2012 APPENDIX B BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS

ame of Pi	Project: DOLLAR GENERAL STORE # 2031	2	
ddress. S	SPRING HILL CHURCH ROAD, LILLINGTON,		
	Jse: MERCANTILE (DOLLAR GENERAL RI		мр
	LOHN C. HOOD 252-30 horized Agent: Phone		y@aol.com
wned By:		D Private	
ode Enfora	cement Jurisdiction: 🗌 City_LILLINGTON_	County HARNETT	
	IOHN C. HOOD		
ESIGNER	FIRM NAME L Hood Herring Archit. John C. Hood E	ICENSE# TELEPHONE# 31684 252-399-2700	E-MAIL 9 aiajay@aol.com
rchitectural	Norris & Tunstall Phil Norris	······································	
ivil	Kilian Engineering, Inc. Michael Kilian	 252-438-87	18
lectrical ire Alarm			k <u>ilianengineer</u> ing.co
lumbing		252-438-87 17304 mkilian	18 9kilianengineering.co
-	Kilian Engineering, Inc. Michael Kilian	 252-438-87	
echanical			
orinkler–Stan	Milliam A. Person, PE <u>William Person</u>	919-496-5228 23253	
tructural			
etaining Walls	ls >5'High		
ther			
012 EDIT	TION OF NC CODE FOR:	ion 🗌 Addition 🗌 Upi	it
XISTING:	Reconstruction Alteration		ovation
ONSTRUCTI	ED: ORIGINAL USE(S):		
ENOVATED:	CURRENT USE(S):		
	PROPOSED USE(S):		
UILDING			
onstructio	on Type: I-A II-A III-A I I I-B X II-B III-B	V 🗌 V–A	
	☐ I-B ☐ II-B ☐ III-B Mixed construction		
prinklers:		NFPA 13R NFPA 1	3D
tandpipes: ire Distric		∟ Wet ∟ Dry ⊠ No □ Yes	
uilding He	eight: ⁶ Feet		
	LDING AREA:		
LOOR th Floor	EXISTING (SQ FT) NEW (SQ FT)	SUB-TOTAL	
th Floor			
th Floor			
rd Floor			
nd Floor			
ezzanine			
st Floor	9208		
asement TOTAL	L 9208		
ccupancy:	ALLOWABLE AREA		
Assembly			
Business Educational			
Factory	F-1 Moderate F-2 Low		
	H-1 Detonate H-2 Deflagrate H-3 Combust		-
nstitutional Mercantile		1 2 3 4	5
Residential			
		Garage Open Enc	loged Penair
Storage	S-1 Moderate S-2 Low High-piled Parking	•	ioseu 🗌 nepan
	S-1 Moderate S-2 Low High-piled Parking and Miscellaneous		loseu 🔄 kepan
Utility a	and Miscellaneous	ne Rm 🗌 Hydrogen Cutoff	Incinerator
Utility a ncidental l Paint Shop	and Miscellaneous	ne Rm 🗌 Hydrogen Cutoff 3 Cells 🗌 Group I-2 Waste	Incinerator
Utility a ncidental Paint Shop Waste/Line	and Miscellaneous	ne Rm 🗌 Hydrogen Cutoff 3 Cells 🗌 Group I-2 Waste as 🔄 Fire Pump	Incinerator
Utility a ncidental N Paint Shop Waste/Line Group I-2 pecial Use	and Miscellaneous Uses: Furnace Rm Boiler Rm Refrigerant Machin op Laboratory & Vocational Laundry Rm Group I-4 nen Collection >100 s.f. Stationary Storage Battery System 2 Storage Group I-2 Comm. Kitchen Group I-2 Laundr es: 402 403 404 405 406 407 40	ne Rm Hydrogen Cutoff 3 Cells Group I-2 Waste 15 Fire Pump 17 Group I-2 Fuel-fired 18 409 410 411	Incinerator /Linen Collection Heat 412 413
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	ALLOWA	ABLE HEIGHT
	ALLOWABLE (TABLE 503)	INCREASE FOR SPRINKLERS
ype of Construction	Type B	
uilding Height in Feet	55	Feet = H + 20' =
uilding Height in Stories	2	Stories + 1 =

SHOWN ON PLANS

18

Type || B

BUILDING ELEMENT	FIRE		RATING	DETAIL #	DESIGN #	DESIGN # FOR	DI
	SEPARATION DISTANCE	REQ'D	PROVIDED	AND SHEET #	FOR RATED	RATED PENETRATION	
	(FEET)		REDUCTION)		ASSEMBLY]]
Structural frame, including colums, girders, trusses							
Bearing Walls							
Exterior							
North	>30'	0					
East	>30'	0					
West	10'>X< 30'	0					
South	>30'	0					
Interior							
Nonbearing walls and partitions							
Exterior	NA						
North							
East							
West							
South							
Interior							
Floor construction Including supporting beams and joists	NA						
Roof construction Including supporting beams and joists	NA						
Shafts-Exit	NA						
Shafts-Other	NA						
Corridor Separation	NA						
Occupancy Separation	NA						
Party/Fire Wall Separation	NA						
Smoke Barrier Separation	NA						
Tenant Separation	NA						
Incidental Use Separation	NA					1	

LIFE	SAFETY SYSTEM	REQUIREMENTS
Emergency Lighting:	🗌 No 🛛 Yes	
Exit Signs:	🗌 No 🛛 Yes	
Fire Alarm:	🖂 No 🗌 Yes	
Smoke Detection Systems:	🗌 No 🛛 Yes 🗌] Partial
Panic Hardware:	🗌 No 🛛 Yes	

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet # $_COVER$

- ated wall locations (Chapter 7 SEE SITE PLAN
- with respect to distance to assumed property lines (705.8) < 30 $^{\circ}$
- Existing structures within 30' of the proposed building Occupancy types for each area as it relates to occupancy load calculations (Table 1004.1.1)
- \boxtimes Occupancy loads for each area
- \boxtimes Exit access travel distances (1016) < 200'
- \boxtimes Common path of travel distances (1014.3 & 1028.8) < 75' \boxtimes Dead end lengths (1018.4) < 20'
- X Clear exit widths for each door
- 🖾 Max calculated occupant load capacity each exit door can accommodate based on exit width
- 🔀 Actual occupant load for each door A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is
- for purposes of occupancy separation
- \boxtimes Location of doors with panic hardware (1008.1.10)
- Location of doors with delayed egress locks and the amount of delay (1008.1.9.7)
- Location of doors with electromagnetic egress locks (1008.1.9.8) Location of doors equipped with hold open devices
- Location of emergency escape windows (1029)
- \boxtimes The square footage of each fire area (902) 9014 SQ. FT.
- ☐ The square footage of each smoke compartment (407.4) Note any code exceptions or table notes that may have been utilized regarding the items abo

ACCESSIBLE DWELLING UNITS (SECTION 1107)

		(SECTION TIO7)								
TOTAL UNITS	ACCESSIBLE UNITS REQUIRED	ACCESSIBLE UNITS PROVIDED	TYPE A UNITS REQUIRED	TYPE A UNITS PROVIDED	TYPE B UNITS REQUIRED					
NA										

ACCESSIBLE PARKING (SEE SITE SHEET)

TYPE B UNITS PROVIDED

TOTAL

DRINKING FO

ACCESSIBL

		(S	ECTION 1106)			
LOT OR	TOTAL # OF PA	ARKING SPACES	# OF ACC	ESSIBLE SPACES	PROVIDED	
PARKING AREA	REQUIRED	PROVIDED	REGULAR WITH 5' ACCESS AISLE	VAN SPACES WITH 132" ACCESS AISLE	VAN SPACES WITH 8' ACCESS AISLE	
						Γ
TOTAL	23	32			2	

PLUMBING FIXTURE REQUIREMENTS (SECTION 2902.1)

			(22			
OCCUPANCY	WATER	CLOSETS	URINALS	LAVA	FORIES	SHOWER
	MALE	FEMALE		MALE	FEMALE	TUBS
MERCANTILE			-			NA

SPECIAL APPROVALS Special approval: (Local Jurisdiction, Department of Insurance, SBCCI, ICC, etc., describe below)

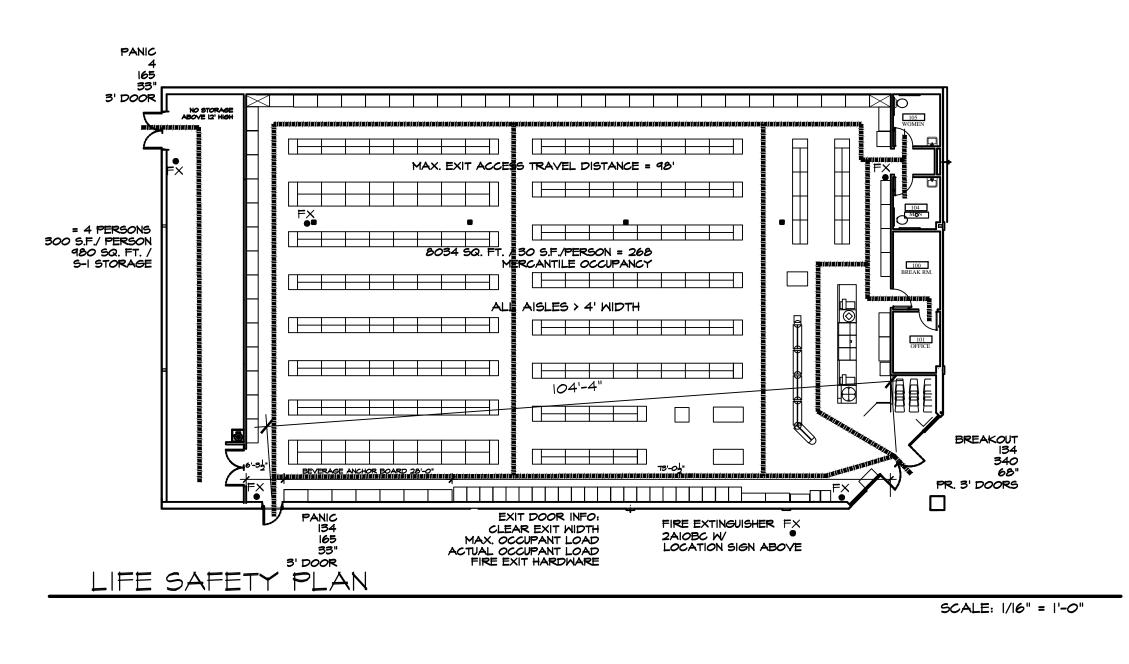
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			-	Shears (for	MWFRS)	- Vx=	Vy=
SEISMIC D Provide the fo			A ntners:	B	🗌 C	🗌 D	
	pancy Categor	•		Пп	ШП	🗌 IV	
-	ral Response Classification		S _{MS}	%g : □ B	S _{₩1}	%g □ D	E
		Data Sour	:e: 🗌 Fi	eld Test		sumptive	🗌 🗋 Historia
Basic	structural sy	́ 🗌 в	earing Wall			Moment Stee	
		_	uilding Frame Ioment Frame	_	ed Pendul		· Special Stee
	ic base shear sis Procedure		implified	Vy= Equiva	 alent Later	al Force	🗌 Dynam
Archit	tectural, Mech	nanical, Comp	-	-	🗌 Yes	_	- •
LATERAL D SOIL BEAR				🔄 Eartho	quake	Wind	
Field	Test (provide	copy of test		-			
	mptive Bearin size, type, and			-			
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design vs ann	ual energy co	ost for the p	oposed desigr		i energy c		Stanuaru Ter
Climate Method	Zone:		」5 yCode □1	Prescriptive	Perforn	nance	
		ASHR	AE 90.1	Prescriptive	🗌 Perforn	nance	
THERMAL Roof/Ceiling			nblv)				
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R-'	Value of insu ylights in eac	lation		<u> </u>		_	
-		ie of skylight				_	
Exterior Wal	-	ssembly)	-			_	
	scription of a Value of tota		TAL PANE	LS, RI9 11	NSUL., M	ITL STUDS	5, GYP BI
	Value of insu enings (windo		vith glazing)	R-19		_	
-	U-Valu	le of assembl heat gain coe	y C C	<u> </u>	1	_	
		tion factor -Values		 1.72		_	
Walls below							
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Floors over	Value of insu uncoonditi		(each asse	mblv)		_	
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DOLLAR GENERAL STORE # 20312 SPRING HILL CHURCH ROAD LILLINGTON, NORTH CAROLINA SCHEDULE OF DRAWINGS COVER $\overline{\mathfrak{H}}$ C2 EXISTING CONDITIONS PLAN 𝘢 C3 SITE PLAN

↓ C6 UTILITY PLAN

- P-2 PLUMBING PLANS & RISERS
- M-1 MECHANICAL SCHEDULES & DETAILS M-2 MECHANICAL PLAN

- E-3 ELECTRICAL POWER POLES E-4 DATA ROUTING PLAN
- EMS-1 EMS PLAN & SCHEDULE



O C4 GRADING & DRAINAGE PLAN C5 EROSION CONTROL PLAN

 $\stackrel{\frown}{=}$ C7 CONSTRUCTION DETAILS = C8 CONSTRUCTION DETAILS m C9 CONSTRUCTION DETAILS G C10 STORMWATER MANAGEMENT DETAILS щ C11 LANDSCAPE PLAN

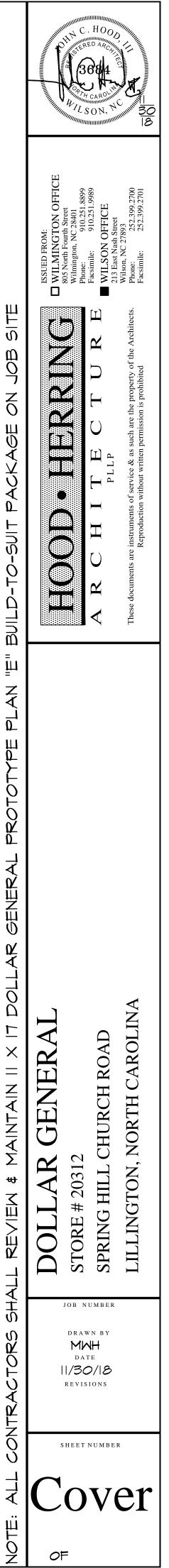
↓ A-1 FLOOR PLAN & SCHEDULES $\overrightarrow{0}$ A-2 ELEVATIONS & FIXTURE PLAN ⁽ A-3 BUILDING SECTIONS

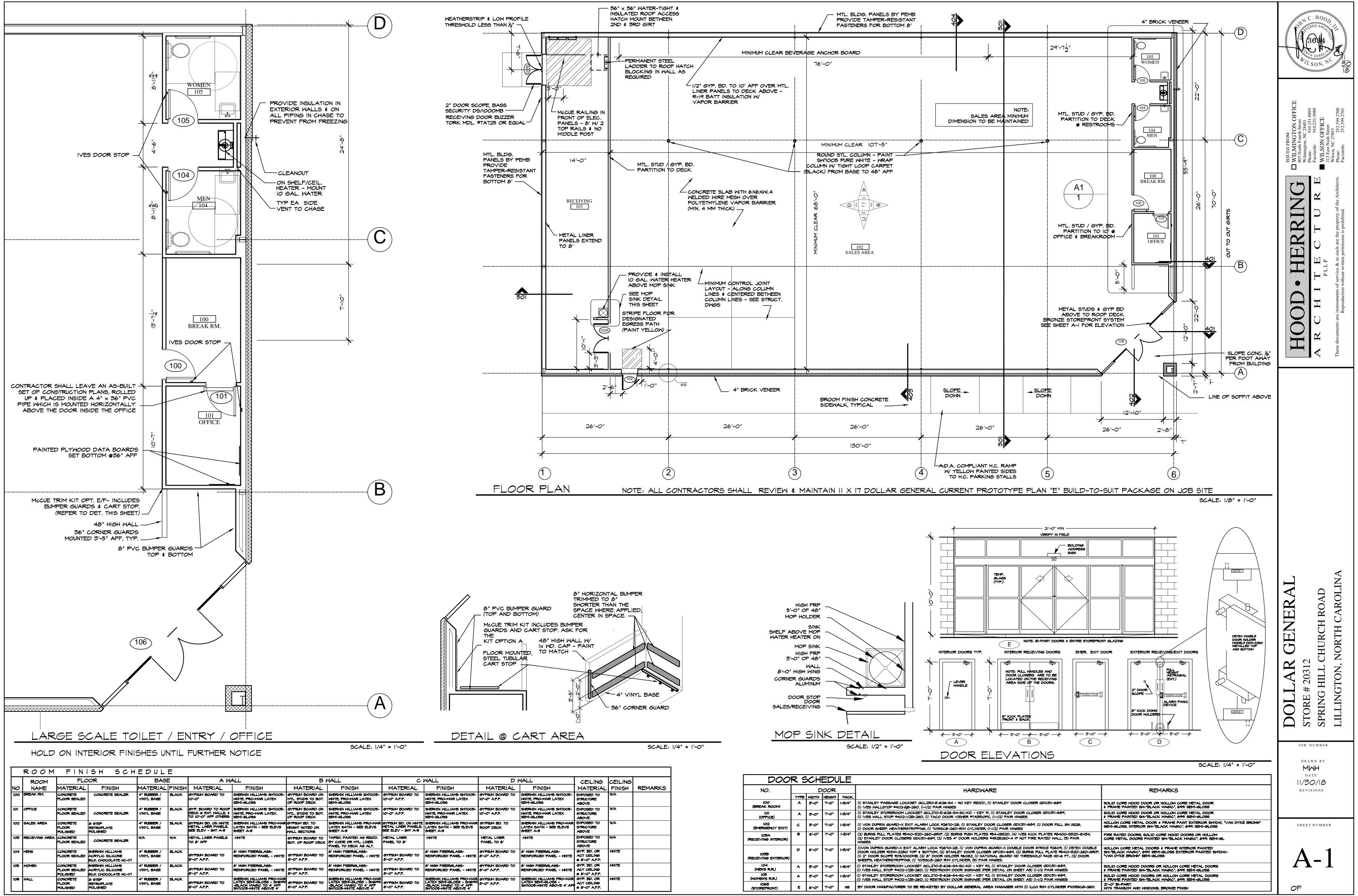
¹ A-4 WALL SECTIONS ¹⁰ A-5 ROOF PLAN, PAINTING DIAGRAM & SCHEDULES L A-6 CONCRETE & FINISH SPECIFICATIONS & NOTES

P-1 PLUMBING SCHEDULES & DETAILS

E-1 ELECTRICAL POWER PLAN E-2 ELECTRICAL LIGHTING PLAN

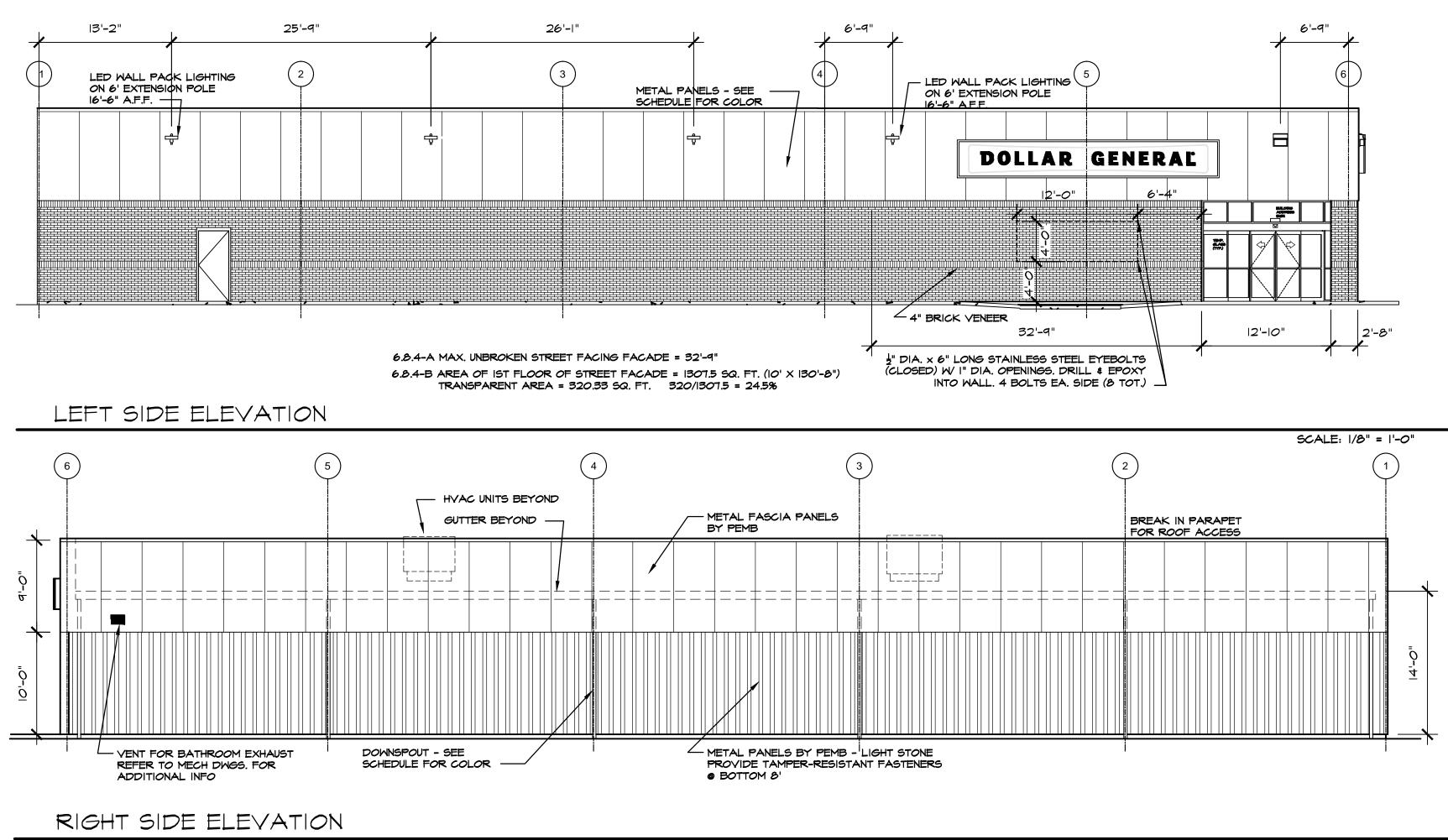
EMS-2 EMS PANEL & CONTROLS





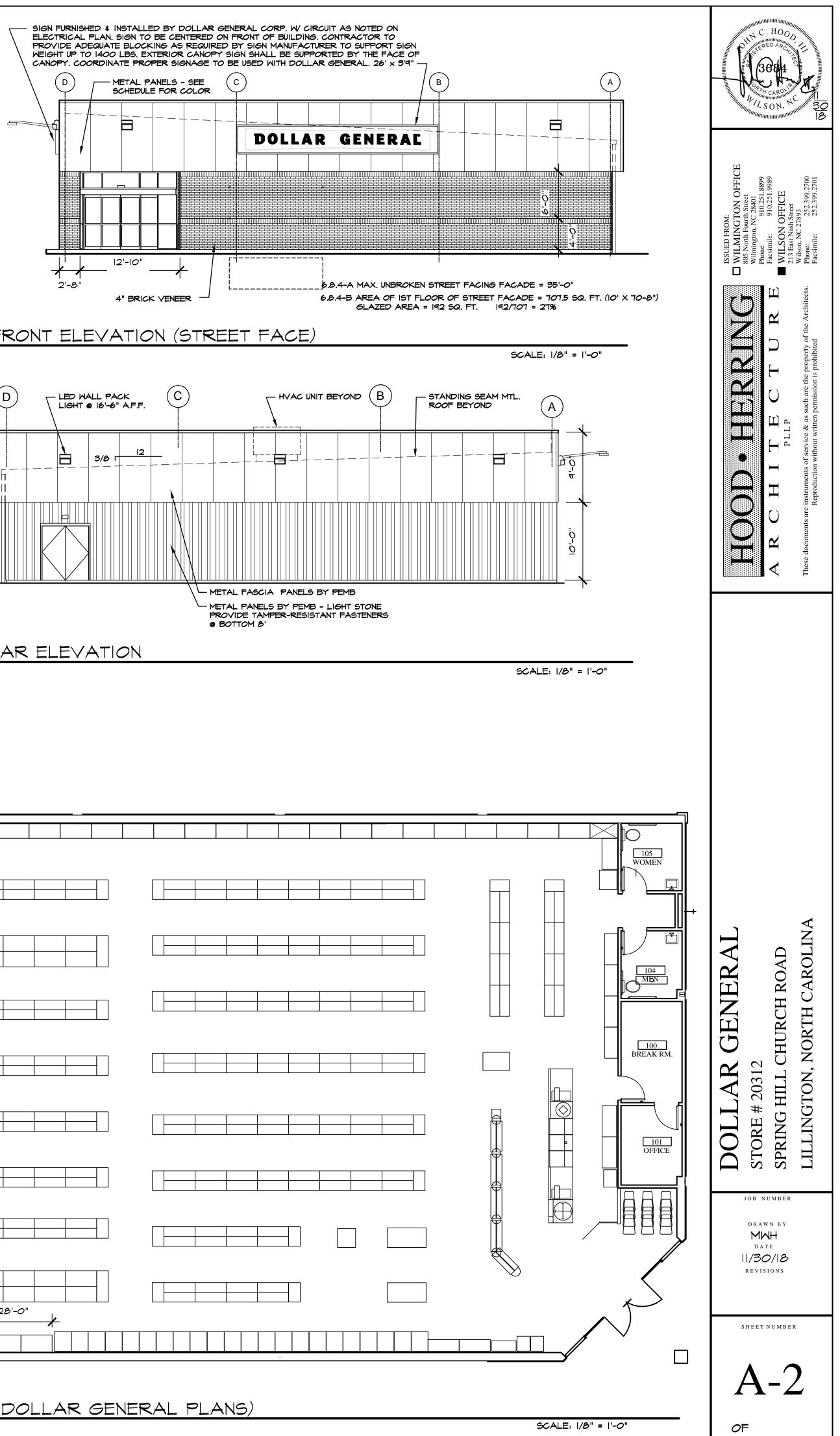
	סי	NALL	CEILING	CEILING	
	MATERIAL	FINISH	MATERIAL	FINISH	REMARKS
MT005- Ex	Gypsum Board to 10'-0" A.F.F.	SHERWIN WILLIAMS SW1005- WHITE, PRO-MAR LATEX SEMI-GLOSS	EXPOSED TO STRUCTURE ABOVE	NA	
47 <i>00</i> 5- EX	Gy psum Boar d to 10'-0" A.F.F.	Sherwin Williams Sw1005- White, Pro-Mar Latex Semi-Gloss	EXPOSED TO STRUCTURE ABOVE	NA	
ro-mar Levs	Gypsum BD. To Roof Deck	Sherwin Williams Pro-Mar Latex Satin - See Elevs Sheet A-5	EXPOSED TO STRUCTURE ABOVE	NA	
	Metal Liner Panel to 8'	WHITE	EXPOSED TO STRUCTURE ABOVE	NA	
- - MHITE	64 P9UM BOAR D TO 8'-0" A.F.F.	8' High Fiberglass- Reinforced Panel - White	GYP. BD. OR Act ceiling B'-O" A.F.F.	WHITE	
- - MHITE	Gypsum Board to 8'-0" A.F.F.	8' High Fiberglass- Reinforced Panel - White	GYP. BD. OR Act ceiling ● 8'-0" A.F.F.	WHITE	
Ro-Mar Sweggi ' Aff 'E 4'	Gypsum Board to 8'-0" A.F.F.	SHERWIN WILLIAMS PRO-MAR LATEX SEMI-GLOSS - SWT003-WHITE ABOVE 4' AFT	GYP. BD. OR ACT CEILING 8'-0" A.F.F.	WHITE	

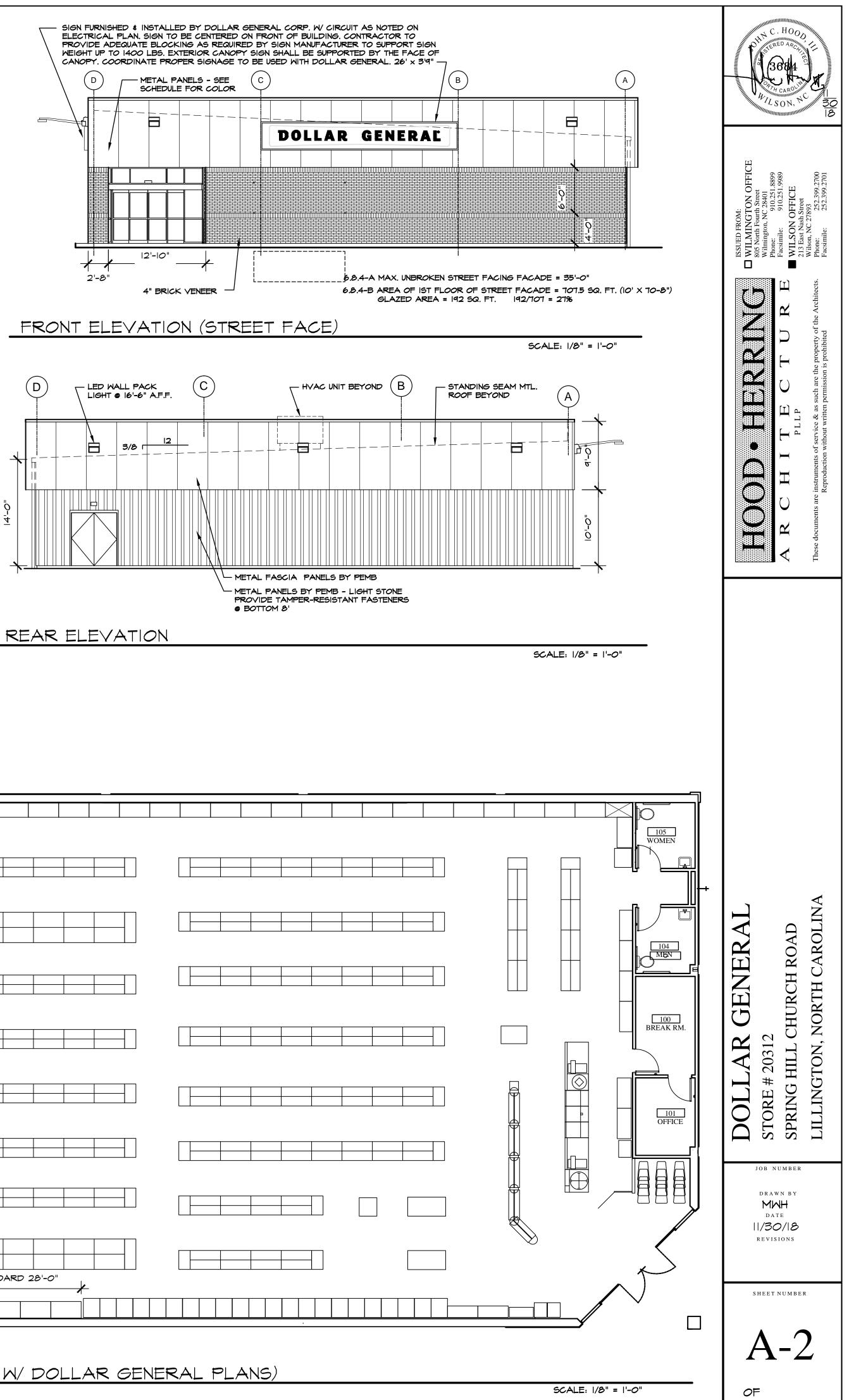
DOO					
	<u> </u>				
NO.			OOR	_	
	TYPE	WIDTH	HEIGHT	тніск.	
100 (BREAK ROOM)	•	5'-0"	יס-יד	1-3/4"	(1) STANLEY PASSAGE LOCKSET QCL230-E-626-54 - 1 (1) IVES WALLSTOP #402-½B-26D, (1-1/2) PAIR HINGES
ioi (office)	*	5'-0"	יס-יד"	-5/4"	(I) STANLEY STOREROOM LOCKSET QCL270-E-626-54 (I) IVES WALL STOP #402-I/2B-26D, (I) TACO DOOR VI
102 (Emergency Exit)	c	5'-0"	7'-0"	1-3/4"	(1) VON DUPRIN GUARD-X EXIT ALARM LOCK #2670-28 (1) DOOR SWEEP, WEATHERSTRIPPING, (1) 70155C8-26D-
IOSA (RECEIVING INTERIOR)	B	6'-0"	7'-0"	1-3/4"	(2) BURNS PULL PLATES #5410-32D-26D-GRIP, (2) BUR (2) STANLEY DOOR CLOSERS @DC311-689, (2) IVES 4" HINGES
1058 (Receiving Exterior)	D	6'-0"	7'-0"	-3/4"	(I)VON DUPRIN GUARD-X EXIT ALARM LOCK #2670-28, DOOR HOLDER #DDH-2250 TOP & BOTTOM, (2) STANLE (I) 2" DOOR SCOPE #D3/1000MB, (2) 8" DOOR HOLDER SWEEPS, WEATHERSTRIPPING, (I) 70155C8-26D RIM CYL
104 (MEN'S R.R.)	A	5'-0"	7'-0"	1-3/4"	(1) STANLEY STOREROOM LOCKSET QCL270-E-626-54- (1) IVES WALL STOP #402-1/2B-26D, (1) RESTROOM DOC
105 (Women's R.R.)	•	5-0"	7'-0"	1-5/4"	(1) STANLEY STOREROOM LOCKSET QCL270-E-626-54- (1) IVES WALL STOP #402-1/2B-26D, (1) RESTROOM DOO
1068 (STOREFRONT)	E	6'-0"	יס-יד	NS	BY DOOR MANUFACTURER TO BE RE-KEYED BY DOLL

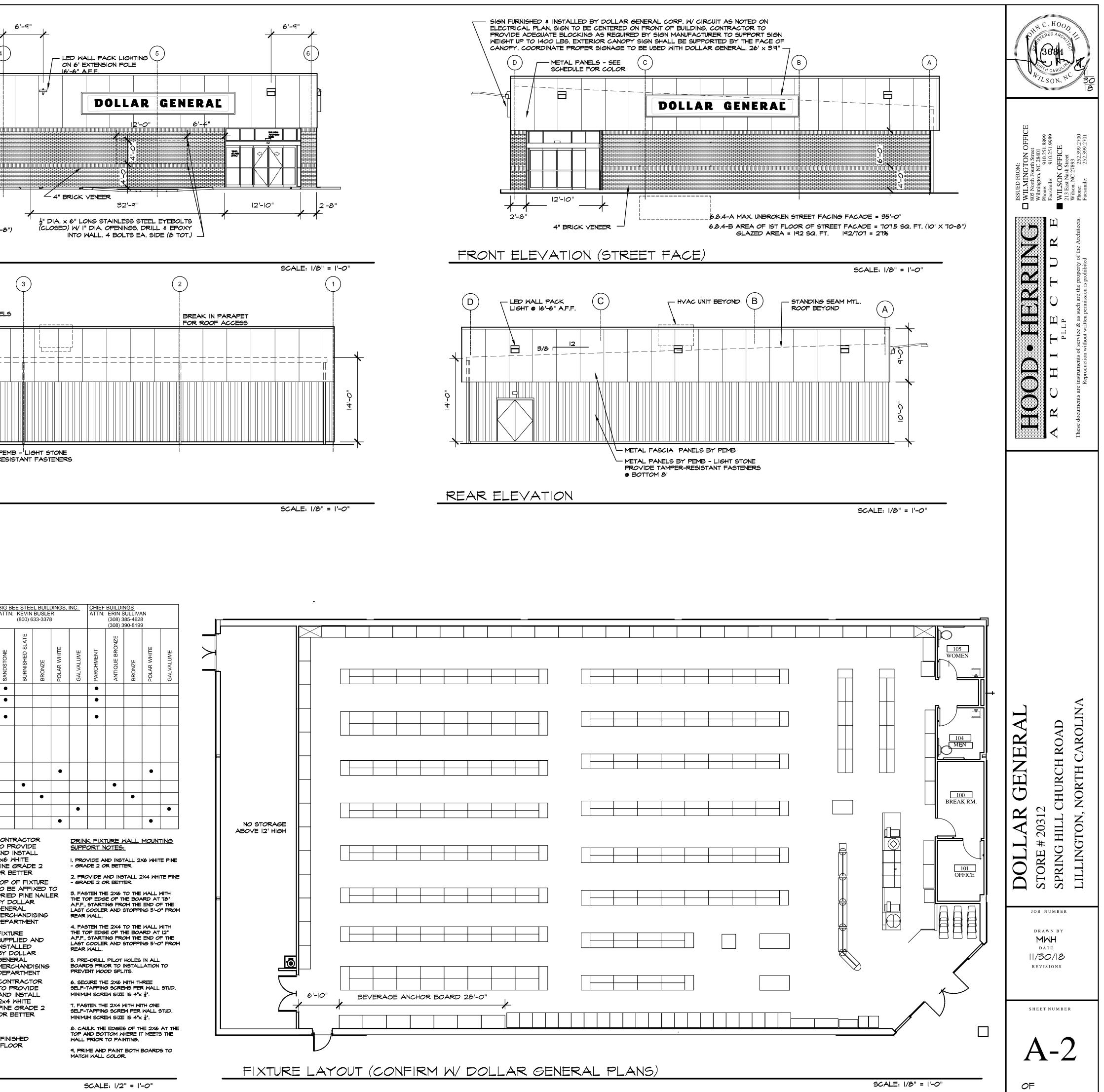


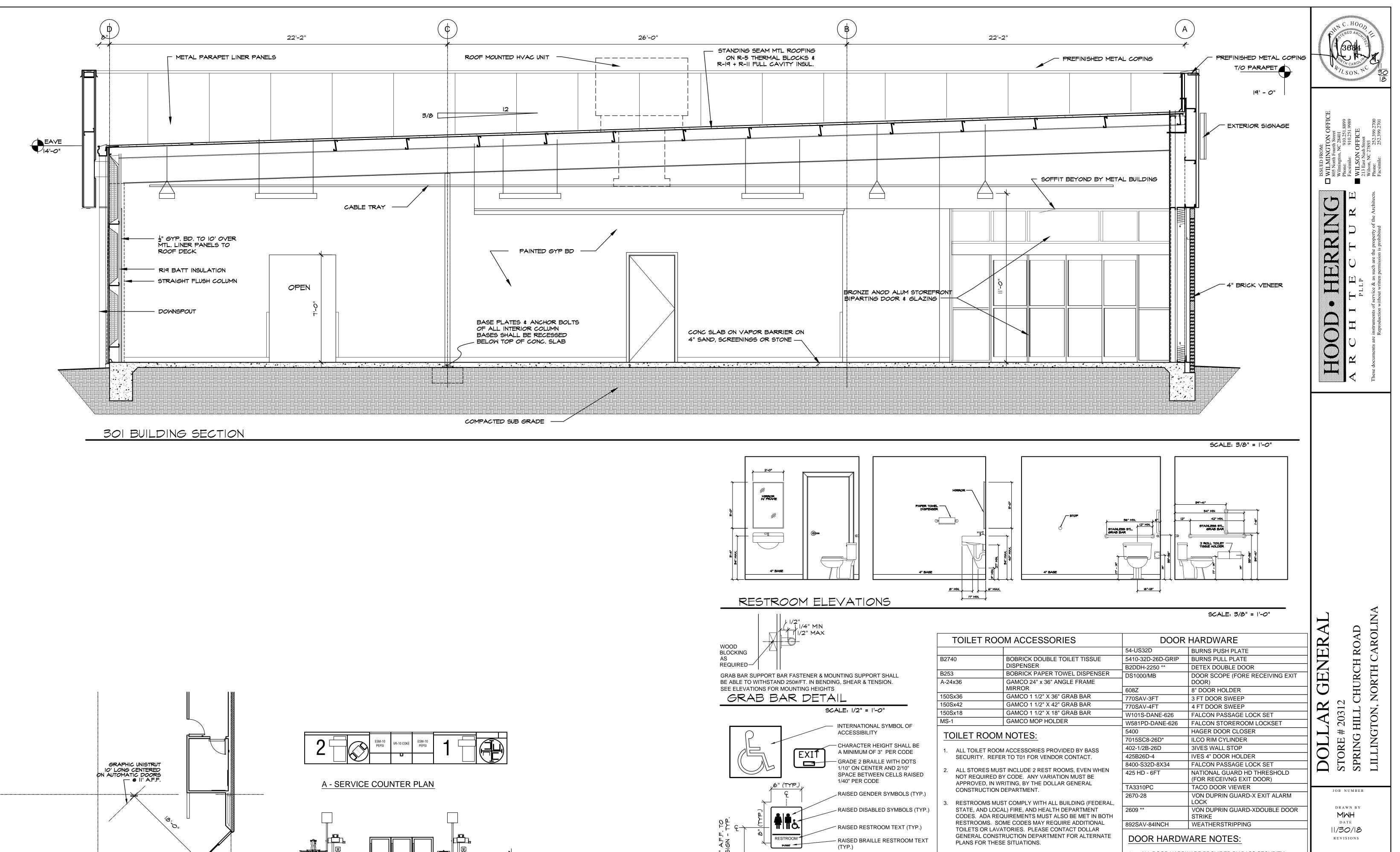
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GUTTERS		•			02		•	23				•	23				•	┢
DOWN SPOUTS		•					•					•					•	\square
	ETAL WALL PANELS & TRIM, RGENCY EXIT DOORS	•					•					•					•	
BRICK VENEER																		
FLAT METAL SOFF VESTIBULE AREA	IT AT STOREFRONT				•					•					•			
BUILDING PARAPE	T WALL AND CANOPY		•					•					•					
STOREFRONT SYS	STEM			•					•					•				
	METAL ROOF PANELS					•					•					•		
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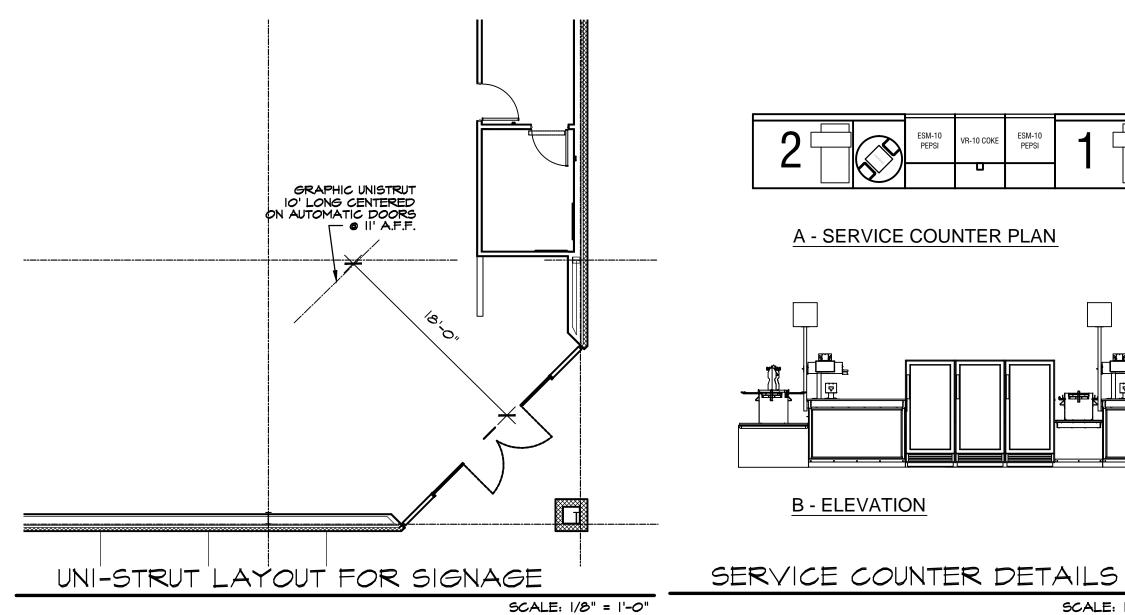
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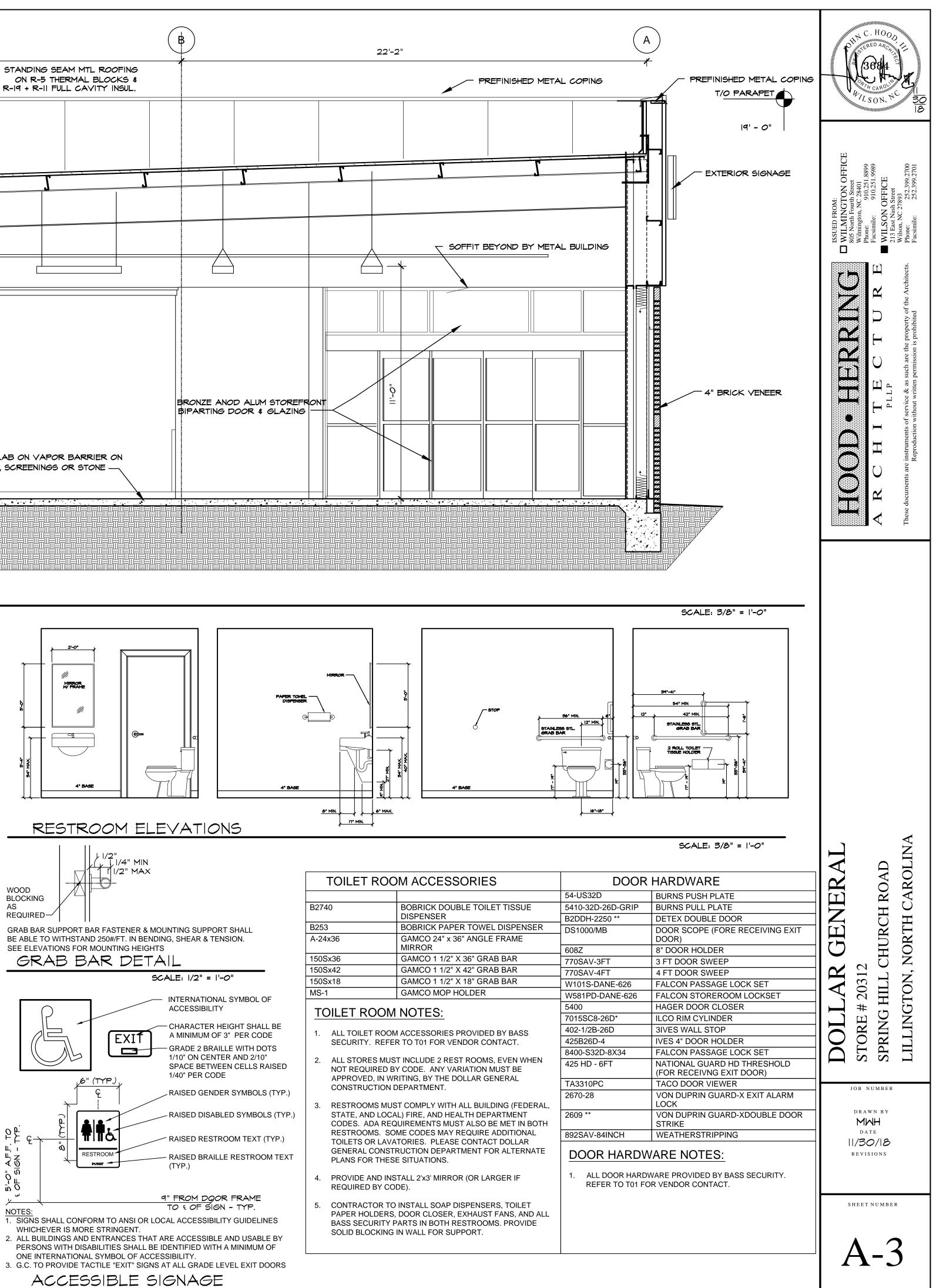


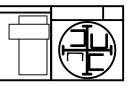


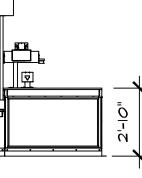








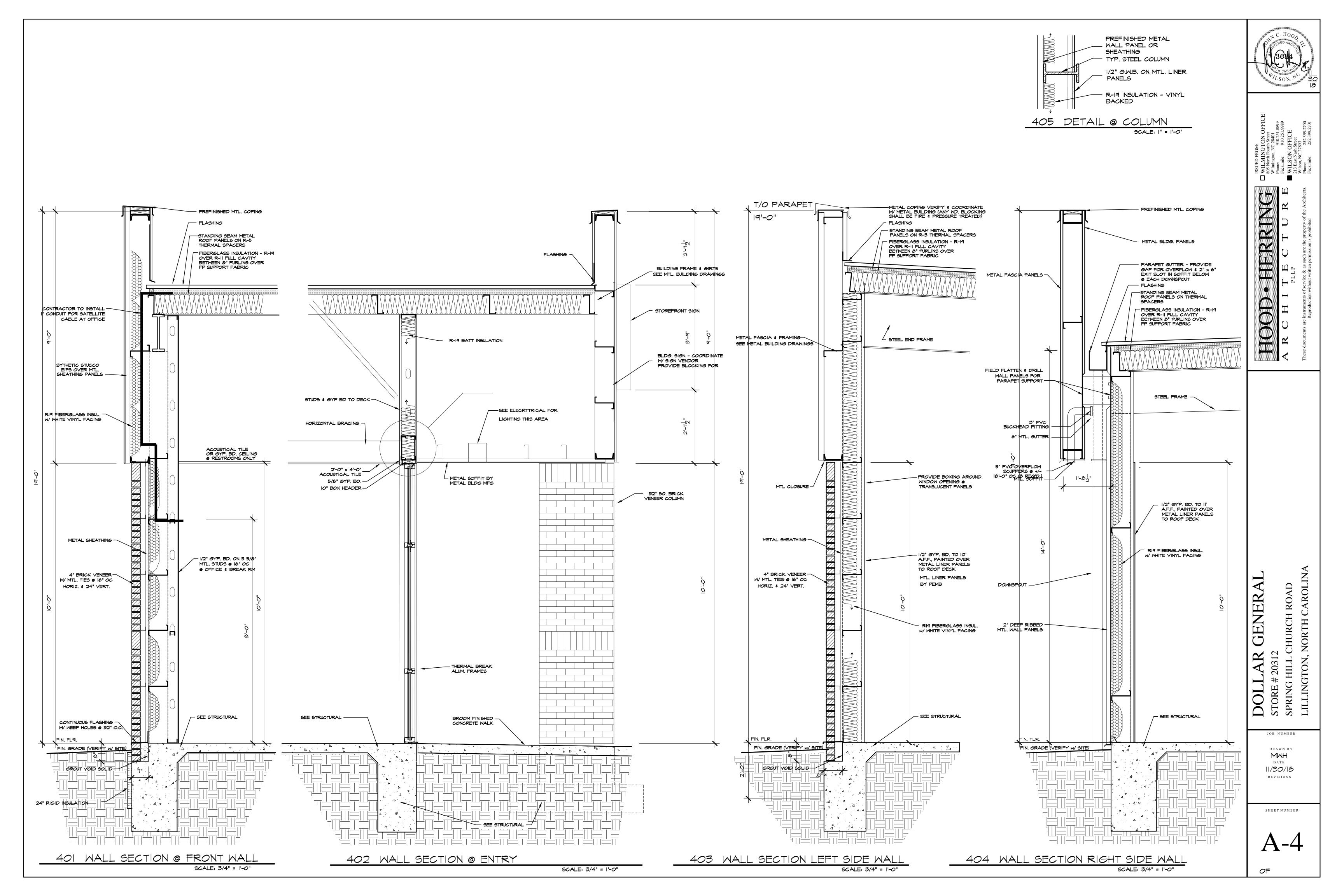


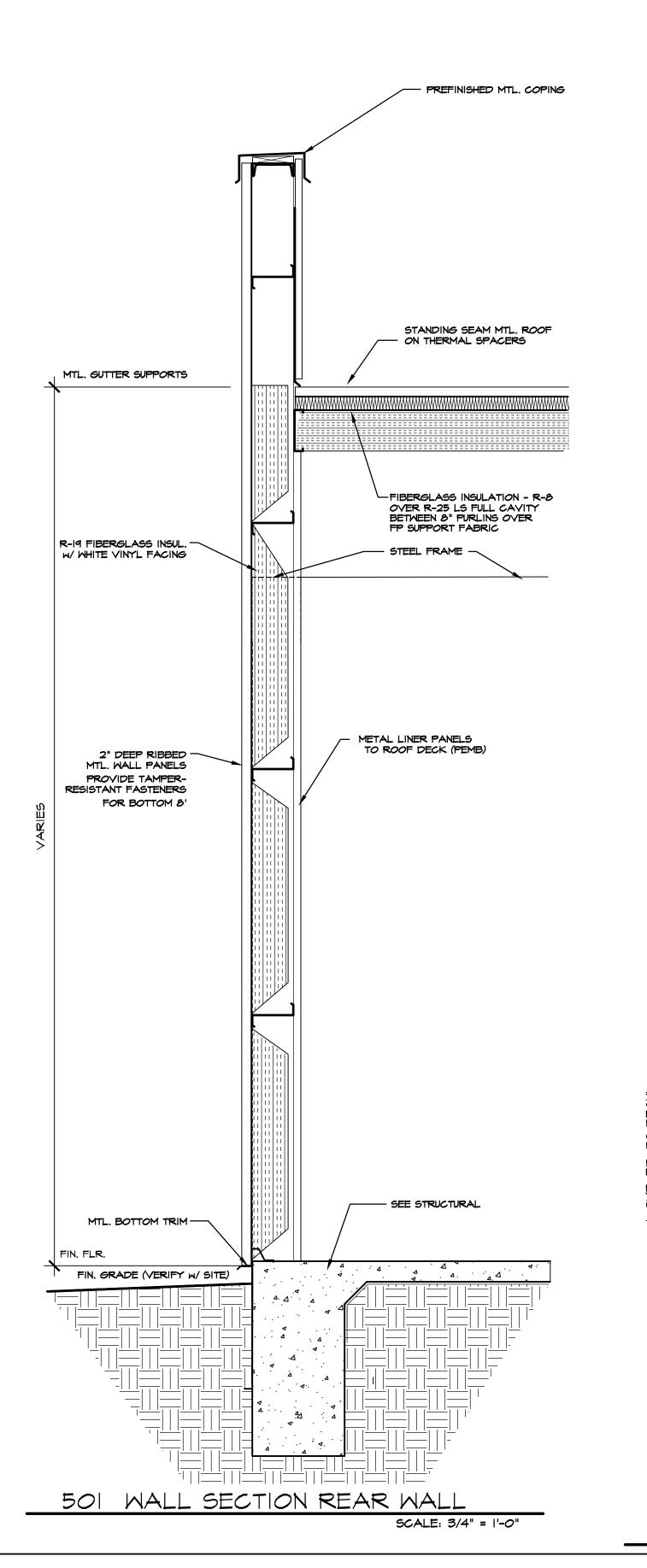


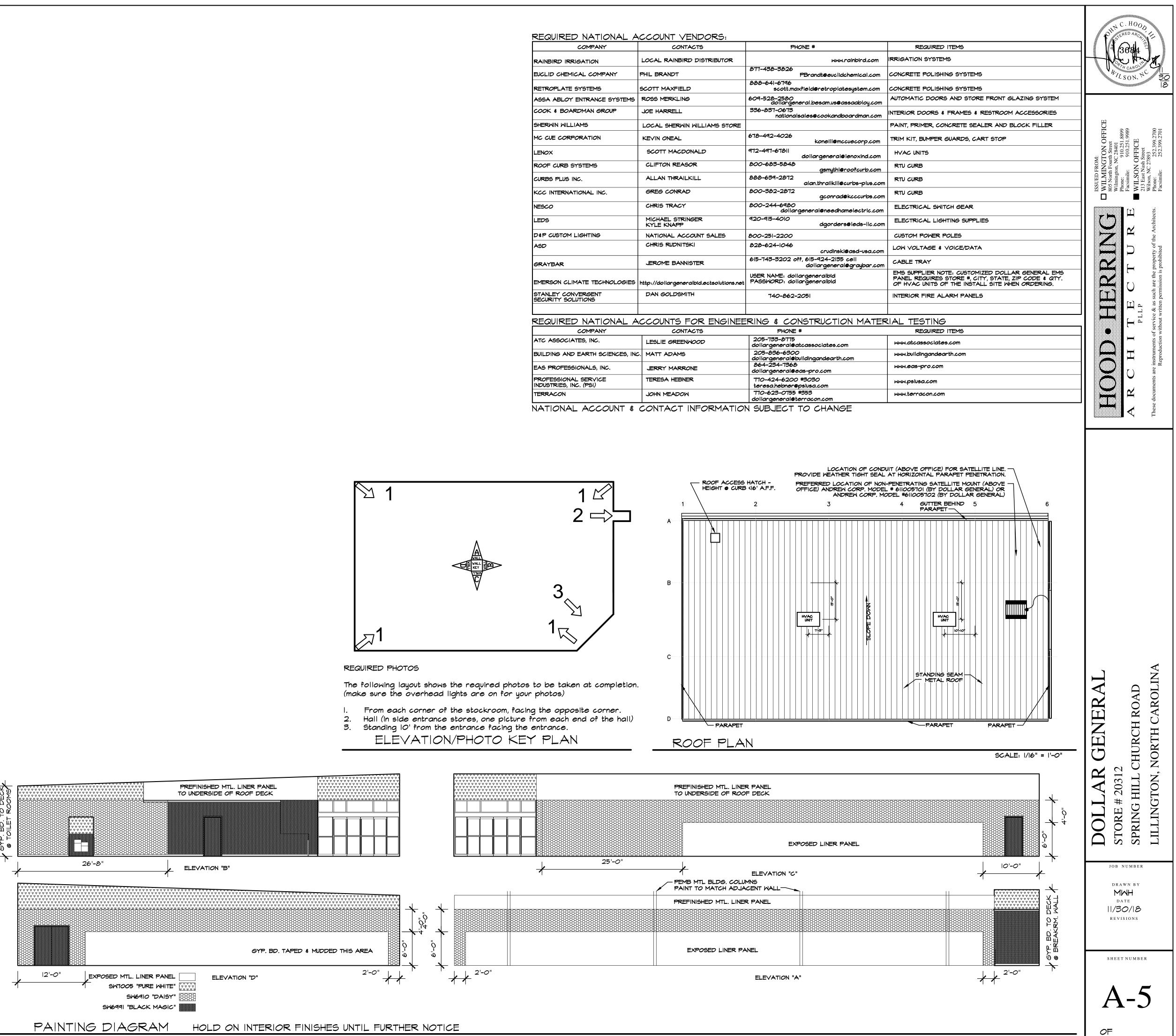
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SCALE: 1/2" = 1'-0"

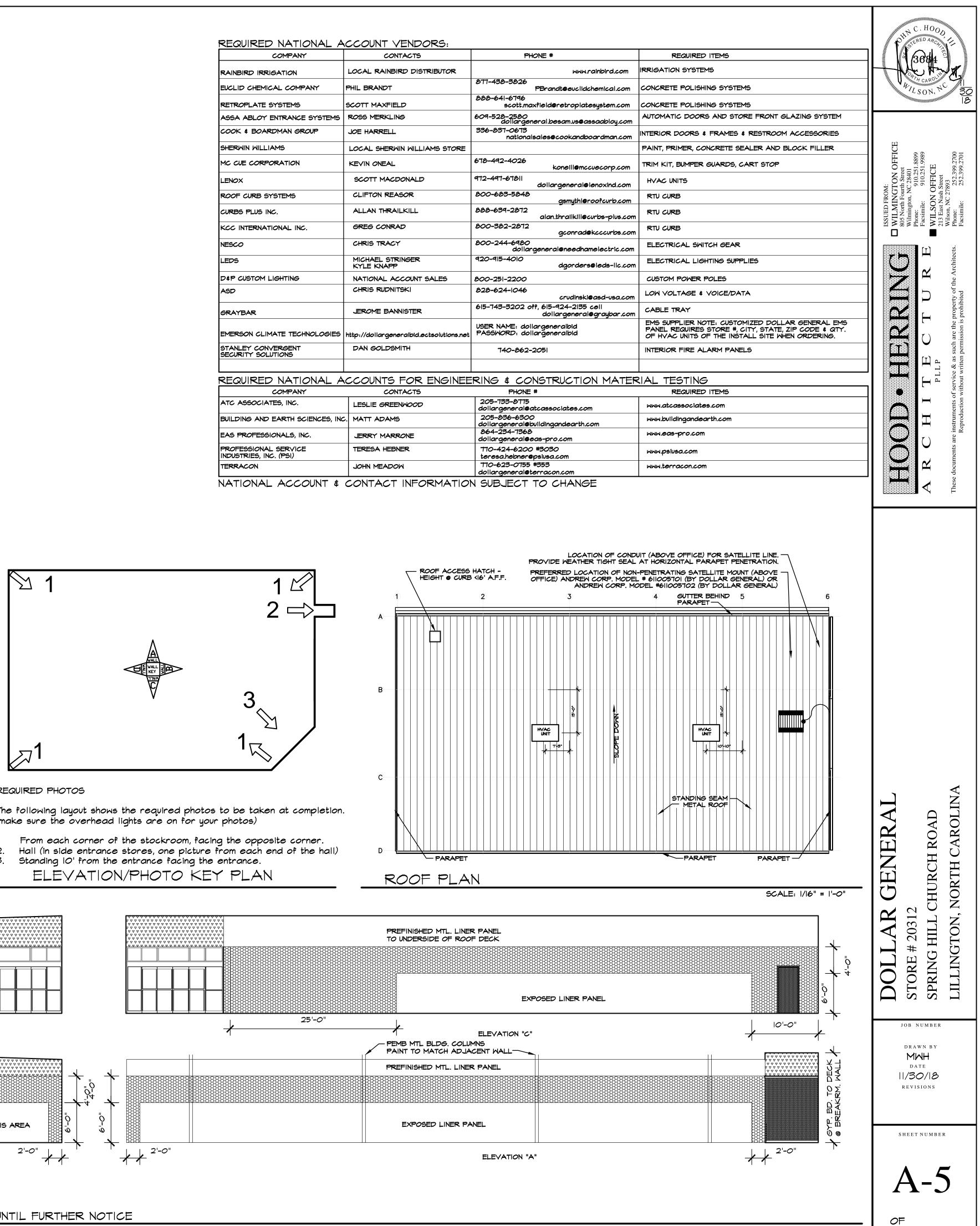
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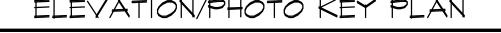






COMPANY	CONTACTS
RAINBIRD IRRIGATION	LOCAL RAINBIRD DIST
EUCLID CHEMICAL COMPANY	PHIL BRANDT
RETROPLATE SYSTEMS	SCOTT MAXFIELD
ASSA ABLOY ENTRANCE SYSTEMS	ROSS MERKLING
COOK & BOARDMAN GROUP	JOE HARRELL
SHERWIN WILLIAMS	LOCAL SHERWIN WILLI
MC CUE CORPORATION	KEVIN ONEAL
LENOX	SCOTT MACDONALD
ROOF CURB SYSTEMS	CLIFTON REASOR
CURBS PLUS INC.	ALLAN THRAILKILL
KCC INTERNATIONAL INC.	GREG CONRAD
NESCO	CHRIS TRACY
LEDS	MICHAEL STRINGER KYLE KNAPP
D&P CUSTOM LIGHTING	NATIONAL ACCOUNT
ASD	CHRIS RUDNITSKI
SRAYBAR	JEROME BANNISTER
EMERSON CLIMATE TECHNOLOGIES	http://dollargeneralbid.e
STANLEY CONVERGENT SECURITY SOLUTIONS	DAN GOLDSMITH
REQUIRED NATIONAL A	ACCOUNTS FOR
COMPANY	CONTACTS
ATC ASSOCIATES, INC.	LESLIE GREENWOOD
BUILDING AND EARTH SCIENCES, INC	C. MATT ADAMS
EAS PROFESSIONALS, INC.	JERRY MARRONE
PROFESSIONAL SERVICE INDUSTRIES, INC. (PSI)	TERESA HEBNER
TERRACON	JOHN MEADOW





1) GENERAL

A. The building shall be designed such that there is maintained an absolute minimum of 68'-1" from face-of-column to face-of-column on the sales floor.

2) FOUNDATIONS A. The concrete foundations shall be designed, detailed and constructed to provide for the safe, serviceable support of

the pre-manufactured metal building structure and all prescribed loads applied thereto. The foundations shall conform to the latest editions of all applicable standards of the American Concrete Institute (ACI), the Building Code(s) enforced by the Authority Having Jurisdiction and these requirements.

B. The soils supporting the foundation shall be prepared and compacted in accordance with a geotechnical testing based investigation and site specific recommendations provided by a Professional Engineer registered to practice in the State where the project is located.

C. The slab on grade shall not be utilized to resist horizontal thrust forces at the base of the pre-engineered building frames. Tie beams below and separate from the building slab may be utilized.

D. The bearing materials shall be free of organic, expansive or corrosive material, and shall support the foundation in accordance with the following twenty five year criteria:

1. Maximum differential movement due to either settlement or heave shall not exceed 1/2" over a distance of 50 feet.

2. Maximum total movement due to either settlement or heave shall not exceed 1".

E. The foundations shall be of sufficient depth to bear below local frost depth where exposed, attain minimum design bearing pressure, achieve sufficient protection from settlement or heave, and where adjacent to existing construction, avoid application of lateral earth pressure to adjacent construction.

3) SLAB ON GRADE

A. The subgrade for the slab on grade shall be compacted and prepared in accordance with a geotechnical testing based investigation and site specific recommendations provided by a Professional Engineer registered to practice in the State where the project is located. The subgrade shall provide a minimum of 100 pounds per cubic inch (pci) modulus of sub-grade reaction and shall be proof-rolled to ensure that there are no pumping or soft zones greater than ¹/₂" (ACI 302, "Guide for Concrete Floor Slab Construction").

B. The slab on grade shall conform to the latest editions of all applicable standards of the American Concrete Institute (ACI), the Building Code(s) enforced by the Authority Having Jurisdiction and these requirements. The slab on grade shall be a minimum of 4" thick and reinforced with a minimum 6" x 6" x W1.4 x W1.4 welded wire fabric located in the center of the slab.

C. Except at doors at the perimeter of the facility, the slab on grade shall be isolated from the building columns and any perimeter grade beams or walls. The slab on grade shall receive a hard steel trowel finish. Saw-cut contraction joints a minimum of ¹/₄ the depth of the slab shall be provided in both principal directions across the entire floor slab, spaced no further than 13 feet on center and providing panels with an aspect ratio no greater that 1.5:1. Refer to Control Joint Spacing Plan on Sheet S3. The slab shall be protected from the effects of heat or wind as necessary to avoid any curling of the slab segments.

4) CONCRETE SALES FLOOR PRE-INSTALLATION CONFERENCE:

A. At least 30 days prior to the start of the concrete slab construction, the general contractor shall conduct a meeting to review the proposed concrete mix designs and to discuss the required methods and procedures to achieve the requirements of this specification. The general contractor shall send a pre-concrete conference agenda to all attendees 20 days prior to the scheduled date of the conference.

B. The general contractor shall require responsible representatives of every party concerned with the concrete work to attend the conference, including, but not limited to, the following: General contractor's superintendent

1. Laboratory responsible for concrete mixes, field quality control and floor tolerance testing

- 2. Ready-mix concrete producer
- 3. Concrete contractor
- 4. Chemical admixture manufacturer
- 5. Liquid densifier and sealer manufacturer
- 6. Liquid densifier and sealer applicator
- 7. Joint filling manufacturer
- 8. Joint filling applicator

C. Minutes of the meeting shall be recorded, typed and printed by the general contractor and distributed to all concerned parties, including the owner's representative, the architect and the structural engineer, within five days of the meeting.

D. The minutes shall include a statement by the concrete supplier stating that the proposed concrete mix design will produce the concrete quality required by these specifications.

E. The minutes shall include a statement by the concrete contractor that the proposed concrete mix design will provide appropriate workability and setting times, to ensure that the concrete contractor can achieve the requirements of this specification.

5) CONCRETE CONTRACTOR QUALIFICATION:

A. The concrete contractor shall include in their bid package to the general contractor, sufficient data, including a minimum of three similar and successful projects that clearly indicates the concrete contractor's ability to successfully perform the work and to achieve the interior sales floor slab tolerances required in this specification. The concrete contractor's team shall have participated in the majority of these projects, and that team shall remain the same through the duration of this project.

6) CONCRETE MATERIALS:

concrete.

A. Portland Cement: ASTM C 150, Type 1. Use one brand of cement throughout the project.

B. Coarse and fine aggregates: ASTM C 33. Combined aggregate gradation for slabs on grade and other designated concrete shall be 8% - 18% for large top size aggregates $(1\frac{1}{2})$ or 8% - 22% for smaller top size aggregates (1" or ³/₄") retained on each sieve below the top size and above the no. 100 sieve. Slabs on grade shall have a maximum aggregate size of $1\frac{1}{2}$ " footings and piers 1" and beams $\frac{3}{4}$ ".

C. Water: complying with ASTM C 94.

D. Air-entraining admixtures: Shall conform to ASTM C-260. Admixture manufacturer shall provide written certification that the air-entraining admixture is compatible with other required admixtures. All exterior slabs shall be air-entrained (4% - 6%). Acceptable products: Euclid Chemical AEA-92 or Air 40; BASF Micro Air: W.R.

Grace Daravair 1000 or Darex- 1. 1. Note: Air-entraining admixture shall not be used on interior

E. Water-reducing admixture: Shall conform to ASTM C494, Type A and contain no more than 0.05% chloride ions. Acceptable products: Euclid Chemical Eucon series; BASF Pozzolith series; W.R. Grace WRDA or Daracem series.

F. Water-reducing, retarding admixture: Shall conform to ASTM C494, Type D, and contain no more than 0.05% chloride ions. Acceptable products: Euclid Chemical Retarder 75; BASF Pozzolith series; W.R. Grace Daratard 17.

G. High range water-reducing admixture (superplasticizer): Shall conform to ASTM C494, Type F or Type G and contain no more than 0.05% chloride ions. Acceptable products: Euclid Chemical Eucon 37; BASF Rheobuild 1000; W.R. Grace daracem-100.

H. Water-reducing, non-corrosive accelerating admixture: Shall conform to ASTM C494, Type C or E, and contain no more chloride ions than are present in municipal drinking water. The admixture manufacturer must have long-term, non-corrosive test data from an independent testing laboratory (of at least a year's duration) using an acceptable accelerated corrosion test method such as that using electrical potential measures. Acceptable products: Euclid Chemical Accelguard 80/90 or Accelguard NCA; BASF NC534 or Pozzutec 20; W.R. Grace Polarset.

I. Prohibited admixtures:

1. Calcium chloride or admixtures containing more than 0.05% chloride ions are not permitted. 2. Flyash is not permitted.

7) EVAPORATION RETARDER:

- 1. Acceptable products: a. "Eucobar" by Euclid Chemical - Phil Brandt 877-438-3826
- 8) CURING MATERIALS:
- V.O.C. Content of 700 g/l.
- 1. Acceptable products:

B. Interior curing (building not enclosed/sales floor slab is placed first): The interior sales floor slab shall be cured using a reduced odor, dissipating liquid membrane forming curing compound that is formulated from hydrocarbon resins. The dissipating liquid membrane forming curing compound shall meet the requirements of ASTM C309 and V.O.C. contents in accordance to EPA 40 CFR, part 59, table 1, subpart D for concrete curing compounds with a maximum V.O.C. content of 350g/l. 1. Acceptable product:

C. Interior curing (building enclosed/sales floor slab is placed last): The interior sales floor slab shall be cured using a removable, low odor, fast drying liquid membrane forming curing compound. The removable liquid membrane forming curing compound shall meet the requirements of ASTM C309, AASHTO M 148, USDA compliancy and V.O.C. contents in accordance to EPA 40 CFR, part 59, Table 1, subpart D for concrete curing compounds with a maximum V.O.C. Content of 350g/l. 1. Acceptable product:

a. "Kurez RC" by Euclid Chemical - Phil Brandt 877-438-3826

9) LIQUID DENSIFIER / SEALER FOR INTERIOR SALES FLOOR: A. Liquid densifier / sealer shall be a sodium silicate / siliconate blend. Manufacturer of liquid densifier and sealer must be contacted prior to bidding for pricing and application requirements.

1. Acceptable liquid densifier and sealer manufacturer: a. "Euco Diamond Hard" by Euclid Chemical - Phil Brandt 877-438-3826 b. "RetroPlate 99" by RetroPlate Systems - Curtis Turnbull 888-942-3144

B. Approval: All general contractors bidding or negotiating a Dollar General project shall contact Euclid Chemical or RetroPlate to obtain a list of approved applicators located within the geographic region of the project. General contractors shall solicit and accept pricing only from those applicators as provided by Euclid Chemical or RetroPlate. The approved applicator selected for the initial application of liquid densifier / sealer shall be the same as for the joint filling and additional application of liquid densifier / sealer and polishing process. Within ten days after completion of work, the approved applicator shall furnish Euclid Chemical or RetroPlate a copy of the invoice, as well as square footage and coverage rate data confirming that the specified application rates were achieved.

C. Project service: at least <u>10</u> days prior to application of liquid densifier and sealer, the general contractor shall notify the Euclid Chemical or RetroPlate representative for jobsite service. The representative will be on the project site during the first application of liquid densifier / sealer and will follow the project through to completion.

10) SEMI-RIGID POLYUREA JOINT FILLER: A. UV Resistant, semi-rigid polyurea joint filler shall be a two (2) component, 100% solids compound, with minimum Shore "A" hardness of 80. Joint filler color shall match the adjacent concrete surface. 1. Acceptable semi-rigid polyurea joint filler manufacturer: a. "Euco QWIKJoint UVR" by Euclid Chemical - Phil Brandt 877-438-3826

B. Non-UV Resistant, semi-rigid polyurea joint filler shall be a two (2) component, 100% solids compound, with a minimum Shore "A" hardness of 75. Joint filler color shall match the adjacent concrete surface. 1. Acceptable semi-rigid polyurea joint filler: a. "CreteFill Pro 75" by CureCrete - Curtis Turnbull 888-942-3144

C. Approval: All general contractors bidding or negotiating a Dollar General project shall contact the Euclid Chemical company or Retroplate to obtain a list of approved applicators located within the geographic region of he project. General contractors shall solicit and accept pricing only from those applicators as provided by Euclid Chemical or RetroPlate. The approved applicator selected for the initial application of liquid densifier / sealer shall be the same as for the joint filling and additional application of liquid densifier / sealer and polishing process.

11) CONCRETE MIXES:

B. Concrete mix design(s) shall be proportioned according to ACI 301, for normal-weight concrete determined by either laboratory trial mix or field test data as follows: 1. Compressive strength (28 days): 4000psi (27.6mpa), with a maximum water/cement ratio of .53, unless otherwise indicated on the drawings. Concrete materials included in the mix design shall be the same materials provided to the project, and shall be prepared by an independent testing laboratory approved by the owner. If sufficient backup data is not available, the laboratory mix design shall exceed the desired job strength of concrete by 1,200psi. Four copies of the mix design shall be submitted to the owner before concrete work begins.

2. Slump: Concrete containing mid or high range water reducer shall have a maximum slump of $5\frac{1}{2}$ " for the interior sales floor slab and 8" (200 mm) for other areas. All other concrete shall not exceed 4 inches (100 mm) unless otherwise indicated on the drawings.

3. Adjustment to concrete mixes: Mix design adjustments may be requested by General Contractor when characteristics of materials, job conditions, weather, test results or other circumstances warrant; at no additional cost to owner and as accepted by owner. Laboratory test data for revised mix design and strength results must be submitted to and accepted by owner before using in work. Both the concrete testing and inspection agency and the concrete contractor shall satisfy themselves that the concrete mix design will produce a concrete which will meet the specifications for this project. In addition, the General Contractor and Concrete Contractor shall verify that the workability, finishability and setting times are appropriate for slab installations. Placement shall be made directly from concrete trucks by chute. If pumping of the concrete is contemplated for any special locations, the proportions established above shall not be altered to suit the capabilities of the pumping equipment. For concrete containing macro-synthetic fibers, adjustments required to provide required placement conditions may warrant use of additional water reducer. No additional water is permitted into concrete mixture after addition of macro-synthetic fibers.

4 Interior concrete sales floor: Concrete shall be designed to meet 4000 psi compressive strength @ 28 days and exhibit <0.04% shrinkage @ 28 days. The mix shall contain approximately 12 cubic feet of #467 aggregate (1-1/2" top size), the specified water reducing admixture and achieve a w/cm ratio of 0.53 (max.). Concrete shall be non air-entrained and in no case shall the concrete be designed for less than 4000 psi (27.6mpa) @ 28 days. Proposed mix design shall be similar to the following

Prototype mix:

Materials Prototype mix 517-564lbs. Cement Fly ash/slag Prohibited 12 cubic feet +/- .50 (#467 stone) Coarse aggregate 7 cubic feet +/- (adjust as necessary) Fine aggregate Water content 250 - 300lbs. Air content (Entrapped Air Only) 3.0% (max.) Water Reducer (type a/f) 3oz.-10oz./100wt +/- (mid range preferred) W/cm 0.53 (max.) Initial slump (water) Final Slump (with water reducer)5.5" (max) <0.04% @ 28 days Shrinkage

A. Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

A. Exterior curing: All exterior concrete slabs shall be cured using a liquid membrane-forming curing compound. The liquid membrane-forming curing compound shall meet the requirements of ASTM C1315 with a maximum

a. "Super Rez Seal" or "Super Aqua Cure" by Euclid Chemical - Phil Brandt 877-438- 3826

a. "Kurez DR VOX" by Euclid Chemical - Phil Brandt 877-438-3826

A. Comply with ACI 301 requirements for concrete mixtures.

12) FLOOR SLAB FINISH AND TOLERANCES:

A. General: Unless otherwise noted by owner, concrete sales floor slab shall be cast in one continuous placement. Concrete shall be placed, screeded, re-straightened, and finished as necessary to meet the FF and FL tolerance requirements. Do not wet concrete surfaces during finishing operations.

B. Trowel finish (sales floor): Apply a hard trowel finish to surfaces as follows:

1. Laser screeds, vibratory screeds, highway straightedges and wood bull floats shall be used to initiate screeding and floating process to form a uniform and open-textured surface plane before excess moisture or bleed water appears on the surface. A back-up laser screed is required during concrete placement of the interior sales floor slab. Remove excess water before starting floating operations. Do not further disturb surfaces before starting finishing operations

2. Highway straightedge operations shall continue before, during and after troweling operation, until specified floor tolerances are achieved.

3. Trowel finish with gas operated troweling machine with adjustable blades on all finishing equipment. Use steel-reinforced blades on ride-on power trowels. Trowel the surface sufficiently to produce a smooth, tight, abrasion resistant surface. Care shall be taken not to overwork or burn the surface. Use 6" wide finish style steel-reinforced blades on final passes. Finishing blades shall be in new condition and completely clean of any deleterious materials. Interior machine trowel finish shall be achieved within a 3" tolerance of all walls, columns and partitions.

4. Protection: Care shall be taken to protect the interior sales floor. Entrances shall include clean floor mats to prevent mud stains and all equipment on the floor shall be diapered to prevent spills. Cutting oils, etc, are not allowed on the sales floor slab at any time during the construction process.

C. Comply with ACI 117, "Specifications For Tolerances For Concrete Construction and Materials." Interior sales floor slab shall meet the requirements of a type 5, single course, hard steel-troweled finish as described in ACI 302.

1. All perimeter areas and edges of the concrete floor shall exhibit the same finish as the sales floor, including but not limited to, hallways, offices, restrooms, etc.

2. The general contractor is responsible for contracting with the testing laboratory for all costs associated with floor tolerance testing. A copy of the final floor tolerance report shall be provided by the general contractor to the owner within 24 hours of receiving the report from the testing laboratory. The sales floor slab shall conform to the following flatness and levelness criteria:

Flatness Overall Floor Flatness rating of at least 35 Levelness

Overall Floor Levelness rating of at least 30

Tolerance Band for Entire Floor +/- 0.375 inch D. Failure to achieve the above criteria shall be cause for replacement of the offending segments or grinding/polishing at no cost to the Owner or Tenant.

E. Trowel finish (other than sales floor): Apply a hard trowel finish to surfaces indicated and to floor and slab surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film-finish coating system.

F. Heavy broom finish: As noted on drawings.

13) CONCRETE PROTECTION AND CURING:

A. General: Normalize concrete set time and protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 305 for hot-weather protection and ACI 306 for cold-weather protection during curing. During concrete placement operations, ventilate and exhaust all fumes from construction equipment and heaters to avoid potential early concrete carbonation. Apply the specified curing compound as quickly as possible for maximum protection. For concrete placement during hot, dry and windy conditions, concrete contractor shall use evaporation retarder as per manufacturer's instructions to maintain a moist condition and to minimize plastic drying shrinkage cracking at the surface of the freshly placed concrete.

1. Curing - Exterior Slabs:

All exterior concrete slabs shall be cured using the specified liquid membrane-forming curing compound. Per manufacturer's instructions, application shall be applied evenly and uniformly as soon as possible after final finishing. Surface shall be clean and damp, but not wet and can no longer be marred by walking workmen. All applications shall be made by an approved applicator of the manufacturer, and when surface and air temperature is above 50° f. Apply "Super Rez Seal" or "Super Aqua Cure" at an application rate of 400sf/gallon. Begin curing immediately after finishing concrete, but not before free water has disappeared from concrete surface.

2. Curing - Interior slabs:

The interior sales floor slab shall be cured using the specified dissipating or removable liquid membrane-forming curing compound. Per manufacturer's instructions, application shall be applied evenly and uniformly as soon as possible after final finishing. Surface shall be damp, but not wet and can no longer be marred by walking workmen. All applications shall be made by an approved applicator of the manufacturer, and when surface and air temperature is above 50° f. Apply "Kurez DR VOX" (slab first) or "Kurez RC" (slab last) at an application rate of 350sf/gallon. Begin curing immediately after finishing concrete, but not before free water has disappeared from concrete surface.

14) CONTRACTION JOINTS IN SLABS-ON-GRADE:

A. Form weakened-plane contraction joints, sectioning concrete into areas as indicated on drawings. Contraction joints shall be sawn to a depth equal to at least one-fourth of the concrete thickness, as follows:

B. Sawed joints: All saw cutting shall be accomplished with a "Soff-Cut" saw and vacuum system equipped with a new blade and plate, as soon as the slab will support the weight of the saw and operator. Note: Concrete dust shall be removed completely and immediately. If chalk lines are used for sawcuts, all chalk remaining on the slab shall be removed completely and immediately after sawing.

15) INTERIOR SALES FLOOR SLAB PROTECTION:

A. Take the following measures to protect the interior sales floor slab:

1. Wrap or "diaper" all motorized and hydraulic equipment to prevent fluid leaks 2. Provide non-marking tires on rubber tired vehicles or equip rubber tires with tire boots made of nylon

fabric Provide mats at all entrances to prevent mud stains

16) TIMING OF JOINT FILLER, LIQUID DENSIFER AND POLISHING PROCESS A. Do not commence installation of semi-rigid polyurea joint filler, liquid densifier and sealer or polishing processes until the building is completely enclosed, permanent power and lighting is operating and the building is thermostatically controlled. Installation of these materials shall commence approximately two weeks prior to "fixture date."

INSTALLATION OF SEMI-RIGID POLYUREA JOINT FILLER: 17)

A. All General Contractors bidding or negotiating a Dollar General project shall contact Euclid Chemical or RetroPlate to obtain a list of approved applicators located within the geographic region of the project. General contractors shall solicit and accept pricing only from those applicators as provided by Euclid Chemical or RetroPlate. The approved applicator selected for the initial application of liquid densifier / sealer shall be the same as for the joint filling and additional application of liquid densifier / sealer.

B. Joint filler installation: Comply with recommendations in ACI 302 for use of joint filler as applicable to materials, applications, and conditions indicated.

C. Surface cleaning of joints: Clean out joints immediately before installing joint filler. Remove foreign material from joint substrates that could interfere with adhesion of joint filler by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint filler. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air. Also remove all laitance and form-release agents from concrete surface. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues could interfere with adhesion of joint sealants. All surfaces to be filled shall be clean and dry.

D. For proper load transfer, joints must be filled full depth, but in no case should the joint filler be any less than 1" deep in the joint.

E. Mixing: Joint filler is a two part product requiring machine mixing and placing. Premix part b separately before using. Follow pump manufacturer's equipment instructions.

F. Placement: Joint filler shall be filled full depth. No backer rod is allowed. Joints should be overfilled and shaved even with the surrounding joint edge giving the floor joints a flat, smooth appearance. Shaving of excess joint filler can be approximately 30 minutes after placement, and up to 24 hours later, depending on jobsite conditions such as concrete and ambient temperatures.

G. Joint filler separation: The approved joint filling applicator shall include in their bid a cost per linear foot to make one return trip to refill joints if joint filler sidewall separation or splitting exceeds 1/16," or if surface profile is concave, chattered or if voids occur. This shall take place one week prior to grand opening.

18) INITIAL CLEANING FOR LIQUID DENSIFIER AND SEALER APPLICATION:

A. Interior sales floor slab: Thoroughly clean the interior sales floor slab prior to initial application of liquid densifier and sealer by completely removing the specified dissipating or removable curing compound from the floor surface. The following floor stripper or removal solution shall be applied to the floor to thoroughly strip, clean and remove all curing compound residue:

1. If Kurez DR VOX (slab first) was used to cure the slab, use "Euco Clean & Strip" by Euclid Chemical, applied at the proper water to floor stripper ratio and coverage rate that will completely remove the Kurez DR VOX. Contact: Phil Brandt (877) 438-3826

2. If Kurez RC (slab last) was used to cure the slab, use "Kurez OFF" by Euclid Chemical, applied at the proper water to floor cleaner ratio and coverage rate that will completely remove the Kurez RC. Contact: Phil Brandt (877) 438-3826

19) POLISHING PROCESS AND APPLICATION OF LIQUID DENSIFIER / SEALER: A. All Applicators must be certified by Euclid Chemical or Retro-Plate.

- B. The revised process can be used in both "Wet" and "Dry" applications.
- This process assumes a quality concrete finish (meets and/or exceeds the specified floor tolerances) by the floor finisher. Failure to achieve the above criteria shall be cause for replacement of the offending segments or grinding/polishing at no cost to the Owner or Tenant.
- D. Only the Sales Floor will receive the full 8 step process outlined below under item K.
- E. All other areas will only receive steps 1 through 3, no additional work is necessary. The yellow safety striping will remain.
- F. The Black painted border will not be required in areas behind fixtures, etc...it will only be installed at the main entry door, office doors, egress doors and doorways into the receiving area and transitions that can be seen by the customers.
- G. Steps 2 & 4 are combo steps using different grits of resin bond diamonds on each pass.
- H. This is a "Resin" only grind that does not tear away as much of the surface area. The Resin grind will remove a minimal top layer of the concrete surface and should greatly reduce the amount of Waste Product created when compared to the old Metal grind process.
- I. If a Cure-n-Seal product is required at the time of slab placement only Water Based Dissipating Sealers are allowed. NO Acrylic Cure-N-Seals are allowed.
- J. Prior to application, inspect interior sales floor slab to ensure that slab is clean and free of dust, grease, oils, or other contaminants that might prohibit the proper application and penetration of the liquid densifier and sealer.

K. Process Steps

- 1. Cut, clean out, prep and fill the concrete floor joints with the Euclid QWIKjoint UVR polyurea joint filler or "CreteFill Pro 75 by CureCrete.
- 2. Grind concrete floor with a combo set of 40/50 grit resin bond diamonds.
- 3. Depending on the final finish of the floor, this step may or may not be required. Grind concrete floor with a combo set of SASE metal bond gold series 80 and 150 grit segments or HTC EZ BB brown 4 series (60 grit diamonds) and HTC EZ BB Black 5 series (100 Grit Diamonds).
- 4. Thoroughly clean the concrete floor and apply Euclid Diamond Hard liquid densifier and sealer at 225 square feet per gallon or ("RetroPlate 99 liquid densifier at 200 square feet per gallon").
- 5. Polish concrete floor with a combo set of SASE Triton 100 grit black resin diamonds, SASE Triton 200 grit blue resin diamonds or HTC EZ MR black series (100 Grit Diamonds) and HTC EZ MR blue series (200 Grit Diamonds).
- 6. Polish concrete floor with SASE Triton 400 grit red resin diamonds or HTC EZ SR red series (400 grit diamonds)
- 7. Thoroughly clean concrete floor and then apply Euclid Diamond Hard liquid densifier and sealer at 700 square feet per gallon (spiff coat). Or ("RetroPlate 99 liquid densifier at 700 square feet per gallon as a spiff coat").
- 8. Burnish / Polish concrete floor with SASE Sure Shine white 800 grit diamond impregnated pads or HTC White Twister pads (800 grit diamond impregnated pads).
- 9. Burnish / Polish concrete floor with 1500 Grit Diamond Impregnated twister pads (H.T.C. Yellow TWISTERS or equivalent)
- L. All edges must be polished to match concrete floor with coinciding SASE 5" resin Polishing pads or HTC EZ Grind polishing 5" diamond tools.
- M. Polish results: Perform polishing process to attain an overall gloss reading of ≥35 specified overall gloss value (SOGV) as measured using a Horiba IG-320, and a specified minimum gloss reading of ≥30 minimum local gloss value (MGLV). A minimum of 75 readings shall be taken throughout the interior sales floor. The approved applicator shall take four gloss measurement readings at 90° from each other, and then averaged for one reading at each location. The overall measurement shall be reported to Dollar General within 24 hours of the polishing process. Gloss shall be considered as a quantitative value that expresses the degree of reflection when light hits the concrete floor surface. Gloss measurements will be taken independent of ambient lighting and will be taken within a sealed measurement window located beneath the test unit.

GENERAL NOTES

I. BUILDING MUST COMPLY WITH ALL BUILDING (FEDERAL, STATE, AND LOCAL), FIRE, ADA, AND HEALTH DEPARTMENT

- 2. WALLS: FINISHED GYPSUM BOARD WITH ALL JOINTS TAPED, MUDDED, SANDED, AND PAINTED.
- 3. PROVIDE DOUBLE STUDS AND BLOCKING TO SUPPORT EQUIPMENT AND/OR MISCELLANEOUS ITEMS WHERE INSTALLED. I.E.-TYPICAL CASEWORK, TOILET PAPER HOLDERS, GRAB BARS, ETC.
- 4. CAULK AND SEAL EXTERIOR JOINT BETWEEN METAL PANELS AND CONCRETE SLAB, AND ALL UNLIKE MATERIALS. 5. TRIM - DOORS, DOOR FRAMES, WINDOW FRAMES, COLUMNS: PAINTED TO MATCH ADJACENT WALLS.
- 6. ALL PENETRATIONS THROUGH ROOF MUST COMPLY WITH ROOF WARRANTY REQUIREMENTS.

7. DOORS: ALL EXTERIOR DOORS HAVE WEATHER STRIPPING AND A SNUG SEAL AROUND DOOR. ALL EXTERIOR DOORS WILL HAVE CYLINDER REPLACED BY DOLLAR GENERAL AREA MANAGER WITH INSTAKEY SYSTEM.

8. THE SALES FLOOR SHALL CONTAIN NO INTERIOR COLUMNS. 12" MAXIMUM THICKNESS ON ALL EXTERIOR COLUMNS THE USE OF INTERIOR COLUMNS, LARGER EXTERIOR COLUMNS, OR TAPERED COLUMNS REQUIRE WRITTEN APPROVAL FROM DOLLAR GENERAL CONSTRUCTION DEPARTMENT.

9. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND COORDINATE ALL TRADES.

IO. CONTRACTOR SHALL VERIFY ALL EQUIPMENT LOCATIONS AND DIMENSIONS OF EQUIPMENT. ANY EQUIPMENT FURNISHED BY THE OWNER OR TENANT SHALL BE RECEIVED, STORED, AND INSTALLED BY THE CONTRACTOR. CONTRACTOR SHALL COORDINATE WITH OWNER FOR INSTALLATION.

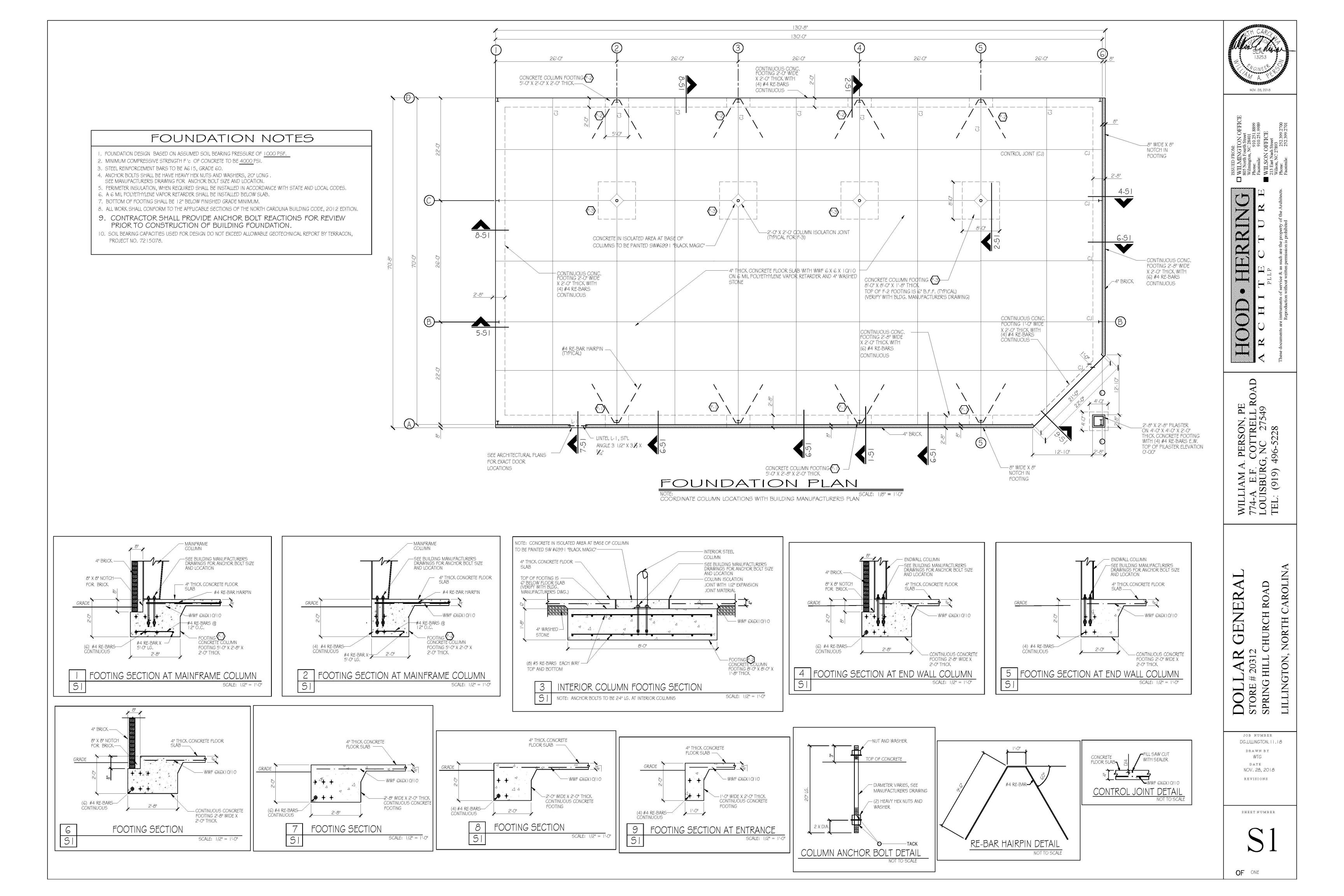
II. IF DIMENSIONS ARE IN QUESTION - THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING CLARIFICATION FROM THE DOLLAR GENERAL CONSTRUCTION DEPARTMENT BEFORE CONTINUING WITH CONSTRUCTION. 12. MAINTAIN CLEAN WORK SITE ON A DAILY BASIS.

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DULLAR GENERAL	STORE # 20312	SPRING HILL CHURCH ROAD A R C H I A R C H I	LILLINGTON, NORTH CAROLINA R
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<u>GENERAL PLUMBING NOTES:</u>

- 1. 'PROVIDE' MEANS TO FURNISH AND INSTALL. THE PLUMBING CONTRACTOR (PC) SHALL ALSO INSTALL MATERIALS FURNISHED BY OTHERS AND/OR THE GENERAL CONTRACTOR.
- 2. THE PC SHALL BE RESPONSIBLE FOR A COMPLETE AND OPERATIONAL SYSTEM AS DESCRIBED BY THESE PLANS AND SPECIFICATIONS FOR
- 3. ALL MATERIALS AND EQUIPMENT SHALL BE DELIVERED TO THE SITE AND UNLOADED AT AN APPROVED LOCATION. PC SHALL PROTECT ALL MATERIALS AND EQUIPMENT FROM BREAKAGE, THEFT, AND THE ELEMENTS, ALL MATERIALS AND EQUIPMENT SHALL REMAIN THE PROPERTY OF THE PC UNTIL THE PROJECT HAS BEEN COMPLETED AND TURNED OVER TO THE OWNER.
- 4. ALL MATERIALS USED SHALL BE NEW AND FREE OF DEFECTS. ANY MATERIALS FOUND TO BE DEFECTIVE SHALL BE REPLACED AT NO EXPENSE TO THE OWNER. ALL MATERIALS AND EQUIPMENT SHALL BEAR APPROVAL FROM UL OR AN APPROVED THIRD PARTY AGENCY. WHERE A MANUFACTURER AND MODEL NUMBER IS GIVEN, IT IS TO ESTABLISH A STANDARD OF QUALITY AND NOT TO LIMIT PRODUCTS TO A PARTICULAR MANUFACTURER. PRODUCTS DETERMINED TO BE EQUAL BY THE ENGINEER WILL BE ACCEPTED.
- 5. THE PLUMBING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE latest virginia (va) plumbing code, va building code, and any APPLICABLE LOCAL CODES. WHERE A CONFLICT EXISTS BETWEEN THE ABOVE REQUIREMENTS, THE MORE STRINGENT SHALL BE USED. THE CONTRACTOR SHALL OBTAIN CLARIFICATION FROM THE ENGINEER IN THE EVENT ANY PART OF THESE PLANS CONFLICTS WITH THE ABOVE REQUIREMENTS.
- 6. THE PC SHALL OBTAIN AND PAY FOR ALL PERMITS, FEES, AND INSPECTIONS NECESSARY FOR THE COMPLETION OF THE WORK UNDER THIS CONTRACT
- 7. DO NOT SCALE THESE DRAWINGS-REFER TO ARCHITECTURAL SHEETS FOR DIMENSIONS. 8. THESE PLANS ARE DIAGRAMMATIC. THE PC SHALL ADJUST THE
- LOCATIONS OF EQUIPMENT, FIXTURES, PIPING, ETC, TO ACCOMMODATE PLANNED AND ENCOUNTERED INTERFERENCES. THE DRAWINGS DO NOT SHOW ALL BENDS, OFFSETS, AND FITTINGS THAT MAY BE REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM. THE PC SHALL MAKE ALLOWANCES FOR SUCH DEVIATIONS AND CONTINGENCIES IN BID TO IMPLEMENT THEM WITHOUT ADDITIONAL COST TO THE OWNER. THE PC SHALL VISIT THE SITE PRIOR TO BIDDING TO BECOME FAMILIAR WITH EXISTING CONDITIONS. CONTRACTOR SHALL CONTACT THE ENGINEER TO RESOLVE ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THESE PLANS. TO AVOID POTENTIAL CONFLICTS, COORDINATE WITH OTHER TRADES PRIOR TO THE START OF CONSTRUCTION. ALL UNDERGROUND UTILITIES SHALL BE LOCATED PRIOR TO ANY DIGGING.
- 9. EXTEND DOMESTIC WATER PIPE FROM FIVE (5) FEET OUTSIDE THE Building into the building as indicated on the plans and INSTALL DOMESTIC WATER DISTRIBUTION PIPING TO ALL FIXTURES AND EQUIPMENT REQUIRING THE SAME, WATER SERVICE PIPE AND THE BUILDING SEWER SHALL BE SEPARATED BY 5 FEET OF UNDISTURBED OR COMPACTED EARTH IN ACCORDANCE WITH VA PLUMBING CODE. PROVIDE ALL FITTINGS, VALVES, AND OTHER ACCESSORIES AS NECESSARY FOR A COMPLETE INSTALLATION. ALL DOMESTIC WATER PIPING SHALL BE CONCEALED IN FINISHED AREAS. ANY OPEN ENDS SHALL BE PROTECTED UNTIL FINAL CONNECTIONS ARE MADE. PIPING TO BE INSTALLED AS FLUSH AS POSSIBLE TO WALLS AND CEILINGS. ALL OVERHEAD DOMESTIC WATER PIPING SHALL BE TYPE L COPPER WITH 95/5 LEAD FREE SOLDER, AND ALL BELOW GRADE WATER PIPING SHALL BE TYPE K COPPER WITH NO JOINTS. ALL PIPING SHALL HAVE MANUFACTURER'S NAME AND THE APPLICABLE STANDARD TO WHICH IT WAS MANUFACTURED CLEARLY MARKED ON EACH LENGTH. PIPING SHALL COMPLY WITH ASTM B-88. USE BRAZED JOINTS ON ALL COPPER PIPING 1-1/2 INCH AND LARGER. PC MAY SUBSTITUTE CPVC, WITH APPROVED FITTINGS, WITH OWNER'S APPROVAL. ALL PLASTIC PIPE, FITTINGS, AND COMPONENTS SHALL BE THIRD PARTY CERTIFIED AS CONFORMING TO NSF 14. ALL PIPE AND PIPE FITTINGS, INCLUDING VALVES AND FAUCETS, USED IN THE WATER DISTRIBUTION SYSTEM SHALL HAVE A MAXIMUM LEAD CONTENT OF 8-PERCENT AND SHALL CONFORM TO NSF 61. ALL WATER DISTRIBUTION PIPE AND TUBING Shall have a minimum pressure rating of 100 psi at 180°F. DO NOT INSTALL PEX IN RETURN AIR PLENUMS.
- 10. ABOVE GRADE DOMESTIC WATER PIPING SHALL BE SLOPED AT A MINIMUM OF 1/32 INCH PER FOOT AND ARRANGED TO DRAIN AT LOW POINTS. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED EQUIPMENT. ROUTE PIPING IN AN ORDERLY MANNER-PARALLEL OR PERPENDICULAR TO WALLS WHEN POSSIBLE-AND MAINTAIN GRADIENT. EACH SUPPLY BRANCH LINE SERVING MORE THAN ONE FIXTURE SHALL HAVE A SHUTOFF VALVE INSTALLED TO ISOLATE ALL FIXTURES AND PIECES OF EQUIPMENT SUPPLIED BY THE BRANCH LINE. THE SHUTOFF VALVE SHALL BE LABELED AND LOCATED AS CLOSE TO THE CONNECTION TO THE SUPPLY MAIN AND RISER AS POSSIBLE. PROVIDE A FULL-OPEN VALVE ON THE BASE OF EVERY WATER RISER PIPE AND ON THE TOP OF EVERY WATER DOWN-FEED PIPE. PROVIDE VALVE HANDLE EXTENSIONS AS NECESSARY FOR INSULATION
- 11. BALL VALVES SHALL HAVE BRASS BODY, FULL PORT, CHROME PLATED BALL, WITH TEFLON SEATS, 150 PSI WSP, AND COMPLY WITH MSS SP-110. GATE VALVES SHALL HAVE BRONZE BODY, CLASS 150, AND COMPLY WITH MSS SP-80, TYPE 2 STANDARD. VALVE BODY SHALL BE ASTM B 62, BRONZE WITH INTEGRAL SEAT AND AND UNION RING BONNET. ENDS SHALL BE THREADED OR SOLDER WITH COPPER-SILICON BRONZE STEM AND SOLID-WEDGE BRONZE DISC. INSTALL VALVES IN LOCATIONS THAT PERMIT EASY ACCESS WITHOUT DAMAGE TO BUILDING OR FINISHED MATERIALS; PROVIDE ACCESS DOORS IF REQUIRED. VALVES SHALL BE BY NIBCO, WATTS, OR STOCKHAM.
- 12. IT SHALL BE THE RESPONSIBILITY OF THE PC TO ADEQUATELY SUSPEND AND SUPPORT ALL PIPING SYSTEMS FOLLOWING RECOGNIZED ENGINEERING PRACTICES AND USING STANDARD, COMMERCIALLY ACCEPTED PIPE HANGERS AND SUSPENSION EQUIPMENT. ALL FIXTURES, DEVICES, AND EQUIPMENT SHALL BE SECURELY MOUNTED TO THE BUILDING STRUCTURE AND SHALL NOT RELY ON CEILING OR WALL SURFACES FOR SUPPORT. THE SUPPORT ATTACHMENT SHALL ADEQUATELY SUPPORT THE WEIGHT OF THE FIXTURE OR EQUIPMENT PLUS THE WEIGHT OF THE SUPPORT ATTACHMENT ITSELF. SUPPORT FROM THE TOP CORD OF THE ROOF JOISTS, GIRDERS, AND BEAMS. THE BOTTOM CORD IS NOT TO BE USED FOR EQUIPMENT AND PIPING SUPPORT, HANGERS SHALL NOT BE ATTACHED TO CORRUGATED STEEL decking. Use steel hangers for steel and plastic pipe and COPPER OR COPPER-PLATED HANGERS FOR COPPER PIPE. PROVIDE PROTECTION FOR COPPER PIPING AGAINST CONTACT WITH DISSIMILAR METALS. WHERE COPPER PIPING IS SUPPORTED ON HANGERS WITH OTHER PIPING, PROVIDE A PERMANENT ELECTROLYTIC ISOLATION MATERIAL TO PREVENT CONTACT WITH OTHER METALS. IN GENERAL, HANGERS SHALL BE CLEVIS TYPE, STANDARD WEIGHT. FOR PIPING, HANGER SPACING SHALL BE IN ACCORDANCE WITH VA PLUMBING CODE. HANGERS AND ACCESSORIES SHALL BE GRINNEL, MASON, OR B-LINE.
- 13. SLEEVE ALL PIPES PASSING THROUGH PARTITIONS, WALLS, AND FLOORS. SLEEVES IN FLOORS AND INTERIOR WALLS OF POURED IN PLACE CONCRETE, BRICK, TILE, OR MASONRY SHALL BE SCHEDULE 40 STEEL 26. FOR ABOVE GRADE SANITARY WASTE AND VENT PIPING, USE SERVICE

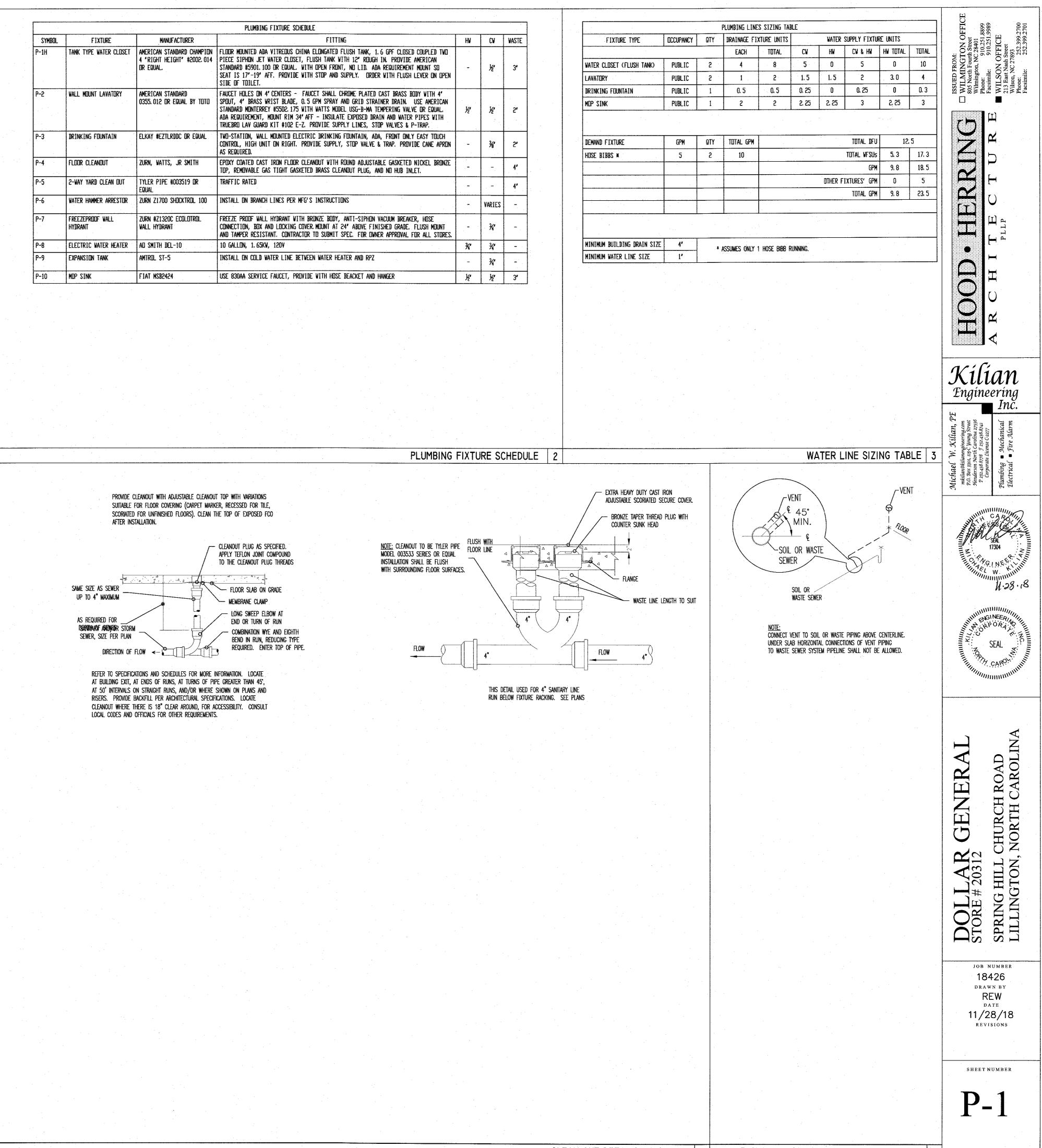
PIPE. MACHINE CUT. SLEEVES IN GYPSUM BOARD WALLS SHALL BE 22 GAUGE, ROLLED GALVANIZED SHEET METAL. TACK WELD ON THE LONGITUDINAL SEAM. PROVIDE SLEEVES WHERE PIPES PASS THROUGH FLOORS AND WALLS ABOVE AND BELOW CEILINGS. PROVIDE SPLIT PIPE SLEEVES IN NEW WALLS BUILT UP AROUND EXISTING PIPES. TACK WELD SPLIT SLEEVES TOGETHER. SLEEVES IN WALLS SHALL BE INSTALLED FLUSH WITH THE WALL. SLEEVES IN FLOORS SHALL EXTEND 3/4 INCH ABOVE THE FLOOR-EXCEPT THEY SHALL BE FLUSH FOR 2 HOUR RATED FLOORS-AND SHALL BE FLUSH WITH THE STRUCTURE BELOW. EACH SLEEVE SHALL HAVE AN INSIDE DIAMETER 1 INCH LARGER THAN THE OUTSIDE DIAMETER OF THE COVERING OF EACH COVERED PIPE TO ALLOW CONTINUOUS INSULATION-BUT NOT LESS THAN TWO PIPE SIZES LARGER THAN EACH UNCOVERED. ANNULAR SPACES BETWEEN SLEEVES AND PIPES SHALL BE FILLED OR CAULKED IN AN APPROVED MANNER. 14. THE TOP OF WATER PIPES INSTALLED BELOW GRADE OUTSIDE THE BUILDING SHALL BE BELOW THE FROST LINE OR A MINIMUM OF 12 INCHES BELOW FINISHED GRADE WHICHEVER IS GREATER. WATER PIPING INSTALLED IN A WALL EXPOSED TO THE EXTERIOR SHALL BE LOCATED ON THE HEATED SIDE OF THE WALL INSULATION. WATER PIPING INSTALLED IN AN UNCONDITIONED UTILITY ROOM OR UNCONDITIONED ATTIC SHALL BE INSULATED TO A MINIMUM OF R6.5 DETERMINED IN ACCORDANCE WITH ASTM C 177.

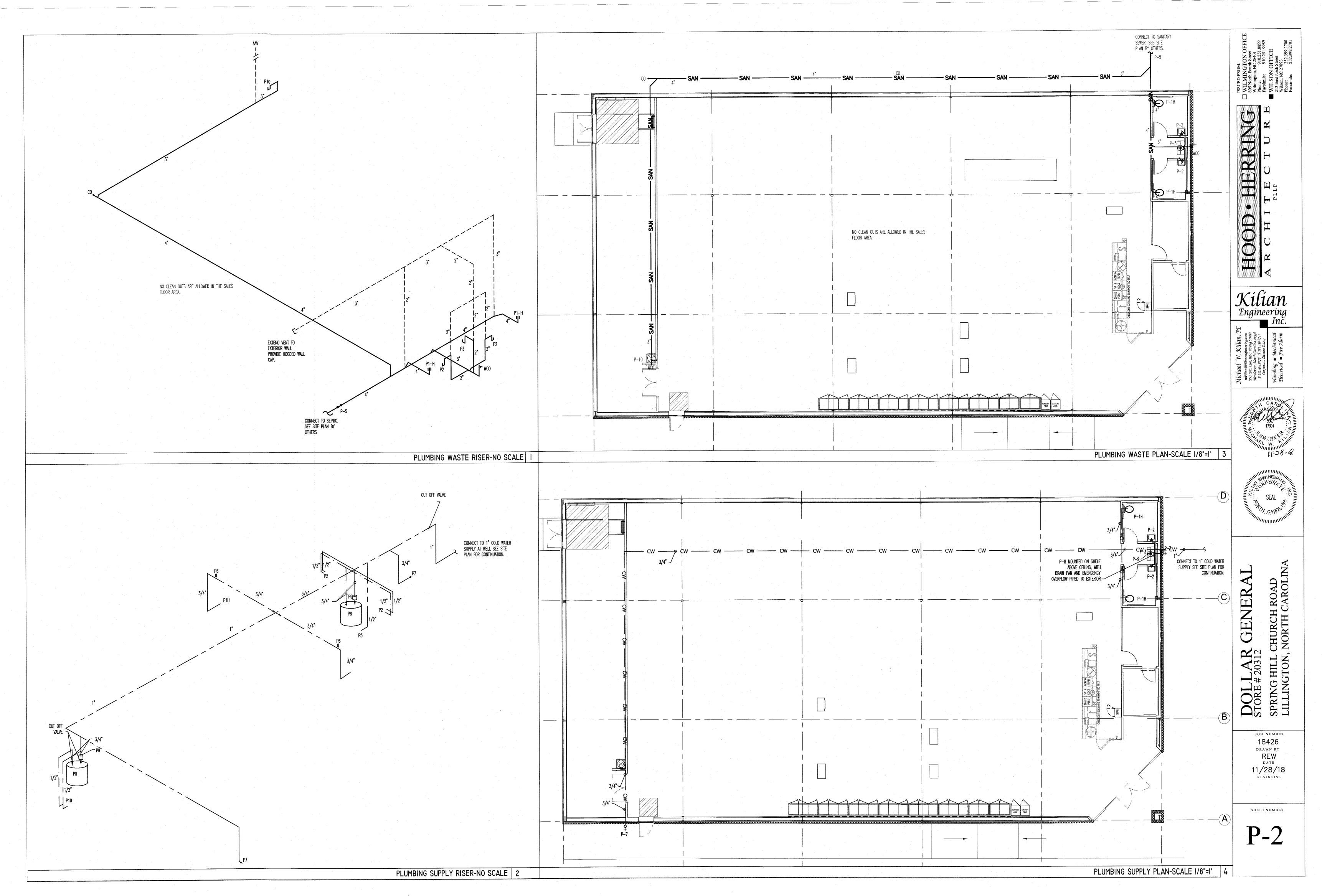
- 15. COLD WATER LINES SHALL BE INSULATED WITH 1/2 INCH THICK CLOSED CELL RUBBER INSULATION WITH A FLAME DENSITY RATING LESS THAN 25 AND A SMOKE DENSITY RATING LESS THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84. HOT WATER LINES UP TO 2 INCHES DIAMETER SHALL HAVE 1 INCH THICK INSULATION CONFORMING TO THE SAME STANDARD. PIPING LARGER THAN 2 INCHES SHALL RECEIVE 1-1/2 INCH THICK INSULATION. FIBROUS GLASS INSULATION MEETING THE SMOKE AND FLAME RATINGS ABOVE MAY BE SUBSTITUTED FOR CLOSED-CELL RUBBER IF SO DESIRED. INSULATION INSTALLED ON PIPING OPERATING BELOW AMBIENT TEMPERATURES MUST HAVE A CONTINUOUS VAPOR RETARDER. ALL JOINTS, SEAMS AND FITTINGS MUST BE SEALED. ON SYSTEMS OPERATING ABOVE AMBIENT, THE BUTT JOINTS SHOULD NOT BE SEALED. ON COLD SURFACES WHERE A VAPOR SEAL MUST BE MAINTAINED, INSULATION SHALL BE APPLIED WITH A CONTINUOUS, UNBROKEN MOISTURE AND VAPOR RETARDER. ALL HANGERS, SUPPORTS, ANCHORS, OR OTHER PROJECTIONS SECURED TO COLD SURFACES SHALL BE INSULATED AND VAPOR SEALED TO PREVENT CONDENSATION. ALL PIPE INSULATION SHALL BE CONTINUOUS THROUGH WALLS, CEILING OR FLOOR OPENINGS, OR SLEEVES EXCEPT WHERE FIRESTOP OR FIRESAFING MATERIALS ARE REQUIRED. INSULATION SHALL HAVE A FACTORY APPLIED ALL SERVICE JACKET WITH SELF-SEALING LAP. WHITE-KRAFT PAPER BONDED TO ALUMINUM FOIL AND REINFORCED WITH GLASS' FIBERS; CONFORMING TO ASTM C 1136 TYPE 1; VAPOR RETARDER; WITH A SELF-SEALING ADHESIVE. VERIFY THAT PIPING HAS BEEN TESTED, SURFACES ARE CLEAN AND DRY, AND ALL FOREIGN MATERIALS ARE REMOVED BEFORE APPLYING INSULATION MATERIALS. INSULATION SHALL BE BY KNAUF, ARMACELL, JOHNS-MANVILLE, OR OWENS-CORNING.
- 16. ALL INSULATION PRODUCTS SHALL CONTAIN RECOVERED MATERIALS AS REQUIRED BY EPA'S CPG AND RELATED RECYCLED CONTENT RECOMMENDATIONS. NO INSULATION INSTALLED ON THE PROJECT SHALL BE MATERIAL MANUFACTURED USING CHLOROFLUOROCARBONS, NOR SHALL CFCS BE USED IN THE INSTALLATION OF THE PRODUCTS. ALL INSULATION CONTAINING FIBROUS MATERIALS EXPOSED TO AIRFLOW SHALL BE RATED FOR THAT EXPOSURE OR SHALL BE ENCAPSULATED. INSULATING PROPERTIES FOR ALL MATERIALS SHALL MEET OR EXCEED INDUSTRY STANDARDS. POLYSTYRENE PRODUCTS SHALL MEET ASTM C578 91. ALL INSULATION SHALL BE LOW EMITTING WITH NOT GREATER THAN 0.05 PPM FORMALDEHYDE EMISSIONS. THE MAXIMUM FLAME SPREAD AND SMOKE DEVELOPED INDEX FOR INSULATION SHALL MEET THE REQUIREMENTS OF THE LOCAL CODES AND ORDINANCES ADOPTED BY THE JURISDICTION IN WHICH THE BUILDING IS LOCATED.
- 17. FAUCETS AND FIXTURE FITTINGS SHALL CONFORM TO ASME A112.18.1. FAUCETS AND FIXTURE FITTINGS THAT SUPPLY DRINKING WATER FOR HUMAN CONSUMPTION SHALL CONFORM TO THE REQUIREMENTS OF NSF 61. SECTION 9. FIXTURE FITTINGS FAUCETS, AND DIVERTERS SHALL BE INSTALLED AND ADJUSTED SO THAT THE FLOW OF HOT WATER FROM THE FITTINGS CORRESPONDS TO THE LEFT HAND SIDE OF THE FIXTURE FITING.
- 18. INSULATE ALL EXPOSED WASTE AND SUPPLY PIPING UNDER LAVATORIES. SINKS, AND ELECTRIC WATER COOLERS WITH THE HANDI-LAV GUARD INSULATION KIT BY TRUEBRO OR EQUAL.
- 19. BACKFLOW PREVENTION SHALL BE IN ACCORDANCE WITH THE VA PLUMBING CODE AND THE LOCAL AUTHORITY HAVING JURISDICTION. REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTERS SHALL CONFORM TO ASSE 1013 OR AWWA C511. THE RELIEF OPENING SHALL DISCHARGE BY AIR GAP. AIR GAPS SHALL COMPLY WITH ASME A112.1.1 AND AIR GAP FITTINGS WITH ASME A112.1.3, DOUBLE CHECK VALVE ASSEMBLIES SHALL CONFORM TO ASSE 1015 OR AWWA C510. ACCESS TO BACKFLOW PREVENTERS SHALL BE PROVIDED AS SPECIFIED BY THE 42. ALL VENT THRU THE ROOF (VTR) PENETRATIONS SHALL BE INSTALLATION INSTRUCTIONS OF THE APPROVED MANUFACTURER.
- 20. POTABLE WATER OUTLETS SHALL BE PROTECTED FROM BACKFLOW IN ACCORDANCE WITH CODE. PRESSURE TYPE VACUUM BREAKERS SHALL CONFORM TO ASSE 1020 AND SPILLPROOF VACUUM BREAKERS SHALL COMPLY WITH ASSE 1056. HOSE-CONNECTION VACUUM BREAKERS SHALL CONFORM TO ASSE 1011, ASSE 1019, ASSE 1035, OR ASSE 1052. CONNECTIONS TO BEVERAGE DISPENSERS, COFFEE MACHINES, AND NON-CARBONATED BEVERAGE DISPENSERS SHALL BE PROTECTED BY A BACKFLOW PREVENTER IN ACCORDANCE WITH ASSE 1022.
- WITH QUICK CLOSING VALVES PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. WATER HAMMER ARRESTORS SHALL CONFORM TO ASSE
- 22. BEFORE COMMENCING WORK, CHECK INVERT ELEVATIONS REQUIRED FOR ALL APPLICABLE CONSTRUCTION WASTE IS RECYCLED DURING THE SEWER CONNECTIONS, CONFIRM INVERTS, AND ENSURE THESE CAN BE PROPERLY CONNECTED TO WITH SLOPE FOR DRAINAGE AND COVER TO AVOID FREEZING. ONCE INVERTS AND FALL HAVE BEEN ESTABLISHED, EXTEND SANITARY SEWER PIPING TO 5 FEET OUTSIDE THE BUILDING AND INSTALL ALL DRAINS, STACKS, VENTS, FLOOR DRAINS, AND CLEANOUTS NECESSARY FOR A COMPLETE INSTALLATION.
- 23. TRENCHING, COMPACTION, AND BACKFILL SHALL BE BY PC AND SHALL BE IN ACCORDANCE WITH THE VA PLUMBING CODE, UNDERGROUND LINES SHALL BE LOCATED SUCH THAT THEY DO NOT ENDANGER FOOTINGS OR FOUNDATION WALLS.
- 24. ALL SANITARY SEWER PIPING IS BELOW GRADE OR WITHIN WALLS UNLESS OTHERWISE NOTED. ALL SANITARY VENT PIPING IS ABOVE THE CEILING OR WITHIN WALLS UNLESS OTHERWISE NOTED. SOIL AND WASTE PIPING SHALL BE INSTALLED TO PROVIDE ADEQUATE PROTECTION AGAINST FREEZING. WASTE AND SOIL LINES LEAVING THE BUILDING MUST HAVE A MINIMUM COVER OF 3 INCHES.
- 25. FOR BELOW GRADE SANITARY WASTE PIPING, PC SHALL USE SERVICE WEIGHT CAST IRON PIPE WITH COMPRESSION JOINTS (ASTM A 74). USE MINIMUM 2 INCH SIZE UNDERGROUND. SOLID WALL SCHEDULE 40 PVC (ASTM D 2665) WITH SCHEDULE 40 SOCKET TYPE PIPE FITTINGS (ASTM D 3311) MAY ALSO BE USED. DO NOT USE PVC PIPE FOR APPLICATIONS WHERE THE WASTE WATER TEMPERATURE EQUALS OR EXCEEDS 140°F.

WEIGHT CAST IRON NO HUB TYPE WITH COUPLINGS (CISPI 301). SOLID WALL SCHEDULE 40 PVC (ASTM D 2665) WITH SCHEDULE 40 SOCKET TYPE FITTINGS (ASTM D 3311) MAY BE USED IF PERMITTED BY LOCAL CODE. DO NOT INSTALL PVC IN RETURN AIR PLENUMS. ALL VENT AND BRANCH VENT PIPES SHALL BE SO GRADED AND CONNECTED AS TO DRAIN BACK TO THE DRAINAGE PIPE BY GRAVITY. BRANCH VENTS EXCEEDING 40 FEET IN DEVELOPED LENGTH SHALL BE INCREASED BY ONE NOMINAL SIZE FOR THE ENTIRE DEVELOPED LENGTH OF THE PIPE. 27. SOIL AND WASTE LINES 2-1/2 INCHES AND SMALLER SHALL BE SLOPED AT 1/4 INCH PER FOOT MINIMUM; SOIL AND WASTE LINES 3 INCHES TO 6 INCHES IN DIAMETER SHALL BE SLOPED AT 1/8 INCH PER FOOT MINIMUM.

- 28. FOR WATER CLOSET WASTE CONNECTIONS, A 4 INCH BY 3 INCH CLOSET BEND SHALL BE ACCEPTABLE. WHERE A 3 INCH BEND IS UTILIZED ON WATER CLOSETS, A 4 INCH BY 3 INCH FLANGE SHALL BE INSTALLED TO RECEIVE THE FIXTURE HORN.
- 29. FOR PLASTIC PIPE SIZES GREATER THAN 6 INCHES, AND OTHER PIPE SIZES GREATER THAN 4 INCHES, RESTRAINTS SHALL BE PROVIDED FOR DRAIN PIPES AT ALL CHANGES IN DIRECTION AND AT ALL CHANGES IN DIAMETER GREATER THAN TWO PIPE SIZES. BRACES, BLOCKS, RODDING, BACKFILL AND OTHER SUITABLE METHODS AS SPECIFIED BY THE COUPLING MANUFACTURER SHALL BE UTILIZED.
- 30. BASES OF STACKS SHALL BE SUPPORTED BY THE BUILDING STRUCTURE, VIRGIN OR COMPACTED EARTH, OR OTHER SUITABLE MATERIAL TO ADEQUATELY SUPPORT THE WEIGHT OF THE PIPING. I. HORIZONTAL DRAIN PIPES SHALL HAVE CLEANOUTS IN ACCORDANCE WITH CODE. EXTEND CLEANOUTS TO FINISHED FLOOR OR WALL SURFACE, LUBRICATE THREADED CLEANOUT PLUGS WITH A MIXTURE OF GRAPHITE AND LINSEED OIL. ENSURE CLEARANCE AT ALL CLEANOUTS FOR RODDING OF DRAINAGE SYSTEM. INSTALL FLOOR CLEANOUTS AT AN ELEVATION TO ACCOMMODATE FINISHED FLOOR. EVERY CLEANOUT SHALL BE INSTALLED TO ALLOW CLEANING IN THE DIRECTION OF FLOW OF THE DRAINAGE PIPE OR AT RIGHT ANGLES THERETO. CLEANOUTS ON 6 INCH
- AND SMALLER PIPES SHALL BE PROVIDED WITH A CLEARANCE OF NOT LESS THAN 18 INCHES FOR RODDING. 32. DRAINAGE PIPING FOR FUTURE FIXTURES SHALL TERMINATE WITH AN APPROVED CAP OR PLUG.
- 33. AIR ADMITTANCE VALVES SHALL BE INSTALLED AFTER THE DWV TESTING REQUIRED BY SECTIONS OF THE VA PLUMBING CODE. PROVIDE ACCESS TO ALL AIR ADMITTANCE VALVES PER CODE. AIR ADMITTANCE VALVES SHALL CONFORM TO ASSE 1050 OR 1051.
- 34. INDIRECT WASTE PIPING THAT EXCEEDS 2 FEET IN DEVELOPED LENGTH MEASURED HORIZONTALLY, OR 4 FEET IN TOTAL DEVELOPED LENGTH, SHALL BE TRAPPED. THE AIR GAP BETWEEN THE INDIRECT WASTE PIPE AND THE FLOOD LEVEL RIM OF THE WASTE RECEPTOR SHALL BE A MINIMUM OF TWICE THE EFFECTIVE OPENING OF THE INDIRECT WASTE
- 35. THE PC SHALL PROVIDE UNIONS FOR DISASSEMBLY AND SERVICE OF ALL FIXTURES AND OTHER RELEVANT PLUMBING EQUIPMENT. UNIONS SHALL BE GROUND-JOINT WITH BRASS SEAT. PROVIDE INSULATING UNIONS AT EACH JUNCTION OF DISSIMILAR MATERIALS.
- 36. THE PC SHALL PROVIDE CHECK VALVES AT ALL FIXTURES WITH THREADED OUTLETS AS REQUIRED BY CODE. TRAP PRIMERS SHALL BE PROVIDED AS SHOWN ON THE PLANS OR AS REQUIRED.
- 37. THE PC SHALL ACCURATELY ROUGH-IN ALL FIXTURES ACCORDING TO MANUFACTURER'S INSTALLATION DIMENSIONS AND INSTRUCTIONS. OFFSET ADAPTERS AND FLEXIBLE CONNECTORS ARE NOT ACCEPTABLE. FLUSH HANDLES SHALL BE MOUNTED ON THE WIDE SIDE OF TOILET AREAS FOR ADA COMPLIANCE. INSTALL EACH FIXTURE WITH TRAP EASILY REMOVABLE FOR SERVICING AND CLEANING. SEAL FIXTURES TO WAL AND FLOOR SURFACES WITH SEALANT. SOLIDLY ATTACH WATER CLOSETS TO FLOOR WITH LAG SCREWS. SEAL ALL SELF-RIMMING LAVATORIES AND SINKS (VITREOUS CHINA AND STAINLESS STEEL) WITH A COMMERCIAL GRADE PLUMBER'S PUTTY OR ACRYLIC LATEX CAULK APPLIED TO THE UNDERSIDE OF THE FIXTURE RIM IN A GENEROUS AMOUNT SO THAT WHEN FIXTURE IS SET, SEALANT SHALL OOZE OUT.
- 38. Adjust stops and valves for intended flow rate to fixtures WITHOUT SPLASHING, NOISE, OR OVERFLOW. 39. PC SHALL PROVIDE ALL WATER HEATERS (WATTAGE/INPUT AND CAPACITY
- AS NOTED IN SCHEDULE). ALL WATER HEATERS SHALL BE THIRD PARTY CERTIFIED; PROVIDE PANS FOR WATER HEATERS IN ACCORDANCE WITH VA PLUMBING CODE. ELECTRICAL CONNECTIONS SHALL BE BY ELECTRICAL CONTRACTOR, PC SHALL COORDINATE WITH EC ON ELECTRICAL CHARACTERISTICS OF THE EQUIPMENT PROVIDED.
- 40. ALL PUMPS SHALL BE RATED FOR TRANSPORT OF POTABLE WATER. PUMPS IN AN INDIVIDUAL WATER SUPPLY SYSTEM SHALL BE CONSTRUCTED AND INSTALLED SO AS TO PREVENT CONTAMINATION FROM ENTERING THE WATER SUPPLY SYSTEM.
- 41. SYSTEM TESTING SHALL BE PERFORMED BY PLUMBING CONTRACTOR IN ACCORDANCE WITH APPLICABLE SECTIONS OF THE VA PLUMBING CODE. COORDINATED WITH THE GENERAL CONTRACTOR. PC SHALL PROVIDE
- FLASHING MATERIAL REQUIRED FOR VTRS. JOINTS AT THE ROOF AND AROUND VENT PIPES, SHALL BE MADE WATER TIGHT BY THE USE OF LEAD, COPPER, GALVANIZED STEEL, ALUMINUM, OR OTHER APPROVED FLASHING MATERIAL MAINTAIN MINIMUM 10 FEET FROM ALL OUTSIDE AIR INTAKES.
- 43. PC SHALL DISINFECT THE ENTIRE DOMESTIC WATER PIPING SYSTEM IN ACCORDANCE WITH THE AMERICAN WATER WORKS ASSOCIATION'S SPECIFICATIONS AND LOCAL HEALTH DEPARTMENT REGULATIONS.
- 21. THE PC SHALL INSTALL WATER HAMMER ARRESTORS ON BRANCH LINES 44. AT THE COMPLETION OF WORK AND PRIOR TO ACCEPTANCE BY OWNER. THE PC SHALL CLEAN ALL EXPOSED FIXTURES, MATERIALS, AND Equipment under this contract.
 - 45. PC SHALL COORDINATE WITH THE GENERAL CONTRACTOR TO ENSURE CONSTRUCTION PHASE OF THE PROJECT.

	· · · ·		PLUMBING FIXTURE SCHEDULE			
SYMBOL	FIXTURE	MANUFACTURER	FITTING	HW	CW	VASTE
P-1H	TANK TYPE VATER CLOSET	AMERICAN STANDARD CHAMPION 4 'RIGHT HEIGHT' #2002.014 DR EQUAL.		-	¥	3,
P-2	Vall Mount Lavatory	AMERICAN STANDARD 0355.012 DR EQUAL BY TUTO	FAUCET HULES ON 4' CENTERS - FAUCET SHALL CHROME PLATED CAST BRASS BODY WITH 4' SPOUT, 4' BRASS WRIST BLADE, 0.5 GPM SPRAY AND GRID STRAINER DRAIN. USE AMERICAN STANDARD MONTERREY #5502.175 WITH WATTS MODEL USG-B-MA TEMPERING VALVE OR EQUAL. ADA REQUIREMENT, MOUNT RIM 34' AFF - INSULATE EXPOSED DRAIN AND WATER PIPES WITH TRUEBRO LAV GUARD KIT #102 E-Z. PROVIDE SUPPLY LINES, STOP VALVES & P-TRAP.	K	k	2'
P-3	DRINKING FOUNTAIN	elkay #eztlrddc or equal	TWO-STATION, WALL MOUNTED ELECTRIC DRINKING FOUNTAIN, ADA, FRONT ONLY EASY TOUCH CONTROL, HIGH UNIT ON RIGHT. PROVIDE SUPPLY, STOP VALVE & TRAP. PROVIDE CANE APRON AS REQUIRED.	-	*	2'
P-4	Floor Cleandut	ZURN, WATTS, JR SMITH	EPDXY COATED CAST IRON FLOOR CLEANOUT WITH ROUND ADJUSTABLE GASKETED NICKEL BRONZE TOP, REMOVABLE GAS TIGHT GASKETED BRASS CLEANOUT PLUG, AND NO HUB INLET.			4'
P-5	2-WAY YARD CLEAN DUT	Tyler PIPE #003519 DR Equal	TRAFFIC RATED	-	. –	4'
P-6	VATER HAMMER ARRESTOR	ZURN Z1700 SHICKTROL 100	INSTALL ON BRANCH LINES PER MFG'S INSTRUCTIONS	-	VARIES	-
P-7	FREEZEPROOF VALL Hydrant	ZURN #Z1320C ECDLOTROL VALL HYDRANT	FREEZE PROOF WALL HYDRANT WITH BRONZE BODY, ANTI-SIPHON VACUUM BREAKER, HOSE CONNECTION, BOX AND LOCKING COVER. MOUNT AT 24" ABOVE FINISHED GRADE. FLUSH MOUNT AND TAMPER RESISTANT. CONTRACTOR TO SUBMIT SPEC. FOR DWNER APPROVAL FOR ALL STORES.	-	34	-
P-8	ELECTRIC WATER HEATER	AD SMITH DEL-10	10 GALLEIN, 1.65KV, 120V	34	3⁄4'	-
P-9	EXPANSION TANK	antrol st-5	INSTALL ON COLD WATER LINE BETWEEN WATER HEATER AND RPZ	_	34'	-
P-10	MDP SINK	FIAT MSB2424	USE 830AA SERVICE FAUCET, PROVIDE WITH HOSE BEACKET AND HANGER	*	1/2	3'





		EXHAUS	t fan schedule					• •
MARK	MFG / MODEL #	TYPE	ESP (in WG)	CFM	VOLT/PH	FLA	SONES	NOTES
EF-1-2	GREENHECK SP-A125	CEILING	0, 25	105	120/1	1	1.8	1-3
	PROVIDE WITH PITCHED ROOF				ABLE.		-	
2.	PROVIDE WITH SQUARE TO ROU	ind duct ada	PIER AS NECESS	ary				

MARK	MFG	MODEL #	SIZE	MOUNTING	DESCRIPTION	NOTES
A	HART & COOLEY	HVS	24X24	LAY-IN	4-WAY DIFFUSER, BRIGHT WHITE	1
B	HART & COOLEY	92V0H	10X6	SIDEWALL	STEEL, 4 WAY DIFFUSER, BRIGHT WHITE	· 1·
R	HART & COOLEY	RH45	24' X8'	SIDEWALL	STEEL RETURN TRANSFER GRILL	2

ROUFTOP PACKAGE AC WITH ELECTRIC STRIP SCHEDULE AIR FLOW FAN MOTORS COOLING CAPACITY FILTER NOMINAL CAPACITY MARK MFG / MODEL # SUPPLY MIN. DA SUPPLY | ESP | CONDENSER | AUX ELEC HEAT | EAT WB/DB | TOTAL | SENSIBLE - INCHES MERV EER TONS CFM CFM ND-HP in wg ND-HP ND kw stages ۴F MBH MBH RTU-1-2 LENNOX # ZCA120S4BJ1P 10. 0 4000 484 5-5 . 25 2-1/3 67/80 130.6 94.03 - 30

PROVIDE WITH ROOF CURB. THRU THE BASE CONNECTIONS

3. OR EQUAL BY LOREN COOK OR PENNBARRY

BELT DRIVE WITH STANDARD STATIC OPTION

ELECTRIC HEAT WITH SINGLE POINT CONNECTION KIT, AS SPECIFIED IN SCHEDULE PROVIDE WITH SINGLE INPUT ELECTRONIC ENTHALPY ECONOMIZERS WITH BARDMETRIC RELIEF DAMPERS

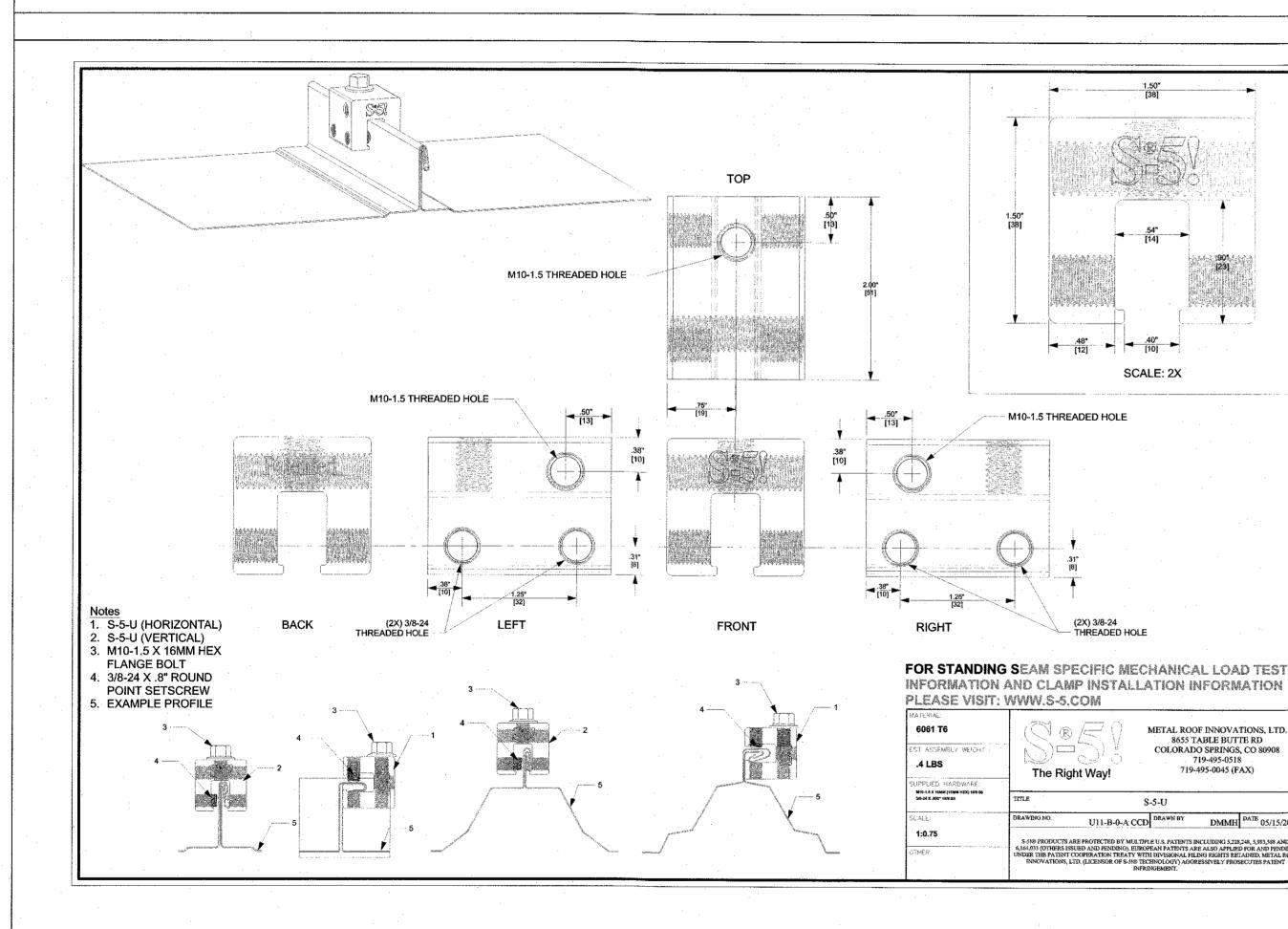
ENTHALPY ACCESSORY CONTROL KIT TO CONVERT SINGLE ENTHALPY ECONOMIZER TO DUAL ENTHALPY FOR ECONOMIZERS TWO (2) ADDITIONAL SETS OF FILTERS (POST CONSTRUCTION/PRE TEST AND BALANCE, AND ONE SET TO OWNER FOR FUTURE USE

ANY EQUIPMENT SUBSTITUTIONS MUST EQUAL OR EXCEED EFFICIENCIES LISTED (RATINGS PER ARI)

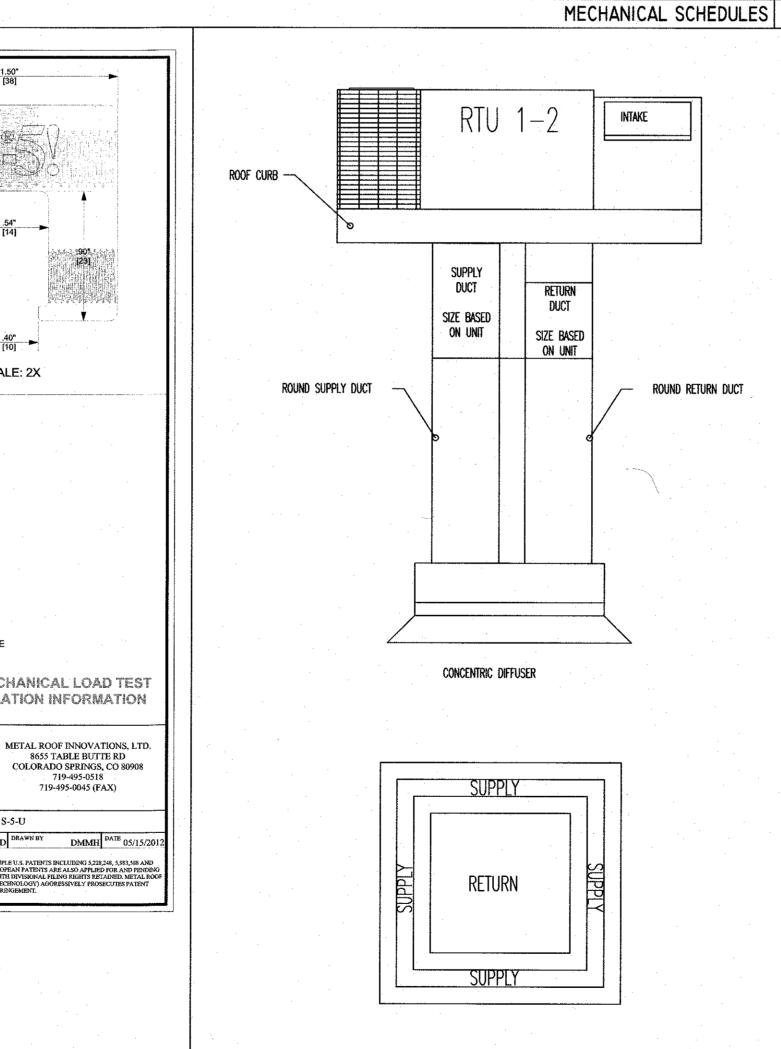
MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCES PROVIDE DUCT DETECTOR IN RETURN DUCT. PROVIDE RELAY FOR KILLING POWER TO UNIT'S FAN

11. PROVIDE HAIL GUARDS

12. 4 VAY DIFFUSER SEE NOTES M2



	EL	ECTRICAL	-	WEIGHT	
	V/PH	MCA	MOCP		REMARKS
	1/17	rica	пшсг	LBS	
2	208/3	92	100	1251	1-12
2	208/3	92	100	1251	1-12



GENERAL MECHANICAL NOTES:

- 1. "PROVIDE" MEANS TO FURNISH AND INSTALL. MECHANICAL CONTRACTOR (MC) SHALL ALSO INSTALL MATERIALS FURNISHED BY OTHERS AND THE GENERAL CONTRACTOR AS SHOWN ON THE PLANS OR NECESSARY FOR A COMPLETE INSTALLATION.
- 2. THE MC SHALL BE RESPONSIBLE FOR A COMPLETE AND OPERATING SYSTEM AS DESCRIBED BY THESE PLANS AND SPECIFICATIONS.
- ALL MATERIALS AND EQUIPMENT SHALL BE DELIVERED TO THE SITE AND UNLOADED BY THE CONTRACTOR AT AN APPROVED LOCATION. THE MC SHALL PROTECT ALL MATERIALS AND EQUIPMENT FROM BREAKAGE, THEFT, AND THE ELEMENTS. ALL MATERIALS AND EQUIPMENT SHALL REMAIN THE PROPERTY OF THE MC UNTIL THE PROJECT HAS BEEN COMPLETED AND TURNED OVER TO THE OWNER
- 4. THE MC SHALL INSTALL ALL MATERIALS AND EQUIPMENT IN ACCORDANCE WITH THE LATEST NORTH CAROLINA MECHANICAL AND BUILDING CODES AND AN APPLICABLE LOCAL CODES. WHERE A CONFLICT EXISTS BETWEEN THE ABOVE REQUIREMENTS, THE MORE STRINGENT SHALL BE USED. THE CONTRACTOR SHALL OBTAIN CLARIFICATION FROM THE ENGINEER IN THE EVENT ANY PART OF THESE PLANS CONFLICTS WITH THE ABOVE REQUIREMENTS.
- 5. THE MC SHALL OBTAIN AND PAY FOR ALL PERMITS, FEES, AND INSPECTIONS NECESSARY FOR THE COMPLETION OF THE WORK UNDER THIS CONTRACT. 6. DO NOT SCALE THESE DRAWINGS-REFER TO ARCHITECTURAL SHEETS FOR DIMENSIONS.
- 7. THE MC SHALL VISIT THE SITE PRIOR TO BIDDING TO BECOME FAMILIAR WITH EXISTING CONDITIONS. CONTRACTOR SHALL RESOLVE ANY DISCREPANCIES SHALL COORDINATE WITH OTHER TRADES PRIOR TO THE START OF CONSTRUCTION.
- 8. All mechanical materials shall be new and free of defect and listed FOUND TO BE DEFECTIVE SHALL BE REPLACED BY THE MC WITHOUT ADDITIONAL COST TO THE OWNER.
- SCHEDULED ON THE DRAWINGS. AIR-COOLED ROOFTOP PACKAGE HEAT PUMPS, GAS-ELECTRIC UNITS, AND AIR-CONDITIONERS SHALL BE BY YORK. THE MC SHALL PROVIDE FACTORY AND FIELD INSTALLED OPTIONS AS SCHEDULED OR AS NECESSARY FOR A COMPLETE AND OPERATIONAL HVAC SYSTEM. 10. THE MC SHALL PROVIDE ALL EXHAUST AND SUPPLY FANS AS SCHEDULED.
- FANS SHALL BE BY GREENHECK, LOREN COOK, OR PENNBARRY. 11. THESE PLANS ARE DIAGRAMMATIC. THE MC SHALL ADJUST THE LOCATIONS OF EQUIPMENT, DUCTS, REGISTERS, GRILLES, ETC, TO ACCOMMODATE PLANNED AND ENCOUNTERED INTERFERENCES. THE DRAWINGS DO NOT SHOW ALL BENDS, OFFSETS, AND FITTINGS THAT MAY BE REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM. THE MC SHALL MAKE ALLOWANCES FOR SUCH DEVIATIONS THE OWNER.
- 12. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POWER CONNECTIONS TO THE MECHANICAL EQUIPMENT. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONTROL WIRING.
- 13. DUCTWORK IS SHOWN WITH FREE AREA DIMENSIONS. ALL DUCTWORK SHALL BE 24. FACTORY-MADE AIR DUCTS AND CONNECTORS SHALL COMPLY WITH UL 181-96. STANDARD, 2 INCH STATIC PRESSURE CLASS.
- 14. IT IS THE MC'S RESPONSIBILITY TO VERIFY THAT ITEMS FURNISHED FOR THIS CONTRACT WILL FIT IN THE SPACE AVAILABLE. THE MC SHALL MAKE FIELD MEASUREMENTS AS NECESSARY TO DETERMINE SPACE REQUIREMENTS. IF THE MC MUST ALTER EQUIPMENT DUE TO SPACE CONSIDERATIONS, THE MC SHALL PROVIDE SIZES AND SHAPES THAT FIT THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS.
- 15. EXTERNAL DUCT INSULATION AND FACTORY-INSULATED FLEXIBLE DUCT SHALL BE WITH THE NAME OF THE MANUFACTURER, THE THERMAL RESISTANCE R-VALUE AT THE SPECIFIED INSTALLED THICKNESS AND THE FLAME SPREAD AND SMOKE-DEVELOPED INDEXES OF THE COMPOSITE MATERIALS. ALL DUCT INSULATION PRODUCT R-VALUES SHALL BE BASED ON INSULATION ONLY, EXCLUDING AIR FILMS, VAPOR RETARDERS OR OTHER DUCT COMPONENTS, AND SHALL BE BASED ON TESTED C-VALUES AT 75'F MEAN TEMPERATURE AT THE INSTALLED THICKNESS, IN ACCORDANCE WITH RECOGNIZED INDUSTRY PROCEDURES. THE INSTALLED THICKNESS OF DUCT INSULATION USED TO DETERMINE ITS R-VALUES SHALL BE DETERMINED AS FOLLOWS:
- 15.1. FOR DUCT WRAP, THE INSTALLED THICKNESS SHALL BE ASSUMED TO BE 75 PERCENT (25-PERCENT COMPRESSION) OF NOMINAL THICKNESS. 15.2. FOR FACTORY-MADE FLEXIBLE AIR DUCTS, THE INSTALLED THICKNESS

EXTERIOR DESIGN CONDITIONS WINTER DRY BULB SUMMER DRY BULB SUMMER WET BULB	27. 7° F 90. 2° F 76. 3° F
INTERIOR DESIGN CONDITIONS WINTER DRY BULB SUMMER DRY BULB RELATIVE HUMIDITY	70°F 75°F 60%
HEATING LOAD	147, 210 BTU/H
<u>SENSIBLE COOLING LOAD:</u> LATENT COOLING LOAD:	133, 360 BTU/H 60, 610 BTU/H
MECHANICAL SPACING CONDITIONING SYSTEM: UNITARY DESCRIPTION OF UNIT(S) BOILER TOTAL BOILER OUTPUT CHILLER TOTAL CHILLER CAPACITY	AIR COOLED DX 2-10 TON PACKAGED AC/ELECTRIC HEAT N/A N/A N/A N/A
EQUIPMENT EFFICIENCIES:	SEE EQUIPMENT SCHEDULES
EQUIPMENT SCHEDULES WITH MOTORS (MECHANICAL SYSTEMS):	see adjacent
ZONEAREA (ft)APPLIED COOLING (TONS)RETAIL 910020 TONS	<u>APPLIED HEAT @ 17°F</u> 60 KW
DESIGNER STATEMENT:	
TO THE BEST OF MY KNOWLEDGE, THE MECHANICAL DESIGN FOR THIS EQUIPMENT REQUIREMENTS OF THE LATEST EDITION OF THE NORTH C	

PRESCRIPTIVE

ZONE 4A

MECHANICAL SYSTEM, SERVICE SYSTEMS, AND EQUIPMENT

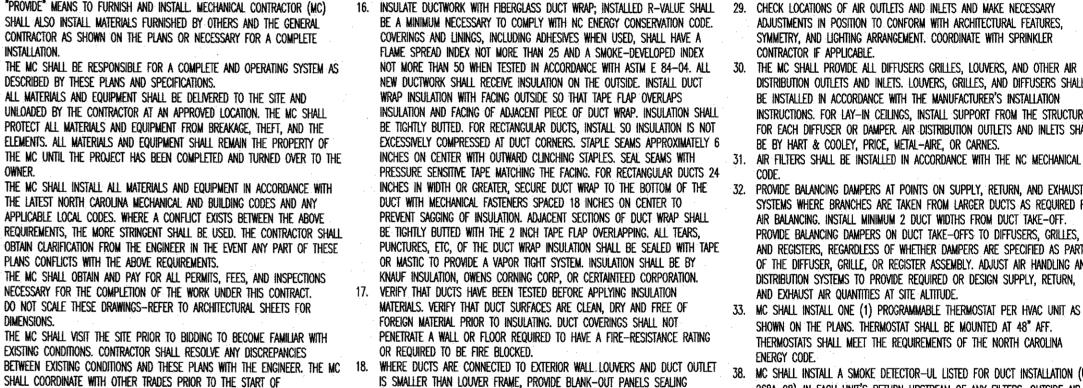
METHOD OF COMPLIANCE

Thermal Zone

MECHANICAL DESIGNER'S STATEMENT

HANGERS SUSPENDED WITH THREADED ROD. SUPPORT DUCTS FROM BAR JOISTS GIRDERS, OR BEAMS. . CHECK LOCATIONS OF AIR OUTLETS AND INLETS AND MAKE NECESSARY ADJUSTMENTS IN POSITION TO CONFORM WITH ARCHITECTURAL FEATURES,

- SYMMETRY, AND LIGHTING ARRANGEMENT. COORDINATE WITH SPRINKLER CONTRACTOR IF APPLICABLE.
- 50. THE MC SHALL PROVIDE ALL DIFFUSERS GRILLES, LOUVERS, AND OTHER AIR DISTRIBUTION OUTLETS AND INLETS. LOUVERS, GRILLES, AND DIFFUSERS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. FOR LAY-IN CEILINGS, INSTALL SUPPORT FROM THE STRUCTURE FOR EACH DIFFUSER OR DAMPER. AIR DISTRIBUTION OUTLETS AND INLETS SHALL BE BY HART & COOLEY, PRICE, METAL-AIRE, OR CARNES.
- INCHES IN WIDTH OR GREATER, SECURE DUCT WRAP TO THE BOTTOM OF THE 32. PROVIDE BALANCING DAMPERS AT POINTS ON SUPPLY, RETURN, AND EXHAUST systems where branches are taken from larger ducts as required for AIR BALANCING. INSTALL MINIMUM 2 DUCT WIDTHS FROM DUCT TAKE-OFF. PROVIDE BALANCING DAMPERS ON DUCT TAKE-OFFS TO DIFFUSERS, GRILLES, AND REGISTERS, REGARDLESS OF WHETHER DAMPERS ARE SPECIFIED AS PART OF THE DIFFUSER, GRILLE, OR REGISTER ASSEMBLY. ADJUST AIR HANDLING AND DISTRIBUTION SYSTEMS TO PROVIDE REQUIRED OR DESIGN SUPPLY, RETURN, AND EXHAUST AIR QUANTITIES AT SITE ALTITUDE.
 - 33. MC SHALL INSTALL ONE (1) PROGRAMMABLE THERMOSTAT PER HVAC UNIT AS SHOWN ON THE PLANS. THERMOSTAT SHALL BE MOUNTED AT 48" AFF. THERMOSTATS SHALL MEET THE REQUIREMENTS OF THE NORTH CAROLINA ENERGY CODE.
 - MC SHALL INSTALL A SMOKE DETECTOR-UL LISTED FOR DUCT INSTALLATION (UL 268A-98)-IN EACH UNIT'S RETURN UPSTREAM OF ANY FILTERS, OUTSIDE AIR CONNECTIONS, OR DECONTAMINATION EQUIPMENT. DUCT SMOKE DETECTORS SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 72. DUCT SMOKE DETECTOR SUPERVISION SHALL COMPLY WITH 606.4.1 OF THE NC MECHANICAL CODE. IF THE BUILDING IS (TO BE) EQUIPPED WITH A FIRE ALARM SYSTEM, THE FIRE ALARM SYSTEM CONTRACTOR SHALL FURNISH AND WIRE ALL DUCT SMOKE DETECTORS. IF THE BUILDING IS NOT PROVIDED WITH A FIRE ALARM SYSTEM, THE MC SHALL FURNISH AND WIRE THE DUCT SMOKE DETECTORS AND A/V DEVICE. IT SHALL BE THE RESPONSIBILITY OF THE MC TO INSTALL ALL SMOKE DUCT DETECTORS PER NEPA AND MEG'S INSTALLATION INSTRUCTIONS REGARDLESS OF WHO FURNISHES THE DEVICES.
 - 39. MC SHALL COORDINATE WITH THE ELECTRICAL CONTRACTOR REGARDING THE ELECTRICAL REQUIREMENTS OF ALL EQUIPMENT BEING PROVIDED. 40. MAINTAIN 10 FEET OF DISTANCE BETWEEN FRESH AIR INTAKES AND ALL VENT
 - MAINTAIN CLEARANCES FOR ALL UNITS ACCORDING TO MANUFACTURER'S RECOMMENDATIONS FOR SERVICEABILITY. ALL ROOFTOP EQUIPMENT MUST BE A
 - MINIMUM OF 6 FEET FROM ROOF EDGE. 42. MC SHALL INSTALL ONE (1) CEILING MOUNTED EXHAUST FAN FOR EACH RESTROOM AND VENT TO THE BUILDING'S EXTERIOR. EC SHALL SWITCH FANS
 - WITH LIGHTS OR ON SEPARATE SWITCH AS SHOWN. 43. P-TRAPS MUST BE INSTALLED ON ALL UNITS. P-TRAPS AND CONDENSATE LINES SHALL BE 1 INCH. P-TRAPS AND CONDENSATE LINES MAY BE PVC WHERE NOT LOCATED IN PLENUMS; OTHERWISE, THEY SHALL BE TYPE M
 - COPPER 44. MC SHALL FURNISH A BOUND SET OF OPERATING AND MAINTENANCE INSTRUCTIONS FOR ALL EQUIPMENT TO THE OWNER UPON COMPLETION OF THE PROJECT. MC SHALL PROVIDE ALL DOCUMENTATION TO THE OWNER AS NECESSARY TO SUBMIT FOR FACTORY WARRANTIES.
 - . CONTRACTOR SHALL PROTECT ALL HVAC EQUIPMENT FROM CONSTRUCTION AND SHEET ROCK DUST DURING CONSTRUCTION. ALL FILTERS SHALL BE REPLACED with New at the completion of the project.
 - 46. ALL EQUIPMENT INSTALLED ON ROOF MUST BE WITHIN THE ROOF SCREEN. 47. IF A ROOF PENETRATION IS REQUIRED AND THE ROOF IS UNDER WARRANTY,
 - USE THE AUTHORIZED ROOFER. PROVIDE DOCUMENTATION. 48. ALL PIPING, WIRING, CONDUIT, INSULATION, EQUIPMENT, SUPPORTS, ETC. SHALL BE SUITABLE FOR INSTALLATION IN A RETURN PLENUM AS NECESSARY.
 - COORDINATE WITH OTHER TRADES ON LOCATIONS OF ALL PLENUMS. APPLICABLE CONSTRUCTION WASTE IS RECYCLED DURING THE CONSTRUCTION PHASE OF THE PROJECT.

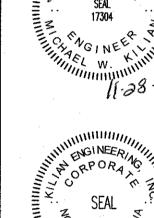


SHALL BE DETERMINED BY DIVIDING THE DIFFERENCE BETWEEN THE

ACTUAL OUTSIDE DIAMETER AND NOMINAL INSIDE DIAMETER BY TWO.

- IS SMALLER THAN LOUVER FRAME, PROVIDE BLANK-OUT PANELS SEALING LOUVER AREA AROUND DUCT. USE SAME MATERIAL AS DUCT, PAINTED BLACK ON EXTERIOR SIDE; SEAL TO LOUVER FRAME AND DUCT.
- AND LABELED BY UL OR AN APPROVED THIRD PARTY AGENCY. ANY MATERIALS 19. PROVIDE DUCT ACCESS DOORS FOR INSPECTION AND CLEANING BEFORE AND AFTER FILTERS, COILS, FANS, AUTOMATIC DAMPERS, AT FIRE DAMPERS, COMBINATION FIRE AND SMOKE DAMPERS, AND ELSEWHERE AS INDICATED.
- 9. THE MC SHALL PROVIDE ALL DX UNITARY HEATING AND COOLING EQUIPMENT AS 20. CONSTRUCT T'S, BENDS, AND ELBOWS WITH RADII OF NOT LESS THAN 1-1/2 TIMES THE WIDTH OF THE DUCT ON CENTERLINE. WHERE NOT POSSIBLE AND WHERE RECTANGULAR ELBOWS MUST BE USED, PROVIDE TURNING VANES. INCREASE DUCT SIZES GRADUALLY, NOT EXCEEDING 15 DEGREES DIVERGENCE WHEREVER POSSIBLE: MAXIMUM OF 30 DEGREES DIVERGENCE UPSTREAM OF
 - EQUIPMENT AND 45 DEGREES CONVERGENCE DOWNSTREAM. 22. MASTIC USED TO SEAL DUCTWORK SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL 181A-95 OR UL 181B-98. MAINTAIN AMBIENT TEMPERATURES AND CONDITIONS REQUIRED BY MANUFACTURER OF ADHESIVES.
- MASTICS, AND INSULATION CEMENTS. DO NOT INSTALL DUCT SEALANT WHEN TEMPERATURES ARE LESS THAT THOSE RECOMMENDED BY THE SEALANT MANUFACTURER. AND CONTINGENCIES IN BID TO IMPLEMENT THEM WITHOUT ADDITIONAL COST TO 23. ALL ADHESIVES AND SEALANTS SHALL BE THOSE WITH THE LOWEST POSSIBLE
 - VOC CONTENT BELOW 20 GRAMS PER LITER AND WHICH MEET THE REQUIREMENTS OF THE MANUFACTURER OF THE PRODUCTS BEING ADHERED OR INVOLVED. ADHESIVES AND SEALANTS SHALL CONTAIN NO HEAVY METALS OR Formaldehyde.
- FABRICATED AND INSTALLED IN ACCORDANCE WITH SMACNA LOW PRESSURE DUCT 25. FLEXIBLE DUCT SHALL BE UL LISTED CLASS 0 OR CLASS 1, INSULATED, AND COMPLY WITH UL 181. FLEXIBLE DUCT SHALL BE FACTORY FORMED, COMPOSED OF SPIRAL WOUND CORROSION RESISTANT WIRE BONDED TO AN INNER FABRIC LINER. DUCT SHALL BE FACTORY INSULATED WITH A FOIL VAPOR BARRIER JACKET. CONNECT TO RIGID DUCT WITH SPIN-IN FITTING AND DAMPER. FLEXIBLE DUCTS AND AIR CONNECTORS SHALL NOT PASS THROUGH ANY FIRE RESISTANCE RATED ASSEMBLY.
- 26. DUCT INSULATION R-VALUES SHALL COMPLY WITH THE LATEST EDITION OF THE NC ENERGY CODE. LEGIBLY PRINTED OR IDENTIFIED AT INTERVALS NOT GREATER THAN 36 INCHES 27. IT SHALL BE THE RESPONSIBILITY OF THE MC TO ADEQUATELY SUSPEND AND
 - SUPPORT ALL EQUIPMENT, DUCTWORK, DIFFUSERS, AND OTHER MATERIALS FOLLOWING RECOGNIZED ENGINEERING PRACTICES AND USING STANDARD, COMMERCIALLY ACCEPTED HANGERS AND SUSPENSION EQUIPMENT. ALL HVAC EQUIPMENT SHALL BE SECURELY MOUNTED TO THE BUILDING STRUCTURE AND SHALL NOT RELY ON CEILING OR WALL SURFACES FOR SUPPORT. THE SUPPORT ATTACHMENT SHALL ADEQUATELY SUPPORT THE WEIGHT OF THE EQUIPMENT PLUS 49. MC SHALL COORDINATE WITH THE GENERAL CONTRACTOR TO ENSURE ALL THE WEIGHT OF THE SUPPORT ATTACHMENT ITSELF. SUPPORT FROM THE TOP CORD OF THE ROOF JOISTS, GIRDERS, AND BEAMS. THE BOTTOM CORD IS NOT
 - TO BE USED FOR EQUIPMENT AND PIPING SUPPORT. HANGERS SHALL NOT BE ATTACHED TO CORRUGATED STEEL DECKING. 28. DUCTS SHALL BE SUPPORTED IN ACCORDANCE WITH SMACNA AT INTERVALS NOT EXCEEDING 10 FEET. DUCTS 36 INCHES OR LARGER SHALL HAVE TRAPEZE TYPE

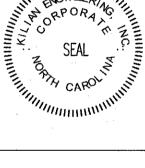
THRU ROOFS.

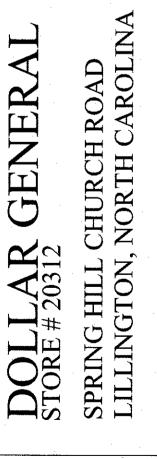


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Engineering







SHEET NUMBER

M-1

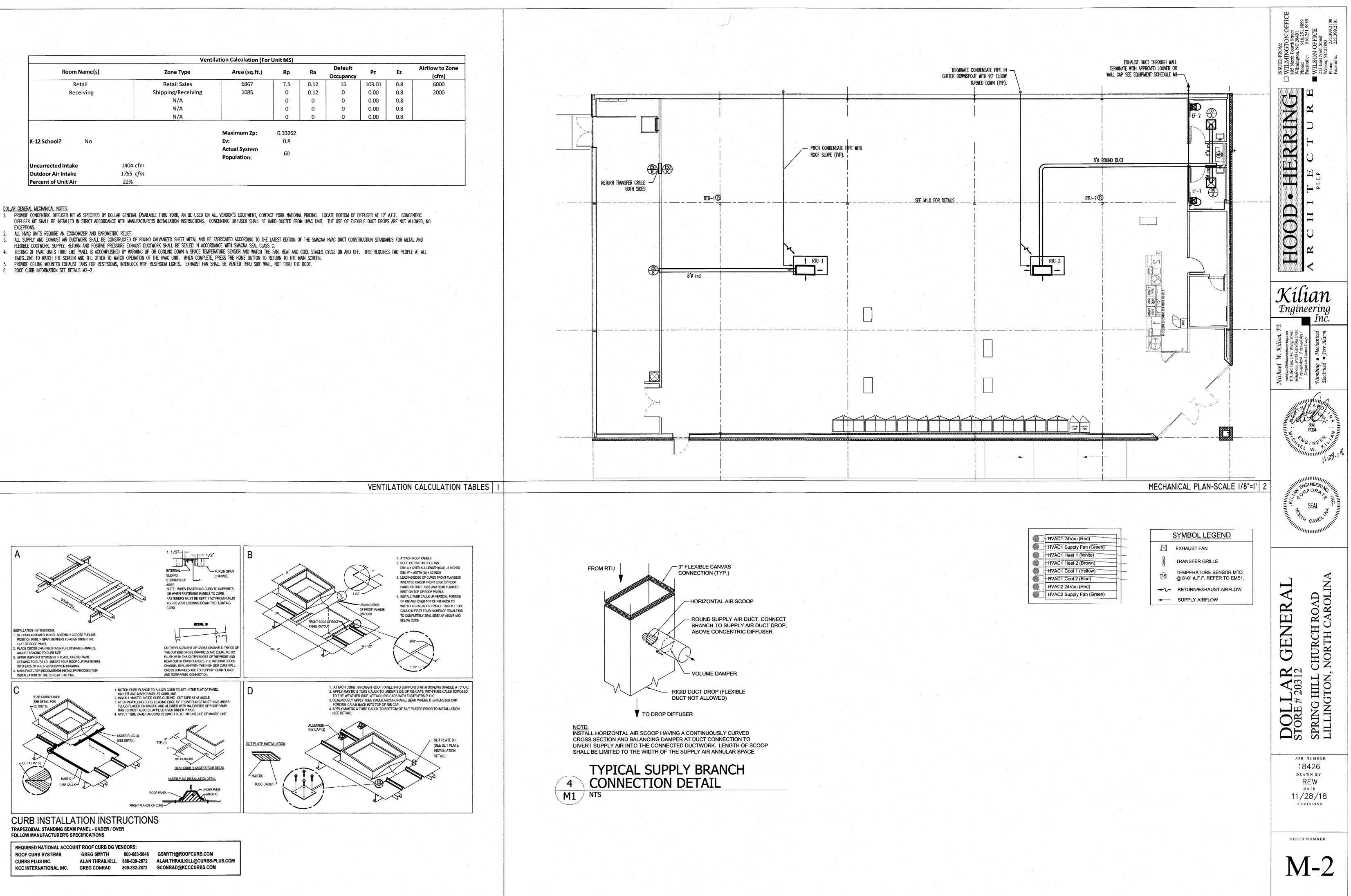
GENERAL MECHANICAL NOTES 5

	Vent	ilation Calculation (For	r Unit MS)					
Room Name(s)	Zone Type	Area (sq.ft.)	Rp	Ra	Default Occupancy	Pz	Ez	Airflow to Zo (cfm)
Retail	Retail Sales	6867	7.5	0.12	15	103.01	0.8	6000
Receiving	Shipping/Receiving	1085	0	0.12	0	0.00	0.8	2000
4	N/A		0	0	. 0	0.00	0.8	
	N/A		0	0	0	0.00	0.8	
	N/A		0	. 0	0	0.00	0.8	
· · · ·				•			·	
		Maximum Zp:	0.33262					
K-12 School? No	· · · · · · · · · · · · · · · · · · ·	Ev:	0.8					
		Actual System Population:	60		• •			. *
Uncorrected Intake 14	04 cfm							
Outdoor Air Intake 17	55 cfm		·	-		•		· .
Percent of Unit Air 22	2%						-	

EXCEPTIONS.

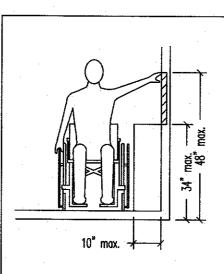
ALL HVAC UNITS REQUIRE AN ECONOMIZER AND BAROMETRIC RELIEF.

FLEXIBLE DUCTWORK. SUPPLY, RETURN AND POSITIVE PRESSURE EXHAUST DUCTWORK SHALL BE SEALED IN ACCORDANCE WITH SMACNA SEAL CLASS C. TIMES...ONE TO WATCH THE SCREEN AND THE OTHER TO WATCH OPERATION OF THE HVAC UNIT. WHEN COMPLETE, PRESS THE HOME BUTTON TO RETURN TO THE MAIN SCREEN.



HVAC WIRING DETAIL AND SYMBOL LEGEND 4

· .		
		ELECTRICAL DEVICE LEGEND
SYMBOL	DESCRIPTION	REMARKS
* \$ _M	VALL MOUNTED OCCUPANCY SENSOR	LEVITON ODS10-IDW LINE VOLTAGE CONTROL SWITCH
\bigcirc	JUNCTION BOX	
iteese and the second s	exhaust fan	VENT FAN, 120V, CFM AS NOTED MC TO PROVIDE AND VENT, EC TO VIRE.
•	data and telephone jack	TELEPHONE DUTLET - 1 RJ11, 1 RJ45 DUTLET FOR VOICE AND DATA. EC TO INSTALL 1'C. FROM DUTLET BOX TO ABOVE CEILING FOR FUTURE USE. PROVIDE CAT 5 CABLING AS NOTED ON PLANS.
•	Telephone Jack	TELEPHONE DUTLET – 1 DUAL RJ45 DUTLET FOR VOICE AND DATA. EC TO INSTALL 1°C. FROM DUTLET BOX TO ABOVE CEILING FOR FUTURE USE, COMMUNICATION WIRING BY OTHERS.
GECI	DUPLEX GFCI RECEPTACLE	COMMERCIAL GRADE, 120V, 20A
6	DUPLEX RECEPTACLE	CUMMERCIAL GRADE, 120V, 20A
₽Q	quad receptacle	COMMERCIAL GRADE, 120V, 20A
Ю СН	DUPLEX RECEPTACLE.	COMMERCIAL GRADE, 120V, 20A, MOUNT AT COUNTER HEIGHT
₿₩P-GFCI	DUPLEX GFCI RECEPTACLE	COMMERCIAL GRADE, 120V, 20A, WITH WEATHER PROOF COVER
₿	4 PRING TWIST LICK RECPT	CUMMERCIAL GRADE, 125/250V NEMA L14-20R
	DISCONNECT SWITCH	NEMA1 IN INTERIOR APPLICATIONS, NEMA 3R IN EXTERIOR APPLICATIONS, FUSIBLE AS NOTED
₽	BUZZER	TORK MDL # TA725 W/ TRANSFORMER MDL # TA592
	Pover Pole	SEE DETAIL



ANSI A117.1 FIG. 308.3.2. OBSTRUCTED HIGH REACH SIDE. ALL SWITCHES AND CONTROLS MUST COMPLY FOR ALL COUNTERTOPS

ELECTRICAL DEVICE LEGEND

ELECTRICAL KEYED NOTES

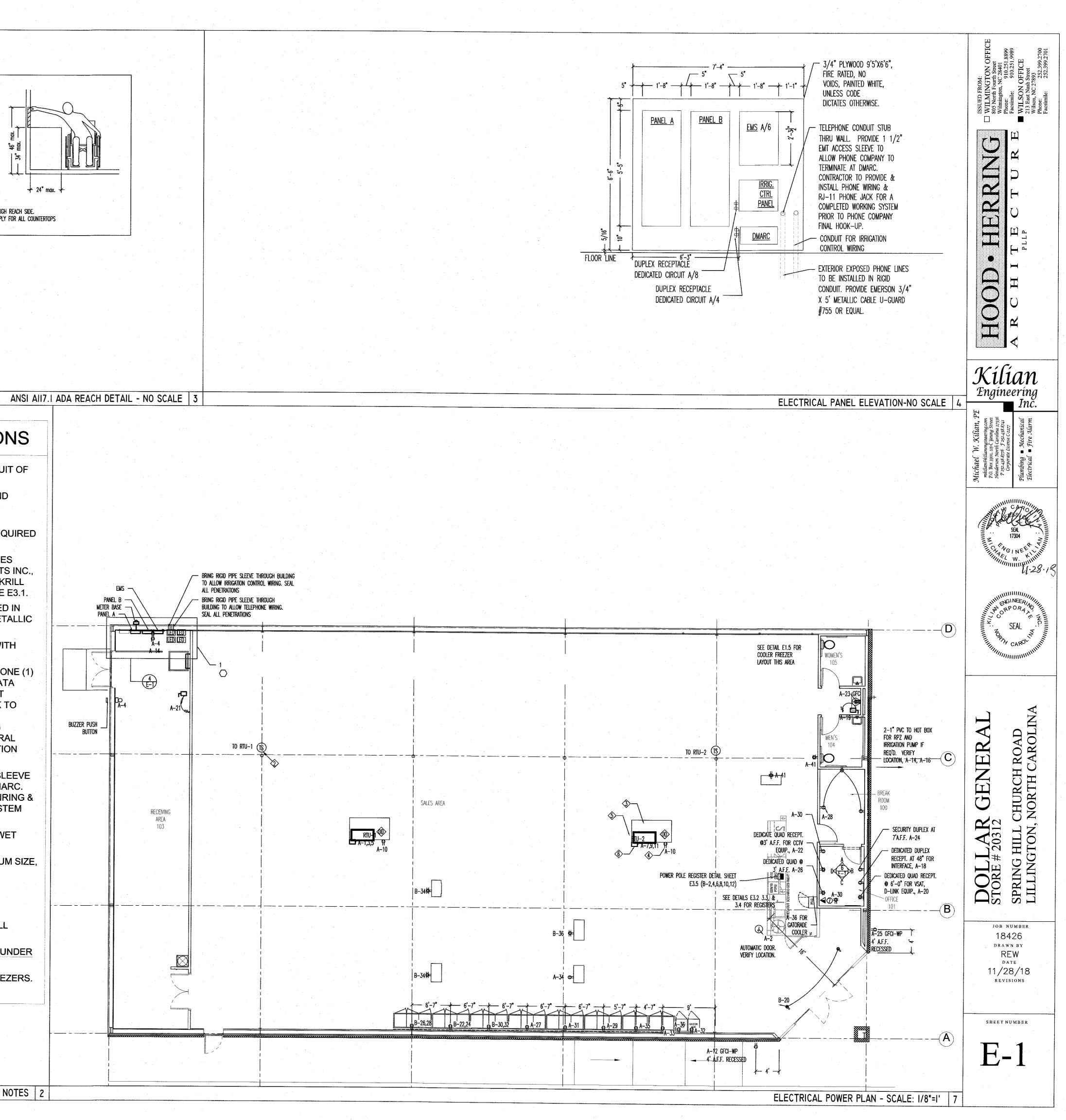
 TEST/RESET STATION FOR STAND ALONE DUCT DETECTOR. ONE FOR EACH DEVICE, SEE KEY NOTE 5 ON THIS SHEET. SIMPLEX #4098-9842 IS SPECIFIED. WITH PIEZO AND LED INDICATOR

2. MECHANICAL THERMOSTAT AT 8'-0" A.F.F.

- 3. LOCATIONS SHOWN FOR MECHANICAL UNITS ARE ONLY APPROXIMATE, CONTRACTOR MUST CONSULT MECHANICAL OR STRUCTURAL DRAWINGS TO DETERMINE ACTUAL UNIT LOCATIONS. PROVIDE 1/2"C. PENETRATION THRU ROOF WITHIN FOOTPRINT OF UNIT FOR USE WITH CONTROL WIRING TO UNIT BY OTHERS. PROVIDE PROPER WATERSEAL. (TYPICAL)
- FACTORY MOUNTED CONVENIENCE OUTLET (ELECTRICAL CONTRACTOR TO PROVIDE IF NOT FACTORY INSTALLED). PROVIDE CIRCUIT AS SHOWN, WIRE ALL WITH THIS NOTE TO A SPARE BREAKER IN PANEL "A" IF THEY ARE NOT POWERED.
- 5. PHOTOELECTRIC DUCT DETECTOR WITH HOUSING. TIE TO LED READOUT RECESSED IN DUCT. STAND ALONE DEVICE, 120V. SIMPLEX #4098-9687 IS SPECIFIED WITH 4098-9842 CONTROL STATION. PROVIDE ONE DEVICE PER UNIT. MOUNT DEVICE IN SUPPLY AIR DUCTWORK. DEVICE SHALL BE PROVIDED AND WIRED TO THE CONTROL STATION BY THE ELECTRICAL CONTRACTOR. HIRE THE MECHANICAL CONTRACTOR FOR INSTALLATION IN DUCTWORK & CONNECTION TO SHUTDOWN CONTROLS. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL REQUIRED RELAYS AND 120V POWER, DO NOT POWER DUCT DETECTORS FROM HVAC UNIT LOW VOLTAGE. SUBMIT SHOP DRAWINGS FOR APPROVAL. PLACE ANY REQUIRED LABELING ON CEILING TILE DIRECTLY BELOW UNIT. RUN CONDUIT & WIRE UNDERGROUND FROM UNIT TO INSIDE OF SPACE.
- 6. MOUNT DISCONNECT SWITCH AT UNIT. ALL DISCONNECTS TO BE HEAVY DUTY. FUSES TO BE RK-5 TYPE, BUSSMANN FRN-R-(AMP) IS SPECIFIED. SEE EQUIPMENT SCHEDULE ON E3.1.
- 7. SO WHITE ELECTRICAL CORD IS NEEDED. SEE SHEET A1, NOTE 26.
- 8. CONFIRM THE FINAL NUMBER AND LOCATION OF OUTLETS IN SALES AREA WITH THE FINAL DG FIXTURE PLAN.

ELECTRICAL SPECIFICATIONS

- A. ALL WIRING SHALL SHALL BE CONTAINED IN CONDUIT OF PROPER SIZE.
- B. ALL WIRING SHALL CONFORM TO LOCAL, STATE AND FEDERAL CODES.
- C. SERVICE IS TO BE A MINIMUM 400 AMP, 3 PHASE (PREFERRED), 600 AMP, 1 PHASE OR LARGER IF REQUIRED BY CODE OR ELECTRICAL LOAD.
- D. REQUIRED CUSTOM BUILT POWER POLE ASSEMBLIES AVAILABLE FROM D&P CUSTOM LIGHTS & PRODUCTS INC., PHONE: (800) 251-2200 OR (615) 350-7800, 7111 COCKRILL BEND INDUSTRIAL ROAD, NASHVILLE, TN 37209. SEE E3.1.
- E. EXTERIOR EXPOSED PHONE LINES TO BE INSTALLED IN RIGID CONDUIT. PROVIDE EMERSON 3/4" X 5-FT. METALLIC CABLE U-GUARD #755, OR EQUAL..
- F. ELECTRICAL PANEL TO BE LABELED CORRECTLY WITH LEGIBLE PRINT.
- G. LOW VOLTAGE VENDOR TO PROVIDE AND INSTALL ONE (1) 24 GA., 4 TWISTED-PAIR, CATEGORY-FIVE (CAT5) DATA CABLE WITH MODULAR COMBO RJ-11/RJ-45 JACK AT MANAGER'S OFFICE. CABLE TO BE RUN FROM JACK TO DATA HUB LOCATION WITH 6'-0" LEFT COILED FOR INSTALLATION TO DATA HUB. A RJ-45 MALE FITTING SHOULD BE CRIMPED ON THIS END. DOLLAR GENERAL STORE OPENING TEAM WILL MAKE FINAL CONNECTION INTO THE DATA HUB.
- H. PROVIDE 1 1/2" EMT CONDUIT TO ACT AS ACCESS SLEEVE TO ALLOW PHONE COMPANY TO TERMINATE AT DMARC. CONTRACTOR TO PROVIDE AND INSTALL PHONE WIRING & RJ-11 PHONE JACK FOR COMPLETED WORKING SYSTEM PRIOR TO PHONE COMPANY FINAL HOOK UP.
- I. ALL 120 VOLT OUTDOOR RECEPTACLES TO HAVE "WET LOCATION IN USE" COVERS.
- J. ALL CONDUCTORS TO BE COPPER, #12 AWG MINIMUM SIZE, OR AS REQUIRED BY LOAD AND OVER CURRENT PROTECTION.
- K. SEE EMS SHEETS EMS1 AND EMS2 FOR ENERGY MANAGEMENT SYMBOLS AND INFORMATION.
- L. ELECTRICIAN TO PROVIDE 1 1/2" CONDUIT WITH PULL STRINGS FOR SATELLITE LOCATION.
- M. ALL POWER AND DATA TO BE ROUTED OVERHEAD. UNDER SLAB NOT ALLOWED.
- N. WIRE SIZE TO BE #8 OR #10 FOR ALL COOLERS/FREEZERS.
- O. MOUNT ALL REFRIGERATOR OUTLETS AT 12" AFF.



GENERAL ELECTRICAL NOTES:

- 1. "PROVIDE" MEANS TO FURNISH AND INSTALL. THE ELECTRICAL CONTRACTOR (EC) Shall also install materials and equipment furnished by others and
- THE GENERAL CONTRACTOR AS REQUIRED. 2. EC SHALL PROVIDE LABOR, MATERIALS, EQUIPMENT, AND SERVICES NECESSARY AND REASONABLY INCIDENTAL TO INSURE A COMPLETE AND OPERATIONAL ELECTRICAL SYSTEM IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS. MINOR ITEMS, ACCESSORIES, AND DEVICES REASONABLY INFERABLE AS NECESSARY FOR THE COMPLETION AND PROPER OPERATION OF ANY ELECTRICAL
- SYSTEM SHALL BE PROVIDED BY THE EC. 3. WORKMANSHIP SHALL BE IN ACCORDANCE WITH NECA 1 "STANDARD PRACTICE FOR GOOD WORKMANSHIP IN ELECTRICAL CONTRACTING."
- 4. ALL MATERIALS AND EQUIPMENT SHALL BE DELIVERED TO THE SITE AND UNLOADED BY THE CONTRACTOR AT AN APPROVED LOCATION. THE EC SHALL PROTECT ALL MATERIALS AND EQUIPMENT FROM BREAKAGE, THEFT, AND THE ELEMENTS. ALL MATERIALS AND EQUIPMENT SHALL REMAIN THE PROPERTY OF THE EC UNTIL THE PROJECT HAS BEEN COMPLETED AND TURNED OVER TO THE
- OWNER. 5. THE EC SHALL OBTAIN AND PAY FOR ALL PERMITS, FEES, AND INSPECTIONS NECESSARY FOR THE COMPLETION OF THE WORK UNDER THIS CONTRACT. 6. DO NOT SCALE THESE DRAWINGS-REFER TO ARCHITECTURAL SHEETS FOR
- DIMENSIONS. TRADE NAMES AND MANUFACTURERS ARE SPECIFIED TO ESTABLISH A QUALITY STANDARD. SUBSTITUTIONS SHALL BE PERMITTED IF APPROVED BY THE
- ENGINEER PRIOR TO INSTALLATION. ALL LISTED MODEL NUMBERS SHALL BE VERIFIED WITH THE MANUFACTURER FOR PROPER APPLICATION OF EQUIPMENT. 8. The EC shall visit the site prior to bidding to become familiar with EXISTING CONDITIONS. THE EC SHALL CONTACT THE ENGINEER TO RESOLVE ANY
- DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THESE PLANS. THE EC SHALL COORDINATE WITH OTHER TRADES PRIOR TO THE START OF CONSTRUCTION 9. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY DISCONNECTS,
- SWITCHES, RECEPTACLES, TERMINALS, ETC, UNDER THE ELECTRICAL BID AND SHALL INCLUDE ALL NECESSARY CIRCUITS TO AND CONNECTIONS TO THE EQUIPMENT PROVIDED BY ALL SUPPLIERS, UNLESS NOTED OTHERWISE BY OTHER DISCIPLINES.
- 10. EC SHALL PROVIDE ALL SERVICE ENTRANCE EQUIPMENT, SUB PANELS, AND OTHER ELECTRICAL DISTRIBUTION EQUIPMENT AS NECESSARY FOR A COMPLETE INSTALLATION. EC SHALL COORDINATE WITH UTILITY REGARDING SERVICE AND METERING DETAILS. PRIOR TO ORDERING EQUIPMENT, THE EC SHALL OBTAIN THE AVAILABLE FAULT CURRENT OR TRANSFORMER SIZE AND IMPEDANCE FROM THE UTILITY AND CONTACT THE ENGINEER IF THE VALUE EXCEEDS THE EQUIPMENT SPECIFIED. PANEL BOARDS AND SWITCH BOARDS SHALL BE SQUARE D, CUTLER-HAMMER, SIEMENS, OR GE. BUSES SHALL BE COPPER UNLESS OTHERWISE APPROVED BY THE ENGINEER. RECESSED PANEL BOARDS SHALL BE INSTALLED FLUSH WITH THE WALL FINISH. METER BASES SHALL COMPLY WITH THE UTILITY'S SPECIFICATIONS AND SHALL BE MOUNTED AT A HEIGHT APPROVED BY THE UTILITY. ALL EQUIPMENT IDENTIFIED FOR SERVICE ENTRANCE USE SHALL BE SO LABELED AND UL LISTED FOR SUCH USE. EC SHALL INSTALL ALL ELECTRICAL EQUIPMENT WITH PROPER CLEARANCES PER NEC 110.26.
- . ENCLOSED SAFETY SWITCHES SHALL BE HEAVY DUTY TYPE BY SQUARE D, EATON, OR GE. ENCLOSED SWITCHES SHALL HAVE A HANDLE LOCKABLE IN THE OFF POSITION AND SHALL HAVE A HANDLE INTERLOCKED TO PREVENT OPENING THE FRONT COVER WHILE IN THE ON POSITION. ENCLOSED SWITCHES OF THE FUSIBLE TYPE SHALL BE FUSED IN ACCORDANCE WITH NAMEPLATE DATA WITH DUAL ELEMENT TYPE FUSES BY BUSSMAN, LITTELFUSE, OR MERSEN.
- 12. OCCUPANCY SENSORS SHALL BE BY WATTSTOPPER, LUTRON, LEVITON, SENSOR SWITCH, HUBBELL, OR APPROVED EQUAL. 13. CIRCUIT BREAKERS SHALL BE MOLDED-CASE, THERMAL MAGNETIC TYPE WITH
- QUICK-MAKE, QUICK-BREAK MECHANISM, COMMON TRIP ON MULTI-POLE BREAKERS, AND UL LISTED FOR BOTH COPPER AND ALUMINUM CONDUCTORS. CIRCUIT BREAKERS IN PANELS SHALL BE SERIES RATED WITH THE MAIN BREAKER, FULLY RATED FOR THE SYSTEM, OR SERIES RATED WITH THE BREAKER FEEDING THE PANEL FROM THE FACTORY.
- 14. WHERE CIRCUIT BREAKERS OR FUSES ARE APPLIED IN COMPLIANCE WITH THE SERIES COMBINATION RATINGS MARKED ON THE EQUIPMENT BY THE MANUFACTURER, THE EQUIPMENT ENCLOSURE(S) SHALL BE LEGIBLY MARKED IN THE FIELD TO INDICATE THE EQUIPMENT HAS BEEN APPLIED WITH A SERIES COMBINATION RATING.
- 15. EC SHALL REVIEW THE MECHANICAL PLANS TO ESTABLISH POINTS OF CONNECTION AND THE EXTENT OF THE ELECTRICAL WORK TO BE PROVIDED IN HIS CONTRACT. ALL CIRCUIT BREAKERS FEEDING HVAC EQUIPMENT SHALL BE HACR BREAKERS. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE MINIMUM #12 AWG IN 3/4 in CONDUIT. EACH MULTIWIRE BRANCH CIRCUIT SHALL BE PROVIDED WITH A MEANS TO SIMULTANEOUSLY DISCONNECT ALL UNGROUNDED OF EACH MULTIWIRE BRANCH CIRCUIT PER 210.4(D) WITH WIRE TIES OR SIMILAR MEANS. DO NOT EXCEED THREE HOMERUNS PER CONDUIT. DO NOT INSTALL ISOLATED GROUND AND NON-ISOLATED GROUND CIRCUITS IN THE SAME CONDUIT. INSTALL CONDUCTORS OF DIFFERENT VOLTAGES IN SEPARATE CONDUITS
- 16. ALL WIRE, CONNECTORS, TERMINALS, AND LUGS SHALL BE PROVIDED BY THE EC. WHERE CONDUCTORS ARE RUN IN PARALLEL, LUGS SHALL BE LISTED FOR PARALLEL CONDUCTORS. PUSH WIRE CONNECTORS ARE NOT ALLOWED FOR BUILDING WIRE. PUSH CONNECTORS ARE ONLY ALLOWED, WHEN APPROVED, AS PART OF MANUFACTURED LISTED PRODUCTS. ALL WIRE SHALL BE INSTALLED IN CONDUIT UNLESS SPECIFICALLY NOTED OTHERWISE.
- 17. THE INSULATION TYPE FOR INTERIOR WIRING SHALL BE DUAL RATED THHN/THWN OR XHHW; ALL WIRING INSTALLED BELOW GRADE OR IN MOIST OR WET LOCATIONS SHALL HAVE TYPE THWN OR XHHW INSULATION. INSULATION VOLTAGE RATING SHALL BE 600 VOLTS AND A MINIMUM TEMPERATURE RATING OF 75°C. CONDUCTORS SHALL BE SOLID OR STRANDED COPPER FOR #10 AWG AND #12 AWG, AND STRANDED COPPER FOR #8 AWG AND LARGER SIZES. ALL WIRING AND CABLE SHALL BE UL LISTED. ALL TERMINATIONS AND DEVICES SHALL BE RATED FOR USE WITH 75°C CONDUCTORS. FINAL CONNECTIONS TO ALL MOTORS AND EQUIPMENT SUBJECT TO VIBRATION OR MOVEMENT SHALL BE MADE WITH STRANDED COPPER CONDUCTORS. CONDUCTORS SHALL BE BY
- CERRO WIRE, INC, INDUSTRIAL WIRE & CABLE, INC, OR SOUTHWIRE COMPANY. 18. JOINTS IN SOLID CONDUCTORS SHALL BE SPLICED USING IDEAL "WIRE NUTS", 3M "SCOTCH LOCK", OR T&B "PIGGY" CONNECTORS IN JUNCTION BOXES, OUTLET BOXES, AND LIGHTING FIXTURES. JOINTS IN STRANDED CONDUCTORS SHALL BE SPLICED BY APPROVED MECHANICAL CONNECTORS AND GUM RUBBER TAPE OR FRICTION TAPE. SOLDERLESS MECHANICAL CONNECTORS FOR SPLICES AND TAPS, PROVIDED WITH UL APPROVED INSULATING COVERS, MAY BE USED

HARRIS LIGHTING

CED-CONSOLIDATED

ELECTRICAL DISTRIBUTORS ro

shall be continuous from outlet to outlet and no splicing shall be MADE EXCEPT WITHIN OUTLET OR JUNCTION BOXES, TROUGHS, OR GUTTERS,

- WHERE CONCENTRIC, ECCENTRIC, OR OVERSIZED KNOCKOUTS ARE ENCOUNTERED, A GROUNDING TYPE INSULATED BUSHING SHALL BE PROVIDED. 19. COLOR CODE CONDUCTORS PER NEC. FEEDERS SHALL BE IDENTIFIED IN ACCORDANCE WITH 215.12. USE BLACK, RED, AND BLUE FOR PHASES A, B, AND C RESPECTIVELY ON 208Y/120 VOLT THREE-PHASE Y SYSTEMS AND white for the neutral. Isolated ground wires shall be green with YELLOW BANDS OR STRIPES. COLORS SHALL BE FACTORY APPLIED FOR CONDUCTORS #6 AWG AND SMALLER. ALL EQUIPMENT GROUNDING CONDUCTORS SHALL BE GREEN IN COLOR AND MINIMUM #12 AWG. THE EC SHALL PROVIDE PLENUM RATED CABLE FOR ANY ELECTRICAL, TELEPHONE, COMMUNICATION, OR OTHER CABLE THAT ENTERS CEILING RETURN PLENUMS.
- 20. ALL LUMINAIRES SHALL BE LISTED, LUMINAIRES IN WET OR DAMP LOCATIONS SHALL BE MARKED AS SUITABLE FOR THE RESPECTIVE USE. EMERGENCY LIGHTING SHALL BE INSTALLED AS SHOWN. FINAL LOCATIONS OF ALL EXIT AND EMERGENCY LIGHTS SHALL BE VERIFIED WITH THE BUILDING INSPECTOR PRIOR TO INSTALLATION. ALL FLUORESCENT FIXTURES SHALL HAVE ELECTRONIC BALLASTS MEETING ANSI C82.11 FOR ELECTRONIC BALLAST PERFORMANCE, ALL BALLASTS SHALL BE UL LISTED AND MEET FEDERAL AND STATE EFFICIENCY REQUIREMENTS.
- 21. ALL LIGHT FIXTURES SHALL BE SUPPORTED INDEPENDENTLY OF THE SUSPENDED CEILING. COORDINATE LIGHTING LAYOUT WITH CEILING GRID. MECHANICAL EQUIPMENT, DUCTWORK AND SPRINKLER HEADS AS NECESSARY. SEE REFLECTED CEILING PLAN FOR DETAILS. FLUORESCENT FIXTURES UTILIZING DOUBLE-ENDED LAMPS MUST HAVE A DISCONNECTING MEANS COMPLYING WITH NEC 410.130(G).
- 22. MOUNT LIGHT SWITCHES AT 48 in AFF. MULTIPLE SWITCHES AT SAME LOCATION SHALL BE UNDER ONE WALL PLATE. VERIFY WALL PLATE COLOR AND MATERIAL WITH THE ARCHITECT/OWNER. INSTALL SWITCHES WITH off POSITION DOWN, ALL SWITCHES SHALL BE HEAVY DUTY, NORY PLASTIC WITH TOGGLE HANDLE, RATED 120-277V AC, AND COMPLYING WITH NEMA WD 6 AND WD 1. SWITCHES SHALL BE BY COOPER WIRING DEVICES, LEVITON MANUFACTURING, PASS & SEYMOUR, or hubbell. Provide box device partition/dividers for multi-gang BOXES FOR COMPLIANCE WITH NEC 404.8(B).
- 23. EC SHALL PROVIDE FIRE-STOPPING AT ALL ELECTRICAL PENETRATIONS OF RATED FLOORS AND WALLS TO PRESERVE OR RESTORE THE FIRE-RESISTANCE RATING. SEAL PENETRATIONS USING A UL LISTED SYSTEM FOUND IN THE UL DIRECTORY SPECIFIC TO THE UL LISTING OF THE ASSEMBLY BEING PENETRATED. SEE ARCHITECTURAL PLANS FOR UL RATED ASSEMBLIES SPECIFIC TO THIS PROJECT
- 24. EC SHALL PROVIDE GFCI RECEPTACLES IN KITCHENS, RESTROOMS, OUTDOORS, AT WATER COOLERS, & AS REQUIRED BY NEC. EACH OUTDOOR HVAC UNIT MUST HAVE A GFCI RECEPTACLE WITHIN 25 FEET FOR SERVICING. GFCI RECEPTACLES SHALL CONFORM TO UL 943 CLASS A AND UL 498 STANDARDS. SHOW WINDOW RECEPTACLES SHALL BE PROVIDED IN ACCORDANCE WITH 210.62 OF THE NEC. RECEPTACLES SHALL BE BY COOPER WIRING DEVICES, LEVITON MANUFACTURING, PASS & SEYMOUR, OR HUBBELL, ALL RECEPTACLES SHALL BE 125V RATED, HEAVY DUTY, AND COMPLY WITH NEMA WD 6 & WD 1. 25. LOCATIONS AND HEIGHTS OF ALL WALL-MOUNTED DEVICES SHALL BE COORDINATED WITH THE ARCHITECT PRIOR TO INSTALLATION.
- 26. GROUNDING AND BONDING SHALL BE PER NEC ARTICLE 250. THE RACEWAY system shall not be relied upon for grounding continuity. A green EQUIPMENT GROUNDING CONDUCTOR, PROPERLY SIZED PER NEC TABLE 250-122, SHALL BE RUN IN ALL POWER RACEWAYS. FOR NON-ISOLATED GROUND CIRCUITS PROVIDE ONE EQUIPMENT GROUNDING CONDUCTOR PER CONDUIT RUN. FOR ISOLATED GROUND CIRCUITS, PROVIDE ONE NEUTRAL AND ONE ISOLATED GROUND WIRE FOR EACH CIRCUIT; IN ADDITION, PROVIDE ONE EQUIPMENT GROUNDING CONDUCTOR PER CONDUIT RUN. MAIN BONDING JUMPERS AND SYSTEM BONDING JUMPERS SHALL BE INSTALLED IN ACCORDANCE WITH 250.28 OF THE NEC. FOR BUILDINGS OR STRUCTURES SUPPLIED BY FEEDERS OR BRANCH CIRCUITS, GROUNDING AND BONDING SHALL 38. ALL MATERIALS AND EQUIPMENT SHALL COMPLY WITH THE UNDERWRITERS' BE IN ACCORDANCE WITH 250.32. SEPARATELY DERIVED AC SYSTEMS SHALL BE GROUNDED IN ACCORDANCE WITH 250.30. RESISTANCE TO GROUND SHALL NOT EXCEED 25 OHMS; ADDITIONAL GROUNDING ELECTRODES SHALL BE INSTALLED
- PER 250.56 AS NECESSARY. THE EC SHALL ALSO COORDINATE WITH THE GC REGARDING THE BONDING OF THE FOOTING REBAR, SO THAT IT WILL BE IN PLACE AND READY AT TIME OF FOOTING INSPECTION
- 28. ALL CONDUIT, FITTINGS, COUPLINGS, AND SUPPORTS SHALL BE PROVIDED BY THE EC. CONDUIT FITTINGS AND COUPLINGS SHALL BE BY APPLETON, RACO, OR 40. EC SHALL INSTALL DISCONNECT SWITCHES IN SIGHT OF ALL HARDWIRED 0-Z/GEDNEY. COUPLINGS SHALL BE THREADED, SET-SCREW, OR COMPRESSION TYPE. INDENTER OR CRIMP TYPE ARE NOT PERMITTED, CONDUIT FITTINGS AT ALL ELECTRICAL BOXES INCLUDING PULL, JUNCTION, AND OUTLET BOXES, SHALL HAVE INSULATED THROATS TO PREVENT INSULATION SCORING. DIE CAST FITTINGS ARE NOT PERMITTED
- CONDUCTORS AT THE SOURCE PER NEC 210.4(B). GROUP ALL CONDUCTORS 29. CONCEAL ALL CONDUIT EXCEPT IN MECHANICAL ROOMS OR UNFINISHED AREAS AS NOTED. USE EMT CONDUIT FOR ALL BRANCH CIRCUITS AND FEEDERS INSIDE PROPERLY SUPPORT THE DEVICE. THE BUILDING. TYPE MC CABLE AND TYPE AC CABLE MAY INSTALLED WITHIN WALLS IF ALL NEUTRAL WIRES, ISOLATED GROUND WIRES, AND EQUIPMENT ground wires as listed above are contained in the cable. Do not use TYPE MC CABLE OR TYPE AC CABLE ALL THE WAY BACK TO THE PANEL. FLEXIBLE CONNECTIONS TO MOTORS AND OTHER EQUIPMENT SHALL BE MADE USING WEATHERPROOF FLEXIBLE CONDUIT. FOR LAY-IN LIGHT FIXTURES, USE MAXIMUM OF SIX (6) FEET OF FLEXIBLE MC CABLE (OR THE FLEXIBLE CONDULT PROVIDED BY THE FIXTURE MANUFACTURER). SCHEDULE 40 PVC CONDUIT MAY BE USED FOR THE SECONDARY UNDERGROUND SERVICE, UNDERGROUND TELEPHONE SERVICE, AND BRANCH AND FEEDER CIRCUITS UNDER SLAB OR EXTERIOR TO THE BUILDING. EXPOSED EXTERIOR CONDUIT SHALL BE SCHEDULE 43. ELECTRICAL CONTRACTOR SHALL VERIFY THE MAXIMUM AVAILABLE FAULT 80 PVC. ALL UNDERGROUND RACEWAYS SHALL BE IDENTIFIED WITH UNDERGROUND LINE MARKING TAPE 6-8 in BELOW GRADE DIRECTLY ABOVE THE RACEWAY. PROVIDE PULL WIRE IN EMPTY CONDUITS, UPSIZE CONDUIT FROM MINIMUM SIZE AS NECESSARY FOR LONGER PULLS, UNDERGROUND RACEWAYS THAT STUB INTO THE BOTTOM OF SWITCHBOARDS, OUTDOOR TRANSFORMERS, GENERATORS, ETC, SHALL RISE AT LEAST 2 in ABOVE THE FINISHED SLAB TO PREVENT WATER FROM DRAINING INTO THE RACEWAYS. RACEWAYS THAT PENETRATE EXTERIOR WALLS OR INTERIOR PARTITIONS SEPARATING SPACES THAT WILL BE AT SIGNIFICANTLY DIFFERENT TEMPERATURES SHALL BE SEALED IN ACCORDANCE WITH 300.5(G), 300.7(A), AND 300.50(E) OF THE NEC. ROUTE CONDUIT IN AND UNDER SLAB FROM POINT-TO-POINT, ROUTE EXPOSED CONDUIT AND CONDUIT INSTALLED ABOVE ACCESSIBLE CEILINGS PARALLEL AND PERPENDICULAR TO WALLS. COMPLETELY AND THOROUGHLY SWAB ALL RACEWAYS BEFORE INSTALLING WIRE. PULL ALL CONDUCTORS INTO EACH RACEWAY AT ONE TIME. USE A SUITABLE WIRE PULLING LUBRICANT FOR BUILDING WIRE #4 AWG AND LARGER. INSTEAD OF MECHANICAL CONNECTORS PLUS TAPE. IN ALL CASES, CONDUCTORS 30. CABLES, RACEWAYS, OR BOXES, INSTALLED IN EXPOSED OR CONCEALED

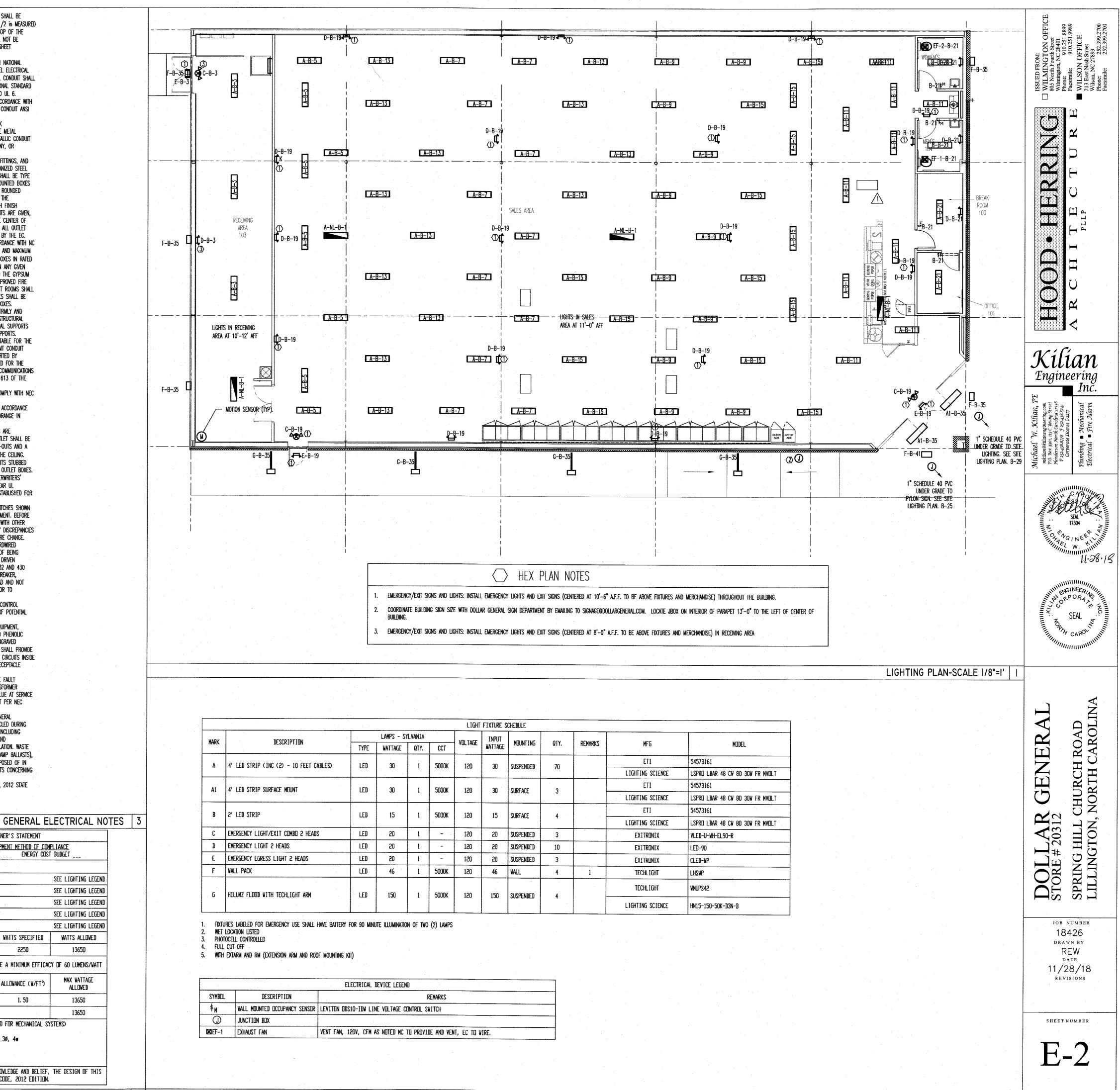
LOCATIONS UNDER METAL-CORRUGATED SHEET ROOF DECKING, SHALL BE INSTALLED AND SUPPORTED SO THERE IS NOT LESS THAN 1-1/2 in MEASURED FROM THE LOWEST SURFACE OF THE ROOF DECKING TO THE TOP OF THE CABLE, RACEWAY, OR BOX. A CABLE, RACEWAY, OR BOX SHALL NOT BE INSTALLED IN CONCEALED LOCATIONS IN METAL-CORRUGATED, SHEET DECKING-TYPE ROOF. SEE NEC 300.4(E).

- 31. EMT SHALL BE MANUFACTURED IN ACCORDANCE WITH AMERICAN NATIONAL STANDARDS INSTITUTE-AMERICAN NATIONAL STANDARD FOR STEEL ELECTRICAL METALLIC TUBING (EMT), ANSI C80.3 AND UL 797. RIGID METAL CONDUIT SHAL BE MANUFACTURED IN ACCORDANCE WITH ANSI-AMERICAN NATIONAL STANDARD FOR ELECTRICAL RIGID STEEL CONDUIT (ERSC), ANSI C80.1 AND UL 6. INTERMEDIATE METAL CONDUIT SHALL BE MANUFACTURED IN ACCORDANCE WITH ANSI-AMERICAN NATIONAL STANDARD FOR INTERMEDIATE METAL CONDUIT ANSI C80.6 AND UL 1242.
- 32. METAL CONDUIT SHALL BE BY ALLIED TUBING & CONDUIT, BECK MANUFACTURING, INC, OR WHEATLAND TUBE COMPANY. FLEXIBLE METAL CONDUIT, LIQUID-TIGHT FLEXIBLE METAL CONDUIT, AND NONMETALLIC CONDUIT SHALL BE BY AFC CABLE SYSTEMS, INC, ELECTRI-FLEX COMPANY, OR INTERNATIONAL METAL HOSE.
- 33. THE EC SHALL PROVIDE ALL OUTLET, JUNCTION, PULL BOXES, FITTINGS, AND SUPPORTS. ALL OUTLET AND JUNCTION BOXES SHALL BE GALVANIZED STEEL TYPE BY APPLETON, STEEL CITY, OR RACO. EXTERIOR BOXES SHALL BE TYPE FS. VAPORTITE BOXES SHALL BE TYPE GS. WHERE SURFACE MOUNTED BOXES ARE USED, THOSE BOXES AND THEIR FACEPLATES SHALL HAVE ROUNDED CORNERS. BOXES INSTALLED IN FLOORS SHALL BE RATED FOR THE APPLICATION. MOUNT JUNCTION AND OUTLET BOXES FLUSH WITH FINISH SURFACES UNLESS OTHERWISE NOTED. WHERE MOUNTING HEIGHTS ARE GIVEN, THEY SHALL BE MEASURED FROM THE FINISHED FLOOR TO THE CENTER OF THE BOX. ALL BOXES SHALL BE SIZED PER NEC ARTICLE 314. ALL OUTLET AND JUNCTION BOXES SHALL HAVE A COVER PLATE, PROVIDED BY THE EC. OUTLET BOXES IN RATED WALLS SHALL BE INSTALLED IN ACCORDANCE WITH NC BUILDING CODE 712.3.2 (MAXIMUM BOX SIZE IS 16 SQUARE in AND MAXIMUM OF SIX (6) BOXES PER 100 SQUARE FEET). INSTALL OUTLET BOXES IN RATED WALLS SUCH THAT OPENINGS OCCUR IN ONE SIDE ONLY WITHIN ANY GIVEN STUD SPACE. ALL CLEARANCES BETWEEN THE OUTLET BOX AND THE GYPSUM BOARD SHALL BE FILLED WITH JOINT COMPOUND OR OTHER APPROVED FIRE STOP MATERIAL FLUSH MOUNTED JUNCTION BOXES IN ADJACENT ROOMS SHALL NOT BE MOUNTED BACK-TO-BACK. SURFACE MOUNTED FIXTURES SHALL BE FED THROUGH FLUSH MOUNTED 4X4 OCTAGONAL OR SQUARE BOXES.
- 34. ALL CONDUIT, BOXES, AND ELECTRICAL EQUIPMENT SHALL BE FIRMLY AND SECURELY FASTENED TO OR SUPPORTED FROM THE BUILDING STRUCTURAL MEMBERS-OR EMBEDDED IN CONCRETE OR MASONRY. ELECTRICAL SUPPORTS SHALL NOT BE ATTACHED TO DUCTWORK, PIPING, OR THEIR SUPPORTS. HANGERS SHALL BE CATALOG ITEMS COMPATIBLE WITH AND SUITABLE FOR THE INTENDED USE. FOR METAL ROOF DECK INSTALLATIONS, 1 in EMT CONDUIT MAXIMUM AND 4 in JUNCTION BOXES MAXIMUM MAY BE SUPPORTED BY DECKING. THE SUSPENDED CEILING SYSTEM SHALL NOT BE USED FOR THE SUPPORT OF ELECTRICAL RACEWAY SYSTEMS OR SUPPORT OF COMMUNICATIONS OR DATA SYSTEMS WIRING. CONTRACTOR SHALL COMPLY WITH 1613 OF THE NORTH CAROLINA GENERAL CONSTRUCTION BUILDING CODE. 35. WHERE CONDUCTORS ARE RUN IN PARALLEL, THE EC SHALL COMPLY WITH NEC
- 36. ISOLATED-GROUND TYPE RECEPTACLES SHALL BE INSTALLED IN ACCORDANCE WITH 250.146(D). ISOLATED GROUND RECEPTACLES SHALL BE ORANGE IN COLOR
- 37. ALL TELEPHONE AND COMMUNICATIONS OUTLETS AND RACEWAYS ARE ROUGH-INS ONLY. EACH TELEPHONE AND COMMUNICATIONS OUTLET SHALL BE A 4 in SQUARE BY 1-1/2 in DEEP BOX WITH 3/4 in KNOCK-OUTS AND A 3/4 in CONDULT STUBBED FROM THE OUTLET BOX TO ABOVE THE CEILING. PROVIDE A NON-METALLIC INSULATING BUSHING ON ALL CONDUITS STUBBED ABOVE THE CEILING. PROVIDE A BLANK COVER PLATE ON ALL OUTLET BOXES.
- LABORATORIES, INC. STANDARDS OR HAVE UL APPROVAL. OR BEAR UL RE-EXAMINATION LISTING WHERE SUCH APPROVAL HAS BEEN ESTABLISHED FOR THE TYPE OF DEVICE IN QUESTION.
-). CONDUCTORS, FUSES, CIRCUIT BREAKERS, AND DISCONNECT SWITCHES SHOWN ON THESE PLANS HAVE BEEN SIZED FOR THE SPECIFIED EQUIPMENT. BEFORE ORDERING ELECTRICAL EQUIPMENT, THE EC SHALL COORDINATE WITH OTHER CONTRACTORS ON THE SITE AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES
- SHOULD CONDUCTOR, CIRCUIT BREAKER, OR FUSE SIZES REQUIRE CHANGE. Equipment and appliances or provide breakers capable of being LOCKED IN THE OPEN POSITION PER NEC 422.31. FOR MOTOR DRIVEN APPLIANCES, PROVIDE A DISCONNECTING MEANS PER NEC 422.32 AND 430 PART IX. WHERE AN INDIVIDUAL DISCONNECT SWITCH, CIRCUIT BREAKER. STARTER, ETC, IS SHOWN ON THE PLANS ADJACENT TO ITS LOAD AND NOT LOCATED ON A WALL, PROVIDE NECESSARY MATERIALS AND LABOR TO
- 41. EC SHALL FIELD IDENTIFY ALL SWITCH BOARD, PANEL BOARDS, CONTROL PANELS, METER SOCKETS, ETC. TO WARN QUALIFIED PERSONS OF POTENTIAL ELECTRICAL ARCH FLASH HAZARDS PER 110.16 OF NEC.
- 42. EC SHALL PROVIDE NAMEPLATES FOR IDENTIFICATION OF ALL EQUIPMENT, SWITCHES, PANELS, ETC. THE NAMEPLATES SHALL BE LAMINATED PHENOLIC PLASTIC, BLACK FRONT, AND BACK WITH WHITE CORE, WHITE ENGRAVED LETTERS (1/4 in MINIMUM) ETCHED INTO THE WHITE CORE. EC SHALL PROVIDE A TYPE WRITTEN DIRECTORY CARD THAT ACCURATELY IDENTIFIES CIRCUITS INSIDE EACH PANEL PLACE TYPED, SELF ADHESIVE LABEL ON EACH RECEPTACLE FACEPLATE. HANDWRITTEN LABELS ARE NOT ACCEPTABLE.
- CURRENT WITH THE POWER COMPANY AT TIME OF UTILITY TRANSFORMER INSTALLATION AND CONTACT ENGINEER FOR CALCULATION OF VALUE AT SERVICE EQUIPMENT. ELECTRICIAN SHALL PERMANENTLY LABEL EQUIPMENT PER NEC 110.24.
- 44. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE GENERAL CONTRACTOR TO ENSURE THE FOLLOWING MATERIALS ARE RECYCLED DURING THE CONSTRUCTION PHASE OF THE PROJECT: LIGHT FIXTURES, INCLUDING PROPER DISPOSAL OF BALLASTS, FLUORESCENT LIGHT BULBS, AND TRANSFORMERS, WIRING AND ELECTRICAL EQUIPMENT, AND INSULATION. WASTE MATERIALS CONTAINING LEAD, ASBESTOS, PCBs (FLUORESCENT LAMP BALLASTS). or other harmful substances shall be handled and disposed of in ACCORDANCE WITH FEDERAL AND STATE LAWS AND REQUIREMENTS CONCERNING HAZARDOUS WASTE.
- 45. ALL WORK SHALL CONFORM TO 2017 NATIONAL ELECTRIC CODE, 2012 STATE BUILDING CODE, AND ALL APPLICABLE LOCAL CODES.

					ELECTRICAL DES	SIGNER'S STATEMENT	
					<u>TRICAL SYSTEM AND EQ</u> TIVE _X_ PERFURMAN	UIPMENT METHOD OF COM NCE ENERGY COST	
				LIGHTING SCHEDULE		· · ·	
				LAMP TYPE REQUIRE	D IN FIXTURE:		S
				NUMBER OF LAMPS P	ER FIXTURE:		SI
				BALLAST TYPE USED	IN FIXTURE:		SI
				NUMBER OF BALLAST	s in fixture;		SI
				TOTAL WATTAGE PER	FIXTURE:		S
				TOTAL INTERIOR VA	TTAGE SPECIFIED VS	WATTS SPECIFIED	
			· · · · · · · · · · · · · · · · · · ·	ALLOWED	· · · ·	2250	
	REQUIRED NATIONAL	ACCOUNT VENDORS					<u>د</u>
	SHENNEL JOHNSON sjohnson@harrislights.com	904-284-1220 EXT. 262	ELECTRICAL LIGHTING SUPPLIES		INHIKES / IUUW MUSI F	HAVE A MINIMUM EFFICAC	, T L T
29	ROBERT DECKER robertd@cedbgky.com	270-781-2229	ELECTRICAL SWITCH GEAR	DCCUPANCY	AREA (FT ²)	ALLOWANCE (W/FT3)	
K2	rober weleubyky. Lon			RETAIL	9100	1. 50	
Γ	For the additional prescriptive	REQUIREMENT REQUIRE	D BY SECTION 506 OF NC ENERGY CODE,	TOTAL	9100		
	WE ARE CHOOSING 506.2.2 - RED (13650 W ALLOWED - 2250 W SPI	uced lighting power	DENSITY.	Motor Horsepover: Number of Phases: Minimum Efficienc' Motor type: N/A Number of Poles: N	N/A BUILDING IS 208Y/120 f: N/A N/A	· · · · · · · · · · · · · · · · · · ·	
				DESTINED STATEMENT	TO THE DEET DE MY	WHENREDCE AND DELTER	Ť

DESIGNER STATEMENT: TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE DESIGN OF THIS BUILDING COMPLIES WITH THE STATE ENERGY CODE, 2012 EDITION.

ELECTRICAL DESIGNER'S STATEMENT | 4

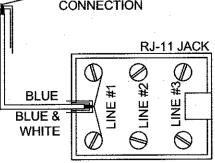


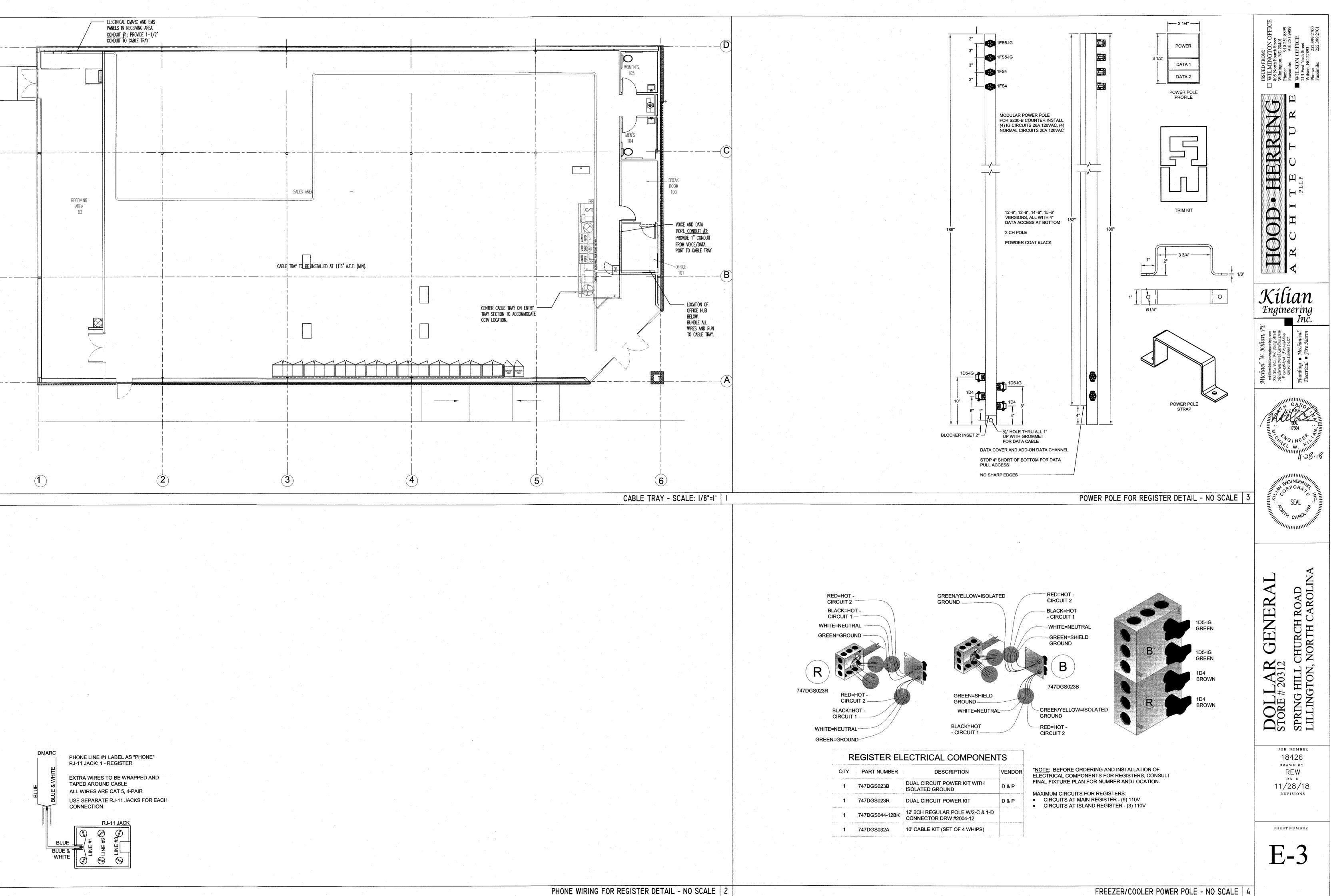
						LIGHT	FIXTURE S	CHEDULE			
MARK	DESCRIPTION	-	LAMPS - S	(LVANIA		VOLTAGE	INPUT		OTY	DEMOKO	
	DESCRETTION	TYPE	WATTAGE	QTY.	CCT		WATTAGE	MOUNTING	QTY.	REMARKS	
A	4' LED STRIP (INC (2) - 10 FEET CABLES)	LED	30	1	5000K	120	30	SUSPENDED	70		
	·										
A1	4' LED STRIP SURFACE MOUNT	LED	30	1	5000K	120	30	SURFACE	3		
								Son not	· · ·		
B	2' LED STRIP	LED	15	1	5000K	120	15	SURFACE	4		1.
-							15	SON HOL	т		
C	EMERGENCY LIGHT/EXIT COMBO 2 HEADS	LED	20	1	-	120	20	SUSPENDED	3		
D	EMERGENCY LIGHT 2 HEADS	LED	20	1	-	120	20	SUSPENDED	10		
E	EMERGENCY EGRESS LIGHT 2 HEADS	LED	20	1	-	120	20	SUSPENDED	3		
F	VALL PACK	LED	46	1	5000K	120	46	WALL	4	1	
								· · ·	· · · ·		
G	HILUMZ FLOOD WITH TECHLIGHT ARM	LED	150	1	5000K	120	150	SUSPENDED	4		<u> </u>
											1

		ELECTRICAL DEVICE LEGEND	
SYMBOL	DESCRIPTION	REMARKS	
\$ _M	VALL MOUNTED OCCUPANCY SENSOR	LEVITON ODS10-IDV LINE VOLTAGE CONTROL SVITCH	
	JUNCTION BOX		
₿EF-1	exhaust fan	VENT FAN, 120V, CFM AS NOTED MC TO PROVIDE AND VENT, EC TO VIRE.	

LIANCE BUDGET SEE LIGHTING LEGEND WATTS ALLOWED 13650 ' OF 60 LUMENS/WATT MAX VATTAGE ALLOVED 13650 13650 (2MJT

LIGHTING FIXTURE SCHEDULE AND LEGEND





				PANEL A	1			
CKT	LOAD	BKR	LOAD	PH	LOAD	BKR	I DAD	C1/1
	LUAD	DNK	kVA		kVa	DKK	LDAD	CKT
1			11. 03	A	0. 10	20/1	AUTOMATIC DOOR	2
3	RTU-1	100/3	11, 03	B	0, 36	20/1	TELEPHONE BOARD/BUZZER	4
5			11, 03	C	0. 18	20/1	ENERGY MANAGEMENT	6
7			11. 03	A	0. 18	20/1	RECEPT FOR IRRIGATION PANEL	8
9	RTU-2	100/3	11. 03	B	0. 72	20/1	od hvac recept (on roof)	10
11			11. 03	C	0. 18	20/1	DD DRINK VEND	12
13	SPARE	20/1	0, 00	A	0, 72	20/1	HOT BOX	14
15	SPARE	20/1	0, 00	B	1.00	20/1	IRRIGATION PUMP	16
17	SPARE	20/1	0, 00	C	0. 50	20/1	INTERFACE EQUIPMENT	18
1	VATER HEATER	20/1	1. 70	A	0. 50	20/1	VSAT SATA HUB EQUIPMENT	20
2	WATER HEATER	20/1	1, 70	B	0. 50	20/1	CCTV EQUIP	22
23	DRINKING FOUNTAIN	20/1	0. 18	C	0, 18	20/1	SECURITY RECEPT.	24
ଞ	Dutdoor ice recept.	20/1	0. 18	A	0. 36	20/1	OFFICE RECEPT.	8
0	COOLER #1	20/1	1, 20	B	0. 54	20/1	Break Room Recept.	28
3	COOLER #2	20/1	1. 20	C	0, 54	20/1	OFFICE RECEPT.	30
31	COOLER #3	20/1	1. 20	A ·	0 <u>,</u> 80	20/1	GATORADE	32
33	COOLER #4	20/1	1. 20	B	0, 18	20/1	ICE CREAM FREEZER	34
35	COOLER #5	20/1	1.60	C	0, 80	20/1	GATURADE	36
37	SPARE	20/1	0. 00	A	11. 70		· · · · · · · · · · · · · · · · · · ·	38
39	SPARE	20/1	0. 00	B	12.80	200/3	PANEL B	40
41	BEAUTY/COSMETICS	20/1	0, 72	С	10. 80			42
			kVA	PH	AMPS		2	
			39. 5	A	329		· · · · · · · · · · · · · · · · · · ·	
			42. 3	B	352			
			38. 9	C	325			
		VOLTAGE	e/phase	-	208Y/1	20V, 3P, 4		•
		BUS	RATING		600A		······································	
	NEU	RAL BUS	RATING		600A			
· · · ·	MAIN CIRCUIT				J			

CKT LDAD BKR LDAD KA PH LDAD BKR LDAD CKT (1) NIGHT LTS 20/1 0.30 A 1.20 20/1 PPMER TERMINAL BRN (2) (3) RECETIVING LTS 20/1 0.20 A 1.20 20/1 PPMER TERMINAL BRN (2) (3) SALES LIGHTS 20/1 0.50 C 1.20 20/1 PPMER TERMINAL GRN (6) 7 SALES LIGHTS 20/1 0.56 B 1.20 20/1 PPMER TERMINAL GRN (10) 11 SALES LIGHTS 20/1 0.50 A 2.88 35/2 WELL PUMP 14 15 SALES LIGHTS 20/1 0.50 B 1.50 20/2 FREEZER H1 (2) 16 PMER TERMINAL GRN 20/1 0.50 B 1.50 20/2 FREEZER H2 (2) 17 SPARE 20/1 0.50 B 1.50 20/2 FREEZER H2 (PANEL E	}.		· · · · · · · · · · · · · · · · · · ·	
Image: constraint of the second sec	СКТ	LDAD	BKR	LOAD	PH	LOAD	BKR	LOAD	СКТ
③ RECETVING LTS 20/1 0.24 B 1.20 20/1 PDMER TERMINAL BRN ④ 5 SALES LIGHTS 20/1 0.50 C 1.20 20/1 PDMER TERMINAL BRN ④ 7 SALES LIGHTS 20/1 0.78 A 1.20 20/1 PDMER TERMINAL BRN ④ 9 SALES LIGHTS 20/1 0.76 B 1.20 20/1 PDMER TERMINAL BRN ④ 11 SALES LIGHTS 20/1 0.45 C 1.20 20/1 PDMER TERMINAL BRN ④ 13 SALES LIGHTS 20/1 0.40 A 2.88 35/2 WELL PUMP 14 15 SALES LIGHTS 20/1 0.00 C 0.00 20/1 SPARE 20 13 SALES LIGHTS 20/1 0.00 B 1.80 20/2 FREIZER #1 20 14 IS SALES LIGHTS 20/1 0.00 B 1.50 20/2 FREIZER #1 20 20 BREAG MAUTF ICE/RR LITS 20/1 0.00 B 1.				kVA		kVa			
5		NIGHT LTS.	20/1	0, 30	A	1.20	20/1	POVER TERMINAL BRN	
7	3	RECEIVING LTS.	20/1	0, 24	B	1. 20	20/1	POVER TERMINAL BRN	•
9	5 -		20/1	0. 50	C	1. 20	20/1	POWER TERMINAL GRN	6
11 SALES LIGHTS 20/1 0.45 C 1.20 20/1 PURE TERNINAL BRN [12] 13 SALES LIGHTS 20/1 0.90 A 2.88 35/2 WELL PURP 14 15 SALES LIGHTS 20/1 0.90 B 2.88 35/2 WELL PURP 14 16 SALES LIGHTS 20/1 0.90 B 2.88 35/2 WELL PURP 14 17 SPARE 20/1 0.00 C 0.00 20/1 SPARE 20 20 BREGREV/VEXIT LIGHTS 20/1 0.40 A 0.00 20/2 FREEZER #1 20 21 BUILDING SIGA 20/1 0.90 A 1.50 20/2 FREEZER #2 20 20 FREEZER #2 20 20 20 FREEZER #3 30 30 30 31 SPARE 20/1 0.00 A 1.50 20/2 FREEZER #2 30 30 30 31 SPARE 20/1 0.00 A 1.50 20/2 FREEZER #3 30 30	7		20/1	0. 78	A	1.20	20/1	POWER TERMINAL GRN	
13	9	SALES LIGHTS	20/1	0, 56	B	1.20	20/1	POWER TERMINAL GRN	
15	11	SALES LIGHTS	20/1	0. 45	C	1. 20	20/1	POWER TERMINAL BRN	12
15	13	SALES LIGHTS.	20/1	0, 90	A	2.88	25/2	NELL DIMO	14
① EMERGENCY/EXIT LIGHTS 20/1 0.40 A 0.00 20/A SPARE 20 ② BREAK RM/DIFFICE/RR LTS & RR EF'S 20/1 0.50 B 1.50 20/2 FREEZER #1 22 23	15	SALES LIGHTS	20/1	0, 90	B	2.88	33/2	WELL FUM	16
(2) BREAK RM/UFFICE/RR LIS 20/1 0.50 B 1.50 20/2 FREEZER (2) (2) 23 BUILDING.SIGN 20/1 1.20 C 1.50 20/2 FREEZER (2) (2) 25 PYLDN.SIGN 20/1 0.90 A 1.50 20/2 FREEZER (2) (2) 27 SPARE 20/1 0.00 B 1.50 20/2 FREEZER (2) (2) 31 STEERIDR LIGHTING 20/1 0.00 A 1.50 20/2 FREEZER (3) (3) 33 EXTERIDR LIGHTING 20/1 0.00 A 1.50 20/2 FREEZER (3) 34 S FREEZIN MAGE 20/1 0.00 20/1 SDBA COLLERS 34 35 FRENT EXTERIOR LIS 20/1 0.15 B 0.00 20/1 SPARE 40 41 EXTERIOR DUSK/DAWN 20/1 0.13 C	17	SPARE	20/1	0.00	C	0.00	20/1	SPARE	18
23	(19)	EMERGENCY/EXIT LIGHTS	20/1	0, 40	A	0, 00	20/A	SPARE	20
23 BUILDING STGN 20/1 1.20 C 1.50 COVE FREEZER #2 20 25 PYLDN STGN 20/1 0.90 A 1.50 20/2 FREEZER #2 20 20 27 SPARE 20/1 0.00 B 1.50 20/2 FREEZER #3 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 <t< td=""><td>2</td><td>BREAK RM/OFFICE/RR LTS & RR EF'S</td><td>20/1</td><td>0. 50</td><td>B</td><td>1. 50</td><td>20.72</td><td>F0FF7F0 #1</td><td>2</td></t<>	2	BREAK RM/OFFICE/RR LTS & RR EF'S	20/1	0. 50	B	1. 50	20.72	F0FF7F0 #1	2
25 PYLDN SIGN 20/1 0.90 A 1.50 20/2 FREEZER #2 (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20) (20)	23	BUILDING SIGN	20/1	1, 20	C	1. 50	20/2	FKELZEK #I	24
27 SPARE 20/1 0.00 B 1.50 CU/L FREEZER #3 (30) 29 STIE LIGHTING 20/1 1.20 C 1.50 20/2 FREEZER #3 (30) 31 SPARE 20/1 0.00 A 1.50 20/2 FREEZER #3 (30) 33 EXTERIOR LTS 20/1 0.56 B 1.60 20/1 DEDIA CODLERS 34 35 FRONT EXTERIOR/CAMOPY LTS 20/1 0.28 C 1.60 20/1 DRINK CODLERS 36 37 EXTERIOR LTS 20/1 0.15 A 0.00 20/1 SPARE 38 39 EXTERIOR DUSK/DAVN 20/1 0.13 C 0.00 20/1 SPARE 40 41 EXTERIOR DUSK/DAVN 20/1 0.13 C 0.00 20/1 SPARE 42 VELTAGE/PHASE II.7 A 38 107 200A 200A MAIN CIRC	25	PYLON SIGN	20/1	0, 90	A.	1. 50	00/0		26
29 SITE LIGHTING 20/1 1.20 C 1.50 20/2 FREEZER #3 30 30 31 SPARE 20/1 0.00 A 1.50 20/2 FREEZER #3 30 32 34 35 FREMAT 20/1 0.00 A 1.50 20/2 FREEZER #3 30 32 34 35 FREMAT 20/1 0.00 A 1.50 20/1 STATE #10R / 13 20/1 0.56 B 1.60 20/1 SDIA CDDLERS 34 35 FREMAT EXTERIOR / LTS 20/1 0.15 A 0.00 20/1 SPARE 36 37 EXTERIOR / LTS 20/1 0.15 B 0.00 20/1 SPARE 40 41	27	SPARE	20/1	0, 00	B	1.50	2072	TKELLEK #C	8
31	29	SITE LIGHTING	20/1	1. 20	C	1.50	00.0		3
33	31		20/1	0.00	A	1.50	20/2	F <u>KELZEK</u> #J	
37 EXTERIOR LTS. 20/1 0.15 A 0.00 20/1 SPARE 38 39 EXTERIOR LTS. 20/1 0.15 B 0.00 20/1 SPARE 40 41 EXTERIOR DUSK/DAWN 20/1 0.13 C 0.00 20/1 SPARE 42 41 EXTERIOR DUSK/DAWN 20/1 0.13 C 0.00 20/1 SPARE 42 41 EXTERIOR DUSK/DAWN 20/1 0.13 C 0.00 20/1 SPARE 42 42 KVA PH AMPS 42 42 KVA PH AMPS 42 42 KVA PH AMPS <td>33</td> <td>EXTERIOR LTS</td> <td>20/1</td> <td>0, 56</td> <td>B</td> <td>1.60</td> <td>20/1</td> <td>SODA COOLERS</td> <td></td>	33	EXTERIOR LTS	20/1	0, 56	B	1.60	20/1	SODA COOLERS	
39 EXTERIOR LTS 20/1 0. 15 B 0. 00 20/1 SPARE 40 41 EXTERIOR DUSK/DAVN 20/1 0. 13 C 0. 00 20/1 SPARE 42 41 EXTERIOR DUSK/DAVN 20/1 0. 13 C 0. 00 20/1 SPARE 42 41 EXTERIOR DUSK/DAVN 20/1 0. 13 C 0. 00 20/1 SPARE 42 42 KVA PH AMPS 42 41 EXTERIOR DUSK/DAVN 20/1 A 98 42 41 EXTERIOR DUSK/DAVN 10.8 C 90	35	FRONT EXTERIOR/CANOPY LTS	20/1	0, 28	C	1. 60	20/1	DRINK COOLERS	36
41 EXTERIOR DUSK/DAWN 20/1 0. 13 C 0. 00 20/1 SPARE 42 kVA PH AMPS 11. 7 A 98	37	EXTERIOR LTS.	20/1	0.15	A	. 0, 00	20/1	SPARE	38
Image: Non-Section of the section	39	EXTERIÓR LTS	20/1	0, 15	B	0.00	20/1	SPARE	40
11.7 A 98 12.8 B 107 10.8 C 90 VULTAGE/PHASE BUS RATING 208Y/120V, 3P, 4W 200A 200A NEUTRAL BUS RATING 200A MAIN CIRCUIT BREAKER RATING MLD SERVICE ENTRANCE RATED YES ENCLOSURE NEMA 1 SURFACE SURFACE	41	EXTERIOR DUSK/DAVN	20/1	0, 13	C	0.00	20/1	SPARE	42
12.8 B 107 10.8 C 90 VULTAGE/PHASE 208Y/120V, 3P, 4W BUS RATING 200A NEUTRAL BUS RATING 200A MAIN CIRCUIT BREAKER RATING MLD AIC RATING 22K SERVICE ENTRANCE RATED YES ENCLOSURE NEMA 1 MDUNTING SURFACE				kVA	PH	AMPS		. <u>/////////////////////////////////</u>	
10.8 C 90 VOLTAGE/PHASE 208Y/120V, 3P, 4W BUS RATING 200A NEUTRAL BUS RATING 200A MAIN CIRCUIT BREAKER RATING MLD AIC RATING 22K SERVICE ENTRANCE RATED YES ENCLOSURE NEMA 1 MDUNTING SURFACE				11.7	A	98			•-
VULTAGE/PHASE 208Y/120V, 3P, 4W BUS RATING 200A NEUTRAL BUS RATING 200A MAIN CIRCUIT BREAKER RATING MLD AIC RATING 22K SERVICE ENTRANCE RATED YES ENCLOSURE NEMA 1 MDUNTING SURFACE				12.8	B	107		аннана спортания и солучити на солучит Спортания с солучити на солу С	
BUS RATING 200A NEUTRAL BUS RATING 200A MAIN CIRCUIT BREAKER RATING MLD AIC RATING 22K SERVICE ENTRANCE RATED YES ENCLOSURE NEMA 1 MDUNTING SURFACE				10.8	C	90		, , ,,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
BUS RATING 200A NEUTRAL BUS RATING 200A MAIN CIRCUIT BREAKER RATING MLD AIC RATING 22K SERVICE ENTRANCE RATED YES ENCLOSURE NEMA 1 MDUNTING SURFACE				P				· · · · · · · · · · · · · · · · · · ·	
NEUTRAL BUS RATING 200A MAIN CIRCUIT BREAKER RATING MLD AIC RATING 22K SERVICE ENTRANCE RATED YES ENCLOSURE NEMA 1 MDUNTING SURFACE	. '	· · · · · · · · · · · · · · · · · · ·	VOLTAGE	E/PHASE	- -	208Y/1	20V, 3P, 4	W	
MAIN CIRCUIT BREAKER RATING MLD AIC RATING 22K SERVICE ENTRANCE RATED YES ENCLOSURE NEMA 1 MDUNTING SURFACE			BUS	RATING		200A		<u></u>	
AIC RATING 22K SERVICE ENTRANCE RATED YES ENCLOSURE NEMA 1 MDUNTING SURFACE		NEUTI	RAL BUS	RATING		200A		· · · · · · · · · · · · · · · · · · ·	
SERVICE ENTRANCE RATED YES ENCLOSURE NEMA 1 MDUNTING SURFACE	MAIN CIRCUIT BREAKER RATING					MLD			
ENCLOSURE NEMA 1 MDUNTING SURFACE		· · · ·	AIC	RATING		22K		· · · · · · · · · · · · · · · · · · ·	
MDUNTING SURFACE		SERVICE I	INTRANCE	E RATED		YES			
MDUNTING SURFACE		·····	ENG	CLOSURE		NEMA 1	- <u>`</u>	······································	
ISOLATED GROUND BUS N/A		· · · · ·	M	JUNTING		SURFACI	E	· · · · · · · · · · · · · · · · · · ·	
	· · · · ·	ISOLA	fed grou	IND BUS		N/A			

NOTE: CIRCLED CIRCUITS REPRESENT BREAKER LOCKS

NEC EL	ECTRIC DEM	and summary	208Y/120V, 3P	, 4V		
EQUIPMENT	DEMAND					
LWUIFMENI	Factor	A	B	C	load kva	
LIGHTING 1	125%	10, 88	10, 88	10. 88	32.64	
Receptacles < 10 kVa 5	100%	1. 80	1. 80	1. 80	5. 40	
RECEPTACLES > 10 kVA 5	50%	0. 00	0.00	0.00	0.00	
HVAC 2	100%	22.06	22.06	22.06	66, 18	
WATER HEATER	100%	1. 70	1, 70	0.00	3, 40	
SHOW WINDOW 3	125%	1. 53	1, 53	1, 53	4, 59	
SIGN 6	125%	1, 20	0, 90	0.00	2, 10	
FREEZERS/CODLERS	100%	4, 40	7. 38	8.40	20. 18	
IRRIGATION PUMP AND WELL	100%	2, 88	1.00	2, 88	6. 76	
Demand Kva	per phase	46. 45	47, 25	47. 55		
Demand Amps	PER PHASE	387	394	396		

AIC RATING

ENCLOSURE

MOUNTING

SERVICE ENTRANCE RATED

ISOLATED GROUND BUS

22K

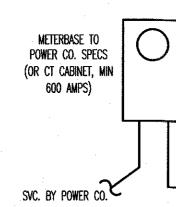
YES

N/A

NEMA 1 SURFACE

8709 SF X 3VA/SF X 1.25 PER NEC 220.12. THIS EXCEEDS THE CONNECTED LIGHTING LOAD.
 ALL HVAC EQUIPMENT IS BASED ON MCA.
 NOT USED

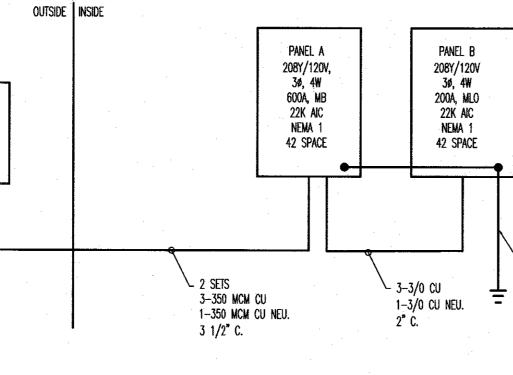
NOT USED
 23 FT X 150 VA/2FT PER NEC 220.43(B)
 NOT USED
 PER NEC 220.14(F)
 NOT USED



NOTE: CIRCLED CIRCUITS REPRESENT BREAKER LOCKS NOTE: SHADED CIRCUITS RUN THROUGH EMS PANEL

PANEL B HAS BOTH ISOLATED GROUND BUS AND A STANDARD BONDED GROUND BUS.

		EQ	UIPMENT	CONNEC	ction schedu	le			-	· .		
SYMBOL	DESCRIPTION	FURN, BY	kVA	HP	VOLT/PH	MCA	MOCP	DISC	AVG	EGC	CEND	NUTES
RTU-1, 2	RTU' S	M. C.		-	208/3	92.0	100	100	#3	#8	1 1/2'	
P-11	WATER HEATERS	P. C.	1.65		120/1	13	20	30	#12	#12	3/4"	

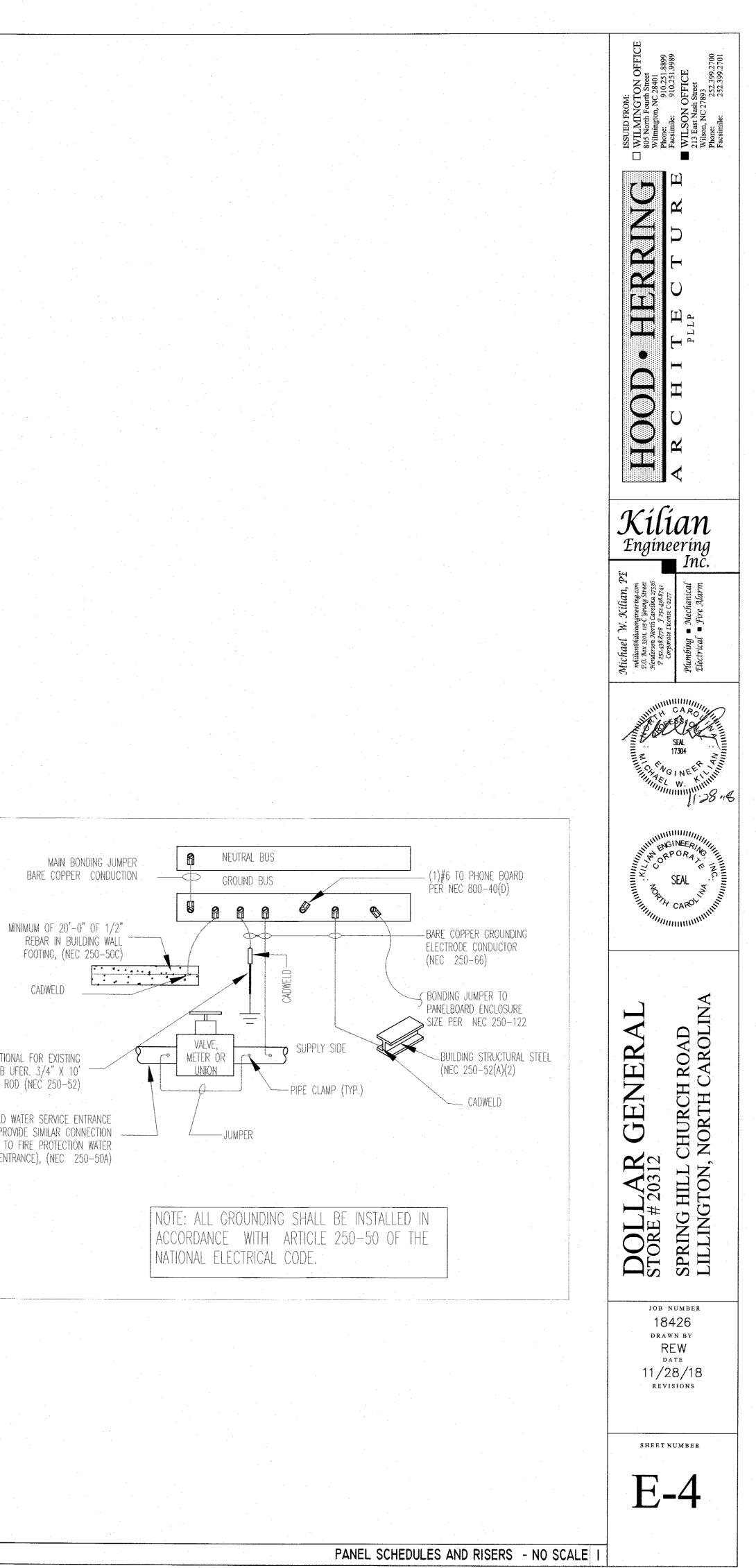


∽ 1/0 CU TO WATER LINES IF CU AND BLDG STEEL #4 TO REBAR IN SLAB #6 TO 3/4" X 10' DRIVEN GRD ROD.

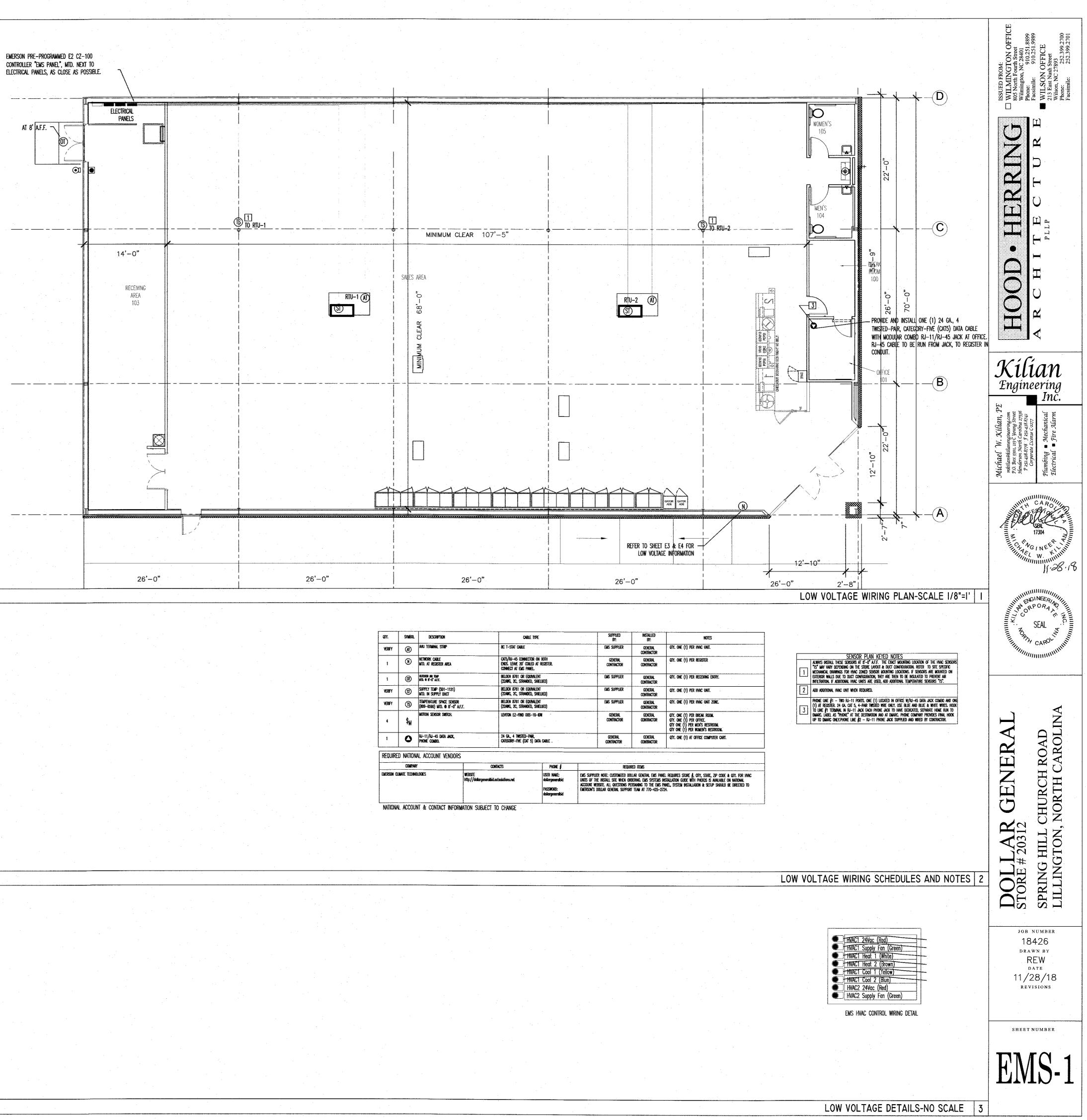
CADWELD

OPTIONAL FOR EXISTING SLAB UFER. 3/4" X 10' GROUND ROD (NEC 250-52)

COLD WATER SERVICE ENTRANCE (PROVIDE SIMILAR CONNECTION TO FIRE PROTECTION WATER SERVICE ENTRANCE), (NEC 250–50A)



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QTY.	SMEOL	DESCRIPTION		CABLE TYPE 8C T-STAT CABLE CAT5/RJ-45 CONNECTOR ON BOTH ENDS, LEAVE 20' COLLED AT REGISTER. CONNECT AT ELIS PANEL.				
VERIEY	Æ	ahu terminal strip						
1	8	NETWORK CABLE MTD. AT REGISTER AREA	· · · · · · · · · · · · · · · · · · ·					
1	0	OUTDOOR MR TEMP NEL & S-O' AFF.	· · ·	BELDEN 8761 OR EQU (22ANG, 2C, STRANDEL				
VERIFY	3	SUPPLY TEMP (501-1121) MTD. IN SUPPLY DUCT		BELDEN 8761 OR EQUIVALENT (22ANG, 2C, STRANDED, SHELDED) BELDEN 8761 OR EQUIVALENT (22ANG, 2C, STRANDED, SHELDED) LEMTON EZ-FIND ODS-10-IBN 24 GA, 4 TWISTED-PAR, CATEGORY-FINE (CAT 5) DATA CABLE .				
VERIFY	13	TEMPERATURE SPACE SENSOR (809-6590) MITD. @ 8'-0" A						
4	\$ _M	MOTION SENSOR SWITCH.						
1	0	RI-11/RI-45 DÁTA JACK, Phone combo.						
REQUIRE	d nation	AL ACCOUNT VENDORS	}	· · · · · · · · · · · · · · · · · · ·				
	COMPAN	1	CONT	ACTIS	PHONE #			
EMERSON CE	MATE TECHNO	LOGIES	WEBSITE http://doilorgeneraibid.ec	tsolutions.net	USER NM/E: dollargeneralbid PASSWORD: dollargeneralbid	E U A E		

