STEEL WITH BEAM CLAMPS, CONDUIT HANGERS,
- TRAPEZE HANGERS, OR OTHER APPROVED DEVICES. H. ALL RACEWAYS AND CABLES SHALL BE CONCEALED EXCEPT THOSE SHOWN ON DRAWINGS TO BE EXPOSED. IF APPLICABLE, MATCH EXISTING RACEWAY INSTALLATION METHODS AND ROUTINGS AT OR NEAR EXISTING FACILITIES. INSTALL EXPOSED RACEWAYS PARALLEL TO OR AT RIGHT ANGLES TO NEARBY SURFACES OR STRUCTURAL MEMBERS. AND
- FOLLOW THE SURFACE CONTOURS AS MUCH AS POSSIBLE. NO DIAGONAL RUNS WILL BE ALLOWED. ALL CONDUITS SHALL BE RUN STRAIGHT AND TRUE. RUN PARALLEL OR BANKED RACEWAYS TOGETHER ON COMMON SUPPORTS WHERE PRACTICAL. MAKE BENDS IN PARALLEL OR BANKED RUNS FROM SAME CENTERLINE TO MAKE BENDS PARALLEL.
- J. RACEWAYS PENETRATING CEILINGS OR WALLS SHALL BE PROPERLY SEALED SMOKETIGHT. K. RACEWAYS PENETRATING RATED CEILING OR WALL ASSEMBLIES SHALL BE PROPERLY SEALED IN ACCORDANCE WITH THE CORRESPONDING UNDERWRITERS LABORATORIES (OR OTHER APPROVED THIRD PARTY TESTING AGENCY) APPROVED AND LISTED FIRESTOPPING MATERIALS AND MANUFACTURER APPROVED INSTALLATION TECHNIQUES COMPLYING WITH ALL APPLICABLE
- L. SEAL ALL CONDUIT OPENINGS THROUGH EXTERIOR BUILDING WALLS WATERTIGHT.

#### 260534 BOXES

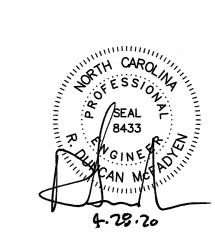
- A. JUNCTION. SWITCH. RECEPTACLE AND OUTLET BOXES FOR INTERIOR CONCEALED USE IN DRY LOCATIONS SHALL BE ZINC COATED OR CADMIUM PLATED SHEET STEEL, 4" SQUARE AND 2-1/8" DEEP, UNLESS OTHERWISE INDICATED ON THE CONTRACT, EXCEPT SINGLE WIRING DEVICE BOXES MAY BE SINGLE GANG. SMALLER AND SHALLOWER OUTLET BOXES WILL BE PERMITTED ONLY BY SPECIAL PERMISSION OF THE ARCHITECT/ENGINEER WHERE SUCH BOXES ARE NECESSARY DUE TO STRUCTURAL CONDITIONS ENCOUNTERED. WHERE LARGER JUNCTION BOXES ARE REQUIRED, THEY SHALL BE FABRICATED FROM NO. 10, 12, 14 OR 16 GAUGE SHEET STEEL AS REQUIRED BY THE UNDERWRITER'S LABORATORIES, INC., AND GALVANIZED AFTER FABRICATION.
- B. INTERIOR EXPOSED JUNCTION, SWITCH, RECEPTACLE AND OUTLET BOXES INSTALLED AT OR BELOW 8 FEET AFF/AFG SHALL BE
- CAST MALLEABLE TYPE WITH HUBS AND CAST, GASKETED PLATES. C. EXTERIOR EXPOSED JUNCTION, SWITCH, RECEPTACLE AND OUTLET BOXES SHALL BE CAST MALLEABLE TYPE WITH HUBS AND CAST, GASKETED PLATES.
- D. ALL JUNCTION BOXES SHALL HAVE SCREW FASTENED COVERS. OUTLET BOXES SHALL BE PROVIDED WITH EXTENSION PLASTER RINGS WHERE REQUIRED BY STRUCTURAL AND FINISH CONDITIONS. E. CONDUIT TERMINATING IN PRESSED STEEL BOXES SHALL HAVE DOUBLE LOCKNUTS AND INSULATED BUSHINGS. CONDUITS
- TERMINATING IN GASKETED ENCLOSURES SHALL BE TERMINATED WITH GROUNDING TYPE CONDUIT HUBS. F. DEVICE BOXES SHOWN BACK-TO-BACK SHALL BE OFFSET A MINIMUM OF TWELVE (12) INCHES TO REDUCE SOUND
- TRANSMISSION BETWEEN ROOMS. G. BOXES INSTALLED IN CONCEALED LOCATIONS SHALL BE SET FLUSH WITH THE FINISHED SURFACES AND SHALL BE PROVIDED
- WITH EXTENSION RINGS WHERE REQUIRED. BOXES SHALL BE RIGIDLY INSTALLED. H. USE FLUSH MOUNTING OUTLET BOX IN FINISHED AREAS. USE STAMPED STEEL BRIDGES, CADDY RBS SERIES, RACO 9001 OR COOPER B-LINE BB8-16 BOX MOUNTING BRACKETS TO SUPPORT FLUSH MOUNTING OUTLET BOXES BETWEEN STUDS. BOXES
- WITH SUPPORT FLANGES ARE NOT ACCEPTABLE. SET WALL MOUNTED BOXES AT ELEVATIONS TO ACCOMMODATE MOUNTING HEIGHTS INDICATED AND SPECIFIED IN SECTION FOR OUTLET DEVICE. BOXES ARE SHOWN ON DRAWINGS IN APPROXIMATE LOCATIONS UNLESS DIMENSIONED. ADJUST BOX LOCATION UP TO 10 FEET (3 M) IF REQUIRED TO ACCOMMODATE INTENDED PURPOSE. INSTALL PULL BOXES AND JUNCTION BOXES ABOVE ACCESSIBLE CEILINGS AND IN UNFINISHED AREAS ONLY, OR PROVIDE ACCESS PANELS AS REQUIRED. COORDINATE MOUNTING HEIGHTS AND LOCATIONS OF OUTLETS MOUNTED ABOVE COUNTERS, BENCHES, AND BACKSPLASHES. J. INSTALL BOXES TO PRESERVE FIRE RESISTANCE RATING OF PARTITIONS AND OTHER ELEMENTS, USING APPROVED MATERIALS AND METHODS.



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## Hurricane Florence Repairs **New Hanover** County Fire Station 12

Construction Drawings 23 April, 2020

Wilmington, NC

3805 US-421

Revisions:

Electrical

ATTACHMENT I

#### **Electrical Specifications - Continued**

#### 260553 IDENTIFICATION

- A. WIRE MARKERS: PROVIDE SPLIT SLEEVE TYPE WIRE MARKERS OR APPROVED EQUIVALENT ON EACH CONDUCTOR AT PANELBOARD GUTTERS, PULL BOXES, OUTLET AND JUNCTION BOXES, AND EACH LOAD CONNECTION. LEGEND: (1) POWER AND LIGHTING CIRCUITS: BRANCH CIRCUIT OR FEEDER NUMBER AS INDICATED ON DRAWINGS. (2) CONTROL CIRCUITS: CONTROL WIRE NUMBER AS INDICATED ON SCHEMATIC AND INTERCONNECTION DIAGRAMS ON DRAWINGS.
- B. IDENTIFICATION NAMEPLATES: FURNISH AND INSTALL ENGRAVED LAMINATED PHENOLIC NAMEPLATES FOR ALL ELECTRICAL EQUIPMENT SUPPLIED FOR IDENTIFICATION OF EQUIPMENT CONTROLLED, SERVED, PHASE, VOLTAGE, ETC. NAMEPLATES SHALL BE SECURELY ATTACHED TO EQUIPMENT WITH METAL SCREWS OR RIVETS AND SHALL IDENTIFY BY NAME THE EQUIPMENT CONTROLLED, ATTACHED, ETC. SEE DRAWINGS FOR DETAILS. INSTALL NAMEPLATE PARALLEL TO EQUIPMENT
- LINES. EMBOSSED, SELF-ADHESIVE PLASTIC TAPE IS NOT ACCEPTABLE. C. RECEPTACLE CIRCUIT IDENTIFICATION: PROVIDE ADHESIVE BACKED, LAMINATED PLASTIC RECEPTACLE DEVICE PLATE LABELS IDENTIFYING THE CIRCUIT FEEDING THE DEVICE. LABELS SHALL BE LABEL MACHINE PRINTED, BLACK LETTERING ON A CLEAR BACKGROUND, TO INDICATE PANEL AND CIRCUIT NUMBER FEEDING THE DEVICE AND SHALL BE CASIO, BROTHER. T&B OR APPROVED EQUAL. LEGIBLY PRINT CIRCUIT NUMBER ON FLAG TYPE PLASTIC CABLE TIE WITH A PERMANENT MARKER (SHARPIE, ETC.) AND ATTACH TO CONDUCTORS IN OUTLET BOX. FLAG SHALL BE READILY VISIBLE UPON REMOVAL OF DEVICE PLATE. ON EACH RECEPTACLE DEVICE PLATE APPLY CIRCUIT LABEL CENTERED ON THE LOWER PORTION BELOW THE RECEPTACLE, PARALLEL TO THE LOWER SURFACE. LABELS SHALL INDICATE PANEL AND CIRCUIT NUMBER FEEDING THE
- D. NEATLY AND LEGIBLY MARK CONDUITS AT JUNCTION BOXES ABOVE ACCESSIBLE CEILINGS WITH THE PANELBOARD AND CIRCUIT NUMBERS OF THE CIRCUITS CONTAINED IN THE RACEWAY USING A PERMANENT BLACK BOLD MARKING PEN.

#### 262416 PANELBOARDS

- A. NEMA PB1, CIRCUIT BREAKER TYPE, LIGHTING AND APPLIANCE BRANCH CIRCUIT PANELBOARD WITH COPPER PHASE BUS. 100% COPPER GROUND AND NEUTRALS BUSES AND RATINGS AS INDICATED. CIRCUIT BREAKERS: NEMA AB 1. BOLT-ON TYPE. ENCLOSURE: NEMA PB 1, TYPE 1 OR TYPE 3R. CABINET BOX: 6 INCHES (153 MM) DEEP, 20 INCHES (508 MM) WIDE FOR 240 VOLT AND LESS PANELBOARDS. CABINET FRONT: FLUSH AND SURFACE CABINET FRONT DOOR-IN-DOOR TYPE WITH CONCEALED TRIM CLAMPS, CONCEALED HINGE, METAL DIRECTORY FRAME, AND FLUSH LOCK ALL KEYED ALIKE. FINISH IN MANUFACTURER'S STANDARD GRAY ENAMEL.
- B. PANELBOARDS SHALL BE MANUFACTURED BY CUTLER HAMMER, GENERAL ELECTRIC, SIEMENS OR SQUARE D. PROVIDE TYPED CIRCUIT DIRECTORY FOR EACH BRANCH CIRCUIT PANELBOARD. FINAL TYPED PANELBOARD DIRECTORIES INSTALLED IN THE PANELBOARD DOOR POCKET SHALL INCLUDE FINAL ACTUAL ROOM NAMES AND NUMBERS IN ADDITION TO THE GENERAL DESCRIPTION SHOWN ON THE PANEL SCHEDULES ON THE DRAWINGS. REVISE DIRECTORY TO REFLECT CIRCUITING CHANGES REQUIRED TO BALANCE PHASE LOADS. PROVIDE SPARE CONDUITS OUT OF EACH RECESSED PANELBOARD TO AN ACCESSIBLE LOCATION ABOVE CEILING AND BELOW FLOOR. MINIMUM SPARE CONDUITS: 5 EMPTY 1 INCH (DN27). IDENTIFY EACH AS SPARE. GROUND AND BOND PANELBOARD ENCLOSURE ACCORDING TO SECTION 260553.

#### 262416 EXISTING PANELBOARDS

- CIRCUIT BREAKERS INDICATED TO BE INSTALLED IN EXISTING PANELBOARDS SHALL BE MOLDED CASE, UL LISTED AND SHALL BE RATED AS SHOWN ON THE DRAWINGS. PROVIDE ALL NECESSARY MOUNTING HARDWARE AND ACCESSORIES AS REQUIRED TO INSTALL NEW CIRCUIT BREAKERS. NEW CIRCUIT BREAKERS SHALL MATCH EXISTING TYPES INSTALLED AND BE RATED CONSISTENT WITH THE EXISTING EQUIPMENT TO MAINTAIN EQUIPMENT RATINGS. ACCESSORIES SHALL BE PROVIDED AS NOTED OR REQUIRED AND SHALL BE UL LISTED AND FIELD INSTALLABLE.
- B. PROVIDE REVISED TYPED CIRCUIT DIRECTORY FOR EACH BRANCH CIRCUIT PANELBOARD MODIFIED BY THIS CONSTRUCTION. FINAL TYPED PANELBOARD DIRECTORIES INSTALLED IN THE PANELBOARD DOOR POCKET SHALL INCLUDE FINAL ACTUAL ROOM NAMES AND NUMBERS IN ADDITION TO THE GENERAL DESCRIPTION SHOWN ON THE PANEL SCHEDULES ON THE DRAWINGS. REVISE DIRECTORY TO REFLECT CIRCUITING CHANGES REQUIRED TO BALANCE PHASE LOADS.

- A. PROVIDE HEAVY DUTY INDUSTRIAL SPECIFICATION GRADE RECEPTACLES AND SWITCHES. ALL DEVICES SHALL BE RATED 20 AMPERES. HUBBELL HBL 5362 AND HBL 1221/2/3/4, PASS AND SEYMOUR 5362A AND PS20AC1/2/3/4, OR LEVITON
- 5362 AND 1221/2/3/4. B. PROVIDE SPECIFICATION GRADE GRAY COMBINATION USB CHARGER RECEPTACLES AS INDICATED. ALL DEVICES SHALL BE RATED 20 AMPERES. HUBBELL USB20AC5W OR EQUAL BY PASS AND SEYMOUR OR LEVITON.
- C. MATCH DEVICE AND PLATE MATERIAL/COLOR TO EXISTING INSTALLED DEVICES.

#### 262727 OCCUPANCY SENSORS

- A. OCCUPANCY SENSORS SHALL UTILIZE DUAL TECHNOLOGY SENSING. ACCEPTABLE TECHNOLOGY IS PASSIVE INFRARED (PIR). ULTRASONIC AND MICROPHONIC. DUAL TECHNOLOGY IS REQUIRED UTILIZING PIR AND ONE OF THE OTHER TECHNOLOGIES. SENSORS SHALL AUTOMATICALLY ADJUST TIME DELAYS AND SENSITIVITY BASED ON THE ACTIVITY LEVEL IN THE SPACE, ALL SWITCHES SHALL BE APPROVED BY A THIRD PARTY AGENCY, APPROVED FOR THE VOLTAGE AND CURRENT INDICATED. SENSORS SHALL BE COMPATIBLE WITH ALL LOAD TYPES AND REQUIRE NO MINIMUM LOAD.
- B. WALL SWITCH LINE VOLTAGE SENSORS FOR SMALL AREAS: LINE VOLTAGE, SINGLE GANG, WALL MOUNTED OCCUPANCY SENSOR SWITCH WITH ONE OVERRIDE SWITCH. SENSOR SHALL RECESS INTO SINGLE GANG SWITCH BOX AND FIT A STANDARD GFI RECEPTACLE PLATE OPENING. SWITCHES SHALL BE COMPATIBLE WITH STANDARD THREE AND FOUR-WAY TOGGLE SWITCHES. PROVIDE HARD LENS SWITCHES IN STORAGE ROOMS AND OTHER LOCATION SUBJECT TO ABUSE. ADJUSTABLE TIME DELAY OF 20 MINUTES, 180 DEGREE FIELD OF VIEW, MINIMUM COVERAGE AREA OF 900 SF. VOLTAGE: 120-277 VOLTS AC, MINIMUM LOAD RATING 800 WATTS AT 120 VAC, 1200 WATTS AT 277 VAC. LUTRON, SENSOR SWITCH
- CEILING MOUNTED LOW VOLTAGE SENSORS FOR LARGE AREAS: LOW VOLTAGE, RECESS CEILING MOUNTED OCCUPANCY SENSOR SWITCH SHALL OPERATE IN CONJUNCTION WITH A LINE VOLTAGE POWER PACK TO CONTROL THE CONNECTED LIGHTING LOADS. SENSORS SHALL OPERATE ON A CLASS 2, THREE-CONDUCTOR CABLE SYSTEM. MULTIPLE SENSORS SHALL BE CONNECTABLE TO A SINGLE POWER PACK. SENSOR SHALL RECESS INTO A TWO GANG OUTLET BOX. ADJUSTABLE TIME DELAY OF 1 - 15 MINUTES. POWER PACKS SHALL BE RATED 20A AT 120-277 VOLTS AND SHALL BE COMPATIBLE WITH ALL LOAD TYPES. THEY SHALL HAVE THE CAPACITY TO POWER ADDITIONAL REMOTE HEADS OR ADDITIONAL RELAYS. LUTRON, SENSOR SWITCH OR WATTSTOPPER.

#### 262816 SAFETY SWITCHES

- . NEMA KS 1, TYPE HD WITH EXTERNALLY OPERABLE HANDLE INTERLOCKED (DEFEATABLE) TO PREVENT OPENING FRONT COVER WITH SWITCH IN ON POSITION, ENCLOSED LOAD INTERRUPTER KNIFE SWITCH. MÉCHANISMS SHALL BE NON-TEASIBLE. POSITIVE, QUICK MAKE-QUICK BREAK TYPE. HANDLE LOCKABLE IN ON OR OFF POSITION. SWITCHES SHALL HAVE HANDLES WHOSE POSITIONS ARE EASILY RECOGNIZABLE IN THE ON OR OFF POSITION. FUSE CLIPS SHALL BE DESIGNED TO ACCOMMODATE NEMA FU1, CLASS R FUSES.
- B. PROVIDE ACCESSORIES REQUIRED BY THEIR INSTALLATION. PROVIDE AUXILIARY SWITCH CONTACTS AS REQUIRED BY OTHER SYSTEMS. COORDINATE WITH OTHER DIVISIONS AS REQUIRED.
- APPLY ADHESIVE TAG ON INSIDE DOOR OF EACH FUSED SWITCH INDICATING NEMA FUSE CLASS AND SIZE INSTALLED. D. SAFETY SWITCHES SHALL BE MANUFACTURED BY CUTLER HAMMER, GENERAL ELECTRIC, SIEMENS OR SQUARE D.

#### 265100 LIGHTING FIXTURES

- A. LIGHTING FIXTURE TYPES SHALL BE FURNISHED AS REQUIRED BY THE LIGHTING FIXTURE SCHEDULE AS INDICATED ON THE DRAWINGS.
- B. ALL FIXTURES SHALL BE INSTALLED COMPLETE WITH LAMPS AND/OR LIGHT ENGINES AS INDICATED ON THE DRAWINGS. C. LED SOURCES SHALL BE HIGH INTENSITY WHITE, SINGLE COLOR OR AS NOTED. PROVIDE WHITE LEDS IN THE COLOR TEMPERATURE(S) SPECIFIED. THE COLOR TEMPERATURE IN ALL FIXTURES OF THE SAME TYPE SHALL BE CONSISTENT AND REMAIN SO OVER THE LIFE OF THE FIXTURE. COLOR CONSISTENCY BETWEEN FIXTURES SHALL CONFORM TO ANSI NEMA ANSLG STANDARD C78.377-2008. THE CONTRACTOR SHALL REPLACE FIXTURES EXHIBITING INCONSISTENT COLOR. MINIMUM LUMEN MAINTENANCE SHALL BE 70% OF RATED INITIAL LUMEN OUTPUT AT 50,000 HOURS OF OPERATION. MEASUREMENT OF LUMEN MAINTENANCE SHALL BE IN ACCORDANCE WITH IES LM-80-08. THE LUMINAIRE MANUFACTURER SHALL PROVIDE A MINIMUM OF FIVE YEAR WARRANTY FROM THE DATE OF FINAL ACCEPTANCE AGAINST PREMATURE FAILURE, DISCOLORATION AND DEFECTS. THE COLOR OR COLOR TEMPERATURE OF REPLACEMENT LEDS SHALL MATCH THOSE OF THE SAME LEDS TYPES THAT REMAIN IN OPERATION. THE MINIMUM COLOR RENDERING INDEX OF WHITE LEDS SHALL BE 80.
- ELECTRICAL AND PHOTOMETRIC PERFORMANCE OF LED ASSEMBLIES AND LUMINAIRES SHALL CONFORM TO IES LM 79-08. D. LENSES SHALL BE CLEAR VIRGIN ACRYLIC MATERIAL WITH UNIFORM 3/16" SQUARE BASED FEMALE CONE PRISMS ALIGNED 45° TO THE LENGTH AND WIDTH OF THE LENS PANEL. MINIMUM PRISM DEPTH SHALL BE 0.080" WITH A NOMINAL PANEL
- LED DRIVERS: PROVIDE HIGH FREQUENCY ELECTRONIC TYPE WITH SECONDARY VOLTAGES MATCHING THOSE REQUIRED BY THE LED SOURCE THEY OPERATE. DRIVERS SHALL OPERATE WITHIN A OF — 140F AMBIENT TEMPERATURE RANGE AND SHALL COMPLY WITH FCC CLASS A STANDARDS FOR EMI. MINIMUM DRIVER SPECIFICATIONS:
- POWER FACTOR > 90% EFFICIENCY ≥ 90%.
- CURRENT CREST FACTOR 1.5 MINIMUM.
- TOTAL HARMONIC DISTORTION < 20%. RATED LIFE - 50,000 HOURS.
- MANUFACTURERS SHALL HAVE BEEN MANUFACTURING LED DRIVERS FOR AT LEAST TEN YEARS WITH A DOCUMENTABLE LOW FAILURE RATE. THE CONTRACTOR SHALL PROVIDE A WRITTEN WARRANTY AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP, INCLUDING REPLACEMENT FOR FIVE YEARS FROM THE DATE OF FINAL ACCEPTANCE.
- RELAMP LUMINAIRES THAT HAVE FAILED LAMPS AT SUBSTANTIAL COMPLETION. REPLACE LED MODULES IN WHICH MORE THAN 5% OF THE LEDS HAVE FAILED LAMPS AT FINAL ACCEPTANCE OF THE WORK. COMPATIBLE MOUNTING ATTACHMENTS AND TRIM. PROVIDE ALL ACCESSORIES, OPTIONS AND/OR FIELD FABRICATED
- G. THE CONTRACTOR SHALL VERIFY THE TYPE CEILINGS OR WALLS THE FIXTURE IS TO BE USED WITH AND SHALL PROVIDE SHROUDS OR ADDITIONAL MATERIALS REQUIRED COMPLYING WITH ALL APPLICABLE CODES TO MAINTAIN THE CEILING FIRE RATING AS REQUIRED BY REGULATORY AUTHORITIES.

#### 265200 EMERGENCY AND EXIT LIGHTING FIXTURES

- A. EMERGENCY AND EXIT LIGHTING FIXTURES SHALL BE SELF_CONTAINED UNITS AUTOMATICALLY ACTIVATED WHEN THE LINE VOLTAGE DROPS BELOW 80% AND SHALL COMPLY WITH UL 924, NFPA 101 - LIFE SAFETY CODE, NFPA 70 - NEC AND THE NCSBC. LIGHTING FIXTURE TYPES SHALL BE FURNISHED AS REQUIRED BY THE LIGHTING FIXTURE SCHEDULE AS INDICATED ON THE DRAWINGS. CATALOG NUMBERS ARE PROVIDED AS A GUIDE TO THE DESIGN AND QUALITY OF FIXTURE DESIRED. EQUIVALENT DESIGNS AND EQUAL QUALITY FIXTURES OF OTHER MANUFACTURERS LISTED WILL BE ACCEPTABLE UPON APPROVAL OF THE ARCHITECT/ENGINEER. THE CONTRACTOR SHALL VERIFY FROM THE CONTRACT DRAWINGS THE TYPE CEILINGS OR WALLS THE FIXTURE IS TO BE USED WITH AND SHALL PROVIDE COMPATIBLE MOUNTING ATTACHMENTS AND TRIM. PROVIDE ALL ACCESSORIES OR ADDITIONAL MATERIALS REQUIRED TO MAINTAIN THE CEILING FIRE RATING AS
- REQUIRED BY REGULATORY AUTHORITIES. B. ALL FIXTURES SHALL BE COMPLETELY SELF-CONTAINED, PROVIDED WITH MAINTENANCE FREE BATTERY, AUTOMATIC CHARGER AND OTHER FEATURES. THEY SHALL BE INSTALLED COMPLETE WITH LAMPS, BATTERIES, ETC. WHICH SHALL BE NEW AND UNUSED AT TIME OF FINAL INSPECTION OF THE PROJECT FOR ACCEPTANCE.
- C. ALL FIXTURES SHALL HAVE SELF-DIAGNOSTICS. ELECTRONICS SHALL AUTOMATICALLY, OR MANUALLY UPON DEMAND, CONDUCT SELF TEST ON BATTERY CONDITION (INCLUDING ACTUAL DISCHARGE), CHARGER, LAMPS AND INTERNAL WIRING INTEGRITY PER NEC AND NFPA AT PRESCRIBED INTERVALS. A PILOT LIGHT SHALL INDICATE THE UNIT IS CONNECTED TO AC POWER. PROVIDE TEST SWITCH AND VISUAL INDICATOR(S) OF UNIT OPERATIONAL CONDITION INCLUDING CHARGER STATUS, READY AND SERVICE CODE. TEST SWITCH SHALL SIMULATE OPERATION OF THE UNIT UPON LOSS OF AC POWER BY ENERGIZING LAMPS FROM THE BATTERY, AND ALSO EXERCISE THE TRANSFER RELAY.
- WARRANTY: EACH UNIT SHALL BE WARRANTED FOR THREE YEARS. THE BATTERY SHALL HAVE AN ADDITIONAL TWO MORE YEARS PRO-RATED WARRANTY. WARRANTY SHALL DATE FROM THE DATE OF FINAL PROJECT ACCEPTANCE AND BE INCLUDED IN THE CONTRACT DOCUMENT.

#### 271500 DATA AND VOICE CABLING

- A. TELEPHONE AND DATA OUTLETS SHALL BE PROVIDED AS SHOWN AND SHALL CONSIST OF DUAL RJ-45 JACKS IN A DEVICE PLATE INSTALLED ON A 4" SQUARE X 2 1/8" DEEP BOX WITH 1" CONDUIT TO THE ACCESSIBLE CEILING CAVITY. FOR EACH OUTLET, PROVIDE TWO CAT 6 CABLES TO THE TELEPHONE/DATA CLOSET, LOCATION AS SHOWN ON THE DRAWINGS. PROVIDE J HOOK CABLE SUPPORTS AT 4' MAXIMUM INTERVALS ABOVE ACCESSIBLE CEILINGS AND IN RACEWAYS AS SHOWN ACROSS THE APPARATUS BAYS TO THE TELEPHONE/DATA CLOSET. COORDINATE EXACT CONNECTION DETAILS WITH THE OWNER. TERMINATE ALL CABLES AND TEST TO CAT 6 PERFORMANCE CRITERIA. LEAVE SUFFICIENT CABLE SERVICE LOOPS FOR CONNECTION TO EQUIPMENT BY THE OWNER. LABEL ALL CABLES AND JACKS TO CONFORM TO THE OWNER'S EXISTING LABELING SCHEME AND AS REQUIRED BY THE OWNER. PROVIDE WRITTEN TEST RESULTS TO THE ARCHITECT/ENGINEER. INSTALLATION PERSONNEL SHALL BE BISCI CERTIFIED FOR THE WORK PERFORMED.
- PROVIDE A FOUR POST, FLOOR MOUNTED, BAKED-POLYESTER POWDER COAT PAINTED STEEL, 19" EQUIPMENT RACK WITH THREADED RAILS DESIGNED FOR MOUNTING TELECOMMUNICATIONS EQUIPMENT. WIDTH IS COMPATIBLE WITH EIA/ECIA 310-E, 19-INCH (482.6-MM) EQUIPMENT MOUNTING WITH AN OPENING OF 17.72-INCHES BETWEEN RAILS. FRAMES SHALL BE MODULAR UNITS DESIGNED FOR TELECOMMUNICATIONS TERMINAL SUPPORT AND COORDINATED WITH DIMENSIONS OF UNITS TO BE SUPPORTED. OVERALL HEIGHT 84 INCHES, OVERALL DEPTH 29 INCHES, PRE-TAPPED WITH 10-32 THREADING. PROVIDE WITH VERTICAL AND HORIZONTAL CABLE MANAGEMENT CHANNELS, TOP AND BOTTOM CABLE TROUGHS, GROUNDING LUG, AND A RACK MOUNTED 20A, 120V POWER STRIP WITH 12 5-20R RECEPTACLES, 6' CORD AND PLUG. BASE SHALL HAVE A MINIMUM OF FOUR MOUNTING HOLES FOR PERMANENT ATTACHMENT TO FLOOR. RACK SHALL BE SELF-LEVELING.

E. SEE "NEW HANOVER COUNTY TELECOMMUNICATIONS CABLING GUIDELINES" FOR ADDITIONAL REQUIREMENTS.

C. MATCH JACKS AND PLATES MATERIAL/COLOR TO EXISTING INSTALLED DEVICES. D. PATCH PANELS WILL BE PROVIDED BY THE OWNER.



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## Hurricane Florence Repairs **New Hanover** County Fire Station 12

3805 US-421 Wilmington, NC

Construction Drawings 23 April, 2020

Revisions:

Electrical Specifications

ATTACHMENT

### **New Hanover County Telecommunications Cabling Guidelines**

THIS DOCUMENT HAS BEEN PREPARED BY NEW HANOVER COUNTY (NHC) WITH THE SPECIFIC PURPOSE OF SETTING STANDARDS FOR STRUCTURED CABLE PLANTS IN SUPPORT OF LOCAL AREA NETWORKS (LAN) AND VOICE CONNECTIVITY THAT WILL FUNCTION AS

- ACCOMMODATE THE FUNCTIONAL REQUIREMENTS OF PRESENT AND FUTURE INFORMATION SERVICES.
- SUPPORT A MULTI-PRODUCT AND MULTI-VENDOR ENVIRONMENT.
- BUILDING OCCUPANTS. ENSURE UNIFORMITY OF STRUCTURED WIRING AND HARDWARE INFRASTRUCTURE INSTALLATIONS IN ALL NHC FACILITIES. THE PRIMARY FOCUS OF THIS DOCUMENT IS TO DEFINE THE STANDARDS FOR MATERIAL, INFRASTRUCTURE, DESIGN, INSTALLATION,

· FACILITATE THE PLANNING AND INSTALLATION OF CABLING SYSTEMS THAT WILL SUPPORT THE DIVERSE COMMUNICATION NEEDS OF

### AND CERTIFICATION WITH RESPECT TO STRUCTURED CABLING SYSTEMS FOR NHC FACILITIES. THE SCOPE OF WORK FOR THE TELECOMMUNICATIONS CABLING CONTRACTOR SHALL BE TO FURNISH, INSTALL, TERMINATE, TEST AND

WARRANTY THE FOLLOWING MATERIALS IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS, PERFORMANCE AND INSTALLATION REQUIREMENTS CONTAINED HEREIN AND IN THE DRAWINGS AND OTHERS THAT MAY BE APPLICABLE, WHICH ARE AVAILABLE ON SITE FROM THE OWNER, ARCHITECT AND GENERAL CONTRACTOR (GC). THIS BODY OF WORK CONSTITUTES THE BACKBONE AND LATERAL/LOCAL DISTRIBUTION WORK FOR LAN AND TELEPHONE CONNECTIVITY.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE JOB TO PROVIDE ALL THE MATERIALS AND LABOR TO FURNISH, INSTALL, TEST AND CERTIFY A COMPLETE AND OPERATIONAL SYSTEM, EVEN IF NOT EXPLICITLY SPECIFIED HEREIN.

TYPICAL STRUCTURED CABLING SYSTEMS INCLUDE THE FOLLOWING ELEMENTS:

#### HORIZONTAL CABLE.

- HORIZONTAL CROSS—CONNECTS
- TRANSITION POINT (OPTIONAL). MAIN CROSS-CONNECT (MC).
- INTERMEDIATE CROSS-CONNECT.
- BACKBONE CABLING, INTRA AND INTER.
- WORKSTATION LOCATIONS OR INFORMATION MANAGEMENT OUTLETS (IMO).
- REMOTE WIRING CLOSET (RWC).
- MAIN DISTRIBUTION FRAME (MDF). GROUNDING

THE OBJECTIVE OF THIS NETWORK APPROACH IS TO PROVIDE NHC WITH A STANDARDIZED, COST-EFFECTIVE CABLE PLANT INFRASTRUCTURE THAT WILL ACCOMMODATE PRESENT AND FUTURE VOICE, VIDEO, AND DATA REQUIREMENTS. WORKSTATION CABLING INFRASTRUCTURE SHALL SUPPORT BANDWIDTH DEMANDS FROM 100 MEGABITS PER SECOND (MBPS) TO GIGABIT SPEEDS. BACKBONE CABLE INFRASTRUCTURE SHALL SUPPORT BANDWIDTH DEMANDS FROM GIGABIT SPEEDS AND BEYOND. THE INSTALLATION OF THE CABLE PLANT INFRASTRUCTURE SHALL COMPLY WITH LOCAL CODES, AS WELL AS, INDUSTRY AND FEDERAL STANDARDS.

#### STRUCTURED CABLE PLANT DESIGN:

THE NETWORK CABLE PLANT SHALL UTILIZE THE FOLLOWING CABLE DISTRIBUTION METHODS TO SUPPORT CONNECTIVITY THROUGHOUT

- · HORIZONTAL WORKSTATION CABLING, WHICH WILL CONNECT THE USER WORKSTATION, OR INFORMATION MANAGEMENT OUTLET (IMO) TO THE NEAREST REMOTE WIRING CLOSET (RWC).
- · WHERE APPROPRIATE, INTRA AND INTER-BUILDING COPPER BACKBONE CABLE, WHICH PROVIDES CONNECTIVITY BETWEEN WIRING CENTERS AND THE MAIN DISTRIBUTION FRAME (MDF.)
- WORK ZONE DISTRIBUTION CABLING FOR OPEN OFFICE SPACE. FIBER OPTIC INTRA AND INTER-BUILDING BACKBONE CABLE, WHICH ALSO PROVIDES CONNECTIVITY BETWEEN WIRING CENTERS AND THE MDF.

#### HORIZONTAL WORKSTATION CABLING:

ALL END-USER WORKSTATION LOCATIONS. WHETHER OCCUPIED OR VACANT. SHALL BE CABLED TO THE NEAREST WIRING CENTER. ALSO, STORAGE ROOMS, CONFERENCE ROOMS AND SIMILAR SPACE NOT DESIGNATED AS OFFICES SHALL BE CABLED TO ALLOW FOR OFFICE EXPANSION, AND EQUIPMENT AS NEEDED.

TO COMPLY WITH ANSI/TIA/EIA-568-B.1 SPECIFICATION DISTANCE LIMITS, THE CABLE RUN FROM ANY USER WORKSTATION LOCATION TO THE NEAREST WIRING CENTER SHALL NOT EXCEED 100 METERS (328 FEET). THE ACTUAL LENGTH OF A CABLE RUN IS DEFINED AS THE TOTAL COMBINED LENGTH OF THE STATION CORD, WORKSTATION CABLE, AND PATCH-PANEL CABLE. WHEN PLANNING OR DESIGNING OFFICE SPACE THE COMMUNICATIONS CLOSETS SHALL BE LOCATED WITHIN 90 METERS OF ANY WORKSTATION OUTLET. THIS DESIGN APPROACH ALLOWS THE ADDITION OF PATCH CABLES AND WORKSTATION CORDS TO CONNECT DEVICES, WITHOUT EXCEEDING THE ANSI/TIA/EIA-568-B.1 SPECIFICATION DISTANCE LIMITS.

IN A BUILDING NOT EXCEEDING TWO STORIES, HORIZONTAL WORKSTATION CABLING MAY BE INSTALLED TO A SINGLE POINT, SUCH AS A COMPUTER ROOM, WIRING CENTER, OR THE MDF. THIS SCENARIO MAY BE USED IN PLACE OF A CREATING A RWC, THUS ELIMINATING ANY NEED FOR BACKBONE CABLING SYSTEMS. THIS INSTALLATION METHOD MAY BE UTILIZED WHEN COST IS A CONSTRAINT AND THE LENGTH OF THE CABLE RUN DOES NOT EXCEED THE SPECIFIED DISTANCE LIMITS.

EACH USER WORKSTATION LOCATION SHALL BE CABLED WITH CATEGORY (CAT) 6 COPPER CABLES FOR DATA TRANSMISSION. THAT WILL BE LABELED CLEARLY AT THE WALL JACK AND PATCH PANEL. WALL PLATE QUANTITIES WILL BE DETERMINED BASED ON THE NEEDS OF THE INSTALLATION. EACH WORKSTATION CABLE THAT IS ROUTED THROUGH A SUSPENDED CEILING AREA SHALL BE SECURED IN A MANNER THAT WILL KEEP ALL CABLE PLANT OFF OF ANY SUSPENDED CEILING TILES, SPRINKLER SYSTEMS, CEILING SUSPENSION HANGERS. AND ADHERE TO LOCAL AND FEDERAL BUILDING CODES. CABLE PLANT INSTALLED IN PLENUM ENVIRONMENTS SHOULD PROVIDE ENOUGH SLACK TO FACILITATE MINOR CONSTRUCTION MODIFICATIONS, OR CABLE RE-LOCATIONS, WITHOUT THE NEED TO INSTALL NEW CABLE ALTOGETHER. THIS INSTALLATION APPROACH NORMALLY REQUIRES APPROXIMATELY 20 FEET OF CABLE SLACK, SECURED IN AN APPROPRIATE MANNER, TO ENSURE CABLE IS MINIMIZED FROM RADIO FREQUENCY INTERFERENCE (RFI) AND ELECTRO-MAGNETIC INTERFERENCE (EMI) SOURCES.

WHEN ROUTED ABOVE A SUSPENDED CEILING, HORIZONTAL CABLES SHALL BE ROUTED DOWN THE INSIDE OF WALLS ("FISHED") WHEREVER POSSIBLE TO ENSURE NO EXPOSED CABLE IS VISIBLE. IF WALLS CANNOT BE FISHED, SURFACE MOUNTED (EXTERNAL) RACEWAY MAY BE USED TO ROUTE THE CABLE FROM THE CEILING TO THE INFORMATION OUTLET AND INSTALLED IN A SURFACE-MOUNTED OUTLET BOX. ALL ATTEMPTS SHALL BE MADE TO ENSURE NO HORIZONTAL CABLE IS EXPOSED WITHIN THE BUILDING AREA, PROVIDING A NEAT, PROFESSIONAL INSTALLATION. HORIZONTAL CABLES SHALL NEVER BE EXPOSED TO OUTDOOR ELEMENTS WITHOUT BEING PROTECTED IN PROPER CONDUIT/RACEWAY SYSTEMS AND HAVE PROPER LIGHTNING AND BONDING PROTECTION INSTALLED.

#### BACKBONE CABLING:

INTRA AND INTER-BACKBONE CABLING MAY CONSIST OF EITHER OR BOTH COPPER AND OPTICAL FIBER CABLES AND ARE REQUIRED WHERE THERE EXISTS MORE THAN ONE WIRE CENTER. THE INTRA AND INTER-BACKBONE SHALL BE INSTALLED TO PROVIDE STRUCTURED CONNECTIVITY BETWEEN CLOSETS

A MULTI-MODE, SINGLE MODE, OR COMBINATION OF FIBER-OPTIC BACKBONE STRUCTURE PROVIDES THE MEANS OF INTERCONNECTING ALL WIRING CLOSETS TO THE MDF IN A MULTI-SEGMENTED ENVIRONMENT. OPTICAL FIBER NOT ONLY PROVIDES EXTENSIVE BANDWIDTH CAPABILITIES TO THE LAN AND VOICE, BUT IT ALSO PROVIDES A SOLUTION TO THE DISTANCE-RELATED PROBLEMS ENCOUNTERED WITH COPPER CABLES IN LARGE INSTALLATIONS AND CAMPUS ENVIRONMENTS.

COPPER BACKBONE CABLING IS REQUIRED TO SUPPORT VOICE SERVICES, HOWEVER, THE SPECIFICATIONS AND DESIGNS ARE DETERMINED ON A SITE-BY-SITE BASIS. THIS IS DUE TO THE VARIETY, FUNDING, CAPACITY AND AVAILABILITY OF VOICE SERVICES AND DESIGNS. EACH REMOTE WIRING CLOSET SHALL BE CONNECTED TO THE MDF WITH A MULTI-STRAND, OPTICAL FIBER BACKBONE CABLE THAT RUNS DIRECTLY FROM THE WIRING CENTER TO THE MDF. ALL STRANDS WILL BE TERMINATED WITH ST STYLE CONNECTORS IN ACCORDANCE WITH THE ANSI/TIA/EIA STANDARDS IN RACK-MOUNTED PATCH PANELS. A MINIMUM TWELVE-STRAND FIBER SHALL BE INSTALLED IN ANY FACILITY PROVIDING CONNECTIVITY BETWEEN COMMUNICATIONS CLOSETS (TO BE DETERMINED ON A SITE-BY-SITE BASIS).

#### HORIZONTAL CABLES:

ALL CABLE, EQUIPMENT, AND MATERIALS SHALL MEET APPLICABLE ANSI/TIA/EIA-568-B, NATIONAL ELECTRICAL CODE (NEC) 770. INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 802 AND UNDERWRITERS LABORATORY (UL) VERIFICATION PROGRAM STANDARDS. ALL CABLE EQUIPMENT AND MATERIALS MUST BE MANUFACTURED BY FACILITIES THAT ARE INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO) 9001 REGISTERED AND CERTIFIED.

- SHALL BE CAT 6 RATING IN ACCORDANCE WITH ANSI/TIA/EIA-568-B.2
- FOUR—PAIR, 100—OHM, 24 AMERICAN WIRE GAGE (AWG).
- THE CABLE SHOULD HAVE CONTIGUOUS, 2-FOOT SEGMENT-LENGTH MARKERS PRINTED ON THE CABLE JACKET. THE MARKINGS MUST ALSO SHOW THE APPLICABLE PERFORMANCE OF CAT 6, AS WELL AS THE FIRE RATING OF THE CABLE BEING INSTALLED.
- THE FINISHED CABLE SHALL BE 100% PLENUM RATED IN ACCORDANCE WITH THE REQUIREMENTS OF NEC ARTICLE 800, UL 444. NFPA 262, (UL 910), AND APPLICABLE CANADIAN STANDARDS ASSOCIATION (CSA) STANDARDS.

- SHALL CONFORM TO THE ANSI/TIA/EIA SPECIFICATIONS OF CAT 6.
- 4-PAIR, UTP STRANDED CABLE.
- RJ-45 CONNECTORS ON BOTH ENDS.
- THE PATCH CABLES SHALL BE WIRED IN ACCORDANCE WITH THE ANSI/TIA/EIA-568-B.2 AND ANSI/TIA/EIA-568-B.3
- CERTIFIED BY THE MANUFACTURER AS COMPLIANT WITH THE ANSI/TIA/EIA CAT 5E OR CAT 6 CRITERIA.

### CABLES SHALL BE AVAILABLE IN A WIDE VARIETY OF COLORS AND LENGTHS.

- SHALL CONFORM TO THE ANSI/TIA/EIA CAT 6 SPECIFICATIONS.
- THE PATCH PANEL WIRING SHALL BE IN COMPLIANCE WITH ANSI/TIA/EIA T568B WIRING STANDARDS.
- PROVIDE BACK WIRE MANAGEMENT HARDWARE.
- PROVIDE MODULAR DESIGN TO FACILITATE FIELD REPAIRS. PROVIDES STANDARD 110D TYPE IDC PCB MOUNTED CONNECTOR.
- AVAILABLE IN LOW AND HIGH DENSITY CONFIGURATIONS. MEET THE STANDARD EIA-310 RELAY RACK SPACING SPECIFICATIONS.
- PROVIDE RJ—45 INTERFACE.
- MEETS ALL FCC PART 68 SPECIFICATIONS. AVAILABLE IN 12, 24, 48, AND 96 PORT CAPACITIES.
- · MATCH MAKE AND MODEL WITHIN EXISTING FACILITIES, WHERE POSSIBLE

- SHALL CONFORM TO THE ANSI/TIA/EIA STANDARDS. CONFORM TO THE STANDARD EIA—310 MOUNTING SPECIFICATION.
- PROVIDE PRE-TAPPED 5/16" OR 10/32" THREADING.
- PROVIDE A FLEXIBLE MODULAR CONCEPT.
- PROVIDE VERTICAL WIRE MANAGEMENT.

ALL INSTALLED CABLES IN AND AROUND THE EQUIPMENT RACKS.

- PROVIDE HORIZONTAL WIRE MANAGEMENT WHERE NEEDED. PROVIDE FLOOR MOUNTING HARDWARE EXCEPT FOR SWING GATE STYLE HARDWARE.
- STANDARD 4 POST RACKS WILL BE USED WHEN SPACE ALLOWS.
- · MATCH MAKE AND MODEL WITHIN EXISTING FACILITIES, WHERE POSSIBLE.

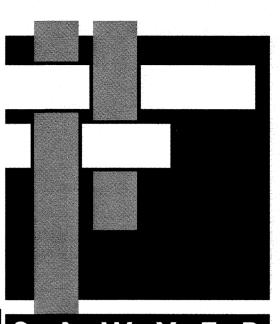
ALL EQUIPMENT RACKS, CABINETS AND SYSTEMS MUST BE PROPERLY CONNECTED TO THE INDEPENDENT GROUND BUS PER THE ANSI/TIA/EIA 607 SPECIFICATIONS. IT IS THE RESPONSIBILITY OF THE CABLE INSTALLER TO CONNECT ALL COMMON CLOSET EQUIPMENT RACKS AND CABINETS TO THE PROVIDED GROUND BUS. IT IS ALSO THE RESPONSIBILITY OF THE CABLE INSTALLERS TO REPORT TO THE NHC PROGRAM MANAGER ANY DISCREPANCIES WITH RESPECT TO IMPROPER OR OMITTED GROUNDING SYSTEMS.

CABLE LADDERS AND FASTENERS: ALL CABLES INSTALLED IN OVERHEAD SPACES (SUCH AS ABOVE CEILING PANELS) SHALL BE SECURELY STRAPPED TO CEILING SLAB FASTENERS OR CABLE LADDERS THAT ARE FASTENED TO THE CEILING SLAB TO AVOID CONTACT WITH LIGHTING EQUIPMENT OR DROP CEILING SUPPORTS. WIRE MANAGEMENT CHANNELS OR CABLE LADDERS SHALL BE USED TO PROVIDE ORDERLY ARRANGEMENT OF

AS A GENERAL RULE, ALL CABLES SHALL BE SECURELY SUSPENDED, FASTENED, TIED, AND BUNDLED FIRMLY (WITHOUT DAMAGING THE CABLE JACKETS OR CREATING KINKS IN THE CABLE) TO MINIMIZE THE AMOUNT OF SPACE REQUIRED FOR CABLING AND CONFORM TO BICSI STANDARDS.

LABEL CONVENTIONS SHALL APPLY TO ALL SITES, REGARDLESS OF THE NUMBER OF BUILDINGS AT THE SITE. THE INSTALLATION CONTRACTOR SHALL COMPLETE ALL TESTING OF THE CABLE PLANT. THE INSTALLATION CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL PERSONNEL, EQUIPMENT, INSTRUMENTATION, AND SUPPLIES THAT ARE NECESSARY TO PERFORM THE REQUIRED TESTING.

ALL INSTALLED COPPER CABLES SHALL BE TESTED WITH A LEVEL III CABLE TESTER TO CERTIFY THAT THE CABLE CONFORMS TO ANSI/TIA/EIA-568-B SPECIFICATIONS.



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Office: (910) 399-1123



Hurricane Florence Repairs **New Hanover** County Fire Station 12

Construction Drawings

Wilmington, NC

3805 US-421

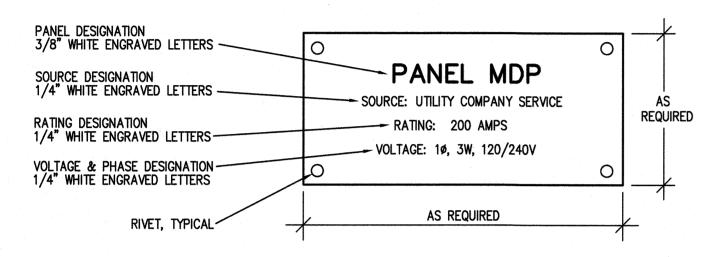
23 April, 2020

Revisions:

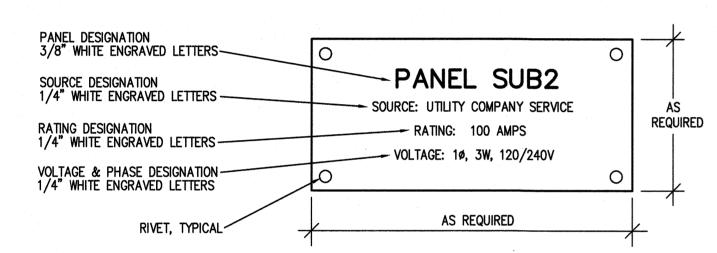
New Hanover

County Telecom Cabling Guidelines

### 2 - Enclosed Circuit Breaker Nameplate Detail **Not to Scale**



### 3 - Panelboard "MDP" Nameplate Detail **Not to Scale**



PANEL "MDP"

LOAD SERVED

REFRIGERATOR 100 REFRIGERATOR 100

LARGEST MOTOR

KITCHEN EQUIPMENT

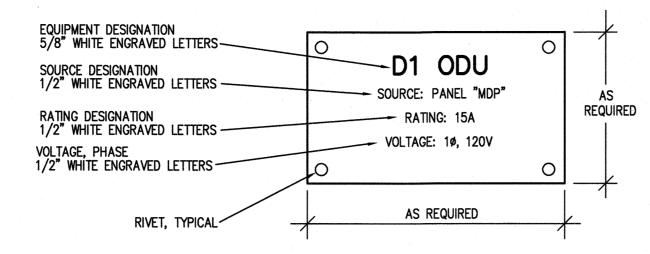
HVAC EQUIPMENT (FLA =  $MCA \times 0.8$ )

PANEL DEMAND LOADING VS RATING

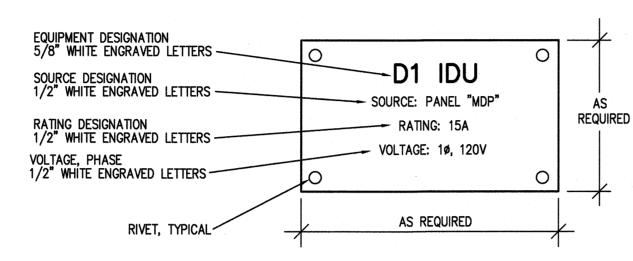
TOTAL DEMAND (VA)

TOTAL DEMAND (AMPERES)

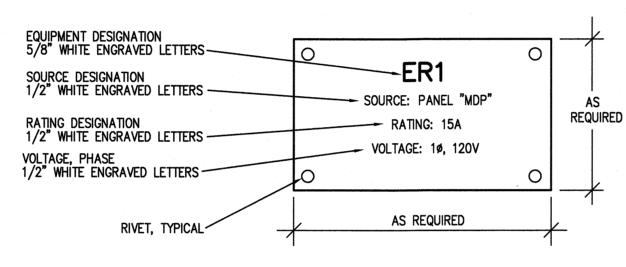
## 4 - Panelboard "SUB2" Nameplate Detail



#### 5 - Mechanical Equipment Nameplate Detail **Not to Scale**



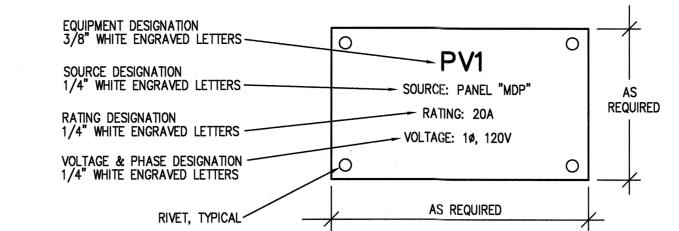
#### 6 - Mechanical Equipment Nameplate Detail **Not to Scale**



7 - Mechanical Equipment Nameplate Detail **Not to Scale** 

XX 100 % NEUTRAL BUS

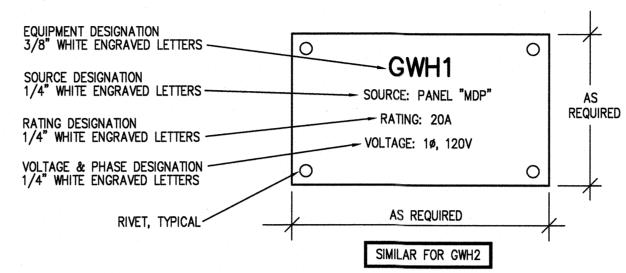
CHECKED ULSE LABEL ISOLATED GROUND BAR



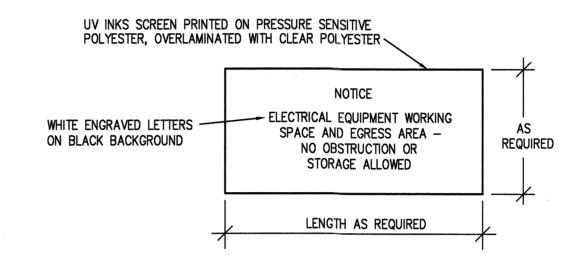
ATTACHMENT I

UNDERGROUND SERVICE

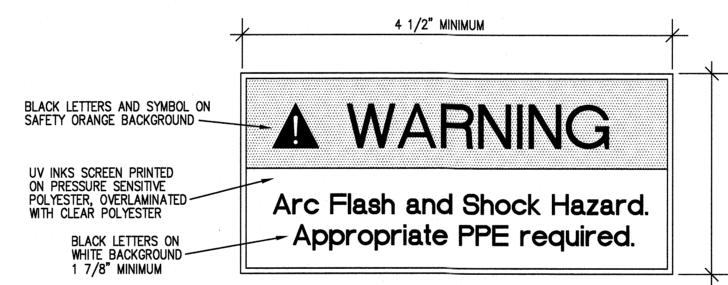
#### 8 - Mechanical Equipment Nameplate Detail **Not to Scale**



### 9 - Water Heater Nameplate Detail **Not to Scale**

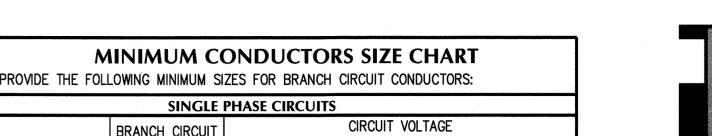


#### 10 - NEC Working Space Label Detail **Not to Scale**



	1 7/8" MINIMUM  11 - Electrical Equir	oment Warning Label I	Detail	
	Not to Scale	Janeire Walling Label L		
				2005
				R00F
	3#3/0 & 1#6 EG - 2" C		2#12 & 1#12 S ER1 EG - 2" C	CEILING
	FEEDER TO EXISTING 200A ENCLOSED CIRCUIT BREAKER			\$ D1 IDU
EXISTING METERIN EQUIPMENT TO R			SEE 7/E0.4 SEE  2#12 & 1#12 EG - 2" C	6/E0.4   2#12 & 1#12   EG - 2" C
     	X	SEE 3/E0.4 SEE 10/E0.4, TYPICAL WS	/125V, 1 HP, SPRINGWOUND 30 MINUTE, AUTO OFF, IN-WALL TIMER. TORK A53 FIELD VERIFY FINISH COLOR	
STING   GINE-   ERATOR   ET	X EXISTING X   AUTOMATIC   TRANSFER   SWITCH   TO   SEE 2/E0.4, SIMILAR	SEE 11/E0.4, TYPICAL NEW PANEL "MDP" 16, 3W,	SEE 8/E0.4	EXISTING PANEL SUB2" SP 3R 30 GWH1 GWH2
TO   EMAIN   	SIMILAR  VOLTS  VOLTS  CIRCUIT BREAKER	EXISTING 2P, 3W, 100A, 240V ENCLOSED CIRCUIT BREAKER TO REMAIN		D1 ODU SEE 9/E0.4
the same of the sa	TO REMAIN			FLOOR

NOT TO SCALE

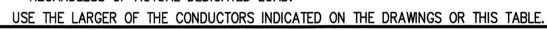


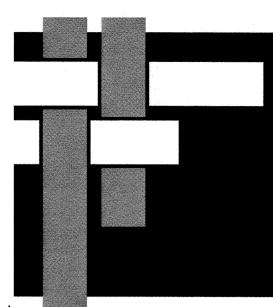
245 283 567

	SHITGEL	TIMOL CINC	3113		
NDUCTOR SIZE	BRANCH CIRCUIT BREAKER TRIP	MAXIMUI	CIRCUIT M ALLOWABLE	VOLTAGE CIRCUIT LENG	TH (FEET)
(AWG)	(AMPERES)	120	208	240	277
#12	15	81	141	163	188
#10	15	135	234	270	312
#8	15	204	355	409	473
<b>#</b> 12	20	61	106	122	141
#10	20	101	175	202	233
#8	20	153	266	307	354
<b>#</b> 10	30	67	117	135	155
#8	30	102	177	204	236

#0	30	102	1//	204	230
	THREE I	PHASE CIRCL	JITS		
CONDUCTOR SIZE	BRANCH CIRCUIT BREAKER TRIP	MAXIMUI		VOLTAGE CIRCUIT LENG	STH (FEET)
(AWG)	(AMPERES)		208	240	480
#12	15		163	188	377
#10	15		270	312	624
#12	20		122	141	283
<b>#</b> 10	20		202	234	468
#10	30		135	156	312
#8	30		205	236	473
#8	40		153	177	354
#6	40		239	276	553
#8	50		123	142	283
#6	50		191	221	442
#6	60		159	184	368

- CONDUCTOR LENGTHS ARE BASED ON SINGLE & THREE PHASE, 90% POWER FACTOR LOADS USING 75°C COPPER CONDUCTORS IN EMT RACEWAYS TO ACHIEVE NO MORE THAN 3 PERCENT VOLTAGE DROP.
- CALCULATIONS ASSUME LOADS OF 80% OF CIRCUIT BREAKER TRIP (12A, 16A & 24A, 32A, 40A & 48A, RESPECTIVELY) ARE CONCENTRATED AT THE END OF THE CIRCUITS. IF LOAD CHARACTERISTICS DIFFER FROM ABOVE, CALCULATE USING KNOWN CHARACTERISTICS AND SUBMIT CALCULATIONS TO THE ARCHITECT/ENGINEER
- DOCUMENTING 3% OR LESS VOLTAGE DROP UNDER THE ACTUAL LOAD CONDITIONS. WHEN A DEDICATED SINGLE LOAD LESS THAN NOTED ABOVE IS KNOWN, THE CONTRACTOR MAY UTILIZE SMALLER CONDUCTORS UPON SUBMISSION OF VOLTAGE DROP CALCULATIONS DOCUMENTING 3% OR LESS VOLTAGE DROP. THE MINIMUM LOAD SHALL BE ASSUMED TO BE 60% OF THE CB TRIP RATING REGARDLESS OF ACTUAL DEDICATED LOAD.

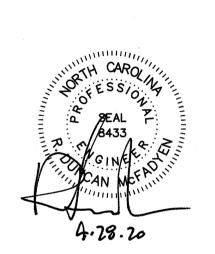




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## Hurricane Florence Repairs **New Hanover** County Fire Station 12

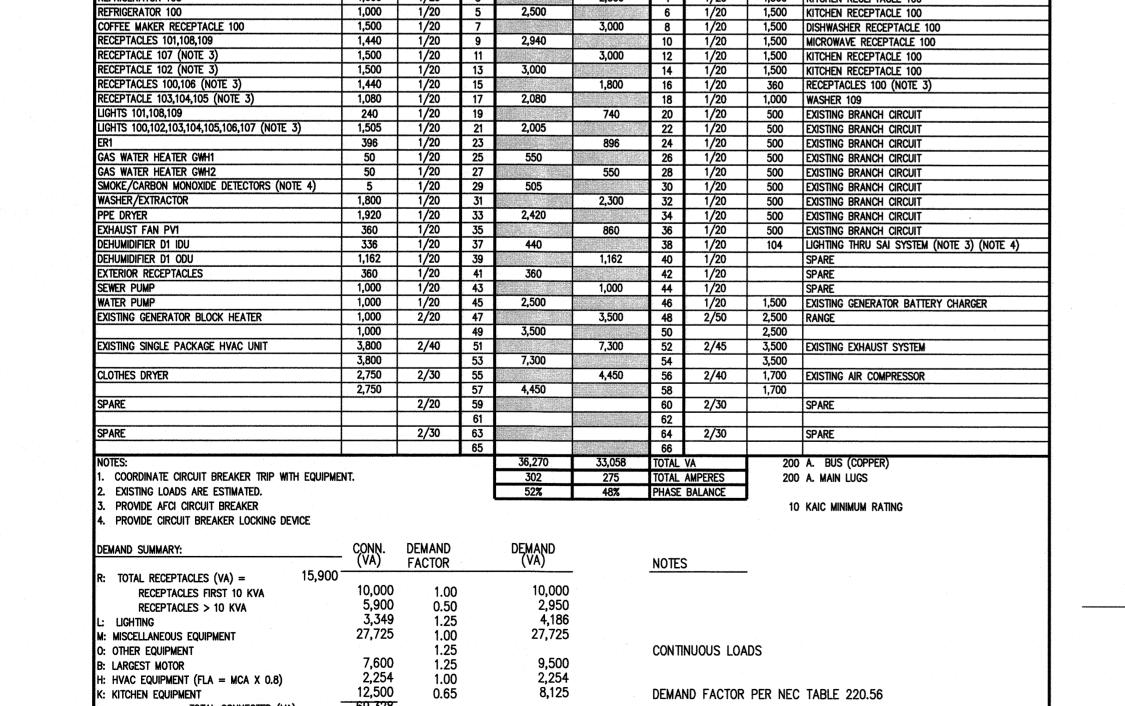
3805 US-421 Wilmington, NC

Construction Drawings 23 April, 2020

Revisions:

Electrical Power Riser Diagram, Panel Schedule and Details

5 of 10 © 2020 Sawyer Sherwood & Associate- All Rights Reserved



9,500 2,254 8,125

269.8

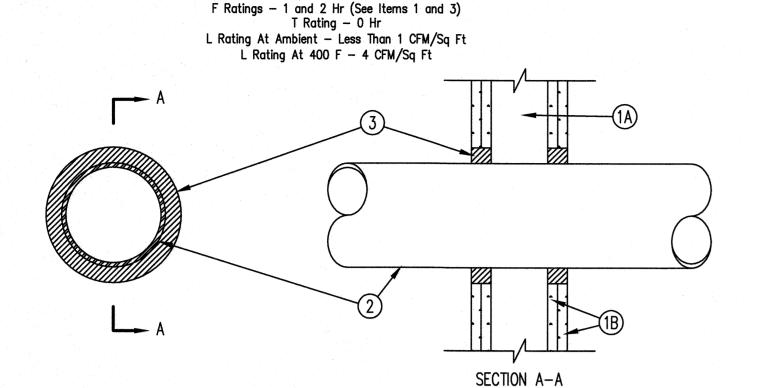
DEMAND FACTOR PER NEC TABLE 220.56

7,600 2,254 12,500

69,328

LOAD CKT BKR CKT CKT BKR LOAD

VA POLES/TRIP # A B # POLES/TRIP VA LOAD SERVED



System No. W-L-1054

December 04, 2002

1. Wall Assembly - The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw—attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. wider and 4 to 6 in. higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. clearance is present between the penetrating item and the framing on all four sides.

B. Gypsum Board* - 5/8 in. thick, 4 ft wide with square or tapered edges. The avosum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32-1/4 in. for steel

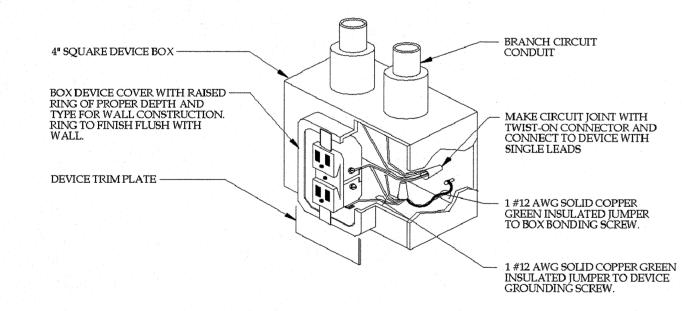
stud walls. Max diam of opening is 14-1/2 in. for wood stud walls. The F Rating of the firestop system is equal to the fire rating of the wall assembly. 2. Through—Penetrants — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. Pipe may be installed with continuous point contact. Pipe, conduit or tubing may be installed at an angle not greater than 45 degrees from perpendicular. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

A. Steel Pipe - Nom 30 in diam (or smaller) Schedule 10 (or heavier) steel pipe. B. Iron Pipe - Nom 30 in. diam (or smaller) cast or ductile iron pipe. C. Conduit - Nom 4 in diam (or smaller) steel electrical metallic tubing or 6 in. diam steel conduit. D. Copper Tubing - Nom 6 in. diam (or smaller) Type L (or heavier) copper

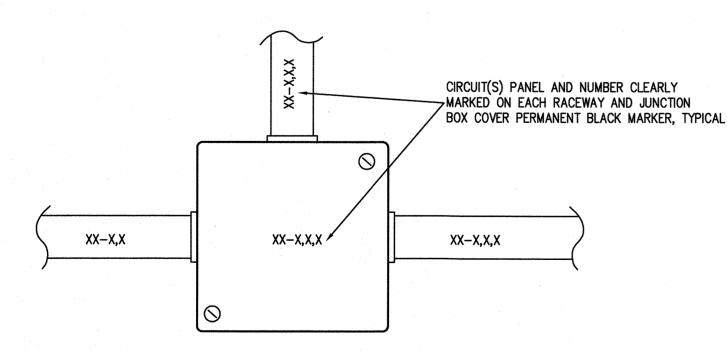
E. Copper Pipe - Nom 6 in. diam (or smaller) regular (or heavier) copper pipe. 3. Fill. Void or Cavity Material* - Sealant - Min 5/8 in. thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. diam bead of fill material shall be applied at the pipe wall interface on both surfaces of wall. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC - FS-One Sealant

Filename = XHEZ.W-L-1054Copyright December 04, 2002 Underwriters Laboratories, INC. Reprinted from the UL Online Directory with permission from Underwriters Laboratories INC.

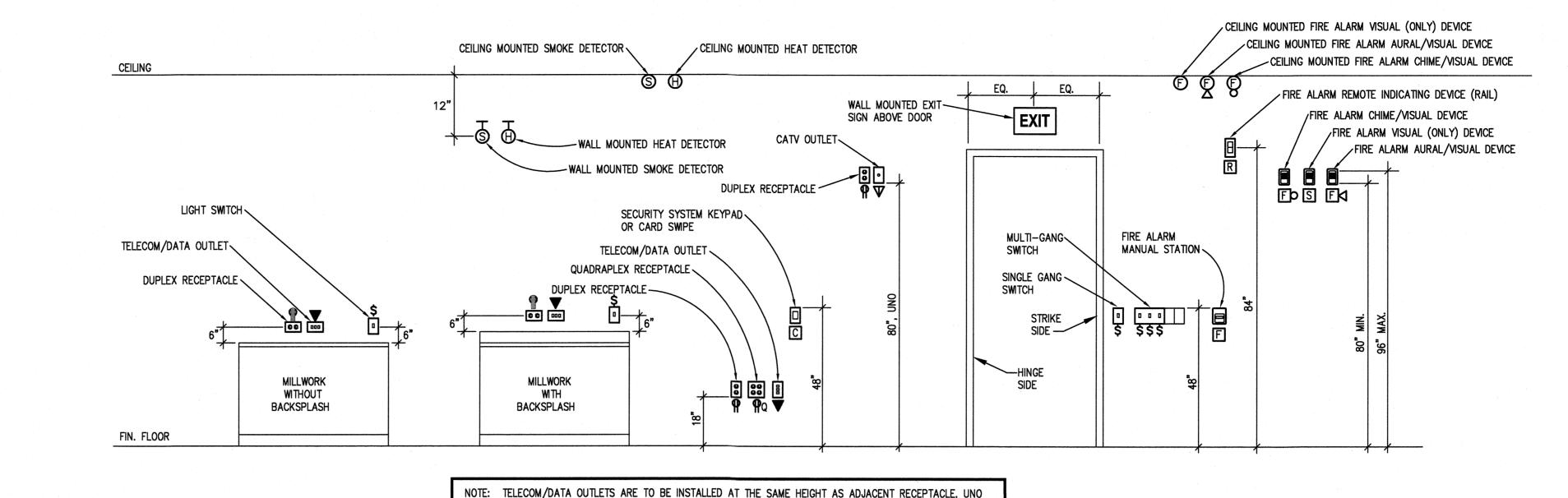
#### 2 - 1 and 2 Hour Firewall Penetration Detail **Not to Scale**



#### 3 - Receptacle Grounding Detail **Not to Scale**



5 - Circuit Identification Detail NOT TO SCALE

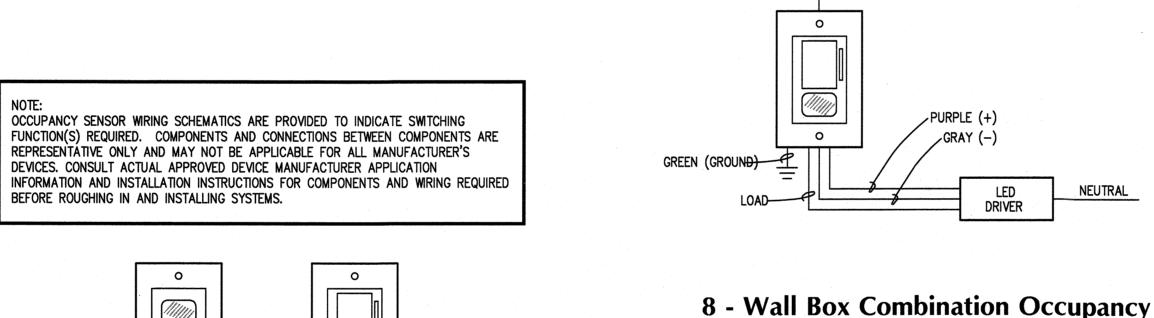


1 - Standard Device Mounting Height Detail **Not to Scale** 

BRANCH CIRCUIT CONDUIT (1/2" EMT) TO STRUCTURE OR MC CABLE WHERE PERMITTED 1. FOR EACH FIXTURE, PROVIDE TWO STEEL WIRES, -6 FEET LENGTH OF FLEXIBLE CONDUIT OR MC ONE WIRE AT EACH OPPOSITE CORNER OF THE CABLE, WHERE PERMITTED, TO ALLOW FOR FIXTURE. SUPPORT WIRES TO BUILDING STRUCTURE, RELOCATION. INCLUDE GROUND WIRE. ALL THEN SCREW FIXTURE TO THE MAIN RUNNERS OF CONDUCTORS #12 AWG COPPER. MAXIMUM OF THE LAY-IN CEILING TRACK, AT THE FOUR CORNERS, THREE FLEX RUNS PER JUNCTION BOX WITH SHEET METAL SCREWS. 2. FOR FIRE RATED CEILING, FIXTURE SHALL BE SUPPORTED AS PER THE CEILING DESIGN CRITERIA - LAY-IN TYPE TROFFER TO THE BUILDING STRUCTURE.

JUNCTION BOX ATTACHED

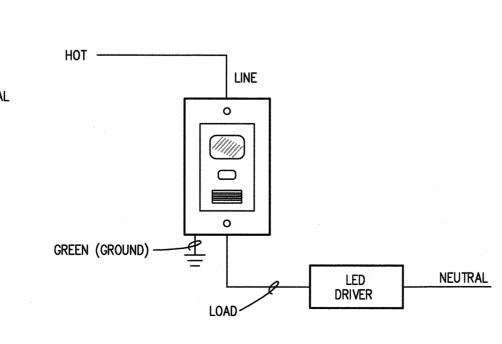
#### 4 - Lighting Fixture Mounting and Installation Detail **Not to Scale**



6 - Occupancy Sensor Wall Switch Plate Detail NOT TO SCALE

WALL SENSOR/

0-10V DIMMER SWITCH

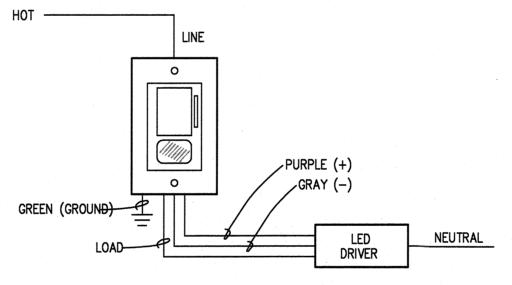


WALL SENSOR

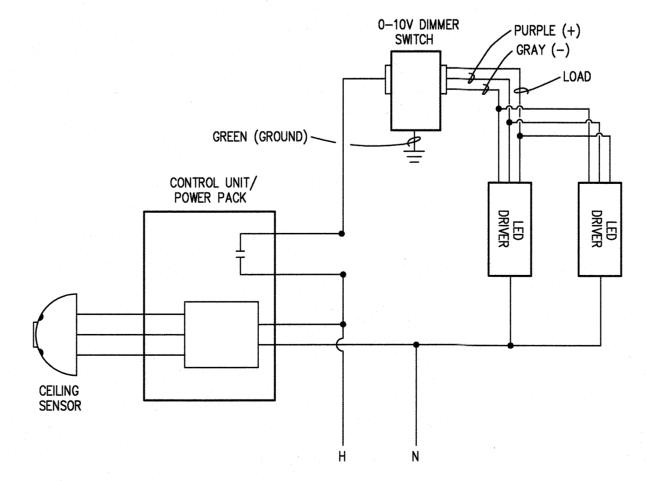
(\$0)

**SWITCH** 

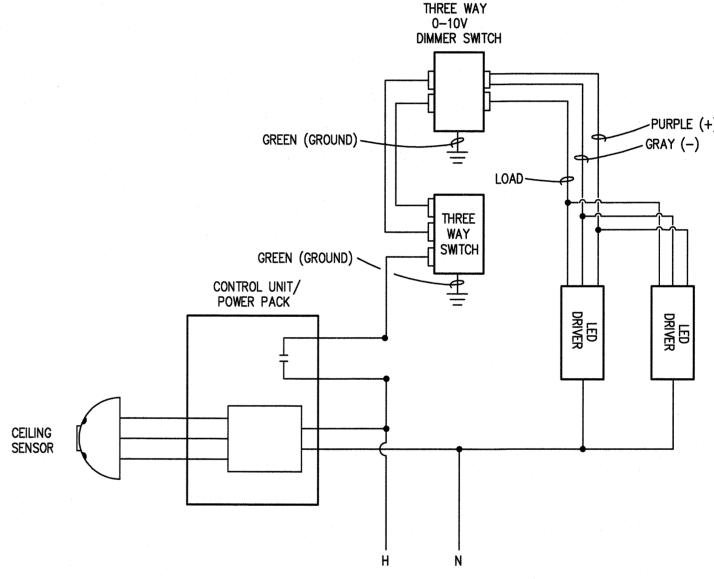
7 - Wall Box Occupancy Sensor Switch Wiring Diagram (\$0) NOT TO SCALE



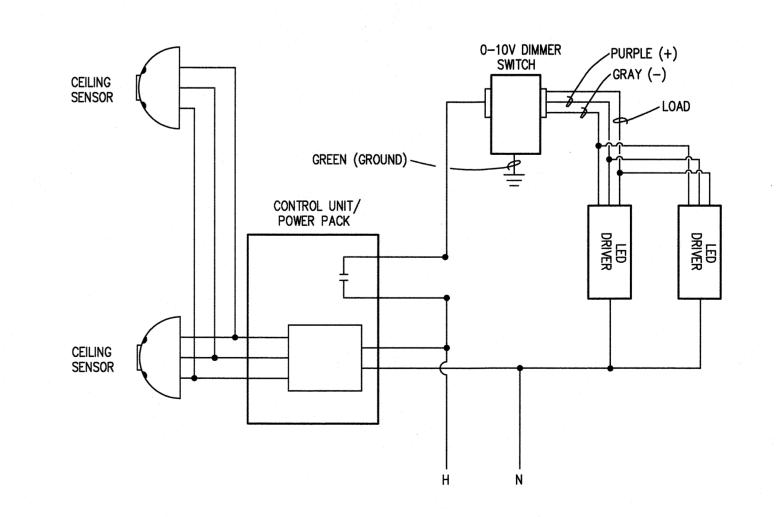
Sensor/0-10 Volt Dimmer Switch, Single Circuit Wiring Diagram (5%) NOT TO SCALE



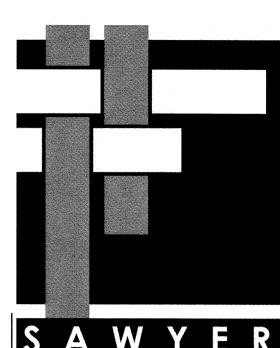
9 - Ceiling Mounted Occupancy Sensor, Wall **Mounted 0-10 Volt Dimmer Switch, Single** Circuit Wiring Diagram(1811) NOT TO SCALE



10 - Ceiling Mounted Occupancy Sensor, Wall **Mounted Three Way, 0-10 Volt Dimmer** Switch, Single Circuit Wiring Diagram (1981)



11 - Multiple Ceiling Mounted Occupancy Sensor, Wall Mounted 0-10 Volt Dimmer Switch, Single **Circuit Wiring Diagram** (**®**) **NOT TO SCALE** 



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Hurricane Florence Repairs **New Hanover** County Fire Station 12

Wilmington, NC Construction Drawings

23 April, 2020

3805 US-421

Revisions:

**Electrical Details** 

IARK	DESCRIPTION.	SIZE/APERTURE	VOLTS	LAMPS	WATTS	LENS	TRIM/DOOR	TRIM COLOR	MOUNTING HEIGHT	REMARKS	MANUFACTURER
L1	LAY-IN GRID LED	2'x4'	UNIV.	8500 LUMEN	64	ADP DIFFUSER	FLUSH	WHITE	RECESSED GRID	10%, 0-10V DIMMING DRIVER	LITHONIA "2BLT" SERIES
				4000K LED			STEEL		MOUNTED		
L2	LAY-IN GRID LED	2'x4'	UNIV.	6000 LUMEN	36	0.125" ACRYLIC	FLUSH	WHITE	RECESSED GRID	10%, 0-10V DIMMING DRIVER	LITHONIA "2GTL" SERIES
en e				4000K LED		PRISMATIC	STEEL		MOUNTED		
L3	LAY-IN GRID LED	2'x4'	UNIV.	4000 LUMEN	30	0.125" ACRYLIC	FLUSH	WHITE	RECESSED GRID	10%, 0-10V DIMMING DRIVER	LITHONIA "2GTL" SERIES
				4000K LED		PRISMATIC	STEEL		MOUNTED		
L4	SURFACE MOUNTED LED	4'	UNIV.	4800 LUMEN	41	ACRYLIC	STEEL	WHITE	SURFACE CEILING	10%, 0-10V DIMMING, 80 CRI	LITHONIA "LBL4" SERIES
	WRAPAROUND			4000K LED							
L5	RECESSED LED DOWNLIGHT	4"	UNIV.	4000 LUMEN	43		ALUMINUM	WHITE	RECESSED	LO4 DOWNLIGHT APERTURE, MATTE DIFFUSE REFLECTOR, WHITE TRIM RING,	LITHONIA "LDN4" SERIES
				4000K LED				CEILING 10%, 0-10V DIMMING DE	10%, 0-10V DIMMING DRIVER		
L6	RECESSED LED DOWNLIGHT	4"	UNIV.	2500 LUMEN	26		ALUMINUM	WHITE	RECESSED	LO4 DOWNLIGHT APERTURE, MATTE DIFFUSE REFLECTOR, WHITE TRIM RING,	LITHONIA "LDN4" SERIES
				2700K LED					CEILING	10%, 0-10V DIMMING DRIVER, WET LOCATION LISTING	<u> </u>
L7	RECESSED LED DOWNLIGHT	4"	UNIV.	2500 LUMEN	26		ALUMINUM	WHITE	RECESSED	LO4 DOWNLIGHT APERTURE, MATTE DIFFUSE REFLECTOR, WHITE TRIM RING,	LITHONIA "LDN4" SERIES
				2700K LED					CEILING	1%, 0-10V DIMMING DRIVER	
L8	WALL MOUNTED LED VANITY LIGHT	2'	UNIV.	2439 LUMEN	21	FROSTED	EXTRUDED	WHITE	SURFACE WALL OVER	FA FLAT ALUMINUM END CAPS, FIXED OUTPUT DRIVER,	COLUMBIA "CWM" SERIES
				2700K LED		ACRYLIC	ALUMINUM		VANITY		
L10	RECESSED INCANDESCENT DOWNLIGHT	4"	120	60 LUMIN MIN.	8		ALUMINUM	"PF" WHITE FLANGE	RECESSED	"ORA19" OPEN REFLECTOR, "CD" CLEAR DIFFISE REFLECTOR. PROVIDE WITH RED A19, MEDIUM	INDY "A4" SERIES
				3000K LED		A December 1			CEILING	SCREW BASE LED LAMP, 60 LUMEN, 3000K, 8 WATT, 60 WATT INCANDECENT EQUIVALENT	
L11	RECESSED WALL MOUNTED LED	5.6" x 3.7"	UNIV.	38 LUMEN LED	3.3	PEARLESCENT	DIE CAST	MATTE	RECESSED WALL, 14" AFF	VR STYLE, INTEGRAL PHOTO CONTROL,	KENALL "MCSL" SERIES
	NIGHT LIGHT			AMBER 600 nm LED		POLYCARBONATE	ALUMINUM	WHITE		SET AT 25% LUMEN OUTPUT, WET LOCATION LISTING	
L12	WALL MOUNTED LED	4'	UNIV	4146 LUMEN	38	ACRYLIC		WHITE	WALL OVER DOOR		LITHONIA "CDS" SERIES
				3500K LED	·	PRISMATIC					
L13	WALL MOUNTED LED	7.5" x 8"	UNIV	1289 LUMEN	14	GLASS	CAST ALUMINUM	BRONZE	WALL, FIELD VERIFY	WET LOCATION LISTING	LITHONIA "OLWX1" SERIES
				5000K LED					MOUNTING HEIGHT		
X1	EXIT LIGHT		UNIV	RED LED	5		POLYCARBONATE	WHITE	FLUSH CEILING	RED LED, 6" LETTERS, SINGLE OR DOUBLE FACE UNITS AND CHEVRONS	LITHONIA "LQM" SERIES
										AS INDICATED, INTERNAL 90 MINUTE BATTERY BACKUP, SELF DIAGNOSTICS	
E1	EMERGENCY LIGHT		UNIV	2 - 1.5W LED	3		POLYCARBONATE	WHITE	WALL / 7'-6"	INTERNAL 90 MINUTE BATTERY BACKUP, SELF DIAGNOSTICS	LITHONIA "ELM2 LED" SERIES

NOTES:

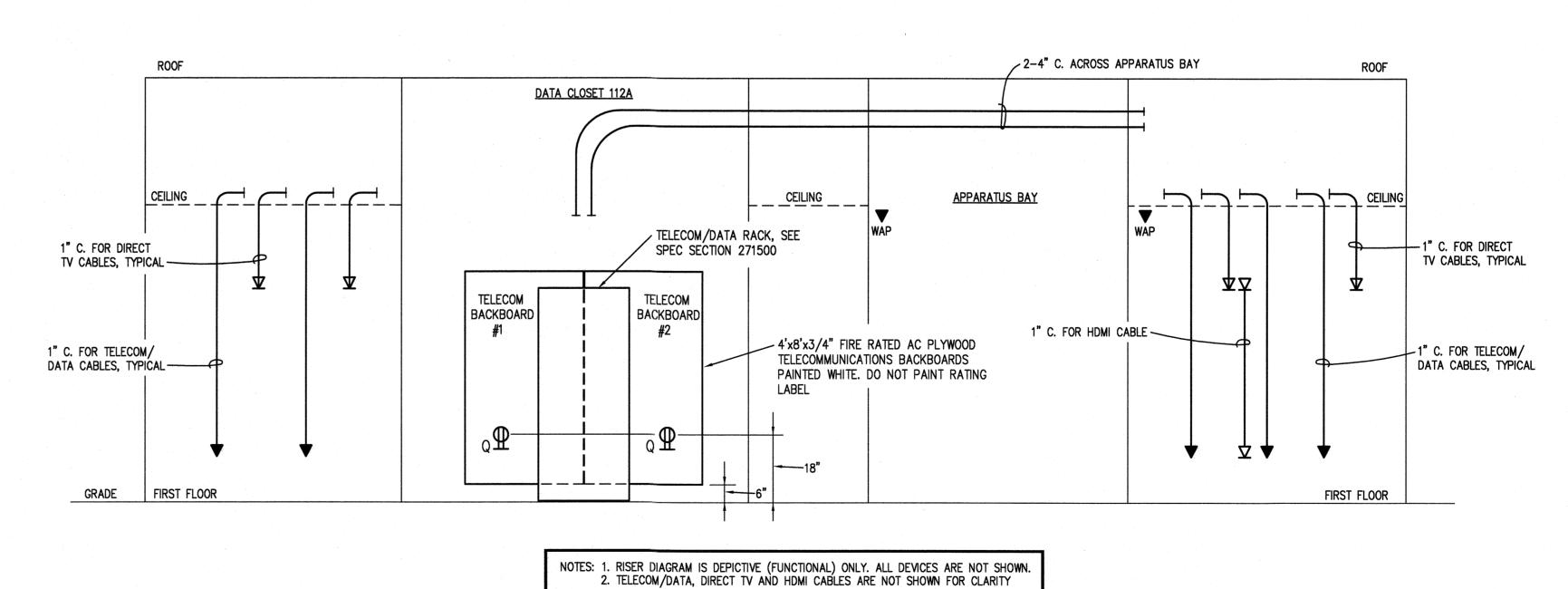
1. ACRYLIC PRISMATIC LENSES SHALL BE 0.125" NOMINAL MINIMUM THICKNESS.

2. ALL EXIT AND EMERGENCY FIXTURES SHALL COMPLY WITH NCSBC STANDARDS AND HAVE AUTOMATIC TESTING DEVICES.

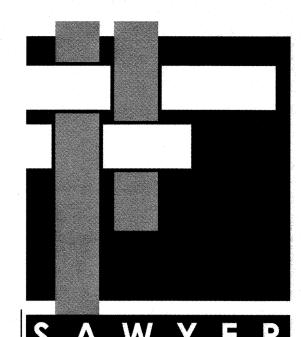
3. SEE SPECIFICATIONS SECTIONS 265100 AND 265200 FOR ADDITIONAL REQUIREMENTS.

4. LIGHTING FIXTURES HAVE BEEN SELECTED AND SPECIFIED TO ACHIEVE REQUIRED/DESIRED ILLUMINATION LEVELS AND OTHER CHARACTERISTICS IN THEIR RESPECTIVE AREAS. SPECIFIC HARACTERISTICS WHICH MAY CREATE UNIQUE ILLUMINATION RESULTS ESSENTIAL TO THE PROJECT. LIGHTING FIXTURES PROVIDED SHALL MEET THE ASTHETICS, DETAILS, AND SPECIFICATIONS STATED ABOVE AND IN THE DIVISION 26 SPECIFICATIONS, AND MOUNTING HEIGHTS AND SPACINGS SHOWN ON THE DRAWINGS. ANY DEVIATIONS FROM THE SPECIFIED FIXTURES SHALL DEEM ALL PARTIES IN THE SUPPLY CHAIN AND CONTRACTOR RESPONSIBLE FOR PROVIDING DETAILED COMPARISONS OF THE SPECIFIED FIXTURE AND THE PROPOSED FIXTURE FOR ARCHITECT AND ENGINEER REVIEW IN DETERMINING EQUALITY. PROVIDE COMPLETE POINT BY POINT ILLUMINATION STUDIES FOR ALL SUBSTITUTIONS.

5 SUBSTITUTIONS MAY BE APPROVED BY THE ARCHITECT AND ENGINEER IF THEY ARE JUDGED TO BE EQUAL TO THE SPECIFIED FIXTURES. "EQUAL" MAY INCLUDE, AT THE SOLE DISCRETION OF THE ARCHITECT AND ENGINEER, LENS MATERIAL AND CHARACTERISTICS, COLORS, REFLECTORS, HOUSING MATERIAL AND CONFIGURATION, FINISHES, PHOTOMETRICS, EFFICIENCY, OPTIONS, FUNCTIONALITY, ETC..



1 - Functional Telecommunications/CATV Riser Diagram



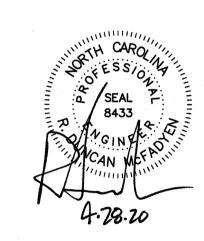
S A W Y E R SHERWOOD & ASSOCIATE ARCHITECTURE

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# Hurricane Florence Repairs New Hanover County Fire Station 12

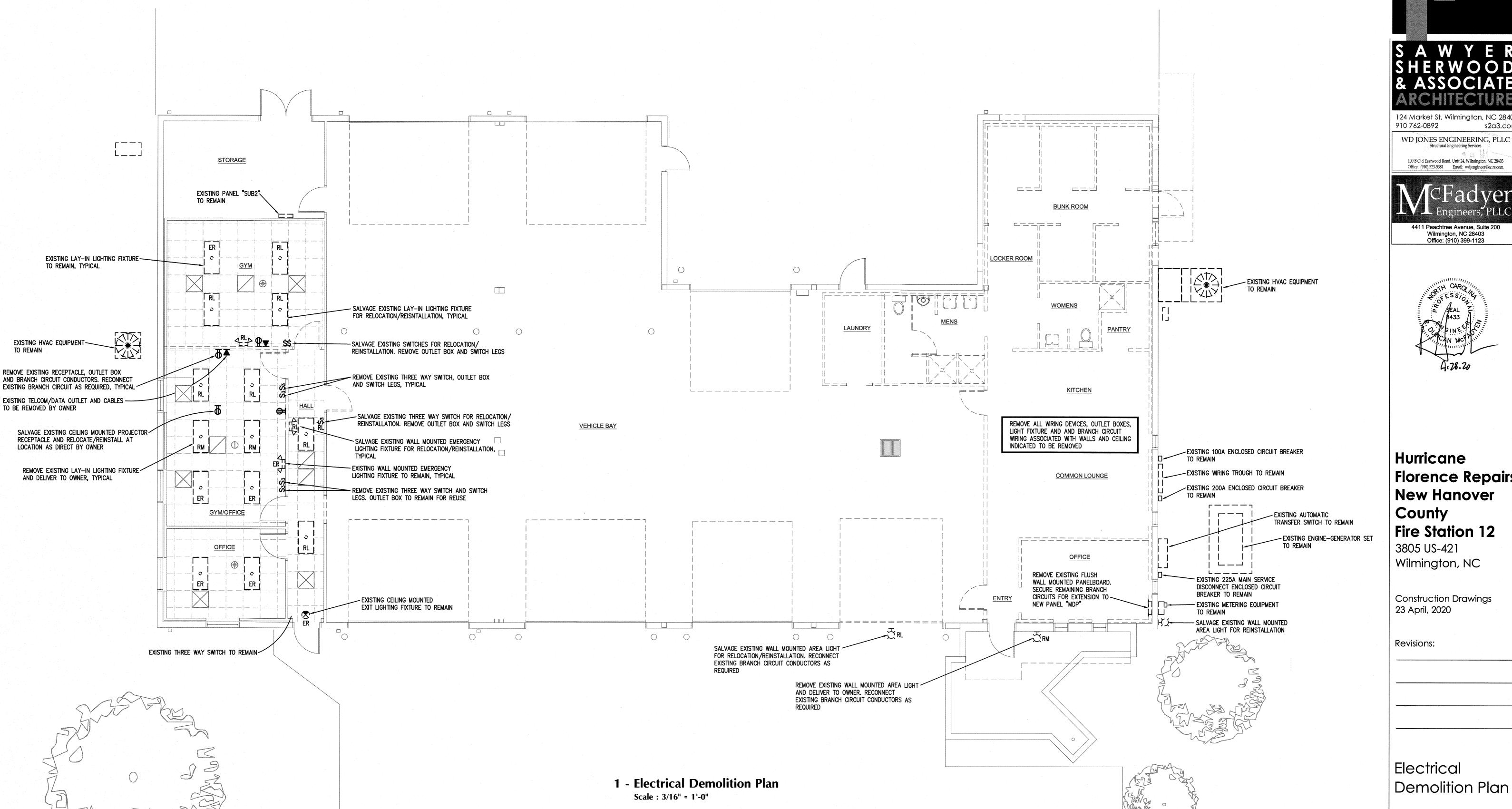
3805 US-421 Wilmington, NC

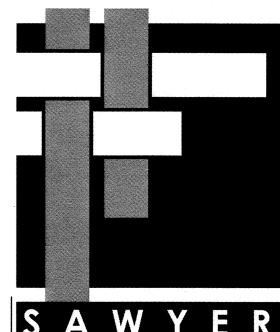
Construction Drawings 23 April, 2020

Revisions:

Lighting Fixture
Schedule and
Electrical Details

E0.6

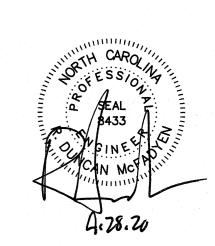




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## Hurricane Florence Repairs New Hanover County Fire Station 12

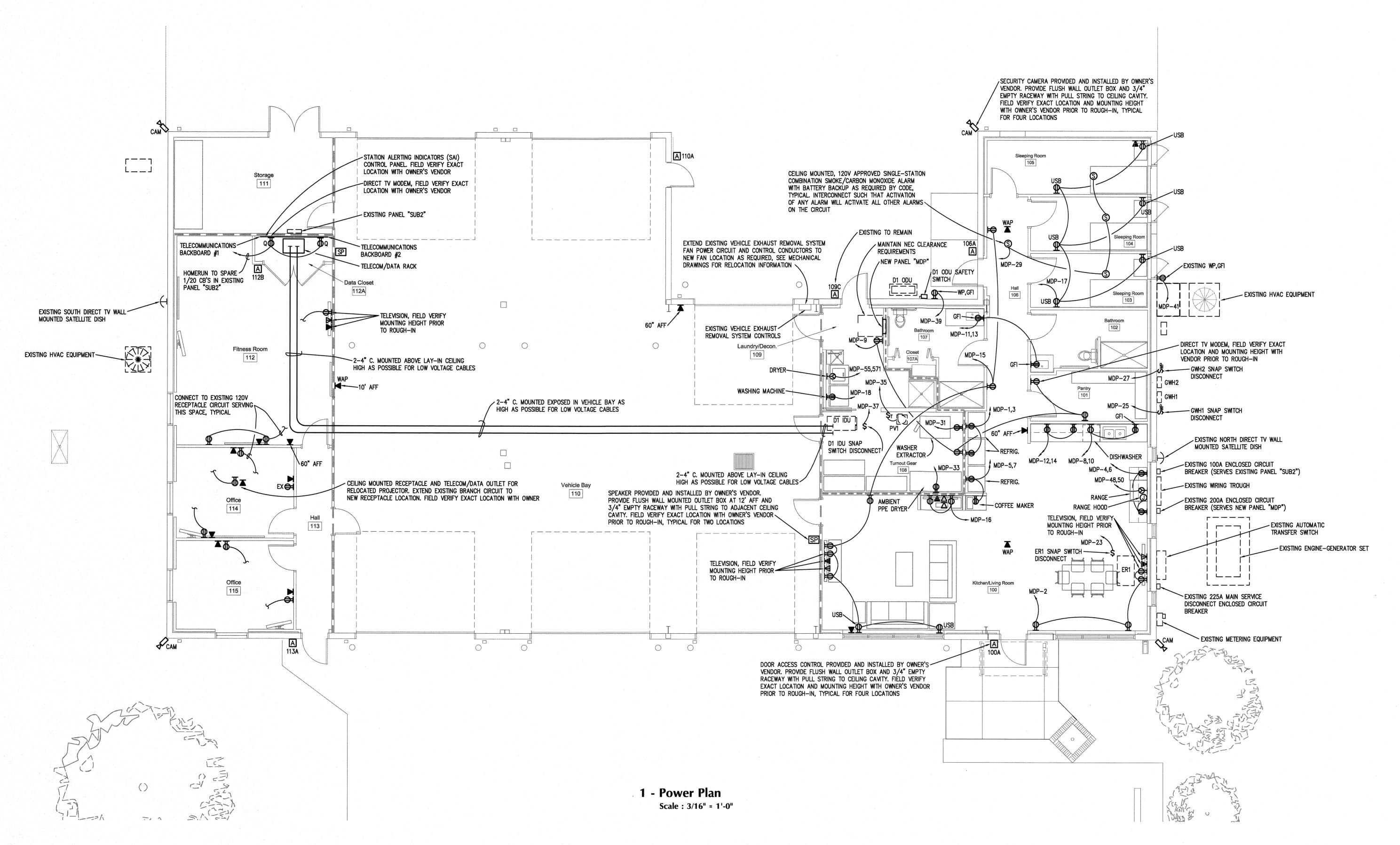
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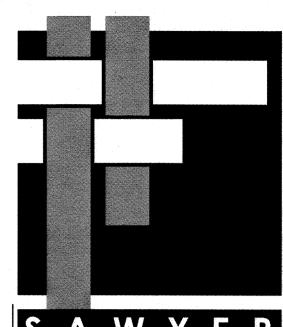
Construction Drawings 23 April, 2020

Revisions:

Electrical

E1.0





S A W Y E R S H E R W O O D & ASSOCIATE ARCHITECTURE

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# Hurricane Florence Repairs New Hanover County Fire Station 12

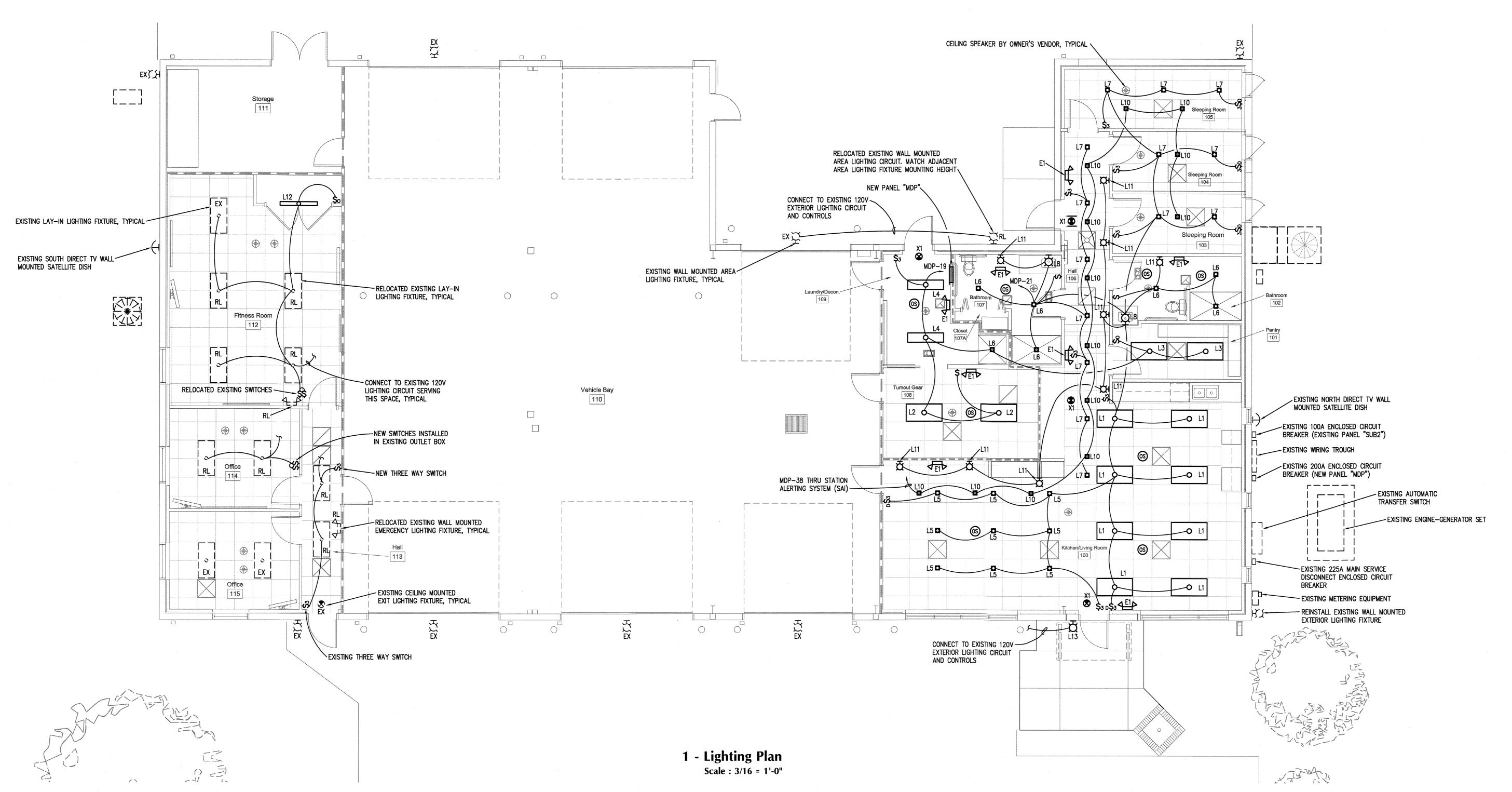
3805 US-421 Wilmington, NC

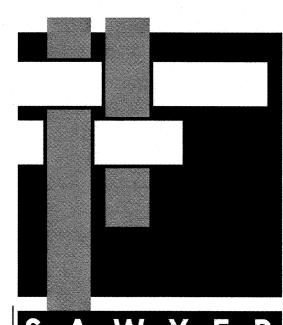
Construction Drawings 23 April, 2020

Revisions:

Power Plan

E2.0





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# Hurricane Florence Repairs New Hanover County Fire Station 12

3805 US-421 Wilmington, NC

Construction Drawings 23 April, 2020

Revisions:

Lighting Plan

E3.0